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Date  
16 July 2020

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Dear Mrs Mpho Nembilwi

Ref Kendal Power Station AEL (17/4/AEL/MP312/11/15)

**KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF MAY 2020**

This is a monthly report required in terms of Section 7.4 in the Kendal Power Station's Atmospheric Emission License. The emissions are for Eskom Kendal Power Station.

**Note: This report was reviewed by Ebrahim Patel from Eskom Generation Division | Asset Management | Mechanical Engineering Center of Excellence | Air Pollution Control**

**Compiled by:**



Tshilidzi Vilane  
**ENVIRONMENTAL OFFICER- KENDAL**

Date: 16-07-2020

**Verified by:**



Hlono Malatsi  
**SENIOR TECHNICIAN BOILER ENGINEERING- KENDAL**

16/07/2020  
Date:

KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF MAY 2020

Validated by:



Malibongwe Mabizela  
BOILER ENGINEERING MANAGER-KENDAL

Date 16-07-2020

Supported by:



Bonga Mashazi  
ENGINEERING MANAGER-KENDAL

Date 2020/07/16

Approved by:



Solly Ngcashu  
ACTING GENERAL MANAGER-KENDAL

Date 2020.07.20

KENDAL POWER STATION MONTHLY EMISSIONS REPORT  
 Atmospheric Emission License 17/4/AEL/MP312/11/15



1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Consumption Rate May-2020
	Coal	Tons	909 009
Fuel Oil	Tons	1663.11	

Production Rates	Product / By-Product Name	Units	Production Rate May-2020
	Energy	GWh	1 481.63
	Ash	Tons	278 520.4
RE Ash	kg/MWh	1.060	

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.7 TO >1 (%)	0.770
Ash Content	%	30 TO >40 (%)	30.640

3 EMISSION LIMITS (mg/Nm<sup>3</sup>)

Associated Unit/Stack	PM	SO <sub>x</sub>		NO <sub>x</sub>
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 May-2020	Technology Type	Utilization May-2020
Unit 1	ESP + SO <sub>3</sub>	99.8%	SO <sub>3</sub>	91.5%
Unit 2	ESP + SO <sub>3</sub>	99.6%	SO <sub>3</sub>	99.7%
Unit 3	ESP + SO <sub>3</sub>	99.3%	SO <sub>3</sub>	100.0%
Unit 4	ESP + SO <sub>3</sub>	99.4%	SO <sub>3</sub>	99.9%
Unit 5	ESP + SO <sub>3</sub>	Unit off	SO <sub>3</sub>	Unit off
Unit 6	ESP + SO <sub>3</sub>	98.1%	SO <sub>3</sub>	Datanot available, PI server Frozen

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO <sub>2</sub>	NO	O <sub>2</sub>
Unit 1	99.9	0.0	0.0	0.0
Unit 2	76.7	0.0	0.0	0.0
Unit 3	84.8	96.1	98.8	0.0
Unit 4	99.7	0.0	0.0	0.0
Unit 5	Unit off	Unit off	Unit off	Unit off
Unit 6	91.9	0.0	0.0	0.0

Note: Low monitor reliability is due to defective analysers as a result of unavailability of spares, Maintenance working on this issue .

6 EMISSION PERFORMANCE

Table 6 1 Monthly tonnages for the month of May 2020

Associated Unit/Stack	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>x</sub> (tons)
Unit 1	116.4	3 689	1 312
Unit 2	172.2	3 606	1 594
Unit 3	362.4	3 617	1 381
Unit 4	249.3	3 800	1 310
Unit 5	Unit off	Unit off	Unit off
Unit 6	670.8	3 222	1 335
SUM	1 571.11	17 934	6 931

Table 6 2 Operating days in compliance to PM AEL Limit - May 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance		Average PM (mg/Nm <sup>3</sup> )	
Unit 1	26	3	0	0	3		67.5	
Unit 2	6	2	0	19	21		141.9	
Unit 3	1	2	0	28	30		181.2	
Unit 4	2	6	0	16	22		190.3	
Unit 5	Unit off	Unit off		Unit off	Unit off	Unit off	Unit off	Unit off
Unit 6	1	4	0	14	18		657.4	
SUM	36	17		77	94			

Table 6 3 Operating days in compliance to SO<sub>x</sub> AEL Limit - May 2020

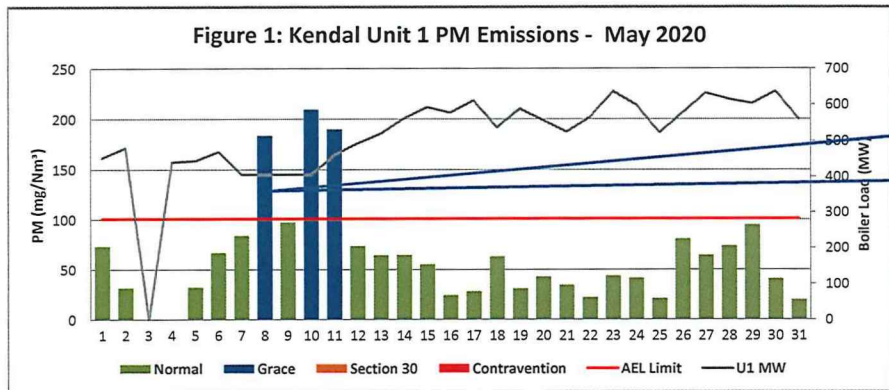
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO <sub>x</sub> (mg/Nm <sup>3</sup> )
Unit 1	30	0	0	0	0	1 949.0
Unit 2	29	0	0	0	0	2 458.1
Unit 3	31	0	0	0	0	1 959.5
Unit 4	25	0	0	0	0	2 734.4
Unit 5	0	0	0	0	0	
Unit 6	21	0	0	0	0	2 441.1
SUM	136	0	0	0	0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm <sup>3</sup> )
Unit 1	30	0	0	0	0	693.0
Unit 2	29	0	0	0	0	1 086.3
Unit 3	31	0	0	0	0	746.2
Unit 4	25	0	0	0	0	942.4
Unit 5	0	0	0	0	0	
Unit 6	21	0	0	0	0	1 011.4
<b>SUM</b>	<b>136</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

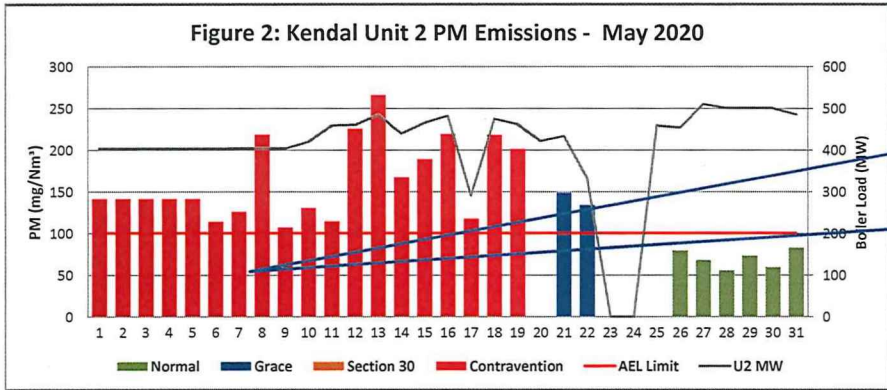
Table 6.5: Legend Description

Condition	Colour	Description
Normal	Green	Emissions below Emission Limit Value (ELV)
Grace	Blue	Emissions above the ELV during grace period
Section 30	Orange	Emissions above ELV during a NEMA S30 incident
Contravention	Red	Emissions above ELV but outside grace or S30 incident conditions



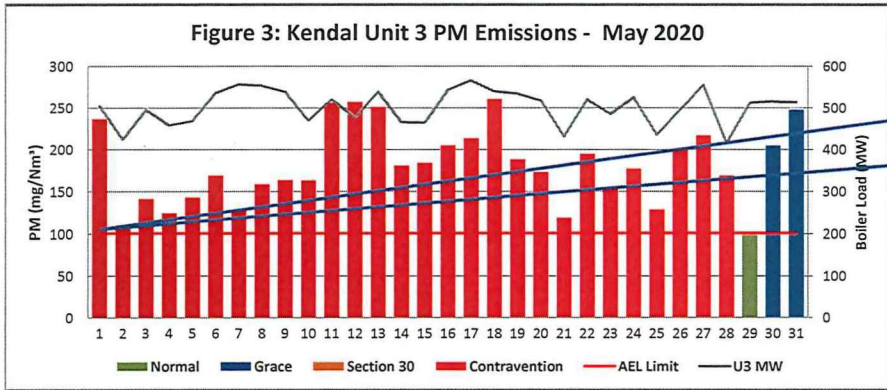
*Unit 1 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance of the electrostatic precipitators fields.*

Figure 2: Kendal Unit 2 PM Emissions - May 2020



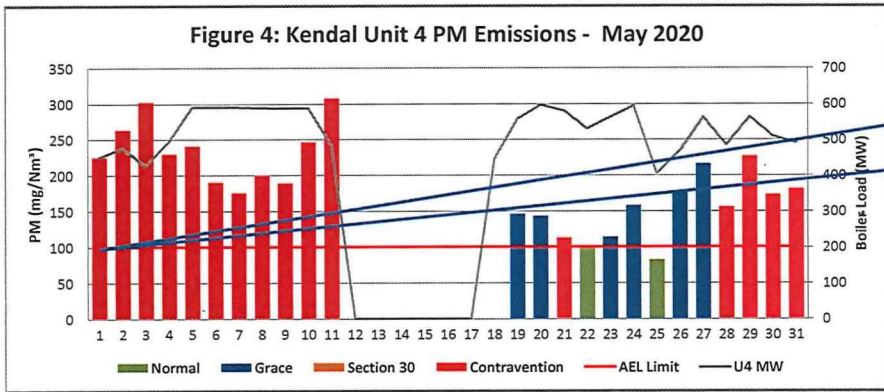
Using an average PM of 141.9 mg/Nm<sup>3</sup> (average load of 404 MW) for Unit 2 from 01 to 5 April due to the PI server fault. This is based on the average emissions 6th to 31st of May 2020. High PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance

Figure 3: Kendal Unit 3 PM Emissions - May 2020



Unit 3 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance of the electrostatic precipitators fields.

Figure 4: Kendal Unit 4 PM Emissions - May 2020



Unit 4 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance of the electrostatic precipitators fields.

Figure 5: Kendal Unit 5 PM Emissions - May 2020

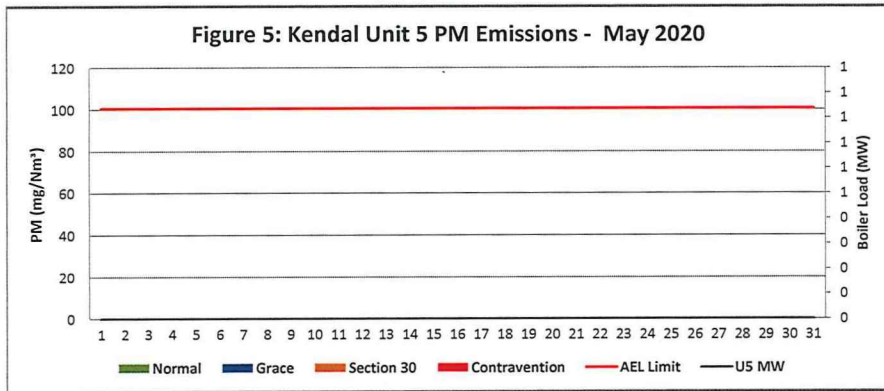
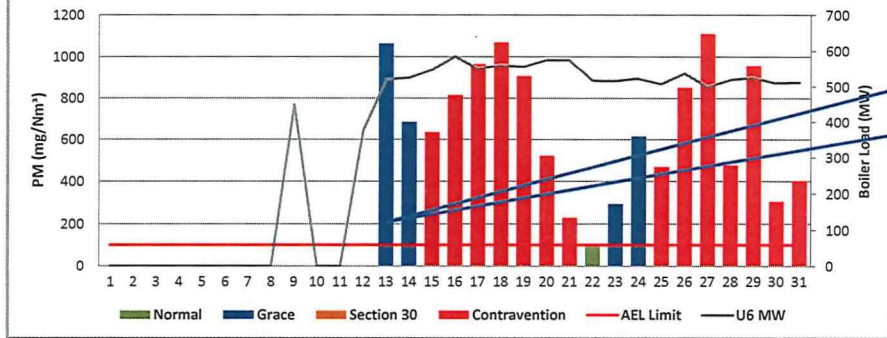


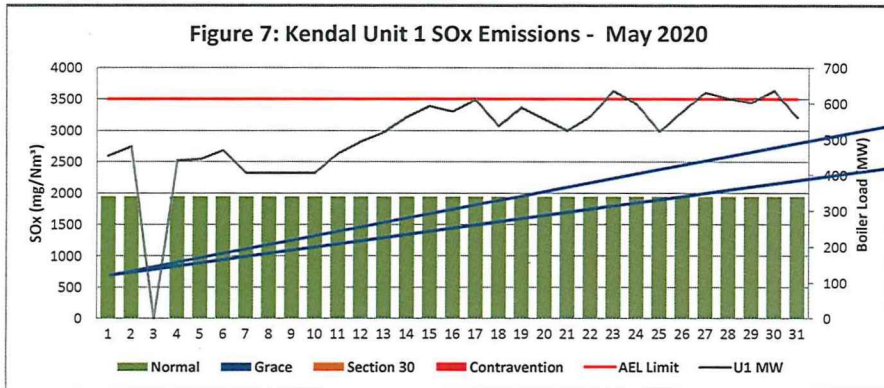


Figure 6: Kendal Unit 6 PM Emissions - May 2020



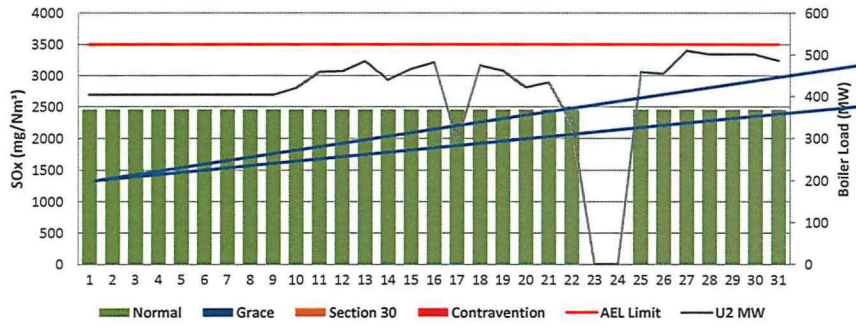
Unit 6 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance of the electrostatic precipitators fields.

Figure 7: Kendal Unit 1 SOx Emissions - May 2020



Note that gaseous emissions for units 1 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 8: Kendal Unit 2 SOx Emissions - May 2020



Note that gaseous emissions for unit 2 were manually entered using independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 9: Kendal Unit 3 SOx Emissions - May 2020

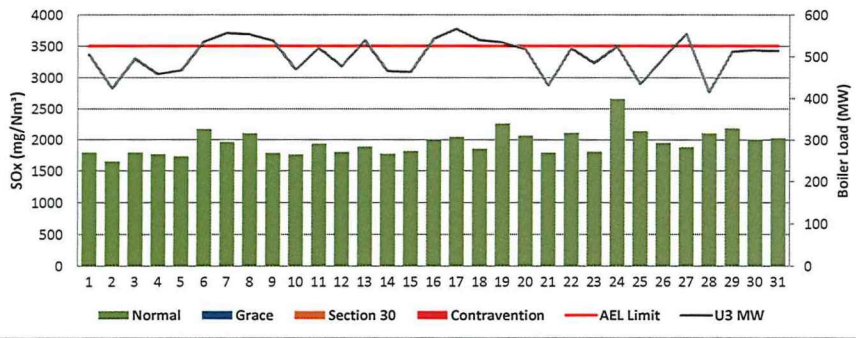
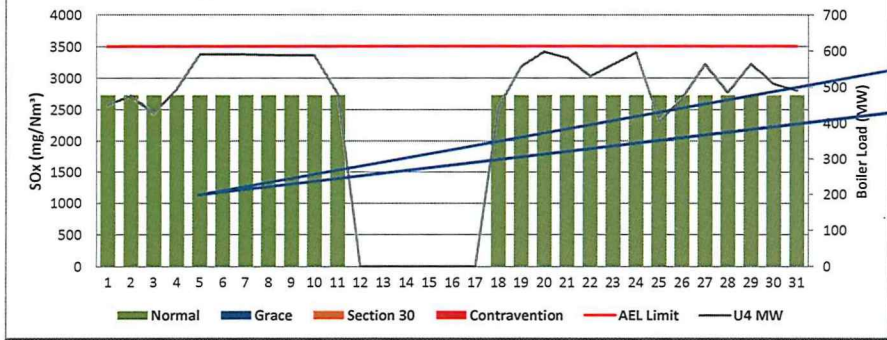


Figure 10: Kendal Unit 4 SOx Emissions - May 2020



Note that gaseous emissions for unit 4 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 11: Kendal Unit 5 SOx Emissions - May 2020

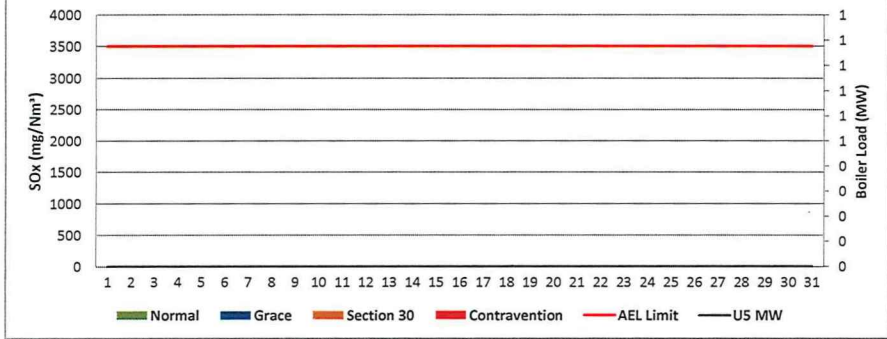
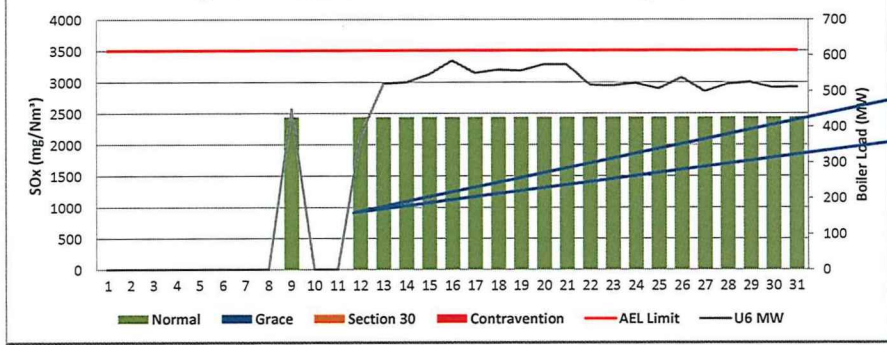
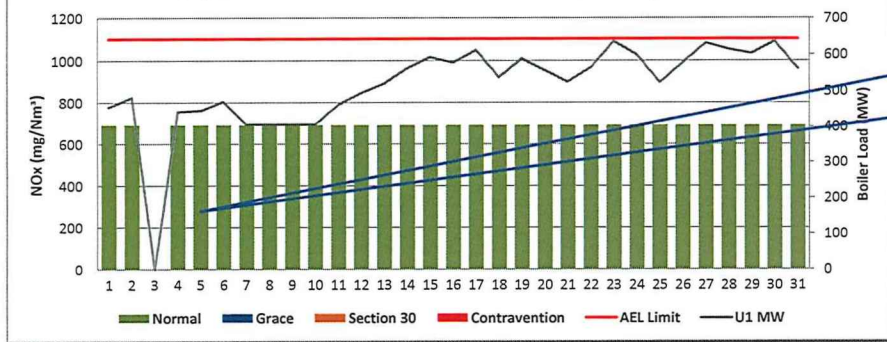


Figure 12: Kendal Unit 6 SOx Emissions - May 2020



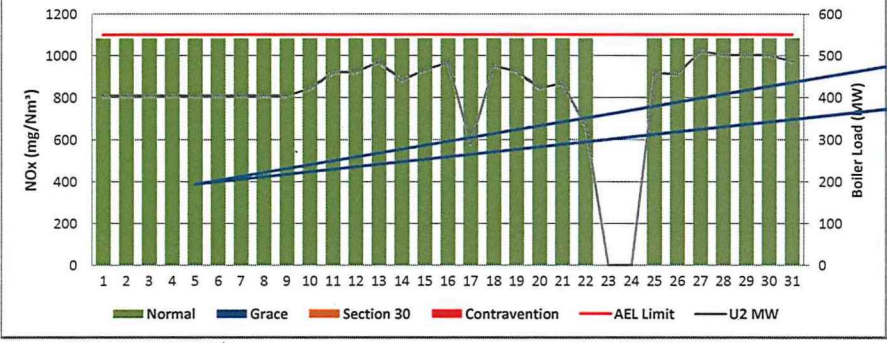
Note that gaseous emissions for unit 6 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 13: Kendal Unit 1 NOx Emissions - May 2020



Note that gaseous emissions for unit 1 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 14: Kendal Unit 2 NOx Emissions - May 2020



Note that gaseous emissions for unit 2 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 15: Kendal Unit 3 NOx Emissions - May 2020

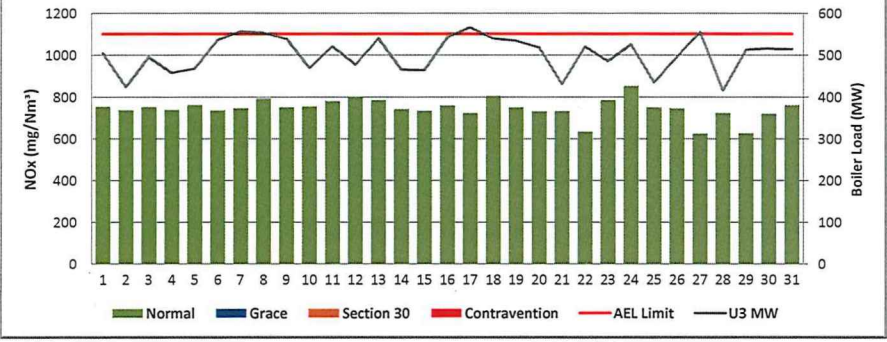
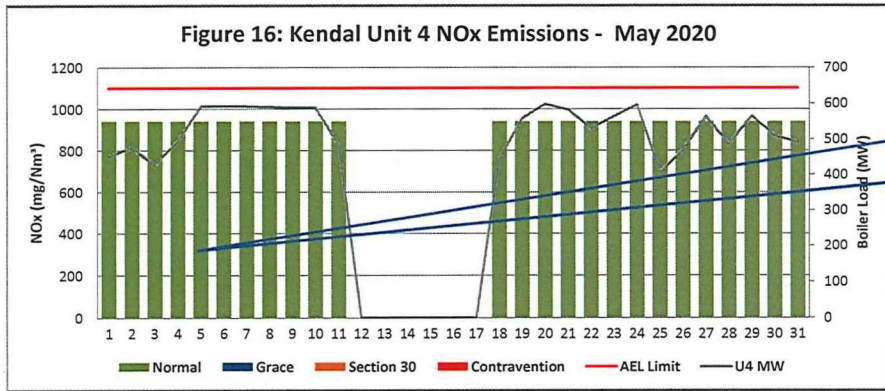


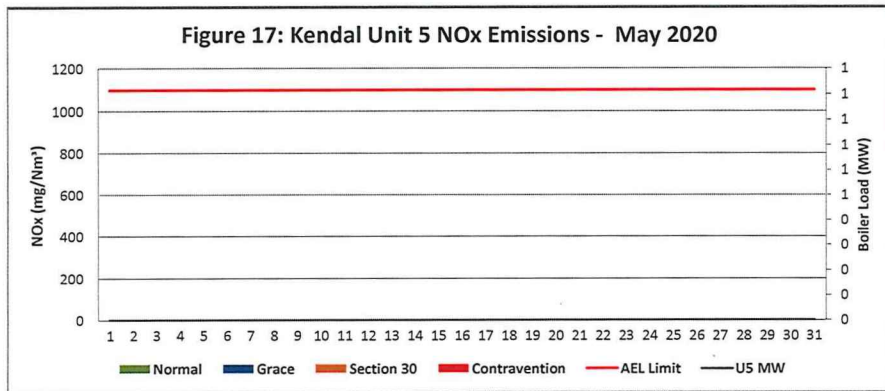


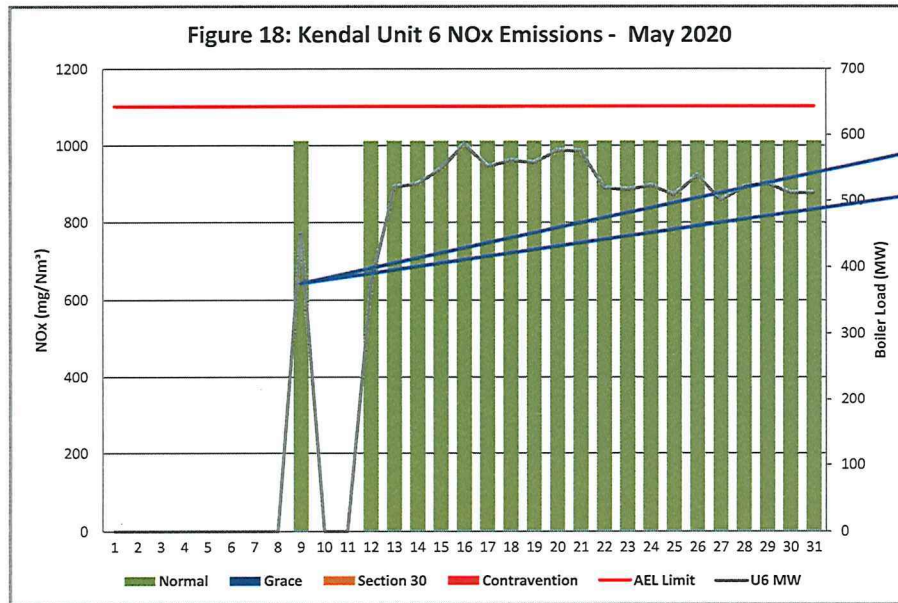
Figure 16: Kendal Unit 4 NOx Emissions - May 2020



Note that gaseous emissions for unit 4 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Figure 17: Kendal Unit 5 NOx Emissions - May 2020





Note that gaseous emissions for unit 6 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

**7 COMMENTS**

Note that gaseous emissions for units 1,2,4 & 6 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

Using an average PM of 141.9 mg/Nm<sup>3</sup> (average load of 404 MW) for Unit 2 from 01 to 5 April due to the PI server fault. This is based on the average emissions 6th to 31st of May 2020.

Unit 5 was still offload during the whole months of May 2020

Units 1,2,3,4 & 6 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance of the electrostatic precipitators fields.

Average SRM velocity values from the latest correlation report were used on the gaseous emissions on Unit 1, 2, 3 & 4 due to defective CEMS monitors and velocity correction factors were set M=1 and C=0

Average AMS velocity values from December 2019 correlation report were used for the gaseous emissions on unit 6 with the velocity correction factors

**8 COMPLAINTS**

There were no complaints for the months of May 2020