



Mr. Chakane Sibaya  
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Date:  
20 January 2022

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LCR01PLA000\_0280/20220112

Dear Mr. Sibaya

**LETHABO POWER STATION EMISSION MONTHLY REPORT FOR DECEMBER 2021**

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


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

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

Yours sincerely

**SOLLY NGCASHI**  
**GENERAL MANAGER**

**Generation Division (Cluster 1)**  
Lethabo; Duvha; Grootvlei; Kusile & Matla Power Stations  
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Eskom Holdings SOC Ltd Reg No 2002/015527/30

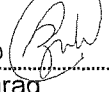
	Report	Lethabo Power Station
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Report name: **Lethabo Power Station  
DECEMBER 2021  
Emission Report**

Reference number: **LCR01PLA000\_0280/20220112**  
Document Type: **Report**  
Area of Applicability: **Environment**  
Report Date: **January-2022**  
Classification: **Controlled Disclosure**

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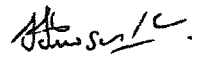
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Approved by:

  
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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 Dec-2021
	Coal	Tons	2 000 000	1 300 947
	Fuel Oil	Tons	1 700	699
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Dec-2021
	Energy	GWh	2834.64	1 853.69
	Ash	Tons	770 000	471 723.3
	RE Ash	kg/MWh	<i>not specified</i>	254.48

**2. ENERGY SOURCE CHARACTERISTICS**

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.656 (Standard)	0.630
Ash Content	%	37.37 (Standard)	36.260

\*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/Nm<sup>3</sup>)

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 Dec-2021
Unit 1	<i>Electrostatic Precipitator (ESP)</i>	99.83%
Unit 2	<i>Electrostatic Precipitator (ESP)</i>	Unit Off-line
Unit 3	<i>Electrostatic Precipitator (ESP)</i>	99.74%
Unit 4	<i>Electrostatic Precipitator (ESP)</i>	99.76%
Unit 5	<i>Electrostatic Precipitator (ESP)</i>	99.84%
Unit 6	<i>Electrostatic Precipitator (ESP)</i>	99.86%

### 5. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO <sub>2</sub>	NO	CO <sub>2</sub>
Unit 1	98.4	97.8	97.8	97.0
Unit 2	OFF	OFF	OFF	OFF
Unit 3	96.1	91.3	91.4	90.3
Unit 4	96.8	100.0	99.9	99.9
Unit 5	99.9	100.0	100.0	99.9
Unit 6	100.0	99.9	100.0	99.9

## 6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of December 2021

Associated Unit/Stack	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>x</sub> (tons)
Unit 1	159.1	3 193	1 758
Unit 2	0.0	0	0
Unit 3	194.4	3 551	1 683
Unit 4	212.6	4 528	1 996
Unit 5	127.4	3 129	1 333
Unit 6	118.4	3 930	1 835
<b>SUM</b>	<b>812.0</b>	<b>18 331</b>	<b>8 605</b>

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

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average PM (mg/Nm <sup>3</sup> )
Unit 1	25	6	0	0	6	92.1
Unit 2	0	0	0	0	0	
Unit 3	16	9	4	0	13	110.2
Unit 4	22	8	0	0	8	108.9
Unit 5	30	0	0	0	0	77.6
Unit 6	31	0	0	0	0	67.4
<b>SUM</b>	<b>124</b>	<b>23</b>	<b>4</b>	<b>0</b>	<b>27</b>	

Table 6.3: Operating days in compliance to SO<sub>x</sub> AEL Limit - December 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average SO <sub>x</sub> (mg/Nm <sup>3</sup> )
Unit 1	31	0	0	0	0	1 836.3
Unit 2	0	0	0	0	0	
Unit 3	30	0	0	0	0	2 000.2
Unit 4	31	0	0	0	0	2 074.3
Unit 5	30	0	0	0	0	1 920.8
Unit 6	31	0	0	0	0	2 130.4
<b>SUM</b>	<b>153</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

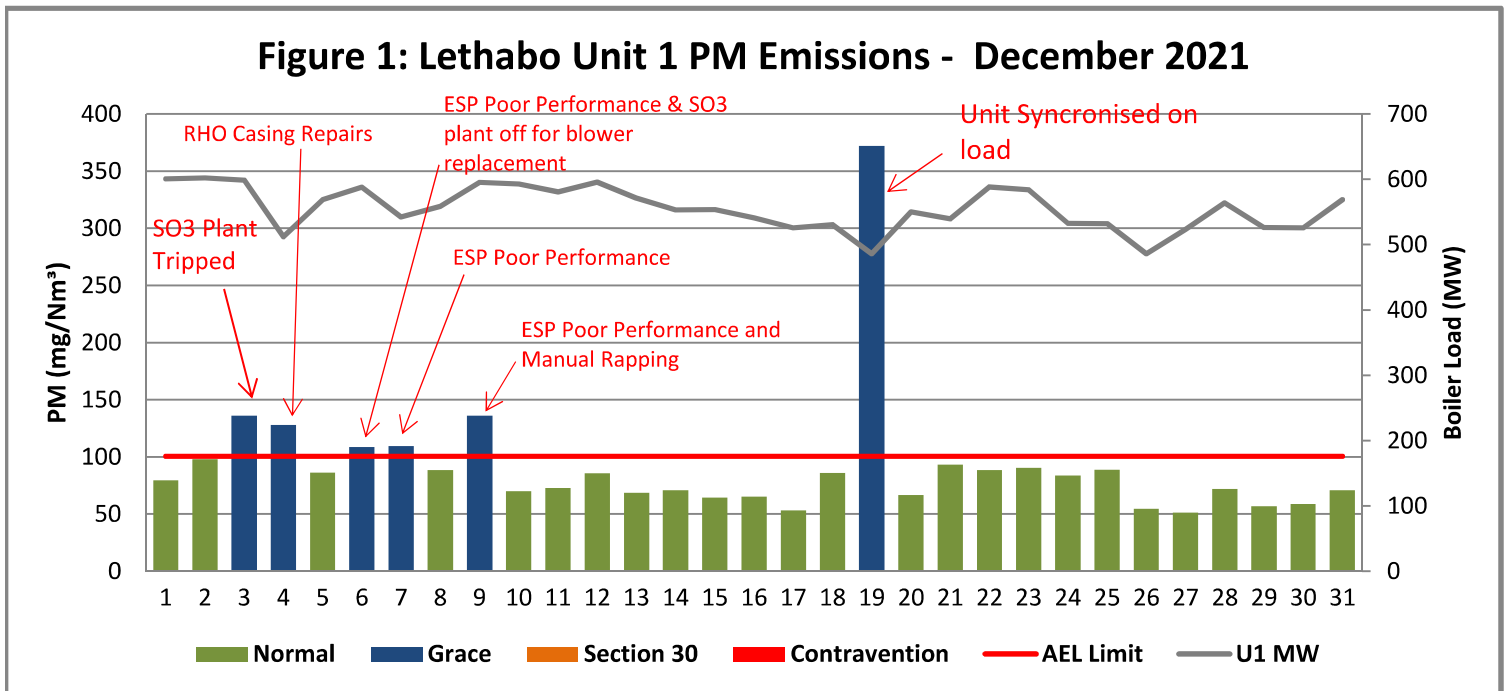
Table 6.4: Operating days in compliance to NOx AEL Limit - December 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	29	0	0	2	2	1 008.2
Unit 2	0	0	0	0	0	
Unit 3	30	0	0	0	0	918.2
Unit 4	31	0	0	0	0	908.6
Unit 5	30	0	0	0	0	817.5
Unit 6	31	0	0	0	0	985.3
<b>SUM</b>	<b>151</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	

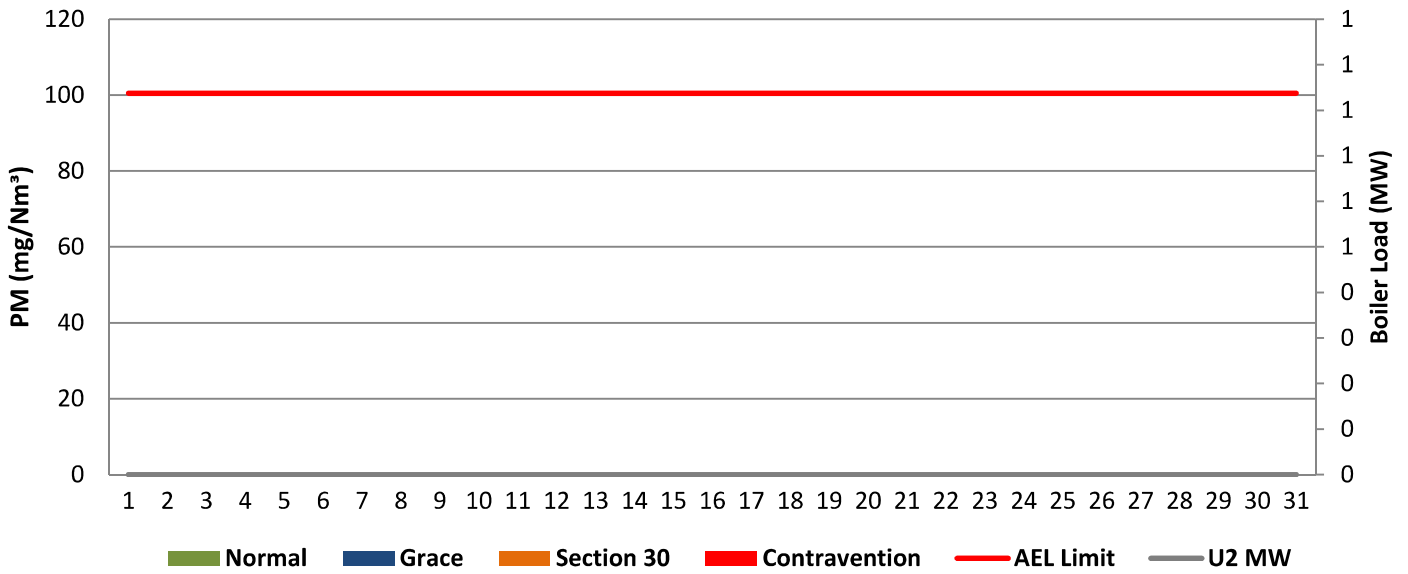
Table 6.5: Legend Description

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

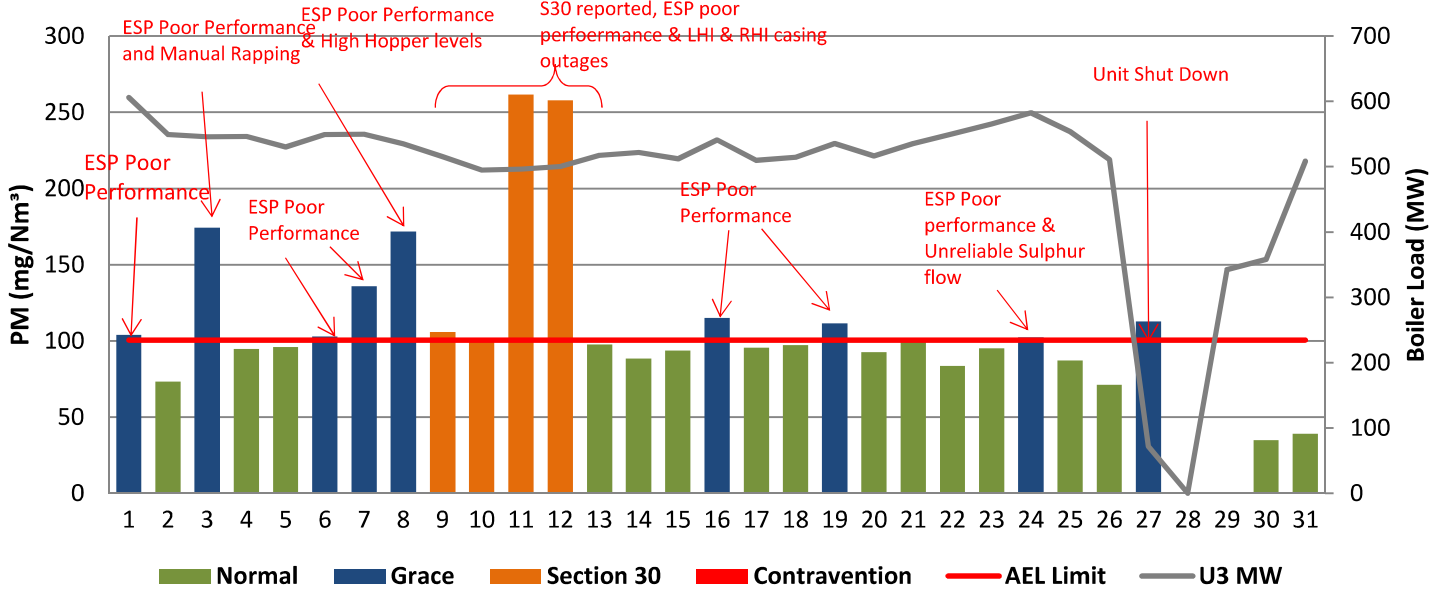
Figure 1: Lethabo Unit 1 PM Emissions - December 2021



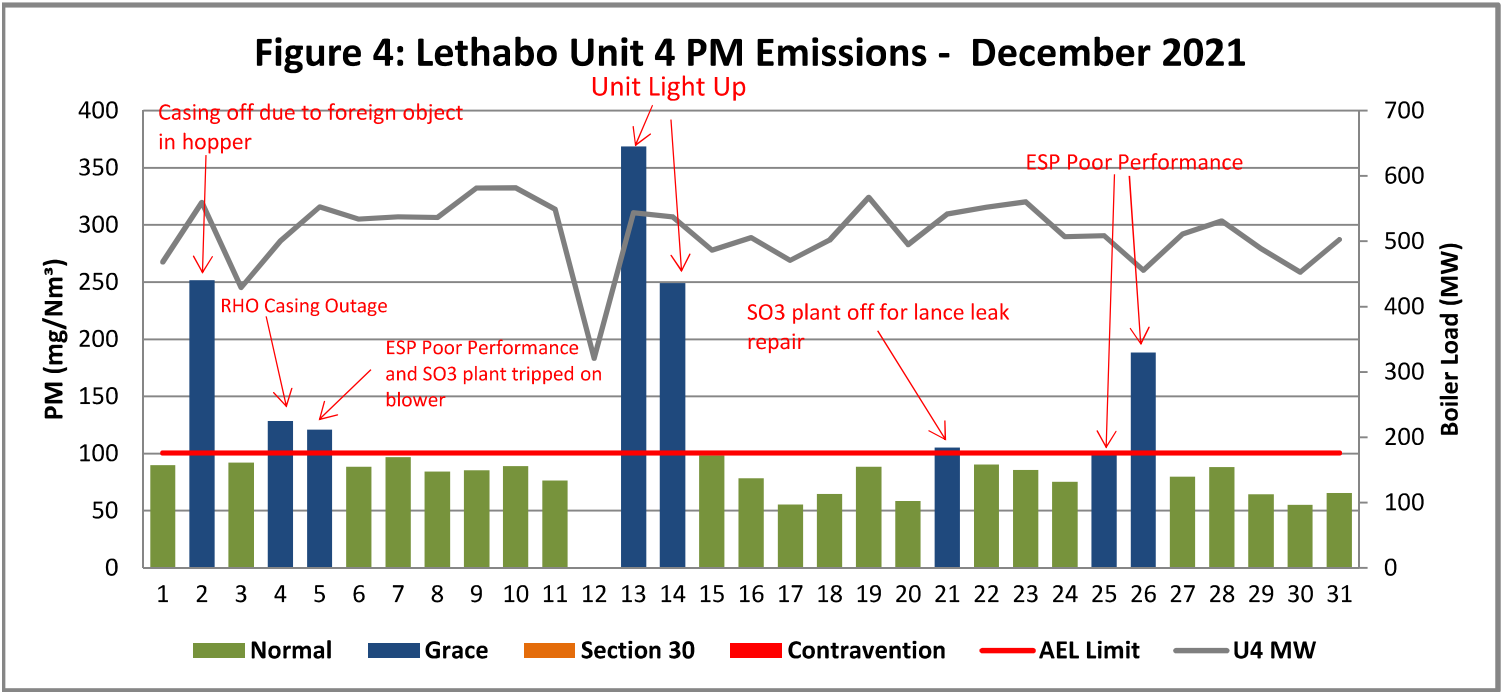
**Figure 2: Lethabo Unit 2 PM Emissions - December 2021**



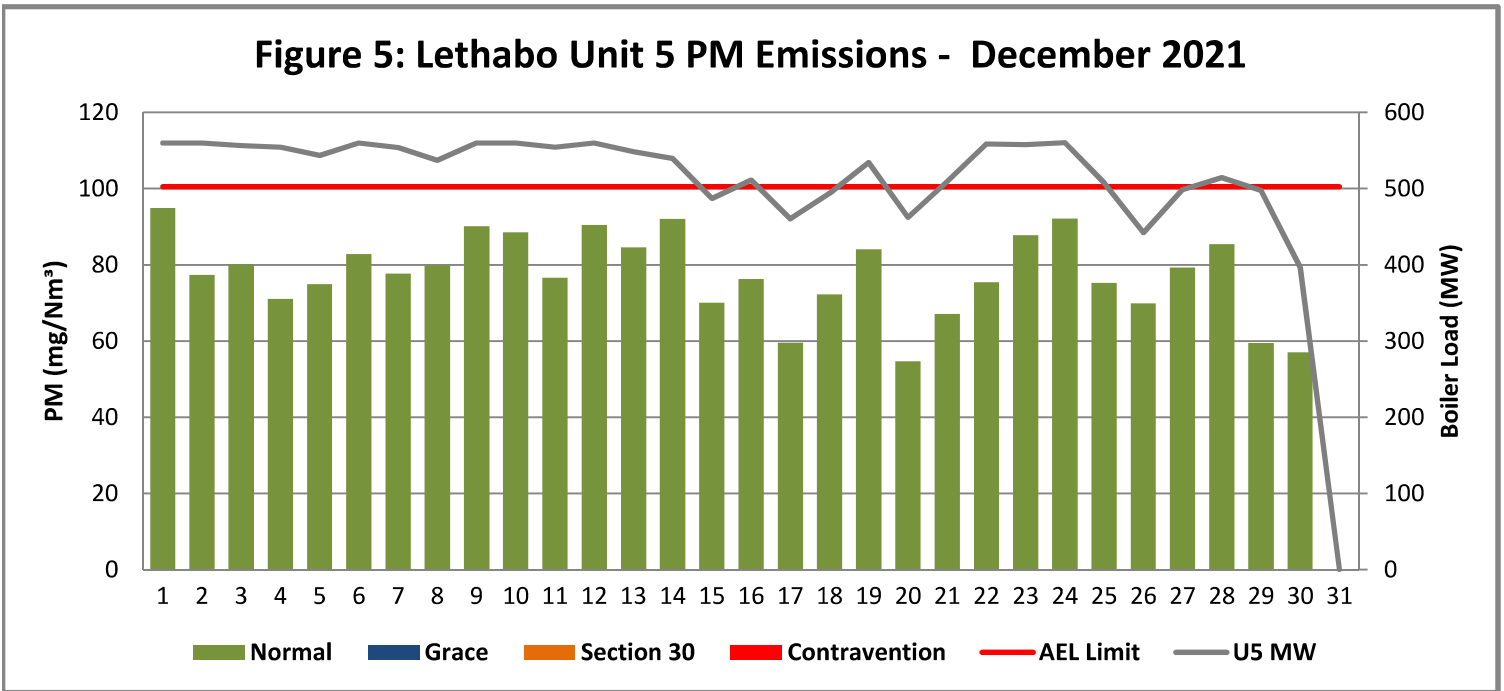
**Figure 3: Lethabo Unit 3 PM Emissions - December 2021**



**Figure 4: Lethabo Unit 4 PM Emissions - December 2021**

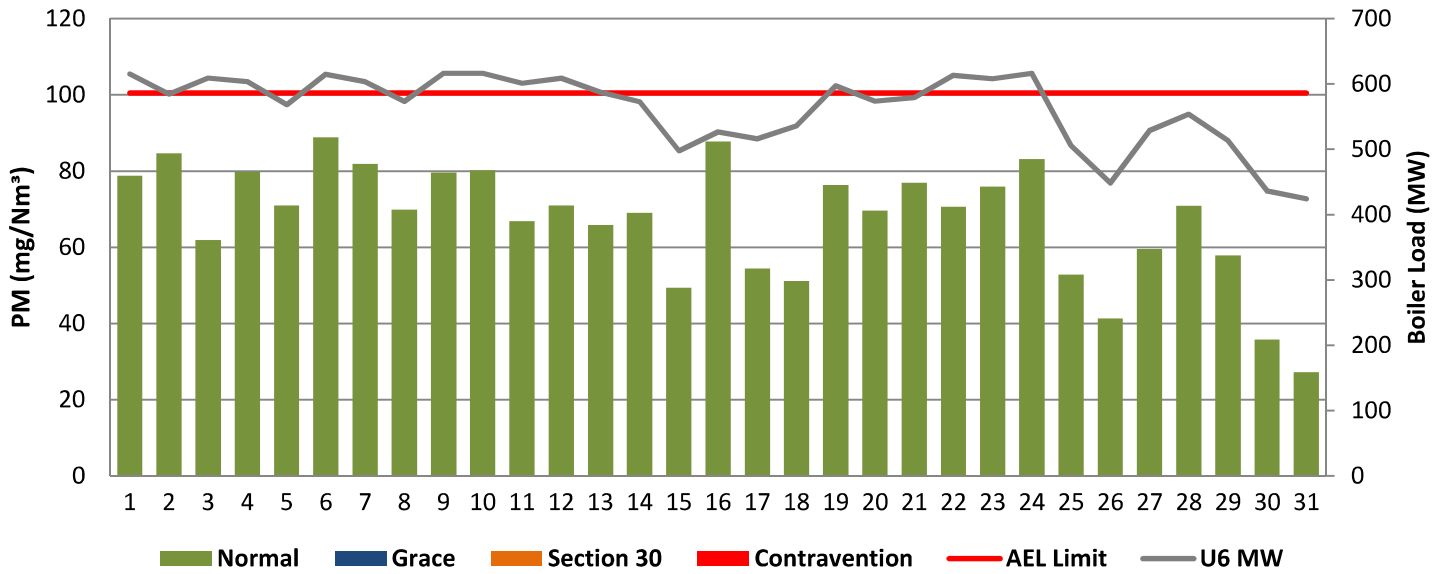


**Figure 5: Lethabo Unit 5 PM Emissions - December 2021**

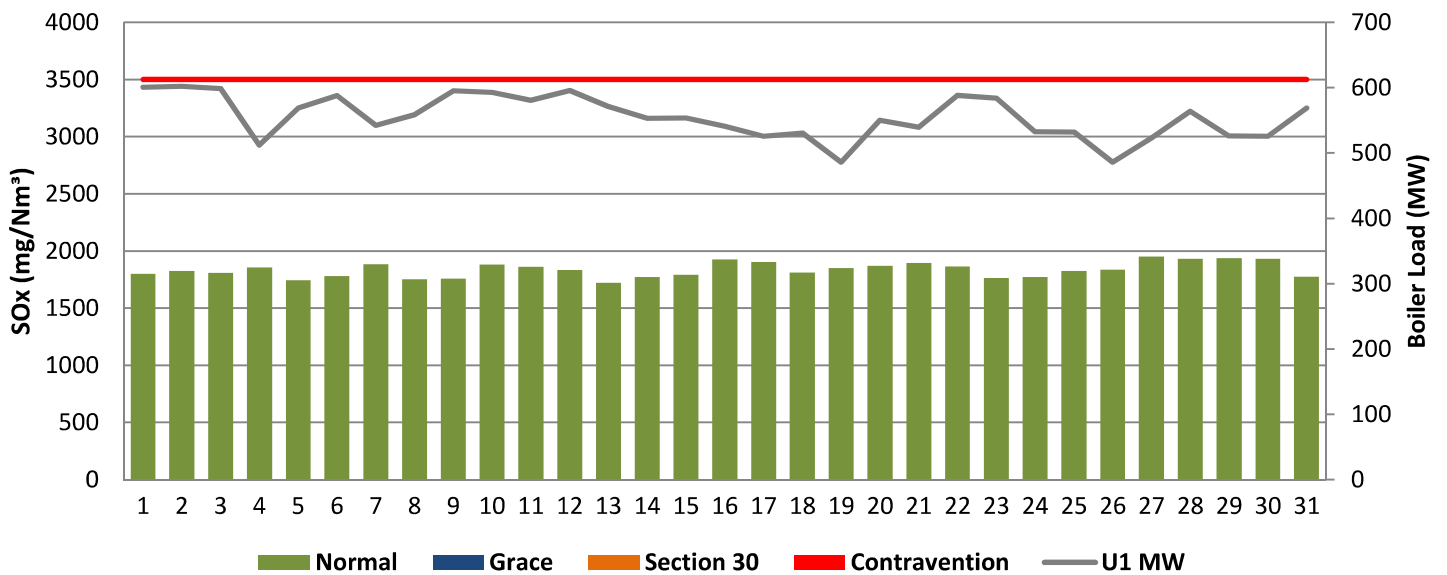




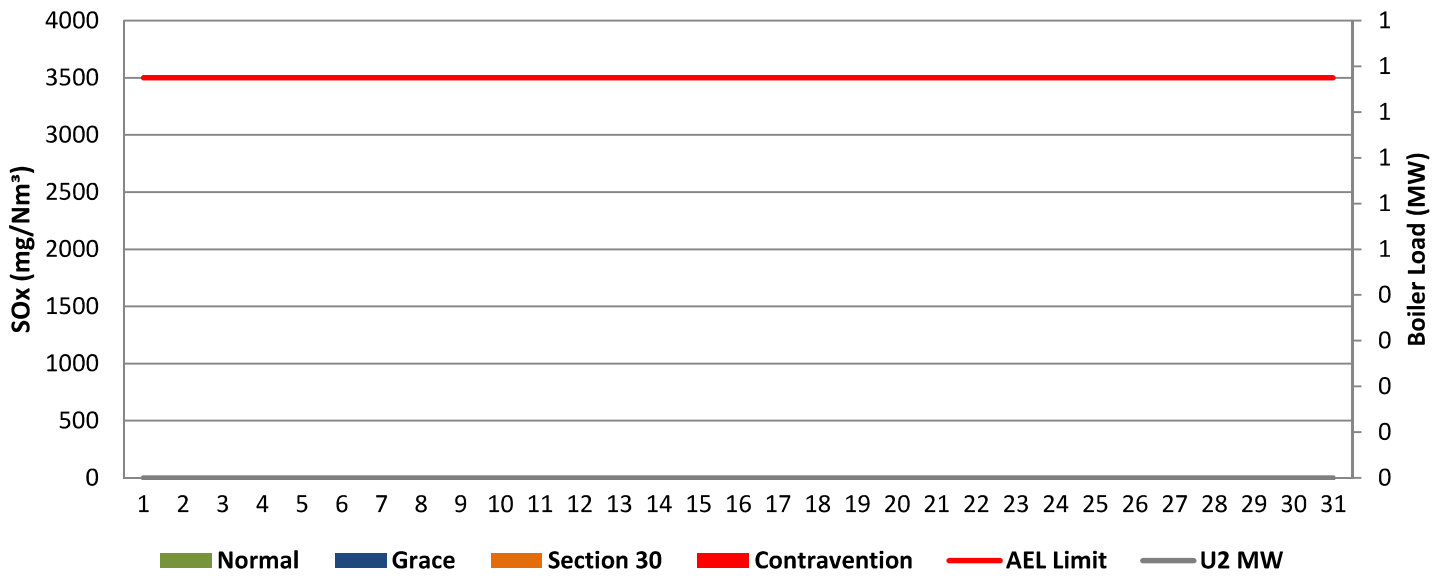
**Figure 6: Lethabo Unit 6 PM Emissions - December 2021**



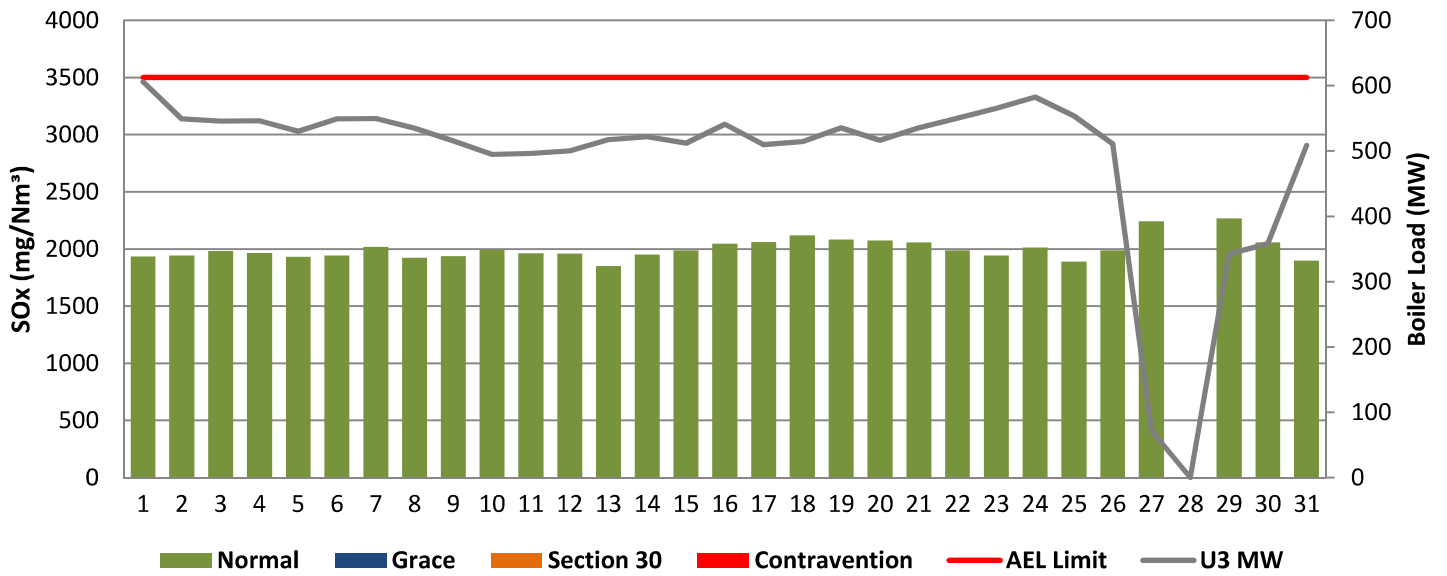
**Figure 7: Lethabo Unit 1 SOx Emissions - December 2021**



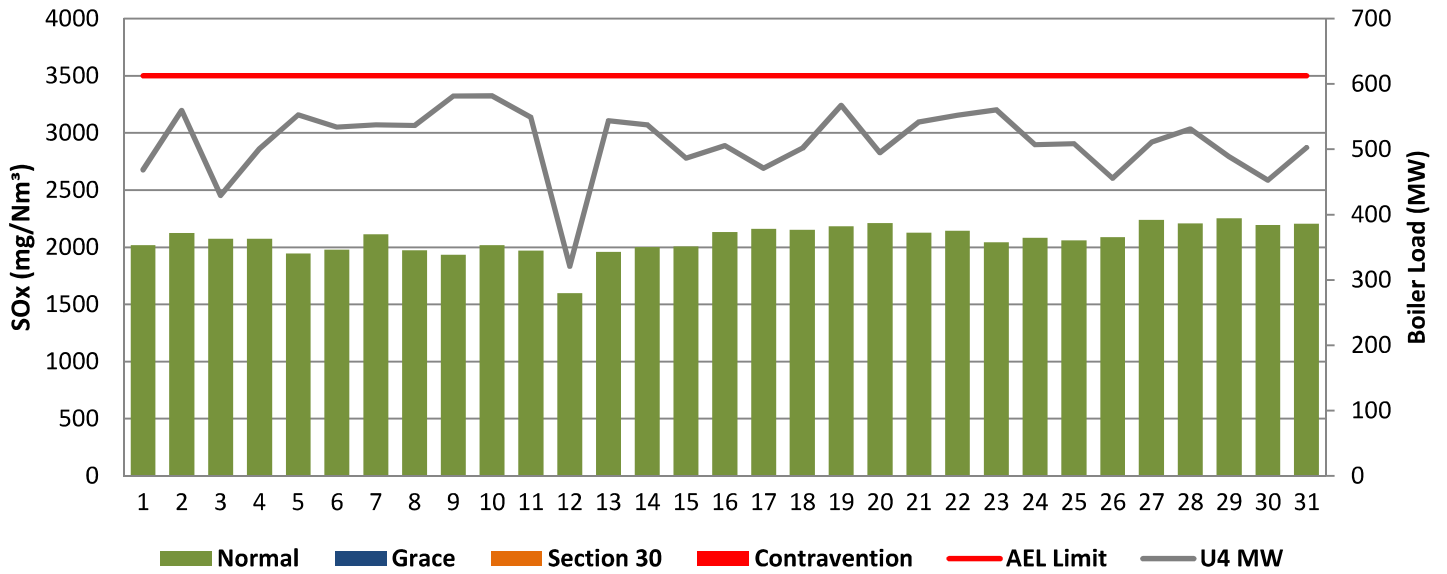
**Figure 8: Lethabo Unit 2 SOx Emissions - December 2021**



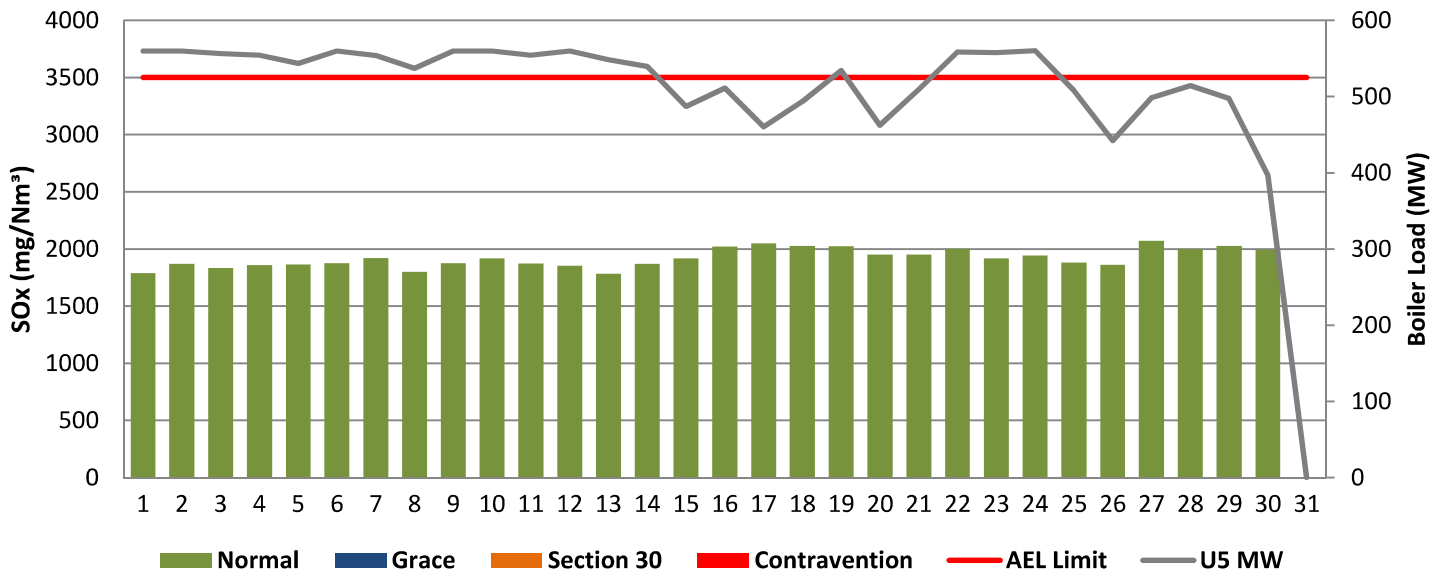
**Figure 9: Lethabo Unit 3 SOx Emissions - December 2021**



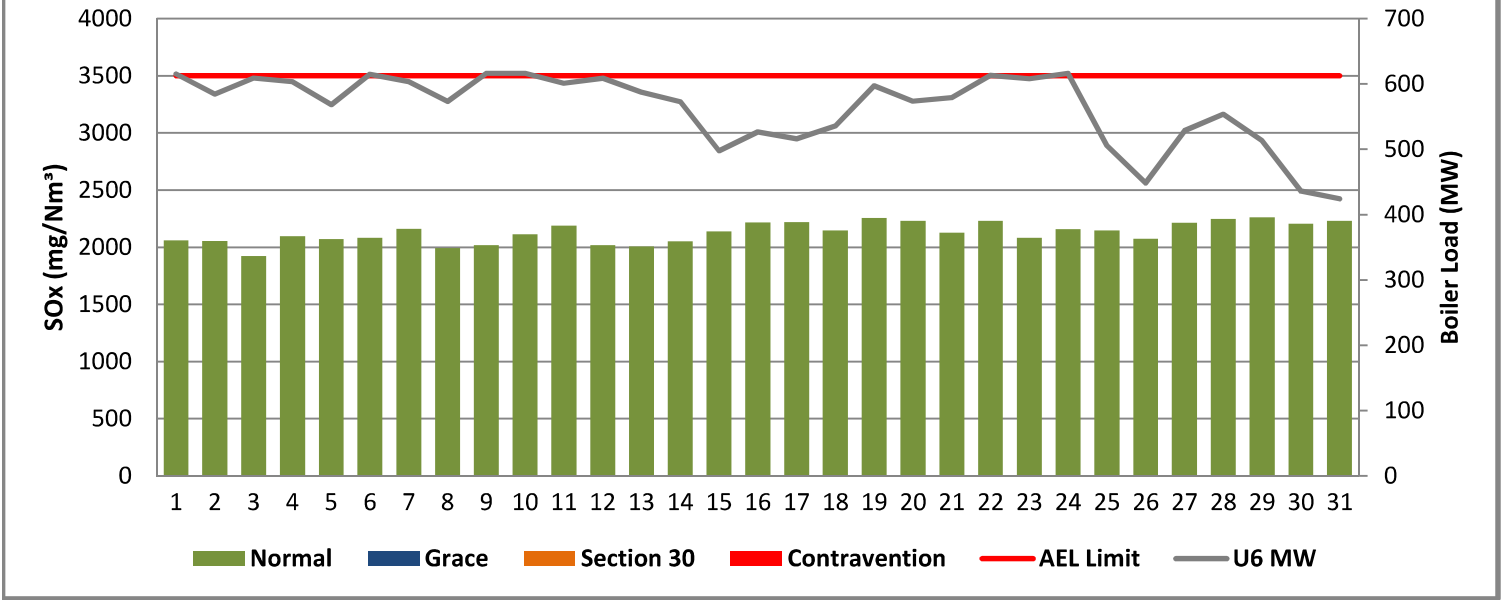
**Figure 10: Lethabo Unit 4 SOx Emissions - December 2021**



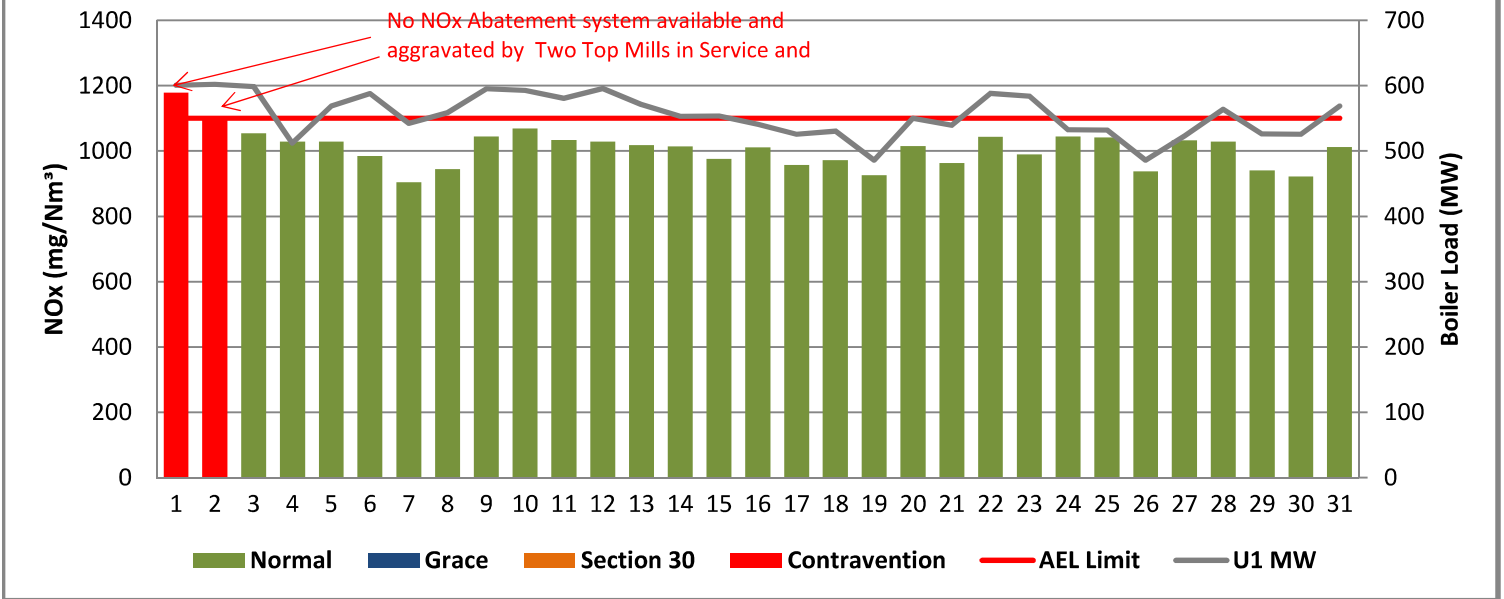
**Figure 11: Lethabo Unit 5 SOx Emissions - December 2021**



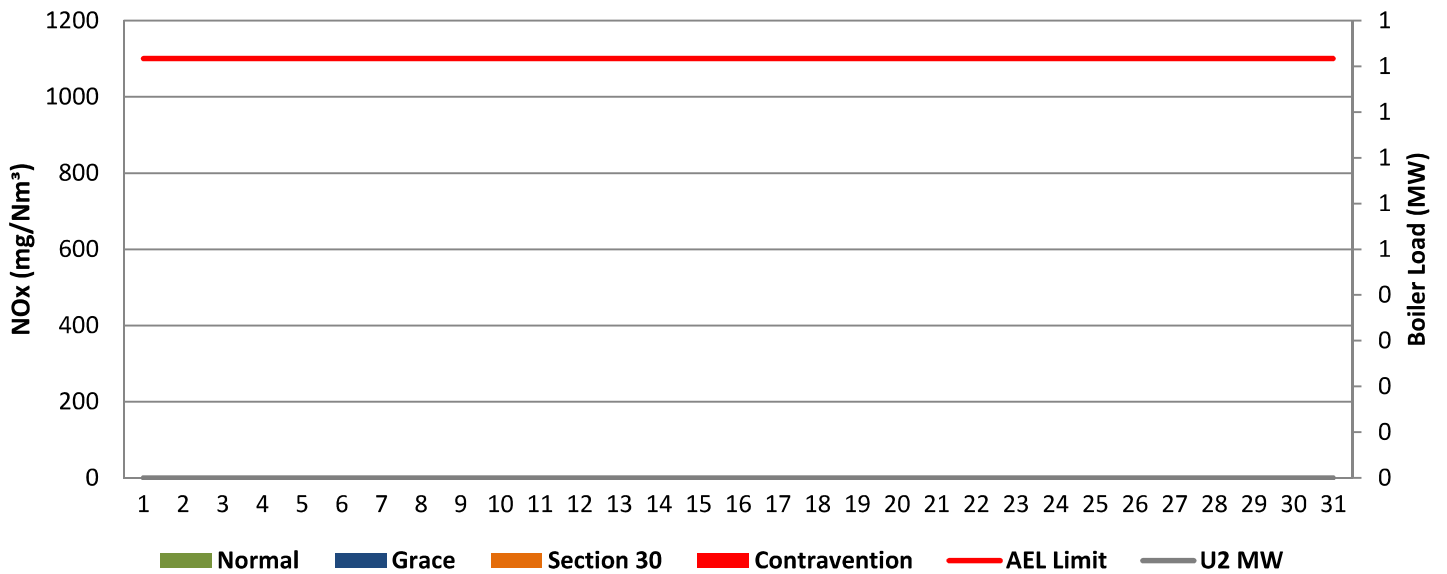
**Figure 12: Lethabo Unit 6 SOx Emissions - December 2021**



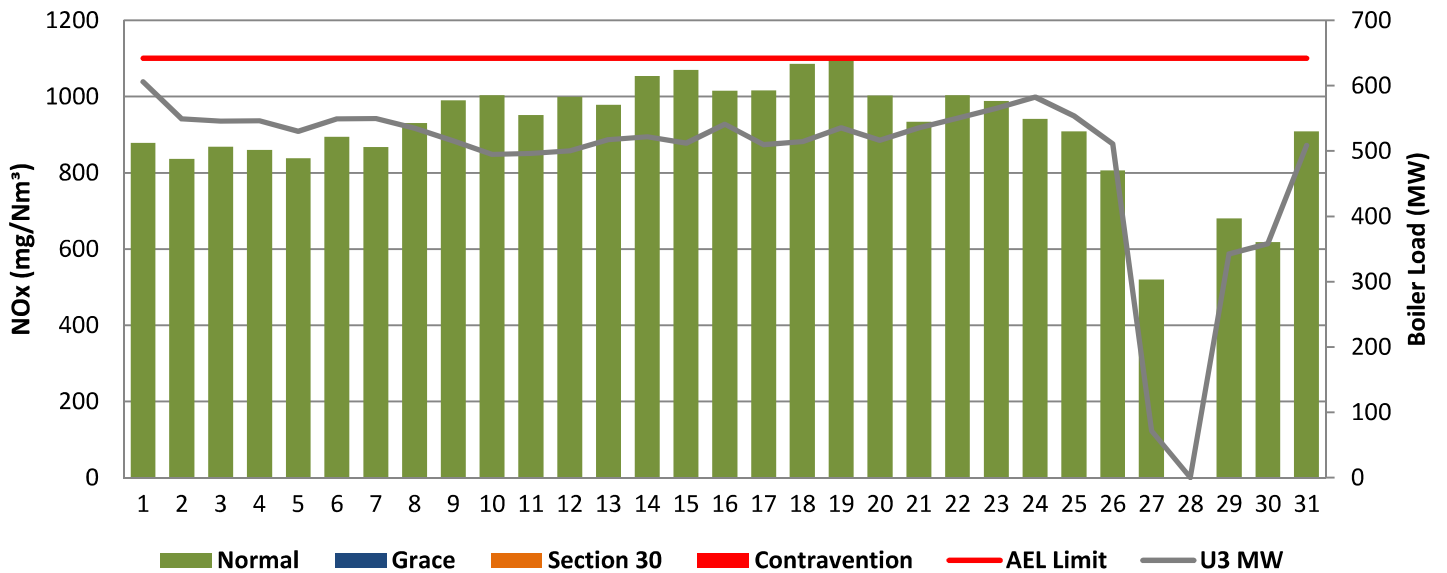
**Figure 13: Lethabo Unit 1 NOx Emissions - December 2021**



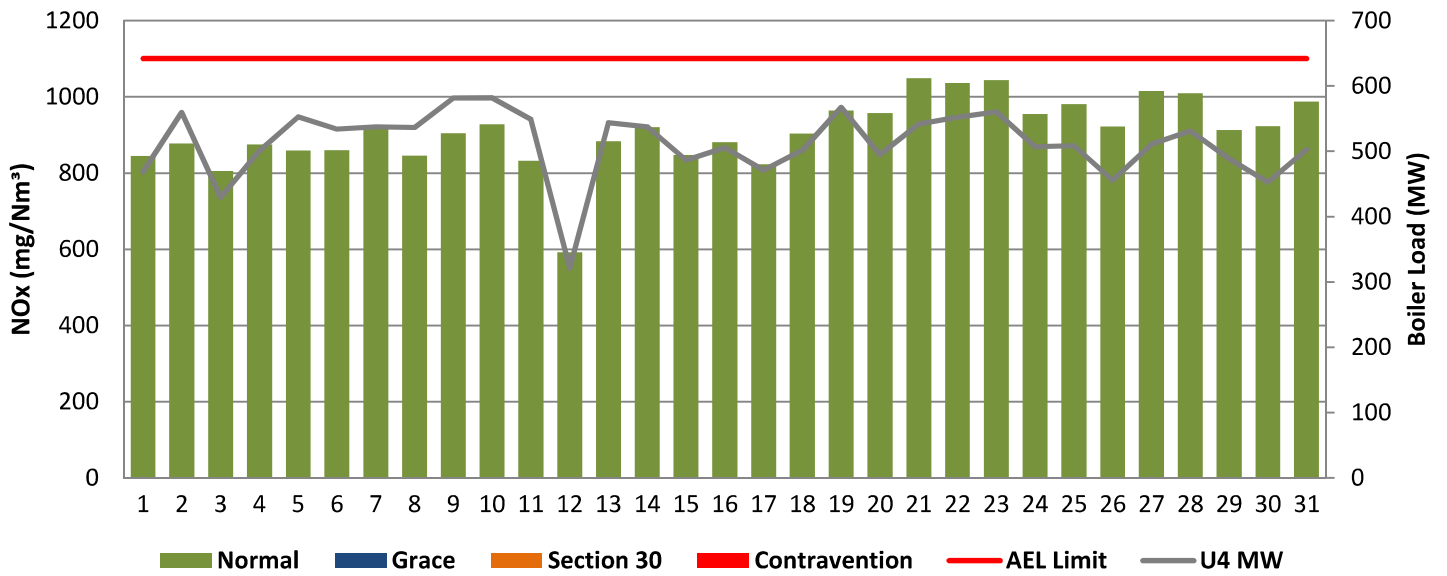
**Figure 14: Lethabo Unit 2 NOx Emissions - December 2021**



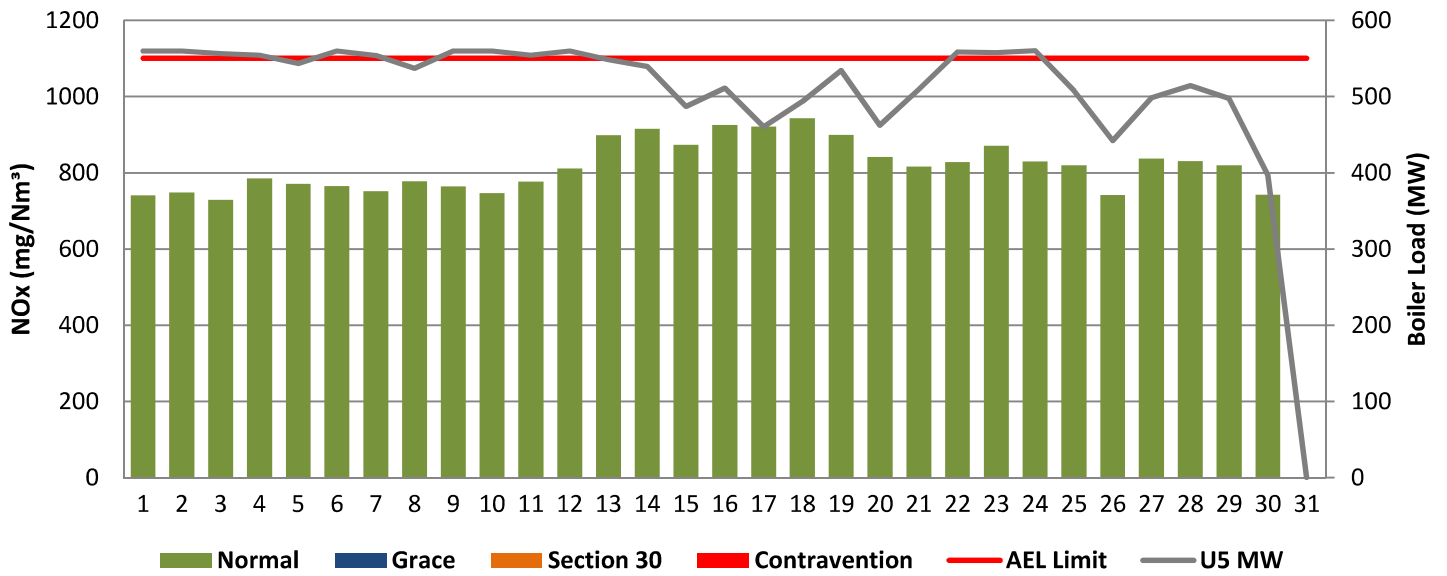
**Figure 15: Lethabo Unit 3 NOx Emissions - December 2021**



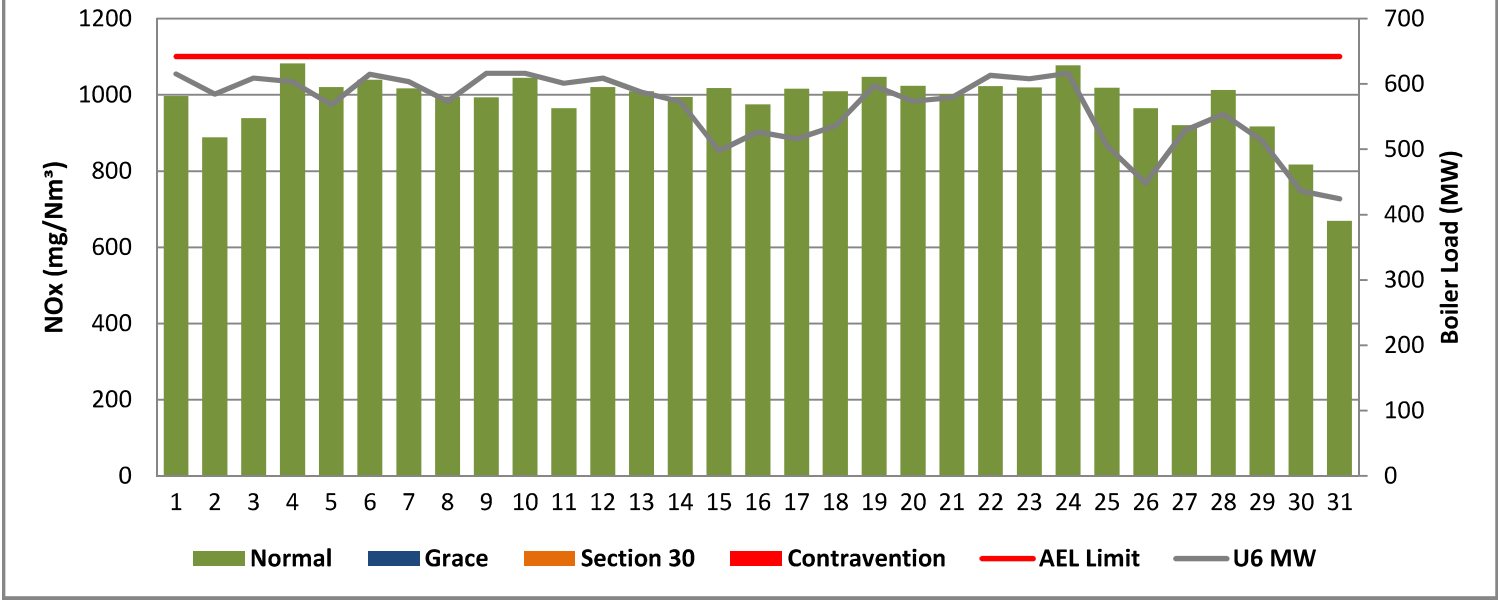
**Figure 16: Lethabo Unit 4 NOx Emissions - December 2021**



**Figure 17: Lethabo Unit 5 NOx Emissions - December 2021**



**Figure 18: Lethabo Unit 6 NOx Emissions - December 2021**



## 7 SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1	<i>Islanding test (Boiler on Bypass and DG running)</i>		<i>Islanding test. (Boiler on Bypass and DG running)</i>					
Breaker Open (BO)	10:05 PM	2021/12/18	12:20 AM	2021/12/24				
Draught Group (DG) Shut Down (SD)	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>				
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>n/a</i>	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.2								
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



<b>Unit No.3</b>	<i>Feed flow transmitter and stator coolant</i>		<i>Main turbine FRF pressure system low. (Boiler on Bypass and DG running)</i>					
<b>Breaker Open (BO)</b>	<i>12:05 AM</i>	<i>2021/12/27</i>	<i>7:10 PM</i>	<i>2021/12/29</i>				
<b>Draught Group (DG) Shut Down (SD)</b>	<i>7:35 PM</i>	<i>2021/12/27</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>				
<b>BO to DG SD (duration)</b>	<i>00:19:30</i>	<i>DD:HH:MM</i>	<i>n/a</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
<b>Fires in time</b>	<i>7:05 AM</i>	<i>2021/12/29</i>						
<b>Synch. to Grid (or BC)</b>	<i>10:36 AM</i>	<i>2021/12/29</i>						
<b>Fires in to BC (duration)</b>	<i>00:03:31</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
<b>Emissions below limit from BC (end date)</b>	<i>5:00 AM</i>	<i>2022/01/01</i>						
<b>Emissions below limit from BC (duration)</b>	<i>02:18:24</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>

<b>Unit No.4</b>	<i>Chemical dosing v/v repairs</i>							
<b>Breaker Open (BO)</b>	<i>12:00 AM</i>	<i>2021/12/12</i>						
<b>Draught Group (DG) Shut Down (SD)</b>	<i>8:00 AM</i>	<i>2021/12/12</i>						
<b>BO to DG SD (duration)</b>	<i>00:08:00</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
<b>Fires in time</b>	<i>4:10 PM</i>	<i>2021/12/12</i>						
<b>Synch. to Grid (or BC)</b>	<i>9:12 PM</i>	<i>2021/12/12</i>						
<b>Fires in to BC (duration)</b>	<i>00:05:02</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
<b>Emissions below limit from BC (end date)</b>	<i>6:00 AM</i>	<i>2021/12/16</i>						
<b>Emissions below limit from BC (duration)</b>	<i>03:08:48</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>

<b>Unit No.5</b>	<i>HP heaters repairs</i>						
<b>Breaker Open (BO)</b>	10:55 PM	2021/12/30					
<b>Draught Group (DG) Shut Down (SD)</b>	3:10 AM	2022/01/01					
<b>BO to DG SD (duration)</b>	01:04:15	DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
<b>Fires in time</b>							
<b>Synch. to Grid (or BC)</b>							
<b>Fires in to BC (duration)</b>		DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM
<b>Emissions below limit from BC (end date)</b>							
<b>Emissions below limit from BC (duration)</b>		DD:HH:MM		DD:HH:MM		DD:HH:MM	DD:HH:MM

<b>Unit No.6</b>	<i>Fly ash bunker water ingress</i>		<i>Unit Manually tripped due to loss of feed water</i>		<i>Tripped due to thyristor bridge fault</i>		
<b>Breaker Open (BO)</b>	11:00 PM	2021/12/31	9:10 AM	2021/12/02	5:30 AM	2021/12/16	
<b>Draught Group (DG) Shut Down (SD)</b>	11:40 PM	2021/12/31	10:15 AM	2021/12/02	8:00 AM	2021/12/16	
<b>BO to DG SD (duration)</b>	00:00:40	DD:HH:MM	00:01:05	DD:HH:MM	00:02:30	DD:HH:MM	DD:HH:MM
<b>Fires in time</b>			10:20 AM	2021/12/02	8:35 AM	2021/12/16	
<b>Synch. to Grid (or BC)</b>			2:11 PM	2021/12/02	6:18 PM	2021/12/16	
<b>Fires in to BC (duration)</b>		DD:HH:MM	00:03:51	DD:HH:MM	00:09:43	DD:HH:MM	DD:HH:MM
<b>Emissions below limit from BC (end date)</b>			3:00 AM	2021/12/04	12:00 AM	2021/12/17	
<b>Emissions below limit from BC (duration)</b>		DD:HH:MM	01:12:49	DD:HH:MM	00:05:42	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 December 2021 in mg/Nm<sup>3</sup>**

## 8. MAINTENANCE

<b>Unit 1</b>				
<b>Beginning of</b>	2021/12/04 00:47			
<b>Reason for Maintenance</b>	RHO pricip casing repairs			
<b>End (Time):</b>	2021/12/04 17:30			
<b>Duration</b>	16:43:00			

<b>Unit 2</b>				
<b>Beginning of</b>				
<b>Reason for Maintenance</b>				
<b>End (Time):</b>				
<b>Duration</b>				

<b>Unit 3</b>				
<b>Beginning of</b>	2021/12/05 00:00:00	2021/12/11 00:00	2021/12/12 00:00	2021/12/29 13:36
<b>Reason for Maintenance</b>	LHI precip casing repairs	LHI precip casing repairs	RHI Precip casing repairs	RHI Precip casing repairs
<b>End (Time):</b>	2021/12/05 02:13:00	2021/12/12 00:00	2021/12/12 23:18	2021/12/29 16:29
<b>Duration</b>	2:13:00	24:00:00	23:18:00	2:53:00

<b>Unit 4</b>				
<b>Beginning of</b>	2021/12/02 12:13	2021/12/02 16:21		
<b>Reason for Maintenance</b>	LHI precip casing repairs	RHO precip casing repairs		
<b>End (Time):</b>	2021/12/02 16:21	2021/12/04 23:10		
<b>Duration</b>	4:08:00	54:49:00		

<b>Unit 5</b>				
<b>Beginning of</b>				
<b>Reason for Maintenance</b>				
<b>End (Time):</b>				
<b>Duration</b>				

<b>Unit 6</b>				
<b>Beginning of</b>				
<b>Reason for Maintenance</b>				
<b>End (Time):</b>				
<b>Duration</b>				

## 9. GENERAL

### Unit 1:

NOx Exceedance on 01/12/2021 : There is no NOx Abatement system and aggravated by Two Top Mills in Service.

NOx Exceedance on 02/12/2021 : There is no NOx Abatement system and aggravated by Two Top Mills in Service.

### Unit 1:

Gaseous Monitor Availabilty on 07/12/2021 / 09/12/2021 and 10/12/2021 : The monitor availability was 79.2% on the 07/12/2021; 87.5% on 09/12/2021 and 79.2% on 10/12/2021 due to Electrical Engineering conducting UPS upgrade project, power off for several hours.

### Unit 3:

Gaseous Monitor Availabilty on 07/12/2021 / 09/12/2021 and 10/12/2021 : The monitor availability was 62.5% on the 07/12/2021; 54.2% on 09/12/2021 and 83.3% on 10/12/2021 due to Electrical Engineering conducting UPS upgrade project, power off for several hours.

### Unit 4:

Gaseous Monitor Availabilty on 07/12/2021 : The monitor availability was 45.8% due to faulty O2 analysers.

### Unit 3

Opacity PM Monitor Reading maximum on 26/12/2021 23:55 - 27/12/2021 05:05 : The Data was removed for this period.

### Unit 4

Opacity PM Monitor Availabilty on 25/12/2021 - 26/12/2021 : The monitor availability was 66.7% on the 25/12/2021 16:10 - 23:59 and 45.8% on the 26/12/2021 00:00 - 12:55 due to the monitor not reading during that period.

### Unit 3:

Unit 3 reported a NEMA Section 30 on the 09/12/2021 due to poor precipitator casing performance. Casing outages were taken to repair some of the faults. On the 12/12/2021 at 23:14 p.m. the RHI casing was returned to service and athe Emissions normalised from the 13/12/2021

**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.
3	09/12/2021	12/12/2021	ESP Poor Performance and Casing outages	Conduct Repairs on casings to improve performance	10/12/2021	20/12/2021	None		PM Exceedance >72 hours - NEMA Section 30 Reported
1	01/12/2021	02/09/2021	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

**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
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
Dec-21	0.39	OFF	0.55	0.57	0.34	0.29	0.42

**ADDENDUM TO MONTHLY EMISSIONS REPORT**

**12. DAILY EMISSIONS FIGURES**

**Final Dust Concentration (mg/Nm<sup>3</sup>)**

Date	U1	U2	U3	U4	U5	U6	Limit
01-Dec	79	OFF	104	90	95	79	100
02-Dec	98	OFF	73	252	77	85	100
03-Dec	136	OFF	174	92	80	62	100
04-Dec	128	OFF	95	129	71	80	100
05-Dec	86	OFF	96	121	75	71	100
06-Dec	109	OFF	103	89	83	89	100
07-Dec	110	OFF	136	97	78	82	100
08-Dec	89	OFF	172	84	80	70	100
09-Dec	136	OFF	106	85	90	80	100
10-Dec	70	OFF	101	89	89	80	100
11-Dec	73	OFF	262	76	77	67	100
12-Dec	86	OFF	258	OFF	90	71	100
13-Dec	68	OFF	98	369	85	66	100
14-Dec	71	OFF	88	249	92	69	100
15-Dec	64	OFF	94	99	70	49	100
16-Dec	65	OFF	115	79	76	88	100
17-Dec	53	OFF	96	55	60	54	100
18-Dec	86	OFF	97	65	72	51	100
19-Dec	372	OFF	112	88	84	76	100
20-Dec	67	OFF	93	59	55	70	100
21-Dec	93	OFF	100	105	67	77	100
22-Dec	89	OFF	84	90	75	71	100
23-Dec	90	OFF	95	86	88	76	100
24-Dec	84	OFF	102	75	92	83	100
25-Dec	89	OFF	87	102	75	53	100
26-Dec	55	OFF	71	189	70	41	100
27-Dec	51	OFF	113	80	79	60	100
28-Dec	72	OFF	OFF	88	85	71	100
29-Dec	57	OFF	OFF	64	59	58	100
30-Dec	59	OFF	35	55	57	36	100
31-Dec	71	OFF	39	65	OFF	27	100

**ADDENDUM TO MONTHLY EMISSIONS REPORT**

**Final SO<sub>x</sub> Concentration (mg/Nm<sup>3</sup>)**

Date	U1	U2	U3	U4	U5	U6	Limit
01-Dec	1801	OFF	1935	2019	1790	2060	3500
02-Dec	1826	OFF	1943	2126	1870	2055	3500
03-Dec	1809	OFF	1983	2076	1834	1922	3500
04-Dec	1857	OFF	1965	2075	1859	2098	3500
05-Dec	1745	OFF	1932	1947	1864	2072	3500
06-Dec	1781	OFF	1944	1980	1877	2082	3500
07-Dec	1885	OFF	2019	2114	1919	2163	3500
08-Dec	1753	OFF	1923	1973	1800	1993	3500
09-Dec	1759	OFF	1937	1935	1874	2020	3500
10-Dec	1881	OFF	1993	2020	1918	2113	3500
11-Dec	1861	OFF	1962	1970	1874	2190	3500
12-Dec	1834	OFF	1959	1599	1855	2017	3500
13-Dec	1722	OFF	1850	1961	1783	2007	3500
14-Dec	1773	OFF	1950	2001	1871	2051	3500
15-Dec	1791	OFF	1989	2007	1917	2140	3500
16-Dec	1926	OFF	2046	2134	2021	2219	3500
17-Dec	1904	OFF	2061	2162	2048	2221	3500
18-Dec	1810	OFF	2119	2153	2027	2147	3500
19-Dec	1850	OFF	2083	2184	2025	2255	3500
20-Dec	1871	OFF	2073	2213	1950	2231	3500
21-Dec	1896	OFF	2057	2128	1951	2127	3500
22-Dec	1866	OFF	1988	2145	2003	2232	3500
23-Dec	1763	OFF	1942	2044	1918	2084	3500
24-Dec	1773	OFF	2014	2084	1943	2159	3500
25-Dec	1825	OFF	1889	2062	1881	2148	3500
26-Dec	1836	OFF	1987	2089	1863	2075	3500
27-Dec	1950	OFF	2242	2240	2073	2215	3500
28-Dec	1931	OFF	OFF	2209	1998	2249	3500
29-Dec	1938	OFF	2266	2254	2026	2263	3500
30-Dec	1930	OFF	2059	2194	1993	2206	3500
31-Dec	1776	OFF	1898	2207	OFF	2231	3500

**ADDENDUM TO MONTHLY EMISSIONS REPORT**

**Final NOx Concentration (mg/Nm<sup>3</sup>)**

Date	U1	U2	U3	U4	U5	U6	Limit
01-Dec	1178	OFF	879	845	740	997	1100
02-Dec	1105	OFF	837	877	748	889	1100
03-Dec	1054	OFF	868	806	729	939	1100
04-Dec	1029	OFF	860	875	785	1083	1100
05-Dec	1029	OFF	838	859	771	1021	1100
06-Dec	984	OFF	894	860	765	1040	1100
07-Dec	905	OFF	867	925	752	1017	1100
08-Dec	945	OFF	930	846	778	995	1100
09-Dec	1045	OFF	990	904	764	994	1100
10-Dec	1069	OFF	1004	928	746	1045	1100
11-Dec	1034	OFF	952	833	777	965	1100
12-Dec	1029	OFF	999	592	811	1020	1100
13-Dec	1018	OFF	978	883	899	1010	1100
14-Dec	1014	OFF	1054	920	916	995	1100
15-Dec	976	OFF	1070	848	874	1018	1100
16-Dec	1012	OFF	1015	881	926	975	1100
17-Dec	957	OFF	1016	823	921	1016	1100
18-Dec	972	OFF	1086	904	943	1009	1100
19-Dec	926	OFF	1096	964	899	1047	1100
20-Dec	1015	OFF	1002	957	842	1024	1100
21-Dec	963	OFF	934	1049	817	1002	1100
22-Dec	1043	OFF	1004	1036	828	1023	1100
23-Dec	990	OFF	988	1044	871	1020	1100
24-Dec	1045	OFF	941	955	830	1078	1100
25-Dec	1042	OFF	909	981	820	1019	1100
26-Dec	938	OFF	806	922	742	965	1100
27-Dec	1033	OFF	520	1016	837	921	1100
28-Dec	1029	OFF	OFF	1010	831	1013	1100
29-Dec	941	OFF	680	913	820	917	1100
30-Dec	923	OFF	618	923	742	817	1100
31-Dec	1012	OFF	908	988	OFF	670	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
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
Dec-21	99.44%	0.7	100.00%	0.0	98.24%	2.2	98.02%	2.5	100.00%	0.0	100.00%	0.0

SO<sub>3</sub> 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
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
Dec-21	97.72%	0.7	OFF	OFF	96.64%	1.0	97.18%	0.9	99.87%	0.0	100.00%	0.0

**ADDENDUM TO MONTHLY EMISSIONS REPORT**

**Particulate Emission Monitors**

<b>Availability</b>						
	<b>Unit 1</b>	<b>Unit 2</b>	<b>Unit 3</b>	<b>Unit 4</b>	<b>Unit 5</b>	<b>Unit 6</b>
<b>Jan-21</b>	86.90%	99.60%	99.74%	100.00%	91.53%	99.44%
<b>Feb-21</b>	OFF	99.70%	98.46%	100.00%	94.64%	98.90%
<b>Mar-21</b>	OFF	99.87%	99.06%	96.15%	99.60%	100.00%
<b>Apr-21</b>	83.69%	99.65%	99.28%	99.58%	99.86%	99.87%
<b>May-21</b>	99.01%	100.00%	94.83%	99.72%	97.31%	99.38%
<b>Jun-21</b>	99.72%	99.17%	99.31%	99.83%	99.86%	99.82%
<b>Jul-21</b>	98.12%	99.60%	99.87%	99.04%	98.22%	99.06%
<b>Aug-21</b>	100.00%	99.60%	99.60%	99.36%	100.00%	100.00%
<b>Sep-21</b>	98.61%	96.91%	99.03%	99.54%	99.72%	OFF
<b>Oct-21</b>	95.51%	99.06%	99.46%	99.87%	99.87%	OFF
<b>Nov-21</b>	99.60%	99.54%	99.86%	99.00%	98.61%	99.80%
<b>Dec-21</b>	98.39%	OFF	96.12%	96.81%	99.87%	100.00%

**Gaseous Emission Monitors**

<b>Availability</b>												
<b>Month</b>	<b>Unit 1</b>		<b>Unit 2</b>		<b>Unit 3</b>		<b>Unit 4</b>		<b>Unit 5</b>		<b>Unit 6</b>	
	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>
<b>Jan-21</b>	99.56%	99.56%	99.60%	99.73%	99.12%	99.12%	92.39%	92.39%	99.87%	99.87%	100.00%	100.00%
<b>Feb-21</b>	OFF	OFF	99.70%	99.70%	99.70%	99.70%	92.56%	92.71%	98.65%	98.65%	98.27%	98.52%
<b>Mar-21</b>	OFF	OFF	100.00%	100.00%	100.00%	100.00%	96.07%	96.07%	99.97%	99.97%	99.60%	99.60%
<b>Apr-21</b>	99.47%	99.76%	99.83%	99.83%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.84%	99.84%
<b>May-21</b>	94.33%	94.33%	99.87%	100.00%	100.00%	100.00%	99.87%	99.87%	100.00%	100.00%	100.00%	100.00%
<b>Jun-21</b>	99%	99%	99.72%	99.86%	100%	100%	99.76%	99.76%	99.86%	99.86%	99.71%	99.71%
<b>Jul-21</b>	99.73%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.66%	98.66%	98.79%	98.92%
<b>Aug-21</b>	89.25%	89.78%	99.60%	99.73%	99.73%	99.73%	100.00%	100.00%	99.87%	99.87%	95.27%	95.27%
<b>Sep-21</b>	99.58%	99.58%	99.55%	99.55%	99.58%	99.72%	99.70%	99.70%	99.58%	99.72%	OFF	OFF
<b>Oct-21</b>	99.52%	99.36%	99.73%	99.87%	99.87%	99.87%	99.73%	99.87%	100.00%	100.00%	OFF	OFF
<b>Nov-21</b>	99.62%	99.81%	94.79%	94.79%	100.00%	99.86%	99.84%	99.84%	100.00%	100.00%	99.81%	99.81%
<b>Dec-21</b>	97.85%	97.85%	OFF	OFF	91.28%	91.42%	100.00%	99.87%	100.00%	100.00%	99.87%	100.00%

**ADDENDUM TO MONTHLY EMISSIONS REPORT**

<b>Oxygen Monitor Availability</b>						
	<b>Unit 1</b>	<b>Unit 2</b>	<b>Unit 3</b>	<b>Unit 4</b>	<b>Unit 5</b>	<b>Unit 6</b>
<b>Jan-21</b>	99.56%	99.06%	99.54%	100.00%	99.87%	99.87%
<b>Feb-21</b>	OFF	99.70%	99.55%	99.26%	98.32%	98.52%
<b>Mar-21</b>	OFF	100.00%	100.00%	96.43%	99.97%	99.87%
<b>Apr-21</b>	99.40%	98.91%	99.87%	99.72%	100.00%	99.37%
<b>May-21</b>	94.16%	99.87%	99.86%	99.87%	99.87%	98.63%
<b>Jun-21</b>	99.58%	99.79%	99.72%	99.76%	99.72%	99.55%
<b>Jul-21</b>	100.00%	99.87%	99.60%	99.52%	98.73%	98.79%
<b>Aug-21</b>	99.46%	99.87%	99.60%	100.00%	100.00%	95.45%
<b>Sep-21</b>	99.72%	99.13%	97.78%	99.55%	99.72%	OFF
<b>Oct-21</b>	99.84%	99.87%	97.04%	99.87%	99.73%	OFF
<b>Nov-21</b>	99.05%	89.58%	98.06%	100.00%	99.86%	99.81%
<b>Dec-21</b>	97.58%	OFF	91.28%	94.76%	99.86%	100.00%

**14. EFFICIENCY**

<b>ESP Efficiency (%)</b>						
	<b>Unit 1</b>	<b>Unit 2</b>	<b>Unit 3</b>	<b>Unit 4</b>	<b>Unit 5</b>	<b>Unit 6</b>
<b>Jan-21</b>	99.622%	99.689%	99.717%	99.832%	99.813%	99.745%
<b>Feb-21</b>	OFF	99.722%	99.736%	99.799%	99.779%	99.775%
<b>Mar-21</b>	OFF	99.659%	99.769%	99.823%	99.802%	99.817%
<b>Apr-21</b>	99.679%	99.788%	99.777%	99.825%	99.858%	99.788%
<b>May-21</b>	99.866%	99.809%	99.825%	99.791%	99.782%	99.786%
<b>Jun-21</b>	99.894%	99.724%	99.844%	99.856%	99.839%	99.852%
<b>Jul-21</b>	99.916%	99.756%	99.819%	99.879%	99.887%	99.838%
<b>Aug-21</b>	99.894%	99.656%	99.810%	99.759%	99.883%	99.864%
<b>Sep-21</b>	99.836%	99.567%	99.756%	99.855%	99.873%	OFF
<b>Oct-21</b>	99.752%	99.776%	99.789%	99.800%	99.823%	OFF
<b>Nov-21</b>	99.870%	99.743%	99.780%	99.798%	99.820%	99.831%
<b>Dec-21</b>	99.834%	OFF	99.744%	99.757%	99.837%	99.864%

**ADDENDUM TO MONTHLY EMISSIONS REPORT**

**15. REMARKS**

<b>UNIT</b>	<b>MWLOSS</b>	<b>REASON</b>	<b>ACTUALSTARTDATE</b>	<b>ACTUALENDDATE</b>
1	119	RHO pricip casing repairs	2021/12/04 00:47:00	2021/12/04 17:30:00
1	593	Islanding test	2021/12/18 22:01:00	2021/12/19 05:17:00
1	297	System Generated Ramp Event for Event id : 1638718	2021/12/19 05:17:00	2021/12/19 06:47:00
1	593	Islanding test.	2021/12/24 00:15:00	2021/12/24 00:56:00
1	297	System Generated Ramp Event for Event id : 1640158	2021/12/24 00:56:00	2021/12/24 02:26:00
2	593	Interim Repairs	2021/12/01 00:00:00	2021/12/31 23:59:59
3	68	High stack emissions	2021/12/01 20:13:00	2021/12/02 00:00:00
3	50	LHI precip casing repairs	2021/12/05 00:00:00	2021/12/05 02:13:00
3	50	AM: High stack emissions.	2021/12/05 20:08:00	2021/12/06 00:15:00
3	50	high stack emissions.	2021/12/09 07:52:00	2021/12/11 00:00:00
3	50	LHI Pricip casing repairs	2021/12/11 00:00:00	2021/12/12 00:00:00
3	50	RHI Precip casing repairs	2021/12/12 00:00:00	2021/12/12 23:18:00
3	50	High stack emissions	2021/12/13 10:18:00	2021/12/14 03:56:00
3	50	EF: High stack emissions	2021/12/20 20:05:00	2021/12/20 23:51:00
3	593	Feed flow transmitter and stator coolant	2021/12/27 00:01:00	2021/12/29 10:36:00
3	297	System Generated Ramp Event for Event id : 1640873	2021/12/29 10:36:00	2021/12/29 13:36:00
3	118	AM: RHI precip casing repairs	2021/12/29 13:36:00	2021/12/29 16:29:00
3	593	Main turbine FRF pressure system low.	2021/12/29 19:04:00	2021/12/30 07:06:00
3	296	System Generated Ramp Event for Event id : 1641741	2021/12/30 07:06:00	2021/12/30 09:36:00
4	80	high stack emission.	2021/12/01 00:00:00	2021/12/01 00:44:00
4	80	High stack emissions	2021/12/01 07:30:00	2021/12/01 10:36:00
4	180	High stack emissions	2021/12/01 10:36:00	2021/12/02 00:54:00
4	80	AM: LHI precip casing	2021/12/02 12:13:00	2021/12/02 16:21:00
4	170	High stack emissions	2021/12/03 00:12:00	2021/12/03 05:12:00
4	70	High stack emissions.	2021/12/03 08:08:00	2021/12/03 09:41:00
4	170	EF: High stack emissions	2021/12/03 09:41:00	2021/12/04 00:46:00
4	70	RHO pricip casing repairs	2021/12/04 00:46:00	2021/12/04 23:10:00
4	102	High stack emissions.	2021/12/06 12:07:00	2021/12/06 17:03:00
4	70	High stack emissions.	2021/12/06 19:00:00	2021/12/07 00:07:00
4	593	Chemical dosing v/v repairs	2021/12/11 23:55:00	2021/12/12 21:12:00
4	296	System Generated Ramp Event for Event id : 1636578	2021/12/12 21:12:00	2021/12/12 23:42:00
5	160	FAB 3 water ingress.	2021/12/30 16:54:00	2021/12/30 22:47:00
5	593	HP heaters repairs	2021/12/30 22:47:00	2021/12/31 23:59:59
6	593	Unit Manually tripped due to loss of feed water flow	2021/12/02 09:01:00	2021/12/02 14:11:00
6	297	System Generated Ramp Event for Event id : 1636100	2021/12/02 14:11:00	2021/12/02 15:41:00
6	593	Tripped due to thyristor bridge fault	2021/12/16 05:22:00	2021/12/16 18:18:00
6	296	System Generated Ramp Event for Event id : 1637923	2021/12/16 18:18:00	2021/12/16 20:48:00
6	218	Fly ash bunker 3 water ingress.	2021/12/31 18:23:00	2021/12/31 22:54:00
6	593	Fly ash bunker water ingress	2021/12/31 22:54:00	2021/12/31 23:59:59

<b>PM Exceedances</b>		
U1.	SO3 plant trip on communication fault 02/12 @23:43 to 03/12@ 02:55 SO3 plant trip again 06:59-07:29 ESP Poor performance	03-Dec
U1.	RHO casing repairs	04-Dec
U1.	ESP Poor performance SO3 plant is off for blower motor replacement	06-Dec
U1.	ESP Poor performance	07-Dec
U1.	ESP Poor performance and manual rapping	09-Dec
U1.	Unit synchronized 2021/12/19 @ 05:17, need to be below the limit on 2021/12/22 @ 05:17 and remain below the limit on the 2021/12/23	19-Dec
U3.	Poor ESP performance (LHI &RHI)	01-Dec
U3.	ESP Poor performance and manual rapping	03-Dec
U3.	ESP poor performance	06-Dec
U3.	ESP Poor Performance	07-Dec
U3.	ESP poor performance and high hopper levers	08-Dec
U3.	NEMA S30 reported ESP poor performance	09-Dec
U3.	ESP poor performance Unit was deloaded to 500MW but could not be reduced further due to spray water system	10-Dec
U3.	Unit load loss of 118mw due to spray water valves and high stack emissions changed to LHI casing PTW	11-Dec
U3.	RHI casing outage	12-Dec
U3.	ESP Poor performance	16-Dec
U3.	ESP poor performance	19-Dec
U3.	ESP Poor performance SO3 PLANT TEMPERATURES DROPS RAPIDLY ,SUSPECT THE FLOW DROPS AWAY AND CANT SEE IT ON THE VDU DUE TO THE FLOW METER NOT WORKING.	24-Dec
U3.	Unit Shut Down 27/12/2021 00:05	27-Dec
U4.	LHI Casing was shutdown due to Foreign object which was found on Hopper 1 and RHO casing is poorly performing	02-Dec
U4.	RHO casing repair	04-Dec
U4.	ESP poor performance SO3 plant tripped on air blower fault 20:30 - 22:51	05-Dec
U4.	Unit synchronized 2021/12/12 @ 21:12, need to be below the limit on 2021/12/15 @ 21:12 and remain below the limit on the 2021/12/16	12-Dec
U4.	Unit Light Up	13-Dec
U4.	Unit Light Up	14-Dec
U4.	SO3 off for lance leak repair. LHO F3 tripping on undervoltage, EMS to attend to it today	21-Dec
U4.	ESP poor performance	25-Dec
U4.	ESP Poor performance	26-Dec
U5.	Unit Shut down @22:47	30-Dec
U6.	Unit Shut Down	31-Dec
<b>NOX Exceedances</b>		
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	01-Dec
U1.	There is no NOx Abatement system and aggravated by Two Top Mills in Service.	02-Dec