

US EPA ARCHIVE DOCUMENT

Corpus Christi Liquefaction, LLC
Corpus Christi Liquefaction Project
Wet/Dry Flare Maintenance and Turnaround Emissions

LNG Train Planned Maintenance Emissions

Borescope Purges

Purge Gas Heat Input = 1096.23 MMBtu/hr
19732.17 MMBtu/yr

Emissions From Borescope Purges

Pollutant	Emission Factor		References	Emission Rate	
				Average (lb/hr)	Annual (tpy)
CO ₂			[1]	1.62E+05	1.46E+03
CH ₄			[2]	6.64E+01	5.98E-01
N ₂ O	1.0E-04	kg/MMBtu	[3]	2.42E-01	2.18E-03
CO ₂ e	--	--	[4]	1.64E+05	1.48E+03

Combustor Changeout/Hot Section Purges

Purge Gas Heat Input = 1096.23 MMBtu/hr
9866.09 MMBtu/yr

Emissions From Combustor Changeout/Hot Section Purges

Pollutant	Emission Factor		References	Emission Rate	
				Average (lb/hr)	Annual (tpy)
CO ₂			[1]	1.62E+05	7.31E+02
CH ₄			[2]	6.64E+01	2.99E-01
N ₂ O	1.0E-04	kg/MMBtu	[3]	2.42E-01	1.09E-03
CO ₂ e	--	--	[4]	1.64E+05	7.38E+02

Combustor Changeout/Hot Section Startup

Purge Gas Heat Input = 1719.28 MMBtu/hr
15473.55 MMBtu/yr

Emissions From Combustor Changeout/Hot Section Startup

Pollutant	Emission Factor		References	Emission Rate	
				Average (lb/hr)	Annual (tpy)
CO ₂			[1]	2.60E+05	1.17E+03
CH ₄			[2]	1.08E+00	4.85E-03
N ₂ O	1.0E-04	kg/MMBtu	[3]	3.79E-01	1.71E-03
CO ₂ e	--	--	[4]	2.60E+05	1.17E+03

[1] Based on mass balance of carbon in purge gas.

[2] Emission rate estimated at a DRE of 99%

[3] Based on EPA default factors in U.S. EPA, 40 CFR 98 Subpart C, Tables C-1 and C-2 for natural gas.

[4] CH₄, CO₂, and N₂O are included in the emissions of CO₂ equivalent (CO₂e), weighted according to their global warming potentials (GWP). The GWP of CH₄ is 21, of CO₂ is 1, and of N₂O is 310.



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	Rev. 9/18/2013	Permit No:	Regulated Entity No: 104401716
Area Name:	Corpus Christi Liquefaction, LLC		Customer Reference No.: 603391640

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

AIR CONTAMINANT DATA					
1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) NAME		(A) MTCE/yr	(B) TPY
TRB1	TRB1	Turbine 1	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB2	TRB2	Turbine 2	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB3	TRB3	Turbine 3	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB4	TRB4	Turbine 4	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB5	TRB5	Turbine 5	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB6	TRB6	Turbine 6	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB7	TRB7	Turbine 7	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28



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(A) EPN	(B) FIN	(C) NAME		(A) MTCE/yr	(B) TPY
TRB8	TRB8	Turbine 8	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB9	TRB9	Turbine 9	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB10	TRB10	Turbine 10	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB11	TRB11	Turbine 11	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB12	TRB12	Turbine 12	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB13	TRB13	Turbine 13	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB14	TRB14	Turbine 14	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28



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(A) EPN	(B) FIN	(C) NAME		(A) MTCE/yr	(B) TPY
TRB15	TRB15	Turbine 15	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB16	TRB16	Turbine 16	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB17	TRB17	Turbine 17	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TRB18	TRB18	Turbine 18	CO2	133,031.31	146,600.51
			CH4	2.51	2.77
			N2O	0.25	0.28
TO-1	TO-1	Thermal Oxidizer 1	CO2	178,255.96	196,438.06
			CH4	0.50	0.55
			N2O	0.02	0.02
TO-2	TO-2	Thermal Oxidizer 2	CO2	178,255.96	196,438.06
			CH4	0.50	0.55
			N2O	0.02	0.02
TO-3	TO-3	Thermal Oxidizer 3	CO2	178,255.96	196,438.06
			CH4	0.50	0.55
			N2O	0.02	0.02



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1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) NAME		(A) MTCE/yr	(B) TPY
WTDYFLR1	WTDYFLR1	Wet/Dry Gas Flare 1 (continuous)	CO2	10,590.18	11,670.38
			CH4	11.52	12.70
			N2O	0.02	0.02
		Wet/Dry Gas Flare 1 (MSS)	CO2	49,908.69	54,999.38
			CH4	155.31	171.15
			N2O	0.08	0.09
WTDYFLR2	WTDYFLR2	Wet/Dry Gas Flare 2 (continuous)	CO2	10,590.18	11,670.38
			CH4	11.52	12.70
			N2O	0.02	0.02
		Wet/Dry Gas Flare 2 (MSS)	CO2	49,908.69	54,999.38
			CH4	155.31	171.15
			N2O	0.08	0.09
MRNFLR	MRNFLR	Marine Flare	CO2	23,532.02	25,932.28
			CH4	96.72	106.59
			N2O	0.01	0.01
BOG	BOG	BOG Compressor Venting (MSS)	CH4	0.68	0.75
GEN1	GEN1	Standby Generator 1	CO2	31.55	34.77
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01
GEN2	GEN2	Standby Generator 2	CO2	31.55	34.77
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01

TCEQ-10153 [Revised 04/08] Table 1(a)

This form is for use by sources subject to air quality permit requirements and may be revised periodically. [APDG 5178v5]



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(A) EPN	(B) FIN	(C) NAME		(A) MTCE/yr	(B) TPY
GEN3	GEN3	Standby Generator 3	CO2	31.55	34.77
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01
GEN4	GEN4	Standby Generator 4	CO2	31.55	34.77
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01
FWPUMP1	FWPUMP1	Diesel Firewater Pump 1	CO2	11.37	12.53
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01
FWPUMP2	FWPUMP2	Diesel Firewater Pump 2	CO2	11.37	12.53
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01
FWPUMP3	FWPUMP3	Diesel Firewater Pump 3	CO2	11.37	12.53
			CH4	< 0.01	< 0.01
			N2O	< 0.01	< 0.01
FUG	FUG	Fugitive Emissions	CO2	0.20	0.22
			CH4	392.90	432.98

EPN = Emission Point Number

FIN = Facility Identification Number