

EP - AIR QUALITY

OMB Control No. 1010-0151
OMB Approval Expires: xx/xx/xxxx

COMPANY	
AREA	
BLOCK	
LEASE	
FACILITY	
WELL	
COMPANY CONTACT	
TELEPHONE NO.	
REMARKS	

AIR EMISSIONS COMPUTATION FACTORS

Fuel Usage Conversion Factors	Natural Gas Turbines		Natural Gas Engines				Diesel Recip. Engine		Diesel Turbines		REF.	DATE	Reference Links
	SCF/hp-hr	9.524	SCF/hp-hr	7.343	SCF/hp-hr	7.343	GAU/hp-hr	0.0514	GAU/hp-hr	0.0514			
Equipment/Emission Factors	units	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3			
Natural Gas Turbine	g/hp-hr		0.0086	0.0086	0.0028	1.4515	0.0095	N/A	0.3719	N/A	AP42 3.1-1.6 3.1-2a	460	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
RECIP - 2 Cycle Lean Natural Gas	g/hp-hr		0.1293	0.1293	0.0020	6.9998	0.4262	N/A	1.2009	N/A	AP42 3.2-1	760	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
RECIP - 4 Cycle Lean Natural Gas	g/hp-hr		0.0002	0.0002	0.0020	2.8814	0.4014	N/A	1.8849	N/A	AP42 3.2-2	760	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
RECIP - 4 Cycle Rich Natural Gas	g/hp-hr		0.0323	0.0323	0.0020	7.7224	0.3021	N/A	11.2608	N/A	AP42 3.2-3	760	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Diesel Recip. < 600 hp	g/hp-hr	1	1	1	0.0279	14.1	1.04	N/A	3.03	N/A	AP42 3.3-1	1096	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Diesel Recip. > 600 hp	g/hp-hr	0.32	0.182	0.178	0.0055	10.9	0.29	N/A	2.5	N/A	AP42 3.4 1.4 3.4.2	1096	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Diesel Boiler	lb/MMscf	0.0440	0.0420	0.0105	0.0089	1.0680	0.0064	5.14E-05	0.2160	0.0036	AP42 1.3-6, Pb and NH3: WAF6/FB (08/2018)	998 and 910	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Diesel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0013	4.45E-05	0.0105	N/A	AP42 3.1 1.3 1.3a	460	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Dual Fuel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0095	4.45E-05	0.3719	0.0000	AP42 3.1-1.6 3.1-2a, AP42 3.1.1 4.3 1-2a	460	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Vessels - Propulsion	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI TSP refer to Diesel Recip. > 600 hp reference	319	
Vessels - Drilling Prime Engine, Auxiliary	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI TSP refer to Diesel Recip. > 600 hp reference	319	https://www3.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels - Diesel Boiler	g/hp-hr	0.0465	0.1491	0.1417	0.4400	1.4014	0.0020	3.73E-05	0.1491	0.0003	USEPA 2017 NEI TSP (Units converted) refer to Diesel Boiler reference	319	
Vessels - Well Stimulation	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI TSP refer to Diesel Recip. > 600 hp reference	319	
Natural Gas Heater/Boiler/Burner	lb/MMscf	7.60	1.90	1.90	0.60	190.00	5.50	5.00E-04	84.00	3.2	AP42 1.4-1.4 1.4-2, Pb and NH3: WAF6/FB (08/2018)	998 and 910	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Combustion Flare (no smoke)	lb/MMscf	0.00	0.00	0.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	218	
Combustion Flare (light smoke)	lb/MMscf	2.10	2.10	2.10	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	218	
Combustion Flare (medium smoke)	lb/MMscf	10.50	10.50	10.50	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	218	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Combustion Flare (heavy smoke)	lb/MMscf	21.00	21.00	21.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	218	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Liquid Flaring	lb/MMscf	0.42	0.0666	0.0651	5.364	0.84	0.01428	5.14E-05	0.21	0.0036	AP42 1.3-1 through 1.3.3 and 1.3.5	510	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Storage Tank	lb/yr/boiler						4.300				2014 Gulfwide Inventory, Avg. emss (Upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-inventory
Fugitive	lb/yr/component						0.0000				AP42 Table	1263	https://www.epa.gov/
Diycol Dehydrator	lb/yr/boiler						19.240				2011 Gulfwide Inventory, Avg. emss (Upper bound of 95% CI)	2014	https://www.boem.gov/environment/environmental-studies/2011-gulfwide-inventory
Cold Vent	lb/yr/boiler						44.747				2014 Gulfwide Inventory, Avg. emss (Upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-inventory
Waste Incinerator	lb/ton		15.0	15.0	2.5	2.0	N/A	N/A	20.0	N/A	AP 42 2.1-12	1096	https://www3.epa.gov/ttr/nche1/ap42/c0303/final/c0303.pdf
Drill Ice - Loader	lb/gal	0.043	0.043	0.043	0.040	0.804	0.049	N/A	0.130	0.003	USEPA NCR04/AD2008 model, TSP (Units converted) refer to Diesel Recip. <600 reference	2009	
Drill Ice - Other Construction Equipment	lb/gal	0.043	0.043	0.043	0.040	0.804	0.049	N/A	0.130	0.003	USEPA NCR04/AD2008 model, TSP (Units converted) refer to Diesel Recip. <600 reference	2009	
Drill Ice - Other Survey Equipment	lb/gal	0.043	0.043	0.043	0.040	0.804	0.049	N/A	0.130	0.003	USEPA NCR04/AD2008 model, TSP (Units converted) refer to Diesel Recip. <600 reference	2009	
Drill Ice - Tractor	lb/gal	0.043	0.043	0.043	0.040	0.804	0.049	N/A	0.130	0.003	USEPA NCR04/AD2008 model, TSP (Units converted) refer to Diesel Recip. <600 reference	2009	https://www3.epa.gov/moves/norcoas2008a-installation-and-updates
Drill Ice - Truck (for gravel island)	lb/gal	0.043	0.043	0.043	0.040	0.804	0.049	N/A	0.130	0.003	USEPA NCR04/AD2008 model, TSP (Units converted) refer to Diesel Recip. <600 reference	2009	
Drill Ice - Truck (for surveys)	lb/gal	0.043	0.043	0.043	0.040	0.804	0.049	N/A	0.130	0.003	USEPA NCR04/AD2008 model, TSP (Units converted) refer to Diesel Recip. <600 reference	2009	
Man Camp - Operation (max people/day)	ton/person/day		0.0004	0.0004	0.0004	0.006	0.001	N/A	0.001	N/A	BOEM 2014-1001	2014	https://www.boem.gov/sites/default/files/uploads/files/BOEM-BOEM_News
Vessels - Ice Management Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI TSP refer to Diesel Recip. > 600 hp reference	319	https://www3.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels - Hovercraft Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI TSP refer to Diesel Recip. > 600 hp reference	319	https://www3.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data

Sulfur Content Source	Value	Units
Fuel Gas	2.38	ppm
Diesel Fuel	0.0015	% weight
Produced Gas (Flare)	3.38	ppm
Produced Oil (Liquid Flaring)	1	% weight

Density and Heat Value of Diesel Fuel	
Density	7.50 lb/gal
Heat Value	19,300 Btu/lb

Heat Value of Natural Gas	
Heat Value	1,050 MBtu/MMscf

Natural Gas Flare Parameters	Value	Units
VOC Content of Flare Gas	0.681E	lb VOC/lb-mol gas
Natural Gas Flare Efficiency	98	%

AIR EMISSIONS CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	FACILITY	WELL				
0									
Year	Facility Emitted Substance								
	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allowable	0.00			0.00	0.00	0.00		0.00	