EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Numbers 36644, PSD-TX-903M2, and N-007M1

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 Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
N-1	Recycle Ethane Cracking Furnace H-0100	NO_x (7)	24.16	79.37
		SO_2 (7)	1.12	4.89
		CO (7)	23.25	101.85
		PM_{10} (7)	1.51	6.61
		VOC (7)	0.57	2.51
N-2	Fresh Feed Cracking Furnace H-0200	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-3	Fresh Feed Cracking Furnace H-0300	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-4	Fresh Feed Cracking Furnace H-0400	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-5	Fresh Feed Cracking Furnace H-0500	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-6	Fresh Feed Cracking Furnace H-0600	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-7	Fresh Feed Cracking Furnace H-0700	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-8	Fresh Feed Cracking Furnace H-0800	NO_x (7)	35.34	116.08
		SO_2 (7)	1.61	7.07
		CO (7)	34.01	148.97
		PM_{10} (7)	2.21	9.67
		VOC (7)	0.84	3.68
N-9	Fresh Feed Cracking Furnace H-0900 (487.5 MMBtu/hr maximum)	NO_x (7)	12.19	21.35
		SO_2 (7)	7.75	33.93
		CO (7)	17.06	74.73
		PM_{10} (7)	3.63	15.91
		VOC (7)	2.63	11.51
		NH_3	1.98	8.68
N-10	Catalyst Regeneration	VOC (7)	0.01	0.01

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
	Effluent			
N-11	Reactor Regeneration Effluent (Startup, Shutdown, and Maintenance)	CO	63.55	53.37
		VOC (7)	0.01	0.01
N-12	DP Reactor Feed Heater	NO_x (7)	5.01	13.71
		SO_2 (7)	0.22	0.95
		CO (7)	2.8	12.26
		PM_{10} (7)	0.38	1.64
		VOC (7)	0.17	0.74
	DP Reactor Feed Heater Startup Emission Rate	CO (7)	14.5	1.74
N-13	DP Reactor Regeneration Heater	NO_x (7)	1.73	1.42
		SO_2 (7)	0.07	0.10
		CO (7)	2.4	3.94
		PM_{10} (7)	0.13	0.17
		VOC (7)	0.06	0.08
N-14	Auxiliary Boiler	NO_x	13.60	20.10
		SO_2	1.24	0.92
		CO	15.60	23.20
		PM_{10}	1.58	2.35
		VOC	1.58	2.35
N-20A	GTG HRSG Unit 1 GE Frame 6B 310.4 MMBtu/hr Duct Burner (with SCR)	NO_x	15.30	
		SO_2	4.46	
		CO	53.90	
		PM_{10}	5.48	
		VOC	3.85	
		NH_3	7.61	30.20
N-20B	GTG HRSG Unit 2 GE Frame 6B	NO_x	24.10	
		SO_2	4.46	

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
	310.4 MMBtu/hr Duct Burner (with SCR)	CO	53.90	
		PM_{10}	5.48	
		VOC	3.85	
		NH_3	7.61	30.20

Emission Point Nos. N-14, N-20A, and N-20B are subject to the following combined annual emission caps for the specified pollutants:

N-14, N-20A, N-20B	Annual Emission Caps		NO_x	—	179.00
		SO_2	—	18.50	
			CO	—	429.00
			PM_{10}	—	49.00
			VOC	—	33.00
N-15, N-15A, N-15 TEMP	Flare system (Including Planned Turnarounds) - Calendar Year 2006 (8)(9)(10)		NO_x (7)	2,219.7	452.7
			SO_2 (7)	165.8	7.0
			CO (7)	15794.4	1040.3
			VOC (7)	24418.1	905.3
		H_2S	1.8	0.1	
	Annual Cap		VOC, NO_x, and CO	—	1600.0
N-15, N-15A, N-15 TEMP	Flare system (Including Planned Turnarounds) - Calendar Year 2007 (8)(9)(10)		NO_x (7)	2,219.7	367.8
			SO_2 (7)	165.8	5.7
			CO (7)	15794.4	845.2
			VOC (7)	24418.1	735.6
		H_2S	1.8	0.1	
	Annual Cap		VOC, NO_x, and CO	—	1300.0
N-15, N-15A, N-15 TEMP	Flare system - Calendar Year 2008 (No Planned Turnarounds in 2008) (8)(9)(10)		NO_x (7)	2,219.7	243.3
			SO_2 (7)	165.8	3.8
			CO (7)	15794.4	559.2
			VOC (7)	24418.1	486.6
		H_2S	1.8	0.1	
	Annual Cap		VOC, NO_x, and CO	—	860.0

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	Emission Rates * TPY**
N-15, N-15A, N-15 TEMP	Flare system (Exclusive of Planned Turnarounds) - Year 2009 and beyond (8)(9)(10)	NO_x (7)	2,219.7	101.8
		SO_2 (7)	165.8	1.6
		CO (7)	15794.4	233.9
		VOC (7)	24418.1	203.5
		H_2S 1.8	0.1	
	Annual Cap	VOC, NO_x, and CO	—	359.7
N-15, N-15A, N-15 TEMP	Flare system (Emissions from Planned Turnarounds) - Year 2009 and beyond (8)(9)(10)	NO_x (7)		84.9
		SO_2 (7)		1.3
		CO (7)		195.1
		VOC (7)		172.7
		H_2S	0.1	
	Annual Cap	VOC, NO_x, and CO	—	300.0
N-18	Decoking Drum	CO (7)	720.00	47.45
		PM_{10} (7)	78.73	3.33
N-19	Thermal Oxidizer	NO_x (7)	0.24	0.88
		SO_2 (7)	0.08	0.28
		CO (7)	0.21	0.77
		PM_{10} (7)	0.04	0.13
		VOC (7)	0.03	0.11
N-21A	Fire Pump Diesel Engine (6)	NO_x (7)	15.81	1.23
		SO_2 (7)	1.05	0.08
		CO (7)	3.41	0.27
		PM_{10} (7)	1.12	0.09
		VOC (7)	1.26	0.10

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
N-21B	Fire Pump Diesel Engine (6)	NO_x (7)	15.81	1.23
		SO_2 (7)	1.05	0.08
		CO (7)	3.41	0.27
		PM_{10} (7)	1.12	0.09
		VOC (7)	1.26	0.10
N-22	Carbon Bed Adsorber	Benzene	0.31	0.11
N-23	Ammonia Scrubber	NH_3	0.12	0.01
N-24A	Boiler B-7280 (425.4 MMBtu/hr)	VOC (7)	6.00	—
		NO_x (Routine)	4.25	—
		NO_x (Startup)	17.02	—
		CO (7)	14.89	—
		SO_2	6.05	—
		PM_{10} (7)	3.17	—
		NH_3	1.88	—
N-24B	Boiler B-7290 (425.4 MMBtu/hr)	VOC (7)	6.00	—
		NO_x (Routine)	4.25	—
		NO_x (Startup)	17.02	—
		CO (7)	14.89	—
		SO_2	6.05	—
		PM_{10} (7)	3.17	—
		NH_3	1.88	—
Total N-24A and N-24B	Boilers B-7280 and B-7290) (Total 425.4 MMBtu/hr)	VOC (7)	—	39.34
		NO_x (Routine)	—	37.26
		NO_x (Startup)	—	2.45
		CO (7)	—	130.42
		SO_2	—	38.68

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
		PM_{10} (7)	—	27.76
		NH_3 —	16.47	
N-1 through N-9, N-14, N-15, N-15A, N-15 TEMP, N-19, N-20A, N-20B	Fresh Feed Cracking Furnaces, Auxiliary Boiler, Flare System, Cogen Facility, Thermal Oxidizer (9)(10)	Mercury (9)	0.63	0.039
TK-470	Stormwater Tank	VOC	0.01	0.01
TK-2501	IFR Spent Caustic	VOC (7)	0.26	1.03
TK-8001	IFR WW Equalization	VOC (7)	0.37	0.66
TK-8101	EFR Contaminated Stormwater	VOC (7)	0.01	0.01
TK-7702	Sulfuric Acid Tank	H_2SO_4	0.01	0.01
		SO_3	0.01	0.01
F-1	Fugitives (4)	VOC (7)	2.26	9.99
F-2	Cooling Tower	PM_{10} (7)	2.13	2.76
		VOC (5) (7)	14.15	42.45
		Benzene	0.50	1.99
F-4	Benzene/Toluene Process	VOC (7)	0.25	1.12
F-5	C4 Huntsman Pipeline Fugitives	VOC	0.01	0.02
BOIL-AMM	Fugitives - Boilers 7280 and 7290 Ammonia Injection System	NH_3	0.01	0.02
COG-AMM-1	Ammonia Fugitives:	NH_3	0.01	0.06

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

	Storage Tank and Vaporizer (4)			
COG-AMM-2	Ammonia Fugitives: GTG/HRSG Unit 2 SCR Ammonia Injection System (4)	NH_3	0.01	0.01
COG-AMM-3	Ammonia Fugitives: GTG/HRSG Unit 1 SCR Ammonia Injection System (4)	NH_3	0.01	0.01
FURN-AMM	Ammonia Fugitives: Fresh Feed Cracking Furnace H-0900 Ammonia Injection System (4)	NH_3	0.01	0.02

(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) NO_x - total oxides of nitrogen
SO_2 - sulfur dioxide
CO - carbon monoxide
PM_{10} - particulate matter (PM) equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no PM greater than 10 microns is emitted.
VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NH_3 - ammonia
H_2S - hydrogen sulfide
H_2SO_4 - sulfuric acid
SO_3 - sulfur trioxide
(4) Emission rate is an estimate and compliance is demonstrated by meeting the requirements of the applicable special conditions (and representations approved pursuant to Special Condition No. 47.)
(5) The VOC emission rates from the cooling tower are for total VOC, including benzene.
(6) Emissions from the fire pump diesel engines are based on 156 hours per year operation. Non-emergency fire pump operations shall only occur between the hours of 8:00 a.m. and 5:00

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

p.m. (one engine at any one time).

(7) These emissions are permitted under PSD or Nonattainment review in addition to State.

(8) Turnarounds are planned for 2006 and 2007 for inspection and maintenance, and for implementation of improvements required by the TCEQ Agreed Order approved and signed March 23, 2005 (Docket No. 2003-1317-AIR-E). Thereafter, consistent with the plant's original design basis, planned turnarounds are expected at nominal intervals of once every three years for purposes such as catalyst replacement, equipment inspection, and equipment repair or replacement.

(9) These are emission caps for the stated EPNs. Mercury shall be calculated and expressed as elemental mercury in any form or phase and shall include the mercury contained in any compound.

(10) The Temporary Flare (EPN N-15 TEMP) shall be taken out of service no later than six months after the Elevated Flare (EPN N-15A) goes into service pursuant to Special Condition No. 14D.

* Emission rates are based on a continuous operating schedule.

** Beginning January 1, 2006, compliance with annual emission limits is based on a rolling 12-month period, with the following exception: allowable emission rates and emission caps for the Ground Flare (EPN N-15) will be based upon calendar years for 2006 through 2009 and will be based on a rolling 12-month period beginning January 1, 2010.

Dated July 16, 2007