Eskom

Generation

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Mr V Mahlangu

AND

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Date: 2020/02/24

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Total number of pages:
16

Total number of annexes:

MATLA POWER STATION

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

BOILER ENGINEERING MANAGER DATE

ENVIRONMENTAL MANAGER DATE

ENGINEERING MANAGER DATE

Eskom

JANUARY 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 Jan-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 Jan-2020
	Energy	GWh	2 567	1 128
	Ash	Tons	471 000	233 061
	RE PM	kg/MWh	not specified	0.930

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	16-24	
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 Jan-2020
South	*Electro Static Precipators (ESP)*	*99.509%*
Unit 4	*Electro Static Precipators (ESP)*	*99.512%*
Unit 5	*Electro Static Precipators (ESP)*	*99.525%*
Unit 6	*Electro Static Precipators (ESP)*	*99.396%*

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	*86.7*	*41.6*	*75.5*		*41.2*
Unit 4	*26.6*	*92.0*	*92.3*		*92.3*
Unit 5	*88.6*	*99.6*	*99.6*		*99.7*
Unit 6	*79.2*	*98.8*	*95.2*		*98.8*

6 EMISSION PERFORMANCE

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

Associated Unit/Stack	PM	SOx	NOx	CO_2
Unit 1	50.6	327.9	180.1	
Unit 2	280.6	3 396.8	1 127.6	
Unit 3	219.8	2 539.6	816.8	
Unit 4	188.1	718.2	510.7	
Unit 5	171.3	2 215.8	698.1	
Unit 6	138.4	1 983.2	738.5	
SUM	1 048.9	11 181.5	4 071.7	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
South	23	0	8	0	8	172.8
Unit 4	2	9	0	0	9	346.6
Unit 5	7	6	9	0	15	147.5
Unit 6	10	14	1	0	15	145.3
SUM	**42**	**29**	**18**	**0**	**47**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
South	31	0	0	0	0	2 102.0
Unit 4	13	0	0	0	0	1 237.9
Unit 5	23	0	0	0	0	1 861.2
Unit 6	28	0	0	0	0	1 612.6
SUM	**95**	**0**	**0**	**0**	**0**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
South	31	0	0	0	0	692.7
Unit 4	13	0	0	0	0	880.6
Unit 5	23	0	0	0	0	567.9
Unit 6	28	0	0	0	0	589.3
SUM	**95**	**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

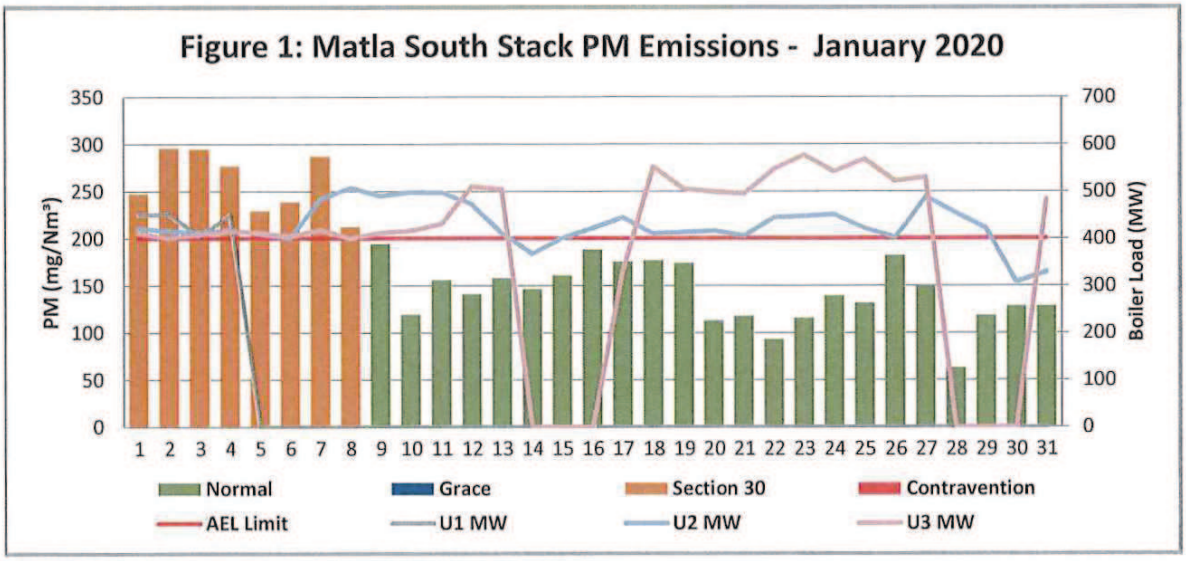
Figure 1: Matla South Stack PM Emissions - January 2020
PM (mg/Nm³)
Boiler Load (MW)
350
300
250
200
150
100
50
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

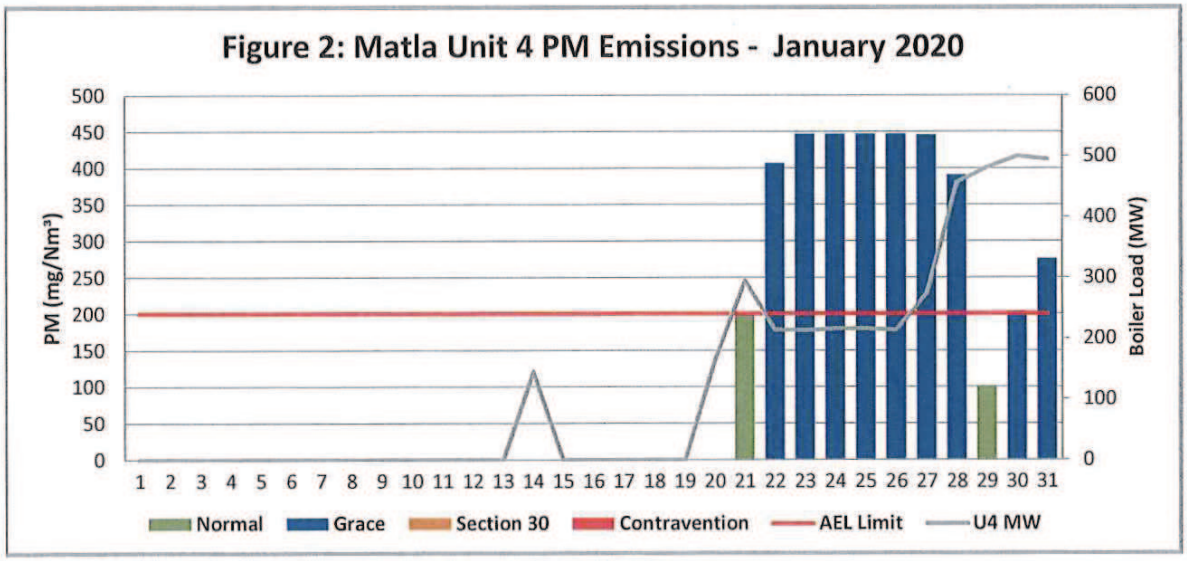
Figure 2: Matla Unit 4 PM Emissions - January 2020
PM (mg/Nm³)
Boiler Load (MW)
500
450
400
350
300
250
200
150
100
50
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

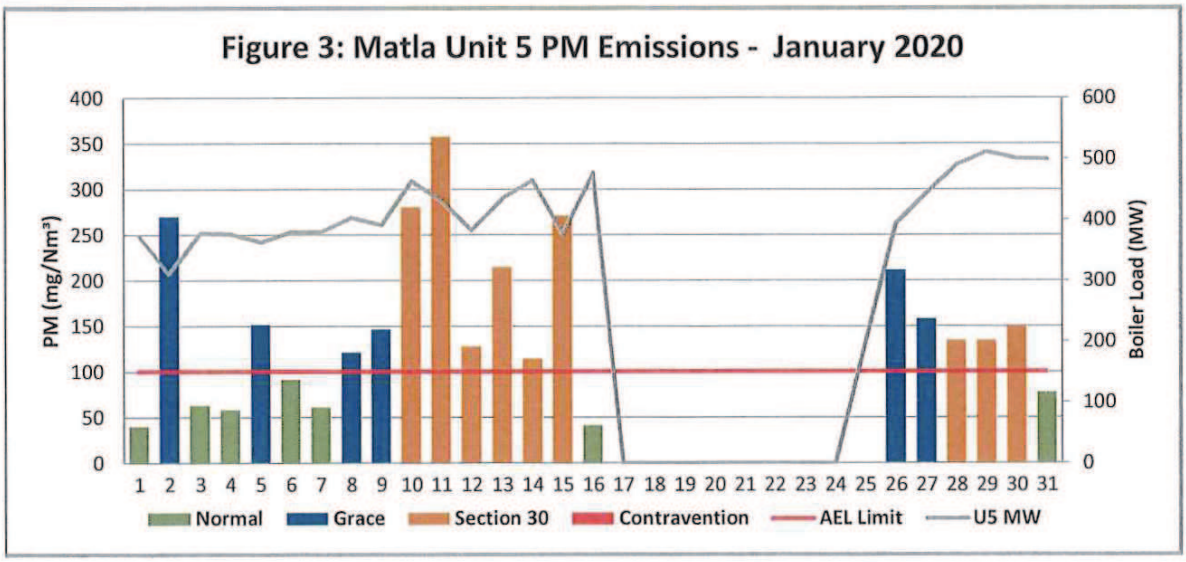
Figure 3: Matla Unit 5 PM Emissions - January 2020
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

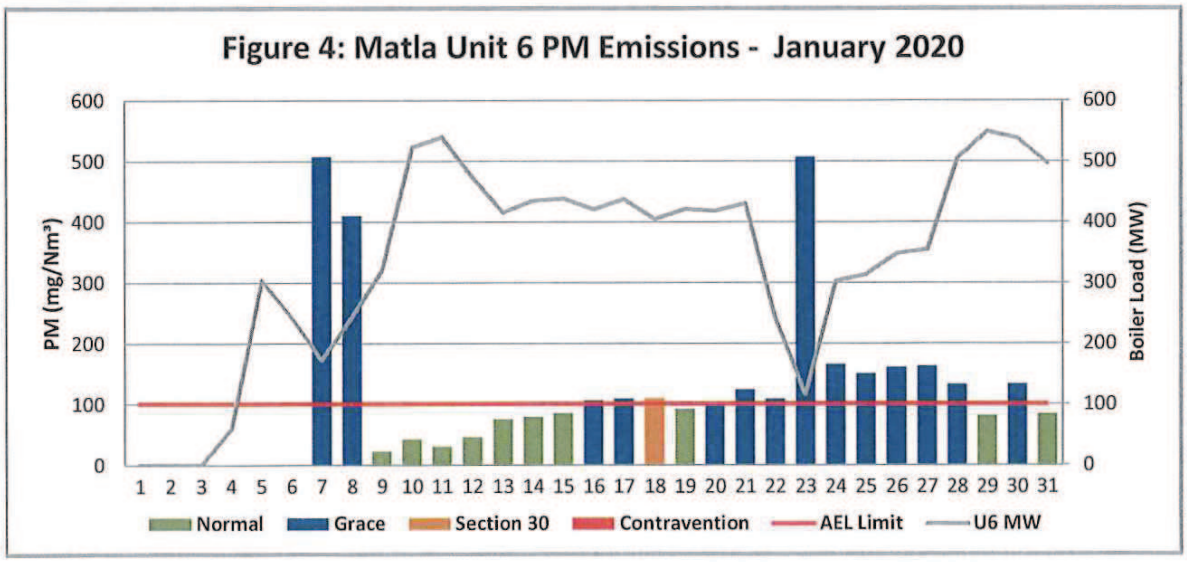
Figure 4: Matla Unit 6 PM Emissions - January 2020
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

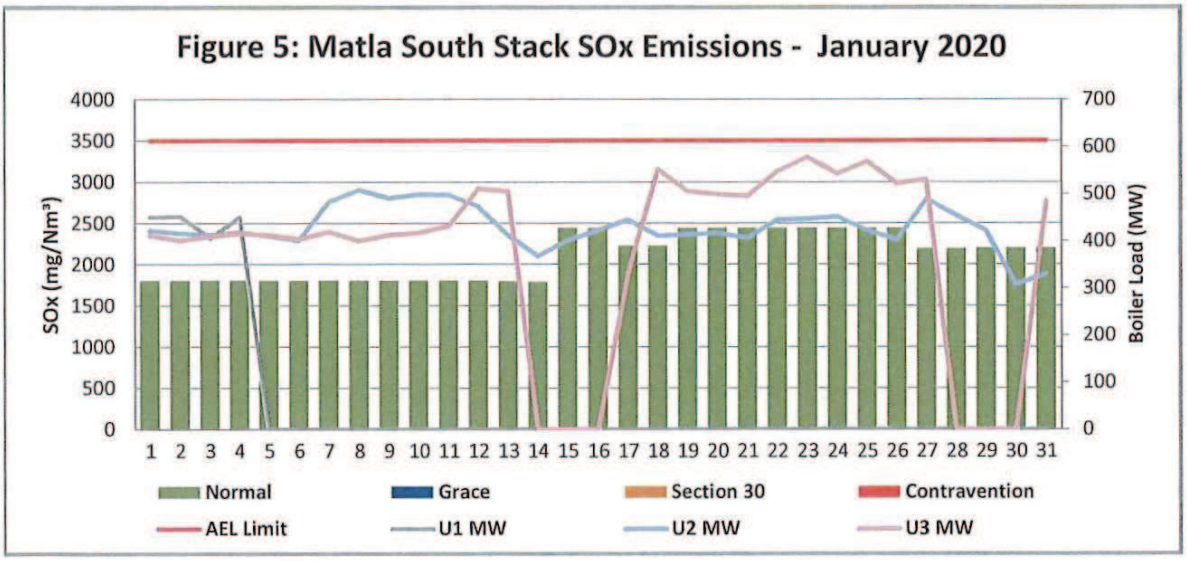
Figure 5: Matla South Stack SOx Emissions - January 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

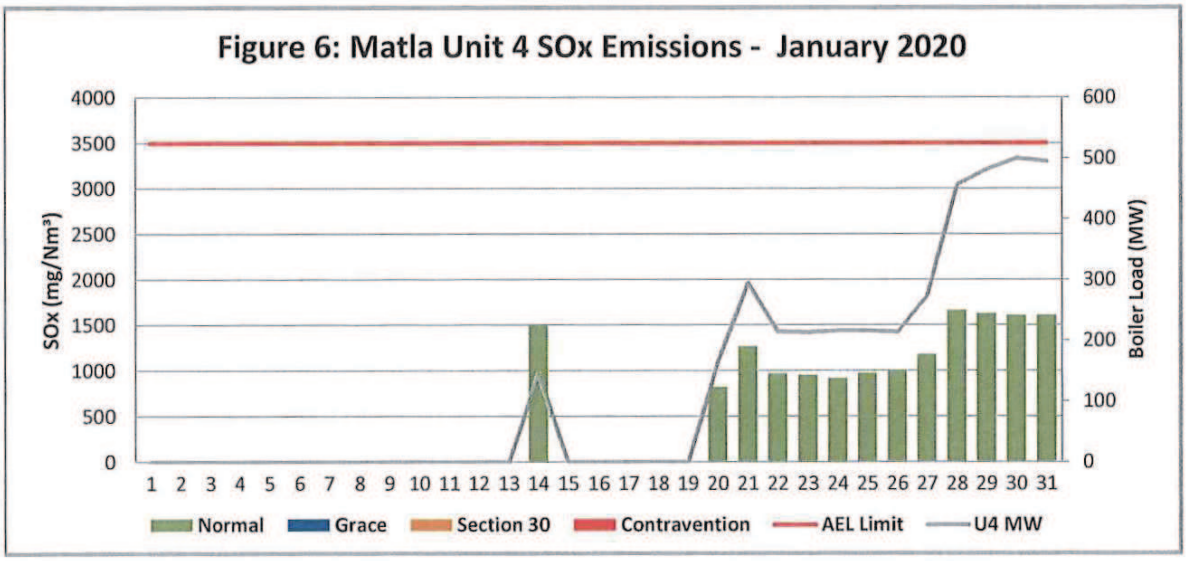
Figure 6: Matla Unit 4 SOx Emissions - January 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

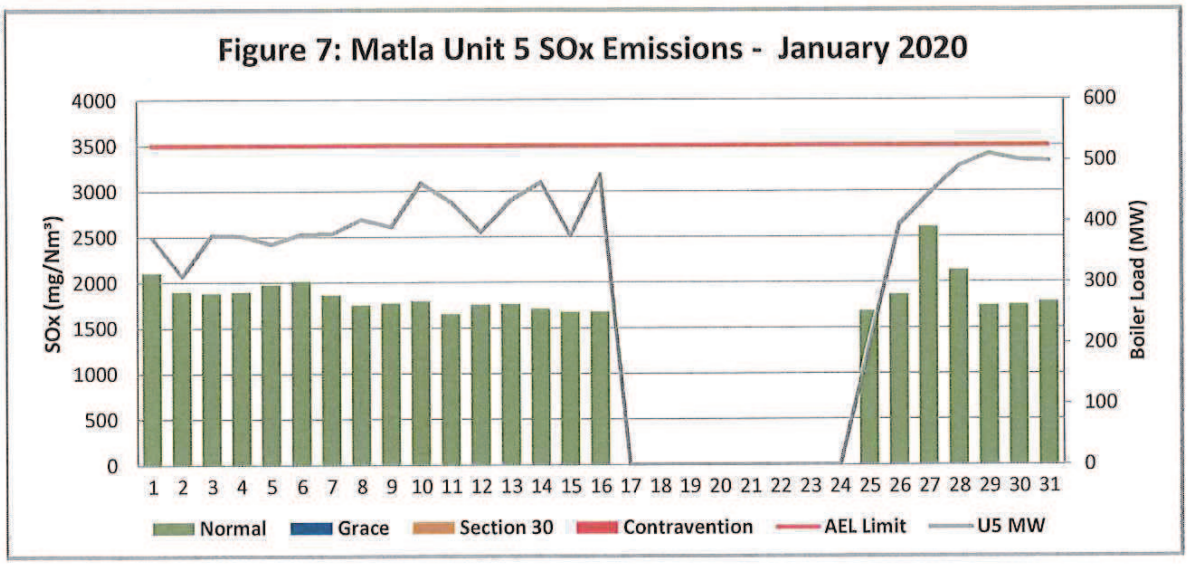
Figure 7: Matla Unit 5 SOx Emissions - January 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

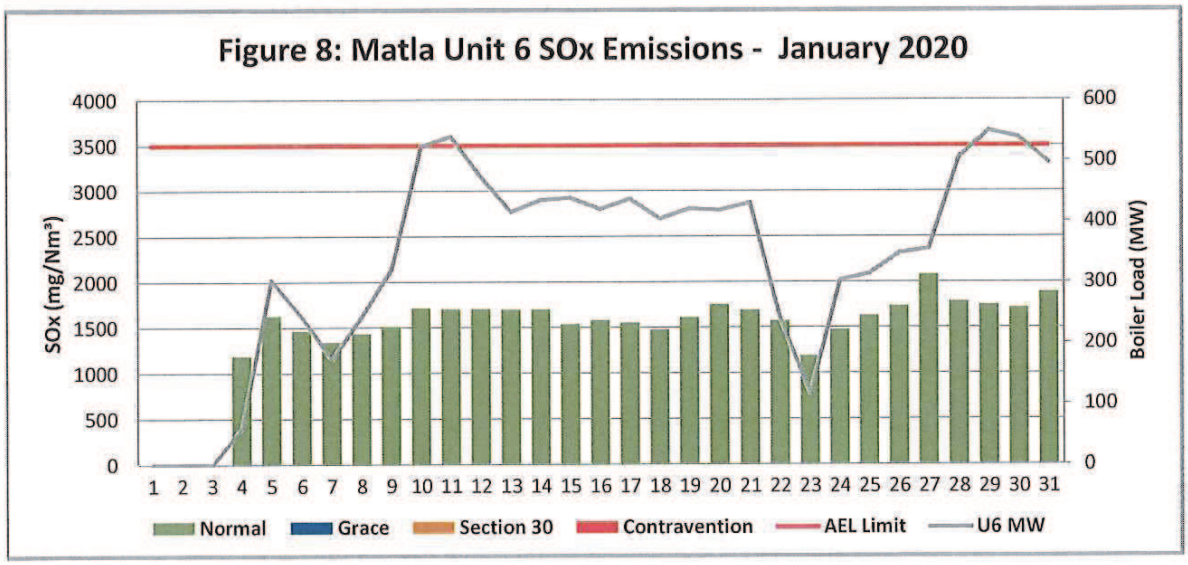
Figure 8: Matla Unit 6 SOx Emissions - January 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

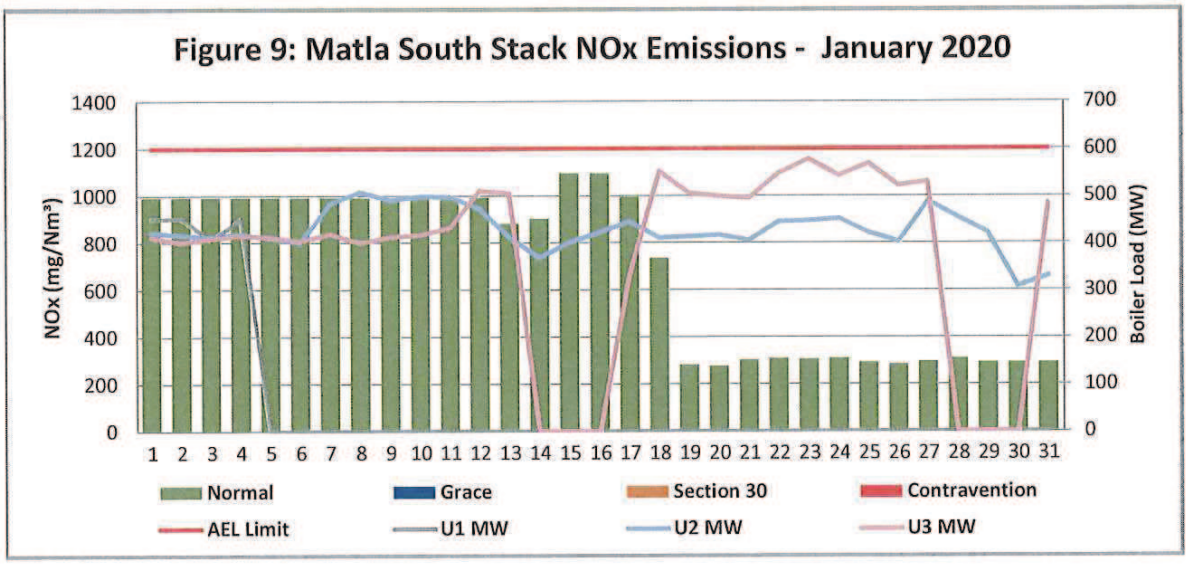
Figure 9: Matla South Stack NOx Emissions - January 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

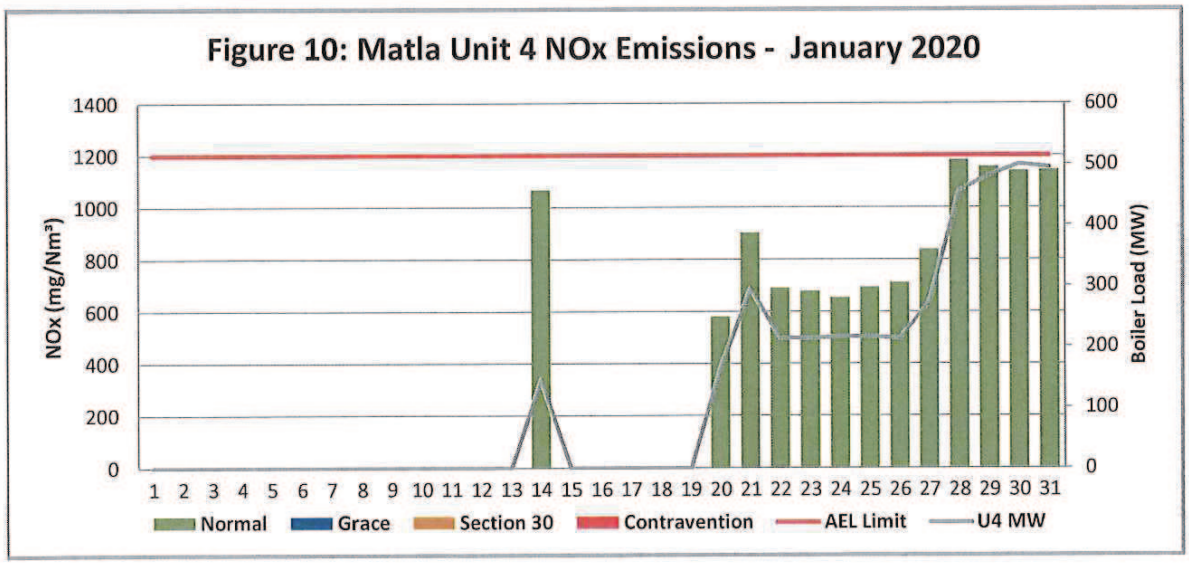
Figure 10: Matla Unit 4 NOx Emissions - January 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

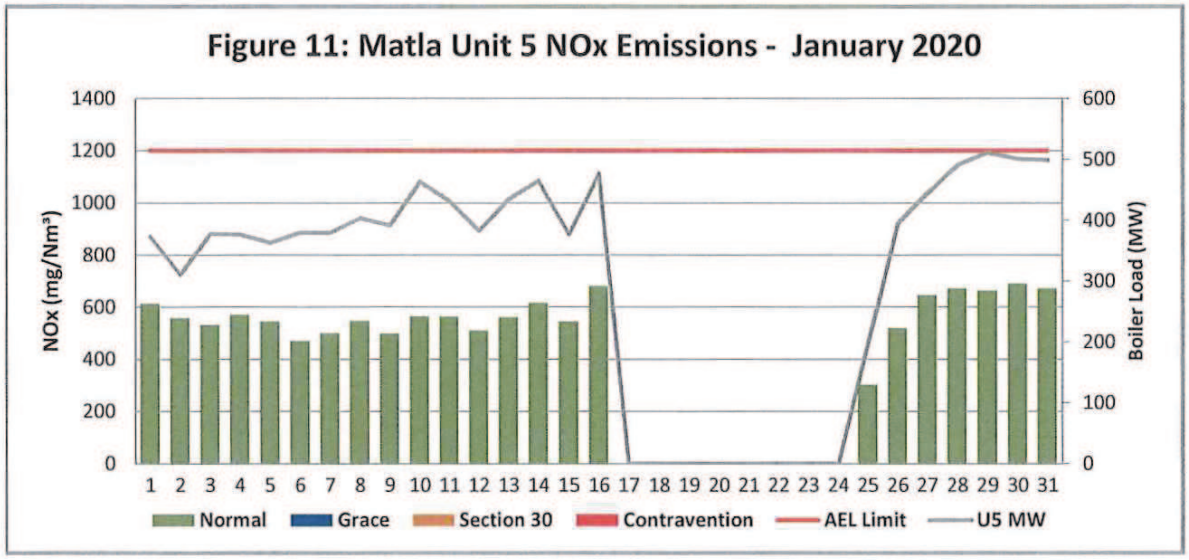
Figure 11: Matla Unit 5 NOx Emissions - January 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

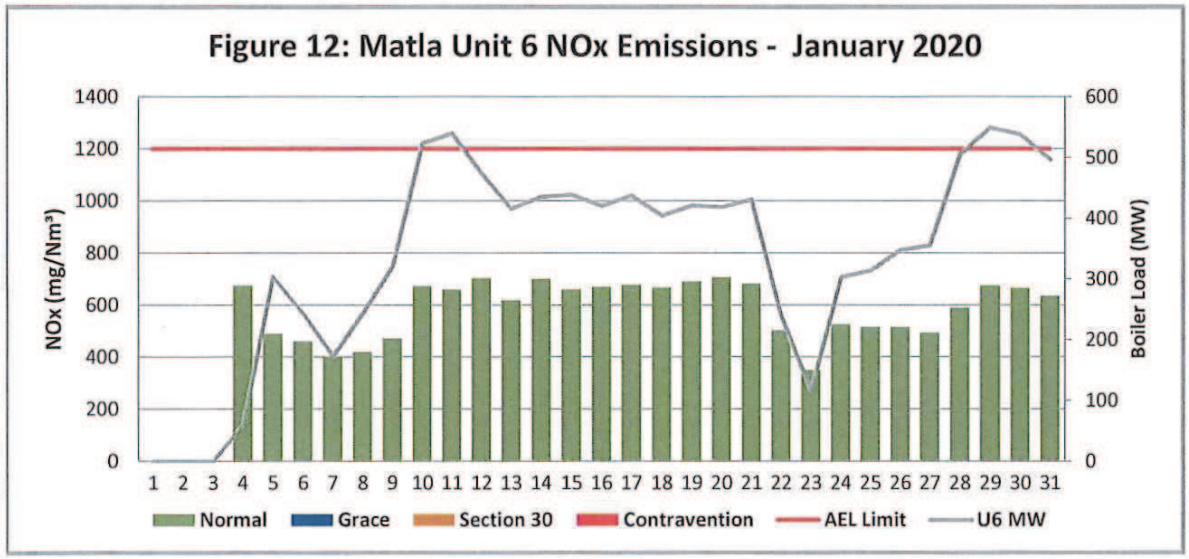
Figure 12: Matla Unit 6 NOx Emissions - January 2020
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

7 SHUT DOWN AND LIGHT UP INFORMATION

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

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	no event		no event		Unit 3		Unit 3	
Breaker Open (BO)	06:20 AM	2020/01/04			05:00 PM	2020/01/13	10:55 PM	2020/01/27
Draught Group (DG) Shut Down (SD)	08:00 AM	2020/01/05			06:20 PM	2020/01/14	07:30 AM	2020/01/28
BO to DG SD (duration)	01:01:40	DD:HH:MM		DD:HH:MM	01:01:20	DD:HH:MM	00:08:35	DD:HH:MM
Fires in time					12:30 AM	2020/01/17	02:40 AM	2020/01/29
Synch. to Grid (or BC)					02:20 PM	2020/01/17	05:40 AM	2020/01/31
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM	00:13:50	DD:HH:MM	02:03:00	DD:HH:MM
Emissions below limit from BC (end date)					12:00 AM	2019/12/29	not > limit	not > limit
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM	#########	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)	BO previously	BO previously						
Draught Group (DG) Shut Down (SD)	n/a	n/a						
BO to DG SD (duration)	n/a	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	10:10 PM	2020/01/18						
Synch. to Grid (or BC)	12:25 PM	2020/01/20						
Fires in to BC (duration)	01:14:15	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 AM	2019/12/29						
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)	09:50 PM	2020/01/16						
Draught Group (DG) Shut Down (SD)	09:50 PM	2020/01/16						
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	10:00 AM	2020/01/25						
Synch. to Grid (or BC)	07:40 PM	2020/01/25						
Fires in to BC (duration)	00:09:40	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 AM	2019/12/29						
Emissions below limit from BC (duration)	#########	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)	BO previously	BO previously	09:50 AM	2020/01/22				
Draught Group (DG) Shut Down (SD)	n/a	n/a	09:50 AM	2020/01/22				
BO to DG SD (duration)	n/a	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	02:40 PM	2020/01/04	09:50 AM	2020/01/22				
Synch. to Grid (or BC)	02:05 PM	2020/01/06	03:05 PM	2020/01/22				
Fires in to BC (duration)	01:23:25	DD:HH:MM	00:05:15	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

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

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

11 General

Boiler Engineering Date **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

Group Technology Engineering

Matla Power Station:

Engineering Manager
Operating Manager
Maintenance Manager
Unit Production Manager
Boiler Engineering Manager
System Engineer
Environmental Officer
Performance and Test
Production Manager