

Mr. Chakane Sibaya
Air Quality Officer
Fezile Dabi District Municipality
P.O Box 10
Sasolburg
1947

Date:
11 May 2021

Enquiries:
W de Klerk
Tel +27 16 457 5308

LRP03PLA000 _0240/20210505

Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR MARCH 2021

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

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

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

Yours sincerely



Karabo Rakgolela
GENERAL MANAGER

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

Reference number: **LRP03PLA000
_0240/20210505**

Document Type: **Report**


Area of Applicability: **Environment**

Report Date: **May 2021**

Classification: **Controlled
Disclosure**

Signatures:

Compiled by:


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P Parag
System Engineer

Verified by :


.....
W de Klerk
Environmental Officer

Reviewed by:

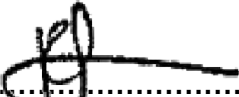

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N Mazibuko
BPE Manager

Date: 2021-05-05
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Date: 2021 05 05
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Date: 05/05/2021
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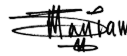
Reviewed by:


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C Govinden
PE Manager

Reviewed by:


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L Nel
C&I Manager

Reviewed by:

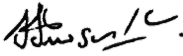

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M Hariram
Environmental Manager

Date: 2021/05/05
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Date: 2021-05-07
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Date: 2021-05-07
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Approved by:


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H Sewsunker
Engineering Manager

Date: 2021/05/11
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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 Mar-2021
	Coal	Tons	2 000 000	1 379 329
	Fuel Oil	Tons	1 700	393.9

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Mar-2021
	Energy	GWh	2834.64	1 974.71
	Ash	Tons	770 000	541 386.8
	RE Ash	kg/MWh	not specified	274.16

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.656 (Standard)	0.650
Ash Content	%	37.37 (Standard)	39.250

*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 Mar-2021
Unit 1	<i>Electrostatic Precipitator (ESP)</i>	<i>Unit Off-line</i>
Unit 2	<i>Electrostatic Precipitator (ESP)</i>	99.66%
Unit 3	<i>Electrostatic Precipitator (ESP)</i>	99.77%
Unit 4	<i>Electrostatic Precipitator (ESP)</i>	99.82%
Unit 5	<i>Electrostatic Precipitator (ESP)</i>	99.80%
Unit 6	<i>Electrostatic Precipitator (ESP)</i>	99.82%

5. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO	CO ₂
Unit 1	OFF	OFF	OFF	OFF
Unit 2	99.9	100.0	100.0	100.0
Unit 3	99.1	100.0	100.0	100.0
Unit 4	96.2	96.1	96.1	96.1
Unit 5	99.6	100.0	100.0	100.0
Unit 6	100.0	99.6	99.6	99.6

6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of March 2021

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	OFF	OFF	OFF
Unit 2	327	4 793	1 847
Unit 3	238	4 065	2 112
Unit 4	163	3 617	1 822
Unit 5	193	3 068	1 452
Unit 6	182	4 363	2 167
SUM	1 102	19 906	9 400

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

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	0	0	0	0	0	
Unit 2	15	16	0	0	16	142.1
Unit 3	19	12	0	0	12	110.9
Unit 4	22	4	0	0	4	85.0
Unit 5	21	10	0	0	10	114.2
Unit 6	27	4	0	0	4	90.9
SUM	104	46	0	0	46	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average SO _x (mg/Nm ³)
Unit 1	0	0	0	0	0	
Unit 2	31	0	0	0	0	2 083.5
Unit 3	31	0	0	0	0	1 899.4
Unit 4	28	0	0	0	0	1 819.5
Unit 5	31	0	0	0	0	1 747.2
Unit 6	31	0	0	0	0	2 066.4
SUM	152	0	0	0	0	

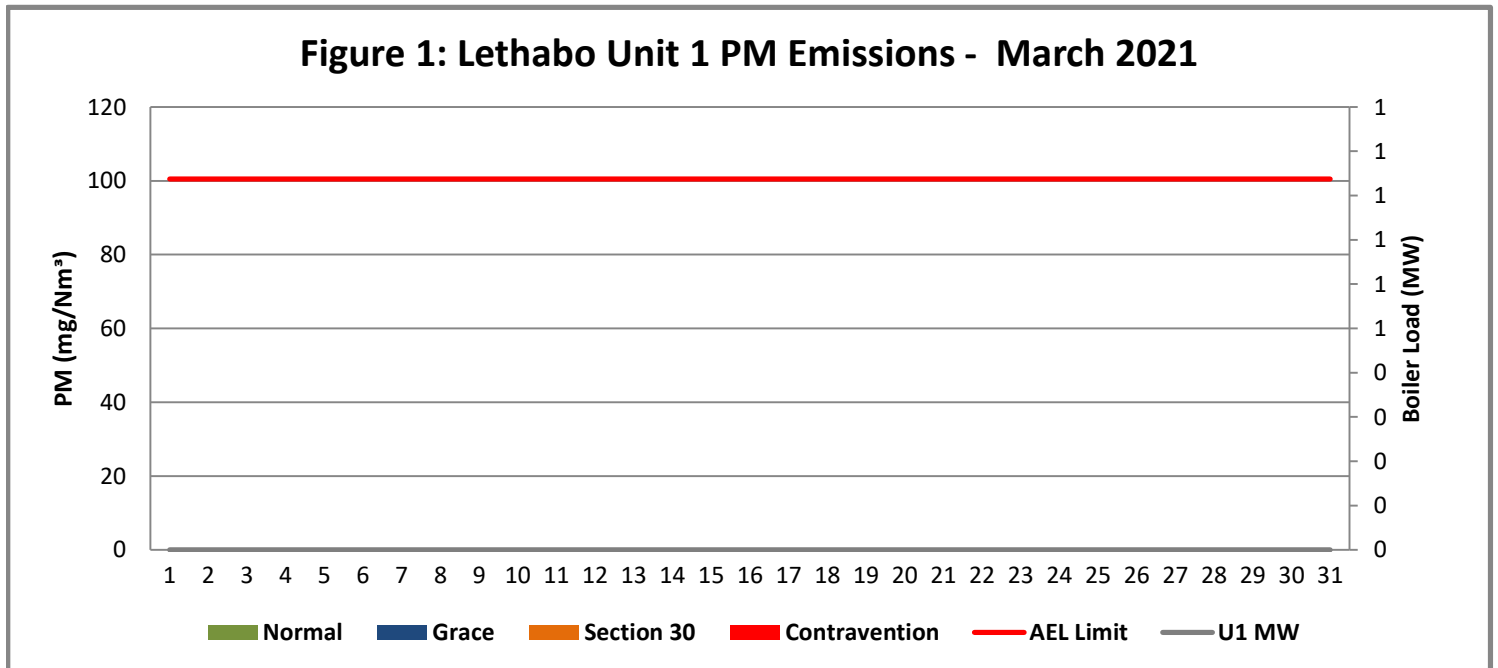
Table 6.4: Operating days in compliance to NOx AEL Limit - March 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	0	0	0	0	0	
Unit 2	31	0	0	0	0	799.3
Unit 3	29	0	0	2	2	985.3
Unit 4	28	0	0	0	0	895.7
Unit 5	31	0	0	0	0	826.5
Unit 6	23	0	0	8	8	1 024.7
SUM	142	0	0	10	10	

Table 6.5: Legend Description

Condition	Colour	Description
Normal	Grey	Emissions below Emission Limit Value (ELV)
Grace	Blue	Emissions above the ELV during grace period
Section 30	Green	Emissions above ELV during a NEMA S30 incident
Contra-vention	Red	Emissions above ELV but outside grace or S30 incident conditions

Figure 1: Lethabo Unit 1 PM Emissions - March 2021



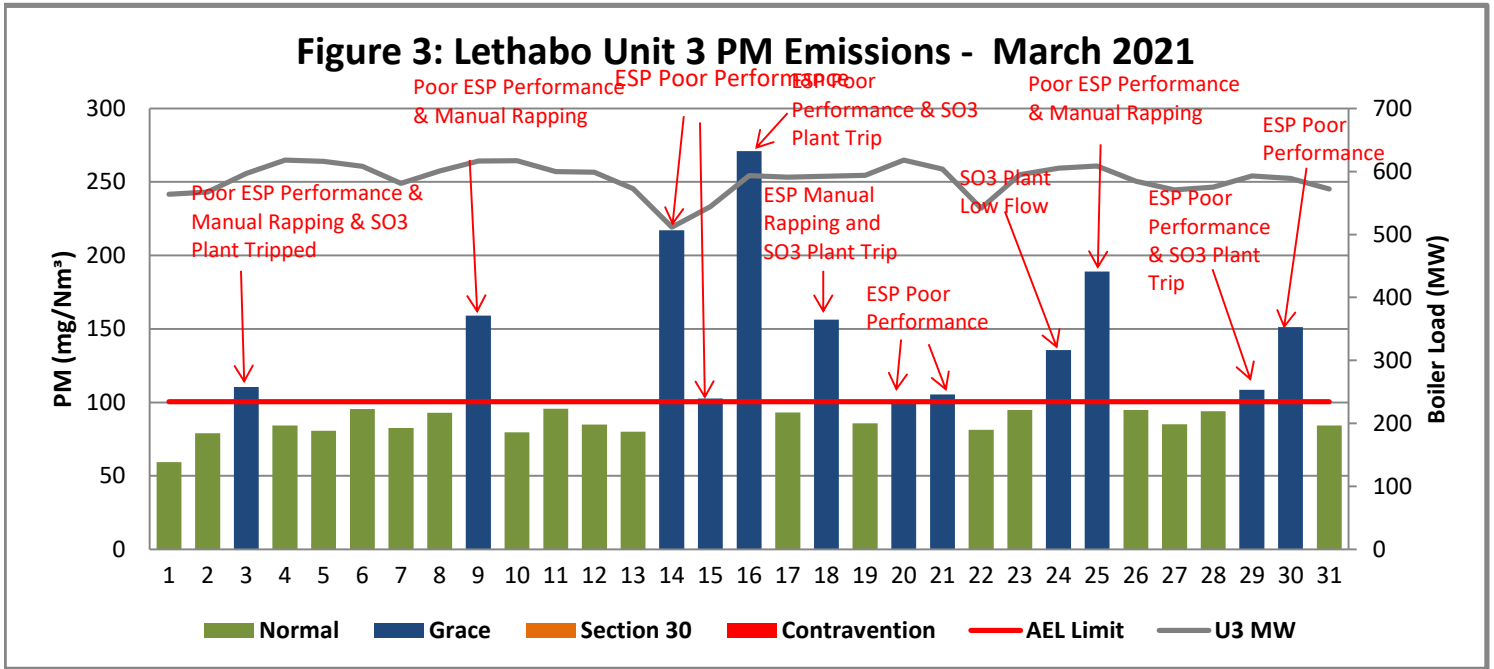
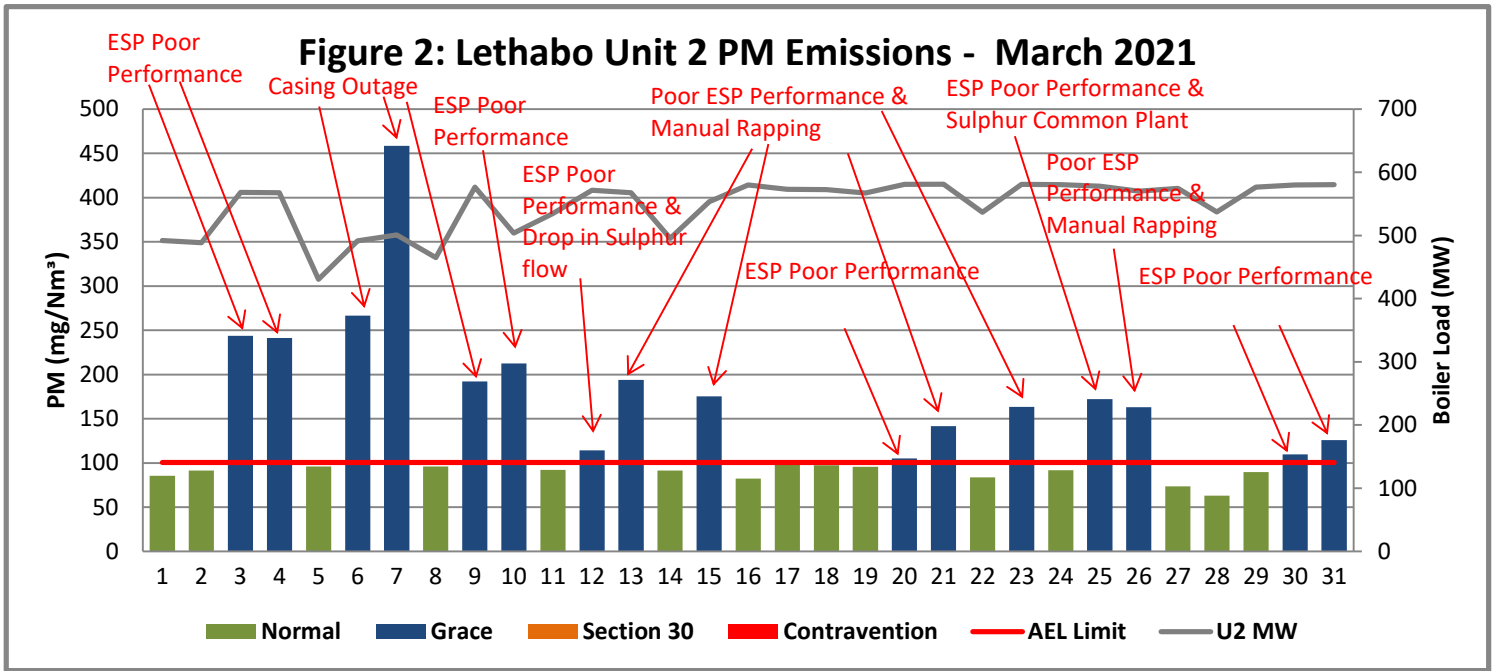


Figure 4: Lethabo Unit 4 PM Emissions - March 2021

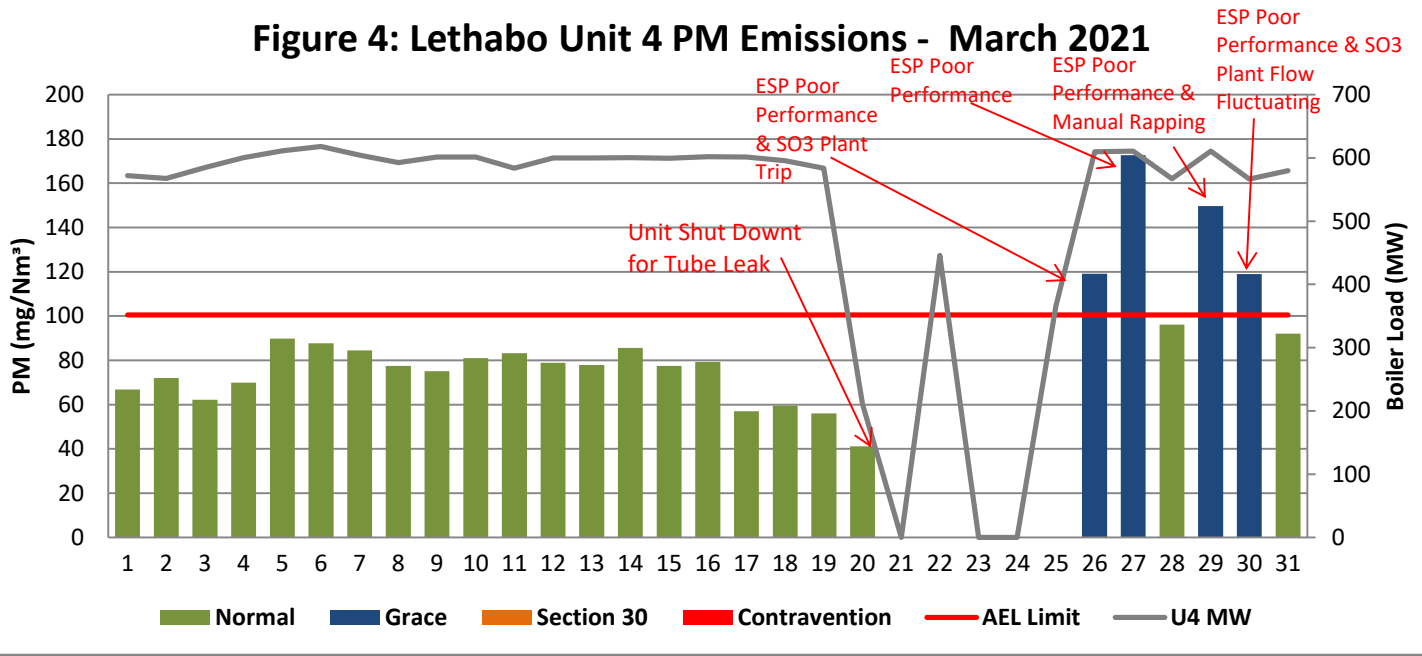


Figure 5: Lethabo Unit 5 PM Emissions - March 2021

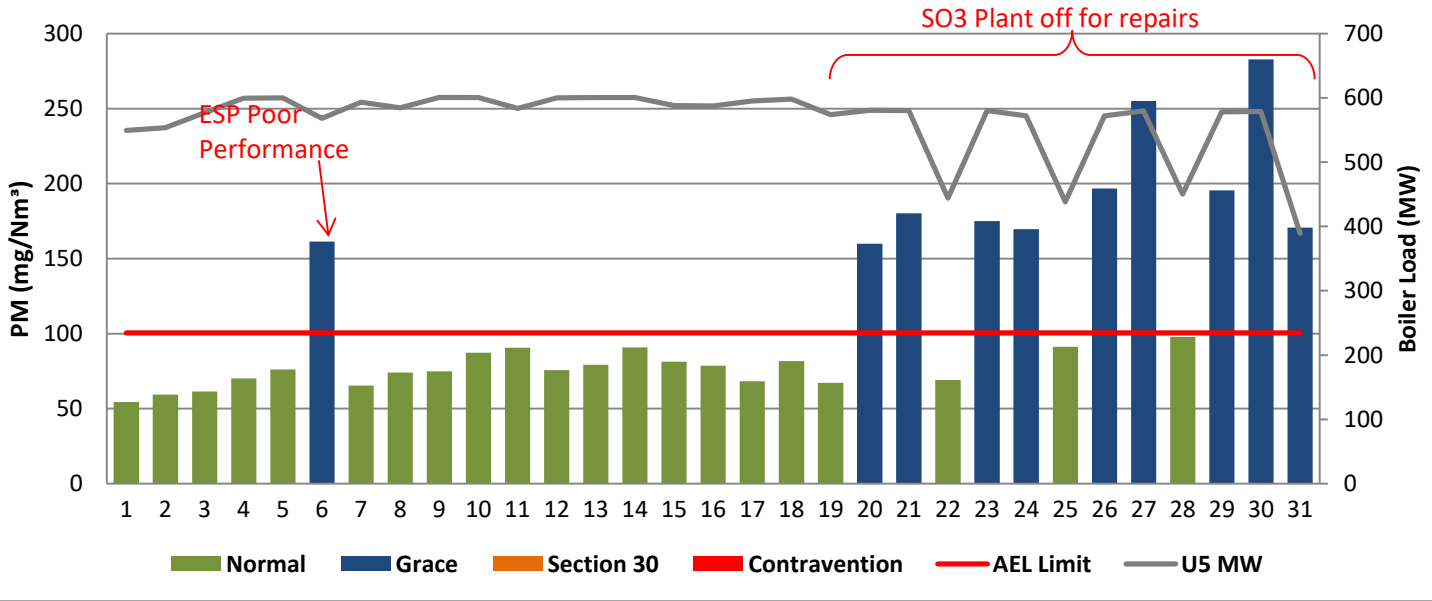


Figure 6: Lethabo Unit 6 PM Emissions - March 2021

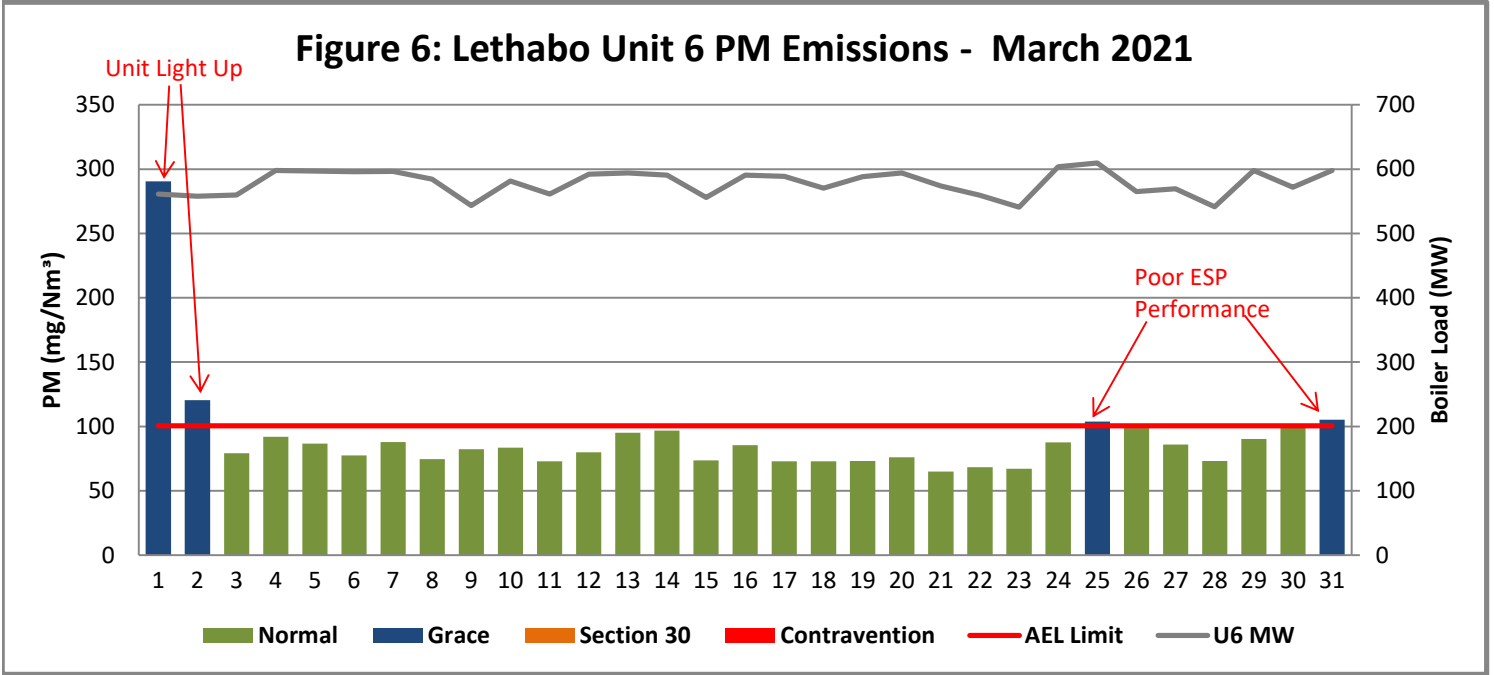


Figure 7: Lethabo Unit 1 SOx Emissions - March 2021

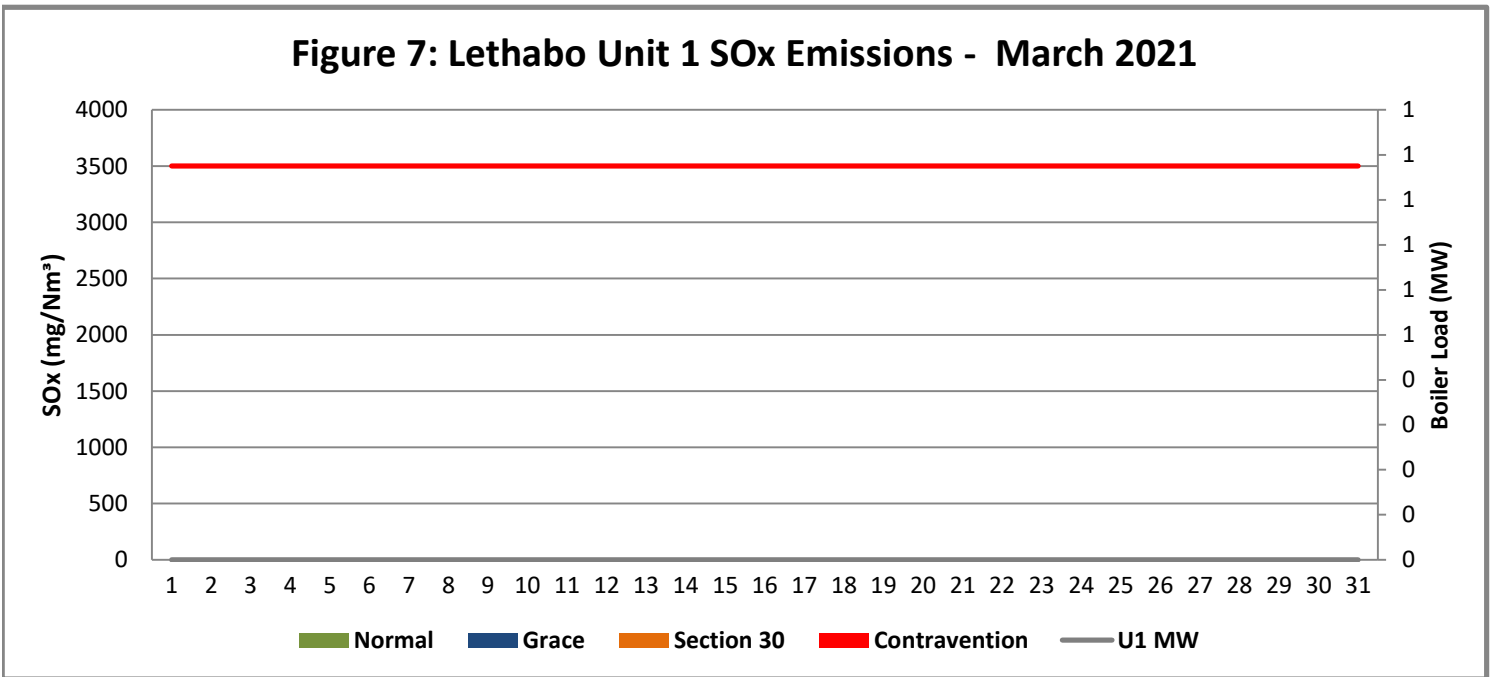


Figure 8: Lethabo Unit 2 SOx Emissions - March 2021

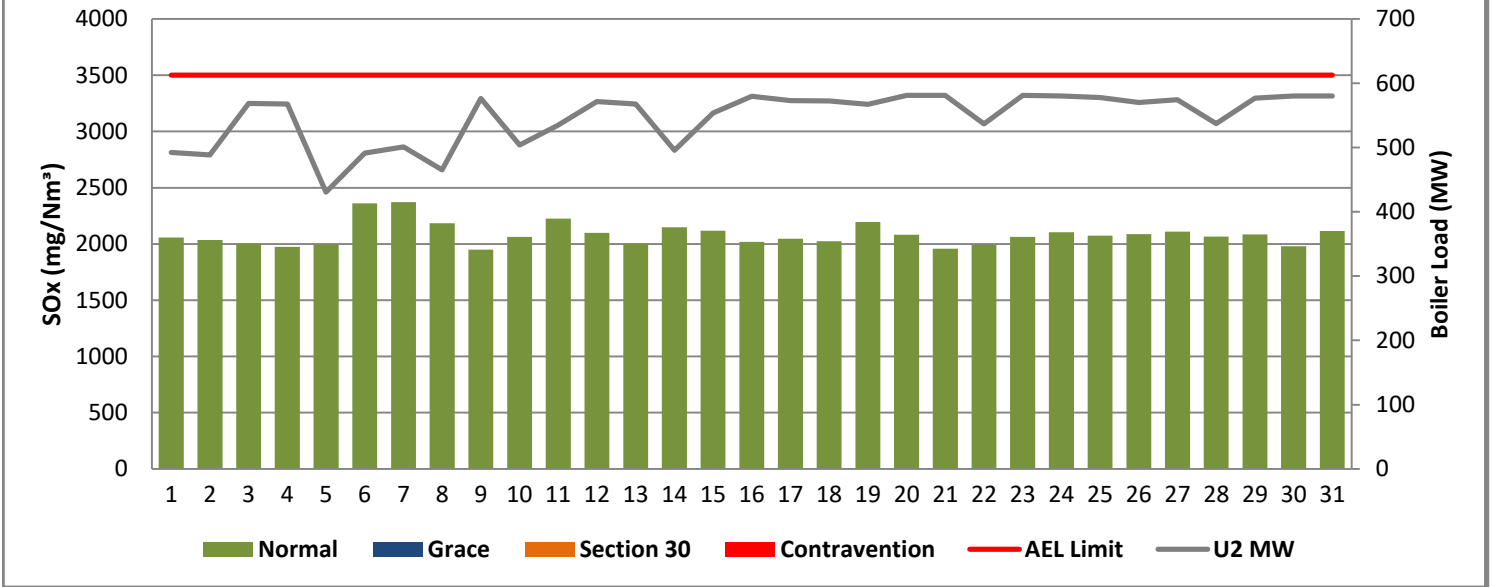


Figure 9: Lethabo Unit 3 SOx Emissions - March 2021

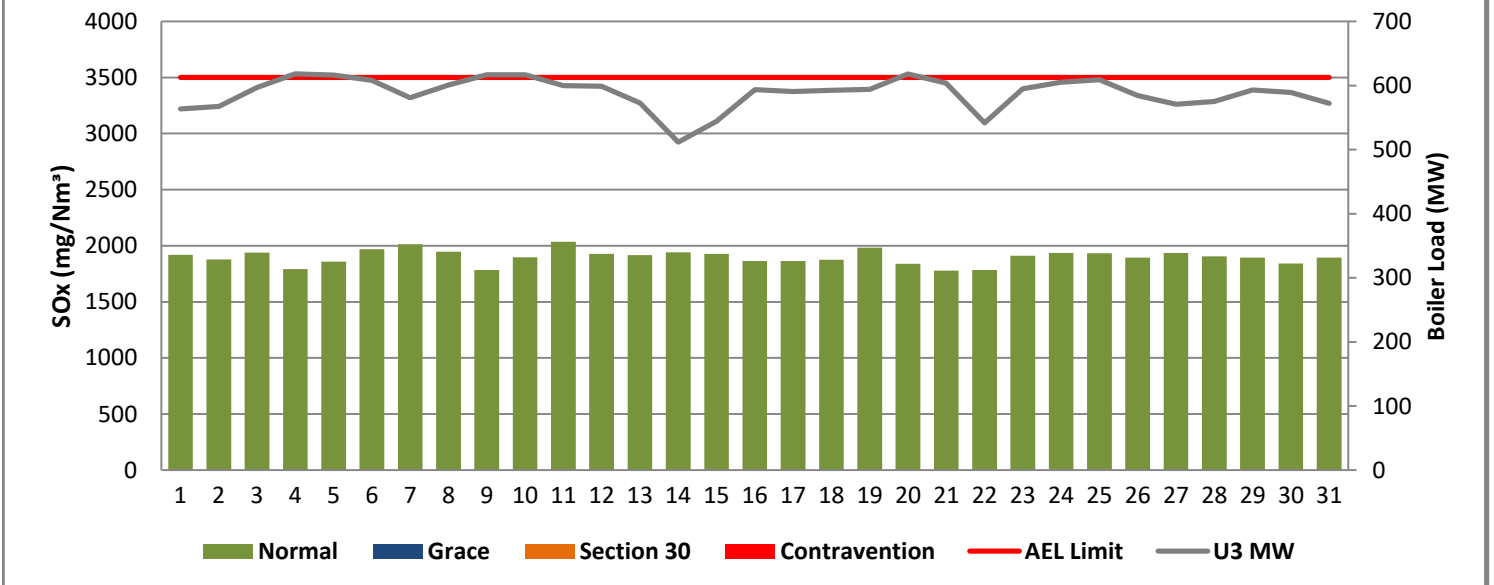


Figure 10: Lethabo Unit 4 SOx Emissions - March 2021

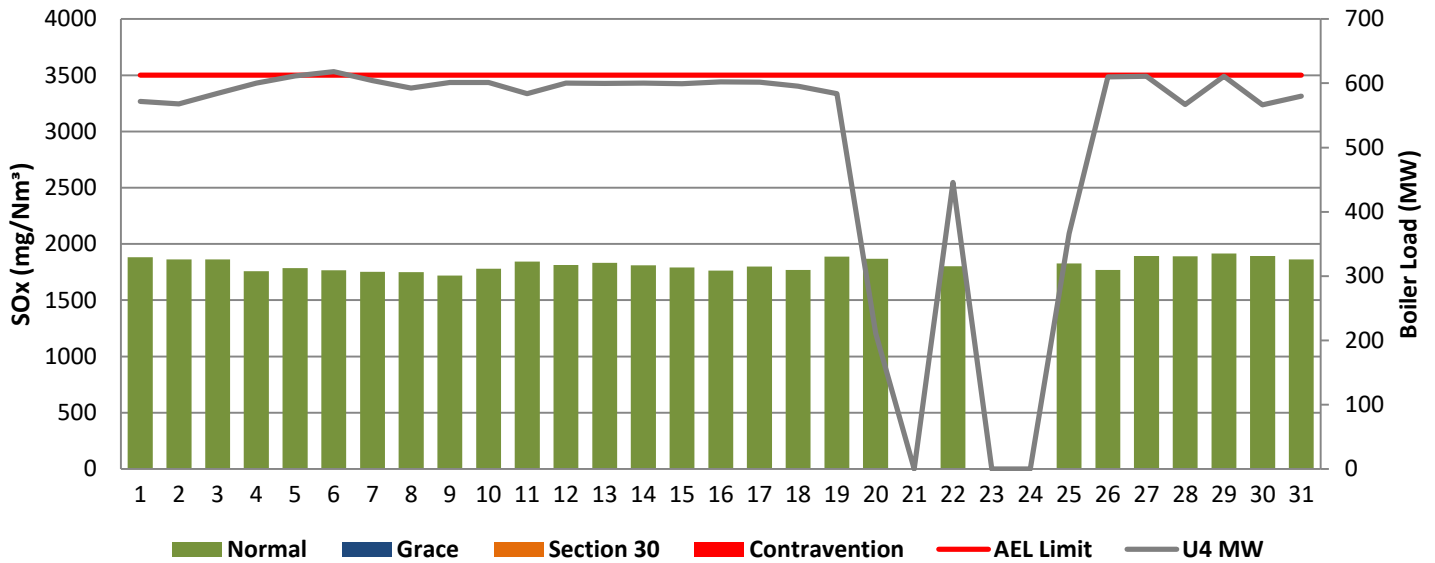


Figure 11: Lethabo Unit 5 SOx Emissions - March 2021

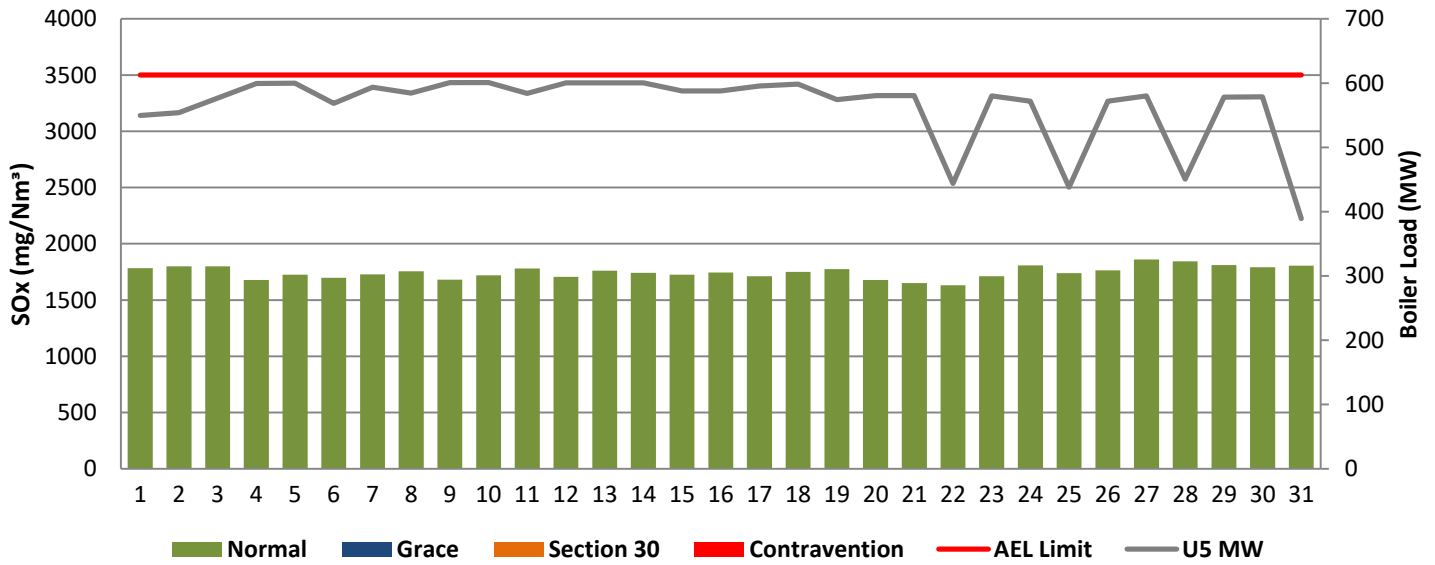


Figure 12: Lethabo Unit 6 SOx Emissions - March 2021

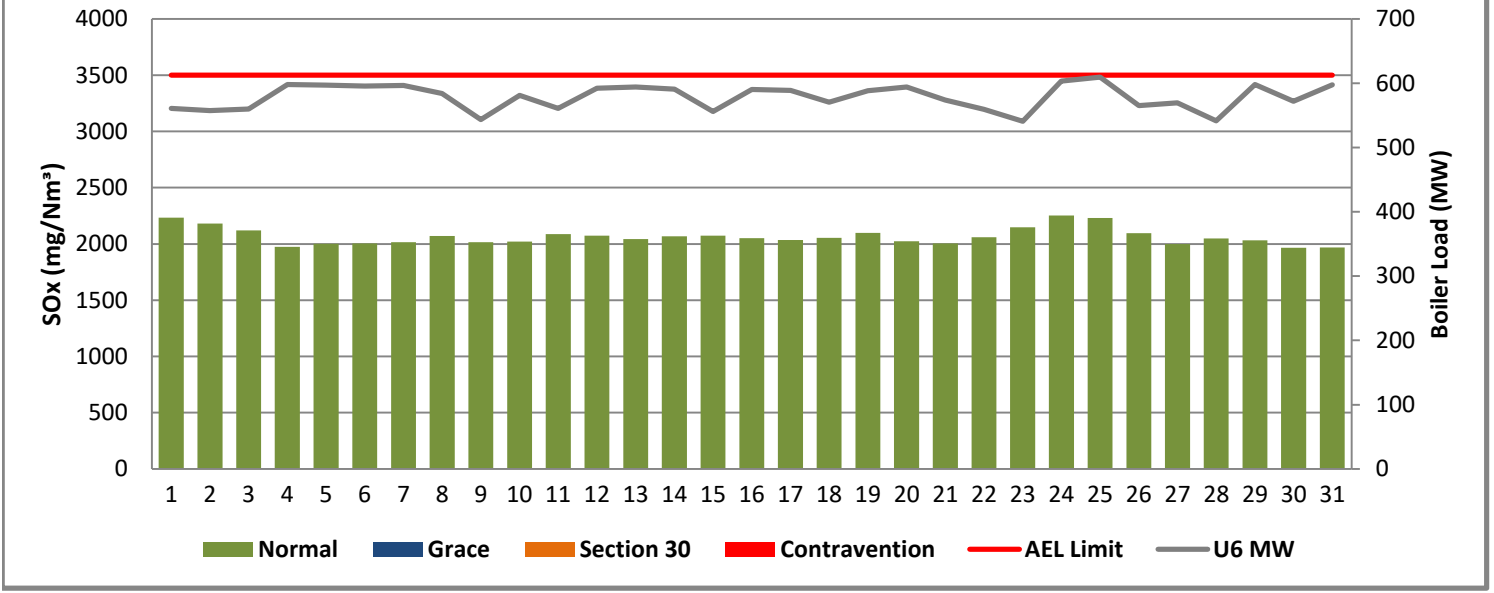


Figure 13: Lethabo Unit 1 NOx Emissions - March 2021

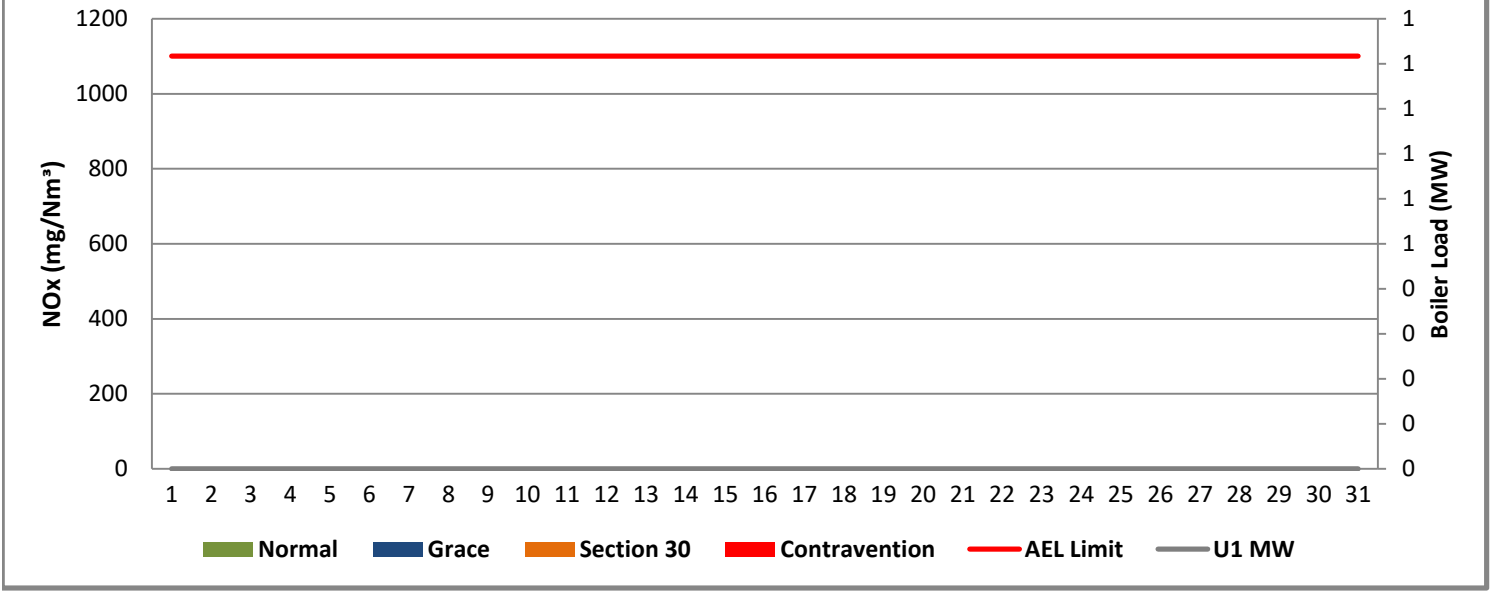


Figure 14: Lethabo Unit 2 NOx Emissions - March 2021

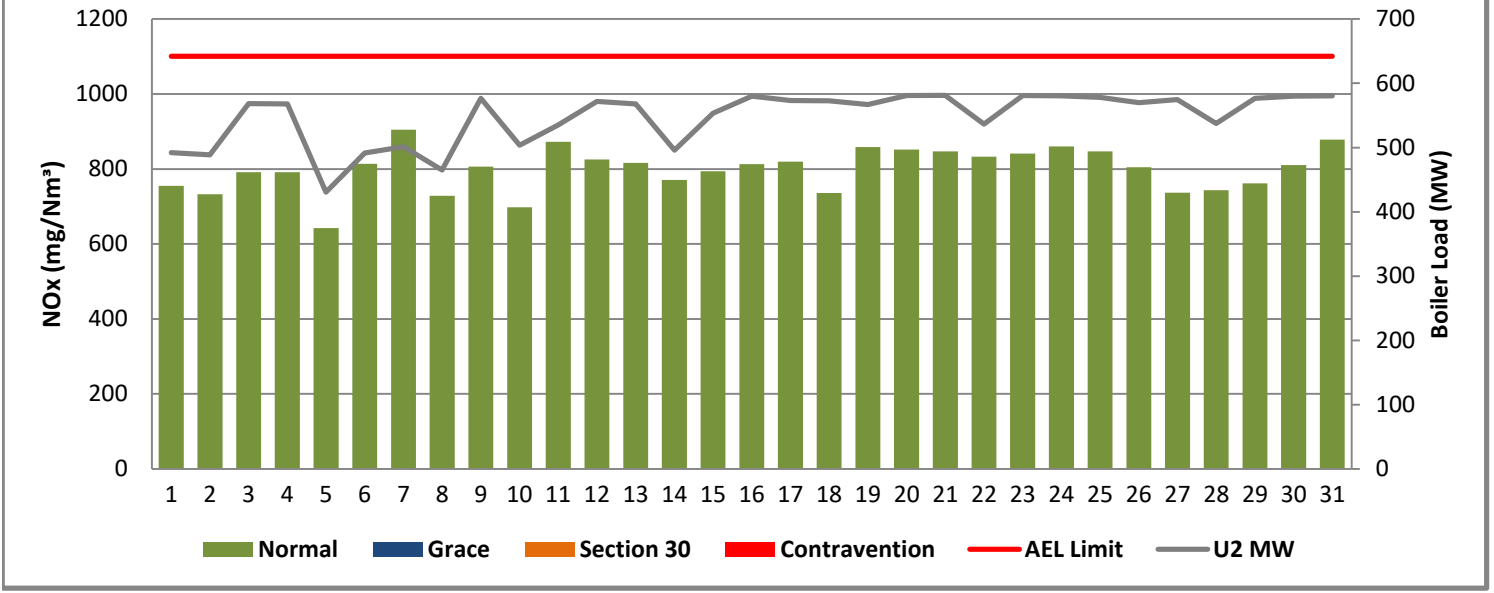


Figure 15: Lethabo Unit 3 NOx Emissions - March 2021

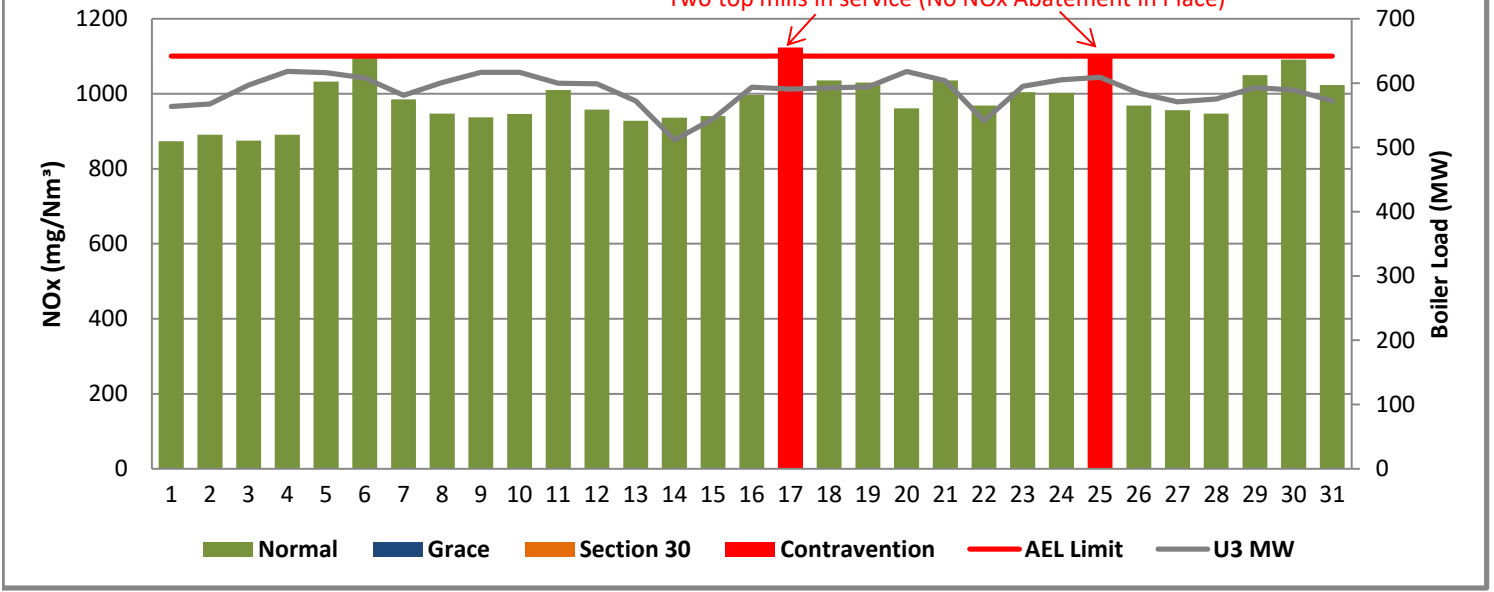


Figure 16: Lethabo Unit 4 NOx Emissions - March 2021

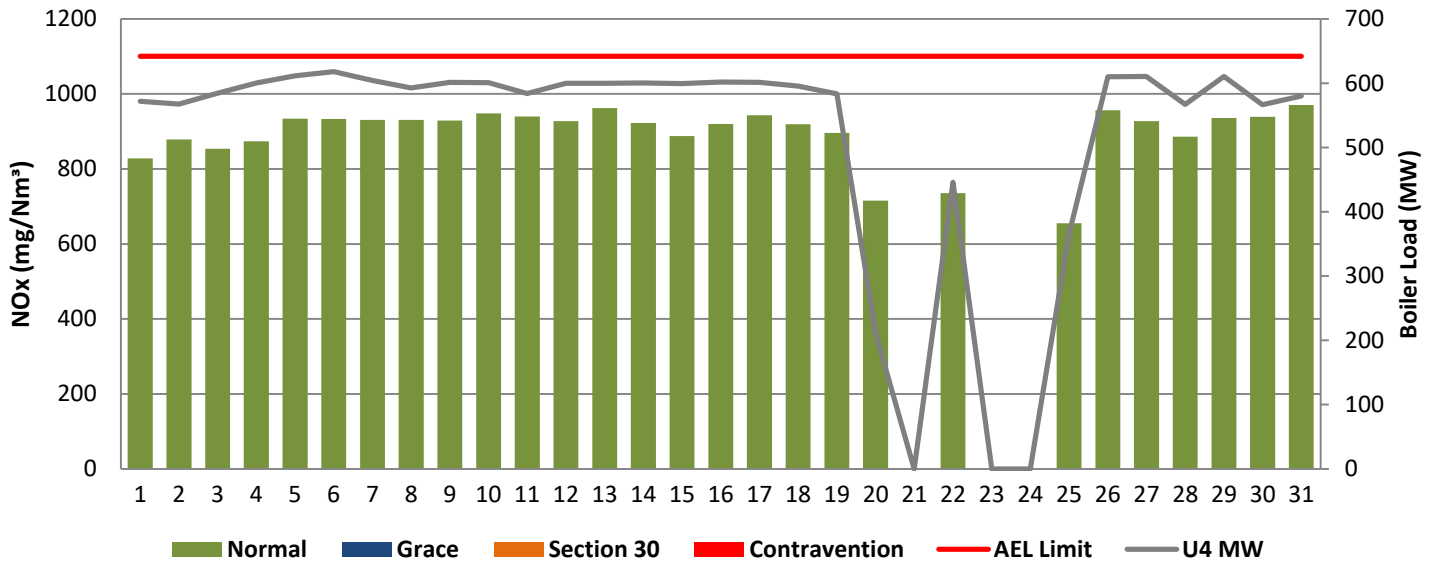


Figure 17: Lethabo Unit 5 NOx Emissions - March 2021

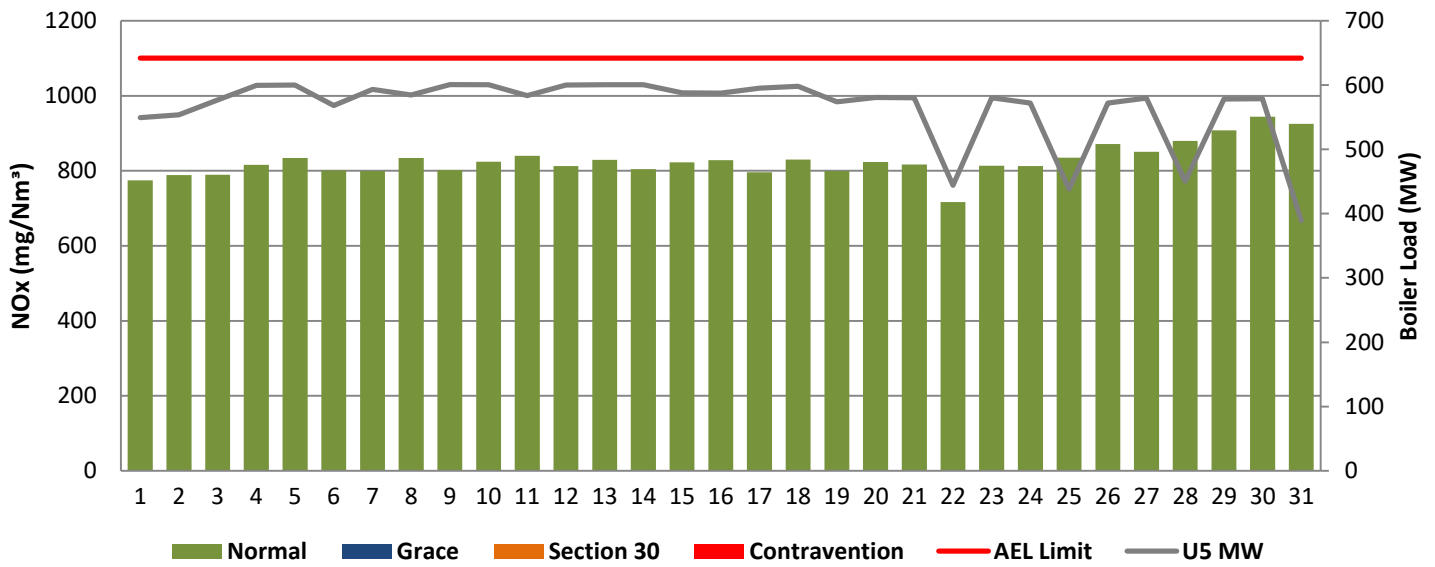
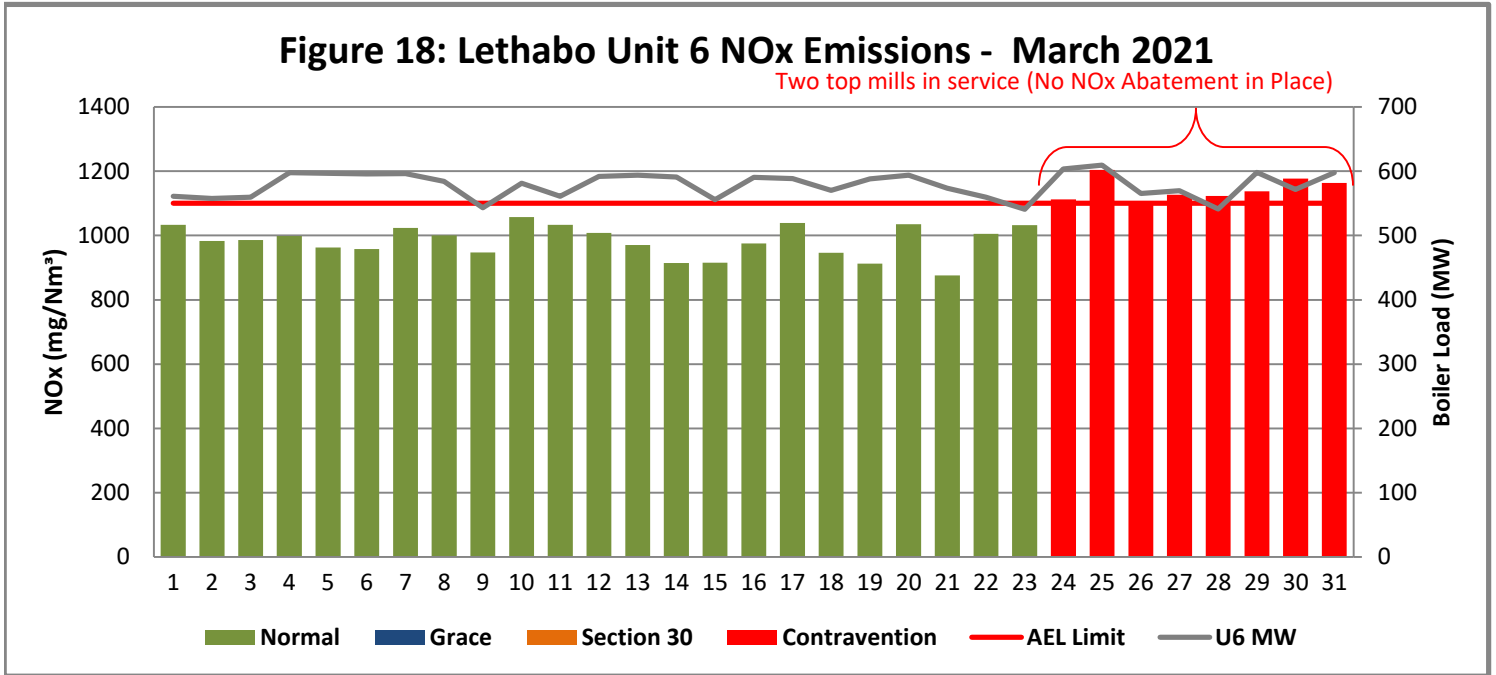


Figure 18: Lethabo Unit 6 NOx Emissions - March 2021

Two top mills in service (No NOx Abatement in Place)



7. SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1							
Breaker Open (BO)							
Draught Group (DG) Shut Down (SD)							
BO to DG SD (duration)							
Fires in time							
Synch. to Grid (or BC)							
Fires in to BC (duration)							
Emissions below limit from BC (end date)							
Emissions below limit from BC (duration)							

Unit No.2							
Breaker Open (BO)							
Draught Group (DG) Shut Down (SD)							
BO to DG SD (duration)							
Fires in time							
Synch. to Grid (or BC)							
Fires in to BC (duration)							
Emissions below limit from BC (end date)							
Emissions below limit from BC (duration)							

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

Unit No.4	AM: Boiler tube leak (BTL).						
Breaker Open (BO)	12:25 AM	2021/03/20					
Draught Group (DG) Shut Down (SD)	12:10 PM	2021/03/20					
BO to DG SD (duration)	00:11:45	DD:HH:MM					
Fires in time	1:05 PM	2021/03/25					
Synch. to Grid (or BC)	6:20 PM	2021/03/25					
Fires in to BC (duration)	00:05:15	DD:HH:MM					
Emissions below limit from BC (end date)	<i>not > limit</i>	<i>not > limit</i>					
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM					

Unit No.5	Main turbine over speed test.						
Breaker Open (BO)	2:05 AM	2021/03/06					
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD					
BO to DG SD (duration)	n/a	DD:HH:MM					
Fires in time							
Synch. to Grid (or BC)							
Fires in to BC (duration)		DD:HH:MM					
Emissions below limit from BC (end date)							
Emissions below limit from BC (duration)		DD:HH:MM					

Unit No.6							
Breaker Open (BO)							
Draught Group (DG) Shut Down (SD)							
BO to DG SD (duration)							
Fires in time							
Synch. to Grid (or BC)							
Fires in to BC (duration)							
Emissions below limit from BC (end date)							
Emissions below limit from BC (duration)							

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

8. MAINTENANCE

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

Unit 2				
Beginning of	2021/03/06 02:17	2021/03/10 00:06:00	2021/03/07 02:17	
Reason for Maintenance	LHI precip casing repairs. LHI precip casing repairs. RHI Casing repairs			
End (Time):	2021/03/07 02:17:00	2021/03/10 22:35:00	2021/03/08 00:05	
Duration	24:00:00	22:29:00	21:48:00	

Unit 3				
Beginning of	2021/03/14 00:39			
Reason for Maintenance	LHI Precip Casing repairs			
End (Time):	2021/03/14 18:03			
Duration	17:24:00			

Unit 4				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 5				
Beginning of	2021/03/22 04:25	2021/03/24 23:13	2021/03/28 00:21	2021/03/31 00:07
Reason for Maintenance	SO3 Plant maintenance	SO3 Plant maintenance	SO3 Plant maintenance	SO3 Plant maintenance
End (Time):	2021/03/22 23:28	2021/03/25 17:31	2021/03/28 05:00	2021/03/31 23:59
Duration	19:03:00	18:18:00	4:39:00	23:52:59

Unit 6				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

9. GENERAL

Unit 5:

It is noted that the Moisture curve was incorrect and inflated during the time of the correlation. It was determined that an average of 6.4% (H₂O) be used from the point of curve expiry until the test is redone. The test has been conducted the report received with the new curve. The new moisture curve has been incorporated in this report.

Unit 3:

NO_x Exceedance on 17/03/2021 and 25/03/2021 are due to there being no NO_x abatement technology currently installed which is aggravated by two top mills being in service in service.

Unit 6:

NO_x Exceedance on 24/03/2021-31/03/2021 are due to there being no NO_x abatement technology currently installed which is aggravated by two top mills being in service. It was initially believed that a Monitor issue contributed to the exceedances. This was investigated and the fluctuating monitor was fixed and data verified by our Process Engineering and Performance and Testing departments. It was found that even with these monitor issues the exceedances remain. These Exceedance will be investigated.

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 Acknowledgment	Date DEA Acceptable	Comments / Reference No.

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
Apr-20	0.54	0.36	0.69	0.21	0.18	0.48	0.38
May-20	0.83	0.34	0.54	0.20	0.20	0.26	0.36
Jun-20	0.23	0.26	0.29	0.18	0.20	0.27	0.24
Jul-20	0.36	0.53	0.36	0.22	0.22	0.33	0.32
Aug-20	0.25	0.57	0.41	0.33	0.31	0.39	0.36
Sep-20	0.22	0.51	OFF	0.25	0.20	0.32	0.29
Oct-20	0.30	0.54	OFF	0.26	0.32	0.31	0.34
Nov-20	0.42	0.49	OFF	0.40	0.32	0.41	0.41
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

ADDENDUM TO MONTHLY EMISSIONS REPORT

12. DAILY EMISSIONS FIGURES

Final Dust Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Mar	OFF	85	59	67	54	290	100
02-Mar	OFF	91	79	72	59	121	100
03-Mar	OFF	244	110	62	61	79	100
04-Mar	OFF	241	84	70	70	92	100
05-Mar	OFF	96	81	90	76	87	100
06-Mar	OFF	266	95	88	161	78	100
07-Mar	OFF	458	83	84	65	88	100
08-Mar	OFF	96	93	77	74	75	100
09-Mar	OFF	192	159	75	75	82	100
10-Mar	OFF	212	80	81	87	84	100
11-Mar	OFF	92	96	83	91	73	100
12-Mar	OFF	114	85	79	76	80	100
13-Mar	OFF	194	80	78	79	95	100
14-Mar	OFF	92	217	86	91	97	100
15-Mar	OFF	175	103	78	81	74	100
16-Mar	OFF	82	271	79	79	85	100
17-Mar	OFF	99	93	57	68	73	100
18-Mar	OFF	97	156	59	82	73	100
19-Mar	OFF	96	86	56	67	73	100
20-Mar	OFF	105	102	41	160	76	100
21-Mar	OFF	141	105	OFF	180	65	100
22-Mar	OFF	84	81	OFF	69	68	100
23-Mar	OFF	163	95	OFF	175	67	100
24-Mar	OFF	92	136	OFF	170	88	100
25-Mar	OFF	172	189	OFF	91	104	100
26-Mar	OFF	163	95	119	197	99	100
27-Mar	OFF	74	85	173	255	86	100
28-Mar	OFF	63	94	96	98	73	100
29-Mar	OFF	90	109	150	196	90	100
30-Mar	OFF	110	151	119	283	99	100
31-Mar	OFF	126	84	92	171	105	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final SOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Mar	OFF	2057	1919	1881	1784	2233	3500
02-Mar	OFF	2035	1879	1864	1800	2182	3500
03-Mar	OFF	2005	1937	1862	1799	2120	3500
04-Mar	OFF	1973	1792	1757	1677	1975	3500
05-Mar	OFF	1996	1858	1786	1727	2002	3500
06-Mar	OFF	2361	1969	1766	1698	2004	3500
07-Mar	OFF	2372	2013	1752	1727	2015	3500
08-Mar	OFF	2185	1947	1748	1755	2071	3500
09-Mar	OFF	1949	1784	1720	1681	2015	3500
10-Mar	OFF	2062	1898	1781	1719	2022	3500
11-Mar	OFF	2225	2034	1842	1780	2088	3500
12-Mar	OFF	2098	1926	1812	1706	2073	3500
13-Mar	OFF	2003	1918	1833	1761	2044	3500
14-Mar	OFF	2148	1942	1809	1741	2069	3500
15-Mar	OFF	2119	1926	1790	1725	2074	3500
16-Mar	OFF	2019	1865	1763	1745	2050	3500
17-Mar	OFF	2045	1865	1799	1713	2036	3500
18-Mar	OFF	2025	1876	1770	1750	2056	3500
19-Mar	OFF	2196	1983	1888	1776	2100	3500
20-Mar	OFF	2083	1838	1869	1680	2023	3500
21-Mar	OFF	1959	1779	OFF	1652	2005	3500
22-Mar	OFF	1991	1784	1802	1632	2060	3500
23-Mar	OFF	2062	1910	OFF	1711	2149	3500
24-Mar	OFF	2104	1937	OFF	1808	2253	3500
25-Mar	OFF	2075	1932	1828	1740	2230	3500
26-Mar	OFF	2087	1896	1769	1764	2095	3500
27-Mar	OFF	2110	1937	1892	1860	1998	3500
28-Mar	OFF	2065	1905	1890	1845	2049	3500
29-Mar	OFF	2085	1893	1916	1810	2033	3500
30-Mar	OFF	1981	1842	1893	1792	1965	3500
31-Mar	OFF	2114	1896	1864	1807	1968	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final NOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Mar	OFF	755	873	828	774	1033	1100
02-Mar	OFF	732	891	879	788	983	1100
03-Mar	OFF	791	876	853	790	986	1100
04-Mar	OFF	791	891	874	816	998	1100
05-Mar	OFF	642	1033	934	834	963	1100
06-Mar	OFF	814	1095	933	801	958	1100
07-Mar	OFF	905	985	930	799	1024	1100
08-Mar	OFF	729	947	931	834	1000	1100
09-Mar	OFF	806	937	929	802	948	1100
10-Mar	OFF	698	946	948	824	1057	1100
11-Mar	OFF	873	1010	940	840	1034	1100
12-Mar	OFF	825	958	927	812	1008	1100
13-Mar	OFF	816	928	962	829	970	1100
14-Mar	OFF	770	936	922	805	914	1100
15-Mar	OFF	794	941	887	823	916	1100
16-Mar	OFF	813	996	920	829	976	1100
17-Mar	OFF	819	1124	943	796	1039	1100
18-Mar	OFF	736	1036	919	830	947	1100
19-Mar	OFF	858	1030	896	800	912	1100
20-Mar	OFF	852	961	716	823	1036	1100
21-Mar	OFF	847	1035	OFF	817	876	1100
22-Mar	OFF	833	969	736	716	1005	1100
23-Mar	OFF	841	1004	OFF	814	1032	1100
24-Mar	OFF	860	1002	OFF	813	1112	1100
25-Mar	OFF	847	1102	656	835	1204	1100
26-Mar	OFF	804	968	956	871	1107	1100
27-Mar	OFF	737	956	927	851	1127	1100
28-Mar	OFF	743	947	886	880	1123	1100
29-Mar	OFF	761	1050	936	908	1137	1100
30-Mar	OFF	810	1091	939	944	1178	1100
31-Mar	OFF	878	1023	971	925	1163	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
Apr-20	98.33%	2	95.00%	6	100.00%	0	100.00%	0	100.00%	0	100.00%	0%
May-20	98.39%	2	98.39%	2	98.39%	2	100.00%	0	100.00%	0	100.00%	0
Jun-20	98.33%	2	100.00%	0	100.00%	0	100.00%	0	100.00%	0	100.00%	0
Jul-20	98.39%	2	98.39%	2	99.19%	1	100.00%	0	100.00%	0	100.00%	0
Aug-20	100.00%	0	100.00%	0	98.39%	2	100.00%	0	98.39%	2	100.00%	0
Sep-20	98.33%	2	98.33%	2	OFF LOAD	0	100.00%	0	100.00%	0	100.00%	0
Oct-20	99.19%	1	99.19%	1	OFF LOAD	0	100.00%	0	99.19%	1	100.00%	0
Nov-20	97.50%	3	98.33%	2	OFF LOAD	0	100.00%	0	100.00%	0	99.17%	1
Dec-20	98.39%	2	97.58%	3	OFF LOAD	0	100.00%	0	99.19%	1	100.00%	0
Jan-21	100.00%	0	99.19%	1	100.00%	0	100.00%	0	99.19%	1	99.19%	1
Feb-21	OFF LOAD	0	99.11%	1	98.21%	2	100.00%	0	100.00%	0	100.00%	0
Mar-21	OFF LOAD	0	97.58%	3	99.19%	1	100.00%	0	100.00%	0	100.00%	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
Apr-20	100.00%	0	100.00%	0	100.00%	0	100.00%	0	100.00%	0	90.00%	3
May-20	93.55%	2	100.00%	0	100.00%	0	100.00%	0	100.00%	0	100.00%	0
Jun-20	100.00%	0	100.00%	0	96.67%	1	100.00%	0	100.00%	0	100.00%	0
Jul-20	100.00%	0	96.77%	1	100.00%	0	100.00%	0	100.00%	0	100.00%	0
Aug-20	93.55%	2	100.00%	0	100.00%	0	100.00%	0	77.42%	7	100.00%	0
Sep-20	100.00%	0	93.33%	2	100%	0	100.00%	0	100.00%	0	100.00%	0
Oct-20	100.00%	0	100.00%	0	100%	0	100.00%	0	100.00%	0	100.00%	0
Nov-20	100.00%	0	96.67%	1	OFF LOAD	0	100.00%	0	100.00%	0	100.00%	0
Dec-20	100.00%	0	100.00%	0	OFF LOAD	0	100.00%	0	93.55%	2	100.00%	0
Jan-21	57.14%	3	100.00%	0	83.87%	5	100.00%	0	96.77%	1	100.00%	0
Feb-21	OFF LOAD	0	100.00%	0	96.43%	1	92.86%	2	100.00%	0	100.00%	0
Mar-21	OFF LOAD	0	100.00%	0	100.00%	0	100.00%	0	87.10%	4	100.00%	0

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Apr-20	91.26%	96.53%	98.53%	98.66%	96.22%	98.57%
May-20	88.89%	99.19%	99.19%	100.00%	100.00%	99.94%
Jun-20	89.86%	99.20%	99.17%	98.75%	97.78%	98.75%
Jul-20	92.47%	98.48%	99.33%	99.35%	100.00%	100.00%
Aug-20	100.00%	100.00%	99.85%	100.00%	98.22%	100.00%
Sep-20	99.84%	99.63%	OFF	100.00%	100.00%	100.00%
Oct-20	98.79%	99.19%	OFF	99.33%	99.19%	100.00%
Nov-20	94.04%	94.58%	OFF	97.17%	97.28%	99.69%
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%

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
Apr-20	100.00%	99.86%	100.00%	100.00%	96.68%	96.68%	99.83%	99.97%	99.96%	99.96%	67.82%	67.82%
May-20	94.74%	94.74%	100.00%	100.00%	99.87%	100.00%	99.84%	99.84%	93.47%	93.61%	90.89%	90.89%
Jun-20	99.44%	99.44%	99.33%	99.33%	99.33%	99.33%	100.00%	100.00%	100.00%	100.00%	93.30%	93.10%
Jul-20	99.73%	99.73%	99.07%	99.07%	99.73%	99.87%	98.54%	98.85%	99.60%	99.87%	99.86%	99.87%
Aug-20	99.91%	99.91%	100.00%	100.00%	99.85%	99.85%	100.00%	100.00%	100.00%	100.00%	96.55%	96.53%
Sep-20	100.00%	100.00%	99.86%	99.86%	OFF	OFF	100.00%	100.00%	100.00%	100.00%	99.77%	99.77%
Oct-20	99.87%	100.00%	99.87%	99.60%	OFF	OFF	99.46%	99.46%	99.46%	99.46%	99.46%	99.46%
Nov-20	97.66%	97.66%	97.64%	97.78%	OFF	OFF	94.14%	94.14%	94.55%	94.55%	94.64%	94.64%
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%	100%	100%	92.56%	92.71%	98.65%	98.65%	98.27%	98.52%
Mar-21	OFF	OFF	100.00%	100.00%	100%	100%	96.07%	96.07%	99.97%	99.97%	99.60%	99.60%

ADDENDUM TO MONTHLY EMISSIONS REPORT

Oxygen Monitor Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Apr-20	51.08%	100.00%	97.35%	0.00%	0.00%	0.00%
May-20	89.69%	100.00%	100.00%	0.00%	0.00%	13.33%
Jun-20	99.31%	99.92%	99.33%	98.85%	0.00%	100.00%
Jul-20	99.87%	99.30%	99.87%	99.02%	48.39%	99.87%
Aug-20	99.86%	99.92%	99.85%	100.00%	100.00%	96.67%
Sep-20	99.68%	99.86%	OFF	100.00%	100.00%	98.97%
Oct-20	99.73%	99.87%	0.00%	99.33%	99.33%	99.46%
Nov-20	99.45%	99.72%	OFF	93.97%	94.55%	94.64%
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	0.00%	0.00%	0.00%	0.00%	0.00%
Mar-21	OFF	100.00%	100.00%	96.43%	99.97%	99.87%

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Apr-20	99.777%	99.838%	99.697%	99.909%	99.914%	99.776%
May-20	99.652%	99.847%	99.760%	99.912%	99.907%	99.880%
Jun-20	99.907%	99.883%	99.876%	99.922%	99.909%	99.877%
Jul-20	99.850%	99.759%	99.839%	99.905%	99.901%	99.846%
Aug-20	99.894%	99.738%	99.818%	99.855%	99.856%	99.819%
Sep-20	99.904%	99.757%	OFF	99.882%	99.906%	99.848%
Oct-20	99.866%	99.744%	OFF	99.876%	99.845%	99.850%
Nov-20	99.835%	99.792%	OFF	99.833%	99.863%	99.822%
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%

ADDENDUM TO MONTHLY EMISSIONS REPORT

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	593	GO	2021/03/01 00:00:00	2021/03/31 23:59:59
2	180	EF: High stack emissions	2021/03/05 00:05:00	2021/03/05 05:18:00
2	180	EF: High stack emissions	2021/03/05 09:26:00	2021/03/06 02:17:00
2	178	EF: High stack Emissions	2021/03/08 01:02:00	2021/03/08 04:20:00
2	97	EF: High stack Emissions	2021/03/08 04:20:00	2021/03/08 06:07:00
2	77	High stack emissions	2021/03/08 11:37:00	2021/03/08 13:46:00
2	180	High stack emissions	2021/03/08 13:46:00	2021/03/08 15:29:00
2	130	High stack emissions	2021/03/08 15:29:00	2021/03/08 20:15:00
2	179	EF: High stack emissions.	2021/03/08 20:15:00	2021/03/09 00:43:00
2	21	EF: High stack emissions	2021/03/10 02:03:00	2021/03/10 04:59:00
2	78	High stack emissions.	2021/03/11 19:40:00	2021/03/12 02:34:00
2	83	High stack emissions	2021/03/14 01:14:00	2021/03/14 05:03:00
2	78	EF: High stack emissions	2021/03/14 09:43:00	2021/03/14 12:35:00
2	130	EF: High stack emissions.	2021/03/14 12:35:00	2021/03/15 00:15:00
2	79	EF: High stack emissions	2021/03/22 09:14:00	2021/03/22 18:02:00
2	30	EF: High stack emissions	2021/03/22 18:02:00	2021/03/22 23:16:00
2	48	High stack emissions	2021/03/26 12:57:00	2021/03/26 16:52:00
2	78	EF: High stack emssions	2021/03/04 02:01:00	2021/03/04 05:09:00
2	80	LHI precip casing repairs.	2021/03/06 06:08:00	2021/03/07 02:17:00
2	79	AM: LHI Precip casing repairs.	2021/03/10 00:06:00	2021/03/10 22:35:00
2	90	For LHI preasip casing	2021/03/06 02:17:00	2021/03/06 06:08:00
2	79	RHI Casing repairs	2021/03/07 02:17:00	2021/03/08 00:05:00
3	593	Islanding test.	2021/03/15 00:35:00	2021/03/15 01:09:00
3	98	EF: High stack emissions	2021/03/15 20:04:00	2021/03/15 22:05:00
3	115	EF: High stack emissions.	2021/03/15 22:05:00	2021/03/15 22:24:00
3	168	EF: High stack emissions.	2021/03/15 22:24:00	2021/03/15 23:10:00
3	216	EF: High stack emissions	2021/03/15 23:10:00	2021/03/16 00:58:00
3	214	EF: R/H Precips O/C. High stack emissions.	2021/03/16 04:29:00	2021/03/16 06:14:00
3	51	EF:High stack emissions	2021/03/17 08:35:00	2021/03/17 16:53:00
3	115	High stack emissions.	2021/03/21 22:07:00	2021/03/22 00:49:00
3	18	High stack emissions	2021/03/26 09:00:00	2021/03/26 12:57:00
3	38	High stack emissions	2021/03/26 12:57:00	2021/03/26 16:55:00
3	38	High stack emissions	2021/03/26 18:34:00	2021/03/26 20:07:00
3	50	EF:High stack emissions	2021/03/28 20:10:00	2021/03/29 00:00:00
3	114	EF:High stack emssions	2021/03/26 20:07:00	2021/03/27 00:08:00
3	115	LHI Precip Casing repairs	2021/03/14 00:39:00	2021/03/14 18:03:00
4	593	Boiler valves repairs	2021/03/20 00:19:00	2021/03/22 02:29:00
4	593	AM: Boiler tube leak (BTL).	2021/03/22 12:26:00	2021/03/25 18:20:00
5	593	Main turbine over speed test.	2021/03/06 02:00:00	2021/03/06 02:44:00
5	179	High stack emission.	2021/03/25 19:36:00	2021/03/26 01:11:00
5	130	EF:High stack emissions	2021/03/28 20:11:00	2021/03/28 20:40:00
5	179	High stack emissions	2021/03/28 20:40:00	2021/03/29 00:24:00
5	180	For So3 plant sulphur leak repairs	2021/03/22 04:25:00	2021/03/22 17:57:00
5	80	So3 plant sulphur leak repairs	2021/03/22 21:35:00	2021/03/22 23:28:00
5	179	AM: Dust plant tripped/SO3 plant repairs	2021/03/24 23:13:00	2021/03/25 08:39:00
5	130	AM:Dust plant tripped/SO3 plant repairs	2021/03/25 08:39:00	2021/03/25 12:44:00
5	109	AM: For SO3 plant repairs	2021/03/25 12:44:00	2021/03/25 17:31:00
5	178	SO3 plant maintenance	2021/03/28 00:21:00	2021/03/28 05:00:00
5	180	AM: SO3 Plant maintenance.	2021/03/31 00:07:00	2021/03/31 10:51:00
5	199	AM: SO3 plant maintenance	2021/03/31 10:51:00	2021/03/31 23:59:59
6	110	High stack emissions.	2021/03/14 21:32:00	2021/03/14 23:22:00
6	121	High stack emissions.	2021/03/14 23:22:00	2021/03/15 00:19:00
6	172	High stack emissions	2021/03/25 22:25:00	2021/03/25 23:18:00
6	20	High stack emissions	2021/03/26 12:53:00	2021/03/26 16:55:00
6	170	High stack emissions.	2021/03/26 20:17:00	2021/03/26 20:30:00
6	218	High stack emissions.	2021/03/26 20:30:00	2021/03/27 00:11:00
6	170	EF: High stack emissions.	2021/03/30 20:31:00	2021/03/30 22:38:00
6	220	EF: High stack emissions.	2021/03/30 22:38:00	2021/03/31 00:44:00

PM Exceedances		
U2.	Poor ESP Performance, Casing outages needed	03-Mar
U2.	LHI and RHI ESP poor performance, Casing outage required	04-Mar
U2.	LHI Precip Casing	06-Mar
U2.	RHI Casing Outage	07-Mar
U2.	<ul style="list-style-type: none"> LHI Casing is being isolated for repairs, casing outage 	09-Mar
U2.	<ul style="list-style-type: none"> LHI Casing was taken yesterday Clean rapping was performed yesterday. LHI casing is improved today, however BPE reported that the casing is sparking. OPS reported performance on LHI casing: <ul style="list-style-type: none"> -LHI F1 & F2 internal faults, -F3 without fault -F4, F5, F6 sparking -F7 Low current. 	10-Mar
U2.	<ul style="list-style-type: none"> Common Sulphur flow dropped in the morning when B filter was tested, however sulphur flow stabilized again and in service. Emissions increased for this time. EMS reported high spark rate on LHI casing is due to caking in the casing. Ops reported LHI, RHI and RHO casings are between 120 – 190, all three performing poorly. 	12-Mar
U2.	ESP Poor Performance and manual rapping	13-Mar
U2.	<p>LHI F1 internal fault</p> <p>Manual rapping was done on all four casings.</p>	15-Mar
U2.	ESP Poor performance	20-Mar
U2.	Manual Rapping and Poor ESP performance	21-Mar
U2.	Manual Rapping and Poor Esp Performance	23-Mar
U2.	Sulphur common plant challenges and Poor ESP Performance	25-Mar
U2.	<p>Manual Rapping 9pm to 11pm</p> <p>ESP poor performance</p>	26-Mar
U2.	<ul style="list-style-type: none"> RHI F6 off <p>ESP Poor performance</p>	30-Mar
U2.	ESP Poor performance	31-Mar

U3.	<p>SO3 plant tripped @15:00 due to comms fault and it took long to recover the plant. The Coms fault were resolved quickly however the "A" heater did not meet limit to heat up plant again.</p> <p>Manual rapping done</p>	03-Mar
U3.	<p>Manual rapping was done last night,</p> <ul style="list-style-type: none"> • RHI two plate rappers defective, notifications loaded by OPS <p>ESP Poor Performance</p>	09-Mar
U3.	<ul style="list-style-type: none"> • LHI F4 HV rod connection was problematic. • Islanding test was done yesterday 	14-Mar
U3.	<ul style="list-style-type: none"> • RH precip board tripped last night, • EMS reported transformer tripped due to transformer high temp. Was recovered and in service at the moment. • Loading remained the same after the board tripped, having two casings in service and no SO3 plant during this time. <p>C&I Eng reported Common plant Sulphur supply problem since last week, OPS to do inspection for steam leaks</p> <ul style="list-style-type: none"> • RHI F5 & F6 off, EMS to check which fuses are blown. • RHO F5 off, EMS to check which fuses are blown. 	15-Mar
U3.	<ul style="list-style-type: none"> • SO3 plant is on ramping up to boiler load, was off this morning due to trip. • LHO F4 has an internal fault, need to request a casing at some point. 	16-Mar
U3.	<ul style="list-style-type: none"> • Manual rapping was done, thus the excessive emissions. • SO3 plant tripped during the same time manual rapping was done • C&I need an hour to replace module of the SO3 plant, to be planned for next week, BAUX to be available when it is done. • GCD is continuing with optimization 	18-Mar
U3.	Poor ESP Performance	20-Mar
U3.	<p>Poor ESP Performance</p> <p>19:18 SO3 plant tripped on coms fault, dosing only started at 23:48</p>	21-Mar
U3.	<p>Due to issues on the common plant SO3 flow was low</p> <p>GCD could not do ESP optimisation as a result</p> <p>Rapping to be done before 23:59</p>	24-Mar
U3.	Manual Rapping done and poor ESP performance	25-Mar

U3.	<p>ESP Poor Performance</p> <p>LHO F4 & RHI F1 – both poor performance, internal faults need casing outage to be resolve</p> <p>SO3 plant tripped on comms fault</p>	29-Mar
U3.	ESP Poor Performance	30-Mar
U4.	Unit Shut Down for tube leak repairs	20-Mar
U4.	<p>ESP Poor Performance</p> <p>SO3 plant tripped on comms fault 12:01-17:41 and flow was reported to be decreasing at 18:30</p>	26-Mar
U4.	ESP Poor Performance	27-Mar
U4.	<ul style="list-style-type: none"> • Manual rapping was done last night from 09:00 – 23:59. • Sulphur flow indicating low, Ops was attempting to put Sulphur plant back on auto. BPE reported that the fluctuation in common Sulphur supply is causing potential blockages on the plant and causing problems. • OPE reported that the B filter need to be reinstated asap, there is a suspected blockage on A filter. Production essential plant has a meeting today to discuss way forward on common supply problem. • LHO F7 comms fault, EMS to attend today • RHO F1, F2, F4 have internal fault, casing outage needed. Production to request casing outage for the weekend. 	29-Mar
U4.	<p>Sulphur flow at Unit 4 is fluctuating extremely, issue stems from common supply problem</p> <p>LHO F7 Comms fault, resolved</p> <p>RHI F3 sparking</p> <p>RHO F1 under voltage trip due to suspected internal fault,</p> <p>RHO F4 under voltage trip due to suspected internal fault</p>	30-Mar
U5.	<p>ESP Poor performance</p> <p>Turbine over speed test done</p>	06-Mar
U5.	SO3 plant shut down for repairs	20-Mar
U5.	SO3 plant shut down for repairs	21-Mar
U5.	SO3 plant off for gasket repair	23-Mar
U5.	SO3 plant not dosing, ramping up to be put in service	24-Mar
U5.	<p>04:30 SO3 plant tripped due to blower</p> <p>Leak at turbulator and suspect blockage on converter. SO3 plant off for repairs</p>	26-Mar
U5.	SO3 plant off for repairs	27-Mar
U5.	SO3 plant is off for repairs, pipe replacement. BAUX reported repairs will be complete by 02/04	29-Mar

U5.	Manual rapping, SO3 Plant offline	30-Mar
U5.	SO3 plant not dosing SO3 plant, heaters tripped when SO3 plant was started	31-Mar
U6.	Unit Light Up	01-Mar
U6.	Unit Light Up	02-Mar
U6.	Poor ESP performance	25-Mar
U6.	ESP Poor Performance	31-Mar
NOX Exceedances		
U3.	Running with 2 top mills	17-Mar
U3.	Running with 2 top mills	25-Mar
U6.	Investigating NOX CEMS monitor as there is a lot of fluctuation	24-Mar
U6.	Investigating NOX CEMS monitor as there is a lot of fluctuation Unit taken off AGC control to assist	25-Mar
U6.	Investigating NOX CEMS monitor as there is a lot of fluctuation Unit taken off AGC control to assist	26-Mar
U6.	Investigating NOX CEMS monitor as there is a lot of fluctuation Unit taken off AGC control to assist	27-Mar
U6.	Process engineering provided feedback that there was an issue with the monitor and that it was fixed, however P&T will need to verify the monitor.	28-Mar
U6.	NOx exceeded yesterday, Process engineering provided feedback that the mills was bias, however it does not bring down the Nox enough, have to bring back B mill. Leaking pipe could not be isolated/clamped, need to check whether the mill can be brought back as is, otherwise unit shutdown is need to do repairs. BPE advised to put the mill back with the leak.	29-Mar
U6.	P&T sent through verifications results this morning, and will be analyzed by Process. Two top mills in service, B Mill to be completed by Baux today.	30-Mar
U6.	Process eng reviewed the verification data and confirmed that all exceedances are true exceedances and will investigate. BAUX will return B mill back in service tomorrow 12:00	31-Mar