El Paso Natural Gas Company, L.L.C.
a Kinder Morgan company

March 6, 2024 **FEDEX 2718 3698 1926**

Ms. Karla Murrieta
Arizona Department of Environmental Quality
Air Quality Division
1110 W. Washington Street
Phoenix, AZ 85007

Re: Submittal of Class I Air Quality Permit Renewal Application
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station

Dear Ms. Murrieta:

This submittal contains Class I Air Quality Permit renewal applications for Mojave Topock Compressor Station. A minor permit revision application was recently submitted that seeks authorized used of a diesel-fired rental auxiliary generator at the facility when both existing auxiliary generators are out of service. There are no other changes to previous representations made for the Mojave Topock Compressor Station.

This application contains the required application forms, emissions calculations, and other information for a complete air permit renewal application. Should you require further information or if you have any questions regarding the permit application, please contact me at (303) 914-7616 or email address weiwen_daly@kindermorgan.com.

Sincerely,

Weiwen Daly
Air Permitting and Compliance - East

Cc: U.S.EPA Region IX (FedEx Tracking No. 2718 3721 4320)

Enclosure:
Class I Air Quality Permit Renewal Application – Mojave Topock Compressor Station

March 07, 2024

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CLASS I AIR QUALITY PERMIT RENEWAL APPLICATION

EL PASO NATURAL GAS COMPANY, L.L.C.

MOJAVE TOPOCK COMPRESSOR STATION

SUBMITTED BY:

MARCH 2024

SUBMITTED TO:

El Paso Natural Gas Company, L.L.C.
a Kinder Morgan company

El Paso Natural Gas Company, L.L.C.
5151 E. Broadway Blvd., Suite 1680
Tucson, AZ 85711

Arizona Department of Environmental Quality
1110 W. Washington St.
Phoenix, AZ 85007

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EXECUTIVE SUMMARY

The El Paso Natural Gas Company, L.L.C. (EPNG), a Kinder Morgan Company, provides natural gas transportation services for natural gas suppliers and end users throughout the southwest United States and owns and operates a large pipeline network. The Mojave Topock Compressor Station (Facility) is one of such stations that provides natural gas compression to the pipeline network. Natural gas compression is needed to maintain enough pressure in the pipeline to keep the natural gas flowing. The Facility is permitted to operate 24 hours a day and 365 days a year. The Mojave Topock Compressor Station is regulated by the Arizona Department of Environmental Quality (ADEQ) and currently operates pursuant to the conditions of ADEQ Class I Air Quality Permit No. 76597.

ADEQ Class I Air Quality Permit No. 76597 was issued on September 12, 2019 and expires on September 10, 2024. EPNG must submit a timely renewal application to ADEQ to maintain the authorization to operate the Mojave Topock Compressor Station. Per Arizona Administrative Code (A.A.C.) R18-2-304(D)(2), a timely renewal application is one that is submitted at least 6 months, but not more than 18 months, prior to the date of permit expiration. This application is being submitted to satisfy this deadline (Application).

The information contained herein includes the applicable information requested by ADEQ's "Application Packet for Class I Permit." A complete set of forms, including the Standard Class I Permit Application Form signed by the Responsible Official, Equipment List, Emission Source Form, and Application Administrative Completeness Checklist is included in Appendix A. Table E-1 identifies each component required for a complete Class I Air Quality Permit Renewal Application and their corresponding section in the document.

Note that EPNG is not proposing a physical change or change in the method of operation as part of the Application and is not proposing any alternate operating scenarios.

A minor revision permit application was recently submitted that seeks authorized use of a diesel-fired auxiliary generator at the Facility when the two existing natural gas-fired auxiliary generators are out of service. The specific standards and requirements that are applicable to the rental engine as well as associated permit conditions have been proposed as part of the pending permit application. EPNG is not

requesting any additional changes and expects the final renewed permit to include the same conditions and citations that will be included in the permit once ADEQ has completed the review of the minor revision application.

EPNG has not reconsidered previous regulatory applicability determinations, except where specifically noted. In some instances, additional information regarding the applicability and compliance determinations has been added for clarification purposes. EPNG anticipates that the renewed Class I Permit will carry forward the policies and understandings set forth in the current permit, including the ability to operate at a range within its permitted capacity and to conduct routine equipment maintenance and inspection activities without notice or prior approval by ADEQ. This was confirmed by ADEQ through approving the classification of such items as insignificant activities. EPNG further understands that changes can be made to insignificant activities without notification to ADEQ provided that such changes remain insignificant.

Table E-1
Application Requirements Index

Application Instructions Section 2.4	Application Component	Location in Application
1, 2	Process Description	Section 2.1
3, 4	Alternate Operating Scenarios	Section 4.2
5	Process Flow Diagram	Section 2.3
7, 20	Emission Calculations	Section 3, Appendix B
8	Citations and Descriptions of all Applicable Requirements	Section 5
9	Proposed Exemptions from Otherwise Applicable Requirements	Section 5.8
10	Activity Data (process rate, fuel usage, hours of operation, etc.)	Section 4.4
11	Equipment List	Appendix A
12	Stack Information	Appendix A
13	Site Diagram	Section 2.2
14	Air Pollution Control Information	Section 4.9
16	Compliance Plan	Section 4.10
17	Compliance Certification	Section 4.11
18	Acid Rain Program Compliance Plan	N/A (1)
19	Major New Sources	Section 4.12

(1) The Mojave Topock Compressor Station is not subject to the Acid Rain program requirements incorporated into A.A.C. R18-2-333.

1. INTRODUCTION

EPNG provides natural gas transportation services for natural gas suppliers and end users throughout the southwest United States and owns and operates a large pipeline network. The Mojave Topock Compressor Station is one of several stations that provides natural gas compression to the pipeline network. The Facility is permitted to operate 24 hours per day and 365 days per year and is regulated by ADEQ. The Facility is a major source of hazardous air pollutants (HAPs), and emissions are above applicable significant levels for several regulated New Source Review (NSR) pollutants. The facility wide Nitrogen Oxides (NO_x) and Carbon Monoxide (CO) emissions exceed the corresponding major source threshold of 100 tons per year (tpy) described in A.A.C. R18-2-101(75)(c) and the 250 tpy threshold described in A.A.C. R18-2-401(13)(b). Therefore, a Class I Air Quality Permit is required per A.A.C. R18-2-302(B)(1)(a). The Facility's emissions and operations are currently authorized by ADEQ Class I Air Quality Permit No. 76597.

1.1 SITE LOCATION

The Mojave Topock Compressor Station is located at 5255 East Needle Mountain Road, Topock, AZ in Mohave County. A site diagram of the Mojave Topock Compressor Station is provided in Section 2.2.

1.2 REGULATORY JURISDICTION

The Mojave Topock Compressor Station is under the jurisdiction of the following State and Federal agencies with respect to air quality requirements:

Arizona Department of Environmental Quality
Air Quality Division
1110 W. Washington Street
Phoenix, AZ 85007

United States Environmental Protection Agency – Region 9
75 Hawthorne Street
San Francisco, CA 94105

2. PROCESS DESCRIPTION AND APPLICATION OVERVIEW

The following sections provide details on current operations at the Facility, including a site diagram, relevant process flow diagrams, and an overview of the Application.

2.1 PROCESS DESCRIPTION

The Mojave Topock Compressor Station is one of several stations that EPNG owns and operates to help provide natural gas compression to their pipeline network. The compression process at the Facility is accomplished with the use of three identical two-stroke, lean-burn (2SLB) natural gas-fired Reciprocating Internal Combustion Engines (RICE) (Cooper-Bessemer Model 8W330; CP-1, CP-2 and CP-3) that drive the compressor units. The Mojave Topock Compressor Station is unattended as the RICE are automated. The Standard Industrial Classification (SIC) code for the Facility is 4922 (Natural Gas Transmission). The North American Industry Classification System (NAICS) code is 48621 (Pipeline Transportation of Natural Gas).

Compressors, driven by the natural gas fueled RICE, receive a flow of natural gas from a common pipeline system. The RICE operation is dependent on the amount of natural gas that is being transported to various customers along the pipeline system.

The primary electric power used at the Facility is provided by one of two identical four-stroke, lean-burn (4SLB) natural gas-fired auxiliary generators (Caterpillar Model 3606 SI; Aux-1/Aux-2). EPNG is also authorized to bring a diesel-fired rental auxiliary generator (model unspecified; Aux-3) on site when one of the existing auxiliary generators is out of service. The rental unit ensures operational continuity at the Facility and will only be present when either of the existing natural gas-fired auxiliary generators is out of service and will only be used when the remaining auxiliary generator shuts down. Finally, the Facility has a four-stroke, rich-burn (4SRB) natural gas-fired emergency generator (Onan Model LSG-8751-6003-C; EG-1) that can be used to supply electricity to the nearby administrative building during power outages.

Depending on customer demand for natural gas, the amount of natural gas transported in the EPNG pipeline will vary. Due to this variance, the permit authorizes full operation of the RICE to meet the maximum potential demand for natural gas transportation services. However, for times when

compression is not necessary due to the volume of natural gas being transported, EPNG will shut down operation of the RICE. Other factors may also require RICE shutdown, as detailed below:

- Maintenance – EPNG uses an "information-based" equipment maintenance system. EPNG collects and analyzes all available information relating to RICE conditions so that necessary or required maintenance is performed.

- Malfunctions – three typical malfunctions that could automatically shut down a unit include, but are not limited to:

    - Loss of oil pressure;
    - High temperature; and
    - Vibration.

  Any one of these alarms will automatically turn off a RICE and block in the fuel line.

- Emergency Shutdown (ESD) – ESD is initiated by the hazardous gas sensors in the compressor building, glass break, pull switches, or fire eyes. When an ESD is performed at the Facility, the main inlet/outlet valve and select station valves will close to isolate portions of the Facility.

When the RICE or entire Facility is shutdown, a small volume of natural gas from the equipment and piping is vented to the atmosphere. These events, referred to as "blowdown", result in insignificant emissions.

2.2 SITE DIAGRAM

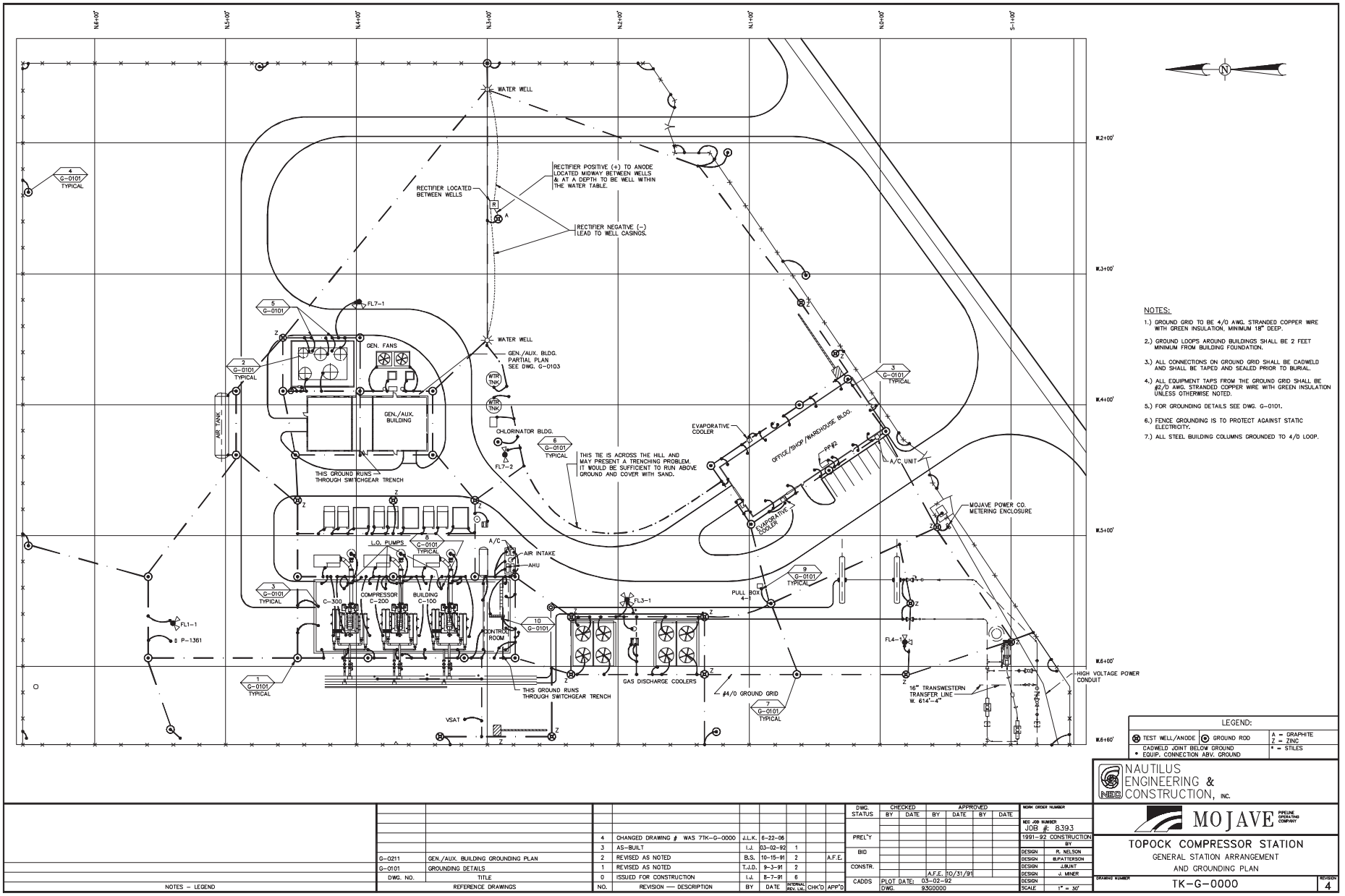
There are no physical changes or changes in the method of operation to the emissions sources at the Mojave Topock Compressor Station being proposed in this Application. As a result, the site-diagram previously provided to ADEQ as part of the 2019 Renewal Application is still applicable and is provided in this section as Figure 2-1.

2.3 PROCESS FLOW DIAGRAMS

Operation of the Facility, as detailed in other parts of this Application, is simple. The three Cooper-Bessemer 8W330 RICE are 2SLB natural gas-fired internal combustion engines driving gas compressors. The energy released during the combustion process drives gas compressors, raising the pressure of the incoming gas from an initial "suction" state to a more compressed "discharge" state. The two Caterpillar 3606 SI are 4SLB natural gas-fired internal combustion engines that are utilized to power auxiliary generators. The rental unit is a diesel-fired internal combustion engine that is utilized to power an auxiliary generator when the two natural gas-fired units are out of service. No processing is performed at this

facility. Figure 2-2 and Figure 2-3 contain the process flow diagrams for the compressor engines and auxiliary generators at the Mojave Topock Compressor Station.

Figure 2-1
Site Diagram - Title V Air Permitting Site Plan



NOTES:

1.) GROUND GRID TO BE 4/0 AWG. STRANDED COPPER WIRE WITH GREEN INSULATION, MINIMUM 18" DEEP.

2.) GROUND LOOPS AROUND BUILDINGS SHALL BE 2 FEET MINIMUM FROM BUILDING FOUNDATION.

3.) ALL CONNECTIONS ON GROUND GRID SHALL BE CADWELD AND SHALL BE TAPED AND SEALED PRIOR TO BURIAL.

4.) ALL EQUIPMENT TAPS FROM THE GROUND GRID SHALL BE #2/0 AWG. STRANDED COPPER WIRE WITH GREEN INSULATION UNLESS OTHERWISE NOTED.

5.) FOR GROUNDING DETAILS SEE DWG. G-0101.

6.) FENCE GROUNDING IS TO PROTECT AGAINST STATIC ELECTRICITY.

7.) ALL STEEL BUILDING COLUMNS GROUNDED TO 4/0 LOOP.

LEGEND:

TEST WELL/ANODE	GROUND ROD	A = GRAPHITE Z = ZINC * = STILES
CADWELD JOINT BELOW GROUND • EQUIP. CONNECTION ABV. GROUND		

NAUTILUS ENGINEERING & CONSTRUCTION, INC.

NOTES — LEGEND

REFERENCE DRAWINGS

DWG. NO.	TITLE
G-0211	GEN./AUX. BUILDING GROUNDING PLAN
G-0101	GROUNDING DETAILS

NO.	REVISION — DESCRIPTION	BY	DATE	INTERNAL REV. NO.	CHK'D	APP'D
4	CHANGED DRAWING # WAS 7TK-G-0000	J.L.K.	6-22-06			
3	AS-BUILT	I.J.	03-02-92	1		
2	REVISED AS NOTED	B.S.	10-15-91	2		A.F.E.
1	REVISED AS NOTED	T.J.D.	9-3-91	2		
0	ISSUED FOR CONSTRUCTION	I.J.	8-7-91	6		

DWG. STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE	APPROVED BY	APPROVED DATE
PREL'Y						
BID						
CONSTR.			A.F.E. 10/31/91			
CADDS	PLOT DATE: 03-02-92 DWG. 9360000					

WORK ORDER NUMBER
NEC JOB NUMBER
JOB #: 8393
1991-92 CONSTRUCTION

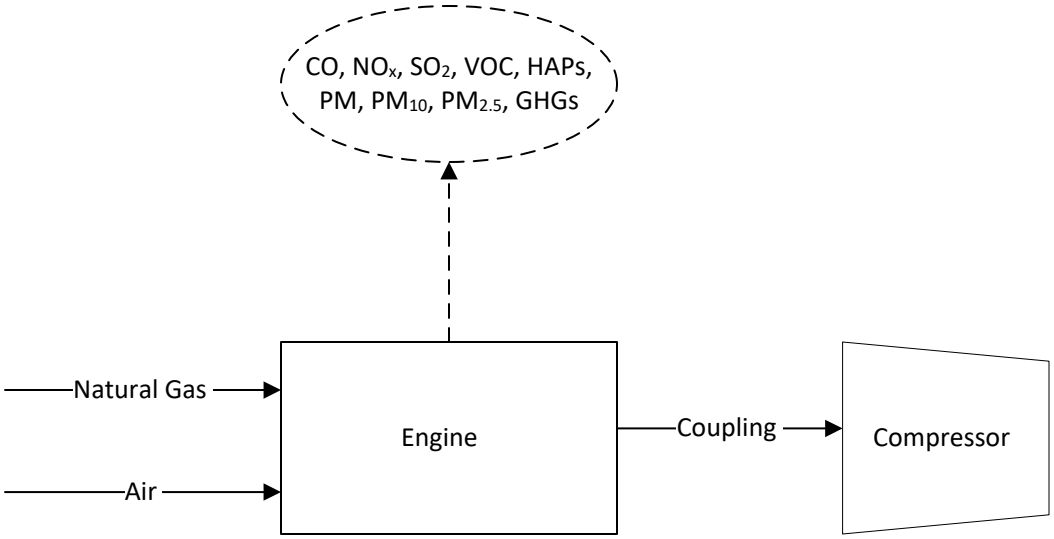
	BY
DESIGN	R. NELSON
DESIGN	B.PATTERSON
DESIGN	J.BUNT
DESIGN	J. MINER
DESIGN	
SCALE	1" = 30'

MOJAVE PIPELINE OPERATING COMPANY

TOPOCK COMPRESSOR STATION
GENERAL STATION ARRANGEMENT AND GROUNDING PLAN

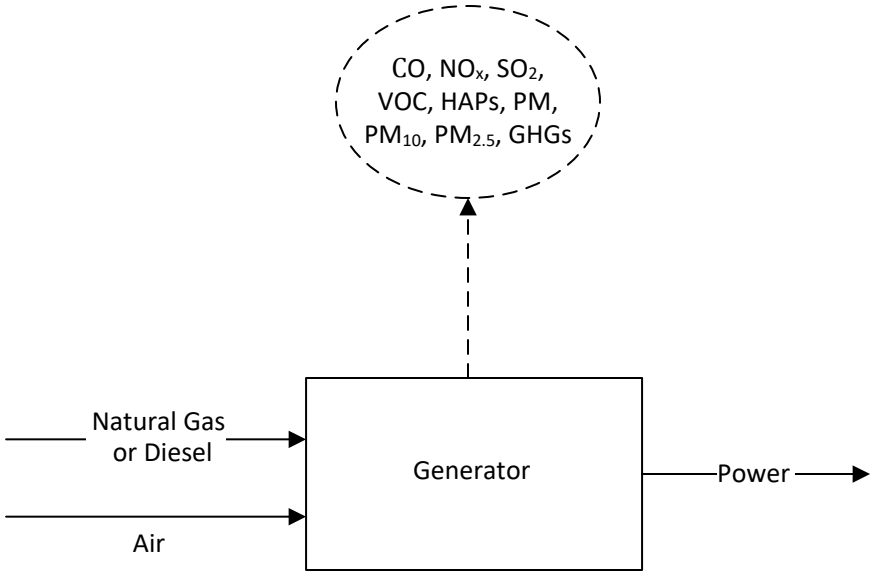
DRAWING NUMBER: TK-G-0000
REVISION: 4

Figure 2-2
Compressor Engines Process Flow Diagram



Nitrogen Oxides (NO_X)
Carbon Monoxide (CO)
Sulfur Dioxide (SO_2)
Particulate Matter (PM)
Particulate Matter with an aerodynamic diameter less than 10 microns (PM_{10})
Particulate Matter with an aerodynamic diameter less than 2.5 microns ($PM_{2.5}$)
Volatile Organic Compounds (VOC)
Hazardous Air Pollutants (HAP)
Greenhouse Gases (GHG)

Figure 2-3
Generators Process Flow Diagram



2.4 RENEWAL APPLICATION OVERVIEW

This submittal is an application for renewal of ADEQ Class I Air Quality Permit No. 76597. The permit was issued on September 12, 2019 and expires on September 10, 2024. Per A.A.C. R18-2-322, EPNG must submit a timely renewal application to ADEQ to avoid the expiration of the permit thereby terminating the source's right to operate. Per A.A.C. R18-2-304(D)(2), a renewal application is considered timely if it is submitted at least six months, but not more than 18 months prior to the date of permit expiration. Therefore, the renewal application is due by March 10, 2024. The submittal of this renewal Application in a timely manner will allow the Facility to continue to operate past the permit expiration date until a new permit has been issued.

There are no physical changes or changes in the method of operation being proposed at this time. Additionally, EPNG is not requesting any changes to the permit.

The information contained in this Application includes the applicable information requested by ADEQ's "Application Packet for Class I Permit" document. Required forms have been included in Appendix A, including the Standard Class I Permit Application Form, Equipment List, Emission Source Form, and Application Administrative Completeness Checklist.

3. EMISSIONS ANALYSIS

The following section describes how the sitewide Potential to Emit (PTE) was calculated for each source and activity associated with the Facility. There are no physical modifications or changes in the method of operation proposed with this Application. Therefore, there are no emissions increases and Federal NSR is not applicable. For this reason, a discussion of emissions increases for the determination of Prevention of Significant Deterioration (PSD) review applicability has not been included in this section.

3.1 EMISSIONS CALCULATION APPROACH

Operations and equipment at the Facility have the potential to emit NO_X, CO, SO_2, PM, PM_{10}, $PM_{2.5}$, VOC, HAP, and GHG. Emissions associated with the various emissions units are calculated using the methodologies described in the following sections. Detailed emissions calculations are provided in Appendix B.

3.1.1 Compressor Engine Emissions

Emissions from the Cooper-Bessemer 8W330 RICE (Equipment IDs: A-01, A-02, and A-03) are calculated based on the heat input, operating hours, current permit limits, the emissions factors from the U.S Environmental Protection Agency (U.S. EPA), AP-42 Section 3.2, "Natural Gas-Fired Reciprocating Engines," dated July 2000, and emissions factors from 40 CFR Part 98 (Mandatory Greenhouse Gas Reporting).

NO_X, CO, and VOC:

Emissions of NO_X, CO, and VOC from the RICE have been set equal to current permit limits. The data is expressed in pounds per hour (lb/hr). Annual emissions, in tpy, are based on the unit operating continuously at these emissions rates for 8,760 hours per year.

- *Hourly Emissions (lb/hr) = Manufacturer's data (lb/hr)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

SO_2, PM, PM_{10}, $PM_{2.5}$, and HAPs

Emissions of SO_2, PM, PM_{10}, $PM_{2.5}$, and HAPs from the RICE are calculated utilizing emissions factors from AP-42 Section 3.2. Specifically, the factors that were utilized are those for 2SLB natural gas-fired RICE located in Table 3.2-1. These emissions factors are expressed as pounds of pollutant per million British Thermal Units of fuel (lb/MMBtu). Therefore, to calculate emissions, a heat input to the RICE is necessary. This heat input has been quantified utilizing the RICE's brake specific fuel consumption (BSFC) and horsepower (hp). The horsepower at 75 degrees Fahrenheit was used. Annual emissions are based on the unit operating continuously for 8,760 hours per year.

- *RICE Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (lb/MMBtu) * RICE Heat Input (MMBtu/hr)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

Greenhouse Gases:

Emissions of GHGs [carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)] from the RICE are calculated utilizing emissions factors from Tables C-1 and C-2 in 40 CFR Part 98, Subpart C (General Stationary Fuel Combustion Sources). The emissions factors are expressed as kilograms of pollutant per MMBtu of fuel (kg/MMBtu). Therefore, to calculate emissions, a heat input to the RICE is necessary. The same heat input for determining emissions of SO_2, particulate matter species, and HAPs has been utilized for calculating emissions of GHGs. Annual emissions are based on the unit operating continuously for 8,760 hours per year. The total GHG emissions are converted to carbon dioxide equivalents (CO_2e) by multiplying each individual GHG by the global warming potential (GWP) from Table A-1 of 40 CFR Part 98, Subpart A (General Provisions).

- *RICE Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (kg/MMBtu) * RICE Heat Input (MMBtu/hr) * 1/0.4536 (lb/kg)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*
- *Annual Greenhouse Gas Equivalents, CO_2e (tpy): CO_2 Annual Emissions (tpy) * CO_2 GWP + CH_4 Annual Emissions (tpy) * CH_4 GWP + N_2O Annual Emissions (tpy) * N_2O GWP*

3.1.2 Auxiliary Generator Emissions

Emissions from the Caterpillar 3606 SI auxiliary generators (Equipment IDs: Aux-1/Aux-2) are calculated based on the heat input, operating hours, the emissions factors from the U.S Environmental Protection Agency (U.S. EPA), AP-42 Section 3.2, "Natural Gas-Fired Reciprocating Engines," dated July 2000, and emissions factors from 40 CFR Part 98. For several pollutants, the maximum emissions have been set equal to currently applicable limits in Permit No. 76597. Note that only one generator is authorized to operate at a time, per Attachment "B", Condition II.B in Permit No. 76597. For this reason, the maximum emissions of each pollutant are based off of a single generator operating continuously for 8,760 hours per year.

NO_X, CO, and VOC:

The maximum emissions of NO_X, CO, and VOC from the auxiliary generators are assumed to be equal to the current limits in Permit No. 76597. These limits are expressed in lb/hr. Therefore, the short-term emissions rates are set equal to these values. Annual emissions, in tpy, are based on one of the units operating continuously at these emissions rates for 8,760 hours per year.

- *Hourly Emissions (lb/hr) = Current Permit Limits (lb/hr)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

SO_2, PM, PM_{10}, $PM_{2.5}$, and HAPs

Emissions of SO_2, PM, PM_{10}, $PM_{2.5}$, and HAPs from the auxiliary generators are calculated utilizing emissions factors from AP-42 Section 3.2. Specifically, the factors that were utilized are those for natural gas-fired 4SLB RICE located in Table 3.2-2. These emissions factors are expressed as lb/MMBtu. Therefore, to calculate emissions, a heat input to the engine is necessary. This heat input has been quantified utilizing the engine's BSFC and horsepower. Conservative values of BSFC and horsepower have been used based on the manufacturer's specifications. Annual emissions are based on one of the units operating continuously for 8,760 hours per year.

- *Generator Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (lb/MMBtu) * Generator Heat Input (MMBtu/hr)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

Greenhouse Gases:

Emissions of GHGs (CO_2, CH_4, and N_2O) from the auxiliary generators are calculated utilizing emissions factors from Tables C-1 and C-2 in 40 CFR Part 98, Subpart C (General Stationary Fuel Combustion Sources). The emissions factors are expressed as kg/MMBtu. Therefore, to calculate emissions, a heat input to the engine is necessary. The same heat input for determining emissions of SO_2, particulate matter species, and HAPs has been utilized for calculating emissions of GHGs. Annual emissions are based on one of the units operating continuously for 8,760 hours per year. The total GHG emissions are converted to CO_2e by multiplying each individual GHG by the GWP from Table A-1 of 40 CFR Part 98, Subpart A (General Provisions).

- *Generator Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (kg/MMBtu) * Generator Heat Input (MMBtu/hr) * 1/0.4536 (lb/kg)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*
- *Annual Greenhouse Gas Equivalents, CO_2e (tpy): CO_2 Annual Emissions (tpy) * CO_2 GWP + CH_4 Annual Emissions (tpy) * CH_4 GWP + N_2O Annual Emissions (tpy) * N_2O GWP*

3.1.3 Diesel-Fired Rental Auxiliary Generator Emissions

The exact make and model of the rental unit may change each time the diesel-fired generator is brought on site. For the purposes of establishing a PTE, the specifications for a 1,207 horsepower (hp) Caterpillar Model C27 unit were used. A copy of the manufacturer's data sheet has been included in Appendix B.

Emissions from the diesel-fired rental auxiliary generator (Equipment ID: Aux-3) are calculated based on the heat input, operating hours, the emissions factors from the U.S Environmental Protection Agency (U.S. EPA), AP-42 Section 3.4, "Large Stationary Diesel and All Stationary Dual-Fuel Engines," dated October 1996, and emissions factors from 40 CFR Part 98. For several pollutants, the maximum emissions have been calculated utilizing the potential emissions factors identified in the manufacturer's data sheet for the Caterpillar Model C27 unit.

NO_X, CO, and VOC:

The maximum emissions of NO_X, CO, and VOC from the diesel-fired rental auxiliary generator are based on emissions data provided by Caterpillar on the Model C27 unit (example rental unit). Specifically, the emissions factors for NO_X, CO, and VOC were taken from the engine's data sheet. As appropriate for each pollutant, the highest or second highest emissions factor from the "potential" (worst-case) table of emissions on the data sheet was utilized. These emissions factors are expressed in grams per horsepower-hour (g/hp-hr). The short-term emissions rates are calculated by multiplying the emissions factor by the horsepower and converting the emissions factors from (g/hp-hr) to (lb/hr). Annual emissions, in tpy, are based on the unit operating continuously at these emissions rates for 8,760 hours per year.

- *Hourly Emissions (lb/hr) = Manufacturer's Data (g/hp-hr) * Horsepower (hp)/ 453.59 (g/lb)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

PM, PM_{10}, and $PM_{2.5}$:

PM consists of both filterable and condensable species. Specifically, A.A.C. R18-2-101(124)(d) requires that both filterable and condensable contributions be included when quantifying the total PM_{10} and $PM_{2.5}$ emitted from a source. Total PM_{10} and $PM_{2.5}$ emissions have been calculated by determining the filterable and condensable portions separately and adding them together. The data provided by the manufacturer was utilized in a similar manner as for NO_X, CO, and VOC to determine appropriate filterable PM, PM_{10}, and $PM_{2.5}$ emissions factors. To calculate the condensable portion, the emissions factor from Table 3.4-2 of AP-42 Section 3.4 was utilized. This emissions factor is expressed as lb/MMBtu. Therefore, to calculate emissions, a heat input to the engine is necessary. This heat input has been quantified utilizing the engine's BSFC and horsepower. For conservative purposes, the maximum rated horsepower and the maximum International Standard Organization (ISO) BSFC values from the data sheet were utilized. To convert the BSFC to units of Btu/hp-hr, it was assumed that the heating value of diesel fuel is 19,300 Btu/lb. Annual emissions are based on the unit operating continuously for 8,760 hours per year. The final total PM[1], PM_{10}, and $PM_{2.5}$ emissions were calculated by summing together the filterable and condensable fractions.

[1] Although A.A.C. R18-2-101(124)(d) only requires the condensable portion to be included for PM_{10} and $PM_{2.5}$ emissions, EPNG has conservatively assumed PM = PM_{10} = $PM_{2.5}$

- *Hourly Filterable PM Emissions (lb/hr) = Manufacturer's Data (g/hp-hr) * Horsepower (hp)/ 453.59 (g/lb)*
- *Annual Filterable PM Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*
- *BSFC (Btu/hp-hr) = Max ISO BSFC (lb/hp-hr) * Diesel Heating Value (Btu/lb)*
- *Generator Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Condensable PM Emissions (lb/hr) = Emissions factor (lb/MMBtu) * Generator Heat Input (MMBtu/hr)*
- *Annual Condensable PM Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*
- *Hourly Total PM Emissions (lb/hr) = Filterable PM Emissions (lb/hr) + Condensable PM Emissions (lb/hr)*
- *Annual Total PM Emissions (tpy) = Filterable PM Emissions (tpy) + Condensable PM Emissions (tpy)*

SO_2 and HAPs

Emissions of $SO_2$and HAPs from the diesel-fired rental auxiliary generator are calculated utilizing emissions factors from AP-42 Section 3.4. Specifically, the factors that were utilized are those for large (>600 hp) diesel-fired generators located in Tables 3.4-1, 3.4-3, and Table 3.4-4.

To determine the final SO_2 emissions factor, it was assumed that the sulfur content of the diesel fuel was equal to 15 parts per million by weight (ppmw), or 0.0015%, based off of the ultra-low sulfur diesel (ULSD) standard. The SO_2 emissions factor is expressed as lb/hp-hr. The short-term emissions rates are calculated by multiplying the emissions factor by the horsepower and converting the emissions factors from units of g/hp-hr to lb/hr. Annual emissions, in tpy, are based on the unit operating continuously at these emissions rates for 8,760 hours per year.

- *SO_2 Emissions Factor (lb/hp-hr) = $8.09x10^{-3}$ * Fuel Sulfur % (%)*
- *Hourly Emissions (lb/hr) = SO_2 Emissions Factor (lb/hp-hr) * Horsepower (hp)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

The HAP factors are expressed as lb/MMBtu. Therefore, to calculate emissions, a heat input to the engine is necessary. This heat input has been quantified utilizing the engine's BSFC and horsepower. For

conservative purposes, the maximum rated horsepower and the maximum ISO BSFC values from the data sheet were utilized. To convert the BSFC to units of Btu/hp-hr, it was assumed that the heating value of diesel fuel is 19,300 Btu/lb. Annual emissions are based on the unit operating continuously for 8,760 hours per year.

- *BSFC (Btu/hp-hr) = Max ISO BSFC (lb/hp-hr) * Diesel Heating Value (Btu/lb)*
- *Generator Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (lb/MMBtu) * Generator Heat Input (MMBtu/hr)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

Greenhouse Gases:

Emissions of GHGs (CO_2, CH_4, and N_2O) from the diesel-fired rental auxiliary generator are calculated utilizing emissions factors from Tables C-1 and C-2 in 40 CFR Part 98, Subpart C (General Stationary Fuel Combustion Sources). The emissions factors are expressed as kg/MMBtu. Therefore, to calculate emissions, a heat input to the engine is necessary. The same heat input utilized for determining emissions of HAPs was utilized for calculating emissions of GHGs. Annual emissions are based on the unit operating continuously for 8,760 hours per year. The total GHG emissions are converted to CO_2e by multiplying each individual GHG by the GWP from Table A-1 of 40 CFR Part 98, Subpart A (General Provisions).

- *Generator Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (kg/MMBtu) * Generator Heat Input (MMBtu/hr) * 1/0.4536 (lb/kg)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*
- *Annual Greenhouse Gas Equivalents, CO_2e (tpy): CO_2 Annual Emissions (tpy) * CO_2 GWP + CH_4 Annual Emissions (tpy) * CH_4 GWP + N_2O Annual Emissions (tpy) * N_2O GWP*

3.1.4 Emergency Generator Emissions

Emissions from the Onan LSG-8751-6003-C natural gas-fired emergency generator (Equipment ID: eGen-1) are calculated based on the heat input, operating hours, emissions factors provided by the

manufacturer, the emission factors from U.S. EPA AP-42 Section 3.2, "Natural Gas-fired Reciprocating Engines," dated July 2000, and 40 CFR Part 98.

NO_X, CO, and VOC:

Emissions of NO_X, CO, and VOC from the generator are determined based on manufacturer's data. The data provided by the manufacturer is in units of g/hp-hr. To calculate the short-term emissions rates, the engine's horsepower is multiplied by the relevant emissions factor and the resulting mass emissions rate is converted from grams to pounds. Annual emissions are based on the unit operating at these emissions rates for 500 hours per year.

- *Hourly Emissions (lb/hr) = Manufacturer's Data (g/hp-hr) * Engine horsepower (hp) * 1/453.59 (lb/g)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 500 (hours/yr) * 1/2000 (tons/pound)*

SO_2, PM, PM_{10}, $PM_{2.5}$ and HAPs:

Emissions of SO_2, PM, PM_{10}, $PM_{2.5}$, and HAPs from the generator are calculated utilizing emissions factors from AP-42 Section 3.2. Specifically, the factors are for 4SRB engines located in Table 3.2-3. These emissions factors are expressed as lb/MMBtu. Therefore, to calculate emissions, a heat input to the generator is necessary. This heat input has been quantified utilizing the engine's BSFC and horsepower. Annual emissions are based on the unit operating for 500 hours per year.

- *Engine Heat Input (MMBtu/hr) = BSFC (Btu/hp-hr) * Horsepower (hp) * 1/10^6 (MMBtu/Btu)*
- *Hourly Emissions (lb/hr) = Emissions factor (lb/MMBtu) * Engine Heat Input (MMBtu/hr)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 500 (hours/yr) * 1/2000 (tons/pound)*

Greenhouse Gases:

Emissions of CO_2, CH_4, and N_2O from the generator are calculated utilizing emissions factors from Tables C-1 and C-2 in 40 CFR Part 98 Subpart C. The emissions factors are expressed as kg/MMBtu. Therefore, to calculate emissions, a heat input to the generator is necessary. The same heat input for determining emissions of SO_2, particulate matter species, and HAPs has been utilized for calculating emissions of GHGs. Annual emissions are based on the unit operating for 500 hours per year. The total GHG emissions are

converted to CO_2e by multiplying each individual GHG by its GWP taken from Table A-1 of 40 CFR Part 98 Subpart A.

- *Hourly Emissions (lb/hr) = Emissions factor (kg/MMBtu) * Engine Heat Input (MMBtu/hr) * 1/0.4536 (lb/kg)*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 500 (hours/yr) * 1/2000 (tons/pound)*
- *Annual Greenhouse Gas Equivalents, CO_2e (tpy): CO_2 Annual Emissions (tpy) * CO_2 GWP + CH_4 Annual Emissions (tpy) * CH_4 GWP + N_2O Annual Emissions (tpy) * N_2O GWP*

3.1.5 Fugitive Emissions

Equipment leak fugitive VOC, HAP, and GHG emissions are quantified based on default component counts from GRI-HAPCalc Version 3.01, which uses a worst-case default number of connectors, flanges, open-ended lines, valves, and other components in gas service for a typical natural gas compression facility. The default numbers were doubled as a conservative estimate. Fugitive emissions are calculated using the total hydrocarbon (THC) emissions factor from Table 2-4 of the U.S. EPA's Protocol for Equipment Leak Emission Estimates (November, 1995) and a representative weight percent of VOCs, HAPs, CO_2, and CH_4. The weight percent of VOC was conservatively assumed to be equal to 4%. For HAPs, CO_2, and CH_4, the weight percents were set equal to the percentage determined from a recent gas analysis. Supporting calculations are provided in Appendix B. Annual emissions are based on the Facility continuously operating for 8,760 hours per year.

- *Hourly Emissions (lb/hr) = Emissions Factor (lb/hr-component) * # of components * Weight Percent (%) / 100*
- *Annual Emissions (tpy) = Hourly Emissions (lb/hr) * 8,760 (hours/yr) * 1/2000 (tons/pound)*

3.1.6 Startup and Shutdown Emissions

As described in Section 2.1, there are several scenarios which involve the shutdown and startup of the RICE. When this occurs, small amounts of natural gas are vented to atmosphere. EPNG has identified three different events that will result in the venting of natural gas: (1) blowdowns during shutdown of the RICE; (2) venting of gas during subsequent startup; (3) and venting during an emergency shutdown. The volume of gas vented during each activity and the number of events are based on the Facility's engineering judgment and experience. A representative gas analysis was utilized to quantify VOC, HAP, CO_2, and CH_4

present in the gas when vented. These compositions and the volume of gas vented were utilized to represent emissions from the startup and shutdown activities. The representations made are not intended to create specific limits or restrict how often they occur. As described in Section 4.14, these emissions have been quantified for the purposes of demonstrating that these emissions are insignificant. For this reason, only annual total emissions have been provided.

- *Annual Emissions (tpy) = Annual Volume of Gas Vented (Mscf/yr) * VOC Content of Gas (lb/scf) * 1,000 (scf/Mscf) * 1/2,000 (tons/pound)*

3.2 SITEWIDE EMISSIONS SUMMARY

Table 3-1 contains a summary of the sitewide PTE emissions. The sitewide PTE of NO_X and CO is above the source-wide NSR major source threshold of 250 tpy as defined in A.A.C. R18-2-401(13)(b) and is greater than the Title V major source threshold of 100 tpy defined in A.A.C. R18-2-101(75)(c). In addition, the Facility is a major source of HAP emissions as its sitewide PTE of HAPs is greater than 10 tpy for formaldehyde and greater than 25 tpy for all HAPs combined. Emissions of NO_X, CO, VOC, PM_{10}, and $PM_{2.5}$ exceed their permitting exemption thresholds and their corresponding significant levels. Due to the sitewide PTE of NO_X, CO, and HAPs exceeding an associated major source threshold in A.A.C. R18-2-101(75)(a)-(c), the Facility is currently and will continue to be authorized by a Class I Air Quality Permit. Detailed calculations can be found in Appendix B.

Table 3-1
Potential to Emit Emissions Rates
Sitewide Summary
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Estimated Potential Emissions (tpy)							A.A.C. R18-2-101(75)(a) Major Source Thresholds (tpy)	A.A.C. R18-2-101(75)(b),(c) Major Source Thresholds (tpy)	A.A.C. R18-2-101(131) Significant Levels (tpy)	Permitting Exemption Thresholds
	Engine (A-01)	Engine (A-02)	Engine (A-03)	Auxiliary Generators (Aux-1/Aux-2/Aux-3) [(b)]	Emergency Generator (EG-1)	Fugitives [(a)]	Total				
NO_x	106.61	106.61	106.61	27.99	0.21	-	348.02	250	100	40	20
CO	133.28	133.28	133.28	41.96	1.15	-	442.96	250	100	100	50
VOC	26.67	26.67	26.67	13.97	0.02	1.27	95.28	250	100	40	20
SO_2	0.07	0.07	0.07	0.06	1.85E-04	-	0.27	250	100	40	20
PM	5.53	5.53	5.53	1.40	6.09E-03	-	17.99	250	100	25	N/A
PM_{10}	5.53	5.53	5.53	1.40	6.09E-03	-	17.99	250	100	15	7.5
$PM_{2.5}$	5.53	5.53	5.53	1.40	6.09E-03	-	17.99	250	100	10	5
Total HAPs	9.12	9.12	9.12	3.19	0.01	3.41E-03	30.55	-	25	N/A	N/A
CO_2e	13,399	13,399	13,399	7,395	37	713	48,341	75,000	100,000	75,000	N/A

[(a)] Fugitive emissions from equipment leaks have been included per Section 2.4, Item 7.a on ADEQ's "Application Packet for a Class I Permit".

[(b)] There are two permanent auxiliary generators (Aux-1, Aux-2) at the Facility, with the potential for one rental unit (Aux-3) to be present when one of the primary units is out of service. Kinder Morgan will only operate one of the three auxiliary generators at a time. For that reason, there is one entry in the sitewide PTE summary for the three units.

4. CLASS I PERMIT APPLICATION COMPONENTS

The following section includes information requested in Section 2.4 of the "Application Packet for Class I Permit" as required by R18-2-304(B).

4.1 PROCESS INFORMATION

A description of the Facility's processes and products by SIC Code has been identified in Section 2 of this application.

4.2 ALTERNATIVE OPERATING SCENARIOS

There are no alternative operating scenarios being requested by EPNG at this time. Therefore, this is not applicable to the Application, and no further information has been included.

4.3 PROCESS FLOW DIAGRAM, MATERIAL BALANCE, AND SITE DIAGRAM

A process flow diagram and site diagram are included in Section 2 of the Application. A material balance is not required to understand emissions calculations; therefore, it has not been provided.

4.4 EMISSIONS RELATED INFORMATION

The applicable emissions related information from items seven and ten of Section 2.4 of the "Application Packet for a Class I Permit" have been identified below:

- *The source shall submit the potential emissions of regulated air pollutants as defined in A.A.C. R18-2-101 for all emission sources. Emissions shall be expressed in pounds per hour, tons per year, and such other terms as may be requested. Emissions shall be submitted using the standard "Emission Sources" portion of the "Standard Permit Application Form." Emissions information shall include fugitive emissions in the same manner as stack emissions, regardless of whether the source category in question is included in the list of sources contained in the definition of major source in A.A.C. R18-2-101.*

- *The source shall identify and describe all points of emissions, and shall submit additional information related to the emissions of regulated air pollutants sufficient to verify which requirements are applicable to the source and sufficient to determine any fees under this Chapter.*

Appendix A includes the "Emissions Sources' portion of the application form. Appendix B provides emissions calculations to support the information included on the form.

- *Maximum annual process rate for each piece of equipment which generates air emissions.*
- *Maximum annual process rate for the whole plant.*
- *Maximum rated hourly process rate for each piece of equipment which generates air emissions.*
- *Maximum rated hourly process rate for the whole plant.*

No processing is done at this Facility. The maximum annual and hourly process rate are not applicable to this Application.

- *For all fuel burning equipment including generators, a description of fuel use, including the type used, the quantity used per year, the maximum and average quantity used per hour, the percent used for process heat, and higher heating value of the fuel. For solid fuels and fuel oils, state the potential sulfur and ash content.*

Natural gas is the fuel used in the compressor engines, primary auxiliary generators, and the emergency generator. The fuel used in the rental unit is diesel fuel. The usage rates have been included in the emissions calculations provided in Appendix B.

- *A description of all raw materials used and the maximum annual and hourly, monthly, or quarterly quantities of each material used.*

There are no raw materials used as inputs for the Facility.

- *Anticipated Operating Schedules*

The Facility is permitted to operate continuously (24 hours per day, 7 days per week, 8,760 hours per year). The anticipated operating schedule is as follows:

WINTER	SPRING	SUMMER	FALL
25%	25%	25%	25%

- *Limitations on source operations and any work practice standards affecting emissions.*

The natural gas-fired auxiliary generators (Aux-1, Aux-2) and the proposed diesel-fired rental auxiliary generator (Aux-3) are not authorized to operate simultaneously. Additionally, the PTE of the natural gas-fired emergency generator is based on a maximum of 500 hours per year. The emergency generator is also limited to less than 100 hours per year for non-emergency situations per 40 CFR Part 63, Subpart ZZZZ. There are no other limitations on source operations proposed with this Application that would impact emissions rates. No work practice standards that impact emissions are proposed with this Application.

4.5 APPLICABLE REQUIREMENTS

There are no changes to applicable requirements as contained in the current ADEQ Class I Air Quality Permit, and all applicable requirements have been addressed in Section 5.

4.6 EXEMPTIONS FROM OTHERWISE APPLICABLE REQUIREMENTS

There are no changes to exemptions from otherwise applicable requirements as contained in the current ADEQ permit, and all exemptions from otherwise applicable requirements have been addressed in Section 5.8.

4.7 VOLUNTARILY ACCEPTED LIMITS

There are no voluntary limitations being proposed to avoid classification as a major source or major modification as the Facility is a major source of regulated pollutants including HAPs. Therefore, no information on such limitations has been included with the Application.

4.8 SOURCE INFORMATION AND STACK CHARACTERISTICS

ADEQ's "Emissions Sources" form with emissions rates and stack characteristics as well as the "Equipment List" form have been included in Appendix A of the Application.

4.9 AIR POLLUTION CONTROL INFORMATION

The Facility does not contain air pollution control devices; therefore, the air pollution control information is not applicable and is not included in the Application. The Facility will continue to remain in compliance with the necessary air pollution control requirements.

4.10 COMPLIANCE PLAN AND SCHEDULE

The Mojave Topock Compressor Station is currently in compliance with all applicable requirements. Additionally, the Facility has no new sources or modifications, thus a compliance plan has not been included with this Application.

4.11 COMPLIANCE CERTIFICATION

The Standard Class I Permit Application Form in Appendix A includes a certification of compliance with all applicable requirements and has been signed by a responsible official as required by A.A.C. R18-2-

304(B)(9). The Facility will continue to submit semi-annual compliance certifications as required by the permit.

4.12 NEW MAJOR SOURCES OR MAJOR MODIFICATIONS

The Facility has no new sources or modifications; thus, the requirements of A.A.C. R18-2-401 are not applicable to the Application.

4.13 MINOR NSR APPLICABILITY DETERMINATION

Per A.A.C. R18-2-334, any new stationary source subject to the Class I permitting requirements or modification of a Class I source is required to complete Minor NSR. The Minor NSR provisions mandate that applicants either prepare an ambient air quality assessment or implement Reasonably Available Control Technology (RACT). This Application is for renewal of an existing Class I permit with no proposed modifications. Therefore, the Minor NSR provisions are not applicable, and the Application does not include a RACT analysis or air dispersion modeling.[2]

4.14 INSIGNIFICANT ACTIVITIES

In addition to the emissions units detailed in other parts of this Application, EPNG may conduct any of the following non-exclusive insignificant activities at the Mojave Topock Compressor Station:

- Liquid Storage and Piping
    - Petroleum product storage tanks containing lubricating oil and used oil in storage tanks with capacity of 40,000 gallons or less.
    - Piping of natural gas.
    - Piping of fuel oils, used oil, and transformer oil.
    - Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading, including containers of waste and used oil regulated under the Federal Resource Conservation and Recovery Act, 42 U.S.C. 6901-6992k.

[2] EPNG has a pending minor revision application that requests authorization for a diesel-fired rental auxiliary generator to be present on site when the primary natural gas-fired auxiliary generators are out of service. This renewal Application has incorporated the rental unit by assuming that the minor revision will be approved. Note that the minor NSR provisions were not applicable to that application and do not impact the applicability of minor NSR to this renewal Application.

  - Storage tanks of any size containing exclusively greases, aqueous solutions of acids that are not regulated air pollutants, or aqueous caustic solutions.

- Internal combustion engine-driven electrical generator sets used for less than 500 hours per calendar year for emergency replacement or standby service.

- Low Emitting Processes

  - Equipment using water, water and soap or detergent, or a suspension of abrasives in water for purposes of cleaning or finishing.

- Site Maintenance

  - Housekeeping activities and associated products used for cleaning purposes, including collecting spilled and accumulated materials at the source, including operation of fixed vacuum cleaning systems specifically for such purposes.

  - Sanding of streets and roads to abate traffic hazards caused by ice and snow.

  - Street and parking lot striping.

  - Architectural painting and associated surface preparation for maintenance purposes at industrial or commercial facilities.

- Sampling and Testing

  - Noncommercial (in-house) experimental, analytical laboratory equipment, which is bench scale in nature, including quality control/quality assurance laboratories supporting a stationary source and research and development laboratories.

  - Individual sampling points, analyzers, and process instrumentation, whose operation may result in emissions but that are not regulated as emission units.

- Ancillary Non-Industrial Activities

  - General office activities, such as paper shredding, copying, photographic activities, and blueprinting, but not to include incineration.

  - Use of consumer products, including hazardous substances as that term is defined in the Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) where the product is used at a source in the same manner as normal consumer use.

- Miscellaneous Activities
    - Transformer vents.
    - Operation of oil/water/scrubber liquid systems.
    - Operation of cooling water, plant water, wastewater, and other water systems/
    - Natural gas blowdowns.
    - Operation of battery systems.
    - Operation of natural gas fired appliances rated less than 1 MMBtu/hr for human comfort.
    - Operation of vents, valves, and flanges.

Furthermore, with this Application, EPNG is providing information and emissions calculations for ESDs and blowdowns associated with startup and shutdown events. EPNG is providing this additional information, with associated emissions calculations, to assist ADEQ in its review of the Application. This information is not intended to be included in the permit or used as the basis for a limit on a number of events. It is included only to demonstrate that ESD and blowdown emissions at the Facility are insignificant. Detailed emissions calculations associated with ESDs and blowdowns are provided in Appendix B.

4.15 CONFIDENTIAL INFORMATION

This Application does not contain any confidential information. Therefore, the requirement to follow notice obligations in Arizona Revised Statutes (A.R.S). §49-432 and A.A.C. R18-2-305 is not applicable to the Application.

5. REGULATORY APPLICABILITY ANALYSIS

The Facility is subject to certain Federal and State air regulations. This section summarizes the key air quality regulations that apply to the Facility under both Federal and State programs. Based on the information included, there should be no change to applicable requirements as contained in the current ADEQ permit.

5.1 FEDERAL APPLICABILITY ANALYSIS

This section summarizes the key Federal air quality regulations that are applicable or potentially applicable to the Facility. There are no physical changes or changes in the method of operation to the emissions sources at the Mojave Topock Compressor Station being proposed with this permit renewal Application. In addition, there have been no changes in the past 5 years to the Federal requirements applicable to the operations at the Mojave Topock Compressor Station, which are already contained in the current permit. Potentially applicable Federal emissions standards include those from 40 CFR Parts 60, 61, and 63, which have been addressed in the following sections.

5.1.1 Standards of Performance for New Stationary Sources

This section discusses New Source Performance Standards (NSPS), located in 40 CFR Part 60, that are applicable or potentially applicable to sources at the Facility.

5.1.1.1 40 CFR Part 60, Subpart A – General Provisions

The Facility is subject to at least one NSPS standard. Therefore, the general provisions in Subpart A are applicable. EPNG will comply with all applicable requirements in Subpart A.

5.1.1.2 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The diesel-fired rental auxiliary generator is a compression ignition engine with a construction date after July 11, 2005 and manufactured date after April 1, 2006. Therefore, it is subject to the requirements in 40 CFR Part 60, Subpart IIII. It is a non-emergency engine with a displacement of less than 10 liters per cylinder. It is a 2014 model year engine and has a power rating between 560 – 900 kilowatts (kW). The specific standards and requirements that are applicable to the engine as well as associated permit

conditions have been identified in a recently submitted Class I minor revision permit application. EPNG is not requesting any additional changes and expects the final renewed permit to include the same conditions and citations that will be included in the permit once ADEQ has completed the review of the minor revision application.

5.1.1.3 40 CFR Part 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

The three compressor engines, two auxiliary generators, and emergency generator are natural gas-fired (spark ignition) stationary internal combustion engines. However, they were constructed prior to June 12, 2006, and have not been modified or reconstructed since that time. Therefore, they are not subject to the standards in 40 CFR Part 60, Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines).

5.1.2 National Emission Standards for Hazardous Air Pollutants

The Facility does not include sources or activities subject to any National Emission Standards for Hazardous Air Pollutants (NESHAPs); therefore, it is not subject to the regulations of 40 CFR Part 61.

5.1.3 Maximum Achievable Control Technology (MACT) Standards

This section discusses NESHAP for source categories, otherwise referred to as MACT standards, located in 40 CFR Part 63 that are applicable or potentially applicable to the Facility.

5.1.3.1 40 CFR Part 63, Subpart A – General Provisions

The Facility is subject to at least one MACT standard. Therefore, the general provisions in Subpart A are applicable. EPNG will comply with all applicable requirements in Subpart A.

5.1.3.2 40 CFR Part 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The Facility is a major source of HAP emissions. The three Cooper-Bessemer 8W330 engines are 2SLB stationary RICE and the two Caterpillar 3606 SI engines are 4SLB stationary RICE. All five of these engines are greater than 500 hp and were constructed before December 19, 2002. Therefore, as described in 40 CFR §63.6590(a)(1)(i), they are “existing stationary RICE”. Per 40 CFR §63.6590(b)(3)(i)-(ii), existing 2SLB and 4SLB type stationary RICE greater than 500 hp and located at a major source of HAP emissions are not

subject to the requirements in 40 CFR Part 63, Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines).

The diesel-fired rental auxiliary generator is a reciprocating internal combustion engine with a site rating of more than 500 hp and constructed after December 19, 2002. Therefore, the diesel-fired rental auxiliary generator is considered a "new stationary RICE" per the criteria in 30 CFR §63.6590(a)(2)(i). It is a non-emergency compression ignition engine. The specific standards and requirements that are applicable to the engine as well as associated permit conditions have been identified in a recently submitted Class I minor revision permit application. EPNG is not requesting any additional changes and expects the final renewed permit to include the same conditions and citations that will be included in the permit once ADEQ has completed the review of the minor revision application.

The Onan /LSG-8751-6003-C emergency generator is an emergency engine with less than 500 hp and was constructed prior to June 12, 2006. Therefore, as described in 40 CFR §63.6590(a)(1)(i), it is considered an "existing stationary RICE". It is an emergency engine and does not meet any of the criteria required for limited requirements at 40 CFR §63.6590(b) and is subject to the requirements of Subpart ZZZZ. EPNG will continue to comply with all applicable requirements of Subpart ZZZZ.

5.2 FEDERAL NEW SOURCE REVIEW APPLICABILITY

The Federal NSR permitting programs generally require that a stationary source obtain a permit and undertake other obligations prior to construction of a Facility if the proposed project results in emissions increases or a PTE of regulated NSR pollutants in excess of certain significance levels. The requirements for these programs have been included as Article 4 of Chapter 2 of Title 18 of the A.A.C. (R18-2-401 through R18-2-412).

Two distinct Federal NSR permitting programs apply depending on whether the Facility is located in an attainment or nonattainment area for a particular pollutant. These are PSD and Nonattainment NSR (NNSR). The PSD permitting program requirements are prescribed in A.A.C. R18-2-406 and apply to projects with emissions increases of conventional pollutants [those with a primary or secondary National Ambient Air Quality Standard (NAAQS)] for which the area is classified as attainment or unclassifiable. PSD can also apply to projects with emissions increases of unconventional pollutants (those regulated NSR

pollutants without a primary or secondary NAAQS) if their corresponding major source threshold or significant emissions rate are exceeded. NNSR permitting program requirements are prescribed in A.A.C. R18-2-403 and apply to new construction or modifications that result in emission increases of a particular pollutant or precursor pollutant for which the area is classified as nonattainment.

The Facility is located in Mohave County. The county has been classified as attainment with the NAAQS or unclassifiable for all regulated NSR pollutants. Therefore, with respect to the Federal NSR permitting program, only PSD requirements are potentially applicable to the Facility. Although the Facility is a major stationary source as defined in the PSD regulations, PSD Requirements are not applicable to the Application because there are no proposed physical modifications or changes in the method of operation.

5.3 TITLE V APPLICABILITY

The requirements of the Federal Title V operating permit program are contained in 40 CFR Part 70 and incorporated into the Class I Air Quality Permit program at A.A.C. R18-2-304. The major source thresholds for the Title V program are 100 tpy for each air pollutant subject to regulation, 10 tpy of any single HAP, and 25 tpy of any combination of HAPs. As noted in 40 CFR 70.2 and A.A.C. R18-2-101(75), non-HAP fugitive emissions are not considered unless the source belongs to one of the source categories listed under the definition of “major source”. The Facility is not one of the listed source categories and is not required to consider fugitive emissions when determining the sitewide PTE of non-HAP air pollutants. However, fugitive emissions are always required when determining the PTE of HAPs, regardless of the source category. Additionally, Item 7.a of Section 2.4 of ADEQ’s “Application Packet for Class I Permit” requires fugitive emissions be included regardless of source category. Therefore, as summarized in Table 3-1, emissions from all point sources and fugitive sources have been included. The result is that the sitewide PTE is greater than the thresholds for NO_X, CO, and HAPs and the Facility is subject to the Title V program.

5.4 COMPLIANCE ASSURANCE MONITORING

Pursuant to the requirement of 40 CFR Part 64, the Compliance Assurance Monitoring (CAM) regulations, facilities are required to prepare and submit monitoring plans for certain emissions units with a Title V application. The CAM Plans provide an assurance of compliance with applicable emissions limits. CAM is not applicable to the Application because the Facility does not use a control device to meet a standard.

5.5 CHEMICAL ACCIDENT PREVENTION

Subpart B of 40 CFR Part 68 outlines requirements for risk management prevention (RMP) plans pursuant to Clean Air Act (CAA) Section 112(r). Applicability of 40 CFR Part 68 Subparts B and G is determined based on the type and quantity of the chemicals stored at the Facility. The Facility will not store RMP chemicals in quantities greater than the RMP trigger thresholds. Therefore, the requirements of 40 CFR Part 68 are not applicable. However, the Facility will be subject to the provisions of the CAA General Duty Clause, Section 112, as it pertains to accidental releases of hazardous materials.

5.6 STRATOSPHERIC OZONE PROTECTION REGULATIONS

The requirements originating from Title VI of the CAA, Protection of Stratospheric Ozone, are contained in 40 CFR Part 82. Subparts A, B, C, D, E, G, H and I of 40 CFR Part 82 will not be applicable to the Facility because the Facility operations do not fall under the activities highlighted. 40 CFR Part 82 Subpart F, Recycling and Emissions Reduction, potentially applies if the Facility maintains, repairs, services, or disposes of appliances that utilize Class I or Class II ozone depleting substances. Subpart F generally requires persons completing the repairs, service, or disposal to be properly certified. An appropriately certified technician will complete all repairs, service, and disposal of ozone depleting substances from the comfort cooling components at the Facility.

5.7 STATE APPLICABILITY ANALYSIS

This section summarizes the key State air quality regulations that are applicable or potentially applicable to the Facility.

5.7.1 Applicability; Registration; Classes of Permits, A.A.C. R18-2-302

As discussed in previous sections, sitewide emissions from the Facility remain above major source thresholds for NO_X, CO, and HAPs. Furthermore, emissions of both NO_X, CO, VOC, PM_{10}, and $PM_{2.5}$ exceed their permitting exemption thresholds and significant levels. For this reason, per A.A.C. R18-2-302(B)(1)(a), the Facility is currently and will continue to be authorized by a Class I Permit.

5.7.2 Permit Application Processing Procedures, A.A.C. R18-2-304

This section addresses specific subparagraphs of A.A.C. R18-2-304 regarding information that should be included in a Class I Air Quality Permit application.

5.7.2.1 Required Forms and Information, A.A.C. R18-2-304(B)

A.A.C. R18-2-304(B) includes provisions related to required forms and information for a Class I Air Quality Permit application. The requirements of a Class I Application are included in the instructions on the form for Class I Applications. Each of these requirements has been addressed in Section 4. EPNG satisfies all required forms and information necessary according to R18-2-304(B) in the permit application and supplemental documents.

5.7.2.2 Request to Waive Requirement, A.A.C. R18-2-304(C)

The information required to support a request, as outlined in A.A.C. R18-2-304(C), does not apply to this Application since it falls under the Class I category; therefore, it has not been included with this Application.

5.7.2.3 Request for Alternative Emission Limit, A.A.C. R18-2-304(E)

A.A.C. R18-2-304(E) describes the procedures that must be followed to request an alternative emissions limit from an applicable standard in a State or Federal implementation plan, when allowed by the relevant plan. It states the following:

If an applicable implementation plan allows the determination of an alternative emission limit, a source may, in its application, propose an emission limit that is equivalent to the emission limit otherwise applicable to the source under the applicable implementation plan. The source shall also demonstrate that the equivalent limit is quantifiable, accountable, enforceable, and subject to replicable compliance determination procedures.

There are no alternative emission limits being requested at this time. Therefore, the requirement in A.A.C. R18-2-304(E) is not applicable to this Application and no demonstrations for equivalent limits have been included with this Application.

5.7.2.4 Information for a Complete Application, A.A.C. R18-2-304(F)

A.A.C. R18-2-304(F) specifies the information that is required for an application to be considered complete. Each element of this subsection is described in further detail, with information describing how this Application complies with each requirement.

A.A.C. R18-2-304(F)(1). To be complete, an application shall provide all information required by subsection (B) (standard application form section). An application for permit revision only need supply information related to the proposed change, unless the source's proposed permit revision will change the permit from a Class II permit to a Class I permit. A responsible official shall certify the submitted information consistent with subsection (I) (Certification of Truth, Accuracy, and Completeness).

This Application includes a completed "Application Packet for Class I Permit" form. It has been provided in Appendix A. The remaining sections of this submittal include all information required by the form. The Application is limited in scope to renewal of Class I Air Quality Permit No. 76597. There are no changes proposed to the permit or Facility with the Application.

A.A.C. R18-2-304(F)(2). An application for a new permit or permit revision shall contain an assessment of the applicability of the requirements of Article 4 of this Chapter. If the applicant determines that the proposed new source is a major source as defined in R18-2-401, or the proposed permit revision constitutes a major modification as defined in R18-2-101, then the application shall comply with all applicable requirements of Article 4.

Article 4 of Chapter 2 applies to new major sources and major modifications to existing major sources. There are no physical modifications or changes in the method of operation proposed with the Application. The Application is limited in scope to renewal of Class I Air Quality Permit No. 76597. Therefore, the requirements in Article 4 are not applicable to the Application.

A.A.C. R18-2-304(F)(3). An application for a new permit or permit revision shall contain an assessment of the applicability of Minor New Source Review requirements in R18-2-334. If the applicant determines that the proposed new source is subject to R18-2-334, or the proposed permit revision constitutes a Minor NSR Modification, then the application shall comply with all applicable requirements of R18-2-334.

As described in Section 4.13, the Minor NSR requirements are not applicable to the Application as it is limited in scope to renewal of Class I Air Quality Permit No. 76597. For this reason, the Application does not include a RACT analysis or air dispersion modeling results.[3]

A.A.C. R18-2-304(F)(4). Except for proposed new major sources or major modifications subject to the requirements of Article 4 of this Chapter, an application for a new permit, a permit revision, or a permit renewal shall be deemed to be complete unless, within 60 days of receipt of the application, the Director notifies the applicant by certified mail that the application is not complete.

This requirement is informational only and does not prescribe any additional information that must be provided to support the Application. EPNG will comply with all requirements and will respond to ADEQ as necessary following submittal of the application.

A.A.C. R18-2-304(F)(5). If a source wishes to voluntarily enter into an emissions limitation, control, or other requirement pursuant to R18-2-306.01, the source shall describe that emissions limitation, control, or other requirement in its application, along with proposed associated monitoring, recordkeeping, and reporting requirements necessary to demonstrate that the emissions limitation, control, or other requirement is permanent, quantifiable, and otherwise enforceable as a practical matter.

EPNG will not operate the diesel-fired rental auxiliary generator at the same time as the natural gas-fired auxiliary generators. EPNG is required per Condition II.B of Attachment "B" of Permit No. 76597 to restrict operation of the natural gas-fired generators so that they do not operate at the same time. The same procedures and continuous compliance demonstration that are followed for demonstrating compliance with this requirement will be extended to the rental unit.

[3] There is a pending minor revision application that requests authorization for a diesel-fired rental auxiliary generator to be present on site when the primary natural gas-fired auxiliary generators are out of service. This renewal Application has incorporated the rental unit by assuming that the minor revision will be approved. Note that the minor NSR provisions were not applicable to that application and do not impact the applicability of minor NSR to this Application.

A.A.C. R18-2-304(F)(6). If, while processing an application that has been determined or deemed to be complete, the Director determines that additional information is necessary to evaluate or take final action on that application, the Director may request such information in writing and set a reasonable deadline for a response. Except for minor permit revisions as set forth in R18-2-319, a source's ability to continue operating without a permit, as set forth in subsection (K), shall be in effect from the date the application is determined to be complete until the final permit is issued, provided that the applicant submits any requested additional information by the deadline specified by the Director.

This requirement is informational only and does not prescribe any additional information that must be provided to support the application. EPNG will comply with all requirements and will respond to ADEQ as necessary following submittal of the Application.

A.A.C. R18-2-304(F)(7). The completeness determination shall not apply to revisions processed through the minor permit revision process.

This requirement is informational only and does not prescribe any additional information that must be provided to support the application. EPNG will comply with all requirements and will respond to ADEQ as necessary following submittal of the Application.

A.A.C. R18-2-304(F)(8). Activities which are insignificant pursuant to the definition of insignificant activities in R18-2-101 shall be listed in the application. Except as necessary to complete the assessment required by subsections (F)(2) or (3), the application need not provide emissions data regarding insignificant activities. If the Director determines that an activity listed as insignificant does not meet the requirements of the definition of insignificant activities in R18-2-101 or that emissions data for the activity is required to complete the assessment required by subsections (F)(2) or (3), the Director shall notify the applicant in writing and specify additional information required.

The activities at the Facility that meet the definition of insignificant activity prescribed in R18-2-101(68) have been included in Section 4.14 of the Application. EPNG can provide additional information regarding these activities upon request by ADEQ.

A.A.C. R18-2-304(F)(9). If a permit applicant requests terms and conditions allowing for the trading of emission increases and decreases in the permitted Facility solely for the purpose of complying with a federally enforceable emission cap that is established in the permit independent of otherwise applicable requirements, the permit applicant shall include in its application proposed replicable procedures and permit terms that ensure the emissions trades are quantifiable and enforceable.

EPNG is not requesting terms and conditions allowing for the trading of emissions increases and decreases for the purposes of complying with a federally enforceable emissions cap. Therefore, the requirements of A.A.C. R18-2-304(F)(9) are not applicable to the Application.

A.A.C. R18-2-304(F)(10). The Director is not in disagreement with a notice of confidentiality submitted with the application pursuant to A.R.S. § 49-432.

None of the information submitted with the Application has been labeled confidential.

5.7.3 Fees Related to Individual Permits, A.A.C. R18-2-326

In accordance with A.A.C. R18-2-326 and the Permit Fee Schedule, effective November 1, 2023, no fee is being submitted with this permit renewal Application. However, upon receipt of the ADEQ invoice following permit processing, EPNG agrees to pay the fee of $196.40 per hour (based on the total actual time spent by ADEQ staff on processing this Application) as well as any fees associated with public notice.

5.7.4 Minor New Source Review Applicability, A.A.C. R18-2-334

Per A.A.C. R18-2-334(A), ADEQ minor NSR requirements apply to the construction of a new Class I or Class II source or to any minor NSR modification to a Class I or Class II source. EPNG is not proposing any modifications or changes in the method of operation with this submittal. The Application is limited in scope to renewal of Class I Permit No. 76597. Therefore, minor NSR requirements are not required to support the approval of the permit renewal Application.[4]

[4] There is a pending minor revision application that requests authorization for a diesel-fired rental auxiliary generator to be present on site when the primary natural gas-fired auxiliary generators are out of service. This renewal Application has incorporated the rental unit by assuming that the minor revision will be approved. Note that the minor NSR provisions were not applicable to that application and do not impact the applicability of minor NSR to this Application.

5.7.5 Emissions from Existing and New Nonpoint Sources, Article 6

Article 6 regulates emissions from sources which due to lack of an identifiable emission point or plume cannot be considered a point source. The following sections of Article 6 have historically been identified as applicable to the Facility:

- A.A.C. R18-2-604 - Open Areas, Dry Washes, or Riverbeds
- A.A.C. R18-2-605 - Roadways and Streets
- A.A.C. R18-2-606 - Material Handling
- A.A.C. R18-2-607 - Storage Piles
- A.A.C. R18-2-608 - Mineral Tailings
- A.A.C. R18-2-614 - Evaluation of Nonpoint Source Emissions

These sections have not been updated in the last five years (since issuance of the current permit). For this reason, it is not necessary to make any revisions to the permit regarding Article 6 requirements. EPNG will continue to comply with all applicable standards.

5.7.6 Existing Stationary Source Performance Standards, Article 7

Article 7 regulates emissions from existing point sources. The following sections of Article 7 have historically been identified as applicable to the Facility:

- A.A.C. R18-2-702 - General Provisions
- A.A.C. R18-2-719 - Standards of Performance for Existing Stationary Rotating Machinery
- A.A.C. R18-2-726 - Standards of Performance for Sandblasting Operations
- A.A.C. R18-2-727 - Standards of Performance for Spray Painting Operations

These sections have not been updated in the last five years (since issuance of the current permit). For this reason, it is not necessary to make any revisions to the permit regarding Article 7 requirements. EPNG will continue to comply with all applicable standards.

5.8 REGULATORY EXEMPTION DOCUMENTATION

As part of this Application in response to Paragraph F of Section 2.4 of the “Application Packet for Class I Permit”, EPNG is presenting the following exemptions which have been historically claimed in other permit actions:

- There is lubricating oil in tanks at the Facility that meets ADEQ's definition for petroleum liquid (A.A.C. R18-2-701(29)). However, the tanks are less than 40,000 gallons in capacity and vapor pressure is less than that for fuel oils exempted in A.A.C R18-2-701(29). ADEQ previously exempted these tanks because A.A.C. R18-2-710(B) and (E) and A.A.C. R18-2-905(1) are not on the list of applicable requirements in the current Class I permit. Accordingly, EPNG requests that ADEQ reaffirm the exemption of the oil storage tanks from the provisions of A.A.C. R18-2-710(B) and (E) and A.A.C. R18-2-905(1).

- Because the units at the Facility subject to A.A.C. R18-2-719 burn only pipeline quality natural gas that contains less than 0.8% sulfur by weight, EPNG requests exemption from the provisions of A.A.C. R18- 2-719(I) and (J) to record the sulfur content and lower heating value of the fuel daily basis and to report instances where the sulfur exceeds 0.8%. The requirement to use only natural gas that meets this fuel sulfur limit is already incorporated in the current permit for this Facility.

APPENDIX A -
ADEQ FORMS

SECTION 2.1

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Air Quality Division

1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD CLASS I PERMIT APPLICATION FORM

(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to (Business license name of organization that is to receive permit):
   El Paso Natural Gas Company, L.L.C. (EPNG) – Mojave Topock Compressor Station

2. Mailing Address: ***5151 E. Broadway, Suite 1680***

   City: ***Tucson*** State: ***AZ*** ZIP: ***85711***

3. Name (or names) of Owners/ Principals: ***Philip Baca***

   Phone: ***(520) 663-4224*** Fax: ***(520) 663-4259*** Email: ***Philip_Baca@Kindermorgan.com***

4. Name of Owner's Agent: _____

   Phone: _____ Fax: _____ Email: _____

5. Plant/Site Manager/ Contact Person and Title: ***Trenton Lilly, Operations Supervisor***

   Phone: ***(928)-768-6954*** Fax: _____ Email: ***Trenton_Lilly@kindermorgan.com***

6. Plant Site Name: ***Mojave Topock Compressor Station***

7. Plant Site Location Address: ***5255 East Needle Mountain Road***

   City: ***Topock*** County: ***Mohave*** Zip Code: ***86436***

   Indian Reservation (if applicable, which one): ***N/A***

   Latitude/ Longitude, Elevation: ***Lat. 34.724920/ Long. -114.464260, Approx. elevation: 640 ft***

   Section/ Township/ Range: ***N/A***

8. General Nature of Business: ***Pipeline transmission of natural gas***

9. Type of Organization:
   ☑ Corporation ☐ Individual Owner ☐ Partnership ☐ Government Entity (Government Facility Code ----------)

   ☐ Other _____

8. Permit Application Basis: ☐ New Source ☐ Revision ☑ Renewal of Existing Permit
   (Check all that apply.)

   For renewal or modification, include existing permit number (and exp. date): ***Permit #76597***

   Date of Commencement of Construction or Modification: ***N/A***

   Primary Standard Industrial Classification Code: ***4922 (NAICS 48621)***

9. I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by ADEQ as public record. I also attest that I am in compliance with the applicable requirements of the Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the Permit. I will present a certification of compliance to ADEQ no less than annually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.

   Signature of Responsible Official: _____

Official Title of Signer: ***Director***

Typed or Printed Name of Signer: ***Philip Baca***

Date: 3-5-24 Telephone Number: ***(520) 663-4224***

SECTION 2.2 - EMISSION SOURCES

Estimated "Potential to Emit" per A.A.C. R18-2-101.

DATE _____

Review of applications and issuance of permits will be expedited by supplying all necessary information on this Table.

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMISSION POINT [1]		CHEMICAL COMPOSITION OF TOTAL STREAM	AIR POLLUTANT EMISSION RATE		UTM COORDINATES OF EMISSION POINT [5] *NAD83*			STACK SOURCES [6]					NONPOINT	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	EXIT DATA			SOURCES [7]	
										DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
A-01	Compressor Engine	NO_X	24.34	106.61	12	182729	3848142	70		3.17	85.89	550		
		CO	30.43	133.28										
		VOC	6.09	26.67										
		SO_2	0.02	0.07										
		$PM/PM_{10}/PM_{2.5}$	1.26	5.53										
		HAPs	2.08	9.12										
		CO_2e	3,059	13,399										
A-02	Compressor Engine	NO_X	24.34	106.61	12	182730	3848150	70		3.17	85.89	550		
		CO	30.43	133.28										
		VOC	6.09	26.67										
		SO_2	0.02	0.07										
		$PM/PM_{10}/PM_{2.5}$	1.26	5.53										
		HAPs	2.08	9.12										
		CO_2e	3,059	13,399										
A-03	Compressor Engine	NO_X	24.34	106.61	12	182730	3848164	70		3.17	85.89	550		
		CO	30.43	133.28										
		VOC	6.09	26.67										
		SO_2	0.02	0.07										
		$PM/PM_{10}/PM_{2.5}$	1.26	5.53										

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMISSION POINT [1]		CHEMICAL COMPOSITION OF TOTAL STREAM	AIR POLLUTANT EMISSION RATE		UTM COORDINATES OF EMISSION POINT [5] *NAD83*			STACK SOURCES [6]					NONPOINT	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	EXIT DATA			SOURCES [7]	
										DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
		HAPs	2.08	9.12										
		CO_2e	3,059	13,399										
Aux-1 (a)	Auxiliary Generator	NO_X	6.39	(a)	12	182763	3848150	35		1.33	85.49	795		
		CO	9.58	(a)										
		VOC	3.19	(a)										
		SO_2	0.006	(a)										
		$PM/PM_{10}/PM_{2.5}$	0.10	(a)										
		HAPs	0.73	(a)										
		CO_2e	1,179	(a)										
Aux-2 (a)	Auxiliary Generator	NO_X	6.39	(a)	12	182763	3848157	35		1.33	85.49	795		
		CO	9.58	(a)										
		VOC	3.19	(a)										
		SO_2	0.006	(a)										
		$PM/PM_{10}/PM_{2.5}$	0.10	(a)										
		HAPs	0.73	(a)										
		CO_2e	1,179	(a)										
Aux-3 (a)	Auxiliary Generator (b)	NO_X	6.07	(a)	12	182744	3848154	(b)		(b)	(b)	(b)		
		CO	5.11	(a)										
		VOC	2.85	(a)										
		SO_2	0.01	(a)										
		$PM/PM_{10}/PM_{2.5}$	0.32	(a)										

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS										
EMISSION POINT [1]		CHEMICAL COMPOSITION OF TOTAL STREAM	AIR POLLUTANT EMISSION RATE		UTM COORDINATES OF EMISSION POINT [5] *NAD83*			STACK SOURCES [6]					NONPOINT	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	EXIT DATA			SOURCES [7]	
										DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
		HAPs	0.02	(a)										
		CO_2e	1,688	(a)										
Aux-1/2/3	Auxiliary Generators	NO_X	(a)	27.99										
		CO	(a)	41.96										
		VOC	(a)	13.97										
		SO_2	(a)	0.06										
		$PM/PM_{10}/PM_{2.5}$	(a)	1.40										
		HAPs	(a)	3.19										
		CO_2e	(a)	7,395										
EG-1	Emergency Generator	NO_X	0.83	0.21	12	182752	3848157	13.67		2.5	0.77	550		
		CO	4.61	1.15										
		VOC	0.07	0.02										
		SO_2	7.38E-04	1.85E-04										
		$PM/PM_{10}/PM_{2.5}$	0.02	0.006										
		HAPs	0.04	0.01										
		CO_2e	147	36.75										

(a) There are two identical natural gas-fired auxiliary generators (Aux-1, Aux-2) and a diesel-fired rental auxiliary generator (Aux-3). Each has been listed. However, they are not authorized to operate at the same time. Therefore, an annual emissions total has not been displayed for each individual engine. Rather, a sum total capped emissions rate for all three engines has been proposed and represented in the table above.

(b) Aux-3 is a rental unit and therefore exact emissions and stack parameters are unknown. EPNG will ensure emissions will comply with represented values.

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL ***640*** feet

ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)

General Instructions:

Submit emission calculations spreadsheet with your application

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.

2. Components to be listed include regulated air pollutants as defined in A.A.C. R18-2-101. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.

3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.

4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.

5. As a minimum applicant shall furnish a facility plot plan as described in the filing instructions. UTM coordinates are required only if the source is a major source or is required to perform refined modeling for the purposes of demonstrating compliance with ambient air quality guidelines.

6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.

7. Dimensions of nonpoint sources as defined in A.A.C. R18-2-101.

SECTION 2.3 - EQUIPMENT LIST

The following table should include all equipment utilized at the facility, and should be completed with all the requested information. Be sure to notate the units (tons/hour, horsepower, etc.) when recording the Maximum Rated Capacity information, the Serial Number and/or the Equipment ID Number. The date of manufacture must be included in order to determine if portions of the facility are NSPS applicable. Make additional copies of this form if necessary.

Submit photographs of the faceplates for all engines listed below. If an engine is certified, please also include a copy of the engine certification with the application. For any newly added equipment, include a copy of the specification sheet. These documents will be used to verify equipment information and determine applicable regulations.

Type of Equipment	Maximum Rated Capacity [1]	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Two Stroke Lean Burn Engine	4,080 hp @ 75 degF	Cooper-Bessemer	8W330	49094	June 3, 1991	A-01
Two Stroke Lean Burn Engine	4,080 hp @ 75 degF	Cooper-Bessemer	8W330	49095	June 18, 1991	A-02
Two Stroke Lean Burn Engine	4,080 hp @ 75 degF	Cooper-Bessemer	8W330	49096	July 19, 1991	A-03
Auxiliary Generator	1,500 hp @ 59 degF	Caterpillar	3606 SI	3XF00019	June 12, 1991	Aux-1
Auxiliary Generator	1,500 hp @ 59 degF	Caterpillar	3606 SI	3XF00020	July 31, 1991	Aux-2
Emergency Generator	135 hp	Onan	LSG-8751-6003-C	12228	1992	EG-1
Rental Diesel Generator	1,207 hp [(a)]	Caterpillar [(a)]	C27 [(a)]	ZRS00569 [(a)]	2007+ [(a)]	Aux-3

[1] For generator sets, enter the maximum rated capacity of the engine rather than the maximum rated capacity of the generator

[(a)] The diesel generator is a rental unit and the specifications will vary. The PTE is based on a Caterpillar C27 diesel engine that is a new source under 40 CFR Part 63, Subpart ZZZZ and is subject to 40 CFR Part 60, Subpart IIII. Any future engine will meet the same applicability requirements.

SECTION 4.0 - APPLICATION ADMINISTRATIVE COMPLETENESS CHECKLIST

	REQUIREMENT	MEETS REQUIREMENTS			COMMENT
		YES	NO	N/A	
1	Has the standard application form been completed?	X			
2	Has the responsible official signed the standard application form?	X			
3	Has a process description been provided?	X			
4	Are the facility's emissions documented with all appropriate supporting information?	X			
5	Is the facility subject to Minor NSR requirements? If the answer is "YES", answer 6a, 6b and 6c as applicable. If the answer is "NO", skip to 7.			X	No modifications or changes in method of operation
6.a	If the facility chooses to implement RACT, is the RACT determination included for the affected pollutants for all affected emission units?			X	Minor NSR not applicable
6.b	If the facility chooses to demonstrate compliance with NAAQS by screen modeling, is the modeling analysis included?			X	Minor NSR not applicable
6.c	If refined modeling has been conducted, is a comprehensive modeling report along with all modeling files included?			X	Minor NSR not applicable
7	Does the application include an equipment list with the type, name, make, model, serial number, maximum rated capacity, and date of manufacture?	X			
8	Does the application include an identification and description of Pollution Controls? (if applicable)			X	
9	For any application component claimed as confidential, are the requirements of AR.S. 49-432 and A.A.C. R18-2-305 addressed?			X	No confidential information
10	For any current non-compliance issue, is a compliance schedule attached?			X	No non-compliance issues
11	For minor permit revision that will make a modification upon submittal of application, has a suggested draft permit been attached?			X	No modifications proposed
12	For major sources, have all applicable requirements been identified?	X			
13	For major sources, has a CAM applicability analysis been provided? For CAM applicable units, have CAM plans been provided?			X	
14	For major sources subject to requirements under Article 4 of the A.A.C., have all necessary New Source Review analyses identified in the application been presented?			X	

APPENDIX B -
EMISSIONS CALCULATIONS

Table B-1
Potential to Emit Emissions Rates
Natural Gas-Fired, Two-Stroke, Lean Burn Engine (Cooper-Bessemer 8W330), A-01
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor		Basis	Emission Rate	
	Value	Units		(lb/hr)	(tpy)
Regulated NSR Pollutants					
NO_x	24.34	lb/hr	Current permit limits	24.34	106.61
CO	30.43	lb/hr	Current permit limits	30.43	133.28
VOC	6.09	lb/hr	Current permit limits	6.09	26.67
SO_2	5.88E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.07
PM	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
PM_{10}	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
$PM_{2.5}$	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	6.63E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.73E-03	7.59E-03
1,1,2-Trichloroethane	5.27E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.38E-03	6.03E-03
1,1-Dichloroethane	3.91E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.02E-03	4.47E-03
1,2-Dichloroethane	4.22E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.10E-03	4.83E-03
1,2-Dichloropropane	4.46E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.17E-03	5.10E-03
1,3-Butadiene	8.20E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.09
1,3-Dichloropropene	4.38E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.14E-03	5.01E-03
2,2,4-Trimethylpentane	8.46E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.10
2-Methylnaphthalene	2.14E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	5.59E-04	2.45E-03
Acenaphthene	1.33E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.47E-05	1.52E-04
Acenaphthylene	3.17E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	8.28E-05	3.63E-04
Acetaldehyde	7.76E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.20	0.89
Acrolein	7.78E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.20	0.89
Anthracene	7.18E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.88E-05	8.22E-05
Benz(a)anthracene	3.36E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	8.78E-06	3.84E-05
Benzene	1.94E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.05	0.22
Benzo(a)pyrene	5.68E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.48E-07	6.50E-07
Benzo(b)fluoranthene	8.51E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.22E-07	9.74E-07
Benzo(e)pyrene	2.34E-08	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.11E-07	2.68E-06
Benzo(g,h,i)perylene	2.48E-08	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.48E-07	2.84E-06
Benzo(k)fluoranthene	4.26E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.11E-07	4.87E-07
Biphenyl	3.95E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.03E-04	4.52E-04
Carbon Tetrachloride	6.07E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.59E-03	6.95E-03
Chlorobenzene	4.44E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.16E-03	5.08E-03
Chloroform	4.71E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.23E-03	5.39E-03
Chrysene	6.72E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.76E-05	7.69E-05
Ethylbenzene	1.08E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.82E-03	0.01
Ethylene Dibromide	7.34E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.92E-03	8.40E-03
Fluoranthene	3.61E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	9.43E-06	4.13E-05
Fluorene	1.69E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	4.41E-05	1.93E-04
Formaldehyde	0.06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.44	6.32
Indeno(1,2,3-c,d)pyrene	9.93E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.59E-07	1.14E-06
Methanol	2.48E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.06	0.28
Methylene Chloride	1.47E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.84E-03	0.02
n-Hexane	4.45E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.01	0.05
Naphthalene	9.63E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.52E-03	0.01
PAH	1.34E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.50E-03	0.02
Perylene	4.97E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.30E-07	5.69E-07
Phenanthrene	3.53E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	9.22E-05	4.04E-04
Phenol	4.21E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.10E-03	4.82E-03
Pyrene	5.84E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.53E-05	6.68E-05
Styrene	5.48E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.43E-03	6.27E-03
Toluene	9.63E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.03	0.11
Vinyl Chloride	2.47E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.45E-04	2.83E-03
Xylene	2.68E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	7.00E-03	0.03
			Total	**2.08**	**9.12**

Table B-1
Potential to Emit Emissions Rates
Natural Gas-Fired, Two-Stroke, Lean Burn Engine (Cooper-Bessemer 8W330), A-01
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Greenhouse Gases					
CO_2	53.06	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-1	3,056	13,385
CH_4	1.00E-03	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.06	0.25
N_2O	1.00E-04	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.01	0.03
CO_2e [(a)]	--	--	40 CFR Part 98, Subpart A, Table A-1 GWPs	3,059	13,399

Unit	Type	Make and Model	Rating [(b)]	Brake specific fuel consumption (BSFC)	Heat Input	Annual Operating Hours
			(hp @ 75 deg F)	(Btu/hp-hr)	(MMBtu/hr)	(hours)
A-01	Natural Gas-Fired, Two-Stroke, Lean Burn Engine	Cooper-Bessemer / 8W330	4,080	6,403	26.1	8,760

[(a)] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

[(b)] RICE horsepower (hp) assumed to be conservative based on rating at the site conditions of 4,080 hp at 75 deg F (summertime conditions).

Table B-2
Potential to Emit Emissions Rates
Natural Gas-Fired, Two-Stroke, Lean Burn Engine (Cooper-Bessemer 8W330), A-02
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor		Basis	Emission Rate	
	Value	Units		(lb/hr)	(tpy)
Regulated NSR Pollutants					
NO_x	24.34	lb/hr	Current permit limits	24.34	106.61
CO	30.43	lb/hr	Current permit limits	30.43	133.28
VOC	6.09	lb/hr	Current permit limits	6.09	26.67
SO_2	5.88E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.07
PM	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
PM_{10}	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
$PM_{2.5}$	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	6.63E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.73E-03	7.59E-03
1,1,2-Trichloroethane	5.27E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.38E-03	6.03E-03
1,1-Dichloroethane	3.91E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.02E-03	4.47E-03
1,2-Dichloroethane	4.22E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.10E-03	4.83E-03
1,2-Dichloropropane	4.46E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.17E-03	5.10E-03
1,3-Butadiene	8.20E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.09
1,3-Dichloropropene	4.38E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.14E-03	5.01E-03
2,2,4-Trimethylpentane	8.46E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.10
2-Methylnaphthalene	2.14E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	5.59E-04	2.45E-03
Acenaphthene	1.33E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.47E-05	1.52E-04
Acenaphthylene	3.17E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	8.28E-05	3.63E-04
Acetaldehyde	7.76E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.20	0.89
Acrolein	7.78E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.20	0.89
Anthracene	7.18E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.88E-05	8.22E-05
Benz(a)anthracene	3.36E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	8.78E-06	3.84E-05
Benzene	1.94E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.05	0.22
Benzo(a)pyrene	5.68E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.48E-07	6.50E-07
Benzo(b)fluoranthene	8.51E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.22E-07	9.74E-07
Benzo(e)pyrene	2.34E-08	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.11E-07	2.68E-06
Benzo(g,h,i)perylene	2.48E-08	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.48E-07	2.84E-06
Benzo(k)fluoranthene	4.26E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.11E-07	4.87E-07
Biphenyl	3.95E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.03E-04	4.52E-04
Carbon Tetrachloride	6.07E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.59E-03	6.95E-03
Chlorobenzene	4.44E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.16E-03	5.08E-03
Chloroform	4.71E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.23E-03	5.39E-03
Chrysene	6.72E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.76E-05	7.69E-05
Ethylbenzene	1.08E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.82E-03	0.01
Ethylene Dibromide	7.34E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.92E-03	8.40E-03
Fluoranthene	3.61E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	9.43E-06	4.13E-05
Fluorene	1.69E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	4.41E-05	1.93E-04
Formaldehyde	0.06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.44	6.32
Indeno(1,2,3-c,d)pyrene	9.93E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.59E-07	1.14E-06
Methanol	2.48E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.06	0.28
Methylene Chloride	1.47E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.84E-03	0.02
n-Hexane	4.45E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.01	0.05
Naphthalene	9.63E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.52E-03	0.01
PAH	1.34E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.50E-03	0.02
Perylene	4.97E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.30E-07	5.69E-07
Phenanthrene	3.53E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	9.22E-05	4.04E-04
Phenol	4.21E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.10E-03	4.82E-03
Pyrene	5.84E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.53E-05	6.68E-05
Styrene	5.48E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.43E-03	6.27E-03
Toluene	9.63E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.03	0.11
Vinyl Chloride	2.47E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.45E-04	2.83E-03
Xylene	2.68E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	7.00E-03	0.03
			Total	**2.08**	**9.12**

Table B-2
Potential to Emit Emissions Rates
Natural Gas-Fired, Two-Stroke, Lean Burn Engine (Cooper-Bessemer 8W330), A-02
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Greenhouse Gases					
CO_2	53.06	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-1	3,056	13,385
CH_4	1.00E-03	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.06	0.25
N_2O	1.00E-04	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.01	0.03
CO_2e [(a)]	--	--	40 CFR Part 98, Subpart A, Table A-1 GWPs	3,059	13,399

Unit	Type	Make and Model	Rating [(b)]	Brake specific fuel consumption (BSFC)	Heat Input	Annual Operating Hours
			(hp @ 75 deg F)	(Btu/hp-hr)	(MMBtu/hr)	(hours)
A-02	Natural Gas-Fired, Two-Stroke, Lean Burn Engine	Cooper-Bessemer / 8W330	4,080	6,403	26.1	8,760

[(a)] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

[(b)] RICE horsepower (hp) assumed to be conservative based on rating at the site conditions of 4,080 hp at 75 deg F (summertime conditions).

Table B-3
Potential to Emit Emissions Rates
Natural Gas-Fired, Two-Stroke, Lean Burn Engine (Cooper-Bessemer 8W330), A-03
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor		Basis	Emission Rate	
	Value	Units		(lb/hr)	(tpy)
Regulated NSR Pollutants					
NO_x	24.34	lb/hr	Current permit limits	24.34	106.61
CO	30.43	lb/hr	Current permit limits	30.43	133.28
VOC	6.09	lb/hr	Current permit limits	6.09	26.67
SO_2	5.88E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.07
PM	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
PM_{10}	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
$PM_{2.5}$	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000), PM_{filt} + PM_{cond}	1.26	5.53
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	6.63E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.73E-03	7.59E-03
1,1,2-Trichloroethane	5.27E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.38E-03	6.03E-03
1,1-Dichloroethane	3.91E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.02E-03	4.47E-03
1,2-Dichloroethane	4.22E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.10E-03	4.83E-03
1,2-Dichloropropane	4.46E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.17E-03	5.10E-03
1,3-Butadiene	8.20E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.09
1,3-Dichloropropene	4.38E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.14E-03	5.01E-03
2,2,4-Trimethylpentane	8.46E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.02	0.10
2-Methylnaphthalene	2.14E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	5.59E-04	2.45E-03
Acenaphthene	1.33E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.47E-05	1.52E-04
Acenaphthylene	3.17E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	8.28E-05	3.63E-04
Acetaldehyde	7.76E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.20	0.89
Acrolein	7.78E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.20	0.89
Anthracene	7.18E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.88E-05	8.22E-05
Benz(a)anthracene	3.36E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	8.78E-06	3.84E-05
Benzene	1.94E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.05	0.22
Benzo(a)pyrene	5.68E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.48E-07	6.50E-07
Benzo(b)fluoranthene	8.51E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.22E-07	9.74E-07
Benzo(e)pyrene	2.34E-08	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.11E-07	2.68E-06
Benzo(g,h,i)perylene	2.48E-08	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.48E-07	2.84E-06
Benzo(k)fluoranthene	4.26E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.11E-07	4.87E-07
Biphenyl	3.95E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.03E-04	4.52E-04
Carbon Tetrachloride	6.07E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.59E-03	6.95E-03
Chlorobenzene	4.44E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.16E-03	5.08E-03
Chloroform	4.71E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.23E-03	5.39E-03
Chrysene	6.72E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.76E-05	7.69E-05
Ethylbenzene	1.08E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.82E-03	0.01
Ethylene Dibromide	7.34E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.92E-03	8.40E-03
Fluoranthene	3.61E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	9.43E-06	4.13E-05
Fluorene	1.69E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	4.41E-05	1.93E-04
Formaldehyde	0.06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.44	6.32
Indeno(1,2,3-c,d)pyrene	9.93E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.59E-07	1.14E-06
Methanol	2.48E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.06	0.28
Methylene Chloride	1.47E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.84E-03	0.02
n-Hexane	4.45E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.01	0.05
Naphthalene	9.63E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	2.52E-03	0.01
PAH	1.34E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	3.50E-03	0.02
Perylene	4.97E-09	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.30E-07	5.69E-07
Phenanthrene	3.53E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	9.22E-05	4.04E-04
Phenol	4.21E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.10E-03	4.82E-03
Pyrene	5.84E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.53E-05	6.68E-05
Styrene	5.48E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	1.43E-03	6.27E-03
Toluene	9.63E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	0.03	0.11
Vinyl Chloride	2.47E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	6.45E-04	2.83E-03
Xylene	2.68E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-1 (July 2000)	7.00E-03	0.03
			Total	**2.08**	**9.12**

Table B-3
Potential to Emit Emissions Rates
Natural Gas-Fired, Two-Stroke, Lean Burn Engine (Cooper-Bessemer 8W330), A-03
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Greenhouse Gases					
CO_2	53.06	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-1	3,056	13,385
CH_4	1.00E-03	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.06	0.25
N_2O	1.00E-04	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.01	0.03
CO_2e [(a)]	--	--	40 CFR Part 98, Subpart A, Table A-1 GWPs	3,059	13,399

Unit	Type	Make and Model	Rating [(b)]	Brake specific fuel consumption (BSFC)	Heat Input	Annual Operating Hours
			(hp @ 75 deg F)	(Btu/hp-hr)	(MMBtu/hr)	(hours)
A-03	Natural Gas-Fired, Two-Stroke, Lean Burn Engine	Cooper-Bessemer / 8W330	4,080	6,403	26.1	8,760

[(a)] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

[(b)] RICE horsepower (hp) assumed to be conservative based on rating at the site conditions of 4,080 hp at 75 deg F (summertime conditions).

Table B-4
Potential to Emit Emissions Rates
Auxiliary Generators (Caterpillar 3606 SI), Aux-1/Aux-2 [(a)]
El Paso Natural Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor		Basis	Emissions Rate	
	Value	Units		(lb/hr)	(tpy)
Regulated NSR Pollutants					
NO_x	6.39	lb/hr	Current permit limit	6.39	27.99
CO	9.58	lb/hr	Current permit limit	9.58	41.96
VOC	3.19	lb/hr	Current permit limit	3.19	13.97
SO_2	5.88E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	5.92E-03	0.03
PM	9.99E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2 (July 2000), PM_{fil} + PM_{Con})	0.10	0.44
PM_{10}	9.99E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2 (July 2000), PM_{fil} + PM_{Con})	0.10	0.44
$PM_{2.5}$	9.99E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2 (July 2000), PM_{fil} + PM_{Con})	0.10	0.44
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.03E-04	1.76E-03
1,1,2-Trichloroethane	3.18E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	3.20E-04	1.40E-03
1,1-Dichloroethane	2.36E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.38E-04	1.04E-03
1,2-Dichloroethane	2.36E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.38E-04	1.04E-03
1,2-Dichloropropane	2.69E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.71E-04	1.19E-03
1,3-Butadiene	2.67E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.69E-03	0.01
1,3-Dichloropropene	2.64E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.66E-04	1.16E-03
2-Methylnaphthalene	3.32E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	3.34E-04	1.46E-03
2,2,4-Trimethylpentane	2.50E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.52E-03	0.01
Acenaphthene	1.25E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.26E-05	5.51E-05
Acenaphthylene	5.53E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	5.57E-05	2.44E-04
Acetaldehyde	8.36E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	0.08	0.37
Acrolein	5.14E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	0.05	0.23
Benzene	4.40E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.43E-03	0.02
Benzo(b)fluoranthene	1.66E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.67E-06	7.32E-06
Benzo(e)pyrene	4.15E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.18E-06	1.83E-05
Benzo(g,h,i)perylene	4.14E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.17E-06	1.83E-05
Biphenyl	2.12E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.14E-03	9.35E-03
Carbon Tetrachloride	3.67E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	3.70E-04	1.62E-03
Chlorobenzene	3.04E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	3.06E-04	1.34E-03
Chloroethane	1.87E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.88E-05	8.25E-05
Chloroform	2.85E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.87E-04	1.26E-03
Chrysene	6.93E-07	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	6.98E-06	3.06E-05
Ethylbenzene	3.97E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.00E-04	1.75E-03
Ethylene Dibromide	4.43E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.46E-04	1.95E-03
Fluoranthene	1.11E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.12E-05	4.90E-05
Fluorene	5.67E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	5.71E-05	2.50E-04
Formaldehyde	0.05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	0.53	2.33
Methanol	2.50E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	0.03	0.11
Methylene Chloride	2.00E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.01E-04	8.82E-04
n-Hexane	1.11E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	0.01	0.05
Naphthalene	7.44E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	7.49E-04	3.28E-03
PAH	2.69E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.71E-04	1.19E-03
Phenanthrene	1.04E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.05E-04	4.59E-04
Phenol	2.40E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.42E-04	1.06E-03
Pyrene	1.36E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.37E-05	6.00E-05
Styrene	2.36E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.38E-04	1.04E-03
Tetrachloroethane	2.48E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	2.50E-05	1.09E-04
Toluene	4.08E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	4.11E-03	0.02
Vinyl Chloride	1.49E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.50E-04	6.57E-04
Xylene	1.84E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-2, (July 2000)	1.85E-03	8.12E-03
			Total	**0.73**	**3.19**

Table B-4
Potential to Emit Emissions Rates
Auxiliary Generators (Caterpillar 3606 SI), Aux-1/Aux-2 [(a)]
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Greenhouse Gases					
CO_2	53.06	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-1	1,178	5,161
CH_4	1.00E-03	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.02	0.10
N_2O	1.00E-04	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	2.22E-03	9.73E-03
CO_2e [(b)]	--	--	40 CFR Part 98, Subpart A, Table A-1 GWPs	1,179	5,166

Unit	Type	Make and Model	Rating [©]	BSFC	Heat Input	Annual Operating Hours
			(hp)	(Btu/hp-hr)	(MMBtu/hr)	(hours)
Aux-1/Aux-2	Natural Gas Auxiliary Generators	Caterpillar / 3606 SI	1,500	6,715	10.1	8,760

[(a)] Per ADEQ Class I Permit 76597, Attachment "B", Condition II.B "The Permittee shall operate only one auxiliary generator at any given time except during periods of start up, shutdown, periods of switching, and routine maintenance." The calculation provided pertains to both engines, but it is combined into a single representation because only one of them can be operational at any given time (total of 8,760 hours of operation combined, and both engines are identical). Kinder Morgan is also proposing to retain this operational restriction for the rental diesel generator. Only the rental diesel generator or one of the natural gas-fired auxiliary generators will ever operate at the same time.

[(b)] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

[(c)] RICE horsepower (hp) and BTU/hp-hr assumed to be conservative based on rating at the site conditions.

Table B-5
Potential to Emit Emissions Rates
Auxiliary Generator (Generic Rental Unit), Aux-3 [a]
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor		Basis	Emissions Rate	
	Value	Units		(lb/hr)	(tpy)
Regulated NSR Pollutants					
NO_x	2.28	g/bhp-hr	Potential Emissions at 75% load	6.07	26.57
CO [b]	1.92	g/bhp-hr	Highest Potential Emissions based on Manufacturer Data	5.11	22.38
VOC [b]	1.07	g/bhp-hr	Highest Potential Emissions based on Manufacturer Data	2.85	12.47
SO_2 [c]	1.22E-05	lb/hp-hr	U.S. EPA AP-42 Section 3.4, Table 3.4-1, (October 1996)	0.01	0.06
Filterable PM [b]	0.09	g/bhp-hr	Highest Potential Emissions based on Manufacturer Data	0.24	1.05
Filterable PM_{10} [b]	0.09	g/bhp-hr	Highest Potential Emissions based on Manufacturer Data	0.24	1.05
Filterable $PM_{2.5}$ [b]	0.09	g/bhp-hr	Highest Potential Emissions based on Manufacturer Data	0.24	1.05
Condensable PM	7.70E-03	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-2	0.08	0.35
Total PM [d]			Sum of Filterable and Condensable	0.32	1.40
Total PM_{10} [d]			Sum of Filterable and Condensable	0.32	1.40
Total $PM_{2.5}$ [d]			Sum of Filterable and Condensable	0.32	1.40
Hazardous Air Pollutants					
Acenaphthene	4.68E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	4.83E-05	2.12E-04
Acenaphthylene	9.23E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	9.53E-05	4.17E-04
Acetaldehyde	2.52E-05	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-3, (October 1996)	2.60E-04	1.14E-03
Acrolein	7.88E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-3, (October 1996)	8.13E-05	3.56E-04
Anthracene	1.23E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	1.27E-05	5.56E-05
Benzene	7.76E-04	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-3, (October 1996)	8.01E-03	0.04
Benz(a)anthracene	6.22E-07	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	6.42E-06	2.81E-05
Benzo(b)fluoranthene	1.11E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	1.15E-05	5.02E-05
Benzo(k)fluoranthene	2.18E-07	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	2.25E-06	9.85E-06
Benzo(a)pyrene	2.57E-07	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	2.65E-06	1.16E-05
Benzo(g,h,i)perylene	5.56E-07	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	5.74E-06	2.51E-05
Chrysene	1.53E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	1.58E-05	6.92E-05
Dibenz(a,h)anthracene	3.46E-07	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	3.57E-06	1.56E-05
Fluoranthene	4.03E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	4.16E-05	1.82E-04
Fluorene	1.28E-05	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	1.32E-04	5.79E-04
Formaldehyde	7.89E-05	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-3, (October 1996)	8.14E-04	3.57E-03
Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	4.27E-06	1.87E-05
Naphthalene	1.30E-04	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	1.34E-03	5.88E-03
Phenanthrene	4.08E-05	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	4.21E-04	1.84E-03
Pyrene	3.71E-06	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-4, (October 1996)	3.83E-05	1.68E-04
Toluene	2.81E-04	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-3, (October 1996)	2.90E-03	0.01
Xylene	1.93E-04	lb/MMBtu	U.S. EPA AP-42 Section 3.4, Table 3.4-3, (October 1996)	1.99E-03	8.72E-03
			Total	**0.02**	**0.07**
Greenhouse Gases					
CO_2	73.96	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-1	1,683	7,370
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.07	0.30
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	0.01	0.06
CO_2e [e]	--	--	40 CFR Part 98, Subpart A, Table A-1 GWPs	1,688	7,395

Table B-5
Potential to Emit Emissions Rates
Auxiliary Generator (Generic Rental Unit), Aux-3 [a]
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Unit	Type	Make and Model	Rating [f]	BSFC [g]	Heat Input	Annual Operating Hours
			(hp)	(Btu/hp-hr)	(MMBtu/hr)	(hours)
Aux-3	Diesel Auxiliary Generator	Generic Rental Unit	1,207	8,550	10.3	8,760

Parameters	
Conversion Factor (lb/ton)	2000
Conversion Factor (g/lb)	453.59
BSFC (lb/bhp-hr) [g]	0.443
Diesel Heating Value (Btu/lb) [g]	19,300

[a] Per ADEQ Class I Permit 76597, Attachment "B", Condition II.B "The Permittee shall operate only one generator at any given time except during periods of start up, shutdown, periods of switching, and routine maintenance." This is applicable to the existing, permanent, stationary auxiliary generators that are at the site. Additionally, Kinder Morgan is also proposing to retain this operational restriction for the rental diesel generator. Only the rental diesel generator or one of the natural gas-fired auxiliary generators will ever operate at the same time. For CO, VOC, and HAPs, the PTE of the rental diesel generator is less than that of the existing auxiliary generators.

[b] Emissions of CO, VOC, PM, PM_{10}, and $PM_{2.5}$ are based on the highest potential emissions rates from the manufacturer's specification sheet that could apply to the rental diesel generator. It is expected that the rental unit will operate at approximately 70% load, and therefore the 75% load factors are the most appropriate. However, for conservative purposes, the highest appropriate factor for these pollutants has been selected so that all potential emissions scenarios are authorized. Accordingly, the NO_X factor at 75% load has been applied.

[c] SO_2 emissions factor is based on a sulfur content of 15 ppm.

[d] The total PM, PM_{10}, and $PM_{2.5}$ is determined by adding the filterable and condensable PM fractions.

[e] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

[f] RICE horsepower (hp) is the highest hp for the engine at all conditions per the manufacturer's specification sheet.

[g] Brake Specific Fuel Consumption (BSFC) based on highest ISO BSFC (59 degrees F, 1 atm) contained in the Manufacturer's Certified Emissions Data Sheet. Diesel heating value of 19,300 Btu/lb is based on AP-42, Section 3.4, Table 3.4-1.

Table B-6
Potential to Emit Emissions Rates
Emergency Generator (Onan LSG-8751-6003-C), EG-1
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor		Basis	Emissions Rate	
	Value	Units		(lb/hr)	(tpy)
Regulated NSR Pollutants					
NO_x	2.80	g/hp-hr	Manufacturer data	0.83	0.21
CO	15.50	g/hp-hr	Manufacturer data	4.61	1.15
VOC	0.22	g/hp-hr	Manufacturer data	0.07	0.02
SO_2	5.88E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	7.38E-04	1.85E-04
PM	0.02	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3 (July 2000), PM_{fil} + PM_{Con})	0.02	6.09E-03
PM_{10}	0.02	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3 (July 2000), PM_{fil} + PM_{Con})	0.02	6.09E-03
$PM_{2.5}$	0.02	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3 (July 2000), PM_{fil} + PM_{Con})	0.02	6.09E-03
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	3.18E-05	7.94E-06
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.92E-05	4.80E-06
1,1-Dichloroethane	1.13E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.42E-05	3.55E-06
1,2-Dichloroethane	1.13E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.42E-05	3.55E-06
1,2-Dichloropropane	1.30E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.63E-05	4.08E-06
1,3-Butadiene	6.63E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	8.32E-04	2.08E-04
1,3-Dichloropropene	1.27E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.59E-05	3.99E-06
Acetaldehyde	2.79E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	3.50E-03	8.76E-04
Acrolein	2.63E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	3.30E-03	8.25E-04
Benzene	1.58E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.98E-03	4.96E-04
Carbon Tetrachloride	1.77E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	2.22E-05	5.56E-06
Chlorobenzene	1.29E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.62E-05	4.05E-06
Chloroform	1.37E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.72E-05	4.30E-06
Ethylbenzene	2.48E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	3.11E-05	7.78E-06
Ethylene Dibromide	2.13E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	2.67E-05	6.69E-06
Formaldehyde	0.02	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	0.03	6.43E-03
Methanol	3.06E-03	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	3.84E-03	9.60E-04
Methylene Chloride	4.12E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	5.17E-05	1.29E-05
Naphthalene	9.71E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.22E-04	3.05E-05
PAH	1.41E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.77E-04	4.43E-05
Styrene	1.19E-05	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	1.49E-05	3.74E-06
Toluene	5.58E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	7.01E-04	1.75E-04
Vinyl Chloride	7.18E-06	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	9.01E-06	2.25E-06
Xylene	1.95E-04	lb/MMBtu	AP-42 Section 3.2, Table 3.2-3, (July 2000)	2.45E-04	6.12E-05
			Total	**0.04**	**0.01**

Table B-6
Potential to Emit Emissions Rates
Emergency Generator (Onan LSG-8751-6003-C), EG-1
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Greenhouse Gases					
CO_2	53.06	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-1	146.86	36.72
CH_4	1.00E-03	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	2.77E-03	6.92E-04
N_2O	1.00E-04	kg/MMBtu	40 CFR Part 98, Subpart C, Table C-2	2.77E-04	6.92E-05
CO_2e [(a)]	--	--	40 CFR Part 98, Subpart A, Table A-1 GWPs	147.01	36.75

Unit	Type	Make and Model	Rating	BSFC	Heat Input	Annual Operating Hours
			(hp)	(Btu/hp-hr)	(MMBtu/hr)	(hours)
EG-1	Natural Gas Backup Generator	Onan / LSG-8751-6003-C	135	9,300	1.26	500

[(a)] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

Table B-7
Potential to Emit Emissions Rates
Equipment Leak Fugitives
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Component	Component Count[a]	THC Emissions Factor	Stream Content [c] (wt %)				Emissions								
							VOC		HAP		CH_4		CO_2		CO_2e[d]
		(lbs/hr-component)[b]	VOC	HAP	CH_4	CO_2	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(tpy)
Valves	514	9.92E-03	4.00%	0.011%	89.82%	2.03%	0.20	0.89	5.49E-04	2.40E-03	4.58	20.06	0.10	0.45	501.99
Flanges	240	8.60E-04	4.00%	0.011%	89.82%	2.03%	8.25E-03	0.04	2.22E-05	9.72E-05	0.19	0.81	4.20E-03	0.02	20.31
Connectors	1,474	4.41E-04	4.00%	0.011%	89.82%	2.03%	0.03	0.11	6.99E-05	3.06E-04	0.58	2.56	0.01	0.06	63.98
Open-ended lines	28	4.41E-03	4.00%	0.011%	89.82%	2.03%	4.94E-03	0.02	1.33E-05	5.82E-05	0.11	0.49	2.51E-03	0.01	12.15
Others	60	0.02	4.00%	0.011%	89.82%	2.03%	0.05	0.20	1.25E-04	5.49E-04	1.05	4.58	0.02	0.10	114.59
Totals							**0.29**	**1.27**	**7.79E-04**	**3.41E-03**	**6.51**	**28.50**	**0.15**	**0.65**	**713.04**

[a] Component counts default values obtained from GRI-HAPCalc Version 3.01 for a "typical" compressor station, doubled as a conservative measure
The GRI-HAPCalc Version 3.01 for a "typical" compressor station assumes six turbines and six reciprocating engines and will conservatively overstate component counts as there are no turbines at the Facility and six engines.

[b] THC emission factors from Table 2-4 of EPA-453/R-95-017, Protocol for Equipment Leak Emission Estimates (November, 1995).
The THC emissions factors were multiplied by the VOC weight percent and HAP weight percent to calculate VOC lb/hr and HAP lb/hr.
The THC emissions factors were multiplied by the CO_2 weight percent and CH_4 weight percent to calculate CO_2 lb/hr and CH_4 lb/hr.

[c] Stream content calculated using the gas analysis provided by Kinder Morgan, on October 12, 2023.
VOC wt% was conservatively assumed to be 4 wt% in calculation rather than as shown on Gas Analysis Spreadsheet (Table B-9).

[d] CO_2e based on multiplying CO_2 and CH_4 and N_2O by the Global Warming Potentials contained in 40 CFR 98 Subpart A as follows:

CO_2	1
CH_4	25
N_2O	298

Table B-8
Potential to Emit Emissions Rates
Insignificant Activities - Startup and Shutdown Emissions
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Pollutant	Emissions Factor [(a)]	Annual Volume Vented	Emissions
	(lb/scf)	(Mscf/yr)	(tpy)
VOC	1.61E-04	13,050	1.05
HAP	4.79E-06	13,050	0.03
CO_2	9.06E-04	13,050	5.91
CH_4	0.04	13,050	261.00
GHG, CO_2e [(b)]	-	13,050	6,531

Emission Unit ID	Event	Volume Vented per Event [(a)]	Annual Events [(c)]	Annual Volume Vented
		(Mscf/event)	(event/yr)	(Mscf/yr)
Cooper-Bessemer 1	Unit Blowdown	30	100	3,000
Cooper-Bessemer 2	Unit Blowdown	30	100	3,000
Cooper-Bessemer 3	Unit Blowdown	30	100	3,000
Cooper-Bessemer	Starting Gas	-	-	400
Station	Station ESD	300	12	3,600
Station	Pipeline Pigging	-	-	50
Total				**13,050**

[(a)] The CO_2 and CH_4 emission factors are from Table B-9 (weight of component per volume of gas).
The VOC emission factor is the sum of the NM/E VOC emission factors from Table B-9.

[(b)] GHG, CO_2e Tons = CO_2 Emissions + (CH_4 Emissions x GWP of 25).

[(c)] Facility estimates. Note that these emissions are considered insignificant activities, as confirmed by ADEQ. For this reason they have not been considered as part of the sitewide PTE summary presented in Table 3-1 and the representations above are not intended to establish limits.

Table B-9
Potential to Emit Emissions Rates
Gas Analysis
El Paso Natural Gas Company, L.L.C.
Mojave Topock Compressor Station - Topock, Arizona

Component	VOC	HAP	Molecular Weight	Density [a]	Mole Percent[b]	lb Constituent/ lb-mol of Gas	Weight Percent[c]	Weight of Component per Volume of Gas[d]
			(lb/lb-mol)	(lb/scf)	(%)	(lb/lb-mol)	(%)	(lb/scf)
Nitrogen	N	N	28.01	0.07	1.13%	0.32	1.88%	8.35E-04
Carbon Dioxide	N	N	44.01	0.12	0.78%	0.34	2.03%	9.06E-04
Methane	N	N	16.04	0.04	94.64%	15.18	89.82%	0.04
Ethane	N	N	30.07	0.08	3.32%	1.00	5.91%	2.63E-03
Propane	Y	N	44.10	0.12	0.11%	0.05	0.28%	1.23E-04
i-Butane	Y	N	58.12	0.15	0.0075%	4.33E-03	0.03%	1.14E-05
n-Butane	Y	N	58.12	0.15	0.009%	5.29E-03	0.03%	1.39E-05
i-Pentane	Y	N	72.15	0.19	0.00233%	1.68E-03	0.0099%	4.43E-06
n-Pentane	Y	N	72.15	0.19	0.00163%	1.18E-03	0.0070%	3.10E-06
Hexane	Y	Y	86.18	0.23	0.002%	1.82E-03	0.011%	4.79E-06
Heptane	Y	N	100.21	0.26	0%	0.00	0%	0
				Total	**100%**	**16.90**	**100%**	**0.04**

[a] Density calculated assuming standard conditions of 60 degrees F and 14.969 psia, 379.5 ft^3/lb-mol

[b] From October 2023 gas analysis provided by Kinder Morgan, on October 12, 2023.

[c] Calculated as the individual component's (Molecular Weight x Mole Percent), divided by the total (Molecular Weight x Mole Percent).

[d] Calculated as the density times the mole percent.

Pollutant	Gas Content (lb/scf) [e]	Gas Weight Percent (%) [e], [f]
VOC	1.61E-04	4.00%
HAP	4.79E-06	0.011%
CO_2	9.06E-04	2.03%
CH_4	0.04	89.82%

[e] The gas content (lb/scf) is utilized for calculated emissions from SSM. The gas weight percent is utilized for determining emissions from equipment leak fugitives.

[f] For the purposes of estimating VOC emissions from equipment leak fugitive components, it was conservatively assumed that the VOC content of the gas is 4%. However, for purposes of demonstrating that Startup, Shutdown, & Malfunction (SSM) emissions are insignificant, the actual VOC content (1.61E-04 lb/scf) from a recent gas analysis was utilized as this is more representative of emissions as a result of SSM.

PERFORMANCE DATA[DM8868]

December 4, 2023

Performance Number: DM8868 **Change Level: 02**

SALES MODEL:	C27	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
MACHINE SALES MODEL:		**HERTZ:**	60
ENGINE POWER (BHP):	1,207	**FAN POWER (HP):**	41.6
GEN POWER WITH FAN (EKW):	800.0	**ADDITIONAL PARASITICS (HP):**	38.4
COMPRESSION RATIO:	16	**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):**	136
MANIFOLD TYPE:	DRY	**JACKET WATER TEMP (F):**	210.2
GOVERNOR TYPE:	ADEM4	**TURBO CONFIGURATION:**	PARALLEL
ELECTRONICS TYPE:	ADEM4	**TURBO QUANTITY:**	2
IGNITION TYPE:	CI	**TURBOCHARGER MODEL:**	GTB4502L-46T-1.06
INJECTOR TYPE:	EUI	**CERTIFICATION YEAR:**	2011
REF EXH STACK DIAMETER (IN):	12	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,800.0

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

General Performance Data

INLET MANIFOLD AIR TEMPERATURE ("INLET MFLD TEMP") FOR THIS CONFIGURATION IS MEASURED AT THE OUTLET OF THE AFTERCOOLER.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)
EKW	%	BHP	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR
800.0	100	1,207	322	0.342	0.335	58.1	57.0
720.0	90	1,093	292	0.341	0.334	52.5	51.5
640.0	80	979	261	0.341	0.335	47.1	46.2
600.0	75	923	246	0.342	0.335	44.5	43.7
560.0	70	867	231	0.344	0.337	42.0	41.2
480.0	60	756	202	0.349	0.343	37.2	36.5
400.0	50	645	172	0.358	0.351	32.5	31.9
320.0	40	535	143	0.366	0.359	27.6	27.1
240.0	30	425	113	0.378	0.370	22.6	22.2
200.0	25	369	98	0.386	0.379	20.1	19.7
160.0	20	313	83	0.398	0.391	17.6	17.2
80.0	10	198	53	0.452	0.443	12.6	12.4

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
800.0	100	1,207	69.9	137.0	1,212.3	72.7	869.8	75	401.4
720.0	90	1,093	64.9	129.2	1,142.4	66.7	811.4	70	379.6
640.0	80	979	59.7	124.8	1,084.4	60.7	767.1	64	358.9
600.0	75	923	56.9	123.1	1,057.5	57.7	748.6	61	348.6
560.0	70	867	54.0	120.2	1,032.7	54.5	733.0	58	337.9
480.0	60	756	47.9	113.1	985.8	48.1	706.9	52	314.9
400.0	50	645	41.2	105.5	937.9	41.4	683.1	45	289.6
320.0	40	535	33.1	98.4	884.3	34.5	656.0	36	255.9
240.0	30	425	24.5	92.2	819.5	27.3	621.4	27	218.1
200.0	25	369	20.7	89.4	782.6	23.6	601.2	23	200.9
160.0	20	313	17.3	86.7	742.5	19.8	579.0	20	185.8
80.0	10	198	13.3	84.9	628.8	18.7	487.1	16	168.0

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

800.0	100	1,207	1,985.9	4,869.7	8,685.5	9,097.9	1,800.9	1,612.7
720.0	90	1,093	1,893.5	4,477.3	8,240.8	8,613.0	1,731.9	1,558.0
640.0	80	979	1,819.7	4,165.1	7,871.0	8,205.0	1,669.3	1,509.6
600.0	75	923	1,784.1	4,009.4	7,691.7	8,007.3	1,631.5	1,479.5
560.0	70	867	1,741.1	3,853.1	7,485.7	7,783.7	1,588.4	1,443.8
480.0	60	756	1,639.5	3,541.4	7,014.6	7,278.2	1,492.5	1,362.4
400.0	50	645	1,520.1	3,229.5	6,474.5	6,704.7	1,389.4	1,273.5
320.0	40	535	1,345.8	2,834.0	5,703.5	5,899.4	1,249.0	1,149.6
240.0	30	425	1,156.5	2,390.8	4,872.3	5,032.5	1,087.4	1,005.6
200.0	25	369	1,080.7	2,189.0	4,539.6	4,681.9	1,014.5	940.4
160.0	20	313	1,025.9	2,011.1	4,299.1	4,423.5	951.9	884.6
80.0	10	198	1,029.3	1,791.6	4,308.9	4,398.3	930.4	877.0

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
800.0	100	1,207	27,943	6,463	39,910	20,230	6,735	9,197	51,179	126,440	134,691
720.0	90	1,093	26,467	5,791	34,702	16,891	6,078	8,262	46,331	114,107	121,553
640.0	80	979	23,995	5,294	30,894	14,463	5,455	7,379	41,537	102,416	109,099
600.0	75	923	22,822	5,074	29,104	13,453	5,155	6,947	39,156	96,787	103,103
560.0	70	867	21,705	4,818	27,498	12,537	4,866	6,526	36,774	91,360	97,321
480.0	60	756	19,580	4,306	24,591	10,881	4,309	5,667	32,042	80,906	86,186
400.0	50	645	17,530	3,818	21,821	9,321	3,764	4,773	27,334	70,665	75,275
320.0	40	535	15,439	3,447	18,838	7,502	3,200	3,598	22,680	60,081	64,002
240.0	30	425	13,308	3,110	15,474	5,648	2,618	2,456	18,005	49,145	52,352
200.0	25	369	12,252	2,920	13,672	4,852	2,326	2,027	15,646	43,667	46,517
160.0	20	313	11,204	2,704	11,809	4,168	2,034	1,706	13,260	38,191	40,683
80.0	10	198	8,161	2,135	9,082	2,441	1,460	1,434	8,392	27,415	29,204

Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	800.0	600.0	400.0	200.0	80.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	1,207	923	645	369	198
NON-ETHANE HC	(CORR 15% O2)	PPM	15.430754	24.883167	31.669365	59.58621	91.34978
TOTAL NOX (AS NO2)		G/HR	2,811	1,730	1,105	686	575
TOTAL CO		G/HR	590	381	239	377	413
TOTAL HC		G/HR	68	65	67	94	112
TOTAL CO2		KG/HR	603	465	336	207	131
PART MATTER		G/HR	37.8	39.7	24.9	16.8	32.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,081.7	861.8	758.8	775.7	1,068.4
TOTAL CO	(CORR 5% O2)	MG/NM3	228.7	191.0	166.0	422.4	751.4
TOTAL HC	(CORR 5% O2)	MG/NM3	22.9	28.5	40.3	91.9	181.5
PART MATTER	(CORR 5% O2)	MG/NM3	11.7	16.4	14.0	17.4	62.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	527	420	370	378	520
TOTAL CO	(CORR 5% O2)	PPM	183	153	133	338	601
TOTAL HC	(CORR 5% O2)	PPM	43	53	75	171	339
TOTAL NOX (AS NO2)		G/HP-HR	2.35	1.89	1.72	1.87	2.92
TOTAL CO		G/HP-HR	0.49	0.41	0.37	1.03	2.09
TOTAL HC		G/HP-HR	0.06	0.07	0.10	0.26	0.57
PART MATTER		G/HP-HR	0.03	0.04	0.04	0.05	0.17
TOTAL NOX (AS NO2)		LB/HR	6.20	3.81	2.44	1.51	1.27
TOTAL CO		LB/HR	1.30	0.84	0.53	0.83	0.91
TOTAL HC		LB/HR	0.15	0.14	0.15	0.21	0.25
TOTAL CO2		LB/HR	1,330	1,025	742	457	289
PART MATTER		LB/HR	0.08	0.09	0.05	0.04	0.07

PERFORMANCE DATA[DM8868]

OXYGEN IN EXH	%	6.5	8.0	9.7	11.5	14.2
DRY SMOKE OPACITY	%	1.5	2.1	1.5	1.0	0.8
BOSCH SMOKE NUMBER		0.52	0.71	0.51	0.35	0.32

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		**EKW**	**800.0**	**600.0**	**400.0**	**200.0**	**80.0**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
ENGINE POWER		**BHP**	**1,207**	**923**	**645**	**369**	**198**
TOTAL NOX (AS NO2)		G/HR	3,401	2,094	1,337	830	696
TOTAL CO		G/HR	1,103	712	447	704	772
TOTAL HC		G/HR	129	123	127	177	212
PART MATTER		G/HR	73.7	77.5	48.6	32.7	63.8
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,308.9	1,042.8	918.1	938.6	1,292.8
TOTAL CO	(CORR 5% O2)	MG/NM3	427.7	357.2	310.4	789.8	1,405.1
TOTAL HC	(CORR 5% O2)	MG/NM3	43.3	53.9	76.2	173.6	343.1
PART MATTER	(CORR 5% O2)	MG/NM3	22.9	31.9	27.4	33.9	121.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	638	508	447	457	630
TOTAL CO	(CORR 5% O2)	PPM	342	286	248	632	1,124
TOTAL HC	(CORR 5% O2)	PPM	81	101	142	324	640
TOTAL NOX (AS NO2)		G/HP-HR	2.84	2.28	2.09	2.26	3.53
TOTAL CO		G/HP-HR	0.92	0.78	0.70	1.92	3.92
TOTAL HC		G/HP-HR	0.11	0.13	0.20	0.48	1.07
PART MATTER		G/HP-HR	0.06	0.08	0.08	0.09	0.32
TOTAL NOX (AS NO2)		LB/HR	7.50	4.62	2.95	1.83	1.53
TOTAL CO		LB/HR	2.43	1.57	0.98	1.55	1.70
TOTAL HC		LB/HR	0.28	0.27	0.28	0.39	0.47
PART MATTER		LB/HR	0.16	0.17	0.11	0.07	0.14

Regulatory Information

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

Altitude Derate Data

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**NORMAL**
ALTITUDE (FT)										
0	1,207	1,207	1,207	1,207	1,204	1,199	1,194	1,189	1,185	1,207
1,000	1,207	1,207	1,206	1,202	1,198	1,193	1,188	1,183	1,178	1,204
2,000	1,206	1,203	1,199	1,196	1,191	1,186	1,181	1,176	1,171	1,199
3,000	1,199	1,196	1,192	1,188	1,184	1,179	1,173	1,168	1,156	1,193
4,000	1,192	1,188	1,185	1,181	1,176	1,170	1,163	1,140	1,116	1,187
5,000	1,184	1,180	1,176	1,172	1,167	1,143	1,122	1,099	1,076	1,180
6,000	1,182	1,178	1,174	1,159	1,135	1,112	1,088	1,064	1,040	1,179
7,000	1,181	1,166	1,146	1,124	1,098	1,073	1,047	1,022	997	1,179
8,000	1,161	1,139	1,119	1,097	1,071	1,046	1,020	997	975	1,161
9,000	1,117	1,096	1,076	1,053	1,027	1,005	985	965	944	1,125
10,000	1,067	1,046	1,026	1,006	985	967	947	926	904	1,081
11,000	1,017	1,000	982	967	949	929	907	882	855	1,040
12,000	978	963	947	930	910	886	859	834	810	998
13,000	941	925	909	888	863	839	815	794	776	966

14,000	901	882	863	842	819	798	781	765	753	934
15,000	857	838	820	802	784	769	756	746	735	901

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K7856	GG0353	3479352	GS534	-	ZRS00001	
0K4030	GG0382	3541449	GS581	-	PEY00001	
0K7856	GG0353	3606757	GS534	-	ZRS00001	
0K7856	GG0353	4447553	GS534	-	ZRS00001	
0K7856	GG0353	4447555	GS534	-	ZRS00001	

Performance Parameter Reference

Parameters Reference:DM9600-14

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600
APPLICATION:
Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.
PERFORMANCE PARAMETER TOLERANCE FACTORS:
Power +/- 3%
Torque +/- 3%
Exhaust stack temperature +/- 8%
Inlet airflow +/- 5%
Intake manifold pressure-gage +/- 10%
Exhaust flow +/- 6%
Specific fuel consumption +/- 3%
Fuel rate +/- 5%
Specific DEF consumption +/- 3%
DEF rate +/- 5%
Heat rejection +/- 5%
Heat rejection exhaust only +/- 10%
Heat rejection CEM only +/- 10%
Heat Rejection values based on using treated water.
Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.
On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.
On 3500 and C175 engines, at speeds below Peak Torque these values are provided for reference only, and may not meet the tolerance listed.
These values do not apply to C280/3600. For these models, see the tolerances listed below.
C280/3600 HEAT REJECTION TOLERANCE FACTORS:
Heat rejection +/- 10%
Heat rejection to Atmosphere +/- 50%
Heat rejection to Lube Oil +/- 20%
Heat rejection to Aftercooler +/- 5%
TEST CELL TRANSDUCER TOLERANCE FACTORS:
Torque +/- 0.5%
Speed +/- 0.2%
Fuel flow +/- 1.0%
Temperature +/- 2.0 C degrees
Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.
REFERENCE ATMOSPHERIC INLET AIR
FOR 3500 ENGINES AND SMALLER
SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES
Engine rating obtained and presented in accordance with ISO 3046/1

and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE

Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER

The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL

DIESEL

Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is 850 G/Liter (7.0936 Lbs/Gal).

GAS

Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD

Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY

Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.

Standard temperature values versus altitude could be seen on TM2001.

When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.

Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.

Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE

TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS:

Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.

WET & DRY EXHAUST/EMISSIONS DESCRIPTION:

Wet - Total exhaust flow or concentration of total exhaust flow
Dry - Total exhaust flow minus water vapor or concentration of exhaust flow with water vapor excluded

EMISSIONS DEFINITIONS:

Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS:

Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS:

PERFORMANCE DATA[DM8868]

3500: EM1500
RATING DEFINITIONS:
Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038
SOUND DEFINITIONS:
Sound Power : DM8702
Sound Pressure : TM7080
Date Released : 10/27/21