



Generation

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DUVHA POWER STATION

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

GENERAL MANAGER

2023/01/09

DATE



SEPTEMBER 2022

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 Sep-2022
	Coal	Tons	1 400 000	337 054.53
	Fuel Oil	Tons	5 000	2172.03
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Sep-2022
	Energy	GWh	3600	601.06
	Ash	Tons	not specified	89 184.63
	RE Ash	kg/MWh	not specified	

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	26.46

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 Sep-2022	Technology Type	SO3 Utilization Sep-2022
Unit 1	FFP	99.9%	n/a	n/a
Unit 4	ESP + SO ₃	99.2%	SO ₃	98.7%
Unit 5	ESP + SO ₃	99.3%	SO ₃	95.6%

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	91.7	99.8	99.8
Unit 4	94.2	99.4	99.5
Unit 5	100.0	99.8	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 September 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	17.0	2 751	1 513
Unit 4	216.5	2 316	1 235
Unit 5	178.5	2 110	936
SUM	411.97	7 177	3 684

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	22	0	0	0	0	12.3
Unit 4	16	6	0	0	6	159.6
Unit 5	8	9	0	2	11	145.9
SUM	46	15	0	0	17	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	24	0	0	0	0	1 658.2
Unit 4	26	0	0	0	0	1 530.3
Unit 5	22	0	0	0	0	1 622.2
SUM	72	0	0	0	0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	24	0	0	0	0	880.9
Unit 4	26	0	0	0	0	796.2
Unit 5	22	0	0	0	0	718.7
SUM	72	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 - September 2022

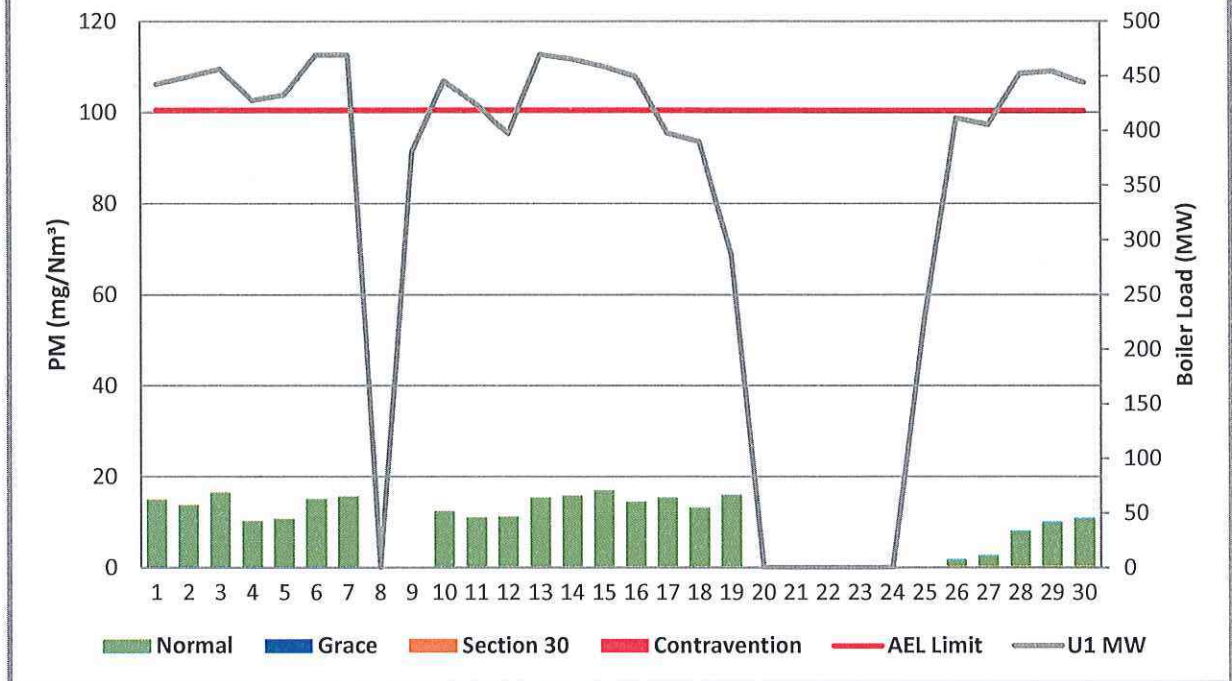


Figure 2: Duvha Unit 4 PM Emissions - September 2022

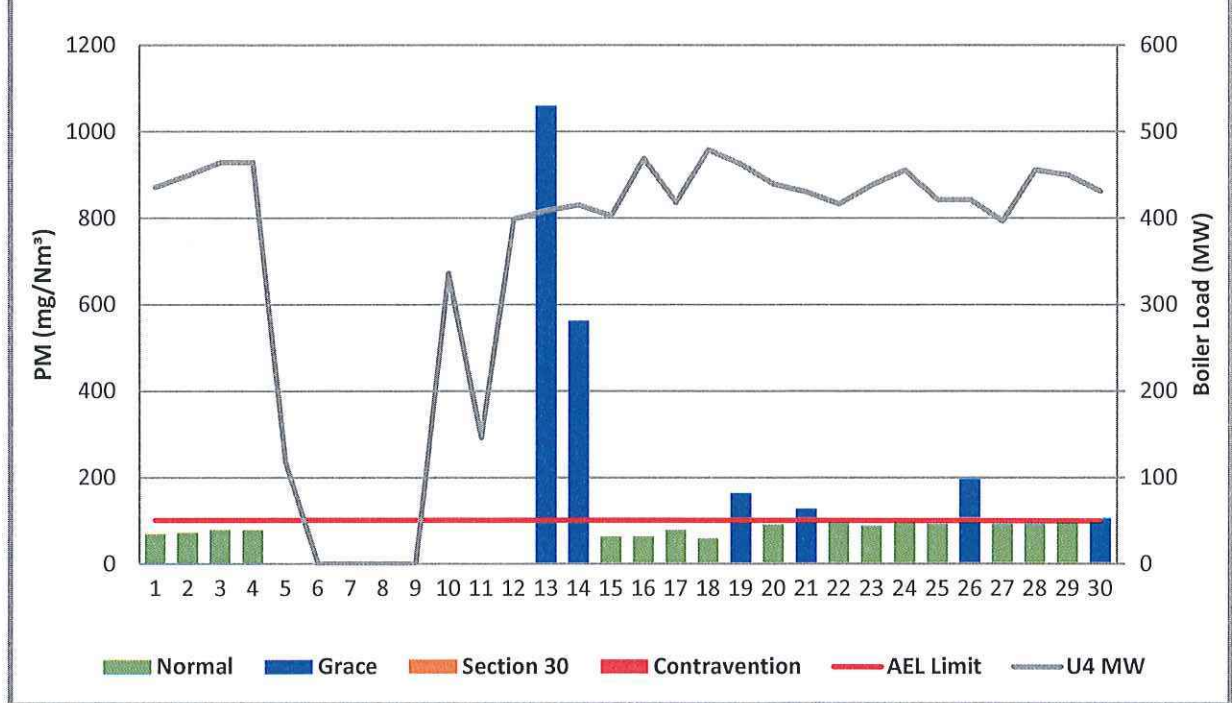


Figure 3: Duvha Unit 5 PM Emissions - September 2022

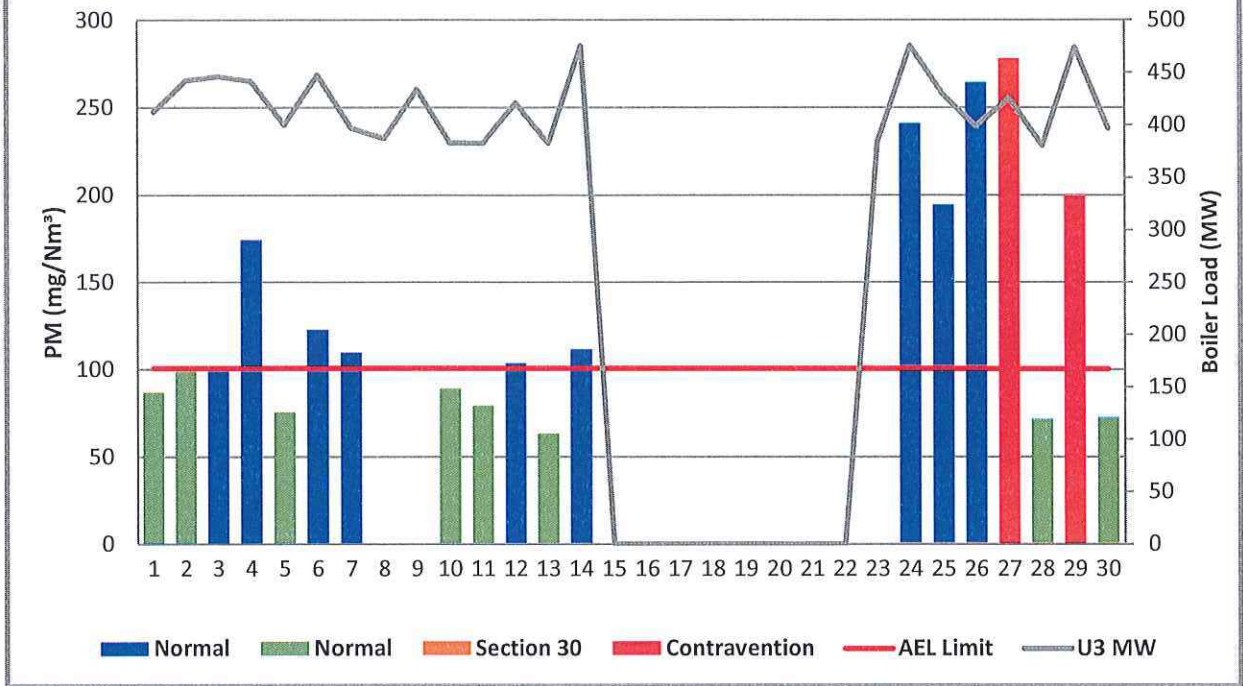


Figure 4: Duvha Unit 1 SOx Emissions - September 2022

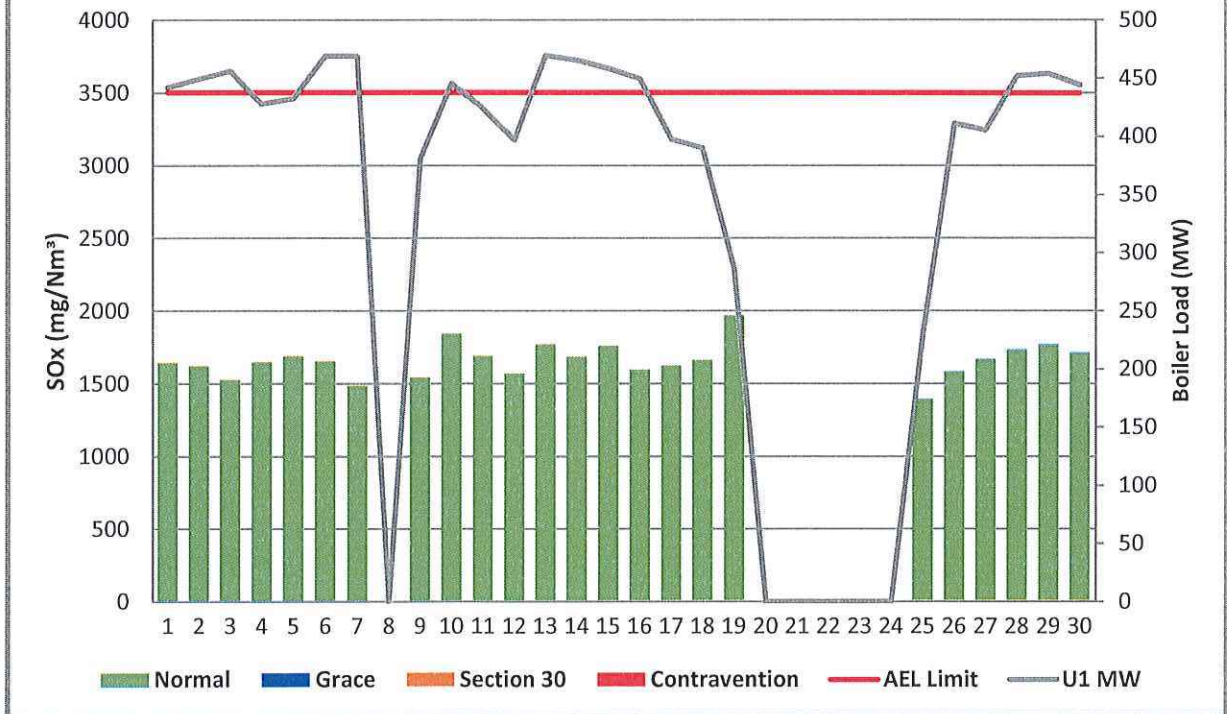


Figure 5: Duvha Unit 4 SOx Emissions - September 2022



Figure 6: Duvha Unit 5 SOx Emissions - September 2022

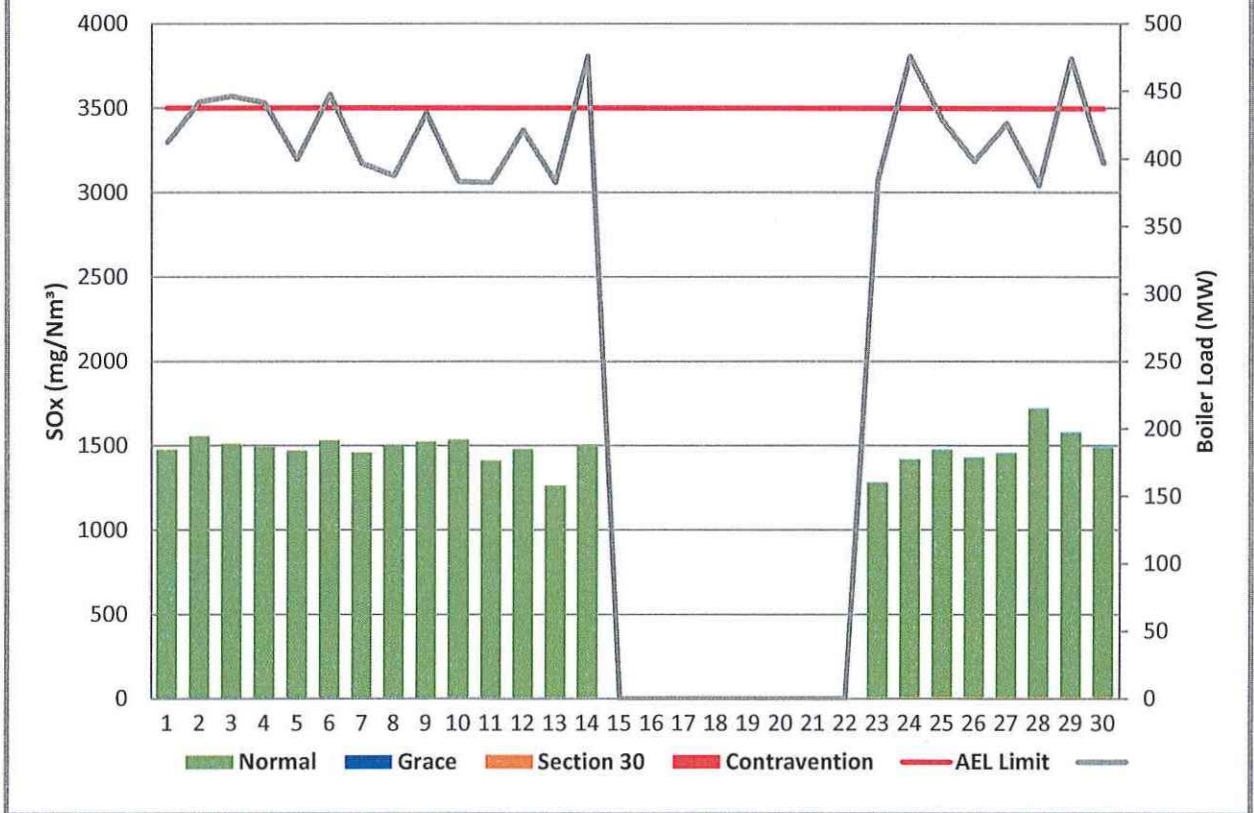


Figure 7: Duvha Unit 1 NOx Emissions - September 2022

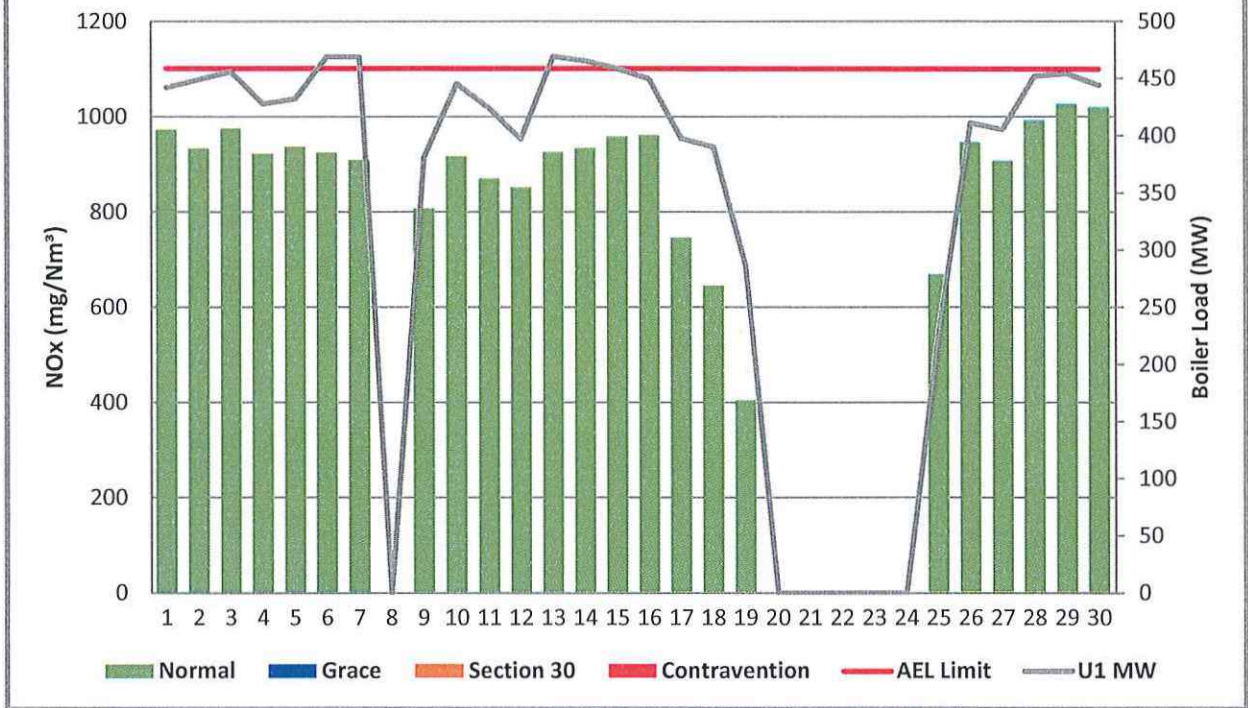
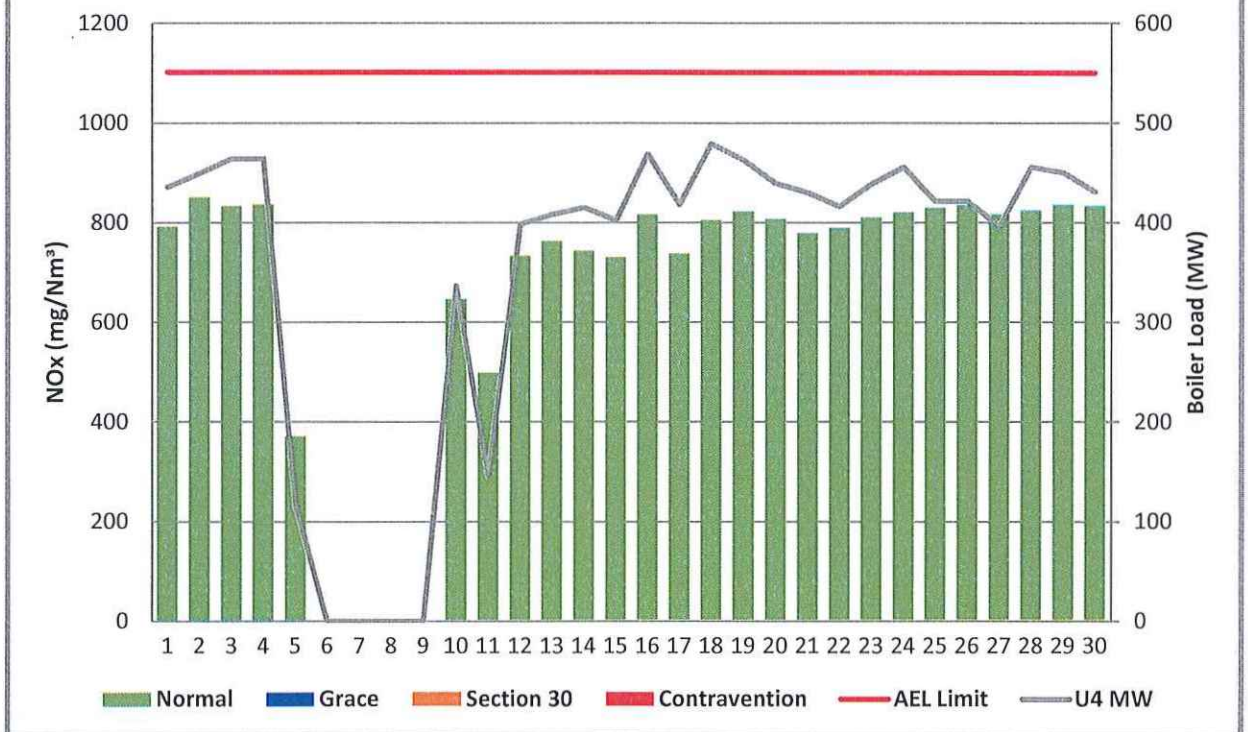
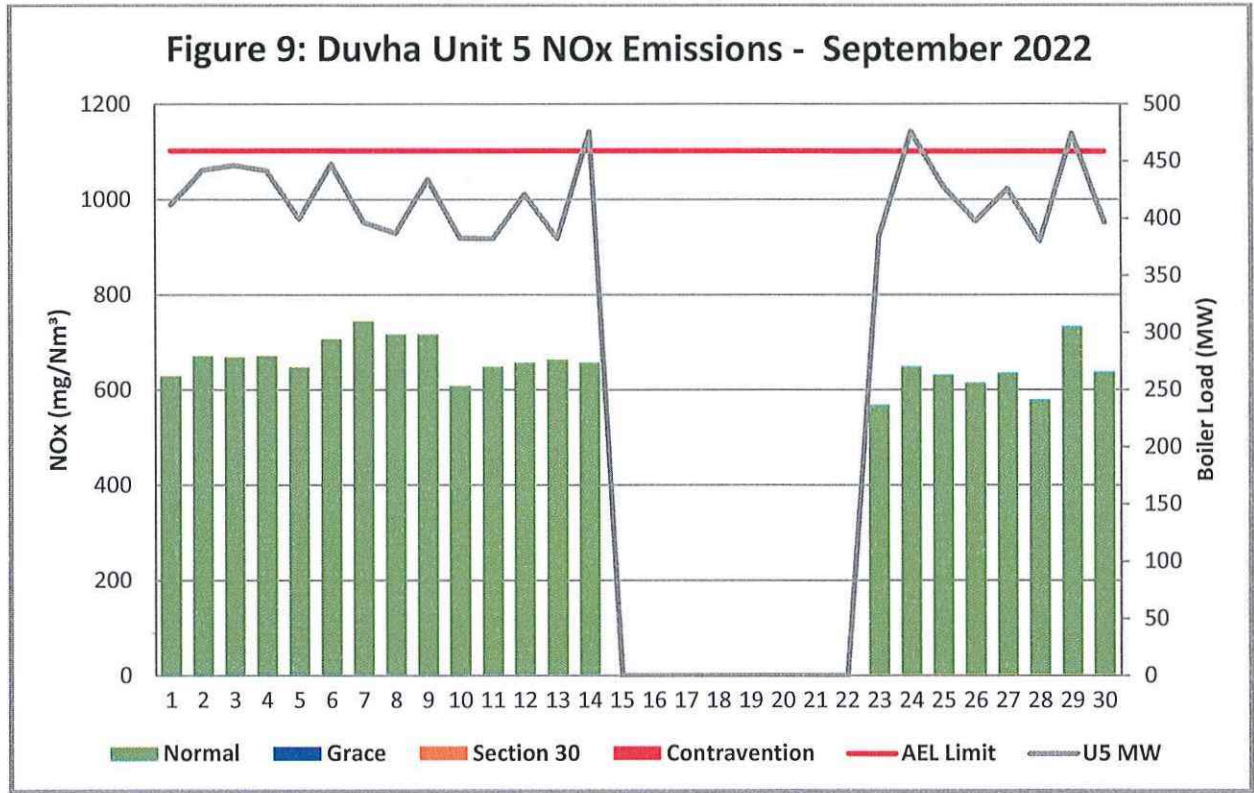


Figure 8: Duvha Unit 4 NOx Emissions - September 2022





7 SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1	Event 1		Event 2		Event 3		Event 4	
Breaker Open (BO)	7:00 pm	2022/09/07	2:25 am	2022/09/12	7:15 am	2022/09/17	12:50 am	2022/09/19
Draught Group (DG) Shut Down (SD)	9:05 pm	2022/09/07	2:25 am	2022/09/12	DG did not trip or SD	DG did not trip or SD	12:55 am	2022/09/19
BO to DG SD (duration)	00:02:05	DD:HH:MM	00:00:00	DD:HH:MM	n/a	DD:HH:MM	00:00:05	DD:HH:MM
Fires in time	4:50 am	2022/09/09	3:00 am	2022/09/12			11:25 am	2022/09/25
Synch. to Grid (or BC)	9:05 am	2022/09/09	5:10 am	2022/09/12			8:30 pm	2022/09/25
Fires in to BC (duration)	00:04:15	DD:HH:MM	00:02:10	DD:HH:MM		DD:HH:MM	00:09:05	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	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	n/a	DD:HH:MM

Unit No.4	Event 1		Event 2	
Breaker Open (BO)	9:10 pm	2022/09/04	7:15 am	2022/09/17
Draught Group (DG) Shut Down (SD)	10:15 am	2022/09/05	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	00:13:05	DD:HH:MM	n/a	DD:HH:MM
Fires in time	3:45 pm	2022/09/11		
Synch. to Grid (or BC)	8:40 am	2022/09/12		
Fires in to BC (duration)	00:16:55	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2022/09/15		
Emissions below limit from BC (duration)	02:15:20	DD:HH:MM		DD:HH:MM

Unit No.5	Event 1	
Breaker Open (BO)	7:40 pm	2022/09/14
Draught Group (DG) Shut Down (SD)	1:00 am	2022/09/15
BO to DG SD (duration)	00:05:20	DD:HH:MM
Fires in time	9:25 am	2022/09/23
Synch. to Grid (or BC)	11:25 am	2022/09/23
Fires in to BC (duration)	00:02:00	DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2022/09/28
Emissions below limit from BC (duration)	04:12:35	DD:HH:MM

8. GENERAL

Units 2, 3 and 6 were offload during the month of September 2022.

Exceedances

Unit 4:

13-14/09/2022

- Cold unit light up.

19/09/2022

- Hot unit light up

21/09/2022

- SO3 plant tripped due to power supply trip.
- Dust Handling plant righthand aeroslide heater temperature was Low.

26/09/2022

- Electrostatic Precipitator fields 2.3 left hand and 3.3 right hand were not in service while field 4.5 was underperforming.

30/09/2022

High back-end temperatures after sootblowing conducted. This was due to the low availability of the Sootblowers.

Unit 5:

03-04/09/2022

- SO3 plant went on hold mode and was not injecting sulphur.
- High backend temperatures due to ineffective Sootblowers

06-09/09/2022

- The 48 hours allowable for upset conditions were exceeded from the 08th to the 09th of September 2022 in unit 5. The final investigation reports will be submitted to your office before the 31st of October 2022.

14/09/2022

- High back-end temperatures after sootblowing conducted. This was due to the low availability of the Sootblowers.

24-29/09/2022

- **Contravention incident:** The 72 Hours allowable for a cold unit light up were exceeded at Duvha Unit 5 from the 27th of September 2022 to the 03rd of October 2022. A detailed investigation report with root cause and preventative actions will be submitted to your office once 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
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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

ADDENDUM TO MONTHLY EMISSIONS REPORT

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of September 2022

Source Code / Name	Root Cause Analysis	Calculation of Impacts / emissions associated with the incident
No complaints were received during the month of September 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 5	08/09/2022	09/09/2022	Incident still under investigation		09/09/2022	Incident still under investigation. Preliminary investigation report submitted to your office once completed 27/09/2022	Not yet acknowledged	N/A	(14/7/6/2/4/2/2222-IDFF380892022
Unit 5	27/09/2022	03/10/2022	Incident still under investigation		Contravention incident not reported as a Section 30.				Contravention incident: The 72 Hours allowable for a cold unit light up were exceeded at Duvha Unit 5 from the 27 th of September 2022 to the 03 rd of October 2022. A detailed investigation report

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with root cause and preventative actions will be submitted to your office once completed.