





Medupi Power Station Monthly Emissions Report

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Date	Reportable hours of Operation						Coal usage	Production rate (MW)				
	U1	U2	U3	U4	U5	U6						
01/10/21	24.0	24.0	24.0	24.0	17.0	24.0	7355	633	498			
02/10/21	24.0	24.0	1.6	24.0	2.3	24.0	7806	677	794	403	785	577
03/10/21	24.0	24.0	OFF	24.0	24.0	24.0	8350	725	791	OFF	780	538
04/10/21	24.0	24.0	OFF	24.0	24.0	24.0	6125	529	716	OFF	745	591
05/10/21	24.0	24.0	OFF	24.0	24.0	24.0	7810	683	773	OFF	729	600
06/10/21	24.0	24.0	OFF	24.0	24.0	24.0	9040	794	794	OFF	757	647
07/10/21	24.0	24.0	OFF	24.0	24.0	24.0	8765	751	745	OFF	760	701
08/10/21	24.0	24.0	19.7	24.0	24.0	24.0	8916	777	741	OFF	760	701
09/10/21	24.0	24.0	0.0	24.0	24.0	24.0	9078	788	560	OFF	757	657
10/10/21	24.0	24.0	19.0	24.0	24.0	24.0	8949	791	675	OFF	760	648
11/10/21	24.0	24.0	24.0	24.0	24.0	24.0	9065	790	795	OFF	760	649
12/10/21	24.0	24.0	24.0	24.0	8.8	24.0	8946	791	794	OFF	760	660
13/10/21	24.0	24.0	24.0	24.0	9.0	24.0	8142	704	794	OFF	723	680
14/10/21	24.0	24.0	24.0	24.0	24.0	24.0	7949	686	784	OFF	764	550
15/10/21	24.0	24.0	24.0	24.0	24.0	24.0	8813	751	794	OFF	697	550
16/10/21	24.0	24.0	24.0	24.0	24.0	24.0	6598	547	777	OFF	768	617
17/10/21	24.0	24.0	24.0	24.0	24.0	24.0	7480	634	771	OFF	765	590
18/10/21	24.0	24.0	5.9	24.0	24.0	24.0	9001	778	568	OFF	768	550
19/10/21	24.0	24.0	7.5	24.0	24.0	24.0	8616	746	794	OFF	735	631
20/10/21	24.0	24.0	24.0	24.0	24.0	24.0	7907	677	655	OFF	790	672
21/10/21	24.0	24.0	1.0	24.0	24.0	24.0	8490	735	332	OFF	745	645
22/10/21	24.0	24.0	0.0	24.0	24.0	24.0	8544	735	510	OFF	749	584
23/10/21	24.0	24.0	12.3	24.0	24.0	24.0	7153	601	759	OFF	598	630
24/10/21	24.0	24.0	24.0	24.0	24.0	24.0	7565	632	782	OFF	775	684
25/10/21	24.0	24.0	24.0	24.0	24.0	24.0	8541	724	764	OFF	752	641
26/10/21	24.0	24.0	21.5	24.0	24.0	24.0	8092	689	782	OFF	789	671
27/10/21	24.0	24.0	0.0	24.0	24.0	24.0	7571	642	627	OFF	789	611
28/10/21	24.0	24.0	13.3	24.0	24.0	24.0	7222	759	759	OFF	748	652
29/10/21	24.0	24.0	24.0	24.0	24.0	24.0	6215	601	727	OFF	783	692
30/10/21	24.0	24.0	24.0	24.0	24.0	24.0	4298	630	790	OFF	790	621
31/10/21	24.0	24.0	24.0	24.0	13.3	24.0	8508	745	750	OFF	764	685

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The emission limits are as follows:

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

**4. Emissions Reporting**

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
<b>Oil</b>		
Sulphur Content	0.5 - 3.5	2.2
Ash Content	0.02 - 0.1	0.020

TABLE 5: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF OCTOBER 2021

Characteristic	Stipulated Range (% by weight on a dry basis)	Monthly Average Content (% by weight on a dry basis)
<b>Coal</b>		
Sulphur Content	1.3 - 2.2	1.38
Ash Content	35 - 39	34.70

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF OCTOBER 2021


**3. Energy Source Characteristics**

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

Associated Unit/Stack	Technology Type	Efficiency
Unit 1	Fabric Filter Plant (FFP)	99.898%
Unit 2	Fabric Filter Plant (FFP)	99.929%
Unit 3	Fabric Filter Plant (FFP)	99.931%
Unit 4	Fabric Filter Plant (FFP)	-
Unit 5	Fabric Filter Plant (FFP)	99.935%
Unit 6	Fabric Filter Plant (FFP)	99.856%

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


**2. Abatement Technology**

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SO<sub>2</sub> Monthly = 3500 mg/Nm<sup>3</sup>      Dust Daily = 50 mg/Nm<sup>3</sup>      NO<sub>2</sub> Daily = 750 mg/Nm<sup>3</sup>

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PM Daily Average

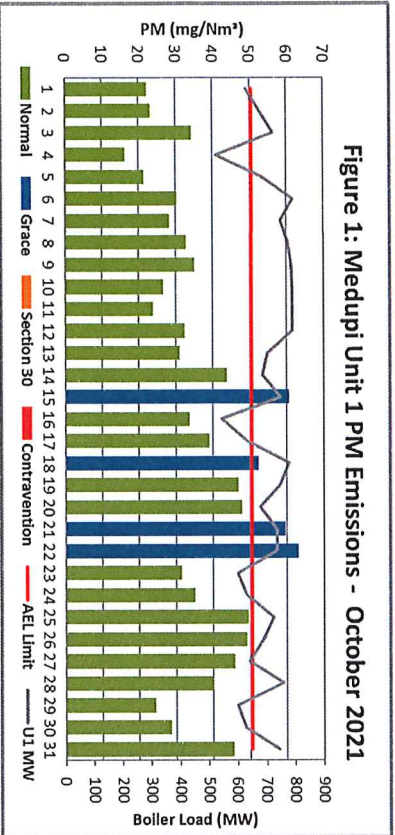


Figure 1: Medupi Unit 1 PM Emissions - October 2021

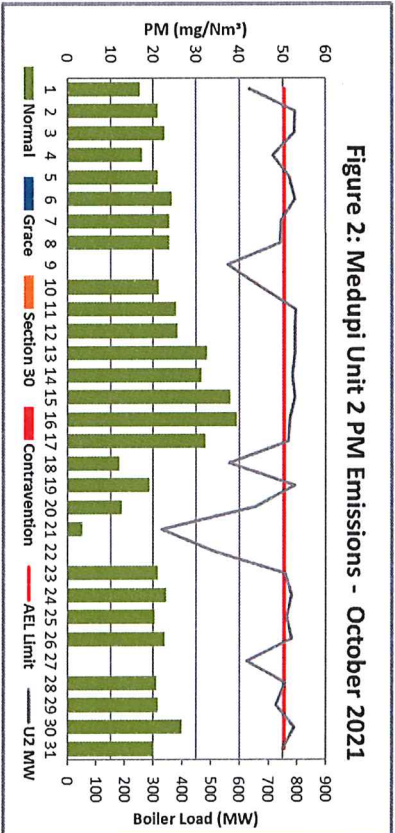


Figure 2: Medupi Unit 2 PM Emissions - October 2021

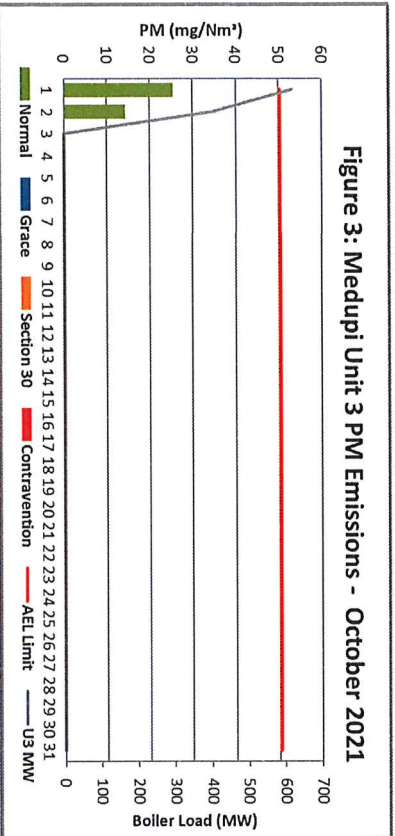


Figure 3: Medupi Unit 3 PM Emissions - October 2021

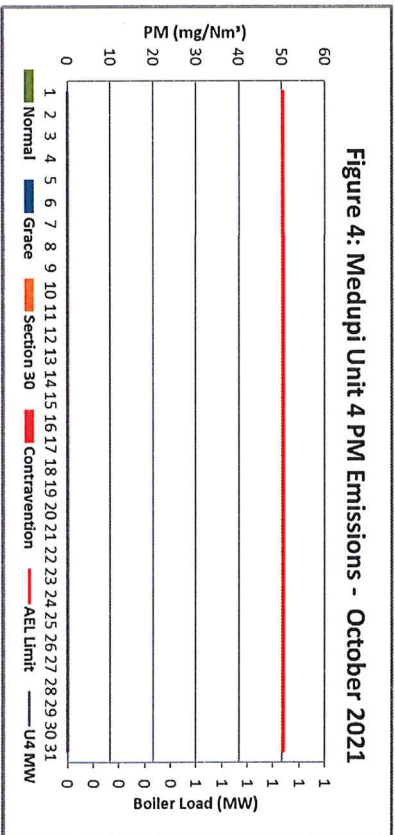


Figure 4: Medupi Unit 4 PM Emissions - October 2021

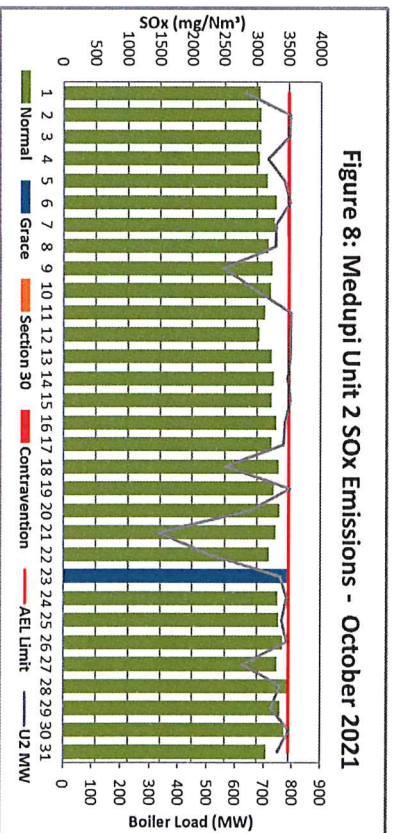
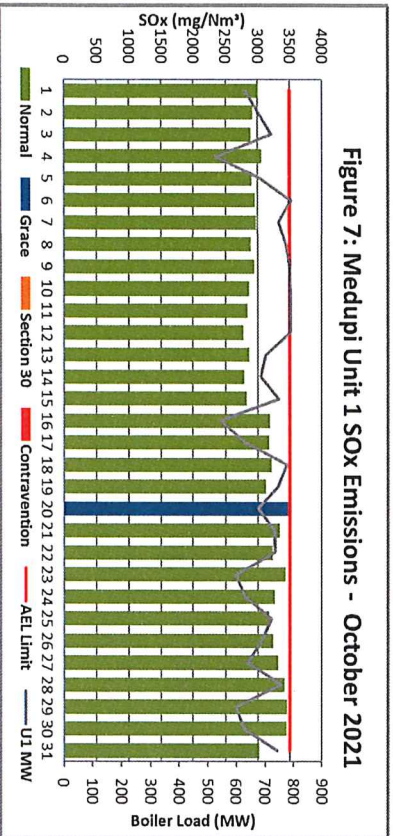
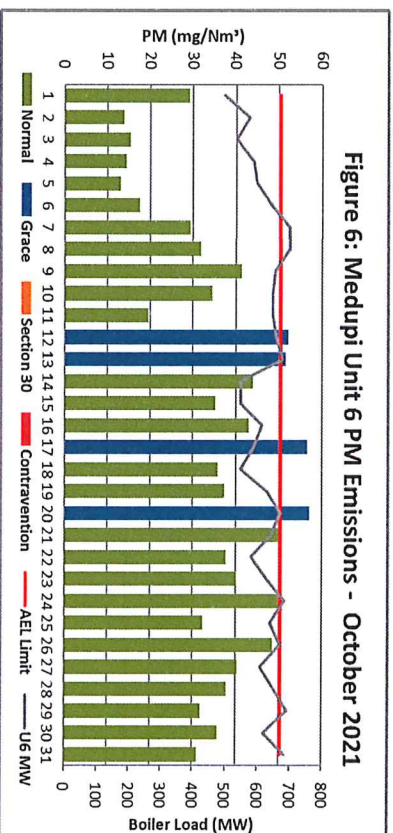
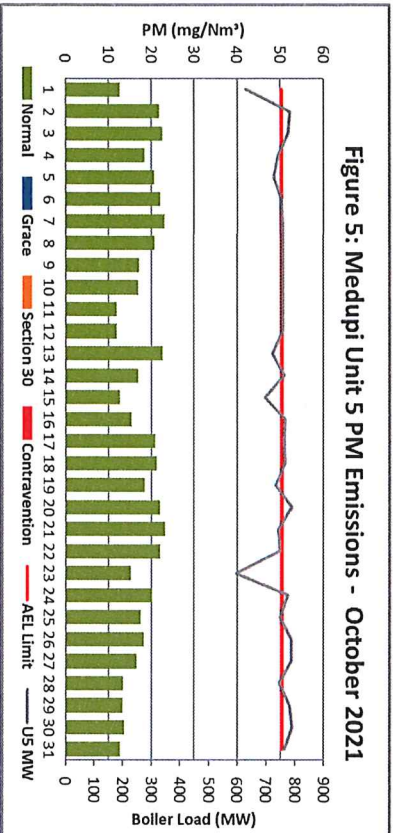
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SOx Daily Averages

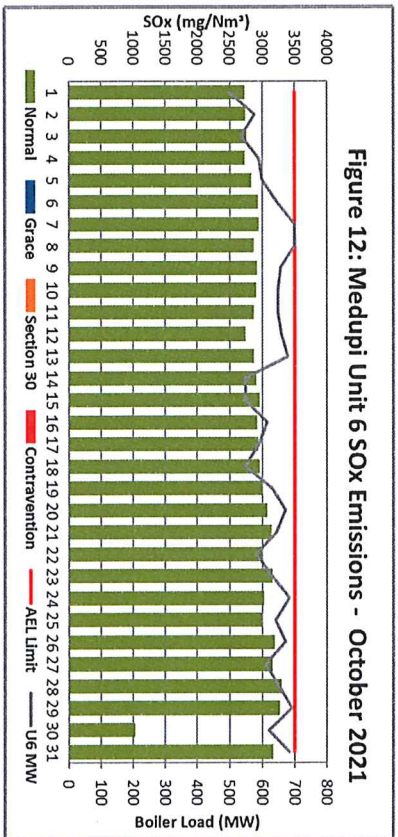
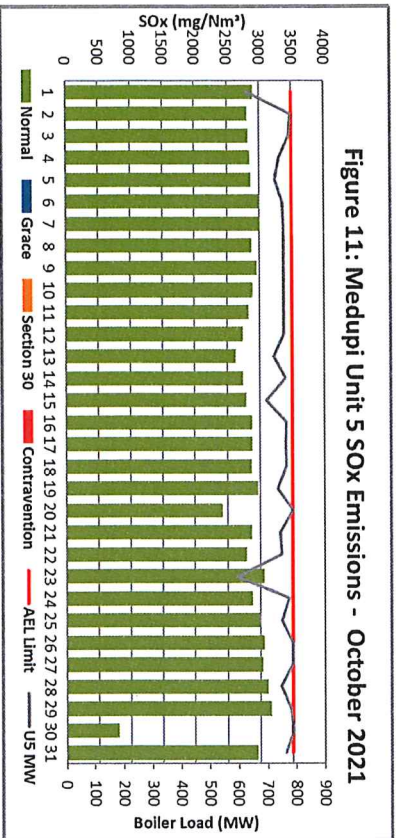
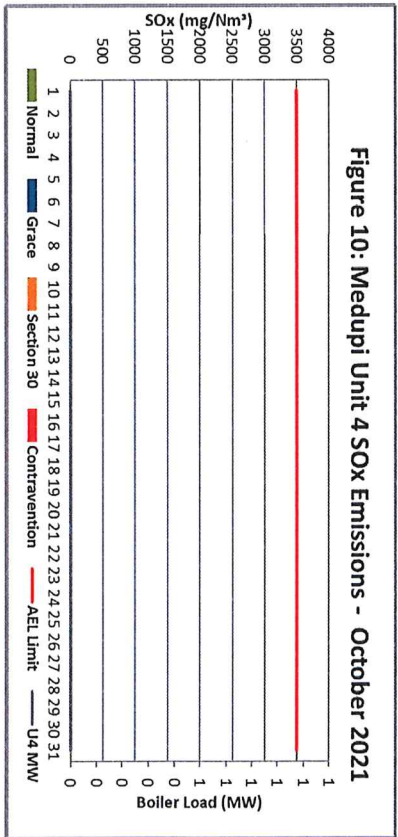
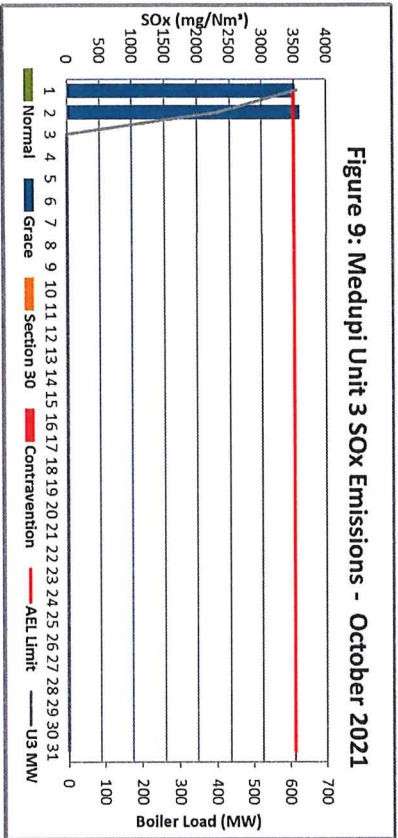
Figure 7: Medupi Unit 1 SOx Emissions - October 2021

Figure 8: Medupi Unit 2 SOx Emissions - October 2021

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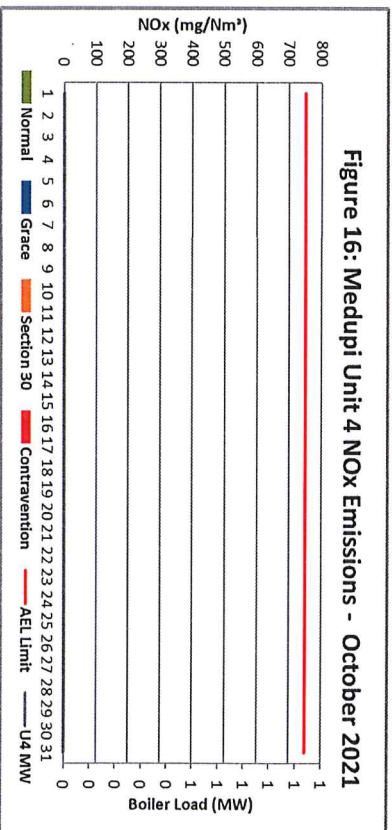
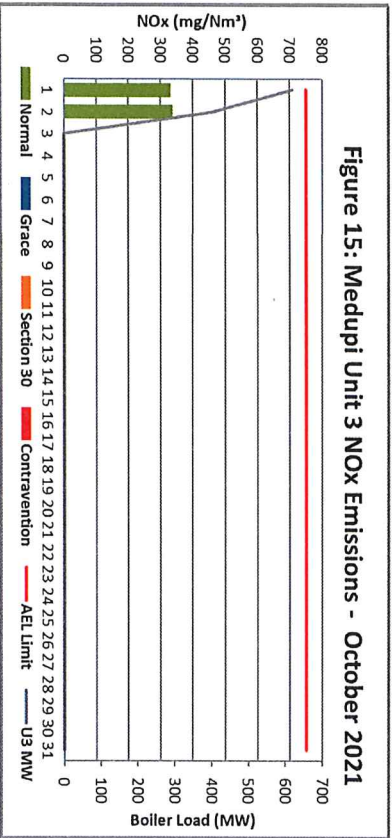
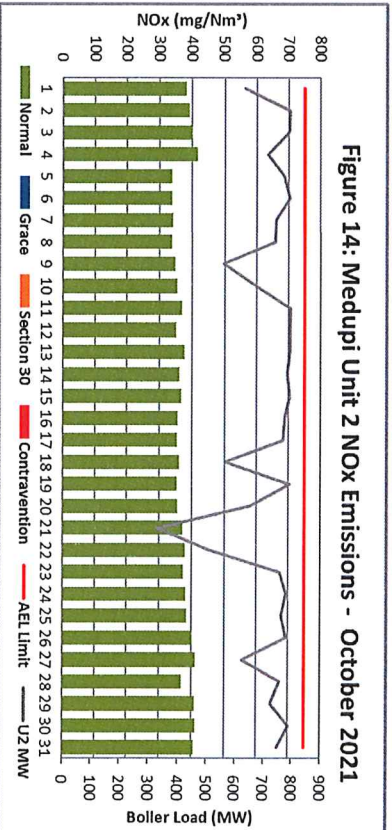
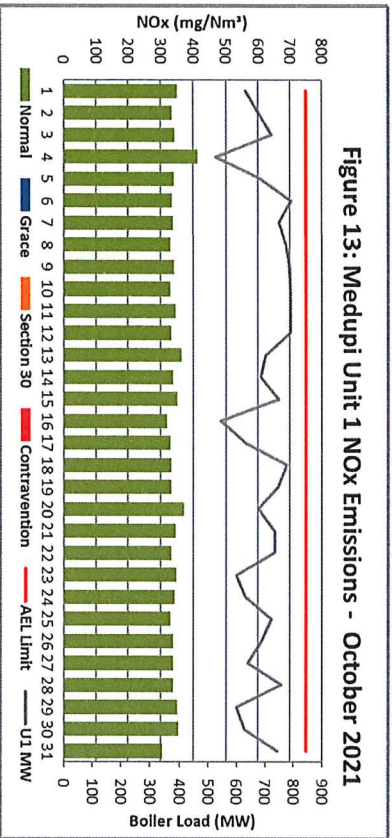
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NOx Daily Averages

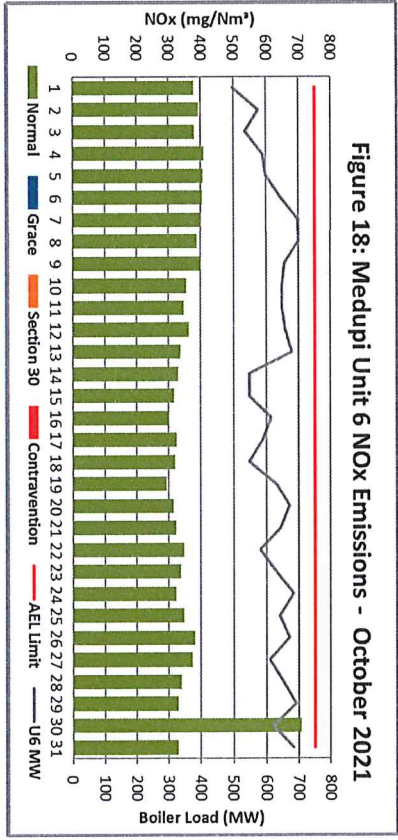
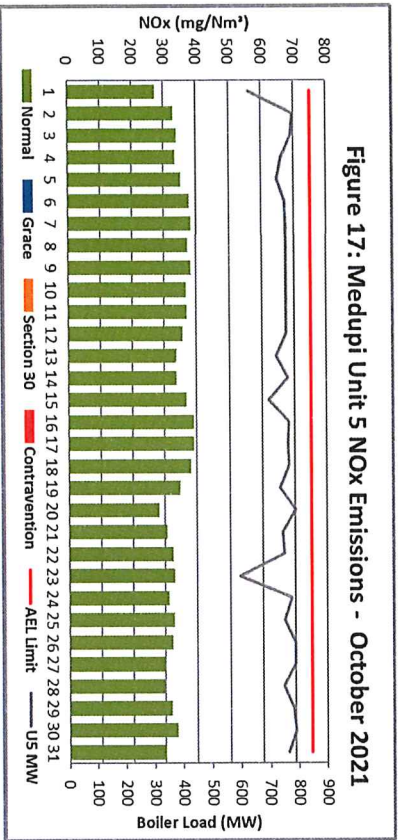


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Medupi Power Station graphical representation of the daily average emissions

Note: Unit 4 off for recovery.

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TABLE 7: MONTHLY TONNAGES FOR THE MONTH OF OCTOBER 2021

Associated Unit/Stack	PM	SO <sub>2</sub>	NO <sub>2</sub>
Unit 1	78.7	6 481	715
Unit 2	52.4	7 548	863
Unit 3	1.6	228	22
Unit 4	0.0	0	0
Unit 5	48.3	7 521	914
Unit 6	93.5	8 389	1 059
SUM	274.5	30 166	3 572

### 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: CEMS MONITOR RELIABILITY

Associated Unit/Stack	PM	SO <sub>2</sub>	NO	O <sub>2</sub>
Unit 1	100.0	100.0	100.0	99.9
Unit 2	100.0	100.0	100.0	99.9
Unit 3	100.0	100.0	100.0	100.0
Unit 4				
Unit 5	100.0	99.9	99.9	98.8
Unit 6	96.8	99.3	97.8	99.3

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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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TABLE 8: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR OCTOBER 2021

		<b>CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*</b>	
Date: Monday, 31 October 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			
<b>MONTHLY INPUT DATA FOR THE STATION</b>			
Please only insert relevant monthly data inputs into the <i>blue cells</i> below Choose from a dropdown menu in the <i>green cells</i> The total VOC emissions for the month are in the <i>red cells</i> IMPORTANT: Do not change <i>any</i> other cells without consulting the AQ CoE			
<b>MONTH:</b>		October	
<b>GENERAL INFORMATION:</b>			
Total number of fuel oil tanks: 2		Unit: NA	
Height of tank*: 14.2		Unit: m	
Diameter of tank: 12		Unit: m	
Net fuel oil throughput for the month: 982		Unit: tons/month	
Molecular weight of the fuel oil: 166.00		Unit: Lb/lb-mole	
<b>METEROLOGICAL DATA FOR THE MONTH</b>			
Daily average ambient temperature		Unit: °C	
Daily maximum ambient temperature		Unit: °C	
Daily minimum ambient temperature		Unit: °C	
Daily ambient temperature range		Unit: °C	
Daily total insulation factor		Unit: kWh/m²/day	
Tank paint colour		Unit: NA	
Tank paint solar absorbance		Unit: NA	
<b>FINAL OUTPUT:</b>			
Breathing losses: 0.74 kg/month		Unit:	
Working losses: 0.03 kg/month		Unit:	
<b>TOTAL LOSSES (Total TVOC Emissions for the month):</b> 0.76 kg/month		Unit:	
*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 OCTOBER 2021

Source Code/ Name	N/A
Air pollution complaints received	No complaints received
Calculation of Impacts/ emissions associated with the incident	N/A
Date of complaint and date of response by the license holder	N/A
Results of investigation	N/A
Action taken to resolve the complaint	N/A

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Compiled by:

Thabo Khoza

Senior Environmental Advisor

Verified by:

Malose Langa

System Engineer Boiler

Supported by:

Mokgadi Dikgale

Environmental Manager

Supported by:

Jabulani Mkhatsywa

Engineering Group Manager

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

Yours sincerely

Zwell Witbooi

GENERAL MANAGER: MEDUPI POWER STATION

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