Eskom

DECEMBER 2020

MATLA POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License 17/4/AEL/MP312/11/14

1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Dec-2020
	Coal	Tons	*1 475 000*	*952 967*
	Fuel Oil	Tons	*2 500*	*1 292*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Production Rate Dec-2020**
	Energy	GWh	*2 567*	*1 642*
	Ash	Tons	*471 000*	*287 796*
	RE PM	kg/MWh	*not specified*	*0,915*

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	*16-24*	*18,71*
Sulphur Content	%	*0.8-1.1*	*1,00*
Ash Content	%	*21-40*	*30,20*

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO_2	NO
South	*200*	*3500*	*1200*
Unit 4	*200*	*3500*	*1200*
Unit 5	*100*	*3500*	*1200*
Unit 6	*100*	*3500*	*1200*

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Dec-2020
South	*Electro Static Precipators (ESP)*	*99,524%*
Unit 4	*Electro Static Precipators (ESP)*	*99,313%*
Unit 5	*Electro Static Precipators (ESP)*	*98,768%*
Unit 6	*Electro Static Precipators (ESP)*	*99,599%*

Note: Abatement plant does not have bypass mode operation, hence plant 100% Utilised.

5 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	PM	SO_2	NO	CO_2	O_2
South	*87,8*	*75,8*	*75,8*		*100,0*
Unit 4	*80,6*	*99,9*	*100,0*		*100,0*
Unit 5	*41,4*	*99,5*	*0,0*		*99,8*
Unit 6	*79,9*	*99,3*	*99,5*		*99,1*

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of December-2020

Associated Unit/Stack	PM	SOx	NOx	CO_2
Unit 1	155,2	2 375,8	773,7	
Unit 2	258,5	3 291,0	1 079,6	
Unit 3	277,4	3 419,8	1 119,3	
Unit 4	325,1	4 051,3	1 412,5	
Unit 5	327,2	0,0	0,0	
Unit 6	159,6	2 281,8	922,0	
SUM	1 503,0	15 419,7	5 307,0	

Table 6.2: Operating days in compliance to PM AEL Limit - December 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
South	21	4	6	0	10	168,2
Unit 4	20	2	9	0	11	178,2
Unit 5	1	3	11	0	14	416,6
Unit 6	17	2	4	0	6	166,4
SUM	**59**	**11**	**30**	**0**	**41**	

Table 6.3: Operating days in compliance to SOx AEL Limit - December 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
South	31	0	0	0	0	2 018,6
Unit 4	31	0	0	0	0	2 197,8
Unit 5	0	0	0	0	0	
Unit 6	26	0	0	0	0	2 211,5
SUM	**88**	**0**	**0**	**0**	**0**	

Table 6.4: Operating days in compliance to NOx AEL Limit - December 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
South	31	0	0	0	0	660,5
Unit 4	31	0	0	0	0	763,7
Unit 5	0	0	0	0	0	
Unit 6	26	0	0	0	0	876,7
SUM	**88**	**0**	**0**	**0**	**0**	

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

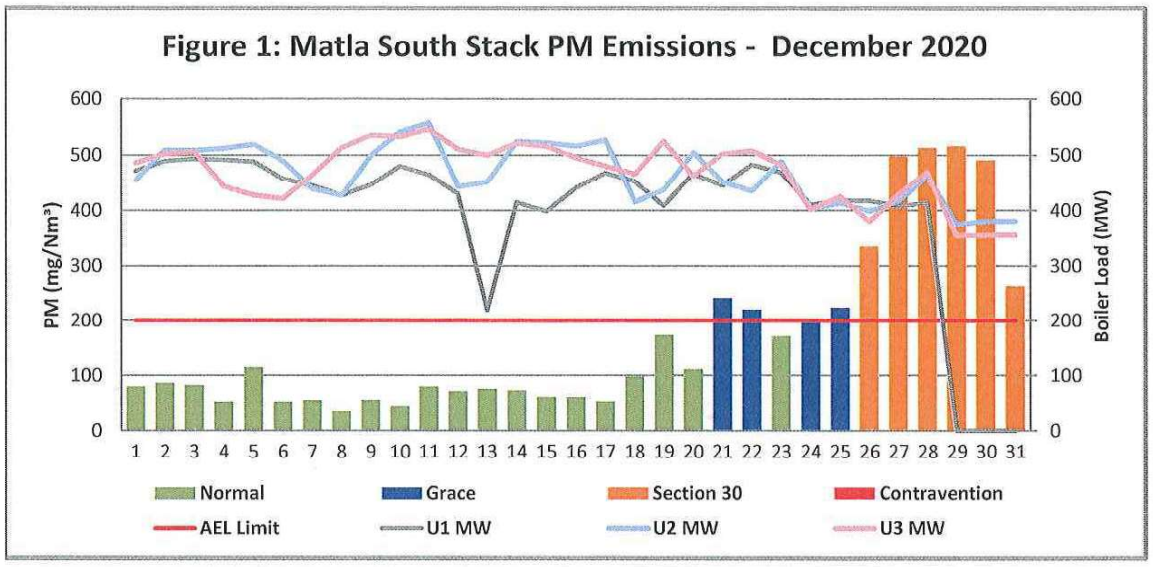


Figure 1: Matla South Stack PM Emissions - December 2020
PM (mg/Nm³)
Boiler Load (MW)
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

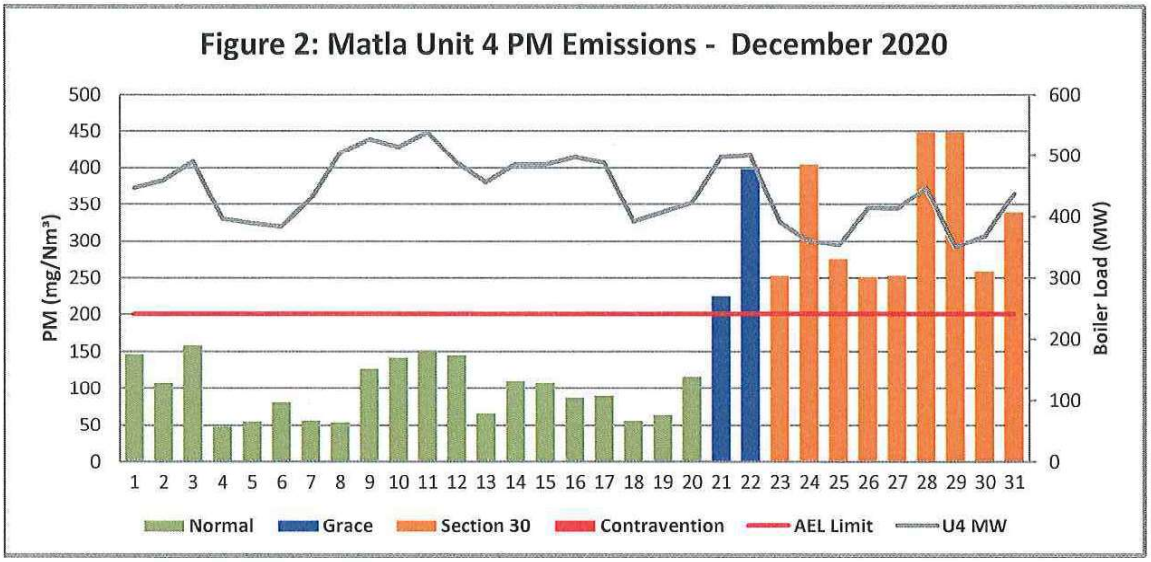


Figure 2: Matla Unit 4 PM Emissions - December 2020
PM (mg/Nm³)
Boiler Load (MW)
500
450
400
350
300
250
200
150
100
50
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

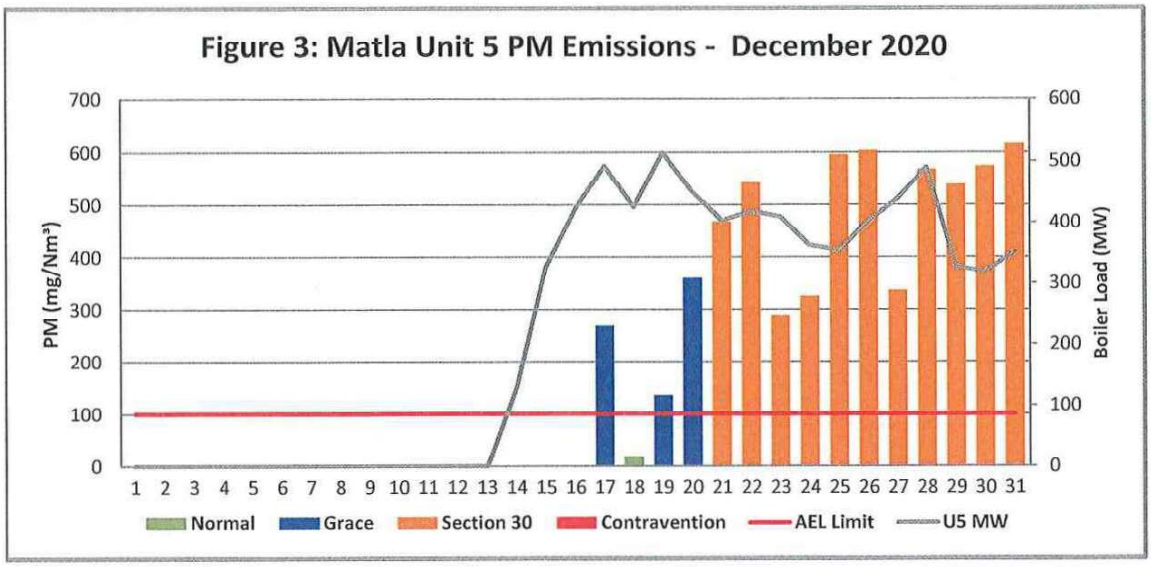


Figure 3: Matla Unit 5 PM Emissions - December 2020
PM (mg/Nm³)
Boiler Load (MW)
0
100
200
300
400
500
600
700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

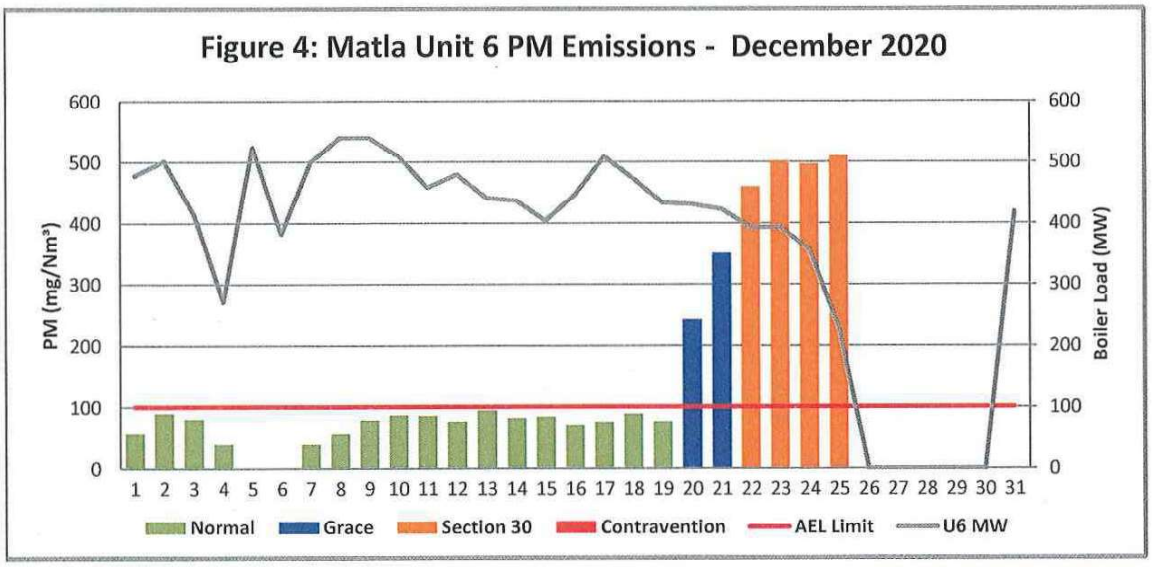


Figure 4: Matla Unit 6 PM Emissions - December 2020
PM (mg/Nm³)
Boiler Load (MW)
0
100
200
300
400
500
600
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

Figure 5: Matla South Stack SOx Emissions - December 2020

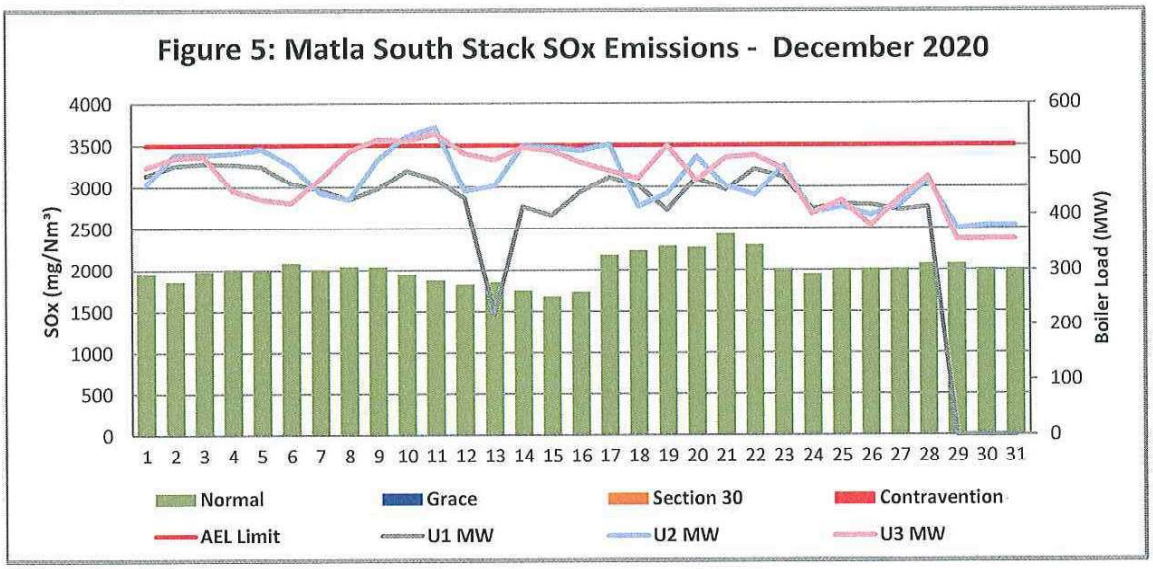
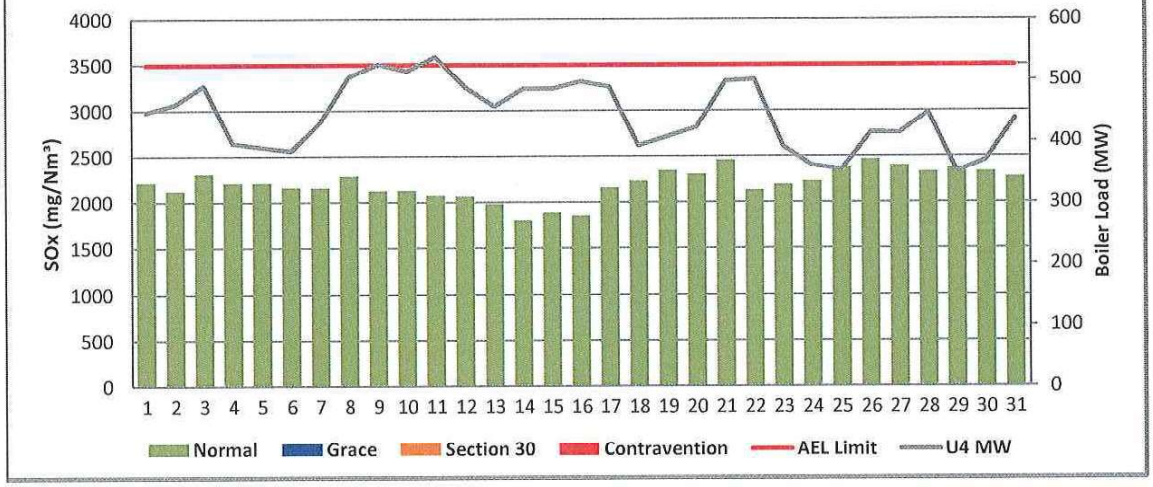


Figure 6: Matla Unit 4 SOx Emissions - December 2020



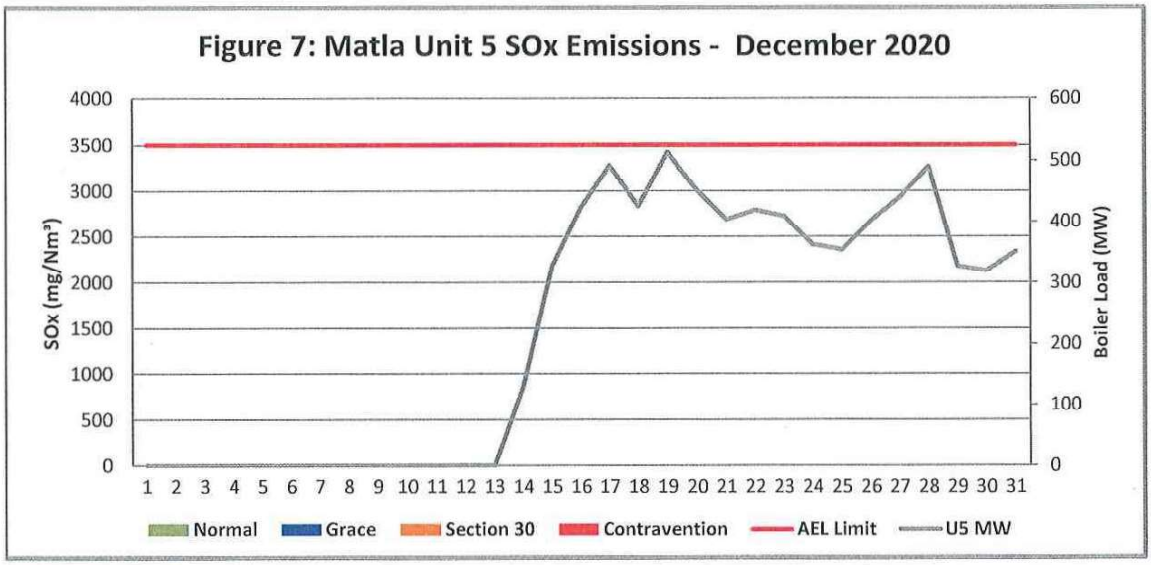


Figure 7: Matla Unit 5 SOx Emissions - December 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

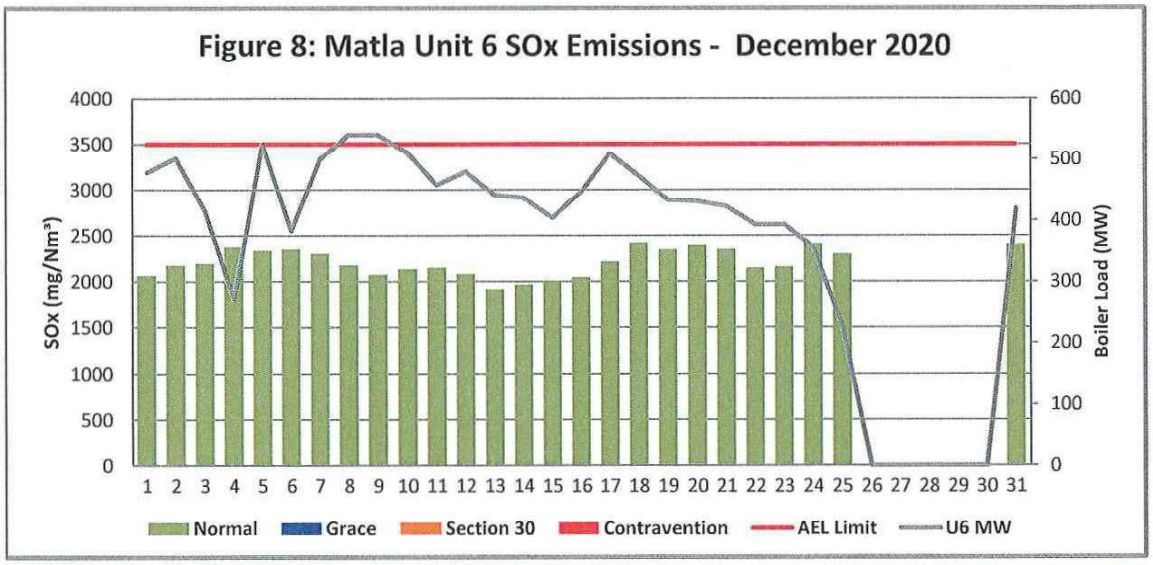


Figure 8: Matla Unit 6 SOx Emissions - December 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

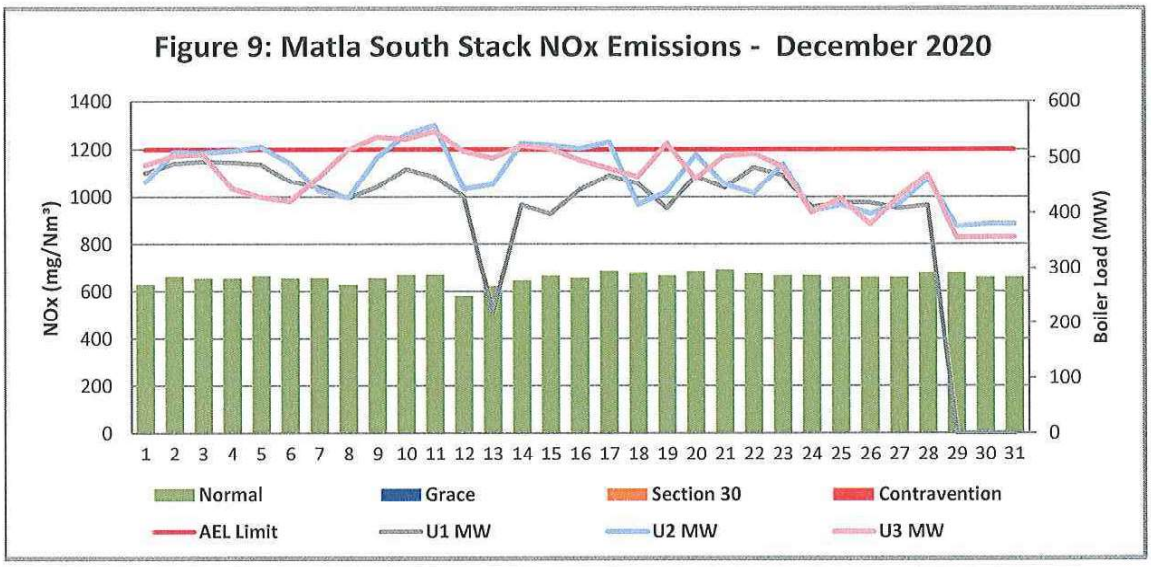


Figure 9: Matla South Stack NOx Emissions - December 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

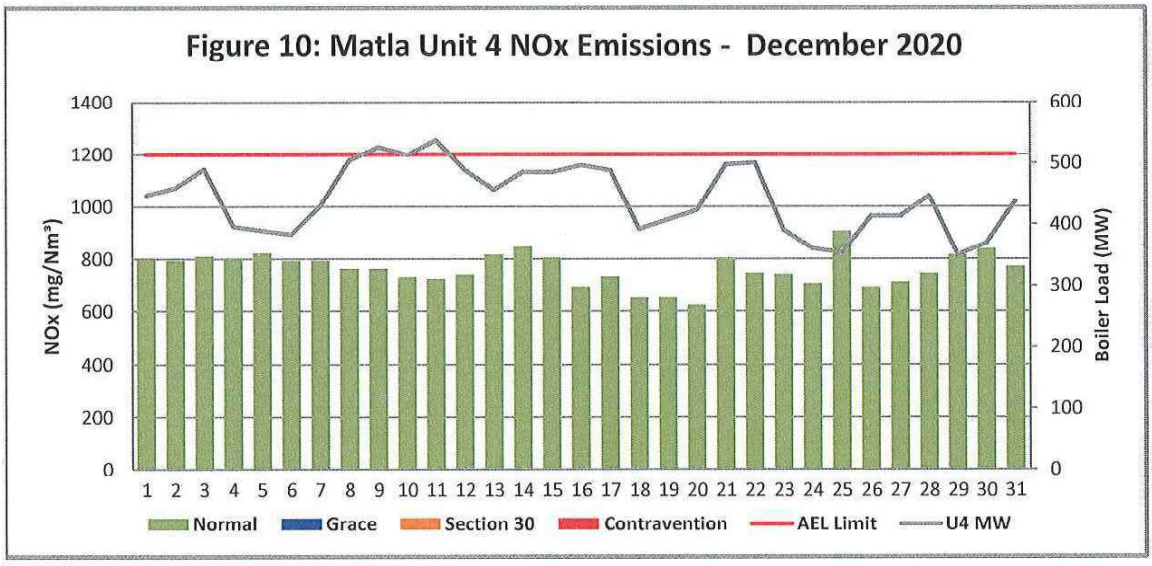


Figure 10: Matla Unit 4 NOx Emissions - December 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

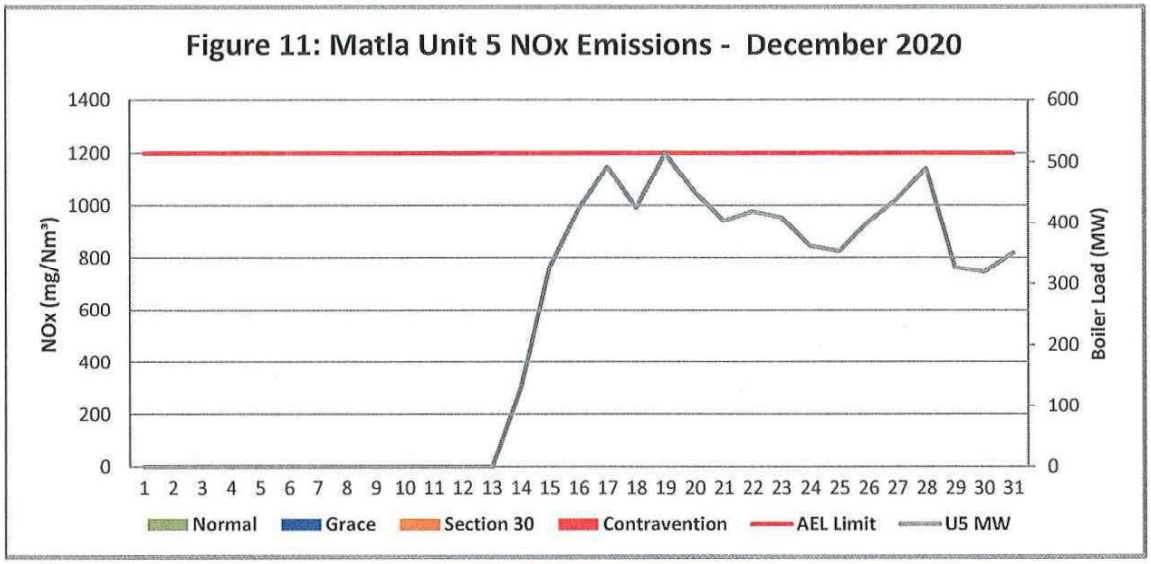


Figure 11: Matla Unit 5 NOx Emissions - December 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

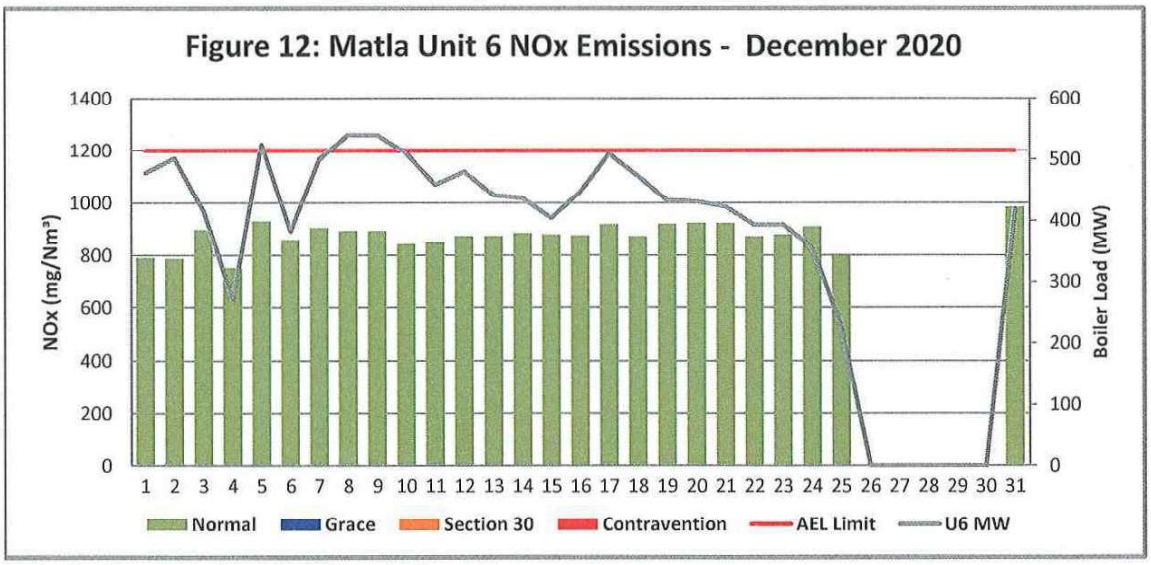


Figure 12: Matla Unit 6 NOx Emissions - December 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1. PM Start-up information for the month of December-2020

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 1		Unit 1		Unit 1	
Breaker Open (BO)	9:10 PM	2020/12/12	9:25 AM	2020/12/15	8:20 AM	2020/12/19	4:45 AM	2020/12/28
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	4:05 AM	2020/12/29
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM	00:23:20	DD:HH:MM
Fires in time	9:10 PM	2020/12/12	9:25 AM	2020/12/15	8:20 AM	2020/12/19	7:40 AM	2021/01/02
Synch. to Grid (or BC)	2:20 PM	2020/12/13	9:30 AM	2020/12/15	2:15 PM	2020/12/19	6:40 PM	2021/01/02
Fires in to BC (duration)	00:17:10	DD:HH:MM	00:00:05	DD:HH:MM	00:05:55	DD:HH:MM	00:11:00	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	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	n/a	DD:HH:MM	n/a	DD:HH:MM

South Stack ...cont.	Event 5		Event 6		Event 7		Event 8	
Unit No.	no event		no event		no event		no event	
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM		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		DD:HH:MM		DD:HH:MM

Unit No. 4	Event 1		Event 2		Event 3		Event 4	
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM		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		DD:HH:MM		DD:HH:MM

Unit No. 5	Event 1		Event 2		Event 3		Event 4	
Breaker Open (BO)	BO previously	BO previously	10:45 AM	2020/12/18				
Draught Group (DG) Shut Down (SD)	n/a	n/a	10:45 AM	2020/12/18				
BO to DG SD (duration)	n/a	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	12:00 PM	2020/12/12	10:45 AM	2020/12/18				
Synch. to Grid (or BC)	4:30 AM	2020/12/16	6:05 PM	2020/12/18				
Fires in to BC (duration)	03:16:30	DD:HH:MM	00:07:20	DD:HH:MM		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		DD:HH:MM

Unit No. 6	Event 1		Event 2		Event 3		Event 4	
Breaker Open (BO)	2:00 AM	2020/12/04	1:10 AM	2020/12/25				
Draught Group (DG) Shut Down (SD)	2:00 AM	2020/12/04	1:10 AM	2020/12/25				
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	2:00 AM	2020/12/04	8:50 PM	2020/12/30				
Synch. to Grid (or BC)	5:15 PM	2020/12/06	4:20 AM	2020/12/31				
Fires in to BC (duration)	02:15:15	DD:HH:MM	00:07:30	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	11:00 PM	2021/01/04				
Emissions below limit from BC (duration)	n/a	DD:HH:MM	04:18:40	DD:HH:MM		DD:HH:MM		DD:HH:MM

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of December-2020 in mg/Nm³

[Include reference to once off test showing typical emissions rates during fires in and SD]

Remember to add attachments here; see ReportAddendum Tab

Reserved for Addendum XXXX

11 General

Unit 5 and 6 PM monitor reliability less than 80% due monitor maxing out during high emissions. South Stack So2, NO and CO2 reliability less than 80% because monitor lost data(defective). Unit 5 Gases defective, PCB to be replaced.

29/01/2020
Boiler Engineering Date

2021-01-19
Environmental Department Date

General Manager Date

Compiled by:	Boiler Engineering Department	ESP & SO_3 System Engineer
For:	Department of Environmental Affairs and Tourism	Chief Air Pollution Control Officer
Copies:	Eskom Environmental Management	D Herbst B Mccourt
	Group Technology Engineering	R Rampiar E. Patel
	Matla Power Station:	Engineering Manager Operating Manager Maintenance Manager Unit Production Manager Boiler Engineering Manager System Engineer Environmental Officer Performance and Test Production Manager

ADDENDUM TO MONTHLY EMISSIONS REPORT

8 EMERGENCY GENERATION

Emergency Generation *(This is only required for stations that are requested to report on this information)*

Table 8. Emergency Generation per unit for the month of December 2020

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Emergency Generation hours declared by national Control						
Emergency Hours declared including hours after stand down						
Hours over the Limit during Emergency Generation						

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of December 2020

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
(Insert name of affected	*(Insert root cause for incident)*	*(Insert emissions associated with incident)*	*(Insert dispersion model information where applicable)*	*(Insert mitigation measures taken)*	*(Insert date of implementation of*

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 Acknowledg-ment	Date DEA Acceptabe	Comments / Reference No.
South Stack	2020/12/21		Poor coal qualities, low instrument air(dust plaant), Dust plant bloackages and SO3 fluctuations which led to high hopper levels. High hopper levels caused high emissions.	Load loss taken, brought more compressors.	Yes				
4	2020/12/21	2021/01/05	Poor coal qualities, low instrument air(dust plaant), Dust plant bloackages and SO3 fluctuations which led to high hopper levels. High hopper levels caused high emissions.	Load loss taken, brought more compressors.	Yes				
5	2020/12/24	2021/01/05	Poor coal qualities, low instrument air(dust plaant), Dust plant bloackages and SO3 fluctuations which led to high hopper levels. High hopper levels caused high emissions.	Load loss taken, brought more compressors.	Yes				
6	2020/12/24	2020/12/25	Poor coal qualities, low instrument air(dust plaant), Dust plant bloackages and SO3 fluctuations which led to high hopper levels. High hopper levels caused high emissions.	Load loss taken, brought more compressors.	Yes				