



Generation

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AND

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Total number of pages: 16

Total number of annexes: 1

DUVHA POWER STATION

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

GENERAL MANAGER

2023/01/09

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 Oct-2022
	Coal	Tons	1 400 000	455 322.21
Fuel Oil	Tons	5 000	4 077.38	

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Oct-2022
	Energy	GWh	3600	772.13
Ash	Tons	not specified	118 884.63	

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.85
Ash Content	%	27 TO 30	26.11

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO _x	NO _x
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 Oct-2022	Technology Type	SO ₃ Utilization Oct-2022
Unit 1	FFP	99.9%	n/a	n/a
Unit 2	FFP	Off-line	n/a	n/a
Unit 3	FFP	Off-line	n/a	n/a
Unit 4	ESP + SO ₃	99.5%	SO ₃	100.0%
Unit 5	ESP + SO ₃	99.3%	SO ₃	99.6%
Unit 6	ESP + SO ₃	98.7%	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	99.4	90.2	90.2
Unit 4	100.0	99.9	99.9
Unit 5	100.0	99.8	99.8
Unit 6	89.9	100.0	100.0

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

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of October 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	37.7	3 397	1 866
Unit 4	141.5	2 615	1 450
Unit 5	218.2	2 697	1 185
Unit 6	107.0	659	305
SUM	504.41	9 368	4 806

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	25	0	0	0	0	20.2
Unit 4	19	7	1	0	8	90.8
Unit 5	12	13	0	0	7	136.6
Unit 6	0	6	0	1	7	335.1
SUM	56	26	1	1	22	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	27	0	0	0	0	1 700.3
Unit 4	29	0	0	0	0	1 494.9
Unit 5	26	0	0	0	0	1 636.2
Unit 6	9	0	0	0	0	1 686.7
SUM	91	0	0	0	0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	27	0	0	0	0	933.0
Unit 4	29	0	0	0	0	821.0
Unit 5	26	0	0	0	0	717.9
Unit 6	9	0	0	0	0	762.3
SUM	91	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 - October 2022

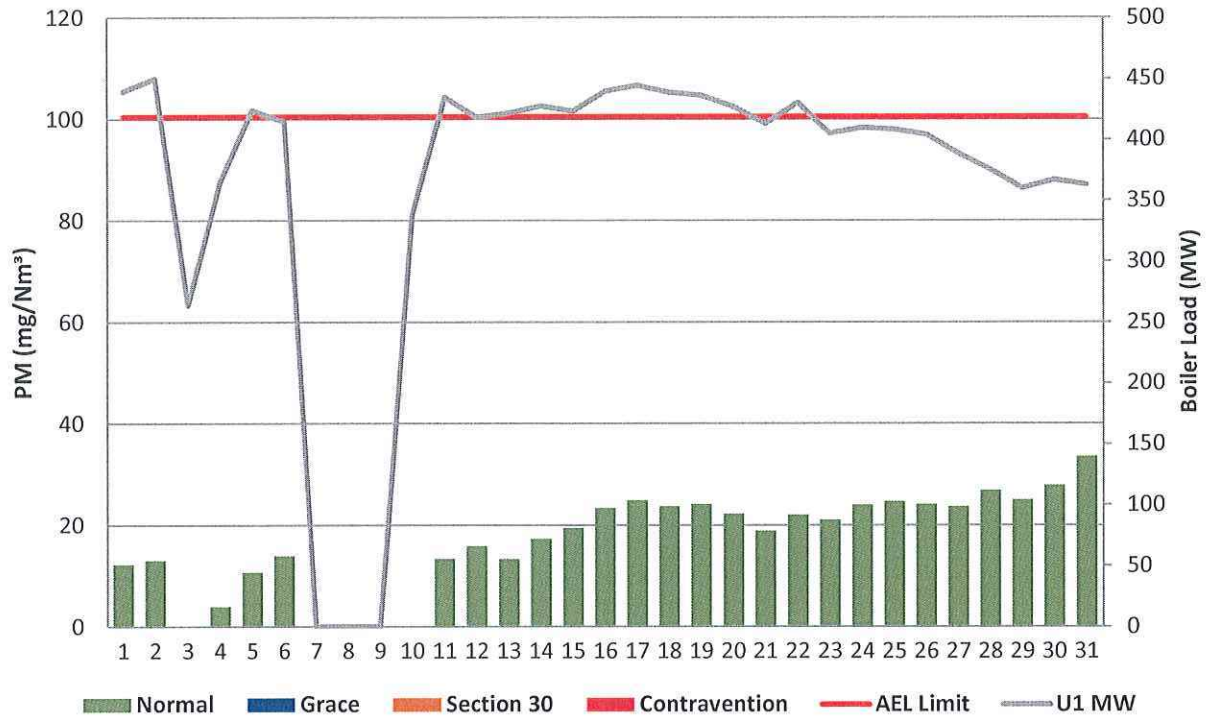


Figure 2: Duvha Unit 4 PM Emissions - October 2022

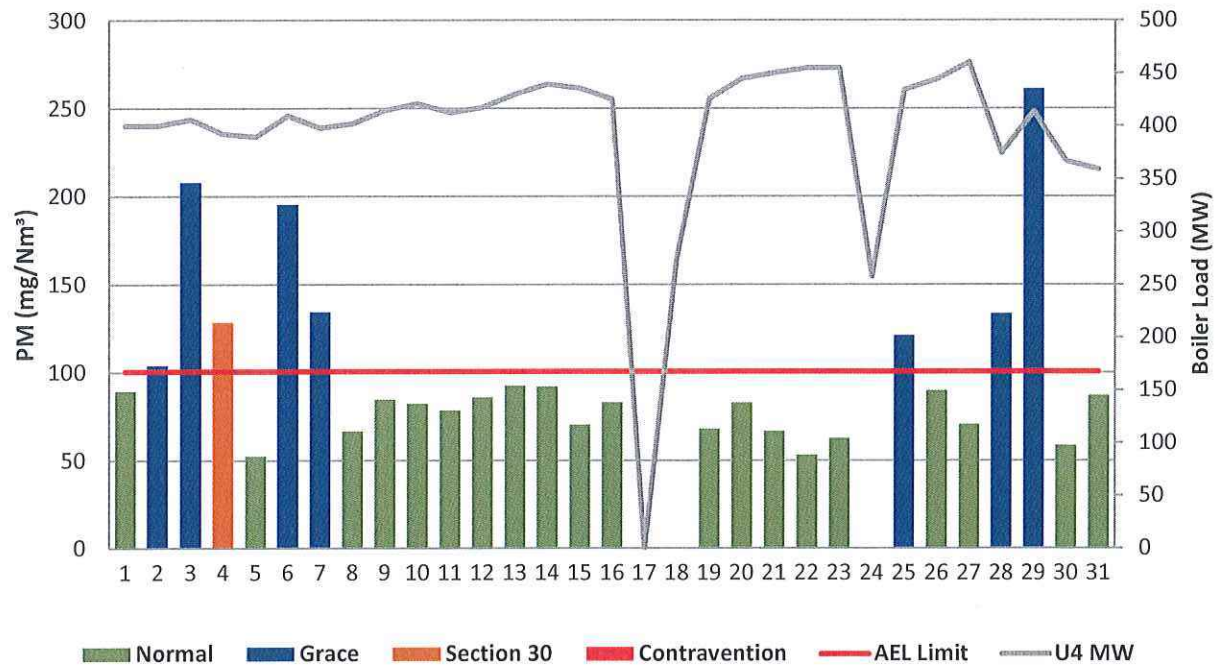


Figure 3: Duvha Unit 5 PM Emissions - October 2022

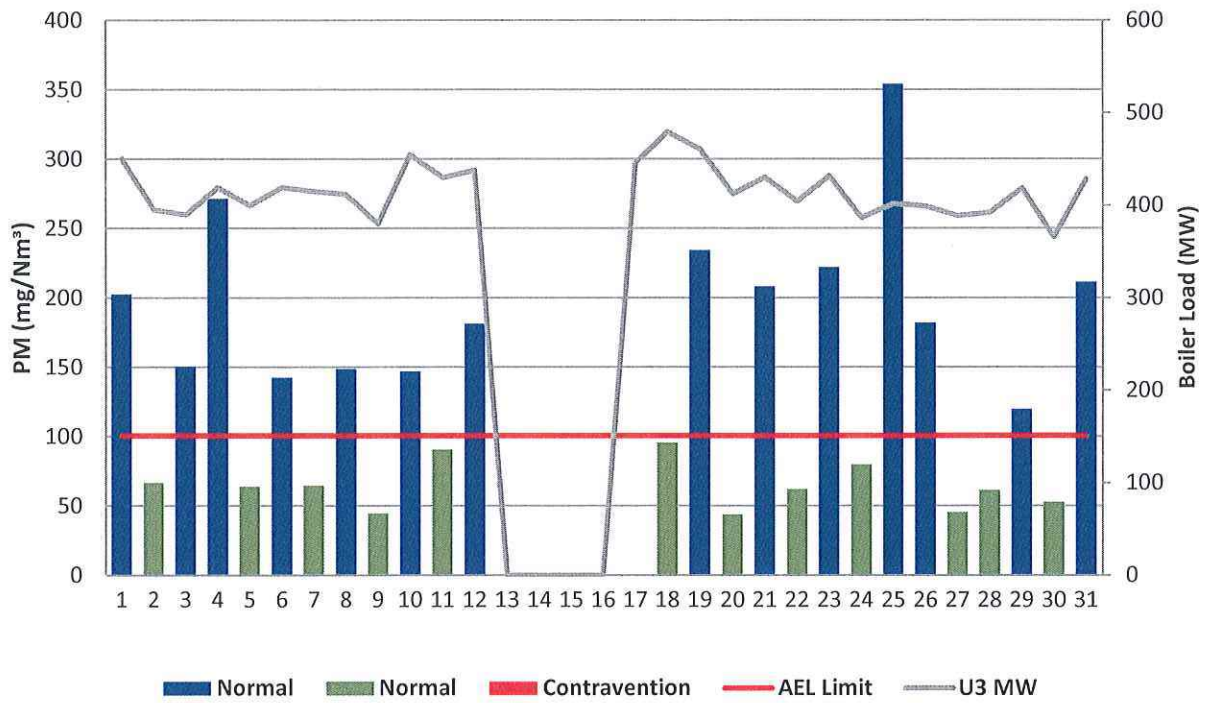


Figure 4: Duvha Unit 6 PM Emissions - October 2022

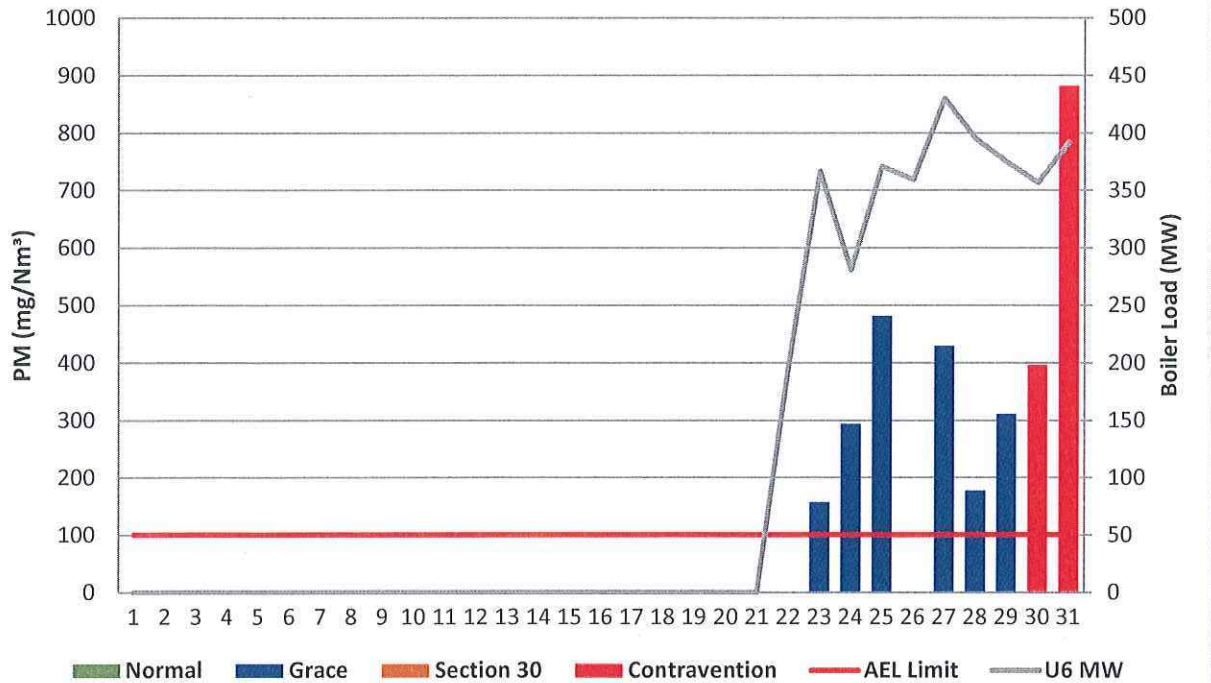


Figure 5: Duvha Unit 1 SOx Emissions - October 2022

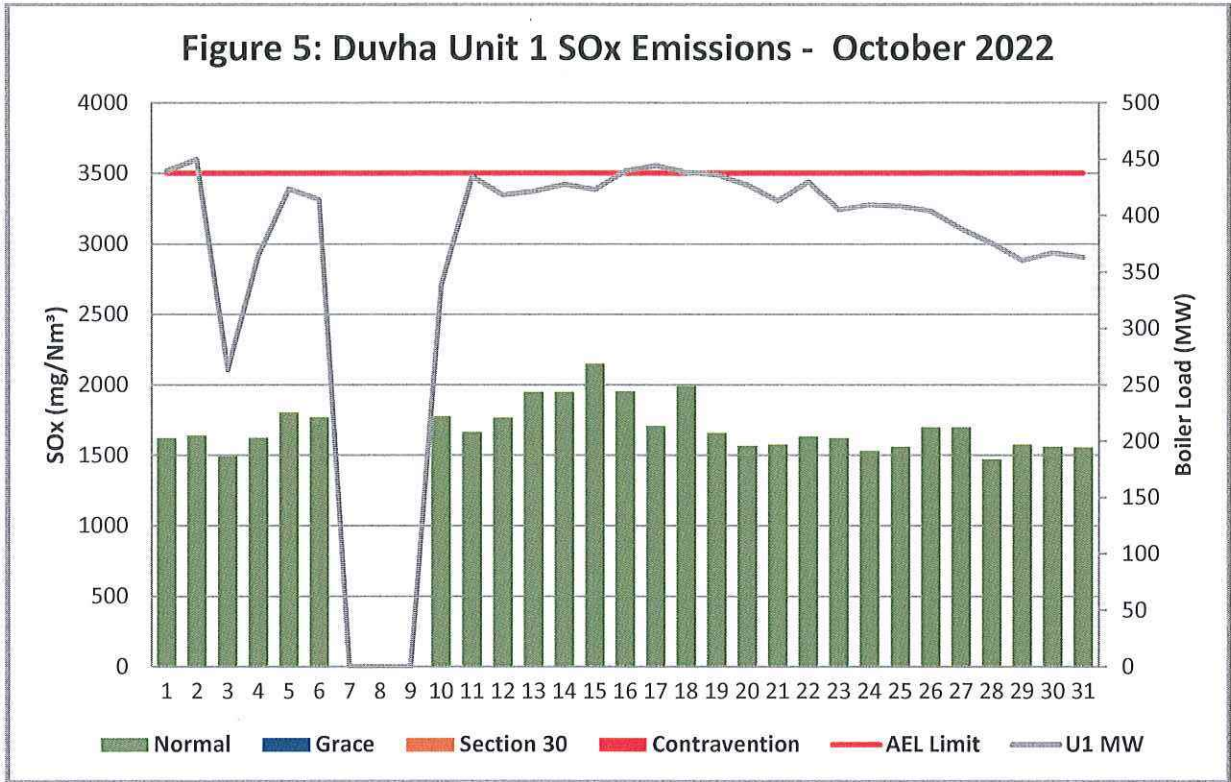


Figure 6: Duvha Unit 4 SOx Emissions - October 2022

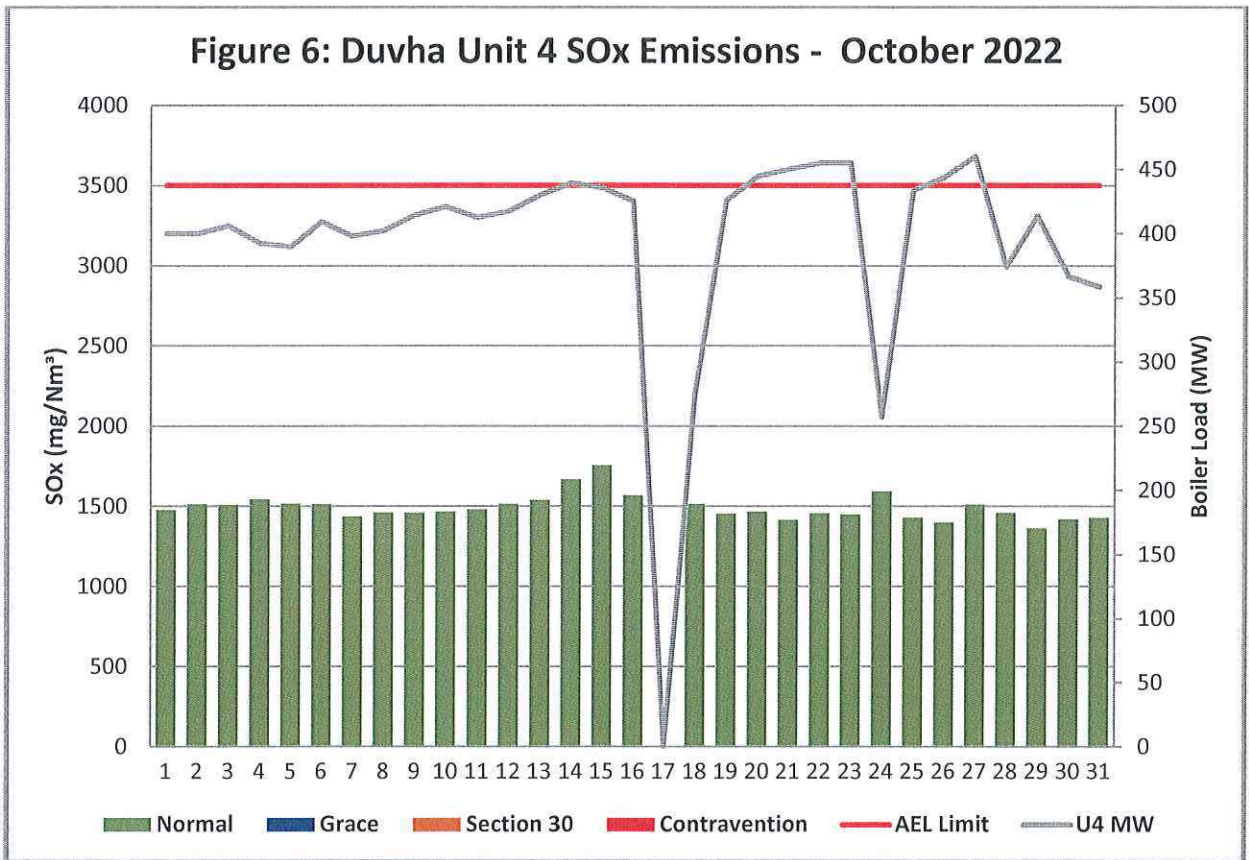


Figure 7: Duvha Unit 5 SOx Emissions - October 2022

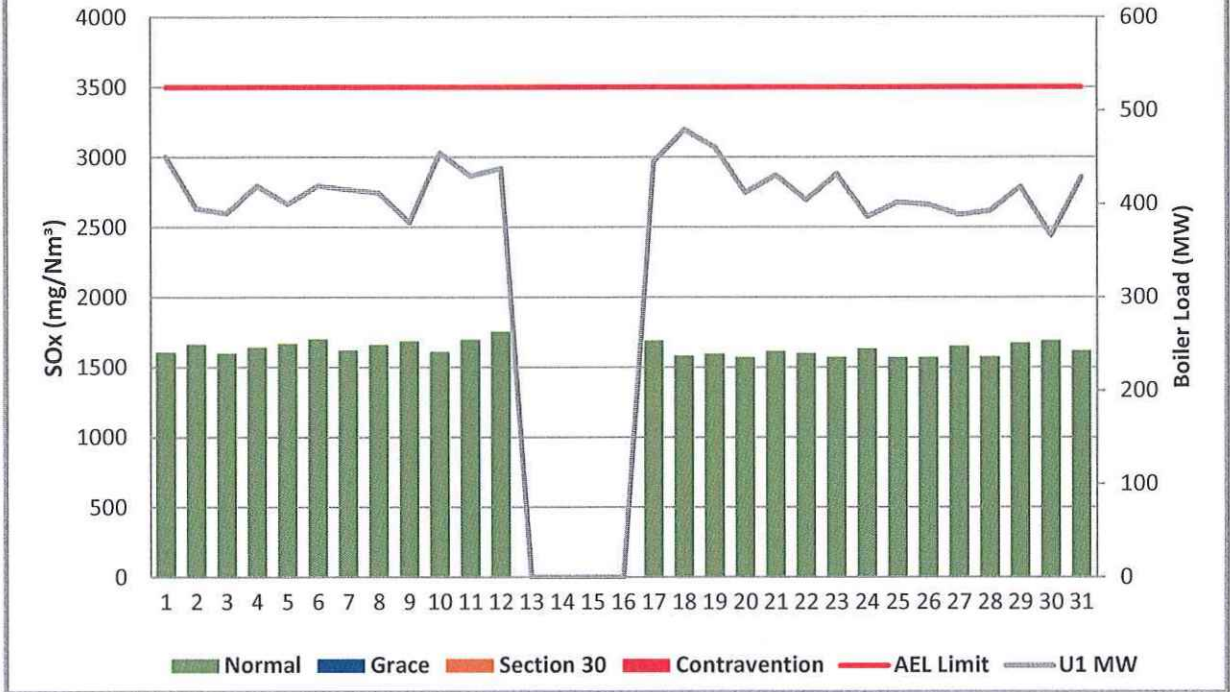


Figure 8: Duvha Unit 6 SOx Emissions - October 2022

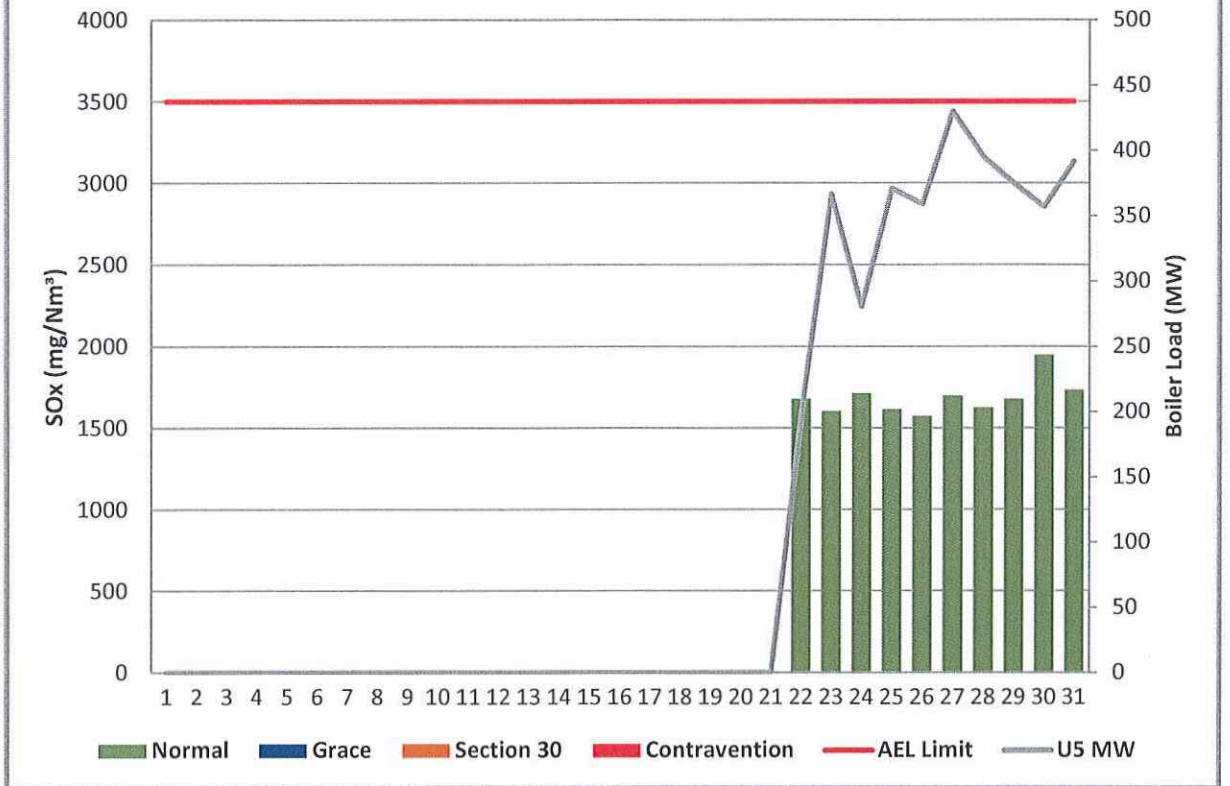


Figure 9: Duvha Unit 1 NOx Emissions - October 2022

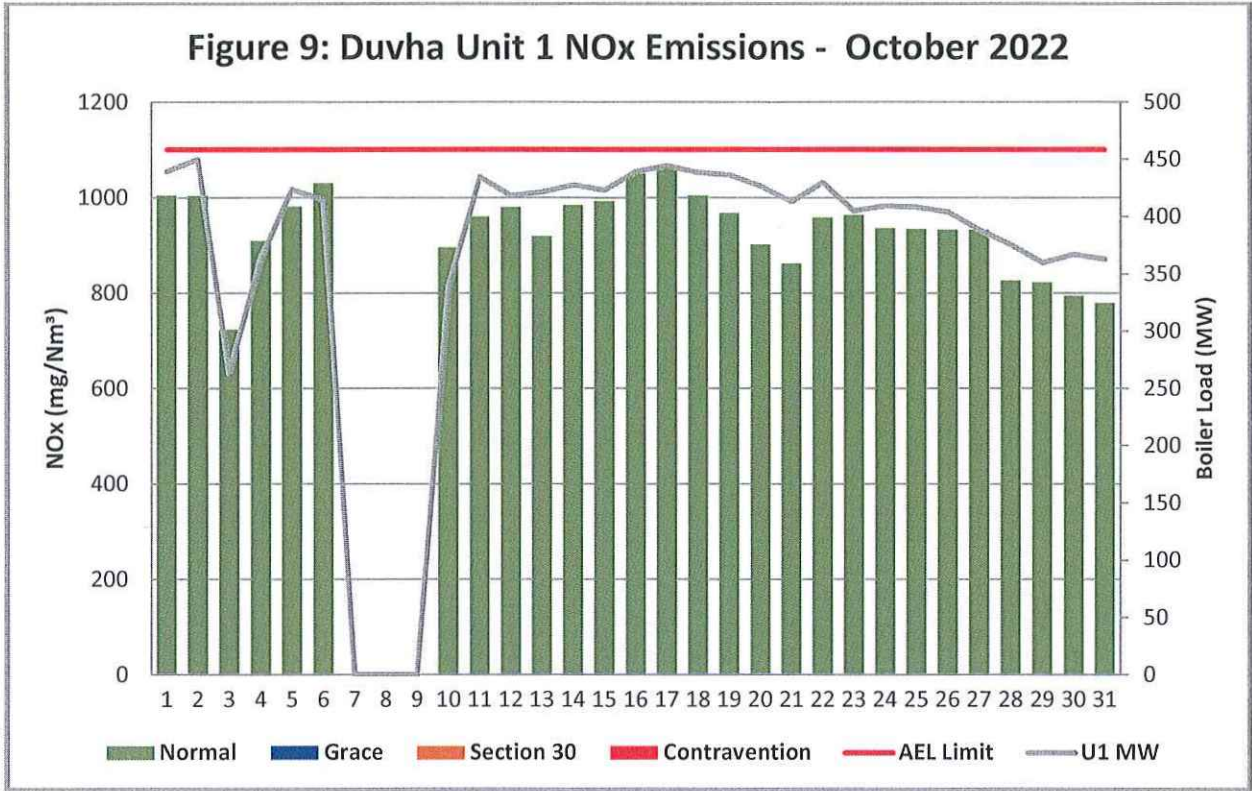


Figure 10: Duvha Unit 4 NOx Emissions - October 2022

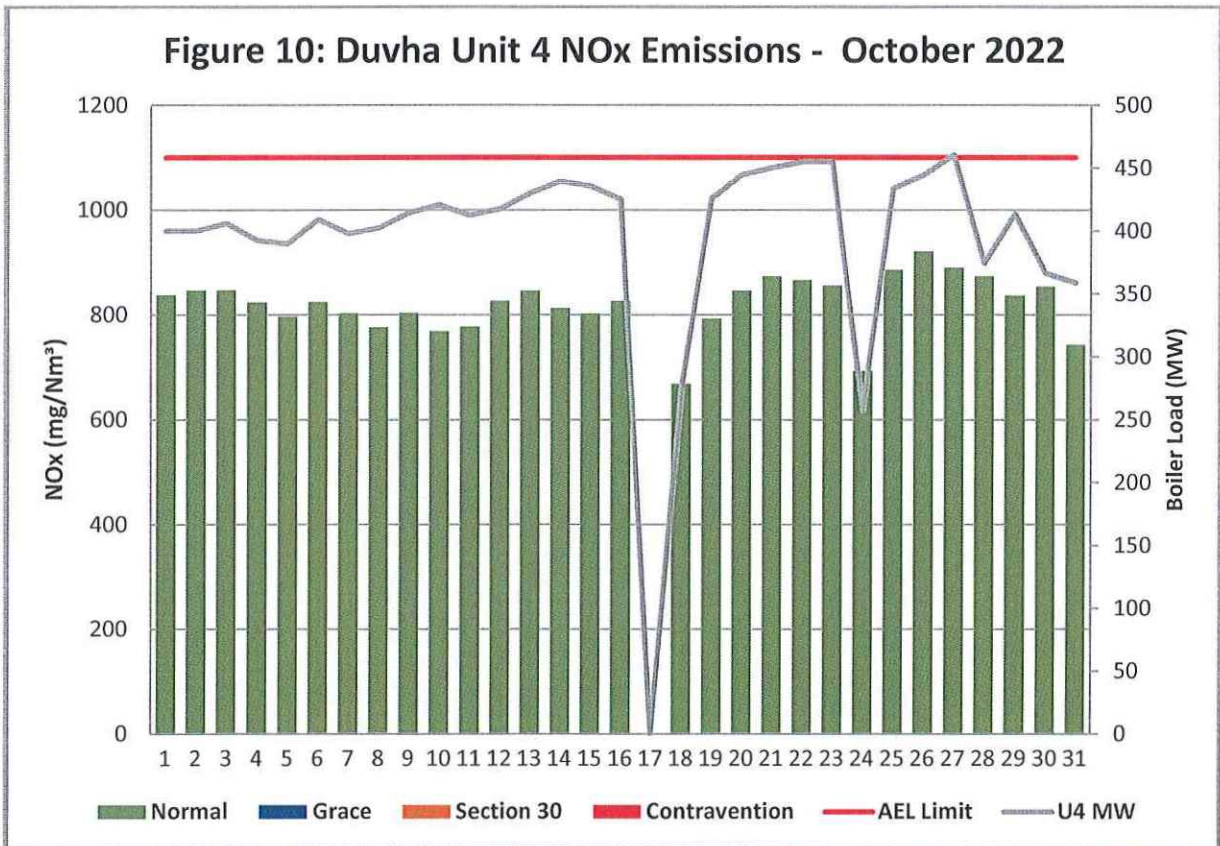
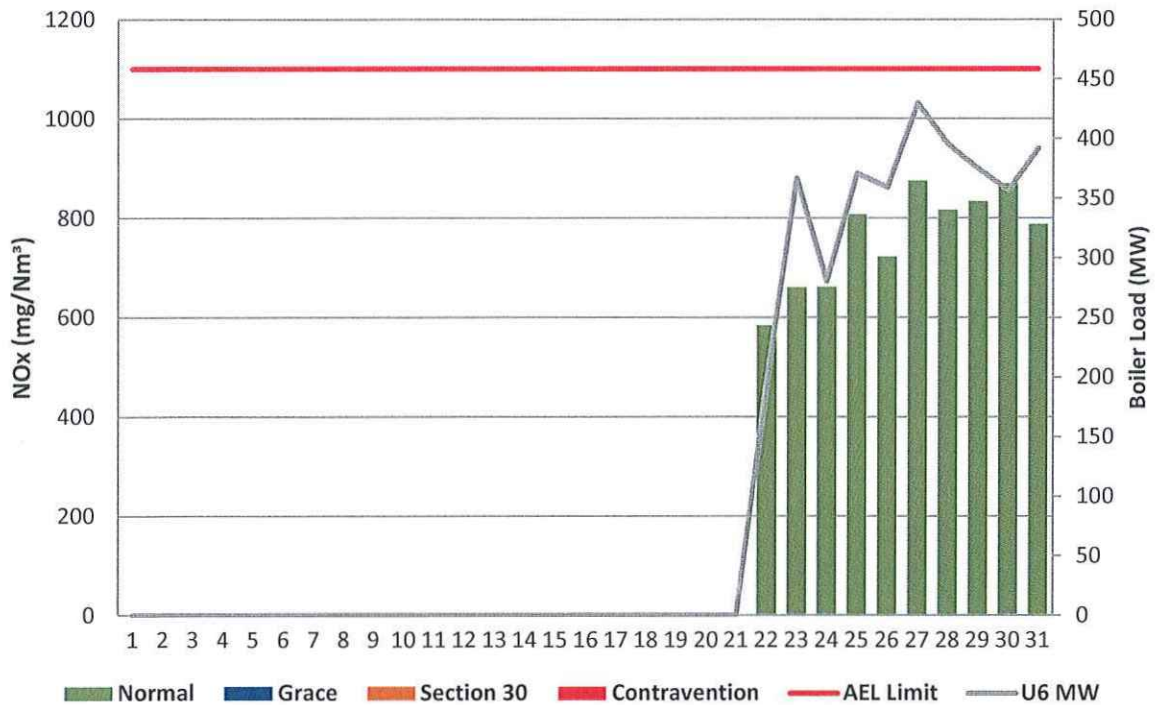


Figure 11: Duvha Unit 5 NOx Emissions - October 2022



Figure 12: Duvha Unit 6 NOx Emissions - October 2022



7 SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1	Event 1		Event 2		Event 3	
Breaker Open (BO)	2:50 am	2022/10/02	9:50 pm	2022/10/06	8:25 pm	2022/10/12
Draught Group (DG) Shut Down (SD)	10:15 pm	2022/10/02	2:15 pm	2022/10/07	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	00:19:25	DD:HH:MM	00:16:25	DD:HH:MM	n/a	DD:HH:MM
Fires in time	11:30 am	2022/10/03	6:05 am	2022/10/10		
Synch. to Grid (or BC)	7:30 pm	2022/10/03	10:20 am	2022/10/10		
Fires in to BC (duration)	00:08:00	DD:HH:MM	00:04:15	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit		
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM

Unit No.4	Event 1		Event 2		Event 3		Event 4	
Breaker Open (BO)	12:50 pm	2022/10/16	9:55 am	2022/10/23	9:10 am	2022/10/28	8:30 am	2022/10/31
Draught Group (DG) Shut Down (SD)	2:35 pm	2022/10/16	9:15 pm	2022/10/23	11:30 am	2022/10/28	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	00:01:45	DD:HH:MM	00:11:20	DD:HH:MM	00:02:20	DD:HH:MM	n/a	DD:HH:MM
Fires in time	8:05 pm	2022/10/17	10:45 am	2022/10/24	12:10 pm	2022/10/28		
Synch. to Grid (or BC)	7:25 am	2022/10/18	7:35 pm	2022/10/24	6:25 pm	2022/10/28		
Fires in to BC (duration)	00:11:20	DD:HH:MM	00:08:50	DD:HH:MM	00:06:15	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2022/10/19	3:00 pm	2022/10/26	2:00 am	2022/10/30		
Emissions below limit from BC (duration)	00:16:35	DD:HH:MM	01:19:25	DD:HH:MM	01:07:35	DD:HH:MM		DD:HH:MM

Unit No.5	Event 1	
Breaker Open (BO)	8:10 pm	2022/10/12
Draught Group (DG) Shut Down (SD)	9:40 pm	2022/10/12
BO to DG SD (duration)	00:01:30	DD:HH:MM
Fires in time	7:25 pm	2022/10/16
Synch. to Grid (or BC)	12:15 am	2022/10/17
Fires in to BC (duration)	00:04:50	DD:HH:MM
Emissions below limit from BC (end date)	8:00 pm	2022/10/18

Emissions below limit from BC (duration)	01:19:45	DD:HH:MM
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8 GENERAL

Units 2 and 4 were offload during the month of October 2022.

Exceedances:

Unit 4:

02-04/10/2022

- The 48 hours allowable for upset conditions were exceeded on the 04th of October 2022 in unit 4. The final investigation reports will be submitted to your office once the investigation is completed.

06-07/10/2022

- High back-end temperature after sootblowing due to low availability of the soot blowers.
- Electrostatic Precipitator fields 2.3 left hand and 3.3 right hand were not in service.

25/10/2022

- Cold unit light up.

29/10/2022

-

Unit 5:

01/10/2022

- High back-end temperature after sootblowing due to low availability of the soot blowers.

03-04/10/2022

- Electrostatic Precipitator fields 1.1, 1.5, 2.1, 2.2, 2.3, and 3.4 were underperforming.
- The SO₃ plant was switched off to drain moisture.
- High back-end temperature after sootblowing due to low availability of the soot blowers.

06/10/2022

- High back-end temperature after sootblowing due to low availability of the soot blowers.

08/10/2022

- SO₃ plant kept tripping on high process air temperature.

10/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

12/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

19/10/2022

- Cold unit light up.

21/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

23/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

25-26/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

29/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

31/10/2022

- High back end temperature after sootblowing due to low availability of the soot blowers.

Unit 6:

23-25/10/2022

- Cold unit light up.

27-31/10/2022


- Contravention Incident: The 72 hours allowable for a cold unit light up were exceeded at Duvha unit 6 from the 27th of October 2022 to the 08th of November 2022. A detailed investigation report with root cause and preventative actions will be submitted to your office once the investigation is completed.

The averages Oxygen(O₂) and Carbon Dioxide (CO₂) data from the QAL 2 tests reports were used for reporting for Units 1, 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 &10 Complaints and S30 Incidents Register

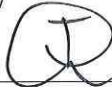
Refer to addendum A


Boiler Plant Engineering
Manager

21/12/2022
Date


Environmental
Manager

2022/12/21
Date


Engineering Manager

21/12/2022
Date

Compiled by:

Environmental Officer

For:

Nkangala District
Municipality

Air Quality Officer

Copies:

Generation Environmental
Management

D Herbst
B
Mccourt

Generation Compliance Management
Generation Asset
Management

R
Rampiar
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 October 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 October 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 4	04/10/2022	04/10/2022	Incident still under investigation	Contravention incident not reported as a Section 30.	06/10/2022	Incident still under investigation. Preliminary investigation report submitted to your office on 19/10/2022.	Not yet received	n/a	14/7/6/2/4/2/2242

Unit 6	30/10/2022	30/10/2022	Incident still under investigation	Contravention incident not reported as a Section 30. Final investigation report will be submitted on 30/11/2022.	N/A	N/A	Contravention Incident: The 72 hours allowable for a cold unit light up were exceeded at Duvha unit 6 from the 27 th of October 2022 to the 08 th of November 2022. A detailed investigation report with root cause and preventative actions will be submitted to your office by 30/11/2022.