

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	7
		Document Identifier	240-88543153	Rev	2
		Effective Date	October2024		
		Review Date	October2027		

Stanley Koenaitse

Waterberg District Municipality
Private Bag X1018
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skoenaite@waterberg.gov.za

Date: 2024/11/30

Enquiries: MF Dikgale

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Email: DikgalMF@eskom.co.za

Ref: H16/1/13-AEL/M1/R1 – October 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF OCTOBER 2024

This document serves as the monthly emissions report required in terms of Section 7.7.1 of Medupi Power Station Provisional Atmospheric Emission License (AEL), H16/1/13-AEL/M1/R1.

This report reflects Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of October2024 only.

1. Raw Materials and Products

TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN OCTOBER 2024

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – October 2024
	Coal	Tons/month	1 875 000	719 364
	Fuel Oil	Tons/month	20 000	2 732
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of October 2024
	Energy	GWh	3 571.2	1547.33
	Ash Emitted	Tons/month	not specified	175.2

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Date	Daily Reportable Hours of Operation						Coal usage	Production rate (MW)					
	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01-Oct	0.0	24.0	0.0	0.0	24.0	24.0	20068	Off	549	Off	Off	642	653
02-Oct	0.0	24.0	0.0	0.0	24.0	24.0	19815	Off	592	Off	Off	652	595
03-Oct	0.0	24.0	0.0	0.0	24.0	24.0	19329	Off	622	Off	Off	569	584
04-Oct	0.0	24.0	0.0	0.0	24.0	24.0	21472	Off	637	Off	Off	653	662
05-Oct	0.0	24.0	0.0	0.0	24.0	24.0	21436	Off	706	Off	Off	620	606
06-Oct	0.0	24.0	0.0	0.0	24.0	24.0	21830	Off	694	Off	Off	645	670
07-Oct	0.0	24.0	0.0	0.0	24.0	15.3	19435	Off	693	Off	Off	685	631
08-Oct	0.0	24.0	0.0	0.0	24.0	0.0	15739	Off	718	Off	Off	719	Off
09-Oct	0.0	24.0	0.0	0.0	24.0	0.0	15582	Off	735	Off	Off	681	Off
10-Oct	0.0	24.0	0.0	0.0	24.0	0.0	15710	Off	747	Off	Off	665	Off
11-Oct	0.0	24.0	0.0	0.0	24.0	0.0	15500	Off	757	Off	Off	605	Off
12-Oct	0.0	24.0	0.0	0.0	12.2	0.0	12696	Off	781	Off	Off	563	Off
13-Oct	0.0	24.0	0.0	0.0	0.0	0.0	14925	Off	775	Off	Off	581	Off
14-Oct	0.0	24.0	0.0	0.0	21.5	0.0	16578	Off	759	Off	Off	690	Off
15-Oct	0.0	24.0	0.0	0.0	2.3	0.0	12818	Off	794	Off	Off	505	Off
16-Oct	0.0	24.0	0.0	0.0	10.7	0.0	20013	Off	777	Off	Off	650	397
17-Oct	0.0	24.0	0.0	0.0	24.0	19.9	24009	Off	670	421	Off	637	553
18-Oct	0.0	24.0	14.5	0.0	24.0	24.0	30121	Off	694	682	Off	625	685
19-Oct	0.0	24.0	21.8	0.0	24.0	24.0	28919	Off	708	564	Off	631	702
20-Oct	0.0	24.0	0.0	0.0	24.0	24.0	21103	Off	655		Off	650	670
21-Oct	0.0	24.0	0.0	0.0	24.0	24.0	27679	Off	751	667	Off	650	741
22-Oct	0.0	24.0	12.7	0.0	24.0	24.0	31250	Off	751	702	Off	650	733
23-Oct	0.0	24.0	24.0	0.0	24.0	24.0	30626	Off	721	693	Off	639	710
24-Oct	0.0	24.0	24.0	0.0	24.0	24.0	31884	Off	793	693	Off	650	731
25-Oct	0.0	24.0	24.0	0.0	24.0	24.0	30304	Off	773	630	Off	650	679
26-Oct	0.0	24.0	1.8	0.0	24.0	24.0	29078	Off	752	640	Off	609	704
27-Oct	0.0	24.0	18.6	0.0	24.0	24.0	28547	Off	691	668	Off	650	613
28-Oct	0.0	24.0	24.0	0.0	24.0	24.0	31742	462	704	651	Off	650	653
29-Oct	0.0	24.0	24.0	0.0	24.0	24.0	33257	353	680	647	Off	650	687
30-Oct	0.0	24.0	24.0	0.0	24.0	24.0	28687	414	581	612	Off	598	640
31-Oct	6.1	24.0	24.0		9.7	24.0	29212	553	578	580	Off	397	615

NB: Operating hours less than 24 highlighted in pink.

2. Abatement Technology

TABLE 2: ABATEMENT EQUIPMENT CONTROL TECHNOLOGY EFFICIENCY FOR MONTH OF OCTOBER2024

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Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.996%	100%
Unit 2	Fabric Filter Plant (FFP)	99.910%	100%
Unit 3	Fabric Filter Plant (FFP)	99.952%	Off
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	99.938%	100%
Unit 6	Fabric Filter Plant (FFP)	99.827%	100%

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

3. Energy Source Characteristics

TABLE 3: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF OCTOBER2024

Characteristic	Stipulated Range (% by weight on a dry basis)	Monthly Average Content (% by weight on a dry basis)
Coal		
Sulphur Content	1.3 - 2.2	1.54
Ash Content	35 - 39	35.72

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF OCTOBER2024

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.1
Ash Content	0.02 - 0.1	0.001

4. Emissions Reporting

Medupi Power Station uses Continuous Emission Monitoring System which uses the extractive method for analysis.

The emission limits are as follows:

SO₂ Monthly = 3500 mg/Nm³

Dust Daily= 50 mg/Nm³

NO₂ Daily= 750 mg/Nm³



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4.1 PM Daily Averages

Figure 1: Medupi Unit 1 PM Emissions - October 2024

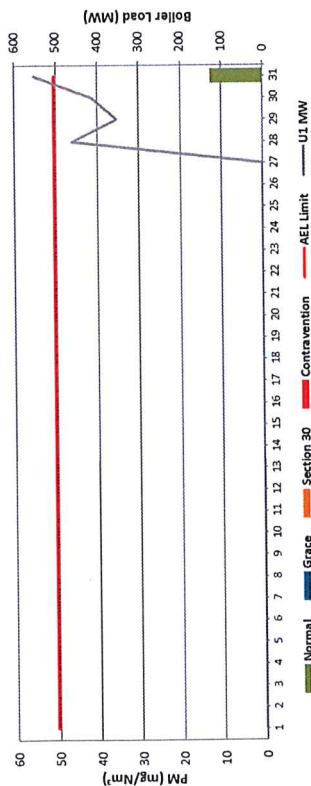


Figure 2: Medupi Unit 2 PM Emissions - October 2024

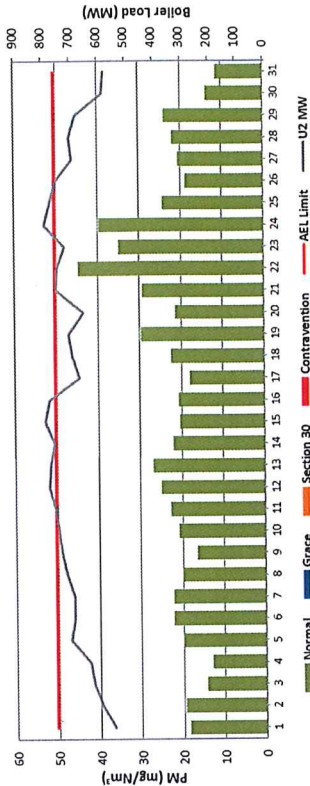


Figure 3: Medupi Unit 3 PM Emissions - October 2024

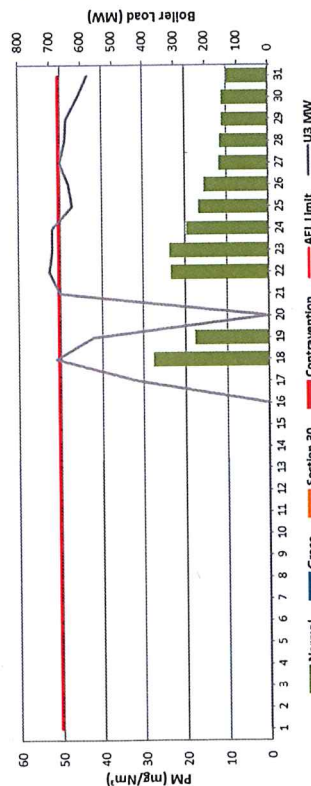
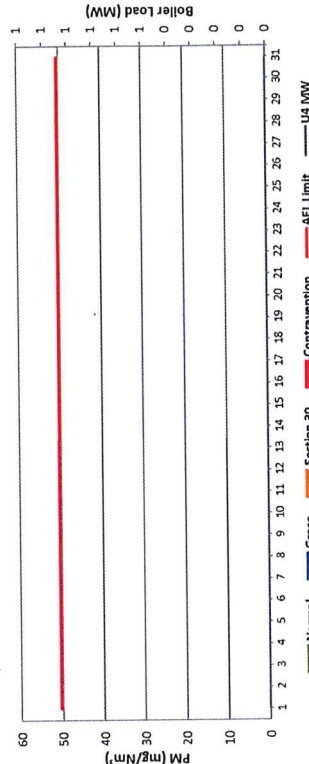


Figure 4: Medupi Unit 4 PM Emissions - October 2024





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Section 30 Investigation
Report was submitted on
12 November 2024.

Figure 5: Medupi Unit 5 PM Emissions - October 2024

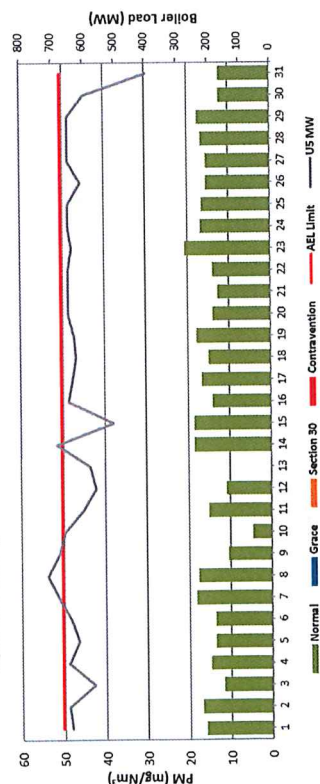


Figure 6: Medupi Unit 6 PM Emissions - October 2024

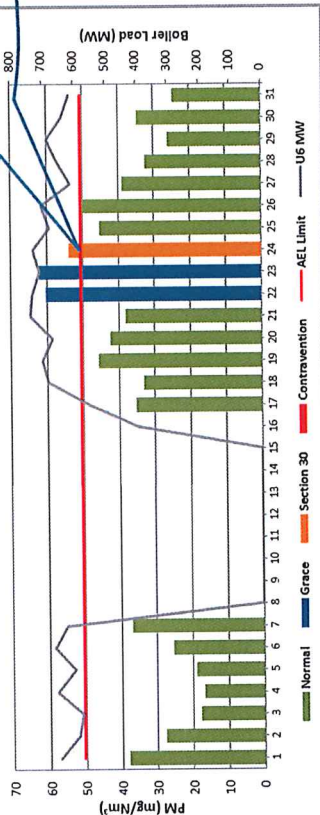


Figure 7: Medupi Unit 1 SO₂ Emissions - October 2024

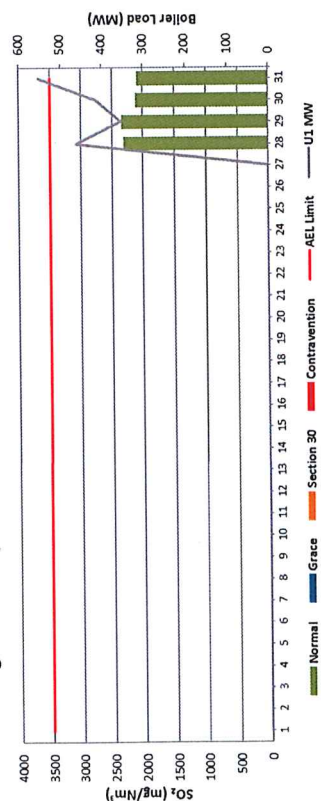
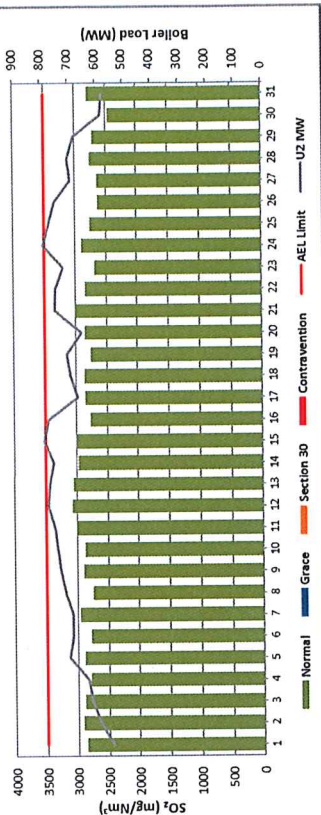


Figure 8: Medupi Unit 2 SO₂ Emissions - October 2024



4.2SOx Daily Averages



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Figure 9: Medupi Unit 3 SO₂ Emissions - October 2024

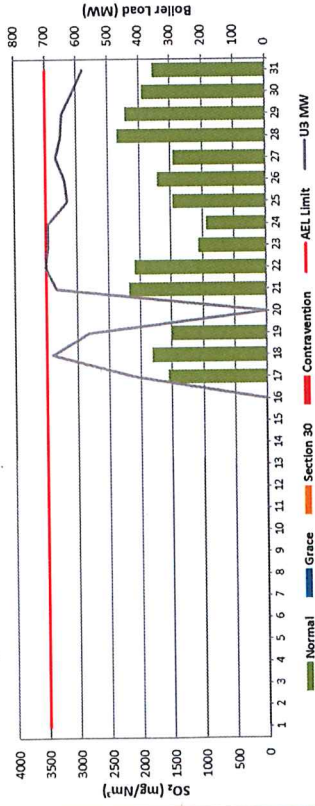


Figure 10: Medupi Unit 4 SO₂ Emissions - October 2024

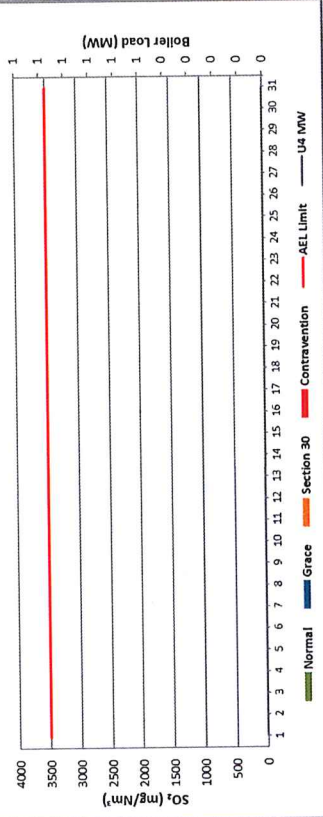


Figure 11: Medupi Unit 5 SO₂ Emissions - October 2024

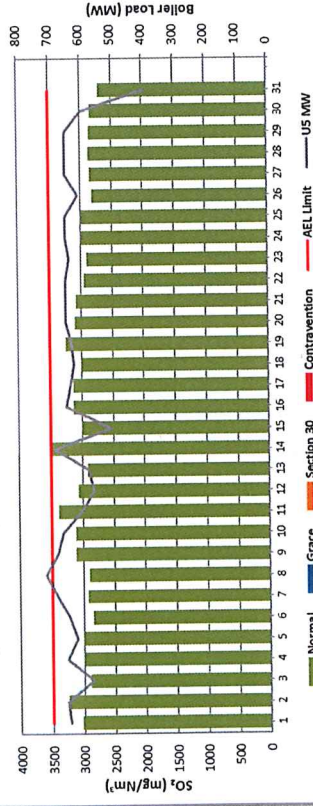
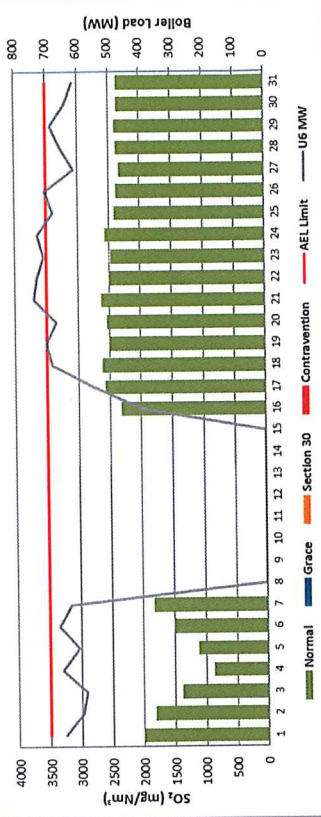


Figure 12: Medupi Unit 6 SO₂ Emissions - October 2024





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4.3 NOx Daily Averages

Figure 13: Medupi Unit 1 NOx Emissions - October 2024

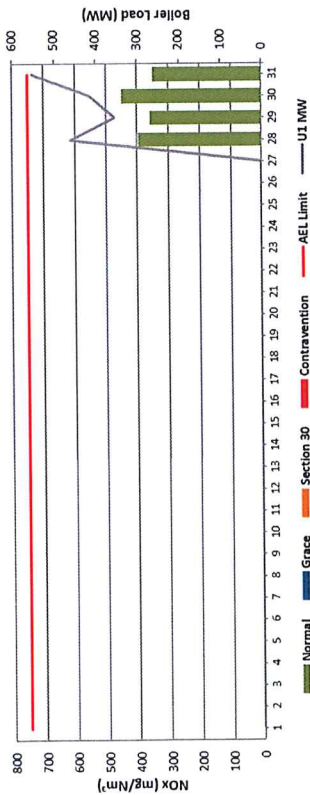


Figure 14: Medupi Unit 2 NOx Emissions - October 2024

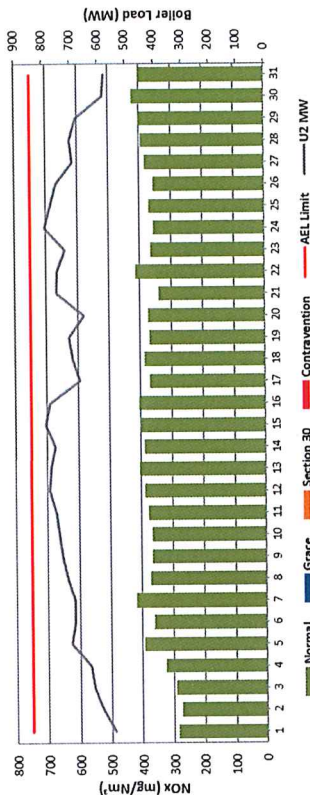


Figure 15: Medupi Unit 3 NOx Emissions - October 2024

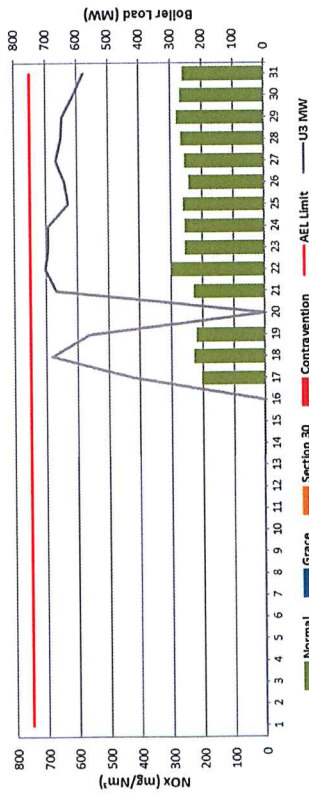
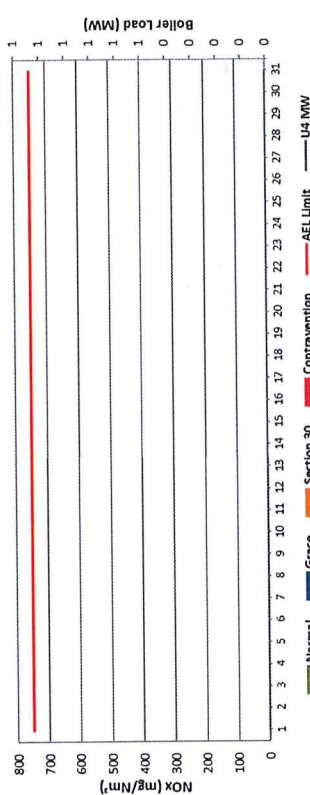


Figure 16: Medupi Unit 4 NOx Emissions - October 2024





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Figure 17: Medupi Unit 5 NOx Emissions - October 2024

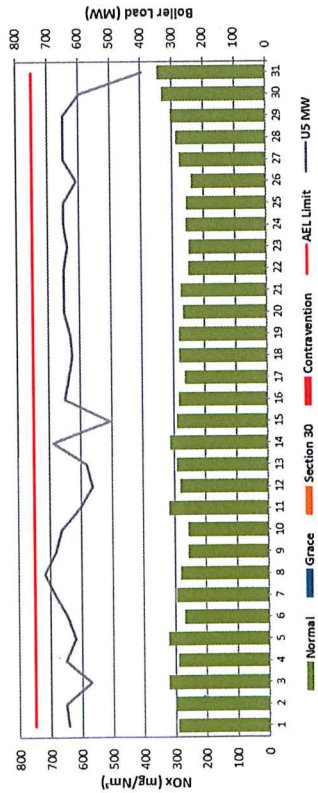
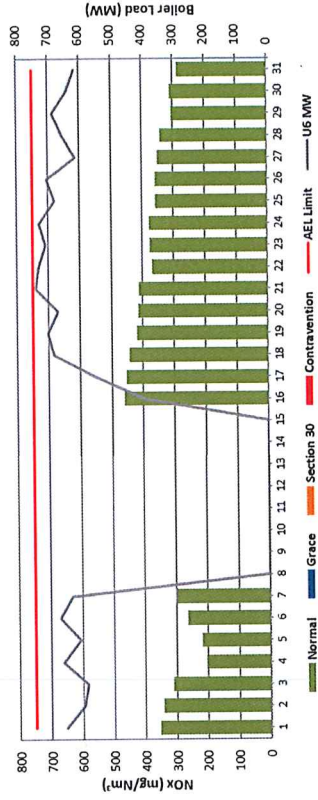


Figure 18: Medupi Unit 6 NOx Emissions - October 2024



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF OCTOBER 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	0.1	179.4	30.7
Unit 2	59.6	7 351.4	968.1
Unit 3	11.7	1 612.4	241.7
Unit 4	Off	Off	Off
Unit 5	32.3	7 047.4	663.1
Unit 6	71.5	4 295.9	679.9
SUM (Tons)	175.2	20 486.7	2 583.5

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF OCTOBER 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	12.7	2 217.5	388.6
Unit 2	22.6	2 837.6	372.7
Unit 3	16.6	1 719.6	252.8
Unit 4	Off	Off	Off
Unit 5	15.0	3 013.7	285.0
Unit 6	36.6	2 170.0	348.9

5. Continuous Emission Monitoring Systems (CEMS)

Unit 1, 2, 3, 5 and 6 Continuous Emission Monitoring Systems were always in operation when the unit was on load.

TABLE 7: PERIODS DURING WHICH CEMS WAS INOPERATIVE/MALFUNCTIONING

Date	CEMS status	Comments
NA	NA	NA

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TABLE 8: CEMS MONITOR RELIABILITY PERCENTAGE (%)

Associated Unit/Stack	PM	SO ₂	NO ₂	O ₂
Unit 1	100.0	100.0	100.0	96.6
Unit 2	99.9	97.4	95.4	98.0
Unit 3	100.0	90.2	91.7	78.3
Unit 4	Off	Off	Off	Off
Unit 5	100.0	99.9	99.8	95.1
Unit 6	100.0	100.0	90.6	84.3

6.CEMS Calibration certificates and equipment used for calibration.

A service provider was appointed to calibrate CEMS equipment at Medupi Power Station, calibration certificates are in place and may be made available upon request. Verification of the CEMS after calibration is conducted internally by Eskom.

7. Ambient Air Quality Monitoring Report

The Ambient Air Quality Monitoring for October 2024 was e-mailed to the Licensing Authority on 18 November 2024. Dust fall-out report will be submitted before the end of November 2024.

8. Visual inspection of the exterior walls of the fuel oil tanks and TVOC Estimation

Visual inspection was conducted and there were no leaks observed on the exterior walls of the fuel oil tanks.

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TABLE 9: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR OCTOBER 2024

 Eskom		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Thursday, 31 October 2024	
Station:	Medupi Power Station	
Province:	Limpopo Province	
Tank no.	1-2	
Description:	Outdoor fuel oil storage tank	
Tank Type:	Vertical fixed roof (vented to atmosphere)	
Material stored:	Fuel Oil 150	
MONTHLY INPUT DATA FOR THE STATION Please only insert relevant monthly data inputs into the blue cells below Choose from a dropdown menu in the green cells The total VOC emissions for the month are in the red cells IMPORTANT: Do not change any other cells without consulting the AQ CoE		
MONTH:	October	
GENERAL INFORMATION:	Data	Unit
Total number of fuel oil tanks:	2	NA
Height of tank*:	14.2	m
Diameter of tank:	12	m
Net fuel oil throughput for the month:	2723	tons/month
Molecular weight of the fuel oil:		Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	26.19	°C
Daily maximum ambient temperature	33.65	°C
Daily minimum ambient temperature	19.11	°C
Daily ambient temperature range	14.54	°C
Daily total insolation factor	5.81	kWh/m²/day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0.74	kg/month
Working losses:	0.08	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	0.81	kg/month
*Calculations performed on this spreadsheet are taken from the USEPA AP-42- Section 7.1 Organic Liquid Storage Tanks - January 1996. This spreadsheet is derived from materials provided by Jimmy Peress, PE, Tritech Consulting Engineers, 85-93 Chevy Chase Street, Jamaica, NY 11432 USA, Tel - 718-454-3920, Fax - 718-454-6330, e-mail - PeressJ@nyc.rr.com.		

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9. Air quality improvements initiatives and public education and awareness campaigns

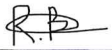
No awareness campaign conducted for October 2024.

10. Complaints Register

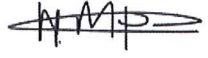
TABLE 10: COMPLAINTS FOR THE MONTH OF OCTOBER 2024

Name/ Source Code	Air pollution complaints received	Calculation of Impacts/ emissions associated with the incident	Date of complaint and date of response by the license holder	Results of investigation	Action taken to resolve the complaint
N/A	N/A	N/A	N/A	N/A	N/A

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Compiled By: Ramokone Makgoka
Officer Environmental Management  Date: 21/11/2024

Verified by: Malose Langa
System Engineer Boiler  Date: 2024/11/22

Verified by: Shu Mpangase
System Engineer C&I  Date: 2024/11/22

Supported by: Mokgadi Dikgale
Environmental Manager  pp Date: 2024/11/22

Supported by: Sithokozile Hlongwa
Engineering Group Manager (Acting)  Date: 2024.11.22

I Thozama Gangi, declares that the information provided in this report is accurate and correct.

Yours sincerely

 Date: 2024/11/26
 Thozama Gangi
GENERAL MANAGER (Acting): MEDUPI POWER STATION