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22 December 2021

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LRP01PLA000_0278/20211215

Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR NOVEMBER 2021

Please find attached Lethabo Power Station emission report for the month of November 2021.

Also attached are the Ambient Air Quality Monitoring Report, Complaints Register and the Fugitive Dust Fallout Monitoring Report for November 2021.

For any additional information please do not hesitate to contact us.

Yours sincerely

YANGAPHE NGCASHI
GENERAL MANAGER

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Eskom Holdings SOC Ltd Reg No 2002/015527/30



Report

Lethabo Power Station

Report name: **Lethabo Power Station
NOVEMBER 2021
Emission Report**

Reference number: **LRP01PLA000_0278/20211215**
Document Type: **Report**
Area of Applicability: **Environment**
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Signatures:

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LETHABO POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License FDDM-MET-2011-08-P1


1. RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Nov-2021
	Coal	Tons	2 000 000	1 297 124
	Fuel Oil	Tons	1 700	1069.9
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Nov-2021
	Energy	GWh	2743.2	1 808.71
	Ash	Tons	770 000	505 489.2
	RE Ash	kg/MWh	not specified	279.47

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.656 (Standard)	0.640
Ash Content	%	37.37 (Standard)	38.970

*Please note the "standard" is not necessary a limit, but merely a optimum indication, it will fluctuate as the coal quality changes. The Stipulated Range are the Station acceptance test values.

3. EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SOx	NOx
Unit 1	100	3500	1100
Unit 2	100	3500	1100
Unit 3	100	3500	1100
Unit 4	100	3500	1100
Unit 5	100	3500	1100
Unit 6	100	3500	1100

4. ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Nov-2021
Unit 1	<i>Electrostatic Precipitator (ESP)</i>	99.87%
Unit 2	<i>Electrostatic Precipitator (ESP)</i>	99.74%
Unit 3	<i>Electrostatic Precipitator (ESP)</i>	99.78%
Unit 4	<i>Electrostatic Precipitator (ESP)</i>	99.80%
Unit 5	<i>Electrostatic Precipitator (ESP)</i>	99.82%
Unit 6	<i>Electrostatic Precipitator (ESP)</i>	99.83%

5. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO	CO ₂
Unit 1	99.6	99.6	99.8	97.9
Unit 2	99.5	94.8	94.8	89.6
Unit 3	99.9	100.0	99.9	92.2
Unit 4	99.0	99.8	99.8	99.8
Unit 5	98.6	100.0	100.0	99.7
Unit 6	99.8	99.8	99.8	99.6

6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of November 2021

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	97.9	2 142	1 298
Unit 2	126.3	2 317	772
Unit 3	214.0	3 938	1 873
Unit 4	161.6	3 463	1 612
Unit 5	152.0	3 044	1 316
Unit 6	115.7	2 679	1 294
SUM	867.4	17 583	8 166

Table 6.2: Operating days in compliance to PM AEL Limit - November 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	18	3	0	0	3	87.1
Unit 2	10	8	0	0	8	108.7
Unit 3	21	9	0	0	9	102.9
Unit 4	17	8	0	0	8	117.7
Unit 5	22	8	0	0	8	97.8
Unit 6	16	5	0	0	5	90.0
SUM	104	41	0	0	41	

Table 6.3: Operating days in compliance to SO_x AEL Limit - November 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average SO _x (mg/Nm ³)
Unit 1	22	0	0	0	0	1 743.1
Unit 2	20	0	0	0	0	1 863.0
Unit 3	30	0	0	0	0	1 917.3
Unit 4	26	0	0	0	0	1 972.8
Unit 5	30	0	0	0	0	1 855.1
Unit 6	22	0	0	0	0	2 018.4
SUM	150	0	0	0	0	

Table 6.4: Operating days in compliance to NOx AEL Limit - November 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	16	0	0	6	6	1 048.9
Unit 2	20	0	0	0	0	607.8
Unit 3	30	0	0	0	0	910.1
Unit 4	26	0	0	0	0	910.1
Unit 5	30	0	0	0	0	800.3
Unit 6	21	0	0	1	1	965.3
SUM	143	0	0	7	7	

Table 6.5: Legend Description

Condition	Colour	Description
Normal	GREEN	Emissions below Emission Limit Value (ELV)
Grace	BLUE	Emissions above the ELV during grace period
Section 30	ORANGE	Emissions above ELV during a NEMA S30 incident
Contra-vention	RED	Emissions above ELV but outside grace or S30 incident conditions

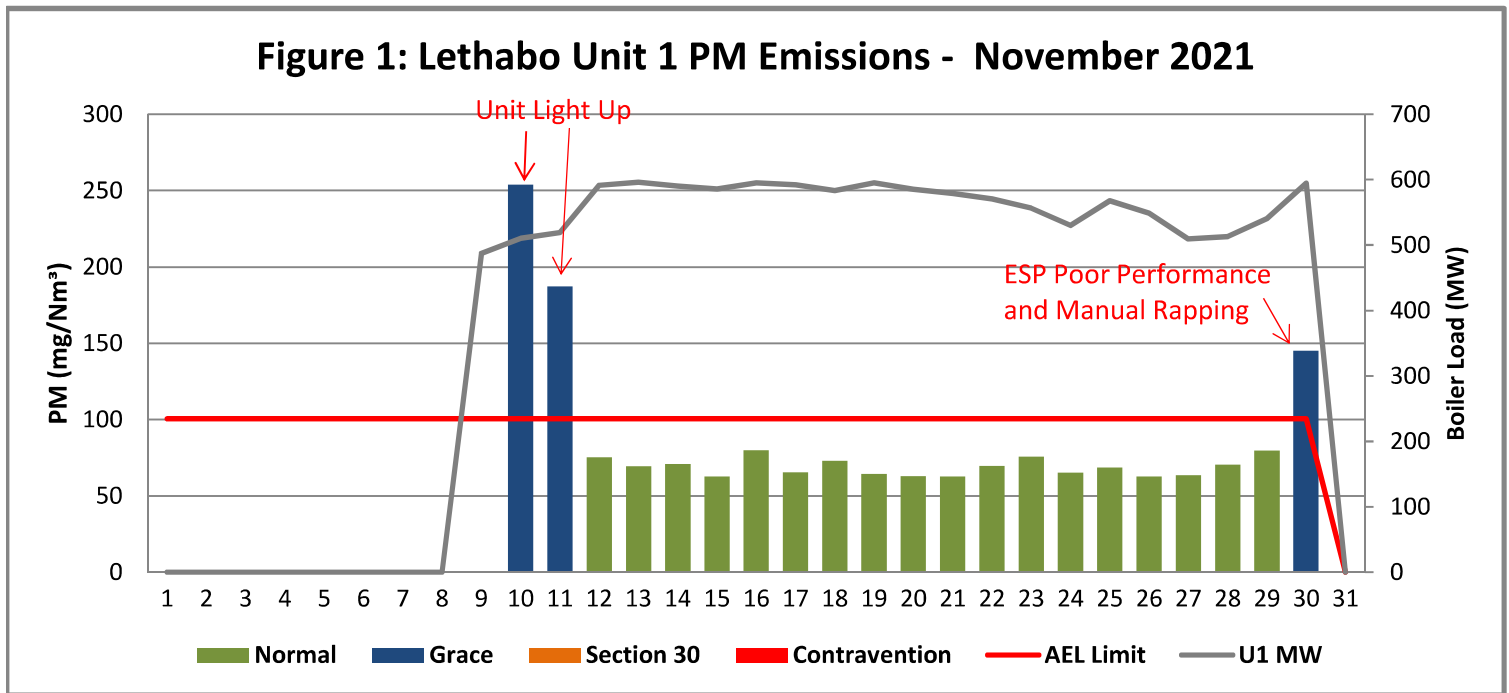


Figure 2: Lethabo Unit 2 PM Emissions - November 2021

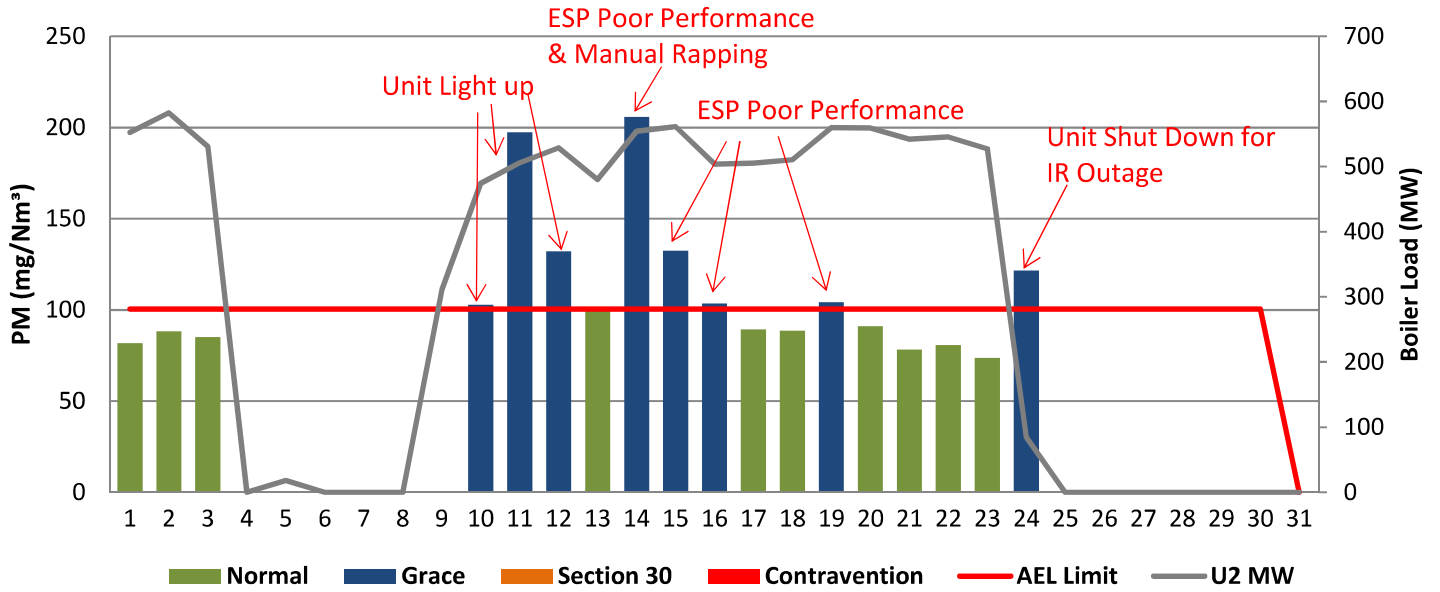


Figure 3: Lethabo Unit 3 PM Emissions - November 2021

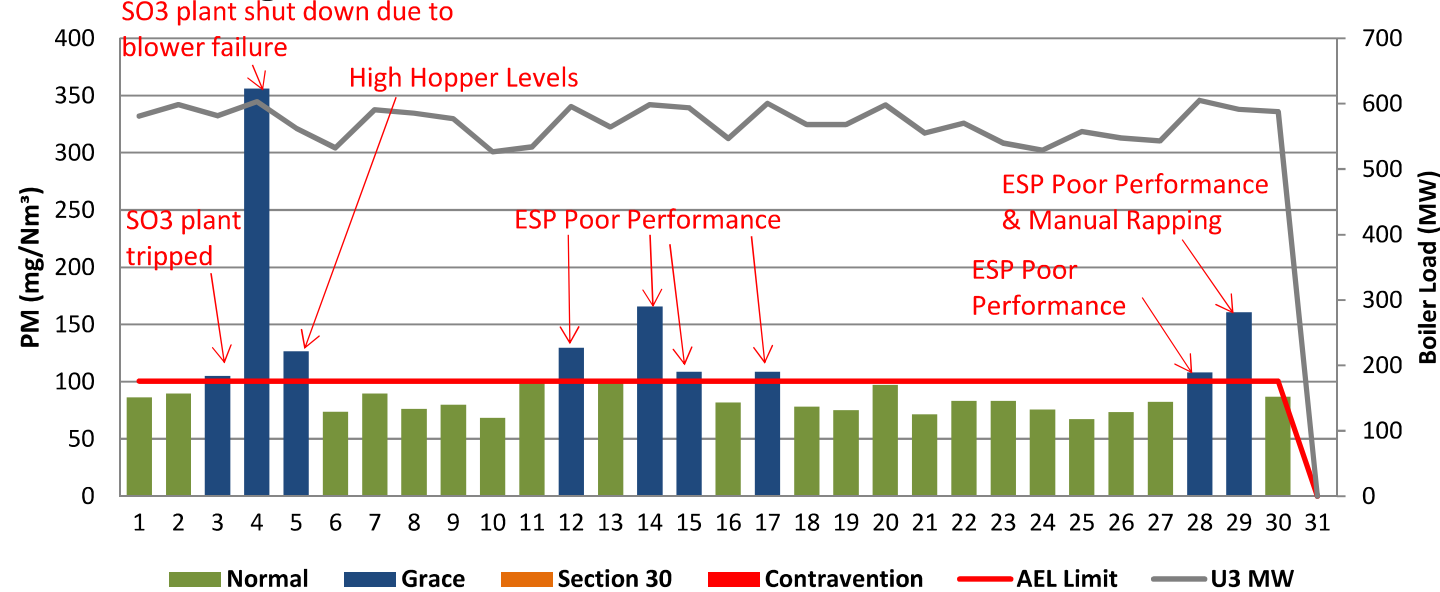


Figure 4: Lethabo Unit 4 PM Emissions - November 2021

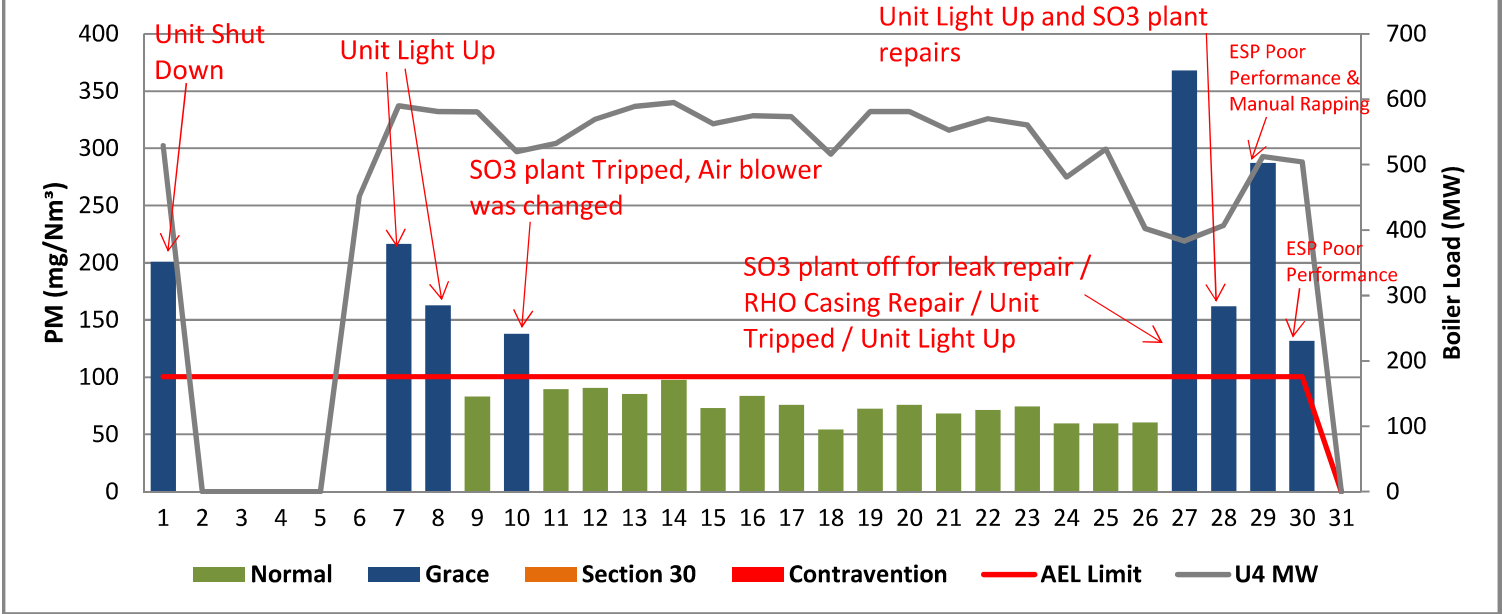


Figure 5: Lethabo Unit 5 PM Emissions - November 2021

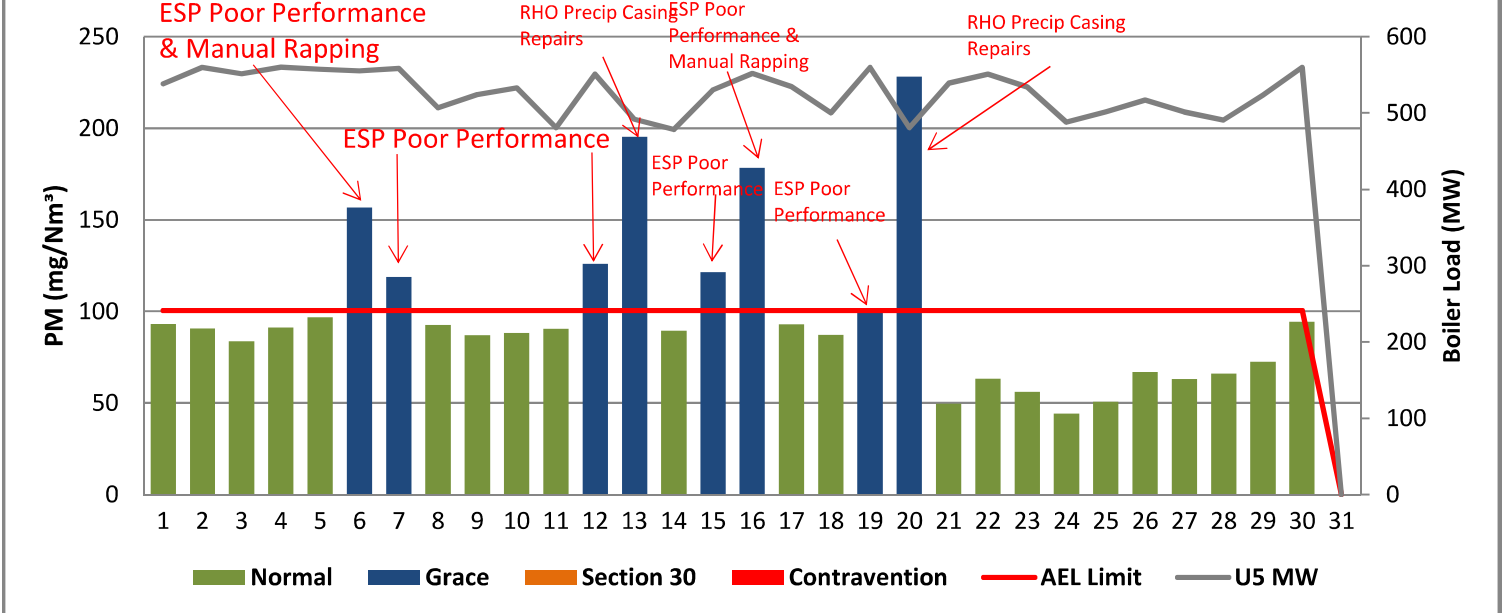


Figure 6: Lethabo Unit 6 PM Emissions - November 2021

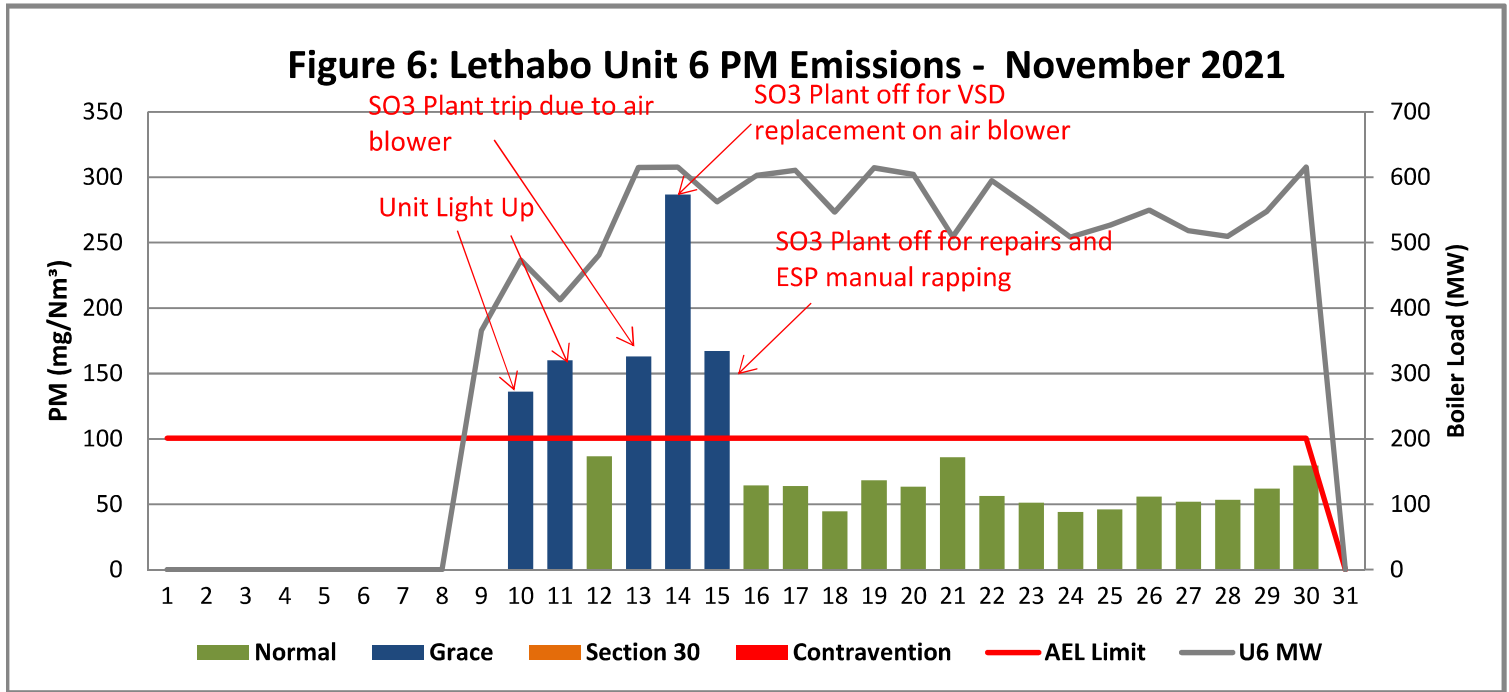


Figure 7: Lethabo Unit 1 SOx Emissions - November 2021

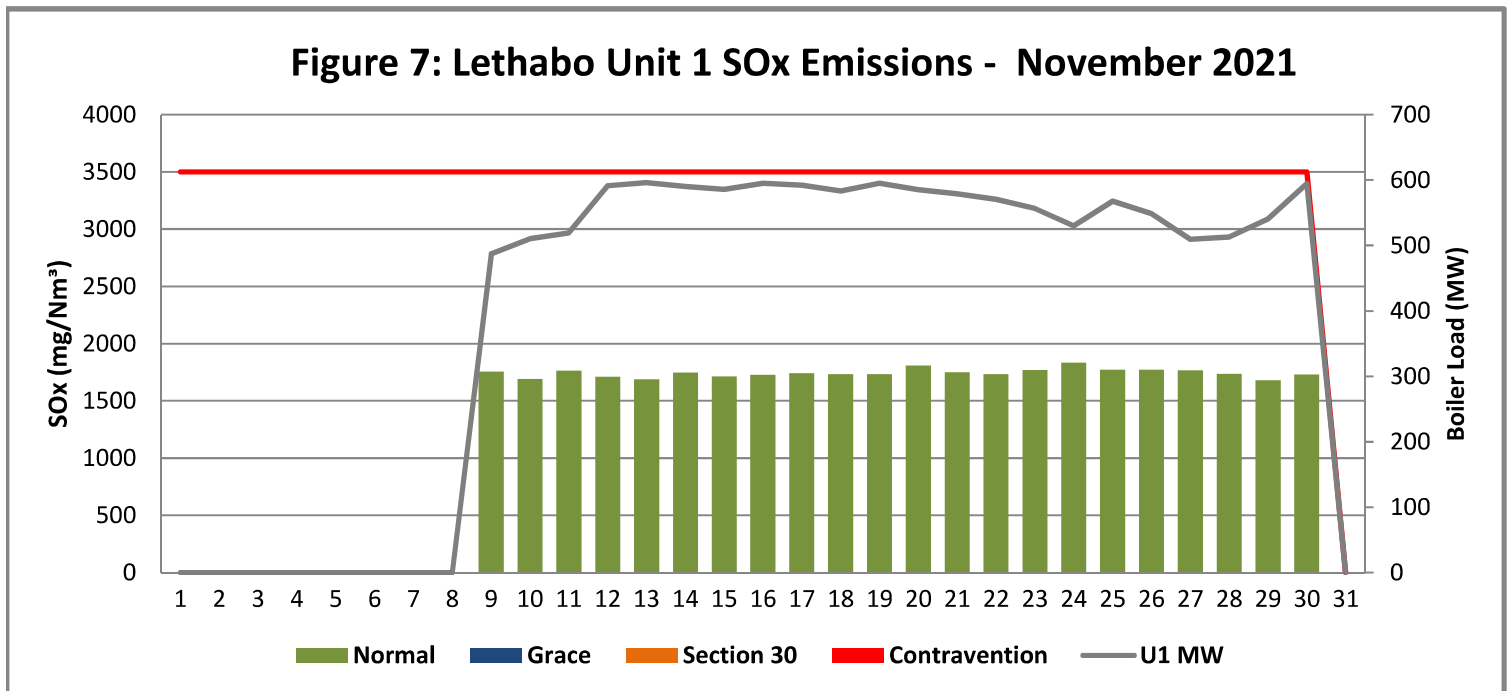


Figure 8: Lethabo Unit 2 SOx Emissions - November 2021

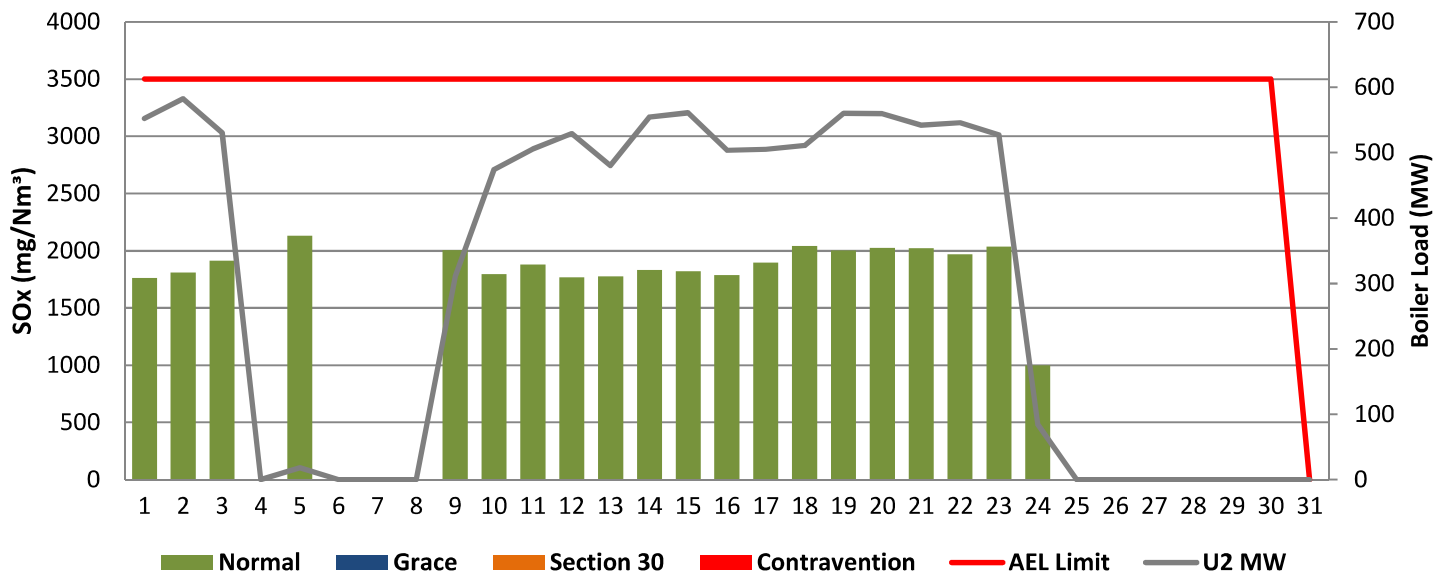


Figure 9: Lethabo Unit 3 SOx Emissions - November 2021

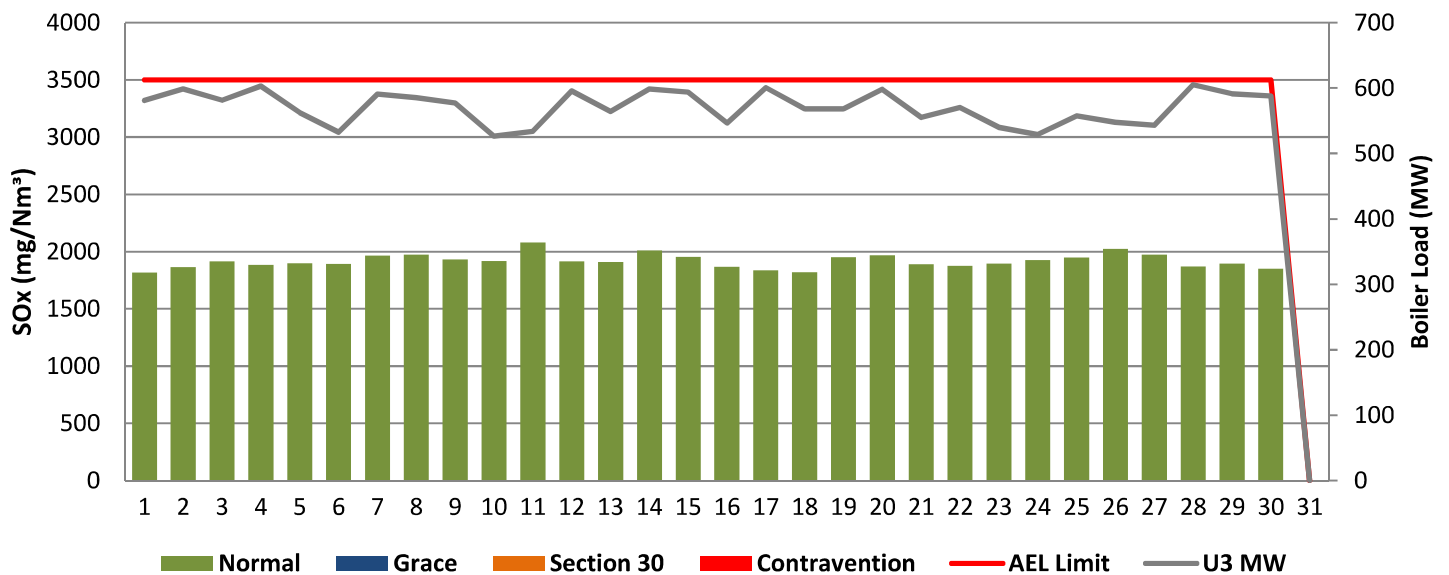


Figure 10: Lethabo Unit 4 SOx Emissions - November 2021

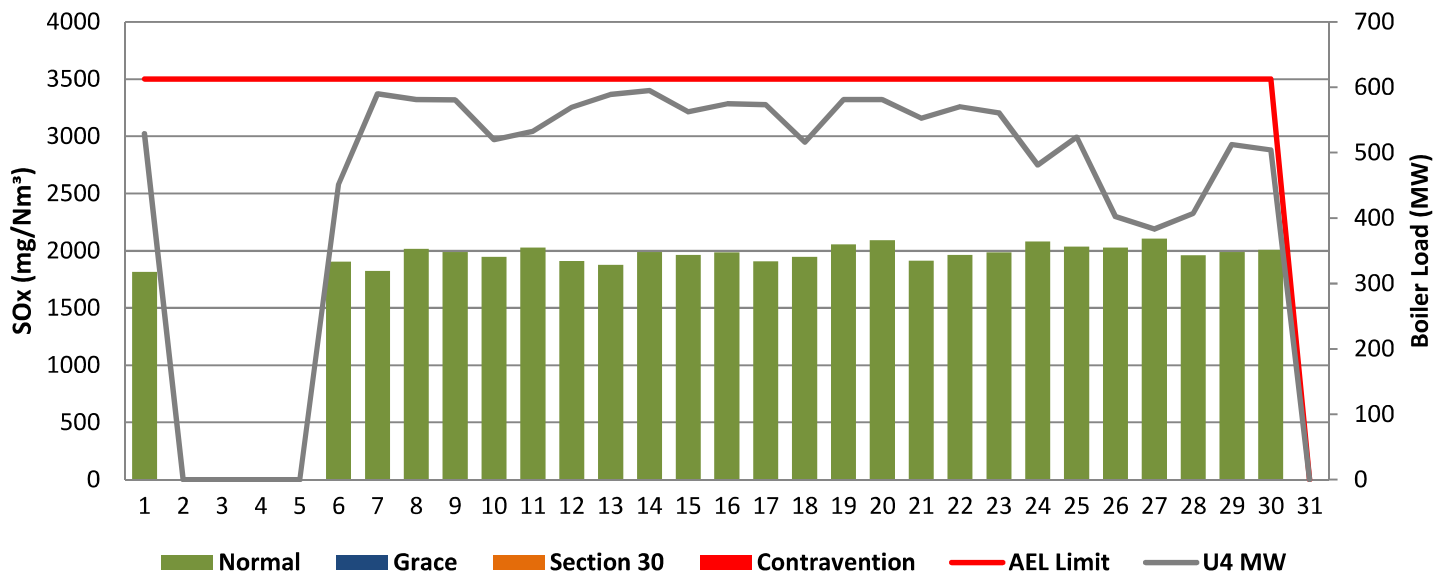


Figure 11: Lethabo Unit 5 SOx Emissions - November 2021

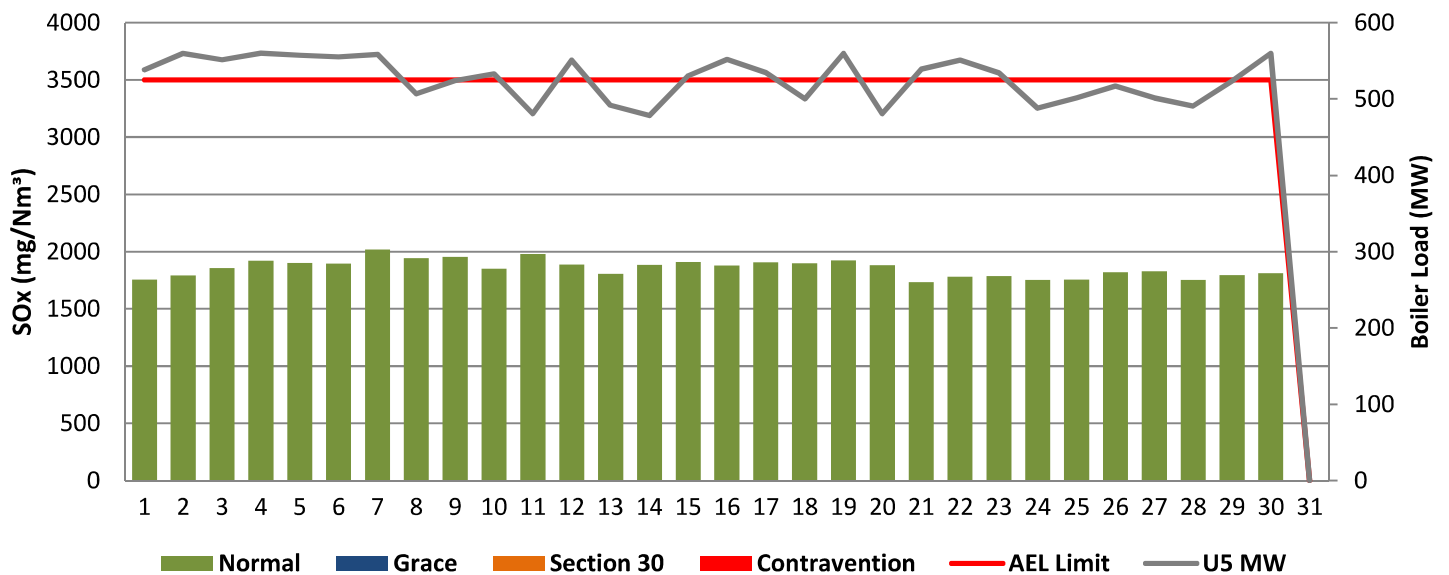


Figure 12: Lethabo Unit 6 SOx Emissions - November 2021

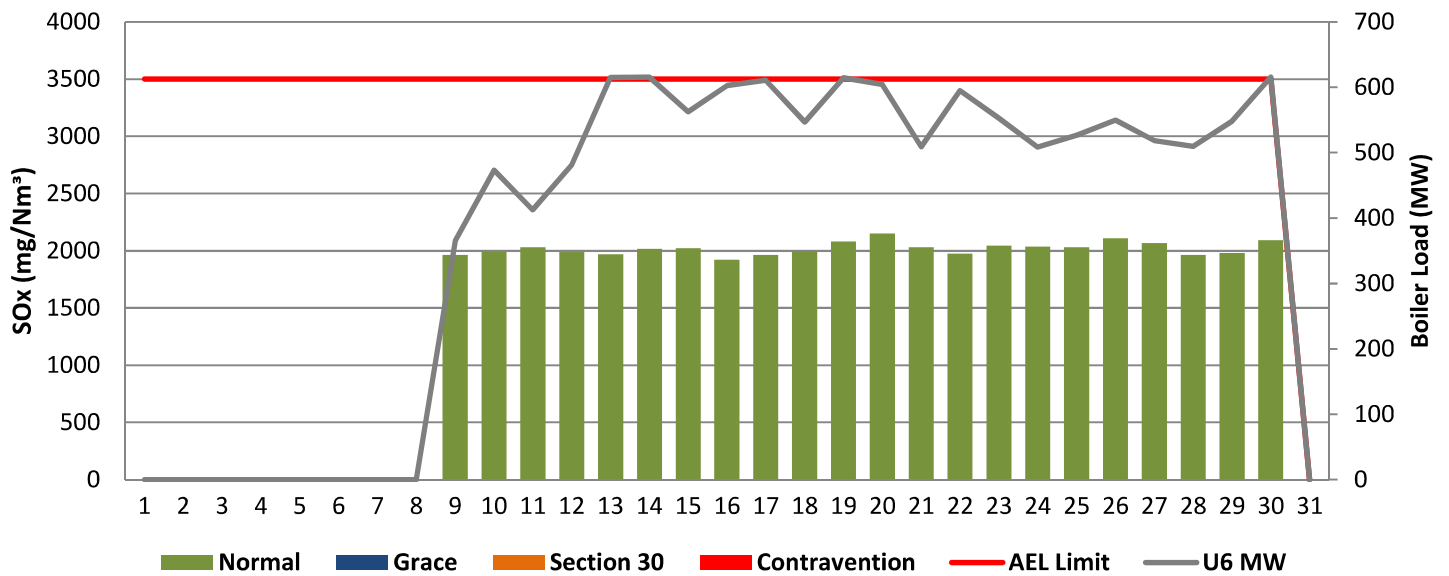


Figure 13: Lethabo Unit 1 NOx Emissions - November 2021

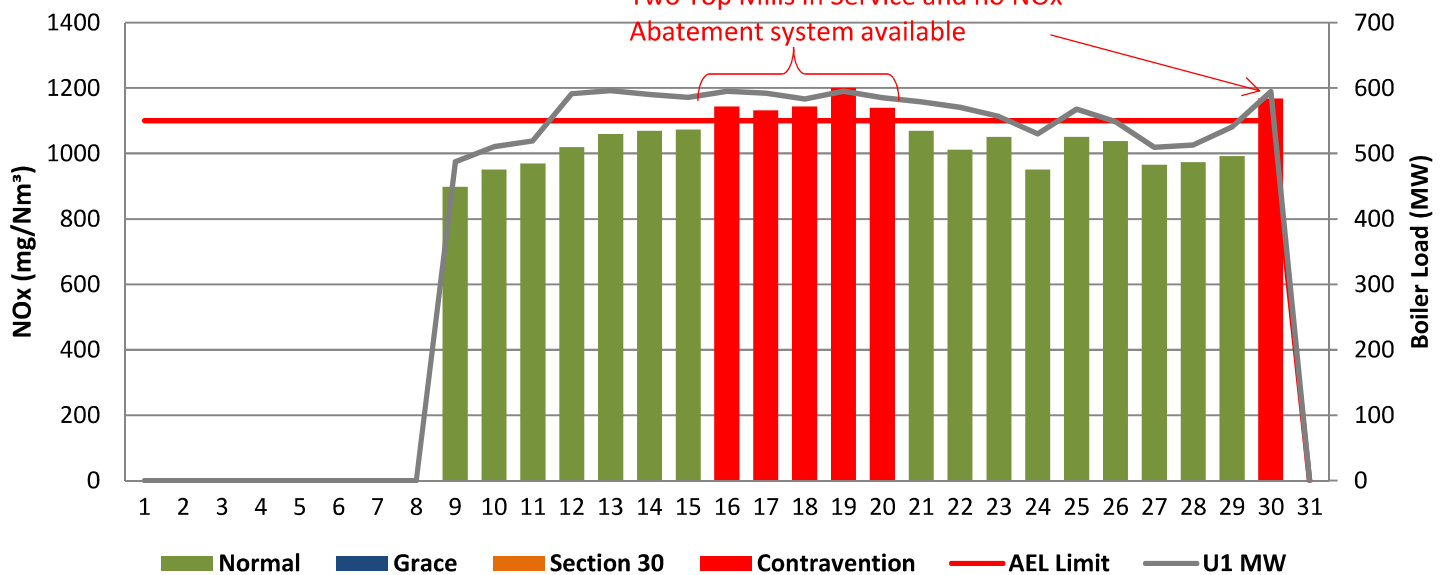


Figure 14: Lethabo Unit 2 NOx Emissions - November 2021

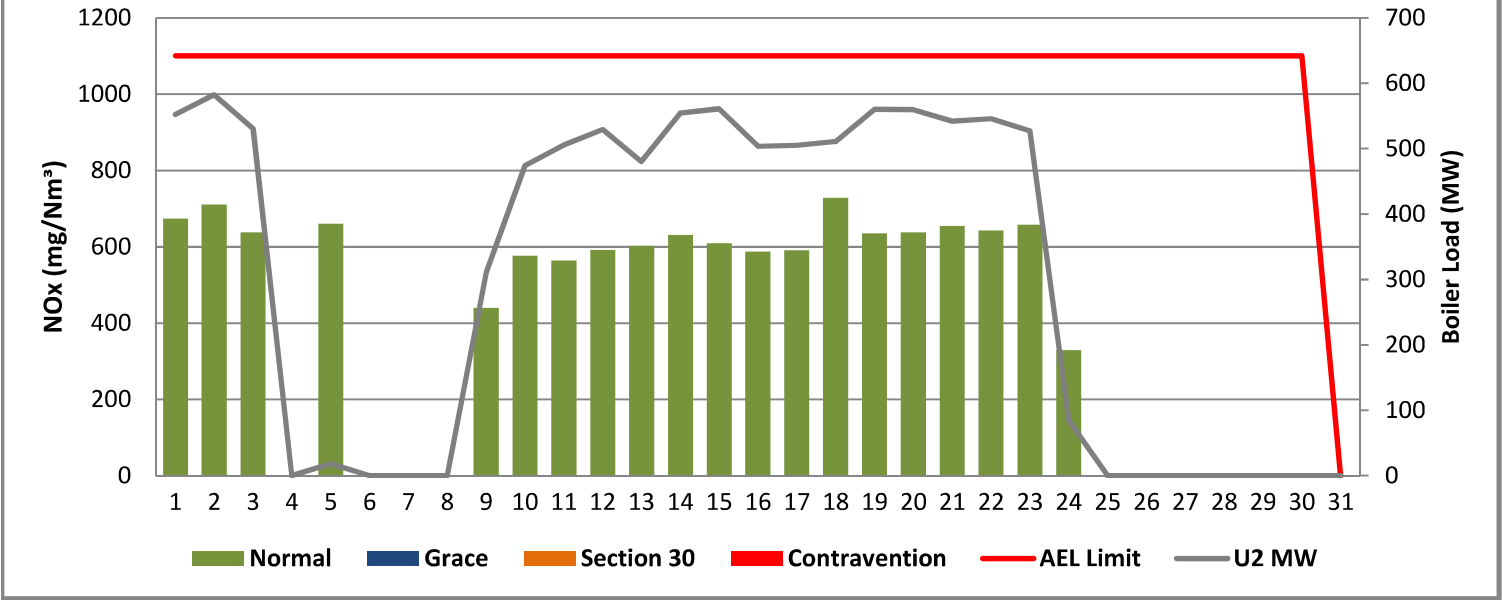


Figure 15: Lethabo Unit 3 NOx Emissions - November 2021

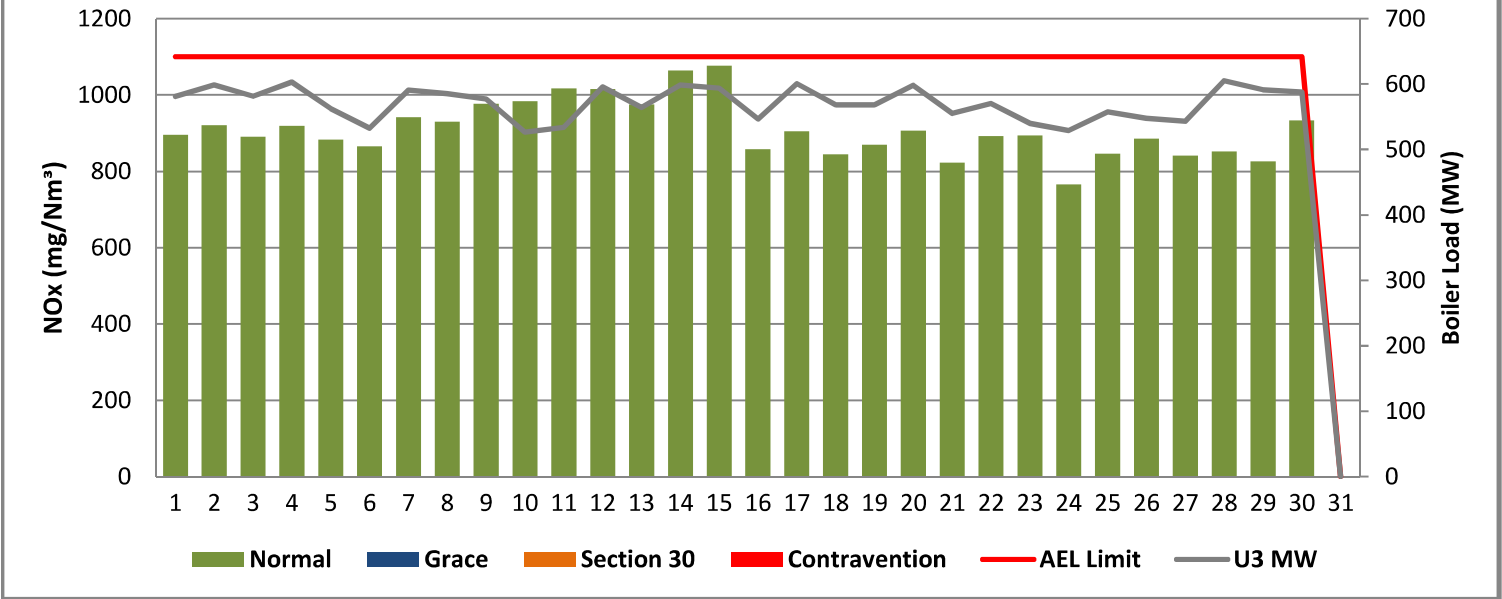


Figure 16: Lethabo Unit 4 NOx Emissions - November 2021

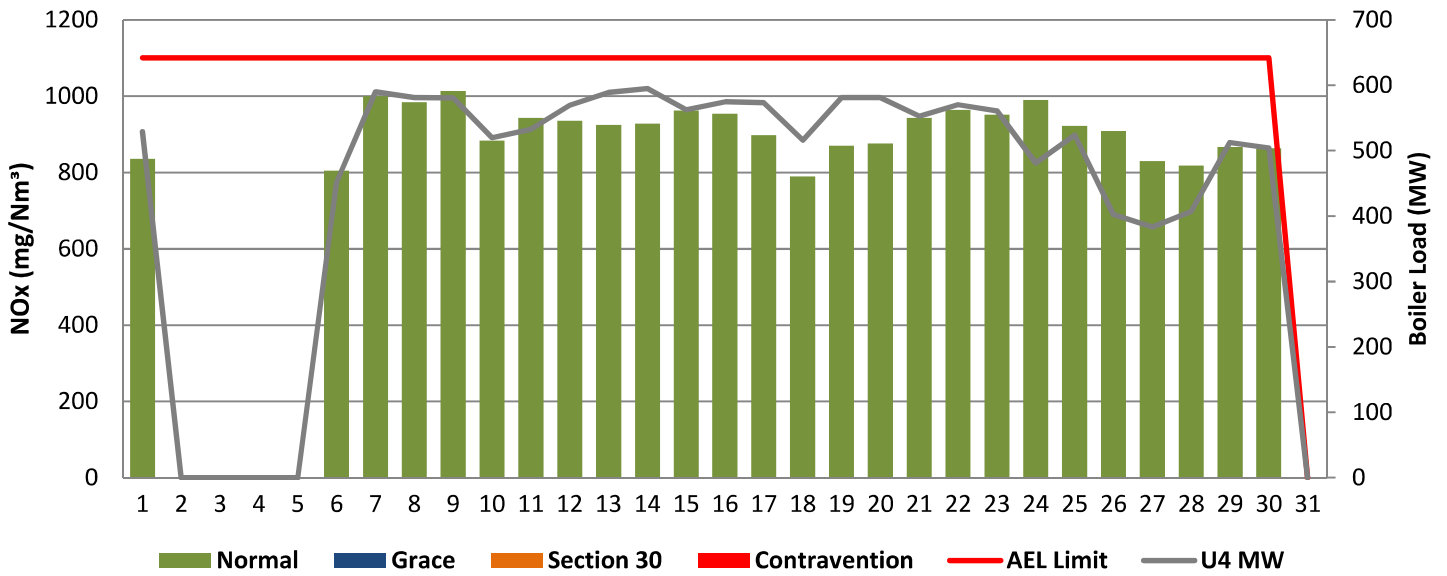


Figure 17: Lethabo Unit 5 NOx Emissions - November 2021

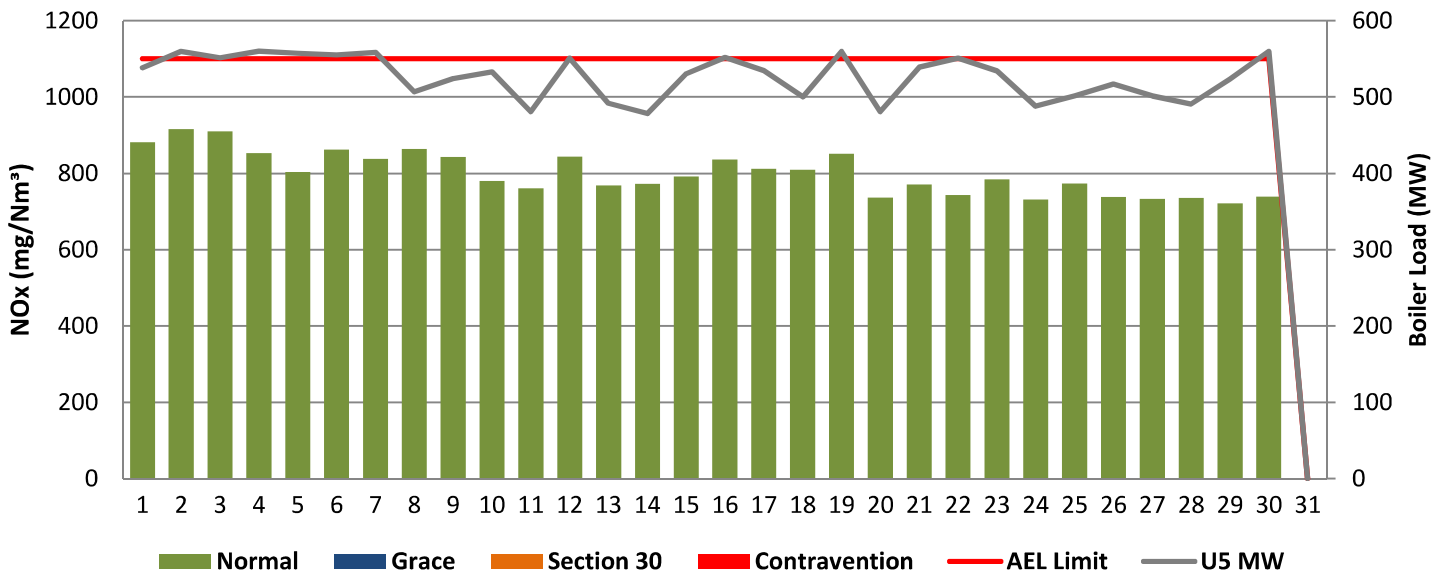
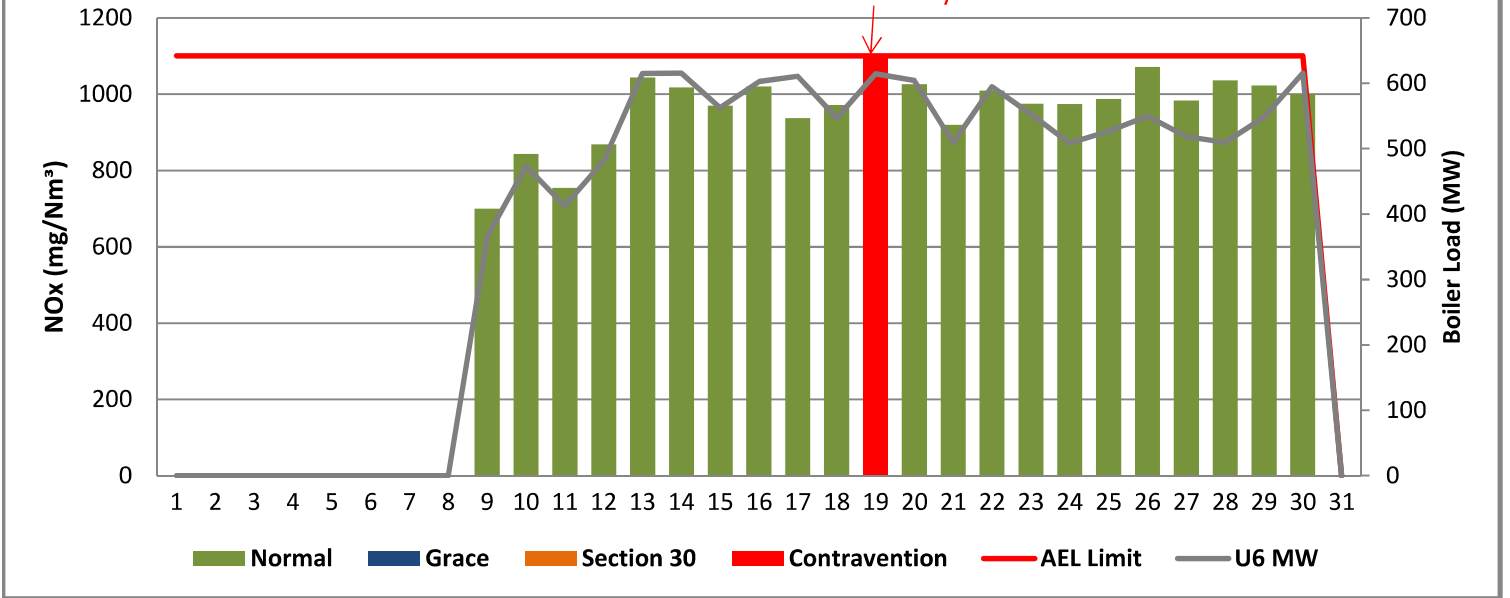


Figure 18: Lethabo Unit 6 NOx Emissions - November 2021

No NOx Abatement system available



7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1: PM Start-up information for the month of November 2021

Unit No.1	<i>Stub header failure.</i>						
Breaker Open (BO)							
Draught Group (DG) Shut Down (SD)							
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
Fires in time	5:50 AM	2021/11/09					
Synch. to Grid (or BC)	9:45 AM	2021/11/09					
Fires in to BC (duration)	00:03:55	DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
Emissions below limit from BC (end date)	5:00 AM	2021/11/14					
Emissions below limit from BC (duration)	04:19:15	DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM

Unit No.2	<i>AM: Super Heater safety valve repairs / Unit tripped due to Generator stator earth fault</i>						
Breaker Open (BO)	1:45 PM	2021/11/03					
Draught Group (DG) Shut Down (SD)	9:30 PM	2021/11/04					
BO to DG SD (duration)	01:07:45	DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
Fires in time	5:05 PM	2021/11/09					
Synch. to Grid (or BC)	7:25 PM	2021/11/09					
Fires in to BC (duration)	00:02:20	DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
Emissions below limit from BC (end date)	12:00 AM	2021/11/12					
Emissions below limit from BC (duration)	02:04:35	DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM

Unit No.3							
Breaker Open (BO)							
Draught Group (DG) Shut Down (SD)							
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
Fires in time							
Synch. to Grid (or BC)							
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
Emissions below limit from BC (end date)							
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM

Unit No.4	<i>AM: Boiler tube leak.</i>		<i>Power loss on 380V Diesel gen BD and Sec air heater tripped</i>				
Breaker Open (BO)	<i>2:55 AM</i>	<i>2021/11/01</i>	<i>2:50 AM</i>	<i>2021/11/27</i>			
Draught Group (DG) Shut Down (SD)	<i>5:30 PM</i>	<i>2021/11/01</i>	<i>8:50 AM</i>	<i>2021/11/27</i>			
BO to DG SD (duration)	<i>00:14:35</i>	DD:HH:MM	<i>00:06:00</i>	DD:HH:MM		DD:HH:MM	DD:HH:MM
Fires in time	<i>10:20 PM</i>	<i>2021/11/05</i>	<i>8:55 AM</i>	<i>2021/11/27</i>			
Synch. to Grid (or BC)	<i>4:35 PM</i>	<i>2021/11/06</i>	<i>12:45 PM</i>	<i>2021/11/27</i>			
Fires in to BC (duration)	<i>00:18:15</i>	DD:HH:MM	<i>00:03:50</i>	DD:HH:MM		DD:HH:MM	DD:HH:MM
Emissions below limit from BC (end date)	<i>5:00 AM</i>	<i>2021/11/11</i>	<i>2:25 PM</i>	<i>2021/12/02</i>			
Emissions below limit from BC (duration)	<i>04:12:25</i>	DD:HH:MM	<i>05:01:40</i>	DD:HH:MM		DD:HH:MM	DD:HH:MM

Unit No.5	<i>Unit tripped due to RH ID fan thermal overload</i>							
Breaker Open (BO)	5:20 AM	2021/11/20						
Draught Group (DG) Shut Down (SD)	7:50 AM	2021/11/20						
BO to DG SD (duration)	00:02:30	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	12:20 PM	2021/11/20						
Synch. to Grid (or BC)	2:15 PM	2021/11/20						
Fires in to BC (duration)	00:01:55	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	3:00 AM	2021/11/23						
Emissions below limit from BC (duration)	02:12:45	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM

Unit No.6	<i>Unit 6 Light up after IR outage</i>		<i>Main turbine over speed trip test</i>					
Breaker Open (BO)			12:05 AM	2021/11/21				
Draught Group (DG) Shut Down (SD)			<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>				
BO to DG SD (duration)		DD:HH:MM	<i>n/a</i>	DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	3:15 AM	2021/11/08						
Synch. to Grid (or BC)	3:10 AM	2021/11/09						
Fires in to BC (duration)	00:23:55	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	4:00 AM	2021/11/13						
Emissions below limit from BC (duration)	04:00:50	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of November 2021 in mg/Nm³

8. MAINTENANCE

Unit 1				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 2				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 3				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 4				
Beginning of	2021/11/26 00:00:00	2021/11/27 15:15:00	2021/11/27 00:06:00	
Reason for Maintenance	SO3 plant repairs	SO3 plant repairs	RHO precip casing	
End (Time):	2021/11/27 02:45:00	2021/11/29 01:12:00	2021/11/27 15:32:00	
Duration	26:45:00	33:57:00	15:26:00	

Unit 5				
Beginning of	2021/11/12 23:59:00	2021/11/20 02:50:00	2021/11/20 17:20:00	
Reason for Maintenance	RHO precip casing	RHO precip casing	RHO precip casing	
End (Time):	2021/11/14 00:38:00	2021/11/20 05:15:00	2021/11/20 19:37:00	
Duration	24:39:00	2:25:00	2:17:00	

Unit 6				
Beginning of	2021/11/13 13:04:32			
Reason for Maintenance	SO3 plant off for VSD replacement			
End (Time):	2021/11/15 13:29:40			
Duration	48:25:08			

9. GENERAL

Unit 1:

NOx Exceedance on 16/11/2021- 20/11/2021 : No nox abatement system which is aggravated by two top mills in service. E mill was on 4000 hrs service.

NOx Exceedance on 30/11/2021 : There is no NOx Abatement system and aggravated by Two Top Mills in Service.

Unit 6:

NOx Exceedance on 19/11/2021: No nox abatement system.

Unit 1:

Gaseous Monitor Availabilty on 17/11/2021 : The monitor availability was 79.2% due to the O2 monitor readinf zero between 11:10-15:55.

Unit 4

Opacity PM Monitor Availabilty on 26/11/2021 : The monitor availability was 75% due to the monitor tripping out and reading full scale between 08:25-13:45. The Data was removed for this period.

Unit 5

Opacity PM Monitor Availabilty on 26/11/2021 : The monitor availability was 75% due to the monitor tripping out and reading full scale between 08:25-13:45. The Data was removed for this period.

Unit 4:

Unit 4 Tripped on 27/11/2021 tripped at 02:45. The High emissions on the 27/11/2021 of 368.05mg/Nm³ is only between 00:00-02:45. The Unit synchronized on 2021/11/27 at 12:45 and emissions for the first 24 hours are not reported as per the licence. The Unit then exceeded 28/10/2021 - 30/11/2021 under light up condition and SO₃ plant repairs, the unit needed to be below the limit at 2021/11/30 @ 12:45 (in our case the unit was below by 11:20 on 30/11/2021) and remain below the limit for the remainder of the day (in our case the average between 30/11/2021 12:45-00:00 was approximately 83mg/mg/Nm³). Based on this a Section 30 was not incurred.

ADDENDUM TO MONTHLY EMISSIONS REPORT

10. S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

To be completed in the case of a S30 incident or a legal contravention:

Unit no	Incident Start Date	Incident End Date	Incident Cause	Remedial action	S30 initial notification sent	Date S30 investigation report sent	Date DEA Acknowledg-ment	Date DEA Acceptabe	Comments / Reference No.
1	16/11/2021	20/11/2021	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	Install Low NOx Burners.	N/A	N/A	None		NOx exceedances - Legal Contravention
1	30/11/2021	30/11/2021	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	Install Low NOx Burners.	N/A	N/A	None		NOx exceedances - Legal Contravention
6	19/11/2021	19/11/2021	There is no NOx Abatement system	Install Low NOx Burners.	N/A	N/A	None		NOx exceedances - Legal Contravention

11. PARTICULATE EMISSIONS

EMISSION RATE (ACTUAL EMISSION/MWh GENERATED - kg/MWh)

MONTH	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	STATION
Dec-20	0.46	0.94	OFF	0.66	0.54	0.48	0.63
Jan-21	0.75	0.66	0.68	0.39	0.40	0.54	0.53
Feb-21	OFF	0.64	0.59	0.49	0.51	0.52	0.56
Mar-21	OFF	0.80	0.54	0.45	0.46	0.42	0.54
Apr-21	0.78	0.49	0.52	0.43	0.31	0.48	0.47
May-21	0.33	0.45	0.42	0.53	0.49	0.49	0.46
Jun-21	0.26	0.63	0.37	0.36	0.35	0.33	0.38
Jul-21	0.23	0.55	0.43	0.31	0.27	0.29	0.35
Aug-21	0.24	0.73	0.41	0.55	0.24	0.28	0.41
Sep-21	0.38	0.92	0.52	0.33	0.26	OFF	0.47
Oct-21	0.63	0.53	0.50	0.50	0.40	OFF	0.51
Nov-21	0.34	0.59	0.52	0.52	0.41	0.41	0.46

ADDENDUM TO MONTHLY EMISSIONS REPORT

12. DAILY EMISSIONS FIGURES

Final Dust Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Nov	OFF	82	86	201	93	OFF	100
02-Nov	OFF	88	90	OFF	91	OFF	100
03-Nov	OFF	85	105	OFF	84	OFF	100
04-Nov	OFF	OFF	356	OFF	91	OFF	100
05-Nov	OFF	OFF	126	OFF	97	OFF	100
06-Nov	OFF	OFF	74	OFF	157	OFF	100
07-Nov	OFF	OFF	89	216	119	OFF	100
08-Nov	OFF	OFF	76	163	93	OFF	100
09-Nov	OFF	OFF	80	83	87	OFF	100
10-Nov	254	103	68	138	88	136	100
11-Nov	187	197	99	90	90	160	100
12-Nov	75	132	130	91	126	87	100
13-Nov	69	100	100	85	195	163	100
14-Nov	71	206	166	98	89	287	100
15-Nov	63	132	109	73	121	167	100
16-Nov	80	103	82	84	179	64	100
17-Nov	66	89	109	76	93	64	100
18-Nov	73	88	78	54	87	45	100
19-Nov	64	104	75	73	101	68	100
20-Nov	63	91	97	76	228	63	100
21-Nov	63	78	71	68	50	86	100
22-Nov	70	81	83	71	63	56	100
23-Nov	76	74	83	75	56	51	100
24-Nov	65	122	76	60	44	44	100
25-Nov	69	OFF	67	60	51	46	100
26-Nov	63	OFF	73	61	67	56	100
27-Nov	64	OFF	82	368	63	52	100
28-Nov	70	OFF	108	162	66	54	100
29-Nov	80	OFF	161	287	72	62	100
30-Nov	145	OFF	87	132	94	80	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final SOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Nov	OFF	1762	1818	1813	1757	OFF	3500
02-Nov	OFF	1808	1863	OFF	1791	OFF	3500
03-Nov	OFF	1912	1915	OFF	1857	OFF	3500
04-Nov	OFF	OFF	1885	OFF	1921	OFF	3500
05-Nov	OFF	2130	1898	OFF	1901	OFF	3500
06-Nov	OFF	OFF	1893	1903	1894	OFF	3500
07-Nov	OFF	OFF	1964	1821	2018	OFF	3500
08-Nov	OFF	OFF	1974	2015	1942	OFF	3500
09-Nov	1755	2005	1932	1989	1953	1964	3500
10-Nov	1690	1795	1918	1946	1851	1992	3500
11-Nov	1764	1879	2080	2027	1980	2029	3500
12-Nov	1709	1767	1916	1910	1888	1989	3500
13-Nov	1687	1776	1911	1875	1805	1969	3500
14-Nov	1746	1831	2011	1988	1883	2016	3500
15-Nov	1714	1820	1954	1962	1908	2022	3500
16-Nov	1726	1787	1867	1985	1879	1921	3500
17-Nov	1743	1897	1836	1907	1908	1962	3500
18-Nov	1733	2040	1819	1946	1897	1995	3500
19-Nov	1734	2001	1950	2056	1923	2080	3500
20-Nov	1809	2025	1969	2091	1882	2150	3500
21-Nov	1750	2021	1889	1912	1732	2029	3500
22-Nov	1733	1967	1877	1963	1781	1973	3500
23-Nov	1769	2036	1895	1986	1785	2043	3500
24-Nov	1833	1001	1927	2081	1752	2037	3500
25-Nov	1772	OFF	1948	2035	1756	2029	3500
26-Nov	1772	OFF	2023	2026	1820	2108	3500
27-Nov	1766	OFF	1974	2105	1828	2066	3500
28-Nov	1735	OFF	1869	1960	1754	1963	3500
29-Nov	1681	OFF	1894	1986	1796	1979	3500
30-Nov	1729	OFF	1851	2007	1813	2090	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final NOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Nov	OFF	673	896	835	882	OFF	1100
02-Nov	OFF	710	920	OFF	916	OFF	1100
03-Nov	OFF	637	891	OFF	909	OFF	1100
04-Nov	OFF	OFF	918	OFF	853	OFF	1100
05-Nov	OFF	660	883	OFF	804	OFF	1100
06-Nov	OFF	OFF	866	805	862	OFF	1100
07-Nov	OFF	OFF	941	1000	838	OFF	1100
08-Nov	OFF	OFF	930	984	864	OFF	1100
09-Nov	899	440	977	1014	843	700	1100
10-Nov	952	576	983	884	780	844	1100
11-Nov	970	564	1017	943	761	754	1100
12-Nov	1020	591	1015	936	844	868	1100
13-Nov	1059	602	975	925	768	1044	1100
14-Nov	1069	631	1064	928	773	1018	1100
15-Nov	1073	609	1077	963	792	970	1100
16-Nov	1144	587	858	954	836	1020	1100
17-Nov	1132	591	905	898	813	937	1100
18-Nov	1143	728	845	789	809	972	1100
19-Nov	1200	635	870	870	852	1101	1100
20-Nov	1140	637	906	876	737	1026	1100
21-Nov	1069	654	823	943	771	920	1100
22-Nov	1012	643	893	965	743	1009	1100
23-Nov	1051	658	894	952	784	975	1100
24-Nov	951	329	766	990	732	974	1100
25-Nov	1050	OFF	847	922	773	988	1100
26-Nov	1039	OFF	886	909	738	1071	1100
27-Nov	967	OFF	842	830	733	984	1100
28-Nov	974	OFF	853	818	736	1037	1100
29-Nov	993	OFF	827	867	721	1023	1100
30-Nov	1168	OFF	933	864	739	1000	1100

ADDENDUM TO MONTHLY EMISSIONS REPORT

13. AVAILABILITY

ESP utilisation

Availability												
Month	Unit 1	Days Affected	Unit 2	Days Affected	Unit 3	Days Affected	Unit 4	Days Affected	Unit 5	Days Affected	Unit 6	Days Affected
Dec-20	98.39%	2.0	97.58%	3.0	OFF LOAD	0.0	100.00%	0.0	99.19%	1.0	100.00%	0.0
Jan-21	100.00%	0.0	99.19%	1.0	100%	0.0	100.00%	0.0	99.19%	1.0	99.19%	1.0
Feb-21	OFF LOAD	0.0	99.11%	1.0	98%	2.0	100.00%	0.0	100.00%	0.0	100.00%	0.0
Mar-21	OFF LOAD	0.0	97.58%	3.0	99%	1.0	100.00%	0.0	100.00%	0.0	100.00%	0.0
Apr-21	100.00%	0.0	100.00%	0.0	97.75%	2.7	99.23%	0.9	100.00%	0.0	98.48%	1.8
May-21	88.70%	2.0	100.00%	0.0	100.00%	0.0	100.00%	0.0	88.82%	1.9	100.00%	0.0
Jun-21	98.59%	1.7	99.28%	0.9	99.18%	1.0	100.00%	0.0	100.00%	0.0	100.00%	0.0
Jul-21	100.00%	0.0	100.00%	0.0	99.38%	0.8	100.00%	0.0	100.00%	0.0	100.00%	0.0
Aug-21	99.33%	0.8	100.00%	0.0	99.26%	0.9	100.00%	0.0	100.00%	0.0	100.00%	0.0
Sep-21	95.94%	1.0	96.00%	1.0	95.98%	1.0	95.97%	1.0	100.00%	0.0	OFF	OFF
Oct-21	97.32%	3.3	99.36%	0.8	99.33%	0.8	100.00%	0.0	100.00%	0.0	OFF	OFF
Nov-21	100.00%	0.0	100.00%	0.0	100.00%	0.0	96.26%	0.6	95.79%	1.2	100.00%	0.0

SO₃ plant utilisation

Availability												
Month	Unit 1	Days Affected	Unit 2	Days Affected	Unit 3	Days Affected	Unit 4	Days Affected	Unit 5	Days Affected	Unit 6	Days Affected
Dec-20	100.00%	0.0	100.00%	0.0	OFF LOAD	0.0	100.00%	0.0	93.55%	2.0	100.00%	0.0
Jan-21	57.14%	3.0	100.00%	0.0	84%	5.0	100.00%	0.0	96.77%	1.0	100.00%	0.0
Feb-21	OFF LOAD	0.0	100.00%	0.0	96%	1.0	92.86%	2.0	100.00%	0.0	100.00%	0.0
Mar-21	OFF LOAD	0.0	100.00%	0.0	100%	0.0	100.00%	0.0	87.10%	4.0	100.00%	0.0
Apr-21	85.06%	4.5	100.00%	0.0	88.46%	3.5	100.00%	0.0	99.33%	0.2	100.00%	0.0
May-21	100.00%	0.0	100.00%	0.0	81.77%	2.7	76.09%	4.4	78.12%	3.8	100.00%	0.0
Jun-21	100.00%	0.0	100.00%	0.0	92.28%	2.3	100.00%	0.0	100.00%	0.0	100.00%	0.0
Jul-21	100.00%	0.0	100.00%	0.0	91.05%	2.7743056	100.00%	0.0	100.00%	0.0	100.00%	0.0
Aug-21	100.00%	0.0	47.45%	16.3	100.00%	0.0	99.08%	0.3	100.00%	0.0	100.00%	0.0
Sep-21	100.00%	0.0	71.12%	8.0	100.00%	0.0	100.00%	0.0	100.00%	0.0	OFF	OFF
Oct-21	99.75%	0.1	100.00%	0.0	100.00%	0.0	100.00%	0.0	100.00%	0.0	OFF	OFF
Nov-21	100.00%	0.0	100.00%	0.0	100.00%	0.0	88.62%	2.5	100.00%	0.0	90.27%	2.0

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Dec-20	98.99%	99.01%	OFF	98.92%	93.67%	99.19%
Jan-21	86.90%	99.60%	99.74%	100.00%	91.53%	99.44%
Feb-21	OFF	99.70%	98.46%	100.00%	94.64%	98.90%
Mar-21	OFF	99.87%	99.06%	96.15%	99.60%	100.00%
Apr-21	83.69%	99.65%	99.28%	99.58%	99.86%	99.87%
May-21	99.01%	100.00%	94.83%	99.72%	97.31%	99.38%
Jun-21	99.72%	99.17%	99.31%	99.83%	99.86%	99.82%
Jul-21	98.12%	99.60%	99.87%	99.04%	98.22%	99.06%
Aug-21	100.00%	99.60%	99.60%	99.36%	100.00%	100.00%
Sep-21	98.61%	96.91%	99.03%	99.54%	99.72%	OFF
Oct-21	95.51%	99.06%	99.46%	99.87%	99.87%	OFF
Nov-21	99.60%	99.54%	99.86%	99.00%	98.61%	99.80%

Gaseous Emission Monitors

Availability												
Month	Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
	SO_x	NO_x	SO_x	NO_x	SO_x	NO_x	SO_x	NO_x	SO_x	NO_x	SO_x	NO_x
Dec-20	99.17%	99.17%	98.89%	99.05%	OFF	OFF	99.22%	99.22%	95.32%	95.32%	99.33%	99.33%
Jan-21	99.56%	99.56%	99.60%	99.73%	99.12%	99.12%	92.39%	92.39%	99.87%	99.87%	100.00%	100.00%
Feb-21	OFF	OFF	99.70%	99.70%	99.70%	99.70%	92.56%	92.71%	98.65%	98.65%	98.27%	98.52%
Mar-21	OFF	OFF	100.00%	100.00%	100.00%	100.00%	96.07%	96.07%	99.97%	99.97%	99.60%	99.60%
Apr-21	99.47%	99.76%	99.83%	99.83%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.84%	99.84%
May-21	94.33%	94.33%	99.87%	100.00%	100.00%	100.00%	99.87%	99.87%	100.00%	100.00%	100.00%	100.00%
Jun-21	99%	99%	99.72%	99.86%	100%	100%	99.76%	99.76%	99.86%	99.86%	99.71%	99.71%
Jul-21	99.73%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.66%	98.66%	98.79%	98.92%
Aug-21	89.25%	89.78%	99.60%	99.73%	99.73%	99.73%	100.00%	100.00%	99.87%	99.87%	95.27%	95.27%
Sep-21	99.58%	99.58%	99.55%	99.55%	99.58%	99.72%	99.70%	99.70%	99.58%	99.72%	OFF	OFF
Oct-21	99.52%	99.36%	99.73%	99.87%	99.87%	99.87%	99.73%	99.87%	100.00%	100.00%	OFF	OFF
Nov-21	99.62%	99.81%	94.79%	94.79%	100.00%	99.86%	99.84%	99.84%	100.00%	100.00%	99.81%	99.81%

ADDENDUM TO MONTHLY EMISSIONS REPORT

Oxygen Monitor Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Dec-20	99.31%	98.85%	OFF	99.22%	95.32%	99.33%
Jan-21	99.56%	99.06%	99.54%	100.00%	99.87%	99.87%
Feb-21	OFF	99.70%	99.55%	99.26%	98.32%	98.52%
Mar-21	OFF	100.00%	100.00%	96.43%	99.97%	99.87%
Apr-21	99.40%	98.91%	99.87%	99.72%	100.00%	99.37%
May-21	94.16%	99.87%	99.86%	99.87%	99.87%	98.63%
Jun-21	99.58%	99.79%	99.72%	99.76%	99.72%	99.55%
Jul-21	100.00%	99.87%	99.60%	99.52%	98.73%	98.79%
Aug-21	99.46%	99.87%	99.60%	100.00%	100.00%	95.45%
Sep-21	99.72%	99.13%	97.78%	99.55%	99.72%	OFF
Oct-21	99.84%	99.87%	97.04%	99.87%	99.73%	OFF
Nov-21	99.05%	89.58%	98.06%	100.00%	99.86%	99.81%

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Dec-20	99.816%	99.605%	OFF	99.734%	99.779%	99.791%
Jan-21	99.622%	99.689%	99.717%	99.832%	99.813%	99.745%
Feb-21	OFF	99.722%	99.736%	99.799%	99.779%	99.775%
Mar-21	OFF	99.659%	99.769%	99.823%	99.802%	99.817%
Apr-21	99.679%	99.788%	99.777%	99.825%	99.858%	99.788%
May-21	99.866%	99.809%	99.825%	99.791%	99.782%	99.786%
Jun-21	99.894%	99.724%	99.844%	99.856%	99.839%	99.852%
Jul-21	99.916%	99.756%	99.819%	99.879%	99.887%	99.838%
Aug-21	99.894%	99.656%	99.810%	99.759%	99.883%	99.864%
Sep-21	99.836%	99.567%	99.756%	99.855%	99.873%	OFF
Oct-21	99.752%	99.776%	99.789%	99.800%	99.823%	OFF
Nov-21	99.870%	99.743%	99.780%	99.798%	99.820%	99.831%

ADDENDUM TO MONTHLY EMISSIONS REPORT

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	593	Stub header failure.	2021/11/01 00:00:00	2021/11/09 09:44:00
1	297	System Generated Ramp Event for Event id : 1618929	2021/11/09 09:44:00	2021/11/09 12:44:00
2	593	AM: Super Heater safety valve repairs	2021/11/03 13:38:00	2021/11/05 05:38:00
2	593	Unit tripped due to Generator stator earth fault	2021/11/05 05:38:00	2021/11/09 19:27:00
2	297	System Generated Ramp Event for Event id : 1621875	2021/11/09 19:27:00	2021/11/09 22:27:00
2	98	AM: High stack emissions	2021/11/10 20:00:00	2021/11/10 20:39:00
2	198	AM: High stack emissions	2021/11/10 20:39:00	2021/11/11 00:06:00
2	72	High stack emissions.	2021/11/12 14:44:00	2021/11/13 09:07:00
2	90	High stack emissions.	2021/11/13 12:24:00	2021/11/13 22:31:00
2	190	High stack emissions.	2021/11/13 22:31:00	2021/11/14 00:02:00
2	90	AM: High stack emissions	2021/11/16 09:23:00	2021/11/16 11:50:00
2	140	High stack emissions.	2021/11/16 11:50:00	2021/11/16 17:08:00
2	142	AM: High stack emissions	2021/11/16 19:22:00	2021/11/16 19:38:00
2	190	AM: High stack emissions	2021/11/16 19:38:00	2021/11/17 04:58:00
2	83	High stack emissions.	2021/11/17 09:30:00	2021/11/17 16:50:00
2	83	EF: High stack emissions.	2021/11/17 20:02:00	2021/11/18 00:00:00
2	593	Interim Repairs	2021/11/24 00:08:00	2021/11/30 23:59:59
3	100	High stack Emissions due to Dust plant high hopper levels	2021/11/05 11:51:00	2021/11/06 16:56:00
3	118	AM: High stack emissions	2021/11/11 19:53:00	2021/11/12 00:09:00
3	118	High stack emissions.	2021/11/13 17:01:00	2021/11/14 00:18:00
3	118	AM: High stack emissions	2021/11/16 09:37:00	2021/11/16 17:03:00
3	118	AM: 142 High stack emissions.	2021/11/16 18:56:00	2021/11/16 23:22:00
3	68	AM: High stack emissions.	2021/11/16 23:22:00	2021/11/17 00:06:00
3	68	High stack emissions.	2021/11/30 11:36:00	2021/11/30 22:20:00
4	593	AM: Boiler tube leak.	2021/11/01 02:49:00	2021/11/06 16:35:00
4	297	System Generated Ramp Event for Event id : 1621018	2021/11/06 16:35:00	2021/11/06 19:35:00
4	175	SO3 plant repairs	2021/11/26 00:00:00	2021/11/27 02:45:00
4	593	Power loss on 380V Diesel gen BD and Sec air heater tripped	2021/11/27 02:45:00	2021/11/27 12:45:00
4	296	System Generated Ramp Event for Event id : 1630933	2021/11/27 12:45:00	2021/11/27 15:15:00
4	218	So3 plant repairs	2021/11/27 15:15:00	2021/11/29 01:12:00
4	80	High stack emissions.	2021/11/30 11:09:00	2021/11/30 22:27:00
4	80	high stack emission.	2021/11/30 23:30:00	2021/11/30 23:59:59
5	50	EF: High stack emissions.	2021/11/08 10:43:00	2021/11/08 14:47:00
5	110	High stack emissions	2021/11/08 14:47:00	2021/11/09 00:11:00
5	60	High stack emissions.	2021/11/12 14:44:00	2021/11/12 16:50:00
5	60	RHO precip casing repairs.	2021/11/12 23:59:00	2021/11/14 00:38:00
5	65	High stack emissions.	2021/11/14 15:09:00	2021/11/14 17:10:00
5	60	High stack emissions.	2021/11/17 11:45:00	2021/11/17 14:33:00
5	60	High stack emissions	2021/11/17 14:55:00	2021/11/17 16:30:00
5	60	EF: High Stack Emissions.	2021/11/17 20:02:00	2021/11/18 00:00:00
5	60	RHO precip casing repairs.	2021/11/20 02:50:00	2021/11/20 05:15:00
5	593	Unit tripped due to RH ID fan thermal overload	2021/11/20 05:15:00	2021/11/20 14:18:00
5	296	System Generated Ramp Event for Event id : 1628389	2021/11/20 14:18:00	2021/11/20 16:48:00
5	118	AM: RHO precip casing repairs	2021/11/20 17:20:00	2021/11/20 19:37:00
6	593	System Generated Slip Event linked to PCLF Event : 1594798	2021/11/01 00:00:00	2021/11/09 03:12:00
6	297	System Generated Ramp Event for Event id : 1594798	2021/11/09 03:12:00	2021/11/09 06:12:00
6	268	High stack emissions & mills not available	2021/11/12 03:00:00	2021/11/12 10:13:00
6	593	Main turbine over speed trip test	2021/11/21 00:01:00	2021/11/21 01:52:00
6	297	System Generated Ramp Event for Event id : 1628583	2021/11/21 01:52:00	2021/11/21 03:22:00
6	318	Secondary air heater tripped	2021/11/21 10:00:00	2021/11/21 11:44:00

PM Exceedances		
U1.	Unit 1 synchronized on 2021/11/09 @ 09:44, Unit need to be below the limit on 2021/11/12@09:44 and remain below the limit until 2021/11/13 @ 23:59	10-Nov
U1.	Unit light up	11-Nov
U1.	ESP Poor Performance and Manual rapping	30-Nov
U2.	Unit 2 synchronized on 2021/11/09 @ 19:27, Unit need to be below the limit on 2021/11/12@19:27and remain below the limit until 2021/11/13 @ 23:59	10-Nov
U2.	Unit Light up	11-Nov
U2.	Unit Light up	12-Nov
U2.	ESP poor performance and manual rapping	14-Nov
U2.	ESP poor performance	15-Nov
U2.	ESP poor performance	16-Nov
U2.	ESP Poor performance	19-Nov
U2.	Unit shut down at 00:08 on 24/11/2021 (this average is only for 8 minutes of the day)	24-Nov
U3.	Sulphur plant tripped @ 18:30	03-Nov
U3.	SO3 plant was shutdown due to blower failure	04-Nov
U3.	03WX12 conveyor is on permit for repairs, causing 24 high hopper levels and contribute to high emissions.	05-Nov
U3.	ESP Poor performance	12-Nov
U3.	ESP poor performance	14-Nov
U3.	ESP poor performance	15-Nov
U3.	ESP poor performance	17-Nov
U3.	ESP Poor Performance (Unit was performing full load during clean rapping)	28-Nov
U3.	ESP poor performance and Manual rapping	29-Nov
U4.	Unit shut down at 02:49 for boiler tube leak	01-Nov
U4.	Unit synchronized on 2021/11/06 @ 16:35, Unit need to be below the limit on 2021/11/09@16:35 and remain below the limit until 2021/11/10 @ 23:59	07-Nov
U4.	Unit Light up	08-Nov
U4.	SO3 plant tripped this morning OPS reported that the plant is on permit for air blower change	10-Nov
U4.	SO3 plant is on forced cooling for leak repair [3day estimate] / RHO Casing Outage / Unit tripped at 02:45 /Unit synchronized on 2021/11/27 @ 12:45, unit need to be below the limit at 2021/11/30 @ 12:45 and remain below the limit for the remainder of the day.	27-Nov
U4.	Unit Light up and SO3 plant repairs	28-Nov
U4.	Unit Light up and SO3 plant repairs / Manual rapping was done last night / Casings are not performing, RHO, LHI and RHI /SO3 plant is ramping up by heaters, temperatures are not ready for dosing	29-Nov
U4.	ESP poor performance	30-Nov
U5.	ESP Poor performance and manual rapping	06-Nov
U5.	ESP poor performance	07-Nov
U5.	ESP poor performance	12-Nov
U5.	RHO Casing repair	13-Nov
U5.	ESP poor performance	15-Nov
U5.	ESP poor performance and manual rapping	16-Nov
U5.	ESP poor performance / Dust plant slide gates were closed for a period to assist with emissions	19-Nov
U5.	RHO precip casing repairs	20-Nov
U6.	Unit 6 synchronized on 2021/11/09 @ 03:12, Unit need to be below the limit on 2021/11/12@03:12 and remain below the limit until 2021/11/13 @ 23:59	10-Nov
U6.	Unit Light up	11-Nov
U6.	SO3 plant trip on air blower @ 13:01	13-Nov
U6.	SO3 plant off for VSD replacement on air blower and replacment of burnt cable	14-Nov
U6.	SO3 still for for repairs / ESP manual rapping / SO3 plant in service 16/11/2021 @03:50	15-Nov
NOX Exceedances		
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	16-Nov
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	17-Nov
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	18-Nov
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	19-Nov
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	20-Nov
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	30-Nov
U6.	There is no NOx Abatement system	19-Nov