



Generation

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AND

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DUVHA POWER STATION

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


GENERAL MANAGER


DATE

DUVHA POWER STATION MONTHLY EMISSIONS REPORT

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



1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Feb-2022
	Coal	Tons	1 400 000	265546.23
Fuel Oil	Tons	5 000	2816.66	

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Feb-2022
	Energy	GWh	3600	455.30
Ash	Tons	not specified	70 582.2	

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.91
Ash Content	%	27 TO 30	26.58

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SOx	NOx
Unit 1	100	3500	1100
Unit 2	100	3500	1100
Unit 3	100	3500	1100
Unit 4	100	3500	1100
Unit 5	100	3500	1100
Unit 6	100	3500	1100

4 ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Feb-2022	Technology Type	SO3 Utilization Feb-2022
Unit 1	FFP	99.8%	n/a	n/a
Unit 4	ESP + SO ₃	Off-line	SO ₃	Off-line
Unit 5	ESP + SO ₃	99.6%	SO ₃	95.0%
Unit 6	ESP + SO ₃	99.2%	SO ₃	100.0%

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO
Unit 1	99.9	99.9	99.9
Unit 4	Off-line	100.0	100.0
Unit 5	100.0	97.5	97.6
Unit 6	95.2	95.8	96.1

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 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	7.5	471	230
Unit 4	exempt	193	89
Unit 5	150.8	3 056	1 342
Unit 6	139.4	1 307	626
SUM	297.68	5 027	2 287

Table 6.2: Operating days in compliance to PM AEL Limit - February 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	4	0	0	0	0	26.6
Unit 4	Off-line	Off-line	Off-line	Off-line	Off-line	Off-line
Unit 5	22	6	0	0	6	86.0
Unit 6	7	6	2	0	8	183.7
SUM	33	12	2	0	14	

- Unit 4 ran for 9.8 hours on the 18th, 1.7 hours on the 19th, 10.8 hours on the 20th, 18.8 hours on the 21st, 22.5 hours on the 23rd, and 4.8 hours of the 28th of the month. All these hours are not reportable in terms of the PM.

Table 6.3: Operating days in compliance to SOx AEL Limit - February 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	4	0	0	0	0	1 672.9
Unit 4	6	0	0	0	0	1 284.3
Unit 5	28	0	0	0	0	1 588.6
Unit 6	17	0	0	0	0	1 676.7
SUM	55	0	0	0	0	

Table 6.4: Operating days in compliance to NOx AEL Limit - February 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	4	0	0	0	0	814.7
Unit 4	6	0	0	0	0	591.4
Unit 5	28	0	0	0	0	696.9
Unit 6	17	0	0	0	0	790.4
SUM	55	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		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 - February 2022

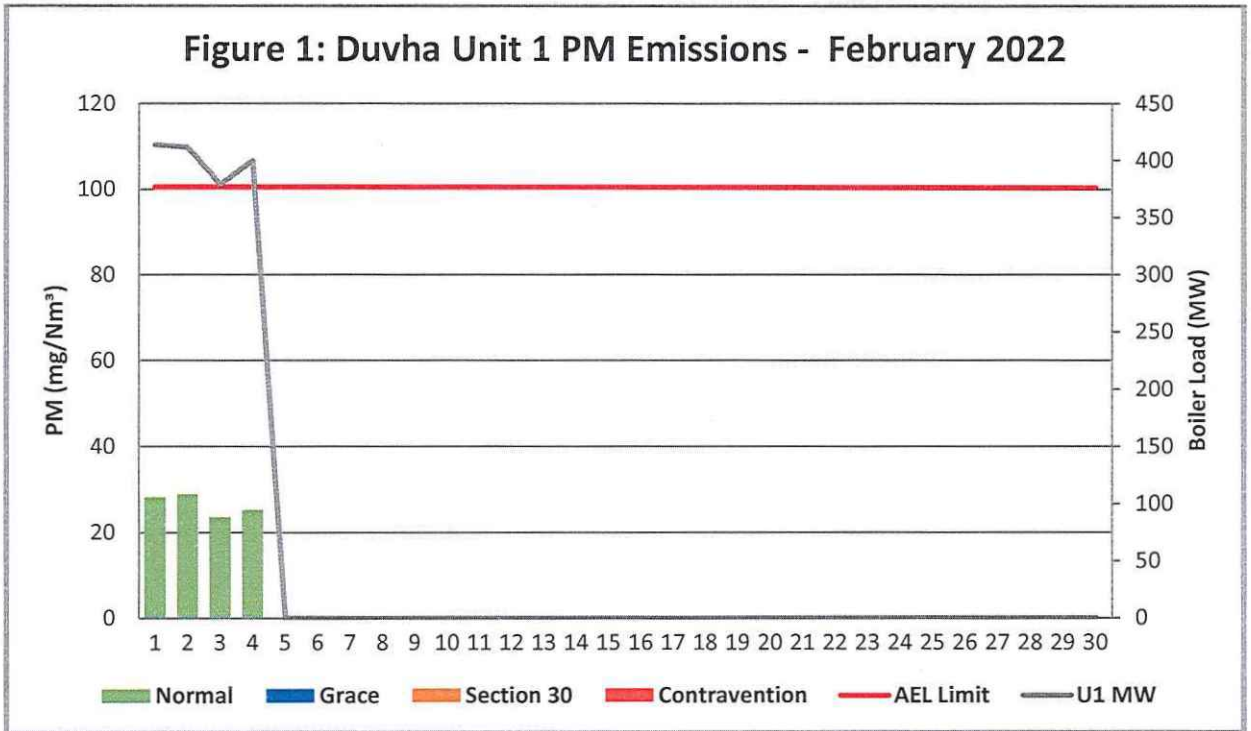


Figure 2: Duvha Unit 4 PM Emissions - February 2022

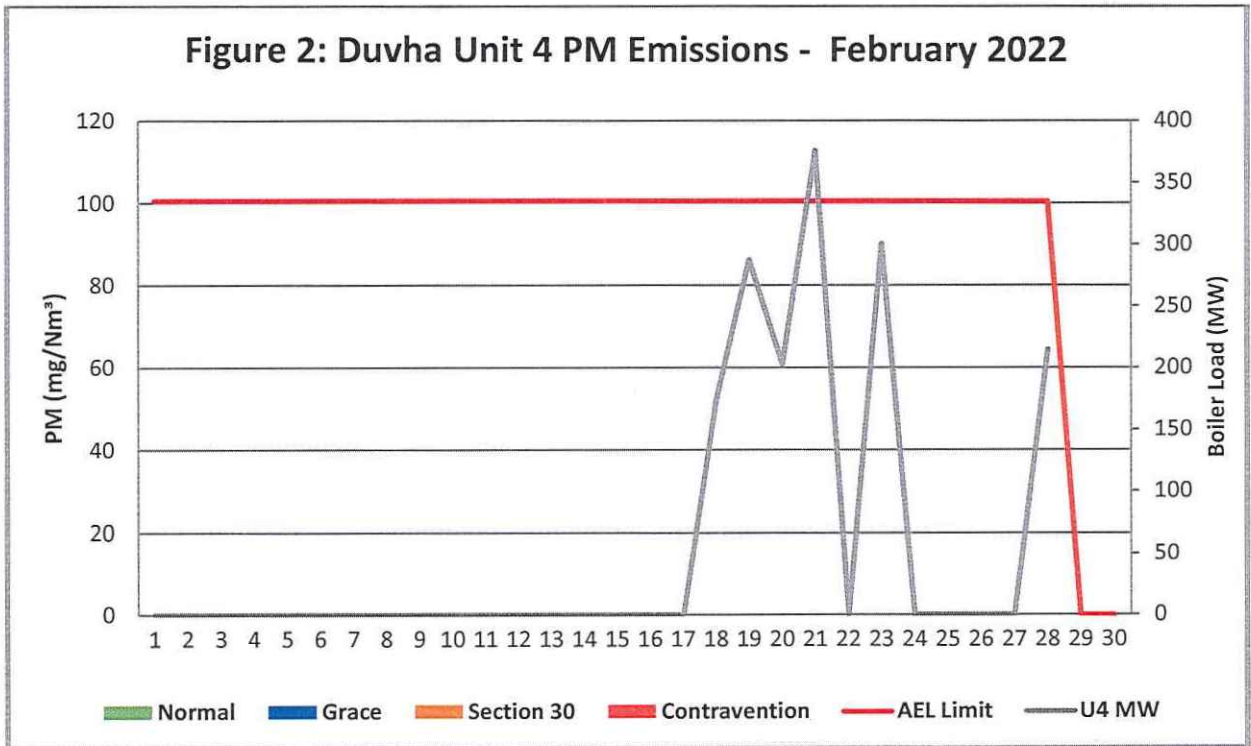


Figure 3: Duvha Unit 5 PM Emissions - February 2022

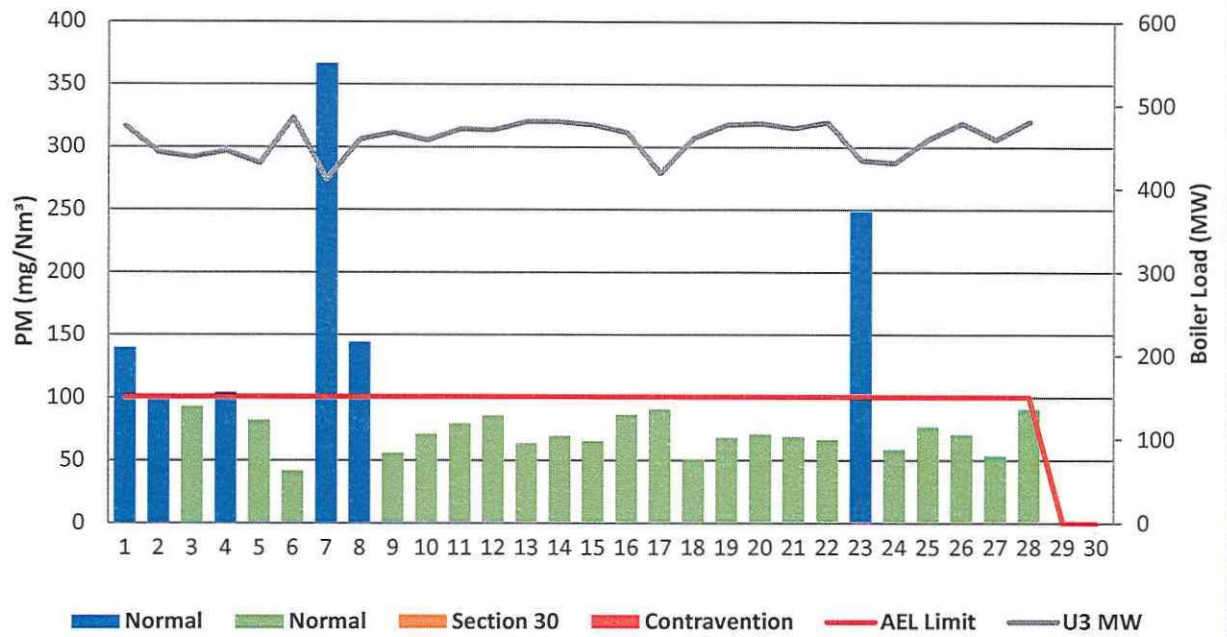


Figure 4: Duvha Unit 6 PM Emissions - February 2022

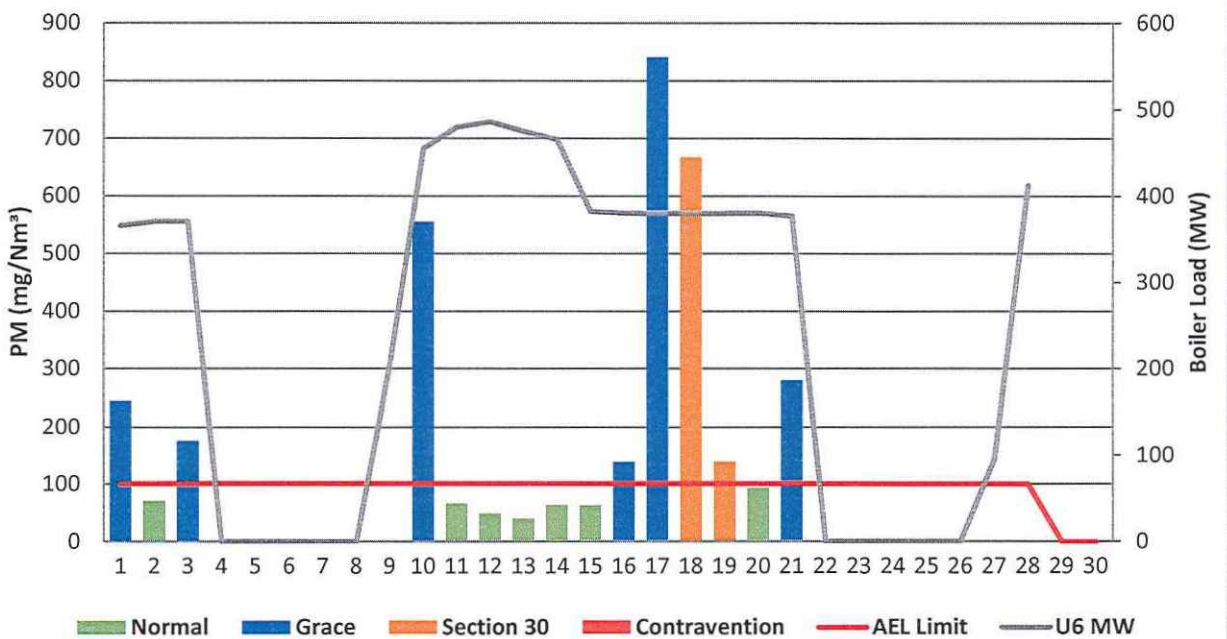


Figure 5: Duvha Unit 1 SOx Emissions - February 2022

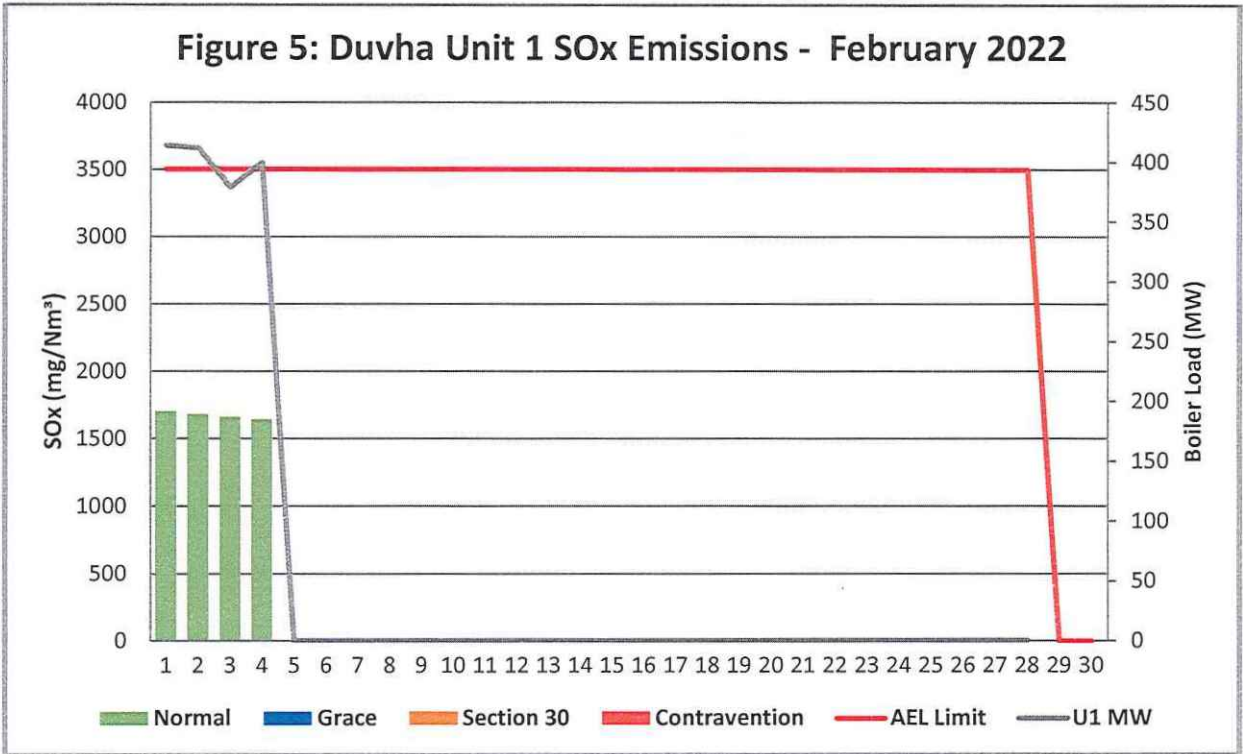


Figure 6: Duvha Unit 4 SOx Emissions - February 2022

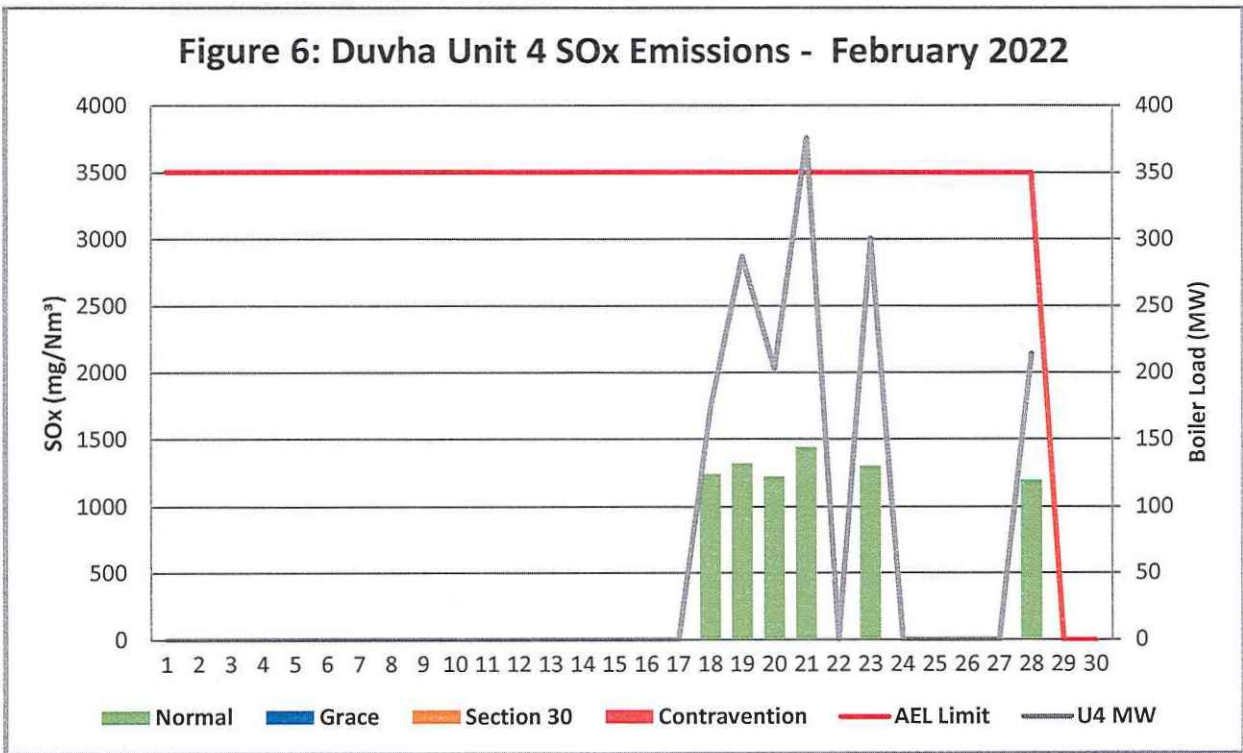


Figure 7: Duvha Unit 5 SOx Emissions - February 2022

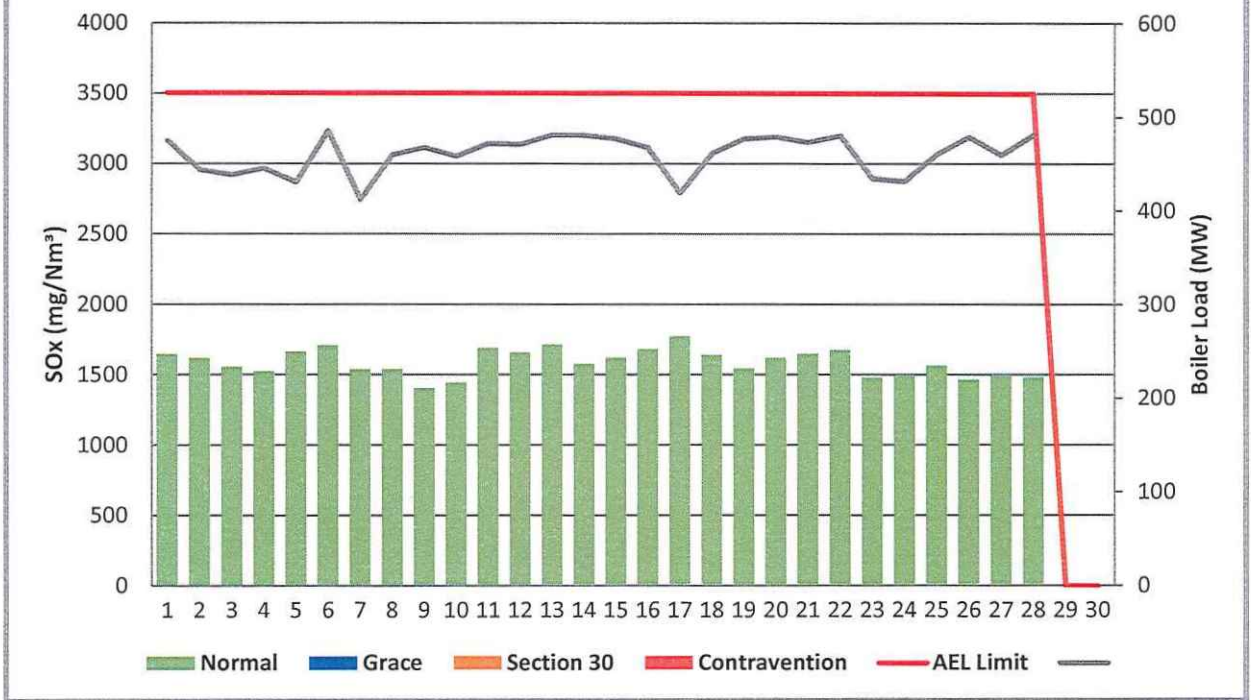


Figure 8: Duvha Unit 6 SOx Emissions - February 2022

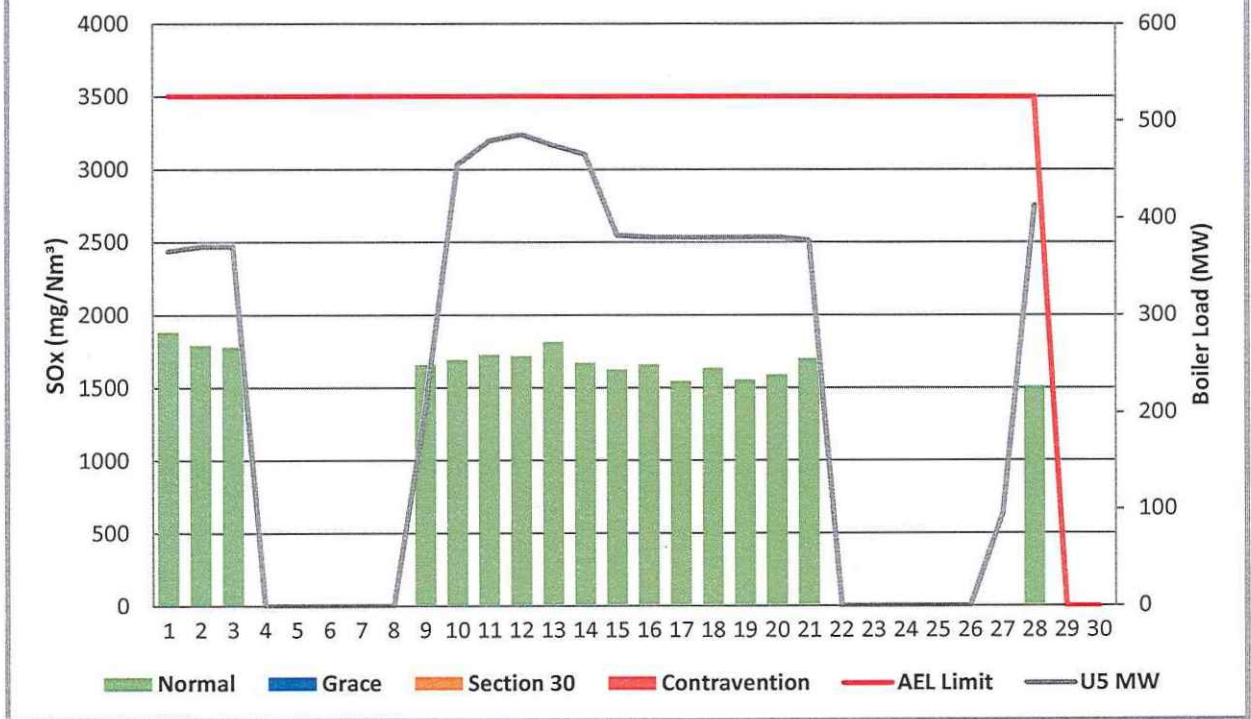


Figure 9: Duvha Unit 1 NOx Emissions - February 2022

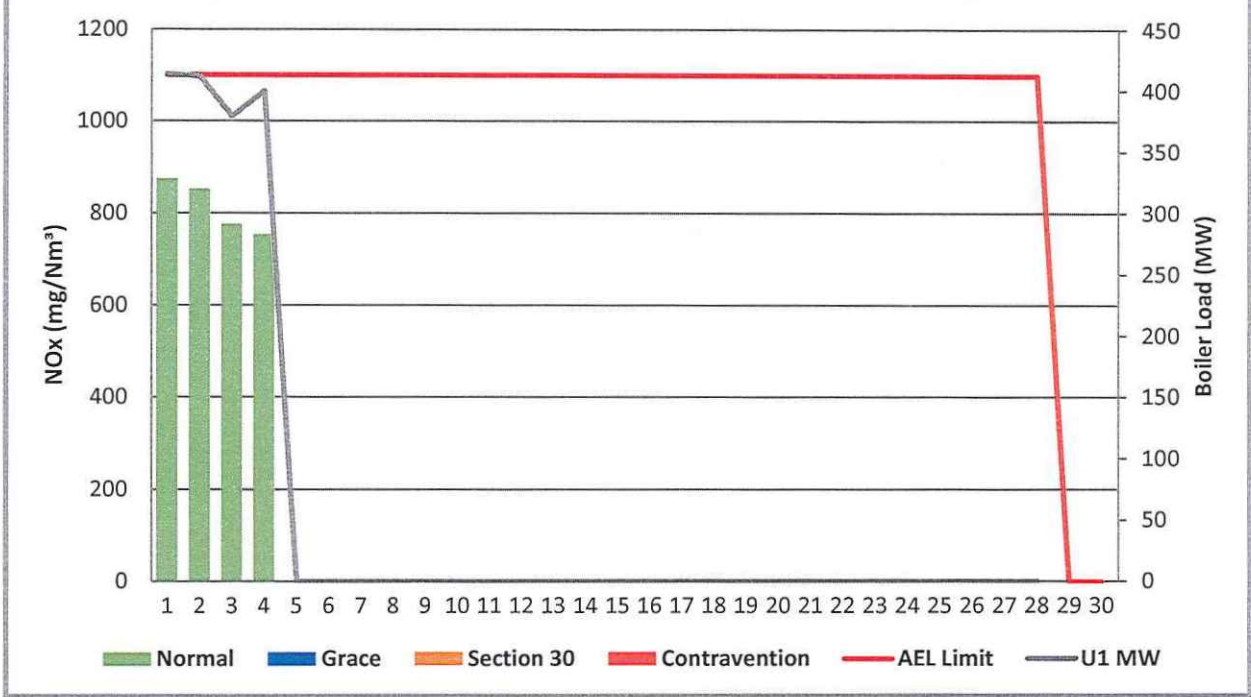


Figure 10: Duvha Unit 4 NOx Emissions - February 2022

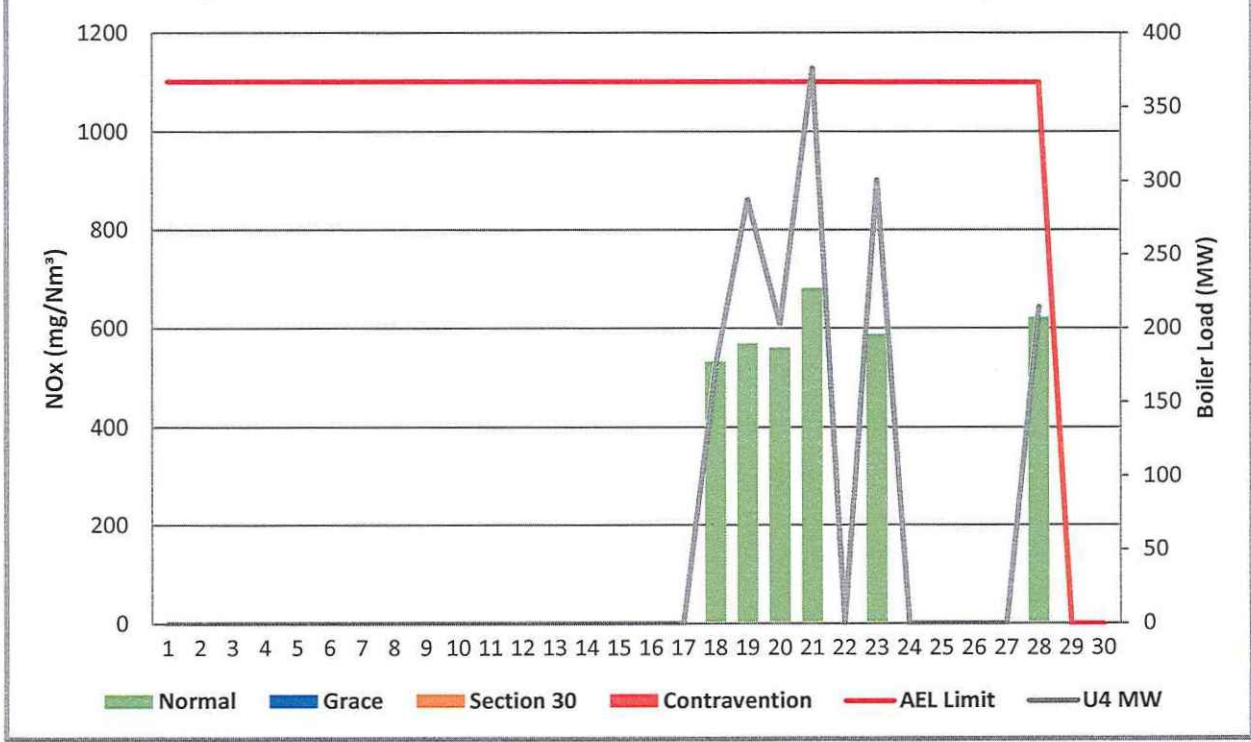


Figure 11: Duvha Unit 5 NOx Emissions - February 2022

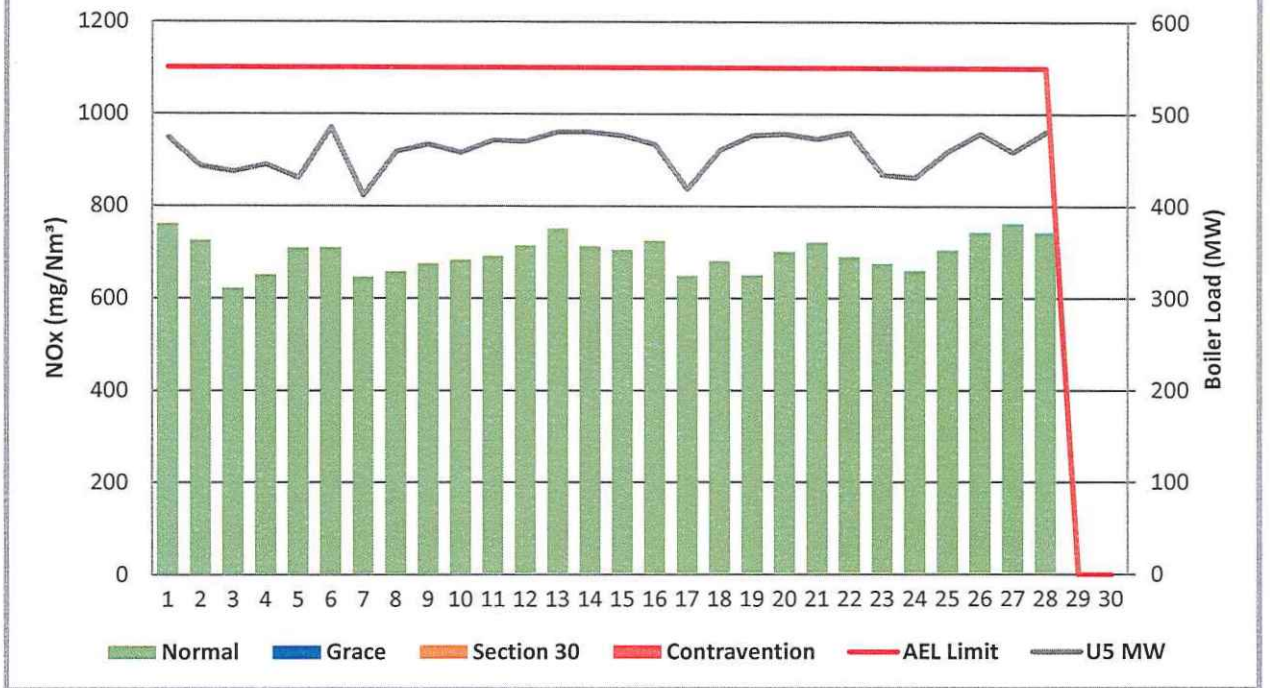
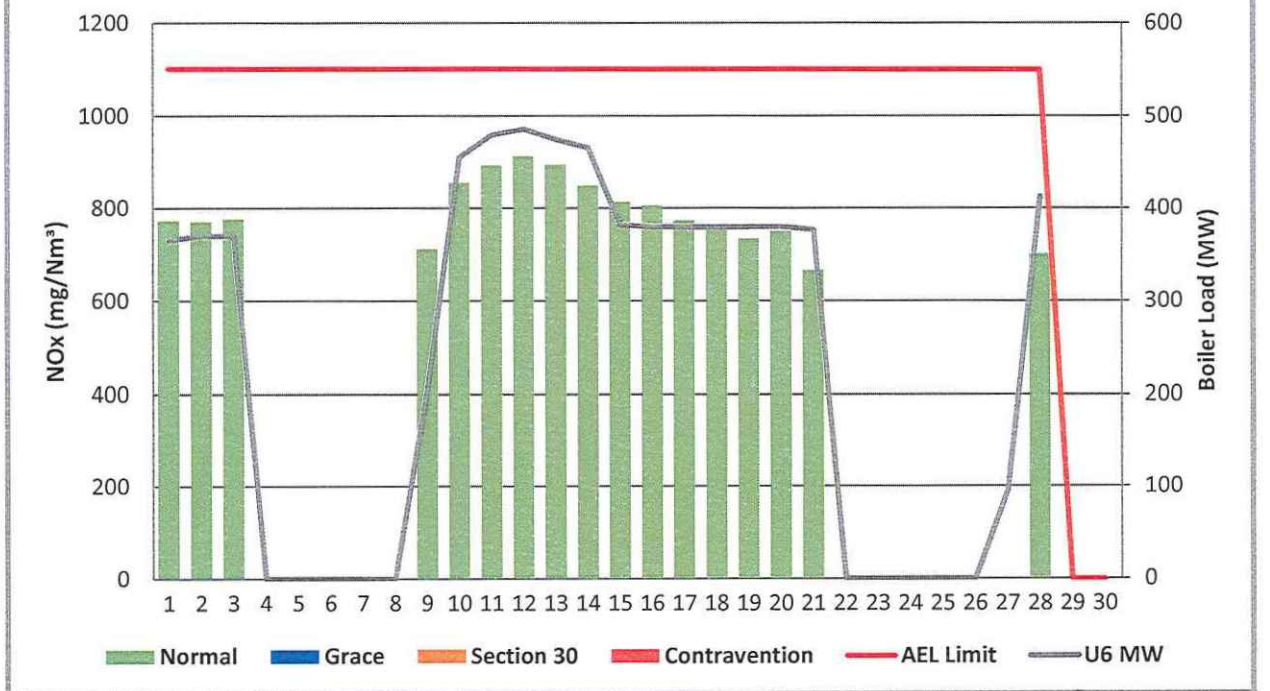


Figure 12: Duvha Unit 6 NOx Emissions - February 2022



7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of February 2022

Unit No.1	<i>Event 1</i>	
Breaker Open (BO)	<i>9:05 pm</i>	<i>2022/02/04</i>
Draught Group (DG) Shut Down (SD)	<i>6:40 am</i>	<i>2022/02/05</i>
BO to DG SD (duration)	<i>00:09:35</i>	DD:HH:MM
Fires in time		
Synch. to Grid (or BC)		
Fires in to BC (duration)		DD:HH:MM
Emissions below limit from BC (end date)		
Emissions below limit from BC (duration)		DD:HH:MM

Unit No.5	<i>Event 1</i>		<i>Event 2</i>	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>	<i>1:20 pm</i>	<i>2022/02/07</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</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
Fires in time				
Synch. to Grid (or BC)				
Fires in to BC (duration)		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

Unit No.6	<i>Event 1</i>		<i>Event 2</i>	
Breaker Open (BO)	<i>10:35 pm</i>	<i>2022/02/03</i>	<i>11:40 am</i>	<i>2022/02/21</i>
Draught Group (DG) Shut Down (SD)	<i>9:25 am</i>	<i>2022/02/04</i>	<i>10:55 pm</i>	<i>2022/02/21</i>
BO to DG SD (duration)	<i>00:10:50</i>	DD:HH:MM	<i>00:11:15</i>	DD:HH:MM
Fires in time	<i>4:20 pm</i>	<i>2022/02/09</i>		
Synch. to Grid (or BC)	<i>8:20 pm</i>	<i>2022/02/09</i>		
Fires in to BC (duration)	<i>00:04:00</i>	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	<i>12:00 am</i>	<i>2022/02/11</i>		
Emissions below limit from BC (duration)	<i>01:03:40</i>	DD:HH:MM		DD:HH:MM

8 GENERAL

Units 2 and 3 were offload during the month of February 2022.

Exceedances: PM

Unit 5:

01-02/02/2022

- Cold unit light up.

04/02/2022

- SO3 plant was on hold due to sulphur tank temperature low.
- Precip fields 4.4 and 4.5 were underperforming

07-08/02/2022

- Cold unit light up

23/02/2022

- SO3 plant was not in service due to a steam leak on the steam supply.

Unit 6:

01/02/2022

- Electrostatic Precipitator fields 2.2, 2.4, 3.1, 3.2, 3.5 and 4.2 tripping on undervoltage.
- Blocked Left Hand row 4 dust hoppers 16, 17 and 18
- Blocked Right Hand row 5 dust hoppers 1, 2, and 3

03/02/2022

- Electrostatic Precipitator fields 2.2, 2.4, 3.1, 3.2, 3.5 and 4.2 tripping on undervoltage.
- Full Left Hand dust hoppers: 1, 2, 4, 9, 16

16-19/02/2022

- The 48 hours allowable for upset conditions were exceeded on the 18th of February 2022. A NEMA Section 30 Emergency incident was reported to your office on 21/02/2022. The final investigation report was submitted to your office on 01/04/2022.

21/02/2022

- Electrostatic Precipitator fields 2.5 and 2.3 had overcurrent faults
- Electrostatic Precipitator fields 1.2 and 4.2 had undervoltage faults
- Electrostatic Precipitator field 3.5 had a pilot relay

The averages Oxygen(O2) and Carbon Dioxide (CO2) data from the QAL 2 tests reports were used for reporting for Units 1, 2, 5 and 6 due to poor performance of the O2 and CO2 gaseous monitors. These poor performances of the gaseous monitors were identified to be caused by the incorrect installation of O2 analyser. An action is being implemented to relocate all the units' O2 monitors to their own measurement port. This action will be completed no later than 31 December 2022.

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.

9 and 10 Complaints and S30 Incidents Register


Refer to addendum A


Boiler Plant Engineering
Manager

14 Dec 2022
Date

 pp
Environmental
Manager

15/12/2022
Date



Engineering Manager

2022/12/14

Date

Compiled by: Environmental Officer

For: Nkangala District Municipality Air Quality Officer

Copies: Generation Environmental Management D
Herbst
B
Mccourt

Generation Compliance Management R
Rampiar
Generation Asset Management E Patel

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

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of February 2022

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	Date measure will be implemented
No complaints were received during the month of February 2022.					

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.
Unit 6	18/02/2022	19/02/2022	Negligence of duty by the ash plant operators	<p>Corrective Actions Taken:</p> <p>1. Consequence management to be taken against the two ash plant operators.</p> <p>Preventative Actions to be taken:</p> <p>1. Operating Experience from this report to be shared with all shifts.</p>	21/02/2022	01/04/2022	Incident acknowledged by DFFE on 13/04/2022		14/7/6/2/4/2/2067

