

Mr. Dan Hlanyane  
 Air Quality Officer  
 Gert Sibande District Municipality  
 c/o Joubert & Oosthuise Street  
 ERMELO  
 2350

Date:  
 20 May 2020

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### TUTUKA POWER STATION MONTHLY EMISSIONS REPORT – APRIL 2019

#### 1. Raw Materials and Products

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of April 2019
	Coal	Tons/month	850 000	635 275
	Fuel Oil	Tons/month	5 500	6 515.14
1 250.9 187 112.8	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of April 2019
	Energy	GW	1 589 GW (based on annual permitted production capacity)	1 250.89
	Ash	kT/month	N/A	164 536.20

**Table 1: Quantity of Raw Materials and Products used/produced for the month of April 2019**

**Generation Division**  
 Tutuka Power Station  
 Standerton/Bethal Road, Standerton  
 Private Bag X2016, STANDERTON, 2430, SA  
 Tel +27 17 7495700 Fax +27 17 7495736 www.eskom.co.za

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## 2. Abatement Technology

Associated Unit / Stack	Technology Type	*Minimum Control Efficiency (%)	Actual Utilisation (%)
1	Electrostatic precipitator	98.6%	100
2	Electrostatic precipitator	99.4%	100
3	Electrostatic precipitator	99.7%	100
4	Electrostatic precipitator	98.6%	100
5	Electrostatic precipitator	Unit off-load	Unit off-load
6	Electrostatic precipitator	98.8%	100

**Table 2: Abatement Equipment Control Technology for month of April 2019**

\*Calculated from the assumption of 90% fly ash to 10% bottom ash and percentage ash as measured in coal (Alstom, Tutuka Power Station Capacity Increase Study).

## 3. Energy Source Characteristics

Characteristic	Stipulated Range (Unit)	Monthly Average Content
CV Content	N/A	
Sulphur Content	0.6 - > 2.6%	0.89
Ash Content	21-33%	25.90

**Table 3: Energy Source Material Characteristics for the month of April 2019**

## 4. Emissions Reporting

Unit	PM (T)	*SO <sub>2</sub> (T)	*NO <sub>2</sub> (T)	*CO <sub>2</sub> (T)
1	533.5	1 2686	5 073	
2	182.8			
3	19.9			
4	453.9			
5	Unit off-load			
6	431.8			

**Table 4: Monthly tonnages for the month of April 2019**

\*Based on coal burnt as per Emissions Summary

Unit	PM (mg/Nm <sup>3</sup> )	*NO <sub>2</sub> (mg/Nm <sup>3</sup> )	*SO <sub>2</sub> (mg/Nm <sup>3</sup> )	*CO <sub>2</sub> (mg/Nm <sup>3</sup> )
1	307.6	925	2392	
2	161.1	946	2322	
3	106.7	702	2149	
4	376.8	1024	2558	
5	Unit off-load	Unit off-load	Unit off-load	
6	305.8	872	2126	

**Table 5: Monthly average Emissions Concentration (mg/Nm<sup>3</sup>) for the month of April 2019**

\*Based on verified gaseous emission data

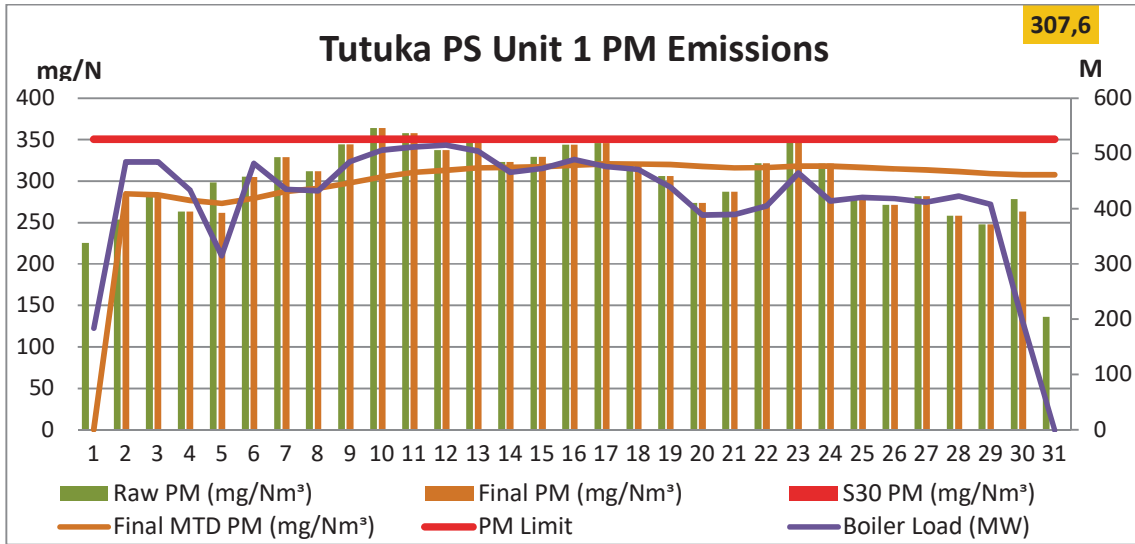


Figure 1: Unit 1 Daily Average PM emissions for the month of April 2019 (Against the emissions limit and load generated)

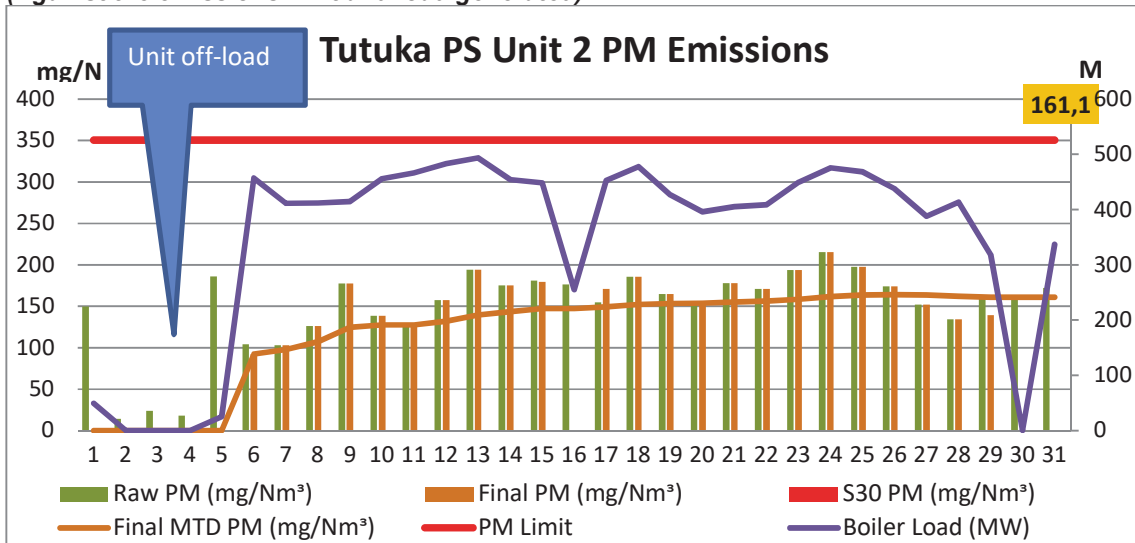


Figure 2: Unit 2 Daily Average PM emissions for the month of April 2019 (Against the emission limits and load generated)

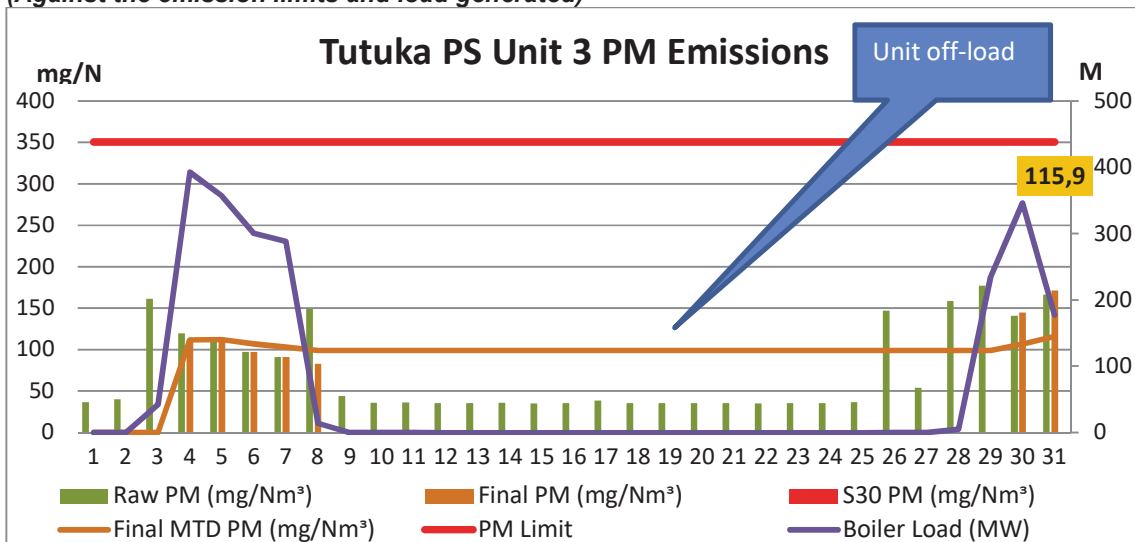


Figure 3: Unit 3 Daily Average PM Emissions for the month of April 2019 (Against the emissions limit and load generated)

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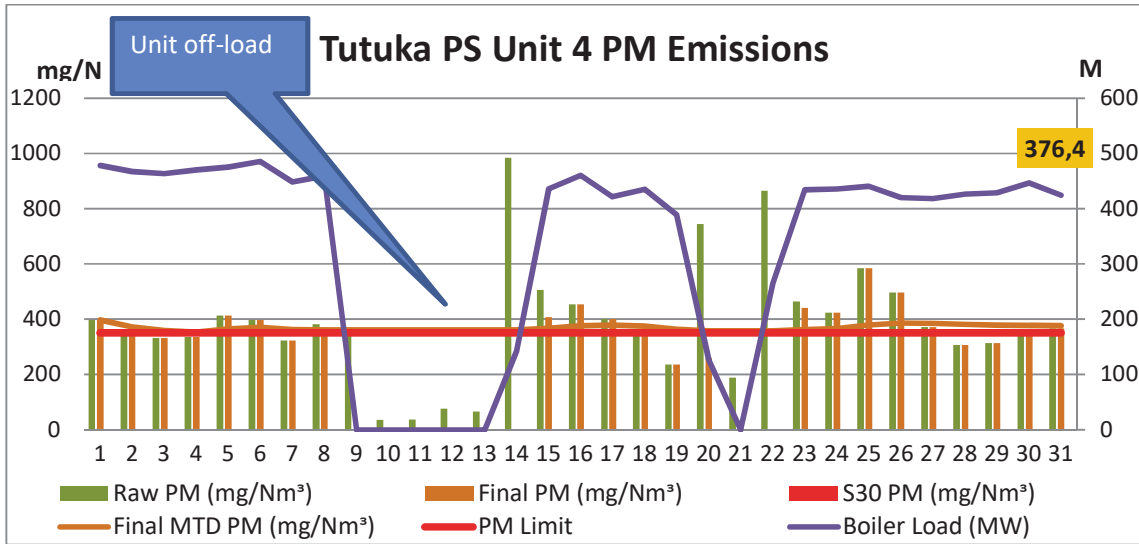


Figure 4: Unit 4 Daily Average PM emissions for the month of April 2019 (Against the emission limits and load generated)

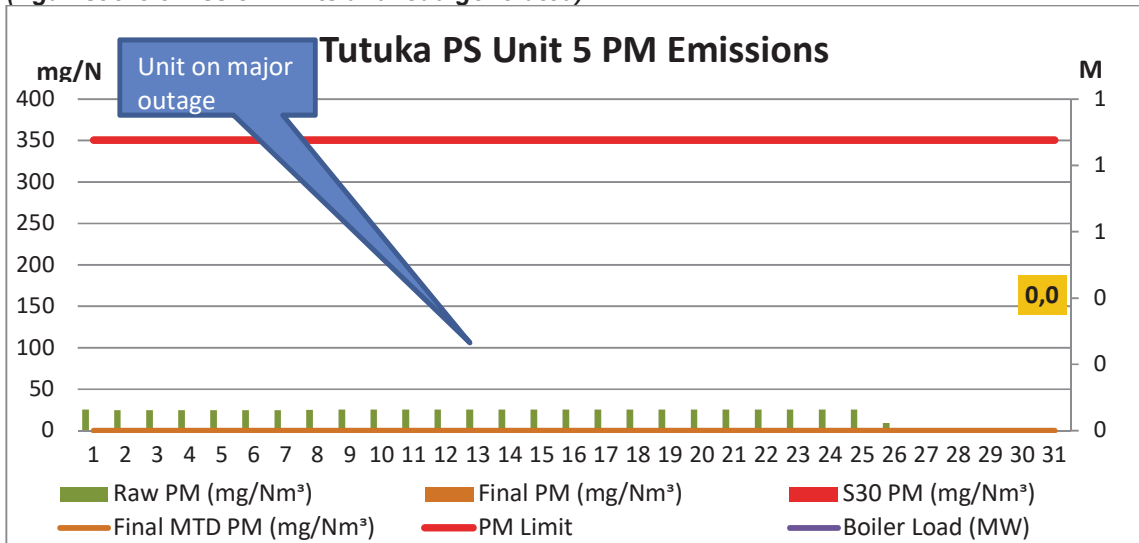


Figure 5: Unit 5 Daily Average PM Emissions for the month of April 2019 (Against the emissions limit and load generated)

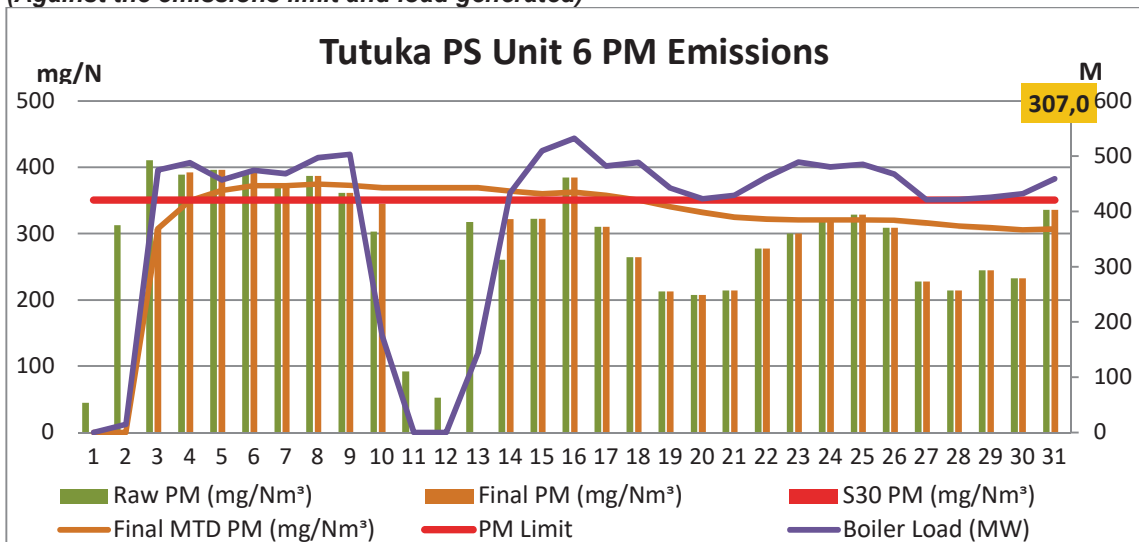


Figure 6: Unit 6 Daily Average PM emissions for the month of April 2019 (Against the emission limits and load generated)

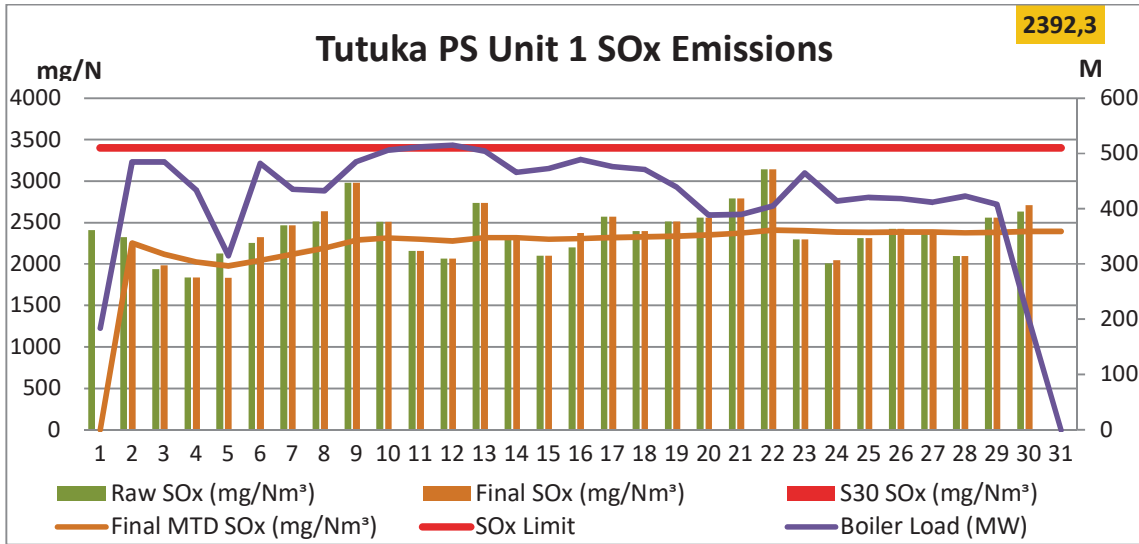


Figure 7: Unit 1 Daily Average SOx Emissions for the month of April 2019 (Against the emissions limit and load generated)

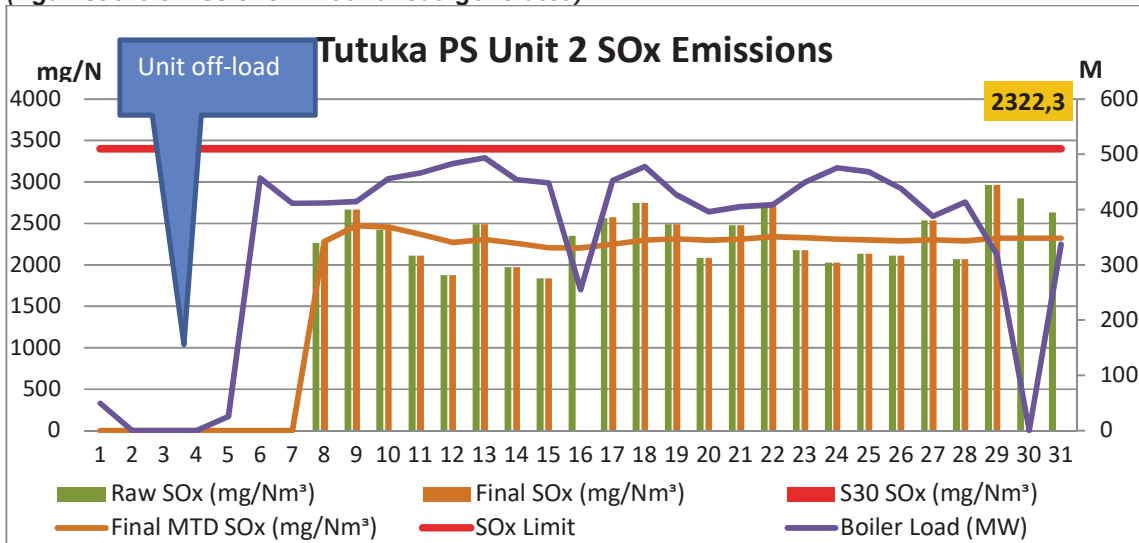


Figure 8: Unit 2 Daily Average SOx emissions for the month of April 2019 (Against the emission limits and load generated)

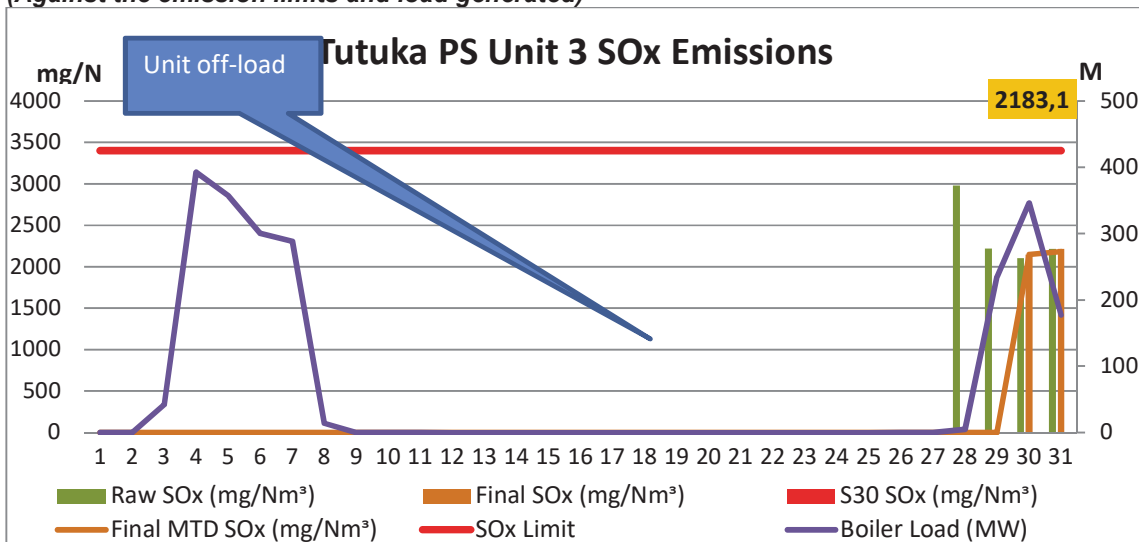


Figure 9: Unit 3 Daily Average SOx emissions for the month of April 2019 (Against the emission limits and load generated)

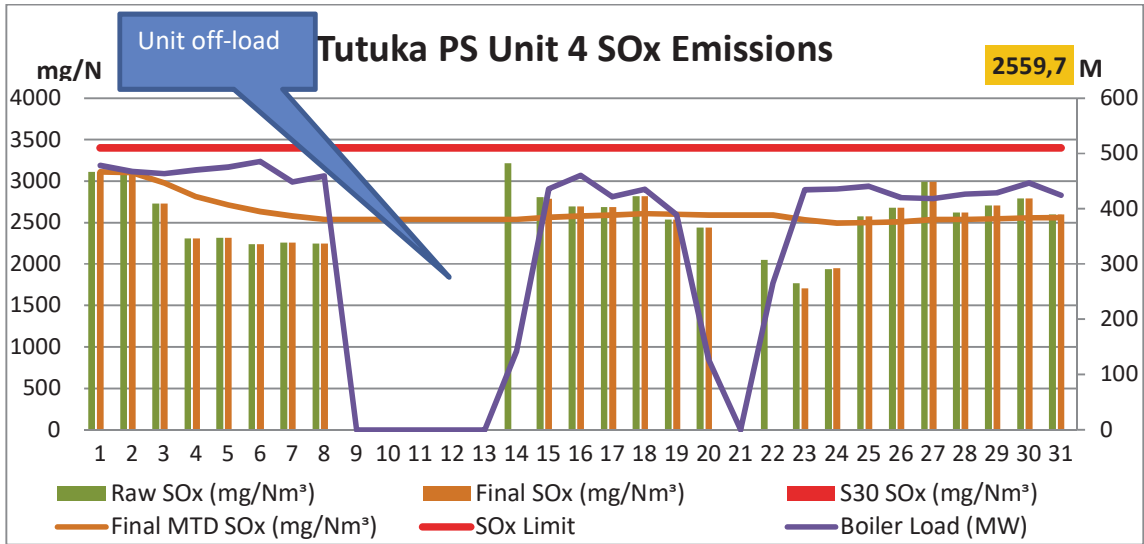


Figure 10: Unit 4 Daily Average SOx emissions for the month of April 2019 (Against the emission limits and load generated)

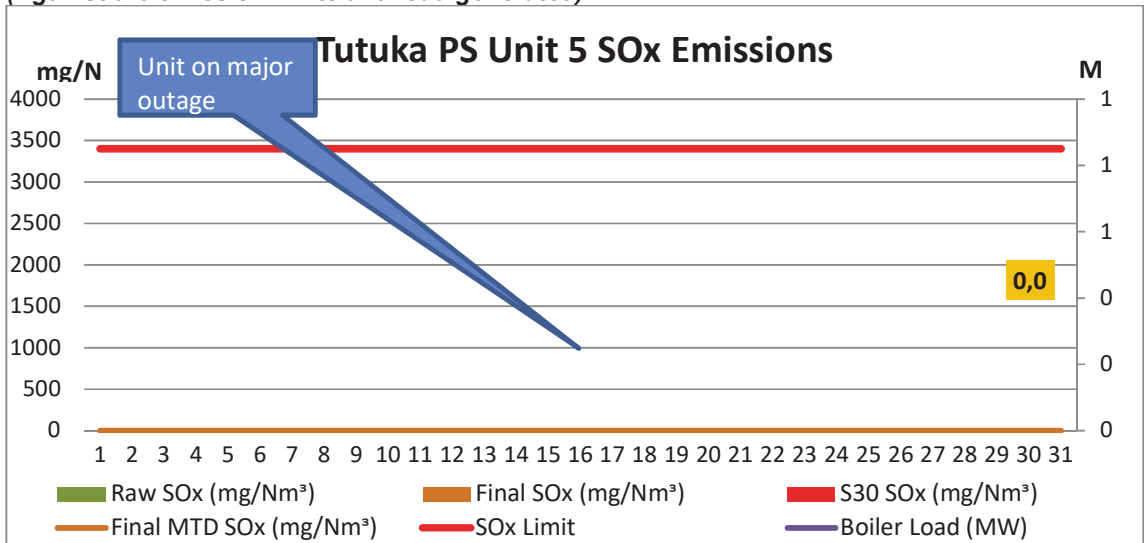


Figure 11: Unit 5 Daily Average SOx Emissions for the month of April 2019 (Against the emissions limit and load generated)

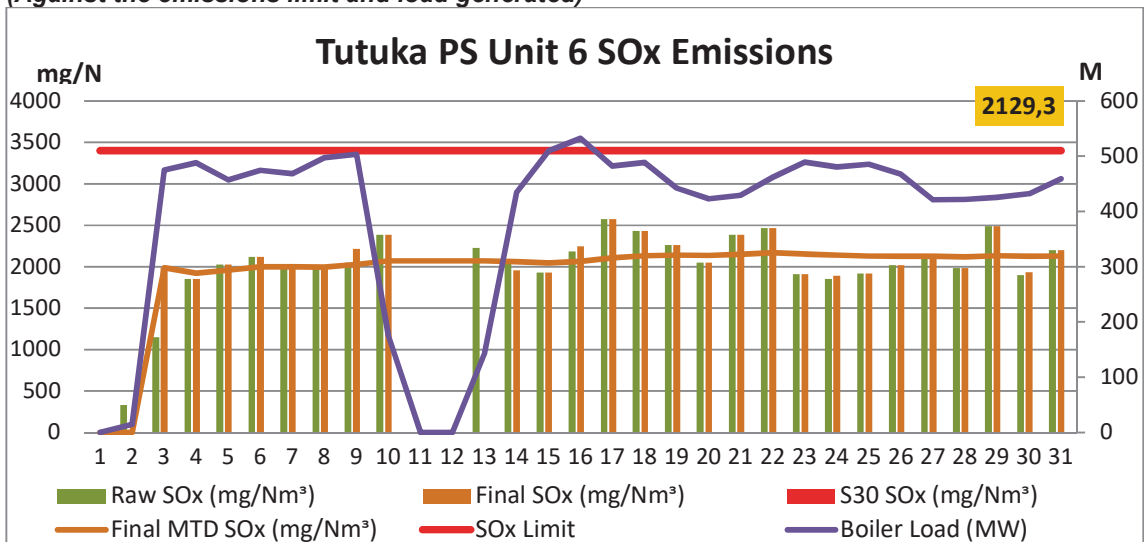


Figure 12: Unit 6 Daily SOx emissions for the month of April 2019 (Against the emission limits and load generated)

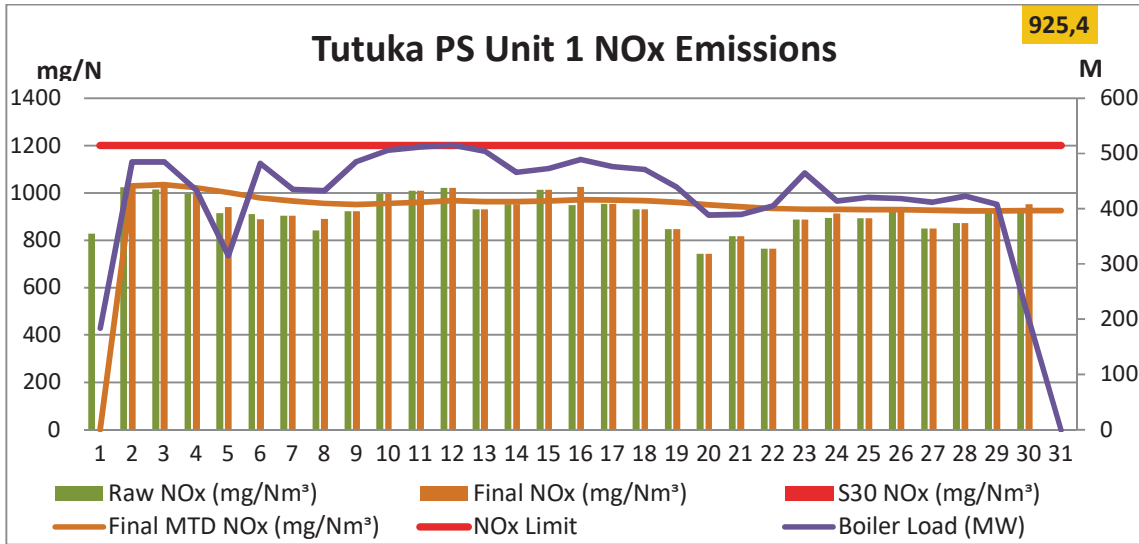


Figure 13: Unit 1 Daily Average NOx Emissions for the month of April 2019 (Against the emissions limit and load generated)

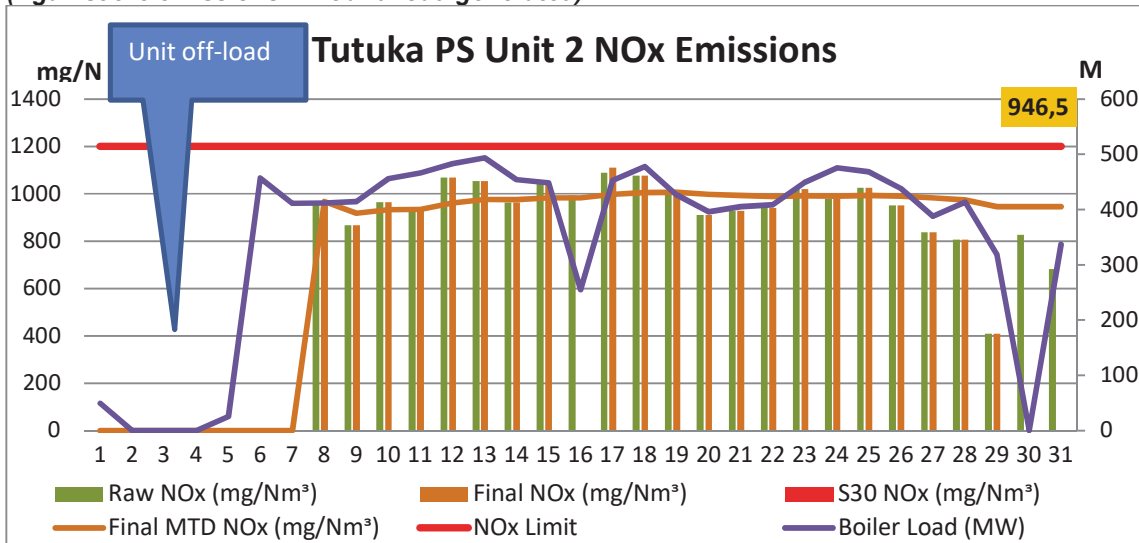


Figure 14: Unit 2 Daily Average NOx emissions for the month of April 2019 (Against the emission limits and load generated)

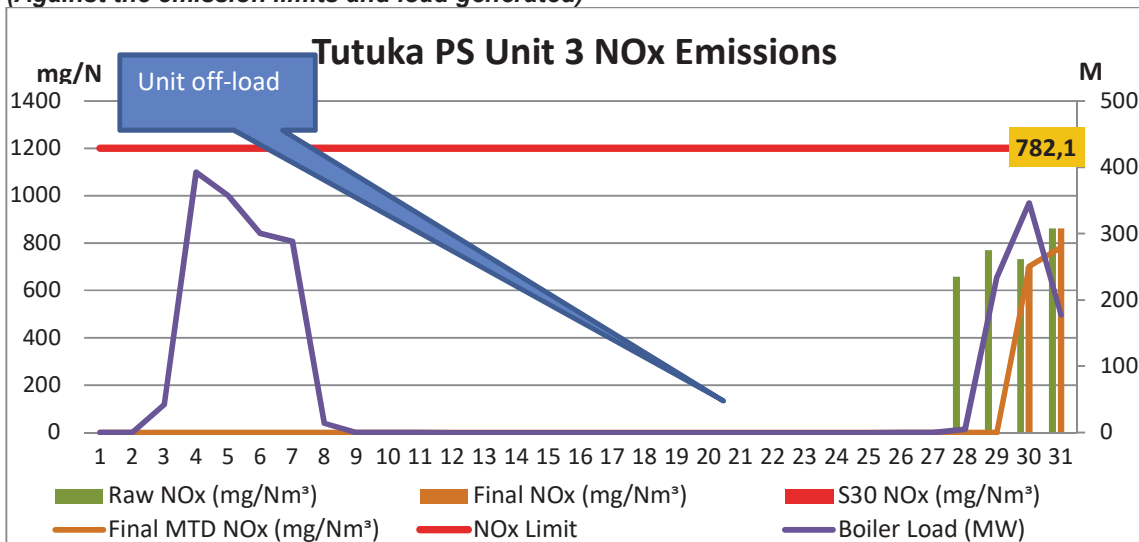


Figure 15: Unit 3 Daily Average NOx emissions for the month of April 2019 (Against the emission limits and load generated)

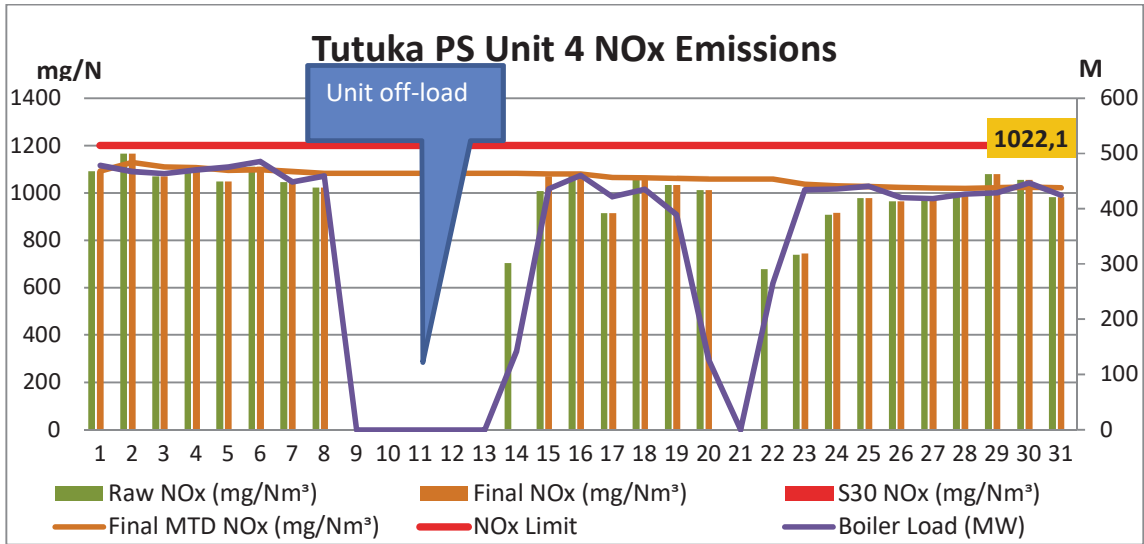


Figure 16: Unit 4 Daily Average NOx emissions for the month of April 2019 (Against the emission limits and load generated)

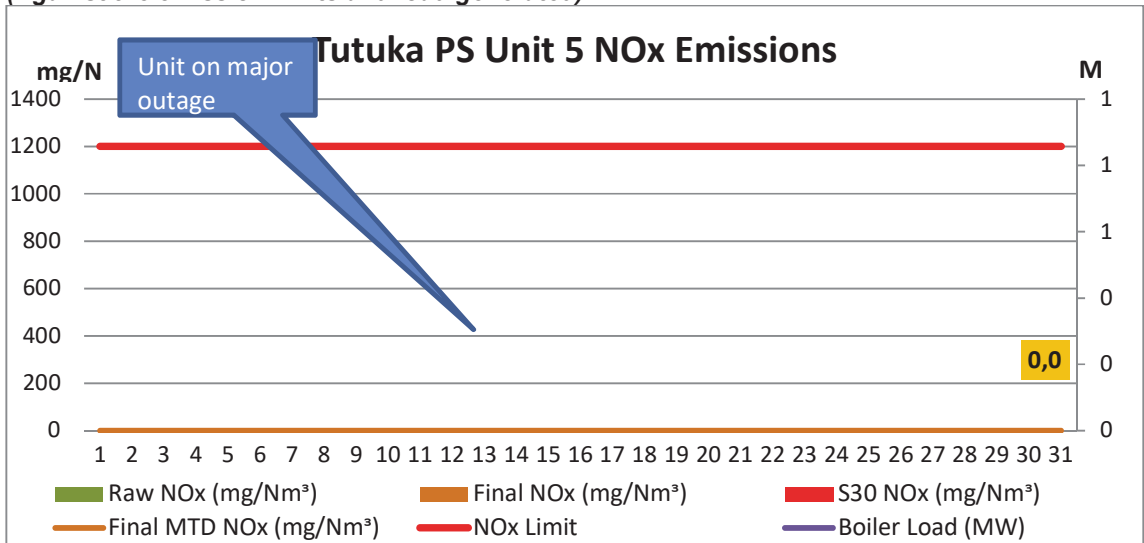


Figure 17: Unit 5 Daily Average NOx emissions for the month of April 2019 (Against the emission limits and load generated)

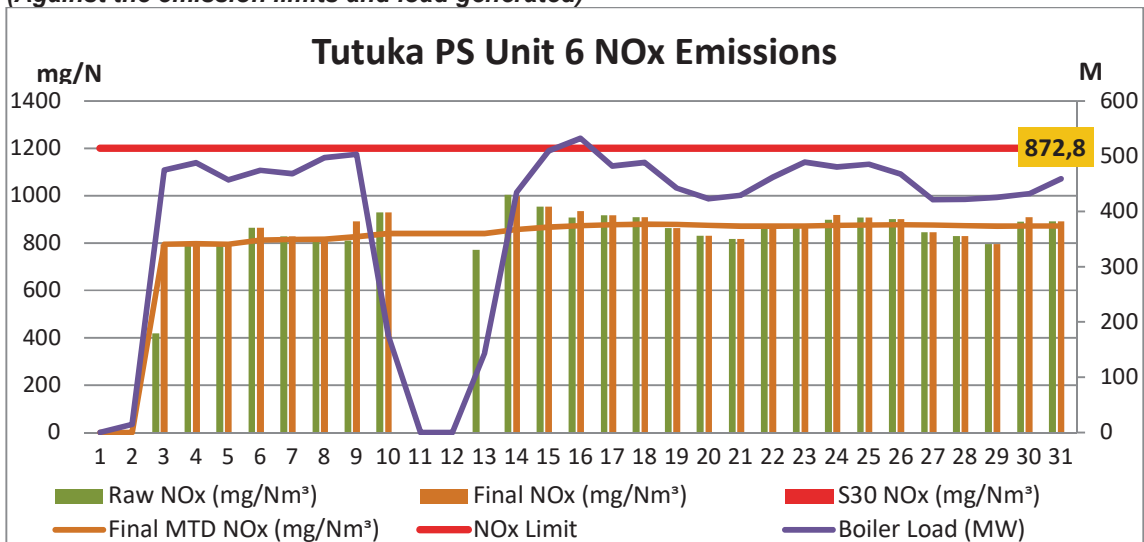


Figure 18: Unit 6 Daily Average NOx emissions for the month of April 2019 (Against the emission limits and load generated)



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**5. Comments on the Performance and Availability of Each Unit**

Unit	Days operating under normal operation	Days operating in grace period	Days operating under S 30	Days Unit offline
1	28:15:10	3	0	01:08:50
2	23:21:25	0	0	06:02:35
3	05:22:25	0	0	24:01:35
4	22:12:35	4	10	07:11:25
5	Unit off-load	Unit off-load	Unit off-load	30:00:00
6	24:20:25	2	5	05:03:35

**Table 6: Each unit and respective days operating under normal operation, days in grace period, and section 30 days respectively for the month of April 2019**

*\*Values rounded to the nearest day*

Number & Type of Starts	U1	U2	U3	U4	U5	U6
Number Of Hot Starts (Off-Load < 30 Hrs)	0	6	15	8	0	6
Number Of Cold Starts (Off-Load > 30 hrs)	0	0	1	0	0	0

**Table 7: Number and type of Unit start-ups for each unit respectively for the month of April 2019**

**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 8: Complaints for the month of April 2019**

**7. General**

- Eskom Head Office (Sustainability Air Quality Centre of Excellence) submitted an application on behalf of Tutuka PS for the postponement for the implementation of the Minimum Emissions Standard (MES) limits to the DEA and Gert Sibande District Municipality on the 09<sup>th</sup> of November 2018. In the application, a limit of 300 mg/Nm<sup>3</sup> was requested (24 hour moving average).
- Tutuka Power Stations’ new PM emissions limit of 200 mg/Nm<sup>3</sup> ( previously 350 mg/Nm<sup>3</sup> ), came into effect on the 1<sup>st</sup> of January 2019 which the Station is unable to meet with the current abatement technology and therefore an AEL variation was also applied for.
- It was communicated to the DEA and Gert Sibande District Municipality on the 20<sup>th</sup> of December 2018 that the station intended to continue to operate assuming a PM emissions limit of 300mg/Nm from the 1<sup>st</sup> of January 2019, whilst feedback is awaited on the MES Postponement Application and the AEL variation.
- On the 31<sup>st</sup> of January 2019 Tutuka PS had a clarification meeting with Mr Dan Hlanyane, the Air Quality Officer of Gert Sibande District Municipality to establish the interim way forward until feedback is received on the postponement application.

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- During the meeting Mr Hlanyane indicated that the Station should continue the status quo of managing and reporting on emissions against the 350mg/Nm<sup>3</sup> limit until formal response is received from the Authorities.
- On 23 May 2019, Eskom had a meeting with the DEA. The meeting was to clarify the additional requested information for Eskom's MES application.

Tutuka Power Station had two emissions incidents for the month of April 2019, the station had initially submitted two Section 30 reportable incidents. These two incidents occurred on 24 April 2019 for Unit 4 and 06 April 2019 for Unit 6. The DEA rejected the Section 30 incident which occurred on 06 April 2019, and indicated that the incident falls outside the ambit of an incident as defined in S (30) (1) (a) of NEMA. This means that, Tutuka Power Station only incurred one Section 30 reportable incident for the month of April 2019.

Compiled by:



Lehlohonolo Mogwase

**SENIOR ENVIRONMENTAL ADVISOR (EMISSIONS CONTROL OFFICER)**


Reviewed by:



Lyborn Xivambu

**ENVIRONMENTAL MANAGER (acting)**

Approved by:

 2020-05-21

Marcus Nemadodzi

**GENERAL MANAGER: TUTUKA POWER STATION**

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ANNEXURE 1: TUTUKA POWER STATION CORRELATION FORMULA FOR UNIT 1 TO 6 INCLUDING UNIT 4 NEW CURVE

mA to Emissions (mg/Nm <sup>3</sup> ) Correlation Curves													
		Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
		OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2
C		-113.126		-93.600		-76.587		78.4038		-91.331		-44.4226	
m <sup>2</sup>		4.2056								1.3550			
m		25.665		22.611		18.016		-36.361		21.705		5.7064	
		*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA
Extinction													
@ 20 mA		400.2	0.0	358.6	0.0	283.7	0.0	-648.8	0.0	342.8	0.0	611.7	0.0
@ 4 mA		-10.5	0.0	-3.2	0.0	-4.5	0.0	-67.0	0.0	-4.5	0.0	0.1	0.0