

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit No. 20509/PSD-TX-790

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission *	Source	Air Contaminant	Emission Rates	
Point No. (1)	Name (2)	Name (3)	lb/hr	TPY
CASE I: Turbines Only Firing Natural Gas (7)				
23 **	42.1 million Btu/hr @ 30°F 30.10		NO _x	11.00
(HPU-T1)	T4500 Solar Centaur Turbine	CO	16.30	24.90
		SO ₂	0.069	0.30
		VOC	0.30	1.31
		PM ₁₀	0.224	0.98
		HCl	0.01	0.05
24 **	42.1 million Btu/hr @ 30°F 30.10		NO _x	11.00
(HPU-T2)	T4500 Solar Centaur Turbine	CO	16.30	24.90
		SO ₂	0.069	0.30
		VOC	0.30	1.31
		PM ₁₀	0.224	0.98
		HCl	0.01	0.05
25 **	42.1 million Btu/hr @ 30°F 30.10		NO _x	11.00
(HPU-T3)	T4500 Solar Centaur Turbine	CO	16.30	24.90
		SO ₂	0.069	0.30
		VOC	0.30	1.31
		PM ₁₀	0.224	0.98
		HCl	0.01	0.05

CASE II: Turbines Firing Natural Gas and Fired Waste Heat Recovery Unit Burners Firing Isomerization Off-gas and Natural Gas and/or Merox Off-gas and Natural Gas

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Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr (4)</u>	<u>TPY (5)</u>
23 **	42.1 million Btu/hr @ 30°F	NO _x	14.38	
	39.55			
(HPU-T1)	T4500 Solar Centaur Turbine	CO	17.88	
	32.76			
	and 1/3 of 84.5 million Btu/hr	SO ₂	2.59	
	11.10			
	HRU	VOC	0.93	4.07
		PM ₁₀	0.85	3.73
		HCl	0.01	0.05
24 **	42.1 million Btu/hr @ 30°F	NO _x	14.38	
	39.55			
(HPU-T2)	T4500 Solar Centaur	CO	17.88	32.76
	Turbine and 1/3 of	SO ₂	2.59	11.10
	84.5 million Btu/hr	HRU	VOC	0.93
	4.07			
		PM ₁₀	0.85	3.73
		HCl	0.01	0.05
25 **	42.1 million Btu/hr @ 30°F	NO _x	14.38	
	39.55			
(HPU-T3)	T4500 Solar Centaur	CO	17.88	32.76
	Turbine and 1/3 of	SO ₂	2.59	11.10
	84.5 million Btu/hr	HRU	VOC	0.93
	4.07			
		PM ₁₀	0.85	3.73
		HCl	0.01	0.05
23, 24, 25 **	Maximum Combined	NO _x		118.65
	Annual Emissions	CO		98.28
	From All Turbines	SO ₂		33.30
	and Waste Heat	VOC		12.21
	Recovery Unit Burners		PM ₁₀	
	11.19			
		HCl		0.15

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<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr (4)</u>	<u>TPY (5)</u>

OTHER EMISSIONS

FL-4	Plant Flare (9) (Flare-4)	NO _x	0.09	0.40
		CO	0.02	0.08
		SO ₂	0.04	0.19
		VOC	1.38	6.05
		PM ₁₀	0.07	0.33
F-19 (F-HPU)	900 Deisobutanizer/ Heat Pump Area Fugitives	VOC	1.02	4.47
F-20 (F-B-RXTR)	800 Butamer Reactor Unit Area Fugitives (Includes Hydrotreater, Pentane Stripper Emissions) (8)	VOC	2.09	9.17
F-23 (F-DIB700)	700 Deisobutanizer (8) Area Fugitives	VOC	1.73	7.58
Total Project Annual (6) 21.39 Fugitive Emissions			VOC	

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.

(2) Specific point source name. For fugitive sources use area name or fugitive source name.

(3) PM₁₀ -

particulate matter less than 10 microns

VOC - volatile organic compounds as defined in General Rule 101.1

NO_x - total oxides of nitrogen

SO₂ - sulfur dioxide

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Point No. (1)	Name (2)	Name (3)	lb/hr (4) TPY (5)

CO - carbon monoxide

HCl - hydrogen chloride

- (4) Turbine hourly emission rates were calculated based on an ambient temperature of 30°F.
- (5) Turbine annual emission rates were calculated based on an ambient average temperature of 60°F, which is conservatively lower than actual site annual average ambient temperature (approximately 68°F).
- (6) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.
- (7) All references to firing rates are Lower Heating Value (LHV).
- (8) Fugitive monitoring requirements included for purpose of obtaining federal enforceability of emission limits.
- (9) Incremental Plant Flare Emissions from this project and other facilities regulated by this permit.

* Emission rates are based on and the facilities are limited by the following maximum operating schedule: Hrs/year 8,760

** Emissions from each turbine are commingled and emitted through Emission Point Nos. 23, 24, and 25.

Dated _____