



Generation

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AND

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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 Aug-2022
	Coal	Tons	1 400 000	439 065.20
	Fuel Oil	Tons	5 000	3204.78
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Aug-2022
	Energy	GWh	3600	799.36
	Ash	Tons	not specified	116 484.00

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.970
Ash Content	%	27 TO 30	26.53

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 Aug-2022	Technology Type	SO3 Utilization Aug-2022
Unit 1	FFP	99.9%	n/a	n/a
Unit 4	ESP + SO ₃	99.5%	SO ₃	98.8%
Unit 5	ESP + SO ₃	99.4%	SO ₃	97.5%

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO
Unit 1	98.8	100.0	100.0
Unit 4	99.7	99.4	100.0
Unit 5	100.0	100.0	99.6

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 August 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	23.3	3 426	1 968
Unit 4	167.0	2 734	1 414
Unit 5	204.5	2 845	1 244
SUM	394.78	9 004	4 627

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	26	0	0	0	0	11.6
Unit 4	20	9	0	0	9	93.3
Unit 5	15	15	0	0	15	126.9
SUM	61	24	0	0	24	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	27	0	0	0	0	1 629.6
Unit 4	30	0	0	0	0	1 421.4
Unit 5	30	0	0	0	0	1 613.1
SUM	87	0	0	0	0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	27	0	0	0	0	932.6
Unit 4	30	0	0	0	0	733.0
Unit 5	30	0	0	0	0	702.7
SUM	87	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 - August 2022

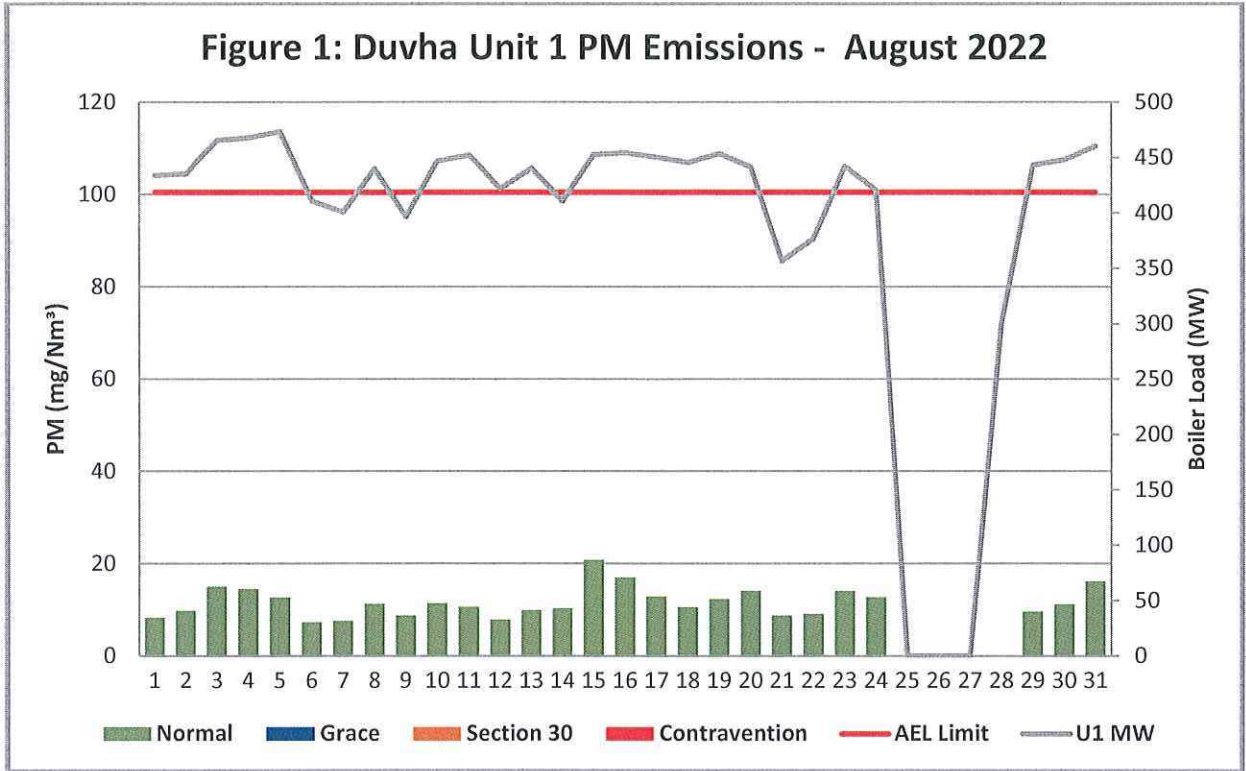


Figure 2: Duvha Unit 4 PM Emissions - August 2022

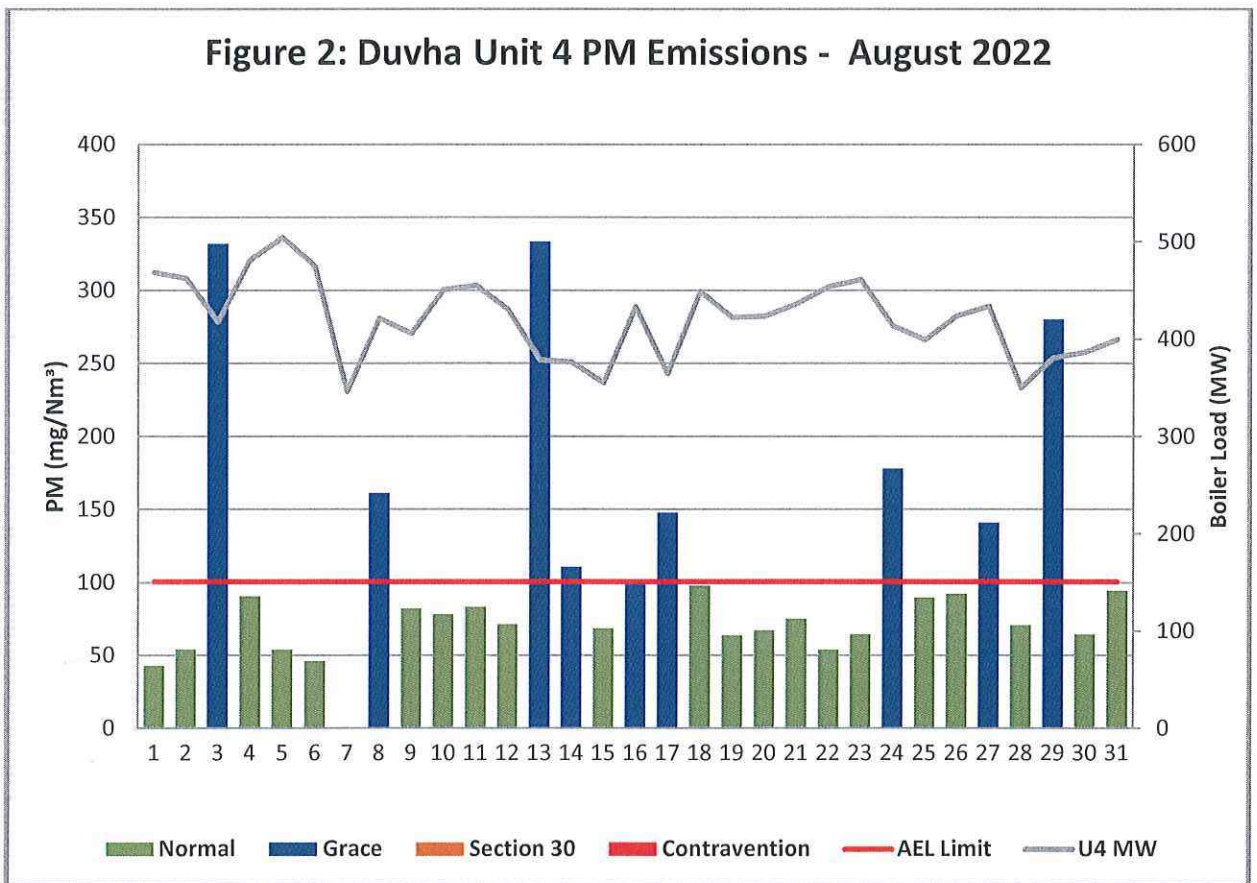


Figure 3: Duvha Unit 5 PM Emissions - August 2022

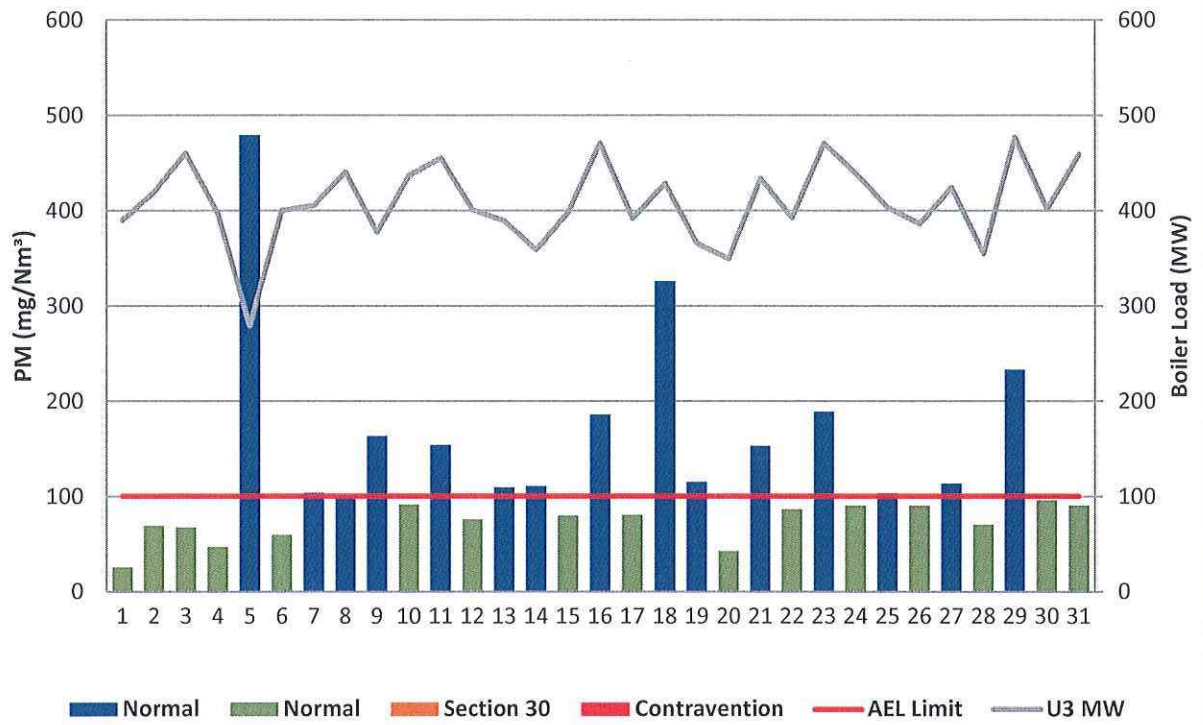


Figure 4: Duvha Unit 1 SOx Emissions - August 2022

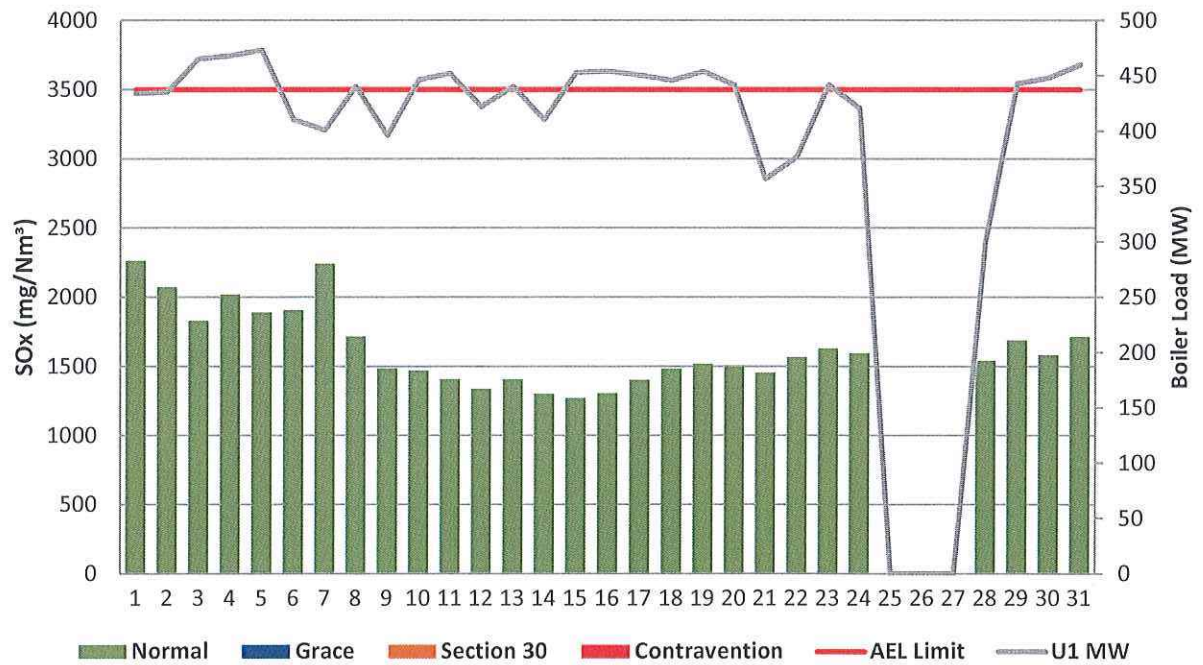


Figure 5: Duvha Unit 4 SOx Emissions - August 2022

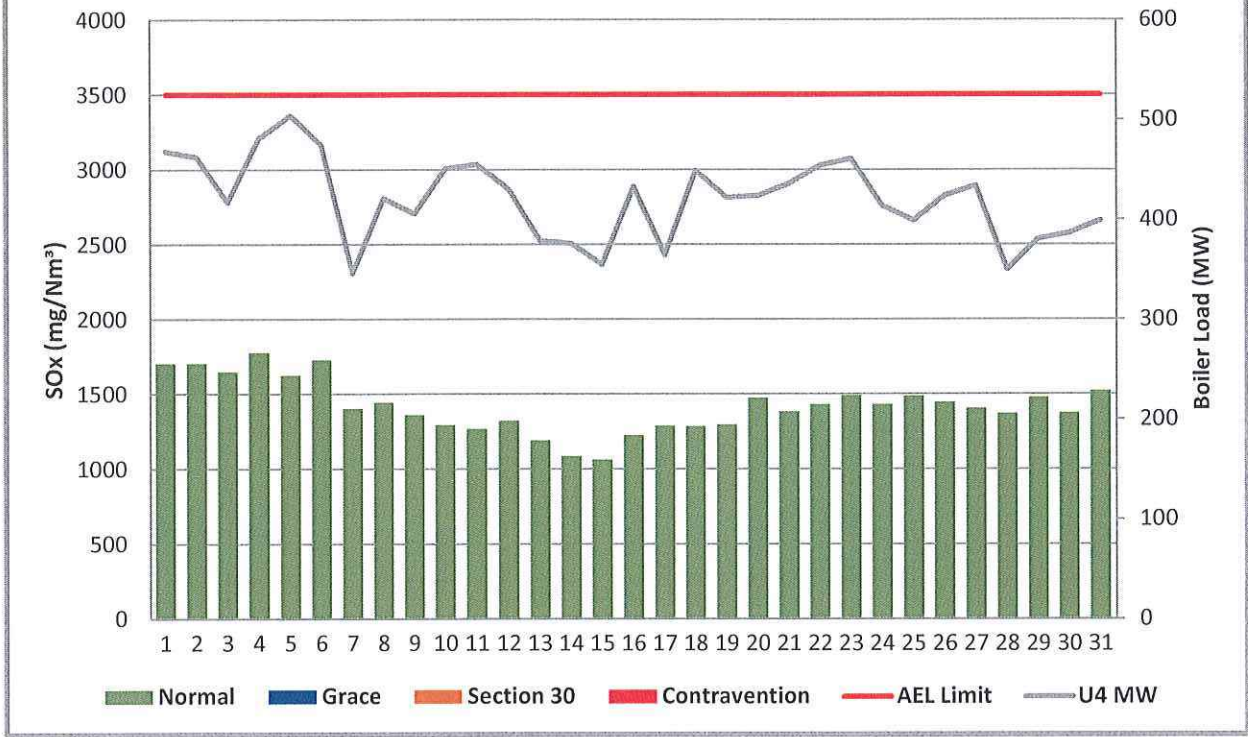


Figure 6: Duvha Unit 5 SOx Emissions - August 2022

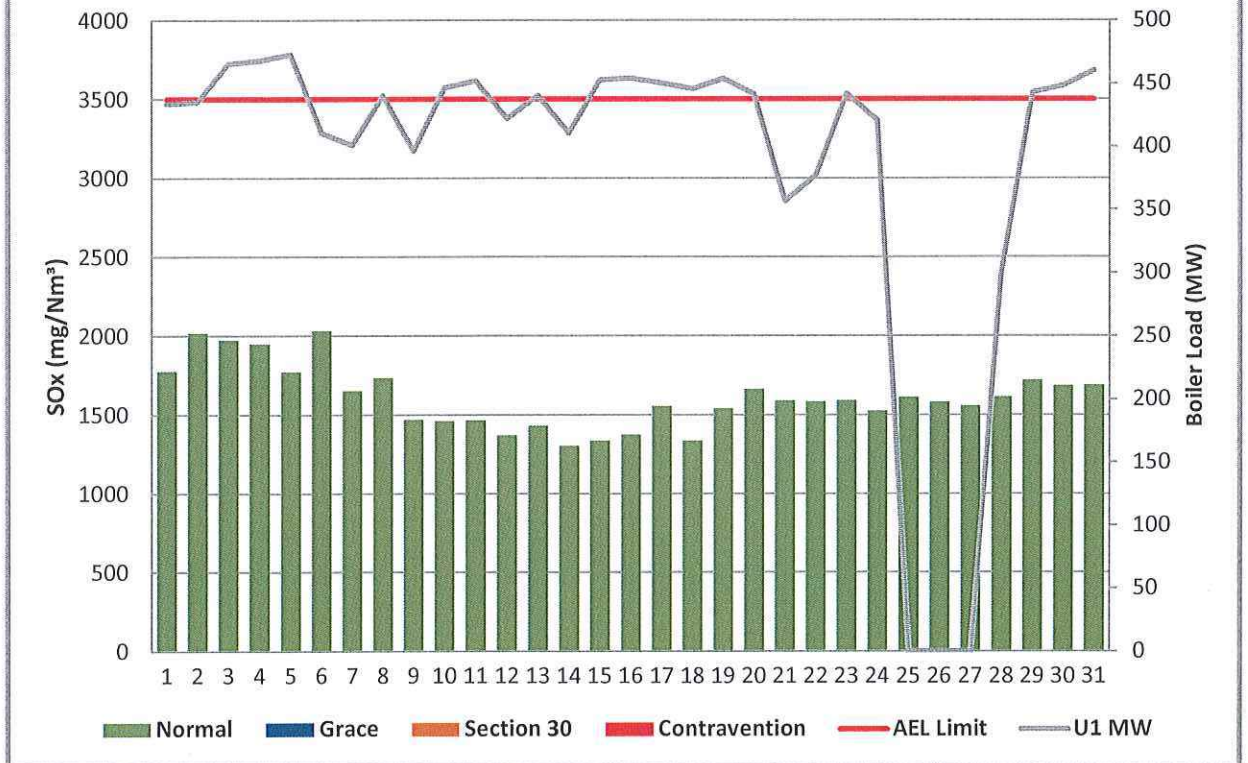


Figure 7: Duvha Unit 1 NOx Emissions - August 2022

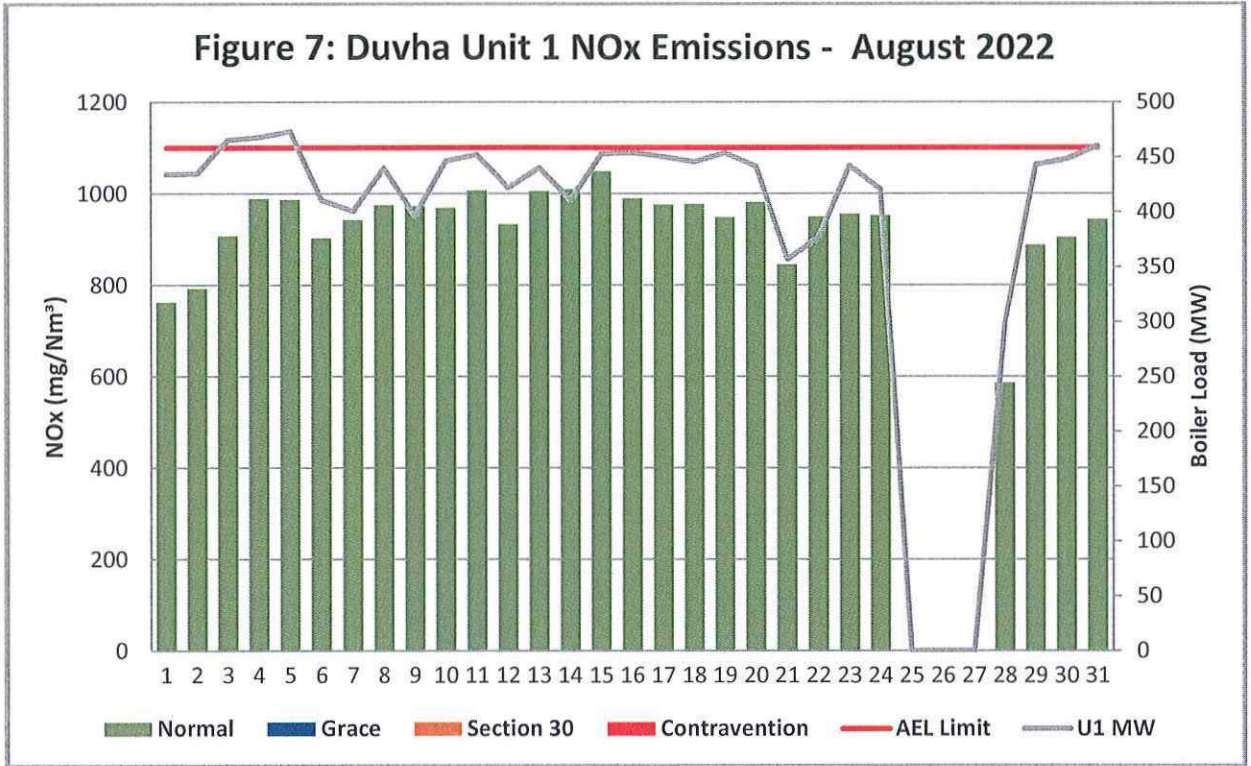


Figure 8: Duvha Unit 4 NOx Emissions - August 2022

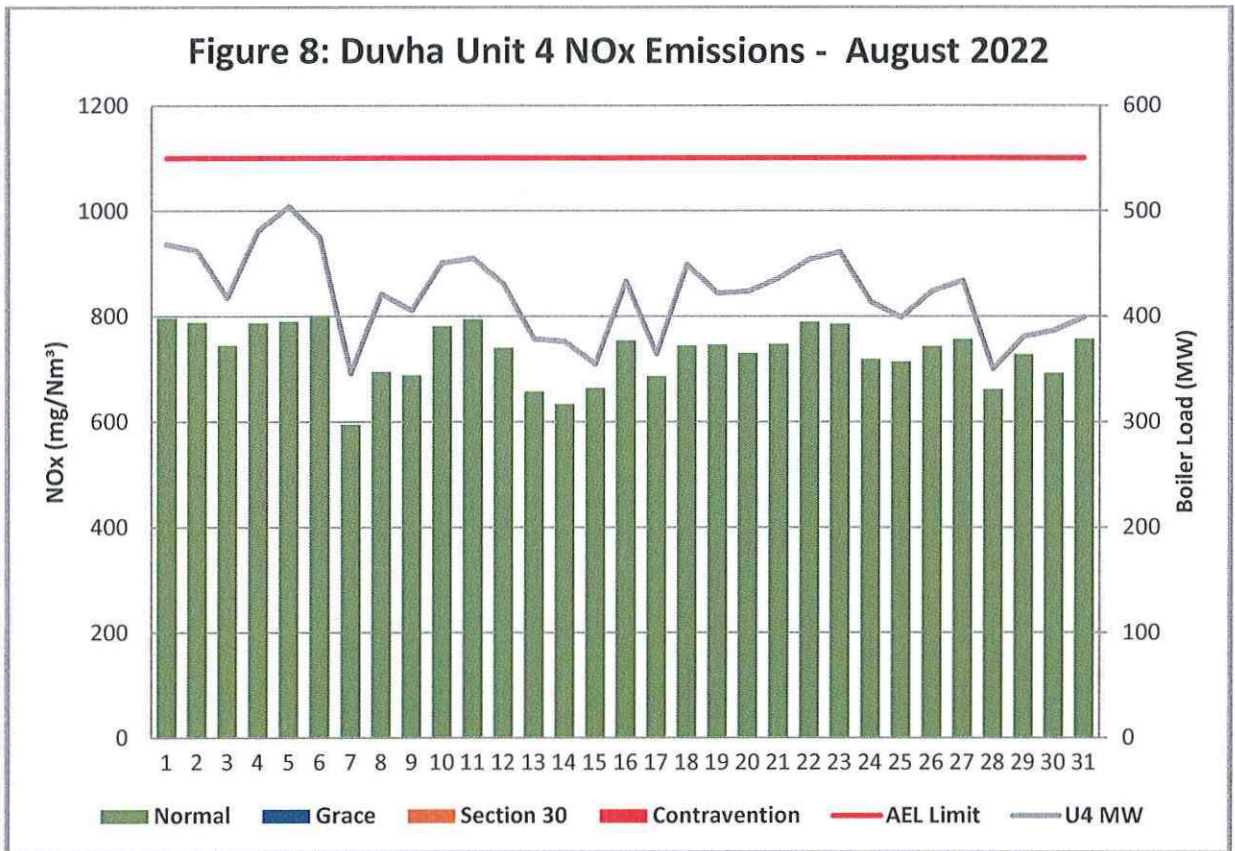
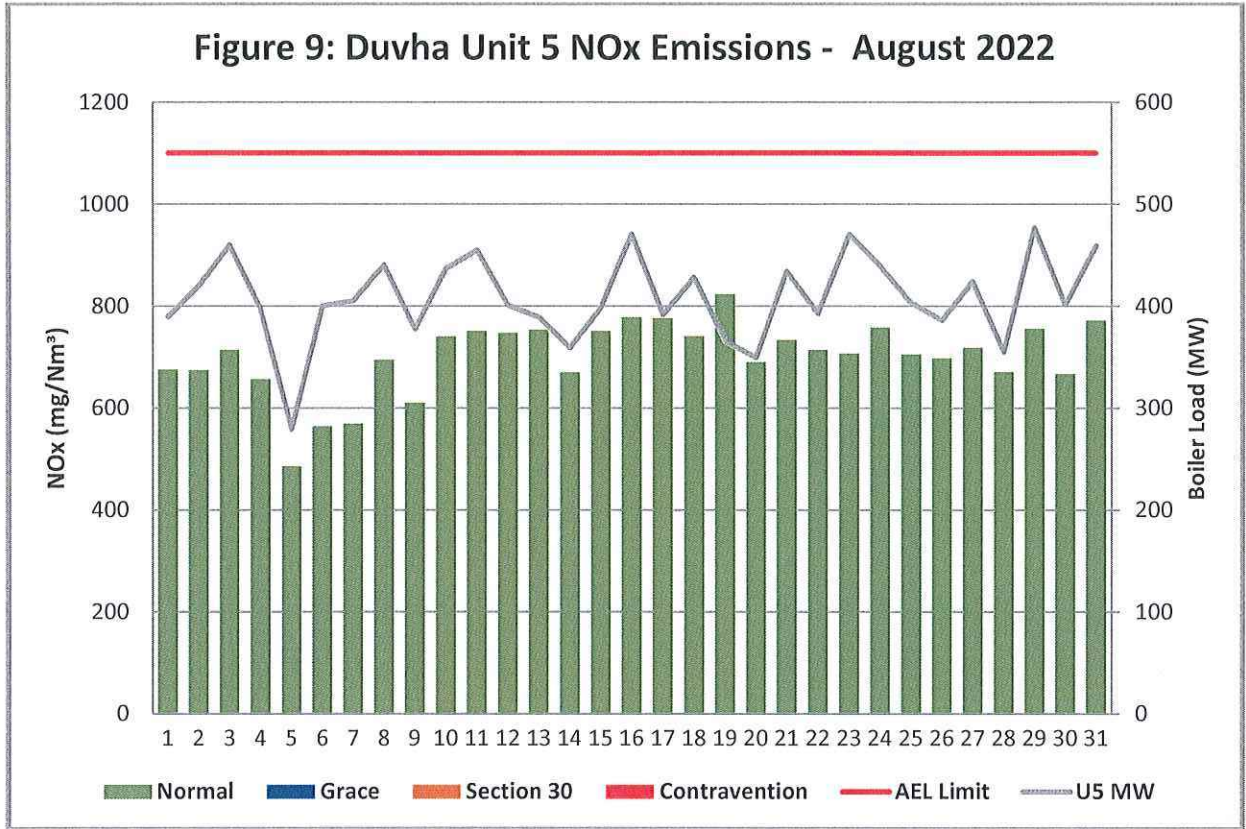


Figure 9: Duvha Unit 5 NOx Emissions - August 2022



7 SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1	Event 1		Event 2	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>	<i>10:00 pm</i>	<i>2022/08/24</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>	<i>12:15 pm</i>	<i>2022/08/25</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>00:14:15</i>	DD:HH:MM
Fires in time			<i>6:25 am</i>	<i>2022/08/28</i>
Synch. to Grid (or BC)	<i>4:20 pm</i>	<i>2022/07/31</i>	<i>11:05 am</i>	<i>2022/08/28</i>
Fires in to BC (duration)		DD:HH:MM	<i>00:04:40</i>	DD:HH:MM
Emissions below limit from BC (end date)			<i>not > limit</i>	<i>not > limit</i>
Emissions below limit from BC (duration)		DD:HH:MM	<i>n/a</i>	DD:HH:MM

Unit No.4	Event 1		Event 2		Event 3	
Breaker Open (BO)	<i>9:30 am</i>	<i>2022/08/03</i>	<i>11:15 pm</i>	<i>2022/08/06</i>	<i>10:40 am</i>	<i>2022/08/17</i>
Draught Group (DG) Shut Down (SD)	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>12:05 am</i>	<i>2022/08/07</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>00:00:50</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM
Fires in time			<i>6:15 am</i>	<i>2022/08/07</i>		
Synch. to Grid (or BC)			<i>11:15 am</i>	<i>2022/08/07</i>		
Fires in to BC (duration)		DD:HH:MM	<i>00:05:00</i>	DD:HH:MM		DD:HH:MM

Emissions below limit from BC (end date)			12:00 am	2022/08/09		
Emissions below limit from BC (duration)		DD:HH:MM	01:12:45	DD:HH:MM		DD:HH:MM

Unit No.5	<i>Event 1</i>	
Breaker Open (BO)	7:50 am	2022/08/05
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
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. GENERAL

Units 2, 3, and 4 were offload during the month of August 2022.

Exceedances:

Unit 4:

08/08/2022

- Cold unit light up.

13-14/08/2022

- SO3 plant tripped due to low duct temperature,
- Full left hand dust hoppers,
- Electrostatic Precipitator (ESP) field 1.1 kept on blowing fuses.

16/08/2022

- Dust Handling plant (DHP) kept on tripping,
- Blocked DHP airlift vessel

24/08/2022

- ESP fields were off due to communication fault between the DCS and PPMS.

27/08/2022

- Left hand dust hopper no 4 was blocked.

29/08/2022

- High back-end temperatures due to low sootblowers availability.

Unit 5:

05/08/2022

- Hot unit light up.

07-09/08/2022

- Electrostatic Precipitator fields 1.2, 1.5 and 4.4 were tripping on undervoltage,
- SO3 plant injection was fluctuating,
- SO3 plant was switched off for replacement of sulphur auto valve block,
- High Dust Handling plant silo level

11/08/2022

- SO3 plant tripped,
- Faulty plate rapper sequence

13-14/08/2022

- SO3 plant injection kept fluctuating.
- High back-end temperatures after sootblowing conducted.

16/08/2022

- SO3 plant injection kept fluctuating.
- ESP field 3.4 kept on tripping.

18-19/08/2022

- SO3 plant injection kept fluctuating and tripped.
- High back-end temperatures.
- Faulty sootblower system.

21/08/2022

- Left hand DHP Aeroslide heater temperature low.
- Low sootblowers availability.

23/08/2022

- SO3 plant injection kept fluctuating and tripped.
- Faulty Lance sootblower.

25/08/2022

- High back-end temperatures due to low sootblowers availability.

27/08/2022

- Faulty sootblowing system.

29/08/2022

- High back-end temperatures due to low sootblowers availability.

The averages Oxygen(O2) and Carbon Dioxide (CO2) data from the QAL 2 tests reports were used for reporting for Units 1, 2,4, 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

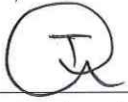
Refer to addendum A


Boiler Plant Engineering
Manager

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

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Duvha Power Station:

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Manager
Operating
Manager
Maintenance
Manager
Production
Manager
Boiler Engineering Manager
System Engineer
Environmental Manager

