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Date: 20 June 2023

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LRP01PLA000 _0326/20230608

Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR MAY 2023

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

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

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

Yours sincerely

Karabo Rakgolela
GENERAL MANAGER

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Eskom Holdings SOC Ltd Reg No 2002/015527/30



Report

Lethabo Power Station

Report name: **Lethabo Power Station
May 2023
Emission Report**

Reference number: **LRP01PLA000_0326/20230608**
Document Type: **Report**
Area of Applicability: **Environment**
Report Date: **June-2023**
Classification: **Controlled Disclosure**

Signatures:

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LETHABO POWER STATION MONTHLY EMISSIONS REPORT

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1. RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate May-2023
	Coal	Tons	2 000 000	1 287 723
	Fuel Oil	Tons	1 700	1482.65
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate May-2023
	Energy	GWh	2834.64	1 723.39
	Ash	Tons	770 000	480 707.0
	RE Ash	kg/MWh	Not Specified	278.93

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.656 (Standard)	0.680
Ash Content	%	37.37 (Standard)	37.330

*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 May-2023	Technology Type	SO ₃ Utilization May-2023
Unit 1	<i>Electrostatic Precipitator (ESP)</i>	<i>Unit Off-line</i>	SO ₃	<i>Off-line</i>
Unit 2	<i>Electrostatic Precipitator (ESP)</i>	99.81%	SO ₃	100.0%
Unit 3	<i>Electrostatic Precipitator (ESP)</i>	99.80%	SO ₃	99.9%
Unit 4	<i>Electrostatic Precipitator (ESP)</i>	99.87%	SO ₃	99.3%
Unit 5	<i>Electrostatic Precipitator (ESP)</i>	99.67%	SO ₃	100.0%
Unit 6	<i>Electrostatic Precipitator (ESP)</i>	99.82%	SO ₃	90.7%

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	OFF	OFF	OFF
Unit 2	97.1	100.0	100.0
Unit 3	99.8	100.0	100.0
Unit 4	99.5	99.6	99.9
Unit 5	95.6	99.7	99.9
Unit 6	99.5	99.5	99.7

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 May 2023

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	0.0	0	0
Unit 2	173.2	3 744	1 495
Unit 3	156.3	3 538	1 511
Unit 4	133.3	3 746	1 749
Unit 5	316.2	5036	1704
Unit 6	117.2	2 940	1 129
SUM	896.3	19 004	7 587

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

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	18	9	0	0	9	101.5
Unit 3	19	6	0	2	8	96.4
Unit 4	27	4	0	0	4	70.1
Unit 5	21	7	0	3	10	134.7
Unit 6	19	6	0	0	6	84.9
SUM	104	32	0	5	37	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average SO ₂ (mg/Nm ³)
Unit 1	0	0	0	0	0	
Unit 2	28	0	0	0	0	2 054.8
Unit 3	28	0	0	0	0	2 017.3
Unit 4	31	0	0	0	0	1 970.9
Unit 5	31	0	0	0	0	2 105.3
Unit 6	26	0	0	0	0	1 970.5
SUM	144	0	0	0	0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contra-vention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	0	0	0	0	0	
Unit 2	28	0	0	0	0	816.3
Unit 3	28	0	0	0	0	855.8
Unit 4	31	0	0	0	0	915.9
Unit 5	31	0	0	0	0	712.1
Unit 6	26	0	0	0	0	765.2
SUM	144	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
Contra-vention	RED	Emissions above ELV but outside grace or S30 incident conditions

Figure 1: Lethabo Unit 1 PM Emissions - May 2023

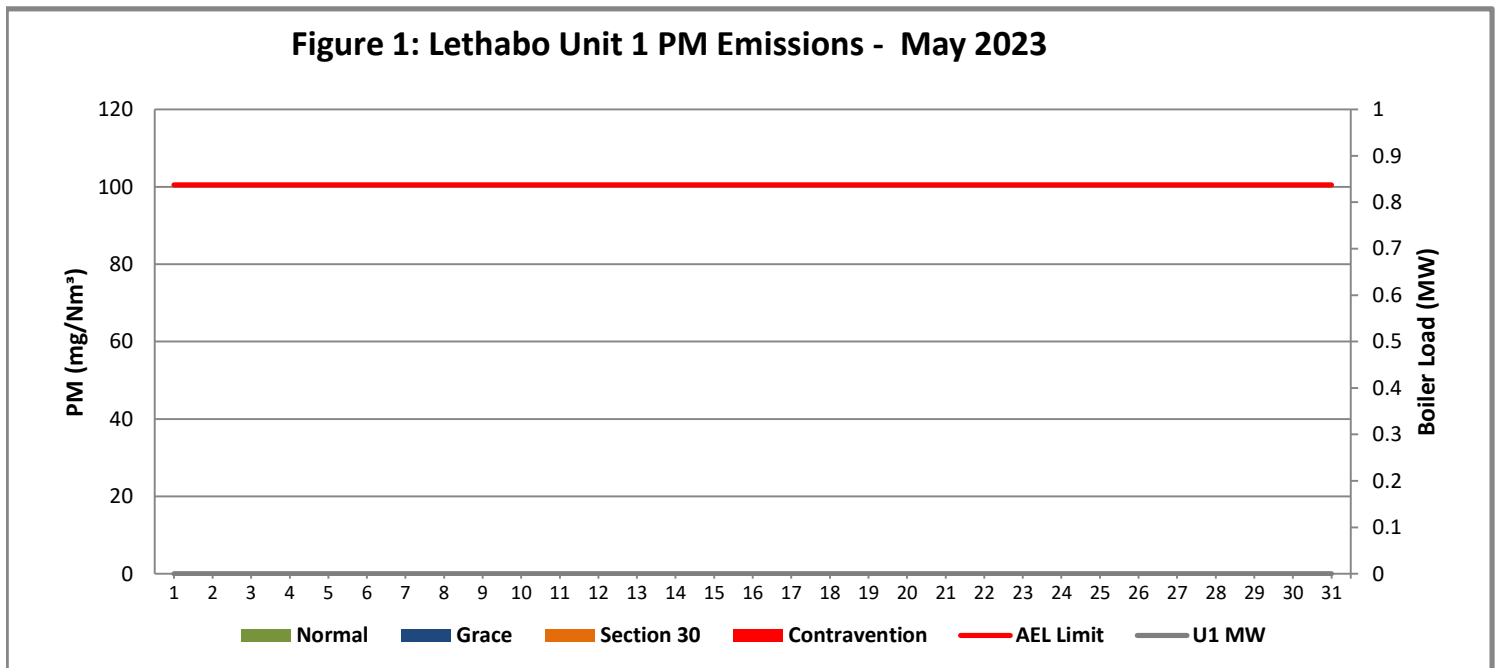


Figure 2: Lethabo Unit 2 PM Emissions - May 2023

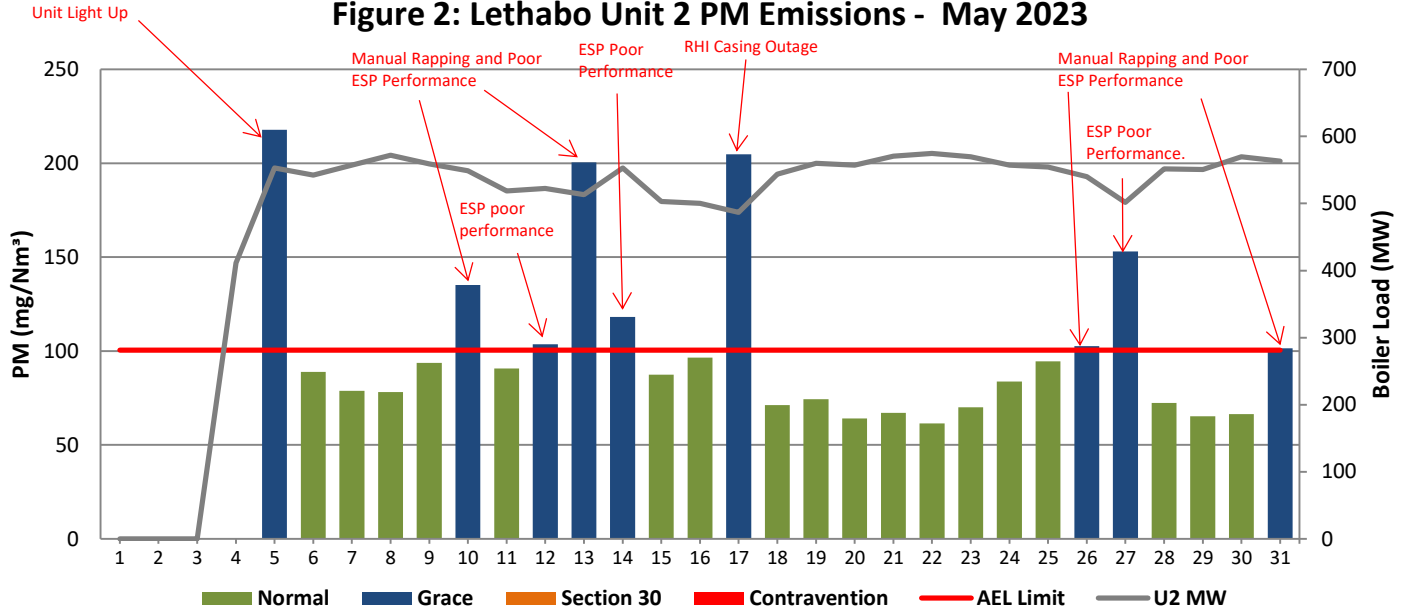


Figure 3: Lethabo Unit 3 PM Emissions - May 2023

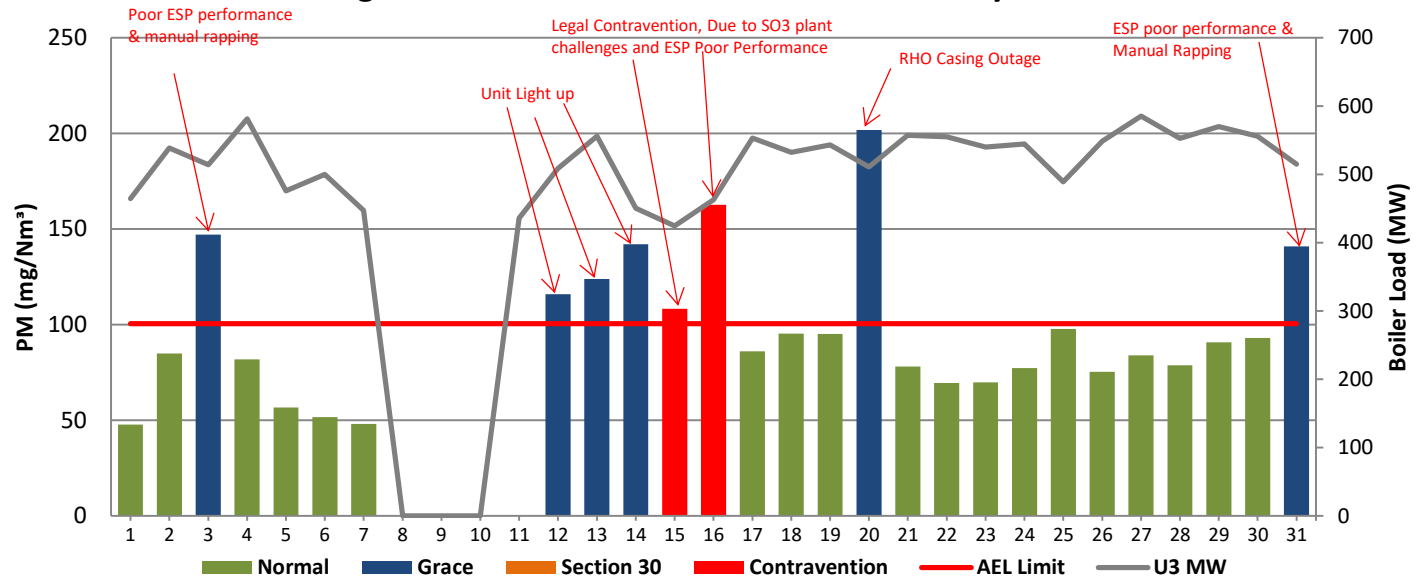


Figure 4: Lethabo Unit 4 PM Emissions - May 2023

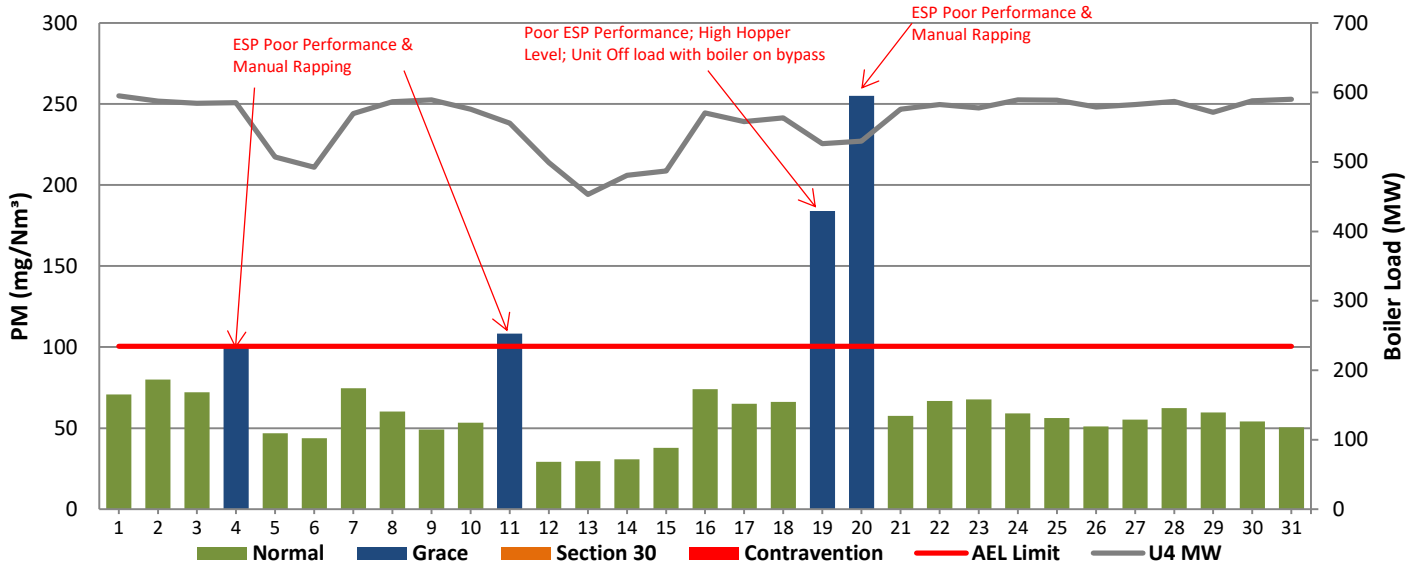


Figure 5: Lethabo Unit 5 PM Emissions - May 2023

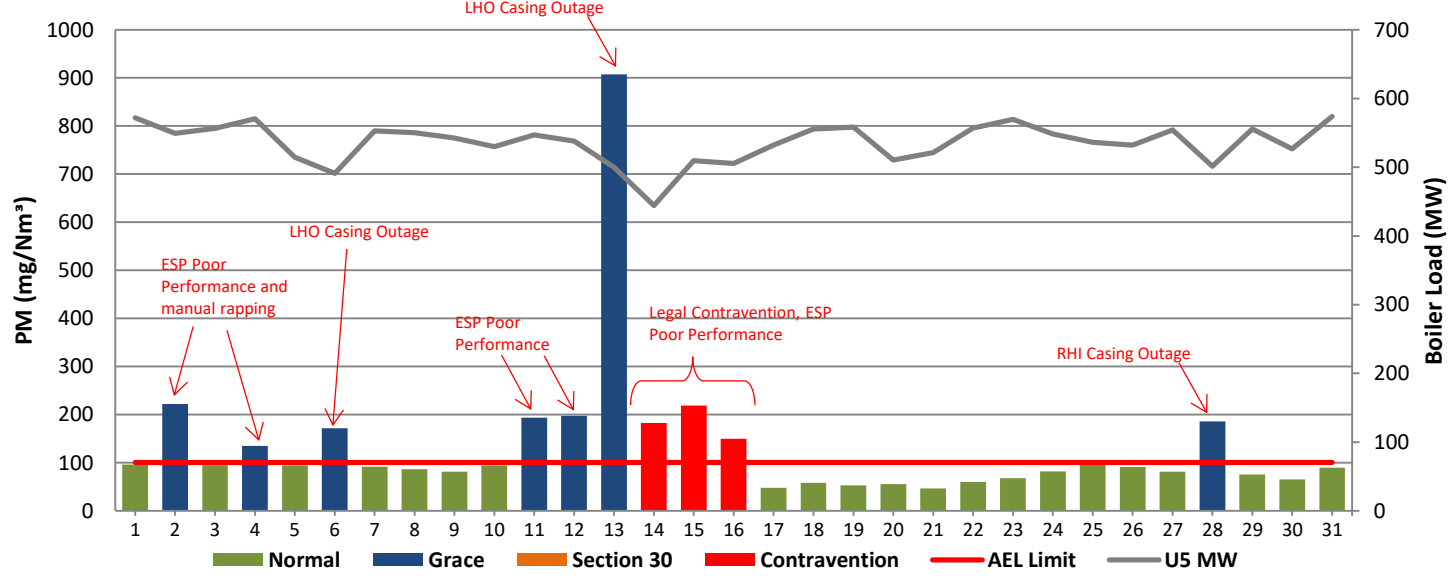


Figure 6: Lethabo Unit 6 PM Emissions - May 2023

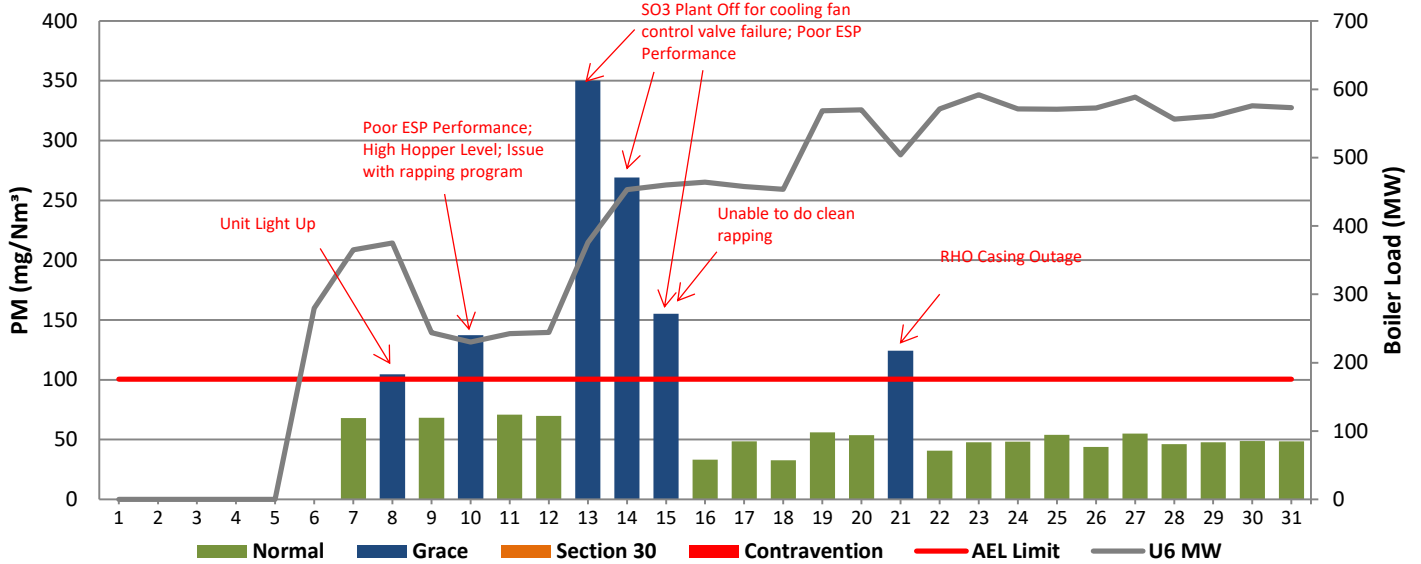


Figure 7: Lethabo Unit 1 SO₂ Emissions - May 2023

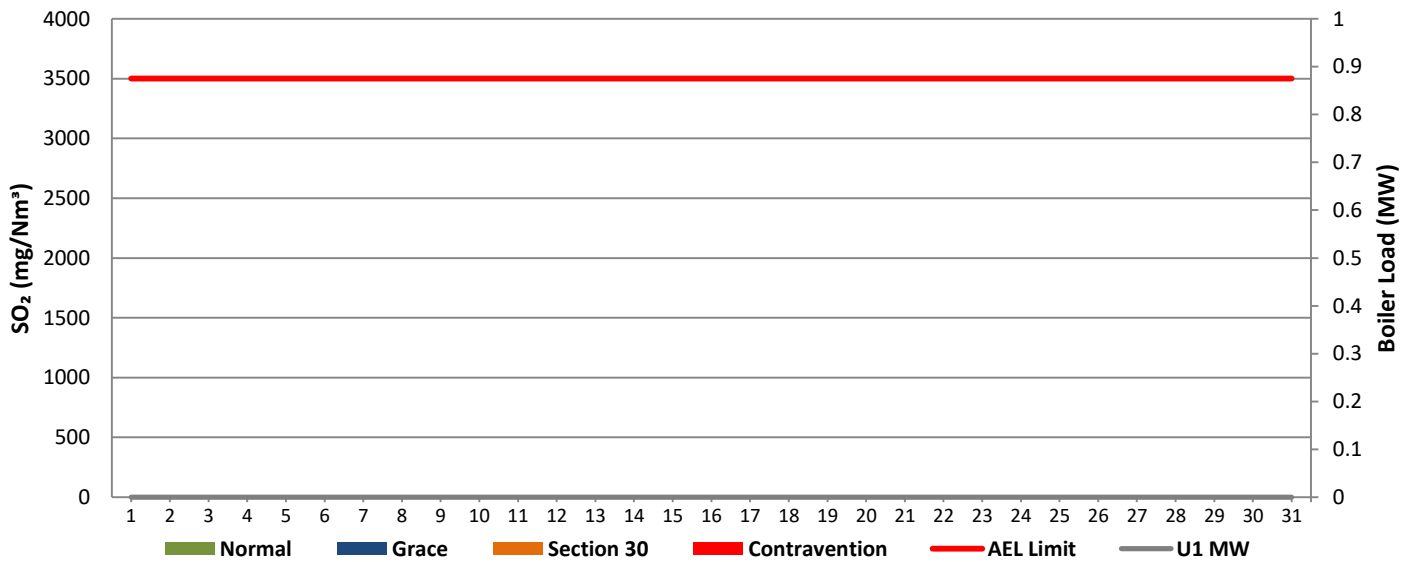


Figure 8: Lethabo Unit 2 SO₂ Emissions - May 2023

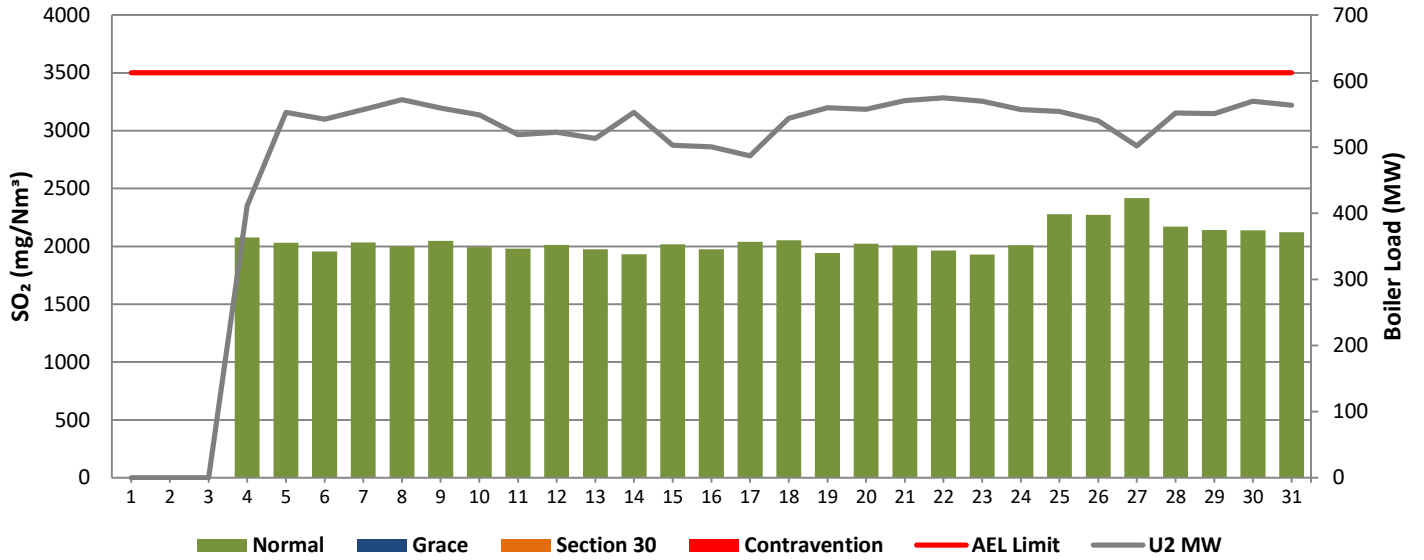


Figure 9: Lethabo Unit 3 SO₂ Emissions - May 2023

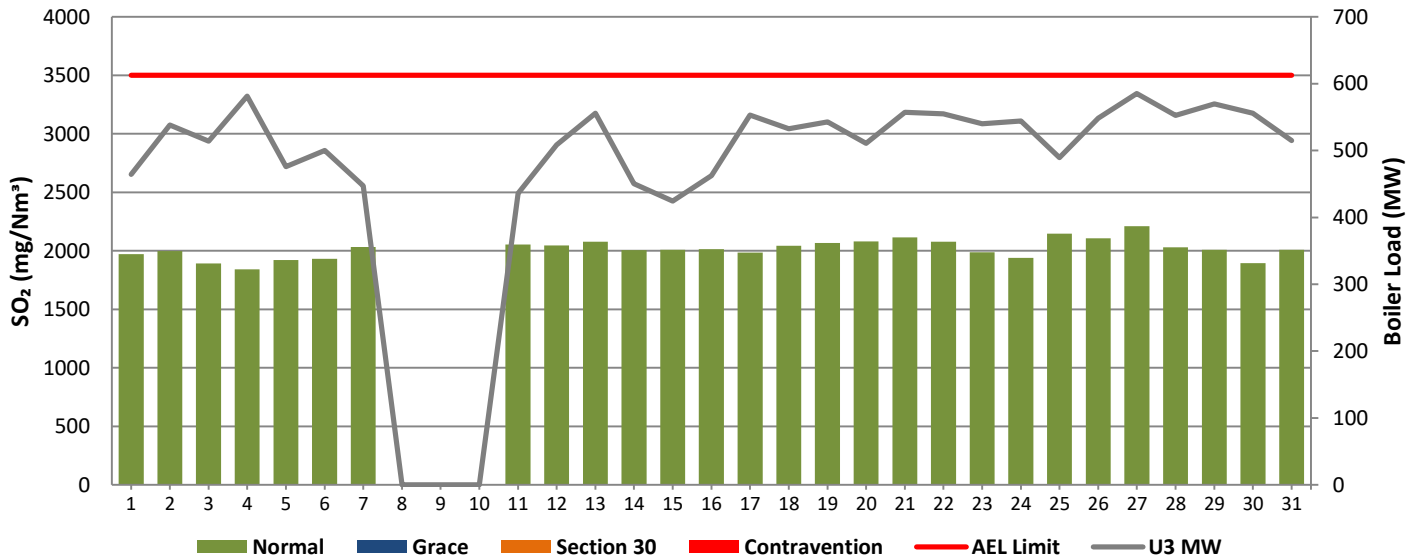


Figure 10: Lethabo Unit 4 SO₂ Emissions - May 2023

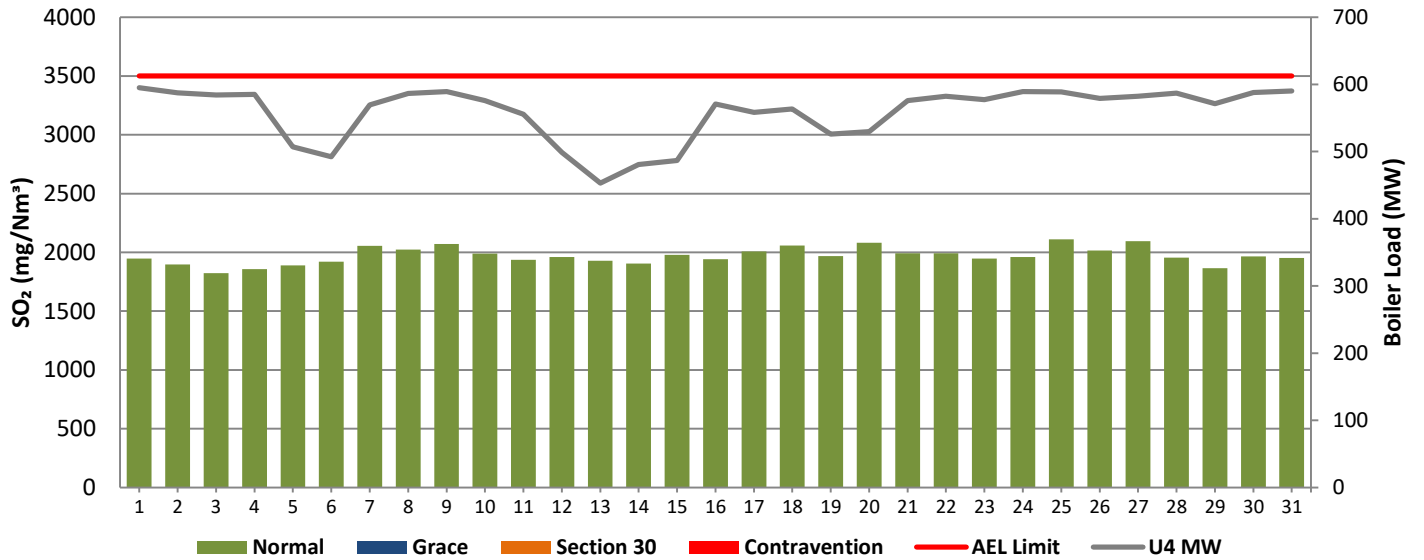


Figure 11: Lethabo Unit 5 SO₂ Emissions - May 2023

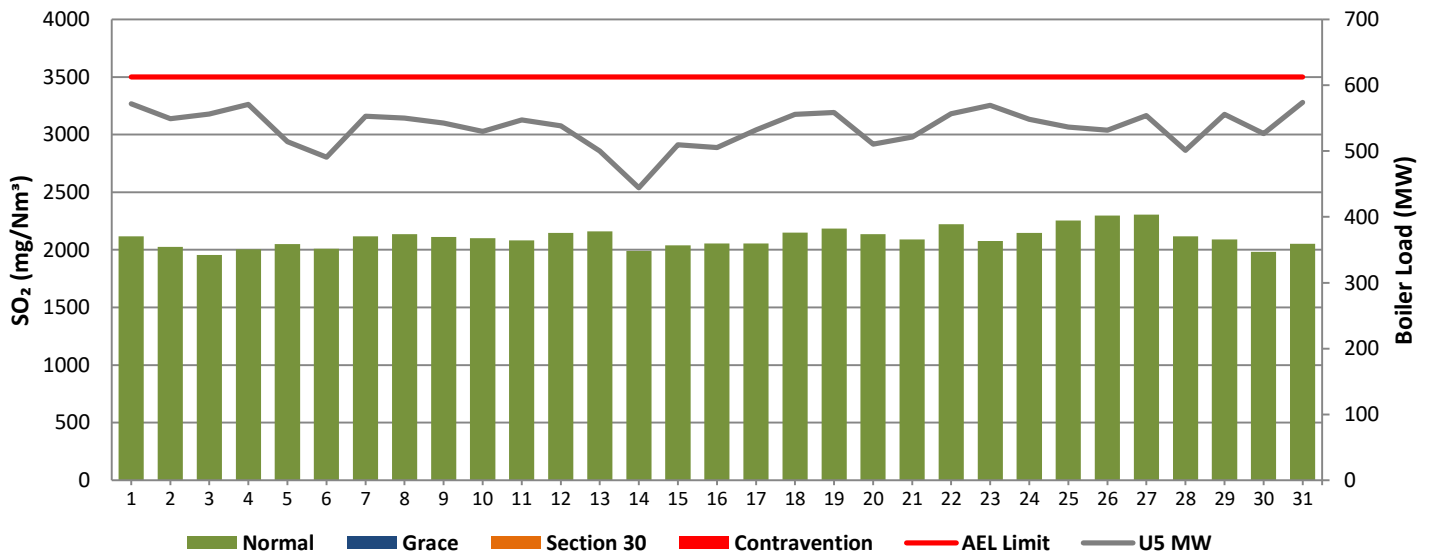


Figure 12: Lethabo Unit 6 SO₂ Emissions - May 2023

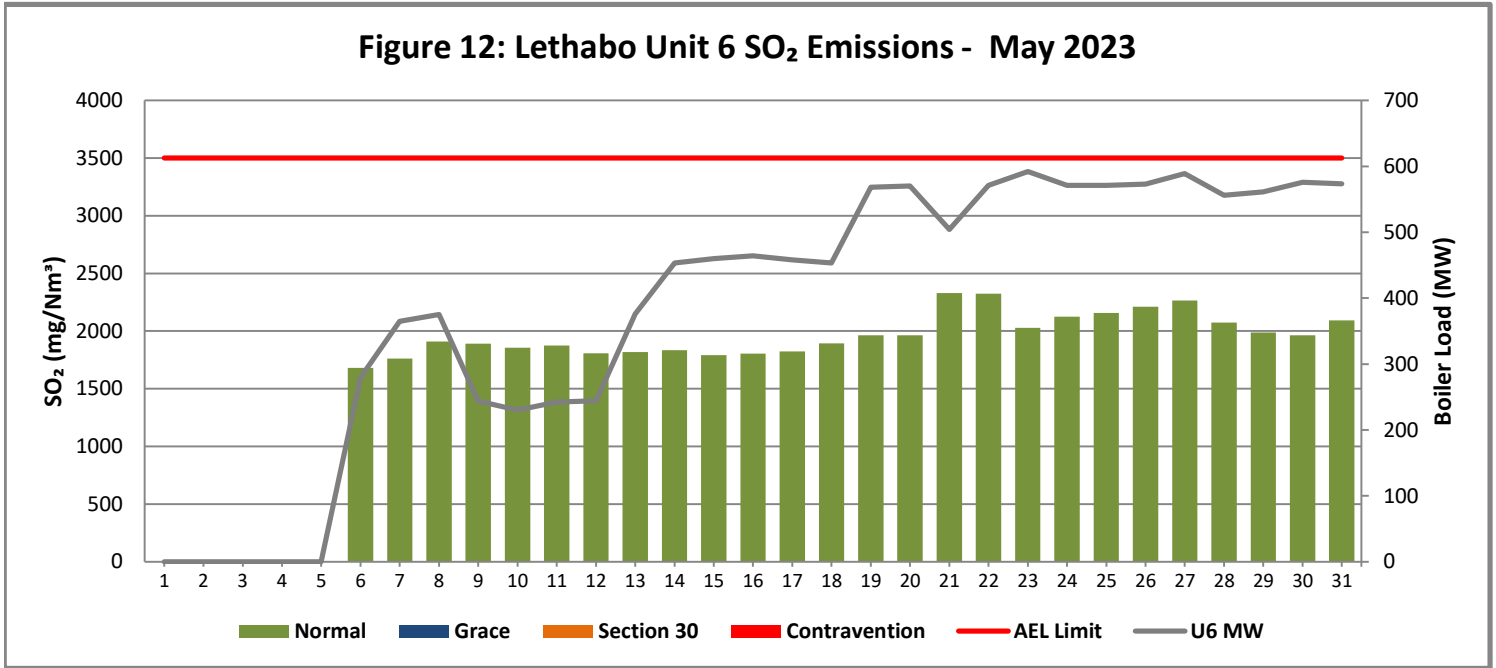


Figure 13: Lethabo Unit 1 NO_x Emissions - May 2023

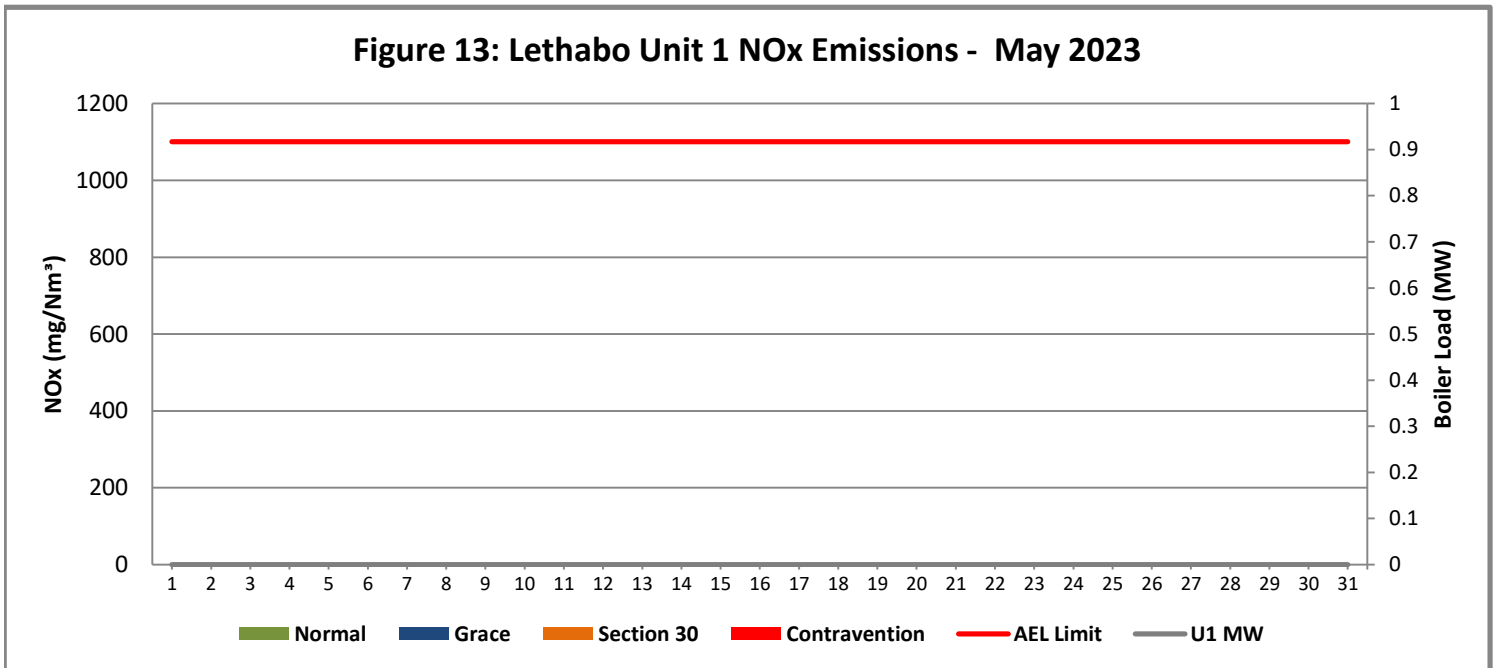


Figure 14: Lethabo Unit 2 NOx Emissions - May 2023

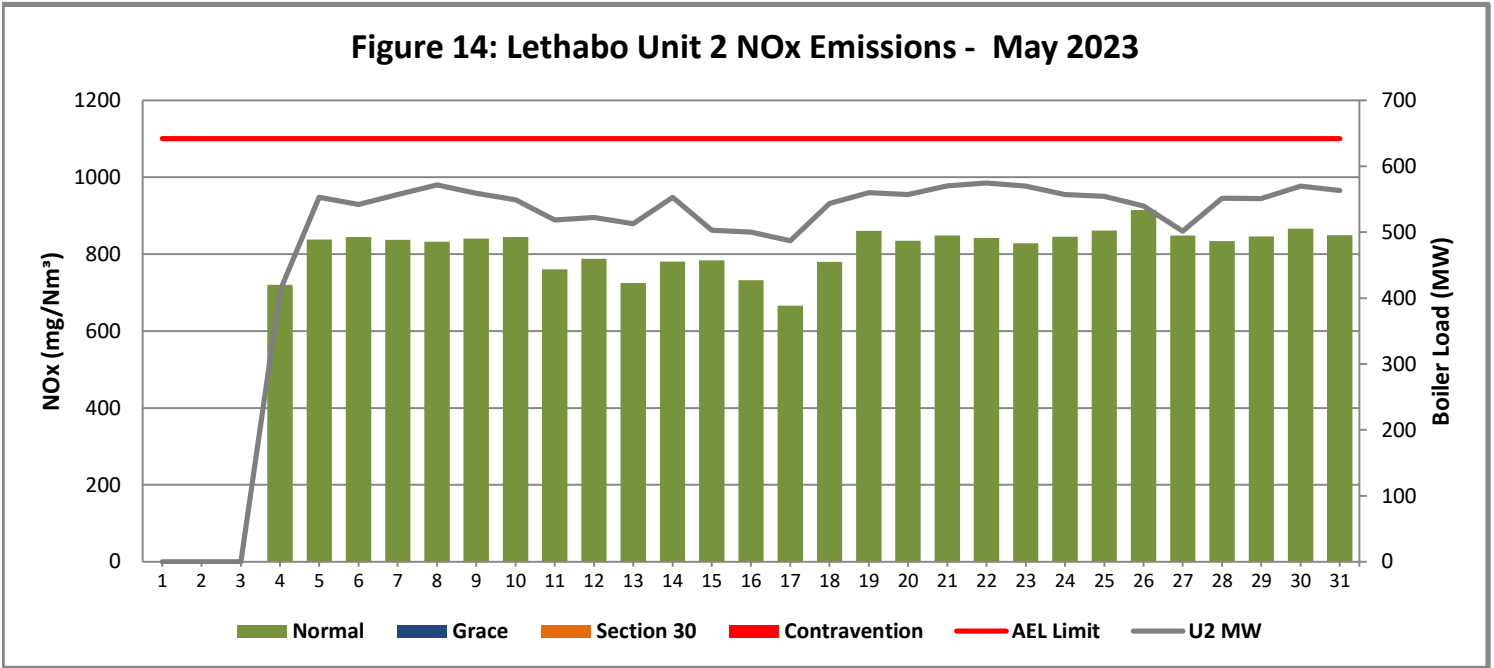


Figure 15: Lethabo Unit 3 NOx Emissions - May 2023

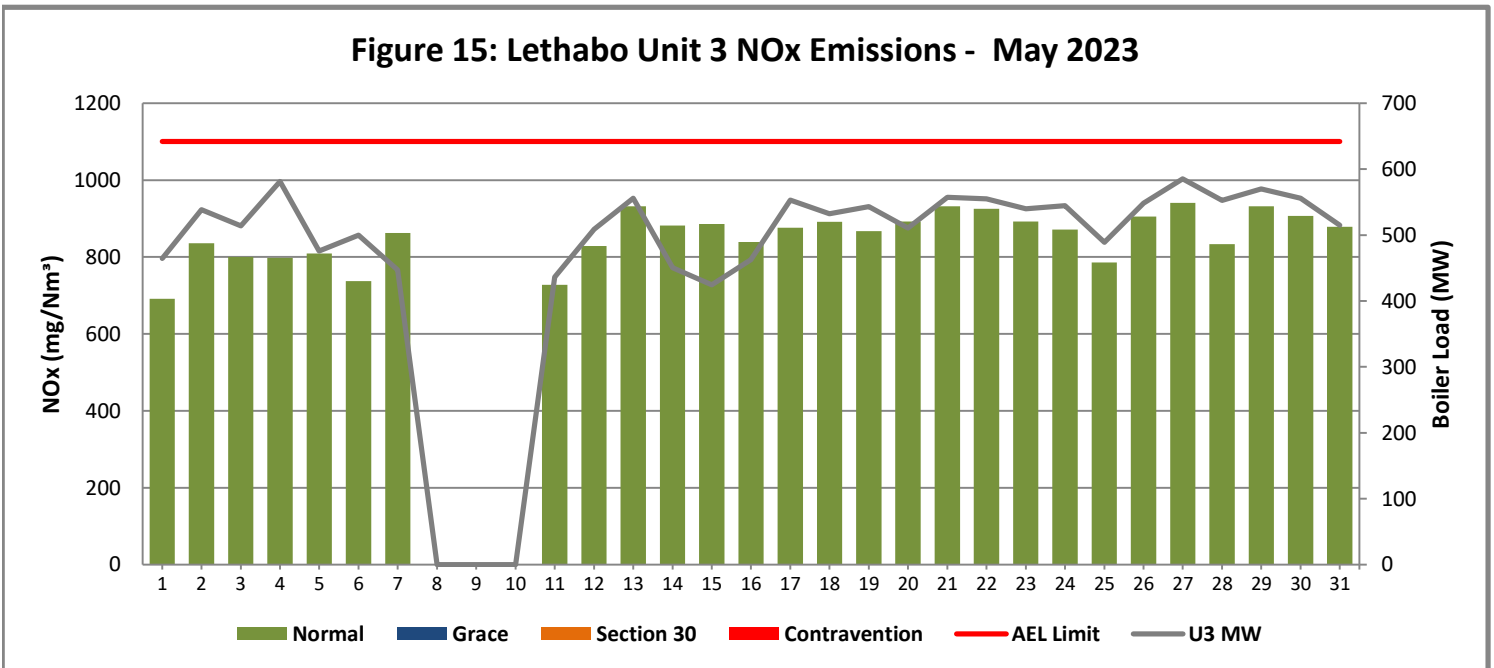


Figure 16: Lethabo Unit 4 NOx Emissions - May 2023

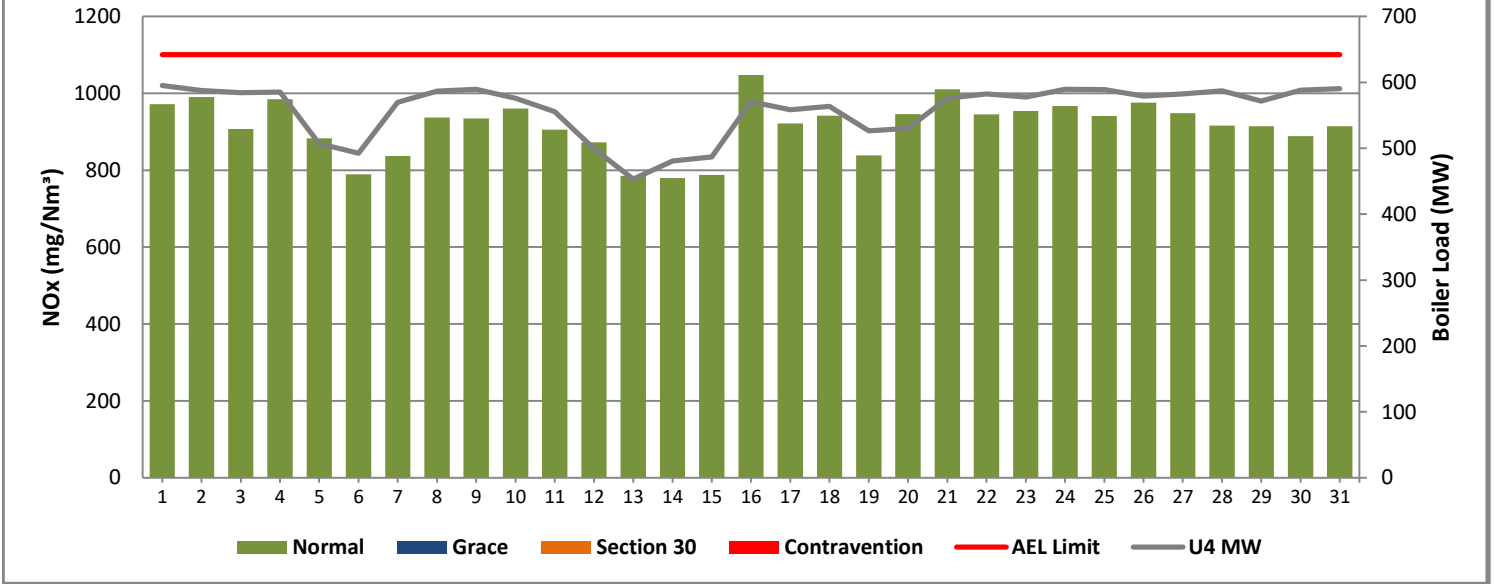


Figure 17: Lethabo Unit 5 NOx Emissions - May 2023

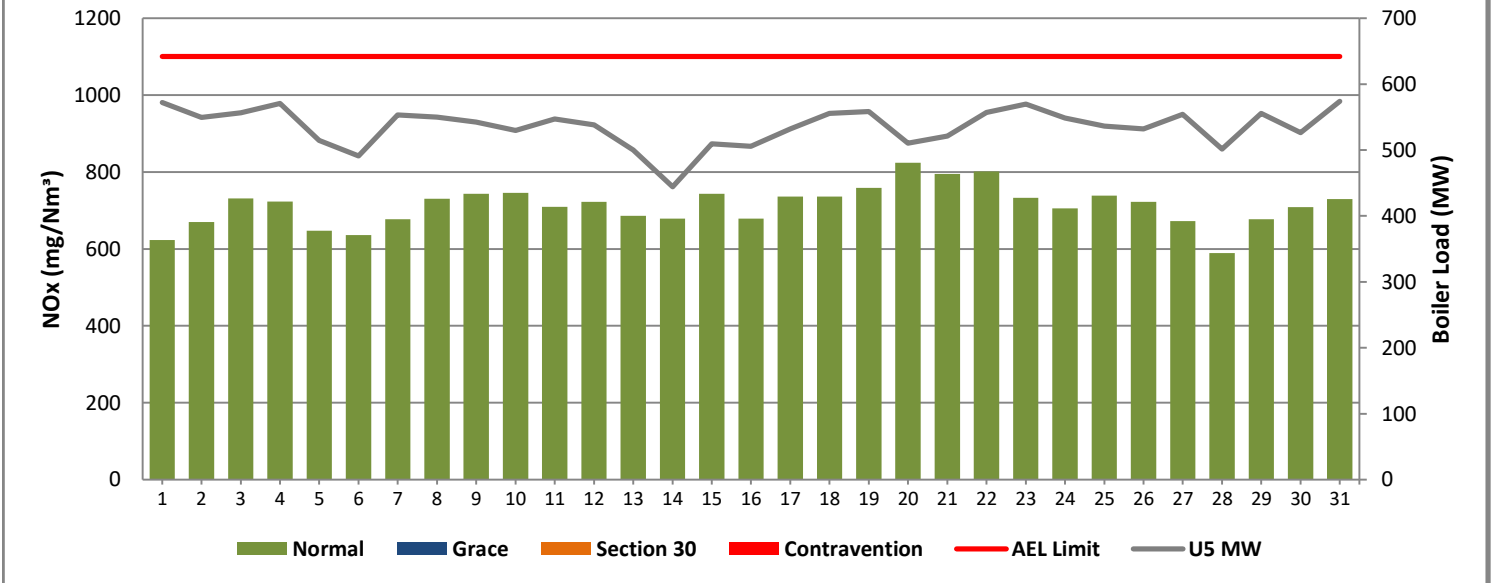
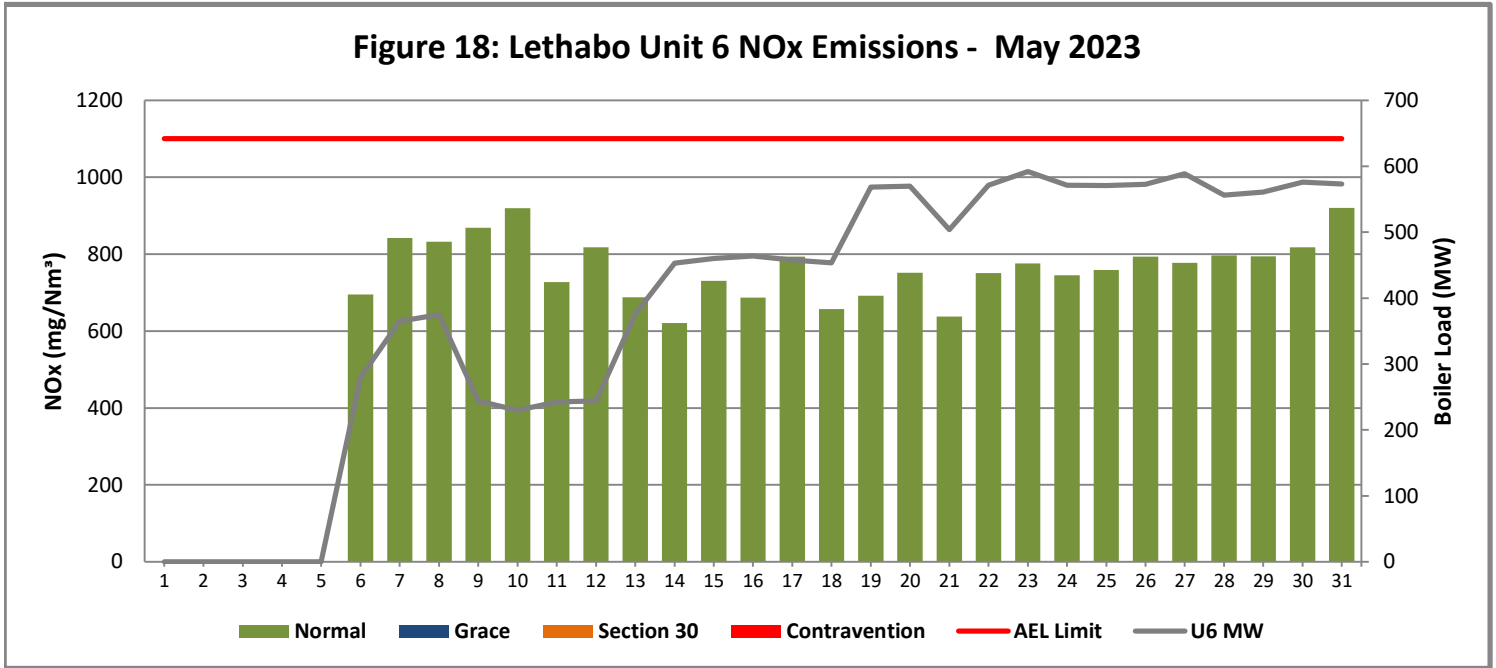


Figure 18: Lethabo Unit 6 NOx Emissions - May 2023



7 SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1							
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>Boiler tube leak</i>					
Breaker Open (BO)						
Draught Group (DG) Shut Down (SD)						
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	12:03 PM	2023/05/04				
Synch. to Grid (or BC)	12:06 PM	2023/05/04				
Fires in to BC (duration)	00:00:03	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	4:00 AM	2023/05/07				
Emissions below limit from BC (duration)	02:15:54	DD:HH:MM		DD:HH:MM		DD:HH:MM

Unit No.3	<i>Donor tube leak & Unit Trip on HP exhaust steam temperature</i>		<i>Unit tripped on low drum level</i>					
Breaker Open (BO)	9:34 PM	2023/05/07	10:33 AM	2023/05/25				
Draught Group (DG) Shut Down (SD)	11:44 AM	2023/05/08	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>				
BO to DG SD (duration)	00:14:10	DD:HH:MM	<i>n/a</i>	DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	8:35 AM	2023/05/11	12:31 PM	2023/05/25				
Synch. to Grid (or BC)	1:20 PM	2023/05/11	2:37 PM	2023/05/25				
Fires in to BC (duration)	00:04:45	DD:HH:MM	00:02:06	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	10:00 PM	2023/05/18	10:40 AM	2023/05/25				
Emissions below limit from BC (duration)	07:08:40	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM

Unit No.4	<i>AM: Gen Exciter diode replacement</i>							
Breaker Open (BO)	11:03 PM	2023/05/19						
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		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.5							
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.6	<i>Off load due to fire on R/H side ducting</i>					
Breaker Open (BO)						
Draught Group (DG) Shut Down (SD)						
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	12:00 PM	2023/05/06				
Synch. to Grid (or BC)	12:25 PM	2023/05/06				
Fires in to BC (duration)	00:00:25	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	8:00 AM	2023/05/07				
Emissions below limit from BC (duration)	00:19:35	DD:HH:MM		DD:HH:MM		DD:HH:MM

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of May 2023 in mg/Nm³

8. MAINTENANCE

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

Unit 2				
Beginning of	2023/05/17 00:04:00	2023/05/26 23:16:00		
Reason for Maintenance	RHI Precip casing repairs	RHO Precip casing		
End (Time):	2023/05/17 22:50:00	2023/05/27 19:25:00		
Duration	22:46:00	20:09:00		

Unit 3				
Beginning of	2023/05/19 23:50:00			
Reason for Maintenance	RHO Precip casing repairs			
End (Time):	2023/05/20 18:51:00			
Duration	19:01:00			

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

Unit 5				
Beginning of	2023/05/06 00:00	2023/05/12 23:58	2023/05/16 02:28	2023/05/28 00:34
Reason for Maintenance	RHO precip casing repairs.	LHO precip casing	LHO precip casing	RHI precip casing
End (Time):	2023/05/06 23:23	2023/05/13 23:47	2023/05/16 23:25	2023/05/29 00:25
Duration	23:23:00	23:49:00	20:57:00	23:51:00

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

9. GENERAL

Unit 6 Monitor Reliability

05/05/2023-06/05/2023: CO2 monitor reliability low during the light up.

09/05/2023-14-05/2023: CO2 monitor reliability low due to monitors reading very low

Unit 5 Monitor Reliability

13/05/2023- 14/05/2023: PM monitor reliability low due to monitors reading maximum.

Unit 3:

On the 15/05/2023, Unit 3 registered a non-compliance as the unit exceeded for greater than 72 hours light up conditions due to poor ESP performance and SO3 plant challenges. The emission's exceedance for the period mentioned in the report was caused by poor performance of LHO casing defects and failure to reduce load in the early hours of the morning; resulting in failure to remain below limit for a period of 24 hours after 72 hours grace period.

Unit 5:

On the 14/05/2023, Unit 5 registered a non-compliance as the unit exceeded for greater than 72 hours light up conditions due to very poor ESP performance and challenges. The emission's exceedance for the period mentioned in the report was caused by poor performance of the RHO and LHO casing defects resulting in failure to remain below limit after the 72 hours grace period.

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.
3	15/05/2023	16/05/2023	SO3 Plant Challenges and ESP Poor Performance	Repairs of the SO3 Plant Defects	15/05/2023				Legal Contravention incurred
5	14/05/2023	16/05/2023	ESP Defects and Poor Performance	Repairs of ESP Defects	15/05/2023				Legal Contravention incurred

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
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
Mar-23	0.51	0.37	0.52	0.54	0.63	0.39	0.50
Apr-23	OFF	0.29	0.61	0.35	0.86	OFF	0.56
May-23							

ADDENDUM TO MONTHLY EMISSIONS REPORT

12. DAILY EMISSIONS FIGURES

Final Dust Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-May	OFF	OFF	48	71	96	OFF	100
02-May	OFF	OFF	85	80	222	OFF	100
03-May	OFF	OFF	147	72	95	OFF	100
04-May	OFF	OFF	82	101	135	OFF	100
05-May	OFF	218	57	47	94	OFF	100
06-May	OFF	89	52	44	172	OFF	100
07-May	OFF	79	48	75	92	68	100
08-May	OFF	78	OFF	60	87	105	100
09-May	OFF	94	OFF	49	81	68	100
10-May	OFF	135	OFF	53	94	137	100
11-May	OFF	91	OFF	108	193	71	100
12-May	OFF	104	116	29	198	70	100
13-May	OFF	200	124	30	907	350	100
14-May	OFF	118	142	31	183	269	100
15-May	OFF	87	108	38	219	155	100
16-May	OFF	97	163	74	150	33	100
17-May	OFF	205	86	65	48	48	100
18-May	OFF	71	95	66	58	33	100
19-May	OFF	74	95	184	53	56	100
20-May	OFF	64	202	255	55	54	100
21-May	OFF	67	78	58	47	124	100
22-May	OFF	61	69	67	60	41	100
23-May	OFF	70	70	68	68	48	100
24-May	OFF	84	77	59	82	48	100
25-May	OFF	94	98	56	99	54	100
26-May	OFF	103	75	51	91	44	100
27-May	OFF	153	84	55	81	55	100
28-May	OFF	72	79	62	186	46	100
29-May	OFF	65	91	60	76	48	100
30-May	OFF	66	93	54	65	49	100
31-May	OFF	101	141	50	90	49	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final SOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-May	OFF	OFF	1972	1947	2118	OFF	3500
02-May	OFF	OFF	1999	1897	2026	OFF	3500
03-May	OFF	OFF	1891	1823	1955	OFF	3500
04-May	OFF	2076	1841	1857	2005	OFF	3500
05-May	OFF	2031	1920	1889	2050	OFF	3500
06-May	OFF	1955	1931	1922	2008	1682	3500
07-May	OFF	2033	2033	2057	2117	1761	3500
08-May	OFF	2000	OFF	2024	2137	1910	3500
09-May	OFF	2046	OFF	2073	2111	1890	3500
10-May	OFF	1993	OFF	1990	2102	1856	3500
11-May	OFF	1980	2054	1936	2081	1874	3500
12-May	OFF	2014	2046	1961	2147	1807	3500
13-May	OFF	1976	2077	1928	2161	1817	3500
14-May	OFF	1933	2005	1905	1990	1835	3500
15-May	OFF	2017	2008	1980	2040	1792	3500
16-May	OFF	1975	2014	1942	2055	1806	3500
17-May	OFF	2039	1985	2009	2056	1822	3500
18-May	OFF	2053	2042	2059	2149	1894	3500
19-May	OFF	1942	2066	1968	2184	1964	3500
20-May	OFF	2024	2080	2083	2136	1965	3500
21-May	OFF	2006	2114	1991	2090	2330	3500
22-May	OFF	1964	2078	1992	2222	2323	3500
23-May	OFF	1928	1987	1947	2076	2028	3500
24-May	OFF	2008	1939	1960	2147	2125	3500
25-May	OFF	2278	2147	2111	2256	2157	3500
26-May	OFF	2273	2106	2016	2298	2212	3500
27-May	OFF	2418	2210	2094	2305	2264	3500
28-May	OFF	2172	2029	1956	2118	2074	3500
29-May	OFF	2141	2009	1866	2092	1989	3500
30-May	OFF	2137	1894	1966	1982	1963	3500
31-May	OFF	2122	2009	1952	2051	2094	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final NOx Concentration (mg/Nm³)

Date	U1	U2	U3	U4	U5	U6	Limit
01-May	OFF	OFF	692	972	623	OFF	1100
02-May	OFF	OFF	836	991	670	OFF	1100
03-May	OFF	OFF	800	907	731	OFF	1100
04-May	OFF	720	798	985	724	OFF	1100
05-May	OFF	838	809	883	647	OFF	1100
06-May	OFF	845	737	789	636	695	1100
07-May	OFF	837	862	837	677	842	1100
08-May	OFF	833	OFF	937	731	832	1100
09-May	OFF	840	OFF	934	743	869	1100
10-May	OFF	844	OFF	960	746	920	1100
11-May	OFF	761	728	906	709	728	1100
12-May	OFF	788	829	872	722	818	1100
13-May	OFF	725	932	785	686	688	1100
14-May	OFF	781	882	779	679	621	1100
15-May	OFF	784	886	787	743	730	1100
16-May	OFF	733	839	1048	679	687	1100
17-May	OFF	666	877	921	736	794	1100
18-May	OFF	780	891	942	736	658	1100
19-May	OFF	860	868	839	759	692	1100
20-May	OFF	835	893	946	824	752	1100
21-May	OFF	849	932	1011	795	638	1100
22-May	OFF	842	926	945	801	751	1100
23-May	OFF	829	892	954	733	775	1100
24-May	OFF	846	871	967	706	745	1100
25-May	OFF	862	786	941	738	759	1100
26-May	OFF	915	905	976	722	794	1100
27-May	OFF	849	941	948	672	777	1100
28-May	OFF	834	833	916	589	797	1100
29-May	OFF	846	932	914	677	794	1100
30-May	OFF	866	907	888	709	818	1100
31-May	OFF	850	879	914	730	921	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
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
Mar-23	99.30%	0.9	99.19%	1.0	99.22%	1.0	100.00%	0.0	98.57%	1.8	99.19%	1.0
Apr-23	OFF	OFF	100.00%	0.0	97.91%	2.5	100.00%	0.0	99.24%	0.9	OFF	OFF
May-23	OFF	OFF	98.56%	1.8	99.36%	0.8	100.00%	0.0	96.91%	3.8	100.00%	0.0

SO₃ plant utilisation

Availability												
Month	Unit 1	Days Affected	Unit 2	Days Affected	Unit 3	Days Affected	Unit 4	Days Affected	Unit 5	Days Affected	Unit 6	Days Affected
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
Mar-23	100.00%	0.0	98.89%	0.3	95.16%	1.5	95.50%	1.4	99.33%	0.2	95.00%	1.6
Apr-23	OFF	OFF	99.66%	0.1	100.00%	0.0	98.93%	0.3	94.58%	1.6	OFF	OFF
May-23	OFF	OFF	100.00%	0.0	99.89%	0.0	99.33%	0.2	100.00%	0.0	90.67%	2.9

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
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%
Mar-23	99.68%	98.75%	99.06%	97.17%	97.33%	99.12%
Apr-23	OFF	99.43%	98.61%	99.57%	94.31%	OFF
May-23	OFF	97.07%	99.85%	99.46%	95.56%	99.50%

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
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%
Mar-23	100.00%	100.00%	100.00%	100.00%	99.87%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Apr-23	OFF	OFF	100.00%	100.00%	99.86%	99.86%	99.95%	99.95%	100.00%	100.00%	OFF	OFF
May-23	OFF	OFF	100.00%	100.00%	100.00%	100.00%	99.60%	99.87%	99.73%	99.87%	99.52%	99.68%

Oxygen Monitor Availability						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
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%
Mar-23	100.00%	100.00%	100.00%	86.16%	99.87%	99.81%
Apr-23	OFF	99.83%	99.86%	99.83%	99.86%	OFF
May-23	OFF	100.00%	100.00%	100.00%	99.87%	99.84%

ADDENDUM TO MONTHLY EMISSIONS REPORT

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
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%
Mar-23	99.797%	99.858%	99.780%	99.780%	99.745%	99.831%
Apr-23	OFF	99.893%	99.731%	99.854%	99.646%	OFF
May-23	OFF	99.812%	99.802%	99.868%	99.667%	99.822%

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	593	Interim repairs	2023/05/01 00:00:00	2023/05/30 09:44:00
1	593	System Generated Slip Event linked to PCLF Event : 1795947	2023/05/30 09:44:00	2023/05/31 23:59:59
2	593	Boiler tube leak	2023/05/01 00:00:00	2023/05/04 12:06:00
2	297	System Generated Ramp Event for Event id : 1811031	2023/05/04 12:06:00	2023/05/04 15:06:00
2	88	EF: High stack emissions	2023/05/06 09:37:00	2023/05/06 15:14:00
2	86	High stack emissions	2023/05/09 20:52:00	2023/05/10 00:21:00
2	87	manual rapping	2023/05/10 19:57:00	2023/05/10 20:05:00
2	89	High stack emissions	2023/05/11 20:03:00	2023/05/12 02:03:00
2	88	EF: High stack emissions	2023/05/12 19:08:00	2023/05/13 00:09:00
2	84	High stack emissions.	2023/05/13 10:48:00	2023/05/13 14:38:00
2	190	High stack emissions.	2023/05/13 14:38:00	2023/05/13 18:17:00
2	90	AM: Manual rapping	2023/05/13 21:01:00	2023/05/14 04:57:00
2	167	High stack emissions.	2023/05/15 00:24:00	2023/05/15 05:00:00
2	87	high stack emissions	2023/05/15 13:27:00	2023/05/15 16:07:00
2	40	high stack emissions	2023/05/15 16:07:00	2023/05/15 18:39:00
2	89	High stack emissions.	2023/05/15 18:39:00	2023/05/16 05:04:00
2	136	EF: High stack emissions	2023/05/16 10:23:00	2023/05/16 16:21:00
2	91	EF: High stack emissions	2023/05/16 16:21:00	2023/05/17 00:04:00
2	90	RHI Precip casing repairs	2023/05/17 00:04:00	2023/05/17 22:50:00
2	137	AM: High stack emissions	2023/05/26 19:23:00	2023/05/26 21:56:00
2	187	EF: High stack emissions	2023/05/26 21:56:00	2023/05/26 23:16:00
2	90	AM: RHO precip casing repairs	2023/05/26 23:16:00	2023/05/27 19:25:00
2	84	Manual rapping	2023/05/31 20:59:00	2023/05/31 23:59:59
3	593	Boiler tube leak.	2023/05/07 21:34:00	2023/05/11 10:08:00
3	557	System Generated Ramp Event for Event id : 1813621 (Recalculated)	2023/05/11 10:08:00	2023/05/11 10:29:00
3	593	Unit on HP exhaust steam temperature	2023/05/11 10:29:00	2023/05/11 13:20:00
3	297	System Generated Ramp Event for Event id : 1814917	2023/05/11 13:20:00	2023/05/11 14:50:00
3	198	High stack emissions	2023/05/14 09:35:00	2023/05/15 00:52:00
3	200	High stack emissions	2023/05/15 08:15:00	2023/05/15 19:15:00
3	218	High stack emissions.	2023/05/15 19:15:00	2023/05/15 19:33:00
3	249	High stack emissions	2023/05/15 19:33:00	2023/05/16 00:00:00
3	199	High stack emissions	2023/05/16 00:00:00	2023/05/16 04:39:00
3	101	High stack emissions.	2023/05/16 04:39:00	2023/05/16 06:47:00
3	198	EF: High stack emissions	2023/05/16 10:13:00	2023/05/16 12:26:00
3	239	EF: High stack emissions	2023/05/16 12:26:00	2023/05/16 17:19:00
3	90	Manual rapping	2023/05/16 20:25:00	2023/05/17 00:00:00
3	100	EF: High stack emissions	2023/05/17 00:00:00	2023/05/17 09:12:00
3	118	EF: High stack emissions	2023/05/17 20:08:00	2023/05/18 00:36:00
3	197	EF: High stack emissions	2023/05/18 19:55:00	2023/05/19 00:23:00
3	100	high stack emissions	2023/05/19 14:19:00	2023/05/19 16:46:00
3	97	AM: RHO Precip casing repairs	2023/05/19 23:50:00	2023/05/20 18:51:00
3	593	Unit tripped on low drum level	2023/05/25 10:33:00	2023/05/25 14:37:00
3	297	System Generated Ramp Event for Event id : 1819540	2023/05/25 14:37:00	2023/05/25 16:07:00

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
4	100	Manual rapping.	2023/05/04 21:03:00	2023/05/04 23:15:00
4	115	Manual rapping.	2023/05/11 20:27:00	2023/05/12 01:54:00
4	593	AM: Gen Exciter diode replacement	2023/05/19 23:03:00	2023/05/20 01:28:00
4	297	System Generated Ramp Event for Event id : 1817709	2023/05/20 01:28:00	2023/05/20 02:58:00
5	99	High stack emissions	2023/05/01 19:15:00	2023/05/02 00:18:00
5	105	manual rapping	2023/05/02 21:07:00	2023/05/03 04:31:00
5	97	high stack emissions	2023/05/03 23:24:00	2023/05/04 00:11:00
5	94	For manual rapping.	2023/05/04 20:57:00	2023/05/04 23:13:00
5	100	High stack emissions.	2023/05/05 10:00:00	2023/05/05 13:50:00
5	195	High stack emissions.	2023/05/05 13:50:00	2023/05/05 17:08:00
5	99	High stack emissions.	2023/05/05 17:08:00	2023/05/05 18:41:00
5	96	High stack emissions.	2023/05/05 19:50:00	2023/05/06 00:00:00
5	96	RHO Precip casing repairs	2023/05/06 00:00:00	2023/05/06 23:23:00
5	99	High stack emissions.	2023/05/07 22:59:00	2023/05/08 02:04:00
5	68	High stack emissions.	2023/05/10 19:35:00	2023/05/11 02:17:00
5	99	Manual rapping.	2023/05/11 20:10:00	2023/05/12 01:56:00
5	100	AM: LHO precip casing repairs	2023/05/12 23:58:00	2023/05/13 23:47:00
5	200	High stack emissions	2023/05/14 09:14:00	2023/05/15 07:42:00
5	100	LHO precip casing repairs	2023/05/16 02:28:00	2023/05/16 23:25:00
5	77	High stack emissions.	2023/05/24 19:53:00	2023/05/24 21:09:00
5	30	High stack emissions.	2023/05/24 21:09:00	2023/05/24 22:19:00
5	50	EF: High stack emissions	2023/05/25 20:34:00	2023/05/25 20:55:00
5	98	EF: High stack emission	2023/05/25 20:55:00	2023/05/26 00:28:00
5	76	AM: RHI precip casing repairs	2023/05/28 00:34:00	2023/05/29 00:25:00
6	593	Off load due to fire on R/H side ducting	2023/05/01 00:00:00	2023/05/06 12:25:00
6	297	System Generated Ramp Event for Event id : 1800775 First Outage	2023/05/06 12:25:00	2023/05/06 13:55:00
6	297	System Generated Ramp Event for Event id : 1800825	2023/05/06 13:55:00	2023/05/06 15:25:00
6	95	high stack emissions	2023/05/15 13:40:00	2023/05/15 16:00:00
6	215	High fab levels	2023/05/28 14:23:00	2023/05/28 16:43:00
6	118	High fab levels	2023/05/28 16:43:00	2023/05/28 17:44:00

PM Exceedances		
U2.	Unit Light Up	05-May
U2.	ESP Poor Performance & Manual Rapping	10-May
U2.	Poor ESP Performance	12-May
U2.	ESP Poor Performance and Manual Rapping	13-May
U2.	ESP Poor Performance	14-May
U2.	RHI Casing Outage	17-May
U2.	ESP poor performance	26-May
U2.	RHO Casing outage	27-May
U2.	Poor ESP Performance and Manual rapping	31-May
U3.	ESP Poor Performance and Manual Rapping	03-May
U3.	Unit synchronised on 2023/05/11 @ 13:21, emissions to be below the limit by 2023/05/14 @ 13:21 and remain below the limit until at least 2023/05/15 @ 23:59	11-May
U3.	Unit Light Up	12-May
U3.	Unit Light Up	13-May
U3.	Unit Light Up	14-May
U3.	The unit was supposed to be below the limit by 2023/05/14 @ 13:21 and remain below the limit until at least 2023/05/15 @ 23:59, however the unit exceeded yesterday and therefore incurred an legal contravention ESP Poor Performance SO3 plant challenges	15-May
U3.	ESP Poor Performance SO3 plant flow low due to temperatures running high	16-May
U3.	RHO Casing Outage	20-May
U3.	Poor ESP Performance and Manual rapping	31-May
U4.	ESP Poor Performance and Manual Rapping	04-May
U4.	ESP Poor Performance & Manual Rapping	11-May
U4.	High Hoper Level Poor ESP Performance Unit off load (with boiler on bypass) for diode rack replacement	19-May
U4.	ESP Poor Performance and Manual Rapping	20-May
U5.	ESP Poor Performance and Manual Rapping	02-May
U5.	ESP Poor Performance and Manual Rapping	04-May
U5.	LHO Casing Outage	06-May
U5.	ESP Poor Performance	11-May
U5.	ESP Poor Performance LHO and RHO casings are performing very poor	12-May
U5.	LHO Casing Outage and Poor ESP performance	13-May
U5.	This unit incurred a noncompliance as it exceeded the 72 hours grace period for upset conditions	14-May
U5.	Poor ESP Performance Casing Outage	15-May
U5.	ESP Poor Performance	16-May
U5.	RHI Casing Repairs	28-May
U6.	Unit Light Up	08-May
U6.	High Hopper Level Poor ESP Performance Issue with rapping program	10-May
U6.	SO3 Plant Tripped a few times. SO 3 PLANT OFF LOAD FOR COMBUSTION AIR CONTROL V/V AND COOLING FAN CONTROL V/V'S FAILURE. ESP Poor Performance	13-May
U6.	SO3 plant still off for cooling valve	14-May
U6.	SO3 plant back in service ESP Poor Performance Unable to do clean rapping on LHO casing	15-May
U6.	RHO Casing Outage	21-May