

Rutherford Refinery

Link to Environment Protection Licence

<https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=117517&SYSUID=1&LICID=12555>

Annual Air Quality Results

Date for testing: 26 – 30 November 2018

Date results received: 22 February 2019

Annual Test Round

DP2: 3MW boiler

Pollutant	Unit of measure	Reference Correction	Result	Limit Conditions
Temperature	°C		201	-
Oxygen	%		10.5	-
Carbon dioxide	%		5.62	-
Moisture	%		7.32	-
Dry gas density	kg/m ³		1.31	-
Molecular weight of dry stack gases	g/g-mol		29.3	-
Velocity	m/s		3.38	-
Volumetric flowrate	m ³ /s		0.600	-
Volatile organic compounds as propane	mg/m ³		< 1.34	-
	mg/m ³	@ 8% Oxygen	< 1.66	10
Hydrogen Sulfide	mg/m ³		< 0.126	-
	mg/m ³	@ 8% Oxygen	< 0.158	-
Nitrogen Oxides	mg/m ³		46.3	-
	mg/m ³	@ 8% Oxygen	57.4	350
Solid particles	mg/m ³		6.00	-
	mg/m ³	@ 8% Oxygen	7.33	10
Formaldehyde	mg/m ³		17.3	-
	mg/m ³	@ 8% Oxygen	21.4	-
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m ³		9.75	-
	mg/m ³	@ 8% Oxygen	11.9	-
Sulphur dioxide	mg/m ³		5.79	-
	mg/m ³	@ 8% Oxygen	7.08	-
Fine Particles (PM ₁₀)	mg/m ³		< 6.00	-
	mg/m ³	@ 8% Oxygen	< 7.33	-
Benzene	mg/m ³		< 0.0537	-
	mg/m ³	@ 8% Oxygen	< 0.0666	-

DP3: 0.2MW boiler

Pollutant	Unit of measure	Reference Correction	Result	Limit Conditions
Temperature	°C		238	-
Oxygen	%		11.5	-
Carbon dioxide	%		4.85	-
Moisture	%		9.79	-
Dry gas density	kg/m3		1.31	-
Molecular weight of dry stack gases	g/g-mol		29.2	-
Velocity	m/s		10.1	-
Volumetric flowrate	m3/s		0.154	-
Volatile organic compounds as propane	mg/m3		< 1.35	-
	mg/m3	@ 8% Oxygen	< 1.85	10
Hydrogen Sulfide	mg/m3		0.318	-
	mg/m3	@ 8% Oxygen	0.434	-
Nitrogen Oxides	mg/m3		32.5	-
	mg/m3	@ 8% Oxygen	44.5	350
Solid particles	mg/m3		9.57	-
	mg/m3	@ 8% Oxygen	13.10	10
Formaldehyde	mg/m3		2.40	-
	mg/m3	@ 8% Oxygen	3.28	-
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m3		5.07	-
	mg/m3	@ 8% Oxygen	6.94	-
Sulphur dioxide	mg/m3		11.9	-
	mg/m3	@ 8% Oxygen	16.4	-
Fine Particles (PM ₁₀)	mg/m3		< 9.57	-
	mg/m3	@ 8% Oxygen	< 13.10	-
Benzene	mg/m3		< 0.0542	-
	mg/m3	@ 8% Oxygen	< 0.0740	-

DP5: Light end scrubber

Pollutant	Unit of measure	Reference Correction	Result	Limit Conditions
Temperature	°C		18.1	-
Oxygen	%		20.8	-
Carbon dioxide	%		0.0600	-
Moisture	%		4.22	-
Dry gas density	kg/m3		1.29	-
Molecular weight of dry stack gases	g/g-mol		28.8	-
Velocity	m/s		2.15	-
Volumetric flowrate	m3/s		0.0676	-
Volatile organic compounds as propane	mg/m3	<	1.31	20
Hydrogen Sulfide	mg/m3	<	0.168	-
Solid particles	mg/m3		1.26	-
Formaldehyde	mg/m3		0.504	-
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m3		0.354	-
Sulphur dioxide	mg/m3		1.75	-
Fine Particles (PM ₁₀)	mg/m3	<	1.26	-
Benzene	mg/m3	<	0.053	-
Benzo(a)pyrene (equivalent - total)	mg/m3	<	0.0000	-
Odour	OU		3477	-
Total PAHs - Lower	mg/m3		0.00365	-

DP19: Fired heater

Pollutant	Unit of measure	Reference Correction	RESULT	Limit Conditions
Temperature	°C		104	-
Oxygen	%		12.1	-
Carbon dioxide	%		5.07	-
Moisture	%		19.6	-
Dry gas density	kg/m3		1.31	-
Molecular weight of dry stack gases	g/g-mol		29.3	-
Velocity (at sample plane)	m/s		3.03	-
Volumetric flowrate	m3/s		0.498	-
Volatile organic compounds as propane	mg/m3		< 1.38	-
	mg/m3	@ 8% Oxygen	< 2.02	10
Hydrogen Sulfide	mg/m3		< 0.185	-
	mg/m3	@ 8% Oxygen	< 0.447	5
Nitrogen Oxides	mg/m3		71.3	-
	mg/m3	@ 8% Oxygen	107	350
Solid particles	mg/m3		3.84	-
	mg/m3	@ 8% Oxygen	10.5	50
Formaldehyde	mg/m3		0.834	-
	mg/m3	@ 8% Oxygen	1.22	-
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3		23.0	-
	mg/m3	@ 8% Oxygen	52.8	100
Sulphur dioxide	mg/m3		44.5	-
	mg/m3	@ 8% Oxygen	102	1360
Fine Particles (PM10)	mg/m3		< 3.84	-
	mg/m3	@ 8% Oxygen	< 10.5	-
Benzene	mg/m3		< 0.055	-
	mg/m3	@ 8% Oxygen	< 0.0810	-
Benzo(a)pyrene (equivalent - total)	mg/m3		< 0.00000276	-
	mg/m3	@ 8% Oxygen	< 0.00000262	-
Odour	OU		2783	-
Arsenic	mg/m3		< 0.00987	-
	mg/m3	@ 8% Oxygen	< 0.0118	-
Lead	mg/m3		0.0140	-
	mg/m3	@ 8% Oxygen	0.0167	-
Mercury	mg/m3		0.000908	-
	mg/m3	@ 8% Oxygen	0.00109	-
Total PAHs - Lower	mg/m3		0.000441	-
	mg/m3	@ 8% Oxygen	0.000420	-

DP20: Reformer

Pollutant	Unit of measure	Reference Correction	RESULT	Limit Conditions
Temperature	°C		833	-
Oxygen	%		9.23	-
Carbon dioxide	%		9.63	-
Moisture	%		15.9	-
Dry gas density	kg/m3		1.34	-
Molecular weight of dry stack gases	g/g-mol		29.9	-
Velocity (at sample plane)	m/s		13.0	-
Volumetric flowrate	m3/s		0.245	-
Volatile organic compounds as propane	mg/m3		< 1.38	-
	mg/m3	@ 4% Oxygen	< 1.99	10
Hydrogen Sulfide	mg/m3		0.196	-
	mg/m3	@ 4% Oxygen	0.261	-
Nitrogen Oxides	mg/m3		46.3	-
	mg/m3	@ 4% Oxygen	67.2	350
Solid particles	mg/m3		3.94	-
	mg/m3	@ 4% Oxygen	5.71	10
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3		27.8	-
	mg/m3	@ 4% Oxygen	40.2	-
Sulphur dioxide	mg/m3		12.2	-
	mg/m3	@ 4% Oxygen	17.6	-
Fine Particles (PM10)	mg/m3		< 3.94	-
	mg/m3	@ 4% Oxygen	< 5.71	-
Benzene	mg/m3		< 0.0550	-
	mg/m3	@ 4% Oxygen	< 0.0797	-
Benzo(a)pyrene (equivalent - total)	mg/m3		0.0000368	-
	mg/m3	@ 4% Oxygen	0.0000533	-
Odour	OU		3955	-
Arsenic	mg/m3		< 0.00941	-
	mg/m3	@ 4% Oxygen	< 0.0114	-
Lead	mg/m3		0.0466	-
	mg/m3	@ 4% Oxygen	0.0737	-
Mercury	mg/m3		0.00101	-
	mg/m3	@ 4% Oxygen	0.00161	-
Total PAHs - Lower	mg/m3		0.00127	-
	mg/m3	@ 4% Oxygen	0.00184	-