Eskom

Mrs Mpho Nembilwi
Nkangala District
P.O Box 437
MIDDLEBERG
1050
By email: nembilwim@nkangaladm.gov.za'

Date:
16 July 2020

Enquiries: E Madike
Tel +27 13 647 9199

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 APRIL 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:

Malatsi

Hlono Malatsi
SENIOR TECHNICIAN BOILER ENGINEERING- KENDAL

16/07/2020
Date:

KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF APRIL 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 Ngcashi
ACTING GENERAL MANAGER-KENDAL

Date: 2020.07.20

Eskom

APRIL 2020

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 Apr-2020
	Coal	Tons	*582 177*
	Fuel Oil	Tons	*1059.44*
Production Rates	**Product / By-Product Name**	**Units**	**Production Rate Apr-2020**
	Energy	GWh	*962.62*
	Ash	Tons	*179 485.2*
	RE Ash	kg/MWh	*1.131*

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	*0.7 TO >1 (%)*	*1.100*
Ash Content	%	*30 TO >40 (%)*	*30.830*

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 Apr-2020	Technology Type	Utlization Apr-2020
Unit 1	ESP + SO_3	99.8%	SO_3	95.1%
Unit 2	ESP + SO_3	99.7%	SO_3	99.0%
Unit 3	ESP + SO_3	99.3%	SO_3	100.0%
Unit 4	ESP + SO_3	99.4%	SO_3	99.8%
Unit 5	ESP + SO_3	Unit off	SO_3	Unit off
Unit 6	ESP + SO_3	97.3%	SO_3	Data not available(Piserver frozen)

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	O_2
Unit 1	99.6	99.8	99.8	83.8
Unit 2	0.0	0.0	0.0	0.0
Unit 3	75.0	100.0	96.9	0.0
Unit 4	99.2	98.5	98.4	0.0
Unit 5	Unit off	Unit off	Unit off	Unit off
Unit 6	83.5	99.9	99.9	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 April 2020

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	72.9	2 962	1 358
Unit 2	140.0	4 118	1 820
Unit 3	65.8	654	240
Unit 4	227.4	3 264	1 099
Unit 5	Unit off	Unit off	Unit off
Unit 6	582.6	1 938	789
SUM	1 088.71	12 937	5 305

Table 6.2: Operating days as per PM AEL Conditions - April 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	20	3	0	0	3	60.5
Unit 2	0	2	0	23	25	115.5
Unit 3	1	2	0	2	4	198.7
Unit 4	3	4	0	18	22	179.0
Unit 5	Unit off	Unit off	Unit off	Unit off	Unit off	Unit off
Unit 6	0	1	0	12	13	769.0
SUM	**24**	**12**	**0**	**55**	**67**	

Table 6.3: Operating days as per SOx AEL Conditions - April 2020

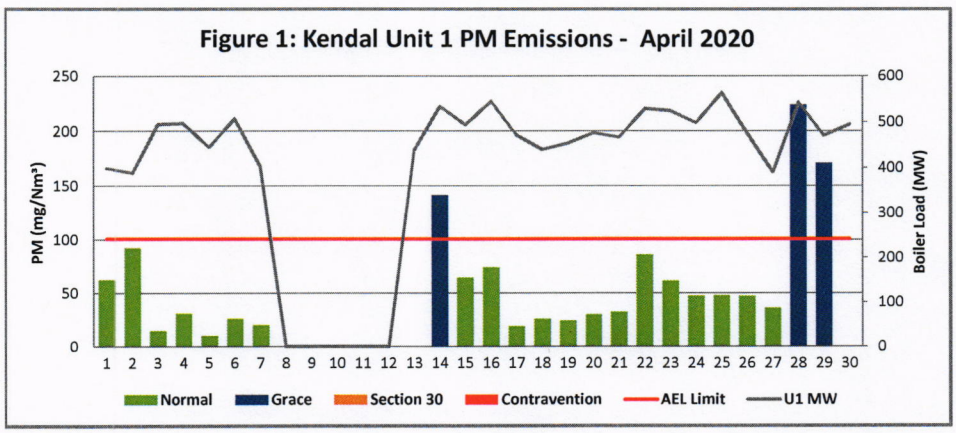
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
Unit 1	25	0	0	0	0	2 025.8
Unit 2	26	0	0	0	0	2 458.1
Unit 3	6	0	0	0	0	1 844.9
Unit 4	26	0	0	0	0	2 088.5
Unit 5	Unit off	Unit off	Unit off	Unit off	Unit off	Unit off
Unit 6	13	0	0	0	0	1 779.6
SUM	**96**	**0**	**0**	**0**	**0**	

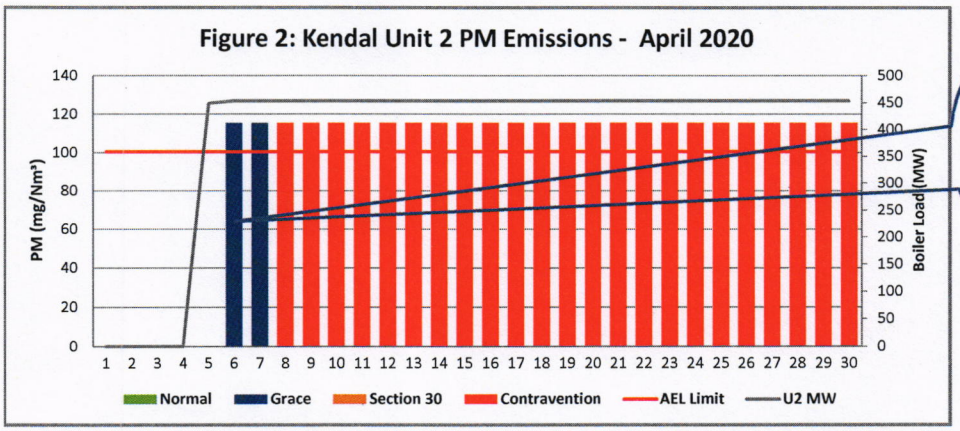
Table 6.4: Operating days as per NOx AEL Conditions - April 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	25	0	0	0	0	928.8
Unit 2	26	0	0	0	0	1 086.3
Unit 3	6	0		0	0	668.5
Unit 4	26	0	0	0	0	702.1
Unit 5	Unit off	Unit off	Unit off	Unit off	Unit off	Unit off
Unit 6	13	0	0	0	0	723.4
SUM	**96**	**0**	**0**	**0**	**0**	

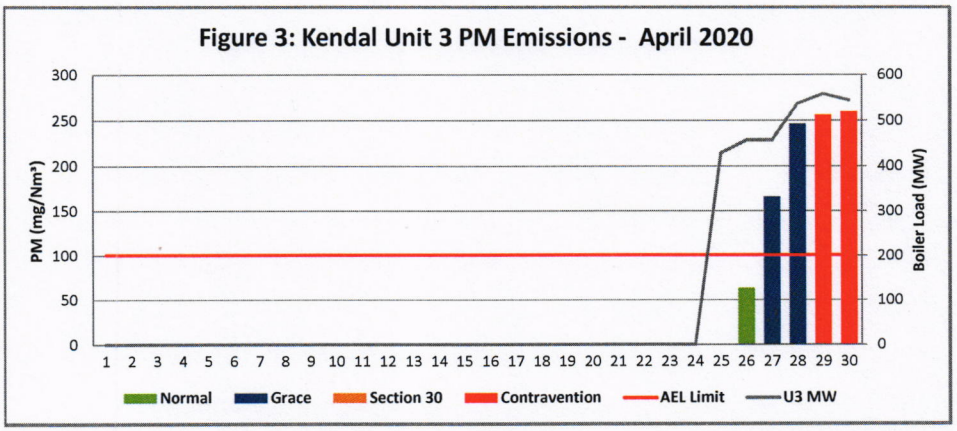
Table 6.5: Legend Description

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





Unit 2 PM used an average PM of 115.5 mg/Nm3 (average load of 454 MW) for Unit 2 from 07 to 30 April due to the PI server fault. This is based on the average emissions for March and 6th ot 31st of May 2020.



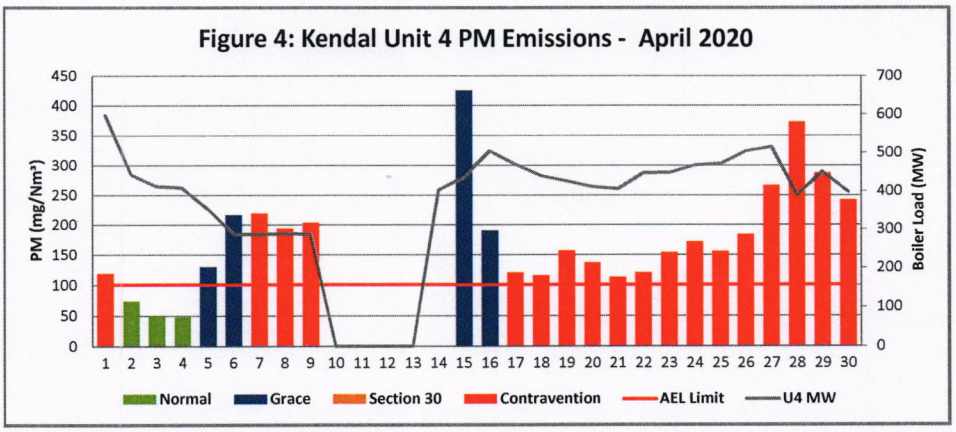


Figure 4: Kendal Unit 4 PM Emissions - April 2020
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

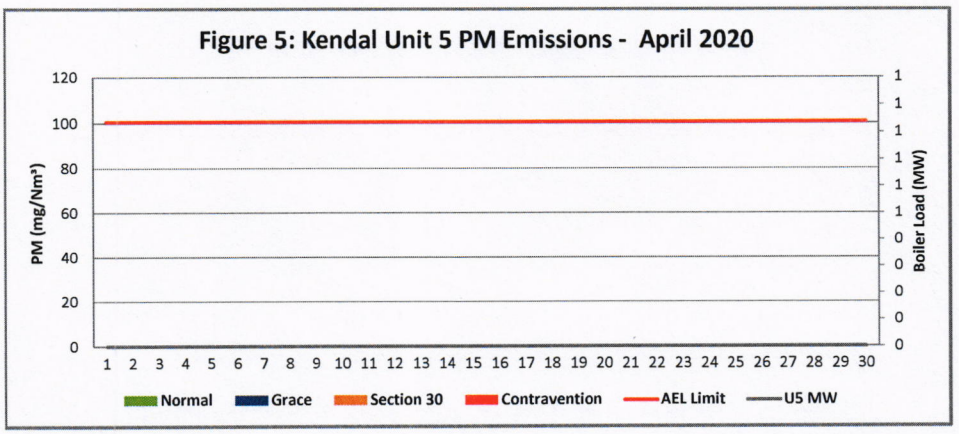
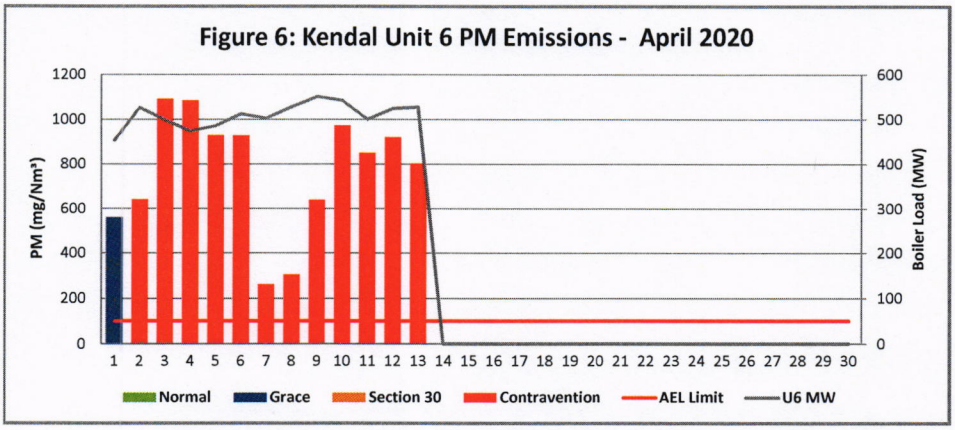
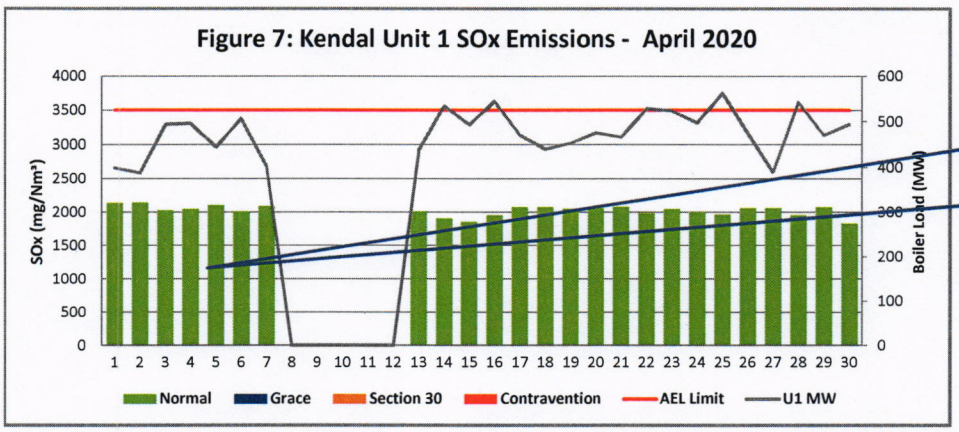
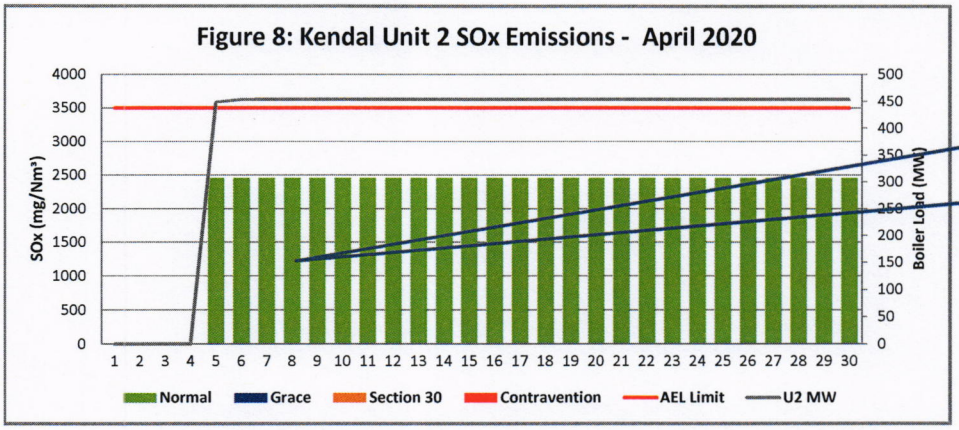


Figure 5: Kendal Unit 5 PM Emissions - April 2020
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

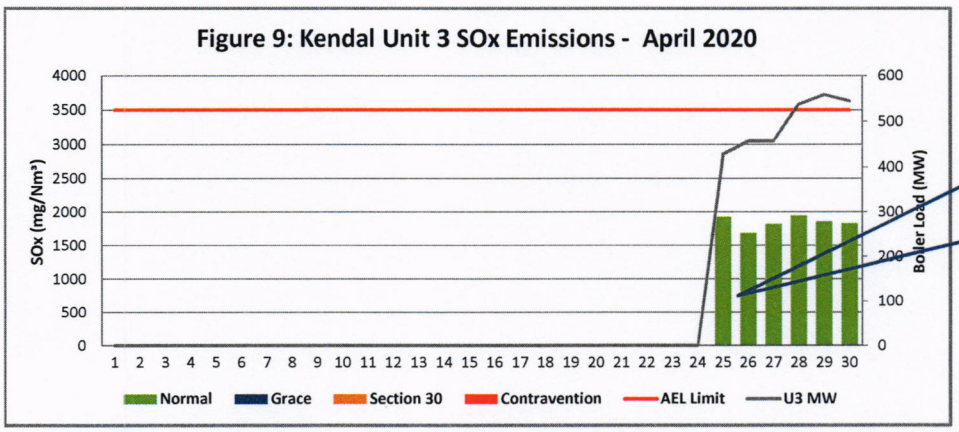




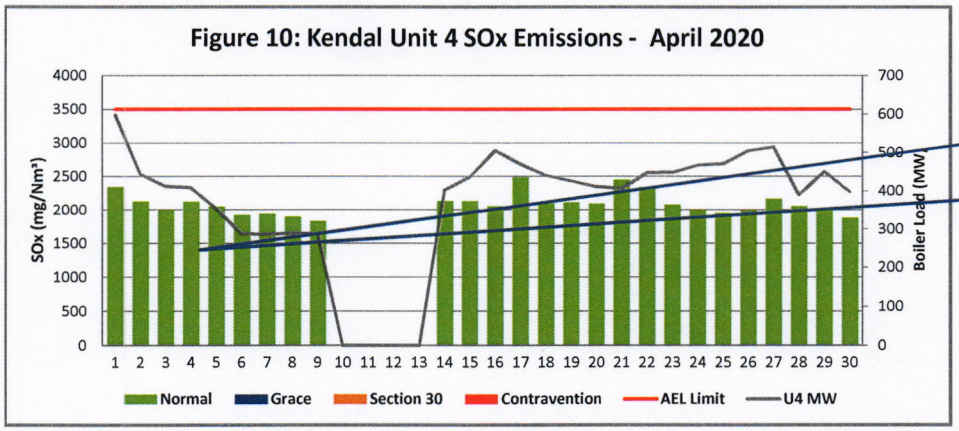
Note that gaseous emissions (H_2O,O_2 & CO_2) for unit 1 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.



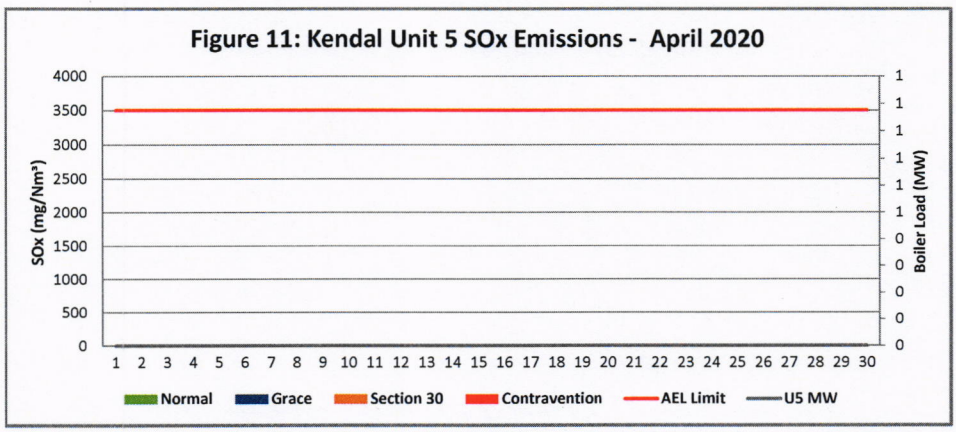
Note that gaseous emissions(H_2O,O_2 & CO_2) including SOx and NO for unit 2 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

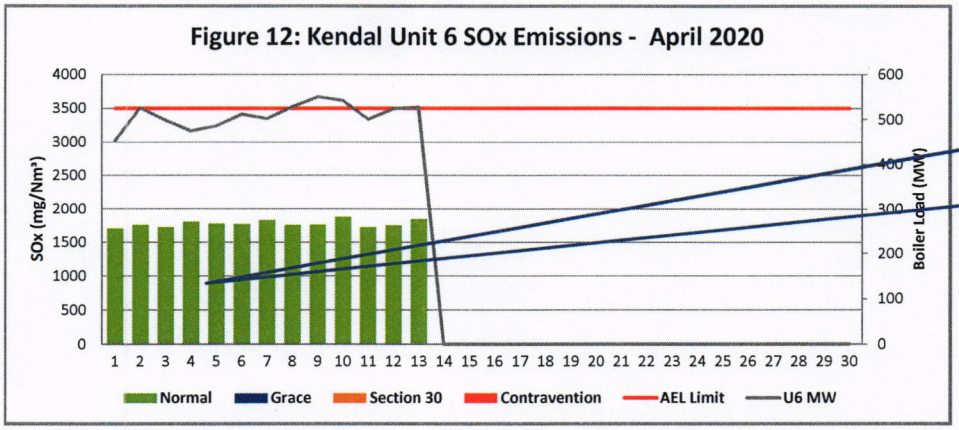


Note that gaseous emissions (H_2O,O_2 & CO_2) for unit 3 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

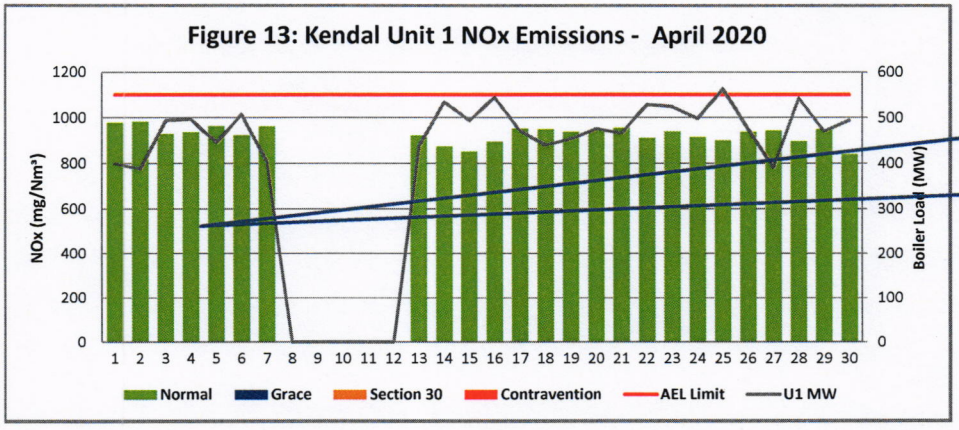


Note that gaseous emissions(H_2O,O_2 & CO_2) for unit 4 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

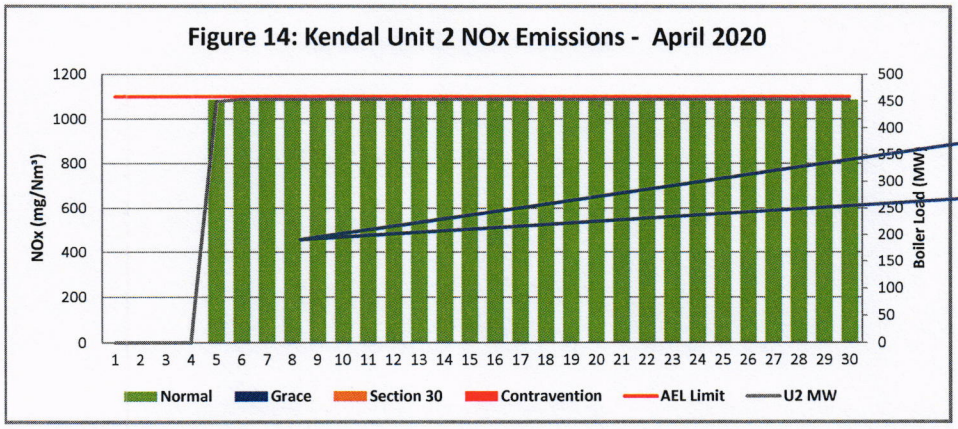




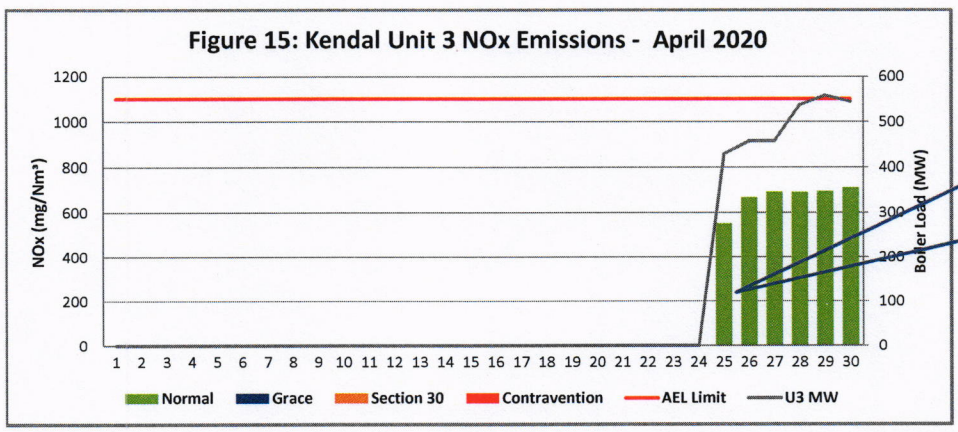
Note that gaseous emissions (H_2O,O_2 & CO_2) for unit 6 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.



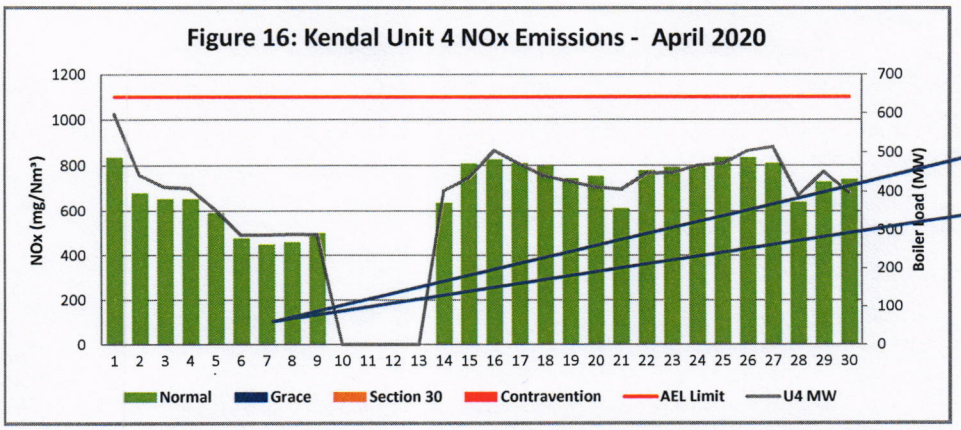
Note that gaseous emissions (H_2O,O_2 & CO_2) for unit 1 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.



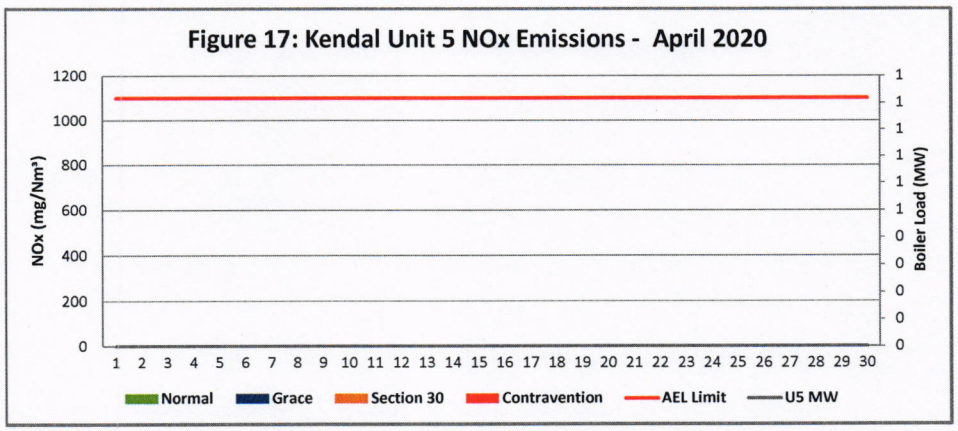
Note that gaseous emissions (H_2O,O_2 & CO_2) incuding SOx and No for unit 2 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.

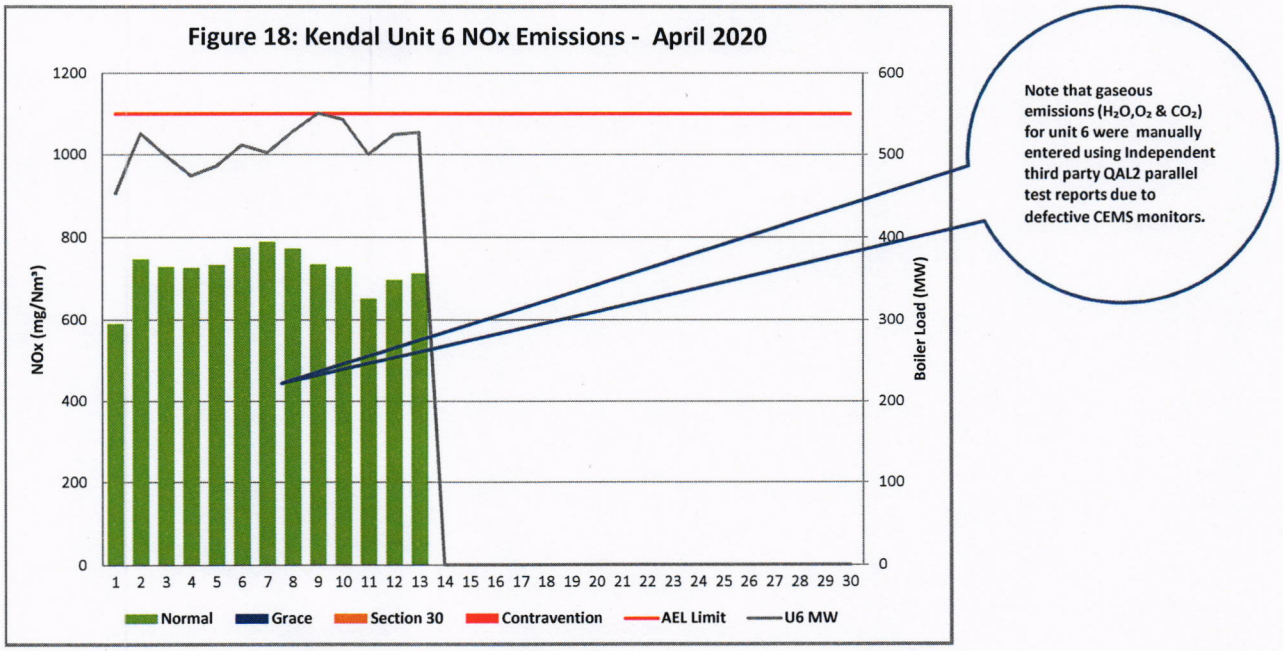


Note that gaseous emissions (H_2O,O_2 & CO_2) for unit 3 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.



Note that gaseous emissions (H_2O,O_2 & CO_2) for unit 4 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors.





7 COMMENTS

Note that gaseous emissions for units 1,2,3,4 & 6 were manually entered using Independent third party QAL2 parallel test reports due to defective CEMS monitors

Unit 2 PM used an average PM of 115.5 mg/Nm3 (average load of 454 MW) for Unit 2 from 07 to 30 April due to the PI server fault. This is based on the average emissions for March and 6th to 31st of May 2020.

Units 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.

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

average SRM velocity values were used for gaseous emissions on unit 1,3 & 4 and velocity factors were set at M=1 and C=0

8 COMPLAINTS

There were no complaints for the months of April 2020