Eskom

Generation

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AND

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DUVHA POWER STATION

Atmospheric Emission License 17/4/AEL/MP312/11/07

GENERAL MANAGER

2024/08/14

DATE

Eskom

DUVHA POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License 17/4/AEL/MP312/11/07

MARCH 2024

1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Mar-2024
	Coal	Tons	*1 400 000*	*578910.93*
	Fuel Oil	Tons	*5 000*	*4620.53*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Indicative Production Rate Mar-2024**
	Energy	GWh	*2 678.400*	*1098.24*
	Ash	Tons	*not specified*	*149416.91*

Note: Maximum energy rate is as per the maximum capacity stated in the AEL: [3 600 MW] x 24 hrs x days in Month/1000 to convert to GWh

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	*0.6 TO >1.2*	*0.69*
Ash Content	%	*27 TO 30*	*25.81*

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO_2	NOx
Unit 1	*100*	*3500*	*1100*
Unit 2	*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 Mar-2024	Technology Type	SO_3 Utlization Mar-2024
Unit 1	*FFP*	*99.9%*	*SO_3*	*n/a*
Unit 2	*FFP*	*100.0%*	*SO_3*	*n/a*
Unit 4	*ESP + SO_3*	*99.5%*	*SO_3*	*96.3%*
Unit 5	*ESP + SO_3*	*99.7%*	*SO_3*	*99.8%*
Unit 6	*ESP + SO_3*	*99.7%*	*SO_3*	*98.2%*
***Note**: ESP plant does not have bypass mode operation, hence plant 100% Utilised.*				

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	O_2
Unit 1	*99.5*	*80.0*	*80.0*	*86.5*
Unit 2	*98.9*	*78.8*	*78.8*	*82.5*
Unit 4	*95.8*	*97.9*	*97.9*	*97.9*
Unit 5	*96.8*	*97.2*	*97.2*	*100.0*
Unit 6	*76.6*	*96.7*	*96.7*	*90.8*

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO_2

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of March 2024

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	39.1	4 357	1 833
Unit 2	7.0	2 839	1 245
Unit 4	130.5	1 749	792
Unit 5	86.0	1 084	516
Unit 6	73.7	1 917	1 013
SUM	336.30	11 946	5 399

Table 6 2 Operating days in compliance to PM AEL Limit - March 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	24	0	0	0	0	21 7
Unit 2	31	0	0	0	0	4 1
Unit 4	19	6	0	0	6	104 4
Unit 5	11	7	0	0	2	117 2
Unit 6	17	2	0	0	2	61 7
SUM	**102**	**15**	**0**	**0**	**10**	

Table 6 3 Operating days in compliance to SO_2 AEL Limit - March 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO_2 (mg/Nm³)
Unit 1	25	0	0	0	0	2 341 7
Unit 2	31	0	0	0	0	1 644 4
Unit 4	27	0	0	0	0	1 354 3
Unit 5	21	0	0	0	0	1 253 0
Unit 6	19	0	0	0	0	1 641 4
SUM	**123**	**0**	**0**	**0**	**0**	

Table 6.4: Operating days in compliance to NOx AEL Limit - March 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	20	0	0	5	5	968.7
Unit 2	31	0	0	0	0	721.2
Unit 4	27	0	0	0	0	609.9
Unit 5	21	0	0	0	0	588.9
Unit 6	18	0	0	1	1	864.0
SUM	**117**	**0**	**0**	**6**	**6**	

Note: NO_x emissions is measured as NO in PPM. Final NO_x value is expressed as total NO_2

Table 6.5: Legend Description

Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		Emissions above ELV but outside grace or S30 incident conditions

Figure 1: Duvha Unit 1 PM Emissions - March 2024

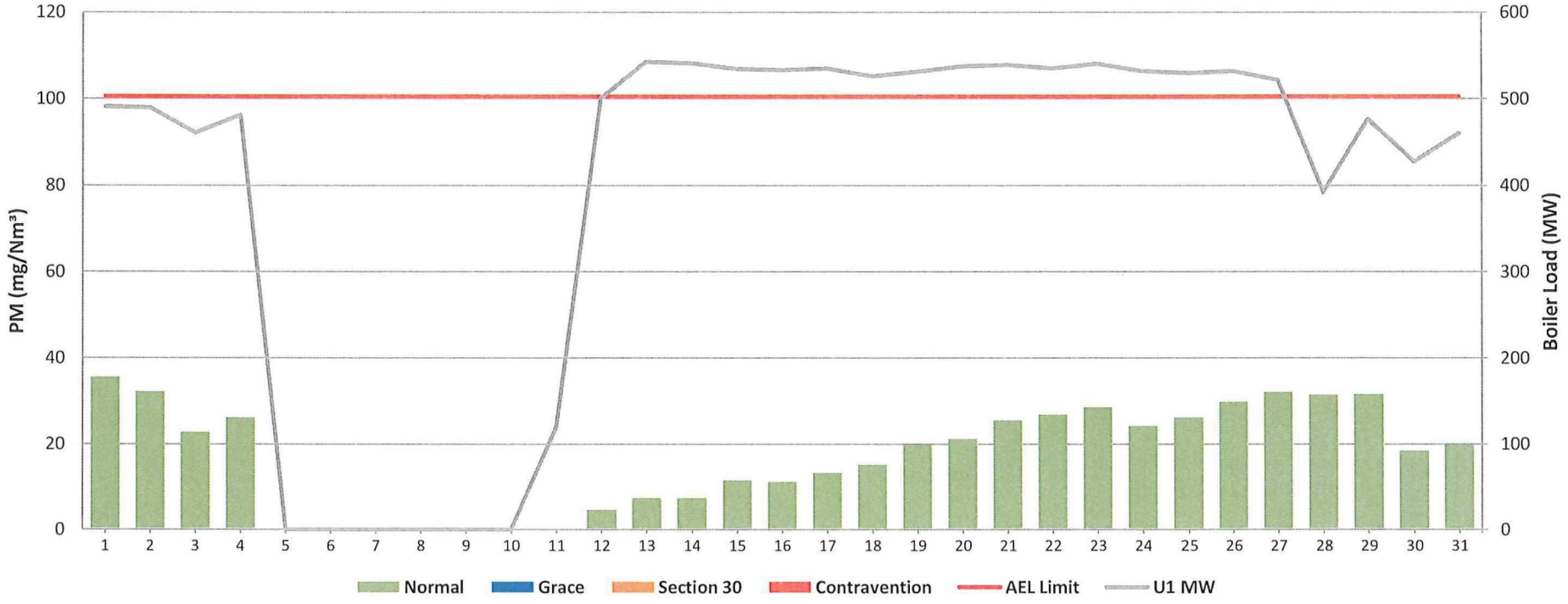


Figure 2: Duvha Unit 2 PM Emissions - March 2024

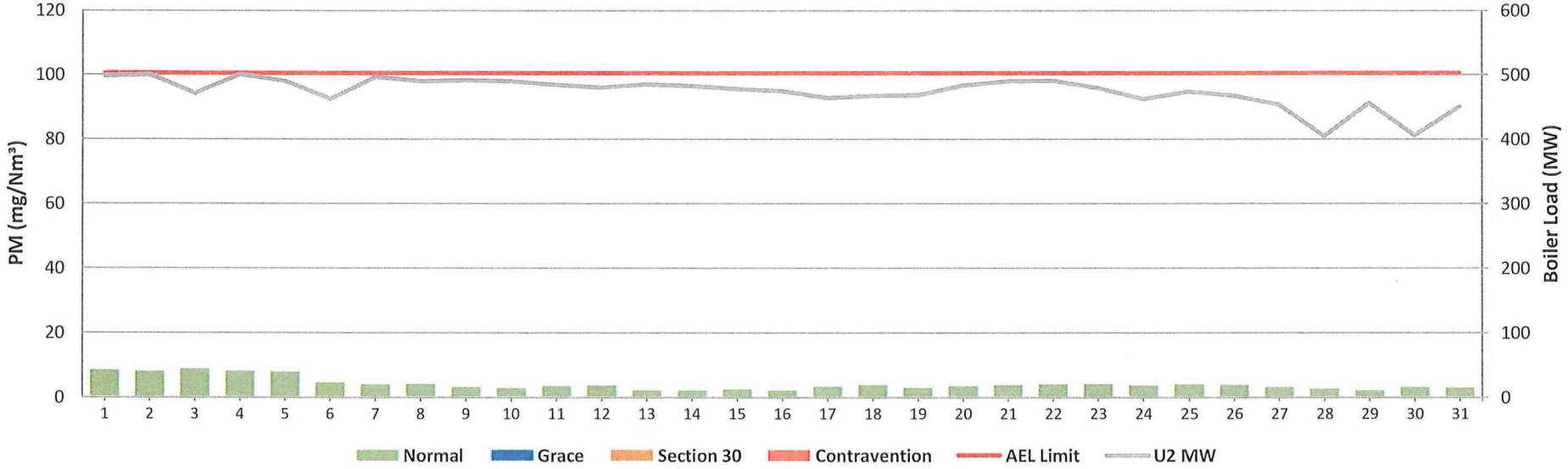


Figure 3: Duvha Unit 4 PM Emissions - March 2024

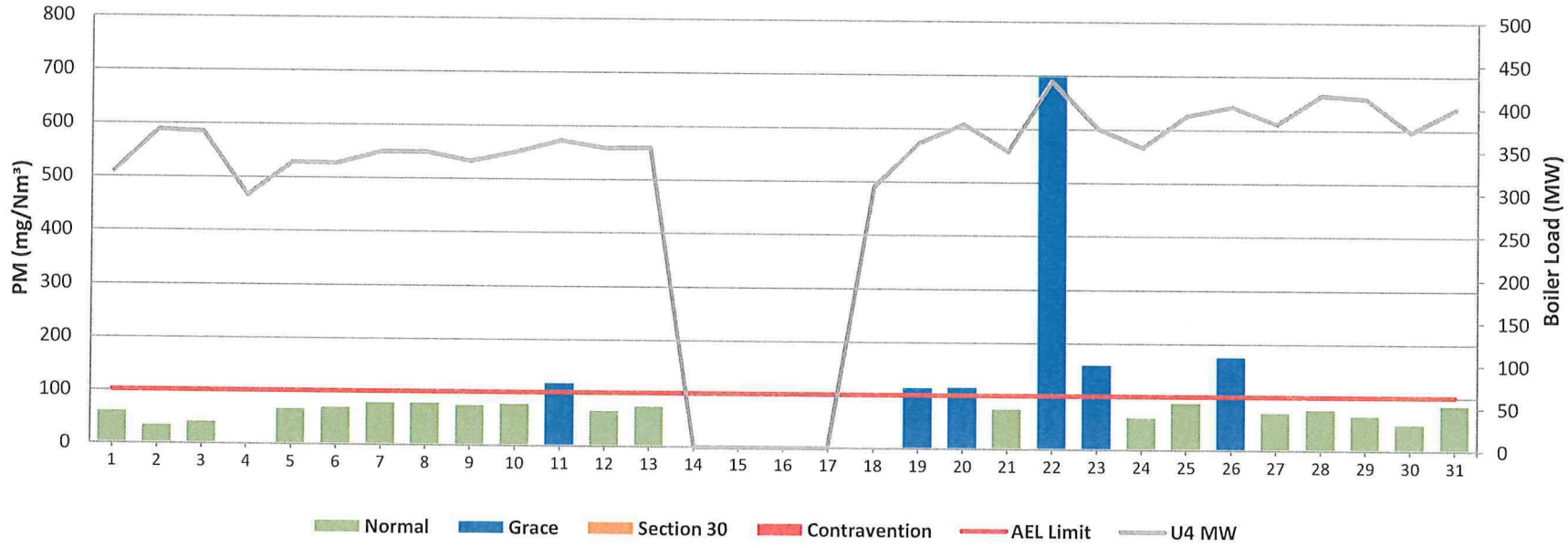


Figure 4: Duvha Unit 5 PM Emissions - March 2024

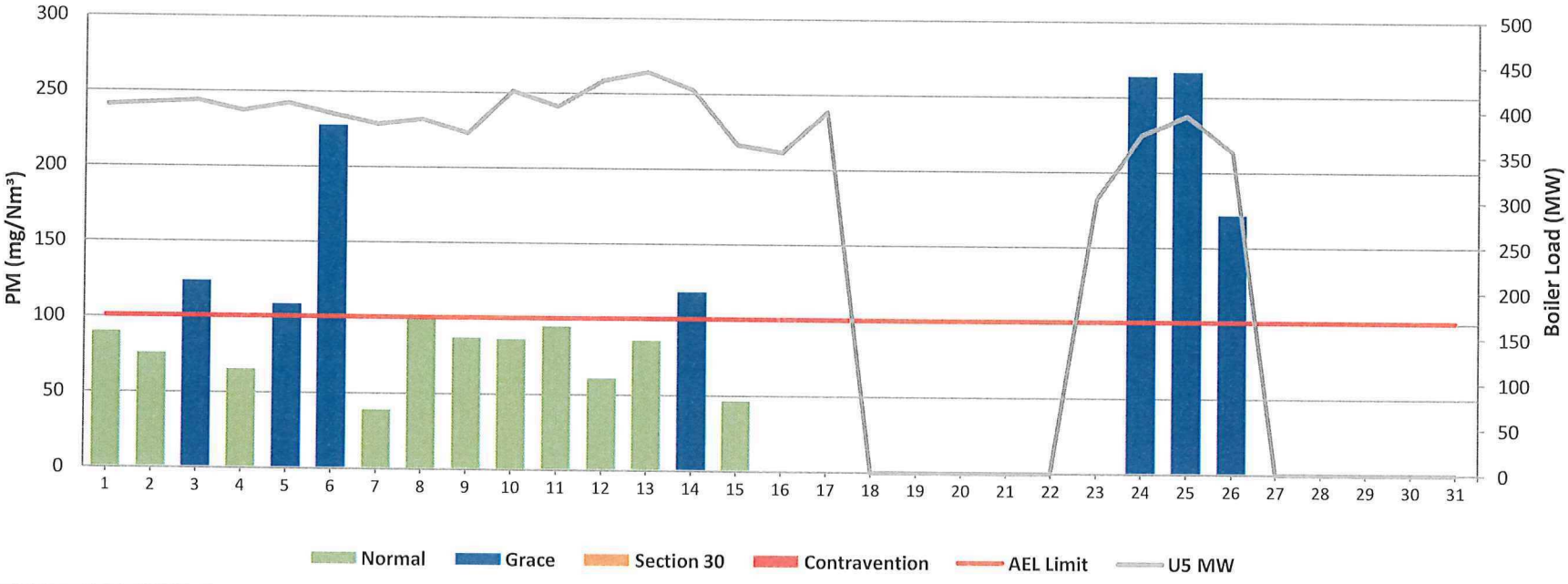


Figure 5: Duvha Unit 6 PM Emissions - March 2024

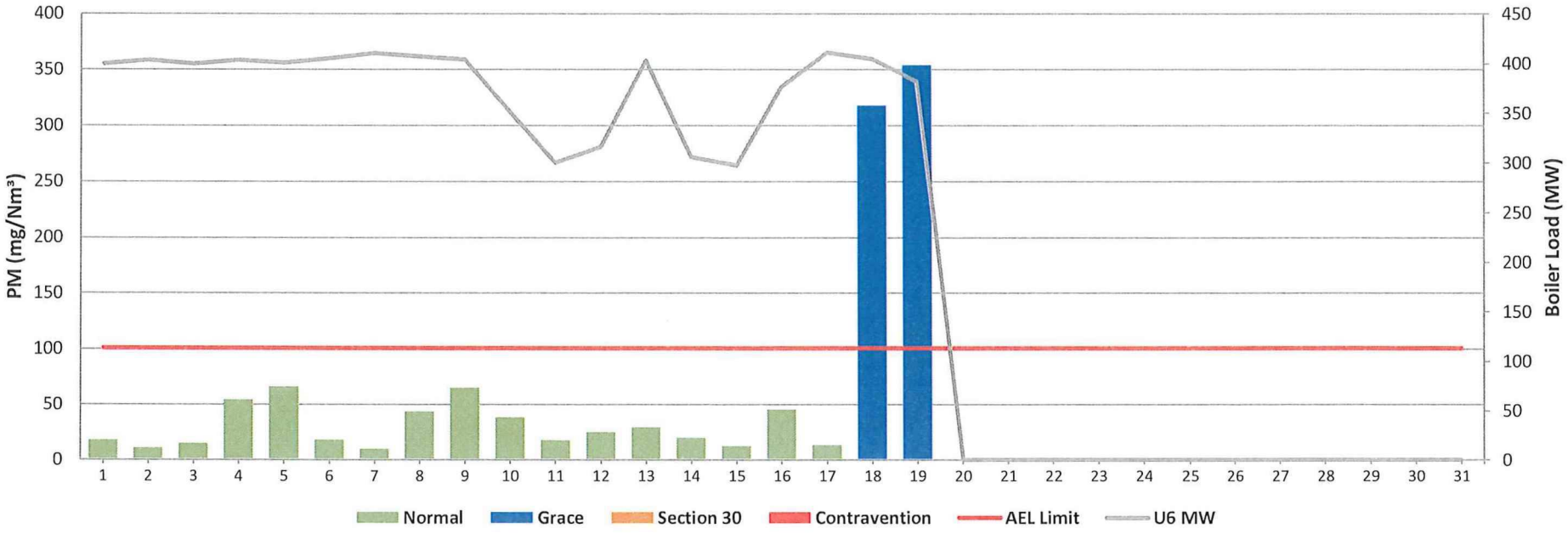


Figure 6: Duvha Unit 1 SO_2 Emissions - March 2024

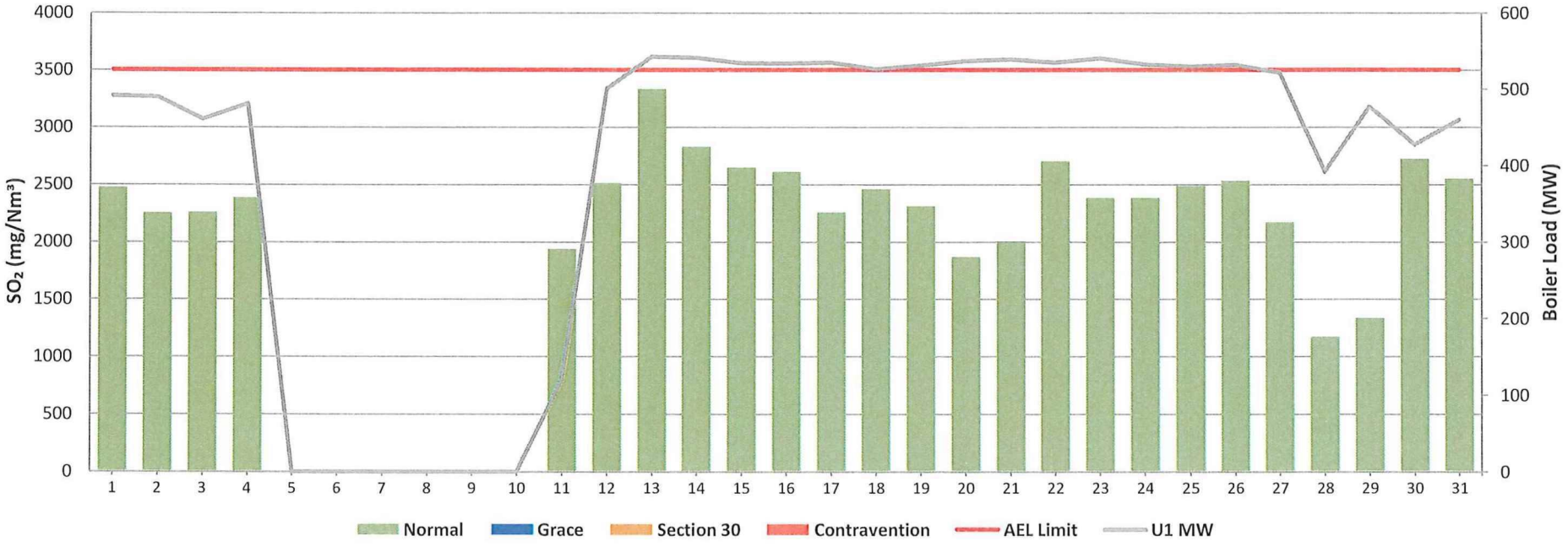


Figure 7: Duvha Unit 2 SO_2 Emissions - March 2024

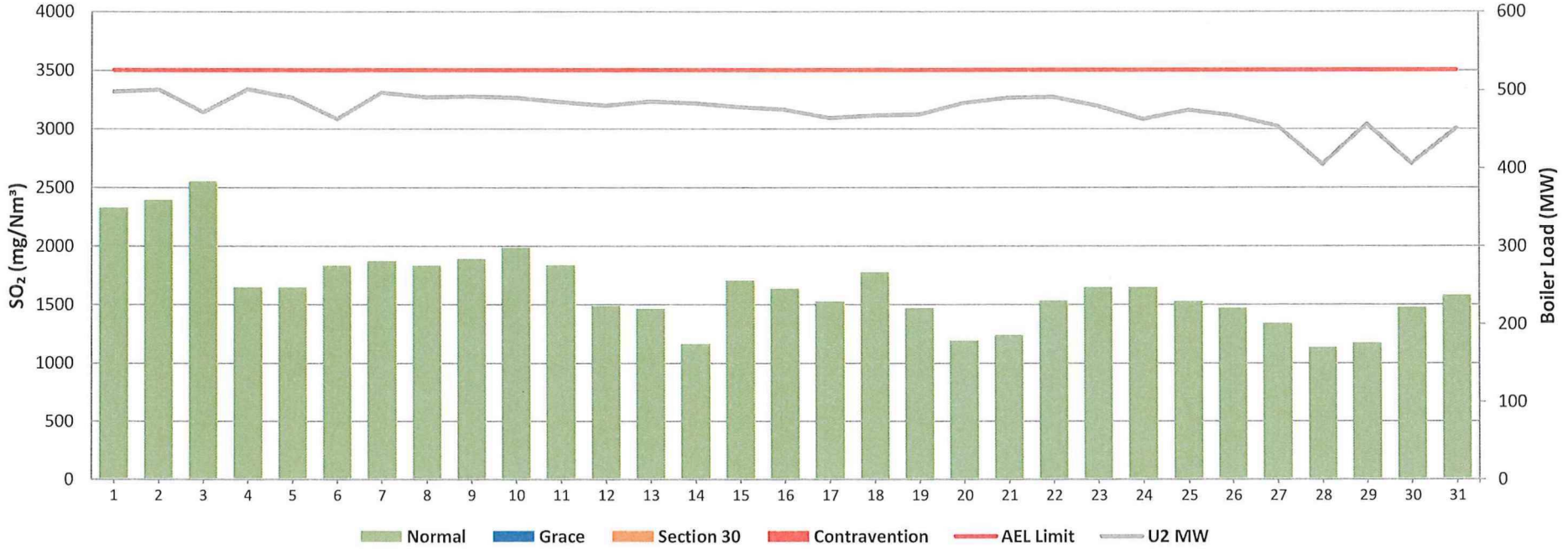


Figure 8: Duvha Unit 4 SO_2 Emissions - March 2024

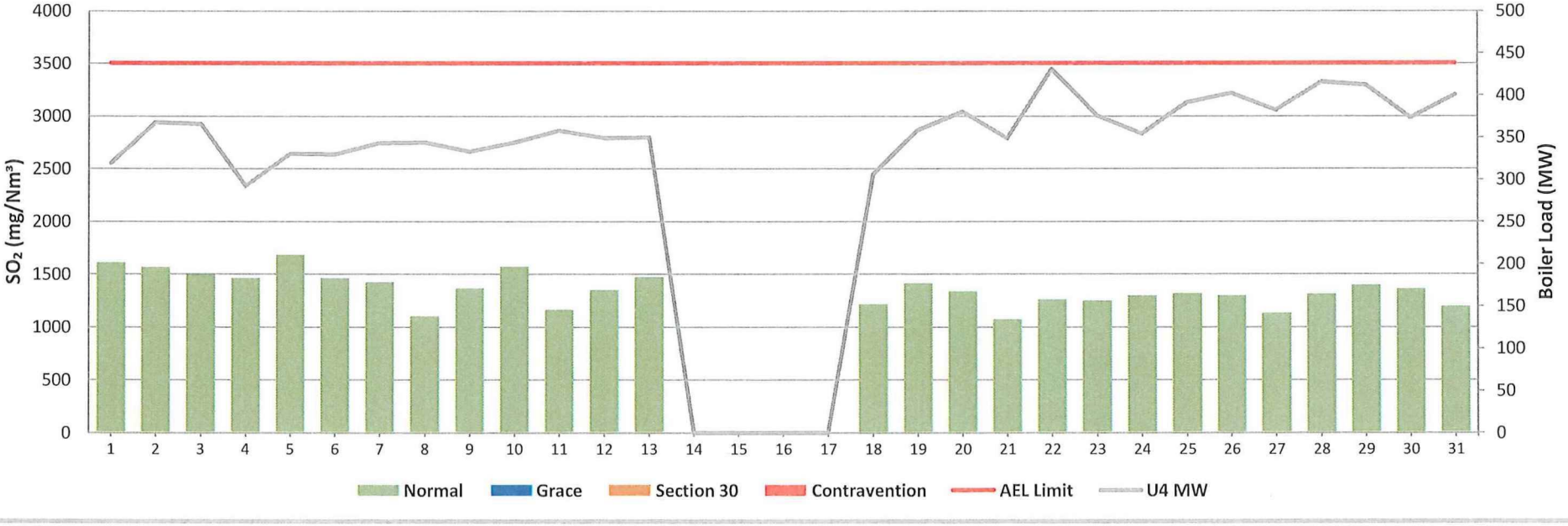


Figure 9: Duvha Unit 5 SO_2 Emissions - March 2024

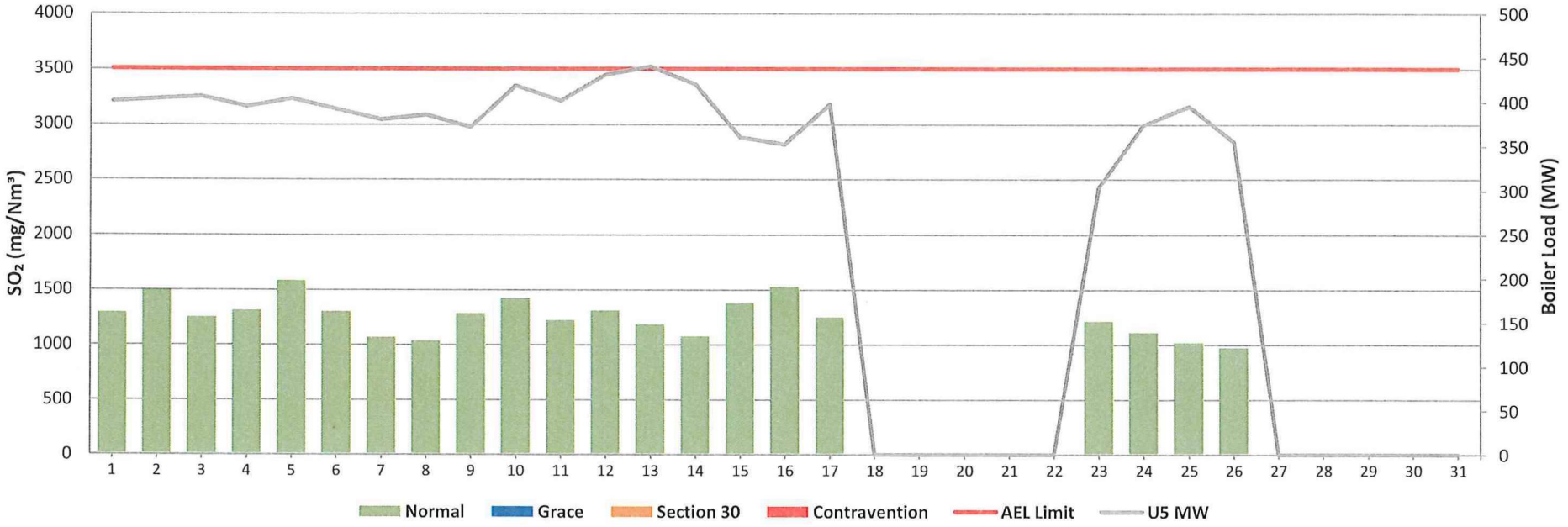


Figure 10: Duvha Unit 6 SO_2 Emissions - March 2024

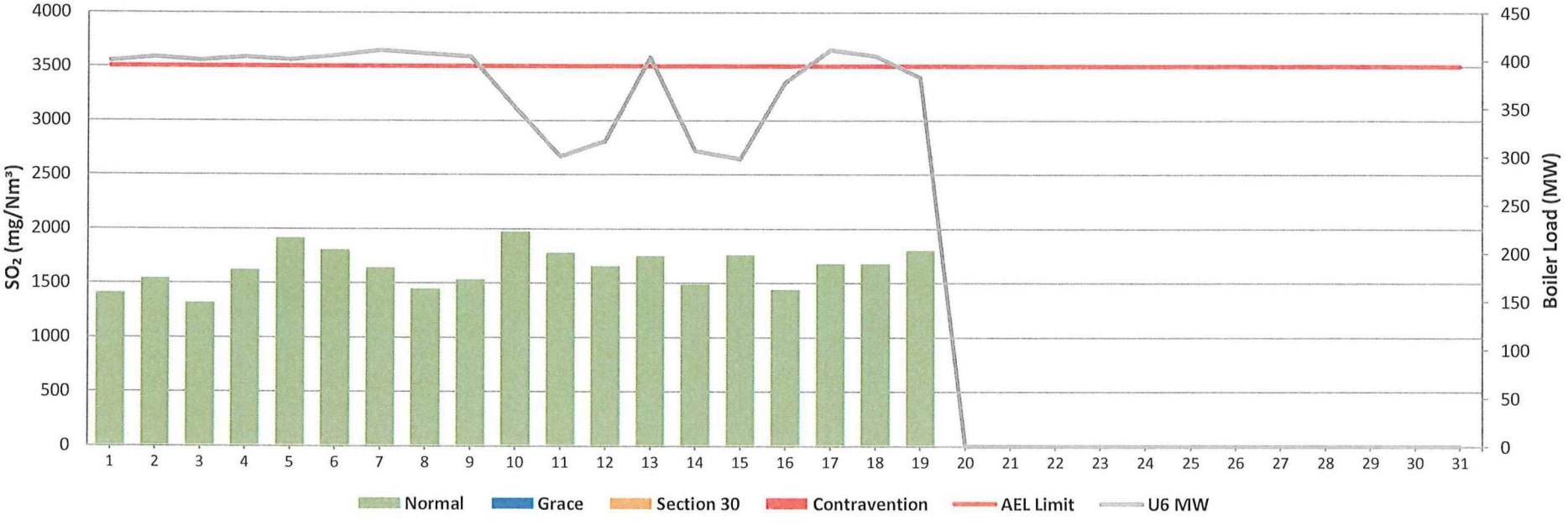


Figure 11: Duvha Unit 1 NOx Emissions - March 2024

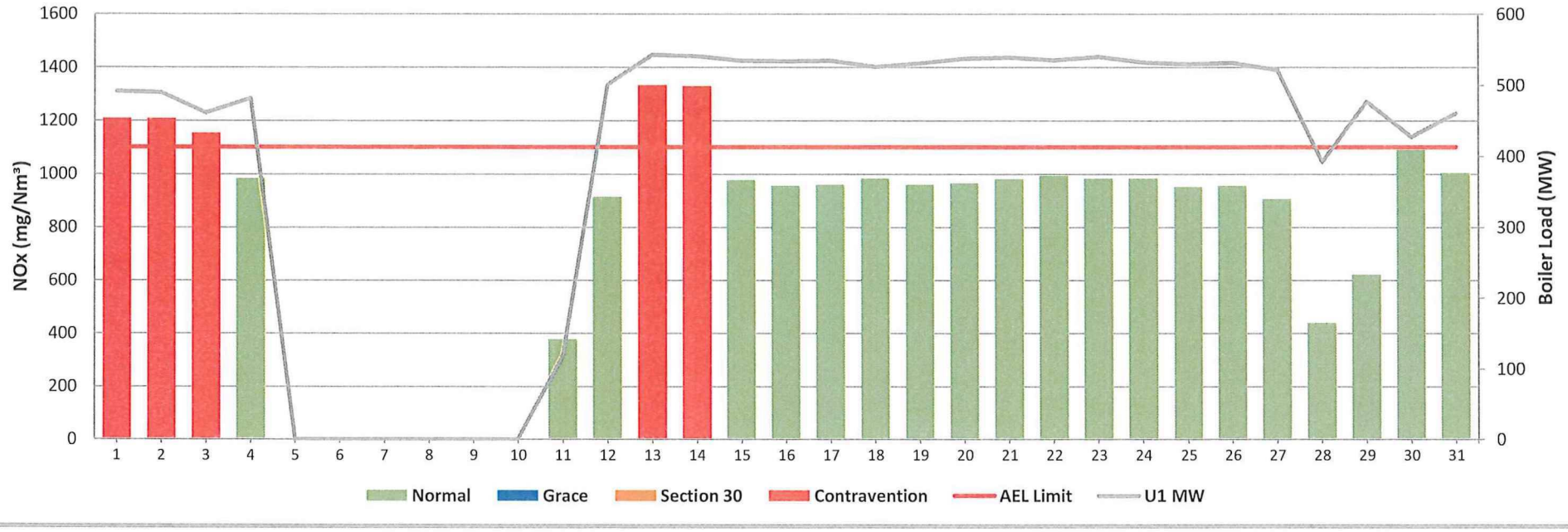


Figure 12: Duvha Unit 2 NOx Emissions - March 2024

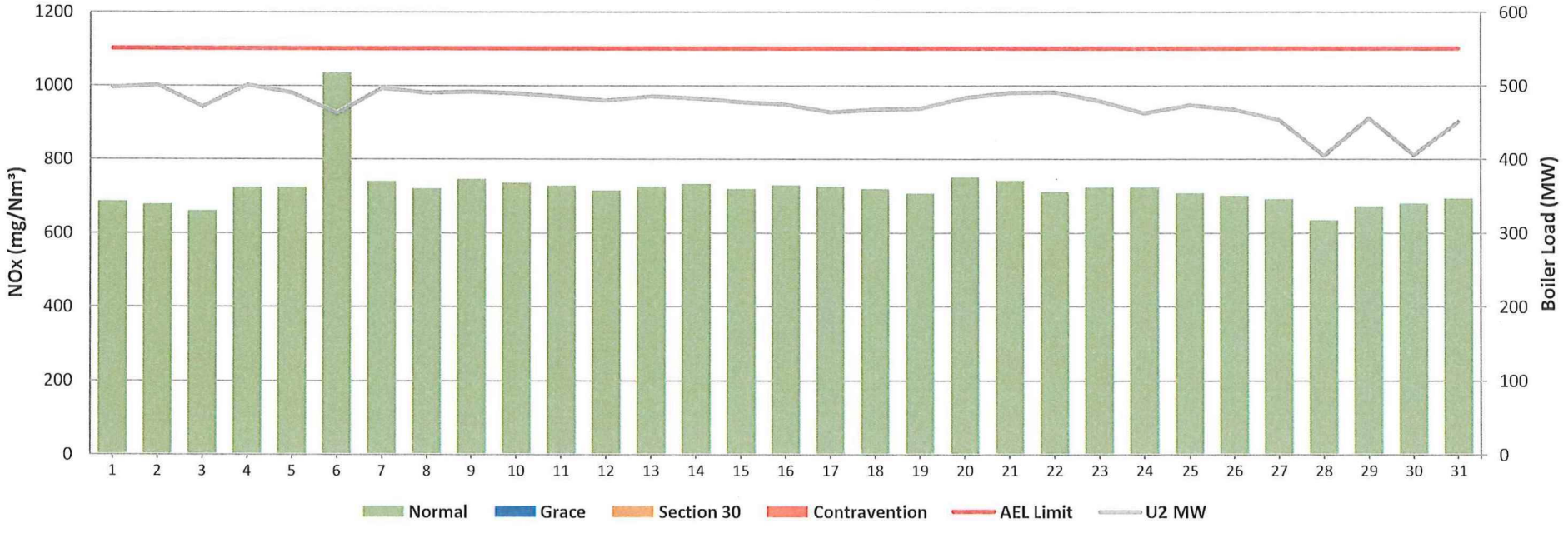


Figure 13: Duvha Unit 4 NOx Emissions - March 2024

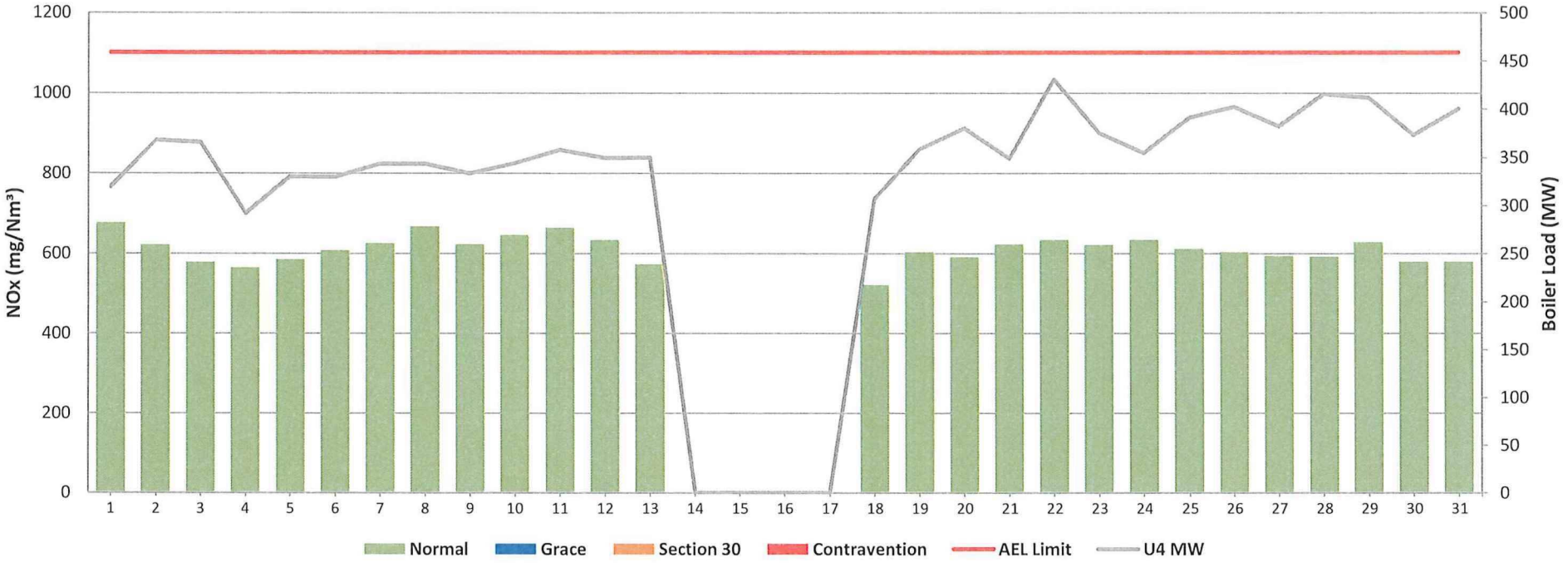


Figure 14: Duvha Unit 5 NOx Emissions - March 2024

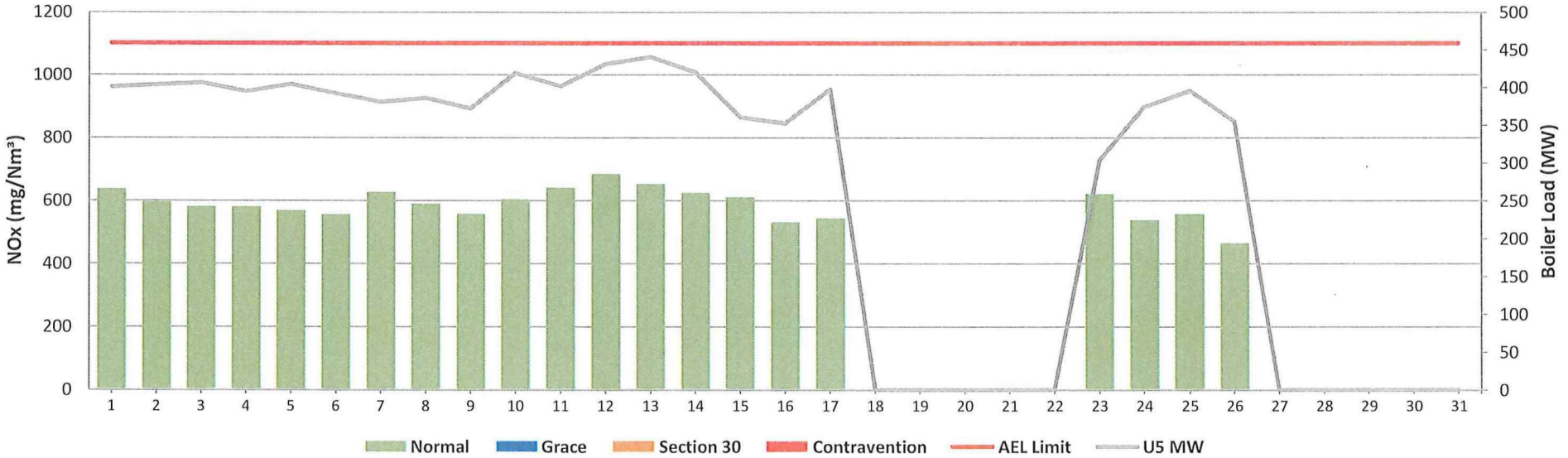
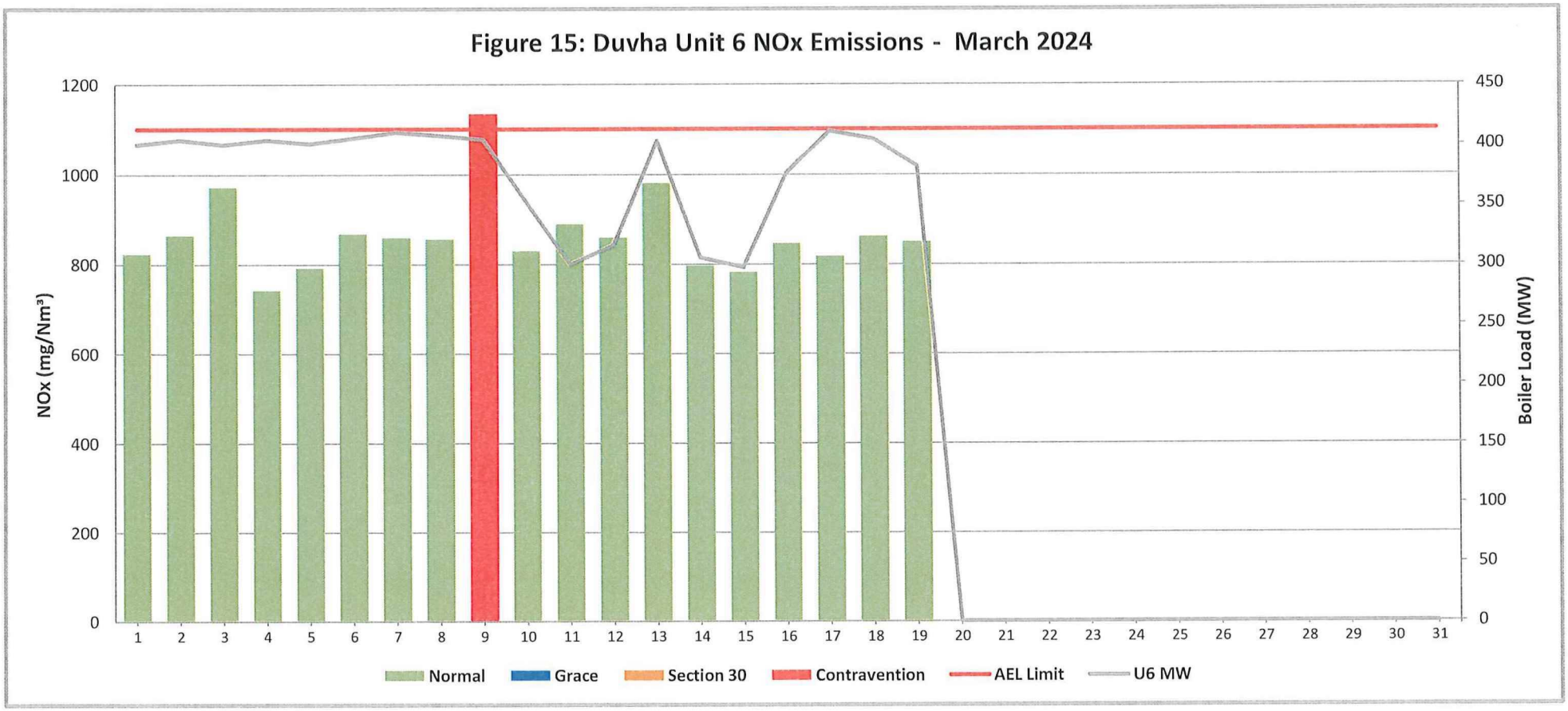


Figure 15: Duvha Unit 6 NOx Emissions - March 2024



7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of March 2024

Unit No.1	Event 1	
Breaker Open (BO)	4:45 pm	2024/03/04
Draught Group (DG) Shut Down (SD)	5:10 pm	2024/03/04
BO to DG SD (duration)	00:00:25	DD:HH:MM
Fires in time	10:45 pm	2024/03/04
Synch. to Grid (or BC)	10:55 pm	2024/03/11
Fires in to BC (duration)	07:00:10	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM

Unit No.4	Event 1		Event 2		Event 3	
Breaker Open (BO)	10:00 am	2024/03/01	6:15 pm	2024/03/03	11:25 pm	2024/03/13
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	11:40 pm	2024/03/03	2:35 pm	2024/03/14
BO to DG SD (duration)	n/a	DD:HH:MM	00:05:25	DD:HH:MM	00:15:10	DD:HH:MM
Fires in time			3:25 am	2024/03/04	2:55 am	2024/03/18
Synch. to Grid (or BC)						
Fires in to BC (duration)		DD:HH:MM	00:04:05	DD:HH:MM	00:11:35	DD:HH:MM
Emissions below limit from BC (end date)			not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM

Unit No.5	Event 1		Event 2	
Breaker Open (BO)	*10:40 am*	*2024/03/15*	*4:10 am*	*2024/03/26*
Draught Group (DG) Shut Down (SD)	*4:10 am*	*2024/03/16*	*DG did not trip or SD*	*DG did not trip or SD*
BO to DG SD (duration)	*00:17:30*	DD:HH:MM	*n/a*	DD:HH:MM
Fires in time	*9:30 am*	*2024/03/16*		
Synch. to Grid (or BC)	*6:00 pm*	*2024/03/23*		
Fires in to BC (duration)	*07:08:30*	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	*not > limit*	*not > limit*		
Emissions below limit from BC (duration)	*n/a*	DD:HH:MM		DD:HH:MM

Unit No.6	Event 1	
Breaker Open (BO)	*11:45 pm*	*2024/03/19*
Draught Group (DG) Shut Down (SD)	*3:20 pm*	*2024/03/20*
BO to DG SD (duration)	*00:15:35*	DD:HH:MM
Fires in time		
Synch. to Grid (or BC)		
Fires in to BC (duration)		DD:HH:MM
Emissions below limit from BC (end date)		
Emissions below limit from BC (duration)		DD:HH:MM

8 COMPLAINTS

There were no complaints for this reporting month

Source Code / Name	Root Cause Analysis	Calculation of Impacts / emissions associated with the incident	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence

9 GENERAL

Exceedances:

Unit 4

11/03/2024

Dust handling plant left hand row shut down due to airlift vessel that was full and blocked.
Precips o/c 1 2,1.5, 2.4, 3 1,3.5

19/03/2024 and 20/03/2024

Cold unit light up, the unit was returned to service on the 18/03/2024 from a boiler tube leak repair

22/03/2023 and 23/03/2024

Planned gas leak repairs on SO3 plant on the 30 metre level and Precips 1 1,2 1,2 4, 3 5 were out of service

26/03/2024

Dust handling plant filter fan belt torn

Unit 5

03/03/2024

Poor sootblower availability,sootblower availability at 38% due to high backend temperatures

05/03/2024 and 06/03/2024

Poor sootblower availability,sootblower availability at 38% due to High backend temperatures

14/03/2024

High back-end temperatures

24/02/2024, 25/03/2024 and 26/03/2024

Cold unit light up Unit was returned to service on the 24/03/2024 from a boiler tube leak repair

Unit 6

18/03/2024 and 19/03/2024

Precipitator 2 1,2 2, 2 3, 2 4 tripped under voltage and DHP left hand row 1,2,3 and 4 were blocked

Exceedance due to poor monitor availability.

On 22/03/2024 Unit 4 maxed out, the SO3 plant defective so 11 5 was used so that the surrogate value can align with output 2 correlation value

Lastly the averages for Oxygen (O2) and Carbon Dioxide (CO2) data from the QAL2 tests reports were used for reporting gaseous emissions for units 2, 4, 5 and 6 due to poor performance of the O2 and CO2 gaseous monitors These poor performances of the monitors are due to faulty O2 analysers The station is in the process to replace all the faulty analysers by 31 March 2024

The rest of the information demonstrating compliance with the emission license conditions is supplied in the annual emission report which will be sent to your office

10. S30 Incidents Register

A preliminary report of the spillage of bulk lube oil was sent to the department on 10/04/2024. The final report will be sent to the department on 18/06/2024.

Ndivhuleni

Boiler Plant Engineering Manager

24/06/2024

Date

Environmental Manager

2024/08/14

Date

Engineering Manager

01/07/2024

Date

Compiled by: Environmental Officer

For: Nkangala District Municipality — Air Quality Officer

Copies:

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Duvha Power Station:	Engineering Manager Operating Manager Maintenance Manager Production Manager Boiler Engineering Manager System Engineer Environmental Manager