



## Kirtland Air Force Base

20.11.41 NMAC Construction Permit Application  
Emergency Generator at Building 277  
AFRL/RVEI

377 MSG/CEIE  
Kirtland AFB, New Mexico

OCT 29 '21 AM 11:39

7020 1810 0002 2646 1875

## KIRTLAND AIR FORCE BASE

### Application for Modification to Permit #2105-RV1 for the Kirtland Air Force Base AFRL/RVEI Generator at Building 277

#### FACT SHEET

Kirtland Air Force Base (AFB) is submitting this application for a modification to Authority to Construct Permit #2105-RV1 from the Albuquerque Environmental Health Department (AEHD) Air Quality Division. Permit #2105-RV1 currently applies to one non-emergency generator with Process Equipment Unit Numbers 1 (Unit ID No. 19159) which provides power to critical equipment utilized for ongoing environmental research and development at the Air Force Research Laboratory (AFRL) Space Vehicles Directorate Building 277.

Kirtland AFB is submitting this application to modify the operational status of this generator. It was originally permitted as a non-emergency generator; however, after several years of operations and discussions with facility staff, it has become apparent that the generator is operating as an emergency generator. This can be verified by reviewing the last three years of operational data included in the table below. As can be seen with this information, the unit is only operating and available for operations when prime power to the building is down. Additionally, the unit itself is only available to turn on when critical equipment is operational and therefore will not turn on if there is a power outage at the building unless it happens during a period when critical equipment is also running. Maintenance of the engine is conducted on a regular basis to ensure that it is operational in the event of a power outage during testing.

Month	19159 Annual Hours of Operation			
	2017	2018	2019	2020
January	2.8	2.2	2.2	2.7
February	2.2	2.2	2.2	2.2
March	2.2	19.9	4.3	2.2
April	2.8	2.7	2.2	2.8
May	2.3	2.2	2.2	2.2
June	2.3	2.2	2.7	2.7
July	4.4	5.1	2.2	2.7
August	2.7	2.2	2.7	2.2
September	2.2	2.5	2.2	1.5
October	2.7	6.5	3.3	5.5
November	0.6	2.8	2.2	2.3
December	2.7	2.2	2.2	2.7
<b>Total Annual Hours</b>	29.9	52.7	30.6	31.7

This engine is subject to the federal requirements under 40 CFR 60, Subpart IIII – Standards of Performance for Compression Ignition Internal Combustion Engine, and Subpart A – General Provisions. This engine is an emergency stationary CI ICE that was manufactured after April 1, 2006. The emission standards for this engine remain the same in 40 CFR 89.112 regardless of whether the engine is emergency or non-emergency. However, as an emergency engine, it is subject to 40 CFR 60.4205(b) and 40 CFR 60.4202(a). Hourly emissions will remain the same for this engine; however, the annual emissions will be reduced since the engine operates on an emergency basis with a

maximum of 200 hours per year. As an emergency generator, this unit does not require dispersion modeling analysis.

Certification by the applicant's official representative that the information in this application is accurate (as required by 20.11.41.13.B(10) NMAC) is included with the permit application forms in Attachment A. Attachment B contains the completed AEHD permit application checklist to ensure that the required elements have been included in this application. The Notice of Intent to Construct is also contained in Attachment B.

Updated hourly, annual, and potential emissions from the emission source are included in Attachment C along with engine specification sheets. Refer to Attachment D for a map illustrating the location of the Process Equipment. Refer to Attachment E for a process flow diagram for an internal combustion engine. Attachment F contains the generator specification sheets and other relevant documentation.

Routine preventative maintenance will be conducted on the engine to ensure proper operation. The operators will be responsible for shutting down the generators and engines if there is a malfunction, such as vacuum loss, low oil pressure, overheating, or overly high revolutions per minute. The following recordkeeping and ongoing compliance activities will be performed.

- Kirtland AFB will maintain records of the hours of operation for the engines;
- Kirtland AFB will calculate annual emissions from the engines using appropriate emission factors and annual operating hours;
- Kirtland AFB will include emissions and hours of operation from the engines in an annual emissions report to be submitted to the AEHD to ensure that no exceedances of the 20.11.41 NMAC permit limits occur; and
- Kirtland AFB will maintain organization-required maintenance logs to show that the engines are in good working condition.

Attachment A – Permit Application Forms

Attachment B – Permit Application Checklist and Notice of Intent to Construct

Attachment C – Emission Calculations

Attachment D – Emergency Generator Location Map

Attachment E – Emergency Generator Process Flow Diagram

Attachment F – Generator Specifications and Reference Documents

**Attachment A**

**AEHD Permit Application Forms**



City of Albuquerque  
Environmental Health Department  
Air Quality Program

Please mail this application to **P.O. Box 1293, Albuquerque, NM 87103**  
or hand deliver between 8:00am - 5:00pm Monday - Friday to:  
**3<sup>rd</sup> Floor, Suite 3023 - One Civic Plaza NW, Albuquerque, New Mexico 87103**  
**(505) 768 - 1972 aqd@cabq.gov (505) 768 - 1977 (Fax)**



20.11.41 NMAC Air Quality Permit Application  
For

**EMERGENCY DIESEL ENGINES**

SUBJECT TO FEDERAL (USEPA) NEW SOURCE PERFORMANCE STANDARDS (NSPS)

**Section 1. General Information**

Date Submitted: 10/27/2021

1. Company Name: U.S. Air Force – Kirtland Air Force Base Ph: (505) 853-1588 Email: Not Applicable
2. Company Address: 377 MSG/CEIE, 2050 Wyoming Blvd SE Suite A-116B City: Kirtland AFB State: NM Zip: 87117-5270
3. Company Mailing Address (if different): (same as above) Zip: \_\_\_\_\_
4. Company Contact: Ms. Melissa B. Clark Title: Chief, Environmental Management Ph: (505) 853-1588 Email: melissa.clark.8@us.af.mil
5. Facility Name: AFRL/RVEI Facility Hours: 19 hours per day M-F 7:00 am TO 2:00 am
6. Facility Address: 2801 Kirtland Dr. SE, Building 277 City: Kirtland AFB State: NM Zip: 87117
7. Local Business Mailing Address (if different): (same as above) Email: Not Applicable
8. Facility Environmental Contact: Ms. Melissa Clark Title: Chief, Environmental Management Ph: (505) 853-1588 Fax: Not Applicable
9. Email: melissa.clark.8@us.af.mil 10. Type of Business: National Security - U.S. Dept. of Defense
11. Environmental Consultant Name and Email Address (if applicable): Not applicable
12. North American Industry Classification System (NAICS): 928110 13. Standard Industrial Classification (SIC): 9711
14. UTM coordinates (required): 353382.13 east 3879643.79 north 15. Facility Ph: (505)-853-0511 Fax: Not applicable
16. Billing Contact: Ms. Andria Cuevas Title: Air Quality Program Manager Ph: (505) 846-2522 Fax: Not Applicable
17. Billing Address: 377 MSG/CEIE, 2050 Wyoming Blvd SE, Suite A-116B City: Kirtland AFB State: NM Zip: 87117
18. Is this an Initial Installation: OR Modification of an Existing Unit: Initial  Modification 19. Current or requested operating hrs/yr: 200 hrs/yr
20. Is engine or genset installed:  Yes  No If yes, date installed: 12/20/2010 If no, anticipated installation date: \_\_\_\_\_  
Anticipated start-up date: \_\_\_\_\_

**Provide an engine spec sheet and a detailed site plan or plat of the property where engine or genset is to be installed.**

**Section 2. Compression Ignition Internal Combustion Engine for Stationary Emergency Engines**

**Provide engine rating in horsepower (Hp) as determined by manufacturer's spec sheet.**

Process Equipment Unit	Manufacturer	Model Number	Serial Number	Manufacturer Date	Modification Date	Engine Size In Horsepower (Hp)	Size of Generator In kilowatts (kW)
Engine	Caterpillar	C15ATAAC	FSE03270	2010	N/A	762	N/A
Generator	Caterpillar	LC6114F	G6B16967	2010	N/A	N/A	568

**Section 3. Stack and Emissions Information**

Stack Height Above Ground & Stack Diameter In Feet	Stack Temperature	Stack Flow Rate & Exit Direction
7.8 0.67	951.6°F	172.87 cfs- Flow Rate Exit - upward

**Section 4. Potential Emission Rate (Uncontrolled Emissions)**

Use manufacturer's data, compliance performance stack test data or the attached USEPA Emission Factors in grams per horsepower-hour (g/Hp-hr) associated with the Engine's Horsepower Rating and Model Year

Model Year	Pollutant	Emission Factors g/Hp-hr	T I M E S	Actual Engine Hp	E Q U A L S	Emission In Grams Per Hour	D I V I D E	Grams Per Pound	E Q U A L S	Emission in Pounds Per Hour	T I M E S	Potential Operating Hours Per Year	D I V I D E	Pounds Per Ton	E Q U A L S	Emission In Tons Per Year
2010	CO	2.54	x	762	=	200.9	+	453.6	=	4.26	x	8,760	+	2,000	=	18.67
	NOx	4.17	x	762	=	3179.7	+	453.6	=	7.01	x	8,760	+	2,000	=	30.72
	NMHC	0.28	x	762	=	13.72	+	453.6	=	0.48	x	8,760	+	2,000	=	2.10
	*NOx + NMHC	4.25	x	762	=	3243.2	+	453.6	=	7.15	x	8,760	+	2,000	=	31.32
	**SOx	0.001	x	762	=	0.456	+	453.6	=	0.022	x	8,760	+	2,000	=	0.09
	***PM	0.08	x	762	=	10.78	+	453.6	=	0.14	x	8,760	+	2,000	=	0.60

\* If the USEPA Emission Factor or manufacturer's data is given as combined NOx + NMHC, also provide individual emission factors for NOx and NMHC from the manufacturer or other approved methodology for estimating individual emission factors.

\*\* Manufacturer's SOx factor shall be used when larger than the USEPA Emission Factor.

\*\*\* Particulate Matter (PM) emissions are considered to be < 1µm (micron). Therefore, PM emissions also reflect PM10 & PM2.5.

**Section 5. Potential to Emit (Requested allowable rate) (Controlled Emissions)**

Transfer each pollutant Emission in Pounds Per Hour from column above to the Emission in Pounds Per Hour column below. Complete the equation after inserting the Requested Operating Hours Per Year. Pound Per Hour rate for each pollutant must be met if performance testing is requested.

Pollutant	Emission in Pounds Per Hour	T I M E S	Requested Operating Hours Per Year	E Q U A L S	Pounds Per Year	D I V I D E	Pounds Per Ton	E Q U A L S	Emission In Tons Per Year
CO	4.26	x	200	=	852.4	+	2,000	=	0.43
NOx	7.01	x	200	=	1402	+	2,000	=	0.70
NMHC	0.48	x	200	=	95.9	+	2,000	=	0.05
*NOx + NMHC	7.15	x	200	=	1430	+	2,000	=	0.72
**SOx	0.022	x	200	=	4.4	+	2,000	=	0.002
***PM	0.14	x	200	=	27.6	+	2,000	=	0.01

I, the undersigned, a responsible officer of the applicant company, certify that to the best of my knowledge, the information stated on this application, together with associated drawings, specifications, and other data, give a true and complete representation of the existing, modified existing, or planned new stationary source with respect to air pollution sources and control equipment. I also understand that any significant omissions, errors, or misrepresentations in these data will be cause for revocation of part or all of the resulting source registration and air quality permit.

JASON F. VATTIONI, Colonel, USAF  
Print Name

VATTIONI.JASON.F.11 Digitally signed by  
70028640 VATTIONI.JASON.F.1170028640  
Date: 2021.10.25 18:04:52 -06'00'  
Sign Name

Commander, 377th Air Base Wing  
Title

25-Oct-21  
Date

**Federal New Source Performance Standards (NSPS) for Stationary Emergency Diesel Engines (40CFR 60.4202 & 60.4205) in Grams Per Horsepower Hour (g/hp-hr) for Engines with a Displacement of < 10 Liters Per Cylinder**

Horsepower / kW	Tier (CFR Section)	Year Of Manufacture	CO (g/hp-hr)	NOx <sup>1</sup> (g/hp-hr)	NMHC <sup>1</sup> (g/hp-hr)	NOx + NMHC <sup>1</sup> (g/hp-hr)	SOx <sup>2</sup> (g/hp-hr)	Particulate Matter (PM) (g/hp-hr)	Notes
< 11 Hp < 8 kW	1 (60.4205)	Pre 2007 <sup>3</sup>	6.0			7.8	0.93*	0.75	* Use AP-42 Section 3.3 SOx factors if <600Hp and Section 3.4 if >600Hp, as shown on this table, or manufacturer's factors. Manufacturer's factors shall be used when larger than AP-42 factors.
≥ 11 Hp < 25 Hp ≥ 8 kW < 19 kW	2 (60.4202) - (89.112)	2007	6.0			5.6	0.93*	0.6	
		2008 +	6.0			5.6	0.93*	0.3	
	1 (60.4205)	Pre 2007 <sup>3</sup>	4.9			7.1	0.93*	0.6	
		2007	4.9			5.6	0.93*	0.6	
≥ 25 Hp < 50 Hp ≥ 19 kW < 37 kW	4 (60.4202)	2008 +	4.9			5.6	0.93*	0.3	
		Pre 2007 <sup>3</sup>	4.1			7.1	0.93*	0.6	
≥ 50 Hp < 100 Hp ≥ 37 kW < 75 kW ≥ 100 Hp < 175 Hp	2 (60.4202) - (89.112)	2007	4.1			5.6	0.93*	0.45	
		2008 +	4.1			5.6	0.93*	0.22	
	1 (60.4205)	Pre 2007 <sup>3</sup>	3.03**	6.9	1.12**		0.93*	1.0**	
		2007	3.7			5.6	0.93*	0.3	
≥ 75 kW < 130 kW ≥ 175 Hp ≤ 750 Hp	3 (60.4202) - (89.112)	Pre 2007 <sup>3</sup>	3.7			3.5	0.93*	0.3	
		2008 +	3.03**	6.9	1.12**		0.93*	1.0**	** Use AP-42 Section 3.3 factors for CO, NMHC, and PM as shown on this table, or manufacturer's factors. Manufacturer's factors shall be used when larger than AP-42 factors.
≥ 130 kW ≤ 560 kW	3 (60.4202) - (89.112)	2007 +	3.7			3.0	0.93*	0.22	
		Pre 2007 <sup>3</sup>	8.5	6.9	1.0		0.93* for < 600Hp or 3.67* for > 600Hp	0.4	
> 750 Hp > 560 kW	3 (60.4202) - (89.112)	Pre 2007 <sup>3</sup>	8.5	6.9	1.0			0.4	
		2007***	2.6			4.8	3.67	0.15	
*** 2007 - 2010 Model Year Engines > 3,000 Hp shall meet the Pre 2007 standards and beginning with the 2011 model year, Engines > 3,000 Hp shall meet the 2007 standards									

<sup>1</sup> When an emission factor is given for combined NOx + NMHC, individual emission factors for NOx and NMHC must be obtained from the manufacturer.

<sup>2</sup> SOx emission factors shall be based on AP-42 Section 3.3 for engines less than (<) 600 Hp and Section 3.4 for engines greater than (>) 600 Hp, or manufacturer's factors since SOx emission standards were not established for non-road diesel engine rulemaking. Manufacturer's factors shall be used when larger than the AP-42 factors. For engines > 600 Hp, the "S" multiplier is 0.05 (5%) if calculating SOx to reflect the current low sulfur diesel fuel standard of 500 ppm. Percent sulfur in diesel fuel transitions to Ultra Low Sulfur Diesel (15 ppm) by October 2010. For engines operated after October 2010, with a year of manufacture of 2010 or later, the "S" multiplier is 0.0015 (0.15%) if calculating SOx to reflect the proposed new standard.

<sup>3</sup> Pre 2007 means each stationary Compression Ignition Internal Combustion Engine (CI ICE) whose construction, modification or reconstruction commenced after July 11, 2005. The date of construction is the date the engine is ordered by the owner or operator. Stationary CI ICE manufactured prior to April 1, 2006, that are not fire pump engines are not subject to NSPS, unless the engines are modified or reconstructed after July 11, 2005. A modified or reconstructed CI ICE must meet the emission standards for the model year in which the engine was originally new, not the year the engine is modified or reconstructed (Preamble language - Section II. E).

**Attachment B**

**AEHD Permit Application Checklist,  
Fees Checklist, and  
Notice of Intent to Construct**





# City of Albuquerque

## Environmental Health Department Air Quality Program



### Permit Application Checklist

Any person seeking a permit under 20.11.41 NMAC, Authority-to-Construct Permits, shall do so by filing a written application with the Department. Prior to ruling a submitted application complete each application submitted shall contain the required items listed below. **This checklist must be returned with the application.**

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

All applicants shall:

1. † Fill out and submit the *Pre-permit Application Meeting Request* form
  - a.  Attach a copy to this application
  
2. † Attend the pre-permit application meeting
  - a.  Attach a copy of the completed *Pre-permit Application Meeting Checklist* to this application
  
3. † Provide public notice to the appropriate parties
  - a.  Attach a copy of the completed *Notice of Intent to Construct* form to this form
    - i. Neighborhood Association(s): See Attached
    - ii. Coalition(s): NA
  - b.  Attach a copy of the completed *Public Sign Notice Guideline* form
  
4. Fill out and submit the *Permit Application*. All applications shall:
  - A.  be made on a form provided by the Department. Additional text, tables, calculations or clarifying information may also be attached to the form.
  - B.  at the time of application, include documentary proof that all applicable permit application review fees have been paid as required by 20 NMAC 11.02. Please refer to the attached permit application worksheet.
  - C.  contain the applicant's name, address, and the names and addresses of all other owners or operators of the emission sources.

- D.  contain the name, address, and phone number of a person to contact regarding questions about the facility.
- E.  indicate the date the application was completed and submitted
- F.  contain the company name, which identifies this particular site.
- G.  contain a written description of the facility and/or modification including all operations affecting air emissions.
- H.  contain the maximum and standard operating schedules for the source after completion of construction or modification in terms of hours per day, days per week, and weeks per year.
- I.  provide sufficient information to describe the quantities and nature of any regulated air contaminant (including any amount of a hazardous air pollutant) that the source will emit during:
  - Normal operation
  - Maximum operation
  - Abnormal emissions from malfunction, start-up and shutdown
- J.  include anticipated operational needs to allow for reasonable operational scenarios to avoid delays from needing additional permitting in the future.
- K.  contain a map, such as a 7.5-minute USGS topographic quadrangle, showing the exact location of the source; and include physical address of the proposed source.
- L.  contain an aerial photograph showing the proposed location of each process equipment unit involved in the proposed construction, modification, relocation, or technical revision of the source except for federal agencies or departments involved in national defense or national security as confirmed and agreed to by the department in writing.
- M.  contain the UTM zone and UTM coordinates.
- N.  include the four digit Standard Industrialized Code (SIC) and the North American Industrial Classification System (NAICS).
- O.  contain the types and **potential emission rate** amounts of any regulated air contaminants the new source or modification will emit. Complete appropriate sections of the application; attachments can be used to supplement the application, but not replace it.
- P.  contain the types and **controlled** amounts of any regulated air contaminants the new source or modification will emit. Complete appropriate sections of the application; attachments can be used to supplement the application, but not replace it.

- Q.  contain the basis or source for each emission rate (include the manufacturer's specification sheets, AP-42 Section sheets, test data, or other data when used as the source).
- R.  contain all calculations used to estimate potential emission rate and controlled emissions.
- S.  contain the basis for the estimated control efficiencies and sufficient engineering data for verification of the control equipment operation, including if necessary, design drawings, test reports, and factors which affect the normal operation (e.g. limits to normal operation).
- T.  contain fuel data for each existing and/or proposed piece of fuel burning equipment.
- U.  contain the anticipated maximum production capacity of the entire facility and the requested production capacity after construction and/or modification.
- V.  contain the stack and exhaust gas parameters for all existing and proposed emission stacks.
- W.  provide an ambient impact analysis using a atmospheric dispersion model approved by the US Environmental Protection Agency (EPA), and the Department to demonstrate compliance with the ambient air quality standards for the City of Albuquerque and Bernalillo County (See 20.11.01 NMAC). If you are modifying an existing source, the modeling must include the emissions of the entire source to demonstrate the impact the new or modified source(s) will have on existing plant emissions.
- X.  contain a preliminary operational plan defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown.
- Y.  contain a process flow sheet, including a material balance, of all components of the facility that would be involved in routine operations. Indicate all emission points, including fugitive points.
- Z.  contain a full description, including all calculations and the basis for all control efficiencies presented, of the equipment to be used for air pollution control. This shall include a process flow sheet or, if the Department so requires, layout and assembly drawings, design plans, test reports and factors which affect the normal equipment operation, including control and/or process equipment operating limitations.
- AA.  contain description of the equipment or methods proposed by the applicant to be used for emission measurement.
- BB.  be signed under oath or affirmation by a corporate officer, authorized to bind the company into legal agreements, certifying to the best of his or her knowledge the truth of all information submitted.



**Timothy M. Keller,**  
Mayor

**Public Participation**

**List of Neighborhood Associations  
and Neighborhood Coalitions  
MEMORANDUM**

**To:** Andria Cuevas, Program Manager  
**From:** Carina G. Munoz-Dyer, Environmental Health Supervisor  
**Subject:** Determination of Neighborhood Associations and Coalitions  
 within 0.5 mile of the Kirtland Air Force Base Property in Bernalillo County, NM  
**Date:** October 6, 2021

**DETERMINATION:**

On October 6, 2021 I used the City of Albuquerque Zoning Advanced Map Viewer (<http://coagisweb.cabq.gov/>) to verify which City of Albuquerque Neighborhood Associations (NA), Homeowner Associations (HOA) and Neighborhood Coalitions (NC) are located within 0.5 mile of the Kirtland Air Force Base Property in Bernalillo County, NM.

I then used the City of Albuquerque Office (COA) of Neighborhood Coordination's Monthly Master NA List dated October 2021 and the Bernalillo County (BC) Monthly Neighborhood Association October 2021 Excel file to determine the contact information for each NA and NC located within 0.5 mile of the Kirtland Air Force Base Property in Bernalillo County, NM.

The table below contains the contact information, which will be used in the City of Albuquerque Environmental Health Department's public notice. Duplicates have been deleted.

COA/BC Association or Coalition	Name	Email or Mailing Address
District 6 Coalition of Neighborhood Associations	Mandy Warr	<a href="mailto:mandy@theremedadayspa.com">mandy@theremedadayspa.com</a> ;
	Patricia Willson	<a href="mailto:info@willsonstudio.com">info@willsonstudio.com</a> ;
East Gateway Coalition	Michael Brasher	<a href="mailto:brasher@aps.edu">brasher@aps.edu</a> ;
	Julie Dreike	<a href="mailto:dreikeja@comcast.net">dreikeja@comcast.net</a> ;
	James Andrews	<a href="mailto:jamesw.andrews01@gmail.com">jamesw.andrews01@gmail.com</a>
	Coalition Email	<a href="mailto:eastgatewaycoalition@gmail.com">eastgatewaycoalition@gmail.com</a> ;
East Mountain District 5 Coalition	Lisa Davis	<a href="mailto:ldavis@eastmountaincoalition.org">ldavis@eastmountaincoalition.org</a> ;
	Paul Butler	<a href="mailto:info@eastmountaincoalition.org">info@eastmountaincoalition.org</a> ;
Elder Homestead Neighborhood Association	Marian Jordan	<a href="mailto:marianjor@aol.com">marianjor@aol.com</a> ;
	Sandra Perea	<a href="mailto:sp-wonderwoman@comcast.net">sp-wonderwoman@comcast.net</a> ;
	Association Email	<a href="mailto:elderhomesteadna@gmail.com">elderhomesteadna@gmail.com</a> ;
Four Hills Village Association	Ellen Lipman	<a href="mailto:elkaleyah@aol.com">elkaleyah@aol.com</a> ;
	Steve Brugge	<a href="mailto:spbrugge@gmail.com">spbrugge@gmail.com</a> ;
Juan Tabo Hills Neighborhood Association	Richard Lujan	<a href="mailto:richtriple777@msn.com">richtriple777@msn.com</a> ;
	Ryan Giar	<a href="mailto:ryangiar@gmail.com">ryangiar@gmail.com</a> ;

La Mesa Community Improvement Association	Idalia Lechuga-Tena	<a href="mailto:idalialt@gmail.com">idalialt@gmail.com;</a>
	Dayna Mares	<a href="mailto:dayna.mares76@gmail.com">dayna.mares76@gmail.com;</a>
	Association Email	<a href="mailto:lamesainternationaldistrict@gmail.com">lamesainternationaldistrict@gmail.com;</a>
Parkland Hills Neighborhood Association	Robert Leming	<a href="mailto:phnapresident@gmail.com">phnapresident@gmail.com;</a>
	Mary Darling	<a href="mailto:mldarling56@yahoo.com">mldarling56@yahoo.com;</a>
Siesta Hills Neighborhood Association	Kathy Pierson	<a href="mailto:kp-shna@centurylink.net">kp-shna@centurylink.net;</a>
	Rachel Baca	<a href="mailto:rbaca@bizjournals.com">rbaca@bizjournals.com;</a>
	Association Email	<a href="mailto:siesta2na.pres@gmail.com">siesta2na.pres@gmail.com;</a>
South Los Altos Neighborhood Association	Stephen Martos-Ortiz	<a href="mailto:sdmartos91@gmail.com">sdmartos91@gmail.com;</a>
	Debbie Conger	<a href="mailto:debsla@swcp.com">debsla@swcp.com;</a> <a href="mailto:notices@slananm.org">notices@slananm.org;</a>
	Association Email	<a href="mailto:contact@slananm.org">contact@slananm.org;</a>
South San Pedro Neighborhood Association	Khadijah Bottom	<a href="mailto:khadijahasili@vizionz.org">khadijahasili@vizionz.org;</a>
	Zabdiel Aldaz	<a href="mailto:zabdiel505@gmail.com">zabdiel505@gmail.com;</a>
Southeast Heights Neighborhood Association	John Pate	<a href="mailto:jpate@molzencorbin.com">jpate@molzencorbin.com;</a>
	Pete Belletto	<a href="mailto:pmbdoc@yahoo.com">pmbdoc@yahoo.com;</a>
Trumbull Village Association	Alyce Ice	<a href="mailto:alyceice@gmail.com">alyceice@gmail.com;</a>
	Joanne Landry	<a href="mailto:landry54@msn.com">landry54@msn.com;</a>
Victory Hills Neighborhood Association	Melissa Williams	<a href="mailto:mansdf@comcast.net">mansdf@comcast.net;</a>
	Patricia Willson <i>Included under District 6 Coalitions of Neighborhood Associations</i>	
Willow Wood Neighborhood Association	Samantha Martinez	<a href="mailto:samijoster@gmail.com">samijoster@gmail.com;</a>
	Pamela Meyer	<a href="mailto:pmeyer@sentrymgt.com">pmeyer@sentrymgt.com;</a>
Yale Village Neighborhood Association	Kim Love	<a href="mailto:klove726@gmail.com">klove726@gmail.com;</a>
	Donald Love	<a href="mailto:donaldlove08@comcast.net">donaldlove08@comcast.net;</a>
	Association Email	<a href="mailto:yalevillage@comcast.net">yalevillage@comcast.net;</a>

***\*If email address is not listed, provide public notice via certified mail and include a copy of each mail receipt with the application submittal.***

**From:** CUEVAS, ANDRIA R CIV USAF AFGSC 377 MSG/CEIEC  
**To:** [mandy@theremedyspa.com](mailto:mandy@theremedyspa.com); [info@willsonstudio.com](mailto:info@willsonstudio.com); [brasher@aps.edu](mailto:brasher@aps.edu); [dreikeja@comcast.net](mailto:dreikeja@comcast.net); [jamesw.andrews01@gmail.com](mailto:jamesw.andrews01@gmail.com); [eastgatewaycoalition@gmail.com](mailto:eastgatewaycoalition@gmail.com); [ldavis@eastmountaincoalition.org](mailto:ldavis@eastmountaincoalition.org); [info@eastmountaincoalition.org](mailto:info@eastmountaincoalition.org); [marianior@aol.com](mailto:marianior@aol.com); [sp-wonderwoman@comcast.net](mailto:sp-wonderwoman@comcast.net); [elderhomesteadna@gmail.com](mailto:elderhomesteadna@gmail.com); [elkalevah@aol.com](mailto:elkalevah@aol.com); [spbrugge@gmail.com](mailto:spbrugge@gmail.com); [richtriple777@msn.com](mailto:richtriple777@msn.com); [ryangiar@gmail.com](mailto:ryangiar@gmail.com); [ldaliait@gmail.com](mailto:ldaliait@gmail.com); [davna.mares76@gmail.com](mailto:davna.mares76@gmail.com); [lamesainternationaldistrict@gmail.com](mailto:lamesainternationaldistrict@gmail.com); [phnapresident@gmail.com](mailto:phnapresident@gmail.com); [mldarling56@yahoo.com](mailto:mldarling56@yahoo.com); [kp-shna@centurylink.net](mailto:kp-shna@centurylink.net); [rbaca@bizjournals.com](mailto:rbaca@bizjournals.com); [siesta2na.pres@gmail.com](mailto:siesta2na.pres@gmail.com); [sdmartos91@gmail.com](mailto:sdmartos91@gmail.com); [debsla@swcp.com](mailto:debsla@swcp.com); [notices@slananm.org](mailto:notices@slananm.org); [contact@slananm.org](mailto:contact@slananm.org); [khadijahasili@vizionz.org](mailto:khadijahasili@vizionz.org); [zabdiel505@gmail.com](mailto:zabdiel505@gmail.com); [jpate@molzencorbin.com](mailto:jpate@molzencorbin.com); [ombdoc@yahoo.com](mailto:ombdoc@yahoo.com); [alyceice@gmail.com](mailto:alyceice@gmail.com); [landry54@msn.com](mailto:landry54@msn.com); [mansof@comcast.net](mailto:mansof@comcast.net); [samioster@gmail.com](mailto:samioster@gmail.com); [pmeyer@sentrymot.com](mailto:pmeyer@sentrymot.com); [klove726@gmail.com](mailto:klove726@gmail.com); [donaiddlove08@comcast.net](mailto:donaiddlove08@comcast.net); [yalevillage@comcast.net](mailto:yalevillage@comcast.net)  
**Cc:** 377 ABW/PA Administrative Mailbox; CLARK, MELISSA B GS-14 USAF AFGSC 377 MSG/CEIE  
**Subject:** Public Notice of Proposed Air Quality Construction Permit Application (2105-RV1)  
**Date:** Tuesday, October 26, 2021 8:27:00 AM  
**Attachments:** [Permit 2105 Notice of Intent.pdf](#)  
**Importance:** High

Dear Neighborhood Association/Coalition Representative(s),

***Why did I receive this public notice?***

You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

***What is the Air Quality Permit application review process?***

The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

***What do I need to know about this proposed application?***

Applicant Name	Kirtland Air Force Base
Site or Facility Name	AFRL/RVEI, Bldg 277
Site or Facility Address	2801 Kirtland Dr SE, Kirtland AFB, NM 87117
New or Existing Source	Existing; Requesting Modification to Permit #2105-RV1
Anticipated Date of Application Submittal	27 October 2021
Summary of Proposed Source to Be Permitted	Kirtland AFB is submitting this application to modify the operational status of this generator. It was originally permitted as a non-emergency generator; however, after several years of operations and discussions with facility staff, it has become apparent that the generator is operating as an emergency generator. The unit is only operating and available for operations when prime power to the building is down. Additionally, the unit itself is only available to turn on when critical equipment is operational and therefore will not turn on if there is a power outage at the building unless it happens during a period when critical equipment is also running. Maintenance of the engine is conducted on a regular basis to ensure that it is operational in the event of a power outage during testing.

***What emission limits and operating schedule are being requested?***

See attached Notice of Intent to Construct form for this information.

***How do I get additional information regarding this proposed application?***

For inquiries regarding the proposed source, contact:

- Kirtland Air Force Base Public Affairs Office
- [377ABW.PA@us.af.mil](mailto:377ABW.PA@us.af.mil)
- (505) 846-5991

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- [aqd@cabq.gov](mailto:aqd@cabq.gov)
- (505) 768-1972

# NOTICE FROM THE APPLICANT

## Notice of Intent to Apply for Air Quality Construction Permit

You are receiving this notice because the New Mexico Air Quality Control Act (20.11.41.13B NMAC) requires any owner/operator proposing to construct or modify a facility subject to air quality regulations to provide public notice by certified mail or electronic mail to designated representatives of recognized neighborhood associations and coalitions within 0.5-mile of the property on which the source is or is proposed to be located.

This notice indicates that the owner/operator intends to apply for an Air Quality Construction Permit from the Albuquerque – Bernalillo County Joint Air Quality Program. Currently, no application for this proposed project has been submitted to the Air Quality Program. Applicants are required to include a copy of this form and documentation of mailed notices with their Air Quality Construction Permit Application.

### Proposed Project Information

**Applicant's name and address:**

*Nombre y domicilio del solicitante:*

U.S. Air Force - Kirtland Air Force Base 2050 Wyoming Blvd. SE. Suite 116 Albuquerque, NM

**Owner / operator's name and address:**

*Nombre y domicilio del propietario u operador:*

Same as above

**Contact for comments and inquires:**

*Datos actuales para comentarios y preguntas:*

Name (*Nombre*): Kirtland AFB Public Affairs Office

Address (*Domicilio*): 2000 Wyoming Blvd. SE

Phone Number (*Número Telefónico*): (505)846-5991

E-mail Address (*Correo Electrónico*): 377ABW.PA@us.af.mil

**Actual or estimated date the application will be submitted to the department:**

*Fecha actual o estimada en que se entregará la solicitud al departamento:* 1 November 2021

**Description of the source:**

*Descripción de la fuente:*

Emergency Generator for backup power AFRL/RVEI Building 277

**Exact location of the source or proposed source:**

*Ubicación exacta de la fuente o fuente propuesta:*

AFRL/RVEI, 2801 Kirtland Dr. SE. Building 277

**Nature of business:**

*Tipo de negocio:*

National Security

**Process or change for which the permit is requested:**

*Proceso o cambio para el cuál de solicita el permiso:*

Requesting the change in status of the generator from a non emergency generator to an emergency generator. reducing annual operating hours from 2500/yr to 200/yr. This results in a significant reduction in permitted annual emissions.

**Maximum operating schedule:**

*Horario máximo de operaciones:*

24 hrs/day, 7 days/wk, 4 wks/mo, 12 mo/yr up to 200 hr/yr

**Normal operating schedule:**

*Horario normal de operaciones:*

Intermittent



**Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:**  
*Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:*

Air Contaminant <i>Contaminante de aire</i>	Proposed Construction Permit <i>Permiso de Construcción Propuesto</i>		Net Changes (for permit modification or technical revision) <i>Cambio Neto de Emisiones</i> (para modificación de permiso o revisión técnica)	
	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>
<b>CO</b>	4.26	0.43	0	-4.90
<b>NOx</b>	7.01	0.70	0.43	-7.51
<b>VOC</b>	0.48	0.05	0	-0.55
<b>SO2</b>	0.022	0.0022	0.12	-0.008
<b>PM10</b>	0.14	0.01	0	-0.16
<b>PM2.5</b>	0.14	0.01	0	-0.16
<b>HAP</b>	0	0	0	0

Questions or comments regarding this Notice of Intent should be directed to the Applicant. Contact information is provided with the Proposed Project Information on the first page of this notice. To check the status of an Air Quality Construction Permit application, call 311 and provide the Applicant's information, or visit [www.cabq.gov/airquality/air-quality-permits](http://www.cabq.gov/airquality/air-quality-permits).

The Air Quality Program will issue a Public Notice announcing a 30-day public comment period on the permit application for the proposed project when the application is deemed complete. The Air Quality Program does not process or issue notices on applications that are deemed incomplete. More information about the air quality permitting process is attached to this notice.

## **Air Quality Construction Permitting Overview**

This is the typical process to obtain an Air Quality Construction Permit for Synthetic Minor and Minor sources of air pollution from the Albuquerque – Bernalillo County Joint Air Quality Program.

**Step 1: Pre-application Meeting:** The Applicant and their consultant must request a meeting with the Air Quality Program to discuss the proposed action. If air dispersion modeling is required, Air Quality Program staff discuss the modeling protocol with the Applicant to ensure that all proposed emissions are considered.

**Notice of Intent from the Applicant:** Before submitting their application, the Applicant is required to notify all nearby neighborhood associations and interested parties that they intend to apply for an air quality permit or modify an existing permit. The Applicant is also required to post a notice sign at the facility location.

**Step 2: Administrative Completeness Review and Preliminary Technical Review:** The Air Quality Program has 30 days from the day the permit is received to review the permit application to be sure that it is administratively complete. This means that all application forms must be signed and filled out properly, and that all relevant technical information needed to evaluate any proposed impacts is included. If the application is not complete, the permit reviewer will return the application and request more information from the Applicant. Applicants have three opportunities to submit an administratively complete application with all relevant technical information.

**Public Notice from the Department:** When the application is deemed complete, the Department will issue a Public Notice announcing a 30-day public comment period on the permit application. This notice is distributed to the same nearby neighborhood associations and interested parties that the Applicant sent notices to, and published on the Air Quality Program's website.

During this 30-day comment period, individuals have the opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing. If approved by the Environmental Health Department Director, Public Information Hearings are held after the technical analysis is complete and the permit has been drafted.

**Step 3: Technical Analysis and Draft Permit:** Air Quality Program staff review all elements of the proposed operation related to air quality, and review outputs from advanced air dispersion modeling software that considers existing emission levels in the area surrounding the proposed project, emission levels from the proposed project, and meteorological data. The total calculated level of emissions is compared to state and federal air quality standards and informs the decision on whether to approve or deny the Applicant's permit.

**Draft Permit:** The permit will establish emission limits, standards, monitoring, recordkeeping, and reporting requirements. The draft permit undergoes an internal peer review process to determine if the emissions were properly evaluated, permit limits are appropriate and enforceable, and the permit is clear, concise, and consistent.

**Public Notice from the Department:** When the technical analysis is complete and the permit has been drafted, the Department will issue a second Public Notice announcing a 30-day public comment period on the technical analysis and draft permit. This second Public Notice, along with the technical analysis documentation and draft permit, will be published on the Air Quality Program's website, and the public notice for availability of the technical analysis and draft permit will only be directly sent to those who requested further information during the first comment period.

## **Air Quality Construction Permitting Overview**

During this second 30-day comment period, residents have another opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing.

**Possible Public Information Hearing:** The Environmental Health Department Director may decide to hold a Public Information Hearing for a permit application if there is significant public interest and a significant air quality issue. If a Public Information Hearing is held, it will occur after the technical analysis is complete and the permit has been drafted.

**Step 4: Public Comment Evaluation and Response:** The Air Quality Program evaluates all public comments received during the two 30-day public comment periods and Public Information Hearing, if held, and updates the technical analysis and draft permit as appropriate. The Air Quality Program prepares a response document to address the public comments received, and when a final decision is made on the permit application, the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process. If no comments are received, a response document is not prepared.

**Step 5: Final Decision on the Application:** After public comments are addressed and the final technical review is completed, the Environmental Health Department makes a final decision on the application. If the permit application meets all applicable requirements set forth by the New Mexico Air Quality Control Act and the federal Clean Air Act, the permit is approved. If the permit application does not meet all applicable requirements, it is denied.

Notifications of the final decision on the permit application and the availability of the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process.

**The Department must approve** a permit application if the proposed action will meet all applicable requirements and if it demonstrates that it will not result in an exceedance of ambient air quality standards. Permit writers are very careful to ensure that estimated emissions have been appropriately identified or quantified and that the emission data used are acceptable.

**The Department must deny** a permit application if it is deemed incomplete three times, if the proposed action will not meet applicable requirements, if estimated emissions have not been appropriately identified or quantified, or if the emission data are not acceptable for technical reasons.

*For more information about air quality permitting, visit [www.cabq.gov/airquality/air-quality-permits](http://www.cabq.gov/airquality/air-quality-permits)*

**Proposed Air Quality Construction Permit**  
**Permiso de Construcción de Calidad del Aire Propuesta**

1. Applicant Name: **U.S. Air Force - Kirtland Air Force Base**  
 Director or Owner's Name: **KIRTLAND AIR FORCE BASE**

2. Project or Installation Name: **KIRTLAND AIR FORCE BASE**

3. Date of Application: **NOVEMBER 2011**

4. Description of the Project: **CONSTRUCTION OF 1000 SQUAD ROOMS & 1000 SQUAD BARRACKS FOR THE 49TH TFWB**

5. Nature of Business: **NATIONAL SECURITY**

6. Permitting Authority: **NEW MEXICO DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, OFFICE OF AIR QUALITY MANAGEMENT**

As Submitted	Proposed Construction Permit	As 100% Allowed
Category	Permit	Permit
CO	4.5	4.5
NO <sub>x</sub>	11.0	11.0
SO <sub>x</sub>	0.04	0.04
PM <sub>10</sub>	0.04	0.04
PM <sub>2.5</sub>	0.04	0.04
VOC	16.5	16.5

7. Construction Start Date: **NOVEMBER 2011**

8. Construction End Date: **NOVEMBER 2011**

9. Construction Location: **1000 SQUAD ROOMS & 1000 SQUAD BARRACKS**

**Proposed Air Quality Construction Permit**  
**Permiso de Construcción de Calidad del Aire Propuesta**

1. Applicant Name: **U.S. Air Force - Kirtland Air Force Base**  
 Director or Owner's Name: **KIRTLAND AIR FORCE BASE**

2. Project or Installation Name: **KIRTLAND AIR FORCE BASE**

3. Date of Application: **NOVEMBER 2011**

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As Submitted	Proposed Construction Permit	As 100% Allowed
Category	Permit	Permit
CO	4.5	4.5
NO <sub>x</sub>	11.0	11.0
SO <sub>x</sub>	0.04	0.04
PM <sub>10</sub>	0.04	0.04
PM <sub>2.5</sub>	0.04	0.04
VOC	16.5	16.5

7. Construction Start Date: **NOVEMBER 2011**

8. Construction End Date: **NOVEMBER 2011**

9. Construction Location: **1000 SQUAD ROOMS & 1000 SQUAD BARRACKS**

**Proposed Air Quality Construction Permit**  
**Permiso de Construcción de Calidad del Aire Propuesta**

1. Applicant Name: **U.S. Air Force - Kirtland Air Force Base**  
 Director or Owner's Name: **KIRTLAND AIR FORCE BASE**

2. Project or Installation Name: **KIRTLAND AIR FORCE BASE**

3. Date of Application: **NOVEMBER 2011**

4. Description of the Project: **CONSTRUCTION OF 1000 SQUAD ROOMS & 1000 SQUAD BARRACKS FOR THE 49TH TFWB**

5. Nature of Business: **NATIONAL SECURITY**

6. Permitting Authority: **NEW MEXICO DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, OFFICE OF AIR QUALITY MANAGEMENT**

As Submitted	Proposed Construction Permit	As 100% Allowed
Category	Permit	Permit
CO	4.5	4.5
NO <sub>x</sub>	11.0	11.0
SO <sub>x</sub>	0.04	0.04
PM <sub>10</sub>	0.04	0.04
PM <sub>2.5</sub>	0.04	0.04
VOC	16.5	16.5

7. Construction Start Date: **NOVEMBER 2011**

8. Construction End Date: **NOVEMBER 2011**

9. Construction Location: **1000 SQUAD ROOMS & 1000 SQUAD BARRACKS**



INFORMATIONAL SIGN 1

Text describing the site and its history.

INFORMATIONAL SIGN 2

Text describing the site and its history.

INFORMATIONAL SIGN 3

Year	1950	1955	1960	1965	1970
Population	100	200	300	400	500
Area (sq. ft.)	1000	2000	3000	4000	5000
Volume (cu. ft.)	10000	20000	30000	40000	50000

INFORMATIONAL SIGN 3 (continued)

Text describing the site and its history.



**Proposed Air Quality Construction Permit**  
**Permiso de Construcción de Calidad del Aire Propuesto**



- Applicant's Name:** U.S. AIR FORCE - KIRTLAND AIR FORCE BASE  
 Nombre del solicitante: U.S. AIR FORCE - KIRTLAND AIR FORCE BASE  
**Owner or Operator's Name:** KIRTLAND AIR FORCE BASE  
 Nombre del Proprietario u Operador: KIRTLAND AIR FORCE BASE
- Actual or Estimated Date the Application will be Submitted to the Department:** NOVEMBER 2021  
 Fecha Actual o Estimada en que se Entregará la Solicitud al Departamento: NOVEMBER 2021
- Exact Location of the Source or Proposed Source:** AFL INVEL Bldg 277, 2801 KIRTLAND DR SE  
 Ubicación Exacta de la Fuente o Fuente Propuesta: AFL INVEL Bldg 277, 2801 KIRTLAND DR SE
- Description of the Source:** EMERGENCY GENERATOR FOR BACK-UP POWER  
 Descripción del Fuente: EMERGENCY GENERATOR FOR BACK-UP POWER  
**Nature of Business:** NATIONAL SECURITY  
 Tipo de Negocio: NATIONAL SECURITY  
 Process or change for which a permit is requested: OPERATION OF EMERGENCY GENERATOR, REDUCING OPERATING HOURS FROM 2,500 HRS/YR TO 200 HRS/YR, & REDUCING NITROX EMISSIONS  
 Proceso o cambio para el cual se solicita el permiso: OPERATION OF EMERGENCY GENERATOR, REDUCING OPERATING HOURS FROM 2,500 HRS/YR TO 200 HRS/YR, & REDUCING NITROX EMISSIONS

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:  
 Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant Contaminante de Aire	Proposed Construction Permit Permiso de Construcción Propuesto		Net Change Emissions (for permit modification or technical revision) Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)	
	Pounds per hour Libras por hora	Tons per year Toneladas por año	Pounds per hour Libras por hora	Tons per year Toneladas por año
	CO	4.26	0.43	0
NOX	1.01	0.10	0.43	-1.51
SO2	0.021	0.0022	0.12	-0.009
PM10	0.19	0.01	0	-0.16
PM2.5	0.14	0.01	0	-0.16
HAP			0	
VOC	0.48	0.05	0	-0.55

5. **Maximum Operating Schedule:** 11 hrs/day, 7 days/week, 2 months up to 200 hrs  
 Horario Máximo de Operaciones: 11 hrs/day, 7 days/week, 2 months up to 200 hrs

**Normal Operation Schedule:** INTERMITTENT  
 Horario Normal de Operaciones: INTERMITTENT

6. **Current Contact Information for Comments and Inquiries**  
 Datos actuales para Comentarios e Inquiries  
**Name (Nombre):** KIRTLAND AFB, PUBLIC AFFAIRS OFFICE  
**Address (Dirección):** 2000 WYOMING APO SE  
**Phone Number (Número Telefónico):** (505) 816-5991  
**Email Address (Correo Electrónico):** 377ABW.92@US.AF.ML

Call 311 for additional information concerning this project, the Air Quality Program, or to file a complaint.  
 Llame al 311 para obtener información adicional sobre este proyecto, el Programa de Calidad del Aire, o para presentar una queja.  
 Gọi 311 để biết thêm thông tin hoặc để khiếu nại về dự án này, Chương trình Chất lượng Không Khí.  
 City of Albuquerque, Environmental Health Department, Air Quality Program - Stationary Source Permitting  
 Ciudad de Albuquerque, Departamento de Salud Ambiental, Programa de Calidad del Aire - Permisos para Fuentes Fijas  
 (505) 765-1872, [aq@abq.gov](mailto:aq@abq.gov)

THIS SIGN SHALL REMAIN POSTED UNTIL THE DEPARTMENT TAKES FINAL ACTION ON THE PERMIT APPLICATION  
 ESTE AVISO DEBERÁ DE MANTENERSE PUESTO HASTA QUE EL DEPARTAMENTO TOMA UNA DECISIÓN SOBRE LA SOLICITUD DE PERMISO

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 el Air, o para presentar una queja.  
 ết lượng không khí.  
 Stationary Source Permitting  
 Permisos para Fuentes Fijas  
 ON THE PERMIT APPLICATION  
 CION SOBRE LA SOLICITUD DE PERMISO

**Attachment C**  
**Emission Calculation**  
**Spreadsheets**

**Summary of Generator Emissions  
Emission Calculation Spreadsheet  
AFRL/RVEI Generator at Building 277 (Unit ID 19159)**

**Generator  
762 hp**

Criteria Air Pollutants	Emission Estimation Data Source <sup>1</sup>	Hourly Emissions <sup>2</sup> (lb/hr)	Annual Emissions <sup>3</sup> (ton/yr)	PTE <sup>4</sup> (ton/yr)
Carbon Monoxide <sup>5</sup>	AP-42 EF, Manufacturer Fuel Flow (Sheet 3)	4.26	0.43	18.67
Nitrogen Oxides	Stack Test Results (Sheet 1)	7.01	0.70	30.72
Particulate Matter <sup>5</sup>	Manufacturer EF (Sheet 1)	0.14	0.01	0.60
Particulate Matter <10µm	Manufacturer EF (Sheet 1)	0.14	0.01	0.60
Particulate Matter <2.5µm	Manufacturer EF (Sheet 1)	0.14	0.01	0.60
Sulfur Oxides	AP-42 EF, Calculated Fuel Flow (Sheet 2)	0.022	0.002	0.09
Volatile Organic Compounds	AP-42 EF, Calculated Fuel Flow (Sheet 2)	0.48	0.05	2.10
NMHC + NO <sub>x</sub> <sup>5</sup>	Manufacturer EF (Sheet 1)	7.15	0.72	31.32

The generator operates a maximum of 200 hours per year and is powered by diesel fuel.

<sup>1</sup> Emission Estimation Data Source Explanations:

*Manufacturer EF (Sheet 1)*: Emission calculations were performed using Manufacturer Emission Factors.

*AP-42 EF, Calculated Fuel Flow (Sheet 2)*: Emission calculations were performed using AP-42 Emission Factors and calculated Fuel Flow.

*AP-42 EF, Manufacturer Fuel Flow (Sheet 3)*: Emission calculations were performed using AP-42 Emission Factors and Manufacturer Specified Fuel Flow.

Unless the pollutant is subject to an NSPS standard (see footnote 5) and emission estimates exceed the applicable standard, worst-case emissions are estimated for the generator using the methodology described.

<sup>2</sup> Refer to calculations on specific sheet for emission calculation methodology.

<sup>3</sup> Annual emissions are based on 200 hours of operation per year.  
Refer to calculations on specific sheet for emission calculation methodology.

<sup>4</sup> Potential to Emit (PTE) was calculated based on the number of hours in a year (8760 hours per year).  
The following equation was used to calculate PTE:  
PTE (ton/yr) = Hourly emissions (lb/hr) \* 8760 (hrs/yr) / 2000 (lb/ton)

<sup>5</sup> This generator is subject to 40 CFR Part 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, and is equipped with a model year 2010 engine rated at 762 hp (568.2 kW). Based on the engine rating (568.2 kW) and displacement of less than 10 liters per cylinder, this generator must comply with the emission standards in 40 CFR 89.112 Table 1 for rated power greater than 560 kW, Tier 2 (Model Year 2006 and beyond). This generator meets the standards outlined in this regulation.



**Sheet 1 - Manufacturer Emission Factors  
Emission Calculation Spreadsheet  
AFRL/RVEI Generator at Building 277 (Unit ID 19159)**

Generator  
762 hp

Criteria Air Pollutants	Manufacturer Emission Factors <sup>1</sup> (g/kW-hr)	Manufacturer Emission Factors <sup>2</sup> (g/hp-hr)	Hourly Emissions <sup>3</sup> (lb/hr)	Annual Emissions <sup>4</sup> (ton/yr)	PTE <sup>5</sup> (ton/yr)
Carbon Monoxide	2.11	1.57	2.64	0.26	11.58
Nitrogen Oxides <sup>9</sup>	NA	NA	7.01	0.70	30.72
Particulate Matter	0.11	0.082	0.14	0.01	0.60
Particulate Matter <10µm <sup>6</sup>	0.11	0.082	0.14	0.01	0.60
Particulate Matter <2.5µm <sup>7</sup>	0.11	0.082	0.14	0.01	0.60
Sulfur Oxides	0.004				
Volatile Organic Compounds	0.11	0.082	0.14	0.01	0.60
NMHC + NO <sub>x</sub> <sup>8</sup>	NA	NA	7.15	0.72	31.32

The generator operates a maximum of 200 hours per year and is powered by diesel fuel.

<sup>1</sup>Manufacturer Emission Factors taken from the D2 cycle emission factor calculations in Appendix F.

<sup>2</sup> Conversion of factors from g/kW-hr to g/hp-hr was made using 1 kW=1.341 hp.

<sup>3</sup> Hourly emissions (lb/hr) = EF (g/hp-hr) \* hp / 453.6 (g/lb)  
where: EF = Emission Factor  
hp = horse power

<sup>4</sup> The following equation was used to calculate annual emissions for each pollutant:  
Annual emissions (ton/yr) = Hourly emissions (lb/hr) \* 200 (hrs/yr) / 2000 (lb/ton)

<sup>5</sup> Potential to Emit (PTE) was calculated based on the number of hours in a year (8760 hours per year).

<sup>3</sup> Annual emissions are based on 200 hours of operation per year.  
PTE (ton/yr) = Hourly emissions (lb/hr) \* 8760 (hrs/yr) / 2000 (lb/ton)

<sup>6,7</sup> Assumed Particulate Matter <2.5µm and Particulate Matter <10µm equal Particulate Matter.

<sup>8</sup> The NMHC + NO<sub>x</sub> emission factor is the sum of the nitrogen oxides emission factor and the volatile organic compounds emission factor. This emission factor calculation is included because there is an NSPS limit for this engine.

<sup>9</sup> The lb/hr emission rate is based on the stack test results conducted on this unit in 19 September 2011.

**Sheet 2 - AP-42 Emission Factors, Calculated Fuel Flow  
Emission Calculation Spreadsheet  
AFRL/RVEI Generator at Building 277 (Unit ID 19159)**

Generator  
762 hp

Criteria Air Pollutants	AP-42 Emission Factors <sup>1</sup> (lb/MMBtu)	Fuel Use <sup>2</sup> (gal/hr)	Heating Value (HV) <sup>3</sup> (Btu/gal)	Hourly Emissions <sup>4</sup> (lb/hr)	Annual Emissions <sup>5</sup> (ton/yr)	PTE <sup>6</sup> (ton/yr)
Carbon Monoxide	0.85	38.9	137000	4.53	0.45	19.86
Nitrogen Oxides	3.2	38.9	137000	17.07	1.71	74.76
Particulate Matter	0.1	38.9	137000	0.53	0.05	2.34
Particulate Matter <10µm <sup>7</sup>	0.1	38.9	137000	0.53	0.05	2.34
Particulate Matter <2.5µm <sup>8</sup>	0.1	38.9	137000	0.53	0.05	2.34
Sulfur Oxides <sup>9</sup>	0.004	38.934	137000	0.0215	0.0022	0.09
Volatile Organic Compounds <sup>10</sup>	0.09	38.9	137000	0.48	0.05	2.10
NMHC + NO <sub>x</sub>	AP-42 emission factor not available					

The generator operates a maximum of 200 hours per year and is powered by diesel fuel.

<sup>1</sup> Emission factors from EPA AP-42 Section 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, Table 3.4-1 (October 1996).

<sup>2</sup> The following equation was used to calculate hourly fuel use:  
Hourly fuel use = hp \* Brake specific fuel consumption (7000 Btu/hp-hr) \* 1/HV (Btu/gal)

<sup>3</sup> The heating value (HV) of diesel fuel is given in AP-42 Appendix A, Miscellaneous Data & Conversion Factors (September 1985), Typical Parameters of Various Fuels as 137000 Btu/gal.

<sup>4</sup> The following equation was used to calculate hourly emissions for each pollutant:  
Hourly emissions (lb/hr) = EF (lb/MMBtu) \* fuel use (gal/hr) \* HV (Btu/gal) / 1000000  
where: EF = Emission Factor  
HV = Heating Value

<sup>5</sup> Annual emissions are based on 200 hours of operation per year.

<sup>6</sup> The following equation was used to calculate annual emissions for each pollutant:  
Annual emissions (ton/yr) = Hourly emissions (lb/hr) \* 200 (hrs/yr) / 2000 (lb/ton)

<sup>7,8</sup> Potential to Emit (PTE) was calculated based on the number of hours in a year (8760 hours per year).  
The following equation was used to calculate PTE:  
PTE (ton/yr) = Hourly emissions (lb/hr) \* 8760 (hrs/yr) / 2000 (lb/ton)

<sup>7,8</sup> Assumed Particulate Matter <2.5µm and Particulate Matter <10µm equal Particulate Matter.

<sup>9</sup> The following equation was used to calculate the sulfur oxides emission factor:  
Sulfur oxides emission factor = 1.01 \* S  
where: S = Percent sulfur in diesel fuel (0.4% from AP-42 Appendix A, Miscellaneous Data & Conversion Factors (September 1985), Typical Parameters of Various Fuels)

<sup>10</sup> Volatile Organic Compounds assumed to be Total Organic Compounds (TOC).

**Sheet 3 - AP-42 Emission Factors, Manufacturer Specification Fuel Flow  
Emission Calculation Spreadsheet  
AFRL/RVEI Generator at Building 277 (Unit ID 19159)**

**Generator**  
762 hp

Criteria Air Pollutants	AP-42 Emission Factors <sup>1</sup> (lb/MMBtu)	Fuel Use <sup>2</sup> (gal/hr)	Heating Value (HV) <sup>3</sup> (Btu/gal)	Hourly Emissions <sup>4</sup> (lb/hr)	Annual Emissions <sup>5</sup> (ton/yr)	PTE <sup>6</sup> (ton/yr)
Carbon Monoxide	0.85	36.6	137000	4.26	0.43	18.67
Nitrogen Oxides	3.2	36.6	137000	16.05	1.60	70.28
Particulate Matter	0.1	36.6	137000	0.50	0.05	2.20
Particulate Matter <10µm <sup>7</sup>	0.1	36.6	137000	0.50	0.05	2.20
Particulate Matter <2.5µm <sup>8</sup>	0.1	36.6	137000	0.50	0.05	2.20
Sulfur Oxides <sup>9</sup>	0.004	36.600	137000	0.02	0.00	0.09
Volatile Organic Compounds <sup>10</sup>	0.09	36.6	137000	0.45	0.05	1.98
NMHC + NO <sub>x</sub>	AP-42 emission factor not available					

The generator operates a maximum of 200 hours per year and is powered by diesel fuel.

<sup>1</sup> Emission factors from EPA AP-42 Section 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, Table 3.4-1 (October 1996).

<sup>2</sup> Maximum manufacturer specified fuel flow from the Gen Set Package Performance Data Sheet in Appendix F.

<sup>3</sup> The heating value (HV) of diesel fuel is given in AP-42 Appendix A: Miscellaneous Data & Conversion Factors (September 1985), Typical Parameters of Various Fuels as 137000 Btu/gal.

<sup>4</sup> The following equation was used to calculate hourly emissions for each pollutant:  
 Hourly emissions (lb/hr) = EF (lb/MMBtu) \* fuel use (gal/hr) \* HV (Btu/gal) / 1000000  
 where: EF = Emission Factor  
 HV = Heating Value

<sup>5</sup> Annual emissions are based on 200 hours of operation per year.  
 Annual emissions (ton/yr) = Hourly emissions (lb/hr) \* 200 (hrs/yr) / 2000 (lb/ton)

<sup>6</sup> Potential to Emit (PTE) was calculated based on the number of hours in a year (8760 hours per year).  
 The following equation was used to calculate PTE:  
 PTE (ton/yr) = Hourly emissions (lb/hr) \* 8760 (hrs/yr) / 2000 (lb/ton)

<sup>7,8</sup> Assumed Particulate Matter <2.5µm and Particulate Matter <10µm equal Particulate Matter.

<sup>9</sup> The following equation was used to calculate the sulfur oxides emission factor:  
 Sulfur oxides emission factor = 1.01 \* S  
 where: S = Percent sulfur in diesel fuel (0.4% from AP-42 Appendix A: Miscellaneous Data & Conversion Factors (September 1985), Typical Parameters of Various Fuels)

<sup>10</sup> Volatile Organic Compounds assumed to be Total Organic Compounds (TOC).

**Attachment D**  
**Emergency Generator**  
**Location Map**

Bldg. 277 – Emergency  
Generator 19159

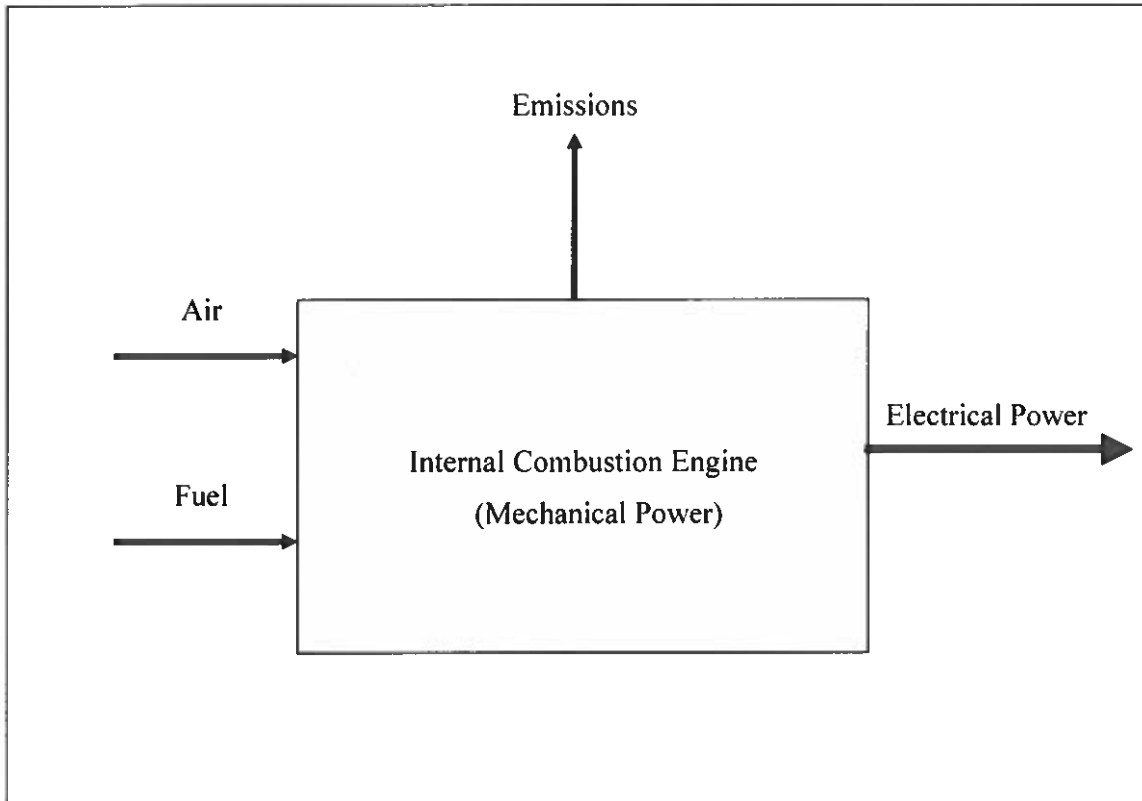


**Emergency Generator Location Map**  
**Kirtland Air Force Base, Albuquerque, New Mexico**  
**UTM-E (m): 353,382.13 UTM-N (m): 3,879,643.79**



**Attachment E**  
**Emergency Generator Process**  
**Flow Diagram**

## Process Flow Diagram for an Emergency Generator





**Attachment F**  
**Generator Specifications and Reference Documents**

## DIESEL GENERATOR SET

# CATERPILLAR®



Image shown may not reflect actual package.

**STANDBY**  
**500 ekW 625 kVA**  
**60 Hz 1800 rpm 480 Volts**

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

## FEATURES

### FUEL/EMISSIONS STRATEGY

- Low fuel consumption

### DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

### UL 2200

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

### FULL RANGE OF ATTACHMENTS

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

### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

### WORLDWIDE PRODUCT SUPPORT

- Caterpillar® dealers provide extensive post sale support including maintenance and repair agreements
- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- The Cat® S·O·S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

### CAT® C15 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

### CAT GENERATOR

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

### CAT EMCP 3 SERIES CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

# STANDBY 500 eKW 625 kVA

60 Hz 1800 rpm 480 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Light Duty Air filter</li> </ul>	<ul style="list-style-type: none"> <li>• Canister Style Air Cleaners</li> <li>• Air Cleaner - single stage</li> <li>• Dual element</li> <li>• Heavy duty</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Radiator package mounted(50°C)</li> <li>• Coolant drain line with valve terminated at edge of base</li> <li>• Fan and belt guards</li> <li>• Coolant level sight gauge</li> <li>• Caterpillar Extended Life Coolant</li> </ul>	<ul style="list-style-type: none"> <li>• Radiator removal</li> <li>• Radiator duct flange &amp; guard</li> </ul>
Exhaust	<ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Flanged faced outlets</li> <li>• Stainless Steel Flex with split-cuff connection</li> </ul>	<ul style="list-style-type: none"> <li>• Mufflers</li> <li>• Manifold &amp; Turbocharger guards</li> <li>• Elbows</li> </ul>
Fuel	<ul style="list-style-type: none"> <li>• Primary fuel filter with integral water separator</li> <li>• Secondary fuel filters</li> <li>• Fuel priming pump</li> <li>• Engine fuel transfer pump</li> <li>• Flex fuel lines</li> <li>• Fuel cooler*</li> <li>*Not included with packages without radiators</li> </ul>	<ul style="list-style-type: none"> <li>• Integral UL listed fuel tank base</li> <li>• Manual transfer pump</li> <li>• Fuel level switch</li> </ul>
Generator	<ul style="list-style-type: none"> <li>• Class H insulation</li> <li>• R448 voltage regulator with load adjustment module</li> <li>• IP23 Protection</li> </ul>	<ul style="list-style-type: none"> <li>• CDVR with KVAR/PF control</li> <li>• Oversize and premium generators</li> <li>• Bearing/Stator temperature detection (premium generator)</li> <li>• 3 phase sensing</li> <li>• Anti-condensation space heaters</li> <li>• Cable access box</li> <li>• Reactive droop</li> </ul>
Power Termination	<ul style="list-style-type: none"> <li>• Power Terminator Strips Mounted inside Power Center</li> <li>• Segregated low voltage wiring panel</li> </ul>	<ul style="list-style-type: none"> <li>• Circuit breakers, UL listed, 3 pole</li> <li>• Circuit breakers, IEC compliant, 3 pole</li> <li>• Circuit breaker Shunt trip</li> <li>• Circuit breaker Auxillary contact</li> <li>• Top &amp; bottom power cable entry</li> <li>• Floor standing UL breakers</li> </ul>
Governor	<ul style="list-style-type: none"> <li>• ADEM<sup>TM</sup>A4</li> </ul>	<ul style="list-style-type: none"> <li>• Load share module</li> </ul>
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 3.1 (rear mounted)</li> <li>• Speed adjust</li> <li>• Emergency stop pushbutton</li> <li>• Voltage adjust</li> </ul>	<ul style="list-style-type: none"> <li>• EMCP 3.2 &amp; EMCP 3.3 (can be RH mounted)</li> <li>• Local annunciator modules (NFPA 99/110)</li> <li>• Remote annunciator modules (NFPA 99/110)</li> <li>• Discrete I/O module</li> </ul>
Lube	<ul style="list-style-type: none"> <li>• Lubricating oil and filter</li> <li>• Oil drain line with valves</li> <li>• Fumes disposal</li> <li>• Gear type lube oil pump</li> </ul>	<ul style="list-style-type: none"> <li>• Manual sump pump</li> </ul>
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor</li> <li>• Battery with rack and cables (dry)</li> <li>• 45 amp charging alternator</li> </ul>	<ul style="list-style-type: none"> <li>• Jacket water heater with shut off valves</li> <li>• Block heater</li> <li>• Ether starting aids</li> <li>• Battery disconnect switch</li> <li>• Battery chargers ( 5 &amp; 10 amp)</li> <li>• Oversized batteries</li> </ul>
General	<ul style="list-style-type: none"> <li>• Paint - Caterpillar yellow except rails and radiators gloss black</li> <li>• Flywheel and flywheel housing - SAE No.1</li> </ul>	

# STANDBY 500 eKW 625 kVA

60 Hz 1800 rpm 480 Volts



## SPECIFICATIONS

### CAT GENERATOR

Frame size.....LC6114F  
Excitation..... Self Excitation  
Pitch..... 0.6667  
Number of poles..... 4  
Number of bearings..... Single Bearing  
Number of Leads..... 12  
Insulation..... UL 1446 Recognized Class H with tropicalization and antiabrasion  
- Consult your Caterpillar dealer for available voltages  
IP Rating..... IP23  
Alignment..... Pilot Shaft  
Overspeed capability..... 125% of rated  
Wave form Deviation (Line to Line)..... 2%  
Voltage regulator..... Single phase sensing with selectable volts/Hz  
Voltage regulation..... Less than +/- 1/2% (steady state)  
Less than +/- 1/2% (w/ 3% speed change)  
Telephone influence factor..... Less than 50  
Harmonic Distortion..... Less than 5%

### CAT DIESEL ENGINE

C15 ATAAC, L-6, 4-stroke water-cooled diesel  
Bore..... 137.20 mm (5.4 in)  
Stroke..... 171.40 mm (6.75 in)  
Displacement..... 15.20 L (927.56 in<sup>3</sup>)  
Compression Ratio..... 16.1:1  
Aspiration..... ATAAC  
Fuel System..... MEUI  
Governor Type..... Caterpillar ADEM control system

### CAT EMCP 3 CONTROL PANELS

- EMCP 3.1 (Standard)
- EMCP 3.2 / EMCP 3.3 (Option)
- Single location customer connector point
- True RMS metering, 3-phase
- Controls
  - Run / Auto / Stop control
  - Speed Adjust
  - Voltage Adjust
  - Emergency Stop Pushbutton
  - Engine cycle crank
- Digital Indication for:
  - RPM
  - Operating hours
  - Oil Pressure
  - Coolant temperature
  - System DC volts
  - L-L volts, L-N volts, phase amps, Hz
  - eKW, kVA, kVAR, kW-hr, %kW, PF (EMCP 3.2 / 3.3)
- Shutdowns with common indicating light for:
  - Low oil pressure
  - High coolant temperature
  - Low coolant level
  - Overspeed
  - Emergency stop
  - Failure to start (overcrank)
- Programmable protective relaying functions: (EMCP 3.2 & 3.3)
  - Under and over voltage
  - Under and over frequency
  - Overcurrent (time and inverse time)
  - Reverse power (EMCP 3.3)
- MODBUS isolated data link, RS-485 half-duplex (EMCP 3.2 & 3.3)
- Options
  - Vandal door
  - Local annunciator module
  - Remote annunciator module
  - Input / Output module
  - RTD / Thermocouple Modules
  - Monitoring software

# STANDBY 500 kW 625 kVA

60 Hz 1800 rpm 480 Volts



## TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/480 Volts	DM8165	
<b>Low BSFC</b>		
<b>Generator Set Package Performance</b> Genset Power rating @ 0.8 pf Genset Power rating with fan	625 kVA 500 kW	
<b>Fuel Consumption</b> 100% load with fan 75% load with fan 50% load with fan	126.9 L/hr 98.3 L/hr 69.7 L/hr	33.5 Gal/hr 26.0 Gal/hr 18.4 Gal/hr
<b>Cooling System<sup>1</sup></b> Air flow restriction (system) Air flow (max @ rated speed for radiator arrangement) Engine Coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity	0.12 kPa 840 m <sup>3</sup> /min 57.8 L 20.8 L 37.0 L	0.48 in. water 29664 cfm 15.3 gal 5.5 gal 9.8 gal
<b>Inlet Air</b> Combustion air inlet flow rate	37.6 m <sup>3</sup> /min	1327.8 cfm
<b>Exhaust System</b> Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system backpressure (maximum allowable)	510.9 °C 103.5 m <sup>3</sup> /min 152.4 mm 6.8 kPa	951.6 °F 3655.1 cfm 6.0 in 27.3 in. water
<b>Heat Rejection</b> Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	189 kW 478 kW 15 kW 29.1 kW	10748 Btu/min 27184 Btu/min 853 Btu/min 1654.9 Btu/min
<b>Alternator<sup>2</sup></b> Motor starting capability @ 30% voltage dip Frame Temperature Rise	1428 skVA LC6114F 130 °C	234 °F
<b>Emissions (Nominal)<sup>3</sup></b> NOx g/hp-hr CO g/hp-hr HC g/hp-hr PM g/hp-hr	6.46 g/hp-hr .38 g/hp-hr .01 g/hp-hr .02 g/hp-hr	

<sup>1</sup> For ambient and altitude capabilities consult your Caterpillar dealer. Air flow restriction (system) is added to existing restriction from factory.

<sup>2</sup> Generator temperature rise is based on a 40° C (104° F) ambient per NEMA MG1-32.

<sup>3</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

# STANDBY 500 kW 625 kVA

60 Hz 1800 rpm 480 Volts



## RATING DEFINITIONS AND CONDITIONS

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**Meets or Exceeds International Specifications:** AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 72/23/EEC, 98/37/EC, 2004/108/EC  
**Standby** - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year. Standby power in accordance with ISO8528. Fuel stop power in accordance with ISO3046. Standby ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

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

# STANDBY 500 ekW 625 kVA

60 Hz 1800 rpm 480 Volts



## DIMENSIONS

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Package Dimensions		
Length	3775.1 mm	148.63 in
Width	1110.0 mm	43.7 in
Height	2091.0 mm	82.32 in
Weight	3881 kg	8,556 lb

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #2781053).

Performance No.: DM8165

Feature Code: C15DE8Y

Gen. Arr. Number: 2351211

Source: U.S. Sourced

[www.CAT-ElectricPower.com](http://www.CAT-ElectricPower.com)

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Materials and specifications are subject to change without notice.  
The International System of Units (SI) is used in this publication.

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May 04 2009

14166487

**GEN SET PACKAGE PERFORMANCE DATA  
[DK4469]**

**MARCH 05, 2010**

For Help Desk Phone Numbers [Click here](#)

Performance Number: DM8155

Change Level:

<b>Sales Model:</b> C15 DITA	<b>Combustion:</b> DI	<b>Aspr:</b> TA
<b>Engine Power:</b> 500 W/F EKW      516 W/O F EKW	<b>Speed:</b> 1,800 RPM	<b>After Cooler:</b> ATAAC
762 HP	<b>Governor Type:</b> ELEC	<b>After Cooler Temp(F):</b> 120
<b>Manifold Type:</b> DRY	<b>Engine App:</b> GP	<b>Turbo Arrangement:</b>
<b>Turbo Quantity:</b> 1	<b>Application Type:</b> PACKAGE-DIE	<b>Engine Rating:</b> PGS <b>Strategy:</b>
<b>Hertz:</b> 60	<b>Certification:</b> EPA TIER-2 2006 - ----	
<b>Rating Type:</b> STANDBY		

**General Performance Data 1**

GEN W/F EKW	PERCENT LOAD	ENGINE POWER BHP	ENGINE BMEP PSI	FUEL BSFC LB/BHP-HR	FUEL RATE GPH	INTAKE MFLD TEMP DEG F	INTAKE MFLD P IN-HG	INTAKE AIR FLOW CFM	EXH MFLD TEMP DEG F	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
500	100	762	361.29	0.34	36.59	118.94	69.38	1,394.93	1,250.06	942.08	3,842.24
450	90	683	323.87	0.34	32.89	115.7	61.03	1,285.46	1,207.58	920.66	3,478.5
400	80	607	288.05	0.34	29.38	114.8	53.3	1,172.45	1,174.28	910.58	3,146.54
375	75	570	270.5	0.34	28.03	114.08	51.35	1,147.73	1,161.5	903.38	3,065.32
350	70	534	253.24	0.35	27.08	112.64	50.94	1,151.26	1,150.52	894.02	3,047.66
300	60	463	219.45	0.38	25.15	109.22	50.14	1,158.32	1,129.1	874.4	3,012.34
250	50	392	186.09	0.42	23.27	104.72	49.22	1,161.85	1,107.86	853.7	2,977.03
200	40	324	153.45	0.42	19.52	98.96	37.58	981.75	1,069.34	833.9	2,489.69
150	30	253	120.24	0.43	15.69	92.84	25.7	798.11	1,010.12	811.94	1,991.75
125	25	218	103.41	0.44	13.74	89.96	19.63	706.29	972.5	800.06	1,737.48
100	20	182	86.3	0.46	11.83	87.26	14.21	625.07	921.92	774.86	1,500.87
50	10	109	51.49	0.53	8.22	84.2	6.75	512.06	766.4	657.5	1,119.48

**General Performance Data 2**

GEN W/F EKW	PERCENT LOAD	ENGINE POWER BHP	COMPRESS OUT PRESS IN-HG	COMPRESS OUT TEMP DEG F
500	100	762	73.17	401.54
450	90	683	64.68	370.4
400	80	607	56.06	339.62
375	75	570	53.9	332.06
350	70	534	53.66	331.34
300	60	463	53.24	329.9
250	50	392	52.68	327.92
200	40	324	40.19	276.26
150	30	253	27.42	223.34
125	25	218	20.94	196.34
100	20	182	15.22	171.5
50	10	109	8	133.16



Performance Data

Engine Heat Rejection Data

GEN W/F EKW	PERCENT LOAD	REJ TO JW BTU/MN	REJ TO ATMOS BTU/MN	REJ TO EXHAUST BTU/MN	EXH RCOV TO 350F BTU/MN	FROM OIL CLR BTU/MN	FROM AFT CLR BTU/MN	WORK ENERGY BTU/MN	LHV ENERGY BTU/MN	HHV ENERGY BTU/MN
500	100	10,748.4	6,767.5	27,638.8	15,525.5	4,202.7	6,653.8	32,302.1	78,935.4	84,110.5
450	90	9,952.2	6,426.3	24,738.4	13,705.6	3,781.9	5,516.4	28,946.8	70,973.6	75,636.9
400	80	9,099.2	6,028.2	22,179.2	12,283.9	3,372.4	4,435.9	25,762.1	63,353.1	67,504.5
375	75	8,758.0	5,857.6	21,439.9	11,828.9	3,218.8	4,208.4	24,169.7	60,452.7	64,433.6
350	70	8,473.6	5,743.9	21,098.7	11,601.5	3,105.1	4,265.2	22,634.2	58,348.5	62,158.8
300	60	7,961.8	5,459.5	20,359.4	11,203.4	2,889.0	4,322.1	19,620.1	54,197.0	57,722.9
250	50	7,506.8	5,232.0	19,620.1	10,691.5	2,667.2	4,379.0	16,606.0	50,102.4	53,343.9
200	40	6,767.5	5,175.2	16,207.9	8,701.1	2,240.7	2,957.2	13,705.6	42,026.8	44,756.6
150	30	5,971.3	4,720.2	12,795.7	6,710.6	1,797.1	1,763.0	10,748.4	33,780.7	35,998.6
125	25	5,573.2	4,322.1	11,089.6	5,800.7	1,575.3	1,251.1	9,212.9	29,572.3	31,505.9
100	20	5,118.3	3,980.9	9,440.4	4,777.1	1,359.2	909.9	7,734.3	25,477.7	27,126.9
50	10	4,037.8	3,412.2	6,369.4	2,786.6	944.0	398.1	4,606.5	17,743.4	18,880.8

Performance Data

**EMISSIONS DATA**

EPA TIER-2 2006 - ---- \*\*\*\*\* B5

Gaseous emissions data measurements are consistent with those described in EPA 40 CFR PART 89 SUBPART D and ISO 8178 for measuring HC, CO, PM, and NOx

Gaseous emissions values are WEIGHTED CYCLE AVERAGES and are in compliance with the following non-road regulations:

LOCALITY	AGENCY/LEVEL	MAX LIMITS - g/kW-hr		
-----	-----	-----	-----	-----
U.S. (incl Calif)	EPA/TIER-2	CO:3.5	NOx + HC:6.4	PM:0.2

REFERENCE EXHAUST STACK DIAMETER	--
WET EXHAUST MASS	6,428.7 LB/HR
WET EXHAUST FLOW (941.00 F STACK TEMP )	3,845.77 CFM
WET EXHAUST FLOW RATE ( 32 DEG F AND 29.98 IN HG )	1,319.00 STD CFM
DRY EXHAUST FLOW RATE ( 32 DEG F AND 29.98 IN HG )	1,208.82 STD CFM
FUEL FLOW RATE	36 GAL/HR

Performance Data

**RATED SPEED "Not to exceed data"**

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BHP	TOTAL NOX (AS NO2) LB/HR	TOTAL CO LB/HR	TOTAL HC LB/HR	PART MATTER LB/HR	OXYGEN IN EXHAUST PERCENT
500	100	762	11.6600	1.2500	.0300	.0600	8.6000
375	75	570	8.1100	1.3600	.0500	.0800	9.5000
250	50	392	2.2100	4.1700	.2100	.1000	11.6000
125	25	218	1.7200	2.1300	.1100	.2100	11.9000
50	10	109	1.1800	1.3600	.1500	.1500	13.6000

**RATED SPEED "Nominal Data"**

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BHP	TOTAL NOX (AS NO2) LB/HR	TOTAL CO LB/HR	TOTAL HC LB/HR	TOTAL CO2 LB/HR	PART MATTER LB/HR	OXYGEN IN EXHAUST PERCENT
500	100	762	9.6300	.6700	.0100	800.4	.0300	8.6000
375	75	570	6.7000	.7300	.0300	614.1	.0400	9.5000
250	50	392	1.8300	2.2300	.1100	505.8	.0500	11.6000
125	25	218	1.4200	1.1400	.0600	296	.1100	11.9000
50	10	109	.9800	.7200	.0800	175	.0800	13.6000

Performance Data

**Altitude Capability Data(Corrected Power Altitude Capability)**

<b>Ambient Operating Temp.</b>	<b>50 F</b>	<b>68 F</b>	<b>86 F</b>	<b>104 F</b>	<b>122 F</b>	<b>NORMAL</b>
<b>Altitude</b>						
0 F	761.7 hp	761.7 hp	761.7 hp	761.7 hp	761.7 hp	761.7 hp
984.25 F	761.7 hp	761.7 hp	761.7 hp	761.7 hp	761.7 hp	761.7 hp
1,640.42 F	761.7 hp	761.7 hp	761.7 hp	761.7 hp	744.27 hp	761.7 hp
3,280.84 F	761.7 hp	761.7 hp	746.95 hp	722.81 hp	700.01 hp	761.7 hp
4,921.26 F	752.31 hp	725.49 hp	702.69 hp	679.9 hp	658.44 hp	724.15 hp
6,561.68 F	706.72 hp	682.58 hp	659.78 hp	639.67 hp	619.55 hp	689.28 hp
8,202.1 F	663.8 hp	641.01 hp	620.89 hp	600.78 hp	582 hp	654.42 hp
9,842.52 F	623.57 hp	602.12 hp	582 hp	563.23 hp	545.8 hp	620.89 hp
10,498.69 F	607.48 hp	587.37 hp	567.25 hp	549.82 hp	532.38 hp	608.82 hp

**The powers listed above and all the Powers displayed are Corrected Powers**

**Identification Reference and Notes**

<b>Engine Arrangement:</b>	2729744	<b>Lube Oil Press @ Rated Spd(PSI):</b>	--
<b>Effective Serial No:</b>	FSE00001	<b>Piston Speed @ Rated Eng SPD(FT/Min):</b>	1,974.4
<b>Primary Engine Test Spec:</b>	0K6281	<b>Max Operating Altitude(FT):</b>	3,280.8
<b>Performance Parm Ref:</b>	TM5739	<b>PEEC Elect Control Module Ref</b>	
<b>Performance Data Ref:</b>	DM8155	<b>PEEC Personality Cont Mod Ref</b>	
<b>Aux Coolant Pump Perf Ref:</b>			
<b>Cooling System Perf Ref:</b>		<b>Turbocharger Model</b>	GTA5518BS
<b>Certification Ref:</b>	EPA TIER 2	<b>Fuel Injector</b>	
<b>Certification Year:</b>	2006	<b>Timing-Static (DEG):</b>	--
<b>Compression Ratio:</b>	16.1	<b>Timing-Static Advance (DEG):</b>	--
<b>Combustion System:</b>	DI	<b>Timing-Static (MM):</b>	--
<b>Aftercooler Temperature (F):</b>	120	<b>Unit Injector Timing (MM):</b>	--
<b>Crankcase Blowby Rate(CFH):</b>	--	<b>Torque Rise (percent)</b>	--
<b>Fuel Rate (Rated RPM) No Load(Gal/HR):</b>	--	<b>Peak Torque Speed RPM</b>	--
<b>Lube Oil Press @ Low Idle Spd(PSI):</b>	--	<b>Peak Torque (LB/FT):</b>	--

## Performance Data

**Reference  
Number: DM8155**

THIS PERFORMANCE DATA IS ALSO APPLICABLE TO  
ENGINE ARRANGEMENT-COMPLETE 2539830.  
EPA TIER-2 2006----B5

**Parameters  
Reference: TM5739**

GEN SET - PACKAGED - DIESEL

**TOLERANCES:**

AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES.  
EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING  
TOLERANCES.

ENGINE POWER	+/-	3%
EXHAUST STACK TEMPERATURE	+/-	8%
GENERATOR POWER	+/-	5%
INLET AIR FLOW	+/-	5%
INTAKE MANIFOLD PRESSURE - GAGE	+/-	10%
EXHAUST FLOW	+/-	6%
SPECIFIC FUEL CONSUMPTION	+/-	3%
FUEL RATE	+/-	5%
HEAT REJECTION	+/-	5%
HEAT REJECTION EXHAUST ONLY	+/-	10%

**CONDITIONS:**

ENGINE PERFORMANCE IS CORRECTED TO INLET AIR STANDARD CONDITIONS  
OF 99 KPA (29.31 IN HG) AND 25 DEG C (77 DEG F).

THESE VALUES CORRESPOND TO THE STANDARD ATMOSPHERIC PRESSURE AND  
TEMPERATURE IN ACCORDANCE WITH SAE J1349. ALSO INCLUDED IS A  
CORRECTION TO STANDARD FUEL GRAVITY OF 35 DEGREES API HAVING A  
LOWER HEATING VALUE OF 42,780 KJ/KG (18,390 BTU/LB) WHEN USED AT  
29 DEG C (84.2 DEG F) WHERE THE DENSITY IS 838.9 G/L (7.002  
LB/GAL).

THE CORRECTED PERFORMANCE VALUES SHOWN FOR CATERPILLAR ENGINES WILL  
APPROXIMATE THE VALUES OBTAINED WHEN THE OBSERVED PERFORMANCE  
DATA IS CORRECTED TO SAE J1349, ISO 3046-2 & 8665 & 2288 & 9249 &  
1585, EEC 80/1269 AND DIN70020 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL, FUEL  
PUMP AND JACKET WATER PUMP. THE POWER REQUIRED TO DRIVE  
AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE  
NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL) LOAD. TYPICAL  
AUXILIARIES INCLUDE COOLING FANS, AIR COMPRESSORS, AND CHARGING  
ALTERNATORS.

RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT  
TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON  
THE PERFORMANCE DATA SET.

GEN SET - PACKAGED - DIESEL

**ALTITUDE:**

ALTITUDE CAPABILITY - THE RECOMMENDED REDUCED POWER VALUES FOR  
SUSTAINED ENGINE OPERATION AT SPECIFIC ALTITUDE LEVELS AND AMBIENT  
TEMPERATURES.

COLUMN "N" DATA - THE FLYWHEEL POWER OUTPUT AT NORMAL AMBIENT  
TEMPERATURE.

AMBIENT TEMPERATURE - TO BE MEASURED AT THE AIR CLEANER AIR INLET  
DURING NORMAL ENGINE OPERATION.

NORMAL TEMPERATURE - THE NORMAL TEMPERATURE AT VARIOUS SPECIFIC  
ALTITUDE LEVELS IS FOUND ON TM2001.

THE GENERATOR POWER CURVE TABULAR DATA REPRESENTS THE NET  
ELECTRICAL POWER OUTPUT OF THE GENERATOR.

GENERATOR SET RATINGS  
EMERGENCY STANDBY POWER (ESP)

## Performance Data

OUTPUT AVAILABLE WITH VARYING LOAD FOR THE DURATION OF AN EMERGENCY OUTAGE. AVERAGE POWER OUTPUT IS 70% OF THE ESP RATING. TYPICAL OPERATION IS 50 HOURS PER YEAR, WITH MAXIMUM EXPECTED USAGE OF 200 HOURS PER YEAR.

### STANDBY POWER RATING

OUTPUT AVAILABLE WITH VARYING LOAD FOR THE DURATION OF AN EMERGENCY OUTAGE. 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.

### PRIME POWER RATING

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 EKW WITH 10% OVERLOAD CAPABILITY FOR EMERGENCY USE FOR A MAXIMUM OF 1 HOUR IN 12. OVERLOAD OPERATION CANNOT EXCEED 25 HOURS PER YEAR.

### CONTINUOUS POWER RATING

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 EKW FOR 100% OF OPERATING HOURS.

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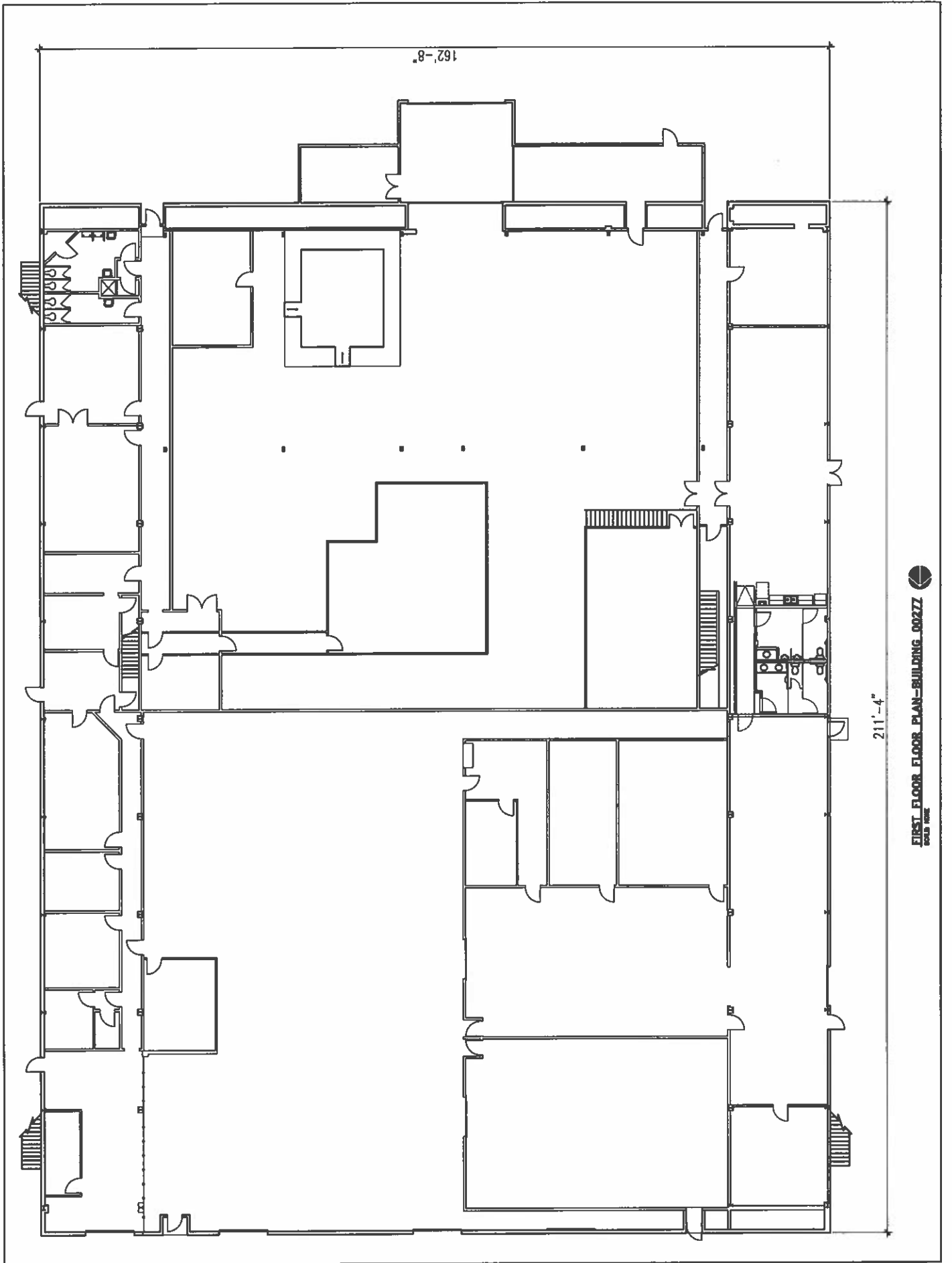
Content Owner: Shane Gilles

Web Master(s): [PSG Web Based Systems Support](#)

Current Date: Friday, March 05, 2010 9:52:11 AM

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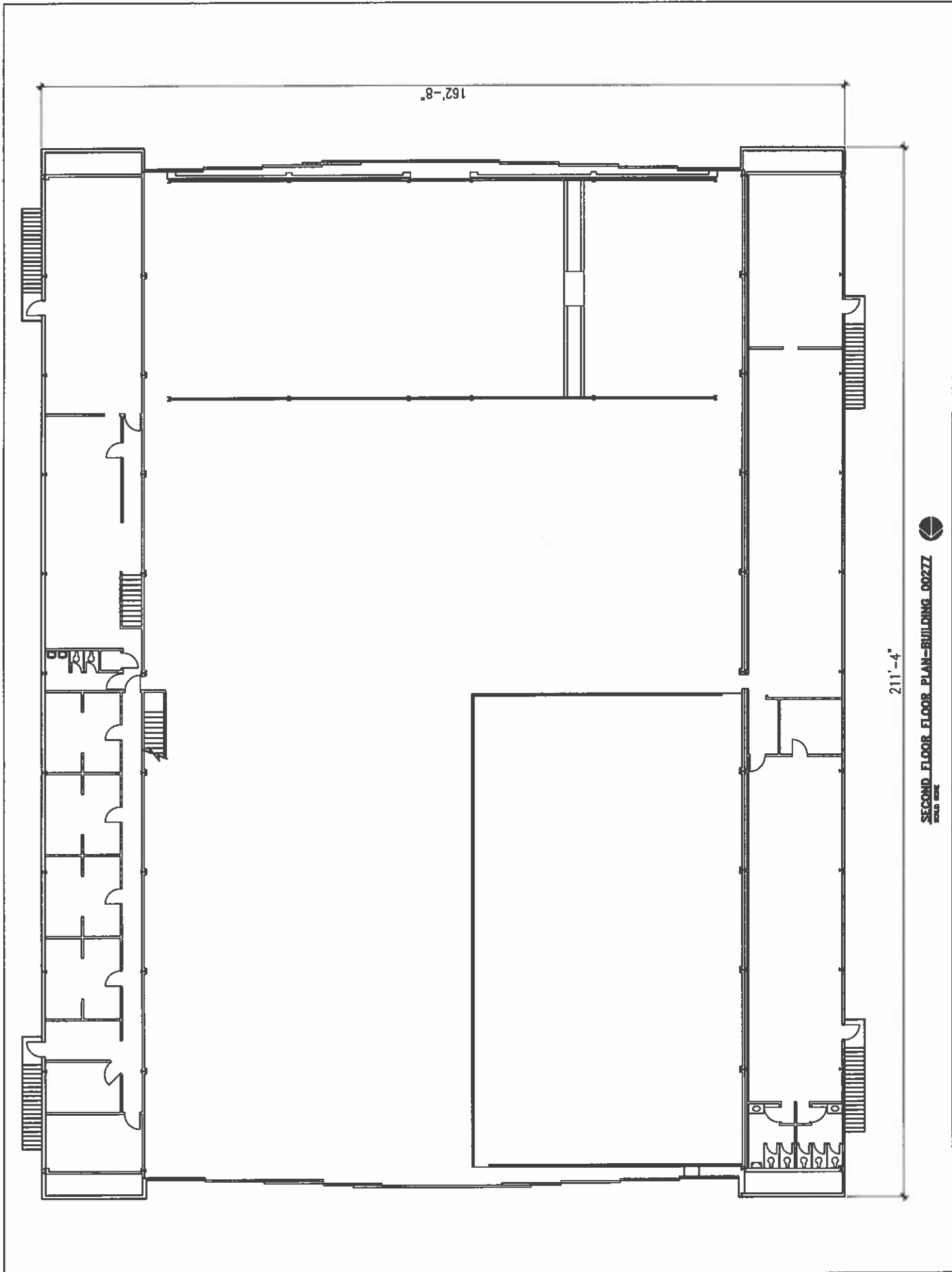
[Data Privacy Statement](#)



167'-8"

211'-4"

FIRST FLOOR PLAN-BUILDING\_002ZZ  
DATE: 11/11/11



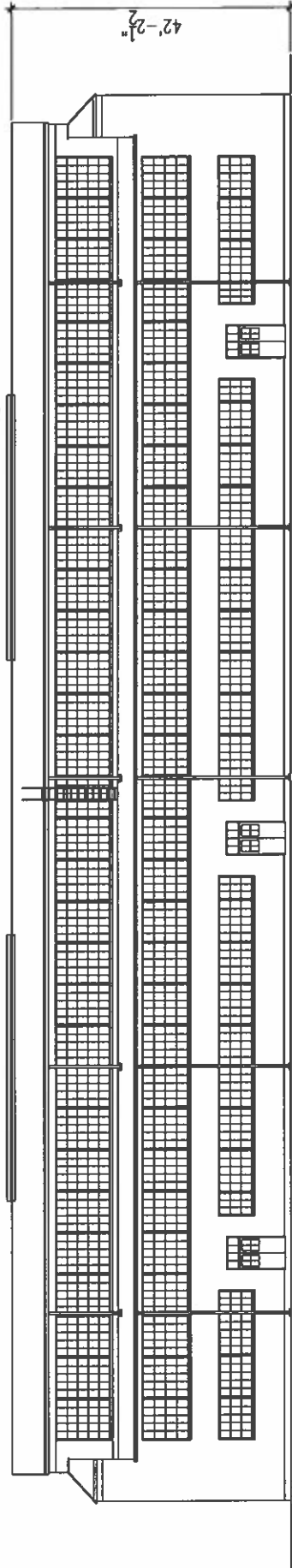
162'-8"

211'-4"

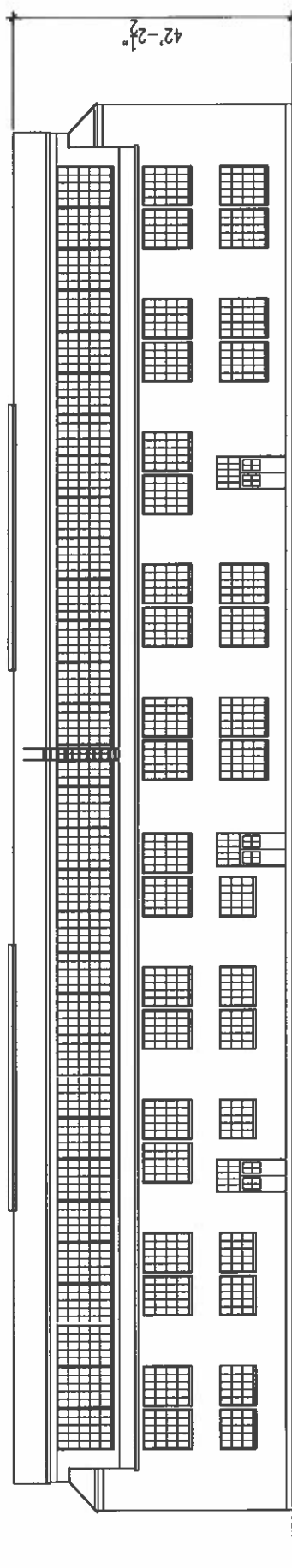


SECOND FLOOR PLAN-BUILDING 00277  
FIELD NO. 100

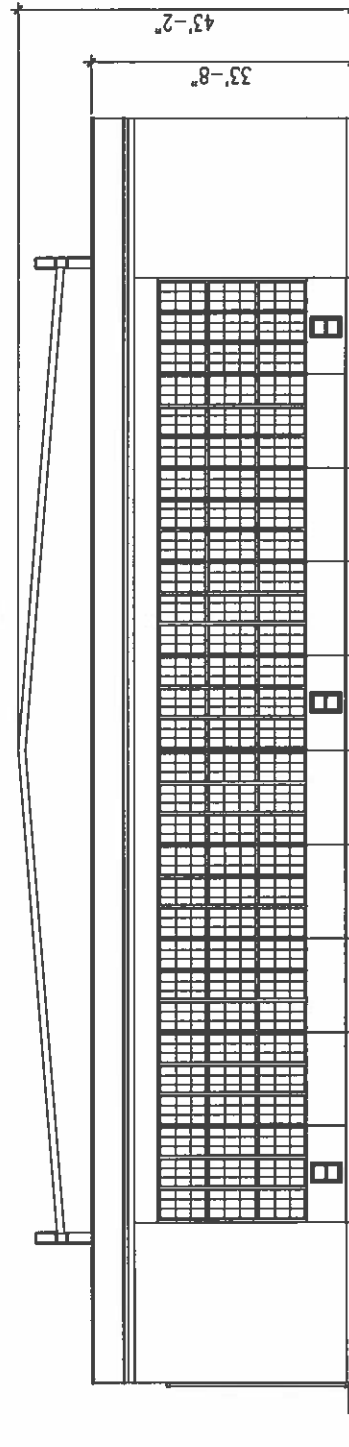




EAST ELEVATION  
SCALE: 1/8" = 1'-0"



WEST ELEVATION  
SCALE: 1/8" = 1'-0"



North Elevation  
SCALE: 1/8" = 1'-0"

**From:** Ports\_Matthew@wagnerequipment.com [mailto:Ports\_Matthew@wagnerequipment.com]  
**Sent:** Friday, April 09, 2010 12:20 PM  
**To:** Rector, Terri  
**Subject:** RE: Sandia Kirtland Project

(Excerpt)

Hello Terri,

Attached is a drawing of the unit showing the stack height.

I have also attached a new genset spec sheet with the correct information on it.  
The spec sheet that I gave you previously had a different generator on it.

I have also attached a diagram of the exhaust system.  
It will help to make sense of why the spec says the exhaust ID is 6" but I have told you that it is 8".  
The spec sheet is referring to the generic genset sans exhaust which means it is referring to the exhaust elbow only.  
What you are interested in is the diameter of the stack where the exhaust exits to the atmosphere, which is actually 8".  
Scaling off of the drawing gives you ~8" at the exit.

Matthew Ports  
Wagner Power Systems  
Mechanical Engineer  
505.938.2843  
mports@wagnerequipment.com  
wagnerequipment.com

From: "Rector, Terri" <Terri.Rector@hdrinc.com>  
To: "Ports\_Matthew@wagnerequipment.com" <Ports\_Matthew@wagnerequipment.com>  
Date: 04/06/2010 02:44 PM  
Subject: RE: Sandia Kirtland Project

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**From:** Ports\_Matthew@wagnerequipment.com  
[mailto:Ports\_Matthew@wagnerequipment.com]  
**Sent:** Monday, April 05, 2010 5:59 PM  
**To:** Rector, Terri  
**Cc:** Cumiford\_James@wagnerequipment.com;  
hansen\_kris@wagnerequipment.com  
**Subject:** RE: Sandia Kirtland Project

Terri,

The I.D. of the exhaust stack is 8"

Matthew Ports  
Wagner Power Systems  
Mechanical Engineer  
505.938.2843  
[mports@wagnerequipment.com](mailto:mports@wagnerequipment.com)  
wagnerequipment.com

**From:** Ports\_Matthew@wagnerequipment.com [mailto:Ports\_Matthew@wagnerequipment.com]  
**Sent:** Thursday, April 15, 2010 6:10 PM  
**To:** Rector, Terri  
**Subject:** RE: Sandia Kirtland Project

(Excerpt)

Based on what I have read in CFR 40 part 89 about the load cycle for a stationary diesel genset that the emissions engineer at Cat referred to as a D2 weighted cycle average those numbers should be acceptable to use in the permit.

**From:** Ports\_Matthew@wagnerequipment.com [mailto:Ports\_Matthew@wagnerequipment.com]  
**Sent:** Tuesday, April 13, 2010 11:51 AM  
**To:** Rector, Terri  
**Subject:** RE: Sandia Kirtland Project

(Excerpt)

Table 2 of Appendix B to Subpart E of Part 89 of CFR 40 gives the weighting factors for the calculation of the 5-mode test cycle for constant-speed engines (which I assume is a D2 cycle...) and applies to all emissions factors. This test procedure is referenced in Part 89.112 section b as the correct procedure for measuring NOx, MO, HC, & NMHC. Therefore, while the Cat engineer did not specifically say that using the weighted cycle averaging method of calculating the emissions factors is, in fact, not only legit, it is also the proper way to look at the numbers.

**From:** Ports\_Matthew@wagnerequipment.com [mailto:Ports\_Matthew@wagnerequipment.com]  
**Sent:** Monday, April 12, 2010 5:42 PM  
**To:** Rector, Terri  
**Subject:** RE: Sandia Kirtland Project

(Excerpt)

Based on what I was told by the Emissions Engineer at Cat, if you can use the numbers from the D2 cycle for NOx you can also use the D2 cycle numbers to calculate the remaining emissions factors.

**From:** Ports\_Matthew@wagnerequipment.com [mailto:Ports\_Matthew@wagnerequipment.com]  
**Sent:** Monday, April 12, 2010 4:48 PM  
**To:** Rector, Terri  
**Subject:** Fw: Sandia Kirtland Project

(Excerpt)

Weighted cycle average for a D2 cycle(used for genset rating) is calculated as...

D2 cycle NOx (grams/kw-hr) = [(0.05 X NOx in grams/hour at 100% power @ rated speed) + (0.25 X NOx in grams/hour at 75% power @ rated speed) + (0.30 X NOx in grams/hour at 50% power @ rated speed) + (0.30 X NOx in grams/hour at 25% power @ rated speed) + (0.10 X NOx at 10% power @ rated speed)] / [(0.05 X 100% power in kw @ rated speed) + (0.25 X 75% power in kw @rated speed) + (0.30 X

50% power in kw @ rated speed) + (0.30 X 25% power in kw @ rated speed) + (0.10 X 10% power in kw @rated speed)]

Therefore, even though the grams/kw-hr at 100% power and rated speed is greater than the limit, the 'weighted cycle average' could still be within the limit.

Same formula can be used for other emissions constituents (HC, CO, PM) also.

Weighting factors and % powers and speeds could be different for different cycles (C1, D1, D2, E1, E2, E3, F etc...) used for different applications.

Matthew Ports  
Wagner Power Systems  
Mechanical Engineer  
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D2 Cycle Emission Factor Calculations

Based on RATED SPEED "Nominal Data" on p. 4 of the Gen Set Package Performance Data [DK4469] located in Appendix F.

GEN	PWR	PERCENT	T LOAD	TOTAL NOX (AS NO2)			TOTAL CO			TOTAL HC			TOTAL NOX			TOTAL CO G/HR			TOTAL HC G/HR			PART MATTER			PART MATTER x								
				ENGINE POWER BHP	NOX LB/HR	CO LB/HR	HC LB/HR	NOX G/HR	CO G/HR	HC G/HR	ENGINE POWER kW	NOX G/HR	CO G/HR	HC G/HR	ENGINE POWER kW	NOX G/HR	CO G/HR	HC G/HR	ENGINE POWER kW	NOX G/HR	CO G/HR	HC G/HR	ENGINE POWER kW	NOX G/HR	CO G/HR	HC G/HR	ENGINE POWER kW	NOX G/HR	CO G/HR	HC G/HR			
500	100	75	100	9.63	0.67	0.01	800.4	0.03	8.6	568	4368	304	5	14	0.05	28	218.4084	15.1956	0.2268	0.6804	14	18	0.25	106	759.78	82.782	3.402	4.536					
375	75	50	75	6.7	0.73	0.03	614.1	0.04	9.5	425	3039	331	14	18	0.25	88	249.0264	303.4584	14.9688	6.804	18	23	0.3	88	249.0264	303.4584	14.9688	6.804					
125	25	25	25	1.42	1.14	0.06	296	0.11	11.9	163	644	517	27	50	0.3	49	193.2336	155.1312	8.1648	14.9688	50	50	0.3	49	193.2336	155.1312	8.1648	14.9688					
50	10	10	10	0.98	0.72	0.08	175	0.08	13.6	81	445	327	36	36	0.1	8	44.4528	32.6592	3.6288	3.6288	36	36	0.1	8	44.4528	32.6592	3.6288	3.6288					
				TOTAL			TOTAL			TOTAL			TOTAL			TOTAL			TOTAL			TOTAL			TOTAL			TOTAL					
				NOX	CO	HC	CO2	EXHAUST PERCENT	ENGINE POWER	NOX	CO G/HR	HC G/HR	NOX	CO G/HR	HC G/HR	D2 multiplier	POWER x multiplier	NOX x multiplier	CO x multiplier	HC x multiplier	MATTER x multiplier	D2 multiplier	POWER x multiplier	NOX x multiplier	CO x multiplier	HC x multiplier	MATTER x multiplier	D2 multiplier	POWER x multiplier	NOX x multiplier	CO x multiplier	HC x multiplier	MATTER x multiplier
				279	327	36	327	13.6	81	445	327	36	36	445	327	36	SUM	279	1465	589	30	31	SUM	279	1465	589	30	SUM	279	1465	589	30	31

D2 Cycle Emission Factor (g/kw-hr, calc)

5.25 2.11 0.11 0.11

This information and data methodology was provided by the manufacturer.