

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

Stanley Koenaitse

Waterberg District Municipality
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Date: 2024/06/30

Enquiries: MF Dikgale

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Ref: H16/1/13-AEL/M1/R1 – May 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF MAY2024

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 May2024 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – May2024
	Coal	Tons/month	1 875 000	739 405
	Fuel Oil	Tons/month	20 000	4230
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of May2024
	Energy	GWh	3 571.2	1 561.01
	Ash Emitted	Tons/month	not specified	174.3

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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-May	24.0	24.0	24.0	0.0	0.0	24.0	18008	649	461	481	Off	Off	
02-May	24.0	24.0	24.0	0.0	0.0	24.0	17293	529	488	525	Off	Off	
03-May	24.0	24.0	24.0	0.0	0.0	24.0	19611	642	568	562	Off	Off	756
04-May	24.0	24.0	24.0	0.0	0.0	24.0	19401	684	559	535	Off	Off	756
05-May	24.0	24.0	24.0	0.0	0.0	19.1	22322	598	554	519	Off	Off	410
06-May	24.0	24.0	24.0	0.0	0.0	0.0	23678	625	569	540	Off	Off	513
07-May	24.0	24.0	24.0	0.0	0.0	18.7	25062	559	551	544	Off	Off	589
08-May	24.0	24.0	24.0	0.0	0.0	16.2	24687	662	553	594	Off	Off	585
09-May	24.0	24.0	24.0	0.0	0.0	0.0	24159	629	540	576	Off	Off	562
10-May	24.0	24.0	24.0	0.0	0.0	0.0	19734	618	524	557	Off	Off	555
11-May	14.2	24.0	24.0	0.0	0.0	0.0	18650	510	490	553	Off	Off	441
12-May	5.0	24.0	24.0	0.0	0.0	9.7	22143	482	450	493	Off	Off	564
13-May	24.0	24.0	24.0	0.0	0.0	24.0	22640	482	450	493	Off	Off	543
14-May	24.0	24.0	24.0	0.0	0.0	24.0	22625	530	450	518	Off	Off	568
15-May	24.0	24.0	24.0	0.0	0.0	24.0	24951	644	450	552	Off	Off	656
16-May	24.0	24.0	24.0	0.0	0.0	24.0	26769	641	528	580	Off	Off	615
17-May	24.0	24.0	24.0	0.0	0.0	24.0	29769	765	592	626	Off	Off	582
18-May	24.0	24.0	24.0	0.0	0.0	24.0	28214	777	596	584	Off	Off	637
19-May	24.0	8.3	24.0	0.0	0.0	24.0	24466	748	415	629	Off	Off	653
20-May	24.0	6.9	24.0	0.0	0.0	24.0	26770	730	548	606	Off	Off	637
21-May	24.0	24.0	24.0	0.0	0.0	24.0	26212	698	548	596	Off	Off	626
22-May	24.0	24.0	24.0	0.0	0.0	24.0	26998	762	568	574	Off	Off	634
23-May	24.0	24.0	24.0	0.0	0.0	24.0	26760	749	572	568	Off	80	643
24-May	24.0	24.0	24.0	0.0	0.0	24.0	27144	791	601	627	Off	399	630
25-May	24.0	24.0	24.0	0.0	0.0	24.0	26071	727	586	599	Off	399	594
26-May	24.0	24.0	24.0	0.0	0.0	24.0	24121	617	485	575	Off		574
27-May	24.0	24.0	24.0	0.0	0.0	24.0	25100	643	498	575	Off		603
28-May	24.0	24.0	24.0	0.0	0.0	0.7	22924	622	514	557	Off		459
29-May	24.0	24.0	24.0	0.0	0.0	14.8	22524	483	462	505	Off	399	531
30-May	24.0	24.0	24.0	0.0	14.9	10.0	25151	616	545	497	Off	521	468
31-May	24.0	24.0	21.2	0.0	24.0	0.0	25448	762	591	501	Off	549	499

NB: Operating hours less than 24 highlighted in pink.

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2. Abatement Technology

TABLE 2: ABATEMENT EQUIPMENT CONTROL TECHNOLOGY EFFICIENCY FOR MONTH OF MAY 2024

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.948%	100%
Unit 2	Fabric Filter Plant (FFP)	99.844%	100%
Unit 3	Fabric Filter Plant (FFP)	99.898%	100%
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	99.970%	100%
Unit 6	Fabric Filter Plant (FFP)	99.949%	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 MAY 2024

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	1.43
Ash Content	35 - 39	34.33

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF MAY2024

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.05
Ash Content	0.02 - 0.1	0.03

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 - May 2024

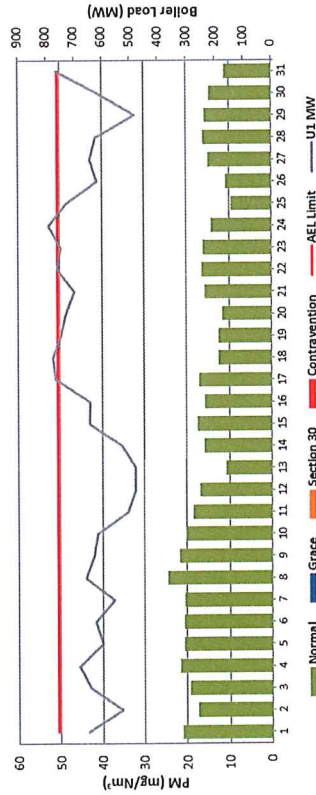


Figure 2: Medupi Unit 2 PM Emissions - May 2024

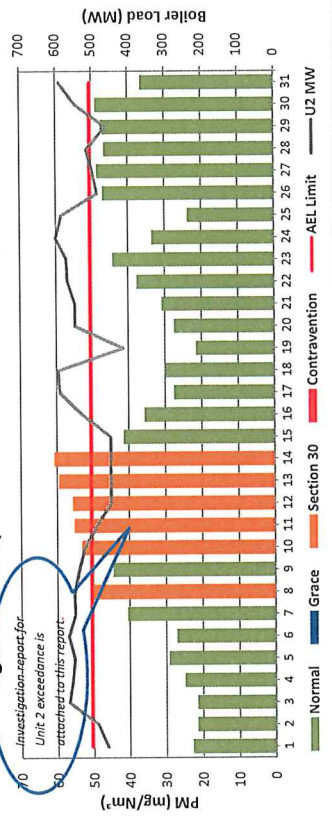


Figure 3: Medupi Unit 3 PM Emissions - May 2024

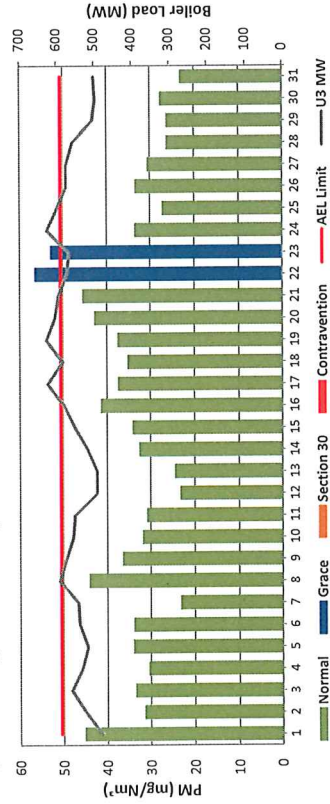
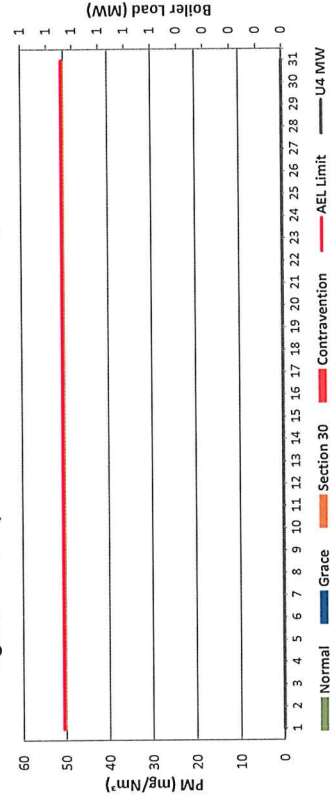


Figure 4: Medupi Unit 4 PM Emissions - May 2024



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Figure 5: Medupi Unit 5 PM Emissions - May 2024

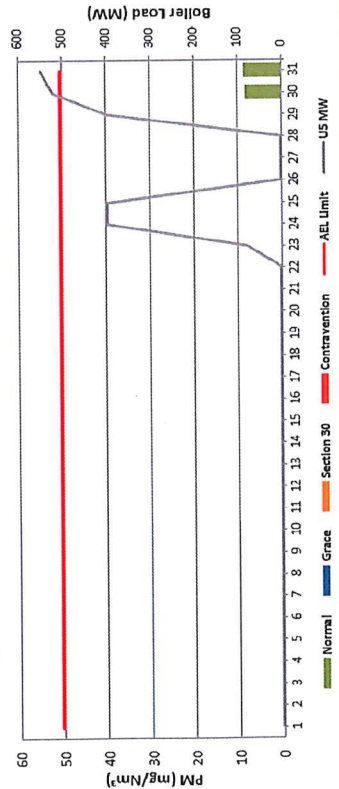
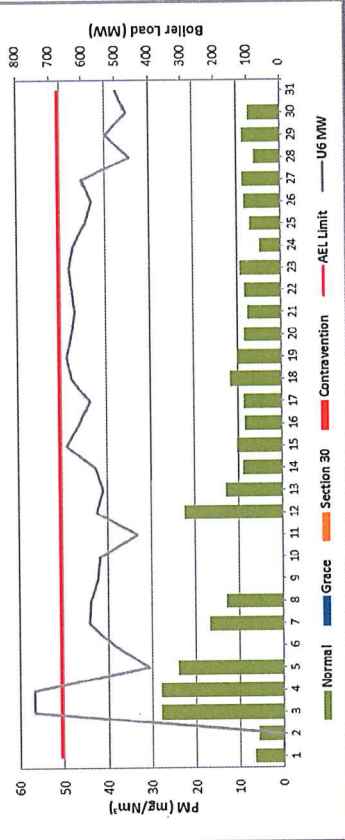


Figure 6: Medupi Unit 6 PM Emissions - May 2024



4.2SOx Daily Averages

Figure 7: Medupi Unit 1 SO₂ Emissions - May 2024

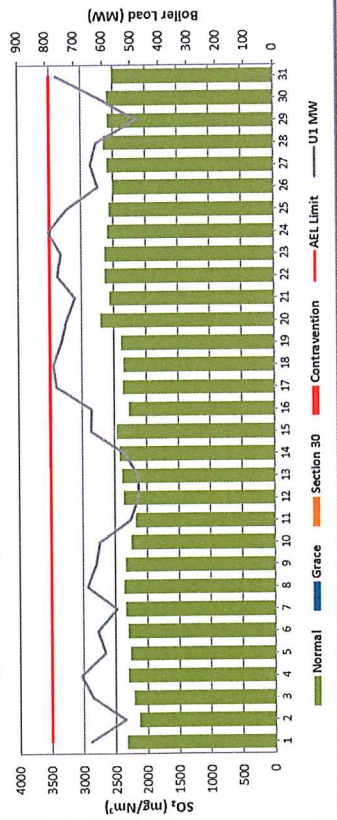
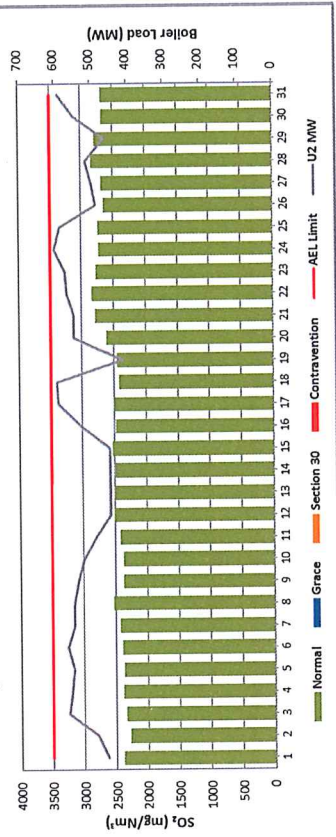


Figure 8: Medupi Unit 2 SO₂ Emissions - May 2024



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Figure 9: Medupi Unit 3 SO₂ Emissions - May 2024

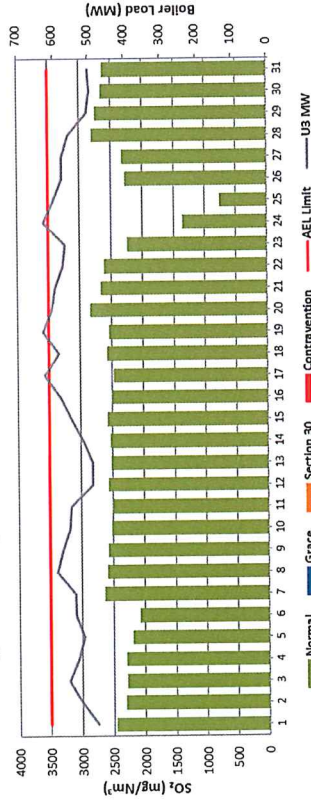


Figure 11: Medupi Unit 5 SO₂ Emissions - May 2024

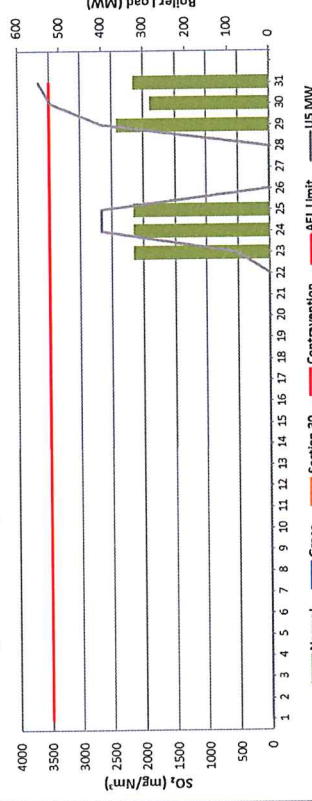
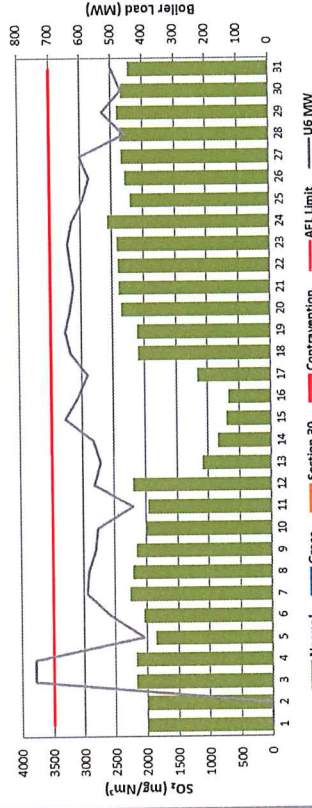


Figure 10: Medupi Unit 4 SO₂ Emissions - May 2024



Figure 12: Medupi Unit 6 SO₂ Emissions - May 2024



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4.3 NOx Daily Averages

Figure 13: Medupi Unit 1 NOx Emissions - May 2024

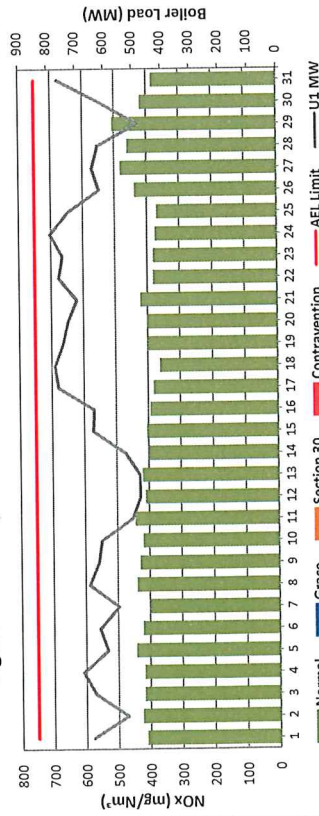


Figure 14: Medupi Unit 2 NOx Emissions - May 2024

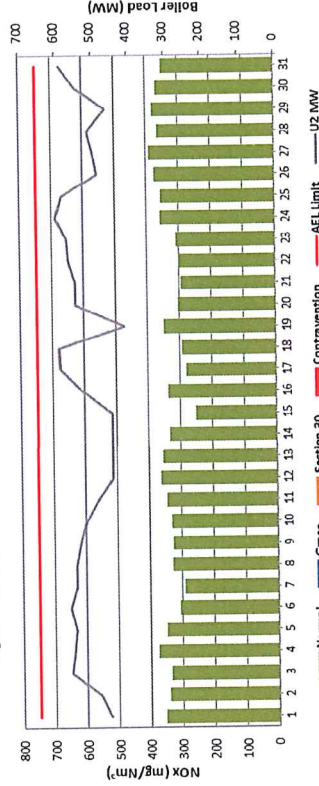


Figure 15: Medupi Unit 3 NOx Emissions - May 2024

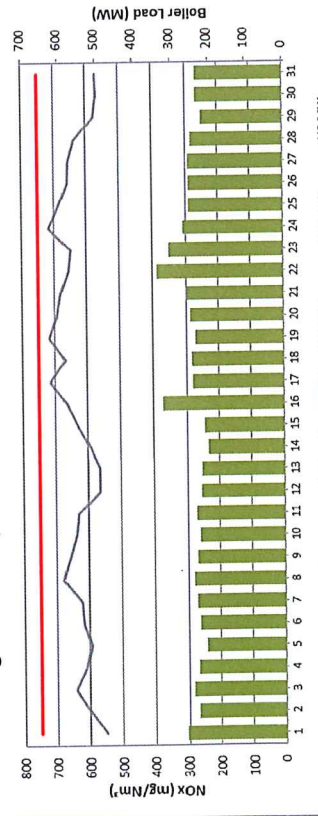
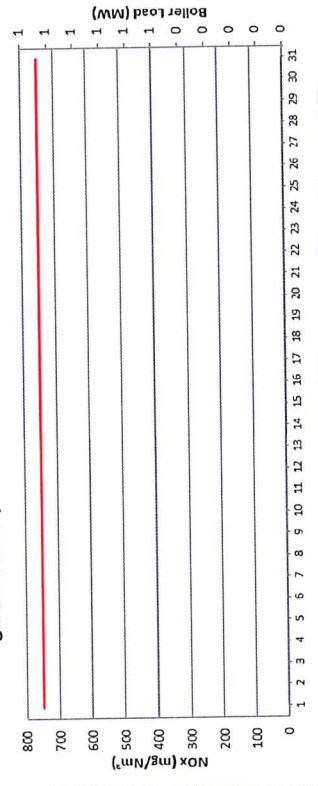


Figure 16: Medupi Unit 4 NOx Emissions - May 2024



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Figure 17: Medupi Unit 5 NOx Emissions - May 2024

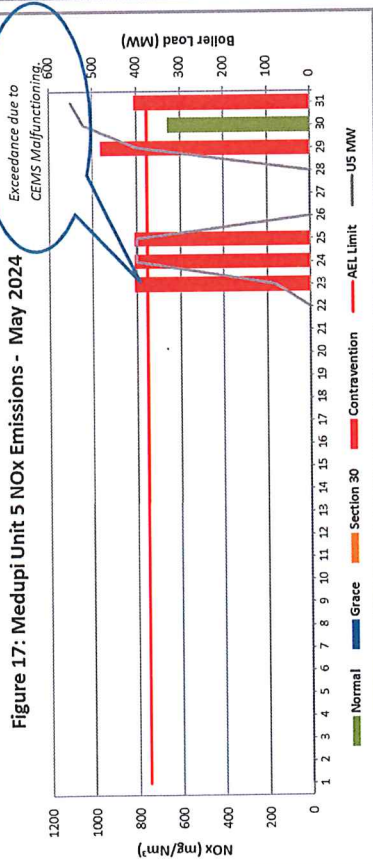
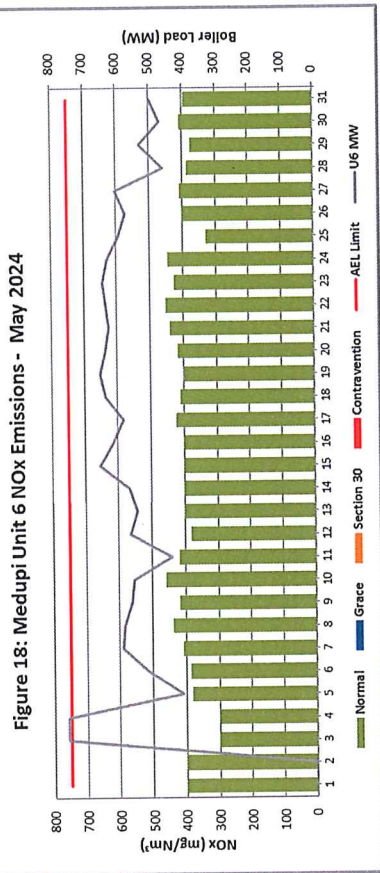


Figure 18: Medupi Unit 6 NOx Emissions - May 2024



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF MAY 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	29.8	4 550.8	770.6
Unit 2	74.0	5 036.2	660.7
Unit 3	50.9	3 521.1	415.0
Unit 4	Off	Off	Off
Unit 5	0.9	457.2	170.4
Unit 6	18.7	3 687.8	731.8
SUM (Tons)	174.3	17 253.2	2 748.5

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF MAY 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	16.5	2 427.5	415.4
Unit 2	38.5	2 550.2	335.4
Unit 3	34.5	2 407.3	282.0
Unit 4	Off	Off	Off
Unit 5	8.4	2 154.2	810.2
Unit 6	11.5	2 002.5	400.4

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. However, there were days where the monitors were faulty and reading incorrect values, as indicated on table 7 below.

TABLE 7: PERIODS DURING WHICH CEMS WAS INOPERATIVE/MALFUNCTIONING

Date	CEMS status	Comments
23, 24, 25, 29 & 31 May 2024	Unit 5 CEMS unhealthy, SO _x and NO _x had low reliability.	Investigation report will be submitted.

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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	99.8
Unit 2	100.0	100.0	100.0	99.8
Unit 3	100.0	97.4	100.0	100.0
Unit 4	Off	Off	Off	Off
Unit 5	100.0	2.8	3.5	10.8
Unit 6	100.0	92.6	75.9	75.3

Notes: SO₂, O₂ and NO was Changed to a Unity Factor (1) for accurate reporting, there was a step change in the performance of the Unit 3 gas Monitor.

6.CEMS Calibration certificates and equipment used for calibration.

A service provider was appointed to calibrate CEMS equipment at Medupi Power Station, calibration certificates to 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 and Dust fall-out report for May 2024 was e-mailed to the Licensing Authority.

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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.

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

 Eskom		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Wednesday, 31 January 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:	May	
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:	4230	tons/month
Molecular weight of the fuel oil:		Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	19.51	°C
Daily maximum ambient temperature	28.42	°C
Daily minimum ambient temperature	12.06	°C
Daily ambient temperature range	15.04	°C
Daily total insolation factor	3.91	kWh/m²/day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorptance	0.39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0.70	kg/month
Working losses:	0.12	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	0.82	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, Trittech Consulting Engineers, 85-93 Chevy Chase Street, Jamaica, NY 11432 USA, Tel - 718-454-3920, Fax - 718-454-6330, e-mail - Peress.J@nyc.rr.com		

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

No awareness campaign conducted for May 2024

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF MAY 2024

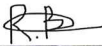
Name/ Source Code	Air pollution complaints received	Calculation of Impacts/ emissions associated with the incident	Date of complaint and date of response by the license holder	Results of investigation	Action taken to resolve the complaint
N/A	N/A	N/A	N/A	N/A	N/A

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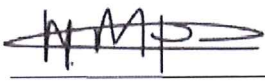
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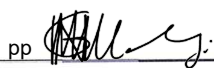
Compiled By: Ramokone Makgoka
 Environmental Officer  Date: 25/06/2024

Reviewed by: Thabo Khoza
 Snr Advisor Environmental Management  Date: 25/06/2024

Verified by: Malose Langa
 System Engineer Boiler  Date: 2024/06/25

Verified by: Shu Mpangase
 System Engineer C&I  Date: 2024/06/25

Supported by: Mokgadi Dikgale
 Environmental Manager  Date: 27/06/2024

Supported by: Jabulani Mkhathswa
 Engineering Group Manager  Date: 2024-06-27

I Zweli Witbooi, declares that the information provided in this report is accurate and correct.

Yours sincerely

pp



Zweli Witbooi

GENERAL MANAGER: MEDUPI POWER STATION

Date: 28/06/2024

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