Stanley Koenaite

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Date: 2021/07/31

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Ref: H16/1/13-AEL/M1/R1 – July 2021 rev 1

Dear Mr Koenaite

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JULY 2021

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 2, 3, 4, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of July 2021 only. This report supersedes the previous submission made for the month on July 2021.

1. Raw Materials and Products

Table 1: Quantity of raw materials and products for Unit 2, 3, 4, 5 and 6 in July 2021

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Unit 2, 3, 4, 5 and 6 consumption July 2021
	Coal	Tons/month	1 875 000	871 686
	Fuel Oil	Tons/month	20 000	4 229
Production Rates	**Product/ By-Product Name**	**Unit**	**Maximum Production Capacity Permitted (Quantity)**	**Unit 2, 3, 4, 5 and 6 Production Rate in Month of July 2021**
	Energy	MW	4 800	2 832
	Ash Emitted	Tons/month	not specified	154.80

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Date	Reportable hours of Operation					Coal usage	Production rate (MW)				
	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6		U2	U3	U4	U5	U6
01-July- 21	24,0	24,0	24,0	24,0	0,0	25359	589,0	684,8	487,4	631,2	0
02-July- 21	24,0	24,0	24,0	24,0	0,0	25123	568,9	608,4	484,4	636,7	0
03-July- 21	24,0	24,0	24,0	24,0	0,0	25564	584,2	590,2	470,4	632,1	186,1
04-July- 21	24,0	24,0	24,0	24,0	0,0	30339	670,3	758,5	479,2	581,8	379,0
05-July- 21	24,0	24,0	24,0	24,0	8,0	26905	524,0	505,7	466,6	484,2	447,9
06-July- 21	24,0	24,0	24,0	24,0	24,0	30077	633,5	620,0	477,5	526,4	479,9
07-July- 21	24,0	24,0	0,3	24,0	24,0	24142	700,7	687,4	400,1	393,1	486,2
08-July- 21	24,0	24,0	0,0	24,0	24,0	25310	536,9	535,0	317,8	556,6	446,7
09-July- 21	24,0	24,0	21,8	24,0	15,9	28002	512,6	607,9	397,8	541,3	473,2
10-July- 21	24,0	24,0	24,0	24,0	0,4	31725	626,8	665,1	493,8	664,0	664,3
11-July- 21	24,0	24,0	24,0	24,0	0,0	27195	556,1	644,3	529,2	620,6	399,8
12-July- 21	24,0	24,0	24,0	24,0	12,2	28530	460,0	653,1	501,5	530,5	477,4
13-July- 21	24,0	24,0	24,0	24,0	24,0	30625	606,7	586,2	524,7	569,0	583,5
14-July- 21	24,0	24,0	24,0	24,0	24,0	31591	733,5	665,1	555,1	664,9	629,0
15-July- 21	24,0	24,0	24,0	12,9	24,0	29735	606,8	549,0	502,3	477,3	574,4
16-July- 21	24,0	21,4	24,0	1,2	24,0	32803	763,5	616,9	559,9	519,7	618,5
17-July- 21	24,0	0,0	24,0	24,0	24,0	27875	769,4	0	549,7	561,2	704,3
18-July- 21	24,0	0,0	24,0	24,0	24,0	22749	738,7	0	369,8	481,1	472,4
19-July- 21	16,3	0,0	24,0	3,5	24,0	24809	639,1	490,7	527,0	511,0	560,7
20-July- 21	0,0	8,8	24,0	18,7	24,0	30425	619,9	645,5	564,0	383,2	592,4
21-July- 21	22,9	24,0	16,8	24,0	24,0	31923	667,5	648,3	630,8	504,3	563,6
22-July- 21	24,0	24,0	0,0	14,3	24,0	26900	647,5	635,7	153,9	529,0	574,3
23-July- 21	24,0	24,0	3,6	0,0	24,0	33511	719,4	676,9	501,8	516,1	667,4
24-July- 21	24,0	24,0	24,0	12,8	24,0	32422	631,9	625,8	532,6	524,7	619,1
25-July- 21	24,0	24,0	24,0	24,0	24,0	35398	711,9	686,7	523,6	671,4	632,0
26-July- 21	24,0	24,0	24,0	24,0	24,0	32977	688,9	634,5	504,3	594,3	654,4
27-July- 21	24,0	0,3	24,0	24,0	24,0	25834	657,3	369,2	526,1	580,8	622,1
28-July- 21	24,0	0,0	17,3	24,0	24,0	23459	683,3	0	462,6	513,6	506,1
29-July- 21	24,0	0,0	0,0	24,0	24,0	20434	742,6	0	0	563,0	438,4
30-July- 21	24,0	0,0	0,0	24,0	24,0	25497	721,3	0	328,3	694,8	646,5

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2. Abatement Technology

Table 3: Abatement Equipment Control Technology efficiency for month of July 2021

Associated Unit/Stack	Technology Type	Efficiency
Unit 1	*Fabric Filter Plant (FFP)*	-
Unit 2	*Fabric Filter Plant (FFP)*	*99,954%*
Unit 3	*Fabric Filter Plant (FFP)*	*99,926%*
Unit 4	*Fabric Filter Plant (FFP)*	*99,972%*
Unit 5	*Fabric Filter Plant (FFP)*	*99,945%*
Unit 6	*Fabric Filter Plant (FFP)*	*99,912%*

3. Energy Source Characteristics

Table 4: Energy Source Material Characteristics for the month of July 2021

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	1,21
Ash Content	35 - 39	33,87

Table 5: Energy Source Material Characteristics for the month of July 2021

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
	Oil	
Sulphur Content	0.5 - 3.5	2.0
Ash Content	0.02 - 0.1	0.010

4. Emissions Reporting

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

The emission limits are as follows:

SO_2 Monthly = 3500 mg/Nm^3 Dust Daily= 50 mg/Nm^3 NO_2 Daily= 750 mg/Nm^3

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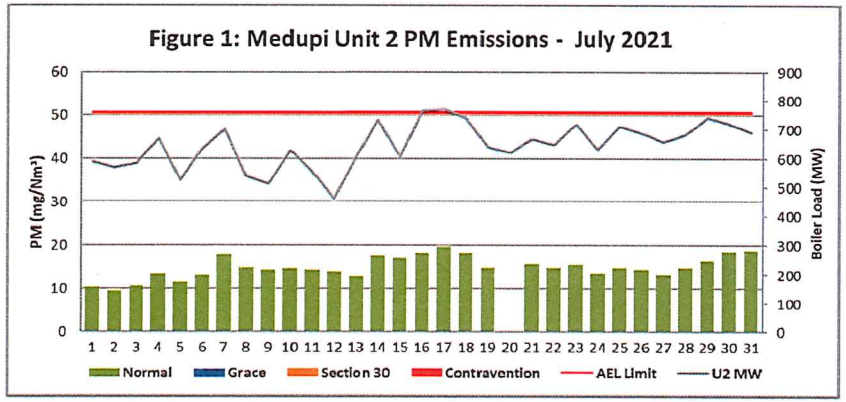
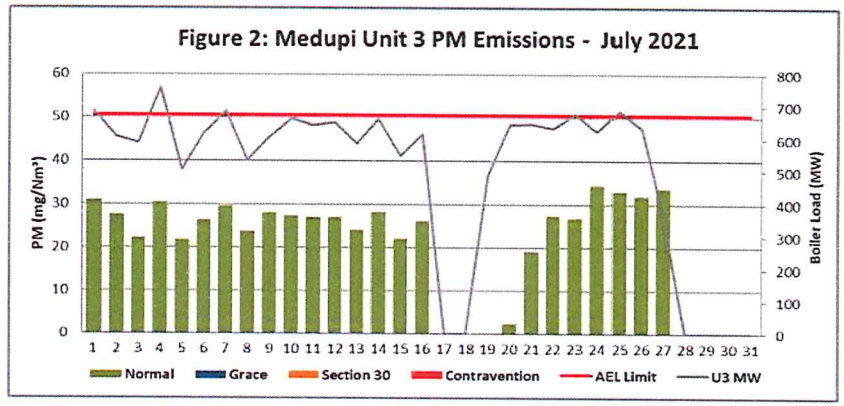
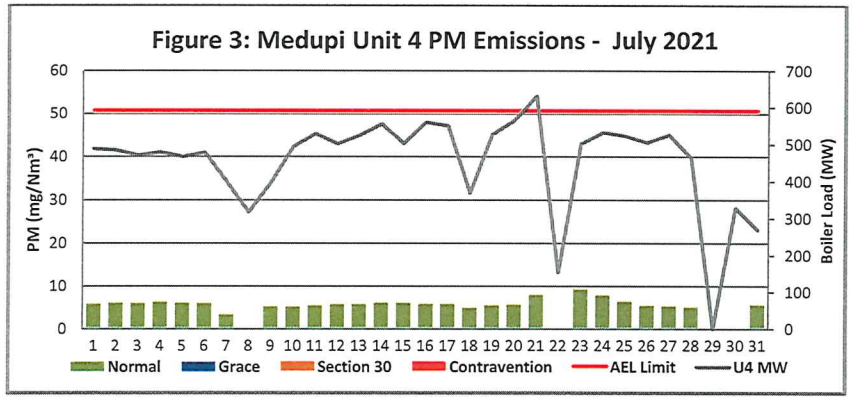
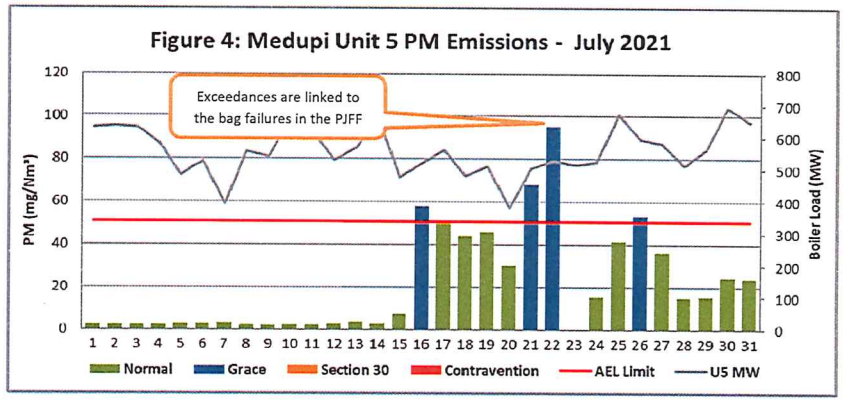
PM Emissions Averages









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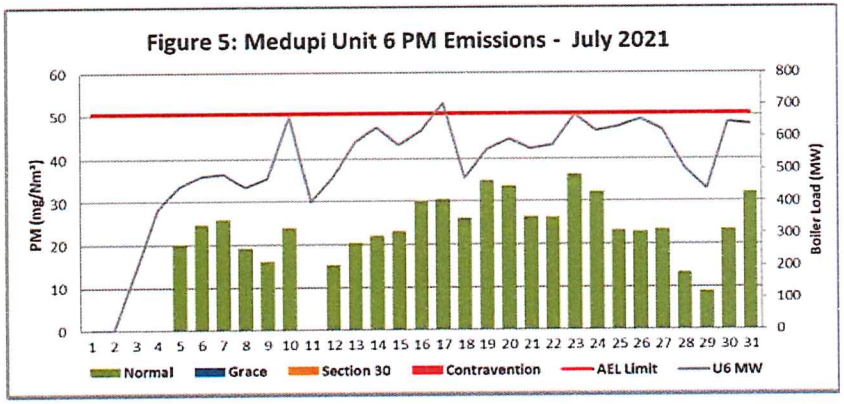
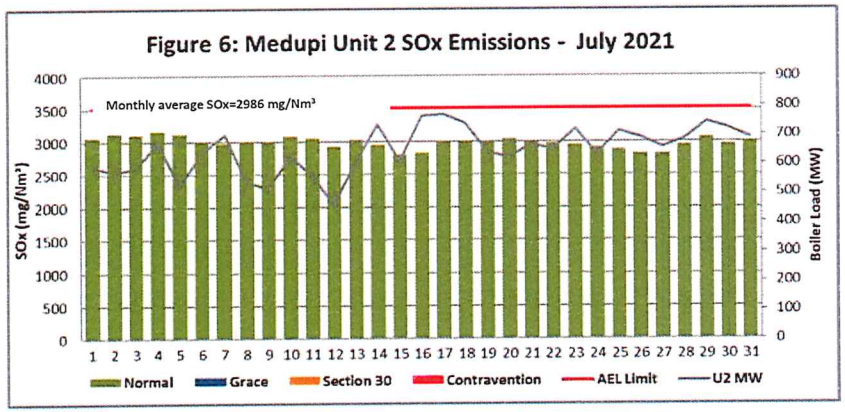
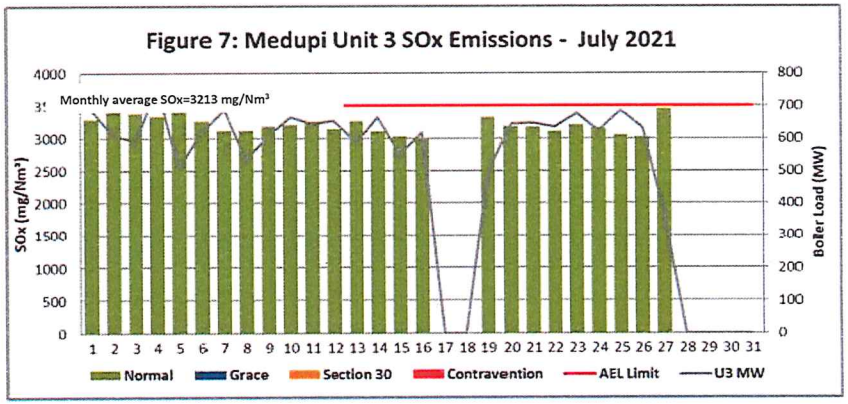


4.1 SOx Emissions Averages





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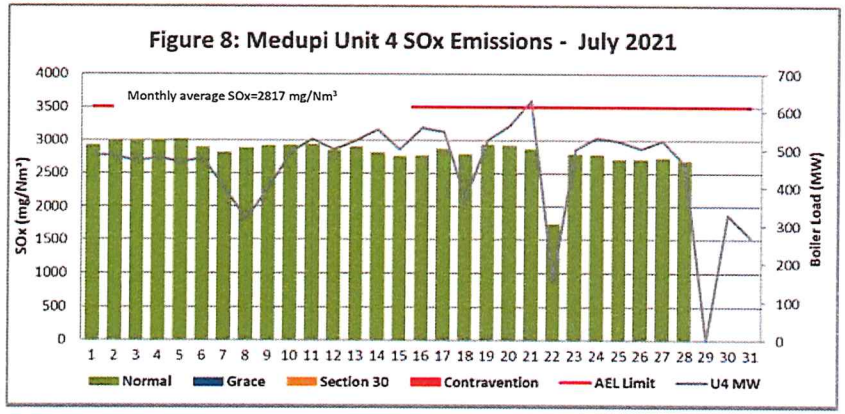

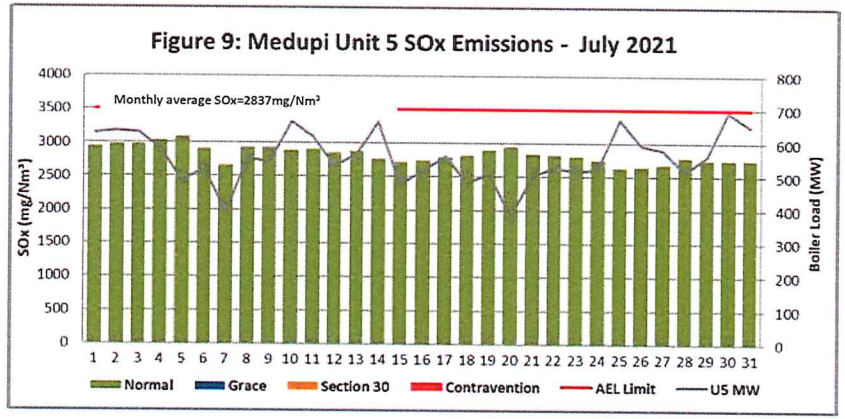

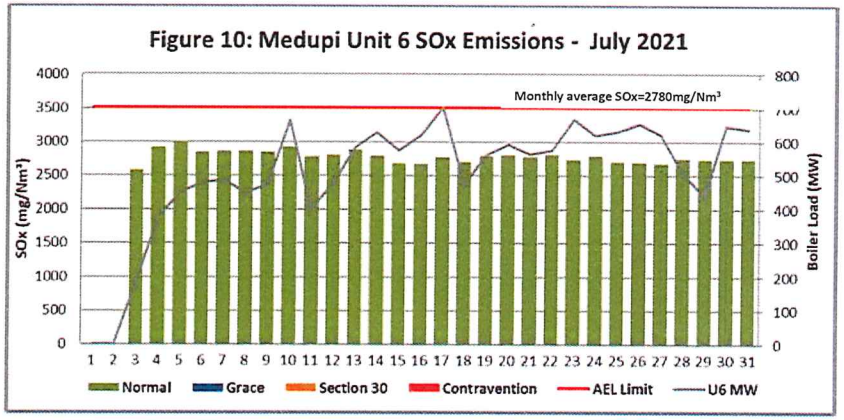

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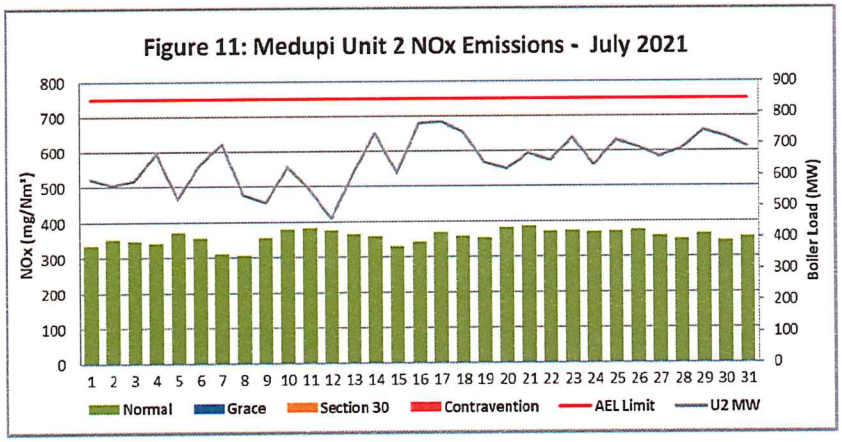
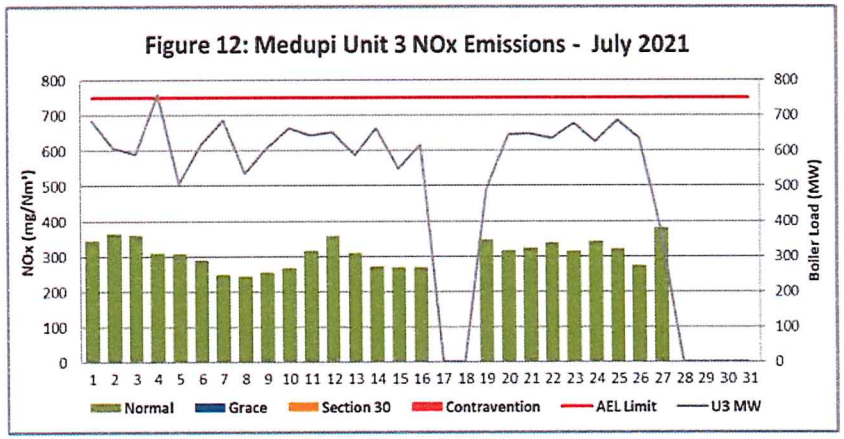
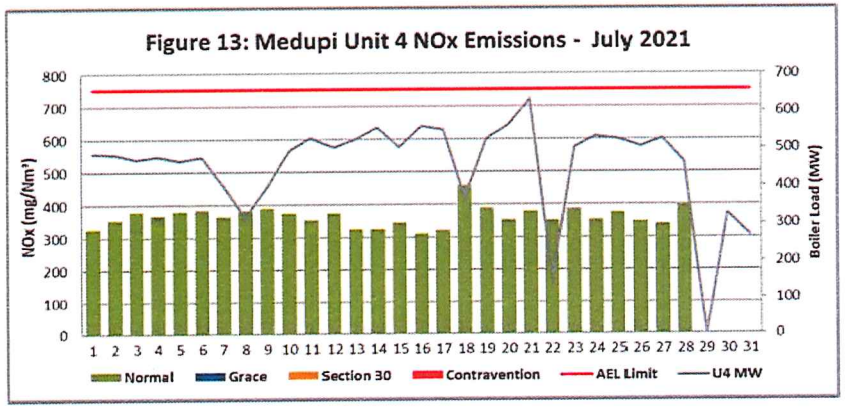
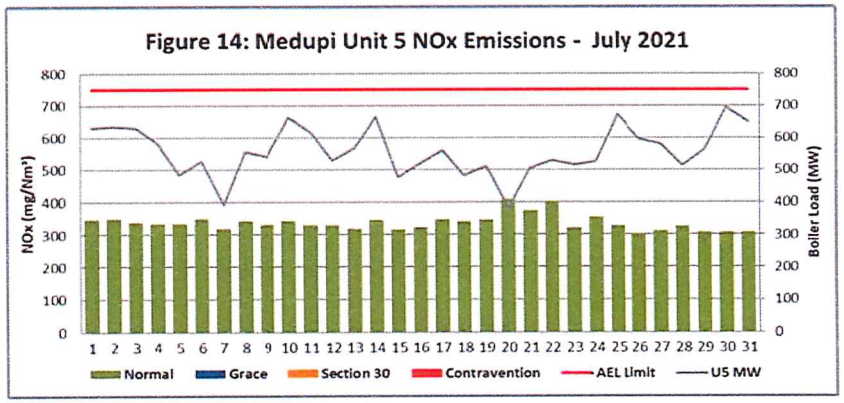
4.2 NOx Emissions Averages









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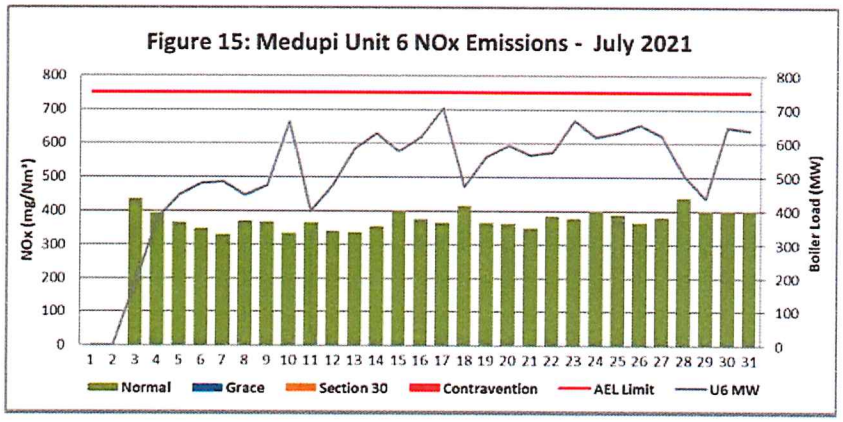

Medupi Power Station graphical representation of the daily average emissions

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Table 7: Monthly tonnages for the month of July 2021

Associated Unit/Stack	PM	SO_2	NO_2	CO
Unit 1	-	-	-	-
Unit 2	31,0	6 322	755	70
Unit 3	37,1	4 551	435	107
Unit 4	12,2	6 196	786	49
Unit 5	30,2	6 275	735	169
Unit 6	44,4	5 498	739	54
SUM	**154,8**	**28 843**	**3 449**	**448**

5. Continuous Emission Monitoring Systems (CEMS)

Unit 2, 3, 4, 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
July 2021	N/A	N/A	N/A

Table 7: CEMS Monitor Reliability

Associated Unit/Stack	PM	SO_2	NO	O_2
Unit 1	-	-	-	-
Unit 2	20,0	20,0	20,0	20,0
Unit 3	100,0	96,8	96,8	100,0
Unit 4	100,0	99,7	100,0	100,0
Unit 5	100,0	96,7	96,5	93,8
Unit 6	100,0	100,0	100,0	99,6

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6. CEMS Calibration certificates and equipment used for calibration

CEMS calibration certificates shall be made available for all units 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.

Table 8: Total Volatile Organic Compound (TVOC) for July 2021

Eskom

CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*

Date:	Saturday, 31 July 2021
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:	July	
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:	*4436*	tons/month
Molecular weight of the fuel oil:	166,00	Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	17,66	°C
Daily maximum ambient temperature	25,87	°C
Daily minimum ambient temperature	10,47	°C
Daily ambient temperature range	15,40	°C
Daily total insolation factor	3,47	kWh/m²/day
Tank paint colour	*Aluminum/Specular*	NA
Tank paint solar absorbtance	0,39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0,69 kg/month	
Working losses:	0,13 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, 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.

10. Complaints Register

Table 9: Complaints for the month of July 2021

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: Thabo Khoza _____
Senior Environmental Advisor

Verified by: Malose Langa_____
System Engineer Boiler

Supported by: Mokgadi Dikgale_____
Environmental Manager

Supported by: Jabulani Mkhatshwa_____
Engineering Group Manager

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

Yours sincerely

_____
Zweli Witbooi
GENERAL MANAGER: MEDUPI POWER STATION

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