

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

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Date: 2022/01/31

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Tel: 014 762 6820

Ref: H16/1/13-AEL/M1/R1 – February 2022

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF FEBRUARY 2022

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 is a reflection of Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of February 2022 only.

1. Raw Materials and Products

TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN FEBRUARY 2022

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption - February 2022
	Coal	Tons/month	1 875 000	930785
	Fuel Oil	Tons/month	20 000	3792
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of February 2022
	Energy	GWh	3571,2	1971,34
	Ash Emitted	Tons	not specified	228,24

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	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

Table 2: Daily consumption and production rates

Date	Reportable hours of Operation						Coal usage	Production rate (MW)					
	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01/02/22	9,8	24,0	24,0		24,0	24,0	29280	529	576	734		466	541
02/02/22	24,0	24,0	24,0		24,0	24,0	36513	679	667	654		672	664
03/02/22	24,0	24,0	24,0		24,0	1,7	32571	662	771	776		767	477
04/02/22	24,0	24,0	24,0		24,0	0,0	31362	694	744	735		694	off
05/02/22	24,0	24,0	24,0		24,0	0,0	29149	643	651	698		787	off
06/02/22	24,0	24,0	24,0		24,0	0,0	30759	659	751	766		741	off
07/02/22	24,0	24,0	24,0		24,0	0,0	31107	730	781	762		722	off
08/02/22	24,0	24,0	24,0		24,0	0,0	31744	764	744	772		748	off
09/02/22	24,0	24,0	24,0		24,0	0,0	27059	587	630	663		660	off
10/02/22	24,0	24,0	24,0		24,0	0,0	30915	713	739	713		779	off
11/02/22	24,0	24,0	24,0		24,0	0,0	33215	758	767	791		759	off
12/02/22	24,0	22,8	24,0		24,0	0,0	33579	787	783	794		786	off
13/02/22	24,0	0,0	24,0		24,0	0,0	27680	794	347	791		788	off
14/02/22	24,0	2,9	24,0		24,0	0,0	35034	794	775	788		788	off
15/02/22	24,0	24,0	24,0		24,0	0,0	31934	794	746	794		667	off
16/02/22	24,0	24,0	24,0		24,0	0,0	32747	794	755	794		735	off
17/02/22	24,0	24,0	24,0		24,0	0,0	32842	794	751	767		788	off
18/02/22	24,0	24,0	24,0		24,0	0,0	32800	794	751	767		783	off
19/02/22	24,0	24,0	24,0		24,0	0,0	33498	794	751	767		787	129
20/02/22	24,0	24,0	24,0		24,0	3,3	36463	791	787	784		758	371
21/02/22	24,0	24,0	24,0		24,0	24,0	38671	756	761	763		713	705
22/02/22	24,0	24,0	24,0		24,0	24,0	38659	756	761	763		744	745
23/02/22	24,0	24,0	24,0		15,2	24,0	36061	724	724	794		783	700
24/02/22	24,0	24,0	24,0		0,0	24,0	34872	794	786	787		604	597
25/02/22	24,0	24,0	24,0		16,3	24,0	36817	750	755	656		790	622
26/02/22	24,0	24,0	24,0		24,0	24,0	32916	647	627	556		790	564
27/02/22	24,0	24,0	24,0		24,0	24,0	35111	657	657	700		748	602
28/02/22	24,0	24,0	24,0		22,7	24,0	37427	794	730	767		770	575

NB: reportable hours less than 24 highlighted in pink and Unit 4 is off since August 2021

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		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

2. Abatement Technology

Table 3: Abatement Equipment Control Technology efficiency for month of February 2022

Associated Unit/Stack	Technology Type	Efficiency
Unit 1	Fabric Filter Plant (FFP)	99,942%
Unit 2	Fabric Filter Plant (FFP)	99,892%
Unit 3	Fabric Filter Plant (FFP)	99,905%
Unit 4	Fabric Filter Plant (FFP)	-
Unit 5	Fabric Filter Plant (FFP)	99,959%
Unit 6	Fabric Filter Plant (FFP)	99,851%

3. Energy Source Characteristics

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF FEBRUARY 2022

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	1,32
Ash Content	35 - 39	33,46

TABLE 5: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF FEBRUARY 2022

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2
Ash Content	0.02 - 0.1	0.027

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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Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	February 2021		
Review Date	February 2024		

4.1 PM Emissions

Figure 1: Medupi Unit 1 PM Emissions - February 2022

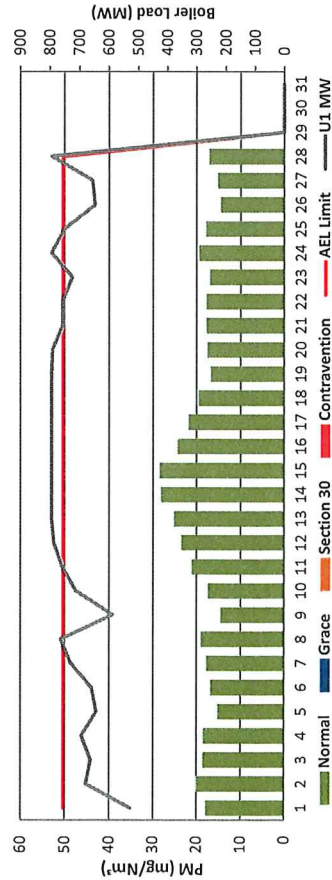


Figure 2: Medupi Unit 2 PM Emissions - February 2022

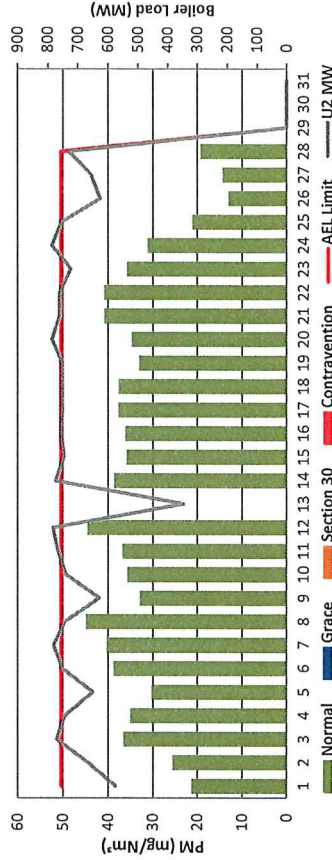


Figure 3: Medupi Unit 3 PM Emissions - February 2022

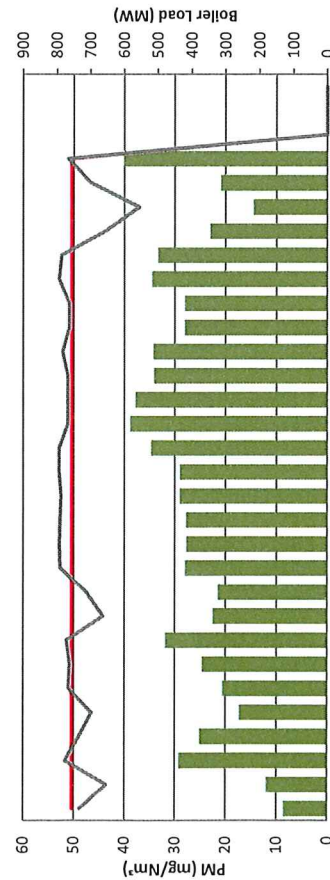
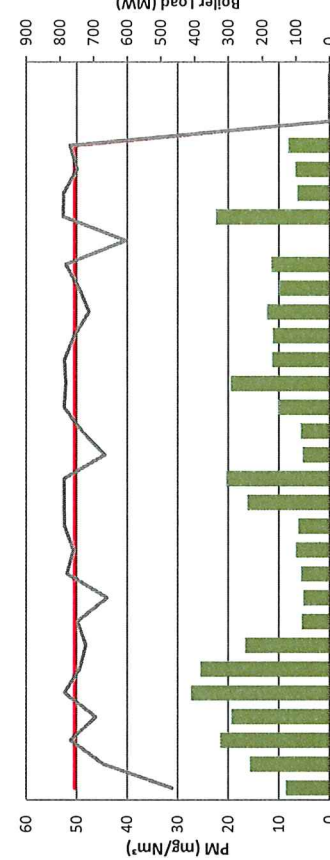
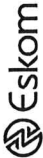


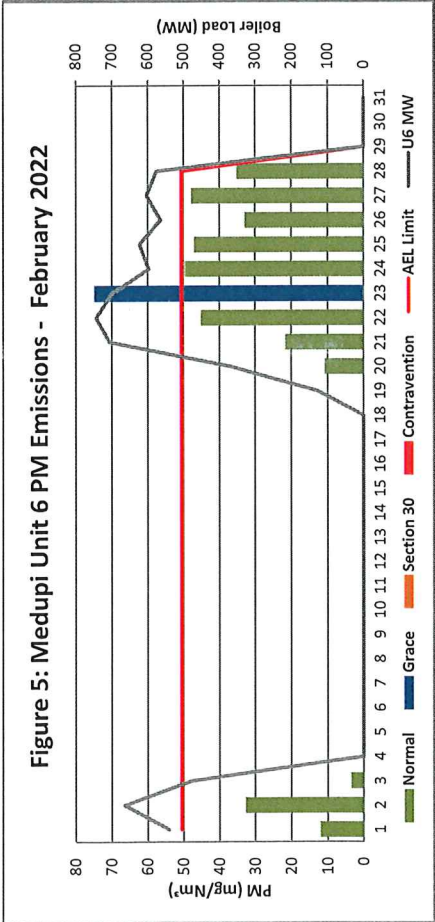
Figure 4: Medupi Unit 5 PM Emissions - February 2022



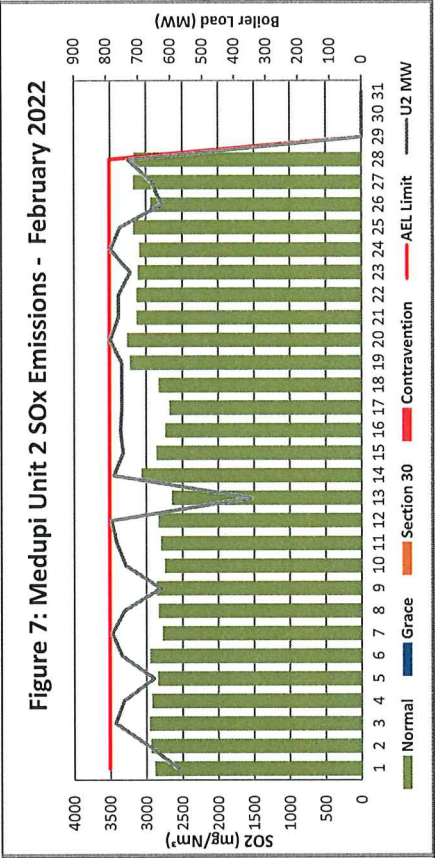
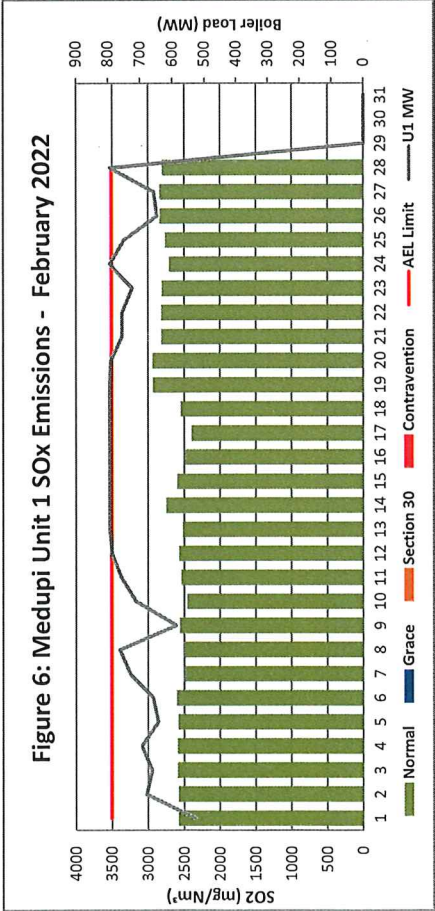
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	Medupi Power Station Monthly Emissions Report			Template Identifier	240-43921804	Rev	6
				Document Identifier	240-88543153	Rev	2
				Effective Date	February 2021		
				Review Date	February 2024		



4.2 SOx Emissions



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Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	February 2021		
Review Date	February 2024		

Figure 8: Medupi Unit 3 SOx Emissions - February 2022

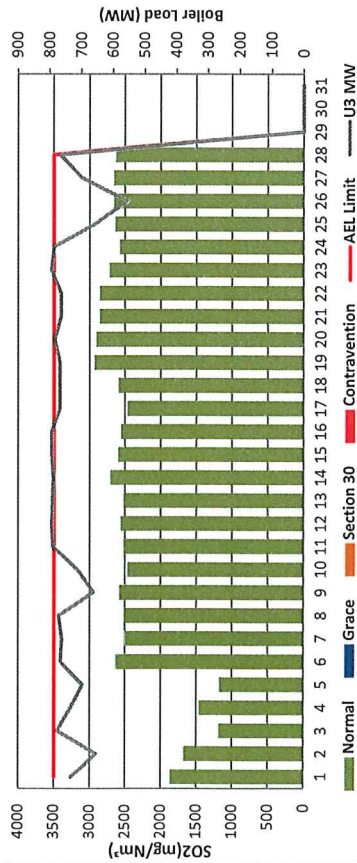


Figure 9: Medupi Unit 5 SOx Emissions - February 2022

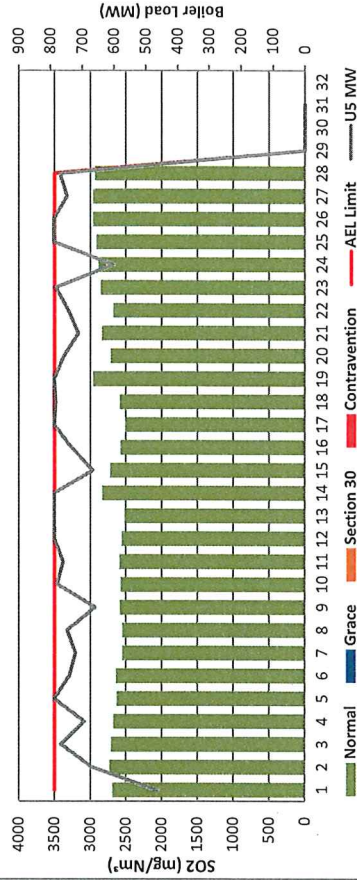
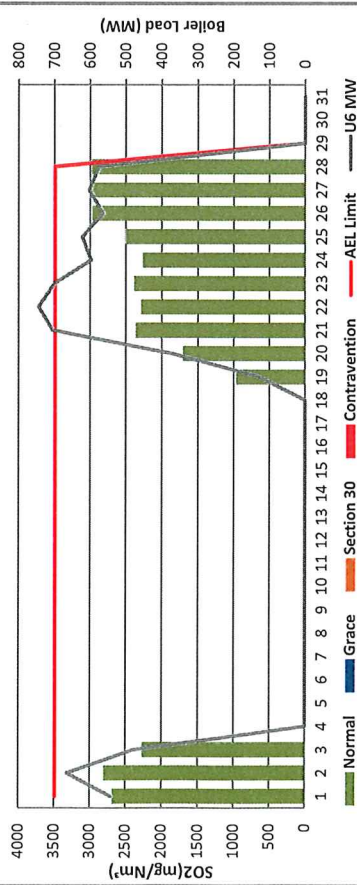


Figure 10: Medupi Unit 6 SOx Emissions - February 2022



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Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	February 2021		
Review Date	February 2024		

4.3 NOx Emissions

Figure 11: Medupi Unit 1 NOx Emissions - February 2022

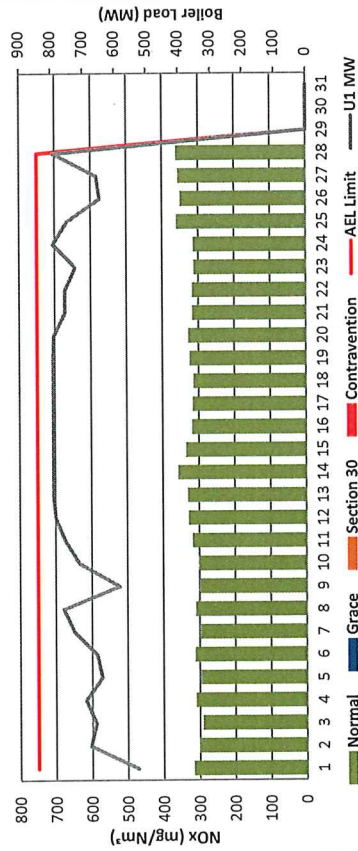


Figure 12: Medupi Unit 2 NOx Emissions - February 2022

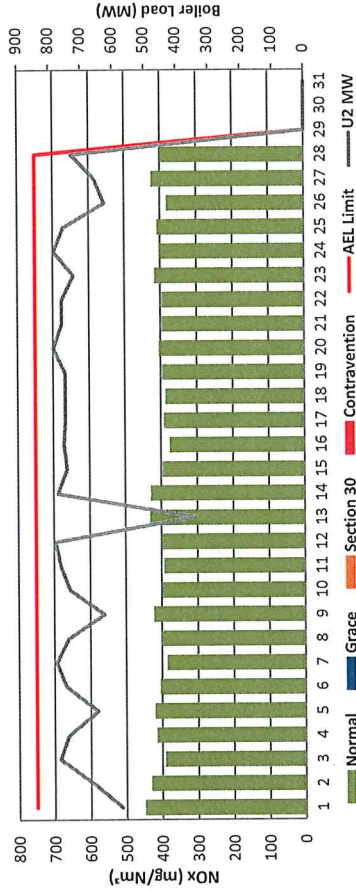


Figure 13: Medupi Unit 3 NOx Emissions - February 2022

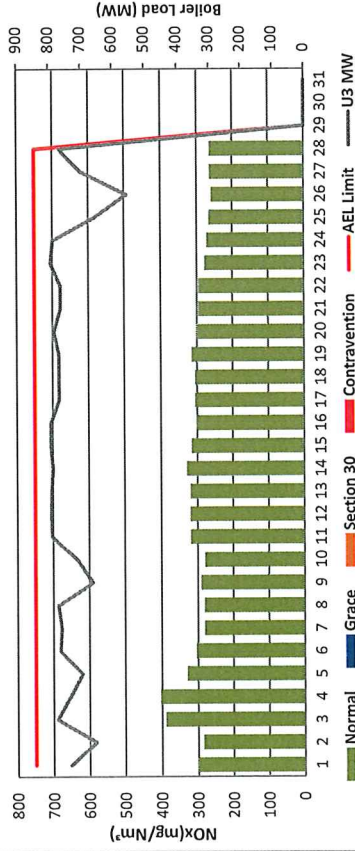
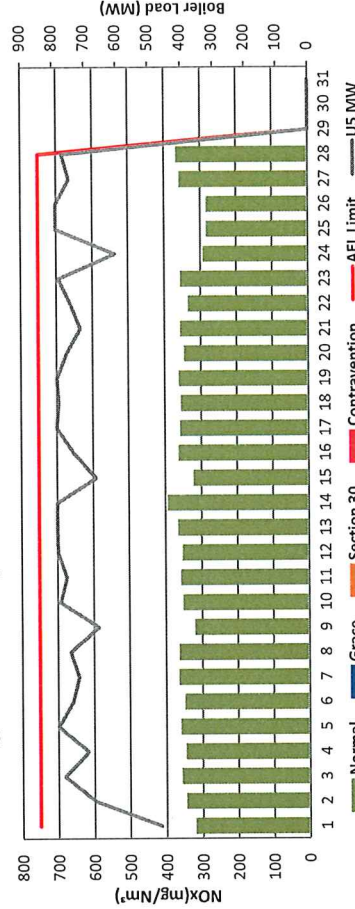
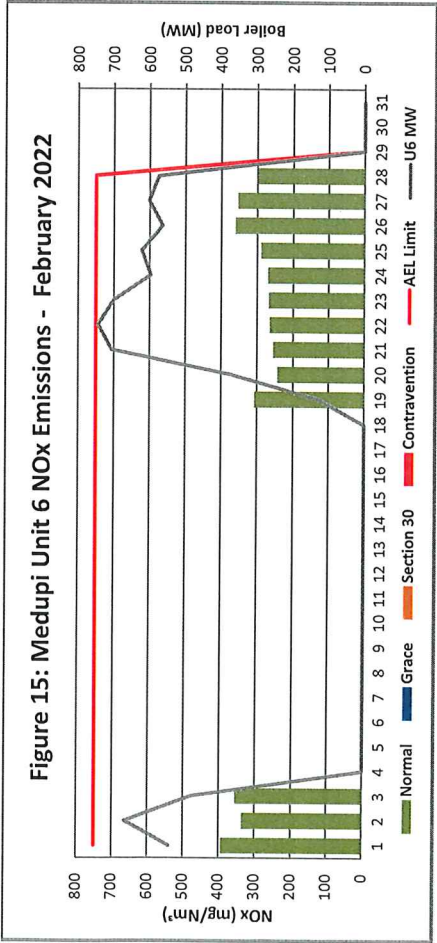


Figure 14: Medupi Unit 5 NOx Emissions - February 2022



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	Medupi Power Station Monthly Emissions Report				Template Identifier	240-43921804	Rev	6
					Document Identifier	240-88543153	Rev	2
					Effective Date	February 2021		
					Review Date	February 2024		



Medupi Power Station graphical representation of the daily average emissions

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		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

TABLE 7: MONTHLY TONNAGES FOR THE MONTH OF FEBRUARY 2022

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	38,8	5 336,5	648,8
Unit 2	69,7	6 492,1	886,5
Unit 3	64,0	5 714,5	698,0
Unit 4	0,0	0,0	0,0
Unit 5	25,0	5 482,9	704,0
Unit 6	30,9	2 142,0	256,5
SUM	228,24	25 168,0	3 193,8

5. Continuous Emission Monitoring Systems (CEMS)

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

TABLE 6: PERIODS DURING WHICH CEMS WAS INOPERATIVE

Date	Time	CEMS status	Comments
N/A	N/A	N/A	N/A

Table 7- Unit 5 Dust monitor was faulty and the following action plan is place .

<u>Action</u>	<u>Status and comment</u>
Replace unit 5 dust monitor with Unit 4 dust monitor since unit 4 is off	Complete
CIB to Unit 5 Correlation curve	Complete
Calibration of instrument and issueing of certificate	Complete
Perform correlation tests	Complete , Awaiting report
Put Out of Normal (OON) instruction is place	Complete
Implement the new curve	Awaiting report

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		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

TABLE 8: CEMS MONITOR RELIABILITY

Associated Unit/Stack	PM	SO ₂	NO	O ₂
Unit 1	100,0	99,9	99,9	99,9
Unit 2	100,0	99,9	99,9	99,9
Unit 3	100,0	99,1	96,6	96,4
Unit 4				
Unit 5	98,8	96,1	95,7	99,3
Unit 6	100,0	99,7	86,7	88,9

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.

7. Ambient Air Quality Monitoring Report

The Ambient Air Quality Monitoring and Dust fall-out report are emailed to the Licensing authority on a monthly basis.

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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		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

TABLE 9: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR FEBRUARY 2022

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Monday, 28 February 2022	
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:	February	
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:	3792	tons/month
Molecular weight of the fuel oil:	166,00	Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	26,20	°C
Daily maximum ambient temperature	32,94	°C
Daily minimum ambient temperature	20,71	°C
Daily ambient temperature range	12,24	°C
Daily total insolation factor	5,72	kWh/m ² /day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbtance	0,39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0,70 kg/month	
Working losses:	0,11 kg/month	
TOTAL LOSSES (Total TVOC Emissions for the month):	0,80 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 - PeressJ@nyc.rr.com.		

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		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

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

- No awareness campaign.

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF FEBRUARY 2022

Source Code/ Name	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	No complaints received	N/A	N/A	N/A	N/A

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		Document Identifier	240-88543153	Rev	2
		Effective Date	February 2021		
		Review Date	February 2024		

Compiled by: Lutendo Nemutamba Nemutamba
Environmental Officer

Verified by: Malose Langa Malose
System Engineer Boiler

Supported by: Mokgadi Dikgale MF Dikgale
Environmental Manager (Acting)

Supported by: Jabulani Mkhathswa Jabulani
Engineering Group Manager

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

Yours sincerely

Zweli Witbooi

Zweli Witbooi
GENERAL MANAGER: MEDUPI POWER STATION (Acting)

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