

Prima America Corporation
248 State Street, Northumberland, NH 03582

Engine Ruston (EU04)
 Engine Size 1,760 hp
 Heat input 14.52 MMBtu/hr [(0.0137MMBtu/gal * 35.7 gal/hr) + (0.094MMBtu/gal * 102.5gal/hr)]
 Fuel consumption 35.7 gal/hr ULSD
 102.5 gal/hr LPG
 % Sulfur 0.0015 ULSD

Dual fuel¹						
Total PM²	PM10²	SO₂^{3,4}	NOx²	CO - no controls²	CO - with controls²	TOC³
lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu
0.054	0.054	1.52E-03	--	--	--	0.090
		0.00372				0.883
Lb/hr	Lb/hr	Lb/hr	Lb/hr	Lb/hr	Lb/hr	Lb/hr
0.78	0.78	0.043	16.90	17.39	1.25	8.95
tpy	tpy	tpy	tpy	tpy	tpy	tpy
3.44	3.44	0.190	74.02	76.18	5.47	39.18

¹ Based on fuel usage of 34% ULSD, 66% LPG

² Emission factors from stack test data; Stack test completed October 25, 2017. CO - no controls is based on the CO concentration at the inlet to the catalyst; CO - with controls is based on the CO concentration at the outlet of the catalyst.

³ SO₂ and TOC emissions factors are from https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Misc/EFT/Liquid_Combustion/APCD_Engine_Pr opane_Fired_Uncontrolled.pdf

⁴ Assumes a percent sulfur content of 0.0015% as per 40 CFR 63 ZZZZ for diesel.

⁵ Engine may run biodiesel in place of ULSD (if sulfur content meets requirement of ≤0.0015%). Biodiesel emissions are anticipated to be similar or less than those of diesel, and in the absence of biodiesel emission factors, the diesel emission factors are used.

⁶ Heat input calculation conversions

ULSD	LPG
0.137 MMBtu/gal	0.094 MMBtu/gal

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Non-Permitted Devices

Heater

Rated at 0.7 MMBtu/hr

#2 Fuel oil = 5 gal/hr

Pollutant	Emission factor lb/1000 gal	Emission rate lb/hr	Potential to emit tpy
total PM	2	0.01	0.04
PM ₁₀	1.00	0.01	0.02
SO ₂	56.8	0.28	1.24
NOx	20	0.10	0.44
CO	5	0.03	0.11
VOCs	0.2	0.001	0.004

#2 fuel oil emission factors - AP-42 Chapter 1.3 *Fuel Oil combustion*, Tables 1.3-1 and 1.3-3

Emergency Generator (25 KW)

0.515 MMBtu/hr

LPG - 5.7 gal/hr

Pollutant	Emission factor lb/1000 gal	Emission rate lb/hr	Potential to emit tpy
total PM	5.00	0.029	0.007
PM ₁₀	5.00	0.029	0.007
SO ₂	0.35	0.002	0.0005
NOx	139.00	0.79	0.20
CO	129.00	0.74	0.18
VOCs	83.00	0.47	0.12

Emissions are calculated using propane emission factors from:

https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Misc/EFT/Liquid_Combustion/APCD_Engine_Propane_Fired_Uncontrolled.pdf

Annual emissions are based on 500 hours/year.

Facility Wide Emissions

Pollutant	EU04 - no controls	EU04 -with controls and permit limit*	Heater	Emergency Generator	Potential Facility-wide Emissions	Permitted Facility-wide Emissions
	tpy	tpy	tpy	tpy	tpy	tpy
Total PM	3.44	2.27	0.04	0.007	3.49	2.33
PM ₁₀	3.44	2.27	0.02	0.007	3.46	2.30
SO ₂	0.19	0.13	1.24	0.0005	1.43	1.37
NOx	74.02	49.01	0.44	0.20	74.66	49.65
CO	76.18	3.62	0.11	0.18	76.48	3.91
VOCs	39.18	25.94	0.004	0.12	39.31	26.07

*EU04 hour limit of 5800 hours of operation per consecutive 12 months set to keep facility-wide NOx emissions below 50 tpy.

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EU Identification	Fuel	MMBtu/ hr	Fuel Rate (gal/hr)	Performance Level (PL):			SO ₂		
				PM ₁₀ lb/hr	PL lb/hr	PL Met?	SO ₂ lb/hr	PL lb/hr	PL Met?
Engine (EU04)	Dual fuel	14.52	4.7 / 136.6	0.10	1.45	YES	0.025	0.36	YES

lb/MMBtu for dual fuel is based on 0.0015% sulfur for No 2 oil and 1.5% sulfur for gas

Device Description			Facility wide Emissions < all Env-A 606.02(c)(5) thresholds	Achieve Performance Level for:				Is Modeling Required?			
Device	Meet A 607.01 threshold?	Env: Stack vertical and unobstructed?		NOx	SO ₂	PM ₁₀	CO	NOx	SO ₂	PM ₁₀	CO
EU04 dual fuel 14.52 MMBtu/hr	YES	YES	NO	NO	YES	YES	n/a	YES	NO	NO	YES

Facility-wide potential NOx emissions are > 50 tpy, but the Facility has requested a 50 tpy cap. The Facility is not required to comply with NOx RACT for the engine.

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Ruston Engine (EU04)
 Diesel Fuel thruput 312,732 gal/yr [8760 hr/yr & 35.7gal/hr diesel]

NATURAL GAS TOXIC FACTORS
 LPG Fuel throughput 32.90 MMCF/YEAR

		EMISSIONS		
		(lb/MMBtu)	(lb/Kgal)	lb/yr
75-07-0	ACETALDEHYDE	2.52E-05	3.45E-03	1.08
107-02-0	ACROLEIN	7.88E-06	1.08E-03	0.34
71-43-2	BENZENE	7.76E-04	1.06E-01	33.25
50-00-0	FORMALDEHYDE	7.89E-05	1.08E-02	3.38
	PROPYLENE	2.79E-03	3.82E-01	119.54
108-88-3	TOLUENE	2.81E-04	3.85E-02	12.04
1330-20-7	XYLENES	1.93E-04	2.64E-02	8.27
		VOC		177.89

		EMISSIONS	
CAS#		(LB/MMCF)	(LBS/YR)
71-43-2	BENZENE	0.0021	0.069
106-97-8	BUTANE	2.10	69.095
25321-22-6	DICHLOROBENZENE	0.0012	0.039
74-84-0	ETHANE	3.10	101.998
50-00-0	FORMALDEHYDE	0.075	2.468
110-54-3	HEXANE	1.80	59.225
109-66-0	PENTANE	2.60	85.547
74-98-6	PROPANE	1.60	52.644
108-88-3	TOLUENE	0.0034	1.12E-01
		VOC	

83-32-9	ACENAPHTHENE	4.68E-06	6.41E-04	0.20
203-96-8	ACENAPHTHYLENE	9.23E-06	1.26E-03	0.40
120-12-7	ANTHRACENE	1.23E-06	1.69E-04	0.05
56-55-3	BENZ(A)ANTHRACENE	6.22E-07	8.52E-05	0.03
50-32-8	BENZO(A)PYRENE	2.57E-07	3.52E-05	0.01
205-99-2	BENZO(B)FLUORANTHENE	1.11E-06	1.52E-04	0.05
191-24-2	BENZO(G,H,L)PERYLENE	5.56E-07	7.62E-05	0.02
205-82-3	BENZO(K)FLUORANTHENE	2.18E-07	2.99E-05	0.01
218-01-9	CHRYSENE	1.53E-06	2.10E-04	0.07
53-70-3	DIBENZ(A,H)ANTHRACENE	3.46E-07	4.74E-05	0.01
206-44-0	FLUORANTHENE	4.03E-06	5.52E-04	0.17
86-73-7	FLUORENE	1.28E-05	1.75E-03	0.55
193-39-5	INDENO(1,2,3,-CD)PYRENE	4.14E-07	5.67E-05	0.02
91-20-3	NAPHTHALENE	1.30E-04	1.78E-02	5.57
85-01-8	PHENANTHRENE	4.08E-05	5.59E-03	1.75
129-00-0	PYRENE	3.71E-06	5.08E-04	0.16

83-32-9	ACENAPHTHENE	1.80E-06	5.92E-05
203-96-8	ACENAPHTHYLENE	1.80E-06	5.92E-05
120-12-7	ANTHRACENE	2.40E-06	7.90E-05
56-55-3	BENZ(A)ANTHRACENE	1.80E-06	5.92E-05
50-32-8	BENZO(A)PYRENE	1.20E-06	3.95E-05
205-99-2	BENZO(B)FLUORANTHENE	1.80E-06	5.92E-05
191-24-2	BENZO(G,H,I)PERYLENE	1.20E-06	3.95E-05
205-82-3	BENZO(K)FLUORANTHENE	1.80E-06	5.92E-05
218-01-9	CHRYSENE	1.80E-06	5.92E-05
53-70-3	DIBENZ(A,H)ANTHRACENE	1.20E-06	3.95E-05
206-44-0	FLUORANTHENE	3.00E-06	9.87E-05
86-73-7	FLUORENE	2.80E-06	9.21E-05
193-39-5	INDENO(1,2,3,-CD)PYRENE	1.80E-06	5.92E-05
91-20-3	NAPHTHALENE	6.10E-04	2.01E-02
85-01-8	PHENANTHRENE	1.70E-05	5.59E-04
129-00-0	PYRENE	5.00E-06	1.65E-04

Chemicals in **BOLD** font are HAPs

	Speciated PAH (lb/yr)	9.06
TOTAL PAH	2.12E-04 2.90E-02	9.08
	Total Diesel HAP (lb/yr)	63.92
	TOTAL DIESEL (lb/yr)	186.95

	PAH		0.022
91-57-6	2-METHYLNAPHTHALENE	2.40E-05	7.90E-04
56-49-5	3-METHYLCHLORANTHRENE	1.80E-06	5.92E-05
	7,12-DIMETHYLBENZ(A)ANTHRACENE	1.60E-05	5.26E-04
	TOTAL POMS		0.023

Total Facility HAP (lb/yr)	66.80
Total Facility HAP (tpy)	0.0334
TOTAL Facility (lb/yr)	558.38

7440-38-2	ARSENIC	2.00E-04	6.58E-03
7440-41-7	BERYLLIUM	1.20E-05	3.95E-04
7440-43-9	CADMIUM	1.10E-03	3.62E-02
7440-47-3	CHROMIUM	1.40E-03	4.61E-02
7440-48-4	COBALT	8.40E-05	2.76E-03
7439-96-5	MANGANESE	3.80E-04	1.25E-02
7439-97-6	MERCURY	2.60E-04	8.55E-03
7440-02-0	NICKEL	2.10E-03	6.91E-02
7782-49-2	SELENIUM	2.40E-05	7.90E-04

*EU04 hour limit of 5800 hours of operation per consecutive 12 months set to keep facility-wide NOx emissions below

	TOTAL		0.18
	Total NG HAP (lb/yr)		2.88
	TOTAL NG (lb/yr)		371.42