Eskom

MARCH 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 Mar-2020
	Coal	Tons	*1 475 000*	*891 587*
	Fuel Oil	Tons	*2 500*	*1 103*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Production Rate Mar-2020**
	Energy	GWh	*2 567*	*1 777*
	Ash	Tons	*471 000*	*233 061*
	RE PM	kg/MWh	*not specified*	*0,571*

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	*16-24*	*20,49*
Sulphur Content	%	*0.8-1.1*	*1,00*
Ash Content	%	*21-40*	*26,14*

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 Mar-2020
South	*Electro Static Precipators (ESP)*	*99,609%*
Unit 4	*Electro Static Precipators (ESP)*	*99,253%*
Unit 5	*Electro Static Precipators (ESP)*	*99,646%*
Unit 6	*Electro Static Precipators (ESP)*	*99,301%*

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

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	PM	SO_2	NO	CO_2	O_2
South	*95,2*	*57,4*	*57,7*	*53,9*	*38,7*
Unit 4	*87,6*	*99,9*	*99,9*	*86,7*	*99,9*
Unit 5	*78,8*	*85,1*	*85,1*	*85,1*	*85,1*
Unit 6	*92,6*	*80,8*	*80,8*	*80,8*	*48,9*

6 EMISSION PERFORMANCE

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

Associated Unit/Stack	PM	SOx	NOx	
Unit 1	158,8	3 679,0	1 001,7	
Unit 2	139,0	3 341,6	910,2	
Unit 3	140,3	2 750,2	733,6	
Unit 4	288,4	2 619,7	1 863,5	
Unit 5	127,7	2 863,6	840,3	
Unit 6	160,1	2 892,7	1 021,5	
SUM	1 014,3	18 146,8	6 371,0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
South	30	1	0	0	1	89,4
Unit 4	19	7	0	0	7	174,9
Unit 5	22	6	1	0	7	102,4
Unit 6	24	6	1	0	7	106,5
SUM	**95**	**20**	**2**	**0**	**22**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
South	31	0	0	0	0	2 121,0
Unit 4	27	0	0	0	0	1 598,7
Unit 5	29	0	0	0	0	1 913,5
Unit 6	31	0	0	0	0	1 815,0
SUM	**118**	**0**	**0**	**0**	**0**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
South	31	0	0	0	0	577,4
Unit 4	19	0	0	8	8	1 136,5
Unit 5	29	0	0	0	0	562,8
Unit 6	31	0	0	0	0	648,6
SUM	**110**	**0**	**0**	**8**	**8**	

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

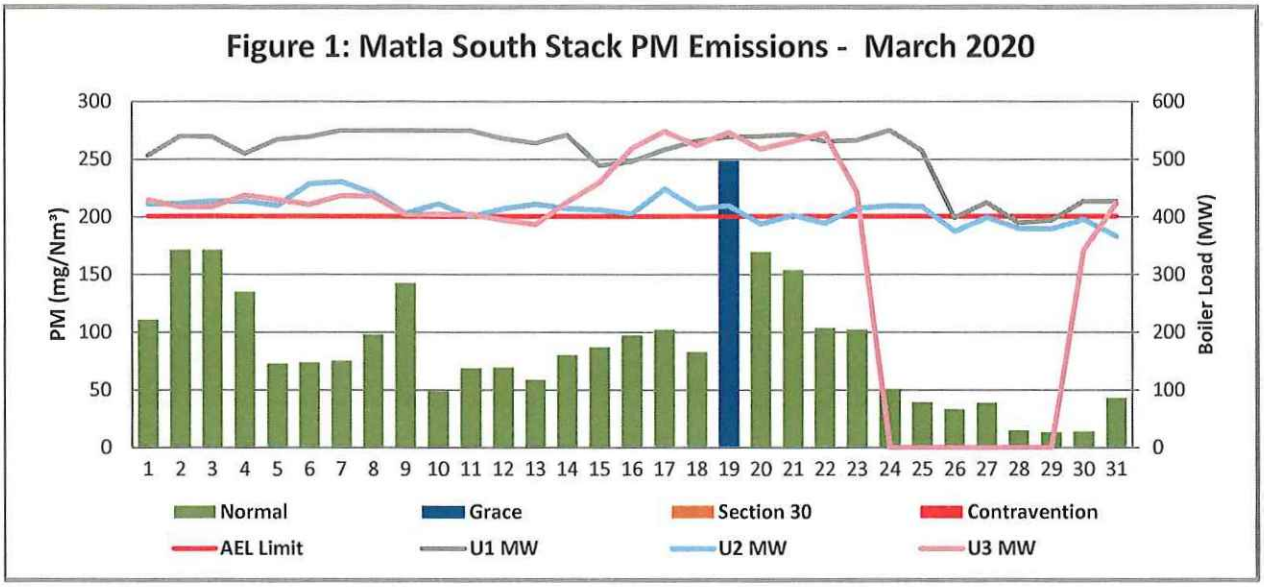


Figure 1: Matla South Stack PM Emissions - March 2020
PM (mg/Nm³)
Boiler Load (MW)
300
250
200
150
100
50
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

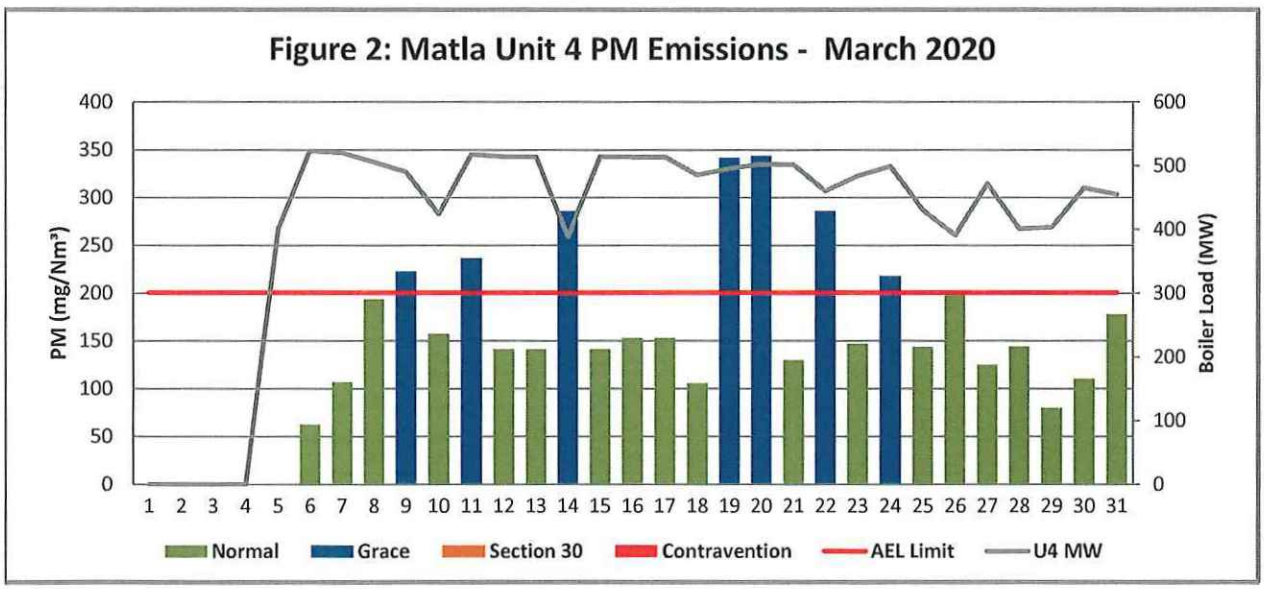


Figure 2: Matla Unit 4 PM Emissions - March 2020
PM (mg/Nm³)
Boiler Load (MW)
400
350
300
250
200
150
100
50
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

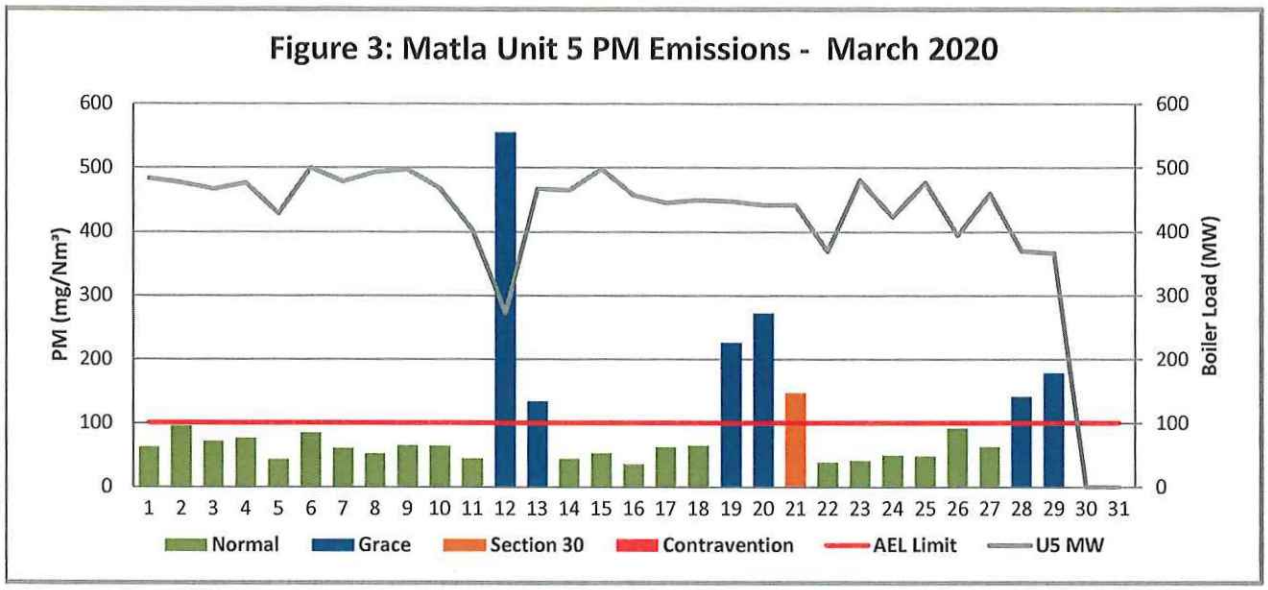


Figure 3: Matla Unit 5 PM Emissions - March 2020
PM (mg/Nm³)
Boiler Load (MW)
0
100
200
300
400
500
600
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

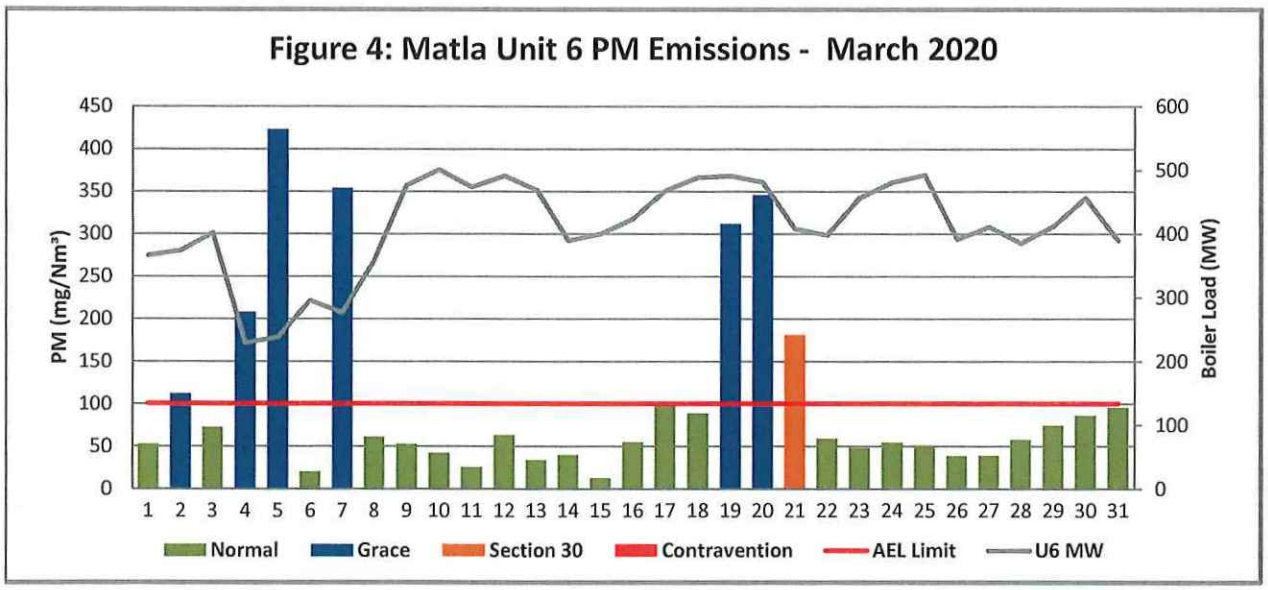


Figure 4: Matla Unit 6 PM Emissions - March 2020
PM (mg/Nm³)
Boiler Load (MW)
0
50
100
150
200
250
300
350
400
450
0
100
200
300
400
500
600
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

Figure 5: Matla South Stack SOx Emissions - March 2020

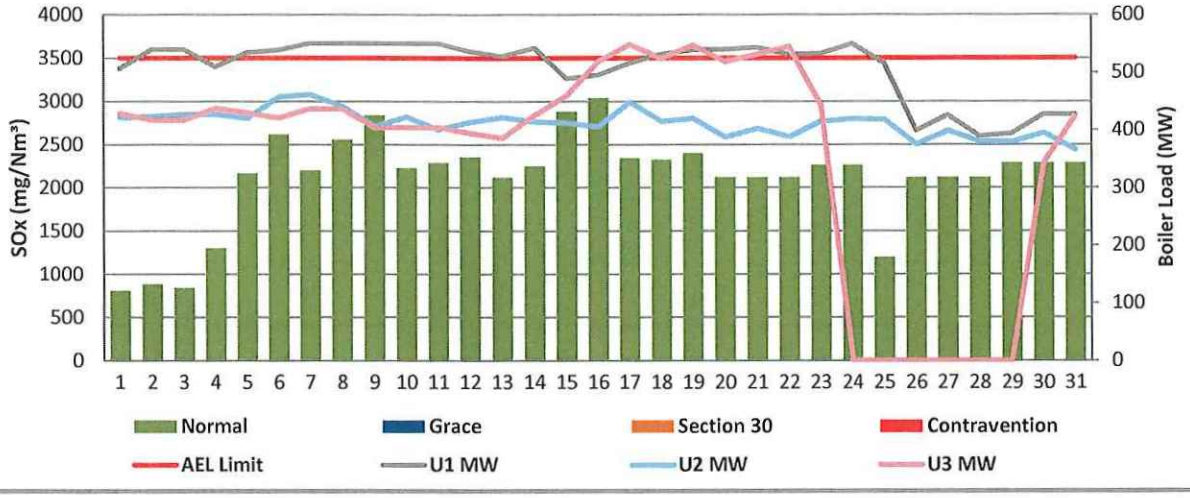
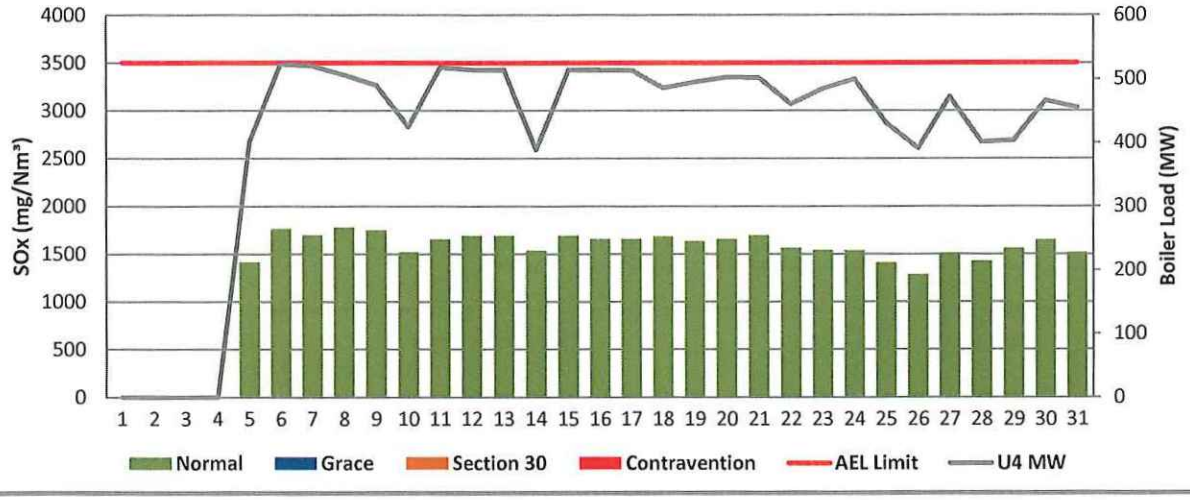


Figure 6: Matla Unit 4 SOx Emissions - March 2020



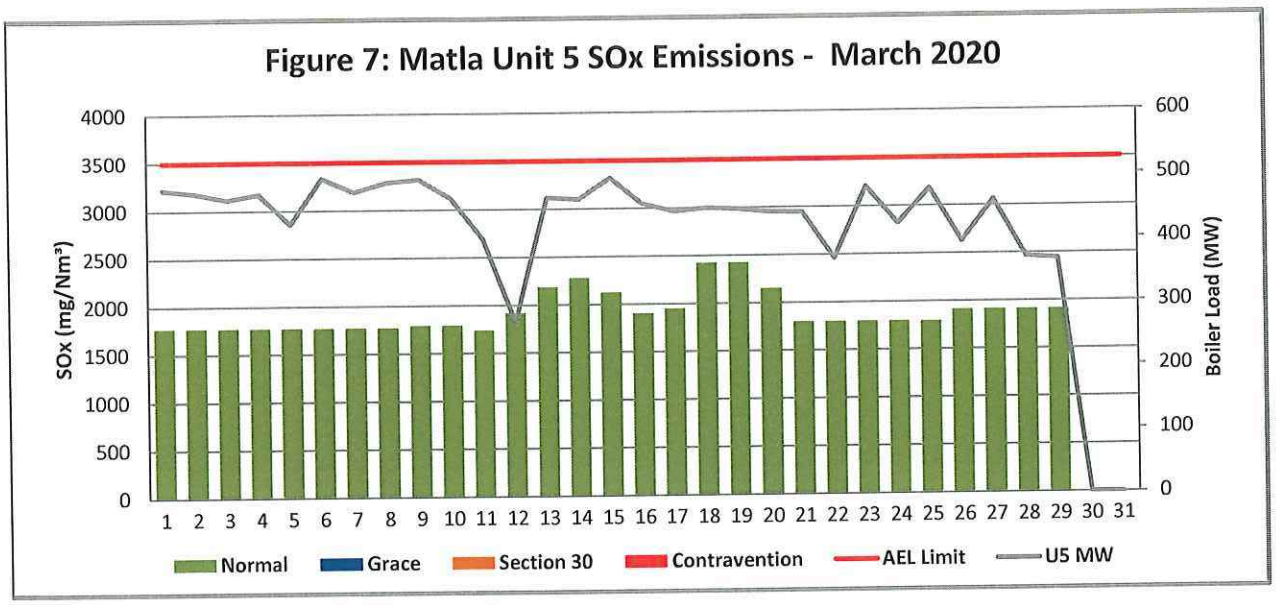


Figure 7: Matla Unit 5 SOx Emissions - March 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

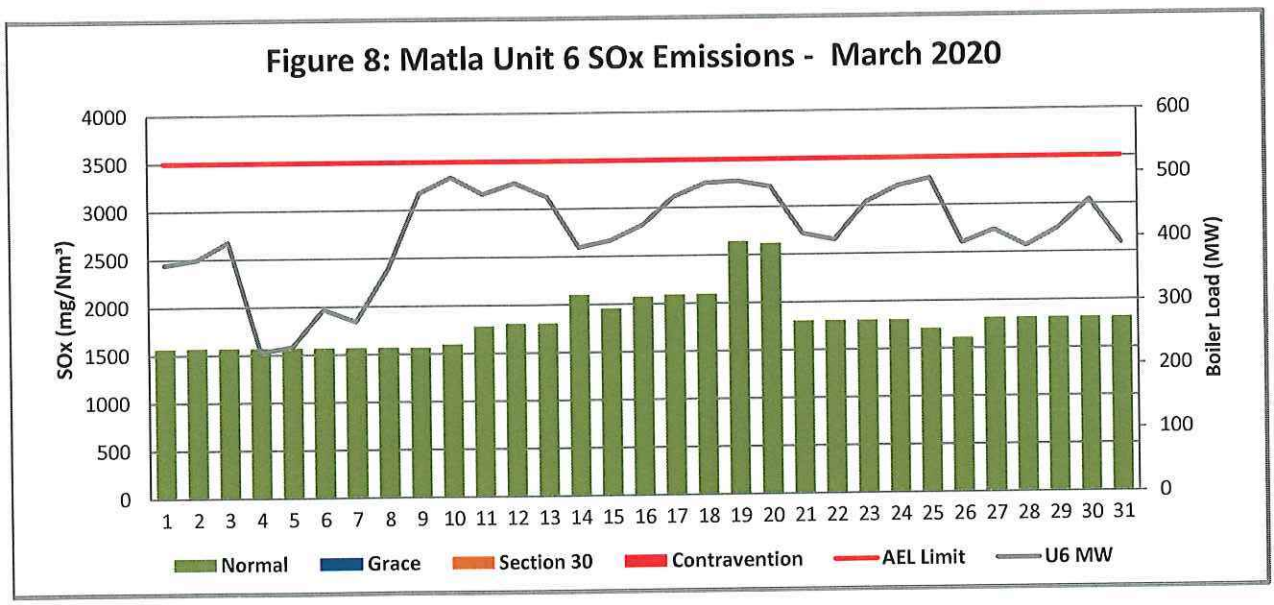


Figure 8: Matla Unit 6 SOx Emissions - March 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

Figure 9: Matla South Stack NOx Emissions - March 2020

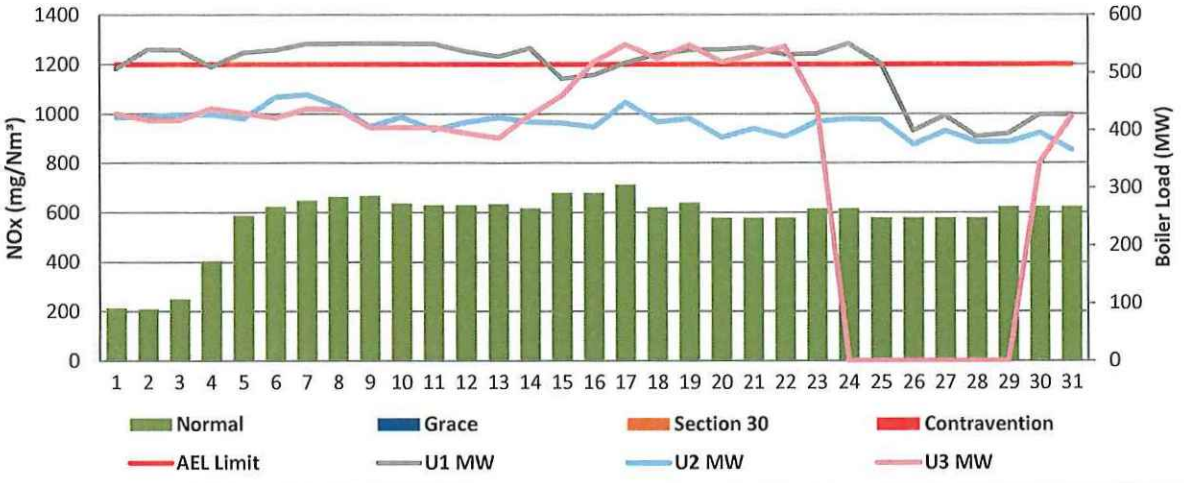
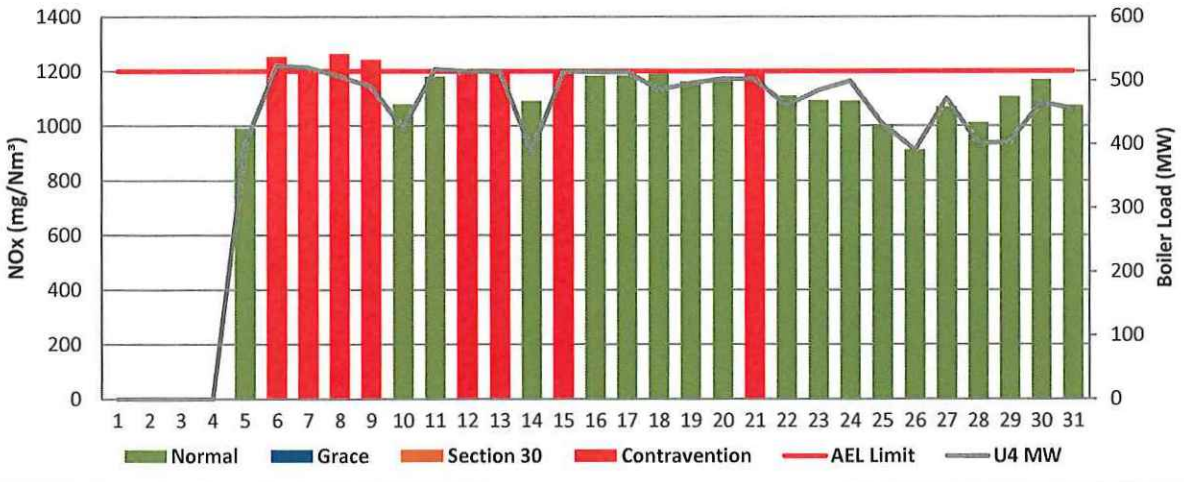


Figure 10: Matla Unit 4 NOx Emissions - March 2020



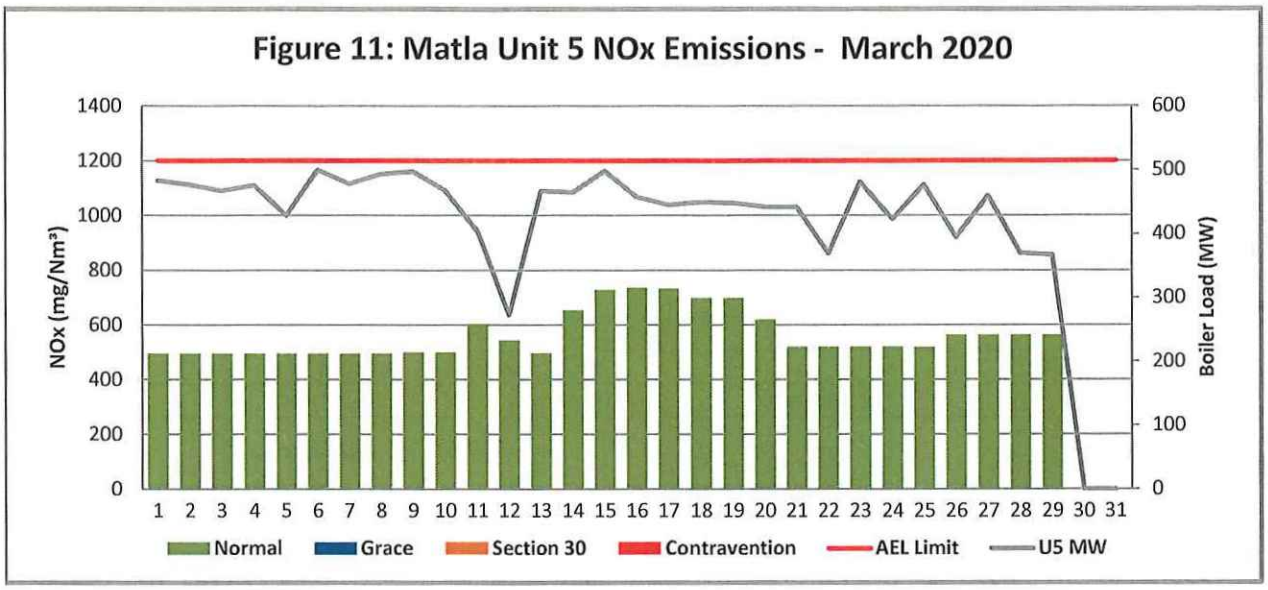


Figure 11: Matla Unit 5 NOx Emissions - March 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

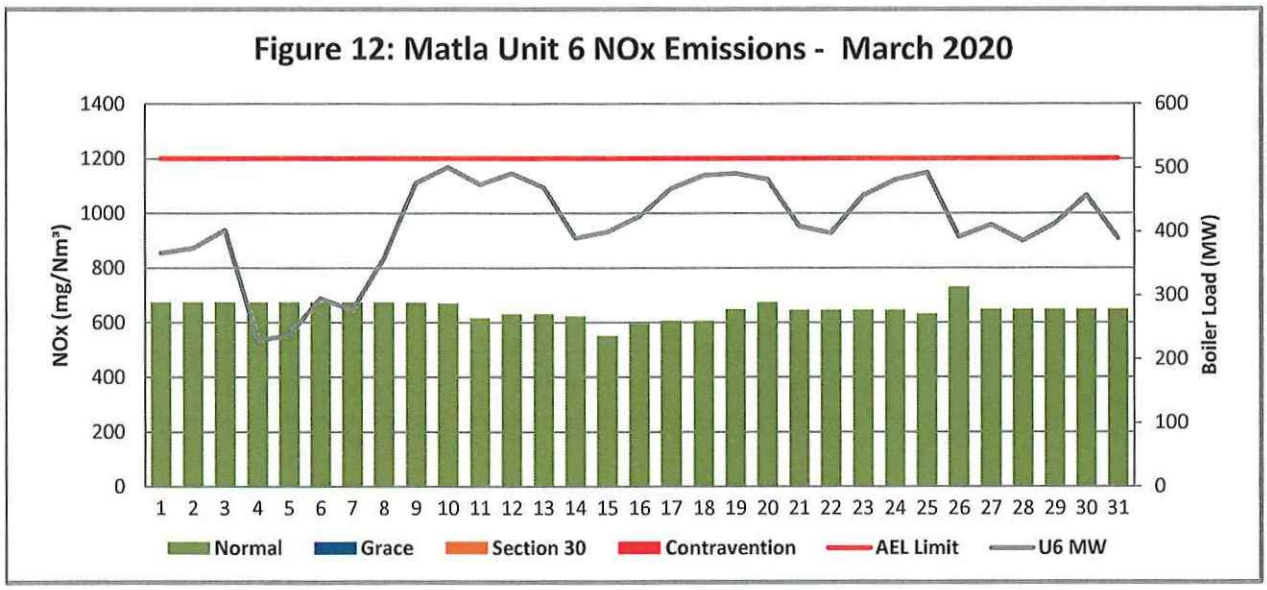


Figure 12: Matla Unit 6 NOx Emissions - March 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

7 SHUT DOWN AND LIGHT UP INFORMATION

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

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	no event		no event		Unit 3		no event	
Breaker Open (BO)					5:20 AM	2020/03/23		
Draught Group (DG) Shut Down (SD)					3:10 AM	2020/03/24		
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM	00:21:50	DD:HH:MM		DD:HH:MM
Fires in time					8:30 PM	2020/03/29		
Synch. to Grid (or BC)					9:10 AM	2020/03/30		
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM	00:12:40	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)					not > limit	not > limit		
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM	n/a	DD:HH:MM		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	5:40 AM	2020/03/03						
Synch. to Grid (or BC)	11:40 AM	2020/03/05						
Fires in to BC (duration)	02:06:00	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit						
Emissions below limit from BC (duration)	n/a	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)	3:40 PM	2020/03/11	9:00 AM	2020/03/29				
Draught Group (DG) Shut Down (SD)	3:40 PM	2020/03/11	9:00 AM	2020/03/29				
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	3:40 PM	2020/03/11						
Synch. to Grid (or BC)	8:40 PM	2020/03/11						
Fires in to BC (duration)	00:05:00	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit						
Emissions below limit from BC (duration)	n/a	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM

Unit No. 6	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

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of March-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

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 March 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 March 2020

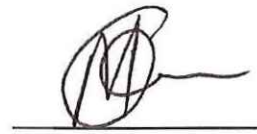
Source Code / Name	Root Cause Analysis	Calculation of Impacts / emissions associated with the incident	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence	Date measure will be implemen
(Insert name of	*(Insert root cause for incident)*	*(Insert emissions associated with incident)*	*(Insert dispersion model information where applicable)*	*(Insert mitigation measures taken)*	*(Insert date of*

10 S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

To be completed in the case of a S30 incident or a legal contravention:

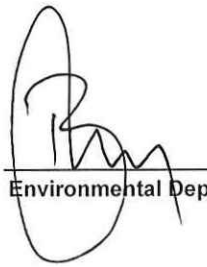
Unit no	Incident Start Date	Incident End Date	Incident Cause	Remedial action	S30 initial notification sent	Date S30 investigation report sent	Date DEA Acknowledg-ment	Date DEA Acceptabe	Comments / Reference No.
5	19/03/2020	22/03/2020	The sulphur plant tripped on Thursday for most of the day leading to the exceedances on Thursday (18th of March). The sulphur plant was returned to service but U4-6 SO3 plants struggled to get back to service. Once they were fully in service on Friday, high hopper levels were experienced during the weekend which led to ESP fields tripping.	Sulphur supply pump could not maintain the pressure and was replaced. The high hopper levels were cleared and fields put back in service.	Yes	24/03/2020			
6	19/03/2020	22/03/2020	The sulphur plant tripped on Thursday for most of the day leading to the exceedances on Thursday (18th of March). The sulphur plant was returned to service but U4-6 SO3 plants struggled to get back to service. Once they were fully in service on Friday, high hopper levels were experienced during the weekend which led to ESP fields tripping.	Sulphur supply pump could not maintain the pressure and was replaced. The high hopper levels were cleared and fields put back in service.	Yes	24/03/2020			

11 General



05-05-2020

Boiler Engineering Date



2020-05-05

Environmental Department Date

05/05/2020

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