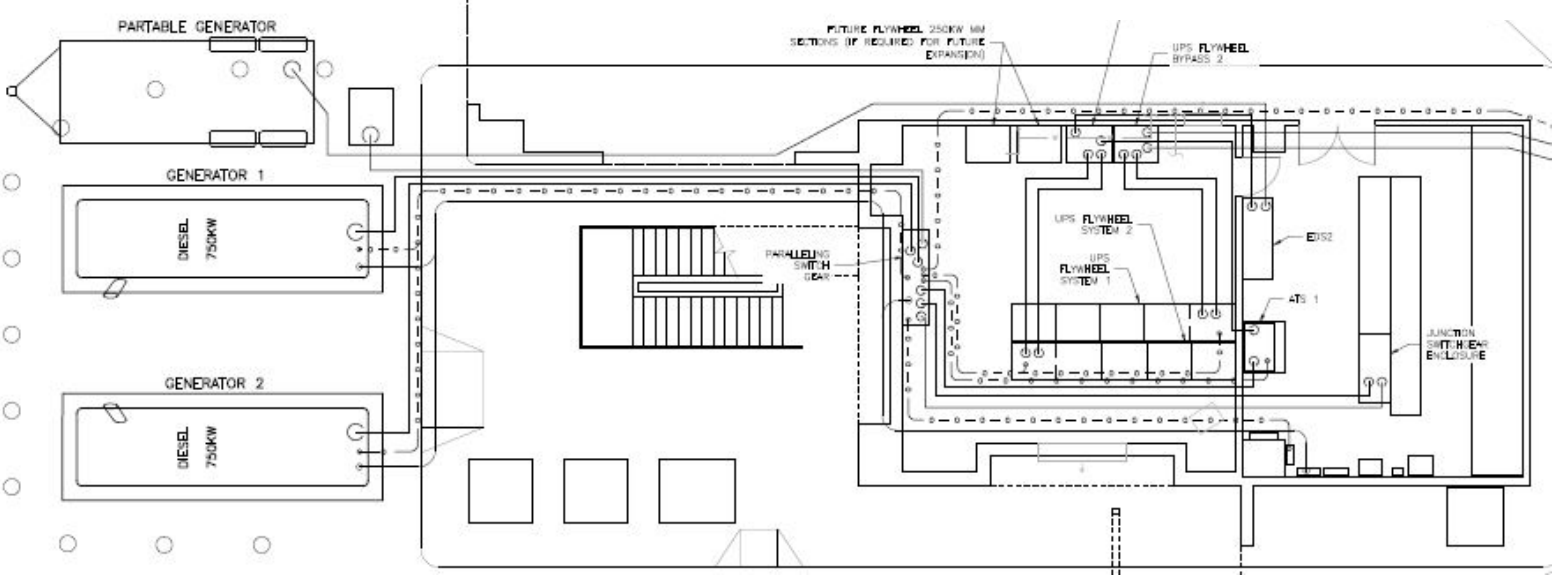


Albuquerque International Sunport Emergency Generator Replacement Project

Authority-to-Construct Modification Application
Air Quality Permit 1419-M7-RV1

Revision
December 27, 2021

Overview

The Albuquerque International Sunport (Sunport) is a public airport located approximately 3 miles southeast of the central business district of Albuquerque. The Sunport is classified as a medium hub airport and is the largest commercial airport in New Mexico and handles approximately 4.9 million passengers and moves over 60,000 tons of cargo per year.

The Sunport covers an area of approximately 2,400 acres which includes four runways, a terminal building encompassing approximately 575,000 square foot with 22 gates in two concourses. The Sunport is home to commercial airlines, fix based operators, cargo/freight, a car rental facility, government agencies, airport tenants, and many leased buildings. An aerial photograph of the Sunport is contained in Figure 1 on the following page.

Commercial Airlines include:

1. Alaska Airlines
2. Allegiant Airlines
3. American Airlines
4. Delta Airlines
5. Frontier Airlines
6. Jet Blue Airways
7. Southwest Airlines
8. United Airlines

Commuter Air Carriers include:

1. Advanced Airlines
2. Boutique Air

Fixed Based Operators include:

1. Atlantic Aviation
2. Cutter Aviation

Air Cargo facilities include:

1. Federal Express
2. United Parcel Service

Rental Car facilities include:

3. Alamo
4. Avis
5. Budget
6. Enterprise
7. Hertz
8. National
9. Payless

Government Agencies include:

1. U.S. Transportation Safety Administration (TSA)
2. U.S. Custom and Border Protection (CBP)
3. U.S. Federal Aviation Administration (FAA)
4. National Weather Service (NWS)

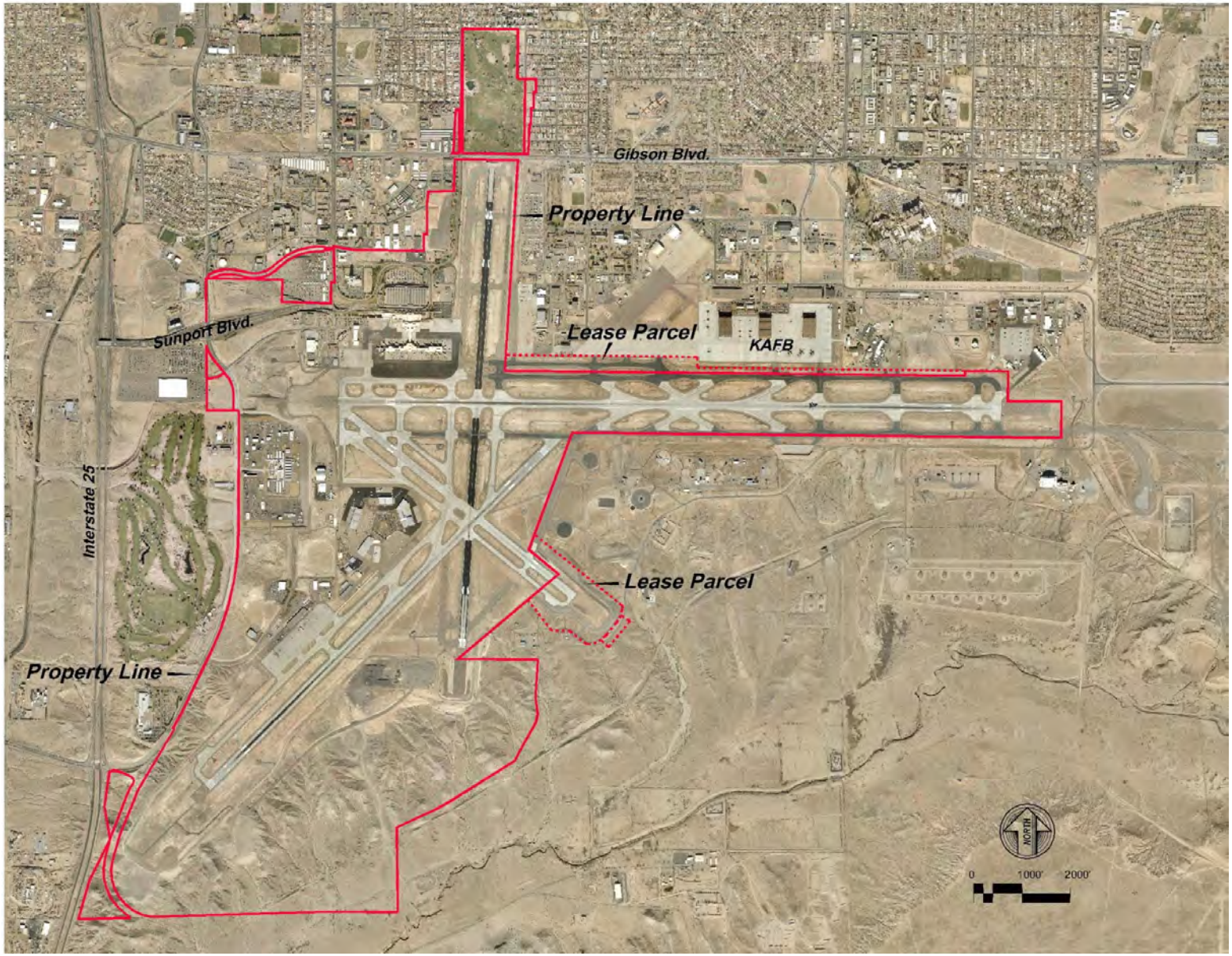


Figure 1 Albuquerque International Sunport Aerial Photograph

Introduction

This document constitutes an air quality permit application in support to modify authority-to-construct permit #1419-M7-RV1 issued June 14, 2016 to the City of Albuquerque Aviation Department for the Albuquerque International Sunport (Sunport). This document includes:

1. Permit application form for modification of permit #1419-M7-RV1
2. Unit G5, G6, G7, and G8 750 Kw diesel fired Internal Combustion Engine (ICE) calculation worksheets (refer to Appendix B)
3. Pre-permit application meeting documentation (refer to Appendix C)
4. Public notice on-site sign documentation (refer to Appendix D)
5. Neighborhood Association and Coalition notice to construction notification documentation (refer to Appendix E)
6. Permit Application Review Fee Checklist (refer to Appendix F)
7. Supporting documentation
   - ✓ Copy of authority-to-construct permit #1419-M7-RV1, issued June 14, 2016 (refer to Appendix G)
   - ✓ AP-42 Emission Factors (refer to Appendix H)
   - ✓ NSPS Subpart IIII
   - ✓ Albuquerque/Bernalillo County Air Quality Control Board Regulation 20.11.2 NMAC "Fees"
   - ✓ Aerial Photographs depicting ICE locations (see Figure 2)
   - ✓ Aerial Photographs depicting Boiler locations (see Figures 4, 5, 6, and 7)

This document describes activities associated with equipment **currently permitted and operated** at the Sunport. These activities include the operation of eleven (11) ICE's; nine (9) diesel fired and two (2) natural gas fired; one (1) natural gas fired process boiler, seven (7) natural gas fired comfort heat boilers; and seven (7) natural gas fired domestic hot water heaters. By the combustion of diesel and natural gas, these activities make the Sunport a stationary source of oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter less than 10 μm (PM_{10}), and particulate matter less than 2.5 μm ($PM_{2.5}$).

Units G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, and G11 provide back-up power for operations at the Sunport terminal and airfield in addition to leased buildings. Boilers B1, B2, B3, B4, B5A, B5B, B6, B7A, B7B, B8, B9, B10, B11, and B12 provide comfort heat and hot water to the Sunport terminal, tenants, and leased buildings. The Sunport leases a building to the U.S. Transportation Security Administration (TSA) and owns and assumes operational control over boiler B10 located at the TSA building, the boiler B11 located at the Sunport Rental Car Facility, and boiler B13 which is a process boiler for the autoclave.

Historical Permit Actions

The Albuquerque International Sunport (Sunport) on May 2, 2001 was issued authority-to-construct permit #1419 for nine (9) ICE/emergency generators and nine (9) heating boilers and hot water heaters. This permit superseded all previously issued certificates of registration and authority-to-construct permits at the Sunport.

The most recent permitting action for the Sunport involved modification of authority-to-construct permit #1419-M7 which resulted in issued authority-to-construct permit #1419-M7-RV1 (Appendix F) that authorized construction, replacement, and operation for the following:

1. Lowered the permitted power output of the natural gas fired internal combustion engine (Unit# G3) located in and provides back-up power to the Snow Barn Complex from 200 hp to 133 hp.
2. Raised the permitted heating value of the natural gas fired boiler located in the Snow Barn Complex that is used to support the autoclave sterilizer from 318,000 Btu/hr to 398,000 Btu/hr.
3. Omitted eight (8) natural gas fired boilers each with a heating value rated under 5,000,000 Btu/hr and each used solely for the heating of buildings for personal comfort and/or used for producing hot water for personal use pursuant to 20.11.41.2.F(3).

Modification and Project Summary

The Sunport supports 10 airlines which have access to two sources of power; emergency and non-emergency. The emergency power source is connected to the Sunport's backup natural gas-emergency generator sets G5, G6, G7, and G8 which are located in Power Centers 2, 3, 4, and 5. These power centers supply the main emergency power busses for the terminal, airlines and TSA, whereas the non-emergency is only connected to utility power. Historically, it has been the sole responsibility of the airlines to connect operational "critical" loads to the emergency circuit so that a power outage does not impede the ability to process passengers.

G5, G6, G7, and G8 were installed in 1987 and are now 34 years old, which increases concerns of reliability and dependability. The older technology of these generators provides less control of how these generators can be operated, makes replacement components difficult to find, and increases the complexity of how these generators can be integrated into new control systems. The switchgear is still functional but is also over 30 years old and increases concerns for integrating paralleling controls with the generators. According to our consulting electrical engineer, the most concerning equipment in the system is the paralleling controls provided by a third party company that no longer exists. These controls communicate to the generators and the switchgear equipment and are responsible for ensuring the generators synchronize with each other. The lack of support for this system makes it the most vulnerable component in the system. It has been recommended that these four emergency generator units, switchgear, and paralleling controls be replaced with a new system that will be provided and supported by a single supplier resulting in non-interruptible power on the emergency power source at the Sunport.

The project design has been finalized, has gone out for advertisement/bid, and a contractor has been selected to conduct the work. The contractor agreement has been executive between both parties and the contractor was issued a notice to proceed on December 1, 2021. This project and modification propose:

1. Replacing currently permitted four (4) 400 kW natural gas fired emergency generators/internal combustion engines (ICE); Units G5, G6, G7, and G8 with four (4) diesel fired 750 kW emergency generators/ICE. The contractor was given an anticipated delivery of June 2022 for these four new units.

2. Increasing the hours of operation for all emergency generators, G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, and G11, to 500 hours per year.

3. Increasing the facility wide annual tpy emissions for all air pollutants. Refer to Table 3 on page 20.

Internal Combustion Engine Locations

ICE's, boilers, and hot water heaters being proposed and currently permitted under permit 1419-M7-RV1 are located in several buildings and locations throughout the Sunport property. Table 1 and Figure 2 illustrate the locations of this equipment.

Table 1 Internal Combustion Engine Locations

Unit #	Internal Combustion Engine Location	Physical Address
G1	Airfield South Vault	Sunport Airfield
G2	Federal Aviation Administration (FAA)- Automated Flight Service Station (AFSS)	3500 Access Road C S.E.
G3	Sunport Snow barn Complex	2200 Sunport Blvd. S.E.
G4	Airfield North Vault	Sunport Airfield
G5	Terminal Power Center 2 (Baggage area)	2200 Sunport Blvd. S.E.
G6	Terminal Power Center 2 (Baggage area)	2200 Sunport Blvd. S.E.
G7	Terminal Power Center 5 (A Concourse)	2200 Sunport Blvd., S.E.
G8	Terminal Power Center 5 (A Concourse)	2200 Sunport Blvd., S.E.
G9	Short Term Parking (West End)	2200 Sunport Blvd. S.E.
G10	Parking Administration Building	2400 Sunport Blvd. S.E.
G11	Rental Car Facility (RAC)	3400 University Blvd. S.E.

Figure 2 Sunport Internal Combustion Engine Locations

Air Emissions Calculation Methodology

Authority-to-construct permit #1419-M7-RV1 (Appendix H) established enforceable short and long term emission rates and limits for internal combustion engines G1, G2, G3, G4, G5, G6, G7 G8, G9, G10, and G11 and for boilers B2, B3, B4, B12, and B13. This permit also established enforceable horsepower ratings for each ICE and maximum heat inputs in Btu/hr for each boiler and hot water heater.

These enforceable emissions are considered the "Potential to Emit" (PTE) or "Pre-Controlled Emission Rate" (PCER) as defined in 20.11.1.7.III NMAC "General Provisions". The short term emission rates are expressed in pound per hour (lb/hr) and the long term emission limits are expressed in tons per year (tpy) within permit 1419-M7-RV1.

Internal Combustion Engine Emission Standards

Emission Standards for Units G5, G6, G7, and G8

In accordance with 40 CFR 60.4205(b), 40 CFR 60.4202, and 40 CFR 89.112, compression ignition (CI) emergency stationary ICE, with a maximum engine power greater than or equal to 37 kilowatt (KW) (50 hp) must comply with the emission standards of these parts. The Aviation Department requested the most current EPA Certificate of Conformity (COC) for the Caterpillar C27 750 KW emergency non-road engine for model year 2021, engine family MCPXL27-0NZS from EPA. EPA provided the COC for this engine. Aviation then cross referenced the COC engine family with the EPA spreadsheet titled "nonroad-compression-ignition-2011-present.xlsx". This Excel spreadsheet lists all engines with an issued COC and provides all pertinent information associated with the COC; such as the power category, applicable Subpart IIII regulation, the applicable Tier, and the emissions. You can access by one of the two links below:

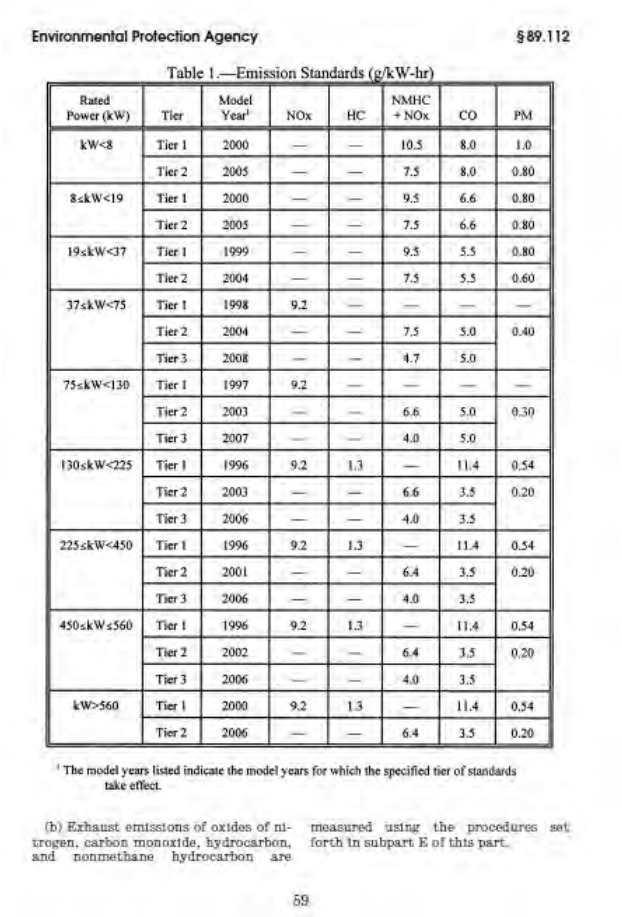
https://www.epa.gov/sites/default/files/2021-01/nonroad-compression-ignition-2011-present.xlsx

or

https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment

The applicable regulation cited within the EPA Excel Spreadsheet for the Tier 2 750 kW engine family MCPXL27-0NZS is "Part 60 only certified to the requirements of Part 89". Please refer to Appendix J for all the above referenced material.

These emission standards are expressed in grams per horsepower-hour (g/KW-hr) for air pollutants oxides of nitrogen (NO_x) plus non-methane hydrocarbons (NMHC) or volatile organic compounds (VOC), carbon monoxide (CO), and particulate matter (PM) and are expressed in Figure 3 on page 8.



Environmental Protection Agency §89.112

Table 1.—Emission Standards (g/kW-hr)

Rated Power (kW)	Tier	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM
kW<8	Tier 1	2000	—	—	10.5	8.0	1.0
	Tier 2	2005	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000	—	—	9.5	6.6	0.80
	Tier 2	2005	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	1999	—	—	9.5	5.5	0.80
	Tier 2	2004	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	1998	9.2	—	—	—	—
	Tier 2	2004	—	—	7.5	5.0	0.40
	Tier 3	2008	—	—	4.7	5.0	
75≤kW<130	Tier 1	1997	9.2	—	—	—	—
	Tier 2	2003	—	—	6.6	5.0	0.30
	Tier 3	2007	—	—	4.0	5.0	
130≤kW<225	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2003	—	—	6.6	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
225≤kW<450	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2001	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
450≤kW≤560	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2002	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
kW>560	Tier 1	2000	9.2	1.3	—	11.4	0.54
	Tier 2	2006	—	—	6.4	3.5	0.20

[1] The model years listed indicate the model years for which the specified tier of standards take effect.

(b) Exhaust emissions of oxides of nitrogen, carbon monoxide, hydrocarbon, and nonmethane hydrocarbon are measured using the procedures set forth in subpart E of this part.

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Figure 3 NSPS Subpart IIII Emission Standards

The uncontrolled and controlled lb/hr NO_x+NMHC, CO, and PM for units G5, G6, G7, and G8 were calculated by taking the emission standard for each of the pollutants expressed in g/KW-hr as found in Figure 3 on page 7, 40 CFR § 89.112 Table 1, and multiplying by the KW rating of the engine and dividing by 453.6 grams/lb. The NOx and NMHC (VOC) lb/hr emission rates were calculated using the City Air Quality Division's fraction default value of 0.95 for NOx and 0.05 for NMHC (VOC). Ton per year allowable emissions for these units are established by multiplying the calculated lb/hr emission rate for each air pollutant by the annual hours of operation and dividing by 2,000 pounds.

Example: Internal Combustion engines units G5, G6, G7, and G8

NO_x +NMHC Emissions
[750 KW] [6.4 grams NO_x + NMHC hp-hr] [1 pound/453.6 grams]= 10.58 lbs NO_x + NMHC /hr
[10.58 lbs NO_x + NMHC /hr] [500 hours/year] [1 ton/2,000 lbs] = 2.65 tons NO_x + NMHC /year

NO_x Emissions (0.95 Air Quality Division Fraction Default Value method)
[10.58 lb/hr NO_x + NMHC] [0.95] = 8.47 lbs NO_x /hr
[8.47 lbs NO_x + NMHC /hr] [500 hours/year] [1 ton/2,000 lbs] = 2.12 tons NO_x /year

NMHC (VOC) Emissions (0.05 Air Quality Division Fraction Default Value method)
[10.58 lb/hr NO_x + NMHC] [0.05]= 2.12 lbs NMHC (VOC) /hr
[2.12 lbs NO_x + NMHC /hr] [500 hours/year] [1 ton/2,000 lbs] = 0.53 tons NMHC (VOC) /year

CO Emissions
[750 KW] [3.5 grams CO/hp-hr] [1 pound/453.6 grams]= 5.79 lbs CO /hr
[5.79 lbs CO /hr] [500 hours/year] [1 ton/2,000 lbs] = 1.45 tons CO /year

PM_{10}/$PM_{2.5}$Emissions
[750 KW] [0.2 grams PM/hp-hr] [1 pound/453.6 grams]= 0.33 lbs PM /hr
[0.33 lbs PM /hr] [200 hours/year] [1 ton/2,000 lbs] = 0.08 tons PM /year

Sulfur dioxide (SO_2) emission rates are based on EPA approved emission factors contained in AP-42, Section 3.4, "Large Stationary Diesel and all Stationary Dual-fuel Engines:, Table 3.2-2 (7/2000) (Appendix H).

The uncontrolled and controlled SO_2 lb/hr emission rates for these units are calculated by taking the emission factor expressed in pounds per horsepower-hr (lb/HP-hr) and multiplied by the horsepower rating of the ICE and then multiplying the % sulfur content of 1.5% (0.015).

Ton per year allowable SO_2 emissions for these units are calculated by multiplying the calculated lb/hr emission rate by the annual hours of operation and dividing by 2,000 pounds.

SO_2 Emissions
[1,129 HP] [0.00809 lb SO_2/HP-hr] [0.015 Sulfur content] = 0.14 lbs SO_2 /hr
[0.14 lbs SO_2 /hr] [500 hours/year] [1 ton/2,000 lbs] = 0.03 tons SO_2 /year

Boiler Locations

Boilers B2, B3, B4, B12, and B13 are currently permitted under permit 1419-M7-RV1 and are located in several buildings and locations throughout the Sunport property. Boilers and hot water heaters B1, B5A, B5B, B6, B7A, B7B, B8, B9, B10, and B11 each have a heating value rated under 5,000,000 Btu/hr and each used solely for the heating of buildings for personal comfort and/or used for producing hot water for personal use pursuant to 20.11.41.2.F (3) NMAC and are listed in the permit and this application as informational purposes only. These are illustrated in Table 2 below and also Figures 4, 5, 6, and 7 which illustrate the locations of this equipment.

Table 2 Boiler Locations

Boiler Unit #	Boiler Location/Description	Physical Address
B1	Automated Flight Service Station (AFSS)	3500 Access Road C S.E.
B2	Sunport Terminal Boiler #70 Central Utility Plant	2200 Sunport Blvd. S.E.
B3	Sunport Terminal Boiler #71 Central Utility Plant	2200 Sunport Blvd. S.E.
B4	Sunport Terminal Boiler #72 Central Utility Plant	2200 Sunport Blvd. S.E.
B5A	Sunport Domestic Hot Water Heater Penthouse 9	2200 Sunport Blvd. S.E.
B5B	Sunport Domestic Hot Water Heater Penthouse 9	2200 Sunport Blvd. S.E.
B6	Sunport Domestic Hot Water Heater Penthouse 2	2200 Sunport Blvd. S.E.
B7A	Sunport Domestic Hot Water Heater Penthouse 13	2200 Sunport Blvd. S.E.
B7B	Sunport Domestic Hot Water Heater Penthouse 13	2200 Sunport Blvd. S.E.
B8	Sunport Domestic Hot Water Heater Penthouse 20	2200 Sunport Blvd. S.E.
B9	Sunport Domestic Hot Water Heater Penthouse 20	2200 Sunport Blvd. S.E.
B10	Sunport Rental Car Facility	3400 University Blvd. S.E.
B11	Old Terminal Transportation Security Administration (TSA)	2920A Yale S.E.
B12	Sunport Terminal Boiler #73 Central Utility Plant	2200 Sunport Blvd., S.E.
B13	Sunport Snow Barn Complex	2200 Sunport Blvd., S.E.

Figure 4 Sunport Boiler Locations

Figure 5 Sunport Terminal Boiler Locations - B2, B3, B4, B5A, B5B, B6, B7A, B7B, B8, B9, and B12

Figure 6 Sunport Old Terminal and Snow Barn Boilers – B11 and B13

Figure 7 Sunport AFSS and Rental Car Boilers - B1 and B10

Boiler and Domestic Hot Water Heater Emission Calculation

The lb/hr emission rates for **boilers B1, B2, B3, B4, B5A, B5B, B6, B7A, B7B, B10, B11, B12, and B13 for permit #1419-M7-RV1** were calculated using AP-42 Table 1.4 (7/98) "Emission Factors from Natural Gas Combustion". The lb/hr emission rates for these natural gas fired boilers are estimated by taking the emission factor expressed in lb/10^6 scf for each pollutant and multiplying by the maximum heat input rating in Btu/hr; assuming a natural gas heating value of 1,000 Btu/scf. The lb/hr and tpy emissions for boilers **B1, B2, B3, B4, B5A, B5B, B6, B7A, B7B, B8, B9, B10, B11, B12, and B13** will not deviate from those emissions established in permit #1419-M7-RV1.

For boilers B3 and B4, the uncontrolled and controlled lb/hr emission rates for NO_x and CO were calculated based on manufacturer's data of 0.245 kg NO_x/1,000 m^3 and 0.817 kg CO/1,000 m^3. These emissions were provided to the Environmental Health Department, Air Quality Division as part of the VALE submittal dated May 13, 2014 requesting air emission credits which is depicted in Figure 8 below.

Proposed Facility Wide TPY Emissions

The proposed facility wide ton per year (tpy) air emissions are summarized in Table 3 below.

Table 3 Proposed Facility Wide Summary of Ton per Year Emissions

Unit#	Description	CO	NO_x	NO_x+ NMHC	SO_2	VOC	PM_{10}	$PM_{2.5}$
G1	Internal Combustion Engine	0.79	3.68		0.24	0.29	0.26	0.26
G2	Internal Combustion Engine	0.69	3.20		0.21	0.25	0.23	0.23
G3	Internal Combustion Engine	0.29	0.15		0.0002	0.07	0.003	0.003
G4	Internal Combustion Engine	0.79	3.68		0.24	0.29	0.26	0.26
G5	Internal Combustion Engine	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G6	Internal Combustion Engine	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G7	Internal Combustion Engine	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G8	Internal Combustion Engine	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G9	Internal Combustion Engine	0.96	0.55		0.002	0.05	0.02	0.02
G10	Internal Combustion Engine	0.28	3.58		0.001	0.10	0.009	0.009
G11	Internal Combustion Engine	0.11	0.14	0.14	0.03	0.01	0.01	0.01
B2	Boiler	4.42	5.26		0.03	0.29	0.40	0.40
B3	Boiler	0.40	1.34		0.02	0.14	0.20	0.20
B4	Boiler	0.40	1.34		0.02	0.14	0.20	0.20
B12	Boiler	4.42	5.26		0.03	0.29	0.40	0.40
B13	Boiler	0.15	0.17		0.001	0.01	0.01	0.01
1419-M7-RV1 Permitted Emissions PTE (tpy)		**14.30**	**26.05**	**0.06**	**0.22**	**1.43**	**1.40**	**1.40**
Modification Proposed Emissions (tpy)		**19.48**	**36.80**	**10.73**	**0.96**	**4.07**	**2.33**	**2.33**
Net Change (tpy)		**+5.18**	**+10.75**	**+10.67**	**+0.74**	**+2.64**	**+0.93**	**+0.93**

Table 4 Albuquerque/Bernalillo County Air Quality Control Board Regulations

Albuquerque/Bernalillo County Air Quality Board Regulation	Regulation Name	Regulation Applicability	
20.11.1 NMAC	General Provisions	☒ Yes	☐ No
20.11.2 NMAC	Fees	☒ Yes	☐ No
20.11.3 NMAC	Transportation Conformity	☐ Yes	☒ No
20.11.4 NMAC	General Conformity	☐ Yes	☒ No
20.11.5 NMAC	Visible Air Contaminants	☒ Yes	☐ No
20.11.6 NMAC	Emergency Action Plan	☐ Yes	☒ No
20.11.7 NMAC	Variance Procedure	☐ Yes	☒ No
20.11.8 NMAC	Ambient Air Quality Standards	☒ Yes	☐ No
20.11.20 NMAC	Fugitive Dust Control	☐ Yes	☒ No
20.11.21 NMAC	Open Burning	☐ Yes	☒ No
20.11.22 NMAC	Wood Burning	☐ Yes	☒ No
20.11.23 NMAC	Stratospheric Ozone Protection	☐ Yes	☒ No
20.11.40 NMAC	Source Registration	☐ Yes	☒ No
20.11.41 NMAC	Authority-to-Construct	☒ Yes	☐ No
20.11.42 NMAC	Operating Permits	☐ Yes	☒ No
20.11.43 NMAC	Stack Height Requirements	☐ Yes	☒ No
20.11.46 NMAC	Sulfur Dioxide Emissions Inventory Requirements; Western Backstop Sulfur Dioxide Trading Program	☐ Yes	☒ No
20.11.47 NMAC	Emissions Inventory Requirements	☒ Yes	☐ No
20.11.49 NMAC	Excess Emissions	☒ Yes	☐ No
20.11.60 NMAC	Permitting in Non-Attainment Areas	☐ Yes	☒ No
20.11.61 NMAC	Prevention of Significant Deterioration	☐ Yes	☒ No
20.11.62 NMAC	Acid Rain	☐ Yes	☒ No
20.11.63 NMAC	New Source Performance Standards for Stationary Sources	☒ Yes	☐ No
20.11.64 NMAC	Emission Standards for Hazardous Air Pollutants for Stationary Sources	☒ Yes	☐ No
20.11.65 NMAC	Volatile Organic Compounds	☐ Yes	☒ No
20.11.66 NMAC	Process Equipment	☐ Yes	☒ No
20.11.67 NMAC	Equipment, Emissions, Limitations	☐ Yes	☒ No
20.11.68 NMAC	Incinerators and Crematories	☐ Yes	☒ No
20.11.69 NMAC	Pathological Waste Destructors	☐ Yes	☒ No
20.11.71 NMAC	Municipal Solid Waste Landfills	☐ Yes	☒ No
20.11.81 NMAC	Adjudicatory Procedures – Air Quality Control Board	☐ Yes	☒ No
20.11.82 NMAC	Rulemaking Procedures – Air Quality Control Board	☐ Yes	☒ No
20.11.90 NMAC	Administration, Enforcement, Inspection	☒ Yes	☐ No
20.11.100 NMAC	Motor Vehicle Inspection – Decentralized	☐ Yes	☒ No
20.11.101 NMAC	Motor Vehicle Inspection – Centralized	☐ Yes	☒ No
20.11.102 NMAC	Oxygenated Fuels	☐ Yes	☒ No
20.11.103 NMAC	Motor Vehicle Visible Emissions	☐ Yes	☒ No
20.11.104 NMAC	Emission Standards for New Motor Vehicles	☐ Yes	☒ No

Start-Up, Shutdown, and Maintenance

Start-up and shutdown conditions are expected to have an insignificant effect on overall emissions because these conditions are not expected to occur very often and the duration of these conditions should not exceed more than a few minutes.

Sunport has hired Wagner Power to conduct monthly maintenance and service for Caterpillar units G5, G6, G7, G8, and G9 and Power Generation Service to conduct monthly maintenance of G2, G3, G10, and G11 and routine maintenance for G1 and G4. During this monthly maintenance, these units are exercised for approximately 30 minutes to minimize any abnormal operating conditions. The majority of the hours of operation of these units are actually due to monthly exercising. Additionally, each of these units undergoes an annual service which includes a load bank test of each unit.

The requested permitted allowable emission rates and limits include any emissions associated with startup and shutdown of each unit. The AP-42 emission factors used to calculate these emissions are more conservative than emissions assumed and/or provided by the manufacture.

Air Dispersion Modeling

The Air Quality Division (Division) did not require air dispersion modeling for replacing units G5, G6, G7, and G8 because these units are part of the emergency generator set. The Division does not require dispersion modeling for internal combustion engines that will be used solely in an emergency capacity and less than 500 hours of operation per 12-month rolling period.

Requested Internal Combustion Engine Permit Conditions

1. Increase ICE G1 hours of operation from 100 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

2. Increase ICE G2 hours of operation from 100 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

3. Increase ICE G3 hours of operation from 100 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

4. Increase ICE G4 hours of operation from 100 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power

and for engine exercising, maintenance, and testing. Requests the removal of non-emergency operation to generate on-site power.

5. Increase ICE G5 hours of operation from 200 to 500 based on a 12-month rolling total. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

6. Increase ICE G6 hours of operation from 200 to 500 based on a 12-month rolling total. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

7. Increase ICE G7 hours of operation from 200 to 500based on a 12-month rolling total. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

8. Increase ICE G8 hours of operation from 200 to 500 based on a 12-month rolling total. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.
9. Increase ICE G9 hours of operation from 200 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

10. Increase ICE G10 hours of operation from 100 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

11. Increase ICE G11 hours of operation from 200 to 500 based on a 12-month rolling total and to retain the permitted allowable lb/hr emissions. This unit will be operated as an emergency backup unit only in the event there is a disruption or loss in commercial power and for engine exercising, maintenance, and testing.

12. Retains 8,760 hours of annual operation for boilers B2, B3, B4, B12, and B13.

Table 5 Summary of Fee Pollutants

Fee Pollutants	Facility Wide Fee Pollutant (tpy)
Carbon Monoxide	19
Oxides of Nitrogen	37
Oxides of Sulfur	1
Volatile Organic Compounds	4
$PM_{10}/PM_{2.5}$	2
Total tpy emissions	**63**

Table 6 Summary of Equipment Process Rates

Unit #	Manufacturer's Maximum Rating	Permit Requested Rating
G1	380 hp	380 hp
G2	330 hp	330 hp
G3	133 hp/100 kW	133 hp/100 kW
G4	380 hp	380 hp
G5	1,129 hp/750kW	1,129 hp/750kW
G6	1,129 hp/750kW	1,129 hp/750kW
G7	1,129 hp/750kW	1,129 hp/750kW
G8	1,129 hp/750kW	1,129 hp/750kW
G9	790 hp/500 kW	790 hp/500 kW
G10	350 hp	350 hp
G11	56 hp/35 kW	56 hp/35 kW
B1	200,000 Btu/hr heat input	200,000 Btu/hr heat input
B2	12,000,000 Btu/hr heat input	12,000,000 Btu/hr heat input
B3	6,000,000 Btu/hr heat input	6,000,000 Btu/hr heat input
B4	6,000,000 Btu/hr heat input	6,000,000 Btu/hr heat input
B5A	500,000 Btu/hr heat input	500,000 Btu/hr heat input
B5B	500,000 Btu/hr heat input	500,000 Btu/hr heat input
B6	650,000 Btu/hr heat input	650,000 Btu/hr heat input
B7A	500,000 Btu/hr heat input	500,000 Btu/hr heat input
B7B	500,000 Btu/hr heat input	500,000 Btu/hr heat input
B10	1,550,000 Btu/hr heat input	1,550,000 Btu/hr heat input
B11	872,000 Btu/hr heat input	872,000 Btu/hr heat input
B12	12,000,000 Btu/hr heat input	12,000,000 Btu/hr heat input
B13	398,000 Btu/hr heat input	398,000 Btu/hr heat input

Appendix A

Permit Application Forms

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 6/10/2021

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): YALE VILLAGE, MA; KINTLAND MA; I
      ii. Coalition(s): DISTRICT 6
   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. ☐ N/A 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.

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 8:00 am – 5:00 pm Monday-Friday to:
3rd Floor, Suite 3023 – One Civic Plaza NW, Albuquerque, NM 87102
(505) 768-1972 aqd@cabq.gov

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Submittal Date:

Corporate Information ☒ **Check here and leave this section blank if information is exactly the same as Facility Information below.**

Company Name: City of Albuquerque Aviation Department			
Mailing Address: P.O. Box 9948	City: Albuquerque	State: NM	Zip: 87119-1048
Company Phone: 505-244-7700	Company Contact: Chris Albrecht		
Company Contact Title: Environmental Program Manager	Phone: 505-244-7836	E-mail: calbrecht@cabq.gov	

Stationary Source (Facility) Information: **Provide a plot plan (legal description/drawing of the facility property) with overlay sketch of facility processes, location of emission points, pollutant type, and distances to property boundaries.**

Facility Name: Albuquerque International Sunport			
Facility Physical Address: 2200 Sunport Blvd. S.E.	City: Albuquerque	State: NM	Zip: 87120
Facility Mailing Address (if different):	City:	State:	Zip:
Facility Contact: Chris Albrecht	Title: Environmental Program Manager		
Phone: 505-244-7836	E-mail: calbrecht@cabq.gov		
Authorized Representative Name[1]: Richard M. McCurley	Authorized Representative Title: Interim Director of Aviation		

Billing Information ☐ **Check here if same contact and mailing address as corporate** ☐ **Check here if same as facility**

Billing Company Name: City of Albuquerque Aviation Department			
Mailing Address: P.O. Box 9948	City: Albuquerque	State: NM	Zip: 87119-1048
Billing Contact: John Stephens	Title: Fiscal Program Manager		
Phone: 505-244-7731	E-mail: jpstephens@cabq.gov		

Preparer/Consultant(s) Information ☒ **Check here and leave section blank if no Consultant used or Preparer is same as Facility Contact.**

Name:	Title:		
Mailing Address:	City:	State:	Zip:
Phone:	Email:		

1. See 20.11.41.13.E.(13) NMAC.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

General Operation Information (if any question does not pertain to your facility, type N/A on the line or in the box)

Permitting action being requested (please refer to the definitions in 20.11.40 NMAC or 20.11.41 NMAC):			
☐ New Permit	☒ Permit Modification Current Permit #: 1419-M7-RV1	☐ Technical Permit Revision Current Permit #:	☐ Administrative Permit Revision Current Permit #:
UTM Coordinates or Latitude – Longitude of Facility: 352,533 E latitude 3,879,659 N longitude			
Facility Type (description of your facility operations): Medium Hub Airport			
Standard Industrial Classification (SIC Code #): 4512		North American Industry Classification System (NAICS Code #): 481111, 481112	
Is this facility currently operating in Bernalillo County? Yes		If **YES**, list date of original construction: If **NO**, list date of planned startup: 1965	
Is the facility permanent? Yes		If **NO**, list dates for requested temporary operation: From Through	
Is the application for a physical or operational change, expansion, or reconstruction (altering process, or adding, or replacing process or control equipment, etc.) to an existing facility? Yes			
Provide a description of the requested changes: Replacement of four (4) 400 kW/700 hp natural gas fired emergency generators, units G5, G6, G7, and G8 for (4) 750 Kw diesel fired emergency generators and the installation of (4) 30 kW diesel fired fire pump emergency generators			
Is the facility operation: ☒ Continuous ☐ Intermittent ☐ Batch			

	Jan-Mar:	Apr-Jun:	Jul-Sep:	Oct-Dec:
Estimated percent of production/operation:	25	25	25	25
Requested operating times of facility:	hours/day 24	days/week 7	weeks/month 4.3	months/year 12

Will there be special or seasonal operating times other than shown above? This includes monthly- or seasonally-varying hours. No

If **YES**, please explain:

List raw materials processed:
None

List saleable item(s) produced:
None

Regulated Emission Sources Table

(Generator-Crusher-Screen-Conveyor-Boiler-Mixer-Spray Guns-Saws-Sander-Oven-Dryer-Furnace-Incinerator-Haul Road-Storage Pile, etc.)
Match the Units listed on this Table to the same numbered line if also listed on Emissions Tables & Stack Table.

Unit Number and Description[1]		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[2]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[3]	Fuel Type
Ex. 1.	Generator	Unigen	B-2500	A567321C	7/96	7/97	11/2020	250 Hp/HR	Diesel
Ex. 2.	Spray Gun	HVLP Systems	Spra-N-Stay 1100	K26-56-95	01/2017	11/2017	N/A	0.25 gal./HR	Electric Compressor
G1	South Vault Emergency Generator	I.C.E. Cummins Generator: Onan	I.C.E. LTA-10G1 Generator: 250DFAC	I.C.E. C960600444 Generator: 34812431	February 1996	1996	N/A	380 / hp	#2 Diesel
G2	AFSS Building Emergency Generator	I.C.E. Detroit Diesel Generator: Kohler	I.C.E. 10637305 Generator: 200ROZF	I.C.E. 106A047818 Generator: 386075	October 1992	November 2001	N/A	330 / hp	#2 Diesel
G3	Snow Barn Emergency Generator	I.C.E. Ford Generator: Generac	I.C.E. FGNXB08-92C1 Generator: SG0100GG189	I.C.E. 600012975 Generator: SG0100GG189	October 31, 2014 June 12, 2015	January 12,2016	N/A	133 / hp	Natural Gas
G4	North Vault Emergency Generator	I.C.E. Cummins Generator: Onan	I.C.E. LTA-10G1 Generator: 250DFAC	I.C.E. 34762840 Generator: B950568781	February 1995	September 1995	N/A	380 / hp	#2 Diesel
G5	Power Center 2 Emergency Generator	I.C.E. Caterpillar Generator: Caterpillar	I.C.E. C27 Generator: SR5	I.C.E. TBD Generator:TBD	TBD	2022	TBD	750 / kW	#2 Diesel
G6	Power Center 3 Emergency Generator	I.C.E. Caterpillar Generator: Caterpillar	I.C.E. C27 Generator: SR5	I.C.E. TBD Generator:TBD	TBD	2022	TBD	750 / kW	#2 Diesel
G7	Power Center 5 Emergency Generator	I.C.E. Caterpillar Generator: Caterpillar	I.C.E. C27 Generator: SR5	I.C.E. TBD Generator:TBD	TBD	2022	TBD	750 / kW	#2 Diesel
G8	Power Center 6 Emergency Generator	I.C.E. Caterpillar Generator: Caterpillar	I.C.E. C27 Generator: SR5	I.C.E. TBD Generator:TBD	TBD	2022	TBD	750 / kW	#2 Diesel
G9	Parking Structure Emergency Generator	I.C.E. Caterpillar Generator: Lima	I.C.E. C15 Generator: KC6	I.C.E. JJF00833 Generator:G6B20633	2013	May 23, 2013	N/A	500 / kW	#2 Diesel
G10	Parking Administration Building Emergency Generator	I.C.E. Onan Generator: Onan	I.C.E.: CSG-6491-6005-A Generator: 30 EKL32948R	I.C.E.18580 Generator: J880172390	Unknown	1989	N/A	330 / hp	Natural Gas
G11	Rental Car Facility Emergency Generator	I.C.E. IVECO/FPT Generator: Generac	I.C.E.F4GE9455B J Generator: SD035-SD0035GG174.5D 18HPSY	I.C.E. J602-1271969 Generator: 9612677	July 2014 March 24, 2015	April 21, 2015	N/A	35 / kW	#2 Diesel
								56 / HP	#2 Diesel
B2	Boiler	Unilux	ZF 1200W	A2184	November 2010	November 2010	N/A	12,000,000 / Btu/hr	Natural Gas
B3	Boiler	AERCO	BMK6000	N-15-0319	January 2015	September 15, 2015	N/A	6,000,000 / Btu/hr	Natural Gas
B4	Boiler	AERCO	BMK6000	N-15-0318	January 2015	September 15, 2015	N/A	6,000,000 / Btu/hr	Natural Gas
B12	Boiler	Unilux	ZF 1200W	A2184	2007	2007	N/A	12,000,000 / Btu/hr	Natural Gas
B13	Autoclave boiler	Parker Boiler	103-9.5	62401	2015	January 12, 2016	N/A	398,000 / Btu/hr	Natural Gas
								/	
								/	
								/	

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Unit Number and Description[1]		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[2]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[3]	Fuel Type
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A /	N/A
								/	
								/	
								/	
								/	

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
2. Have changes been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7.U NMAC?
3. Basis for Equipment Process Rate or Capacity (Manufacturer's data, Field observation/test, etc.) _____
   Submit information for each unit as an attachment.

Emissions Control Equipment Table

Control Equipment Units listed on this Table should either match up to the same Unit number as listed on the Regulated Emission Sources, Controlled Emissions and Stack Parameters Tables (if the control equipment is integrated with the emission unit) or should have a distinct Control Equipment Unit Number and that number should then also be listed on the Stack Parameters Table.

Control Equipment Unit Number and Description		Controlling Emissions for Unit Number(s)	Manufacturer	Model # | Serial #	Date Installed	Controlled Pollutant(s)	% Control Efficiency[1]	Method Used to Estimate Efficiency	Rated Process Rate or Capacity or Flow
Ex. 8b	Baghouse	3,4,5	Best Baghouses	C-12010 | A16925	11/12/2019	PM10, PM2.5	99%	Manufacturer spec sheet	1,500 ACFM
	Not applicable	Not applicable	Not applicable		Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (Manufacturers data, Field Observation/Test, AP-42, etc.). _____
   Submit information for each unit as an attachment.

Exempted Sources and Exempted Activities Table

See 20.11.41 for exemptions.

Unit Number and Description		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[1]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[2]	Fuel Type
Ex. 1.	Boiler	Unigen	B-2500	A567321C	7/96	7/97	11/2020	3.5 MMBtu - HR	Natural Gas
Ex. 2.	Hot Water Heater	HVLP Systems	6500A	K26-56-95	01/2017	11/2017	N/A	80 gal. - HR	Natural Gas
B1	Hot Water Heater	RBI	SB0200	40642037	2007	April 2007	N/A	200,000 / Btu/Hr	Natural Gas
B5A	Boiler	Raypak	WH3-502B	810289409	2008	February 2009	N/A	500,000 / Btu/hr	Natural Gas
B5B	Boiler	Raypak	WH3-502B	810289410	2008	February 2009	N/A	500,000 / Btu/hr	Natural Gas
B6	Boiler	Raypak	WH3-652B	907298747	2008	9/29/2009	N/A	650,000 / Btu/hr	Natural Gas
B7A	Boiler	Raypak	WH3-502B	706267307	2007	August 2007	N/A	500,000 / Btu/hr	Natural Gas
B7B	Boiler	Raypak	WH3-502B	706267306	2007	August 2007	N/A	500,000 / Btu/hr	Natural Gas
B8	Boiler	Lochinvar	KBN400	3415101930310	2015	1/15/2016	N/A	399,000 / Btu/hr	Natural Gas
B9	Boiler	Lochinvar	KBn400	3415101930309	2015	1/15/2016	N/A	399,000 / Btu/hr	Natural Gas
B10	Boiler	Kewanee	M 155 G	23223	Unknown	Unknown	N/A	1,550,000 / Btu/hr	Natural Gas
B11	Boiler	RBI	HB 1260E-2-NG	10988896	Unknown	Unknown	N/A	872,000 / Btu/hr	Natural Gas
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NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Have changes been made to the unit that impact emissions, that trigger modification as defined in 20.11.41.7.U NMAC, or that change the status from exempt to non-exempt?
2. Basis for Equipment Process Rate or Capacity (Manufacturer's data, Field observation/test, etc.) _____
   Submit information for each unit as an attachment.

Uncontrolled Emissions Table

(Process potential under physical/operational limitations during a 24 hr/day and 365 day/year = 8760 hrs)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Controlled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number*	Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
Example 1.	27.7	121.3	9.1	39.9	1.3	5.7	0.5	2.2	2.0	8.8	0.2	0.4	0.2	0.4	AP-42
G1	14.73	0.74	3.17	0.16	1.17	0.05	0.97	0.04	1.05	0.05	1.05	0.05	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G2	12.79	0.64	2.76	0.14	1.02	0.05	0.85	0.04	0.91	0.05	0.91	0.05	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G3	0.59	0.06	1.17	0.12	0.29	0.03	0.009	0.0009	0.01	0.001	0.01	0.001	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 NSPS Subpart JJJJ 40 CFR 60.4233 (e) Table 1
G4	14.73	0.74	3.17	0.16	1.17	0.05	0.97	0.04	1.05	0.05	1.05	0.05	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G5	28.63	2.86	3.91	0.39	0.83	0.08	0.004	0.0004	0.07	0.007	0.07	0.007	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G6	28.63	2.86	3.91	0.39	0.83	0.08	0.004	0.0004	0.07	0.007	0.07	0.007	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G7	28.63	2.86	3.91	0.39	0.83	0.08	0.004	0.0004	0.07	0.007	0.07	0.007	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G8	28.63	2.86	3.91	0.39	0.83	0.08	0.004	0.0004	0.07	0.007	0.07	0.007	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G9	2.20	0.22	3.86	0.39	0.21	0.02	0.01	0.001	0.02	0.002	0.02	0.002	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 NSPS Subpart IIII 40 CFR 1039.102
G10	14.32	0.72	1.11	0.06	0.41	0.02	0.002	0.0001	0.03	0.002	0.03	0.002	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
G11	0.58	0.06	0.42	0.04	0.58	0.06	0.001	0.00007	0.02	0.002	0.02	0.002	N/A	N/A	AAuthority-to-Construct air quality permit #1419-M7-RV1 NSPS Subpart IIII 40 CFR 60.4205 (b)
	NOX+ NMHC b/hr	NOX+ NMHC tpy													
G11	0.58	0.060													

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Unit Number*	Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
B2	1.20	5.26	1.01	4.42	0.07	0.29	0.007	0.03	0.09	0.40	0.09	0.40	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
B3	0.31	1.34	0.09	0.40	0.03	0.14	0.004	0.02	0.05	0.20	0.05	0.20	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions (AP-42 Section 1.4)
B4	0.31	1.34	0.09	0.40	0.03	0.14	0.004	0.02	0.05	0.20	0.05	0.20	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions (AP-42 Section 1.4)
B12	1.20	5.26	1.01	4.42	0.07	0.29	0.007	0.03	0.09	0.40	0.09	0.40	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions
B13	0.04	0.17	0.03	0.14	0.002	0.001	0.0002	0.001	0.003	0.01	0.003	0.01	N/A	N/A	Authority-to-Construct air quality permit #1419-M7-RV1 permit conditions (AP-42 Section 1.4)
													NOX+ NMHC lb/hr	NOX+ NMHC tpy	
Totals of Uncontrolled Emissions	176.51	26.05	33.99	14.296	7.798	1.428	2.85	0.217	3.648	1.398	3.648	1.398	0.58	0.06	

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

*A permit is required and this application along with the additional checklist information requested on the Permit Application checklist must be provided if:

(1) any one of these process units or combination of units, has an uncontrolled emission rate greater than or equal to (≥) 10 lbs/hr or 25 tons/yr for any of the above pollutants, excluding HAPs, based on 8,760 hrs of operation; or

(2) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 2 tons/yr for any single HAP or ≥ 5 tons/yr for any combination of HAPs based on 8,760 hours of operation; or

(3) any one of the process units or combination of units is subject to an Air Board or federal emission limit or standard.

* If all of these process units, individually and in combination, have an uncontrolled emission rate less than (<) 10 lbs/hr or 25 tons/yr for all of the above pollutants (based on 8,760 hrs of operation), but > 1 ton/yr for any of the above pollutants, then a source registration is required. A Registration is required, at minimum, for any amount of HAP emissions. Please complete the remainder of this form.

Controlled Emissions Table

(Based on current operations with emission controls OR requested operations with emission controls)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Uncontrolled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number	Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency[1]
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
Example 1.	27.7	55.4	9.1	18.2	1.3	2.6	0.5	1.0	2.0	4.0	0.2	0.088	0.2	0.088	Operating Hours	N/A
G1	14.73	3.68	3.17	0.79	1.17	0.29	0.97	0.24	1.05	0.26	1.05	0.26	N/A	N/A	Operating Hours 500	None
G2	12.79	3.20	2.76	0.69	1.02	0.25	0.85	0.21	0.91	0.23	0.91	0.23	N/A	N/A	Operating Hours 500	None
G3	0.59	0.15	1.17	0.29	0.29	0.07	0.001	0.002	0.01	0.003	0.01	0.003	N/A	N/A	Operating Hours 500	None
G4	14.73	3.68	3.17	0.79	1.17	0.29	0.97	0.24	1.05	0.26	1.05	0.26	N/A	N/A	Operating Hours 500	None
G5	8.47	2.12	5.79	1.45	2.12	0.53	0.14	0.03	0.33	0.08	0.33	0.08	N/A	N/A	Operating Hours 500	None
G6	8.47	2.12	5.79	1.45	2.12	0.53	0.14	0.03	0.33	0.08	0.33	0.08	N/A	N/A	Operating Hours 500	None
G7	8.47	2.12	5.79	1.45	2.12	0.53	0.14	0.03	0.33	0.08	0.33	0.08	N/A	N/A	Operating Hours 500	None
G8	8.47	2.12	5.79	1.45	2.12	0.53	0.14	0.03	0.33	0.08	0.33	0.08	N/A	N/A	Operating Hours 500	None
G9	2.20	0.55	3.86	0.96	0.21	0.05	0.01	0.003	0.02	0.01	0.02	0.02	N/A	N/A	Operating Hours 500	None
G10	14.32	3.58	1.11	0.28	0.41	0.10	0.002	0.001	0.03	0.01	0.03	0.01	N/A	N/A	Operating Hours 500	None
G11	0.55	0.14	0.42	0.11	0.03	0.01	0.11	0.04	0.02	0.01	0.02	0.01	N/A	N/A	Operating Hours 500	None
	NOX+ NMHC b/hr	NOX+ NMHC tpy														
G5, G6, G7. G8	10.58	2.65														
G11	0.58	0.14														

Unit Number	Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency[1]
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
B2	1.20	5.26	1.01	4.42	0.07	0.29	0.007	0.03	0.09	0.40	0.09	0.40	N/A	N/A	None	None
B3	0.31	1.34	0.09	0.40	0.03	0.14	0.004	0.02	0.05	0.20	0.05	0.20	N/A	N/A	None	None
B4	0.31	1.34	0.09	0.40	0.03	0.14	0.004	0.02	0.05	0.20	0.05	0.20	N/A	N/A	Low NOx burner/Ultra Low Nox	None
B12	1.20	5.26	1.01	4.42	0.07	0.29	0.007	0.03	0.09	0.40	0.09	0.40	N/A	N/A	Low NOx burner/Ultra Low Nox	None
B13	0.04	0.17	0.03	0.14	0.002	0.001	0.0002	0.001	0.003	0.01	0.003	0.01	N/A	N/A	None	None
													NOX+ NMHC lb/hr	NOX+ NMHC tpy		
Totals of Controlled Emissions	96.82	36.80	41.05	19.48	12.98	4.07	3.49	0.96	4.69	2.33	4.69	2.33	42.91	10.73		

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (Manufacturers data, Field Observation/Test, AP-42, etc.). _____
   Submit information for each unit as an attachment.

Hazardous Air Pollutants (HAPs) Emissions Table

Report the Potential Emission Rate for each HAP from each source on the Regulated Emission Sources Table that emits a given HAP. Report individual HAPs with ≥ 1 ton/yr total emissions for the facility on this table. Otherwise, report total HAP emissions for each source that emits HAPs and report individual HAPs in the accompanying application package in association with emission calculations. If this application is for a Registration solely due to HAP emissions, report the largest HAP emissions on this table and the rest, if any, in the accompanying application package.

Unit Number	Total HAPs															
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Example 1.	6.3	18.2	3.2	8.5	2.3	7.7	0.5	1.0	0.3	1.0	N/A	N/A	N/A	N/A	N/A	N/A
None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals of HAPs for all units:																

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Copy and paste the HAPs table here if need to list more individual HAPs.

Purchased Hazardous Air Pollutant Table*

Product Categories (Coatings, Solvents, Thinners, etc.)	Hazardous Air Pollutant (HAP), or Volatile Hazardous Air Pollutant (VHAP) Primary To The Representative As Purchased Product	Chemical Abstract Service Number (CAS) of HAP or VHAP from Representative As Purchased Product	HAP or VHAP Concentration of Representative As Purchased Product (pounds/gallon, or %)	Concentration Determination (CPDS, MSDS, etc.)[1]	Total Product Purchases For Category	(-)	Quantity of Product Recovered & Disposed For Category	(=)	Total Product Usage For Category
Example 1. Surface Coatings	Xylene	1330207	4.0 lbs/gal	MSDS	lbs/yr 100 gal/yr	(-)	lbs/yr 0 gal/yr	(=)	lbs/yr 100 gal/yr
Example 2. Cleaning Solvents	Toluene	108883	70%	Product Label	lbs/yr 200 gal/yr	(-)	lbs/yr 50 gal/yr	(=)	lbs/yr 150 gal/yr
1. None	N/A	N/A	N/A	N/A	lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
2.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
3.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
4.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
5.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
6.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
7.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
8.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
9.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
TOTALS					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Submit, as an attachment, information on one (1) product from each Category listed above which best represents the average of all the products purchased in that Category.

***NOTE: A Registration is required, at minimum, for any amount of HAP or VHAP emission.**
Emissions from purchased HAP usage should be accounted for on previous tables as appropriate.
A permit may be required for these emissions if the source meets the requirements of 20.11.41.

Material and Fuel Storage Table

(Tanks, barrels, silos, stockpiles, etc.)

Storage Equipment		Product Stored	Capacity (bbls, tons, gals, acres, etc.)	Above or Below Ground	Construction (Welded, riveted) & Color	Installation Date	Loading Rate[1]	Offloading Rate[1]	True Vapor Pressure	Control Equipment	Seal Type	% Eff.[2]
Ex. 1.	Tank	Diesel Fuel	5,000 gal.	Below	Welded/Brown	3/93	3,000 gal/hr	500 gal/hr	N/A	N/A	N/A	N/A
Ex. 2.	Barrels	Solvent	55 gal. drum	Above	Welded/Green	N/A	N/A	N/A	N/A	N/A	N/A	N/A
G1	Tank	Diesel	250 gals	AST	Welded	1996	N/A	N/A	N/A	N/A	N/A	N/A
G2	Tank	Diesel	2,000 gals	UST	Welded	1988	N/A	N/A	N/A	N/A	N/A	N/A
G4	Tank	Diesel	300 gals	AST	Welded	1995	N/A	N/A	N/A	N/A	N/A	N/A
G5 G6 G7 G8	Tank Tank Tank Tank	Diesel	1,000 gals each	AST	Welded	TBD	N/A	N/A	N/A	N/A	N/A	N/A
G9 G11	Tank Tank	Diesel Diesel	1,000 gals 54 gals	AST AST	Welded	2013 2015	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Loading/Offloading Rate (Manufacturer's data, Field Observation/Test, etc.). _____
   Submit information for each unit as an attachment.
2. Basis for Control Equipment % Efficiency (Manufacturer's data, Field Observation/Test, AP-42, etc.). _____
   Submit information for each unit as an attachment.

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NOx, PM10, etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate	Stack Inside Diameter (ft)	Stack Type
Ex. 1.	Generator	CO, NOx, PM10, PM2.5, SO2	349430.28	3884014.64	18	900 °F	150 fps	4524 acfm	0.8	Rain Cap
Ex. 2.	Spray Gun	PM10, xylene, toluene	348540.1	3882928.5	9.2	Ambient	50 fps	589 scfm	0.5	Vertical
G1 G2 G3 G4	Emergency generator Emergency generator Emergency generator Emergency generator	NOx, CO, SO2, VOC PM10, PM2.5	352547.0 352083.00 352043.00 352746.00	3877705.00 3878149.00 3879431.0 3878874.00	20 ft 20 ft 6 ft 20 ft	600 F 600 F 900 F 600 F	87.3 FPS 69.1 FPS FPS 124.5 FPS	Unknown Unknown Unknown Unknown	0.5 FT 0.5 FT 0.21 FT 0.5 FT	Vertical
G5 G6 G7 G8	Emergency generator Emergency generator Emergency generator Emergency generator	NOx, CO, SO2, VOC PM10, PM2.5	352507.0 352507.0 352648.00 352648.00	3879632.0 3879632.0 3879504.00 3879504.00	15 ft 15 ft 15 ft 15 ft	910 F 910 F 910 F 910 F	124.5 FPS 124.5 FPS 124.5 FPS 124.5 FPS	Unknown Unknown Unknown Unknown	0.83 FT 0.83 FT 0.83 FT 0.83 FT	Vertical
G9 G10 G11	Emergency generator Emergency generator Emergency generator	NOx, CO, SO2, VOC PM10, PM2.5	352393.00 352651.00 351731.0	3879795.00 3879995.00 3878740.00	20 ft 20 ft 6 ft	600 F 600 F 900 F	89.8 FPS 89.8 FPS	Unknown Unknown	0.5 FT 0.5 FT 0.21 FT	Vertical
B2 B3 B4	Boiler Boiler Boiler	NOx, CO, SO2, VOC PM10, PM2.5	352592.00 352592.00 352592.00	3879655.00 3879655.00 3879655.00	53 ft 53 ft 53 ft	460 F 460 F 460 F	8.6 FPS 8.6 FPS 8.6 FPS	Unknown Unknown Unknown	2.5 FT 2.5 FT 2.5 FT	Vertical
B12 B13	Boiler Boiler	NOx, CO, SO2, VOC PM10, PM2.5	352592.00 352038.00	3879655.00 3879425.00	53 ft 18 ft	250 F Unknown	8.6 FPS Unknown	Unknown Unknown 342 CFM	2.5 FT 0.83 FT	Vertical

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

I, the undersigned, an authorized representative 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 registration or permit.

Signed this 6th day of January, 20 22

Richard G. McCurley
Print Name

Interim Director of Aviation
Print Title

Signature

Appendix B

Emission Calculation Worksheets

	Permitted Equipment Allowable tpy Emissions						
Unit #	**CO tpy**	**NO_x tpy**	**NO_x+NMHC tpy**	**SO_2 tpy**	**VOC tpy**	**PM_{10} tpy**	**$PM_{2.5}$ tpy**
G1	0.79	3.68		0.24	0.29	0.26	0.26
G2	0.69	3.20		0.21	0.25	0.23	0.23
G3	0.29	0.15		0.0002	0.07	0.003	0.003
G4	0.79	3.68		0.24	0.29	0.26	0.26
G5	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G6	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G7	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G8	1.45	2.12	2.65	0.034	0.53	0.08	0.08
G9	0.96	0.55		0.002	0.05	0.022	0.022
G10	0.28	3.58		0.001	0.10	0.009	0.009
G11	0.11	0.14	0.14	0.03	0.01	0.01	0.01
B2	4.42	5.26		0.03	0.29	0.40	0.40
B3	0.40	1.34		0.02	0.14	0.20	0.20
B4	0.40	1.34		0.02	0.14	0.20	0.20
B12	4.42	5.26		0.03	0.29	0.40	0.40
B13	0.15	0.17		0.001	0.01	0.01	0.01
Total tpy emissions	**19.48**	**36.80**	**10.73**	**0.96**	**4.07**	**2.33**	**2.33**
Permit 1419M7RV1	14.3	26.05	0.06	0.22	1.43	1.4	1.4
EMS Delta	5.18	10.75	10.67	0.74	2.64	0.93	0.93

City of Albuquerque Aviation Department
Albuquerque International Sunport
Modification Facility Wide Emissions
(Air Quality Permit #1419-M7-RV1)

	Permitted Equipment Allowable lb/hr Emissions						
Unit #	**CO lb/hr**	**NO_x lb/hr**	**NO_x+NMHC lb/hr**	**SO_2 lb/hr**	**VOC lb/hr**	**PM_{10} lb/hr**	**$PM_{2.5}$ lb/hr**
G1	3.17	14.73		0.97	1.17	1.05	1.05
G2	2.76	12.79		0.85	1.02	0.91	0.91
G3	1.17	0.59		0.001	0.29	0.01	0.01
G4	3.17	14.73		0.97	1.17	1.05	1.05
G5	5.79	8.47	10.58	0.14	2.12	0.33	0.33
G6	5.79	8.47	10.58	0.14	2.12	0.33	0.33
G7	5.79	8.47	10.58	0.14	2.12	0.33	0.33
G8	5.79	8.47	10.58	0.14	2.12	0.33	0.33
G9	3.86	2.20		0.01	0.21	0.02	0.02
G10	1.11	14.32		0.00	0.41	0.03	0.03
G11	0.42	0.55	0.58	0.11	0.03	0.02	0.02
B2	1.01	1.20		0.007	0.07	0.09	0.09
B3	0.09	0.31		0.004	0.03	0.05	0.05
B4	0.09	0.31		0.004	0.03	0.05	0.05
B12	1.01	1.20		0.007	0.07	0.09	0.09
B13	0.03	0.04		0.0002	0.002	0.003	0.003
Total lb/hr emissions	**41.05**	**96.82**	**42.91**	**3.49**	**12.98**	**4.69**	**4.69**
Permit 1419M7RV1	33.99	176.51		2.85	7.8	3.65	3.65
EMS Delta	7.06	-79.69		0.64	5.18	1.04	1.04

City of Albuquerque Aviation Department
Albuquerque International Sunport
Boiler B2 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Boiler Unit #: B2 **Natural Gas Heating Value** 1,000 Btu/ft^3

Boiler Location: Physical Plant Boiler 70
Boiler Rating: 12,000,000 Btu/hr
Manufacturer: Unilux
Model #: ZF 1200W
Serial #: A2184

Calendar Year	Annual Hours of Operation	Natural Gas Total Annual Usage (Therms)	Actual Natural Gas Annual Usage (ft^3)
2021	8,760.0	10,512,000.00	105,120,000.00

Boiler Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	84	$lb/10^6$ ft^3	AP-42 Table 1.4
NO_X	100	$lb/10^6$ ft^3	AP-42 Table 1.4
SO_2	0.6	$lb/10^6$ ft^3	AP-42 Table 1.4
PM_{10}, $PM_{2.5}$	7.6	$lb/10^6$ ft^3	AP-42 Table 1.4
VOC	5.5	$lb/10^6$ ft^3	AP-42 Table 1.4

Permitted Emissions	Permitted CO	Permitted NOx	Permitted SO2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	1.01	1.20	0.007	0.07	0.09
Allowable Emissions (tpy)	4.42	5.26	0.03	0.29	0.40

City of Albuquerque Aviation Department
Albuquerque International Sunport
Boiler B3 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Boiler Unit #: B3 **Natural Gas Heating Value** 1,000 Btu/ft^3

Boiler Location: Physical Plant Boiler 71
Boiler Rating: 6,000,000 Btu/hr
Manufacturer: AERCO
Model #: BMK6000
Serial #: N-15-0319

Calendar Year	Annual Hours of Operation	Natural Gas Total Annual Usage (Therms)	Actual Natural Gas Annual Usage (ft^3)
2021	8,760.0	5,256,000.00	52,560,000.00

Boiler Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	0.245	$kg/10^3$ m	MFG Data
NO_X	0.817	$kg/10^3$ m	MFG Data
SO_2	0.6	$lb/10^6$ ft^3	AP-42 Table 1.4
PM_{10}, $PM_{2.5}$	7.6	$lb/10^6$ ft^3	AP-42 Table 1.4
VOC	5.5	$lb/10^6$ ft^3	AP-42 Table 1.4

Permitted Emissions	Permitted CO	Permitted NOx	Permitted SO2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	0.09	0.31	0.004	0.03	0.05
Allowable Emissions (tpy)	0.40	1.34	0.02	0.14	0.20

City of Albuquerque Aviation Department
Albuquerque International Sunport
Boiler B4 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Boiler Unit #: B4 **Natural Gas Heating Value** 1,000 Btu/ft^3

Boiler Location: Physical Plant Boiler 72
Boiler Rating: 6,000,000 Btu/hr
Manufacturer: AERCO
Model #: BMK6000
Serial #: N-15-0318

Calendar Year	Annual Hours of Operation	Natural Gas Total Annual Usage (Therms)	Actual Natural Gas Annual Usage (ft^3)
2021	8,760.0	5,256,000.00	52,560,000.00

Boiler Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	0.245	$lb/10^6\ ft^3$	MFG Data
NO_X	0.817	$lb/10^6\ ft^3$	MFG Data
SO_2	0.6	$lb/10^6\ ft^3$	AP-42 Table 1.4
PM_{10}, $PM_{2.5}$	7.6	$lb/10^6\ ft^3$	AP-42 Table 1.4
VOC	5.5	$lb/10^6\ ft^3$	AP-42 Table 1.4

Permitted Emissions	Permitted CO	Permitted NOx	Permitted SO2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	0.09	0.31	0.004	0.03	0.05
Allowable Emissions (tpy)	0.40	1.34	0.02	0.14	0.20

City of Albuquerque Aviation Department
Albuquerque International Sunport
Boiler B12 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Boiler Unit #: B12 **Natural Gas Heating Value** 1,000 Btu/ft^3

Boiler Location: Physical Plant Boiler 73
Boiler Rating: 12,000,000 Btu/hr
Manufacturer: Unilux
Model #: 2F1200W
Serial #: A1113

Calendar Year	Annual Hours of Operation	Natural Gas Total Annual Usage (Therms)	Calculated and Actual Natural Gas Annual Usage (ft^3)
2021	8,760.0	10,512,000.00	105,120,000.00

Boiler Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	84	$lb/10^6$ ft^3	AP-42 Table 1.4
NO_X	100	$lb/10^6$ ft^3	AP-42 Table 1.4
SO_2	0.6	$lb/10^6$ ft^3	AP-42 Table 1.4
PM_{10}, $PM_{2.5}$	7.6	$lb/10^6$ ft^3	AP-42 Table 1.4
VOC	5.5	$lb/10^6$ ft^3	AP-42 Table 1.4

Permitted Emissions	Permitted CO	Permitted NOx	Permitted SO2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	1.01	1.20	0.007	0.07	0.09
Allowable Emissions (tpy)	4.42	5.26	0.03	0.29	0.40

City of Albuquerque Aviation Department
Albuquerque International Sunport
Boiler B13 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Boiler Unit #: B13 **Natural Gas Heating Value** 1,000 Btu/ft^3

Boiler Location: Snowbarn Complex - Autoclave
Boiler Rating: 398,000 Btu/hr
Manufacturer: Parker Boiler Company
Model #: 103-9.5
Serial #: 62401

Calendar Year	Annual Hours of Operation	Natural Gas Total Annual Usage (Therms)	Calculated and Actual Natural Gas Annual Usage (ft^3)
2021	8,760.0	348,648.00	3,486,480.00

Boiler Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	84	$lb/10^6\ ft^3$	AP-42 Table 1.4
NO_X	100	$lb/10^6\ ft^3$	AP-42 Table 1.4
SO_2	0.6	$lb/10^6\ ft^3$	AP-42 Table 1.4
PM_{10}, $PM_{2.5}$	7.6	$lb/10^6\ ft^3$	AP-42 Table 1.4
VOC	5.5	$lb/10^6\ ft^3$	AP-42 Table 1.4

Permitted Emissions	Permitted CO	Permitted NOx	Permitted SO2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	0.03	0.04	0.0002	0.002	0.003
Allowable Emissions (tpy)	0.15	0.17	0.001	0.01	0.01

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G1 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permits #: 1419-M7-RV1
Issued Dates: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G1 **Diesel Fired**

Location of Unit: Airfield South Vault **Fuel Consumption Rate (gph):** 17.1

Manufacturer: Cummins/Onan
I.C. Engine Model #: LTA-10G1 Serial #: C960600444 Rating (HP): 380
Generator Model #: 250DFAC Serial #: 34812431 Rating (kW): 250

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gallons)	Allowable Annual Hrs of Operation
2021	500.0	8,550.0	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	0.00668	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
NO_X	0.031	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
SO_2	0.00205	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
PM_{10}, $PM_{2.5}$	0.0022	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
VOC	0.00247	lb/hp-hr	AP-42 Table 3.3-1 (10/96)

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted SO_2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	2.54	11.78	0.78	0.94	0.84
Allowable lb/hr + 25% Safety Factor (Federally Enforceable via 1419-M5 issued 11/15/20210	3.17	14.73	0.97	1.17	1.05
Allowable Emissions (tpy)	0.79	3.68	0.24	0.29	0.26

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G2 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G2 **Diesel Fired**
Location of Unit: FAA/AFSS **Fuel Consumption Rate (gph):** 16.8

Manufacturer: Detroit Diesel/Kohler
I.C. Engine Model #: 10637305 Serial #: 06A047818 Rating (HP): 330
Generator Model #: 200ROZF Serial #: 386075 Rating (kW): 200

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gallons)	Allowable Annual Hrs of Operation
2021	500.0	8,400.0	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	0.00668	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
NO_X	0.031	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
SO_2	0.00205	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
PM_{10}, $PM_{2.5}$	0.0022	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
VOC	0.00247	lb/hp-hr	AP-42 Table 3.3-1 (10/96)

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted SO_2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	2.20	10.23	0.68	0.82	0.73
Allowable lb/hr + 25% Safety Factor (Federally Enforceable via 1419-M5 issued 11/15/20210	2.76	12.79	0.85	1.02	0.91
Allowable Emissions (tpy)	0.69	3.20	0.21	0.25	0.23

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G3 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G3
Location of Unit: Snowbarn Complex

Natural Gas Heating Value: 1,000 #REF!
Fuel Consumption Rate: 1,280.0 ft^3/hr

Manufacturer: Generac/Ford
I.C. Engine Model #: FGNXB08.92C1 Serial #: 600012975 Rating (HP): 133
Generator Model #: SG0100GG189 Serial #: 9750259 Rating (kW): 100

Calendar Year	Annual Hours of Operation	Natural Gas Annual Usage (ft^3)	Allowable Annual Hrs of Operation
2021	500.0	640,000.00	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	4	g/hp-Hr	40 CFR 60.4233 (e) Table 1
NO_X	2	g/hp-Hr	40 CFR 60.4233 (e) Table 1
SO_2	0.000588	$lb/10^6$ Btu	AP42 Section 3.2, Table 3.2-2
PM_{10}, $PM_{2.5}$	0.00991	$lb/10^6$ Btu	AP42 Section 3.2, Table 3.2-2 (EPA Interim Guidance of Condensable Particulate Matter; 4/8/2014)
VOC	1	g/hp-Hr	40 CFR 60.4233 (e) Table 1

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted SO_2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	1.17	0.59	0.001	0.29	0.01
Allowable Emissions (tpy)	0.29	0.15	0.0002	0.07	0.003

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G4 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G4 **Diesel Fired**
Location of Unit: Airfield North Vault **Fuel Consumption Rate (gph):** 17.1

Manufacturer: Cummins/Onan
I.C. Engine Model #: LTA-10G1 Serial #: 34762840 Rating (HP): 380
Generator Model #: 250DFAC Serial #: B950568781 Rating (kW): 250

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gallons)	Allowable Annual Hrs of Operation
2021	500.0	8,550.0	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	0.00668	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
NO_X	0.031	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
SO_2	0.00205	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
PM_{10}, $PM_{2.5}$	0.0022	lb/hp-hr	AP-42 Table 3.3-1 (10/96)
VOC	0.00247	lb/hp-hr	AP-42 Table 3.3-1 (10/96)

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted SO_2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	2.54	11.78	0.78	0.94	0.84
Allowable lb/hr + 25% Safety Factor (Federally Enforceable via 1419-M5 issued 11/15/20210	3.17	14.73	0.97	1.17	1.05
Allowable Emissions (tpy)	0.79	3.68	0.24	0.29	0.26

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G5 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G5 New **Diesel Fired**

Location of Unit: Terminal West - Power Center 2 **Estimated Fuel Consumption Rate (gph):** 52.9

Manufacturer: Caterpillar Rating (BHP): 1,114
I.C. Engine Model #: C27 Serial #: TBD Rating (HP): 1,129
Generator Model #: SR5 Serial #: TBD Rating (kW): 750

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gals)	Allowable Annual Hrs of Operation
2021	500.0	26,450.00	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	3.5	g/kW-hr	40 CFR 60.4205 (b)/13
NO_x	5.12	g/kW-hr	AQD Fraction Default Values 0.8 of NOx+NMHC
VOC	1.28	g/kW-hr	AQD Fraction Default Values 0.2 of NOx+NMHC
NO_X+NMHC	6.4	g/kW-hr	40 CFR 60.4205 (b)/5
SO_2	0.00809	lb/hp-hr	AP-42 Section 3.4
PM_{10}, $PM_{2.5}$	0.2	g/kW-hr	40 CFR 60.4205 (b)/22

Permitted Emissions	Permitted CO	Permitted Nox	Permitted VOC	Permitted Nox+NMHC	Permitted SO_2	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	5.79	8.47	2.12	10.58	0.14	0.33
Allowable Emissions (tpy)	1.45	2.12	0.53	2.65	0.034	0.08

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G6 New Air Emissions Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G6 New **Diesel Fired**

Location of Unit: Terminal West - Power Center 2 **Estimated Fuel Consumption Rate (gph):** 52.9

Manufacturer: Caterpillar Rating (BHP): 1,114
I.C. Engine Model #: C27 Serial #: TBD Rating (HP): 1,129
Generator Model #: SR5 Serial #: TBD Rating (kW): 750

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gals)	Allowable Annual Hrs of Operation
2021	500.0	26,450.00	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	3.5	g/kW-hr	40 CFR 60.4205 (b)/13
NO_x	5.12	g/kW-hr	AQD Fraction Default Values 0.8 of NOx+NMHC
VOC	1.28	g/kW-hr	AQD Fraction Default Values 0.2 of NOx+NMHC
NO_X+NMHC	6.4	g/kW-hr	40 CFR 60.4205 (b)/5
SO_2	0.00809	lb/hp-hr	AP-42 Section 3.4
PM_{10}, $PM_{2.5}$	0.2	g/kW-hr	40 CFR 60.4205 (b)/22

Permitted Emissions	Permitted CO	Permitted Nox	Permitted VOC	Permitted Nox+NMHC	Permitted SO_2	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	5.79	8.47	2.12	10.58	0.14	0.33
Allowable Emissions (tpy)	1.45	2.12	0.53	2.65	0.034	0.08

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G7 New Air Emissions Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G7 New **Diesel Fired**

Location of Unit: Terminal West - Power Center 2 **Estimated Fuel Consumption Rate (gph):** 52.9

Manufacturer: Caterpillar Rating (BHP): 1,114
I.C. Engine Model #: C27 Serial #: TBD Rating (HP): 1,129
Generator Model #: SR5 Serial #: TBD Rating (kW): 750

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gals)	Allowable Annual Hrs of Operation
2021	500.0	26,450.00	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	3.5	g/kW-hr	40 CFR 60.4205 (b)/13
NO_x	5.12	g/kW-hr	AQD Fraction Default Values 0.8 of NOx+NMHC
VOC	1.28	g/kW-hr	AQD Fraction Default Values 0.2 of NOx+NMHC
NO_X+NMHC	6.4	g/kW-hr	40 CFR 60.4205 (b)/5
SO_2	0.00809	lb/hp-hr	AP-42 Section 3.4
PM_{10}, $PM_{2.5}$	0.2	g/kW-hr	40 CFR 60.4205 (b)/22

Permitted Emissions	Permitted CO	Permitted Nox	Permitted VOC	Permitted Nox+NMHC	Permitted SO_2	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	5.79	8.47	2.12	10.58	0.14	0.33
Allowable Emissions (tpy)	1.45	2.12	0.53	2.65	0.034	0.08

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G8 New Air Emissions Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G8 New **Diesel Fired**

Location of Unit: Terminal West - Power Center 2 **Estimated Fuel Consumption Rate (gph):** 52.9

Manufacturer: Caterpillar Rating (BHP): 1,114
I.C. Engine Model #: C27 Serial #: TBD Rating (HP): 1,129
Generator Model #: SR5 Serial #: TBD Rating (kW): 750

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gals)	Allowable Annual Hrs of Operation
2021	500.0	26,450.00	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	3.5	g/kW-hr	40 CFR 60.4205 (b)/13
NO_x	5.12	g/kW-hr	AQD Fraction Default Values 0.8 of NOx+NMHC
VOC	1.28	g/kW-hr	AQD Fraction Default Values 0.2 of NOx+NMHC
NO_X+NMHC	6.4	g/kW-hr	40 CFR 60.4205 (b)/5
SO_2	0.00809	lb/hp-hr	AP-42 Section 3.4
PM_{10}, $PM_{2.5}$	0.2	g/kW-hr	40 CFR 60.4205 (b)/22

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted VOC	Permitted NO_x+NMHC	Permitted SO_2	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	5.79	8.47	2.12	10.58	0.14	0.33
Allowable Emissions (tpy)	1.45	2.12	0.53	2.65	0.034	0.08

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G9 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G9 **Diesel Fired**
Location of Unit: Parking Structure Entrance **Fuel Consumption Rate (gph):** 39.6

Manufacturer: Caterpillar Rating (BHP) 779
I.C. Engine Model #: C15 Serial #: JJF00833 Rating (HP): 790
Generator Model #: LC6 Serial #: G6B20633 Rating (kW): 500

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gallons)	Allowable Annual Hrs of Operation
2021	500.0	19,800.0	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	3.5	g/kW-hr	40 CFR 1039.102, Table 6
NO_X	2	g/kW-hr	40 CFR 1039.102 (e) (2)
SO_2	0.00809	lb/hp-hr	AP-42 Section 3.4
PM_{10}, $PM_{2.5}$	0.02	g/kW-hr	40 CFR 1039.102, Table 6
VOC	0.19	g/kW-hr	40 CFR 1039.102 (e)

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted SO_2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	3.86	2.20	0.01	0.21	0.02
Allowable Emissions (tpy)	0.96	0.55	0.002	0.05	0.01

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G10 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G10
Location of Unit: Parking Administration
Natural Gas Heating Value (Mfgr.): 8,025 Btu/hp-hr
Fuel Consumption Rate: 2,808.8 ft^3/hr

Manufacturer: Onan/Onan
I.C. Engine Model #: CSG-6491-6005-A Serial #: 18580 Rating (HP): 350
Generator Model #: 30 EKL32948R Serial #: J880172390 Rating (kW):

Calendar Year	Annual Hours of Operation	Natural Gas Annual Usage (ft^3)	Allowable Annual Hrs of Operation
2021	500.0	1,404,375.00	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	0.317	lb/10^6 Btu	AP-42 Sec 3.2, Table 3.2-2 (7/2000)
NO_X	4.08	lb/10^6 Btu	AP-42 Sec 3.2, Table 3.2-2 (7/2000)
SO_2	0.000588	lb/10^6 Btu	AP-42 Sec 3.2, Table 3.2-2 (7/2000)
PM_{10}, $PM_{2.5}$	0.00991	lb/10^6 Btu	AP42 Section 3.2, Table 3.2-2 (EPA Interim Guidance of Condensable Particulate Matter; 4/8/2014)
VOC	0.118	lb/10^6 Btu	AP-42 Sec 3.2, Table 3.2-2 (7/2000)

Permitted Emissions	Permitted CO	Permitted NO_x	Permitted SO_2	Permitted VOC	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	0.89	11.46	0.002	0.33	0.028
Allowable lb/hr + 25% Safety Factor (Federally Enforceable via 1419-M5 issued 11/15/20210	1.11	14.32	0.002	0.41	0.035
Allowable Emissions (tpy)	0.28	3.58	0.0005	0.10	0.009

City of Albuquerque Aviation Department
Albuquerque International Sunport
Emergency Generator G11 Air Emissions
Permit Modification
(Air Quality Permit #1419-M7-RV1)

Air Quality Permit #: 1419-M7-RV1
Issued Date: 6/14/2016

Company Name: City of Albuquerque Aviation Department
Facility Name: Albuquerque International Sunport
Facility Address: 2200 Sunport Blvd., S.E., Albuquerque, NM 87119

Responsible Official: Richard M. McCurley Title: Interim Aviation Director
Phone #: 505-244-7712

Contact Name: Chris Albrecht Title: Environmental Program Manager
Phone #: 505-244-7836

Emergency Generator Unit #: G11 **Diesel Fired**
Location of Unit: Rental Car Facility **Fuel Consumption Rate (gph):** 3.07

Manufacturer: Generac/Iveco
I.C. Engine Model #: F4GE9455B Serial #: J602-01271969 Rating (HP): 56
Generator Model #: SD035G174 Serial #: 96267 Rating (kW): 35

Calendar Year	Annual Hours of Operation	Annual Fuel Usage (gallons)	Allowable Annual Hrs of Operation
2021	500.0	1,535.0	500.0

Internal Combustion Engine Emission Factors			
Air Pollutant	**Emission Factor**	**Units**	**Emission Factor Source**
CO	5.5	g/kW-hr	40 CFR 60.4205 (b), 40 CFR 89.112
NO_X	7.13	g/kW-hr	AQD Fraction Default Values 0.95 of NOx+NMHC
VOC	0.38	g/kW-hr	AQD Fraction Default Values 0.05 of NOx+NMHC
NOX +NMHC	7.5	g/kW-hr	40 CFR 60.4205 (b), 40 CFR 89.112
SO_2	0.00205	lb/hp-hr	AP-42 Section 3.3, Table 3.3-1
PM_{10}, $PM_{2.5}$	0.3	g/kW-hr	40 CFR 60.4205 (b), 40 CFR 89.112

Permitted Emissions	Permitted CO	Permitted Nox	Permitted VOC	Permitted NOx+NMHC	Permitted SO_2	Permitted $PM_{10}/PM_{2.5}$
Allowable Emissions (lb/hr)	0.42	0.55	0.03	0.58	0.11	0.02
Allowable Emissions (tpy)	0.11	0.14	0.01	0.14	0.03	0.01

Appendix C

Pre-Permit Application Meeting Documentation

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Thursday, June 3, 2021 8:46 AM
To: Eyerman, Regan V. (reyerman@cabq.gov)
Cc: Isreal Tavarez (itavarez@cabq.gov); Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov); Rachel M. Harding (rharding@cabq.gov)
Subject: Air Quality Pre Application Meeting - ABQ Sunport Air Quality Permits

Good morning Regan,

I hope is well with you. I would like to request an air quality pre-application meeting for three (3) projects that will take place at the Sunport this year. Here is what is being proposed.

1. Modification to Sunport air quality permit #1419-M7-RV1
   - Replace four (4) 400 kW natural gas fired emergency generators (G5, G6, G7, and G8) for four (4) 750kW diesel fired emergency generators

2. New permit for a back-up 17 hp diesel fired engine to support a fire pump/sprinkler system at the Sunport I hangar; occupied by CSI Aviation

3. Transfer of ownership (TOO) for the Advantage Rental Car air quality permit; need a copy of current permit

Could you please discuss with your team and see what day and time is favorable for a Zoom call next week if possible.

Please call if you want to discuss our availability.

Thank you very much,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Aviation Department Meeting Agenda
Air Quality Permits Pre-Application Meeting
Thursday June 10th 1:00 pm

DATE: June 10, 2021

TIME: 2:00 pm to 2:45 pm

SUBJECT: Aviation Department Air quality permits pre-application meeting

ATTENDEES: Isreal Tavarez, Air Quality Programs Manager
Carina Munoz-Dyer, Air Quality Envt. Health Supervisor
Regan Eyerman, Air Quality Envt. Health Scientist
Paul Puckett, Air Quality Envt. Health Scientist
Jeff Stonesifer, Air Quality Sr. Envt. Health Scientist
Kyle Tumpane, Air Quality Envt. Health Scientist
Chris Albrecht, Aviation Environmental Program Manage
Rachel Harding, Aviation Environmental & Sustainability Specialist

AGENDA:

1:00 pm to 1:15 pm Chris Albrecht overview of upcoming ABQ Sunport air quality projects and group discussion

I. Advantage Rent A Car, permit #1487-M1-RV1 – 3400 University Blvd. SE, Suite N

- Advantage bankruptcy May 2020
- Bankruptcy court order signed March 11, 2021
- Transfer of ownership back to Aviation Department until new tenant has taken over property; possibility of July 1st

Action Items:

II. Aviation Sunport I Fire pump project – 2503 Clark Carr

- Location will be the north hangar of the old Eclipse HQ building. Current hangar is shared by 10 Tanker on the southern portion of hangar and CSI Aviation occupying the northern portion of the hangar. See attached
- Installation of a fire suppression system and fire pump on the CSI Aviation Hangar which will have a 15 HP diesel fired internal combustion engine (CE). This system will not support the 10 Tanker hangar.
- Aviation is proposing an AQN for the 15 HP ICE
- Currently Sunport I has an air quality notification, 1825-AQN for an emergency generator which supports the entire Sunport I facility (both CSI and 10 Tanker)

Action Items:

Aviation Department Meeting Agenda
Air Quality Permits Pre-Application Meeting
Thursday June 10th 1:00 pm

III. Sunport, permit #1419-M7-RV1

- Replacement of four (4) 400kW natural gas fired emergency generators G5, G6, G7, and G8 with four (4) 750 kW diesel fired emergency generators

- What tier is currently required for 2021 models?

- During construction phase, Sunport needs to maintain emergency back-up capability
  - Anticipate construction to commence November 2021
  - Need two 400 kW diesel fired portable generators wired into the emergency systems; Power centers 2/3 and 4/5.
  - Remove existing units, wire portable units temporarily, and install/wire new units; approximately 1 month each location
  - Only 1 unit would run at any given time in PC 2/3 and PC 4/5; other unit will be in standby mode
  - Can we do this without a permitting action or do we need to apply for an emergency permit?

- Assume no dispersion modeling required because of emergency only operation

- Studies currently being conducted, but within the next year or so; potential installation of four (4) fire suppression systems and fire pump ICE's in the following Sunport facilities: See attached
  - New Snow Barn which currently has ICE G3
  - Belly Freight
  - Airfield Maintenance Building
  - Old Snow Barn (Airfield Maintenance

- Targeting application submittal middle of July

<u>Action Items:</u>

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Thursday, June 10, 2021 4:53 PM
To: Tumpane, Kyle
Cc: Eyerman, Regan V.; Tavarez, Isreal L.; Munoz-Dyer, Carina G.; Puckett, Paul S.; Stonesifer, Jeff W.; Rachel M. Harding (rharding@cabq.gov)
Subject: RE: - Pre-application Meeting - ABQ Sunport

Good afternoon Kyle,

Per our discussion regarding the Aviation Department's proposed modification to the Albuquerque International Sunport air quality permit #1419-M7-RV1, it is my understanding that air dispersion modeling will not be required since this modification will include units that are for emergency use only. This proposed modification includes the following:

1. The replacement of the four (4) 400 kW natural gas fired internal combustion engines units G5, G6, G7, and G8, which are emergency use only, for four (4) 750 kW diesel fired internal combustion engines; also emergency use only
2. The addition of four diesel fired internal combustion engines (emergency use) for four fire pump systems

Please let me know if air quality concurs that air dispersion modeling will not be required as part of this permit application submittal.

Thank you very much for your time and the air quality team's time. Please reach out if you should have any questions.

Sincerely,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Albrecht, Christopher P.

From: Tumpane, Kyle
Sent: Friday, June 11, 2021 6:55 AM
To: Albrecht, Christopher P.
Cc: Eyerman, Regan V.; Tavarez, Isreal L.; Munoz-Dyer, Carina G.; Puckett, Paul S.; Stonesifer, Jeff W.; Harding, Rachel M.
Subject: RE: - Pre-application Meeting - ABQ Sunport

Chris and Rachel,
Based on the discussions during the pre-application meeting yesterday and the description of the project, air dispersion modeling will not be required. The City of Albuquerque Air Dispersion Modeling Guidelines, rev. Oct 2019, exempt emergency generators that backup PNM power and operate less than 500 hours per year. The emergency engines for power and emergency engines for fire pump systems appear to fit that description and therefore are exempt from air dispersion modeling.

Please include this email as part of the application package when it is submitted.

Thank you,
Kyle

KYLE TUMPANE
environmental health scientist | environmental health department
o 505.768.2872
m 505.366.9985
cabq.gov/environmentalhealth/

From: Albrecht, Christopher P. <CAlbrecht@cabq.gov>
Sent: Thursday, June 10, 2021 4:53 PM
To: Tumpane, Kyle <ktumpane@cabq.gov>
Cc: Eyerman, Regan V. <reyerman@cabq.gov>; Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Stonesifer, Jeff W. <JStonesifer@cabq.gov>; Harding, Rachel M. <rharding@cabq.gov>
Subject: RE: - Pre-application Meeting - ABQ Sunport

Good afternoon Kyle,

Per our discussion regarding the Aviation Department's proposed modification to the Albuquerque International Sunport air quality permit #1419-M7-RV1, it is my understanding that air dispersion modeling will not be required since this modification will include units that are for emergency use only. This proposed modification includes the following:

1. The replacement of the four (4) 400 kW natural gas fired internal combustion engines units G5, G6, G7, and G8, which are emergency use only, for four (4) 750 kW diesel fired internal combustion engines; also emergency use only

2. The addition of four diesel fired internal combustion engines (emergency use) for four fire pump systems

Please let me know if air quality concurs that air dispersion modeling will not be required as part of this permit application submittal.

Thank you very much for your time and the air quality team's time. Please reach out if you should have any questions.

Sincerely,

Chris

<< OLE Object: Picture (Device Independent Bitmap) >>

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Appendix D

Public Notice On-Site Sign Documentation

Proposed Air Quality Construction Permit

Permiso de Construcción de Calidad del Aire Propuesto

1. **Applicant's Name:**
   Nombre del solicitante: CITY OF ALBUQUERQUE AVIATION
   Owner or Operator's Name:
   Nombre del Propietario u Operador: CITY OF ALBUQUERQUE AVIATION
2. **Actual or Estimated Date the Application will be Submitted to the Department:**
   Fecha Actual o Estimada en que se Entragará la Solicitud al Departamento: AUGUST 13, 2021
3. **Exact Location of the Source or Proposed Source:**
   Ubicación Excata de la Fuente o Fuente Propuesta: 2200 SUNPORT BLVD., S.E.
4. **Description of the Source:**
   Descripción del Fuente: AIR TRANSPORTATION – MEDIUM HUB AIRPORT
   Nature of Business:
   Tipo de Negocio: AIR TRANSPORTATION
   Process or change for which a permit is requested:
   Proceso o cambio para el cuál se solicita el permiso: REPLACE (4) N.G. FIRED EMERGENCY GENERATORS WITH (4) DIESEL FIRED EMERGENCY GENERATORS

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:

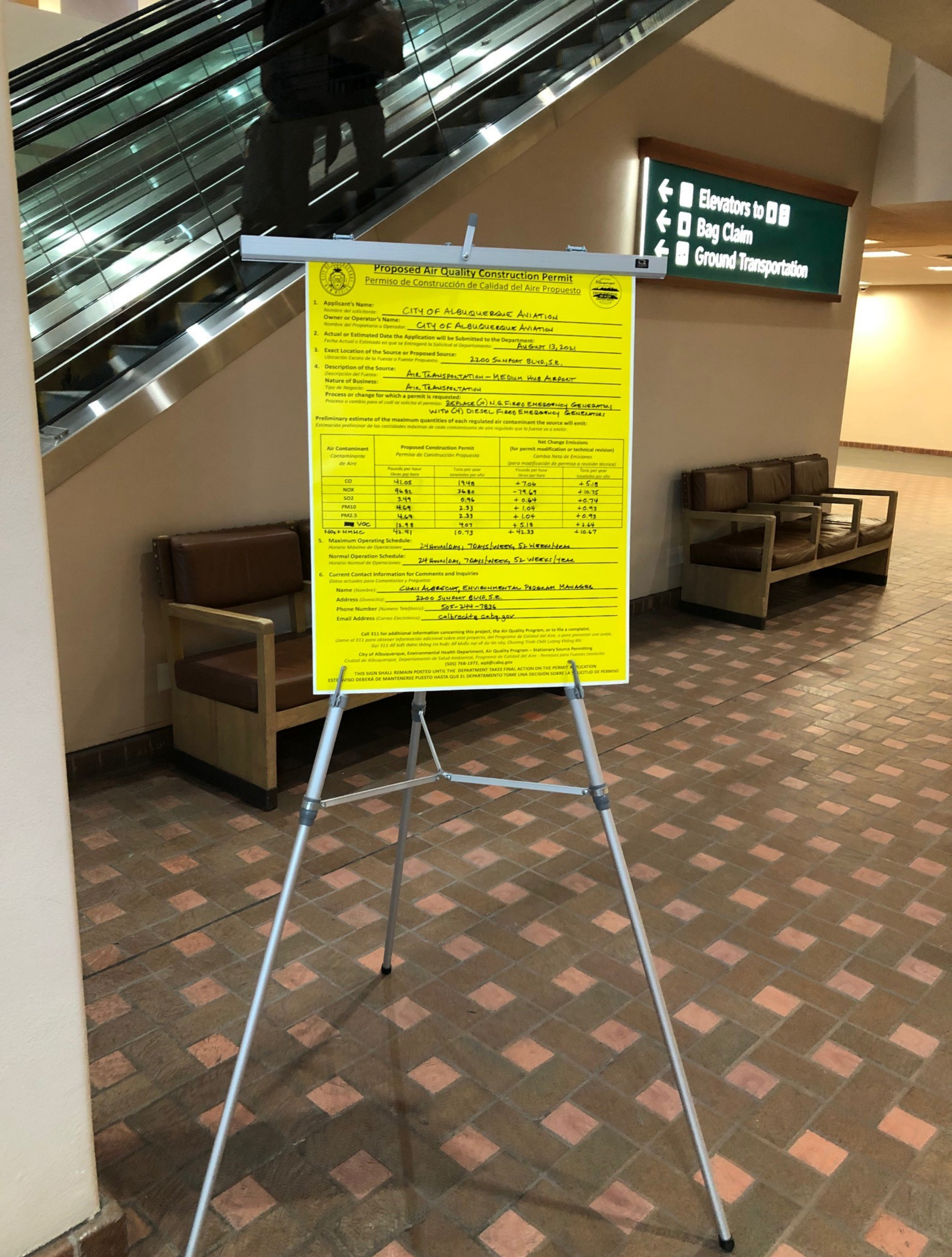
Air Contaminant / Contaminante de Aire	Proposed Construction Permit / Permiso de Construcción Propuesto		Net Change Emissions (for permit modification or technical revision) / Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)	
	Pounds per hour / libras por hora	Tons per year / toneladas por año	Pounds per hour / libras por hora	Tons per year / toneladas por año
CO	41.05	19.48	+7.06	+5.18
NOX	96.82	36.80	-79.69	+10.75
SO2	3.49	0.96	+0.64	+0.74
PM10	4.69	2.33	+1.04	+0.93
PM2.5	4.69	2.33	+1.04	+0.93
[redacted] VOC	12.98	4.07	+5.18	+2.64
NOx + NMHC	42.91	10.73	+42.33	+10.67

5. **Maximum Operating Schedule:**
   Horario Máximo de Operaciones: 24 HOURS/DAY, 7 DAYS/WEEK, 52 WEEKS/YEAR
   Normal Operation Schedule:
   Horario Normal de Operaciones: 24 HOURS/DAY, 7 DAYS/WEEK, 52 WEEKS/YEAR
6. **Current Contact Information for Comments and Inquiries**
   Datos actuales para Comentarios y Preguntas
   Name *(Nombre):* CHRIS ALBRECHT, ENVIRONMENTAL PROGRAM MANAGER
   Address *(Domicilio):* 2200 SUNPORT BLVD, S.E.
   Phone Number *(Número Telefónico):* 505-244-7836
   Email Address *(Correo Electrónico):* calbrecht@cabq.gov

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, del Programa de Calidad del Aire, o para presenter 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 Inmóviles
(505) 768-1972, aqd@cabq.gov

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


Elevators to
Bag Claim
Ground Transportation
Proposed Air Quality Construction Permit
Permiso de Construcción de Calidad del Aire Propuesto
1. Applicant's Name:
Nombre del solicitante: CITY OF ALBUQUERQUE AVIATION
Owner or Operator's Name:
Nombre del Propietario u Operador: CITY OF ALBUQUERQUE AVIATION
2. Actual or Estimated Date the Application will be Submitted to the Department:
Fecha Actual o Estimado en que se Entregará la Solicitud al Departamento: AUGUST 13, 2021
3. Exact Location of the Source or Proposed Source:
Ubicación Exacta de la Fuente o Fuente Propuesta: 2200 SUNPORT BLVD, S.E.
4. Description of the Source:
Descripción del Fuente: AIR TRANSPORTATION – MEDIUM HUB AIRPORT
Nature of Business:
Tipo de Negocio: AIR TRANSPORTATION
Process or change for which a permit is requested:
Proceso o cambio para el cuál se solicita el permiso: REPLACE (4) N.G. FIRED EMERGENCY GENERATORS WITH (4) DIESEL FIRED EMERGENCY GENERATORS
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
Pounds per hour / libras por hora
Tons per year / toneladas por año
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
CO 41.05 19.48 +7.06 +5.18
NOX 96.82 36.80 -79.69 +10.75
SO2 3.49 0.96 +0.64 +0.74
PM10 4.69 2.33 +1.04 +0.93
PM2.5 4.69 2.33 +1.04 +0.93
[redacted] VOC 12.98 4.07 +5.18 +2.64
NOx+NMHC 42.91 10.73 +42.33 +10.67
5. Maximum Operating Schedule:
Horario Máximo de Operaciones: 24 HOURS/DAY, 7 DAYS/WEEK, 52 WEEKS/YEAR
Normal Operation Schedule:
Horario Normal de Operaciones: 24 HOURS/DAY, 7 DAYS/WEEK, 52 WEEKS/YEAR
6. Current Contact Information for Comments and Inquiries
Datos actuales para Comentarios y Preguntas
Name (Nombre): CHAIS ALBRECHT, ENVIRONMENTAL PROGRAM MANAGER
Address (Domicilio): 2200 SUNPORT BLVD, S.E.
Phone Number (Número Telefónico): 505-244-7836
Email Address (Correo Electrónico): calbrecht@cabq.gov
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, del 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 Inmóviles
(505) 768-1972, aqd@cabq.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 TOME UNA DECISIÓN SOBRE LA SOLICITUD DE PERMISO

Appendix E

Neighborhood Association & Coalition Notification Documentation

Albrecht, Christopher P.

From:	Albrecht, Christopher P.
Sent:	Thursday, July 22, 2021 10:00 AM
To:	Isreal Tavarez (itavarez@cabq.gov); Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov); Eyerman, Regan V. (reyerman@cabq.gov)
Cc:	Rachel M. Harding (rharding@cabq.gov)
Subject:	Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good morning Isreal and Carina,

I am still working on the permit application for the application to modify Sunport Air Quality Permit 1419M1RV1 for the replacement of emergency generators units #G5, G6, G7, and G8.

Could you please provide a list of Neighborhood Associations to contact for public notice requirements.

Thank you,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Thursday, July 22, 2021 4:31 PM
To: Munoz-Dyer, Carina G.; Tavarez, Isreal L.; Eyerman, Regan V.
Cc: Harding, Rachel M.
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good afternoon Carina,

I have worked all day on the application, crunching numbers, etc. My goal is no later than Friday August 6th; hopefully sooner.

The project is being advertised July 28th , August 4th, and August 11th with proposals due August 31st. They then review the proposal, make a recommendation of award to the contractor where it then goes to CAO, etc. for approval and signature (roughly September 1 through November 1st). With an anticipated construction "Notice to Proceed" of November 29th.

Give me a call tomorrow morning if you want; I can fill you in on all the details.

Thanks,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Munoz-Dyer, Carina G.
Sent: Thursday, July 22, 2021 2:44 PM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; Tavarez, Isreal L. <ITavarez@cabq.gov>; Eyerman, Regan V. <reyerman@cabq.gov>
Cc: Harding, Rachel M. <rharding@cabq.gov>
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Hello Chris,

When do you anticipate you will be able to submit the application?

I am asking so that we can plan the turnaround for this request. We are shorthanded at the moment.

Thanks

Carina

CARINA G. MUNOZ-DYER
environmental health supervisor | environmental health department
o 505.768.1948
cabq.gov/environmentalhealth/

The Four-Way Test of the Things We Think, Say or Do:

1. Is it the **TRUTH**?
2. Is it **FAIR** to all concerned?
3. Will it build **GOODWIL**L and **BETTER FRIENDSHIPS**?
4. Will it be **BENEFICIAL** to all concerned?

From: Albrecht, Christopher P.
Sent: Thursday, July 22, 2021 10:00 AM
To: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Eyerman, Regan V. <reyerman@cabq.gov>
Cc: Harding, Rachel M. <rharding@cabq.gov>
Subject: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good morning Isreal and Carina,

I am still working on the permit application for the application to modify Sunport Air Quality Permit 1419M1RV1 for the replacement of emergency generators units #G5, G6, G7, and G8.

Could you please provide a list of Neighborhood Associations to contact for public notice requirements.

Thank you,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Tuesday, August 3, 2021 4:34 PM
To: Pomo, Elizabeth
Cc: Tavarez, Isreal L.; Munoz-Dyer, Carina G.
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc
Attachments: Sunport AQ Alternative Public Notice Protocol (Dec 2014).pdf; CABQ zone map with NA around Sunport (08-03-2021).jpg; Google map with NA 0.5 mile radius Sunport (08-03-2021).jpg

Good afternoon Elizabeth,

Thank you very much for sending me the NA list for public notice. I have reviewed the list of NA and coalitions. For your review and consideration, I have attached the Sunport alternative public notice approach previously approved by the Air Quality Division and maps showing the applicable NA that are within the 0.5 mile radius of the equipment/project location.

The Aviation Department is respectfully requesting the approval to utilize this previously approved alternative and assign the appropriate NA that are effected by the 0.5 mile radius.

Please give me a call if you should have questions,

Sincerely,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Pomo, Elizabeth
Sent: Monday, August 2, 2021 2:54 PM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Harding, Rachel M. <rharding@cabq.gov>
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good afternoon Chris,

Attached is a memo with neighborhood associations within a half-mile radius of 2200 Sunport Blvd SE. Please let me know if you have any questions.

Thank you,

Elizabeth M. Pomo, MPH
environmental health scientist | environmental health department
o 505.768.2638
m 505.239.7094
cabq.gov/environmentalhealth/

From: Albrecht, Christopher P.
Sent: Thursday, July 22, 2021 4:31 PM
To: Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Tavarez, Isreal L. <ITavarez@cabq.gov>; Eyerman, Regan V. <reyerman@cabq.gov>
Cc: Harding, Rachel M. <rharding@cabq.gov>
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good afternoon Carina,

I have worked all day on the application, crunching numbers, etc. My goal is no later than Friday August 6th; hopefully sooner.

The project is being advertised July 28th , August 4th, and August 11th with proposals due August 31st. They then review the proposal, make a recommendation of award to the contractor where it then goes to CAO, etc. for approval and signature (roughly September 1 through November 1st). With an anticipated construction "Notice to Proceed" of November 29th.

Give me a call tomorrow morning if you want; I can fill you in on all the details.

Thanks,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836

Albrecht, Christopher P.

From: Pomo, Elizabeth
Sent: Wednesday, August 4, 2021 12:43 PM
To: Albrecht, Christopher P.
Cc: Tavarez, Isreal L.; Munoz-Dyer, Carina G.
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc
Attachments: PN by Applicant Memo 08042021.docx

Good afternoon Chris,

Attached is a revised memo with neighborhood associations utilizing the Sunport's alternative protocol. Please let me know if you have any questions.

Thank you,

Elizabeth M. Pomo, MPH
environmental health scientist | environmental health department
o 505.768.2638
m 505.239.7094
cabq.gov/environmentalhealth/

From: Albrecht, Christopher P. <CAlbrecht@cabq.gov>
Sent: Tuesday, August 3, 2021 04:34 PM
To: Pomo, Elizabeth <epomo@cabq.gov>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good afternoon Elizabeth,

Thank you very much for sending me the NA list for public notice. I have reviewed the list of NA and coalitions. For your review and consideration, I have attached the Sunport alternative public notice approach previously approved by the Air Quality Division and maps showing the applicable NA that are within the 0.5 mile radius of the equipment/project location.

The Aviation Department is respectfully requesting the approval to utilize this previously approved alternative and assign the appropriate NA that are effected by the 0.5 mile radius.

Please give me a call if you should have questions,

Sincerely,

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Pomo, Elizabeth
Sent: Monday, August 2, 2021 2:54 PM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Harding, Rachel M. <rharding@cabq.gov>
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Good afternoon Chris,

Attached is a memo with neighborhood associations within a half-mile radius of 2200 Sunport Blvd SE. Please let me know if you have any questions.

Thank you,

Elizabeth M. Pomo, MPH
environmental health scientist | environmental health department
o 505.768.2638
m 505.239.7094
cabq.gov/environmentalhealth/

From: Albrecht, Christopher P.
Sent: Thursday, July 22, 2021 4:31 PM
To: Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Tavarez, Isreal L. <ITavarez@cabq.gov>; Eyerman, Regan V. <reyerman@cabq.gov>
Cc: Harding, Rachel M. <rharding@cabq.gov>
Subject: RE: Sunport Air Quality Permit Modification Application 1419M1RV1 - Public Notice list of Neighborhood Assoc

Albuquerque International Sunport
Air Quality Public Notice Protocol
(Effective December 23, 2014)

Subject: **Air Quality Permit authority-to-construct public notification requirements pursuant to 20.11.41 NMAC**

Overview: The City of Albuquerque-Bernalillo County Air Quality Control Board approved 20.11.41 NMAC "Construction Permits" filed with the State of New Mexico Records Center on July 12, 2013 includes new public notice requirements when applying for an air quality construction permit; specifically 20.11.41.13.B "Applicant's public notice requirements".

Pursuant to 20.11.43.13.B, "… If the applicant is applying for a permit or permit modification, then before the applicant submits the application required by Subsection E of 20.11.41.13 NMAC, the applicant shall comply with the public notice requirements of Paragraphs (1) and (2) of Subsection B of 20.11.41.13 NMAC…"

20.11.41.13.B (1) NMAC states:
"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; contact information shall be obtained from the most current records of the city of Albuquerque office of neighborhood coordination and the county of Bernalillo zoning, building and planning department; the public notice shall include all information required by Subsection C of 20.11.41.13 NMAC; the applicant may submit a written request to the department proposing an alternative approach to providing public notice if the proposed source or modification is located at a site with large property boundaries or campus –like facilities; the applicant shall obtain prior written approval from the department before using an alternative approach to providing public notice;" and

20.11.41.13. B (2) states:
"prior to submitting the application, post and maintain a weather-proof sign provided by the department, posted at the more visible of either the proposed or existing facility entrance or, if approved in advance and in writing by the department, at another location on the property that is accessible to the public; … the department may waive the posting requirement and may impose different notification requirements."

Proposed Alternative Public Notice Requirements –Albuquerque International Sunport

1. The City of Albuquerque Aviation Department (Aviation) will satisfy the requirements of 20.11.41.13.B (1) by notifying the recognized neighborhood associations and coalitions which are within ½ mile of the physical location of proposed equipment being permitted.

2. Aviation will satisfy the requirements of 20.11.41.13.B (2) by posting a sign in the Aviation Department Administration Office when permitting equipment located within the terminal building. For equipment not located in the terminal, signs will be posted at the offsite Aviation buildings or facilities that are not located at the terminal building. (i.e. Old Terminal Building, Rental Car Facility, Automated Flight Service Station, Airfield Maintenance Building, etc.)

Timothy M. Keller,
Mayor

Public Participation

List of Neighborhood Associations and Neighborhood Coalitions
MEMORANDUM

To: Chris Albrecht, Environmental Program Manager
From: Elizabeth Pomo, Environmental Health Scientist
Subject: Determination of Neighborhood Associations and Coalitions within 0.5 mile of 2200 Sunport Blvd SE in Bernalillo County, NM
Date: August 4, 2021

DETERMINATION:

On August 4, 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 2200 Sunport Blvd SE in Bernalillo County, NM.

I then used the City of Albuquerque Office (COA) of Neighborhood Coordination's Monthly Master NA List dated July 2021 and the Bernalillo County (BC) Monthly Neighborhood Association July 2021 Excel file to determine the contact information for each NA and NC located within 0.5 mile of 2200 Sunport Blvd SE 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	Patricia Wilson Mandy Warr	info@willsonstudio.com mandy@theremedydayspa.com
Kirtland Community Association	Elizabeth Aikin Kimberly Brown	bakieaikin@comcast.net kande0@yahoo.com
Yale Village Neighborhood Association	Donald Love Kim Love Association Email	donaldlove08@comcast.net klove726@gmail.com yalevillage@comcast.net

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: original August 13, 2021
revised December 28, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport
2200 Sunport Blvd., SE, ABQ NM

Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

Nature of the Business: Air Transportation

Process or Change for which the permit is requested: Replacing the existing four (4) 400 kW natural gas fired emergency generators with four (4) 750 kW diesel fired emergency generators. The current 4 emergency generators are 34 years old and contains older technology that provides less control in how these units can be operated, makes replacement components difficult to find, and lowers the reliability of non-interruptible power within the emergency power system at Sunport. The proposed emergency power system upgrade will result in a more reliable emergency power source for the Sunport.

Preliminary Estimate of the Maximum Quantities of each regulated air contaminant the source will emit:

Initial Construction Permit

	Pounds Per Hour (lbs/hr)	Tons Per Year (tpy)
CO	41.05	19.48
NOx	96.82	36.80
NOx + NMHC	42.91	10.73
SO2	3.49	0.96
VOC	12.98	4.07
PM10	4.69	2.33
PM2.5	4.69	2.33
VHAP	-	-

Net Changes In Emissions

(Only for permit Modifications or Technical Revisions)

	lbs/hr	tpy	Estimated Total TPY
CO	+7.06	+5.18	19.48
NOx	-79.69	+10.75	36.80
NOx + NMHC	+42.33	+10.67	10.73
SO2	+0.64	+0.74	0.96
VOC	+5.18	+2.64	4.07
PM10	+1.04	+0.93	2.33
PM2.5	+1.04	+0.93	2.33
VHAP	-	-	-

Maximum Operating Schedule: 24 hours/day; 7 days/week; 365 days/year
Normal Operating Schedule: 24 hours/day; 7 days/week; 365 days/year

Current Contact Information for Comments and Inquires:

Name:	Chris Albrecht, Aviation Environmental Program Manager
Address:	2200 Sunport Blvd., SE, ABQ, NM
Phone Number:	(505) 244-7836
E-Mail Address:	calbrecht@cabq.gov

If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager
Stationary Source Permitting
Albuquerque Environmental Health Department
Air Quality Program
PO Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, if required, the Department's notice will be published in the legal section of the Albuquerque Journal and mailed to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Tuesday, February 15, 2022 2:38 PM
To: 'info@willsonstudio.com'; 'mandy@theremedydayspa.com'
Cc: Isreal Tavarez (itavarez@cabq.gov); Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov); Puckett, Paul S.; Pomo, Elizabeth
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent
Attachments: ABQ Sunport Air Quality Permit MOD REV2 NOI Construct (02-15-2022).pdf

Tracking:

Recipient	Delivery	Read
'info@willsonstudio.com'		
'mandy@theremedydayspa.com'		
Isreal Tavarez (itavarez@cabq.gov)	Delivered: 2/15/2022 2:38 PM	
Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov)	Delivered: 2/15/2022 2:38 PM	Read: 2/15/2022 2:51 PM
Puckett, Paul S.	Delivered: 2/15/2022 2:38 PM	
Pomo, Elizabeth	Delivered: 2/15/2022 2:38 PM	

Dear District 6 Coalition of Neighborhood Associations,

Please note that this is only a revision to the previously sent notice of intent to construct. Please see attached.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Wednesday, December 22, 2021 11:56 AM
To: 'info@willsonstudio.com' <info@willsonstudio.com>; 'mandy@theremedydayspa.com' <mandy@theremedydayspa.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear District 6 Coalition of Neighborhood Associations,

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 ***revised*** 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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Friday, September 24, 2021 8:52 AM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'info@willsonstudio.com' <info@willsonstudio.com>; 'mandy@theremedydayspa.com' <mandy@theremedydayspa.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

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Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:21 PM
To: 'info@willsonstudio.com' <info@willsonstudio.com>; 'mandy@theremedydayspa.com' <mandy@theremedydayspa.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear District 6 Coalition of Neighborhood Associations,

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: August 13, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport
2200 Sunport Blvd., SE, ABQ NM

Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

Nature of the Business: Air Transportation

Process or Change for which the permit is requested: Replacing the existing four (4) 400 kW natural gas fired emergency generators with four (4) 750 kW diesel fired emergency generators. The current 4 emergency generators are 34 years old and contains older technology that provides less control in how these units can be operated, makes replacement components difficult to find, and lowers the reliability of non-interruptible power within the emergency power system at Sunport. The proposed emergency power system upgrade will result in a more reliable emergency power source for the Sunport

Preliminary Estimate of the Maximum Quantities of each regulated air contaminant the source will emit:

Net Changes In Emissions

	Pounds Per Hour (lbs/hr)	Tons Per Year (tpy)	Estimated Total TPY
CO	+7.08	+5.19	19.49
CO	33.99	14.30	
NOx	-114.10	+2.15	28.20
NOx	176.51	26.05	
NOx + NOx	+42.33	+10.67	10.73
NMHC	0.58	0.06	
NMHC	+0.03	+0.59	0.81
SO2	3.85	0.22	
VOC	-3.32	+0.52	1.95
VOC	7.80	1.43	
PM10	+1.04	+0.91	2.31
PM10	3.65	1.40	
PM2.5	+1.04	+0.91	2.31
PM2.5	3.65	1.40	
VHAP	-	-	-
VHAP	-	-	

Maximum Operating Schedule: 24 hours/day; 7 days/week; 365 days/year
Normal Operating Schedule: 24 hours/day; 7 days/week; 365 days/year

Current Contact Information for Comments and Inquires:

Name: Chris Albrecht, Aviation Environmental Program Manager
Address: 2200 Sunport Blvd., SE, ABQ, NM
Phone Number: (505) 244-7836
E-Mail Address: calbrecht@cabq.gov

If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager, Stationary Source Permitting
Albuquerque Environmental Health Department
Air Quality Program
PO Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, if required, the Department's notice will be published in the legal section of the Albuquerque Journal and mailed to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Tuesday, February 15, 2022 2:37 PM
To: 'bakieaikin@comcast.net'; 'kande0@yahoo.com'
Cc: Tavarez, Isreal L.; Munoz-Dyer, Carina G.; Puckett, Paul S.; Pomo, Elizabeth
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent
Attachments: ABQ Sunport Air Quality Permit MOD REV2 NOI Construct (02-15-2022).pdf

Tracking:

Recipient	Read
'bakieaikin@comcast.net'	
'kande0@yahoo.com'	
Tavarez, Isreal L.	
Munoz-Dyer, Carina G.	
Puckett, Paul S.	
Pomo, Elizabeth	Read: 2/15/2022 2:37 PM

Dear Kirtland Neighborhood Association,

Please note that this is only a revision to the previously sent notice of intent to construct. Please see attached.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Wednesday, December 22, 2021 12:00 PM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'bakieaikin@comcast.net' <bakieaikin@comcast.net>; 'kande0@yahoo.com' <kande0@yahoo.com>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Kirtland Neighborhood Association,

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 ***revised*** 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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Friday, September 24, 2021 8:51 AM
To: 'bakieaikin@comcast.net' <bakieaikin@comcast.net>; 'kande0@yahoo.com' <kande0@yahoo.com>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

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Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:18 PM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'bakieaikin@comcast.net' <bakieaikin@comcast.net>; 'kande0@yahoo.com' <kande0@yahoo.com>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

My apologies, Here is the attachment.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:17 PM
To: 'bakieaikin@comcast.net' <bakieaikin@comcast.net>; 'kande0@yahoo.com' <kande0@yahoo.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

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Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: August 13, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport

Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

Nature of the Business: Air Transportation

Process or Change for which the permit is requested: Replacing the existing four (4) 400 kW natural gas fired emergency generators with four (4) 750 kW diesel fired emergency generators. The current 4 emergency generators are 34 years old and contains older technology that provides less control in how these units can be operated, makes replacement components difficult to find, and lowers the reliability of non-interruptible power within the emergency power system at Sunport. The proposed emergency power system upgrade will result in a more reliable emergency power source for the Sunport

Preliminary Estimate of the Maximum Quantities of each regulated air contaminant the source will emit:

Net Changes In Emissions

	Pounds Per Hour (lbs/hr)	Tons Per Year (tpy)	Estimated Total TPY
CO	+7.08	+5.19	19.49
CO	33.99	14.30	
NOx	-114.10	+2.15	28.20
NOx	176.51	26.05	
NOx + NMHC	+42.33	+10.67	10.73
NMHC	0.58	0.06	
SO2	+0.03	+0.59	0.81
SO2	2.85	0.22	
VOC	-3.32	+0.52	1.95
VOC	7.80	1.43	
PM10	+1.04	+0.91	2.31
PM10	3.65	1.40	
PM2.5	+1.04	+0.91	2.31
PM2.5	3.65	1.40	
VHAP	-	-	-
VHAP	-	-	

Maximum Operating Schedule: 24 hours/day; 7 days/week; 365 days/year
Normal Operating Schedule: 24 hours/day; 7 days/week; 365 days/year

Current Contact Information for Comments and Inquires:

Name: Chris Albrecht, Aviation Environmental Program Manager
Address: 2200 Sunport Blvd., SE, ABQ, NM
Phone Number: (505) 244-7836
E-Mail Address: calbrecht@cabq.gov

If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager, Stationary Source Permitting
Albuquerque Environmental Health Department
Air Quality Program
PO Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, if required, the Department's notice will be published in the legal section of the Albuquerque Journal and mailed to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Tuesday, February 15, 2022 2:36 PM
To: 'donaldlove08@comcast.net'; 'klove726@gmail.com'; 'yalevillage@comcast.net'
Cc: Isreal Tavarez (itavarez@cabq.gov); Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov); Pomo, Elizabeth; Puckett, Paul S.
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Revised Notice of Intent to Construct
Attachments: ABQ Sunport Air Quality Permit MOD REV2 NOI Construct (02-15-2022).pdf

Tracking:

Recipient	Delivery	Read
'donaldlove08@comcast.net'		
'klove726@gmail.com'		
'yalevillage@comcast.net'		
Isreal Tavarez (itavarez@cabq.gov)	Delivered: 2/15/2022 2:36 PM	
Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov)	Delivered: 2/15/2022 2:36 PM	
Pomo, Elizabeth	Delivered: 2/15/2022 2:36 PM	Read: 2/15/2022 2:37 PM
Puckett, Paul S.	Delivered: 2/15/2022 2:36 PM	

Dear Yale Village Neighborhood Association,

Please note that this is only a revision to the previously sent notice of intent to construct. Please see attached.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Wednesday, December 22, 2021 12:03 PM
To: donaldlove08@comcast.net; klove726@gmail.com; yalevillage@comcast.net
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Yale Village Neighborhood Association,

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 ***revised*** 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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Friday, September 24, 2021 8:49 AM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'donaldlove08@comcast.net' <donaldlove08@comcast.net>; 'klove726@gmail.com' <klove726@gmail.com>; 'yalevillage@comcast.net' <yalevillage@comcast.net>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Yale Village Neighborhood Association,

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.

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Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:13 PM
To: 'donaldlove08@comcast.net' <donaldlove08@comcast.net>; 'klove726@gmail.com' <klove726@gmail.com>; 'yalevillage@comcast.net' <yalevillage@comcast.net>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>
Subject: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Yale Village Neighborhood Association,

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: August 13, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport
2200 Sunport Blvd., SE, ABQ NM

Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

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PM2.5	3.65	1.40	
VHAP	-	-	-
VHAP	-	-	

Maximum Operating Schedule: 24 hours/day; 7 days/week; 365 days/year
Normal Operating Schedule: 24 hours/day; 7 days/week; 365 days/year

Current Contact Information for Comments and Inquires:

Name:	Chris Albrecht, Aviation Environmental Program Manager
Address:	2200 Sunport Blvd., SE, ABQ, NM
Phone Number:	(505) 244-7836
E-Mail Address:	calbrecht@cabq.gov

If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager, Stationary Source Permitting
Albuquerque Environmental Health Department
Air Quality Program
PO Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, if required, the Department's notice will be published in the legal section of the Albuquerque Journal and mailed to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Wednesday, December 22, 2021 11:56 AM
To: 'info@willsonstudio.com'; 'mandy@theremedydayspa.com'
Cc: Isreal Tavarez (itavarez@cabq.gov); Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov); Puckett, Paul S.; Pomo, Elizabeth
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent
Attachments: ABQ Sunport Air Quality Permit MOD REV NOI Construct (12-22-2021).pdf

Tracking:

Recipient	Delivery
'info@willsonstudio.com'	
'mandy@theremedydayspa.com'	
Isreal Tavarez (itavarez@cabq.gov)	Delivered: 12/22/2021 11:56 AM
Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov)	Delivered: 12/22/2021 11:56 AM
Puckett, Paul S.	Delivered: 12/22/2021 11:56 AM
Pomo, Elizabeth	Delivered: 12/22/2021 11:56 AM

Dear District 6 Coalition of Neighborhood Associations,

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 ***revised*** 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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Friday, September 24, 2021 8:52 AM

To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'info@willsonstudio.com' <info@willsonstudio.com>; 'mandy@theremedydayspa.com' <mandy@theremedydayspa.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear District 6 Coalition of Neighborhood Associations,

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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:21 PM
To: 'info@willsonstudio.com' <info@willsonstudio.com>; 'mandy@theremedydayspa.com' <mandy@theremedydayspa.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear District 6 Coalition of Neighborhood Associations,

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: August 13, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport
2200 Sunport Blvd., SE, ABQ NM

Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

Nature of the Business: Air Transportation

Process or Change for which the permit is requested: Replacing the existing four (4) 400 kW natural gas fired emergency generators with four (4) 750 kW diesel fired emergency generators. The current 4 emergency generators are 34 years old and contains older technology that provides less control in how these units can be operated, makes replacement components difficult to find, and lowers the reliability of non-interruptible power within the emergency power system at Sunport. The proposed emergency power system upgrade will result in a more reliable emergency power source for the Sunport

Preliminary Estimate of the Maximum Quantities of each regulated air contaminant the source will emit:

Net Changes In Emissions

	Pounds Per Hour (lbs/hr)	Tons Per Year (tpy)	Estimated Total TPY
CO	+7.08	+5.19	19.49
CO	-33.99	-14.30	28.20
NOx	-114.10	+2.15	
NOx	176.51	26.05	
NOx + NMHC	+42.33	+10.67	10.73
NMHC	0.58	0.06	
SO2	+0.03	+0.59	0.81
SO2	-2.85	-0.22	1.95
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PM2.5	+1.04	+0.91	
PM2.5	3.65	1.40	-
VHAP	-	-	
VHAP	-	-	

Maximum Operating Schedule: 24 hours/day; 7 days/week; 365 days/year
Normal Operating Schedule: 24 hours/day; 7 days/week; 365 days/year

Current Contact Information for Comments and Inquires:

Name: Chris Albrecht, Aviation Environmental Program Manager
Address: 2200 Sunport Blvd., SE, ABQ, NM
Phone Number: (505) 244-7836
E-Mail Address: calbrecht@cabq.gov

If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager, Stationary Source Permitting
Albuquerque Environmental Health Department
Air Quality Program

PO Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, if required, the Department's notice will be published in the legal section of the Albuquerque Journal and mailed to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Friday, September 24, 2021 8:51 AM
To: 'bakieaikin@comcast.net'; 'kande0@yahoo.com'
Cc: Tavarez, Isreal L.; Munoz-Dyer, Carina G.; Puckett, Paul S.; Pomo, Elizabeth
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent
Attachments: Sunport Notice of Intent REV (09-22-2021).pdf

Tracking:

Recipient	Delivery
'bakieaikin@comcast.net'	
'kande0@yahoo.com'	
Tavarez, Isreal L.	Delivered: 9/24/2021 8:51 AM
Munoz-Dyer, Carina G.	Delivered: 9/24/2021 8:51 AM
Puckett, Paul S.	Delivered: 9/24/2021 8:51 AM
Pomo, Elizabeth	Delivered: 9/24/2021 8:51 AM

Dear Kirtland Neighborhood Association,

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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:18 PM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'bakieaikin@comcast.net' <bakieaikin@comcast.net>;

'kande0@yahoo.com' <kande0@yahoo.com>
Cc: Tavarez, Isreal L. <ITavarez@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

My apologies, Here is the attachment.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:17 PM
To: 'bakieaikin@comcast.net' <bakieaikin@comcast.net>; 'kande0@yahoo.com' <kande0@yahoo.com>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>
Subject: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Kirtland Neighborhood Association,

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: August 13, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport
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Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

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VHAP	-	-	-
VHAP	-	-	

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Current Contact Information for Comments and Inquires:

Name: Chris Albrecht, Aviation Environmental Program Manager
Address: 2200 Sunport Blvd., SE, ABQ, NM
Phone Number: (505) 244-7836
E-Mail Address: calbrecht@cabq.gov

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Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Wednesday, December 22, 2021 12:03 PM
To: 'donaldlove08@comcast.net'; 'klove726@gmail.com'; 'yalevillage@comcast.net'
Cc: Isreal Tavarez (itavarez@cabq.gov); Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov); Pomo, Elizabeth; Puckett, Paul S.
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent
Attachments: ABQ Sunport Air Quality Permit MOD REV NOI Construct (12-22-2021).pdf

Dear Yale Village Neighborhood Association,

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 ***revised*** 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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Friday, September 24, 2021 8:49 AM
To: Albrecht, Christopher P. <CAlbrecht@cabq.gov>; 'donaldlove08@comcast.net' <donaldlove08@comcast.net>; 'klove726@gmail.com' <klove726@gmail.com>; 'yalevillage@comcast.net' <yalevillage@comcast.net>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>
Subject: RE: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Yale Village Neighborhood Association,

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.

Attached is the revised notice of intent for the emergency generator replacement project.

Sincerely,

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

From: Albrecht, Christopher P.
Sent: Tuesday, August 10, 2021 1:13 PM
To: 'donaldlove08@comcast.net' <donaldlove08@comcast.net>; 'klove726@gmail.com' <klove726@gmail.com>; 'yalevillage@comcast.net' <yalevillage@comcast.net>
Cc: Isreal Tavarez (itavarez@cabq.gov) <itavarez@cabq.gov>; Carina G. Munoz-Dyer (cmunoz-dyer@cabq.gov) <cmunoz-dyer@cabq.gov>; Pomo, Elizabeth <epomo@cabq.gov>; Puckett, Paul S. <ppuckett@cabq.gov>
Subject: Albuquerque International Sunport Air Quality Permit #1419-M1-RV1 - Modification Notice of Intent

Dear Yale Village Neighborhood Association,

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required 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 with-in one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located* if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's Name and Address: Albuquerque International Sunport

Owner / Operator's Name and Address: City of Albuquerque Aviation Department
2200 Sunport Blvd. SE, ABQ NM

Actual or Estimated Date the Application will be submitted to the Department: August 13, 2021

Exact Location of the Source or Proposed Source: Albuquerque International Sunport
2200 Sunport Blvd., SE, ABQ NM

Description of the Source: The Albuquerque International Sunport is a medium hub airport. The current air quality permit contains fourteen (14) natural gas fired boilers and hot water heaters for comfort heat and domestic hot water, one natural gas fired process boiler associated with the sterilizing autoclave, and eleven (11) emergency generators that provide back-up power when there is an interruption in utility supplied power.

Nature of the Business: Air Transportation

Process or Change for which the permit is requested: Replacing the existing four (4) 400 kW natural gas fired emergency generators with four (4) 750 kW diesel fired emergency generators. The current 4 emergency generators are 34 years old and contains older technology that provides less control in how these units can be operated, makes replacement components difficult to find, and lowers the reliability of non-interruptible power within the emergency power system at Sunport. The proposed emergency power system upgrade will result in a more reliable emergency power source for the Sunport

Preliminary Estimate of the Maximum Quantities of each regulated air contaminant the source will emit:

Net Changes In Emissions

	Pounds Per Hour (lbs/hr)	Tons Per Year (tpy)	Estimated Total TPY
CO	+7.08	+5.19	19.49
CO	33.99	14.30	
NOx	-114.10	+2.15	28.20
NOx	176.51	26.05	
NOx + NMHC	+42.33	+10.67	10.73
NMHC	0.58	0.06	
SO2	+0.03	+0.59	0.81
SO2	3.85	0.22	
VOC	-3.32	+0.52	1.95
VOC	7.80	1.43	
PM10	+1.04	+0.91	2.31
PM10	3.65	1.40	
PM2.5	+1.04	+0.91	2.31
PM2.5	3.65	1.40	
VHAP	-	-	-
VHAP	-	-	

Maximum Operating Schedule: 24 hours/day; 7 days/week; 365 days/year
Normal Operating Schedule: 24 hours/day; 7 days/week; 365 days/year

Current Contact Information for Comments and Inquires:

Name:	Chris Albrecht, Aviation Environmental Program Manager
Address:	2200 Sunport Blvd., SE, ABQ, NM
Phone Number:	(505) 244-7836
E-Mail Address:	calbrecht@cabq.gov

If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager, Stationary Source Permitting
Albuquerque Environmental Health Department
Air Quality Program
PO Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and

its air quality impacts, if required, the Department's notice will be published in the legal section of the Albuquerque Journal and mailed to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

Appendix F

Permit Application Fee Checklist

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Review Fee Instructions

All source registration, authority-to-construct, and operating permit applications for stationary or portable sources shall be charged an application review fee according to the fee schedule in 20.11.2 NMAC. These filing fees are required for both new construction, reconstruction, and permit modifications applications. Qualified small businesses as defined in 20.11.2 NMAC may be eligible to pay one-half of the application review fees and 100% of all applicable federal program review fees.

Please fill out the permit application review fee checklist and submit with a check or money order payable to the "City of Albuquerque Fund 242" and either:

1. be delivered in person to the Albuquerque Environmental Health Department, 3rd floor, Suite 3023 or Suite 3027, Albuquerque-Bernalillo County Government Center, south building, One Civic Plaza NW, Albuquerque, NM or,

2. mailed to Attn: Air Quality Program, Albuquerque Environmental Health Department, P.O. Box 1293, Albuquerque, NM 87103.

The department will provide a receipt of payment to the applicant. The person delivering or filing a submittal shall attach a copy of the receipt of payment to the submittal as proof of payment Application review fees shall not be refunded without the written approval of the manager. If a refund is requested, a reasonable professional service fee to cover the costs of staff time involved in processing such requests shall be assessed. Please refer to 20.11.2 NMAC (effective January 10, 2011) for more detail concerning the "Fees" regulation as this checklist does not relieve the applicant from any applicable requirement of the regulation.

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Review Fee Checklist Effective January 1 - December 31, 2021

Please completely fill out the information in each section. Incompleteness of this checklist may result in the Albuquerque Environmental Health Department not accepting the application review fees. If you should have any questions concerning this checklist, please call 768-1972.

I. COMPANY INFORMATION:

Company Name	City of Albuquerque Aviation Department		
Company Address	2200 Sunport Blvd., S.E.		
Facility Name	Albuquerque International Sunport		
Facility Address	2200 Sunport Blvd., S.E.		
Contact Person	Chris Albrecht, Environmental Program Manager		
Contact Person Phone Number	Office: 505-244-7836 Mobile: 505-350-0090 Email: calbrecht@cabq.gov		
Are these application review fees for an existing permitted source located within the City of Albuquerque or Bernalillo County?	☑ **Yes**	☐ **No**	
If yes, what is the permit number associated with this modification?	**Permit #** 1419-M1-RV1		
Is this application review fee for a Qualified Small Business as defined in 20.11.2 NMAC? (See Definition of Qualified Small Business on Page 4)	☐ **Yes**	☑ **No**	

II. STATIONARY SOURCE APPLICATION REVIEW FEES:

If the application is for a new stationary source facility, please check all that apply. If this application is for a modification to an existing permit please see Section III.

Check All That Apply	Stationary Sources	Review Fee	Program Element
	Air Quality Notifications		
☐	AQN New Application	$581.00	2801
☐	AQN Technical Amendment	$318.00	2802
☐	AQN Transfer of a Prior Authorization	$318.00	2803
☑	*Not Applicable*	*See Sections Below*	
	Stationary Source Review Fees (Not Based on Proposed Allowable Emission Rate)		
☐	Source Registration required by 20.11.40 NMAC	$ 592.00	2401
☐	A Stationary Source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	$ 1,185.00	2301
☑	*Not Applicable*	*See Sections Below*	
	Stationary Source Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)		
☐	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	$ 889.00	2302
☐	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	$1,777.00	2303
☐	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	$3,554.00	2304
☐	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	$5,331.00	2305
☐	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	$7,108.00	2306
☐	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	$8,885.00	2307
☑	*Not Applicable*	*See Section Above*	

Federal Program Review Fees (In addition to the Stationary Source Application Review Fees above)			
☑	40 CFR 60 - "New Source Performance Standards" (NSPS)	$1,185.00	2308
☐	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	$1,185.00	2309
☐	40 CFR 63 - (NESHAPs) Promulgated Standards	$1,185.00	2310
☐	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	$11,847.00	2311
☐	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	$5,924.00	2312
☐	20.11.60 NMAC, Non-Attainment Area Permit	$5,924.00	2313
☐	*Not Applicable*	*Not Applicable*	

III. MODIFICATION TO EXISTING PERMIT APPLICATION REVIEW FEES:

If the permit application is for a modification to an existing permit, please check all that apply. If this application is for a new stationary source facility, please see Section II.

Check All That Apply	Modifications	Review Fee	Program Element
Modification Application Review Fees (Not Based on Proposed Allowable Emission Rate)			
☑	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	$ 1,185.00	2321
☐	*Not Applicable*	*See Sections Below*	
Modification Application Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
☐	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	$889.00	2322
☐	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	$1,777.00	2323
☐	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	$3,554.00	2324
☐	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	$5,331.00	2325
☐	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	$7,108.00	2326
☐	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	$8,885.00	2327
☑	*Not Applicable*	*See Section Above*	
Major Modifications Review Fees (In addition to the Modification Application Review Fees above)			
☐	20.11.60 NMAC, Permitting in Non-Attainment Areas	$5,924.00	2333
☐	20.11.61 NMAC, Prevention of Significant Deterioration	$5,924.00	2334
☑	*Not Applicable*	*Not Applicable*	
Federal Program Review Fees (This section applies only if a Federal Program Review is triggered by the proposed modification) (These fees are in addition to the Modification and Major Modification Application Review Fees above)			
☐	40 CFR 60 - "New Source Performance Standards" (NSPS)	$1,185.00	2328
☐	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	$1,185.00	2329
☐	40 CFR 63 - (NESHAPs) Promulgated Standards	$1,185.00	2330
☐	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	$11,847.00	2331
☐	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	$5,924.00	2332
☐	20.11.60 NMAC, Non-Attainment Area Permit	$5,924.00	2333
☑	*Not Applicable*	*Not Applicable*	

IV. ADMINISTRATIVE AND TECHNICAL REVISION APPLICATION REVIEW FEES:

If the permit application is for an administrative or technical revision of an existing permit issued pursuant to 20.11.41 NMAC, please check one that applies.

Check One	Revision Type	Review Fee	Program Element
☐	Administrative Revisions	$ 250.00	2340
☐	Technical Revisions	$ 500.00	2341
☑	*Not Applicable*	*See Sections II, III or V*	

V. PORTABLE STATIONARY SOURCE RELOCATION FEES:

If the permit application is for a portable stationary source relocation of an existing permit, please check one that applies.

Check One	Portable Stationary Source Relocation Type	Review Fee	Program Element
☐	No New Air Dispersion Modeling Required	$ 500.00	2501
☐	New Air Dispersion Modeling Required	$ 750.00	2502
☑	*Not Applicable*	*See Sections II, III or V*	

VI. Please submit a check or money order in the amount shown for the total application review fee.

Section Totals	Review Fee Amount
Section II Total	$ 1,185.00
Section III Total	$ 1,185.00
Section IV Total	$ 0.00
Section V Total	$ 0.00
Total Application Review Fee	$ 2,370.00

I, the undersigned, a responsible official of the applicant company, certify that to the best of my knowledge, the information stated on this checklist, give a true and complete representation of the permit application review fees which are being submitted. I also understand that an incorrect submittal of permit application reviews may cause an incompleteness determination of the submitted permit application and that the balance of the appropriate permit application review fees shall be paid in full prior to further processing of the application.

Signed this 6th **day of** January **20** 22

Richard G. McCurley — **Print Name**

Interim Director of Aviation — **Print Title**

Signature

Definition of Qualified Small Business as defined in 20.11.2 NMAC:
"Qualified small business" means a business that meets all of the following requirements:

(1) a business that has 100 or fewer employees;
(2) a small business concern as defined by the federal Small Business Act;
(3) a source that emits less than 50 tons per year of any individual regulated air pollutant, or less than 75 tons per year of all regulated air pollutants combined; and
(4) a source that is not a major source or major stationary source.

Note: Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the application review fees. The application review fees established in Subsection A through D of 20.11.2.18 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately-preceding year. Application review fee adjustments equal to or greater than fifty cents ($0.50) shall be rounded up to the next highest whole dollar. Application review fee adjustments totaling less than fifty cents ($0.50) shall be rounded down to the next lowest whole dollar. The department shall post the application review fees on the city of Albuquerque environmental health department air quality program website.

Appendix G

Authority- to-Construct Permit #1419-M7-RV1

AIR QUALITY CONSTRUCTION PERMIT #1419-M7-RV1
FACILITY CDS #NM/001/00056
Facility ID: FA0003361; Record ID: PR0007836

Issued to: City of Albuquerque Aviation Department
2200 Sunport Blvd S.E.
Albuquerque, New Mexico 87106

Certified Mail # 7010 3090 0001 4486 9181
Return Receipt Requested

Responsible Official: Aviation Director

Pursuant to the New Mexico Air Quality Control Act, Chapter 74, Article 2 New Mexico Statutes Annotated 1978 (as amended); the Joint Air Quality Control Board Ordinance, 9-5-1 to 9-5-99 ROA 1994; the Bernalillo County Joint Air Quality Control Board Ordinance, Bernalillo County Ordinance 94-5; the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB) Regulation Title 20, New Mexico Administrative Code (20 NMAC), Chapter 11, Part 40 (20.11.40 NMAC), Air Contaminant Source Registration; and A/BCAQCB Regulation Title 20, NMAC, Chapter 11, Part 41 (20.11.41 NMAC), Construction Permit; **City of Albuquerque, Aviation Department ("Company" or "Permittee")** is hereby issued this **CONSTRUCTION PERMIT** and authorized to operate the following equipment at:

Facility/Location	Facility Process Description	SIC	NAICS
Albuquerque International Sunport 2200 Sunport Blvd., S.E. Albuquerque, New Mexico 87106 UTMN: 3879659 UTME: 352533	Medium-Hub Airport Eleven (11) Reciprocating Internal Combustion Engines / Generators (5 Diesel-Fired and 6 Natural Gas-Fired) and five (5) natural gas fired boilers.	4512	481111 481112

This **CONSTRUCT PERMIT** 1419-M7-RV1 has been issued based on the review of the applications received by the Albuquerque Environmental Health Department (Department), Air Quality Program (Program) on January 28, 2016 and on the National Ambient Air Quality Standards, New Mexico Ambient Air Quality Standards, and Air Quality Control Regulations for Albuquerque/Bernalillo County, as amended. As these standards and regulations are updated or amended, the applicable changes will be incorporated into permit number 1419-M7-RV1 and will apply to the Facility. This permit supersedes all portions of Air Quality Permit Number 1419-M7 issued on April 20, 2015.

Issued on the 14th day of June, 2016

Isreal Tavarez, Environmental Health Manager
Permitting Division
Air Quality Program
Environmental Health Department
City of Albuquerque

I. **CONDITIONS**--Conditions have been imposed in this permit to assure continued compliance. 20.11.41.19.D NMAC, states that any term or condition imposed by the Program on a permit or permit modification is enforceable to the same extent as a regulation of the Board. Pursuant to 20.11.41 NMAC, the facility is subject to the following conditions:

1. **Construction and Operation**: Compliance will be based on inspections of the facility, reviews of production records, submission of appropriate permit applications for modification, and timely notification to the Department regarding equipment substitutions and relocations.

   a) This permit modification authorizes the following:

      i. Lowers the permitted power output of the natural gas fired internal combustion engine (Unit # G3) located in and to provide power to the newly built Snow Barn Complex from 200 hp to 133 hp.

      ii. Raise the permitted heating value to the natural gas fired boiler located in the Snow Barn Complex that is used to support the autoclave sterilizer from 318,000 Btu/hr to 398,000 Btu/hr.

      iii. Omit eight (8) natural gas fired boilers each with a heating value rated under 5,000,000 Btu/hr and each used solely for the heating of buildings for personal comfort and/or used for producing hot water for personal use pursuant to 20.11.41.2.F(3).

Process Equipment Table

Unit No.	Description	Manufacturer	Model No.	Serial No.	Date of Mfg.	Date of Installation	Rated Capacity/ Process Rate	Is Unit Subject to NSPS
G1	Reciprocating Internal Combustion Engine (RICE) /Generator (Diesel Fired) South Vault	Engine: Cummins Generator: Onan	Engine: LTA-10G1 Generator: 250DFAC	Engine: C960600444 Generator: 34812431	2/96	1996	380 hp	No
G2	RICE /Generator (Diesel Fired) AFSS Building	Engine: Detroit Diesel Generator: Kohler	Engine: 10637305 Generator: 200ROZF	Engine: 106A047818 Generator: 386075	10/92	11/2001	330 hp	No
G3	RICE /Generator (Natural Gas Fired) Snow Barn	Engine: Ford Generator: Generac	Engine: FGNXB08.92C1 Generator: SG0100GG189	Engine: 600012975 Generator: SG0100GG189	11/ 31/ 2016	01/12/2016	133 hp	Yes
G4	RICE /Generator (Diesel Fired) North Vault	Engine: Cummins Generator: Onan	Engine: LTA-10G1 Generator: 250DFAC	Engine: 34762840 Generator: B950568781	6/12/2015	01/12/2016	380 hp	No
G5	RICE /Generator (Natural Gas Fired) Power Center 2	Engine: Caterpillar Generator: Lima	Engine: G398LE Generator: Class F	Engine: 073B02090 Generator: AB8878CK	10/1987	10/1987	700 hp	Yes
G6	RICE /Generator (Natural Gas Fired) Power Center 2	Engine: Caterpillar Generator: Lima	Engine: G398LE Generator: Class F	Engine: 073B02091 Generator: AB901194DD	10/1987	10/1987	700 hp	Yes
G7	RICE /Generator (Natural Gas Fired) Power Center 5	Engine: Caterpillar Generator: Lima	Engine: G398LE Generator: Class F	Engine: 073B02088 Generator: AB90195DD	10/1987	10/1987	700 hp	Yes
G8	RICE /Generator (Natural Gas Fired) Power Center 5	Engine: Caterpillar Generator: Lima	Engine: G398LE Generator: Class F	Engine: 073B02089 Generator: AB0155DD	10/1987	10/1987	700 hp	Yes
G9	RICE /Generator (Diesel Fired) Parking Structure	Engine: Caterpillar Generator: Caterpillar	Engine:C15 ATAAC Generator: KC6	Engine: JJF00833 Generator: G6B20633	2013	05/23/2013	779 hp	Yes

Unit No.	Description	Manufacturer	Model No.	Serial No.	Date of Mfg.	Date of Installation	Rated Capacity/ Process Rate	Is Unit Subject to NSPS
G10	RICE /Generator (Natural Gas Fired) Parking Administration	Engine: Onan Generator: Onan	Engine: CSG-6491-6005-A Generator: 30EKL32948R	Engine: 18580 Generator: J880172390	Unknown	1989	350 hp	No
G11	RICE /Generator (Diesel Fired) Rental Car Facility	Engine: IVECO/FPT Generator: Generac	Engine: F4GE9455B*J Generator: SD035 / SD0035GG174.5D18HPSY	Engine: TBD Generator: TBD	TBD	TBD	35 kW 79 hp	Yes
B2	Boiler (Natural Gas Fired) Central Utility Plant	Unilux	ZF 1200W	A2184	11/2010	11/2010	12,000,000 Btu/hr	Yes
B3	Boiler (Natural Gas Fired) Central Utility Plant	AERCO	BMK6000	N-15-0319	1/2015	9/19/2015	6,000,000 Btu/hr	No
B4	Boiler (Natural Gas Fired) Central Utility Plant	AERCO	BMK6000	N-15-0318	1/2015	9/19/2015	6,000,000 Btu/hr	No
B12	Boiler (Natural Gas Fired) Central Utility Plant	Unilux	ZF 1200W	A1133	2007	2007	12,000,000 Btu/hr	Yes
B13	Boiler (Natural Gas Fired for Autoclave) Snow Barn	Parker Boiler Company	103-9.5	62401	2015	01/12/2016	398,000 Btu/hr	No

- TBD – To Be Determined

Process Equipment Table – Exempt Boilers – each of the following natural gas boilers are all used for heating of personal space or for heating of water for personal use and each meets the requirements of 20.11.41.2(F). These boilers are listed for only for informational purposes.

Unit No.	Description	Manufacturer	Model No.	Serial No.	Date of Mfg.	Date of Installation	Rated Capacity/ Process Rate
B1	Boiler (Natural Gas Fired)	RBI	SB0200	40642037	2007	4/2007	200,000 Btu/hr
B5A	Boiler (Natural Gas Fired)	Raypak	WH3-0502B	810289409	2008	2/2009	500,000 Btu/hr
B5B	Boiler (Natural Gas Fired)	Raypak	WH3-0502B	810289410	2008	2/2009	500,000 Btu/hr
B6	Boiler (Natural Gas Fired)	Raypak	WH3-652B	907298747	2008	9/29/2009	650,000 Btu/hr
B7A	Boiler (Natural Gas Fired)	Raypack	WH3-502B	706267307	2007	8/2007	500,000 Btu/hr
B7B	Boiler (Natural Gas Fired)	Raypack	WH3-502B	706267306	2007	8/2007	500,000 Btu/hr
B8	Boiler (Natural Gas Fired)	Lochinvar	KBN400	3415101930310	2015	01/15/2016	399,000 Btu/hr
B9	Boiler (Natural Gas Fired)	Lochinvar	KBN400	3415101930309	2015	01/15/2016	399,000 Btu/hr
B10	Boiler (Natural Gas Fired)	Kewanee	M 155-G	23223	Unknown	1987	1,550,000 Btu/hr
B11	Boiler (Natural Gas Fired)	RBI	HB1260E-2-NG	10988896	Unknown	1987	872,000 Btu/hr

b) This facility shall be constructed and operated in accordance with information provided on the permit application dated January 27, 2016 and received January 28, 2016 and in accordance with the legal authority specified above and the conditions of this permit.

c) All equipment shall be maintained as per manufacturer specifications to ensure the emissions remain at or below the permitted levels.

d) The Reciprocating Internal Combustion Engines (RICE) Units #G1, G2, and G4 are categorized as Emergency, Existing Stationary RICE, Non-road , Compression Ignition, and less than 500 hp, and are not residential, commercial, or institutional. The stationary RICEs are located at an area source of HAP emissions and each commenced construction before June 12, 2006. Therefore, each of the RICE Units #G1, G2, and G4 are defined under Subpart ZZZZ, §63.6590(a) and §63.6590(1)(iii) as an affected sources applicable to 40 CFR 63 Subpart ZZZZ - for NESHAP Source Category: Stationary Reciprocating Internal Combustion Engines (RICE). These units must comply with the specific requirements found in this subpart as well as the general requirements of 40 CFR 63 Subpart A- General Provisions accordingly to its categorization.

e) RICE Unit #G3 is categorized as an Emergency, New Stationary RICE, Spark Ignition, Lean Burn, Non-road, and under 500 hp, and are not residential, commercial, or institutional. The stationary RICE is located at an area source of HAP emissions and is categorized as "New" since it's construction was commenced after June 12, 2006. Therefore, Unit #G3, is defined under Subpart ZZZZ, §63.6590(a) and §63.6590(a)(2)(iii) as an affected source applicable to 40 CFR 63 Subpart ZZZZ - for NESHAP Source Category: Stationary Reciprocating Internal Combustion Engines (RICE). These units must comply with the specific requirements found in this subpart as well as the general requirements of 40 CFR 63 Subpart A- General Provisions accordingly to its categorization.

f) RICE Unit #G3 is subject to Federal New Source Performance Standards (NSPS), Code of Federal Regulations (CFR), Title 40, Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, and Subpart A - General Provisions since Unit #G3 was manufactured after January 1, 2009. Accordingly, Unit #G3 shall comply with all applicable requirements of 40 CFR Part 60, Subparts A and JJJJ.

g) The Reciprocating Internal Combustion Engines (RICE) Units #G5, G6, G7, and G8 are categorized as Emergency, Existing Stationary RICE, Non-road, Spark Ignition, Lean Burn, 4 Stroke, more than 500 hp, and are not residential, commercial, or institutional. The stationary RICEs are located at an area source of HAP emissions and each commenced construction before June 12, 2006. Therefore, each of the RICE Units #G5, G6, G7, and/or G8 are defined under Subpart ZZZZ, §63.6590(a) and §63.6590(1)(iii) as an affected sources applicable to 40 CFR 63 Subpart ZZZZ - for NESHAP Source Category: Stationary Reciprocating Internal Combustion Engines (RICE). These units must comply with the specific requirements found in this subpart as well as the general requirements of 40 CFR 63 Subpart A- General Provisions accordingly to its categorization.

h) RICE Units #G9 and #G11 are categorized as Emergency, New Stationary, Non-road, and Compression Ignition (CI). The stationary RICE's are located at an area source of HAP emissions and are categorized as "New" since their construction was commenced after June 12, 2006. Therefore, Units #G9 and #G11, are defined under Subpart ZZZZ, §63.6590(a) and §63.6590(a)(2)(iii) as an affected source applicable to Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

i) RICE Units #G9 and #G11 are subject to Federal New Source Performance Standards (NSPS), Code of Federal Regulations (CFR), Title 40, Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, and Subpart A - General Provisions since Units #G9 and #G11 commenced construction after July 11, 2005 and were manufactured after April 1, 2006. Accordingly, Units #G9 and #G11 shall comply with all applicable requirements of 40 CFR Part 60, Subparts A and IIII

j) The RICE Unit #G9 is categorized as a Compression Ignition, Non-road, more than 500 hp, and a Tier IV Engine, and therefore is applicable to the Subpart IIII, Tier IV Interim, 40 CFR 1039 – Control of Emissions from New and In-Use Non-road Compression-Ignition Engines.

k) The Reciprocating Internal Combustion Engine (RICE) Unit #G10 is categorized as Emergency, Existing Stationary RICE, Non-road, Spark Ignition, Lean Burn, 4 Stroke, less than 500 hp, and is not residential, commercial, or institutional. The stationary RICE is located at an area source of HAP emissions and commenced construction before June 12, 2006. Therefore, the RICE Unit #G10 is defined under Subpart ZZZZ, §63.6590(a) and §63.6590(1)(iii) as an affected sources applicable to 40 CFR 63 Subpart ZZZZ - for NESHAP Source Category: Stationary Reciprocating Internal Combustion Engines (RICE). The unit must comply with the specific requirements found in this subpart as well as the general requirements of 40 CFR 63 Subpart A- General Provisions accordingly to its categorization.

l) Units #B2 and B12 are subject to Federal New Source Performance Standards (NSPS), Code of Federal Regulations (CFR), Title 40, Part 60, Subpart A - General Provisions, and Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

m) The following equipment located at the facility is restricted to operate the following:

i) Operate RICE Units #G1, G2, G3, G4, G5, G6, G7, G9, G10, and G11 as an emergency only engines providing power in the event of supplied power interruption and shall only be operated during loss of commercial power and for engine exercising/maintenance. If the facility does operate these engines according to the requirements in paragraphs (f)(1) through (4) of section §63.6640, the engines will be considered emergency engines. If the facility does not operate these engines according to the requirements in paragraphs (f)1) through (4) of section §63.6640, the engines will not be considered emergency engines and will have to meet all the requirements for non-emergency engines the under Subpart ZZZZ.

ii) The RICE Units #G1, G2, G4, and G10 shall be restricted to a maximum of 100 hours of operation based on a 12-month rolling total, and shall only be operated during loss of commercial power and as required by the manufacturer for engine exercising/maintenance. The units shall not be operated for peak shaving or to generate income for the facility to supply power to an electric gird or otherwise supply non-emergency power as part of a financial arrangement with another entity. Routine or non-emergency operation of the units or operation for any other purposes, except as stated above, shall be a violation of this permit

iii) The RICE Unit #G3 shall be restricted to a maximum of 100 hours of operation based on a 12-month rolling total, and shall only be operated during loss of commercial power and as required by the manufacturer for engine exercising/maintenance. Pursuant to CFR Title 40 Part 60 Subpart JJJJ §60.4243(d), Unit #G3 shall be limited to 100 hours per year of maintenance checks and readiness testing. The unit may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The units shall not be operated for peak shaving or to generate income for the facility to supply power to an electric gird or otherwise supply non-emergency power as part of a financial arrangement with another entity. Routine or non-emergency operation of the units or operation for any other purposes, except as stated above, shall be a violation of this permit.

a) The permittee shall comply with the applicable requirements of 40 CFR §60.4243. The permittee shall demonstrate compliance by purchasing an engine certified according to the procedures specified in 40 CFR 60 Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified by 40 CFR §60.4243(a). The permittee shall also comply with the applicable requirements of 40 CFR 1068, Subparts A through D. The permittee may adjust engine settings according to and consistent with the manufacturer's instructions.

b) In accordance with 40 CFR 63, Subpart ZZZZ §63.6590(c), an affected source that is a new or reconstructed stationary RICE located at an area source "must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart JJJJ, for spark ignition engines." The permittee shall comply with the specific requirements of Subpart JJJJ for RICE Unit #G3 applicable to new stationary spark ignition internal combustion engines meeting the definition of a new engine.

iv) RICE Units #G5, G6, G7, and G8 shall be restricted to a maximum of 200 hours of operation based on a 12-month rolling total, and shall only be operated during loss of commercial power and as required by the manufacturer for engine exercising/maintenance. The unit shall not be operated to generate power for peak shaving or sale to third parties, but only to provide emergency power for the facility. Routine or non-emergency operation of the unit or operation for any other purposes, except as stated above, shall be a violation of this permit;

v) Operate RICE Unit #G9 as an emergency Stationary Internal Combustion Engine defined in Subpart IIII, section §60.4219 – definition of an emergency Stationary Internal Combustion Engine. The facility must operate RICE Unit #G9 according to the requirements in paragraphs §60.4211(f)(1)through(3) in order to for the RICE to be considered emergency under Subpart IIII. If the facility operates Unit #G9 other than described in §60.4211(f)(1)through(3), then the engine will be considered non-emergency and will have to meet all the requirements for non-emergency engines the under Subpart IIII.

vi) The RICE Units #G9 and G11 shall be restricted to a maximum of 200 hours of operation based on a 12-month rolling total, and shall only be operated during loss of commercial power and as required by the manufacturer for engine exercising/maintenance. Pursuant to CFR Title 40 Part 60 Subpart IIII §60.4211(f), Unit #1 shall be limited to 100 hours per year of maintenance checks and readiness testing. RICE Units #G9 and G11 may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for the facility to supply power to an electric gird or otherwise supply non-emergency power as part of a financial arrangement with another entity. Routine or non-emergency operation of the unit or operation for any other purposes, except as stated above, shall be a violation of this permit.

a) The permittee shall meet the diesel fuel requirements as required by CFR Title 40 Part 60 Subpart IIII §60.4207(b).

b) The permittee shall operate and maintain RICE Units #G9 and G11 according to the manufacturer's written instructions, or procedures developed by the permittee that have been approved by the manufacturer. In addition, the permittee may only change those settings that are allowed by the manufacturer. The permittee must also meet the requirements of CFR Title 40 part 89, 94, and/or 1068 as they apply. This condition is Pursuant to CFR Title 40 Part 60 Subpart IIII §60.4211.

c) In accordance with 40 CFR 63, Subpart ZZZZ §63.6590(c), an affected source that is a new or reconstructed stationary RICE located at an area source "must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart IIII, for compression ignition engines." The permittee shall comply with the specific requirements of Subpart IIII for RICE Units #G9 and G11 applicable to new stationary compression ignition internal combustion engines meeting the definition of a new engine.

vii) The RICE Units #G1, G2, G4, G5, G6, G7, G8, and G10, in accordance with MACT Subpart ZZZZ 40 CFR 63.6640(f)(1), there is no time limit on their use in emergency situations. However, in order for the engines to be considered emergency engines, non-emergency operation is limited as follows:

1. Maintenance checks and readiness testing on each Unit is limited to 100 hours per year.

2. The Units may operate for non-emergency purposes for 50 hours per year, but counts towards 100 hours for non-emergency operation. The 50 hours of operation cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

viii) The RICE Units #G1, G2, and G4, in accordance with MACT Subpart ZZZZ 40 CFR 63.6603(a), must comply with the requirements in Table 2d that apply:

1. Change oil and filter every 500 hours of operation or annually, whichever comes first;

2. Inspect air cleaner every 1000 hours of operation or annually, whichever comes first and replace as necessary; and,

3. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Pursuant to CFR Title 40 Part 63 Subpart ZZZZ §63.6625(h)(i), the facility has the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2d to Subpart ZZZZ. The oil analysis must be performed at the same frequency specified for changing the oil in 2d. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 business days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

ix) The RICE Units #G5, G6, G7, G8, and G10, in accordance with MACT Subpart ZZZZ 40 CFR 63.6603(a), must comply with the requirements in Table 2d that apply:

1. Change oil and filter every 500 hours of operation or annually, whichever comes first;

2. Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and,

3. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Pursuant to CFR Title 40 Part 63 Subpart ZZZZ §63.6625(h)(j), the facility has the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2d to Subpart ZZZZ. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Acid Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 business days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

x) In accordance with MACT Subpart ZZZZ 40 CFR 40 63.6625(h), the operator must minimize the time RICE Units # G1, G2, G4, G5, G6, G7, G8, and G10 are spent at idle during startup and minimize the engines' startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.

xi) Units # B2, B3, B4, B12, and B13 may each operate 8,760 hours of operation per 12-month rolling period.

n) Changes in plans, specifications, and other representations proposed in the application documents shall not be made if they will increase the potential to emit or cause a change in the method of control of emissions or in the

character of emissions. Any such proposed changes shall be submitted as a modification to this permit. No modification shall begin prior to issuance of a permit.

o) Replacement of emission units for which an allowable emissions limit has been established in the permit may be requested by the permittee through a technical permit revision in accordance with 20.11.41.28.B.

p) Compliance with ton per year (tpy) emissions shall be based on compliance with Conditions I.1.m.

q) The emission of a regulated air pollutant in excess of the quantity, rate, opacity, or concentration specified in an air quality regulation or permit condition that results in an excess emission is a violation of the air quality regulation or permit condition and may be subject to an enforcement action. The owner or operator of a source having an excess emission shall, to the extent practicable, operate the source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. This condition is pursuant to 20.11.49.14 NMAC.

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2. **Unit Emission Limits**--Condition 2, Unit Emission Limits, has been placed in the permit in accordance with 20.11.41.19.B and C NMAC and 40 CFR 60, Subpart IIII, to allow the Program to determine compliance with the terms and conditions of the permit. These were the emission rates stated in the permit application and are the basis of the Program's review. Compliance will be based on Program inspections of the facility and upon compliance with the emission limits and opacity readings conducted in accordance with the test methods specified in Condition 6 – **Compliance Tests**.

a) Units #G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, B2, B3, B4, B12, and B13 shall not exceed the emission limits stated in the table:

Unit #	NO_x lb/hr[3]	NO_x tpy	NO_x + NMHC lb/hr[3]	NO_x + NMHC tpy	CO lb/hr	CO tpy	SO_2 lb/hr	SO_2 tpy	VOC lb/hr	VOC tpy	TSP lb/hr	TSP tpy	PM_{10} lb/hr	PM_{10} tpy	$PM_{2.5}$ lb/hr	$PM_{2.5}$ tpy	Percent Opacity	Record Keeping Requirements[1]	Monitoring Requirements[1]	Reporting Requirements[1]	Compliance Testing[2]
G1	14.73	0.74			3.17	0.16	0.97	0.04	1.17	0.05	1.05	0.05	1.05	0.05	1.05	0.05	20%, 40% @ startup	Yes	Yes	Yes	No
G2	12.79	0.64			2.76	0.14	0.85	0.04	1.02	0.05	0.91	0.05	0.91	0.05	0.91	0.05	20%, 40% @ startup	Yes	Yes	Yes	No
G3	0.6	0.06			1.19	0.12	0.00903	0.0009	0.29	0.0287	0.01	0.001	0.01	0.001	0.01	0.001	20%, 40% @ startup	Yes	Yes	Yes	No
G4	14.73	0.74			3.17	0.16	0.97	0.04	1.17	0.05	1.05	0.05	1.05	0.05	1.05	0.05	20%, 40% @ startup	Yes	Yes	Yes	No
G5	28.63	2.86			3.91	0.39	0.004	0.0004	0.83	0.08	0.07	0.007	0.07	0.007	0.07	0.007	5%	Yes	Yes	Yes	No
G6	28.63	2.86			3.91	0.39	0.004	0.0004	0.83	0.08	0.07	0.007	0.07	0.007	0.07	0.007	5%	Yes	Yes	Yes	No
G7	28.63	2.86			3.91	0.39	0.004	0.0004	0.83	0.08	0.07	0.007	0.07	0.007	0.07	0.007	5%	Yes	Yes	Yes	No
G8	28.63	2.86			3.91	0.39	0.004	0.0004	0.83	0.08	0.07	0.007	0.07	0.007	0.07	0.007	5%	Yes	Yes	Yes	No
G9	2.20	0.22			3.86	0.39	0.01	0.001	0.21	0.02	0.02	0.002	0.02	0.002	0.02	0.002	20%, 40% @ startup	Yes	Yes	Yes	No
G10	14.32	0.72			1.11	0.06	0.002	0.0001	0.41	0.02	0.03	0.002	0.03	0.002	0.03	0.002	5%	Yes	Yes	Yes	No
G11			0.58	0.06	0.42	0.04	0.00068	0.00007			0.023	0.002	0.023	0.002	0.023	0.002	20%, 40% @ startup	Yes	Yes	Yes	No
B2	1.20	5.26			1.01	4.42	0.007	0.03	0.07	0.29	0.09	0.40	0.09	0.40	0.09	0.40	20%	No	No	Yes	No
B3	0.09	0.40			0.31	1.34	0.004	0.016	0.033	0.15	0.046	0.2	0.046	0.2	0.046	0.2	20%	No	No	Yes	No
B4	0.09	0.40			0.31	1.34	0.004	0.016	0.033	0.15	0.046	0.2	0.046	0.2	0.046	0.2	20%	No	No	Yes	No
B12	1.20	5.26			1.01	4.42	0.007	0.03	0.07	0.29	0.09	0.40	0.09	0.40	0.09	0.40	20%	No	No	Yes	No
B13	0.04	0.174			0.033	0.146	0.00024	0.00105	0.00219	0.00959	0.00302	0.01325	0.00302	0.01325	0.00302	0.01325	20%	Yes	Yes	Yes	No
TOTALS	**176.51**	**26.05**	**0.58**	**0.06**	**33.99**	**14.296**	**2.85**	**0.217**	**7.798**	**1.428**	**3.648**	**1.398**	**3.648**	**1.398**	**3.648**	**1.398**					

[1] Refer to permit conditions I.3, I.4 and I.5 for unit specific record keeping/monitoring, and reporting requirement Refer to Condition I for unit specific compliance testing requirements

[2] Refer to Condition 1.6 for unit specifics compliance testing requirements.

b) For all units, the NOx and CO pound per hour (lb/hr) emission rates shall be based on a 3-hour average.

c) In accordance with 40CFR 60, Subpart JJJJ §60.4233(e), RICE Unit #G3 shall comply with the emission standards in Table 1 Subpart JJJJ of Part 60 for the maximum permitted engine power. RICE Unit #G3 shall not exceed the more stringent of the allowable NOx, CO and VOC emission standards in Table 1 to Subpart JJJJ of Part 60 for the maximum permitted engine power or the pound per hour (lb/hr) and opacity emission limits as specified in Condition I.2.(a) in the table above.

d) In accordance with CFR Title 40 Part 60, Subpart IIII , Unit #G9 shall comply with the emission standards in Tier IV Interim, 40 CFR 1039.102, Table 6 for the maximum permitted engine power. Unit #G9 shall not exceed the more stringent of the allowable CO emission standard in CFR Title 40 CFR 1039.102 Table 6 for the maximum permitted engine power or the pound per hour (lb/hr) as specified in Condition 2(a) in the table above.

e) In accordance with CFR Title 40 Part 60, Subpart IIII , Unit #G9 shall comply with the emission standards in Tier IV Interim, 40 CFR 1039.102(e)(2) – Alternate NOx Standard, for the maximum permitted engine power. Unit #G9 shall not exceed the more stringent of the allowable NOx emission standard in CFR Title 40 CFR 1039. 102(e)(2) for the maximum permitted engine power or the pound per hour (lb/hr) as specified in Condition 2(a) in the table above.

f) In accordance with CFR Title 40 Part 60, Subpart IIII , Unit #G9 shall comply with the emission standards in Tier IV Interim, 40 CFR 1039.102, Table 6 for the maximum permitted engine power. Unit #G9 shall not exceed the more stringent of the allowable NMHC emission standard in CFR Title 40 CFR 1039.102 Table 6 for the maximum permitted engine power or the pound per hour (lb/hr) as specified in Condition 2(a) in the table above.

g) In accordance with CFR Title 40 Part 60, Subpart IIII , Unit #G9 shall comply with the emission standards in Tier IV Interim, 40 CFR 1039.102, Table 6 for the maximum permitted engine power. Unit #G9 shall not exceed the more stringent of the allowable PM emission standard in CFR Title 40 CFR 1039.102 Table 6 for the maximum permitted engine power or the pound per hour (lb/hr) as specified in Condition 2(a) in the table above.

h) In accordance with 40CFR 60, Subpart IIII §60.4205(b), owner and operators of 2007 model year and later emergency stationary diesel-powered engines with a displacement of less than 30 liters per cylinder that are not fire engines must comply with the emission standards for new non-road diesel engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary diesel engine. RICE Unit #G11 shall comply with the emission standards in 40 CFR 89.112(a) for the maximum permitted engine power or the pound per hour (lb/hr) and opacity emission limits as specified in Condition 2(a) in the table above.

i) Compliance with all opacity requirements specified in Conditions 2(j), 2(k), and 2(l) below, shall be considered compliance with the hourly lb/hr TSP, PM_{10} and $PM_{2.5}$ emissions.

j) Units #G1, G2, G4, G9, and G11 each shall not cause or allow visible air emissions to exceed 20 percent opacity for any six (6) minute timed average and 40 percent opacity for any six (6) minute timed average during the first 20 minutes of cold startup pursuant to 20.11.5.13.C NMAC. Additionally, no increase of load shall be applied so as to cause an emission having an opacity greater than 40 percent during any time interval.

k) Units # B2, B3, B4, B12, and B13 each shall not cause or allow visible air emissions to exceed 20 percent opacity for any six (6) minute timed average pursuant to 20.11.5.12 NMAC.

l) Except for the initial 10 seconds from startup, Units #G3, G5, G6, G7, G8, and G10 individually shall not cause or allow visible emissions to exceed 5 percent opacity, 3-minute time-averaged pursuant to 20.11.5.13.B NMAC.

3. **Record keeping:** Condition 3 has been placed in the permit in accordance with 20.11.41.19.B(4) NMAC and 20.11.41.19.C(8) and (9) NMAC, to allow the Program to determine compliance with the terms and conditions of the

permit. Compliance will be based on inspection of records and logs.

a) For RICE Units #G1, #G2, and #G4 shall maintain the applicable records as required in Subpart ZZZZ for engines that have the following categories: Emergency, Existing Stationary RICE, less than 500 hp, Compression Ignition, at an Area Source for HAPs.

b) For RICE Unit #G3 shall maintain the applicable records as required in Subpart JJJJ for an engine that has the following categories: New Stationary RICE, Emergency, less than 500 hp, Four Stroke Lean Burn, Spark Ignition, at an Area Source for HAPs.

c) For RICE Units #G5, #G6, #G7, and #G8 shall maintain the applicable records as required in Subpart ZZZZ for engines that have the following categories: Emergency, Existing Stationary RICE, more than 500 hp, Four Stroke Lean Burn, Spark Ignition, at an Area Source for HAPs.

d) For RICE Units #G9 shall maintain the applicable records as required in Subpart IIII for an engine that has the following categories: New Stationary RICE, Emergency, more than 500 hp, Combustion Ignition, at an Area Source for HAPs.

e) For RICE Unit #G10 shall maintain the applicable records as required in Subpart ZZZZ for engines that have the following categories: Emergency, Existing Stationary RICE, less than 500 hp, Four Stroke Lean Burn, Spark Ignition, at an Area Source for HAPs.

f) For RICE Units #G11 shall maintain the applicable records as required in Subpart IIII for an engine that has the following categories: New Stationary RICE, Emergency, less than 500 hp, Combustion Ignition, at an Area Source for HAPs.

g) Applicable to Subpart JJJJ, §60.4245(b), record and maintain a monthly log of the hours of operation for Unit #G3, as a monthly total and as a 12-month rolling total. In addition, the records shall document whether operation of each unit is Emergency or Maintenance and Testing.

h) Applicable to Subpart ZZZZ, 63.6655(f) and 63.6655(f)(2), record and maintain a monthly log of the hours of operation for Units #G1, G2, G4, G5, G6, G7, G8, and G10, both as a monthly total and as a 12-month rolling total. In addition, the records shall document whether operation of each unit is Emergency or Maintenance and Testing.

i) Applicable to Subpart IIII, 60.4214(b), record and maintain a monthly log of the hours of operation for Units #G9 and G11, both as a monthly total and as a 12-month rolling total. The records shall document whether operation of each unit is Emergency or Maintenance and Testing. In addition, the records shall include the reason the engine was in operation during that time.

j) The permittee shall record and maintain records on the amount of natural gas fuel consumption of Units #B2 and B12 on a monthly basis. This condition is pursuant to CFR 40 Part 60 Subpart Dc, 60.48c(g).

4. **Monitoring**: Condition 4 has been placed in the permit in accordance with 20.11.41.19.B(4) NMAC, 20.11.41.19.C(3),(4),(5),(6) and (7) NMAC and 40 CFR 63 Subpart ZZZZ, to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on Program inspection of equipment and logs. The permittee shall install the appropriate equipment deemed necessary by the Program for performance testing and continuous emissions monitoring.

a) Monitor the monthly hours of operation of Units #G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, and G11 accordingly to the requirements (I)(3)(g), (h), and (i) of Construction Permit #1419.

b) Monitor whether operation of Units #G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, and G11is for Emergency or or Maintenance or Testing, accordingly to the requirements (I)(3)(g), (h), and (i) of Construction Permit #1419.

c) For RICE Units #G1, G2, and G4 comply with the applicable monitoring requirements as required in Subpart ZZZZ for engines that have the following categories: Emergency, Existing Stationary RICE, less than 500 hp, Compression Ignition, at an Area Source for HAPs.

d) For RICE Unit #G3 comply with the applicable monitoring requirements as required in Subpart JJJJ for an engine that have the following categories: Emergency, Existing Stationary RICE, less than 500 hp, Four Stroke Lean Burn, Spark Ignition, at an Area Source for HAPs.

e) For RICE Units #G5, G6, G7, and G8 comply with the applicable monitoring requirements as required in Subpart ZZZZ for engines that have the following categories: Emergency, Existing Stationary RICE, more than 500 hp, Four Stroke Lean Burn, Spark Ignition, at an Area Source for HAPs.

k) For RICE Unit #G9 comply with the applicable monitoring requirements as required in Subpart IIII for an engine that has the following categories: Emergency, New Stationary RICE, more than 500 hp, Combustion Ignition, at an Area Source for HAPs.

l) For RICE Unit #G10 comply the applicable monitoring requirements as required in Subpart ZZZZ for engines that have the following categories: Emergency, Existing Stationary RICE, less than 500 hp, Four Stroke Lean Burn, Spark Ignition, at an Area Source for HAPs

m) For RICE Unit #G11 comply the applicable monitoring requirements as required in Subpart IIII for an engine that has the following categories: Emergency, New Stationary RICE, less than 500 hp, Combustion Ignition, at an Area Source for HAPs.

f) In accordance with 40CFR 60, Subpart JJJJ §60.4243(b), RICE Unit #G3 shall keep a maintenance plan and records of conducted maintenance. The permittee shall comply with the applicable notification and recordkeeping requirements of 40 CFR §60.4245.

g) Monitor the monthly natural gas fuel consumption of Units #B2 and B12 pursuant with CFR 40 Part 60, Subpart Dc, 60.48c(g).

5. **Reporting**: Condition 5 has been placed in the permit in accordance with 20.11.41.21 NMAC and 20.11.90 NMAC, to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on timely submittal of the reports, notifications, and required information and shall be made in accordance with CFR Title 40, Part 60, Subpart A - General Provisions and 20.11.41.21 NMAC.

The permittee shall notify the Program in writing of:

a) Any change in control or ownership within fifteen (15) days of the change in control or ownership; the permit and conditions apply in the event of any change in control or ownership of the facility. No permit modification is required in such case; however, in the event of any such change in control or ownership, the permittee shall notify the succeeding owner of the permit and the conditions;

b) Any replacement or substitution of equipment which has the same or lower process capacity as the piece of equipment being replaced or substituted within fifteen (15) days of equipment substitutions. Equipment that is substituted shall comply with the requirements in Condition 2;

c) An annual (January 1st through December 31st of the previous year) emissions inventory for the regulated air pollutants listed in the table of Condition I.2.a) to include the annual hours of operation for all units together with descriptions of any reconfiguration of process technology and air pollution control equipment. The

emissions inventory shall be calculated based on each individual pollutant's permitted pound per hour rate and reported for the actual hours of operation. The annual emissions inventory shall be submitted to the Program by March 15 every year; and,

d) The permittee of a source having an excess emission shall provide the department with the following reports on forms provided by the department:

i. INITIAL REPORT: The permittee shall file an initial report, no later than the end of the next regular business day after the time of discovery of an excess emission pursuant to 20.11.49.15.A(1) NMAC;

ii. FINAL REPORT: The permittee shall file a final report, no later than 10 days after the end of the excess emission. If the period of an excess emission extends beyond 10 days, the permittee shall submit the final report to the department within 72 hours of the date and time the excess emission ceased. This condition is pursuant to 20.11.49.15.A(2) NMAC and 20.11.49.15.C NMAC; and,

iii. ALTERNATIVE REPORTING: If the facility is subject to the reporting requirements of 40 CFR Parts, 60, 61, and 63 and the federal requirements duplicate the requirements of 20.11.49.15 NMAC, then the federal reporting requirements shall suffice. This condition is pursuant to 20.11.49.15.D NMAC.

6. **Compliance Tests**: Condition 6 has been placed in the permit in accordance with CFR Title 40, Part 60, Subpart A General Provisions, 20.11.41.22 NMAC, 20.11.90.13 NMAC. Compliance will be based on the satisfactory completion of the compliance tests, the timely submittal of the emission unit test results to the Program, and on meeting the emission limits and opacity restrictions specified in Condition 2.

a) Initial and annual compliance testing requirements for Units G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, B2, B3, B4, B12, and B13 have not been imposed at this time. Compliance tests may be re-imposed, or imposed, if inspections of the facility indicate non-compliance with unit emission limits or opacity standards found in Condition I.2.a). In the event the Program imposes a compliance test, it shall be conducted in accordance with EPA methods contained in Appendix A of the CFR, Title 40, Part 60, unless otherwise approved by the Program.

b) The permittee shall provide for the Program 's approval a written test protocol at least fifteen (15) days prior to the anticipated test date. The protocol shall describe the test methods to be used (including sampling locations), and shall describe data reduction procedures. Any variation from the established sampling and analytical procedures or from facility operating conditions shall be presented for Program approval.

c) For all compliance tests, the test protocol and compliance test report shall conform to the standard format specified by the Program.

d) Compliance testing shall be conducted at ninety (90%) percent of the unit's permitted capacity or greater to demonstrate compliance with the permitted emission limits. Compliance testing at other than 90% production levels shall be performed at the Program 's request and/or approval.

e) One copy of the compliance test results shall be submitted to the Enforcement and Compliance Division within thirty (30) days after the completion of testing.

f) The permittee may submit to the Program for review and approval, a written request for shorter sampling times, minor changes in the reference method, use of an equivalent method, or a request to waive any compliance test requirement.

Unit Specific Compliance Testing

Unit Number	Initial Compliance Test	Frequency of Compliance Test
G1, G2, G3 G4, G5, G6, G7, G8, G9, G10, G11, B2, B3, B4, B12, and B13	Not Required*	Not Required*

* Compliance tests have not been imposed for this unit at this time, but may be re-imposed if inspections of the source indicate non-compliance with permit conditions.

7. **Modifications**-- Condition 7 has been placed in the permit in accordance with 20.11.41.7.U NMAC, to enable the Program to review proposed changes to the facility which may constitute a permit modification prior to such changes. Compliance will be based on Program inspections and the submittal of a new permit application for any modification.

   a) Any future physical changes or changes in the method of operation which results in an increase in the pre-controlled emission rate may constitute a modification as defined by 20.11.41.7.U NMAC. No modification shall begin prior to issuance of a permit. Modifications or revisions to this permit shall be processed in accordance with 20.11.41 NMAC.

8. **Compliance Assurance/Enforcement**-- All air pollution emitting facilities within Bernalillo County are subject to all applicable Albuquerque/Bernalillo County Air Quality Control Regulations, whether listed in this permit or not.

   a) The issuance of a permit does not relieve the permittee from responsibility of complying with the provisions of the Air Quality Control Act, and the laws and regulations in force pursuant to the Act. (20.11.41.18 NMAC).

   b) Any conditions imposed upon the facility as the result of a Construction Permit or any other permit issued by the Program shall be enforceable to the same extent as a regulation of the Board. (20.11.41.19.D NMAC).

   c) Whenever two or more parts of the Air Quality Control Act, or the laws and regulations in force pursuant to the Act, limit, control or regulate the emissions of a particular air contaminant, the more restrictive or stringent shall govern. (20.11.41.14 NMAC).

   d) The Program is authorized to issue a compliance order requiring compliance and assessing a civil penalty not to exceed Fifteen Thousand and no/100 Dollars ($15,000) per day of noncompliance for each violation, commence a civil action in district court for appropriate relief, including a temporary and permanent injunction. (74-2-12 NMSA).

   e) Scheduled and Unscheduled Inspection (74-2-13 NMSA) -- The Program will conduct scheduled and unscheduled inspections to insure compliance with the Air Quality Control Act, and the laws and regulations in force pursuant to the Act, and this Permit, and, upon presentation of credentials:

      i. Shall have a right of entry to, upon, or through any premises on which an emission source is located or on which any records required to be maintained by regulations of the Board or by any permit condition are located;

      ii. May at any reasonable time have access to and copy any records required to be established and maintained by Regulations of the Board, or any permit condition;

      iii. May inspect any monitoring equipment and method required by Regulations of the Board or by any permit condition, and;

      iv. Sample any emissions that are required to be sampled pursuant to Regulation of the Board, or any permit

condition.

f) Any credible evidence may be used to establish whether the permittee has violated or is in violation of any regulation of the Board, or any other provision of law. Credible evidence and testing shall include, but is not limited to (20.11.41.27A and B NMAC):

i. A monitoring method approved for the source pursuant to 20.11.42 NMAC "Operating Permits" and incorporated into an operating permit;

ii. Compliance methods specified in the Regulations, conditions in a permit issued to the facility, or other provision of law;

iii. Federally enforceable monitoring or testing methods, including methods in 40 CFR parts 51, 60, 61, and 75; and,

iv. Other testing, monitoring or information-gathering methods that produce information comparable to that produced by any CFR method and approved by the Program and EPA.

9. **Posting of the Permit** -- Compliance will be based on Program inspections of the facility, which show that a copy of the permit has been posted in a visible location. A copy of this permit shall be posted in a visible location at the facility at all times. The permit shall be made available to Program personnel for inspection upon request.

10. **Annual Fees** -- Condition 10 has been placed in the permit in accordance with 20.11.2 NMAC to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on the receipt of the annual emissions fee due each year to the Program pursuant to 20.11.2 NMAC. Every owner or operator of a source that is required to obtain a source registration, an Construction Permit, an operating permit, or a preconstruction permit shall pay an annual emissions fee pursuant to 20.11.2 NMAC, 20.11.40 NMAC, 20.11.41 NMAC, 20.11.42 NMAC, 20.11.60 NMAC, 20.11.61 NMAC, or 20.11.62 NMAC.

Facility Wide Fee Pollutants
(Tons per Year)

Fee Pollutant	Facility Wide Fee Pollutant Totals in Tons per Year (TPY)
Carbon Monoxide (CO)	14
Oxides of Nitrogen (NO_x)	26
Oxides of Nitrogen (NO_x) + Non Methane Hydrocarbons (NMHC)	0
Total Suspended Particulate Matter (TSP)	1
Oxides of Sulfur (SO_x)	0
Non Methane Hydrocarbon (NMHC)	1
Facility Wide Fee Pollutants Totals (TPY)	**42**

II. ADDITIONAL REQUIREMENTS

1. **Permit Cancellation**-- The Program may cancel any permit if the construction or modification is not commenced within one (1) year from the date of issuance or if, during the construction or modification, work is suspended for a total of one (1) year pursuant to 20.11.41.20.B NMAC.

Application for permit modifications, relocation notices and items listed under **ADDITIONAL REQUIREMENTS**

shall be submitted to:

Albuquerque Environmental Health Department
Air Quality Program
Permitting Division
P.O. Box 1293
Albuquerque, New Mexico 87103

Test protocols and compliance test reports shall be submitted to:

Albuquerque Environmental Health Department
Air Quality Program
Attention: Enforcement and Compliance Division Supervisor
P.O. Box 1293
Albuquerque, New Mexico 87103

All reports shall be submitted to:

Albuquerque Environmental Health Department
Air Quality Program
Attention: Enforcement and Compliance Division Supervisor
P.O. Box 1293
Albuquerque, New Mexico 87103

Appendix H

AP-42 Emission Factors

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

APR 08 2014

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Interim Guidance on the Treatment of Condensable Particulate Matter Test Results in the Prevention of Significant Deterioration and Nonattainment New Source Review Permitting Programs

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards (C404-04)

TO: EPA Regional Air Division Directors, Regions 1-10

This memorandum provides interim guidance on the treatment of condensable particulate matter (CPM) under the EPA's new source review (NSR) permit programs for particulate matter (PM). As explained below, the NSR regulations require that the measurement and control of PM from major stationary sources and major modifications include the condensable component for both PM_{10} and $PM_{2.5}$ emissions. Accordingly, CPM must be considered for permits addressing PM_{10} and $PM_{2.5}$ that are issued under the Prevention of Significant Deterioration (PSD) program and the nonattainment NSR program in areas that are classified attainment/unclassifiable and nonattainment, respectively, for the PM_{10} and $PM_{2.5}$ national ambient air quality standards (NAAQS).

This guidance addresses the use of CPM test results obtained with EPA Method 202[1] in (1) determining whether a new major stationary source or a major modification is subject to PSD or nonattainment NSR with respect to PM_{10} and/or $PM_{2.5}$; (2) conducting the air quality analyses required to obtain a PSD permit; and (3) determining the quantity of required emissions offsets in nonattainment areas. It also addresses the use of Method 202 when conducting compliance tests and the use of AP-42[2] and other emission factors for CPM that are based on Method 202.

Summary

Since January 1, 2011, air agencies have been required to account for CPM in establishing emissions limits for both PM_{10} and $PM_{2.5}$ in all applicable PSD and nonattainment NSR permits.[3] Method 202, as revised in 2010, provides a test method for quantifying CPM in emissions from stationary sources, and

[1] Method 202 is contained in 40 CFR part 51 appendix M. See 75 FR 80118, December 21, 2010.
[2] AP 42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, http://www.epa.gov/ttnchie1/ap42/.
[3] See 40 CFR §§ 51.165(a)(1)(xxxvii)(D), 51.166 (b)(49)(vi) and 52.21(b)(50)(vi).

may be incorporated as a component of other test methods and may be required as a method to demonstrate compliance with control measures implemented by air agencies in other actions, such as individual PSD permits. In using Method 202, industry stakeholders have expressed concern that source-specific CPM test results obtained with the method could include positive bias that translates into overestimations of emissions. Such overestimation could inappropriately affect applicability determinations for both PSD and nonattainment NSR permits. This, in turn, could cause overestimated emissions to be used when a new source or modification conducts its required air quality impact analyses (PSD) or determines the amount of emissions offsets needed (nonattainment NSR).

Method 202 involves the use of a variety of solvents and materials, implemented by individuals under various environmental conditions, all of which present the potential for contamination of emissions samples if appropriate care is not taken. As explained below, the EPA acknowledges the potential for blank contamination associated with the implementation of Method 202. The EPA has begun an independent investigation of the reported issues and plans in the future to issue a best practices document for conducting Method 202 and to revise the method, if necessary.

Interim Guidance

In this guidance, we are recommending to air agencies and permit applicants that it is appropriate on an interim basis to allow major source permit applicants to depart from one aspect of Method 202, specifically the current upper limit of 2.0 mg for the value of the field train recovery blank that can be used in the calculation of source CPM. During the prescribed interim period, air agencies may allow permit applicants to use field train proof blanks in lieu of field train recovery blanks and to allow blank values as high as 5.1 mg to be used in the calculation of CPM. This interim guidance applies for the purposes of (1) determining source applicability to PSD or nonattainment NSR with respect to PM_{10} and/or $PM_{2.5}$; (2) conducting the air quality analyses required to obtain a PSD permit; (3) determining the quantity of required emissions offsets in nonattainment areas; and (4) conducting the necessary compliance tests. The interim period will end on the effective date of any revision that the EPA may make for Method 202 regarding the use of blanks in the field train on individual test results or on a date specified by Federal Register notice in the event that the EPA determines that a revision of Method 202 is not needed.

Background

Primary PM is the sum of filterable PM and CPM. Filterable PM are particles that are directly emitted by a source as a solid or liquid at stack or release conditions and captured on the filter of a stack test train. CPM are emissions that are vapor phase at stack conditions, but which condenses and/or reacts upon cooling and dilution in the ambient air to form solid or liquid PM immediately after discharge from the stack.

Shortly after the EPA promulgated the PM_{10} NAAQS in 1987, our guidance began recommending that air agencies consider, in certain circumstances, the condensable portion of PM_{10} emissions; however, it

was not until 2008 that the EPA codified a requirement to count CPM as part of the measurement and control of emissions of PM from major stationary sources and major modifications. Specifically, in its 2008 $PM_{2.5}$ NSR Implementation Rule, the EPA revised the definition of "regulated NSR pollutant" for both PSD and nonattainment NSR to require that CPM be considered in applicability determinations and in establishing emissions limits for "particulate matter emissions," "PM_{10} emissions" and "$PM_{2.5}$ emissions." *See* 73 FR 28321 (May 16, 2008). The definition of "regulated NSR pollutant" was again revised in 2012 to correct the definition by removing the requirement that CPM be counted in the measurement and control of "particulate matter emissions."[4] *See* 77 FR 65107 (October 25, 2012). In the 2008 $PM_{2.5}$ NSR Implementation Rule, citing various concerns raised about uncertainties associated with the EPA test method, the EPA announced that it would not require air agencies to implement the requirement to account for CPM in establishing enforceable emissions limits for either PM_{10} or $PM_{2.5}$ in permits until the completion of a transition period that ended on January 1, 2011. Accordingly, since January 1, 2011, air agencies have been required to account for CPM in establishing enforceable emissions limits for both PM_{10} and $PM_{2.5}$ in all applicable PSD and nonattainment NSR permits issued.

In requiring that CPM be counted in measurements of emissions of PM_{10} and $PM_{2.5}$, the PSD and nonattainment NSR regulations do not refer explicitly to the test method to be used for quantifying CPM. However, it should be noted that the EPA defines "PM_{10} emissions" at 40 CFR 51.100(rr) to include the following: "...as measured by an applicable reference method, or an equivalent or alternative method specified in this chapter or by a test method specified in an approved state implementation plan." This definition is applicable to the use of the terms "PM_{10} emissions" and "$PM_{2.5}$ emissions" (which should be considered a subset of PM_{10}) in any regulations developed pursuant to part 51, including the regulations for NSR (§51.165) and PSD (§51.166).

The EPA developed Method 202 as a measurement method to quantify the CPM fraction of primary PM to be used in conjunction with a filterable particulate matter measurement method. The EPA originally promulgated Method 202 in 1991. The original Method 202 contained a multitude of measurement options that were present in a variety of air agencies' CPM measurement methods. Method 202 has the potential for a "sulfate measurement artifact" that occurs when the sulfur dioxide gas present in the stack gas dissolves in water contained in the impingers.[5] Over time, the dissolved sulfur dioxide slowly converts to sulfur trioxide and then to sulfuric acid. This converted sulfur dioxide is then improperly quantified as CPM.

In 2010, Method 202 was revised in order to greatly reduce the potential for the sulfur dioxide-to-sulfuric acid artifact by removing the requirement for sample gas to bubble through water to reduce the gas/water interactions, increasing the CPM impinger temperature to lower sulfur dioxide solubility and requiring a nitrogen purge to remove any dissolved sulfur dioxide. The revision of some options and

[4] "Particulate matter emissions" is a term that refers to the measurement of particles captured by a Method 5 source test. Particles in that size range include $PM_{2.5}$ and PM_{10} as well as particles that have an aerodynamic diameter greater than PM_{10}. Such larger particles are not considered in the measurement of the indicators for the PM_{10} and $PM_{2.5}$ NAAQS.

[5] For further discussion of this topic, see the preamble to the Method 202 revision (75 FR 80118, December 21, 2010) and the relevant response to comments document (Docket EPA-HQ-OAR-2008-0348).

removal of other options allowed in the 1991 version of Method 202 also increased the precision of the measurements for the 2010 revised methodology.

In Method 202, CPM is collected in dry impingers after filterable PM has been collected on a filter maintained as specified in either Method 5 of appendix A-3 to 40 CFR part 60, Method 17 of appendix A-6 to part 60 or Method 201A of appendix M to part 51. The organic and aqueous fractions on the impingers and an out-of-stack CPM filter are then dried and weighed. The total weight of the impinger fractions and the CPM filter represents the source's CPM portion of its PM_{10} or $PM_{2.5}$ emissions.

Method 202 uses a variety of solvents (water, acetone and hexane) and materials (glass impingers, filters, sample jars, solvent squirt bottles, etc.). Each of these components, as well as the sample recovery technician and the recovery area, presents a potential for contamination of sample. Blanks are used as both a qualitative and quantitative means of contamination control.

Field train recovery blanks are generally used as quality assurance checks to insure both proper recovery of the sample from the previous test run and low contamination level of solvents, recovery, and analytical equipment and procedures. In Method 202, the result for a field train recovery blank is also used as the value for blank correction in order to reduce the quality assurance and control analysis burden. Field train proof blanks, another quality assurance and control sample, are not influenced by poor recovery of a preceding run.

Industry Concerns

In using Method 202 in NSR permitting, industry stakeholders have expressed concern that source-specific CPM test results obtained with the method can include positive bias stemming both from the conversion of gaseous material to particulate form in the test apparatus (i.e., a measurement artifact) and from contamination of the apparatus and solvents. According to industry stakeholders, these biases translate into estimates of CPM associated with proposed new or modified emission units that are higher than the amount of CPM that actually would be emitted. To the extent that this overestimation of CPM is true with regard to a specific source, it can affect whether the source is determined to be subject to the PSD program or the nonattainment NSR program for $PM_{2.5}$ and/or PM_{10}. The alleged positive bias problem could also affect the demonstration via air dispersion modeling as to whether the new or modified source will cause or contribute to a violation of the PM_{10} or $PM_{2.5}$ NAAQS or applicable increment. The alleged overestimation problem could make it difficult for a source to satisfy certain requirements needed to obtain a PSD permit or nonattainment NSR permit. It could force the source to constrain its design or operation in ways not actually necessary to avoid causing or contributing to a violation of the NAAQS or applicable increment. The alleged problem could also affect the determination of the quantity of required emissions offsets in nonattainment areas. The use of emission factors that are based on Method 202 (or other testing methods with similar artifact and contamination issues) could lead to similar problems in estimating a source's CPM.

The National Council for Air and Stream Improvement, Inc. (NCASI) presented a report entitled "Investigations of Potential Biases Associated with EPA Methods 201A and 202" (September 20, 2013) to the EPA outlining its concerns with the use of Methods 201A and 202 and AP-42 emission factors in modeling for PSD. To examine the blank contamination due to method implementation issues, NCASI collected over 50 data points representing field train recovery blanks, reagent blanks and field train proof blanks. The train blank values presented by NCASI ranged from 0.5 mg to 13.3 mg. NCASI evaluated a subset of blank data and proposed that a blank correction of 7.0 mg was needed with the use of field train proof blanks in lieu of field train recovery blanks. To examine the positive bias associated with sulfur dioxide conversion, NCASI presented cation and anion concentrations from a single test series at a natural gas-fired boiler.

After reviewing the data presented by NCASI and our own investigations, the EPA acknowledges there can be an issue with implementation of Method 202 by some testing firms to meet the 2.0 mg levels allowed as a blank correction. The EPA has been investigating these issues independently and plans in the future to issue a best practices document for Method 202 and to revise Method 202, as necessary. The EPA independently assessed all of the train blank data presented by NCASI and determined that it is appropriate to use a blank correction of 5.1 mg[6] when using the value from a field proof blank in lieu of the field recovery blank. If this larger blank correction allowance is used, it is also critical to use a site-specific field train proof blank in lieu the field train recovery blank, since a field train recovery blank also measures the impact of a poor recovery procedure from the previous use of the sampling train. Sampling campaigns with field proof blank values larger than 5.1 mg should consider assessing their sample recovery practices and materials used and retesting the source.

However, after assessing the NCASI data on sulfur dioxide positive bias, the EPA does not believe it is necessary to change our existing guidance.[7] The EPA believes that the NCASI data set provides an incomplete understanding of the source matrix, and any potential biases or measurement artifacts are due to the limited data presented and the extremely long test runs. The EPA does not see sufficient evidence of a significant sulfur dioxide artifact. We do not recommend any departures from Method 202 as promulgated with respect to this issue.

There is ongoing work by the EPA to assess the issues associated with implementation of Method 202 by some private contractors resulting in blank levels above the required 2.0 mg. The EPA plans to issue guidance on best practices for Method 202 implementation and revise Method 202 in the future, as necessary.

[6] 95th percentile upper confidence level of all train blank data in the submitted NCASI "Investigations of Potential Biases Associated with EPA Methods 201A and 202" report

[7] For further discussion of this topic, see the preamble to the Method 202 revision (75 FR 80118, December 21, 2010) and the relevant response to comments document (Docket EPA-HQ-OAR-2008-0348).

Consideration of Emission Factors

In some cases, stack testing is not an option and reliance must be placed on emission factors from available references or emission factors developed by the permit applicant based on stack testing at other sources. While the test method for CPM used for all of the current AP-42 $PM_{2.5}$ emission factors had the potential for a sulfate artifact, this issue is not uniformly associated with all emission factors. Many $PM_{2.5}$ emission factors include only the filterable component of particulate matter and do not include CPM. As a result, these factors are biased low. In addition, when the condensable component was included, the previous version of Method 202 allowed testers and air agencies significant latitude in the laboratory methods used for its analysis. In the development of AP-42 emission factors, an attempt was made to exclude tests that would have a significant bias. However, few test companies provided adequate documentation to determine which of the many allowed or tester-generated analyses were performed. As a result, it is speculative to state categorically that all $PM_{2.5}$ emission factors which include CPM have a high bias.

It is important to note that as we use recent $PM_{2.5}$ test data to revise emission factors, we have the ability to compare the existing data to the new test data to evaluate whether to exclude the old data. We have worked effectively with industry to update other types of AP-42 factors (e.g., with corn refiners on factors for paved roads[8]) using data and analyses developed in cooperation with industry. We encourage similar collaborative efforts to resolve issues with $PM_{2.5}$ emission factors.

The EPA prefers stack emission measurements from individual sources rather than the use of estimates or emission factors. If representative source-specific data cannot be obtained, emissions information from equipment vendors (particularly emissions performance guarantees or actual test data from similar equipment) may be an acceptable source of information for permitting decisions. However, the use of any performance guarantees or actual test data from similar equipment should be carefully assessed to insure that the information being provided is based on measurement methods that are consistent with the most recent revision of Method 202. When such information is not available, use of emission factors may be necessary as a last resort. Whenever emission factors are being considered for use, the EPA emphasizes that their limitations in accurately representing the emissions from a particular facility, and the uncertainties of using emission factors in such situations, should be evaluated against the cost of further testing or analyses.

The recommendations contained in this interim guidance are not binding or enforceable against any person, and no part of the guidance or the guidance as a whole constitutes final agency action or the consummation of agency decision making. This document is not a rule or regulation, and individual air agencies may determine that the guidance it contains may not apply to a particular situation based upon the individual facts and circumstances. This guidance does not change or substitute for any law, regulation or other legally binding requirement and is not legally enforceable.

[8] Emission Factor Documentation for AP-42, Section 13.2.1 Paved Roads Background Document 2.2.6 http://www.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s0201.pdf.

1.4 Natural Gas Combustion

1.4.1 General[1-2]

Natural gas is one of the major combustion fuels used throughout the country. It is mainly used to generate industrial and utility electric power, produce industrial process steam and heat, and heat residential and commercial space. Natural gas consists of a high percentage of methane (generally above 85 percent) and varying amounts of ethane, propane, butane, and inerts (typically nitrogen, carbon dioxide, and helium). The average gross heating value of natural gas is approximately 1,020 British thermal units per standard cubic foot (Btu/scf), usually varying from 950 to 1,050 Btu/scf.

1.4.2 Firing Practices[3-5]

There are three major types of boilers used for natural gas combustion in commercial, industrial, and utility applications: watertube, firetube, and cast iron. Watertube boilers are designed to pass water through the inside of heat transfer tubes while the outside of the tubes is heated by direct contact with the hot combustion gases and through radiant heat transfer. The watertube design is the most common in utility and large industrial boilers. Watertube boilers are used for a variety of applications, ranging from providing large amounts of process steam, to providing hot water or steam for space heating, to generating high-temperature, high-pressure steam for producing electricity. Furthermore, watertube boilers can be distinguished either as field erected units or packaged units.

Field erected boilers are boilers that are constructed on site and comprise the larger sized watertube boilers. Generally, boilers with heat input levels greater than 100 MMBtu/hr, are field erected. Field erected units usually have multiple burners and, given the customized nature of their construction, also have greater operational flexibility and NO_x control options. Field erected units can also be further categorized as wall-fired or tangential-fired. Wall-fired units are characterized by multiple individual burners located on a single wall or on opposing walls of the furnace while tangential units have several rows of air and fuel nozzles located in each of the four corners of the boiler.

Package units are constructed off-site and shipped to the location where they are needed. While the heat input levels of packaged units may range up to 250 MMBtu/hr, the physical size of these units are constrained by shipping considerations and generally have heat input levels less than 100 MMBtu/hr. Packaged units are always wall-fired units with one or more individual burners. Given the size limitations imposed on packaged boilers, they have limited operational flexibility and cannot feasibly incorporate some NO_x control options.

Firetube boilers are designed such that the hot combustion gases flow through tubes, which heat the water circulating outside of the tubes. These boilers are used primarily for space heating systems, industrial process steam, and portable power boilers. Firetube boilers are almost exclusively packaged units. The two major types of firetube units are Scotch Marine boilers and the older firebox boilers. In cast iron boilers, as in firetube boilers, the hot gases are contained inside the tubes and the water being heated circulates outside the tubes. However, the units are constructed of cast iron rather than steel. Virtually all cast iron boilers are constructed as package boilers. These boilers are used to produce either low-pressure steam or hot water, and are most commonly used in small commercial applications.

Natural gas is also combusted in residential boilers and furnaces. Residential boilers and furnaces generally resemble firetube boilers with flue gas traveling through several channels or tubes with water or air circulated outside the channels or tubes.

1.4.3 Emissions[3-4]

The emissions from natural gas-fired boilers and furnaces include nitrogen oxides (NO_x), carbon monoxide (CO), and carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), volatile organic compounds (VOCs), trace amounts of sulfur dioxide (SO_2), and particulate matter (PM).

Nitrogen Oxides -

Nitrogen oxides formation occurs by three fundamentally different mechanisms. The principal mechanism of NO_x formation in natural gas combustion is thermal NO_x. The thermal NO_x mechanism occurs through the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most NO_x formed through the thermal NO_x mechanism occurs in the high temperature flame zone near the burners. The formation of thermal NO_x is affected by three furnace-zone factors: (1) oxygen concentration, (2) peak temperature, and (3) time of exposure at peak temperature. As these three factors increase, NO_x emission levels increase. The emission trends due to changes in these factors are fairly consistent for all types of natural gas-fired boilers and furnaces. Emission levels vary considerably with the type and size of combustor and with operating conditions (e.g., combustion air temperature, volumetric heat release rate, load, and excess oxygen level).

The second mechanism of NO_x formation, called prompt NO_x, occurs through early reactions of nitrogen molecules in the combustion air and hydrocarbon radicals from the fuel. Prompt NO_x reactions occur within the flame and are usually negligible when compared to the amount of NO_x formed through the thermal NO_x mechanism. However, prompt NO_x levels may become significant with ultra-low-NO_x burners.

The third mechanism of NO_x formation, called fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Due to the characteristically low fuel nitrogen content of natural gas, NO_x formation through the fuel NO_x mechanism is insignificant.

Carbon Monoxide -

The rate of CO emissions from boilers depends on the efficiency of natural gas combustion. Improperly tuned boilers and boilers operating at off-design levels decrease combustion efficiency resulting in increased CO emissions. In some cases, the addition of NO_x control systems such as low NO_x burners and flue gas recirculation (FGR) may also reduce combustion efficiency, resulting in higher CO emissions relative to uncontrolled boilers.

Volatile Organic Compounds -

The rate of VOC emissions from boilers and furnaces also depends on combustion efficiency. VOC emissions are minimized by combustion practices that promote high combustion temperatures, long residence times at those temperatures, and turbulent mixing of fuel and combustion air. Trace amounts of VOC species in the natural gas fuel (e.g., formaldehyde and benzene) may also contribute to VOC emissions if they are not completely combusted in the boiler.

Sulfur Oxides -

Emissions of SO_2 from natural gas-fired boilers are low because pipeline quality natural gas typically has sulfur levels of 2,000 grains per million cubic feet. However, sulfur-containing odorants are added to natural gas for detecting leaks, leading to small amounts of SO_2 emissions. Boilers combusting unprocessed natural gas may have higher SO_2 emissions due to higher levels of sulfur in the natural gas. For these units, a sulfur mass balance should be used to determine SO_2 emissions.

Particulate Matter -

Because natural gas is a gaseous fuel, filterable PM emissions are typically low. Particulate matter from natural gas combustion has been estimated to be less than 1 micrometer in size and has filterable and condensable fractions. Particulate matter in natural gas combustion are usually larger molecular weight hydrocarbons that are not fully combusted. Increased PM emissions may result from poor air/fuel mixing or maintenance problems.

Greenhouse Gases -[6-9]

CO_2, CH_4, and N_2O emissions are all produced during natural gas combustion. In properly tuned boilers, nearly all of the fuel carbon (99.9 percent) in natural gas is converted to CO_2 during the combustion process. This conversion is relatively independent of boiler or combustor type. Fuel carbon not converted to CO_2 results in CH_4, CO, and/or VOC emissions and is due to incomplete combustion. Even in boilers operating with poor combustion efficiency, the amount of CH_4, CO, and VOC produced is insignificant compared to CO_2 levels.

Formation of N_2O during the combustion process is affected by two furnace-zone factors. N_2O emissions are minimized when combustion temperatures are kept high (above 1475°F) and excess oxygen is kept to a minimum (less than 1 percent).

Methane emissions are highest during low-temperature combustion or incomplete combustion, such as the start-up or shut-down cycle for boilers. Typically, conditions that favor formation of N_2O also favor emissions of methane.

1.4.4 Controls[4,10]

NO_x Controls -

Currently, the two most prevalent combustion control techniques used to reduce NO_x emissions from natural gas-fired boilers are flue gas recirculation (FGR) and low NO_x burners. In an FGR system, a portion of the flue gas is recycled from the stack to the burner windbox. Upon entering the windbox, the recirculated gas is mixed with combustion air prior to being fed to the burner. The recycled flue gas consists of combustion products which act as inerts during combustion of the fuel/air mixture. The FGR system reduces NO_x emissions by two mechanisms. Primarily, the recirculated gas acts as a dilutent to reduce combustion temperatures, thus suppressing the thermal NO_x mechanism. To a lesser extent, FGR also reduces NO_x formation by lowering the oxygen concentration in the primary flame zone. The amount of recirculated flue gas is a key operating parameter influencing NO_x emission rates for these systems. An FGR system is normally used in combination with specially designed low NO_x burners capable of sustaining a stable flame with the increased inert gas flow resulting from the use of FGR. When low NO_x burners and FGR are used in combination, these techniques are capable of reducing NO_x emissions by 60 to 90 percent.

Low NO_x burners reduce NO_x by accomplishing the combustion process in stages. Staging partially delays the combustion process, resulting in a cooler flame which suppresses thermal NO_x formation. The two most common types of low NO_x burners being applied to natural gas-fired boilers are staged air burners and staged fuel burners. NO_x emission reductions of 40 to 85 percent (relative to uncontrolled emission levels) have been observed with low NO_x burners.

Other combustion control techniques used to reduce NO_x emissions include staged combustion and gas reburning. In staged combustion (e.g., burners-out-of-service and overfire air), the degree of staging is a key operating parameter influencing NO_x emission rates. Gas reburning is similar to the use of overfire

in the use of combustion staging. However, gas reburning injects additional amounts of natural gas in the upper furnace, just before the overfire air ports, to provide increased reduction of NO_x to NO_2.

Two postcombustion technologies that may be applied to natural gas-fired boilers to reduce NO_x emissions are selective noncatalytic reduction (SNCR) and selective catalytic reduction (SCR). The SNCR system injects ammonia (NH_3) or urea into combustion flue gases (in a specific temperature zone) to reduce NO_x emission. The Alternative Control Techniques (ACT) document for NO_x emissions from utility boilers, maximum SNCR performance was estimated to range from 25 to 40 percent for natural gas-fired boilers.[12] Performance data available from several natural gas fired utility boilers with SNCR show a 24 percent reduction in NO_x for applications on wall-fired boilers and a 13 percent reduction in NO_x for applications on tangential-fired boilers.[11] In many situations, a boiler may have an SNCR system installed to trim NO_x emissions to meet permitted levels. In these cases, the SNCR system may not be operated to achieve maximum NO_x reduction. The SCR system involves injecting NH_3 into the flue gas in the presence of a catalyst to reduce NO_x emissions. No data were available on SCR performance on natural gas fired boilers at the time of this publication. However, the ACT Document for utility boilers estimates NO_x reduction efficiencies for SCR control ranging from 80 to 90 percent.[12]

Emission factors for natural gas combustion in boilers and furnaces are presented in Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4.[11] Tables in this section present emission factors on a volume basis (lb/10^6 scf). To convert to an energy basis (lb/MMBtu), divide by a heating value of 1,020 MMBtu/10^6 scf. For the purposes of developing emission factors, natural gas combustors have been organized into three general categories: large wall-fired boilers with greater than 100 MMBtu/hr of heat input, boilers and residential furnaces with less than 100 MMBtu/hr of heat input, and tangential-fired boilers. Boilers within these categories share the same general design and operating characteristics and hence have similar emission characteristics when combusting natural gas.

Emission factors are rated from A to E to provide the user with an indication of how "good" the factor is, with "A" being excellent and "E" being poor. The criteria that are used to determine a rating for an emission factor can be found in the Emission Factor Documentation for AP-42 Section 1.4 and in the introduction to the AP-42 document.

1.4.5 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section are summarized below. For further detail, consult the Emission Factor Documentation for this section. These and other documents can be found on the Emission Factor and Inventory Group (EFIG) home page (http://www.epa.gov/ttn/chief).

Supplement D, March 1998

- Text was revised concerning Firing Practices, Emissions, and Controls.
- All emission factors were updated based on 482 data points taken from 151 source tests. Many new emission factors have been added for speciated organic compounds, including hazardous air pollutants.

July 1998 - minor changes

- Footnote D was added to table 1.4-3 to explain why the sum of individual HAP may exceed VOC or TOC, the web address was updated, and the references were reordered.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

TABLE 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
7440-38-2	Arsenic[b]	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium[b]	<1.2E-05	E
7440-43-9	Cadmium[b]	1.1E-03	D
7440-47-3	Chromium[b]	1.4E-03	D
7440-48-4	Cobalt[b]	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese[b]	3.8E-04	D
7439-97-6	Mercury[b]	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel[b]	2.1E-03	C
7782-49-2	Selenium[b]	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. Emission factors preceeded by a less-than symbol are based on method detection limits. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by l6. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020.

[b] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

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3.3 Gasoline And Diesel Industrial Engines

3.3.1 General

The engine category addressed by this section covers a wide variety of industrial applications of both gasoline and diesel internal combustion (IC) engines such as aerial lifts, fork lifts, mobile refrigeration units, generators, pumps, industrial sweepers/scrubbers, material handling equipment (such as conveyors), and portable well-drilling equipment. The three primary fuels for reciprocating IC engines are gasoline, diesel fuel oil (No.2), and natural gas. Gasoline is used primarily for mobile and portable engines. Diesel fuel oil is the most versatile fuel and is used in IC engines of all sizes. The rated power of these engines covers a rather substantial range, up to 250 horsepower (hp) for gasoline engines and up to 600 hp for diesel engines. (Diesel engines greater than 600 hp are covered in Section 3.4, "Large Stationary Diesel And All Stationary Dual-fuel Engines".) Understandably, substantial differences in engine duty cycles exist. It was necessary, therefore, to make reasonable assumptions concerning usage in order to formulate some of the emission factors.

3.3.2 Process Description

All reciprocating IC engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated.

There are 2 methods used for stationary reciprocating IC engines: compression ignition (CI) and spark ignition (SI). This section deals with both types of reciprocating IC engines. All diesel-fueled engines are compression ignited, and all gasoline-fueled engines are spark ignited.

In CI engines, combustion air is first compression heated in the cylinder, and diesel fuel oil is then injected into the hot air. Ignition is spontaneous because the air temperature is above the autoignition temperature of the fuel. SI engines initiate combustion by the spark of an electrical discharge. Usually the fuel is mixed with the air in a carburetor (for gasoline) or at the intake valve (for natural gas), but occasionally the fuel is injected into the compressed air in the cylinder.

CI engines usually operate at a higher compression ratio (ratio of cylinder volume when the piston is at the bottom of its stroke to the volume when it is at the top) than SI engines because fuel is not present during compression; hence there is no danger of premature autoignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), CI engines are more efficient than SI engines. This increased efficiency is gained at the expense of poorer response to load changes and a heavier structure to withstand the higher pressures.[1]

3.3.3 Emissions

Most of the pollutants from IC engines are emitted through the exhaust. However, some total organic compounds (TOC) escape from the crankcase as a result of blowby (gases that are vented from the oil pan after they have escaped from the cylinder past the piston rings) and from the fuel tank and carburetor because of evaporation. Nearly all of the TOCs from diesel CI engines enter the

atmosphere from the exhaust. Evaporative losses are insignificant in diesel engines due to the low volatility of diesel fuels.

The primary pollutants from internal combustion engines are oxides of nitrogen (NO_x), total organic compounds (TOC), carbon monoxide (CO), and particulates, which include both visible (smoke) and nonvisible emissions. Nitrogen oxide formation is directly related to high pressures and temperatures during the combustion process and to the nitrogen content, if any, of the fuel. The other pollutants, HC, CO, and smoke, are primarily the result of incomplete combustion. Ash and metallic additives in the fuel also contribute to the particulate content of the exhaust. Sulfur oxides (SO_x) also appear in the exhaust from IC engines. The sulfur compounds, mainly sulfur dioxide (SO_2), are directly related to the sulfur content of the fuel.[2]

3.3.3.1 Nitrogen Oxides -

Nitrogen oxide formation occurs by two fundamentally different mechanisms. The predominant mechanism with internal combustion engines is thermal NO_x which arises from the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most thermal NO_x is formed in the high-temperature region of the flame from dissociated molecular nitrogen in the combustion air. Some NO_x, called prompt NO_x, is formed in the early part of the flame from reaction of nitrogen intermediary species, and HC radicals in the flame. The second mechanism, fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Gasoline, and most distillate oils have no chemically-bound fuel N_2 and essentially all NO_x formed is thermal NO_x.

3.3.3.2 Total Organic Compounds -

The pollutants commonly classified as hydrocarbons are composed of a wide variety of organic compounds and are discharged into the atmosphere when some of the fuel remains unburned or is only partially burned during the combustion process. Most unburned hydrocarbon emissions result from fuel droplets that were transported or injected into the quench layer during combustion. This is the region immediately adjacent to the combustion chamber surfaces, where heat transfer outward through the cylinder walls causes the mixture temperatures to be too low to support combustion.

Partially burned hydrocarbons can occur because of poor air and fuel homogeneity due to incomplete mixing, before or during combustion; incorrect air/fuel ratios in the cylinder during combustion due to maladjustment of the engine fuel system; excessively large fuel droplets (diesel engines); and low cylinder temperature due to excessive cooling (quenching) through the walls or early cooling of the gases by expansion of the combustion volume caused by piston motion before combustion is completed.[2]

3.3.3.3 Carbon Monoxide -

Carbon monoxide is a colorless, odorless, relatively inert gas formed as an intermediate combustion product that appears in the exhaust when the reaction of CO to CO_2 cannot proceed to completion. This situation occurs if there is a lack of available oxygen near the hydrocarbon (fuel) molecule during combustion, if the gas temperature is too low, or if the residence time in the cylinder is too short. The oxidation rate of CO is limited by reaction kinetics and, as a consequence, can be accelerated only to a certain extent by improvements in air and fuel mixing during the combustion process.[2-3]

3.3.3.4 Smoke and Particulate Matter -

White, blue, and black smoke may be emitted from IC engines. Liquid particulates appear as white smoke in the exhaust during an engine cold start, idling, or low load operation. These are formed in the quench layer adjacent to the cylinder walls, where the temperature is not high enough to ignite the fuel. Blue smoke is emitted when lubricating oil leaks, often past worn piston rings, into the combustion chamber and is partially burned. Proper maintenance is the most effective method of preventing blue smoke emissions from all types of IC engines. The primary constituent of black smoke is agglomerated carbon particles (soot) formed in regions of the combustion mixtures that are oxygen deficient.[2]

3.3.3.5 Sulfur Oxides -

Sulfur oxides emissions are a function of only the sulfur content in the fuel rather than any combustion variables. In fact, during the combustion process, essentially all the sulfur in the fuel is oxidized to SO_2. The oxidation of SO_2 gives sulfur trioxide (SO_3), which reacts with water to give sulfuric acid (H_2SO_4), a contributor to acid precipitation. Sulfuric acid reacts with basic substances to give sulfates, which are fine particulates that contribute to PM-10 and visibility reduction. Sulfur oxide emissions also contribute to corrosion of the engine parts.[2-3]

3.3.4 Control Technologies

Control measures to date are primarily directed at limiting NO_x and CO emissions since they are the primary pollutants from these engines. From a NO_x control viewpoint, the most important distinction between different engine models and types of reciprocating engines is whether they are rich-burn or lean-burn. Rich-burn engines have an air-to-fuel ratio operating range that is near stoichiometric or fuel-rich of stoichiometric and as a result the exhaust gas has little or no excess oxygen. A lean-burn engine has an air-to-fuel operating range that is fuel-lean of stoichiometric; therefore, the exhaust from these engines is characterized by medium to high levels of O_2. The most common NO_x control technique for diesel and dual-fuel engines focuses on modifying the combustion process. However, selective catalytic reduction (SCR) and nonselective catalytic reduction (NSCR) which are post-combustion techniques are becoming available. Controls for CO have been partly adapted from mobile sources.[4]

Combustion modifications include injection timing retard (ITR), preignition chamber combustion (PCC), air-to-fuel ratio adjustments, and derating. Injection of fuel into the cylinder of a CI engine initiates the combustion process. Retarding the timing of the diesel fuel injection causes the combustion process to occur later in the power stroke when the piston is in the downward motion and combustion chamber volume is increasing. By increasing the volume, the combustion temperature and pressure are lowered, thereby lowering NO_x formation. ITR reduces NO_x from all diesel engines; however, the effectiveness is specific to each engine model. The amount of NO_x reduction with ITR diminishes with increasing levels of retard.[4]

Improved swirl patterns promote thorough air and fuel mixing and may include a precombustion chamber (PCC). A PCC is an antechamber that ignites a fuel-rich mixture that propagates to the main combustion chamber. The high exit velocity from the PCC results in improved mixing and complete combustion of the lean air/fuel mixture which lowers combustion temperature, thereby reducing NO_x emissions.[4]

The air-to-fuel ratio for each cylinder can be adjusted by controlling the amount of fuel that enters each cylinder. At air-to-fuel ratios less than stoichiometric (fuel-rich), combustion occurs under conditions of insufficient oxygen which causes NO_x to decrease because of lower oxygen and lower temperatures. Derating involves restricting the engine operation to lower than normal levels of power production for the given application. Derating reduces cylinder pressures and temperatures, thereby lowering NO_x formation rates.[4]

SCR is an add-on NO_x control placed in the exhaust stream following the engine and involves injecting ammonia (NH_3) into the flue gas. The NH_3 reacts with NO_x in the presence of a catalyst to form water and nitrogen. The effectiveness of SCR depends on fuel quality and engine duty cycle (load fluctuations). Contaminants in the fuel may poison or mask the catalyst surface causing a reduction or termination in catalyst activity. Load fluctuations can cause variations in exhaust temperature and NO_x concentration which can create problems with the effectiveness of the SCR system.[4]

NSCR is often referred to as a three-way conversion catalyst system because the catalyst reactor simultaneously reduces NO_x, CO, and HC and involves placing a catalyst in the exhaust stream of the engine. The reaction requires that the O_2 levels be kept low and that the engine be operated at fuel-rich air-to-fuel ratios.[4]

The most accurate method for calculating such emissions is on the basis of "brake-specific" emission factors (pounds per horsepower-hour [lb/hp-hr]). Emissions are the product of the brake-specific emission factor, the usage in hours, the rated power available, and the load factor (the power actually used divided by the power available). However, for emission inventory purposes, it is often easier to assess this activity on the basis of fuel used.

Once reasonable usage and duty cycles for this category were ascertained, emission values were aggregated to arrive at the factors for criteria and organic pollutants presented. Factors in Table 3.3-1 are in pounds per million British thermal unit (lb/MMBtu). Emission data for a specific design type were weighted according to estimated material share for industrial engines. The emission factors in these tables, because of their aggregate nature, are most appropriately applied to a population of industrial engines rather than to an individual power plant. Table 3.3-2 shows unweighted speciated organic compound and air toxic emission factors based upon only 2 engines. Their inclusion in this section is intended for rough order-of-magnitude estimates only.

Table 3.3-3 summarizes whether the various diesel emission reduction technologies (some of which may be applicable to gasoline engines) will generally increase or decrease the selected parameter. These technologies are categorized into fuel modifications, engine modifications, and exhaust after-treatments. Current data are insufficient to quantify the results of the modifications. Table 3.3-3 provides general information on the trends of changes on selected parameters.

3.3.5 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below. For further detail, consult the memoranda describing each supplement or the background report for this section. These and other documents can be found on the CHIEF electronic bulletin board (919-541-5742), or on the new EFIG home page (http://www.epa.gov/oar/oaqps/efig/).

Supplement A, February 1996

No changes.

Supplement B, October 1996

- Text was revised concerning emissions and controls.
- The CO_2 emission factor was adjusted to reflect 98.5 percent conversion efficiency.

Table 3.3-1. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES[a]

Pollutant	Gasoline Fuel (SCC 2-02-003-01, 2-03-003-01)		Diesel Fuel (SCC 2-02-001-02, 2-03-001-01)		EMISSION FACTOR RATING
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	
NO_x	0.011	1.63	0.031	4.41	D
CO	0.439	62.7	6.68 E-03	0.95	D
SO_x	5.91 E-04	0.084	2.05 E-03	0.29	D
PM-10[b]	7.21 E-04	0.10	2.20 E-03	0.31	D
CO_2[c]	1.08	154	1.15	164	B
Aldehydes	4.85 E-04	0.07	4.63 E-04	0.07	D
TOC					
Exhaust	0.015	2.10	2.47 E-03	0.35	D
Evaporative	6.61 E-04	0.09	0.00	0.00	E
Crankcase	4.85 E-03	0.69	4.41 E-05	0.01	E
Refueling	1.08 E-03	0.15	0.00	0.00	E

[a] References 2,5-6,9-14. When necessary, an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr was used to convert from lb/MMBtu to lb/hp-hr. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code. TOC = total organic compounds.

[b] PM-10 = particulate matter less than or equal to 10 µm aerodynamic diameter. All particulate is assumed to be ≤ 1 µm in size.

[c] Assumes 99% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 86 weight % carbon in gasoline, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and gasoline heating value of 20,300 Btu/lb.

Table 3.3-2. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR UNCONTROLLED DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (Fuel Input) (lb/MMBtu)
Benzene[b]	9.33 E-04
Toluene[b]	4.09 E-04
Xylenes[b]	2.85 E-04
Propylene[b]	2.58 E-03
1,3-Butadiene[b,c]	<3.91 E-05
Formaldehyde[b]	1.18 E-03
Acetaldehyde[b]	7.67 E-04
Acrolein[b]	<9.25 E-05
Polycyclic aromatic hydrocarbons (PAH)	
Naphthalene[b]	8.48 E-05
Acenaphthylene	<5.06 E-06
Acenaphthene	<1.42 E-06
Fluorene	2.92 E-05
Phenanthrene	2.94 E-05
Anthracene	1.87 E-06
Fluoranthene	7.61 E-06
Pyrene	4.78 E-06
Benzo(a)anthracene	1.68 E-06
Chrysene	3.53 E-07
Benzo(b)fluoranthene	<9.91 E-08
Benzo(k)fluoranthene	<1.55 E-07
Benzo(a)pyrene	<1.88 E-07
Indeno(1,2,3-cd)pyrene	<3.75 E-07
Dibenz(a,h)anthracene	<5.83 E-07
Benzo(g,h,l)perylene	<4.89 E-07
TOTAL PAH	1.68 E-04

[a] Based on the uncontrolled levels of 2 diesel engines from References 6-7. Source Classification Codes 2-02-001-02, 2-03-001-01. To convert from lb/MMBtu to ng/J, multiply by 430.
[b] Hazardous air pollutant listed in the *Clean Air Act*.
[c] Based on data from 1 engine.

Table 3.3-3. EFFECT OF VARIOUS EMISSION CONTROL TECHNOLOGIES ON DIESEL ENGINES[a]

Technology	Affected Parameter	
	Increase	Decrease
Fuel modifications		
Sulfur content increase	PM, wear	
Aromatic content increase	PM, NO_x	
Cetane number		PM, NO_x
10% and 90% boiling point		PM
Fuel additives		PM, NO_x
Water/Fuel emulsions		NO_x
Engine modifications		
Injection timing retard	PM, BSFC	NO_x, power
Fuel injection pressure	PM, NO_x	
Injection rate control		NO_x, PM
Rapid spill nozzles		PM
Electronic timing & metering		NO_x, PM
Injector nozzle geometry		PM
Combustion chamber modifications		NO_x, PM
Turbocharging	PM, power	NO_x
Charge cooling		NO_x
Exhaust gas recirculation	PM, power, wear	NO_x
Oil consumption control		PM, wear
Exhaust after-treatment		
Particulate traps		PM
Selective catalytic reduction		NO_x
Oxidation catalysts		TOC, CO, PM

[a] Reference 8. PM = particulate matter. BSFC = brake-specific fuel consumption.

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3.4 Large Stationary Diesel And All Stationary Dual-fuel Engines

3.4.1 General

The primary domestic use of large stationary diesel engines (greater than 600 horsepower [hp]) is in oil and gas exploration and production. These engines, in groups of 3 to 5, supply mechanical power to operate drilling (rotary table), mud pumping, and hoisting equipment, and may also operate pumps or auxiliary power generators. Another frequent application of large stationary diesels is electricity generation for both base and standby service. Smaller uses include irrigation, hoisting, and nuclear power plant emergency cooling water pump operation.

Dual-fuel engines were developed to obtain compression ignition performance and the economy of natural gas, using a minimum of 5 to 6 percent diesel fuel to ignite the natural gas. Large dual-fuel engines have been used almost exclusively for prime electric power generation. This section includes all dual-fuel engines.

3.4.2 Process Description

All reciprocating internal combustion (IC) engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated.

There are 2 ignition methods used in stationary reciprocating IC engines, compression ignition (CI) and spark ignition (SI). In CI engines, combustion air is first compression heated in the cylinder, and diesel fuel oil is then injected into the hot air. Ignition is spontaneous because the air temperature is above the autoignition temperature of the fuel. SI engines initiate combustion by the spark of an electrical discharge. Usually the fuel is mixed with the air in a carburetor (for gasoline) or at the intake valve (for natural gas), but occasionally the fuel is injected into the compressed air in the cylinder. Although all diesel- fueled engines are compression ignited and all gasoline- and gas-fueled engines are spark ignited, gas can be used in a CI engine if a small amount of diesel fuel is injected into the compressed gas/air mixture to burn any mixture ratio of gas and diesel oil (hence the name dual fuel), from 6 to 100 percent diesel oil.

CI engines usually operate at a higher compression ratio (ratio of cylinder volume when the piston is at the bottom of its stroke to the volume when it is at the top) than SI engines because fuel is not present during compression; hence there is no danger of premature autoignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), CI engines are more efficient than SI engines. This increased efficiency is gained at the expense of poorer response to load changes and a heavier structure to withstand the higher pressures.[1]

3.4.3 Emissions And Controls

Most of the pollutants from IC engines are emitted through the exhaust. However, some total organic compounds (TOC) escape from the crankcase as a result of blowby (gases that are vented from the oil pan after they have escaped from the cylinder past the piston rings) and from the fuel tank

and carburetor because of evaporation. Nearly all of the TOCs from diesel CI engines enter the atmosphere from the exhaust. Crankcase blowby is minor because TOCs are not present during compression of the charge. Evaporative losses are insignificant in diesel engines due to the low volatility of diesel fuels. In general, evaporative losses are also negligible in engines using gaseous fuels because these engines receive their fuel continuously from a pipe rather than via a fuel storage tank and fuel pump.

The primary pollutants from internal combustion engines are oxides of nitrogen (NO_x), hydrocarbons and other organic compounds, carbon monoxide (CO), and particulates, which include both visible (smoke) and nonvisible emissions. Nitrogen oxide formation is directly related to high pressures and temperatures during the combustion process and to the nitrogen content, if any, of the fuel. The other pollutants, HC, CO, and smoke, are primarily the result of incomplete combustion. Ash and metallic additives in the fuel also contribute to the particulate content of the exhaust. Sulfur oxides also appear in the exhaust from IC engines. The sulfur compounds, mainly sulfur dioxide (SO_2), are directly related to the sulfur content of the fuel.[2]

3.4.3.1 Nitrogen Oxides -

Nitrogen oxide formation occurs by two fundamentally different mechanisms. The predominant mechanism with internal combustion engines is thermal NO_x which arises from the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most thermal NO_x is formed in the high-temperature region of the flame from dissociated molecular nitrogen in the combustion air. Some NO_x, called prompt NO_x, is formed in the early part of the flame from reaction of nitrogen intermediary species, and HC radicals in the flame. The second mechanism, fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Gasoline, and most distillate oils, have no chemically-bound fuel N_2 and essentially all NO_x formed is thermal NO_x.

3.4.3.2 Total Organic Compounds -

The pollutants commonly classified as hydrocarbons are composed of a wide variety of organic compounds and are discharged into the atmosphere when some of the fuel remains unburned or is only partially burned during the combustion process. Most unburned hydrocarbon emissions result from fuel droplets that were transported or injected into the quench layer during combustion. This is the region immediately adjacent to the combustion chamber surfaces, where heat transfer outward through the cylinder walls causes the mixture temperatures to be too low to support combustion.

Partially burned hydrocarbons can occur because of poor air and fuel homogeneity due to incomplete mixing, before or during combustion; incorrect air/fuel ratios in the cylinder during combustion due to maladjustment of the engine fuel system; excessively large fuel droplets (diesel engines); and low cylinder temperature due to excessive cooling (quenching) through the walls or early cooling of the gases by expansion of the combustion volume caused by piston motion before combustion is completed.[2]

3.4.3.3 Carbon Monoxide -

Carbon monoxide is a colorless, odorless, relatively inert gas formed as an intermediate combustion product that appears in the exhaust when the reaction of CO to CO_2 cannot proceed to completion. This situation occurs if there is a lack of available oxygen near the hydrocarbon (fuel) molecule during combustion, if the gas temperature is too low, or if the residence time in the cylinder is too short. The oxidation rate of CO is limited by reaction kinetics and, as a consequence, can be accelerated only to a certain extent by improvements in air and fuel mixing during the combustion process.[2-3]

3.4.3.4 Smoke, Particulate Matter, and PM-10 -

White, blue, and black smoke may be emitted from IC engines. Liquid particulates appear as white smoke in the exhaust during an engine cold start, idling, or low load operation. These are formed in the quench layer adjacent to the cylinder walls, where the temperature is not high enough to ignite the fuel. Blue smoke is emitted when lubricating oil leaks, often past worn piston rings, into the combustion chamber and is partially burned. Proper maintenance is the most effective method of preventing blue smoke emissions from all types of IC engines. The primary constituent of black smoke is agglomerated carbon particles (soot).[2]

3.4.3.5 Sulfur Oxides -

Sulfur oxide emissions are a function of only the sulfur content in the fuel rather than any combustion variables. In fact, during the combustion process, essentially all the sulfur in the fuel is oxidized to SO_2. The oxidation of SO_2 gives sulfur trioxide (SO_3), which reacts with water to give sulfuric acid (H_2SO_4), a contributor to acid precipitation. Sulfuric acid reacts with basic substances to give sulfates, which are fine particulates that contribute to PM-10 and visibility reduction. Sulfur oxide emissions also contribute to corrosion of the engine parts.[2,3]

Table 3.4-1 contains gaseous emission factors for the pollutants discussed above, expressed in units of pounds per horsepower-hour (lb/hp-hr), and pounds per million British thermal unit (lb/MMBtu). Table 3.4-2 shows the particulate and particle-sizing emission factors. Table 3.4-3 shows the speciated organic compound emission factors and Table 3.4-4 shows the emission factors for polycyclic aromatic hydrocarbons (PAH). These tables do not provide a complete speciated organic compound and PAH listing because they are based only on a single engine test; they are to be used only for rough order of magnitude comparisons.

Table 3.4-5 shows the NO_x reduction and fuel consumption penalties for diesel and dual-fueled engines based on some of the available control techniques. The emission reductions shown are those that have been demonstrated. The effectiveness of controls on a particular engine will depend on the specific design of each engine, and the effectiveness of each technique could vary considerably. Other NO_x control techniques exist but are not included in Table 3.4-5. These techniques include internal/external exhaust gas recirculation, combustion chamber modification, manifold air cooling, and turbocharging.

3.4.4 Control Technologies

Control measures to date are primarily directed at limiting NO_x and CO emissions since they are the primary pollutants from these engines. From a NO_x control viewpoint, the most important distinction between different engine models and types of reciprocating engines is whether they are rich-burn or lean-burn. Rich-burn engines have an air-to-fuel ratio operating range that is near stoichiometric or fuel-rich of stoichiometric and as a result the exhaust gas has little or no excess oxygen. A lean-burn engine has an air-to-fuel operating range that is fuel-lean of stoichiometric; therefore, the exhaust from these engines is characterized by medium to high levels of O_2. The most common NO_x control technique for diesel and dual fuel engines focuses on modifying the combustion process. However, selective catalytic reduction (SCR) and nonselective catalytic reduction (NSCR) which are post-combustion techniques are becoming available. Control for CO have been partly adapted from mobile sources.[5]

Combustion modifications include injection timing retard (ITR), preignition chamber combustion (PCC), air-to-fuel ratio, and derating. Injection of fuel into the cylinder of a CI engine initiates the combustion process. Retarding the timing of the diesel fuel injection causes the combustion process to occur later in the power stroke when the piston is in the downward motion and

combustion chamber volume is increasing. By increasing the volume, the combustion temperature and pressure are lowered, thereby lowering NO_x formation. ITR reduces NO_x from all diesel engines; however, the effectiveness is specific to each engine model. The amount of NO_x reduction with ITR diminishes with increasing levels of retard.[5]

Improved swirl patterns promote thorough air and fuel mixing and may include a precombustion chamber (PCC). A PCC is an antechamber that ignites a fuel-rich mixture that propagates to the main combustion chamber. The high exit velocity from the PCC results in improved mixing and complete combustion of the lean air/fuel mixture which lowers combustion temperature, thereby reducing NO_x emissions.[5]

The air-to-fuel ratio for each cylinder can be adjusted by controlling the amount of fuel that enters each cylinder. At air-to-fuel ratios less than stoichiometric (fuel-rich), combustion occurs under conditions of insufficient oxygen which causes NO_x to decrease because of lower oxygen and lower temperatures. Derating involves restricting engine operation to lower than normal levels of power production for the given application. Derating reduces cylinder pressures and temperatures thereby lowering NO_x formation rates.[5]

SCR is an add-on NO_x control placed in the exhaust stream following the engine and involves injecting ammonia (NH_3) into the flue gas. The NH_3 reacts with the NO_x in the presence of a catalyst to form water and nitrogen. The effectiveness of SCR depends on fuel quality and engine duty cycle (load fluctuations). Contaminants in the fuel may poison or mask the catalyst surface causing a reduction or termination in catalyst activity. Load fluctuations can cause variations in exhaust temperature and NO_x concentration which can create problems with the effectiveness of the SCR system.[5]

NSCR is often referred to as a three-way conversion catalyst system because the catalyst reactor simultaneously reduces NO_x, CO, and HC and involves placing a catalyst in the exhaust stream of the engine. The reaction requires that the O_2 levels be kept low and that the engine be operated at fuel-rich air-to-fuel ratios.[5]

3.4.5 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below. For further detail, consult the memoranda describing each supplement or the background report for this section. These and other documents can be found on the CHIEF electronic bulletin board (919-541-5742), or on the new EFIG home page (http://www.epa.gov/oar/oaqps/efig/).

Supplement A, February 1996

No changes.

Supplement B, October 1996

- The general text was updated.
- Controlled NO_x factors and PM factors were added for diesel units.
- Math errors were corrected in factors for CO from diesel units and for uncontrolled NO_x from dual fueled units.

Table 3.4-1. GASEOUS EMISSION FACTORS FOR LARGE STATIONARY DIESEL AND ALL STATIONARY DUAL-FUEL ENGINES[a]

Pollutant	Diesel Fuel (SCC 2-02-004-01)			Dual Fuel[b] (SCC 2-02-004-02)		
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING
NO_x						
Uncontrolled	0.024	3.2	B	0.018	2.7	D
Controlled	0.013[c]	1.9[c]	B	ND	ND	NA
CO	5.5 E-03	0.85	C	7.5 E-03	1.16	D
SO_x[d]	8.09 E-03S_1	1.01S_1	B	4.06 E-04S_1 + 9.57 E-03S_2	0.05S_1 + 0.895S_2	B
CO_2[e]	1.16	165	B	0.772	110	B
PM	0.0007[c]	0.1[c]	B	ND	ND	NA
TOC (as CH_4)	7.05 E-04	0.09	C	5.29 E-03	0.8	D
Methane	[f]	[f]	E	3.97 E-03	0.6	E
Nonmethane	[f]	[f]	E	1.32 E-03	0.2[g]	E

[a] Based on uncontrolled levels for each fuel, from References 2,6-7. When necessary, the average heating value of diesel was assumed to be 19,300 Btu/lb with a density of 7.1 lb/gallon. The power output and fuel input values were averaged independently from each other, because of the use of actual brake-specific fuel consumption (BSFC) values for each data point and of the use of data possibly sufficient to calculate only 1 of the 2 emission factors (e. g., enough information to calculate lb/MMBtu, but not lb/hp-hr). Factors are based on averages across all manufacturers and duty cycles. The actual emissions from a particular engine or manufacturer could vary considerably from these levels. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code.

[b] Dual fuel assumes 95% natural gas and 5% diesel fuel.

[c] References 8-26. Controlled NO_x is by ignition timing retard.

[d] Assumes that all sulfur in the fuel is converted to SO_2. S_1 = % sulfur in fuel oil; S_2 = % sulfur in natural gas. For example, if sulfer content is 1.5%, then S = 1.5.

[e] Assumes 100% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 70 weight % carbon in natural gas, dual-fuel mixture of 5% diesel with 95% natural gas, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and natural gas heating value of 1050 Btu/scf.

[f] Based on data from 1 engine, TOC is by weight 9% methane and 91% nonmethane.

[g] Assumes that nonmethane organic compounds are 25% of TOC emissions from dual-fuel engines. Molecular weight of nonmethane gas stream is assumed to be that of methane.

Table 3.4-2. PARTICULATE AND PARTICLE-SIZING EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Filterable particulate[b]	
< 1 μm	0.0478
< 3 μm	0.0479
< 10 μm	0.0496
Total filterable particulate	0.0620
Condensable particulate	0.0077
Total PM-10[c]	0.0573
Total particulate[d]	0.0697

[a] Based on 1 uncontrolled diesel engine from Reference 6. Source Classification Code 2-02-004-01. The data for the particulate emissions were collected using Method 5, and the particle size distributions were collected using a Source Assessment Sampling System. To convert from lb/MMBtu to ng/J, multiply by 430. PM-10 = particulate matter ≤ 10 micrometers (μm) aerometric diameter.

[b] Particle size is expressed as aerodynamic diameter.

[c] Total PM-10 is the sum of filterable particulate less than 10 μm aerodynamic diameter and condensable particulate.

[d] Total particulate is the sum of the total filterable particulate and condensable particulate.

Table 3.4-3. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Benzene[b]	7.76 E-04
Toluene[b]	2.81 E-04
Xylenes[b]	1.93 E-04
Propylene	2.79 E-03
Formaldehyde[b]	7.89 E-05
Acetaldehyde[b]	2.52 E-05
Acrolein[b]	7.88 E-06

[a]Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.
[b]Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-4. PAH EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

PAH	Emission Factor (lb/MMBtu) (fuel input)
Naphthalene[b]	1.30 E-04
Acenaphthylene	9.23 E-06
Acenaphthene	4.68 E-06
Fluorene	1.28 E-05
Phenanthrene	4.08 E-05
Anthracene	1.23 E-06
Fluoranthene	4.03 E-06
Pyrene	3.71 E-06
Benz(a)anthracene	6.22 E-07
Chrysene	1.53 E-06
Benzo(b)fluoranthene	1.11 E-06
Benzo(k)fluoranthene	<2.18 E-07
Benzo(a)pyrene	<2.57 E-07
Indeno(1,2,3-cd)pyrene	<4.14 E-07
Dibenz(a,h)anthracene	<3.46 E-07
Benzo(g,h,l)perylene	<5.56 E-07
TOTAL PAH	<2.12 E-04

[a] Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.

[b] Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-5. NO_x REDUCTION AND FUEL CONSUMPTION PENALTIES FOR LARGE STATIONARY DIESEL AND DUAL-FUEL ENGINES[a]

Control Approach		Diesel (SCC 2-02-004-01)		Dual Fuel (SCC 2-02-004-02)	
		NO_x Reduction (%)	ΔBSFC[b] (%)	NO_x Reduction (%)	ΔBSFC (%)
Derate	10%	ND	ND	<20	4
	20%	<20	4	ND	ND
	25%	5 - 23	1 - 5	1 - 33	1 - 7
Retard	2°	<20	4	<20	3
	4°	<40	4	<40	1
	8°	28 - 45	2 - 8	50 - 73	3 - 5
Air-to-fuel	3%	ND	ND	<20	0
	±10%	7 - 8	3	25 - 40	1 - 3
Water injection (H_2O/fuel ratio)	50%	25 - 35	2 - 4	ND	ND
SCR		80 - 95	0	80 - 95	0

[a] References 1,27-28. The reductions shown are typical and will vary depending on the engine and duty cycle. SCC = Source Classification Code. ΔBSFC = change in brake-specific fuel consumption. ND = no data.

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VALE PROGRAM APPLICATION FOR AIP DISCRETIONARY GRANT
(FOR ENVIRONMENTAL HEALTH DEPARTMENT REVIEW)

INSTALLATION OF CENTRAL UTILITY PLANT UPGRADES

Albuquerque International Sunport

Submitted by

City of Albuquerque
with the assistance of LeighFisher

May 13, 2014

Leigh | Fisher

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SECTION 1: PROJECT INFORMATION

Project Title: VALE Application for Central Utility Plant Upgrades

Airport Code: ABQ

Airport Name: Albuquerque International Sunport

Airport Sponsor: City of Albuquerque Aviation Department

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SECTION 2: DESCRIPTION OF PROPOSED EMISSION REDUCTION MEASURES

This Voluntary Airport Low Emission (VALE) Program application pertains to proposed low-emission upgrades of the Central Utility Plant (CUP) at the Albuquerque International Sunport (the Sunport). The City of Albuquerque Aviation Department (the City), as owner and operator of the Sunport, seeks $541,579 in fiscal year (FY) 2014 Federal Aviation Administration (FAA) Airport Improvement Program (AIP) discretionary funding via the VALE Program to partially cover the cost of the Project. The requested grant amount would help fund the following components of the Project: (1) the purchase and installation of two ultra-low nitrogen oxides (NO_X) heating units, (2) the purchase and installation of two ultra-low NO_X burners equipped with electronic burner controls, including variable frequency drive (VFD) fans to ensure low-emission combustion, (3) project formulation, (4) electrical and mechanical infrastructure, and (6) demolition, engineering, and design.

The City is eligible for 84.29% AIP funding since the Sunport is a medium-hub and is adjusted for unappropriated and unreserved public lands and nontaxable Indian lands in the State of New Mexico, as described in 49 USC 47109 - Sec. 47109(b). The City is eligible for VALE Program funding because the Sunport is located in an area designated by the United States Environmental Protection Agency's (EPA's) National Ambient Air Quality Standards as in maintenance for carbon monoxide (CO).

2.1 Project Description

The proposed measures would reduce on-airport emissions through the use of low-emission burner equipment installed at the Sunport's CUP, thereby reducing the emissions of criteria air pollutants.

2.1.1 Existing Conditions and Baseline Scenario

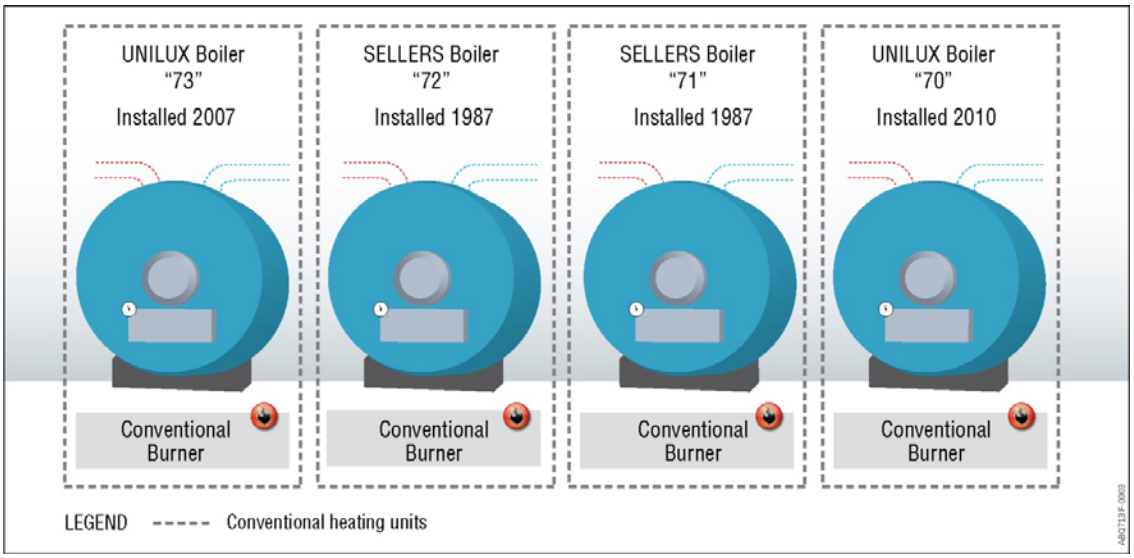
The existing CUP consists of four natural gas-fired boilers that are equipped with conventional, uncontrolled burners. Two of the boilers, designated #71 and #72, were installed in 1987, while the remaining two boilers, #70 and #73, were installed in 2010 and 2007, respectively. All boilers in the

existing CUP utilize uncontrolled emissions technology, resulting in high levels of NO_X and other criteria pollutants. The CUP serves the main terminal at the Sunport. Additional boilers are located in the Sunport Rental Car Facility, Sunport Mechanical Penthouses, and other administrative areas, but are not included in the scope of this Project. Figures 1 and 2 depict the location of the CUP and a schematic diagram of the existing conditions at the CUP, respectively. Figure 3 depicts the in-service boilers.

Figure 1
LOCATION OF THE CENTRAL UTILITY PLANT
Albuquerque International Sunport

Source: LeighFisher, May 2014.

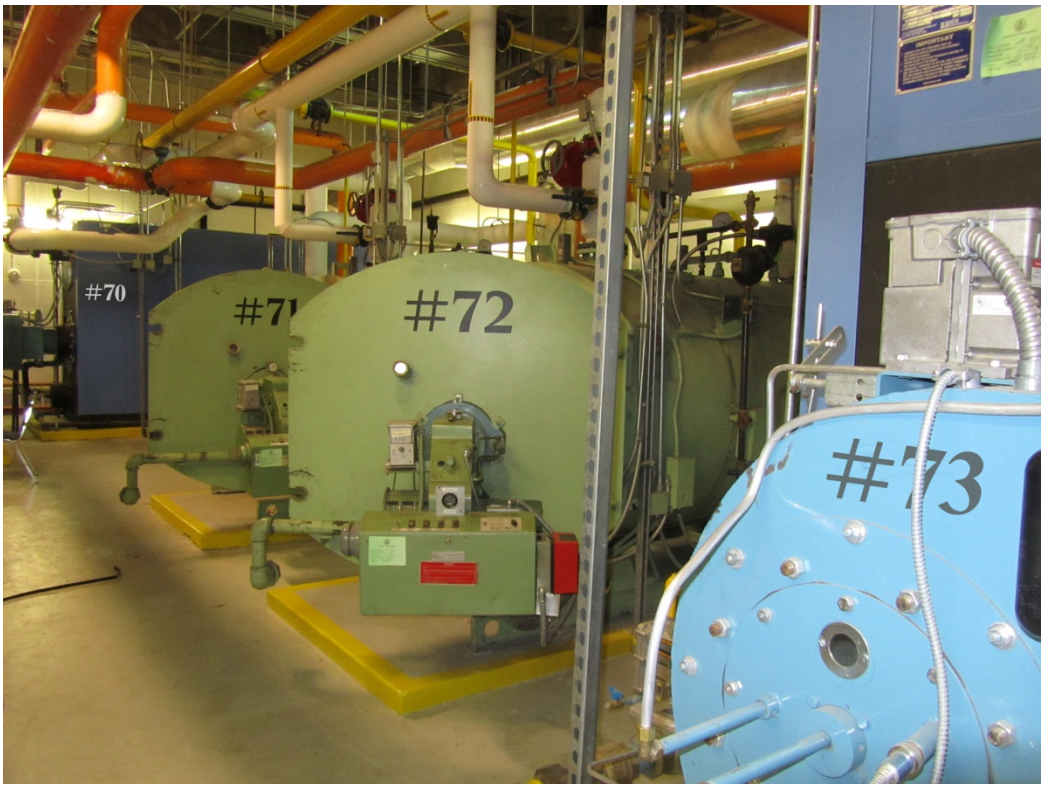
Figure 2
EXISTING CENTRAL UTILITY PLANT HEATING UNITS
Albuquerque International Sunport



Source: LeighFisher, May 2014.

The City does not intend to upgrade or improve the conventional heating units if VALE Program funding is not available. Therefore, the Baseline Scenario of this VALE Program application is defined as the continued operation of the existing heating equipment in the CUP in a business-as-usual manner. Although Boilers #71 and #72 have reached the end of their design lives, they continue to operate efficiently with regular preventive maintenance. Consequently, the Baseline Scenario would result in the same high level of uncontrolled emissions as is present with existing conditions. An engineering assessment of the fitness for operation of Boilers #71 and #72 is provided in Appendix F.

Figure 3
EXISTING BOILERS
Albuquerque International Sunport



Source: LeighFisher, May 2014.

2.1.2 Low Emission Scenario

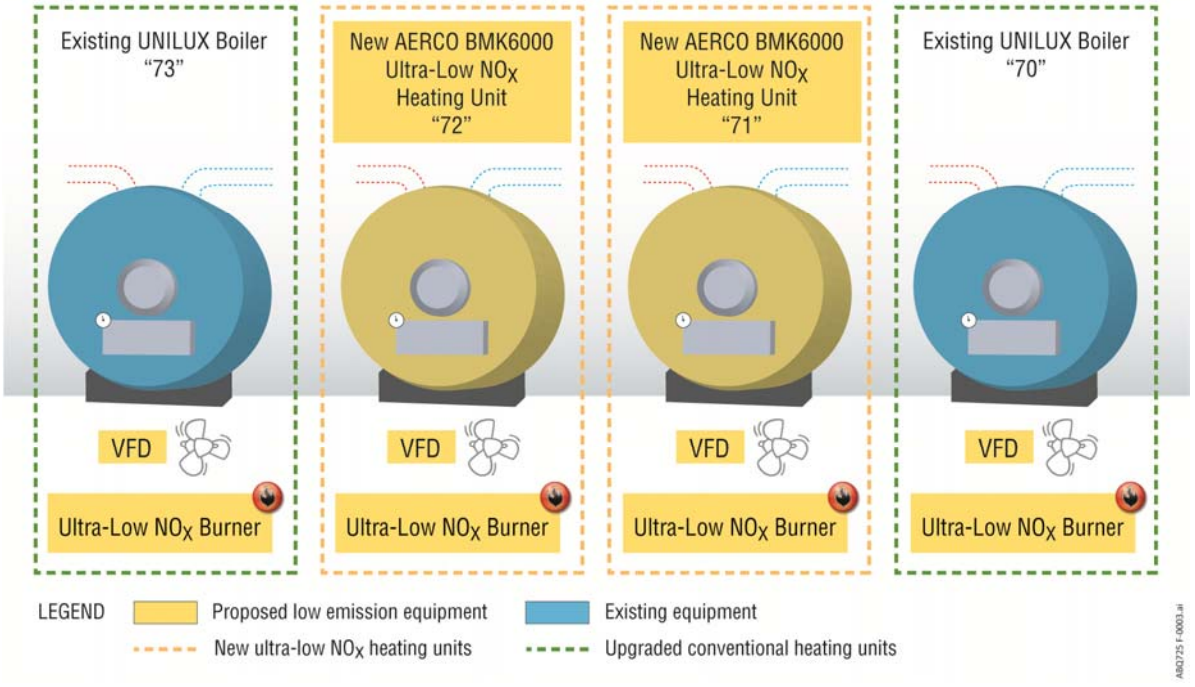
The proposed Project includes replacing Boilers #71 and #72 with two ultra-low NO_X heating units. It is important to note that the City intends to purchase and install the heating units as complete "off the shelf" modular units rather than purchasing and inserting the low emission equipment on the existing equipment. It is not cost-effective to reconfigure the existing units. The proposed Project also includes installing ultra-low NO_X burners and supporting equipment on Boilers #70 and #73 (the newer boilers). The improvements would involve the demolition and removal of existing Boilers #71 and #72 and all four units would require mechanical and electrical infrastructure to support and operate the proposed low-emission equipment.

The proposed ultra-low NO_X burners for all boilers would emit 9 parts per million by volume (ppmv) or less of NO_X and have been accepted by EPA as providing the lowest achievable emission reduction technology. To ensure consistent emission reductions for the Project, combustion of natural gas in the burners would be electronically regulated with VFDs. The VFD controls the speed of the combustion air fan which in turn controls the air-to-fuel mixture going into the burner. It is a critical component to ensure the proper air-to-fuel mixture and the resulting NOx emissions are achieved. It is important to note that electronic control of gas combustion is critical to achieve the

desired 9 ppmv emission results, as the VFDs would regulate burner activity according to outdoor air temperature. The VFDs are integral to the burner control panels.

The proposed Low Emission Scenario is shown in Figure 4.

Figure 4
LOW EMISSION SCENARIO
Albuquerque International Sunport



Source: LeighFisher, May 2014.

2.2 VALE Eligibility

Projects funded through the VALE Program must account for both eligible and ineligible costs. Ineligible costs include (1) base costs of the proposed Project that would be incurred without AIP funding, and (2) costs associated with revenue-producing areas or non-public areas of those facilities served by the proposed Project. Because the CUP would provide heat to both public and non-public areas of the Sunport, its components have historically been subject to the ineligible cost requirements. LeighFisher has calculated the percent of non-revenue-producing public-use space in the terminal areas served by the CUP to be 46%. Thus, the equipment and installation costs associated with the proposed Project have been reduced by 54% to reflect funding for the VALE-eligible portion only. Project cost calculations based on VALE Program eligibility are further discussed in Section 6, and a space eligibility analysis is provided in Appendix D.

SECTION 3: EMISSION REDUCTION ESTIMATES

The FAA Emissions and Dispersion Modeling System (EDMS), Version 5.1.4.1, is used to calculate emission reductions resulting from the Project. All emission reductions calculated with EDMS are contained in the Emission Reductions Report (the ER Report), provided as Appendix A. Appendix B contains the EDMS inputs used to estimate the emission reductions.

3.1 Calculation Methodology

3.1.1 Methodology

In estimating the emission reductions, the Baseline Scenario, which reflects the operation of the existing conventional heating units, is compared to the Low Emission Scenario, which reflects the operation of the proposed ultra-low NO_X heating equipment.

3.1.2 Emission Factor Selection

Emission factors used in the Baseline Scenario were selected from EPA's AP-42 emission factors for small, uncontrolled natural-gas boilers, which are representative of the existing heating units located in the CUP. Emission factors used in the Low Emission Scenario were selected from manufacturer specification sheets. The burners on the two newer conventional heating units, Boilers #70 and #73, would be replaced with ultra-low NO_x Powerflame Nova Plus burners and VFDs. The two older conventional heating units, Boilers #71 and #72, would be replaced with two AERCO BMK6000 LN high efficiency condensing style ultra-low NO_X heating units. Table 1 provides emission factors in kilograms per 1,000 cubic meters (kg/1000 m^3) for the existing boilers, the Powerflame burners, and the AERCO BMK6000 LN ultra-low NO_X heating units for the following pollutants: NO_x, CO, volatile organic compounds (VOC), particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}), particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$), and sulfur oxides (SO_X). Although total hydrocarbons (THC) is not considered a criteria air pollutant, it is included for purposes of estimating VOC emissions in EDMS.

3.1.3 Energy Consumption

Installing the proposed ultra-low NO_x heating equipment would not only result in reduced emissions, but would also result in slightly reduced natural gas consumption due to efficiency improvements associated with modern technology. Given that the proposed Project is subject to minor New Source Review (NSR) regulations, the Baseline annual natural gas consumption was calculated consistent with NSR guidance, averaging a period of 24 consecutive months between January 2009 and December 2010 using consumption data provided by the City. It is estimated that 51.8 million cubic feet (MMcf), or approximately 1.5 million m^3, per year of natural gas would be consumed in the Baseline Scenario. The City's engineering consultant estimated that implementing the low-emission upgrades would result in an overall reduction in natural gas consumption of 6.2%. Accordingly, it is estimated that 48.6 MMcf, or approximately 1.4 million m^3, of natural gas would be annually consumed in the Low Emission Scenario. Natural gas consumption data is provided in Appendix E. The gas consumption of each of the four heating units was calculated based on the relative percentage of total natural gas consumption of the CUP during 2011. Natural gas consumption for each boiler in the Baseline and Low Emission Scenarios is shown in Table 2.

It is important to note that, although demand for heating in both Scenarios is expected to increase over time as new facilities are added to the Sunport, it was assumed that the existing heating demand level would remain constant over the life of the proposed Project. This assumption results

in slightly conservative emission reduction estimates, which is consistent with EPA's Airport Emission Reduction Credit (AERC) guidance documentation.

Table 1
SUMMARY OF EMISSION FACTORS
Albuquerque International Sunport

	Baseline Scenario All Boilers	Low Emission Scenario Boilers #70 and #73	Low Emission Scenario Boilers #71 and #72
Pollutant	Existing Boilers (kg/1000 m^3) *(a)*	Powerflame Burners (kg/1000 m^3) *(b)*	AERCO BMK6000 LN Boilers (kg/1000 m^3) *(b)*
NO_X	1.602	0.163	0.245
THC	0.184 (*c*)	0.102 (*c*)	0.000 (*c*)
CO	1.346	0.605	0.817
PM_{10}	0.122	0.078	0.000
$PM_{2.5}$ *(d)*	0.122	0.078	0.000
SO_X	0.010 (*e*)	0.010 (*e*)	0.010 (*e*)

(a) Data provided by EPA's AP-42 Handbook.

(b) Manufacturer specification data unless indicated otherwise.

(*c*) The THC emission factor was calculated based on the VOC emission factors provided by the manufacturer and EPA's AP-42 Handbook.

(d) EDMS assumes a PM_{10} to $PM_{2.5}$ ratio of 1.

(e) Based on sulfur content in natural gas, as directed by EPA's AP-42 Handbook.

Source: LeighFisher, May 2014.

Table 2
NATURAL GAS CONSUMPTION BY HEATING UNIT
Albuquerque International Sunport

Boiler	Percent of Annual CUP Gas Consumption (*a*)	Baseline Scenario Annual Consumption (1000 m^3) *(b)*	Low Emission Scenario Annual Consumption (1000 m^3) (*c*)
#70	52.96%	776.19	728.84
#71	13.28%	194.65	182.76
#72	9.51%	139.43	130.88
#73	24.25%	355.38	333.73
Total	100.00%	1,465.65	1,376.21

(a) Based on each boiler's consumption percentage in 2011, the most recent available annual data from the City.

(b) Based on 24 consecutive months of consumption data from 2009 to 2010.

(*c*) Based on the Baseline Scenario and the engineer's estimated 6.2% reduction in fuel consumption under the Low Emission scenario.

Source: LeighFisher, May 2014.

3.2 Total Emissions Reductions

Emission reductions estimated by EDMS are summarized in Table 3 and include the following pollutants: NO_X, CO, volatile organic compounds (VOC), particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}), particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$), and sulfur oxides (SO_X). Annual emission reductions are provided in the ER Report in Appendix A. As shown in Table 3, the emission reductions realized over the lifetime of the proposed Project are estimated to be 22.2000 tons of CO and 47.831 tons of ozone precursors (NO_X + VOC).

Table 3
TOTAL ESTIMATED EMISSION REDUCTIONS
Albuquerque International Sunport

Pollutant Emissions (Tons)						
NO_X	VOC	NO_X + VOC	CO	PM_{10}	$PM_{2.5}$	SO_X
46.191	1.640	47.831	22.200	2.052	2.052	0.020

Note: Emission reductions are based on the 20-year useful life of the VALE-funded equipment.

Source: LeighFisher, May 2014.

3.3 Life of Equipment and Duration of Emission Credits

The VALE Technical Report 7 provides guidance for useful life of typical infrastructure projects. Table 6-1 of the Technical Report indicates that the useful life of heating, ventilation, and air conditioning (HVAC) equipment is 20 years. Given that the proposed equipment would be installed as part of the Sunport's HVAC system, this application assumes a 20-year useful life for all VALE-funded equipment. The City requests AERCs be assured by the Albuquerque Environmental Health Department (EHD) for the City's use exclusively at the Sunport over the 20-year useful life of the proposed Project.

SECTION 4: CONFIRMATION THAT ESTIMATED EMISSION REDUCTIONS MEET CLEAN AIR ACT CRITERIA

4.1 Quantifiable

The emission reductions are quantified using EDMS, version 5.1.4.1. This quantification can be verified and repeated.

4.2 Surplus

The emission reductions from the proposed Project are voluntary—they are not required by any regulatory control measure, nor have the emission reductions been allocated to offset emissions from another project.

4.3 Federally Enforceable

The emission reductions are enforceable through the FAA's grant assurance provisions and through the four VALE Program Special Conditions. To be creditable, emission reduction measures must be enforceable at the federal and state levels. Enforceability of the proposed emission reduction measures is established based on the following information:

- ***The measures are independently verifiable*—**the Project equipment emissions are based on a manufacturer's certification following EPA testing methodologies. Actual performance can be independently verified by EHD.
- ***The City has agreed to standard grant assurances*—** if FAA provides grant funds to the City in support of the Project, the City will be required to agree to standard grant assurances together with the four VALE Program Special Conditions provided in Chapter 8 of the VALE Technical Report. FAA uses grant assurances to ensure that federal funds are applied in accordance with relevant laws and regulations, and therefore such assurances are federally enforceable.
- ***Violations of AERC requirements are practicably enforceable*—**the issuance of AERCs for the Project by EHD is a discretionary action. Therefore, if the Project is not implemented, EHD is not required to issue AERCs. The "State Air Quality Agency AERC Letter of Assurance to the FAA" – contained in Appendix C – outlines the process of project confirmation by EHD.
- ***Liability for violations can be identified*—**the City is solely responsible for implementation of the Project and is answerable to the FAA through the AIP grant assurances. If the proposed Project is not implemented or does not meet tracking requirements, the City is subject to penalties as allowed by applicable statutes.
- ***Emission information for the Project must be made publicly available*—**the City is providing support information on estimated emission reductions for the Project via this application, which is being submitted to EHD and FAA. Likewise, updated reports of emission reductions actually achieved through implementation of the Project would be provided to EHD and the FAA. Such data would be made available to the public upon request.

4.4 Permanent

In accordance with the special condition outlined in Section 1 of Chapter 8 of the VALE Technical Report 7, the City is committed to permanently keeping the proposed emission reductions in the region by ensuring that the proposed ultra-low NO_X burners are operated exclusively at the Sunport over the 20-year expected useful life of the equipment.

4.5 Adequately Supported

The City has permanent staff positions that are dedicated to environmental compliance. These City personnel are tasked with the responsibility of compliance with the VALE Special Conditions over the useful life of the equipment.

SECTION 5: RELATIONSHIP TO STATE IMPLEMENTATION PLAN

The adopted State Implementation Plan budget does not reflect implementation of the Project or the use or acquisition of low-emission equipment at the existing CUP.

SECTION 6: FUNDING SOURCES

The City has adopted an incremental cost approach to establish a funding basis for the proposed Project. To determine this basis, the equipment costs associated with the proposed CUP upgrades are reduced by the equipment costs associated with the continued operation of the conventional units to arrive at an incremental cost. Since the CUP is expected to operate in a business-as-usual manner in the absence of VALE Program funds, the full cost of the proposed Project represents the incremental cost. The Sunport's engineer has provided verification of Boilers #70 and #73 fitness for continued operation in Appendix F.

The incremental costs of the equipment are subject to the AIP-eligibility proration requirements for revenue-generating space, and multiplying the incremental cost by this AIP Eligibility percentage determines the VALE-eligible cost. This calculation is shown in Table 4. The final grant amount is determined by multiplying the VALE-eligible costs by the AIP cost-sharing percentage of 84.29%, as shown in Table 5.

Table 4
VALE ELIGIBLE COSTS
Albuquerque International Sunport

Component	Gross Cost	AIP Eligibility Factor (*a*)	VALE-eligible Cost
Ultra-Low NO_X Heating Units	$243,140.00	46%	$111,844.40
Ultra-Low NO_X Burners	159,390.00	46%	73,319.40
Variable Frequency Drives	4,740.00	46%	2,180.40
Mechanical Infrastructure	561,248.65	46%	258,174.37
Electrical Infrastructure	11,523.20	46%	5,300.67
Project Design	145,000.00	46%	66,700.00
Project Formulation	125,000.00	100%	125,000.00
Total	$1,250,041.85		$642,519.24

(a) AIP Eligibility Factor is the percentage of public non-revenue generating space in the terminal for all categories except Project Formulation. Details are provided in Appendix D.

Source: LeighFisher, May 2014.

The City expects to fund 84.29% of the VALE-eligible cost of the proposed Project through the requested AIP discretionary funds. Local revenues are expected to cover matching funds. The City is requesting a FY 2014 AIP discretionary grant in the amount of $541,579. The proposed cost-share is consistent with AIP guidelines. Table 5 summarizes the funding for the proposed Project. Funding amounts are also summarized on the FAA VALE Program Worksheets in Appendix A. A detailed breakdown of costs by project component is provided in Appendix E.

Table 5
PROJECT FUNDING SUMMARY
Albuquerque International Sunport

Component	VALE-eligible Cost	84.29% of VALE-Eligible Cost	Required Local Match	Total
Ultra-Low NO_X Heating Units	$111,844.40	$94,273.64	$17,570.76	$111,844.40
Ultra-Low NOX Burners	73,319.40	61,800.92	11,518.48	73,319.40
Variable Frequency Drives	2,180.40	1,837.86	342.54	2,180.40
Mechanical Infrastructure	258,174.37	217,615.17	40,559.20	258,174.37
Electrical Infrastructure	5,300.67	4,467.93	832.74	5,300.67
Project Design	66,700.00	56,221.43	10,478.57	66,700.00
Project Formulation	125,000.00	105,362.50	19,637.50	125,000.00
	$642,519.24	$541,579.45	$100,939.79	$642,519.24
AIP Required Adjustments (*a*)		$541,579.00	$100,940.24	$642,519.24

(a) The Airport Improvement Program requires that grant request amounts be rounded down to the nearest dollar and accordingly the required local match has been increased.

Source: LeighFisher, May 2014.

SECTION 7: COST EFFECTIVENESS

Based on the conservative estimate of emission reductions, the Project's cost effectiveness value is estimated to be approximately $28,942 per ton of CO and $13,910 per ton of ozone precursors. The cost effectiveness values for all pollutants are presented in Table 6.

Table 6
SUMMARY OF ESTIMATED COST EFFECTIVENESS VALUES
Albuquerque International Sunport

Capital Cost per Emission Reduction ($ per ton)						
NO_X	VOC	NO_X+VOC	CO	PM_{10}	$PM_{2.5}$	SO_X
$13,910	$391,780	$13,433	$28,942	$313,119	$313,119	$32,125,962

Note: Cost effectiveness is calculated based on the 20-year useful life of the VALE-funded equipment.

Source: LeighFisher, May 2014.

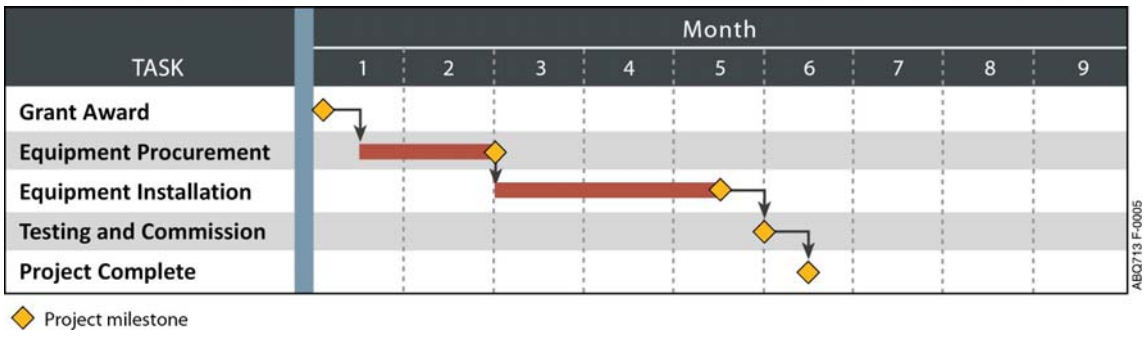
SECTION 8: COMMITMENTS

In accordance with the VALE Special Conditions, the City is committed throughout the 20-year expected useful life of the equipment to: (1) permanently keeping the proposed emission reductions in the region by ensuring that the proposed low-emission equipment is operated at the Sunport, (2) annually tracking and recording emission reductions, and (3) ensuring that disabled equipment is repaired or replaced with equivalent units that produce equal or lesser emissions.

SECTION 9: SCHEDULE

Construction notice-to-proceed would be given after: (1) award of the VALE Program grant, (2) grant execution, and (3) construction contract approval by the City. The City expects the Project to proceed according to the preliminary schedule depicted in Figure 5. For planning purposes, the City assumes that if this VALE Program application is approved, a grant would be awarded by September 2014.

Figure 5
PROJECT SCHEDULE
Albuquerque International Sunport



Source: LeighFisher, May 2014.

Appendix A

ER REPORT AND FAA WORKSHEETS

Generated: Fri Jan 24 10:34:52 2014

Emissions Reduction Report

Airport: Albuquerque Intl Sunport
Units: Short Tons (2,000 pounds)
Project: ABQ CUP v2

No.	Year	Scenario	Source Group	CO	VOC	NOx	SOx	PM-10	PM-2.5
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
1	2015	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2015 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
2	2016	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2016 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
3	2017	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2017 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
4	2018	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2018 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
5	2019	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2019 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
6	2020	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2020 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***

No.	Year	Scenario	Source Group	CO	VOC	NOx	SOx	PM-10	PM-2.5
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
7	2021	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2021 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
8	2022	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2022 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
9	2023	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2023 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
10	2024	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2024 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
11	2025	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2025 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
12	2026	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2026 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
13	2027	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2027 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***

No.	Year	Scenario	Source Group	CO	VOC	NOx	SOx	PM-10	PM-2.5
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
14	2028	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2028 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
15	2029	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2029 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
16	2030	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2030 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
17	2031	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2031 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
18	2032	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2032 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
19	2033	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2033 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
		Baseline							
			Stationary Sources	2.1	0.139	2.585	0.016	0.194	0.194
			Baseline Total	**2.1**	**0.139**	**2.585**	**0.016**	**0.194**	**0.194**
*20	2034	VALE							
			Stationary Sources	0.99	0.057	0.275	0.015	0.091	0.091
			VALE Total	**0.99**	**0.057**	**0.275**	**0.015**	**0.091**	**0.091**
			2034 Net ER	***-1.11***	***-0.082***	***-2.31***	***-0.001***	***-0.103***	***-0.103***
	VALE-Funded Useful Life (no option)	**Baseline**		**42.006**	**2.782**	**51.699**	**0.323**	**3.877**	**3.877**
		VALE		**19.806**	**1.142**	**5.508**	**0.303**	**1.826**	**1.826**
		Net Change		***-22.2***	***-1.64***	***-46.191***	***-0.02***	***-2.052***	***-2.052***
	Cumulative Total (with option)	**Baseline**		**42.006**	**2.782**	**51.699**	**0.323**	**3.877**	**3.877**
		VALE		**19.806**	**1.142**	**5.508**	**0.303**	**1.826**	**1.826**
		Net Change		***-22.2***	***-1.64***	***-46.191***	***-0.02***	***-2.052***	***-2.052***

*One or more pieces of equipment have come to the end of their first useful life.

FAA Voluntary Airport Low Emission Program
PAGE 1. GENERAL INFORMATION

Airport Name:	Albuquerque International Sunport	3-Letter Airport ID:	ABQ
Contact Person:	James Hinde, C.M.	Air Quality Proposal Date:	May 13, 2014
Mailing Address:	City of Albuquerque Aviation Department P.O. Box 9948 Albuquerque, NM 87119-1048	Phone:	(505) 244-7725
Email Address:	jhinde@cabq.gov	Fax:	

What is the air quality status of the region?
(Place an "X" for all designations that apply)

	Ozone (O_3) 8-hour standard	Nonattainment / Maintenance
	Particulate Matter (PM)	
	PM_{10}	Nonattainment / Maintenance
	$PM_{2.5}$	Nonattainment / Maintenance
X	Carbon Monoxide (CO)	Maintenance
	Nitrogen Dioxide (NO_2)	Nonattainment / Maintenance
	Sulfur Dioxide (SO_2)	Nonattainment / Maintenance

Hub Designation (place "X" in one)[1]

Large	Medium	Small	Non-hub
	X		

[1] Per the criteria in FAA Order 5100.38B and subsequent updates.

AERC Option on Project Life

AERC Option: The sponsor may obtain AERCs up to 20 years for vehicles and equipment with shorter useful lives. The AERC Option requires a separate ER Report that includes the VALE-funded years plus the additional option years. (Note: FAA's evaluation of project cost effectiveness does not include emission reductions for the extra AERC Option years.)

(Check for AERC Option)

☐ AERC Option: Sponsor commits to replacing VALE-funded vehicles and equipment with equivalent or cleaner low-emission technology.

(Check below if AERC Option above does not include all project vehicles and equipment)

☐ AERC Option applies only to some VALE-funded vehicles and equipment (attach detailed explanation)

PAGE 4. VALE INFRASTRUCTURE SUMMARY SHEET

Air Quality Proposal Date: May 13, 2014

Low Emissions Infrastructure Technololgy or Equipment Units											
	Description (including fuel type, size)	Start-up Date	Estimated Operating Life (years)	No. of Units	Use PFCs for matching funds (Y/N)?	AIP Funding	Required Local Matching Funds	PFC Funding[1]	Total Project Funding	Additional Matching Funds[2]	Total Cost[3]
1	Ultra-Low NO_X Heating Units	2013	20	2	N	$94,273.64	$17,570.76		$111,844.40		$111,844.40
2	Ultra-Low NO_X Burners	2013	20	2	N	$61,800.92	$11,518.48		$73,319.40		$73,319.40
3	Variable Frequency Drives	2013	20	2	N	$1,837.86	$342.54		$2,180.40		$2,180.40
4	Mechanical Infrastructure	2013	20	n/a	N	$217,615.18	$40,559.19		$258,174.37		$258,174.37
5	Electrical Infrastructure	2013	20	n/a	N	$4,467.93	$832.74		$5,300.67		$5,300.67
6	Project Engineering	n/a	n/a	n/a	N	$56,221.43	$10,478.57		$66,700.00		$66,700.00
7											
8											
9											
#											
#											
#											
#											
#											
#											
	Totals:					**$436,216.97**	**$81,302.27**	**$0.00**	**$517,519.24**	**$0.00**	**$517,519.24**

Ver. 7.0

[1] Direct PFC funding for the project, not PFC funding used for AIP required local match.

[2] Voluntary local contribution above the required match for AIP funding

[3] Begin cost inputs in this column. Include all eligible costs including design, equipment, and installation of infrastructure.

PAGE 5.
PROJECT FUNDING SUMMARY SHEET

Air Quality Proposal Date: May 13, 2014

VALE Capital Purchases	AIP Requested Funds	PFC Requested Funds	AIP Matching Funds	Other Local Funds[1]	Total Project Funds[2]
Vehicles	$0.00	$0.00	$0.00	$0.00	$0.00
Infrastructure	$436,216.97	$0.00	$81,302.27	$0.00	$517,519.24
Other Eligible Costs[3]	$105,362.50	$0.00	$19,637.50	$0.00	$125,000.00
Totals	$541,579.00	$0.00	$100,940.24	$0.00	$642,519.24

Ver. 7.0

[1] Voluntary local contribution above the required match for AIP funding (no vehicle base costs).

[2] Total project funds is based on AIP requested funds, PFC requested funds, and AIP matching funds.

[3] Include project formulation.

PAGE 6.
PROJECT COST EFFECTIVENESS SUMMARY SHEET

Air Quality Proposal Date: May 13, 2014

Pollutant	Projected Emission Reductions over Useful Life of Project Vehicles and Equipment (tons)	Cost Effectiveness over Useful Life of Project Vehicles and Equipment ($/ton)
NOx	46.19	13,910.05
VOC	1.64	391,780.02
Ozone (NOx + VOC)	47.83	13,433.11
CO	22.20	28,942.31
PM_{10}	2.05	313,118.54
$PM_{2.5}$	2.05	313,118.54
SO_2	0.02	32,125,962.00

Appendix B

MODELING INPUTS

Table B-1
BASELINE SCENARIO EDMS INPUTS
Albuquerque International Sunport

EDMS Parameter	Value
Category	Boiler/Space Heater
Type	Natural Gas: Wall Fired Boiler, <100 Million BTU/hr., Uncontrolled
1,000 of m^3 used (Boilers #71 and #72) (*a*)	Yearly: 334.08
1,000 of m^3 used (Boilers #70 and #73) (*b*)	Yearly: 1,131.57
Operational Profiles (Qtr.-Hourly)	Default
Operational Profiles (Daily)	Default
Operational Profiles (Monthly)	Default
Emission Parameters (Boilers #71 and #72 CO EI)	1.346 kg/1000 m^3
Emission Parameters (Boilers #70 and #73 CO EI)	1.346 kg/1000 m^3
Emission Parameters (Boilers #71 and #72 THC EI)	0.184 kg/1000 m^3
Emission Parameters (Boilers #70 and #73 THC EI)	0.184 kg/1000 m^3
Emission Parameters (Boilers #71 and #72 NOx EI)	1.602 kg/1000 m^3
Emission Parameters (Boilers #70 and #73 NOx EI)	1.602 kg/1000 m^3
Emission Parameters (Boilers #71 and #72 SO2 EI)	0.010 kg/1000 m^3
Emission Parameters (Boilers #70 and #73 SO2 EI)	0.010 kg/1000 m^3
Emission Parameters (Boilers #71 and #72 PM-10) EI)	0.122 kg/1000 m^3
Emission Parameters (Boilers #70 and #73 PM-10) EI)	0.122 kg/1000 m^3
CO Pollution Control Factor	0%
TOC Pollution Control Factor	0%
NOx Pollution Control Factor	0%
SO2 Pollution Control Factor	0%
PM-10 Pollution Control Factor	0%

(a) "New Boilers" refers to boilers #71 and #72, which are modeled together in EDMS because they are both being replaced with new condensing boilers.

(b) "New Burners" refers to boilers #70 and #73, which are modeled together in EDMS because they are both being upgraded with ultra-low NO_x burners.

Source: LeighFisher, May 2014.

Table B-2

LOW EMISSION SCENARIO EDMS INPUTS

Albuquerque International Sunport

EDMS Parameter	Value
Category	Boiler/Space Heater
Type	Natural Gas: Wall Fired Boiler, <100 Million BTU/hr., Uncontrolled
1,000 of m^3 used (New Boilers) (*a*)	Yearly: 313.64
1,000 of m^3 used (New Burners) (*b*)	Yearly: 1,062.57
Operational Profiles (Qtr.-Hourly)	Default
Operational Profiles (Daily)	Default
Operational Profiles (Monthly)	Default
Emission Parameters (Boilers CO EI)	0.817 kg/1000 m^3
Emission Parameters (Burners CO EI)	0.605 kg/1000 m^3
Emission Parameters (Boilers THC EI)	0.000 kg/1000 m^3
Emission Parameters (Burners THC EI)	0.102 kg/1000 m^3
Emission Parameters (Boilers NOx EI)	0.245 kg/1000 m^3
Emission Parameters (Burners NOx EI)	0.163 kg/1000 m^3
Emission Parameters (Boilers SO2 EI)	0.010 kg/1000 m^3
Emission Parameters (Burners SO2 EI)	0.010 kg/1000 m^3
Emission Parameters (Boilers PM-10 EI)	0.000 kg/1000 m^3
Emission Parameters (Burners PM-10 EI)	0.078 kg/1000 m^3
CO Pollution Control Factor	0%
TOC Pollution Control Factor	0%
NOx Pollution Control Factor	0%
SO2 Pollution Control Factor	0%
PM-10 Pollution Control Factor	0%

(a) "New Boilers" refers to boilers #71 and #72, which are modeled together in EDMS because they are both being replaced with new condensing boilers.

(b) "New Burners" refers to boilers #70 and #73, which are modeled together in EDMS because they are both being upgraded with ultra-low NO_x burners.

Source: LeighFisher, May 2014.

Appendix C

AERC ASSURANCE LETTER

Appendix D

COST ELIGIBILITY

Table D-1

AIP ELIGIBLE AREA ANALYSIS

Albuquerque International Sunport

	Square Footage	VALE Eligibility	Ineligible Space	Total VALE Eligible Space
Baggage claim office	2,529	0%	2,529	-
Ticket counter	9,087	0%	9,087	-
Ticket office	12,907	0%	12,907	-
Baggage make-up area	27,123	0%	27,123	-
Airline operations	21,247	0%	21,247	-
Holdroom	51,767	0%	51,767	-
Passenger concourse circulation areas	26,476	100%	0	26,476
Baggage claim and inbound baggage	32,281	60%(*a*)	12,913	19,368
Commuter Terminal Rented Space	1,273	0%	1,273	-
Concessions	53,082	0%	53,082	-
U.S. Customs/FIS Area	8,045	100%	0	8,045
Transportation Security Administration (TSA)	1,281	0%	1,281	-
Public areas	153,556	100%	0	153,556
Aviation Department	50,320	0%	50,320	-
Mechanical and electrical	47,395	46%	25,594	21,801
Total Sq Ft	498,369		269,123	229,246
Prorated %			54.00%	46.00%

(a) 60% eligible public use space is an estimate for the baggage claim and inbound baggage space.

Source: LeighFisher, May 2014.

Appendix E

PROJECT INFORMATION

Table E-1

NATURAL GAS CONSUMPTION BY BOILER

Albuquerque International Sunport

Boiler	Percent of CUP Gas Consumption (*a*)	Baseline Scenario Consumption (1000 m^3) *(b)*	Low Emission Scenario Consumption (1000 m^3)(*c*)
#70	52.96%	776.19	728.84
#71	13.28%	194.65	182.76
#72	9.51%	139.43	130.88
#73	24.25%	355.38	333.73
Total	100.00%	1,465.65	1,376.21

(a) Based on each boiler's consumption percentage in 2011, the most recent available annual data from the City.

(b) Based on 24 consecutive months of consumption data from 2009 to 2010.

(*c*) Based on the Baseline Scenario and the engineer's estimated 6.2% reduction in fuel consumption under the Low Emission scenario.

Source: LeighFisher, May 2014.

Appendix F

ENGINEER'S TECHNICAL MEMORANDUM

Appendix I

NSPS Subpart IIII Applicability Flowchart

§ 89.112 Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.

(a) Exhaust emission from nonroad engines to which this subpart is applicable shall not exceed the applicable exhaust emission standards contained in Table 1, as follows:

Table 1.—Emission Standards (g/kW-hr)

Rated Power (kW)	Tier	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM
kW<8	Tier 1	2000	—	—	10.5	8.0	1.0
	Tier 2	2005	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000	—	—	9.5	6.6	0.80
	Tier 2	2005	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	1999	—	—	9.5	5.5	0.80
	Tier 2	2004	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	1998	9.2	—	—	—	—
	Tier 2	2004	—	—	7.5	5.0	0.40
	Tier 3	2008	—	—	4.7	5.0	
75≤kW<130	Tier 1	1997	9.2	—	—	—	—
	Tier 2	2003	—	—	6.6	5.0	0.30
	Tier 3	2007	—	—	4.0	5.0	
130≤kW<225	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2003	—	—	6.6	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
225≤kW<450	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2001	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
450≤kW≤560	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2002	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
kW>560	Tier 1	2000	9.2	1.3	—	11.4	0.54
	Tier 2	2006	—	—	6.4	3.5	0.20

[1] The model years listed indicate the model years for which the specified tier of standards take effect.

(b) Exhaust emissions of oxides of nitrogen, carbon monoxide, hydrocarbon, and nonmethane hydrocarbon are measured using the procedures set forth in subpart E of this part.

(c) Exhaust emission of particulate matter is measured using the California Regulations for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines. This procedure is incorporated by reference. See § 89.6.

(d) In lieu of the NO_X standards, NMHC + NO_X standards, and PM standards specified in paragraph (a) of this section, manufacturers may elect to include engine families in the averaging, banking, and trading program, the provisions of which are specified in subpart C of this part. The manufacturer must set a family emission limit (FEL) not to exceed the levels contained in Table 2. The FEL established by the manufacturer serves as the standard for that engine family. Table 2 follows:

Table 2.—Upper Limit for Family Emission Limits (g/kW-hr)

Rated Power (kW)	Tier	Model Year[1]	NOx FEL	NMHC+ NOx FEL	PM FEL
kW<8	Tier 1	2000	—	16.0	1.2
	Tier 2	2005	—	10.5	1.0
8≤kW<19	Tier 1	2000	—	16.0	1.2
	Tier 2	2005	—	9.5	0.80
19≤kW<37	Tier 1	1999	—	16.0	1.2
	Tier 2	2004	—	9.5	0.80
37≤kW<75	Tier 1	1998	14.6	—	—
	Tier 2	2004	—	11.5	1.2
	Tier 3	2008	—	7.5	
75≤kW<130	Tier 1	1997	14.6	—	—
	Tier 2	2003	—	11.5	1.2
	Tier 3	2007	—	6.6	
130≤kW<225	Tier 1	1996	14.6	—	—
	Tier 2	2003	—	10.5	0.54
	Tier 3	2006	—	6.6	
225≤kW<450	Tier 1	1996	14.6	—	—
	Tier 2	2001	—	10.5	0.54
	Tier 3	2006	—	6.4	
450≤kW≤560	Tier 1	1996	14.6	—	—
	Tier 2	2002	—	10.5	0.54
	Tier 3	2006	—	6.4	
kW>560	Tier 1	2000	14.6	—	—
	Tier 2	2006	—	10.5	0.54

[1] The model years listed indicate the model years for which the specified tier of limits take effect.

(e) Naturally aspirated nonroad engines to which this subpart is applicable shall not discharge crankcase emissions into the ambient atmosphere, unless such crankcase emissions are permanently routed into the exhaust and included in all exhaust emission measurements. This provision applies to all

Tier 2 engines and later models. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(f) The following paragraphs define the requirements for low-emitting Blue Sky Series engines:

(1) *Voluntary standards.* Engines may be designated ''Blue Sky Series'' engines by meeting the voluntary standards listed in Table 3, which apply to all certification and in-use testing, as follows:

TABLE 3—VOLUNTARY EMISSION STANDARDS (G/KW-HR)

Rated Brake Power (kW)	$NMHC+NO_X$	PM
kW<8	4.6	0.48
8≤kW<19	4.5	0.48
19≤kW<37	4.5	0.36
37≤kW<75	4.7	0.24
75≤kW<130	4.0	0.18
130≤kW≤560	4.0	0.12
kW>560	3.8	0.12

(2) *Additional standards.* Blue Sky Series engines are subject to all provisions that would otherwise apply under this part, except as specified in paragraph (f)(3) of this section.

(3) *Test procedures.* NO_X, NMHC, and PM emissions are measured using the procedures set forth in 40 CFR part 1065, in lieu of the procedures set forth in subpart E of this part. CO emissions may be measured using the procedures set forth either in 40 CFR part 1065 or in subpart E of this part. Manufacturers may use an alternate procedure to demonstrate the desired level of emission control if approved in advance by the Administrator. Engines meeting the requirements to qualify as Blue Sky Series engines must be capable of maintaining a comparable level of emission control when tested using the procedures set forth in paragraph (c) of this section and subpart E of this part. The numerical emission levels measured using the procedures from subpart E of this part may be up to 20 percent higher than those measured using the procedures from 40 CFR part 1065 and still be considered comparable.

(g) Manufacturers of engines at or above 37 kW and below 56 kW from model years 2008 through 2012 that are subject to the standards of this section under 40 CFR 1039.102 must take the following additional steps:

(1) State the applicable PM standard on the emission control information label.

(2) Add information to the emission-related installation instructions to clarify the equipment manufacturer's obligations under 40 CFR 1039.104(f).

[59 FR 31335, June 17, 1994. Redesignated and amended at 63 FR 56995, 57000, Oct. 23, 1998; 69 FR 39212, June 29, 2004; 70 FR 40444, July 13, 2005]

§ 89.113 Smoke emission standard.

(a) Exhaust opacity from compression-ignition nonroad engines for which this subpart is applicable must not exceed:

(1) 20 percent during the acceleration mode;

(2) 15 percent during the lugging mode; and

(3) 50 percent during the peaks in either the acceleration or lugging modes.

(b) Opacity levels are to be measured and calculated as set forth in 40 CFR part 86, subpart I. Notwithstanding the provisions of 40 CFR part 86, subpart I, two-cylinder nonroad engines may be tested using an exhaust muffler that is representative of exhaust mufflers used with the engines in use.

(c) The following engines are exempt from the requirements of this section:

(1) Single-cylinder engines;

(2) Propulsion marine diesel engines; and

(3) Constant-speed engines.

[59 FR 31335, June 17, 1994. Redesignated and amended at 63 FR 56995, 57003, Oct. 23, 1998]

§ 89.114 Special and alternate test procedures.

(a) *Special test procedures.* The Administrator may, on the basis of written application by a manufacturer, establish special test procedures other than those set forth in this part, for any nonroad engine that the Administrator determines is not susceptible to satisfactory testing under the specified test procedures set forth in subpart E of this part or 40 CFR part 86, subpart I.

(b) *Alternate test procedures.* (1) A manufacturer may elect to use an alternate test procedure provided that it yields equivalent results to the specified procedures, its use is approved in

Summary of Requirements[1]

40 CFR part 60, subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

For 2007 model year and later **emergency** engines with <30 l/cyl,
constructed after July 11, 2005 and manufactured after April 1, 2006

NOTE: To refer directly to the regulatory text, please go to Subpart IIII (scroll down to almost the end of the page).

Temporary Engines:

Per 60.4200(e) Owners and operators of facilities with CI ICE that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

Emission Standards: 60.4205(b), 60.4202

60.4205(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

60.4202 (a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (a)(1) through (2) of this section.

(1) For engines with a maximum engine power less than 37 KW (50 HP):

(i) The certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants for model year 2007 engines, and
(ii) The certification emission standards for new nonroad CI engines in 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, 40 CFR 1039.115, and table 2 to this subpart, for 2008 model year and later engines.

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[1]Disclaimer: The content provided in this software tool is intended solely as assistance for potential reporters to aid in assessing requirements for compliance under the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart IIII. Any variation between the rule and the information provided in this tool is unintentional, and, in the case of such variations, the requirements of the rule govern. Use of this tool does not constitute an assessment by EPA of the applicability of the rule to any particular facility. In any particular case, EPA will make its assessment by applying the law and regulations to the specific facts of the case.

(2) For engines with a maximum engine power greater than or equal to 37 KW (50 HP), the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007.

(b) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (b)(1) through (2) of this section.

(1) For 2007 through 2010 model years, the emission standards in table 1 to this subpart, for all pollutants, for the same maximum engine power.

(2) For 2011 model year and later, the certification emission standards for new nonroad CI engines for engines of the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants.

(c) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines to the certification emission standards for new marine CI engines in 40 CFR 94.8, as applicable, for all pollutants, for the same displacement and maximum engine power.

(d) Beginning with the model years in table 3 to this subpart, stationary CI internal combustion engine manufacturers must certify their fire pump stationary CI ICE to the emission standards in table 4 to this subpart, for all pollutants, for the same model year and NFPA nameplate power.

(e) Stationary CI internal combustion engine manufacturers must certify the following emergency stationary CI ICE that are not fire pump engines to the certification emission standards for new marine CI engines in 40 CFR 94.8, as applicable, for all pollutants, for the same displacement and maximum engine power:

(1) Their 2007 model year through 2012 emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder;

(2) Their 2013 model year and later emergency stationary CI ICE with a maximum engine power greater than or equal to 3,700 KW (4,958 HP) and a displacement of greater than or equal to 10 liters per cylinder and less than 15 liters per cylinder;

(3) Their 2013 model year emergency stationary CI ICE with a displacement of greater than or equal to 15 liters per cylinder and less than 30 liters per cylinder; and

(4) Their 2014 model year and later emergency stationary CI ICE with a maximum engine power greater than or equal to 2,000 KW (2,682 HP) and a displacement of greater than or equal to 15 liters per cylinder and less than 30 liters per cylinder.

(f) Stationary CI internal combustion engine manufacturers must certify the following emergency stationary CI ICE to the certification emission standards and other requirements applicable to Tier 3 new marine CI engines in 40 CFR 1042.101, 40 CFR 1042.107, 40 CFR 1042.115, 40 CFR 1042.120, and 40 CFR 1042.145, for all pollutants, for the same displacement and maximum engine power:

(1) Their 2013 model year and later emergency stationary CI ICE with a maximum engine power less than 3,700 KW (4,958 HP) and a displacement of greater than or equal to 10 liters per cylinder and less than 15 liters per cylinder; and

(2) Their 2014 model year and later emergency stationary CI ICE with a maximum engine power less than 2,000 KW (2,682 HP) and a displacement of greater than or equal to 15 liters per cylinder and less than 30 liters per cylinder.

(g) Notwithstanding the requirements in paragraphs (a) through (d) of this section, stationary emergency CI internal combustion engines identified in paragraphs (a) and (c) may be certified to the provisions of 40 CFR part 94 or, if Table 2 to 40 CFR 1042.101 identifies Tier 3 standards as being applicable, the requirements applicable to Tier 3 engines in 40 CFR part 1042, if the engines will be used solely in either or both of the following locations:

(1) Areas of Alaska not accessible by the FAHS; and

(2) Marine offshore installations.

(h) Notwithstanding the requirements in paragraphs (a) through (f) of this section, stationary CI internal combustion engine manufacturers are not required to certify reconstructed engines; however manufacturers may elect to do so. The reconstructed engine must be certified to the emission standards specified in paragraphs (a) through (f) of this section that are applicable to the model year, maximum engine power and displacement of the reconstructed emergency stationary CI ICE.

Fuel Requirements: 60.4207(a), (b), (e)

60.4207(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

Per 60.4215(b) stationary CI ICE that are used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are not required to meet the fuel requirements in 40 CFR 60.4207.

Special requirements apply to engines used in Alaska. Please refer to 60.4216 for the specific requirements and provisions that apply to engines that are located in areas of Alaska not accessible by the FAHS.

Per 60.4217 Owners and operators of stationary CI ICE that do not use diesel fuel may petition the Administrator for approval of alternative emission standards, if they can demonstrate that they use a fuel that is not the fuel on which the manufacturer of the engine certified the engine and that the engine cannot meet the applicable standards required in §60.4204 or §60.4205 using such fuels and that use of such fuel is appropriate and reasonably necessary, considering cost, energy, technical feasibility, human health and environmental, and other factors, for the operation of the engine.

Importing/Installing Requirements: 60.4208(a), (b), (h), (i)

60.4208(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(h) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (g) of this section after the dates specified in paragraphs (a) through (g) of this section.

(i) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

Monitoring Requirements: 60.4209(a); If your engine is equipped with a diesel particulate filter: 60.4209(b)

60.4209(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.

If your engine is equipped with a diesel particulate filter: 60.4209(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

Compliance Requirements: 60.4206, 60.4211(a), (c), (f), (g)

60.4206 Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 over the entire life of the engine.

60.4211(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;

(2) Change only those emission-related settings that are permitted by the manufacturer; and

(3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the

emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

(f) If you own or operate an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(2) You may operate your emergency stationary ICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (f)(3) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (f)(2).

> (i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.
>
> **Note: On May 1, 2015, the U.S. Court of Appeals for the District of Columbia Circuit issued a decision vacating paragraphs 40 CFR 60.4211(f)(2)(ii)-(iii) below. Guidance regarding the impact of the vacatur is available here: https://www3.epa.gov/ttn/atw/icengines/docs/RICEVacaturGuidance041516.pdf.**
>
> (ii) Emergency stationary ICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see § 60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.
>
> (iii) Emergency stationary ICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraph (f)(3)(i) of this section, the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to

generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator;

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

(D) The power is provided only to the facility itself or to support the local transmission and distribution system.

(E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

(g) If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

(1) If you are an owner or operator of a stationary CI internal combustion engine with maximum engine power less than 100 HP, you must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, if you do not install and configure the engine and control device according to the manufacturer's emission-related written instructions, or you change the emission-related settings in a way that is not permitted by the manufacturer, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of such action.

(2) If you are an owner or operator of a stationary CI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer.

(3) If you are an owner or operator of a stationary CI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an

engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. You must conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

Testing Requirements: 60.4212

60.4212 Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (e) of this section.

(a) The performance test must be conducted according to the in-use testing procedures in 40 CFR part 1039, subpart F, for stationary CI ICE with a displacement of less than 10 liters per cylinder, and according to 40 CFR part 1042, subpart F, for stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder.

(b) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1039 must not exceed the not-to-exceed (NTE) standards for the same model year and maximum engine power as required in 40 CFR 1039.101(e) and 40 CFR 1039.102(g)(1), except as specified in 40 CFR 1039.104(d). This requirement starts when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.

(c) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8, as applicable, must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 89.112 or 40 CFR 94.8, as applicable, determined from the following equation:

$$\text{NTE requirement for each pollutant} = (1.25) \times (\text{STD}) \qquad \text{(Eq. 1)}$$

Where:

STD = The standard specified for that pollutant in 40 CFR 89.112 or 40 CFR 94.8, as applicable.

Alternatively, stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8 may follow the testing procedures specified in §60.4213 of this subpart, as appropriate.

(d) Exhaust emissions from stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in §60.4204(a), §60.4205(a), or §60.4205(c), determined from the equation in paragraph (c) of this section.

Where:

STD = The standard specified for that pollutant in §60.4204(a), §60.4205(a), or §60.4205(c).

Alternatively, stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) may follow the testing procedures specified in §60.4213, as appropriate.

(e) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1042 must not exceed the NTE standards for the same model year and maximum engine power as required in 40 CFR 1042.101(c).

Notification, Reports, and Records Requirements: 60.4214(b); If equipped with DPF: 60.4214(c); If >100 HP and > 15 hrs/yr for emergency DR: 60.4214(d)

60.4214(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

If your engine is equipped with a diesel particulate filter: 60.4214(c)

60.4214(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

If your engine is greater than 100 HP and used more than 15 hours a year for emergency demand response:

60.4214(d) If you own or operate an emergency stationary CI ICE with a maximum engine power more than 100 HP that operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 60.4211(f)(2)(ii) and (iii) or that operates for the purposes specified in § 60.4211(f)(3)(i), you must submit an annual report according to the requirements in paragraphs (d)(1) through (3) of this section.

(1) The report must contain the following information:

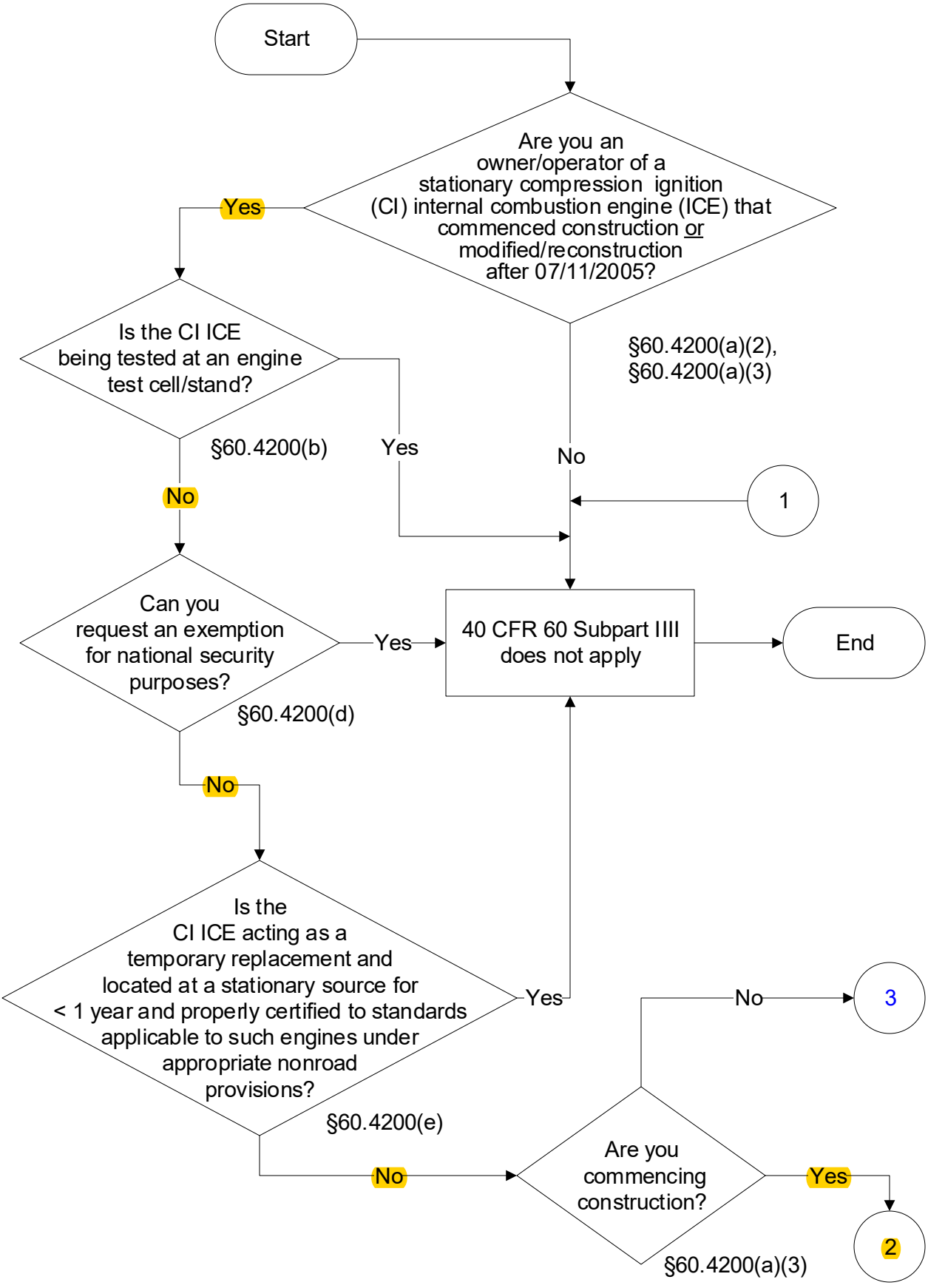
(i) Company name and address where the engine is located.
(ii) Date of the report and beginning and ending dates of the reporting period.
(iii) Engine site rating and model year.
(iv) Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.
(v) Hours operated for the purposes specified in § 60.4211(f)(2)(ii) and (iii), including the date, start time, and end time for engine operation for the purposes specified in § 60.4211(f)(2)(ii) and (iii).
(vi) Number of hours the engine is contractually obligated to be available for the purposes specified in § 60.4211(f)(2)(ii) and (iii).
(vii) Hours spent for operation for the purposes specified in § 60.4211(f)(3)(i), including the date, start time, and end time for engine operation for the purposes specified in § 60.4211(f)(3)(i). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

(2) The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year.

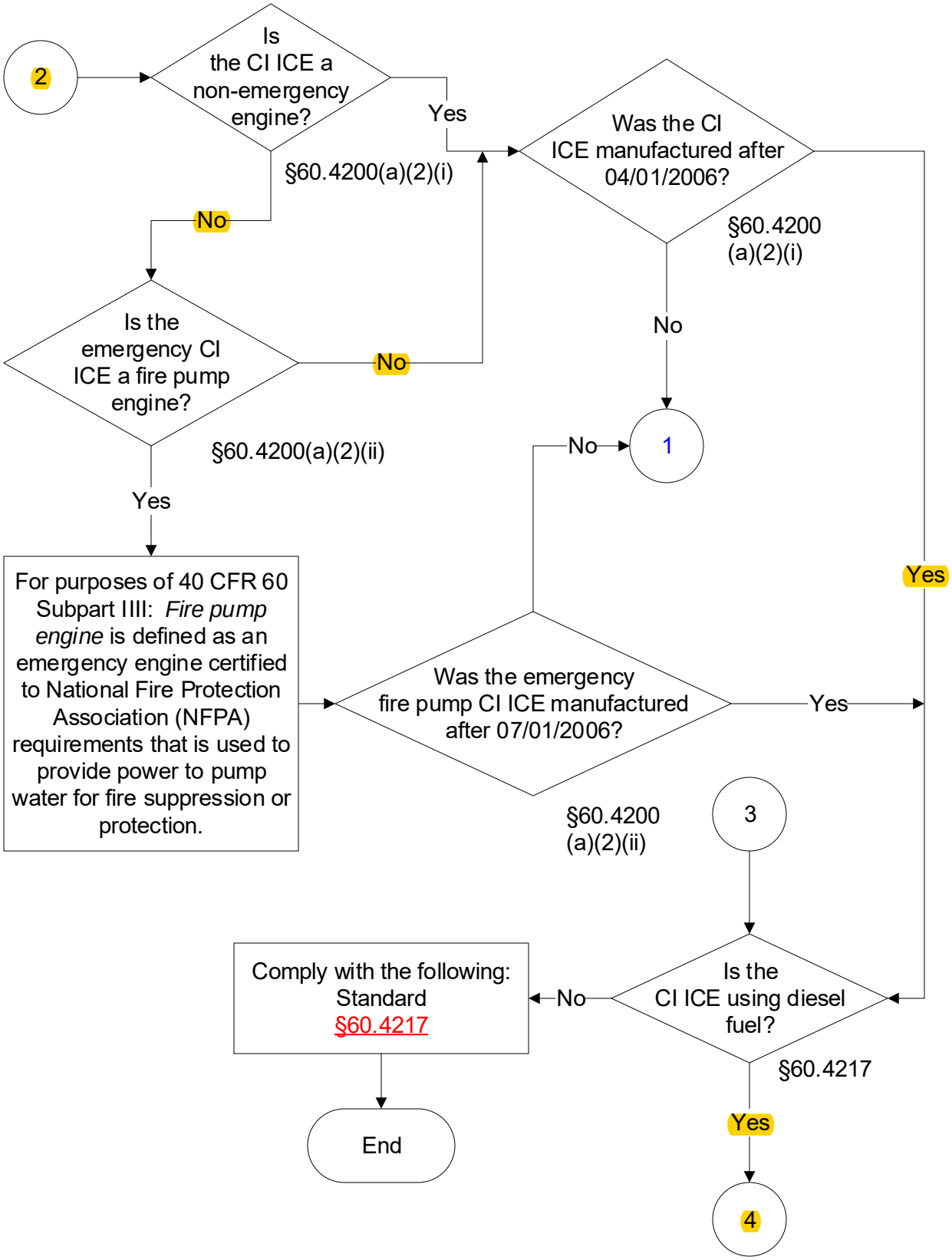
(3) The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (*www.epa.gov/cdx*). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in § 60.4.

General Provisions (40 CFR part 60): Table 8

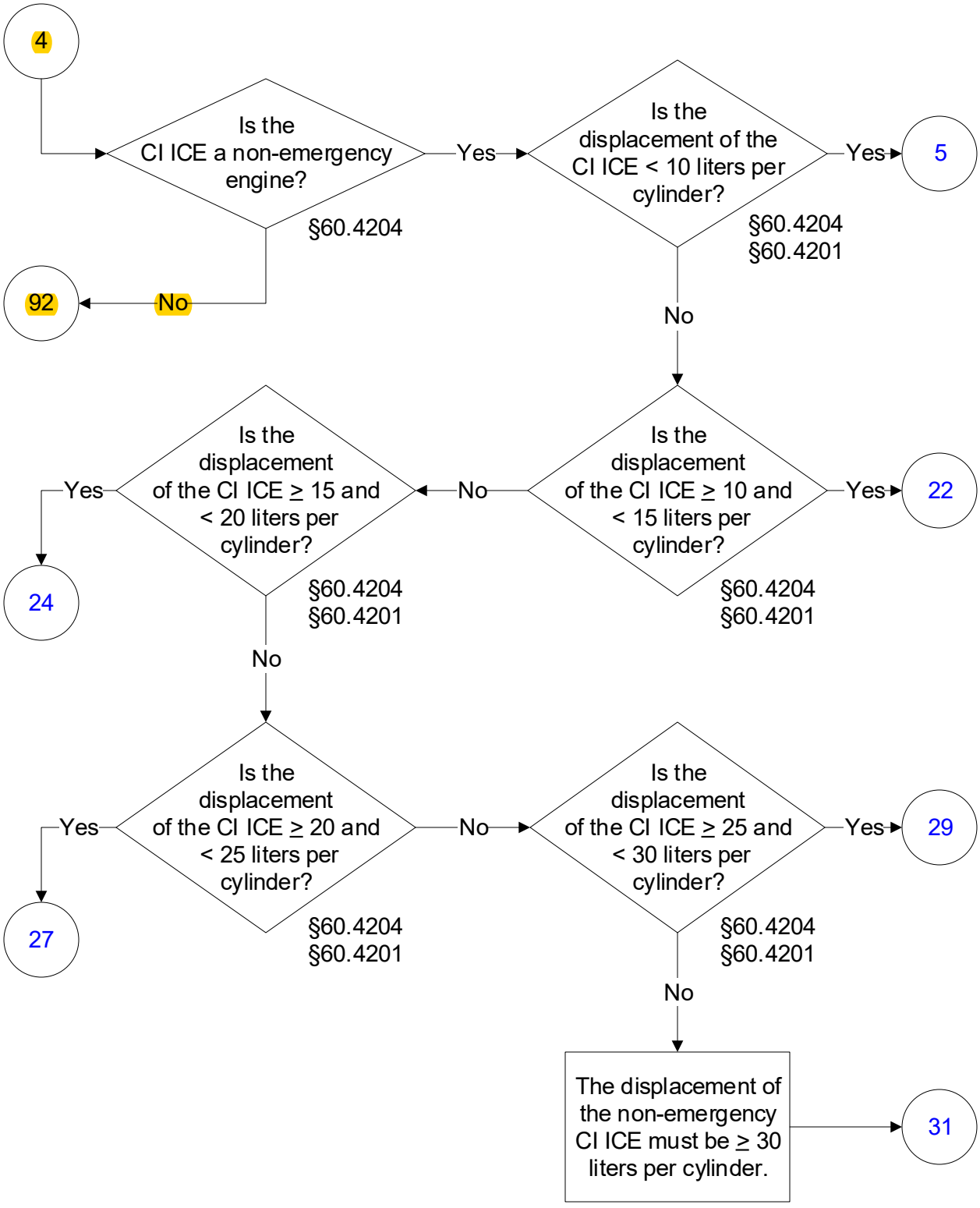
Below is a flowchart describing 40 CFR Part 60, Subpart IIII. It will likely not be accessible using a screen reader. For the text of the statute/rule, please go to 40 CFR Part 60, Subpart IIII
(1 of 103)



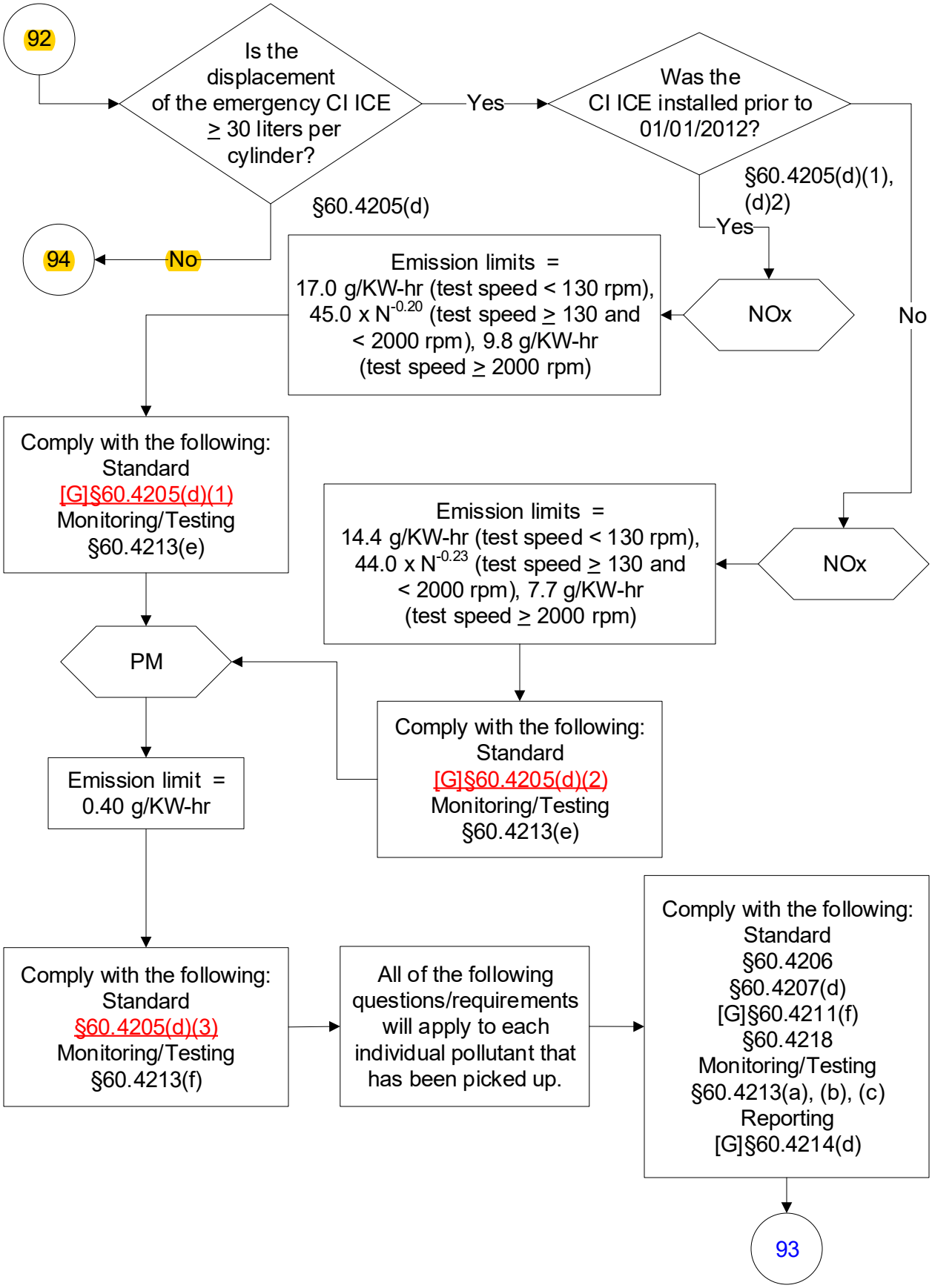
40 CFR Part 60, Subpart IIII
(2 of 103)



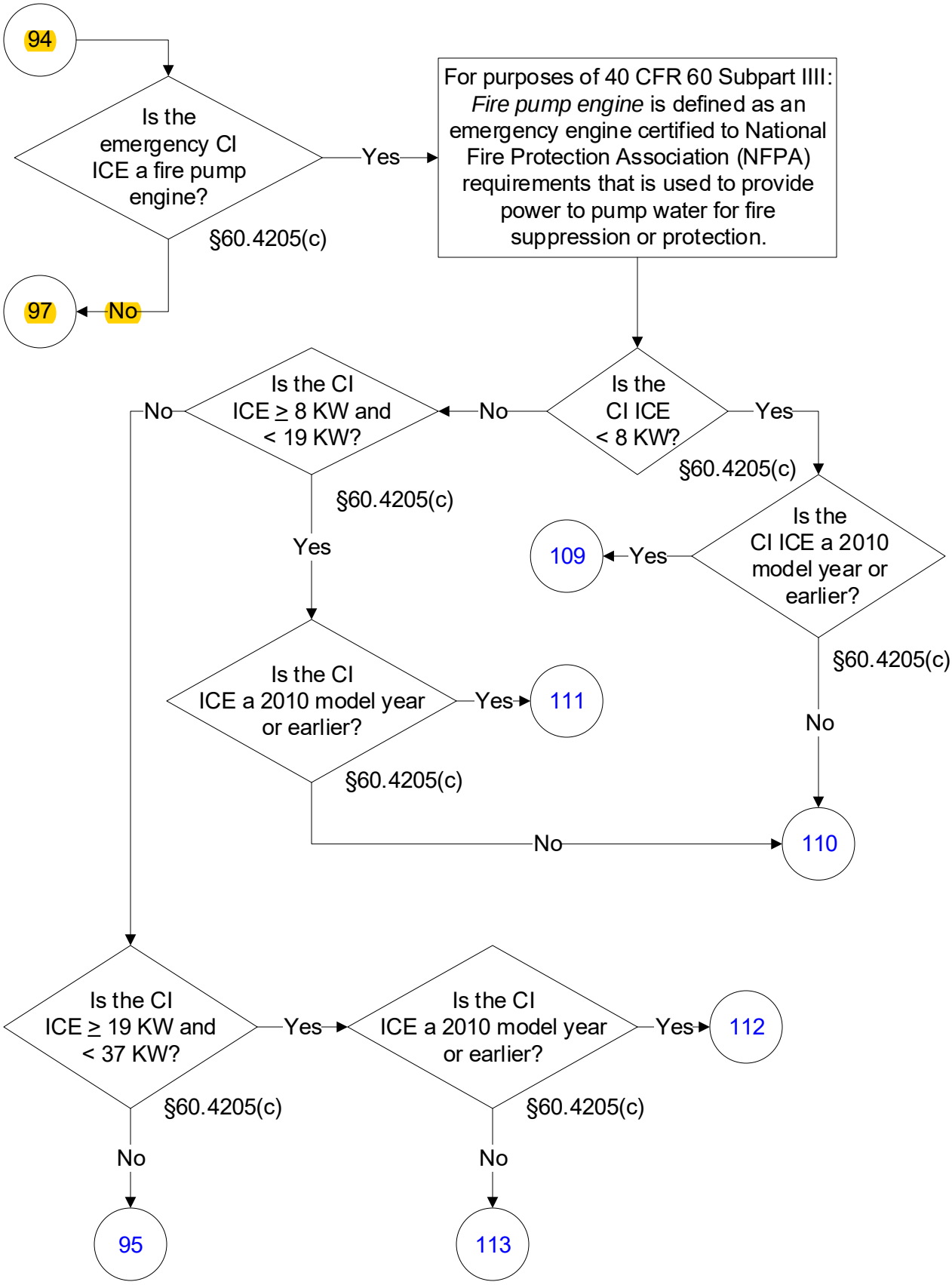
40 CFR Part 60, Subpart IIII
(3 of 103)



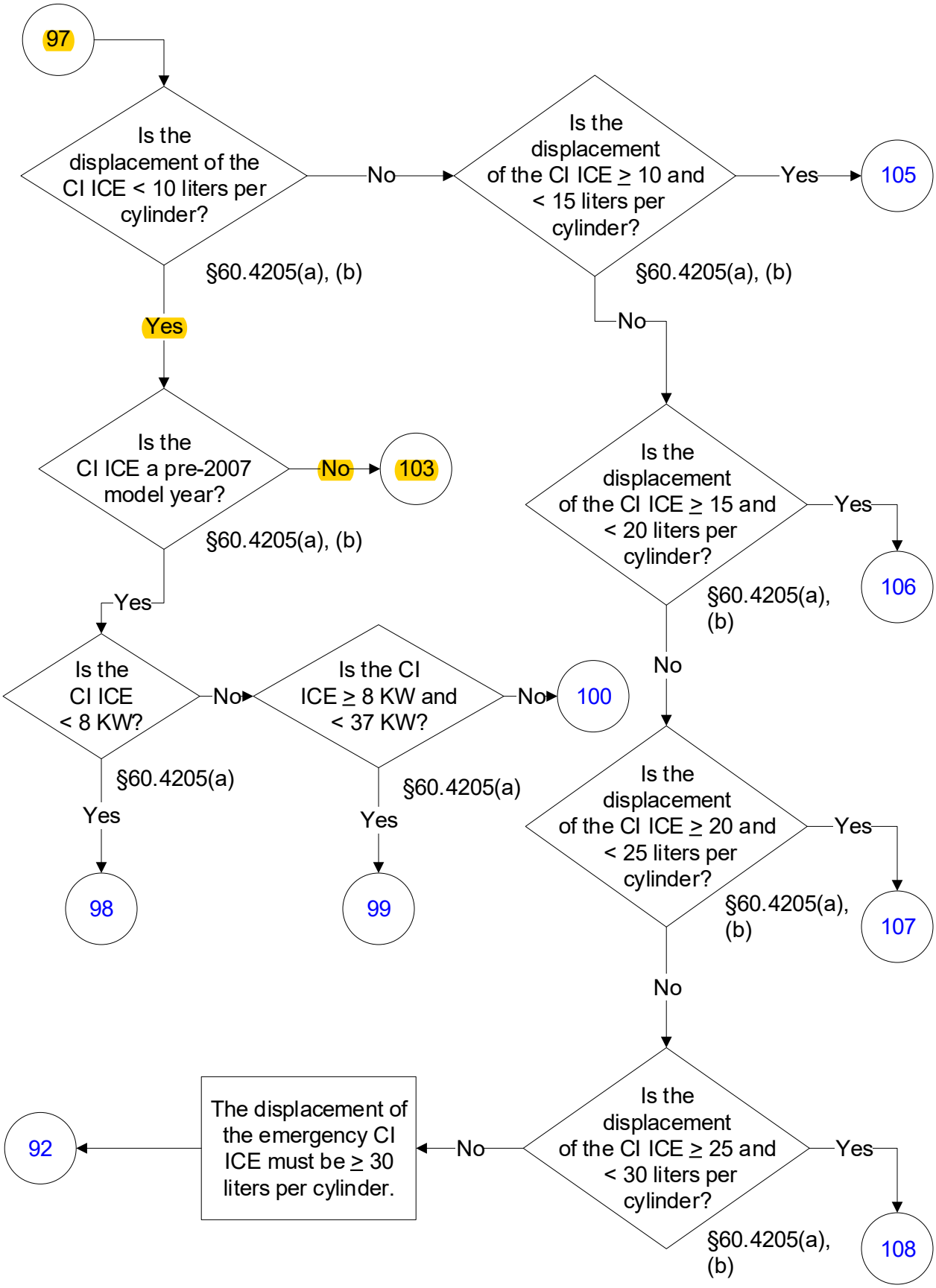
40 CFR Part 60, Subpart IIII
(54 of 103)



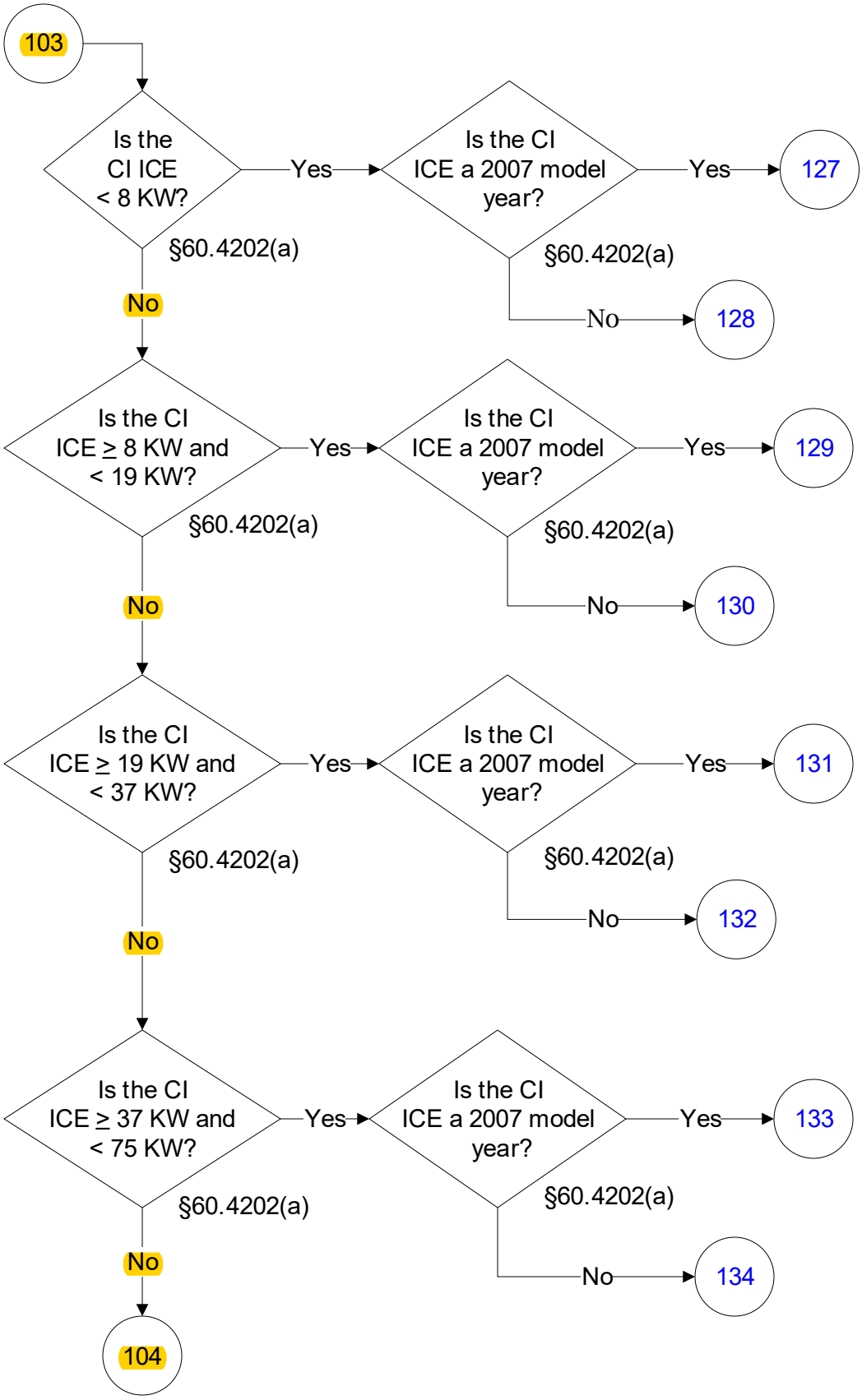
40 CFR Part 60, Subpart IIII
(56 of 103)



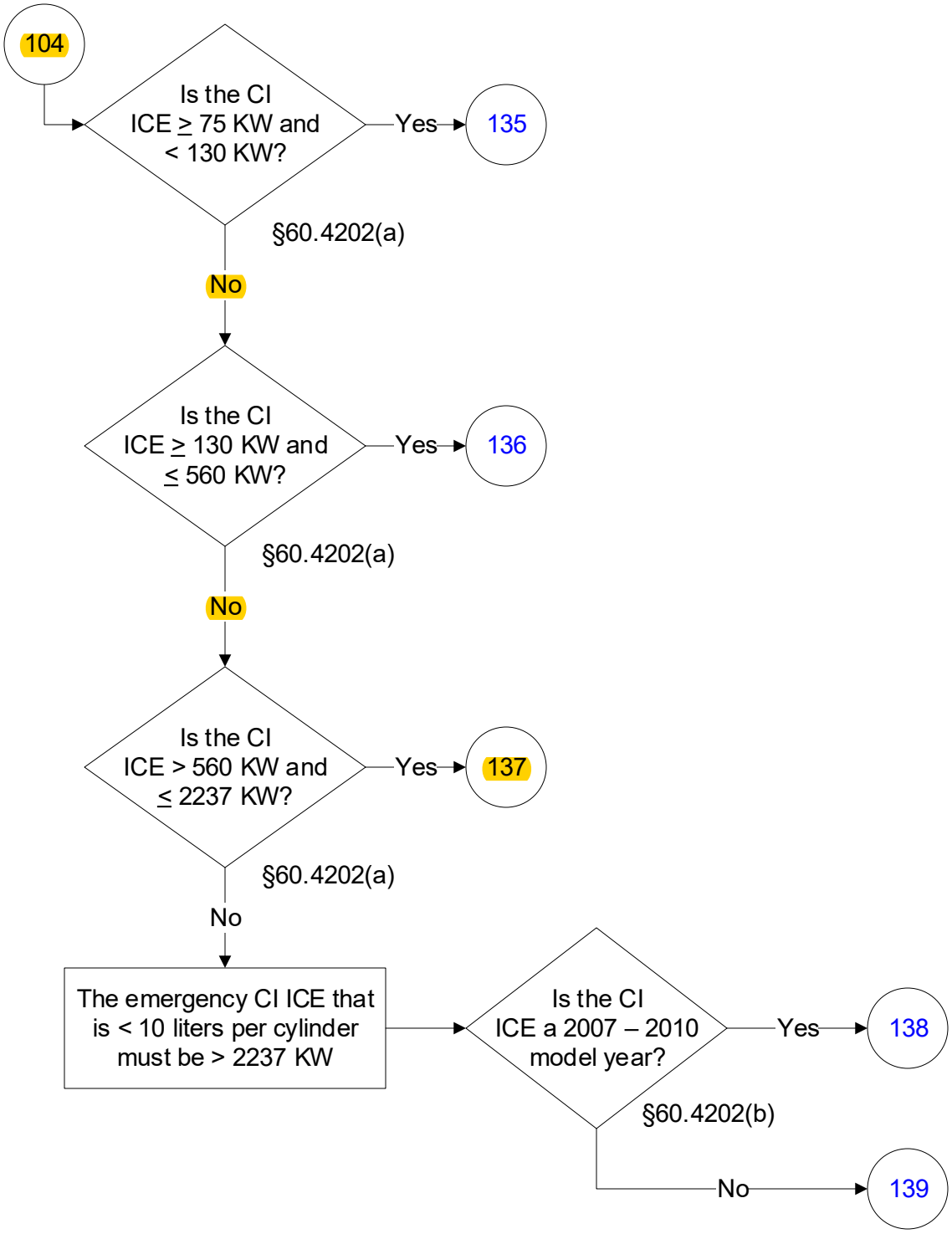
40 CFR Part 60, Subpart IIII
(59 of 103)



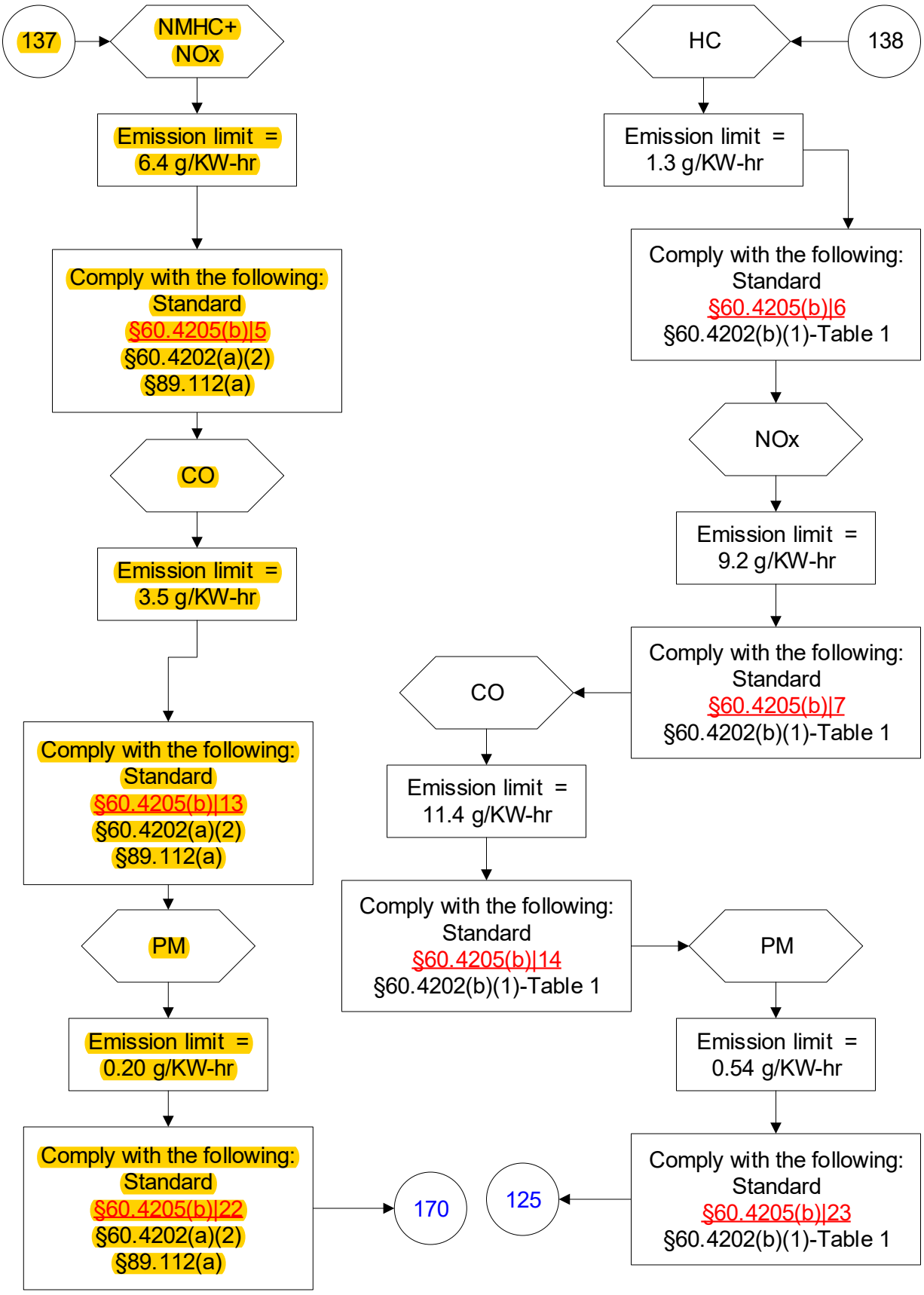
40 CFR Part 60, Subpart IIII
(64 of 103)



40 CFR Part 60, Subpart IIII
(65 of 103)



40 CFR Part 60, Subpart IIII
(85 of 103)



Appendix J

Caterpillar C27 Specification Sheets and EPA Data

Albrecht, Christopher P.

From: Albrecht, Christopher P.
Sent: Monday, December 6, 2021 3:13 PM
To: Isreal Tavarez (itavarez@cabq.gov)
Subject: EPA Spreadsheet for CI ICE COC
Attachments: Caterpillar C18 and C27 COC year 2021 and EMS.xlsx; EPA COC-MCPXL27.0NZS-007 Model Year 2021.pdf

Isreal,

Attached is the data for a C18 and C27 CI ICE spreadsheet that I have data sorted from the EPA Excel Spreadsheet and highlighted both the C18 and C27 engine. Note that we will be getting the Tier II engines and not Tier IV.

I have also requested and received the COC for the 2021 model year C27 from EPA. Based on the contractors' submittal for the ICE equipment, Aviation will be receiving the C27 engine family MCPXL27.0NZS and COC # MCPXL27.0NZS-007 (also attached).

Here is where you can find the EPA spreadsheet that I downloaded.

https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment

Scroll down to

- **Nonroad Compression Ignition (NRCI) Engines**
  For Model Year 2011, NRCI data can be found in both files listed below. MY 2011 certification data not found in one file will be located in the other. This is due to a transition in our database system.
  - NRCI Certification Data (Model Years: 2011 – Present) (xlsx) (November 2021)
  - Archive (Model Years: 1996 – 2011) (xlsx) (April 2018)

Chris

CHRIS ALBRECHT
environmental program manager
o 505.244.7836
m 505.350.0090
abqsunport.com

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2021 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: MCPXL27.0NZS-007

Effective Date: 05/07/2020

Expiration Date: 12/31/2021

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 05/07/2020

Revision Date: N/A

Model Year: 2021
Manufacturer Type: Original Engine Manufacturer
Engine Family: MCPXL27.0NZS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 560<kW<=2237
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Engine Family	Carryover Engine Family Name	Power Category	Applicable Regulation	Applicable Tier	NMHC	NOx	NMHC+ NOx	CO	PM
MCPXL27.0HXF	LCPXL27.0NZS	14 = 560<kW<=2237	4 = Part 60 only certified to the requirements of part 89	2 = Tier 2	0.03	3		0.1	0.02
MCPXL27.0NZS	LCPXL27.0HXF	13 = 560<kW<=900	5 = Part 60 and 1039	4 = Tier 4 (Final or Phase In)	0.1	5.16	5.3	1.2	0.09
MCPXL27.0HXF	LCPXL27.0HXF	13 = 560<kW<=900	5 = Part 60 and 1039	4 = Tier 4 (Final or Phase In)	0.04	3.1		0	0.04
MCPXL27.0HXF	LCPXL27.0HXF	13 = 560<kW<=900	5 = Part 60 and 1039	4 = Tier 4 (Final or Phase In)	0.04	3		0.1	0.02
MCPXL27.0HXF	LCPXL27.0NZS	14 = 560<kW<=2237	4 = Part 60 only certified to the requirements of part 89	2 = Tier 2	0.04	3.1		0	0.03
MCPXL27.0NZS	LCPXL27.0NZS	14 = 560<kW<=2237	4 = Part 60 only certified to the requirements of part 89	2 = Tier 2	0.1	5.29	5.4	1.3	0.13

NOTE: Yellow highlighted is the engine to be installed at Sunport. Also refer to the EPA Certificate of Conformity

SOURCE: https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment

Nonroad Compression Ignition (NRCI) Engines: For Model Year 2011, NRCI data can be found in both files listed below. MY 2011 certification data not found in one file will be located in the other. This is due to a transition in our database system.

https://www.epa.gov/sites/default/files/2021-01/nonroad-compression-ignition-2011-present.xlsx
https://www.epa.gov/sites/default/files/2018-02/nonroad-compression-ignition-archive1996-2011.xlsx

SUBMITTAL

210765 Albuquerque International Airport

WAGNER POWER SYSTEMS

CAT

CAT C27 PGBG EPG GEN SET
CAT GENTCBN LUG TO LUG BOX
CAT ATC ATS
CAT SWITCHGEAR

CATERPILLAR

WHERE THE WORLD TURNS FOR POWER

Wagner Power Systems
18091 E. 22nd Avenue
Aurora, CO 80011
(303) 739-3095
Fax (303) 739-3190
http://wagnerequipment.cat.com

SUBMITTAL PACKAGE

Nov. 8, 2021

PROJECT: 210765 Albuquerque International Airport

ENGINE MODEL: CAT C27 PGBG EPG GEN SET
CAT GENTCBN LUG TO LUG BOX
CAT ACT-900 ATS
CAT SWITCHGEAR

Rodney Sanchez:
Sales & Applications Rep
Wagner Power Systems
Cell: 505-506-5055
E-mail: rsanchez@wagnerequipment.com

Raymond Pohl:
Project Manager
Wagner Power Systems
Phone: 505-343-2745
Cell: 505-235-7654
E-mail: pohl_raymond@wagnerequipment.com

Cat® C27

Diesel Generator Sets

Bore – mm (in)	137.2 (5.4)
Stroke – mm (in)	152.4 (6.0)
Displacement – L (in³)	27.03 (1649.47)
Compression Ratio	16.5:1
Aspiration	TA
Fuel System	MEUI
Governor Type	ADEM™ A4

Image shown may not reflect actual configuration

Standby 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Standby 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Emissions Performance
750 (937)	680 (850)	800 (1000)	725 (906)	Optimized for Low Fuel Consumption

Standard Features

Cat® Diesel Engine
- Designed and optimized for low fuel consumption
- Reliable performance proven in thousands of applications worldwide

Generator Set Package
- Accepts 100% block load in one step and meets NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

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

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

EMCP 4 Control Panels
- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

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

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

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

Optional Equipment

Engine

Air Cleaner
- [x] Single element
- [ ] Dual element
- [ ] Heavy duty

Muffler
- [x] Residential grade (25 dB)

Starting
- [x] Standard batteries
- [ ] Oversized batteries
- [ ] Standard electric starter(s)
- [ ] Jacket water heater

Alternator

Output voltage
- [ ] 208V
- [ ] 240V
- [x] 480V
- [ ] 600V

Temperature Rise (over 40°C ambient)
- [ ] 150°C
- [x] 125°C
- [ ] 105°C
- [ ] 80°C

Winding type
- [x] Random wound

Excitation
- [x] Internal excitation (IE)

Attachments
- [x] Anti-condensation heater
- [ ] Stator and bearing temperature monitoring and protection

Power Termination

Type
- [ ] Bus bar
- [x] Circuit breaker
- [ ] 400A
- [ ] 800A
- [x] 1200A
- [ ] 1600A
- [ ] 2000A
- [ ] 2500A
- [ ] 3000A
- [ ] UL
- [ ] IEC
- [ ] 3-pole
- [ ] 4-pole
- [ ] Manually operated
- [ ] Electrically operated

Trip Unit
- [ ] LSI
- [x] LSI-G
- [ ] LSIG-P

Factory Enclosure

- [x] Sound attenuated

Attachments
- [ ] Cold weather bundle
- [ ] DC lighting package
- [ ] Motorized louvers

Fuel Tank

- [x] 1000 gal (3785 L)
- [ ] 2000 gal (7571 L)
- [ ] 3600 gal (13627 L)

Control System

Controller
- [ ] EMCP 4.2B
- [ ] EMCP 4.3
- [x] EMCP 4.4

Attachments
- [x] Local annunciator module
- [ ] Remote annunciator module
- [ ] Expansion I/O module
- [x] Remote monitoring software

Charging

- [x] Battery charger – 10A
- [ ] Battery charger – 20A
- [ ] Battery charger – 30A

Vibration Isolators

- [ ] Rubber
- [x] Spring
- [ ] Seismic rated

Cat Connect

Connectivity
- [ ] Ethernet
- [ ] Cellular
- [ ] Satellite

modbus

Extended Service Options

Terms
- [x] 2 year (prime)
- [ ] 3 year
- [ ] 5 year
- [ ] 10 year

warranty

Coverage
- [ ] Silver
- [ ] Gold
- [ ] Platinum
- [ ] Platinum Plus

Ancillary Equipment

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

Certifications

- [x] UL 2200 Listed
- [ ] CSA
- [ ] IBC seismic certification
- [ ] OSHPD pre-approval

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

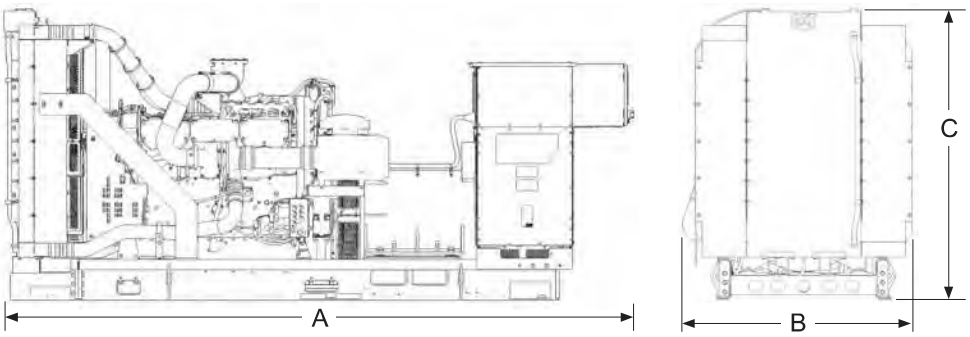
Package Performance

Performance	Standby		Prime		Standby		Prime	
Frequency	60 Hz		60 Hz		60 Hz		60 Hz	
Gen set power rating with fan	750 ekW		680 ekW		800 ekW		725 ekW	
Gen set power rating with fan @ 0.8 power factor	937 kVA		850 kVA		1000 kVA		906 kVA	
Emissions	Low Fuel		Low Fuel		Low Fuel		Low Fuel	
Performance number	DM9072-01		DM9074-02		DM9068-01		DM9070-02	
Fuel Consumption								
100% load with fan – L/hr (gal/hr)	200.3	(52.9)	183.1	(48.4)	213.3	(56.3)	196.2	(51.8)
75% load with fan – L/hr (gal/hr)	154.4	(40.8)	141.6	(37.4)	164.6	(43.5)	150.4	(39.7)
50% load with fan – L/hr (gal/hr)	111.2	(29.4)	102.9	(27.2)	117.3	(31.0)	108.3	(28.6)
25% load with fan – L/hr (gal/hr)	69.1	(18.3)	64.8	(17.1)	72.0	(19.0)	67.5	(17.8)
Cooling System								
Radiator air flow restriction (system) – kPa (in. water)	0.12	(0.48)	0.12	(0.48)	0.12	(0.48)	0.12	(0.48)
Radiator air flow – m^3/min (cfm)	1200	(42377)	1200	(42377)	1200	(42377)	1200	(42377)
Engine coolant capacity – L (gal)	55.0	(14.5)	55.0	(14.5)	55.0	(14.5)	55.0	(14.5)
Radiator coolant capacity – L (gal)	41.0	(10.0)	41.0	(10.0)	41.0	(10.0)	41.0	(10.0)
Total coolant capacity – L (gal)	96.0	(24.5)	96.0	(24.5)	96.0	(24.5)	96.0	(24.5)
Inlet Air								
Combustion air inlet flow rate – m^3/min (cfm)	55.0	(1942.9)	52.0	(1835.4)	58.2	(2055.3)	56.2	(1984.1)
Exhaust System								
Exhaust stack gas temperature – °C (°F)	515.9	(960.6)	503.0	(937.4)	523.6	(974.4)	506.5	(943.6)
Exhaust gas flow rate – m^3/min (cfm)	150.2	(5303.8)	139.0	(4907.9)	160.3	(5661.7)	151.6	(5351.4)
Exhaust system backpressure (maximum allowable) – kPa (in. water)	6.7	(27.0)	6.7	(27.0)	6.7	(27.0)	6.7	(27.0)
Heat Rejection								
Heat rejection to jacket water – kW (Btu/min)	334	(19012)	316	(17959)	350	(19909)	330	(18760)
Heat rejection to exhaust (total) – kW (Btu/min)	713	(40526)	651	(37011)	765	(43510)	708	(40287)
Heat rejection to aftercooler – kW (Btu/min)	121	(6855)	105	(5998)	140	(7966)	129	(7319)
Heat rejection to atmosphere from engine – kW (Btu/min)	109	(6208)	96	(5477)	105	(5950)	93	(5285)
Heat rejection from alternator – kW (Btu/min)	47	(2673)	41	(2337)	57	(3213)	50	(2866)
Emissions* (Nominal)								
NOx mg/Nm^3 (g/hp-h)	3359.5	(6.74)	3178.9	(6.37)	3371.2	(6.20)	2847.5	(5.71)
CO mg/Nm^3 (g/hp-h)	119.8	(0.24)	118.0	(0.23)	137.1	(0.25)	120.2	(0.24)
HC mg/Nm^3 (g/hp-h)	6.9	(0.02)	8.7	(0.02)	7.7	(0.02)	9.4	(0.02)
PM mg/Nm^3 (g/hp-h)	7.7	(0.02)	7.5	(0.02)	5.0	(0.01)	4.4	(0.01)
Emissions* (Potential Site Variation)								
NOx mg/Nm^3 (g/hp-h)	4065.0	(8.15)	3846.5	(7.71)	4079.2	(7.51)	3445.5	(6.91)
CO mg/Nm^3 (g/hp-h)	224.0	(0.45)	220.6	(0.44)	256.4	(0.48)	224.8	(0.45)
HC mg/Nm^3 (g/hp-h)	13.0	(0.03)	16.5	(0.04)	14.6	(0.03)	17.7	(0.04)
PM mg/Nm^3 (g/hp-h)	15.0	(0.04)	14.7	(0.04)	9.8	(0.02)	8.7	(0.02)

**mg/Nm^3 levels are corrected to 5% O_2. Contact your local Cat dealer for further information.*

C27 Diesel Generator Sets
Electric Power

Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
4674 (184.0)	1723 (67.8)	2162 (85.1)	6622 (14,600)

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

Ratings Definitions

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

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

Applicable Codes and Standards
AS 1359, CSA C22.2 No. 100-04, UL 142, UL 489, UL 869, UL 2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU.

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

Data Center Applications
- ISO 8528-1 Data Center Power (DCP) compliant per DCP application of Cat diesel generator set prime power rating.
- All ratings Tier III/Tier IV compliant per Uptime Institute requirements.
- All ratings ANSI/TIA-942 compliant for Rated-1 through Rated-4 data centers.

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

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C27 PGBG
LEHE1212-04 (10/19)

PERFORMANCE DATA[DM9072]

October 13, 2021

Performance Number: DM9072 **Change Level: 02**

SALES MODEL:	C27	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	1,141	**HERTZ:**	60
GEN POWER WITH FAN (EKW):	750.0	**FAN POWER (HP):**	37.5
COMPRESSION RATIO:	16.5	**ASPIRATION:**	TA
RATING LEVEL:	STANDBY	**AFTERCOOLER TYPE:**	ATAAC
PUMP QUANTITY:	1	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
FUEL TYPE:	DIESEL	**INLET MANIFOLD AIR TEMP (F):**	120
MANIFOLD TYPE:	DRY	**JACKET WATER TEMP (F):**	210.2
GOVERNOR TYPE:	ADEM4	**TURBO CONFIGURATION:**	SERIES
ELECTRONICS TYPE:	ADEM4	**TURBO QUANTITY:**	2
IGNITION TYPE:	CI	**TURBOCHARGER MODEL:**	GTA5008BS-56T-1.60
INJECTOR TYPE:	EUI	**COMBUSTION STRATEGY:**	LOW BSFC
REF EXH STACK DIAMETER (IN):	8	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,800.0
MAX OPERATING ALTITUDE (FT):	9,882		

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

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR
750.0	100	1,114	297	0.325	51.0
675.0	90	1,004	268	0.325	46.1
600.0	80	896	239	0.325	41.1
562.5	75	843	225	0.326	38.7
525.0	70	789	211	0.327	36.3
450.0	60	683	182	0.330	31.8
375.0	50	578	154	0.335	27.3
300.0	40	474	127	0.341	22.8
225.0	30	371	99	0.352	18.4
187.5	25	318	85	0.361	16.2
150.0	20	264	71	0.374	13.9
75.0	10	153	41	0.440	9.5

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
750.0	100	1,114	47.5	118.9	1,207.5	32.0	954.8	50	320.1
675.0	90	1,004	41.3	110.7	1,162.9	27.9	927.9	43	295.2
600.0	80	896	34.5	102.5	1,114.7	23.6	897.9	37	268.1
562.5	75	843	31.4	99.4	1,090.3	21.6	882.6	34	254.8
525.0	70	789	28.6	97.9	1,065.8	19.9	867.3	31	241.9
450.0	60	683	23.3	94.8	1,014.4	16.6	834.6	25	217.1
375.0	50	578	18.5	91.5	959.5	13.8	799.2	20	193.1
300.0	40	474	13.9	87.8	883.9	11.2	743.8	15	169.9
225.0	30	371	9.7	84.2	789.9	8.9	671.0	11	147.6
187.5	25	318	7.8	82.4	735.6	7.9	627.7	9	136.8
150.0	20	264	6.0	80.9	674.6	7.0	578.1	7	126.9
75.0	10	153	3.4	78.3	528.5	5.5	455.4	4	111.5

General Performance Data (Continued)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
750.0	100	1,114	1,916.1	5,202.8	8,230.8	8,593.0	1,808.5	1,631.2
675.0	90	1,004	1,791.0	4,750.4	7,667.5	7,994.3	1,683.2	1,522.2
600.0	80	896	1,648.8	4,259.3	7,035.5	7,326.9	1,542.6	1,398.3

562.5	75	843	1,578.5	4,025.0	6,724.3	6,998.5	1,474.4	1,338.1
525.0	70	789	1,512.4	3,810.3	6,432.6	6,690.2	1,411.8	1,283.2
450.0	60	683	1,386.1	3,394.2	5,878.3	6,103.3	1,289.4	1,176.0
375.0	50	578	1,267.0	2,992.9	5,358.7	5,552.1	1,168.9	1,070.7
300.0	40	474	1,154.7	2,599.2	4,872.6	5,034.5	1,061.9	978.2
225.0	30	371	1,051.7	2,214.1	4,430.4	4,560.9	962.8	893.4
187.5	25	318	1,003.2	2,023.1	4,224.4	4,339.0	914.8	852.5
150.0	20	264	959.8	1,838.4	4,039.8	4,138.6	871.0	815.8
75.0	10	153	893.9	1,498.2	3,759.1	3,826.6	805.0	763.4

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
750.0	100	1,114	18,733	5,996	39,623	22,286	5,912	6,634	47,258	111,002	118,245
675.0	90	1,004	17,537	5,294	35,639	19,748	5,336	5,664	42,591	100,188	106,725
600.0	80	896	15,470	5,546	31,464	17,103	4,758	4,667	38,003	89,322	95,150
562.5	75	843	14,835	5,344	29,472	15,854	4,478	4,183	35,732	84,080	89,566
525.0	70	789	14,319	5,093	27,609	14,693	4,210	3,710	33,459	79,033	84,190
450.0	60	683	13,018	4,678	24,067	12,508	3,680	2,878	28,962	69,093	73,602
375.0	50	578	11,599	4,134	20,752	10,497	3,158	2,179	24,499	59,293	63,162
300.0	40	474	10,209	3,702	17,279	8,289	2,646	1,601	20,121	49,671	52,913
225.0	30	371	8,822	3,156	13,837	6,065	2,133	1,126	15,715	40,043	42,655
187.5	25	318	8,123	2,813	12,143	4,966	1,874	920	13,480	35,183	37,478
150.0	20	264	7,312	2,574	10,468	3,865	1,615	745	11,205	30,326	32,304
75.0	10	153	5,180	2,678	7,184	1,625	1,102	501	6,505	20,697	22,048

Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	750.0	562.5	375.0	187.5	75.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	1,114	843	578	318	153
TOTAL NOX (AS NO2)		G/HR	7,286	5,520	3,853	2,223	1,240
TOTAL CO		G/HR	260	234	209	220	309
TOTAL HC		G/HR	19	27	49	46	53
TOTAL CO2		KG/HR	510	385	270	159	93
PART MATTER		G/HR	20.1	28.0	34.3	23.9	23.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,293.0	3,284.4	3,289.8	3,208.0	3,081.4
TOTAL CO	(CORR 5% O2)	MG/NM3	118.1	140.4	179.8	326.2	848.3
TOTAL HC	(CORR 5% O2)	MG/NM3	7.3	14.7	36.7	60.2	124.3
PART MATTER	(CORR 5% O2)	MG/NM3	7.4	13.8	24.7	31.3	55.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,604	1,600	1,602	1,563	1,501
TOTAL CO	(CORR 5% O2)	PPM	94	112	144	261	679
TOTAL HC	(CORR 5% O2)	PPM	14	27	69	112	232
TOTAL NOX (AS NO2)		G/HP-HR	6.61	6.60	6.69	7.01	8.11
TOTAL CO		G/HP-HR	0.24	0.28	0.36	0.69	2.02
TOTAL HC		G/HP-HR	0.02	0.03	0.09	0.14	0.35
PART MATTER		G/HP-HR	0.02	0.03	0.06	0.08	0.15
TOTAL NOX (AS NO2)		LB/HR	16.06	12.17	8.49	4.90	2.73
TOTAL CO		LB/HR	0.57	0.52	0.46	0.49	0.68
TOTAL HC		LB/HR	0.04	0.06	0.11	0.10	0.12
TOTAL CO2		LB/HR	1,124	850	596	350	205
PART MATTER		LB/HR	0.04	0.06	0.08	0.05	0.05
OXYGEN IN EXH		%	8.1	9.0	10.6	13.3	16.0
DRY SMOKE OPACITY		%	0.7	1.4	2.1	1.9	1.5
BOSCH SMOKE NUMBER			0.19	0.60	0.94	0.84	0.66

PERFORMANCE DATA[DM9072]

October 13, 2021

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	750.0	562.5	375.0	187.5	75.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	1,114	843	578	318	153
TOTAL NOX (AS NO2)		G/HR	8,816	6,679	4,662	2,690	1,501
TOTAL CO		G/HR	487	438	391	411	579
TOTAL HC		G/HR	35	52	93	87	101
PART MATTER		G/HR	39.2	54.6	67.0	46.7	45.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,984.5	3,974.2	3,980.7	3,881.6	3,728.5
TOTAL CO	(CORR 5% O2)	MG/NM3	220.8	262.5	336.2	610.1	1,586.2
TOTAL HC	(CORR 5% O2)	MG/NM3	13.9	27.8	69.4	113.8	234.9
PART MATTER	(CORR 5% O2)	MG/NM3	14.3	27.0	48.2	61.0	109.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,941	1,936	1,939	1,891	1,816
TOTAL CO	(CORR 5% O2)	PPM	177	210	269	488	1,269
TOTAL HC	(CORR 5% O2)	PPM	26	52	130	212	439
TOTAL NOX (AS NO2)		G/HP-HR	7.99	7.98	8.10	8.49	9.81
TOTAL CO		G/HP-HR	0.44	0.52	0.68	1.30	3.78
TOTAL HC		G/HP-HR	0.03	0.06	0.16	0.27	0.66
PART MATTER		G/HP-HR	0.04	0.07	0.12	0.15	0.29
TOTAL NOX (AS NO2)		LB/HR	19.44	14.73	10.28	5.93	3.31
TOTAL CO		LB/HR	1.07	0.97	0.86	0.91	1.28
TOTAL HC		LB/HR	0.08	0.11	0.21	0.19	0.22
PART MATTER		LB/HR	0.09	0.12	0.15	0.10	0.10

Regulatory Information

NON-CERTIFIED	1970 - 2100
THIS ENGINE RATING IS NOT EMISSIONS CERTIFIED BY ANY DOMESTIC OR FOREIGN AGENCY.	

Altitude Derate Data

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
1,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
2,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
3,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
4,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
5,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
6,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,138	1,141
7,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,132	1,112	1,094	1,141
8,000	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,126	1,106	1,087	1,069	1,051	1,141
9,000	1,141	1,141	1,141	1,141	1,141	1,121	1,101	1,081	1,062	1,044	1,026	1,009	1,141
10,000	1,141	1,141	1,139	1,118	1,096	1,076	1,057	1,038	1,019	1,002	985	968	1,141
11,000	1,138	1,115	1,093	1,072	1,052	1,032	1,014	996	978	961	945	929	1,117
12,000	1,091	1,069	1,048	1,028	1,009	990	972	955	938	922	906	891	1,079
13,000	1,046	1,025	1,005	986	967	949	932	915	899	884	869	854	1,041
14,000	1,002	982	963	945	927	910	893	877	862	847	832	819	1,005
15,000	960	941	922	905	888	871	855	840	825	811	797	784	970

Cross Reference

Systems Data
Reference Number: DM9072

October 13, 2021
For Help Desk Phone Numbers
Click Here

AIR INTAKE SYSTEM		
THE INSTALLED SYSTEM MUST COMPLY WITH THE SYSTEM LIMITS BELOW FOR ALL EMISSIONS CERTIFIED ENGINES TO ASSURE REGULATORY COMPLIANCE.		
MAXIMUM ALLOWABLE INTAKE RESTRICTION WITH CLEAN ELEMENT	15	IN-H20
MAXIMUM ALLOWABLE INTAKE RESTRICTION WITH DIRTY ELEMENT	25	IN-H20
MAXIMUM PRESSURE DROP FROM COMPRESSOR OUTLET TO MANIFOLD INLET (OR MIXER INLET FOR EGR)	4.4	IN-HG
MAXIMUM TURBO INLET AIR TEMPERATURE	122	DEG F
MAXIMUM AIR FILTER INLET AIR TEMPERATURE	122	DEG F
CHARGE AIR FLOW AT RATED SPEED	148.4	LB/MIN
TURBO COMPRESSOR OUTLET PRESSURE AT RATED SPEED (ABSOLUTE)	80.9	IN-HG
COOLING SYSTEM		
ENGINE ONLY COOLANT CAPACITY	14.5	GAL
MAXIMUM ALLOWABLE JACKET WATER OUTLET TEMPERATURE	210	DEG F
REGULATOR LOCATION FOR JW (HT) CIRCUIT	OUTLET	
MAXIMUM UNINTERRUPTED FILL RATE	5.0	G/MIN
MINIMUM COOLANT LOSS WITHOUT IMPACTING RADIATOR PERFORMANCE (PERCENT OF TOTAL)	12	PERCENT
COOLANT LOSS-MAXIMUM PERCENTAGE OF PUMP PRESSURE RISE LOSS	15	PERCENT
ENGINE SPEC SYSTEM		
CYLINDER ARRANGEMENT	VEE	
NUMBER OF CYLINDERS	12	
CYLINDER BORE DIAMETER	5.4	IN
PISTON STROKE	6.0	IN
TOTAL CYLINDER DISPLACEMENT	1649	CU IN
STANDARD CRANKSHAFT ROTATION FROM FLYWHEEL END	CCW	
STANDARD CYLINDER FIRING ORDER	1-10-9-6-5-12-11-4-3-8-7-2	
NUMBER 1 CYLINDER LOCATION	LEFT FRONT	
STROKES/COMBUSTION CYCLE	4	
EXHAUST SYSTEM		
THE INSTALLED SYSTEM MUST COMPLY WITH THE SYSTEM LIMITS BELOW FOR ALL EMISSIONS CERTIFIED ENGINES TO ASSURE REGULATORY COMPLIANCE.		
MAXIMUM ALLOWABLE SYSTEM BACK PRESSURE	27	IN-H20
MANIFOLD TYPE	DRY	
MAXIMUM ALLOWABLE STATIC WEIGHT ON EXHAUST CONNECTION	110.2	LB
MAXIMUM ALLOWABLE STATIC BENDING MOMENT ON EXHAUST CONNECTION	0	LB-FT
FUEL SYSTEM		
MAXIMUM FUEL FLOW FROM TRANSFER PUMP TO ENGINE	227.2	G/HR

MAXIMUM ALLOWABLE FUEL SUPPLY LINE RESTRICTION	8.9	IN-HG
MAXIMUM ALLOWABLE FUEL TEMPERATURE AT TRANSFER PUMP INLET	149	DEG F
MAXIMUM FUEL FLOW TO RETURN LINE FROM ENGINE	198.1	G/HR
MAXIMUM ALLOWABLE FUEL RETURN LINE RESTRICTION	10.2	IN-HG
NORMAL FUEL PRESSURE IN A CLEAN SYSTEM	90.9	PSI
FUEL SYSTEM TYPE	EUI	
MAXIMUM TRANSFER PUMP PRIMING LIFT WITHOUT PRIMING PUMP	12.1	FT
MAXIMUM ALLOWABLE BIOFUEL	20	PERCENT
LUBE SYSTEM		
CRANKCASE VENTILATION TYPE	TO ATM	
MOUNTING SYSTEM		
CENTER OF GRAVITY LOCATION - X DIMENSION - FROM REAR FACE OF BLOCK - (REFERENCE TM7077)	23.0	IN
CENTER OF GRAVITY LOCATION - Y DIMENSION - FROM CENTERLINE OF CRANKSHAFT - (REFERENCE TM7077)	11.5	IN
CENTER OF GRAVITY LOCATION - Z DIMENSION - FROM CENTERLINE OF CRANKSHAFT - (REFERENCE TM7077)	0.0	IN
DRY WEIGHT - ENGINE ONLY (REFERENCE VALUE)	6462	LB
STARTING SYSTEM		
MINIMUM CRANKING SPEED REQUIRED FOR START	100	RPM
LOWEST AMBIENT START TEMPERATURE WITHOUT AIDS	32	DEG F

Alternator

Image Shown may not Reflect Actual Package.

SR5 — 1200 Frame

Standby Power
60 Hz, 1800 rpm 750 – 800 ekW

Prime Power
60 Hz, 1800 rpm 680 – 725 ekW

Features

General

- Standards: meets the requirements of NEMA, IEC, ISO, IEEE, BS, AS
- Industry leading insulation technology
- Proven mechanical and electrical design
- Reliable and durable construction
- Improved excitation system for high power quality
- Improved motor starting capability
- Radio frequency noise suppression better than industry standards
- Superior construction and testing

Standard

- 3 Phase brushless, salient pole
- NEMA Class H insulation
- Class H Temperature rise at 40°C ambient
- 2/3 winding pitch
- Low voltage: Random Wound and Internal Excitation
- Standard voltages:
  60 Hz: 480V, 4160V
- Busbar connections:
  60 Hz models: NEMA standard hole pattern

Advanced Features

- Enhanced performance from fuel injection timing and limiting
- PM excitation capability to IE excitation
- Space heater kit
- Bearing temperature detectors

Optional voltages:
60 Hz: 380V, 440V, 600V, 2400V

- Oversized generators for Class F temperature rise
- UL Listing
- CSA test and certification

NEMA MG-1 Temperature Rise
(over 40° C ambient)

	Class A	Class B	Class F	Class H
Standby	85°C	105°C	130°C	150°C
Prime / Continuous	60°C	80°C	105°C	125°C

Alternator

Specifications

Type
Brushless, revolving field solid-state automatic voltage regulator

Construction
One bearing three phase, series star connected

Enclosure
Drip proof IP23, guarded

Alignment
Cat® pilot shaft, single bearing only

Over-speed capability
60 Hz .....125% of synchronous speed
50 Hz.....150% of synchronous speed

Waveform deviation, line to line, no load
Less than 2%

Paralleling capability
Standard with adjustable voltage droop

Voltage regulator
3 Phase sensing with variable Volts-Per Hertz response

Voltage regulation, steady state
+/- 0.5%

Voltage regulation with 3% speed change
+/- 0.5%

Voltage gain
Adjustable to compensate for engine speed droop and line loss

Number of leads
6

Product Support

- Standard Caterpillar warranty
- Optional extended Caterpillar warranty
- Serviceable parts available through Caterpillar Parts System
- Service intervals agree with recommended engine practices

Serviceability

- Stator leads exit top
- Replaceable bearing sleeve(s) for longer life and lower repair cost
- Easy access to serviceable parts
- Improved wire and terminal idenfication ensuring reliable connection

Cable Entry

- Top cable entry on LV package

Alternator

Main Stator Construction

The 1200 frame generators use Round lamination stator design.

Stator coil pitch, coil distribution designed to produce optimum waveform and minimum total harmonic distortion. Stator slots are insulated by slot liners and coil separators. Slot liners, coil separators, and top sticks provide a minimum of 25 mm (1 in) distance from the coil to ground. The thickness of liners, separators, and phase sheets provides superior protection between phases and ground.

Low voltage stator windings are given a 3000 volt “high pot” test (150% of the NEMA and IEC requirements for 460 volt generators) before the insulation is applied. The stators are then given a vacuum impregnation treatment of polyester material, followed by an application of epoxy resin. This sealed stator is then given a final 2000 volt “high pot” test.

Rotor Construction

The main rotor is constructed using a precision “wet” layer winding process with epoxy painted on the bare rotor and on each layer. This ensures bonding of all the wire layers together, bonding of the coils to the rotor laminations, and a sealed insulation system. The rotor is put in the oven for curing the epoxy.

The exciter rotor is machine wound and receives a trickle coat of a fungus-resisting resin. Numerically controlled turning and grinding machines produce rotor shafts with close repeatable tolerances. Grade-8 bolts are used wherever joints are subject to induced stresses. A complete coating of red sealer is applied to protect the rotors and shaft from corrosion.

Every production rotor is dynamically balanced in two planes to within 0.0508 mm deflection peak-to-peak amplitude and run at rated speed before assembly into the stator.

www.cat.com/electricpower

LEHE0451-02 (02/19)

GENERATOR DATA

(AT400240)-ENGINE (BAA126422A)-CEM

OCTOBER 13, 2021

For Help Desk Phone Numbers Click here

Selected Model

Engine: C27	**Generator Frame:** 1296	**Genset Rating (kW):** 750.0	**Line Voltage:** 480
Fuel: Diesel	**Generator Arrangement:** 3850654	**Genset Rating (kVA):** 937.0	**Phase Voltage:** 277
Frequency: 60	**Excitation Type:** Permanent Magnet	**Pwr. Factor:** 0.8	**Rated Current:** 1127.0
Duty: STANDBY	**Connection:** PARALLEL STAR	**Application:** EPG	**Status:** Current

Version: 41205 /41383 /41513 /10134

Spec Information

Generator Specification

Frame: 1296 **Type:** SR5	**No. of Bearings:** 1
Winding Type: RANDOM WOUND	**Flywheel:** 18.0
Connection: PARALLEL STAR	**Housing:** 0
Phases: 3	**No. of Leads:** 12
Poles: 4	**Wires per Lead:** 2
Sync Speed: 1800	**Generator Pitch:** 0.6667

Generator Efficiency

Per Unit Load	kW	Efficiency %
0.25	187.5	89.7
0.5	375.0	93.1
0.75	562.5	93.7
1.0	750.0	93.4

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X''_d	0.1265	0.0311
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.1416	0.0348
TRANSIENT - SATURATED X'_d	0.1579	0.0388
SYNCHRONOUS - DIRECT AXIS X_d	3.2275	0.7932
SYNCHRONOUS - QUADRATURE AXIS X_q	1.9364	0.4759
NEGATIVE SEQUENCE X_2	0.1343	0.0330
ZERO SEQUENCE X_0	0.0098	0.0024

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	2.0450
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'_d	0.1000
OPEN CIRCUIT SUBSTRANSIENT - DIRECT AXIS T''_{d0}	0.0130
SHORT CIRCUIT SUBSTRANSIENT - DIRECT AXIS T''_d	0.0100
OPEN CIRCUIT SUBSTRANSIENT - QUADRATURE AXIS T''_{q0}	0.1370
SHORT CIRCUIT SUBSTRANSIENT - QUADRATURE AXIS T''_q	0.0100
EXCITER TIME CONSTANT T_e	0.0300
ARMATURE SHORT CIRCUIT T_a	0.0150

Short Circuit Ratio: 0.41	Stator Resistance = 0.0072 Ohms	Field Resistance = 0.386 Ohms

Voltage Regulation

Voltage level adjustment: +/-	5.0%
Voltage regulation, steady state: +/-	0.5%
Voltage regulation with 3% speed change: +/-	0.5%
Waveform deviation line - line, no load: less than	2.0%
Telephone influence factor: less than	50

Generator Excitation

	No Load	Full Load, (rated) pf	
		Series	Parallel
Excitation voltage:	11.61 Volts	49.69 Volts	Volts
Excitation current	0.97 Amps	3.41 Amps	Amps

Selected Model

Engine: C27	**Generator Frame:** 1296	**Genset Rating (kW):** 750.0	**Line Voltage:** 480
Fuel: Diesel	**Generator Arrangement:** 3850654	**Genset Rating (kVA):** 937.0	**Phase Voltage:** 277
Frequency: 60	**Excitation Type:** Permanent Magnet	**Pwr. Factor:** 0.8	**Rated Current:** 1127.0
Duty: STANDBY	**Connection:** PARALLEL STAR	**Application:** EPG	**Status:** Current

Version: 41205 /41383 /41513 /10134

Generator Mechanical Information

Center of Gravity

Dimension X	-670.0 mm	-26.4 IN.
Dimension Y	0.0 mm	0.0 IN.
Dimension Z	0.0 mm	0.0 IN.

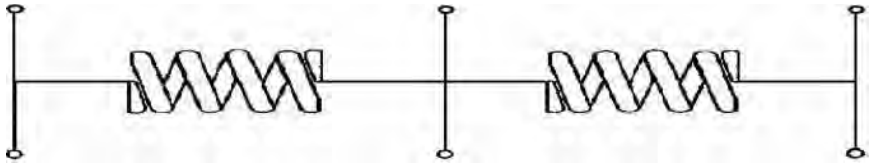
- "X" is measured from driven end of generator and parallel to rotor. Towards engine fan is positive. See General Information for details
- "Y" is measured vertically from rotor center line. Up is positive.
- "Z" is measured to left and right of rotor center line. To the right is positive.

Generator WT = 1665 kg * Rotor WT = 620 kg * Stator WT = 1045 kg
3,671 LB 1,367 LB 2,304 LB

Rotor Balance = 0.0508 mm deflection PTP

Overspeed Capacity = 125% of synchronous speed

Generator Torsional Data



J1 = Coupling and Fan **J2 = Rotor** **J3 = Exciter End**

TOTAL J = J1 + J2 + J3

K1 = Shaft Stiffness between J1 + J2 (Diameter 1)

K2 = Shaft Stiffness between J2 + J3 (Diameter 2)

J1	K1	Min Shaft Dia 1	J2	K2	Min Shaft Dia 2	J3
9.9 LB IN. s^2	72.3 MLB IN./rad	5.7 IN.	78.9 LB IN. s^2	71.2 MLB IN./rad	5.5 IN.	3.3 LB IN. s^2
1.12 N m s^2	8.17 MN m/rad	145.0 mm	8.92 N m s^2	8.05 MN m/rad	140.0 mm	0.37 N m s^2

Total J

92.1 LB IN. s^2

10.41 N m s^2

Selected Model

Engine: C27	**Generator Frame:** 1296	**Genset Rating (kW):** 750.0	**Line Voltage:** 480
Fuel: Diesel	**Generator Arrangement:** 3850654	**Genset Rating (kVA):** 937.0	**Phase Voltage:** 277
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