



Mr. Chakane Sibaya
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Date:
31 March 2023

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LRP02PLA000 _0326/20221103

Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR FEBRUARY 2023

Please find attached Lethabo Power Station emission report for the month of February 2023.

Also attached are the Ambient Air Quality Monitoring Report, Complaints Register and the Fugitive Dust Fallout Monitoring Report for February 2023.

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

Yours sincerely

bonga Mvelase Digitally signed by bonga Mvelase
Date: 2023.03.30 16:28:16 +02'00'

Bongani Mvelase
GENERAL MANAGER

Generation Division (Cluster 1)
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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
February 2023
Emission Report**

Reference number: **LRP02PLA000_0326/20221103**
 Document Type: **Report**
 Area of Applicability: **Environment**
 Report Date: **March-2023**
 Classification: **Controlled Disclosure**

Signatures:

Compiled by:


 P Parag
System Engineer

Date: 2023/03/27

Verified by :


 W de Klerk
**Senior Advisor -
Environment**

Date: 2023/03/27

Reviewed by:


 N Mazibuko
BPE Manager

Date:

Reviewed by:


 C Govinden
PE Manager

Date: 2023-03-28

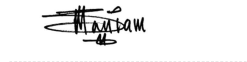
Reviewed by:

pp

 L Nel
C&I Manager

Date: 2023-03-28

Reviewed by:


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Date: 2023-03-28

Approved by:


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Engineering Manager

Date: 2023-03-28

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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 Feb-2023
	Coal	Tons	2 000 000	1 036 158
	Fuel Oil	Tons	1 700	3145.11

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Feb-2023
	Energy	GWh	2560.32	1 393.26
	Ash	Tons	770 000	400 475.1
	RE Ash	kg/MWh	Not Specified	287.44

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.656 (Standard)	0.700
Ash Content	%	37.37 (Standard)	38.650

*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	SO ₂	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. ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Feb-2023	Technology Type	SO ₃ Utilization Feb-2023
Unit 1	<i>Electrostatic Precipitator (ESP)</i>	99.81%	SO ₃	100.0%
Unit 2	<i>Electrostatic Precipitator (ESP)</i>	99.80%	SO ₃	88.1%
Unit 3	<i>Electrostatic Precipitator (ESP)</i>	99.79%	SO ₃	100.0%
Unit 4	<i>Electrostatic Precipitator (ESP)</i>	<i>Unit Off-line</i>	SO ₃	<i>Off-line</i>
Unit 5	<i>Electrostatic Precipitator (ESP)</i>	99.67%	SO ₃	97.1%
Unit 6	<i>Electrostatic Precipitator (ESP)</i>	99.73%	SO ₃	97.8%

Note: ESP plant does not have bypass mode operation, hence plant 100% Utilised.

5. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO
Unit 1	99.1	99.9	99.9
Unit 2	96.9	100.0	100.0
Unit 3	98.7	100.0	100.0
Unit 4	OFF	100.0	100.0
Unit 5	93.8	100.0	99.3
Unit 6	96.3	100.0	100.0

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO₂

6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of February 2023

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	174.7	2 837	1 515
Unit 2	123.3	2 058	826
Unit 3	162.1	2 795	1 183
Unit 4	0.0	0	0
Unit 5	216.6	3327	1231
Unit 6	178.6	2 318	978
SUM	855.2	13 334	5 732

Table 6.2: Operating days in compliance to PM AEL Limit - February 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	17	11	0	0	11	94.3
Unit 2	14	7	0	0	7	146.0
Unit 3	17	9	0	0	9	103.3
Unit 4	0	0	0	0	0	
Unit 5	12	9	0	2	11	149.8
Unit 6	13	11	0	1	12	145.1
SUM	73	47	0	3	50	

Table 6.3: Operating days in compliance to SO₂ AEL Limit - February 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO ₂ (mg/Nm ³)
Unit 1	28	0	0	0	0	1 537.1
Unit 2	24	0	0	0	0	1 552.3
Unit 3	27	0	0	0	0	1 794.2
Unit 4	0	0	0	0	0	
Unit 5	26	0	0	0	0	1 889.6
Unit 6	27	0	0	0	0	1 664.6
SUM	132	0	0	0	0	

Table 6.4: Operating days in compliance to NOx AEL Limit - February 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	28	0	0	0	0	815.9
Unit 2	24	0	0	0	0	600.5
Unit 3	27	0	0	0	0	749.8
Unit 4	0	0	0	0	0	
Unit 5	26	0	0	0	0	696.0
Unit 6	27	0	0	0	0	676.9
SUM	132	0	0	0	0	

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO₂

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
Contravention	RED	Emissions above ELV but outside grace or S30 incident conditions

Figure 1: Lethabo Unit 1 PM Emissions - February 2023

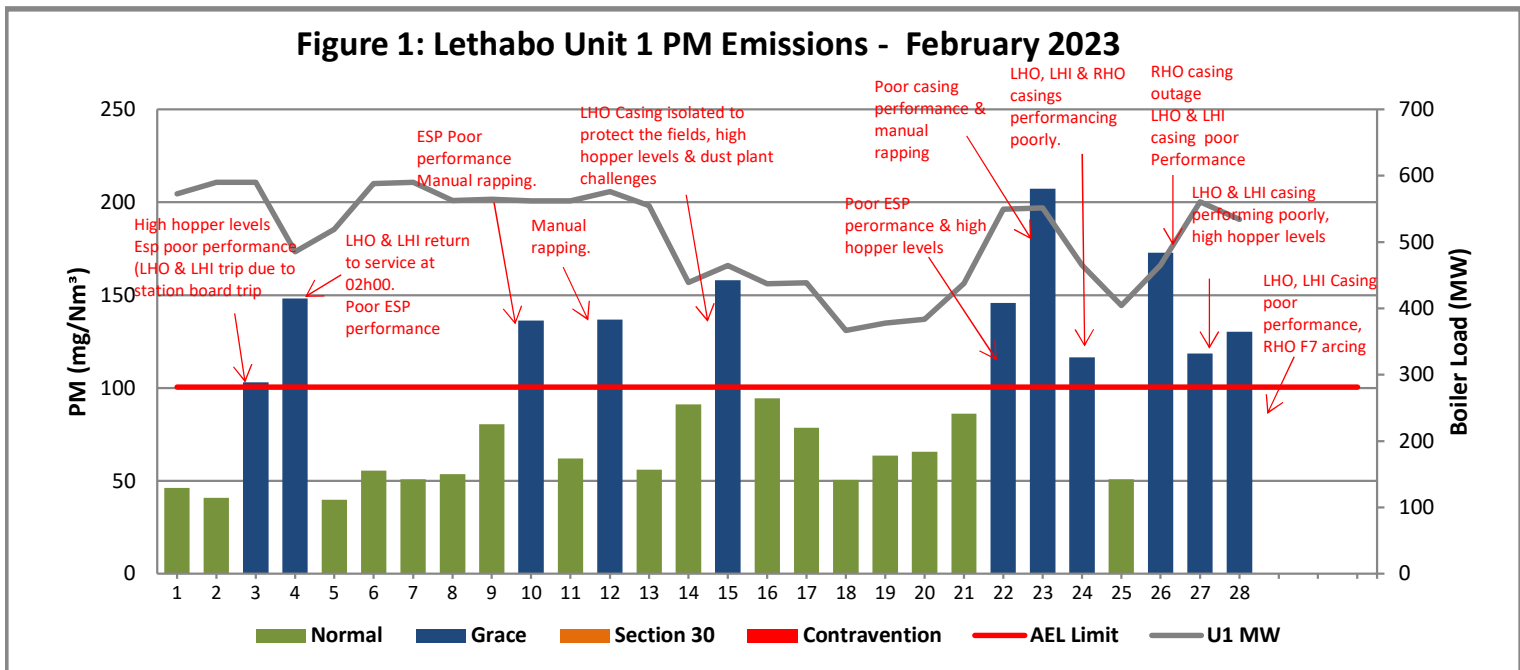


Figure 2: Lethabo Unit 2 PM Emissions - February 2023

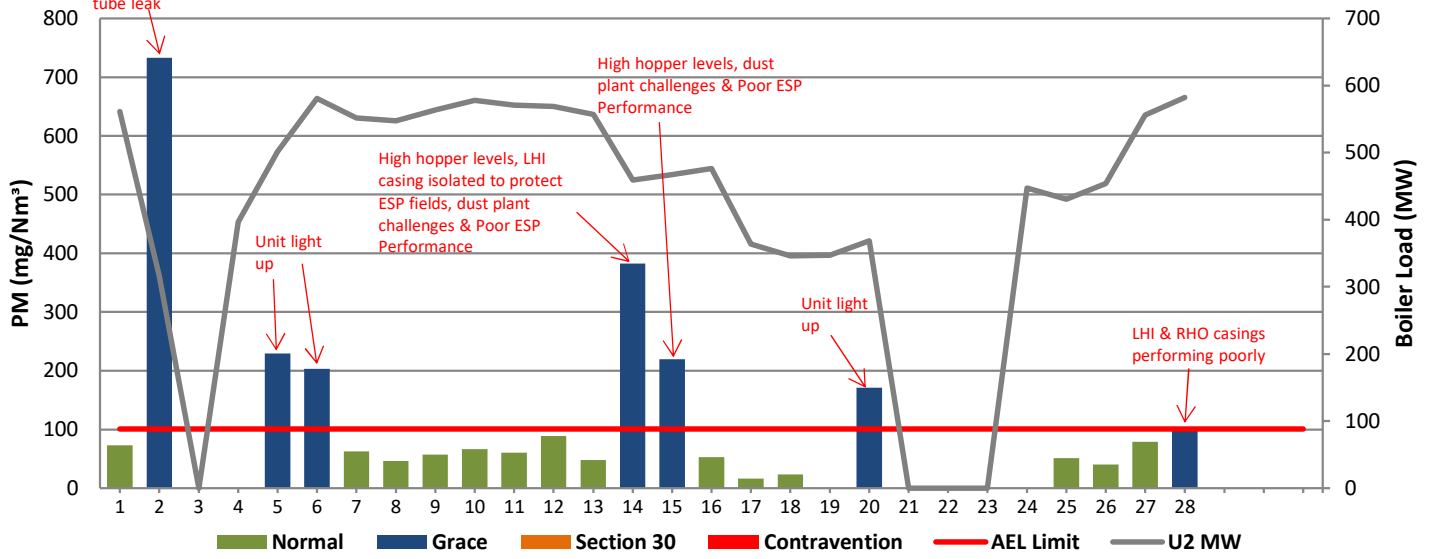


Figure 3: Lethabo Unit 3 PM Emissions - February 2023

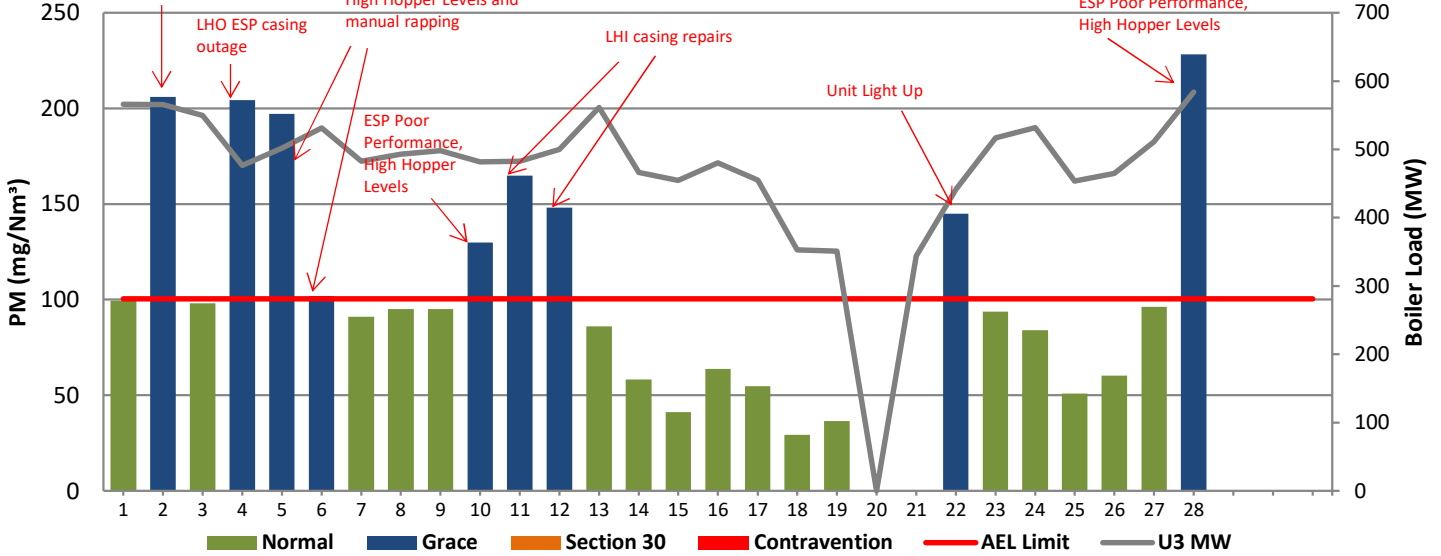


Figure 4: Lethabo Unit 4 PM Emissions - February 2023

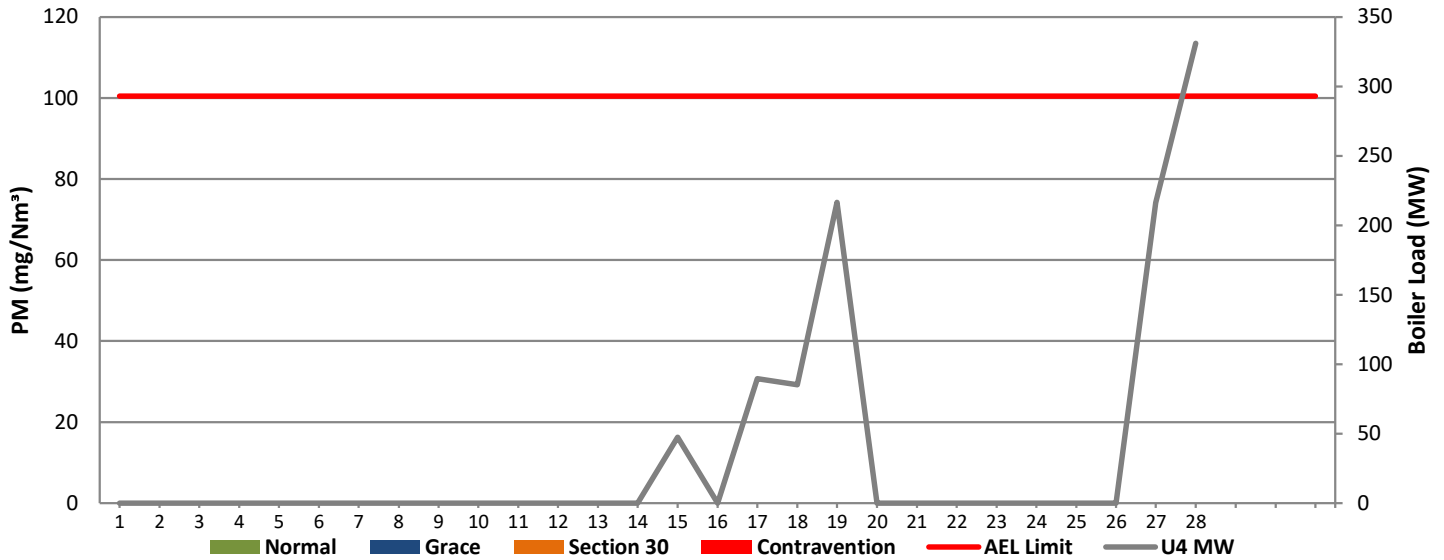


Figure 5: Lethabo Unit 5 PM Emissions - February 2023

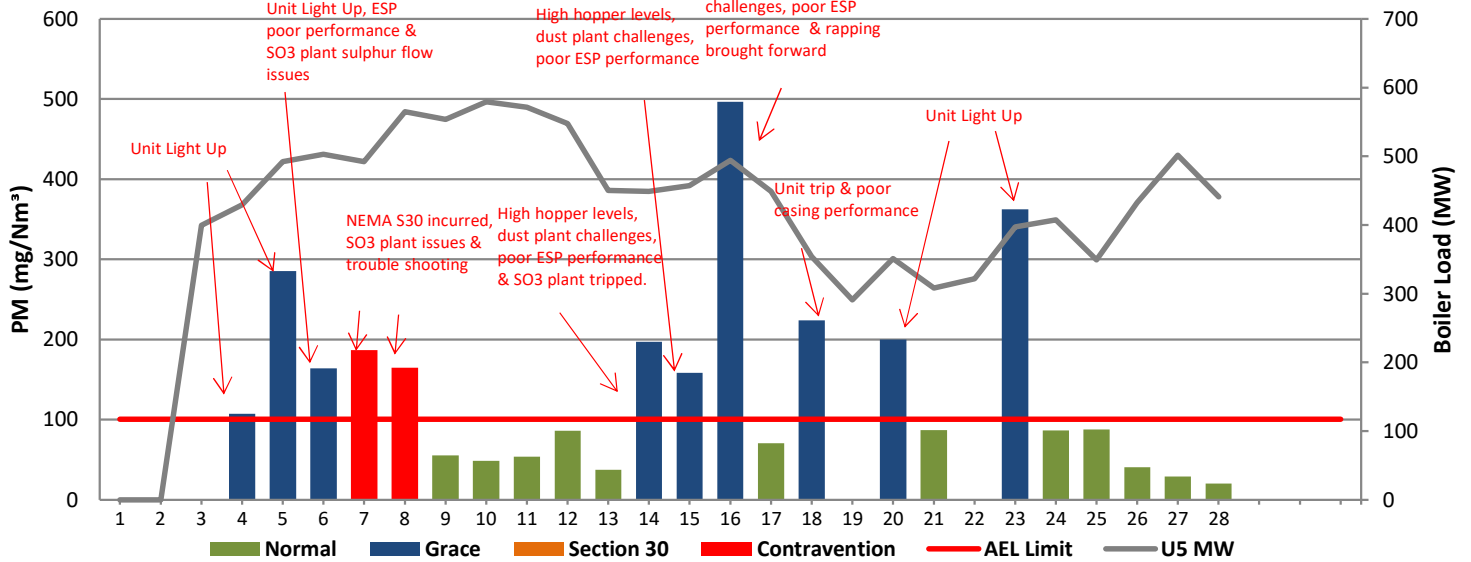


Figure 6: Lethabo Unit 6 PM Emissions - February 2023

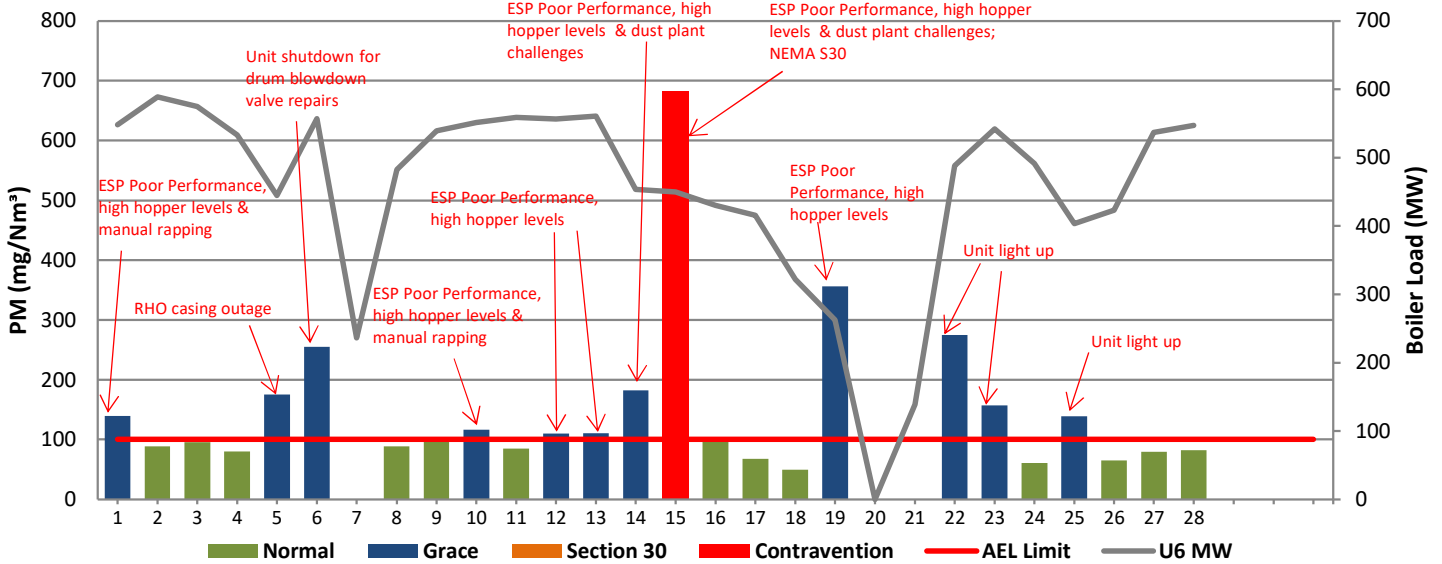


Figure 7: Lethabo Unit 1 SO₂ Emissions - February 2023

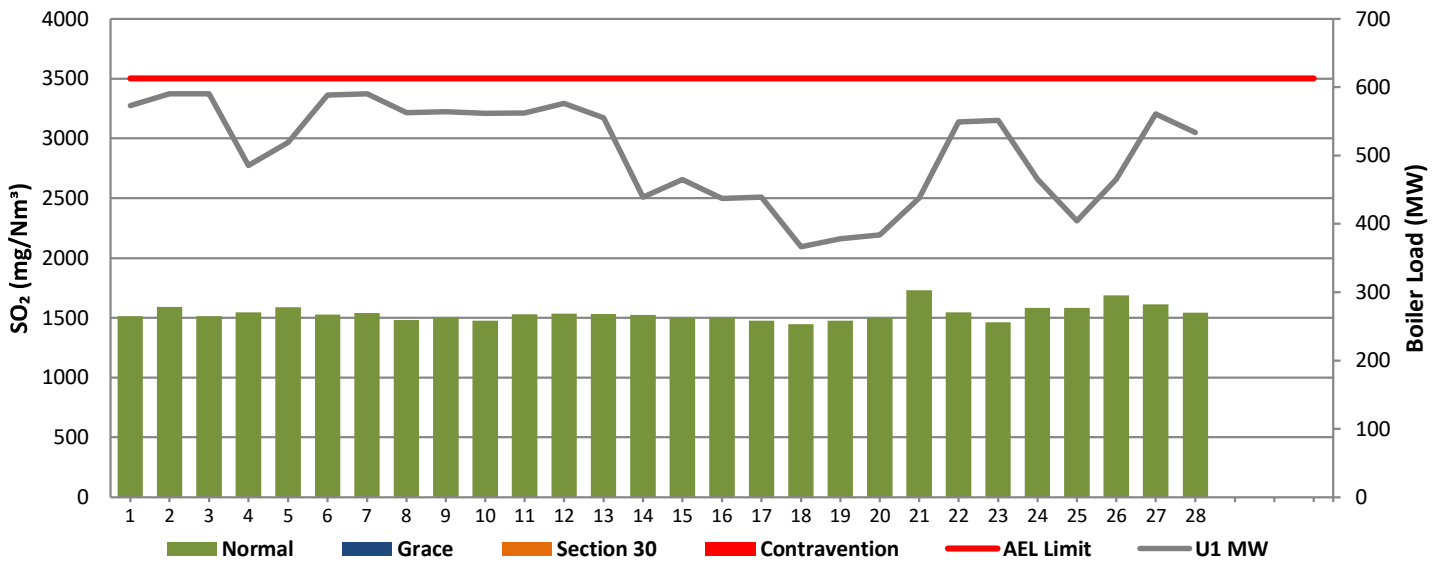


Figure 8: Lethabo Unit 2 SO₂ Emissions - February 2023

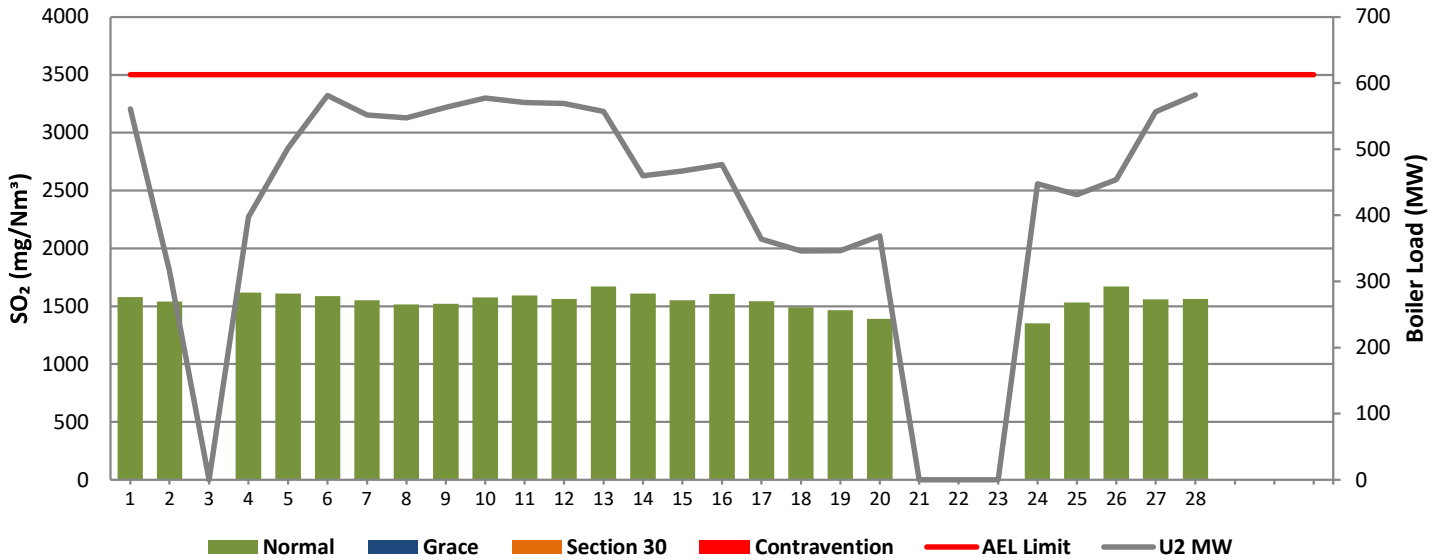


Figure 9: Lethabo Unit 3 SO₂ Emissions - February 2023

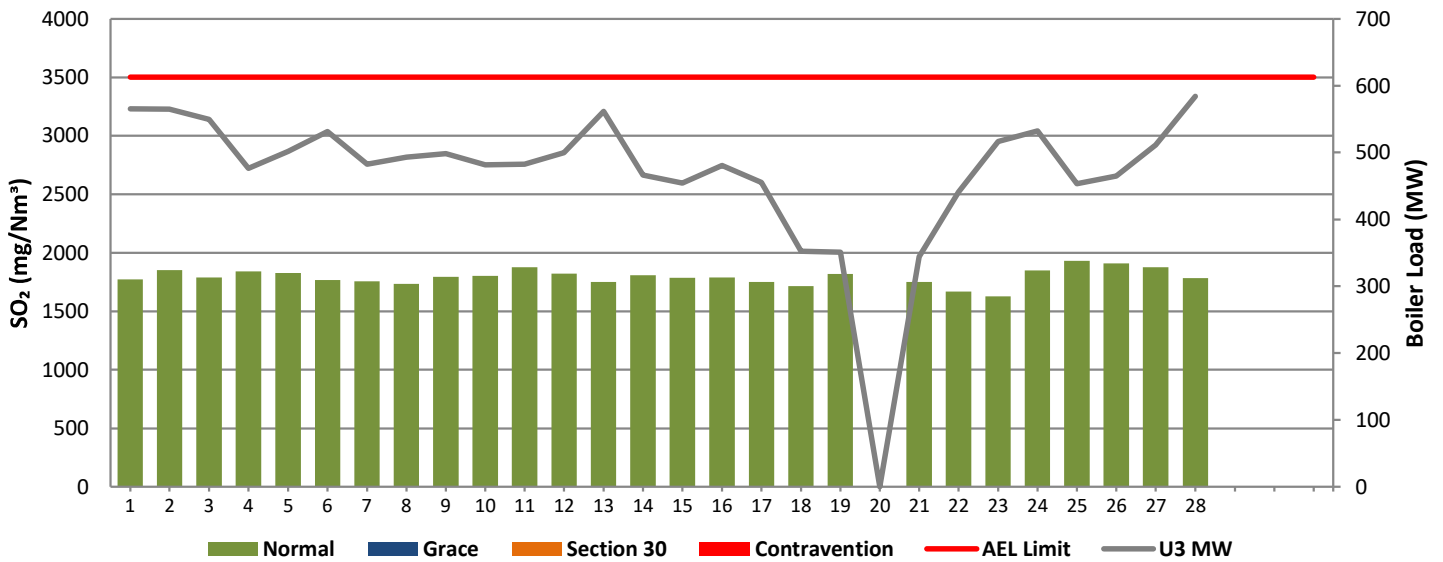


Figure 10: Lethabo Unit 4 SO₂ Emissions - February 2023

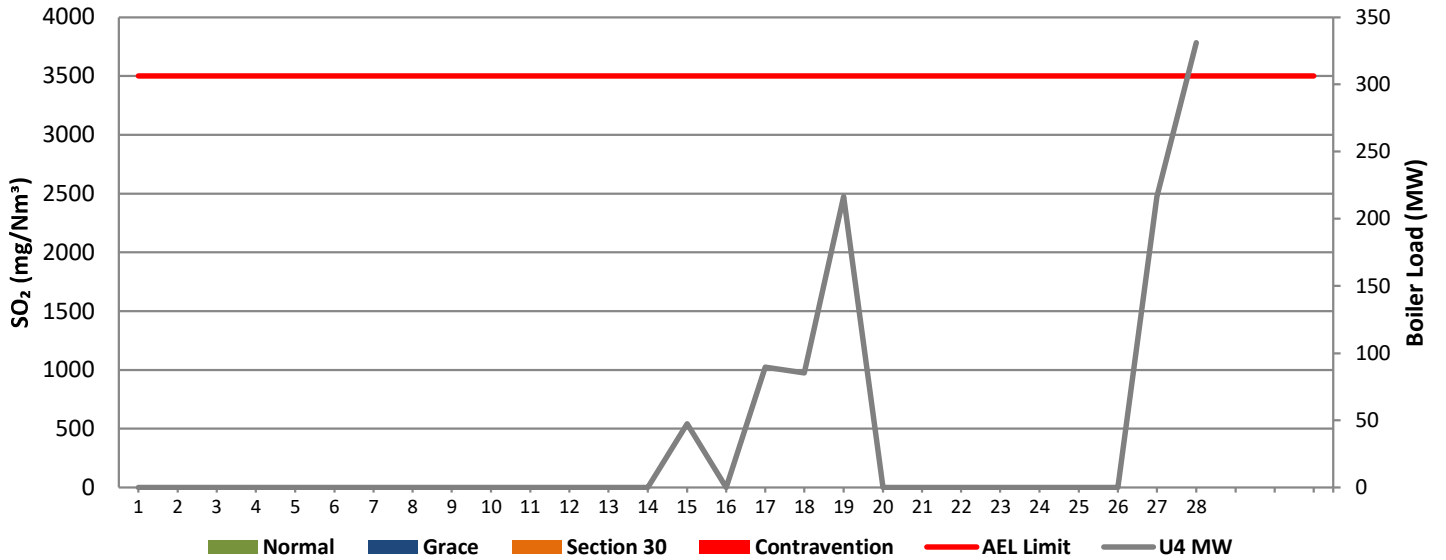


Figure 11: Lethabo Unit 5 SO₂ Emissions - February 2023

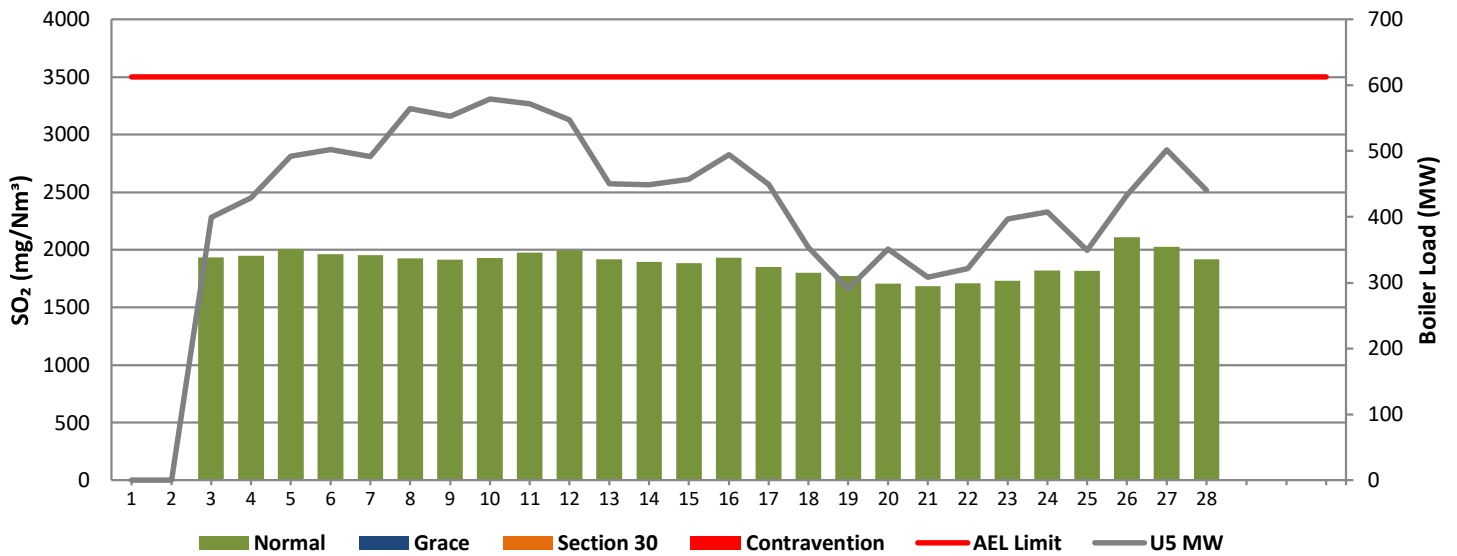


Figure 12: Lethabo Unit 6 SO₂ Emissions - February 2023

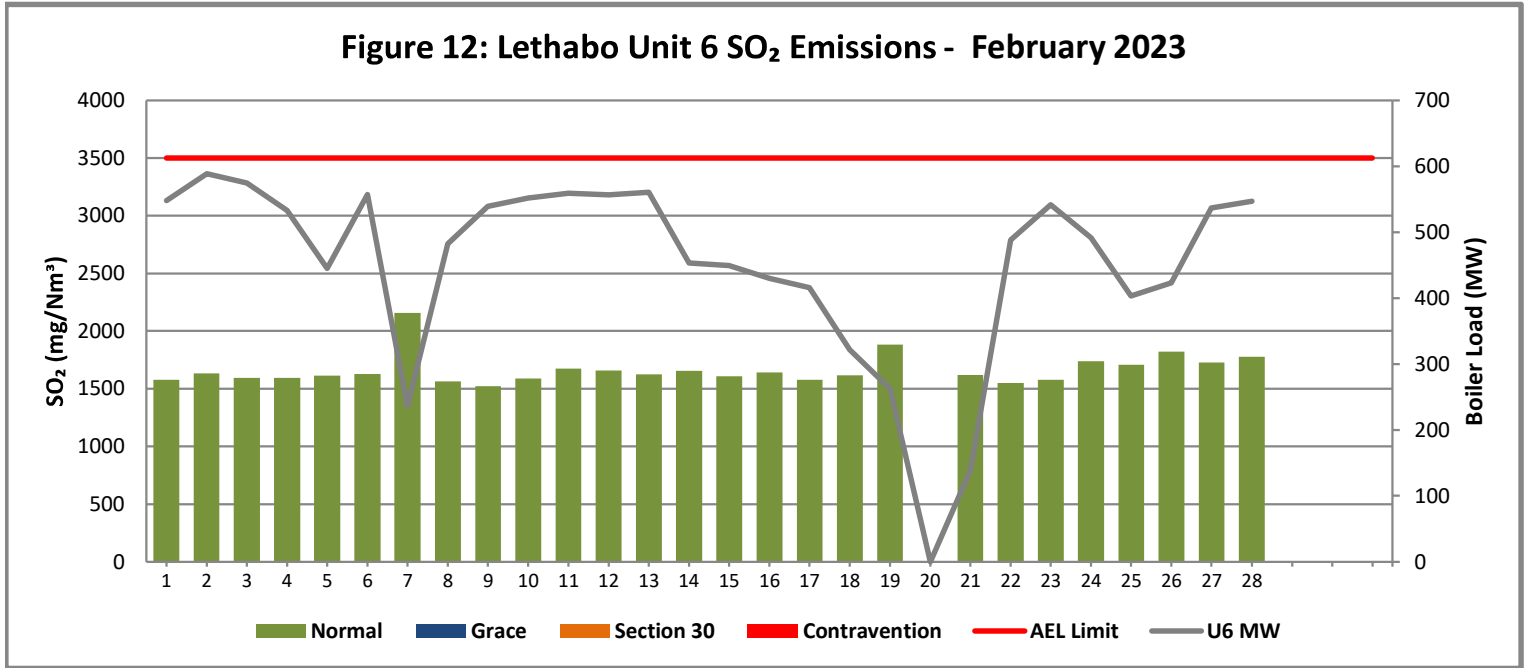


Figure 13: Lethabo Unit 1 NO_x Emissions - February 2023

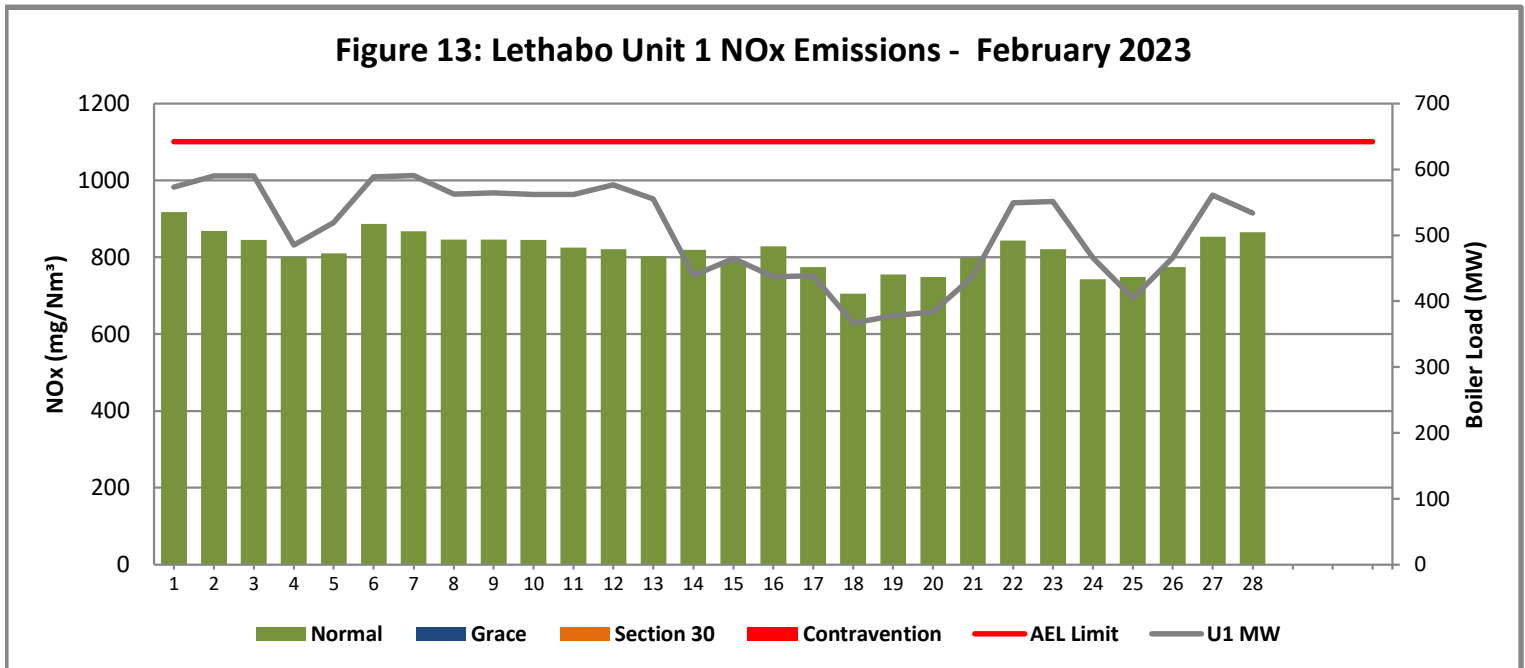


Figure 14: Lethabo Unit 2 NOx Emissions - February 2023

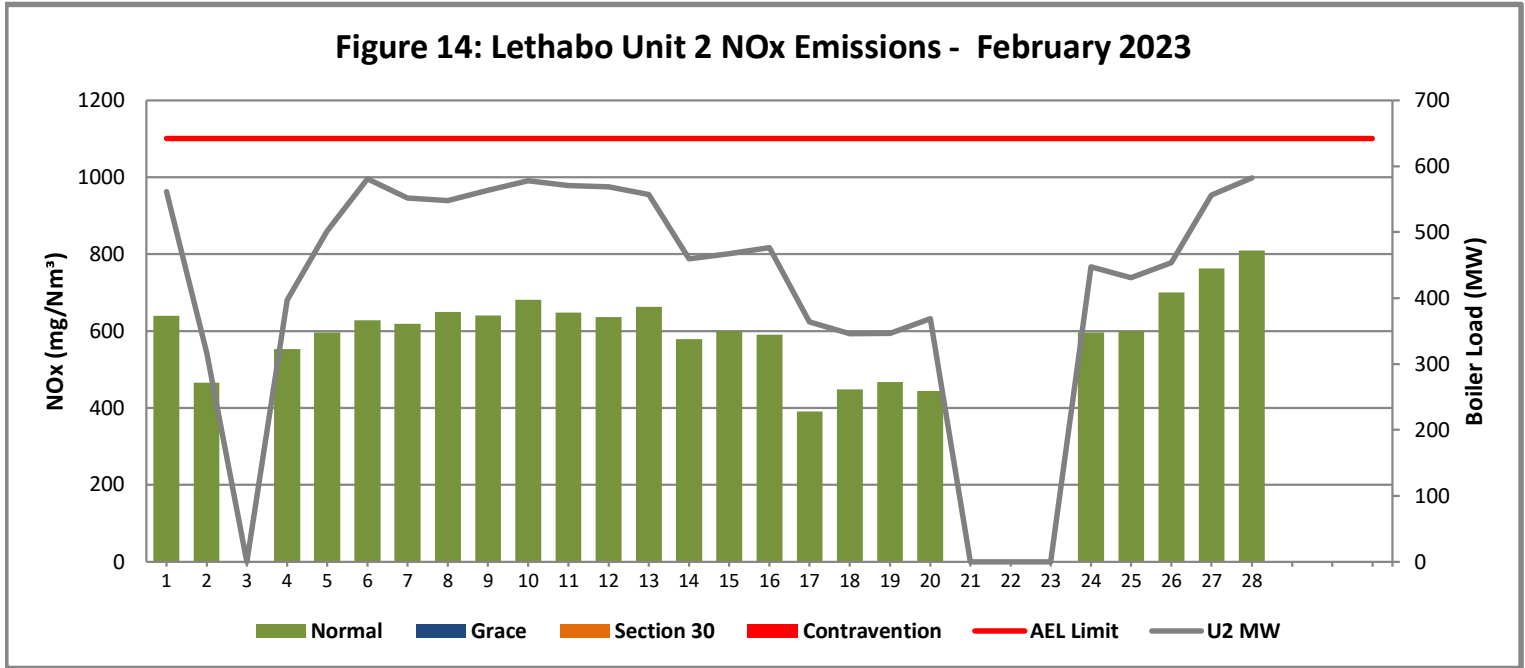


Figure 15: Lethabo Unit 3 NOx Emissions - February 2023

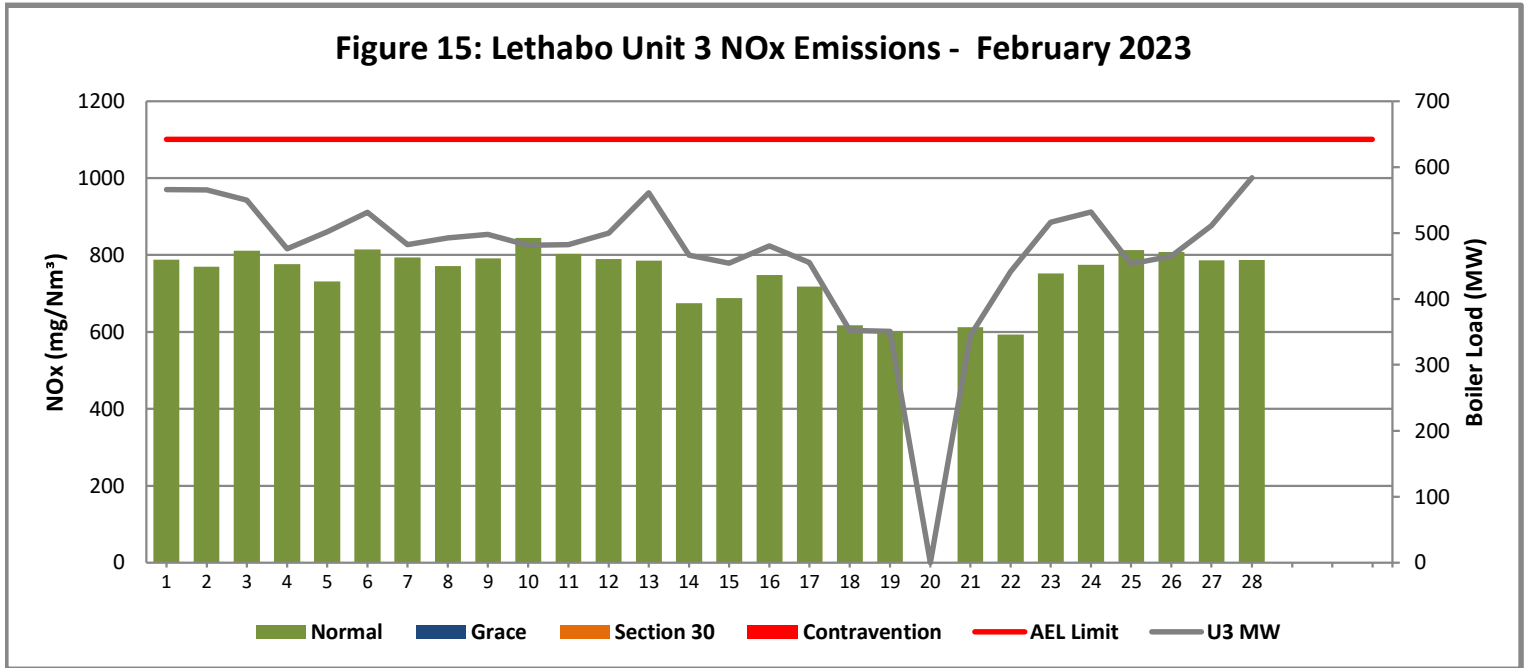


Figure 16: Lethabo Unit 4 NOx Emissions - February 2023

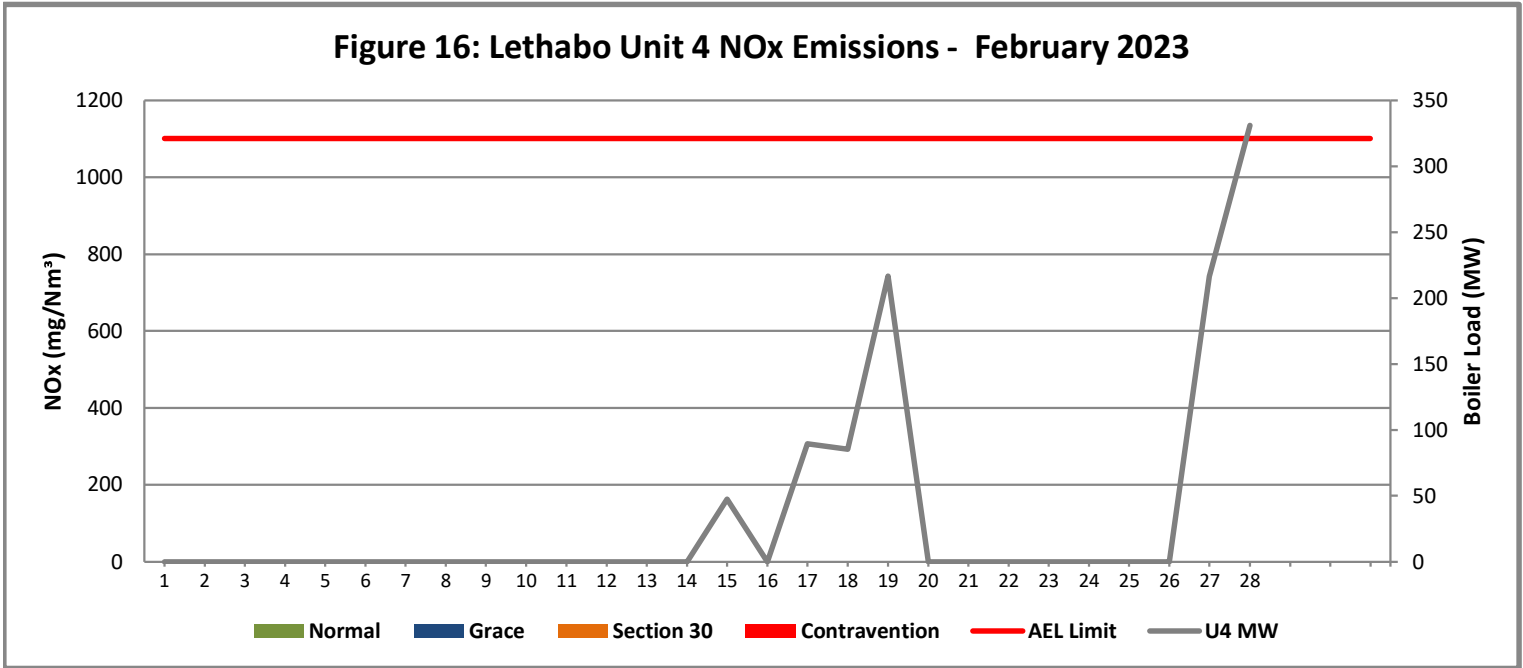


Figure 17: Lethabo Unit 5 NOx Emissions - February 2023

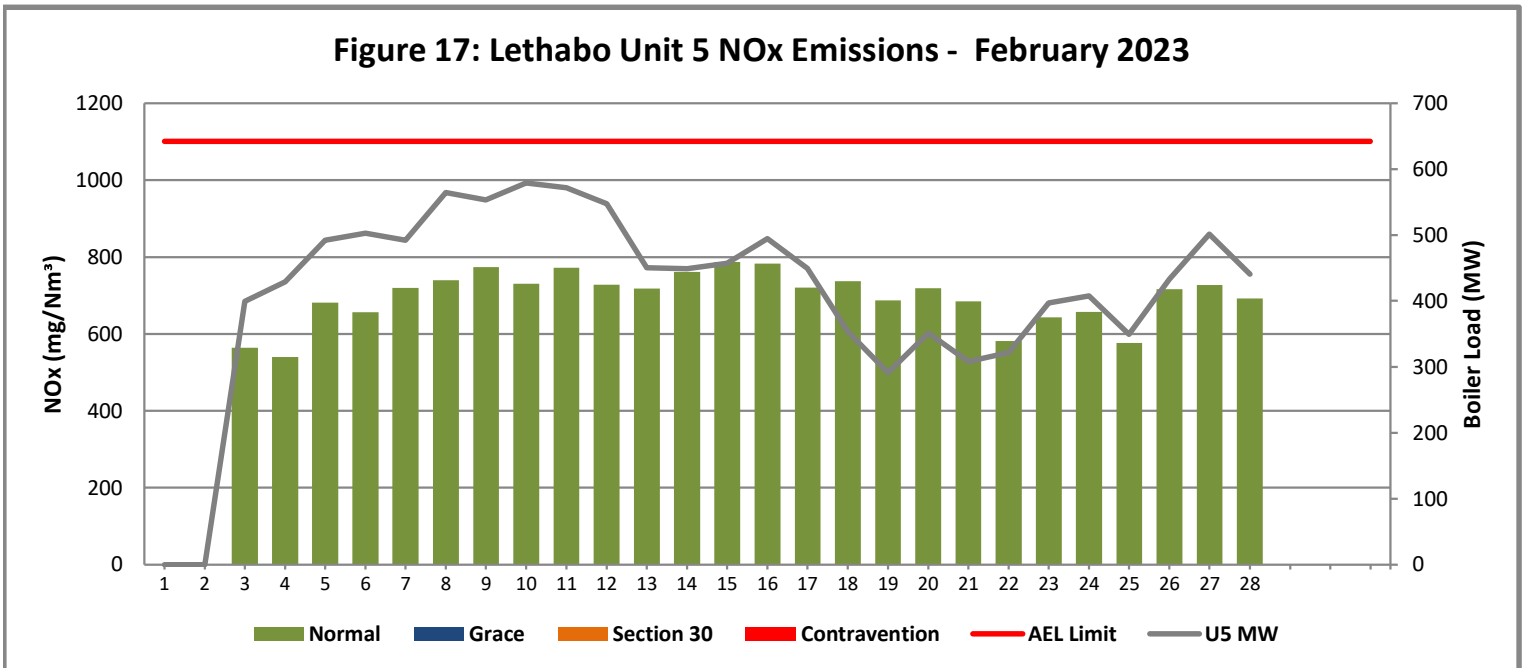
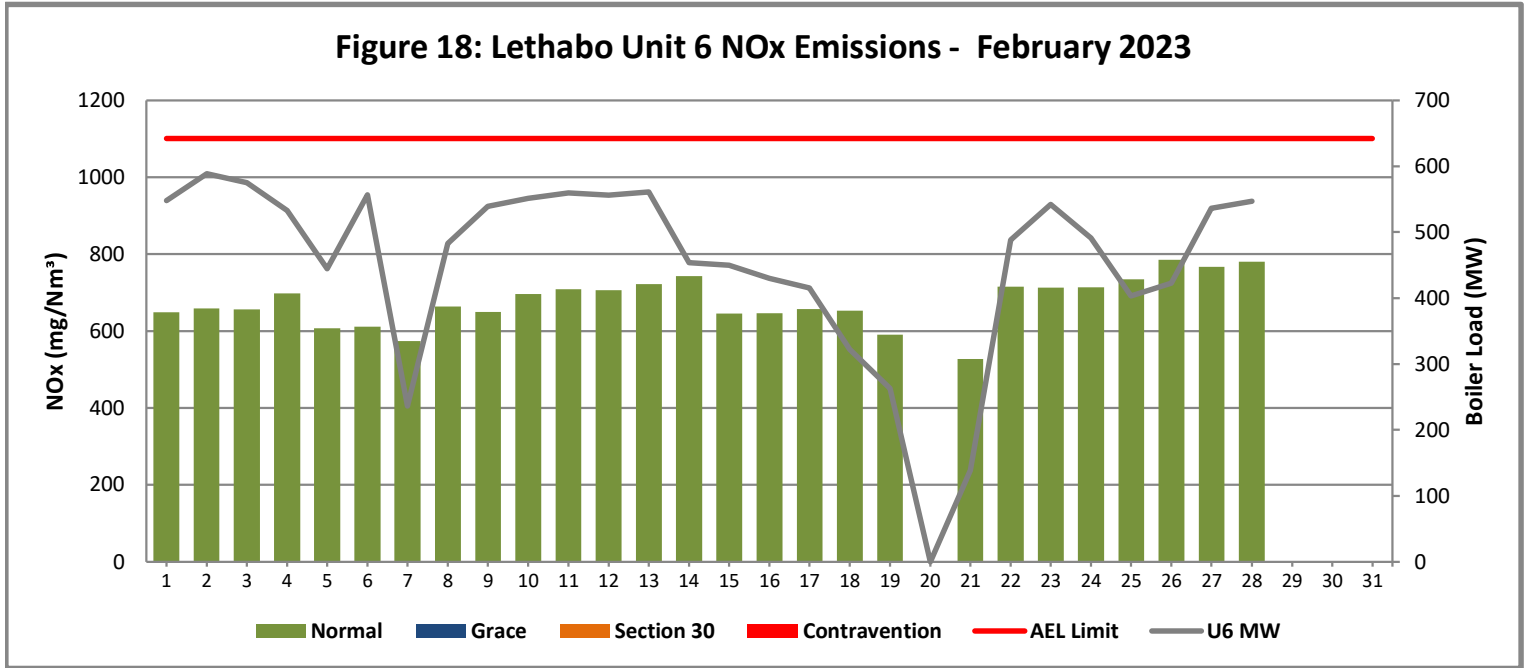


Figure 18: Lethabo Unit 6 NOx Emissions - February 2023



7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1: PM Start-up information for the month of February 2023

Unit No.1	0		0		0		0	
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.2	<i>HP heater tube and Boiler tube leak.</i>		<i>Unit shut down due to no coal available</i>		<i>Unit shut down due to no coal available</i>			
Breaker Open (BO)	<i>1:05 AM</i>	<i>2023/02/02</i>	<i>9:25 AM</i>	<i>2023/02/18</i>	<i>7:30 PM</i>	<i>2023/02/20</i>		
Draught Group (DG) Shut Down (SD)	<i>2:11 PM</i>	<i>2023/02/02</i>	<i>10:50 AM</i>	<i>2023/02/18</i>	<i>8:18 PM</i>	<i>2023/02/20</i>		
BO to DG SD (duration)	<i>00:13:06</i>	<i>DD:HH:MM</i>	<i>00:01:25</i>	<i>DD:HH:MM</i>	<i>00:00:48</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
Fires in time	<i>6:56 AM</i>	<i>2023/02/04</i>	<i>12:09 PM</i>	<i>2023/02/19</i>	<i>1:52 AM</i>	<i>2023/02/24</i>		
Synch. to Grid (or BC)	<i>8:03 AM</i>	<i>2023/02/04</i>	<i>12:17 PM</i>	<i>2023/02/19</i>	<i>2:14 AM</i>	<i>2023/02/24</i>		
Fires in to BC (duration)	<i>00:01:07</i>	<i>DD:HH:MM</i>	<i>00:00:08</i>	<i>DD:HH:MM</i>	<i>00:00:22</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
Emissions below limit from BC (end date)	<i>12:00 AM</i>	<i>2023/02/07</i>	<i>7:30 PM</i>	<i>2023/02/20</i>	<i>4:00 AM</i>	<i>2023/02/25</i>		
Emissions below limit from BC (duration)	<i>02:15:57</i>	<i>DD:HH:MM</i>	<i>01:07:13</i>	<i>DD:HH:MM</i>	<i>01:01:46</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>

Unit No.3	<i>tripped on black furnace due to coal constraints & Coal constrains, no coal supply from mine</i>		<i>0</i>					
Breaker Open (BO)	<i>4:30 PM</i>	<i>2023/02/19</i>						
Draught Group (DG) Shut Down (SD)	<i>5:11 PM</i>	<i>2023/02/19</i>						
BO to DG SD (duration)	<i>00:00:41</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
Fires in time	<i>6:18 PM</i>	<i>2023/02/21</i>						
Synch. to Grid (or BC)	<i>6:19 PM</i>	<i>2023/02/21</i>						
Fires in to BC (duration)		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>
Emissions below limit from BC (end date)	<i>3:00 AM</i>	<i>2023/02/23</i>						
Emissions below limit from BC (duration)	<i>01:08:41</i>	<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>		<i>DD:HH:MM</i>

Unit No.4	Unit Return from Outage		Boiler tube leak		Shutdown due to fuel oil pumps failure		Unit trip on Black furnace & Boiler Tube Leak & Coal Constraints	
Breaker Open (BO)			8:01 PM	2023/02/15	11:20 PM	2023/02/17	8:17 PM	2023/02/19
Draught Group (DG) Shut Down (SD)			5:02 AM	2023/02/17	3:29 AM	2023/02/18	12:52 PM	2023/02/20
BO to DG SD (duration)		DD:HH:MM	01:09:01	DD:HH:MM	00:04:09	DD:HH:MM	00:16:35	DD:HH:MM
Fires in time	5:45 PM	2023/02/15	6:28 PM	2023/02/17	9:41 PM	2023/02/18	8:01 PM	2023/02/27
Synch. to Grid (or BC)	7:48 PM	2023/02/15	6:32 PM	2023/02/17	10:08 PM	2023/02/18		2023/02/27
Fires in to BC (duration)	00:02:03	DD:HH:MM		DD:HH:MM	00:00:27	DD:HH:MM	00:00:53	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	4:00 AM	2023/02/18	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	00:09:28	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

Unit No.4	Poor vacuum							
Breaker Open (BO)	2:05 PM	2023/02/28						
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	9:37 PM	2023/02/28						
Synch. to Grid (or BC)	7:48 PM	2023/02/15						
Fires in to BC (duration)	00:00:53	DD:HH:MM						
Emissions below limit from BC (end date)	12:00 AM	2023/03/02						
Emissions below limit from BC (duration)	14:04:12	DD:HH:MM						

Unit No.5	AM: Boiler tube leak.		Coal constrains, empty bunkers.		Tripped on Black Furnace & Coal constrains, no coal supply from mine		Tripped on LP turbine 2 rear bearing temp high	
Breaker Open (BO)			11:37 PM	2023/02/18	3:23 AM	2023/02/21	2:10 PM	2023/02/22
Draught Group (DG) Shut Down (SD)			12:51 AM	2023/02/19	4:05 AM	2023/02/21	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)		DD:HH:MM	00:01:14	DD:HH:MM	00:00:42	DD:HH:MM	n/a	DD:HH:MM
Fires in time	12:01 PM	2023/02/03	8:45 AM	2023/02/19	1:29 PM	2023/02/22	4:26 PM	2023/02/22
Synch. to Grid (or BC)	12:50 PM	2023/02/03	9:53 AM	2023/02/19	2:00 PM	2023/02/22	4:32 PM	2023/02/22
Fires in to BC (duration)	00:00:49	DD:HH:MM	00:01:08	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 AM	2023/02/09	10:00 PM	2023/02/21	3:00 AM	2023/02/24	3:00 AM	2023/02/24
Emissions below limit from BC (duration)	05:11:10	DD:HH:MM	02:12:07	DD:HH:MM	01:13:00	DD:HH:MM	01:10:28	DD:HH:MM

Unit No.5	<i>Tripped, thermocouple dislodged out.</i>						
Breaker Open (BO)	1:10 PM	2023/02/23					
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)	<i>n/a</i>	DD:HH:MM					
Fires in time	5:19 PM	2023/02/23					
Synch. to Grid (or BC)	12:50 PM	2023/02/03					
Fires in to BC (duration)	00:00:28	DD:HH:MM					
Emissions below limit from BC (end date)	3:00 AM	2023/02/24					
Emissions below limit from BC (duration)	20:14:10	DD:HH:MM					

Unit No.6	<i>boiler blow done isolating v/v gland leaking.</i>		<i>Coal constrains, bunkers empty.</i>		<i>Boiler tube leak</i>		
Breaker Open (BO)	10:06 PM	2023/02/06	12:09 AM	2023/02/19	10:49 AM	2023/02/28	
Draught Group (DG) Shut Down (SD)	1:05 PM	2023/02/07	12:51 AM	2023/02/19	4:58 AM	2023/03/01	
BO to DG SD (duration)	00:14:59	DD:HH:MM	00:00:42	DD:HH:MM	00:18:09	DD:HH:MM	DD:HH:MM
Fires in time	8:50 PM	2023/02/07	10:22 PM	2023/02/21	10:34 AM	2023/03/02	
Synch. to Grid (or BC)	10:27 PM	2023/02/07	10:36 PM	2023/02/21	12:33 PM	2023/03/02	
Fires in to BC (duration)	00:01:37	DD:HH:MM	00:00:14	DD:HH:MM	00:01:59	DD:HH:MM	DD:HH:MM
Emissions below limit from BC (end date)	12:00 AM	2023/02/08	12:00 AM	2023/02/24	8:00 PM	2023/03/05	
Emissions below limit from BC (duration)	00:01:33	DD:HH:MM	02:01:24	DD:HH:MM	03:07:27	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 February 2023 in mg/Nm³

8. MAINTENANCE

Unit 1			
Beginning of	2023/02/01 00:00	2023/02/26 00:00:00	
Reason for Maintenance	RHO precip casing	RHO precip casing	
End (Time):	2023/02/01 04:39	2023/02/26 17:06:00	
Duration	4:39:00	17:06:00	

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

Unit 3			
Beginning of	2023/02/04 00:00:00	2023/02/10 00:01:00	
Reason for Maintenance	LHO precip casing	LHI precip casing	
End (Time):	2023/02/04 17:47:00	2023/02/12 18:06:00	
Duration	17:47:00	66:05:00	

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

Unit 5			
Beginning of			
Reason for Maintenance			
End (Time):			
Duration			

Unit 6			
Beginning of	2023/02/05 00:00:00	2023/02/25 00:00:00	
Reason for Maintenance	RHO precip casing	LHO precip casing	
End (Time):	2023/02/05 22:33:00	2023/02/25 00:00:00	
Duration	22:33:00	0:00:00	

9. GENERAL

Unit 2 Monitor Reliability

14/02/2023: Monitor Reliability low (79.2%) due to monitors reading maximum

Unit 5:

05/02/2023: Monitor Reliability low (79.2%) due to monitor maxing out.

15/02/2023: Monitor Reliability low (79.2%) due to monitor maxing out.

16/02/2023: Monitor Reliability low (66.7%) due to monitor maxing out.

Unit 6:

16/02/2023: Monitor Reliability low (66.7%) due to monitors reading maximum

Unit 5:

The daily emissions average limit was exceeded from 4th February 2023 to the 8th February 2023 and the emission's exceedance was caused by SO3 plant issues and trouble shooting, and ESP poor performance; hence NEMA S30 incurred.

Unit 6

The daily emissions average limit was exceeded from 12 February 2023 to the 15 February 2023 and the emission's exceedance was caused by high hopper levels, dust handling plant challenges & ESP poor performance; hence NEMA S30 incurred.

CO2 and Velocity Monitors Low Reliability Units 1-6:

Due to correction of bad data as per internal emission data integrity review actions in 2021 and 2022. Bad Velocity data and Bad CO2 data were corrected/removed as per the review actions and findings.

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.
5	04/02/2023	08/02/2023	SO3 plant issues and trouble shooting, and ESP poor performance	Repairs to SO3 Plant	02/02/2023				NEMA S30 Incident
5	12/02/2023	15/02/2023	High Hopper Levels, Dust Handling Plant challenges and ESP poor Performance	Reporting tool correct by head office and new revision was obtained	16/02/2023				NEMA S30 Incident

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
Mar-22	0.73	0.90	0.66	0.58	0.33	0.43	0.57
Apr-22	0.60	0.61	0.53	0.45	OFF	0.37	0.51
May-22	0.55	0.59	0.33	0.19	OFF	0.44	0.45
Jun-22	0.55	0.63	0.37	0.77	OFF	0.48	0.56
Jul-22	0.36	0.42	0.42	0.54	0.11	0.33	0.40
Aug-22	0.28	0.41	0.50	0.64	0.27	0.32	0.40
Sep-22	0.40	0.24	0.31	0.80	0.33	0.40	0.42
Oct-22	0.54	0.39	0.44	0.40	0.47	0.44	0.44
Nov-22	0.62	0.39	0.33	0.59	0.59	0.57	0.52
Dec-22	0.58	0.67	0.58	OFF	0.94	0.50	0.65
Jan-23	0.40	0.69	0.59	OFF	0.74	0.45	0.57
Feb-23	0.51	0.48	0.53	OFF	0.83	0.63	0.59

ADDENDUM TO MONTHLY EMISSIONS REPORT

12. DAILY EMISSIONS FIGURES

Final Dust Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
29-Jan	101	370	218	4	OFF	90	100
30-Jan	94	291	86	4	OFF	97	100
31-Jan	135	53	146	OFF	OFF	95	100
01-Feb	46	73	99	OFF	OFF	140	100
02-Feb	41	733	206	OFF	OFF	89	100
03-Feb	103	OFF	98	OFF	OFF	95	100
04-Feb	148	OFF	204	OFF	101	80	100
05-Feb	40	302	197	OFF	285	175	100
06-Feb	56	203	102	OFF	164	255	100
07-Feb	51	62	91	OFF	187	OFF	100
08-Feb	54	46	95	OFF	165	77	100
09-Feb	80	57	95	OFF	55	97	100
10-Feb	136	66	130	OFF	48	117	100
11-Feb	62	60	165	OFF	54	85	100
12-Feb	137	89	148	OFF	86	110	100
13-Feb	56	48	86	OFF	37	110	100
14-Feb	91	383	58	OFF	197	182	100
15-Feb	158	219	41	OFF	158	658	100
16-Feb	94	53	64	OFF	496	98	100
17-Feb	79	16	55	OFF	71	68	100
18-Feb	50	23	29	OFF	224	50	100
19-Feb	64	OFF	37	OFF	OFF	356	100
20-Feb	66	370	OFF	OFF	55	OFF	100
21-Feb	86	OFF	OFF	OFF	87	OFF	100
22-Feb	146	OFF	73	OFF	OFF	203	100
23-Feb	207	OFF	94	OFF	709	157	100
24-Feb	116	OFF	84	OFF	86	61	100
25-Feb	51	43	51	OFF	88	139	100
26-Feb	173	40	60	OFF	41	65	100
27-Feb	119	78	96	OFF	29	79	100
28-Feb	130	101	228	OFF	20	82	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final SOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
29-Jan	1520	1562	1740	OFF	OFF	1605	3500
30-Jan	1538	1617	1765	OFF	OFF	1596	3500
31-Jan	1506	1601	1737	OFF	OFF	1576	3500
01-Feb	1514	1577	1772	OFF	OFF	1579	3500
02-Feb	1592	1540	1852	OFF	OFF	1632	3500
03-Feb	1513	OFF	1788	OFF	1933	1596	3500
04-Feb	1546	1617	1841	OFF	1948	1594	3500
05-Feb	1588	1609	1828	OFF	2007	1615	3500
06-Feb	1527	1589	1766	OFF	1963	1628	3500
07-Feb	1540	1552	1756	OFF	1953	2158	3500
08-Feb	1481	1515	1736	OFF	1927	1566	3500
09-Feb	1505	1523	1793	OFF	1916	1523	3500
10-Feb	1477	1575	1803	OFF	1929	1590	3500
11-Feb	1528	1593	1876	OFF	1976	1676	3500
12-Feb	1535	1562	1823	OFF	1996	1658	3500
13-Feb	1532	1670	1751	OFF	1919	1626	3500
14-Feb	1523	1609	1806	OFF	1897	1653	3500
15-Feb	1497	1552	1785	OFF	1884	1609	3500
16-Feb	1497	1607	1788	OFF	1931	1640	3500
17-Feb	1478	1543	1750	OFF	1851	1579	3500
18-Feb	1445	1491	1714	OFF	1802	1617	3500
19-Feb	1478	1466	1821	OFF	1773	1884	3500
20-Feb	1497	1390	OFF	OFF	1707	OFF	3500
21-Feb	1733	OFF	1751	OFF	1683	1620	3500
22-Feb	1545	OFF	1669	OFF	1711	1549	3500
23-Feb	1461	OFF	1625	OFF	1732	1580	3500
24-Feb	1582	1353	1849	OFF	1821	1737	3500
25-Feb	1584	1532	1932	OFF	1819	1708	3500
26-Feb	1687	1672	1910	OFF	2109	1820	3500
27-Feb	1611	1559	1876	OFF	2025	1727	3500
28-Feb	1543	1563	1783	OFF	1918	1779	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final NOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
29-Jan	835	633	795	OFF	OFF	632	1100
30-Jan	796	636	806	OFF	OFF	639	1100
31-Jan	895	578	803	OFF	OFF	677	1100
01-Feb	918	640	788	OFF	OFF	649	1100
02-Feb	868	466	770	OFF	OFF	659	1100
03-Feb	845	OFF	810	OFF	564	656	1100
04-Feb	801	553	776	OFF	540	698	1100
05-Feb	810	597	732	OFF	681	607	1100
06-Feb	887	628	815	OFF	656	611	1100
07-Feb	867	618	794	OFF	720	574	1100
08-Feb	846	650	772	OFF	739	664	1100
09-Feb	846	641	792	OFF	774	650	1100
10-Feb	845	681	845	OFF	730	697	1100
11-Feb	825	649	803	OFF	772	709	1100
12-Feb	821	637	790	OFF	728	706	1100
13-Feb	803	663	785	OFF	717	722	1100
14-Feb	819	579	674	OFF	761	743	1100
15-Feb	788	600	688	OFF	787	646	1100
16-Feb	829	590	748	OFF	783	647	1100
17-Feb	775	391	718	OFF	721	657	1100
18-Feb	705	448	617	OFF	737	653	1100
19-Feb	755	467	601	OFF	687	591	1100
20-Feb	749	444	OFF	OFF	720	OFF	1100
21-Feb	798	OFF	612	OFF	684	527	1100
22-Feb	843	OFF	593	OFF	581	715	1100
23-Feb	821	OFF	752	OFF	643	713	1100
24-Feb	742	597	775	OFF	657	714	1100
25-Feb	748	600	813	OFF	576	735	1100
26-Feb	774	701	808	OFF	716	785	1100
27-Feb	853	763	787	OFF	727	767	1100
28-Feb	865	810	788	OFF	692	780	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
Mar-22	98.73%	1.6	98.70%	1.6	100.00%	0.0	100.00%	0.0	100.00%	0.0	100.00%	0.0
Apr-22	100.00%	0.0	98.63%	1.6	100.00%	0.0	98.46%	1.9	OFF	OFF	100.00%	0.0
May-22	98.73%	1.6	98.13%	2.3	100.00%	0.0	100.00%	0.0	OFF	OFF	100.00%	0.0
Jun-22	98.33%	2.0	99.05%	1.1	100.00%	0.0	100.00%	0.0	OFF	OFF	97.53%	3.0
Jul-22	99.37%	0.8	98.80%	1.5	100.00%	0.0	97.23%	3.4	100.00%	0.0	100.00%	0.0
Aug-22	99.42%	0.7	98.67%	1.6	100.00%	0.0	99.32%	0.8	100.00%	0.0	100.00%	0.0
Sep-22	98.86%	1.4	100.00%	0.0	100.00%	0.0	99.27%	0.9	98.44%	1.9	99.20%	1.0
Oct-22	98.80%	1.5	98.86%	1.4	100.00%	0.0	100.00%	0.0	99.24%	0.9	100.00%	0.0
Nov-22	99.29%	0.9	100.00%	0.0	100.00%	0.0	100.00%	0.0	98.86%	1.4	98.56%	1.7
Dec-22	99.29%	0.9	98.58%	1.8	98.66%	1.7	OFF	OFF	99.36%	0.8	98.46%	1.9
Jan-23	98.91%	1.3	99.90%	0.1	97.59%	3.0	OFF	OFF	99.23%	1.0	98.42%	2.0
Feb-23	99.19%	0.9	100.00%	0.0	96.88%	3.5	OFF	OFF	100.00%	0.0	99.16%	0.9

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
Mar-22	87.77%	3.8	100.00%	0.0	100.00%	0.0	87.23%	4.0	100.00%	0.0	100.00%	0.0
Apr-22	99.72%	0.1	100.00%	0.0	95.69%	1.3	98.33%	0.5	OFF	OFF	100.00%	0.0
May-22	98.66%	0.4	100.00%	0.0	97.45%	0.8	98.92%	0.3	OFF	OFF	96.51%	1.1
Jun-22	97.78%	0.7	96.25%	1.1	98.19%	0.5	46.67%	16.0	OFF	OFF	98.06%	0.6
Jul-22	100.00%	0.0	100.00%	0.0	100.00%	0.0	100.00%	0.0	86.67%	4.0	98.61%	0.4
Aug-22	98.52%	0.5	100.00%	0.0	96.51%	1.1	65.19%	10.8	99.33%	0.2	100.00%	0.0
Sep-22	100.00%	0.0	99.58%	0.1	100.00%	0.0	94.27%	1.7	97.92%	0.6	100.00%	0.0
Oct-22	89.39%	3.3	100.00%	0.0	82.41%	5.5	99.73%	0.1	79.69%	6.3	100.00%	0.0
Nov-22	100.00%	0.0	100.00%	0.0	97.21%	0.8	88.86%	3.3	100.00%	0.0	100.00%	0.0
Dec-22	85.12%	4.6	98.28%	0.5	99.88%	0.0	OFF	OFF	62.90%	11.5	100.00%	0.0
Jan-23	90.05%	3.1	93.82%	1.9	100.00%	0.0	OFF	OFF	91.52%	2.6	100.00%	0.0
Feb-23	89.39%	3.0	100.00%	0.0	82.41%	4.9	OFF	OFF	79.69%	5.7	100.00%	0.0

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Mar-22	94.33%	95.83%	95.56%	99.67%	98.38%	98.79%
Apr-22	96.20%	94.58%	98.99%	99.57%	OFF	100.00%
May-22	97.32%	99.06%	99.65%	99.72%	OFF	100.00%
Jun-22	90.56%	97.50%	97.33%	98.56%	OFF	98.71%
Jul-22	98.92%	98.75%	100.00%	91.10%	100.00%	97.54%
Aug-22	99.85%	96.77%	100.00%	96.24%	98.61%	100.00%
Sep-22	98.69%	100.00%	92.89%	96.01%	99.31%	99.17%
Oct-22	96.61%	97.27%	99.38%	100.00%	95.14%	98.66%
Nov-22	94.72%	95.66%	97.08%	98.85%	98.92%	97.64%
Dec-22	99.09%	93.78%	98.73%	OFF	67.20%	98.66%
Jan-23	99.46%	90.07%	98.79%	OFF	96.28%	98.39%
Feb-23	99.11%	96.87%	98.72%	OFF	93.83%	96.29%

Gaseous Emission Monitors

Availability												
	Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
Month	SO _x	NO _x	SO _x	NO _x	SO _x	NO _x	SO _x	NO _x	SO _x	NO _x	SO _x	NO _x
Mar-22	98.30%	98.30%	98.92%	99.06%	99.06%	99.33%	99.84%	100.00%	98.88%	98.88%	98.79%	98.66%
Apr-22	99.31%	99.31%	99.58%	99.86%	100.00%	99.86%	99.44%	99.86%	OFF	OFF	100.00%	100.00%
May-22	99.71%	99.86%	99.60%	99.60%	99.83%	99.83%	90.93%	91.16%	OFF	OFF	99.83%	99.83%
Jun-22	99.86%	99.86%	99.86%	99.86%	100.00%	100.00%	98.92%	99.07%	OFF	OFF	98.89%	99.17%
Jul-22	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.87%	100.00%	100.00%	100.00%	98.96%	98.81%
Aug-22	100.00%	100.00%	100.00%	100.00%	99.83%	99.83%	99.87%	99.73%	99.70%	99.57%	99.60%	99.73%
Sep-22	100.00%	100.00%	100.00%	100.00%	99.62%	100.00%	93.83%	93.83%	94.86%	94.86%	94.86%	94.86%
Oct-22	98.95%	78.72%	99.87%	100.00%	99.86%	99.86%	100.00%	100.00%	99.86%	99.86%	99.87%	99.87%
Nov-22	99.86%	99.86%	99.72%	99.86%	99.81%	99.81%	100.00%	100.00%	99.72%	99.72%	99.44%	99.44%
Dec-22	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	OFF	OFF	100.00%	99.87%	99.87%	100.00%
Jan-23	97.85%	97.85%	99.69%	99.69%	100.00%	100.00%	OFF	OFF	99.85%	99.85%	99.60%	99.60%
Feb-23	99.85%	99.85%	100.00%	100.00%	100.00%	100.00%	OFF	OFF	100.00%	99.28%	100.00%	100.00%

Oxygen Monitor Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Mar-22	98.30%	98.92%	99.19%	99.84%	98.88%	98.52%
Apr-22	99.13%	100.00%	100.00%	81.67%	OFF	99.72%
May-22	100.00%	99.73%	99.83%	99.75%	OFF	99.83%
Jun-22	99.72%	97.22%	99.52%	98.77%	OFF	98.75%
Jul-22	99.87%	99.87%	99.46%	99.87%	100.00%	98.96%
Aug-22	99.73%	99.60%	99.67%	99.73%	99.40%	99.60%
Sep-22	99.72%	99.71%	99.62%	93.67%	94.72%	94.44%
Oct-22	99.27%	99.87%	99.57%	99.73%	99.72%	99.60%
Nov-22	99.72%	99.72%	99.62%	98.82%	99.44%	99.58%
Dec-22	99.65%	99.72%	99.72%	OFF	99.87%	99.87%
Jan-23	97.45%	99.04%	99.87%	OFF	99.70%	99.73%
Feb-23	100.00%	100.00%	100.00%	OFF	99.51%	100.00%

ADDENDUM TO MONTHLY EMISSIONS REPORT

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Mar-22	99.725%	99.623%	99.726%	99.768%	99.862%	99.816%
Apr-22	99.778%	99.748%	99.786%	99.822%	OFF	99.842%
May-22	99.672%	99.488%	99.880%	99.961%	OFF	99.844%
Jun-22	99.769%	99.712%	99.833%	99.657%	OFF	99.778%
Jul-22	99.857%	99.812%	99.818%	99.768%	99.955%	99.850%
Aug-22	99.881%	99.804%	99.768%	99.708%	99.873%	99.846%
Sep-22	99.834%	99.888%	99.868%	99.660%	99.857%	99.815%
Oct-22	99.772%	99.814%	99.807%	99.826%	99.795%	99.796%
Nov-22	99.761%	99.828%	99.859%	99.769%	99.752%	99.756%
Dec-22	99.788%	99.724%	99.768%	OFF	99.637%	99.799%
Jan-23	99.848%	99.709%	99.766%	OFF	99.702%	99.813%
Feb-23	99.808%	99.800%	99.785%	OFF	99.669%	99.733%

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	90	RHO precip casing.	2023/02/01 00:00:00	2023/02/01 04:39:00
1	190	Manual rapping	2023/02/10 20:35:00	2023/02/10 23:42:00
1	190	High hoppers levels	2023/02/14 07:00:00	2023/02/14 19:31:00
1	190	AM: High ash hopper levels.	2023/02/14 23:07:00	2023/02/15 05:12:00
1	190	AM: High ash hopper levels	2023/02/15 10:04:00	2023/02/15 17:04:00
1	185	High hopper levels	2023/02/15 20:23:00	2023/02/16 04:52:00
1	180	AM: manual rapping	2023/02/23 20:54:00	2023/02/23 23:16:00
1	178	High stack emissions.	2023/02/24 09:36:00	2023/02/25 20:55:00
1	80	RH Outer precip casing repairs	2023/02/26 00:00:00	2023/02/26 17:06:00
1	150	EF: High stack emissions	2023/02/28 14:21:00	2023/02/28 16:55:00
1	150	High stack emissions	2023/02/28 23:57:00	2023/02/28 23:59:59
2	593	HP heater tube and Boiler tube leak.	2023/02/02 01:00:00	2023/02/04 08:03:00
2	196	AM: High hoppers due to dust plant standing	2023/02/04 15:03:00	2023/02/05 00:32:00
2	94	Manual rapping.	2023/02/05 21:27:00	2023/02/06 02:51:00
2	100	High stack emissions	2023/02/07 00:27:00	2023/02/07 04:48:00
2	150	Dust plant not available	2023/02/13 21:46:00	2023/02/14 17:12:00
2	104	AM: High ash hopper levels.	2023/02/15 04:38:00	2023/02/15 09:33:00
2	149	AM: High hopper levels	2023/02/15 09:33:00	2023/02/15 16:27:00
2	100	AM: High hopper levels	2023/02/15 16:27:00	2023/02/15 19:49:00
2	151	high hoppers level	2023/02/15 19:49:00	2023/02/16 05:03:00
2	593	Unit shut down due to no coal available	2023/02/18 09:20:00	2023/02/19 12:17:00
2	593	Unit shut down due to no coal available	2023/02/20 19:24:00	2023/02/24 02:14:00
3	119	High stack emissions.	2023/02/01 00:00:00	2023/02/01 02:27:00
3	50	High stack emissions.	2023/02/01 20:58:00	2023/02/02 00:16:00
3	98	High stack emissions.	2023/02/02 20:24:00	2023/02/03 00:13:00
3	99	EF: High stack emissions	2023/02/03 14:24:00	2023/02/04 00:00:00
3	101	LHO Precip Casing repairs	2023/02/04 00:00:00	2023/02/04 17:47:00
3	99	Manual rapping.	2023/02/05 21:24:00	2023/02/06 03:04:00
3	100	high stack emissions	2023/02/06 19:40:00	2023/02/06 21:20:00
3	199	High stack emissions	2023/02/06 21:20:00	2023/02/07 05:08:00
3	100	EF:High stack emissions	2023/02/07 10:22:00	2023/02/07 12:57:00
3	150	EF:High stack emissions	2023/02/07 12:57:00	2023/02/07 17:15:00
3	100	High stack emissions.	2023/02/07 19:17:00	2023/02/07 20:16:00
3	200	high stack emissions.	2023/02/07 20:16:00	2023/02/08 02:26:00
3	147	EF:High stack emissions	2023/02/08 13:14:00	2023/02/08 16:33:00
3	149	EF: High stack emissions	2023/02/08 19:31:00	2023/02/09 02:05:00
3	118	High stack emissions.	2023/02/09 11:45:00	2023/02/09 16:24:00
3	100	high stack emissions	2023/02/09 21:29:00	2023/02/10 00:01:00
3	100	LH Inner precip casing frame damaged	2023/02/10 00:01:00	2023/02/12 18:06:00
3	98	High stack emissions.	2023/02/13 01:10:00	2023/02/13 02:36:00
3	199	AM: Dust plant not available	2023/02/14 01:51:00	2023/02/14 10:43:00
3	593	tripped on black furnace due to coal constraints	2023/02/19 16:21:00	2023/02/19 17:21:00
3	593	Coal constrains, no coal supply from mine	2023/02/19 17:21:00	2023/02/21 18:19:00
4	593	Unit shut down due to IR.	2023/02/01 00:00:00	2023/02/01 08:43:00

4	593	System Generated Slip Event linked to PCLF Event : 1759269	2023/02/01 08:43:00	2023/02/15 19:48:00
4	593	Boiler tube leak	2023/02/15 20:01:00	2023/02/17 18:32:00
4	593	Shutdown due to fuel oil pumps failure	2023/02/17 23:20:00	2023/02/18 22:08:00
4	593	Unit tripped on black furnace	2023/02/19 20:17:00	2023/02/19 21:17:00
4	593	Unit off due to Boiler tube leak	2023/02/19 21:17:00	2023/02/21 17:02:00
4	593	Unit off due to coal constraints	2023/02/21 17:02:00	2023/02/27 20:54:00
4	218	AM: Boiler chemical cleaning	2023/02/27 23:54:00	2023/02/28 14:05:00
4	593	Poor vacuum	2023/02/28 14:05:00	2023/02/28 22:30:00
5	593	AM: Boiler tube leak.	2023/02/01 00:00:00	2023/02/03 12:50:00
5	88	Manual rapping.	2023/02/05 21:29:00	2023/02/06 04:34:00
5	183	High stack emissions.	2023/02/06 12:50:00	2023/02/06 14:07:00
5	140	High stack emissions.	2023/02/06 14:07:00	2023/02/07 17:15:00
5	140	EF: Emission test	2023/02/09 00:00:00	2023/02/09 04:36:00
5	140	AM: High ash hopper levels.	2023/02/14 23:00:00	2023/02/15 16:23:00
5	90	AM: High hopper levels	2023/02/15 16:23:00	2023/02/15 19:50:00
5	134	high hoppers levels	2023/02/15 19:50:00	2023/02/16 04:58:00
5	593	Coal constrains, empty bunkers.	2023/02/18 23:37:00	2023/02/19 09:53:00
5	593	tripped on black furnace due to coal constraints	2023/02/21 03:23:00	2023/02/21 04:23:00
5	593	Coal constrains, no coal supply from mine	2023/02/21 04:23:00	2023/02/22 14:00:00
5	593	Tripped on LP turbine 2 rear bearing temp high	2023/02/22 14:10:00	2023/02/22 16:32:00
5	593	Tripped, thermocouple dislodged out.	2023/02/23 13:10:00	2023/02/23 17:47:00
6	214	High stack emissions	2023/02/01 20:42:00	2023/02/01 23:29:00
6	118	RHO precip casing repairs.	2023/02/05 00:00:00	2023/02/05 22:33:00
6	593	boiler blow done isolating v/v gland leaking.	2023/02/06 22:06:00	2023/02/07 22:27:00
6	118	AM: A Mill ball loading hopper	2023/02/09 00:00:00	2023/02/09 03:46:00
6	117	High stack emissions.	2023/02/09 12:41:00	2023/02/09 16:15:00
6	73	high stack emissions	2023/02/09 21:20:00	2023/02/10 02:26:00
6	213	High stack emissions	2023/02/10 20:08:00	2023/02/10 23:53:00
6	200	AM: Dust plant not available.	2023/02/14 02:02:00	2023/02/14 17:52:00
6	200	AM: High ash hoppers	2023/02/14 22:20:00	2023/02/15 06:26:00
6	237	AM: high ash hoppers levels	2023/02/15 10:09:00	2023/02/15 17:08:00
6	216	High hoppers level	2023/02/15 20:19:00	2023/02/16 04:58:00
6	593	Coal constrains, bunkers empty.	2023/02/19 00:09:00	2023/02/21 22:36:00
6	148	AM: Manual rapping	2023/02/23 21:05:00	2023/02/24 00:00:00
6	148	AM:Emission tests	2023/02/24 00:00:00	2023/02/24 04:22:00
6	100	AM: LHO precip casing repairs	2023/02/25 00:00:00	2023/02/25 00:00:00
6	593	Boiler tube leak	2023/02/28 10:49:00	2023/02/28 23:59:59

PM Exceedances		
U1.	High hopper levels ESP poor performance(LHO & LHI trip due to station board trip)	03-Feb
U1.	LHO & LHI return to service at 02h00 Poor ESP performance	04-Feb
U1.	SP poor performance & manual rapping	10-Feb
U1.	Manual rapping	12-Feb
U1.	HO Casing isolate to protect the fields, High hopper levels & dust plant challenges.	15-Feb
U1.	Poor ESP performance & high hopper levels	22-Feb
U1.	Manual rapping and poor casing performance	23-Feb
U1.	LHO, LHI & RHO casings performing poorly.	24-Feb
U1.	RHO casing outage LHO & LHI casing poor performance	26-Feb
U1.	HO & LHI casing performing poorly High hopper levels	27-Feb
U1.	HO & LHI casing performing poorly, RHO F7 is arcing	28-Feb
U2.	Unit Shut down for boiler tube leak	02-Feb
U2.	Unit 2 synchronised on 2023/02/04 @ 08:04, emissions should be within the limit by 2023/02/07 @ 08:04 and it is advised to remain within the limit until at least 2023/02/08 @ 23:59 to ensure there is a clear gap between start up conditions	04-Feb
U2.	Unit light up	05-Feb
U2.	Unit light up	06-Feb
U2.	High hopper levels, LHI casing isolated to protect ESP fields, dust plant challenges & poor ESP performance.	14-Feb
U2.	oor ESP performance, dust plant challenges & high hopper levels	15-Feb
U2.	Unit 2 synchronised on 2023/02/19 @ 12:18, emissions to be below the limit by 2023/03/22 @ 12:18 and remain below the limit on the 2023/02/23 @ 23:59	19-Feb
U2.	Unit light up	20-Feb
U2.	Unit off due to coal constraints	21-Feb
U2.	Unit light up	24-Feb
U2.	LHI & RHO Casing performing poorly	28-Feb
U3.	ESP Poor Performance High Hoppe Levels Manual Rapping	02-Feb
U3.	LHO ESP casing outage	04-Feb
U3.	ESP poor performance Manual rapping High hopper levels	05-Feb