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Date:
 21 March 2021

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Dear Mr. Hlanyane

TUTUKA POWER STATION SUBMISSION MONTHLY EMISSIONS PERFORMANCE MONITORING REPORT AS STIPULATED ON CONDITION 7.5 OF TUTUKA POWER STATION ATMOSPHERIC EMISSION LICENCE NO: Lekwa/Eskom H SOC Ltd TPS/0013/2019/F03 DATED 25 APRIL 2019

In terms of Tutuka PS AEL, the station is required to submit the monthly emissions monitoring report on/before the 12th every month. The report shall indicate the emission performance for the previous month. This report contains the emission performance for the month of December 2020.

1. RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Max. Permitted	Actual Consumption Dec-2020
	Coal	Tons	1 200 000	496 779
	Fuel Oil	Tons	10 000	15958.46
Production Rates	Product / By-Product Name	Units	Max. Production Capacity Permitted	Production Rate Dec-2020
	Energy	MW	30748	34691
	Ash	Tons	350 000	120 519
	RE Ash	kg/MWh	not specified	1.37

Table 1: Quantity of raw materials and products used/produces for the month of December 2020

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristics	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	16-24	21.870
Sulphur Content	%	0.6 TO >2.6	0.780
Ash Content	%	21 TO >33	24.260

Table 2: Energy sources material characteristics for the month of December 2020

3. ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Minimum Control Efficiency (%)	Actual Utilisation (%)
Unit 1	<i>Electro Static Precipitators (ESP)</i>	95.00	99.0%
Unit 2	<i>Electro Static Precipitators (ESP)</i>	95.00	99.2%
Unit 3	<i>Electro Static Precipitators (ESP)</i>	98.00	0
Unit 4	<i>Electro Static Precipitators (ESP)</i>	95.00	99.3%
Unit 5	<i>Electro Static Precipitators (ESP)</i>	95.00	0
Unit 6	<i>Electro Static Precipitators (ESP)</i>	95.00	98.7%

Table 3.1: Abatement Equipment Control Technology for month of December 2020

Note: The ESP does not have bypass mode operation, hence plant considered 100% Utilised. Unit 3 and 5 were off in December 2020.

3.2. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO _x	NO _x
Unit 1	100.0	100.0	100.0
Unit 2	100.0	100.0	100.0
Unit 3	0.0	0.0	0.0
Unit 4	100.0	100.0	100.0
Unit 5	0	0	0
Unit 6	100.0	100.0	100.0

Table 3.2: Monitor reliability for the month of December 2020. Unit 3 and 5 were off.

4. EMISSION PERFORMANCE

Table 4.1: Monthly tonnages for the month of December-2020

Associated Unit/Stack	PM (tons)	SO _x (tons)	NO _x (tons)
Unit 1	266.1	1 698	495
Unit 2	133.8	2 146	568
Unit 3	0.0	0	0
Unit 4	253.0	3 330	992
Unit 5	0.0	0	0
Unit 6	374.8	3 047	1 112
SUM	1 027.7	10 221.5	3 094.6

4.2. 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

Table 4.2: Legend Description for figure 1-18(below)

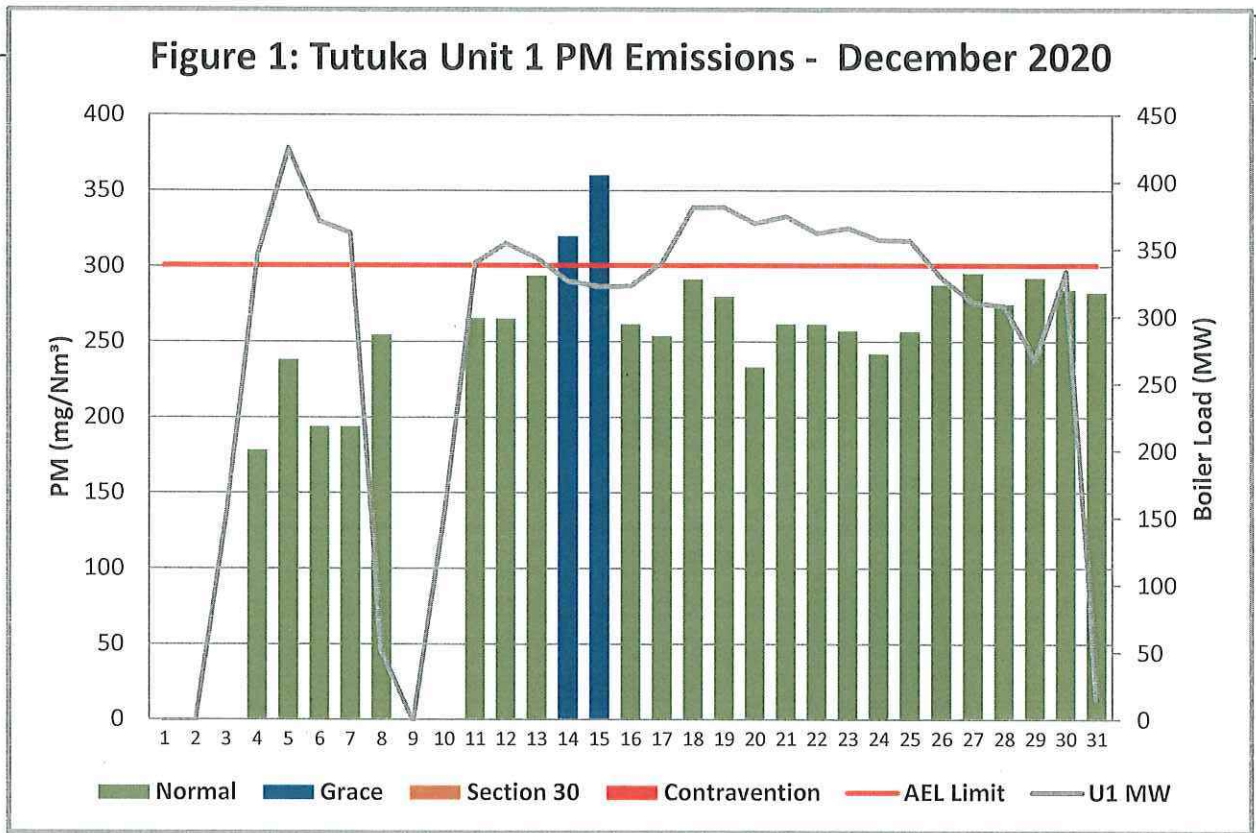


Figure 1: Unit 1 Daily Average PM emissions for the month of December 2020 (against the emission limits and load Generated)

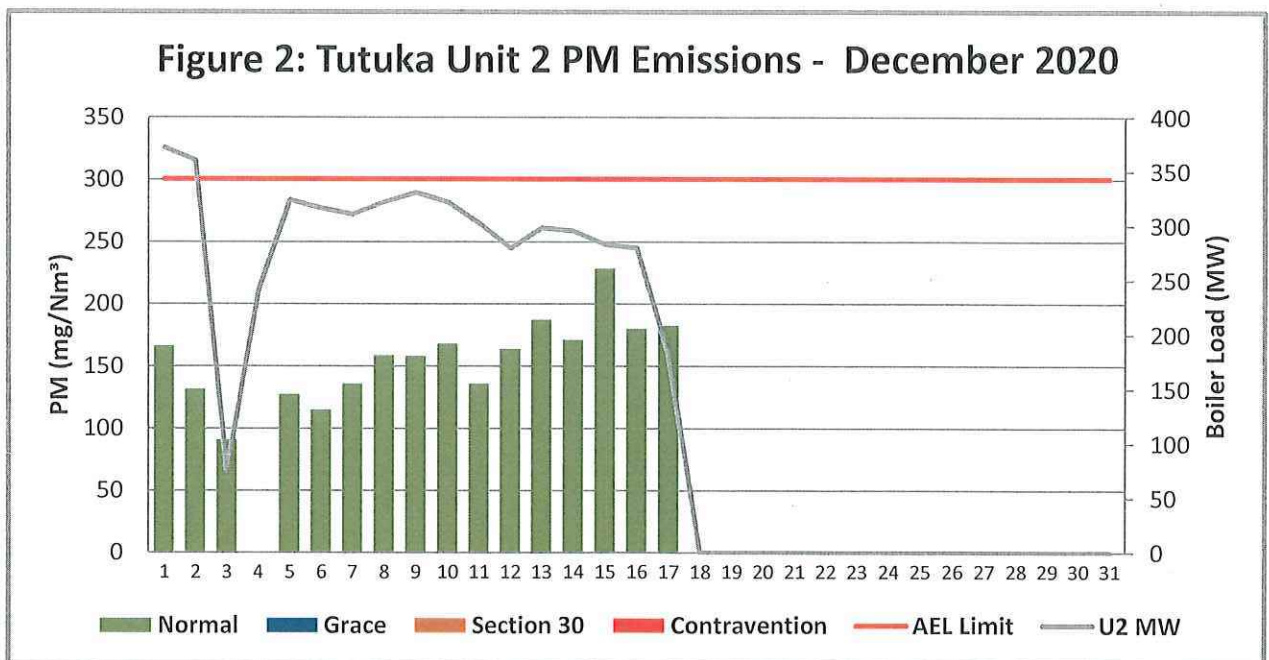


Figure 2: Unit 2 Daily Average PM emissions for the month of December 2020 (against the emission limits and load Generated)

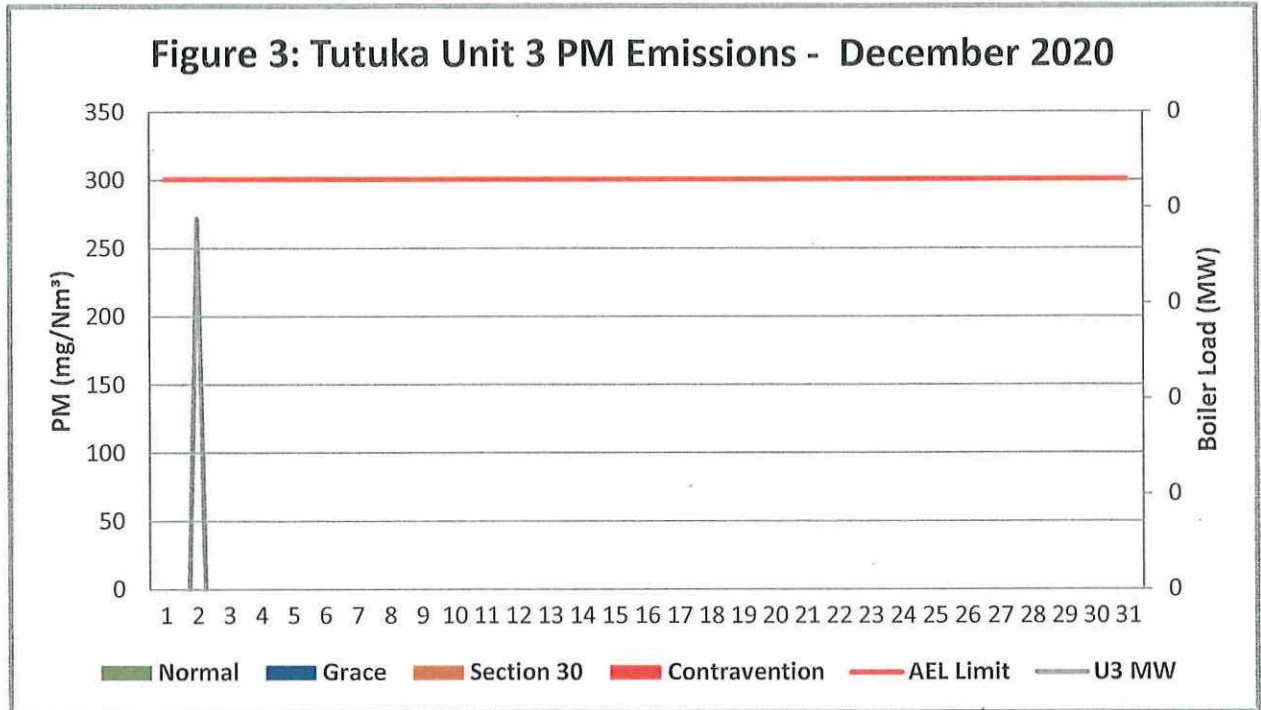


Figure 3: Unit 3 Daily Average PM emissions for the month of December 2020 (against the emission limits and load Generated)

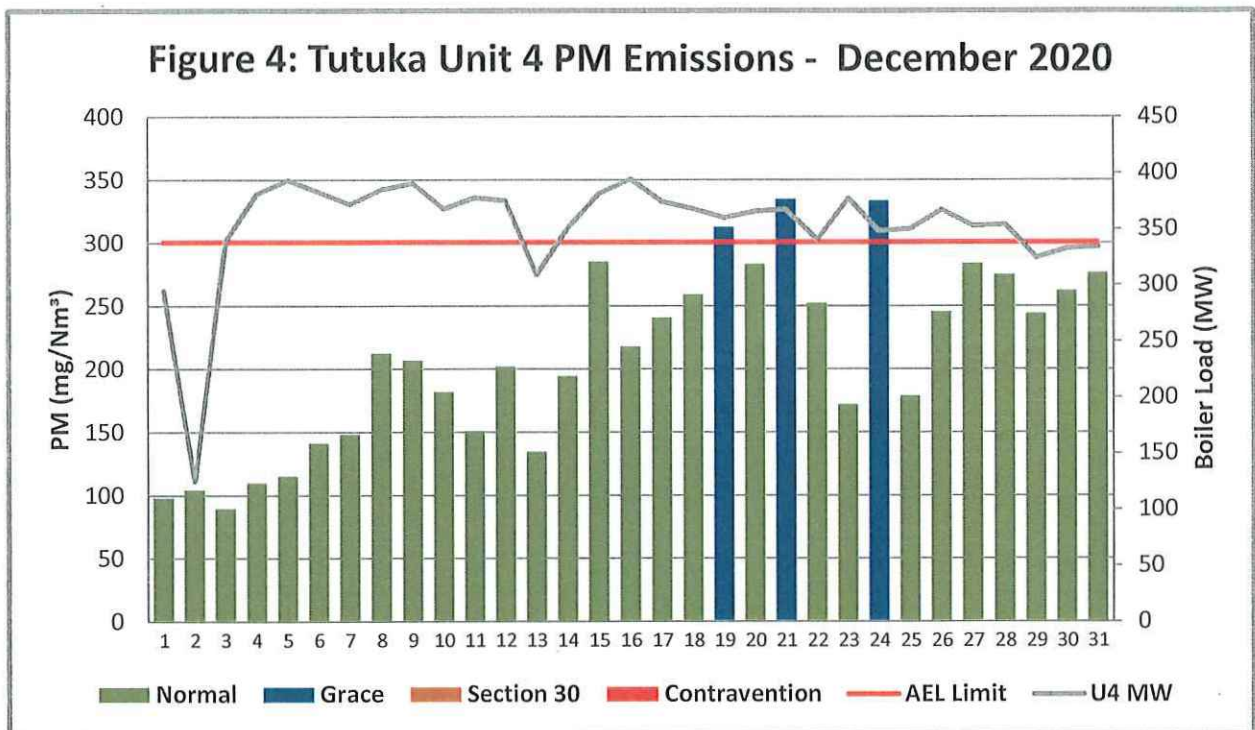


Figure 4: Unit 4 Daily Average PM emissions for the month of December 2020 (against the emission limits and load Generated)

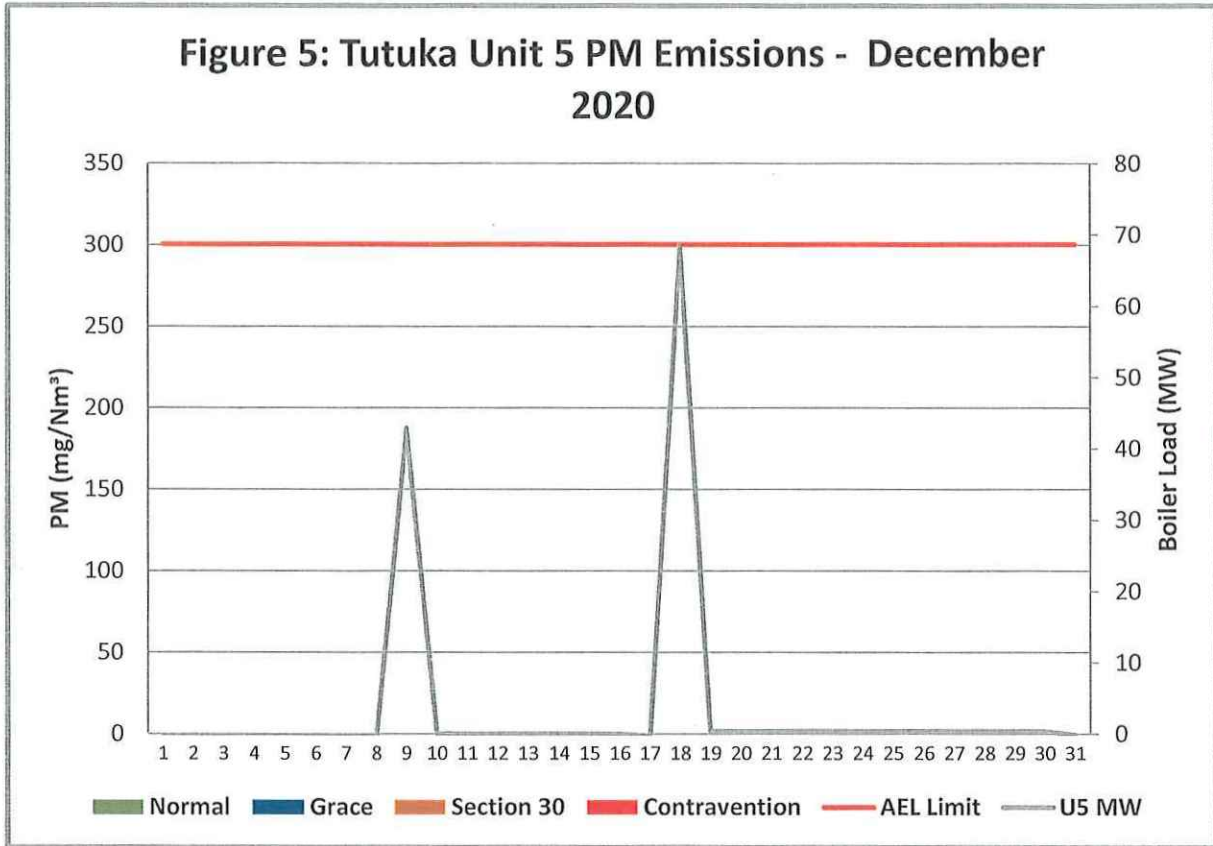


Figure 5: Unit 5 Daily Average PM emissions for the month of December 2020 (against the emission limits and load Generated)

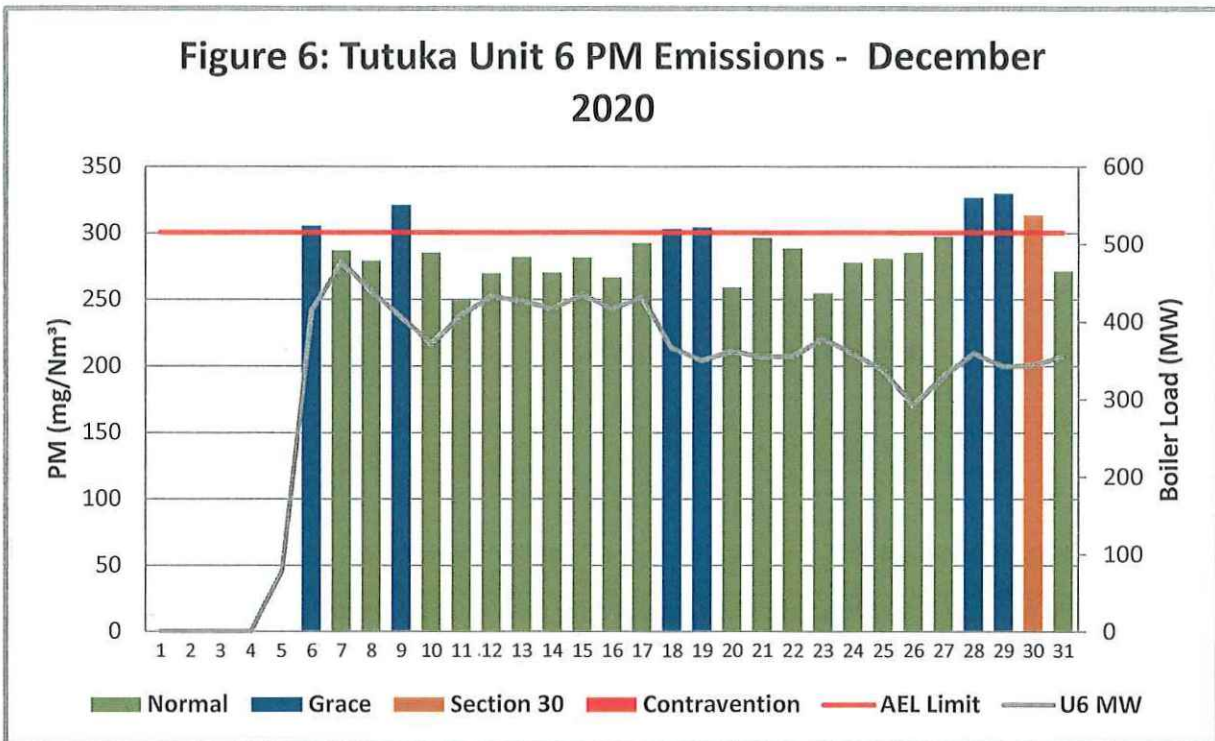


Figure 6: Unit 6 Daily Average PM emissions for the month of December 2020 (against the emission limits and load Generated)

Unit 6 incurred a section 30 on the 30th December 2020. See details on 7.1 below.

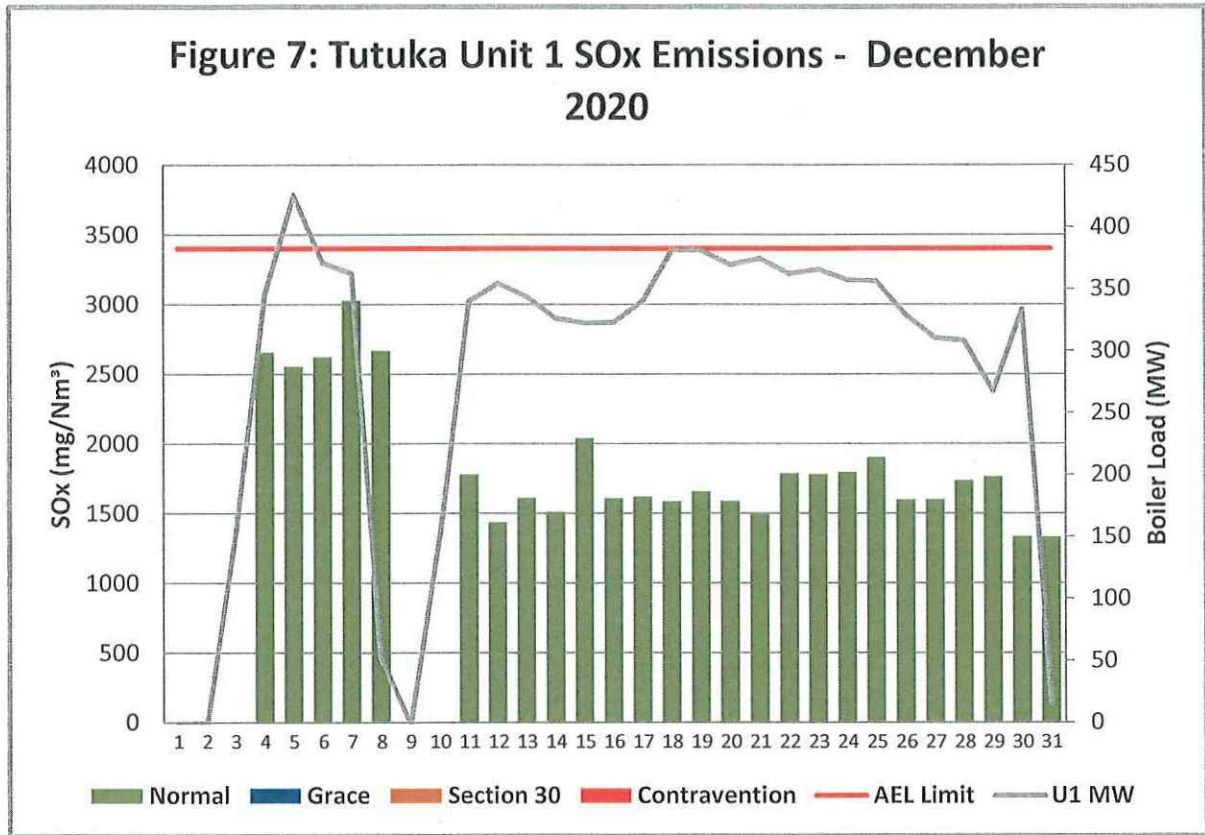


Figure 7: Unit 1 Daily Average SOx emissions for the month of December 2020 (against the emission limits and load Generated)

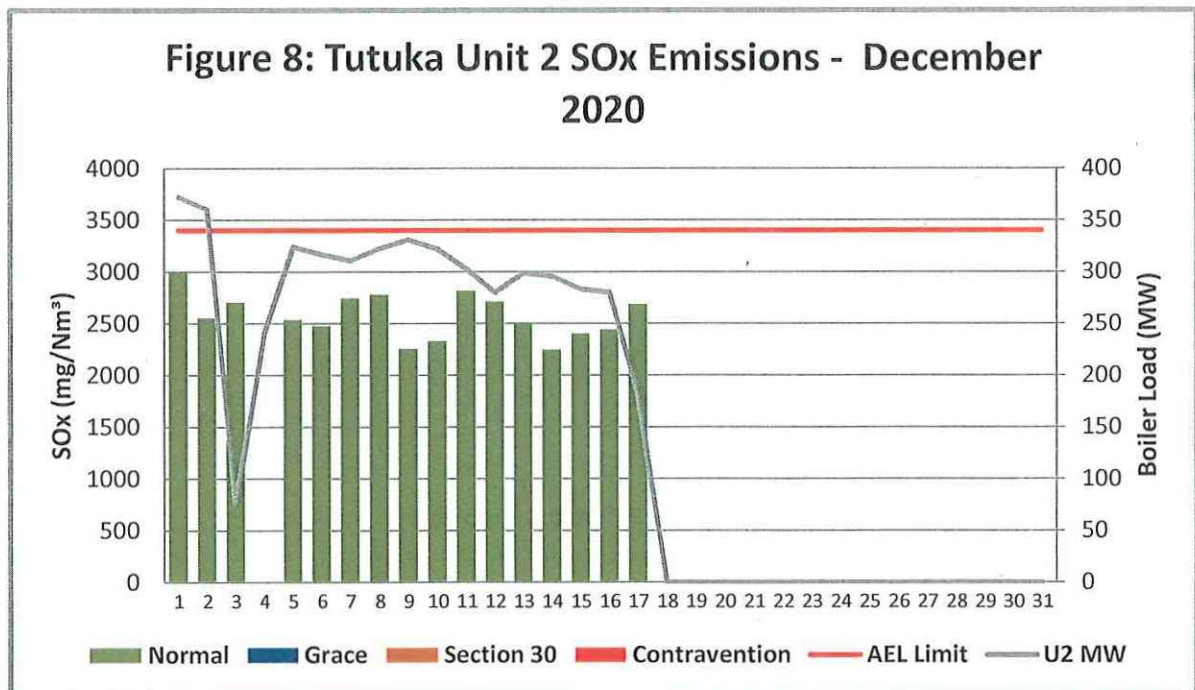


Figure 8: Unit 2 Daily Average SOx emissions for the month of December 2020 (against the emission limits and load Generated)

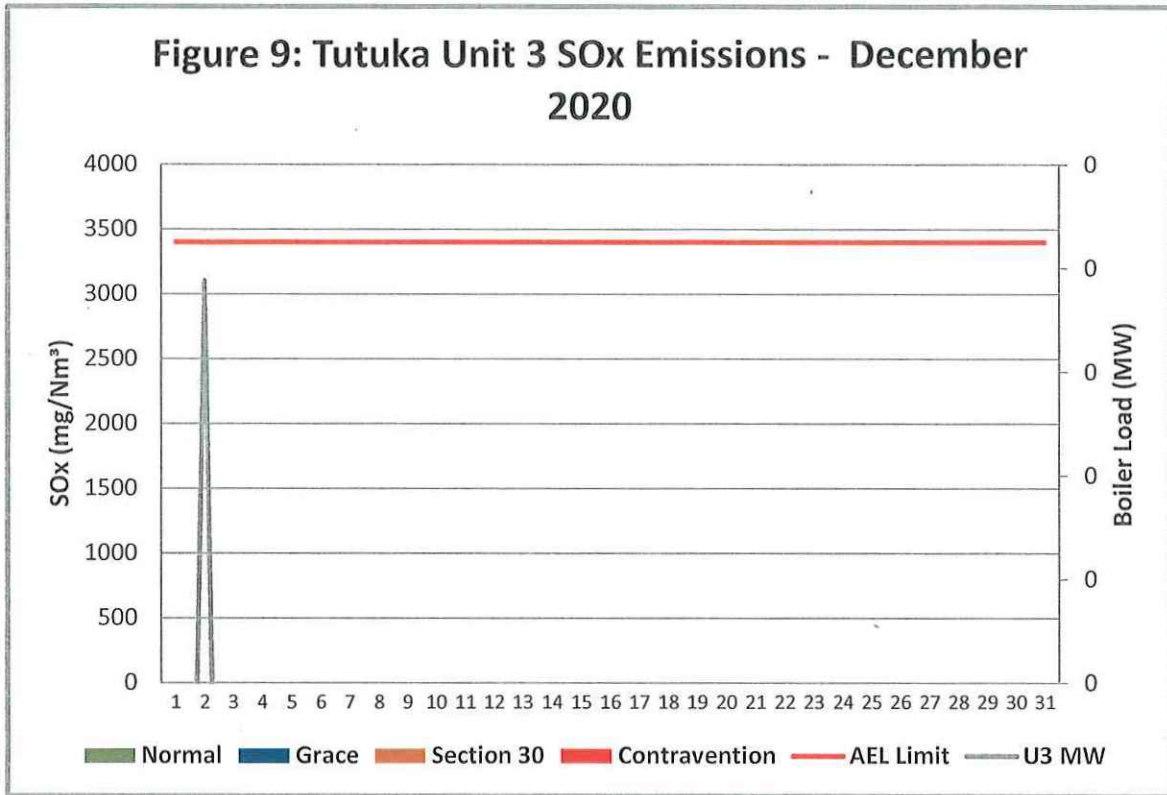


Figure 9: Unit 3 Daily Average SOx emissions for the month of December 2020 (against the emission limits and load Generated)

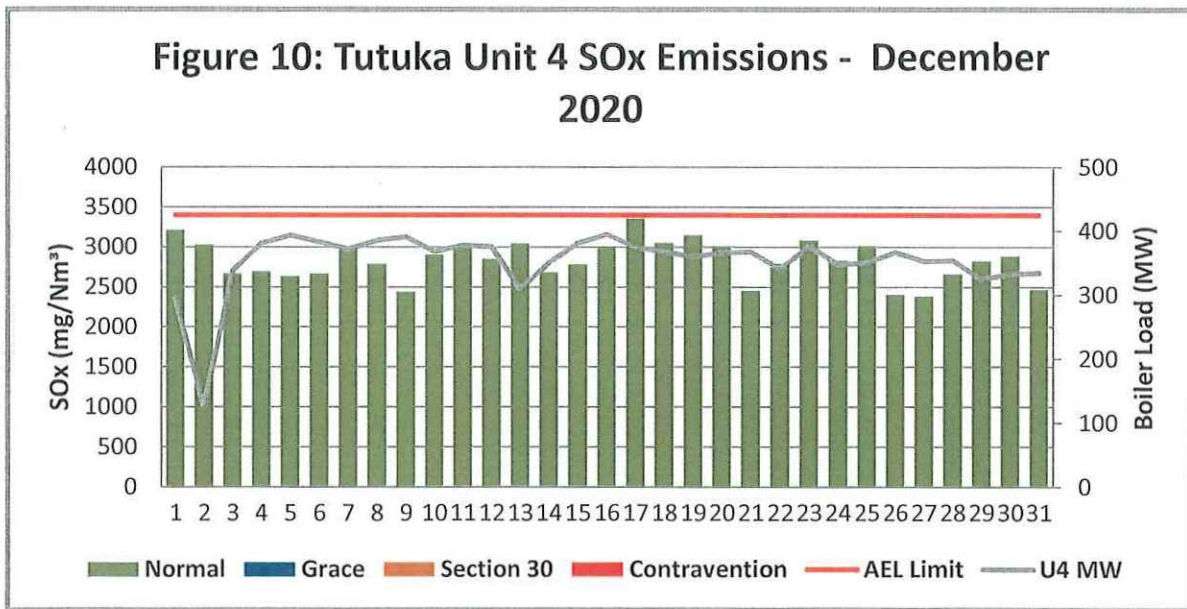


Figure 10: Unit 4 Daily Average SOx emissions for the month of December 2020 (against the emission limits and load Generated)

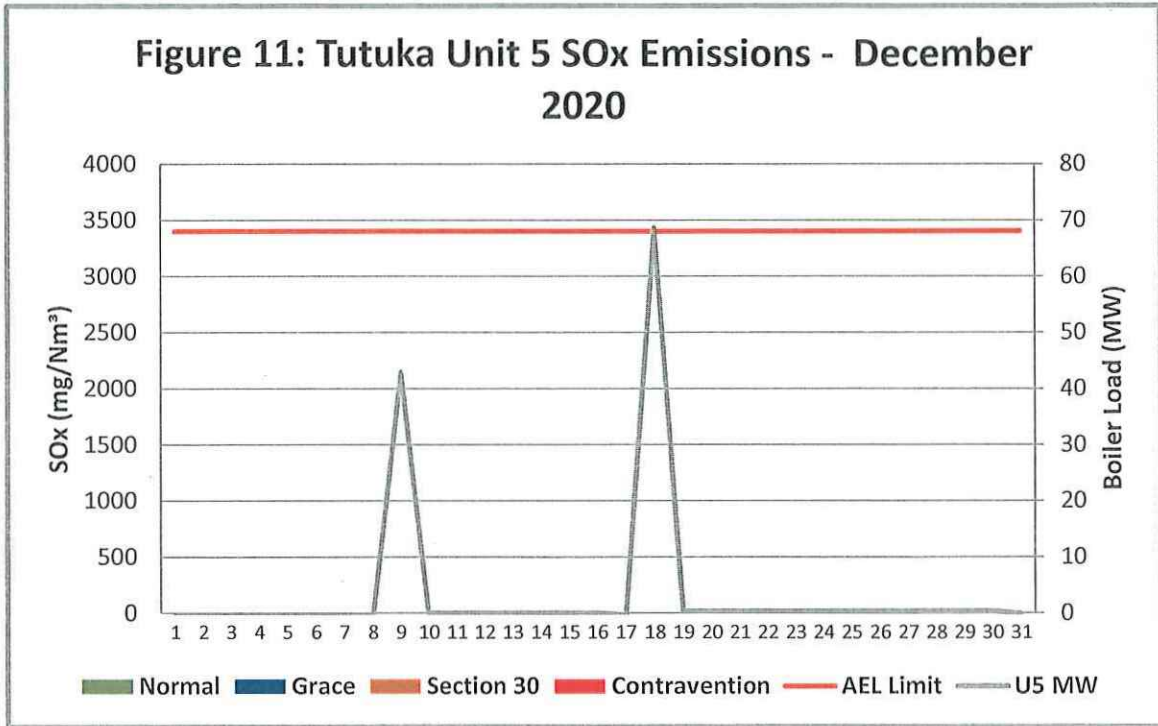


Figure 11: Unit 5 Daily Average SOx emissions for the month of December 2020 (against the emission limits and load Generated)

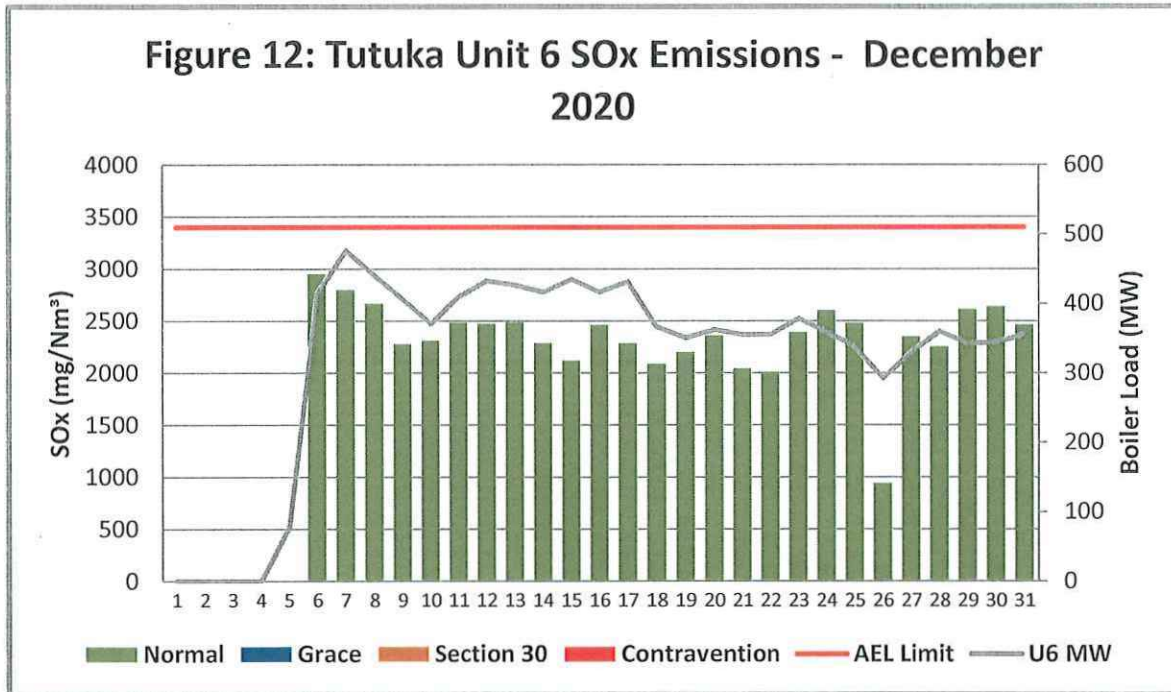


Figure 12: Unit 6 Daily Average SOx emissions for the month of December 2020 (against the emission limits and load Generated)

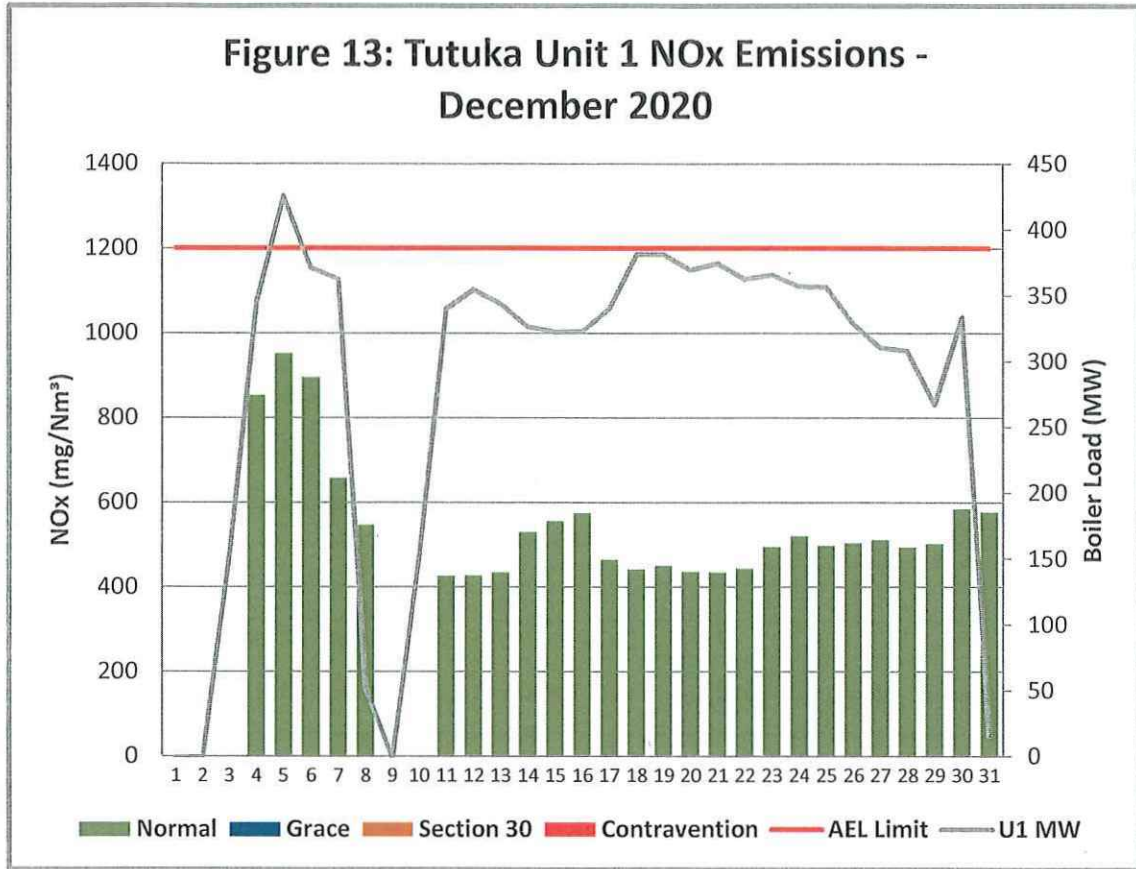


Figure 13: Unit 1 Daily Average NOx emissions for the month of December 2020 (against the emission limits and load Generated)

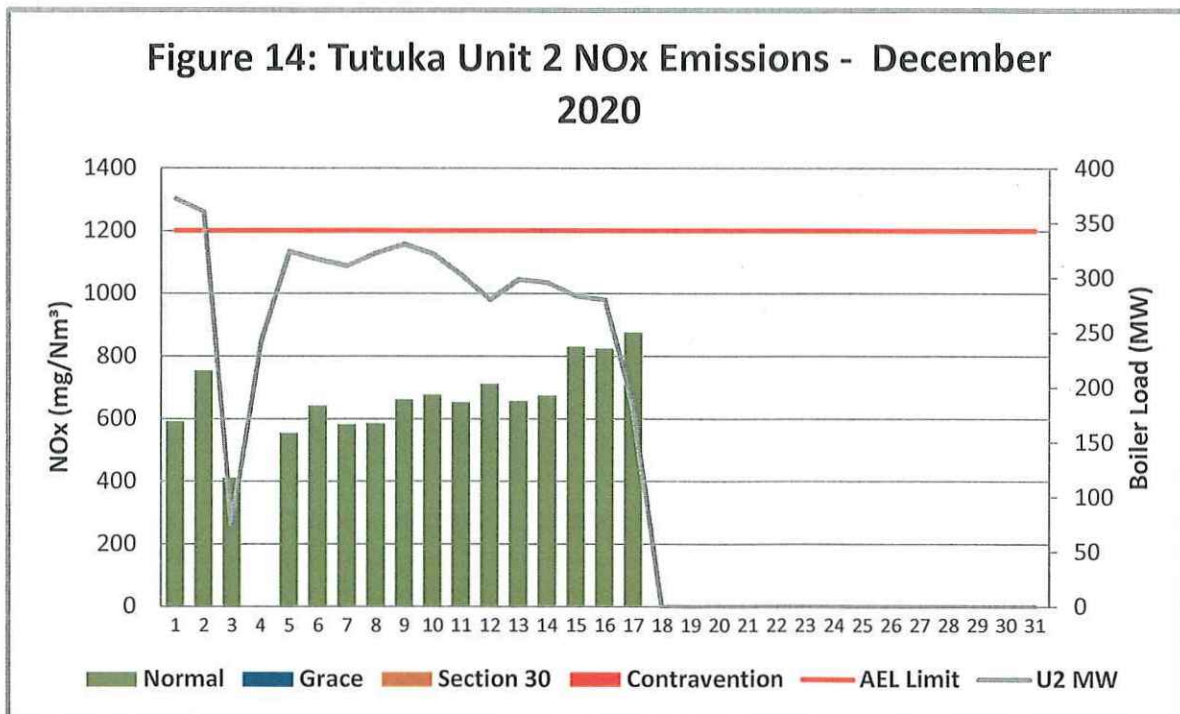


Figure 14: Unit 2 Daily Average NOx emissions for the month of December 2020 (against the emission limits and load Generated)

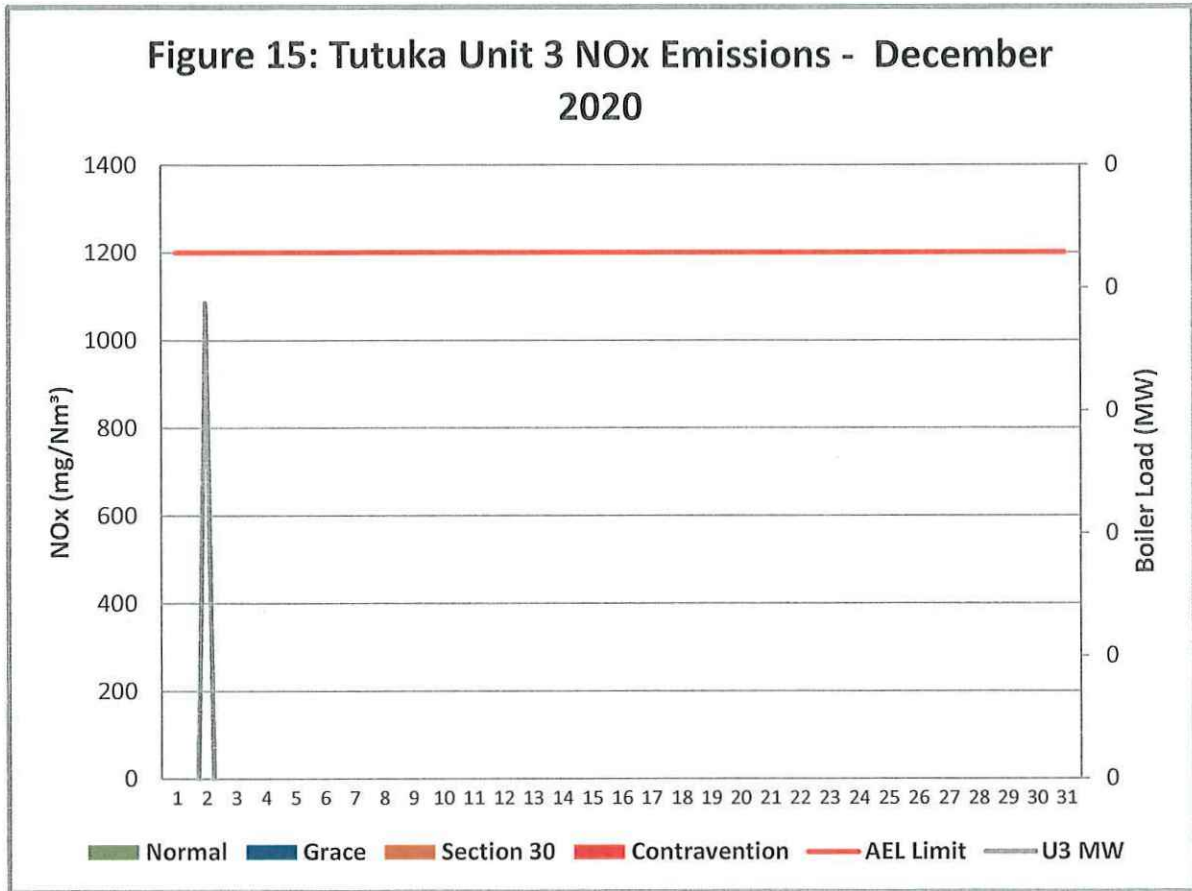


Figure 15: Unit 3 Daily Average NOx emissions for the month of December 2020 (against the emission limits and load Generated)

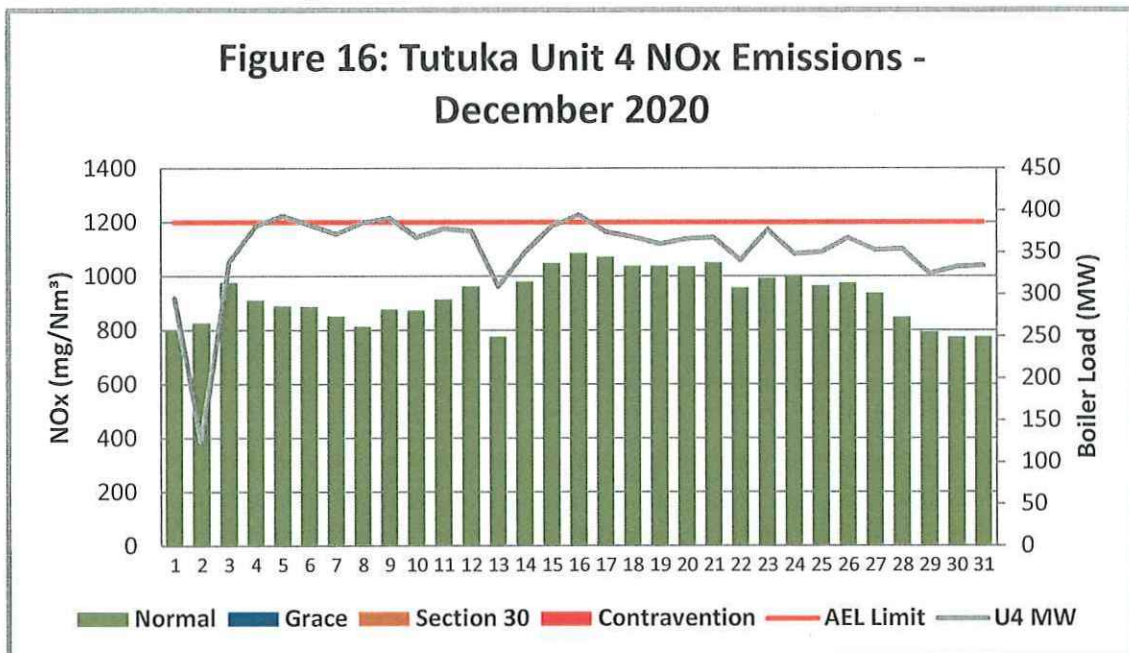


Figure 16: Unit 4 Daily Average NOx emissions for the month of December 2020 (against the emission limits and load Generated)

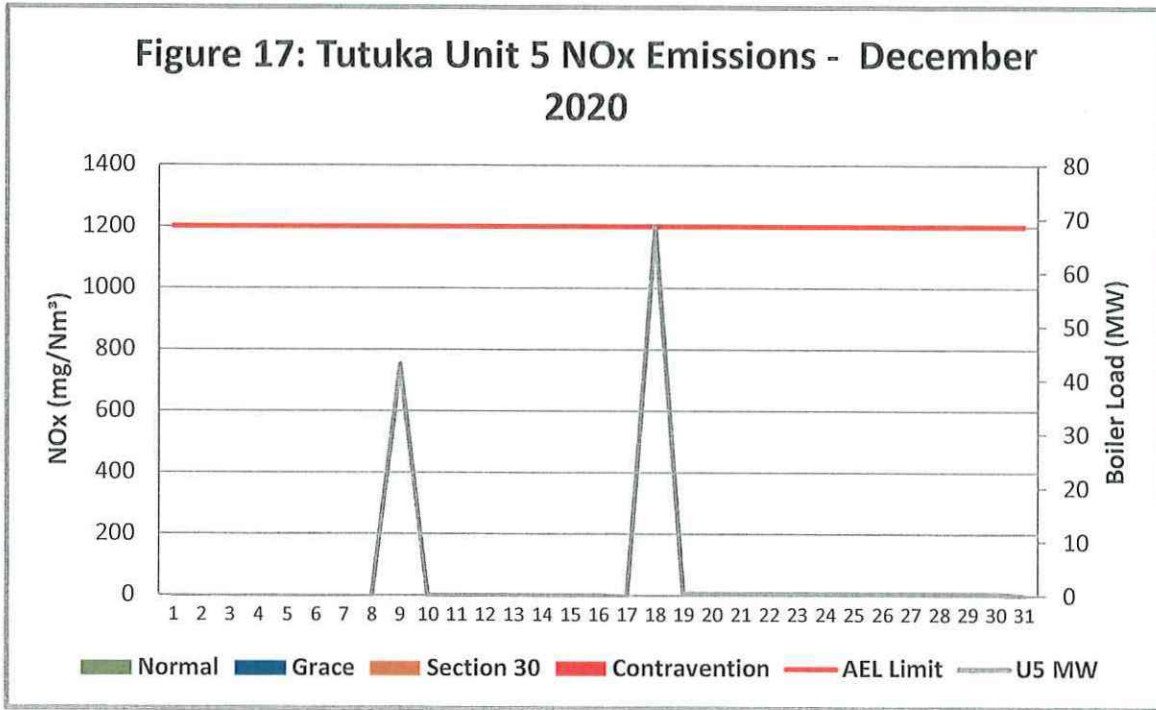


Figure 17: Unit 5 Daily Average NOx emissions for the month of December 2020 (against the emission limits and load Generated)

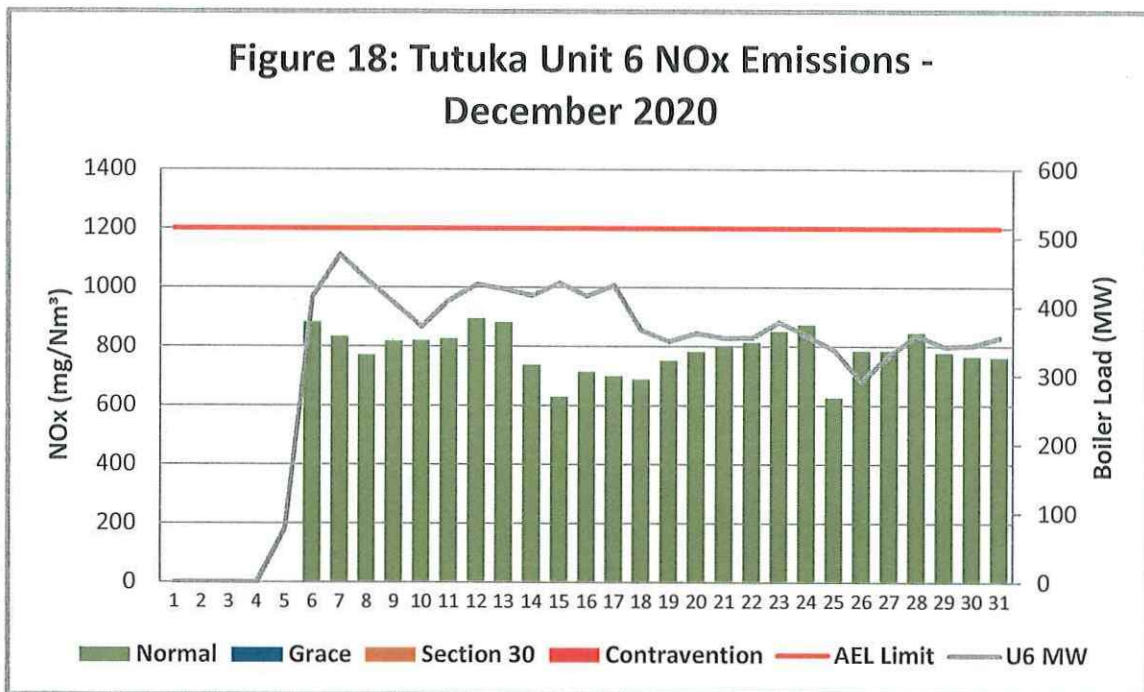


Figure 18: Unit 6 Daily Average NOx emissions for the month of December 2020 (against the emission limits and load Generated)

5. Number of start-up per unit

Number & Type of Starts	U1	U2	U3	U4	U5	U6
Number Of Hot Starts (Off-Load < 30 Hrs)	3	1	0	3	0	0
Number Of Cold Starts (Off-Load > 30 hrs)	2	0	0	0	2	1

Table 5: Number and type of Unit start-ups for each unit respectively for the month of December 2020

6. Complaints

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 by which measure will be implemented
N/A	N/A	N/A	N/A	N/A	N/A

Table 6: Complaints for the month of December 2020

7. General

Note 1 performance:

Unit 6 had a section 30 incident that was due to the dust handling plant. The plant had 3 hoppers full caused by the build-up of ash backlog from prolonged repair period on the bucket elevators, and ash conditioners. Units 1, 4 & 6 had 11 PM exceedances within the grace period during the month of December 2020(See table 7.1 below) due to the dust handling plant issues.

Date	PM emissions	Authority submission
27-Dec	297.5	Section 30 investigation report was submitted on the 18 January 2021
28-Dec	326.7	
29-Dec	329.8	
30-Dec	313.7	
31-Dec	271.6	

There were no SO_x & NO_x exceedances (See tables 7.2 -7.3 below)

Table 7.1: Operating days in compliance to PM AEL Limit - December 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	24	2	0	0	2	264.6
Unit 2	16	0	0	0	0	156.3
Unit 3	0	0	0	0	0	
Unit 4	28	3	0	0	3	211.2
Unit 5	0	0	0	0	0	
Unit 6	19	6	1	0	7	287.7
SUM	87	11	1	0	12	

Table 7.2: Operating days in compliance to SO_x AEL Limit - December 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO _x (mg/Nm ³)
Unit 1	26	0	0	0	0	1 849.2
Unit 2	16	0	0	0	0	2 573.0
Unit 3	0	0	0	0	0	
Unit 4	31	0	0	0	0	2 830.1
Unit 5	0	0	0	0	0	
Unit 6	26	0	0	0	0	2 347.1
SUM	99	0	0	0	0	

Table 7.3: Operating days in compliance to NO_x AEL Limit - December 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NO _x (mg/Nm ³)
Unit 1	26	0	0	0	0	546.6
Unit 2	16	0	0	0	0	667.9
Unit 3	0	0	0	0	0	
Unit 4	31	0	0	0	0	926.8
Unit 5	0	0	0	0	0	
Unit 6	26	0	0	0	0	785.6
SUM	99	0	0	0	0	



Note 2 – Applicable emission limits

Eskom Centre of Excellence (CoE): Air Quality submitted an application on behalf of Tutuka PS for the postponement for the implementation of the Minimum Emissions Standard (MES) limits to the Department of Environment Fisheries and Forestry (DEFF) and Gert Sibande District Municipality on the 09th of November 2018. In the application, a postponement of 300 mg/Nm³ was requested (24 hour moving average). Tutuka PS's new PM emissions limit of 100 mg/Nm³ (previously- 350 mg/Nm³), came into effect on the 1st January 2020. The Station is unable to meet the limits with the current abatement technology.

All documentation in respect of the stations MES postponement application was submitted and DEFF has confirmed that while the application is being assessed the previous emission limits apply i.e. 300 mg/Nm³ for PM. In addition to that, the station has also submitted an AEL variation request.

For more information or enquiries contact the Tutuka environmental team.

Yours Sincerely

Compile by:

Monica Mokgawa

ENVIRONMENTAL MANAGER: TUTUKA POWER STATION

Signature: 

Date: 23 March 2021

Verified By:

Mike Molepo

SENIOR ADVISOR CHEMISTRY: TUTUKA POWER STATION

Signature: 


Date: 24/03/2021



Approved by:

Sello Mametja

GENERAL MANAGER: TUTUKA POWER STATION

Signature: .....

Date: 2021/03/24.....