Emission Sources - Maximum Allowable Emission Rates

Permit Number 18897

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, sources, and related activities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
XF1011	No. 11 Boiler (8)	NO_X	13.73	60.13
		CO	3.64	15.94
		PM	0.77	3.39
		PM_{10}	0.74	3.22
		$PM_{2.5}$	0.72	3.16
		VOC	0.56	2.46
		SO_2	3.06	4.96
		H_2S	0.03	0.05
XF1601	No. 6 Crude Unit Furnace 1 (8)	NOx	5.93	25.97
		CO	5.93	25.97
		PM	1.26	5.53
		PM_{10}	1.20	5.25
		$PM_{2.5}$	1.17	5.14
		VOC	0.91	4.00
		SO_2	4.98	8.08
		H_2S	0.05	0.09

Emission Sources - Maximum Allowable Emission Rates

XF1602	No. 6 Crude Unit Furnace 2 (8)	NO_X	3.50	15.33
		CO	3.00	13.14
		PM	0.75	3.26
		PM_{10}	0.71	3.10
		$PM_{2.5}$	0.69	3.04
		VOC	0.54	2.36
		SO_2	2.94	4.77
		H_2S	0.03	0.05
XF3804	Plant 38 Feed Furnace (8)	NO_X	2.59	11.34
		CO	0.92	4.05
		PM	0.20	0.86
		PM_{10}	0.19	0.82
		$PM_{2.5}$	0.18	0.80
		VOC	0.14	0.62
		SO_2	0.78	1.26
		H_2S	0.01	0.01

Emission Sources - Maximum Allowable Emission Rates

XF3901	Plant 39 Diesel Furnace (8)	NO_X	2.59	11.34
		CO	2.59	11.34
		PM	0.55	2.42
		PM_{10}	0.52	2.29
		$PM_{2.5}$	0.51	2.25
		VOC	0.40	1.75
		SO_2	2.18	3.81
		H_2S	0.02	0.04
XF4131	Naphtha Hydrotreater Furnace No. 1 (8)	NO_X	3.68	16.10
		CO	1.31	5.75
		PM	0.28	1.22
		PM_{10}	0.27	1.16
		$PM_{2.5}$	0.26	1.14
		VOC	0.20	0.89
		SO_2	1.10	1.79
		H_2S	0.01	0.02
XF4132	Naphtha Hydrotreater Furnace No. 2 (8)	NO_X	3.68	16.10
		CO	1.31	5.75
		PM	0.28	1.22
		PM_{10}	0.27	1.16
		$PM_{2.5}$	0.26	1.14
		VOC	0.20	0.89
		SO_2	1.10	1.79
		H_2S	0.01	0.02

Emission Sources - Maximum Allowable Emission Rates

XF4150-60	Rheniformer Reactor Furnace (F-4150) (8)	NO_X	5.08	22.23
		CO	4.35	19.05
		PM	1.08	4.73
		PM_{10}	1.03	4.50
		$PM_{2.5}$	1.00	4.40
		VOC	0.78	3.42
		SO_2	4.26	6.92
		H_2S	0.05	0.07

Emission Sources - Maximum Allowable Emission Rates

XF4150-60	Rheniformer Reactor Furnace (F-4160) (8)	NO_X	5.29	23.15
		CO	4.53	19.84
		PM	1.13	4.93
		PM_{10}	1.07	4.68
		$PM_{2.5}$	1.05	4.58
		VOC	0.81	3.57
		SO_2	4.44	7.20
		H_2S	0.05	0.08
XF4170-80	Rheniformer Reactor Furnace (F-4170) (8)	NO_X	7.28	31.89
		CO	4.90	21.46
		PM	1.04	4.57
		PM_{10}	0.99	4.34
		$PM_{2.5}$	0.97	4.25
		VOC	0.75	3.31
		SO_2	4.12	6.68
		H_2S	0.04	0.07
XF4170-80	Rheniformer Reactor Furnace (F-4180) (8)	NO_X	2.24	9.79
		CO	1.51	6.59
		PM	0.32	1.40
		PM_{10}	0.30	1.33
		$PM_{2.5}$	0.30	1.31
		VOC	0.23	1.02
		SO_2	1.26	2.05
		H_2S	0.01	0.02

Emission Sources - Maximum Allowable Emission Rates

6	Boiler No. 1 (H-901) (8)	NO_X	21.46	94.00
		CO	6.41	28.05
		PM	1.36	5.97
		PM_{10}	1.30	5.67
		$PM_{2.5}$	1.27	5.55
		VOC	0.99	4.32
		SO_2	5.38	8.73
		H_2S	0.06	0.09
8	Boiler No. 3 (H-903) (8)	NO_X	10.81	47.35
		CO	6.10	26.73
		PM	1.30	5.69
		PM_{10}	1.23	5.41
		$PM_{2.5}$	1.21	5.29
		VOC	0.94	4.12
		SO_2	5.13	8.32
		H_2S	0.05	0.09
109	Vacuum Unit Heater (H-1601) (8)	NO_x	19.68	46.69
		CO	5.74	25.14
		PM	1.22	5.35
		PM_{10}	1.16	5.08
		$PM_{2.5}$	1.14	4.98
		VOC	0.88	3.87
		SO_2	4.82	7.82
		H_2S	0.05	0.08

Emission Sources - Maximum Allowable Emission Rates

125	Vacuum Preflash Heater (H-1101) (8)	NO_x	3.31	14.48
		CO	1.18	5.17
		PM	0.25	1.10
		PM_{10}	0.24	1.04
		$PM_{2.5}$	0.23	1.02
		VOC	0.18	0.80
		SO_2	0.99	1.61
		H_2S	0.01	0.02
K501-04	Relief Gas Compressors (8)	NO_x	7.11	31.15
		CO	11.25	49.28
		PM	2.18	9.55
		PM_{10}	2.07	9.07
		$PM_{2.5}$	2.03	8.88
		VOC	1.80	7.88
		SO_2	0.01	0.04
97	Fire Water Pump (8)	NO_x	7.25	0.77
		CO	1.56	0.16
		PM	0.51	0.05
		PM_{10}	0.51	0.05
		$PM_{2.5}$	0.51	0.05
		VOC	0.59	0.06
		SO_2	0.48	0.05
XH-103	CPS Crude Heater (H-103) (8)	NO_x	5.95	26.06
		CO	3.40	14.89

Emission Sources - Maximum Allowable Emission Rates

XF3902	Plant 39 Furnace (8)	PM	1.27	5.55
		PM_{10}	1.20	5.27
		$PM_{2.5}$	1.18	5.16
		VOC	0.92	4.02
		SO_2	4.76	8.04
		H_2S	0.05	0.09
		NO_x	1.44	6.33
		CO	1.44	6.33
111	FCCU (8)	PM	0.31	1.35
		PM_{10}	0.29	1.28
		$PM_{2.5}$	0.29	1.25
		VOC	0.22	0.97
		SO_2	1.21	2.13
		H_2S	0.01	0.02
		NO_x	74.41	75.04
		CO	58.88	91.36
		PM	24.00	91.98
		PM_{10}	24.00	91.98
		$PM_{2.5}$	24.00	91.98
		VOC	3.57	14.39
		SO_2	33.65	52.21
		H_2SO_4	3.96	15.18
		HCN	4.49	17.20

Emission Sources - Maximum Allowable Emission Rates

PK-853	North Wastewater Collection and Treatment	NO_x	0.88	3.87
		CO	0.54	2.38
		PM	0.05	0.22
		PM_{10}	0.05	0.22
		$PM_{2.5}$	0.05	0.22
		VOC	0.07	0.30
		SO_2	0.07	0.31
		H_2S	0.04	0.16
		Benzene	0.02	0.11
T-24	TK-024 (8)	VOC	0.41	0.01
T-61	TK-061 (8)	VOC	0.92	2.39
		Benzene	0.01	0.03
T-94	TK-094 (8)	VOC	0.75	1.86
		Benzene	0.02	0.02
T-120	TK-120 (8)	VOC	1.43	2.12
		Benzene	0.01	0.01
T-135	TK-135 (8)	VOC	0.75	0.17
		Benzene	0.01	0.01
T-138	TK-138 (8)	VOC	1.76	4.18
		H2S	0.02	0.06
T3601	TK-3601 (8)	VOC	0.80	2.49
		Benzene	0.01	0.03
41	TK-4114 (8)	VOC	4.82	15.95
		Benzene	0.07	0.20
50	TK-4117 (8)	VOC	1.34	3.04
		Benzene	0.03	0.04

Emission Sources - Maximum Allowable Emission Rates

T4270	TK-4270 (8)	VOC	0.83	0.20
		Benzene	0.01	0.01
T4272	TK-4272 (8)	VOC	1.86	1.30
		Benzene	0.01	0.02
T4273	TK-4273 (8)	VOC	1.86	1.30
		Benzene	0.01	0.01
T-4274	TK-4274 (8)	VOC	0.68	0.03
T-4275	TK-4275 (8)	VOC	0.68	0.03
T4276	TK-4276 (8)	VOC	0.82	0.03
T4607	TK-4607 (8)	VOC	0.21	0.21
		Benzene	0.01	0.01
T-525	TK-525 (8)	VOC	0.09	0.05
T-803	TK-803 (8)	VOC	2.16	7.21
		Benzene	0.01	0.03
T-804	TK-804 (8)	VOC	1.92	6.41
		Benzene	0.01	0.03
DEATANK	DEATANK (8)	VOC	0.01	0.01
T-8402	DEA Tank (8)	VOC	0.01	0.01
D-4145	TK-4145 (8)	VOC	0.87	0.02
D-3106	TK-3106 (8)	VOC	3.01	0.25
WAXCLD	DHT Wax Cloud Tank (8)	VOC	0.01	0.01
F-38	Plant 38 Piping Fugitives (5) (8)	VOC	2.52	11.03
		H_2S	0.01	0.01
F-39	Plant 39 Fugitives (5) (8)	VOC	4.60	20.14
		H_2S	0.02	0.08
		Benzene	0.01	0.01
F-16N	No. 6 Crude Unit Piping Fugitives (5) (8)	VOC	9.30	40.71
		H_2S	0.01	0.01
		Benzene	0.05	0.20

Emission Sources - Maximum Allowable Emission Rates

F-71-72	North 84 Plant Amine 1 and 2 Fugitives (5) (8)	VOC	1.00	4.37
		H_2S	0.01	0.01
F-10N	North Plant Utilities Fugitives (5) (8)	VOC	3.42	14.97
		H_2S	0.02	0.02
WWCTS	North API Separator Fugitives (5) (8)	VOC	1.82	7.93
		Benzene	0.02	0.02
		H_2S	<0.01	<0.01
		NH_3	0.01	0.05
F-20N	North Isom Piping Fugitives (5) (8)	VOC	2.41	10.53
LE-FUG	LER Unit Fugitives (5) (8)	VOC	5.75	25.18
		Benzene	0.26	1.12
		H_2S	0.01	0.02
F-41	Rheniformer/NHT/LSR Splitter Fugitives (5) (8)	VOC	5.08	22.27
		Benzene	0.12	0.54
		H_2S	0.01	0.02
TNK-FUG	Tank Field Piping Fugitives (5) (8)	VOC	1.65	7.24
		Benzene	0.02	0.09
F-8	South Poly Plant	H_2S	<0.01	<0.01
		VOC	3.20	14.00
		Benzene	0.15	0.62
		H_2S	0.01	0.01
F-9	Jet Fuel Treating	VOC	1.04	4.54
F-5	Alkylation Fugitives (5)	VOC	9.62	42.13
F-20S	Alky II Fugitives (5) (8)	VOC	3.90	17.07
W-2	South API Separator	VOC	0.75	3.27
		Benzene	0.01	0.01
F-23	South Utilities Fugitives (5) (8)	VOC	2.79	12.18
F-19	Butamer Fugitives (5) (8)	H_2S	0.01	0.01
		VOC	3.21	14.06

Emission Sources - Maximum Allowable Emission Rates

F-11	FCCU Fugitives (5) (8)	VOC	8.69	38.04
		H_2S	0.01	0.02
F-1/2	CPS/DCU Fugitives (5) (8)	Benzene	0.10	0.41
		VOC	5.86	25.66
		H_2S	0.05	0.23
		Benzene	0.03	0.13
F-22	Merox III Fugitives (5) (8)	VOC	0.89	3.87
		Benzene	0.01	0.05
F-10 SP	Naphtha Merox Fugitives (5) (8)	VOC	1.33	5.81
F-18	Vacuum Distillation Fugitives (5) (8)	VOC	5.10	22.33
F-16S	Receiving, Pumping, and Shipping Fugitives (5) (8)	VOC	2.24	9.82
		Benzene	0.02	0.08
FUG	Terminal Fugitives (5) (8)	H_2S	<0.01	<0.01
		VOC	<0.01	<0.01
		Benzene	<0.01	<0.01
		H_2S	<0.01	<0.01
F-84	Amine Unit 1 and 2 Fugitives (5) (8)	VOC	0.96	4.19
		H_2S	0.02	0.06
F-14-5-6	5-6 Cooling Tower (5) (8)	VOC	0.78	3.41
		PM	1.11	4.88
		PM_{10}	0.31	1.37
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01
F-14-7	7 Cooling Tower (5) (8)	VOC	0.34	1.47
		PM	4.81	21.05
		PM_{10}	1.35	5.90
		$PM_{2.5}$	<0.01	0.04
		Benzene	0.01	0.01
F-14-8	8 Cooling Tower (5) (8)	VOC	1.09	4.76
		PM	15.54	68.06
		PM_{10}	4.35	19.07

Emission Sources - Maximum Allowable Emission Rates

		$PM_{2.5}$	0.03	0.12
		Benzene	0.01	0.01
F-14-9	9 Cooling Tower (5) (8)	VOC	0.48	2.11
		PM	0.69	3.01
		PM_{10}	0.19	0.84
		$PM_{2.5}$	<0.01	<0.01
F-21	Alky Cooling Tower (5) (8)	Benzene	0.01	0.01
		VOC	0.79	3.44
		PM	1.12	4.93
		PM_{10}	0.32	1.38
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01
F-7	Main Cooling Tower (5) (8)	VOC	0.96	4.21
		PM	13.73	60.16
		PM_{10}	3.85	16.86
		$PM_{2.5}$	0.02	0.10
PK-854	North Wastewater Collection and	Benzene	0.01	0.01
		VOC	0.13	0.57
		H_2S	0.01	0.01
		NH_3	0.01	0.04
		Benzene	<0.01	0.01
98	South API Oil Water Separator (8)	VOC	0.01	0.03
		H_2S	0.16	0.68
		NH_3	0.01	0.06
RHENSCRUB PK-855	Rheniformer Catalyst Regeneration New North WWCTS Carbon Canister (8)	Benzene	<0.01	0.01
		HCl	0.09	0.02
		VOC	0.25	1.10
		Benzene	<0.01	0.01
		H_2S	0.01	0.04
		NH_3	0.03	0.14

Emission Sources - Maximum Allowable Emission Rates

Compliance Caps - Final (5)(8)	NOx	173.42	446.82	
	PM	32.80	96.79	
	PM_{10}	32.48	96.53	
	$PM_{2.5}$	32.22	95.69	
	VOC	106.55	480.61	
	Benzene	0.89	1.85	
Individual Emission Rate Limits				
		VOC	9.86	-
		NO_x	18.48	-
		CO	46.20	-
		SO_2	72.90	-
R-2911	Rheniformer Flare (6)	H_2S	0.77	-
		VOC	7.46	-
		NO_x	18.72	-
		CO	48.78	-
		SO_2	0.01	-
		H_2S	0.77	-

Emission Sources - Maximum Allowable Emission Rates

D-2914/R-2911	North Main Flare/ Rheniformer Flare (6)	VOC	-	0.40
		NO_x	-	3.51
		CO	-	16.24
		SO_2	-	0.47
		H_2S	-	0.01
112	Plant Emergency/AAC/Main	VOC	0.43	1.90
		NO_x	0.05	0.23
		CO	0.24	1.03
		SO_2	0.01	0.01
XF8801/2	Steam Reformer Heater F-8801, Steam Reformer	VOC	0.70	2.61
		NO_x	4.52	16.96
		CO	4.52	16.96
		PM	0.96	3.61
		PM_{10}	0.91	3.43
		$PM_{2.5}$	0.89	3.36
		SO_2	3.81	1.92
		H_2S	0.04	0.02
H2FUG	Hydrogen Plant Fugitives (5)	CO	0.01	0.06
		VOC	0.04	0.18
		H_2S	0.01	0.01
XF4301	Reformate Splitter Reboiler Heater	VOC	0.24	0.99
		NO_x	1.58	6.44
		CO	1.58	6.44
		PM	0.34	1.37
		PM_{10}	0.32	1.30
		$PM_{2.5}$	0.31	1.27
		SO_2	1.21	1.97
		H_2S	0.01	0.02
Planned Maintenance MSS CAP	Sitewide MSS Sources Excluding Flares	VOC	137.13	10.00

Emission Sources - Maximum Allowable Emission Rates

		NO_x	2.38	9.98
		CO	208.65	11.00
		SO_2	21.17	0.93
		PM	52.21	4.20
		PM_{10}	52.21	4.20
		$PM_{2.5}$	52.21	4.20
		H_2S	0.31	0.01
D-2914/R-2911	North Flares [Including North Relief Gas Flare (EPN D-2914) and Rheniformer Flare (EPN R-2911)]	VOC	92.90	0.90
		NO_x	41.24	9.81
		CO	164.24	30.55
		SO_2	587.61	5.66
		H_2S	6.24	0.06
112	South Main Flare (MSS)	VOC	227.54	2.54
		NO_x	48.38	3.25
		CO	192.70	12.96
		SO_2	1,471.87	23.27
		H_2S	15.64	0.25

Emission Sources - Maximum Allowable Emission Rates

XF4301	Heater Start-Up	VOC	0.24	1.00
		NO_x	2.75	0.13
		CO	15.87	0.76
		PM	0.34	1.38
		PM_{10}	0.34	1.38
		$PM_{2.5}$	0.34	1.38
		SO_2	1.21	1.97
		H_2S	0.01	0.02
F-90	MSAT Plant Fugitives	VOC	8.50	37.24
		Benzene	0.35	1.52
F-90MSS	Planned Routine MSS	VOC	351.75	3.67
		PM	0.02	0.02
		PM_{10}	0.02	0.02
		$PM_{2.5}$	0.02	0.02
D-2914/R-2911	North Main Flare/ Pheniformer Flare	VOC	70.67	0.57
		NO_x	6.99	0.10
		CO	50.48	0.72
		SO_2	0.01	0.01
		H_2S	0.01	0.01
XF1013	Boiler F-1013	VOC	1.21	5.28
		NO_x	2.87	12.57
		CO	10.04	43.99
		PM	2.45	8.13
		PM_{10}	2.37	7.80
		$PM_{2.5}$	2.34	7.67
		SO_2	7.58	12.28
		H_2S	0.08	0.14
		H_2SO_4	0.70	1.13
		TRS	0.30	0.50
XF1013MSS	Boiler F-1013 MSS	NH_3	1.29	5.66
		NO_X	34.43	1.65

Emission Sources - Maximum Allowable Emission Rates

XF1012	Boiler F-1012	CO	200.86	9.64
		VOC	0.49	2.13
		NO_x	0.90	3.94
		CO	3.15	13.80
		PM	0.67	2.94
		PM_{10}	0.64	2.79
		$PM_{2.5}$	0.62	2.73
0.23 <0.01 1.77 0.04 <0.01 <0.01	F-25_SPB		SO_2	0.05
			H_2S	<0.01
			NH_3	0.41
		South Cat Gas Hydrotreater Fugitives	VOC	0.01
			H_2S	<0.01
			Benzene	<0.01
VOC 0.72 3.15	CT-CDU6 No. 6 Crude Unit Auxiliary Cooling Tower			
	Marketing Terminal	PM	0.06	0.26
		PM_{10}	0.02	0.07
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01
		VOC	0.14	0.59
	North Crude Expansion	PM	0.01	0.05
		PM_{10}	<0.01	0.01
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01
		VOC	1.10	0.01
NCMSSCPS	North Crude Expansion Units MSS – CPS	VOC	0.12	<0.01
	North Crude Expansion	VOC	0.69	<0.01
	North Crude Expansion	VOC	0.13	<0.01
	North Crude Expansion	VOC	15.78	0.08

Emission Sources - Maximum Allowable Emission Rates

	Aux Alky Cooling Tower	VOC	0.15	0.66
		PM	0.05	0.24
		PM_{10}	0.02	0.07
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01
F-26	Aux Alky Cooling Tower #2	VOC	0.15	0.66
		PM	0.05	0.24
		PM_{10}	0.02	0.07
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01
	Aux Alky Cooling Tower	VOC	0.15	0.66
		PM	0.05	0.24
		PM_{10}	0.02	0.07
		$PM_{2.5}$	<0.01	<0.01
		Benzene	0.01	0.01

(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) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} - total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ - particulate matter equal to or less than 2.5 microns in diameter
CO - carbon monoxide
HCl - hydrochloric acid
H_2S - hydrogen sulfide
H_2SO_4 - sulfuric acid
NH_3 - ammonia
HCN - hydrogen cyanide
(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
(5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
(6) Planned MSS activities described in Special Condition 50 and pilot emissions are authorized.
(7) Only pilot emissions are authorized for these combustion sources.
(8) Total emission rates from these emission points shall comply with compliance caps contained in this MAERT.
(9) Represents emissions associated with flared releases from the Mobile Source Air Toxics (MSAT) Unit.

Date: May 31, 2017