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		Document Identifier	240-88543153	Rev	2
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		Review Date	July2024		

Stanley Koenaitse

Waterberg District Municipality
Private Bag X1018
Modimole
0510

skoenaite@waterberg.gov.za

Date: 2023/07/31

Enquiries: MF Dikgale

Tel: 014 762 6820

Ref: H16/1/13-AEL/M1/R1 – July2023

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JULY 2023

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 supersedes the report that was sent to the Department in August 2023, the report was revised due to findings from the Eskom Data Integrity review Audit of FY2023.

This report reflects Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of July 2023 only.

1. Raw Materials and Products


TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN JULY 2023

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – July2023
	Coal	Tons/month	1 875 000	1063907
	Fuel Oil	Tons/month	20 000	1110
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of July2023
	Energy	GWh	3 571.2	2298.99
	Ash Emitted	Tons/month	not specified	182.20

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Date	Reportable Hours of Operation						Coal usage	Production rate (MW)					
	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01-July	24.0	24.0	24.0	0.0	24.0	24.0	35084	742	731	673	off	600	736
02-July	24.0	24.0	24.0	0.0	24.0	24.0	34635	717	710	645	Off	600	705
03-July	24.0	24.0	24.0	0.0	24.0	24.0	35012	740	714	624	Off	600	705
04-July	24.0	24.0	24.0	0.0	24.0	24.0	35235	741	698	681	Off	600	705
05-July	24.0	24.0	24.0	0.0	24.0	24.0	34722	700	713	673	Off	600	727
06-July	24.0	24.0	24.0	0.0	24.0	24.0	34731	697	719	673	Off	570	712
07-July	24.0	24.0	0.7	0.0	24.0	24.0	35416	726	714	615	Off	599	690
08-July	24.0	24.0	21.0	0.0	24.0	24.0	35661	729	720	676	Off	600	709
09-July	6.7	24.0	24.0	0.0	24.0	24.0	31514	672	698	651	Off	666	690
10-July	0.0	24.0	24.0	0.0	24.0	24.0	33939	629	729	673	Off	629	705
11-July	11.0	1.2	24.0	0.0	24.0	24.0	35834	711	703	675	Off	704	724
12-July	24.0	20.3	24.0	0.0	24.0	24.0	36393	699	746	676	Off	705	709
13-July	24.0	24.0	24.0	0.0	24.0	24.0	35269	696	674	663	Off	689	692
14-July	2.3	24.0	24.0	0.0	24.0	24.0	32245	665	716	663	off	587	712
15-July	14.3	24.0	24.0	0.0	24.0	24.0	34336	697	701	619	Off	600	702
16-July	24.0	24.0	24.0	0.0	24.0	24.0	33439	682	691	622	Off	600	676
17-July	24.0	24.0	24.0	0.0	24.0	24.0	33813	689	668	645	Off	616	660
18-July	24.0	24.0	24.0	0.0	24.0	24.0	34456	665	696	653	Off	600	694
19-July	24.0	24.0	24.0	0.0	24.0	24.0	34333	646	712	657	Off	593	723
20-July	24.0	24.0	24.0	0.0	24.0	24.0	35028	725	715	662	Off	585	707
21-July	24.0	24.0	24.0	0.0	24.0	24.0	33436	650	695	647	Off	585	664
22-July	24.0	24.0	24.0	0.0	24.0	24.0	34311	674	709	648	Off	594	717
23-July	24.0	24.0	24.0	0.0	24.0	24.0	33945	663	695	646	Off	576	698
24-July	24.0	24.0	24.0	0.0	24.0	24.0	34547	692	708	642	Off	627	673
25-July	24.0	24.0	24.0	0.0	24.0	24.0	35299	723	721	641	Off	619	677
26-July	24.0	24.0	24.0	0.0	24.0	24.0	36270	735	717	651	Off	640	708
27-July	22.5	24.0	24.0	0.0	24.0	24.0	35088	722	726	648	Off	700	709
28-July	0.0	24.0	24.0	0.0	24.0	24.0	27903		732	651	Off	653	688
29-July	0.0	24.0	24.0	0.0	24.0	24.0	34682	632	703	648	Off	731	684
30-July	22.8	11.3	24.0	0.0	24.0	24.0	31944	638	527	615	Off	695	651
31-July	24.0	11.3	24.0	0.0	24.0	24.0	35387	684	700	621	Off	739	694

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NB: Reportable hours less than 24 highlighted in pink; Unit OFF highlighted in Red

2. Abatement Technology

Table 2: Abatement Equipment Control Technology efficiency for month of July2023

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.929%	100%
Unit 2	Fabric Filter Plant (FFP)	99.917%	100%
Unit 3	Fabric Filter Plant (FFP)	99.907%	100%
Unit 4	Fabric Filter Plant (FFP)	off	off
Unit 5	Fabric Filter Plant (FFP)	99.945%	100%
Unit 6	Fabric Filter Plant (FFP)	99.976%	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 JULY 2023

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	1.23
Ash Content	35 - 39	33.13

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF JULY 2023

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
	Oil	
Sulphur Content	0.5 - 3.5	2.3
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:

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SO₂ Monthly = 3500 mg/Nm³

Dust Daily= 50 mg/Nm³

NO₂ Daily= 750 mg/Nm³

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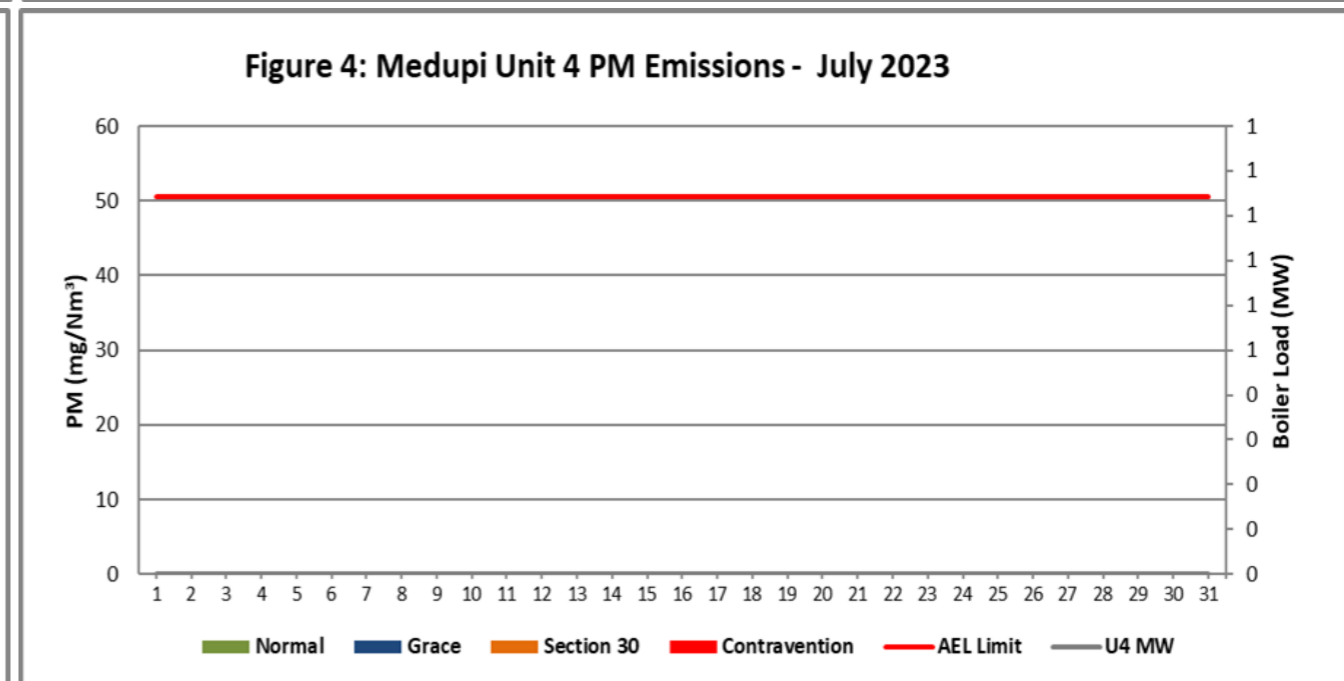
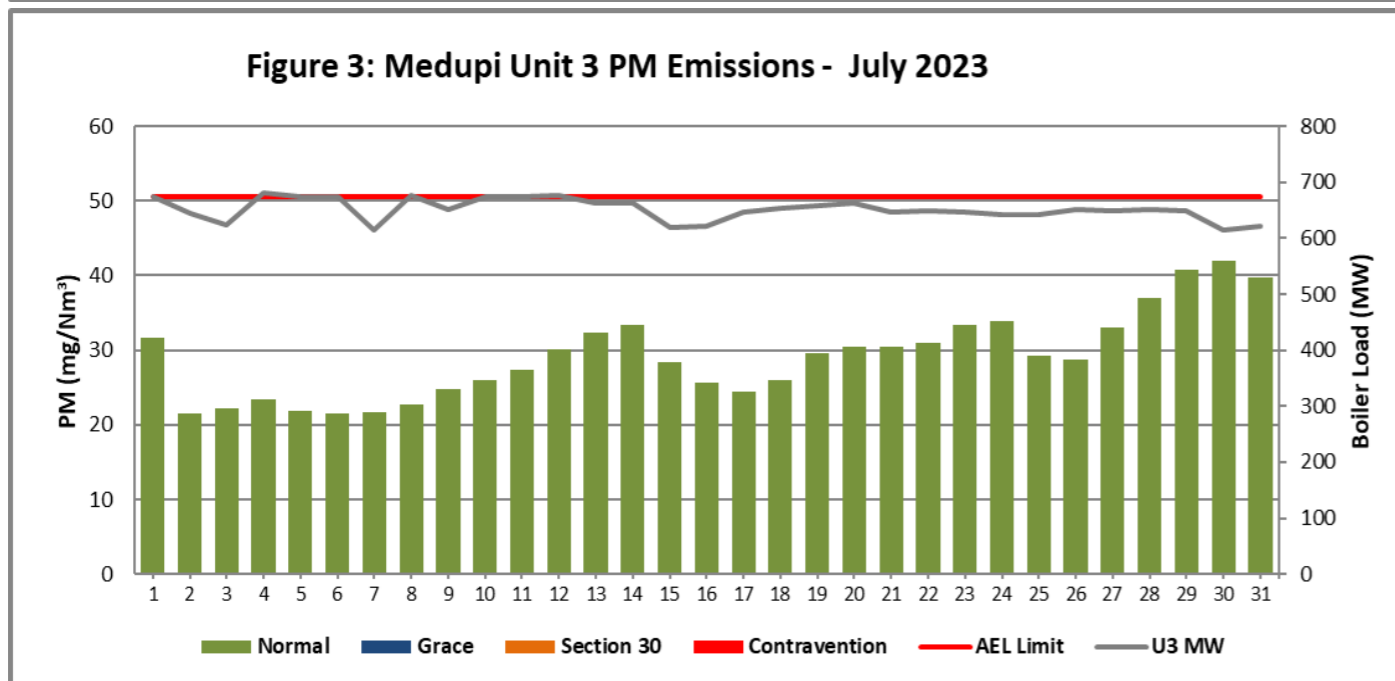
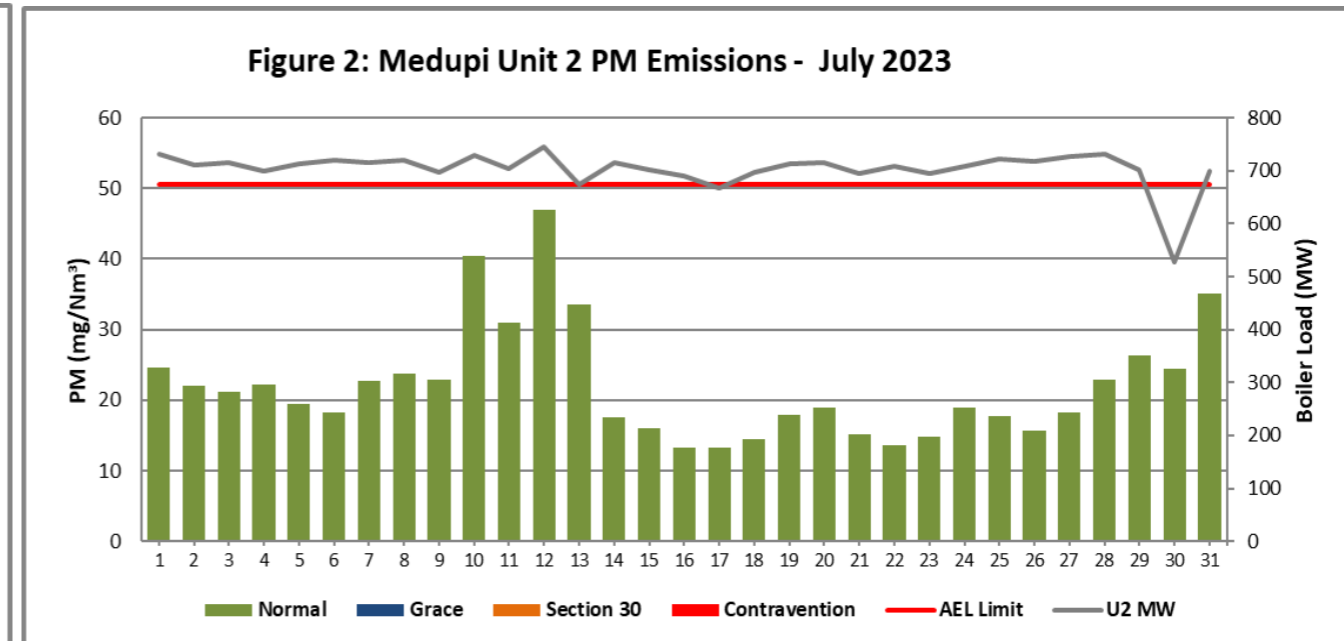
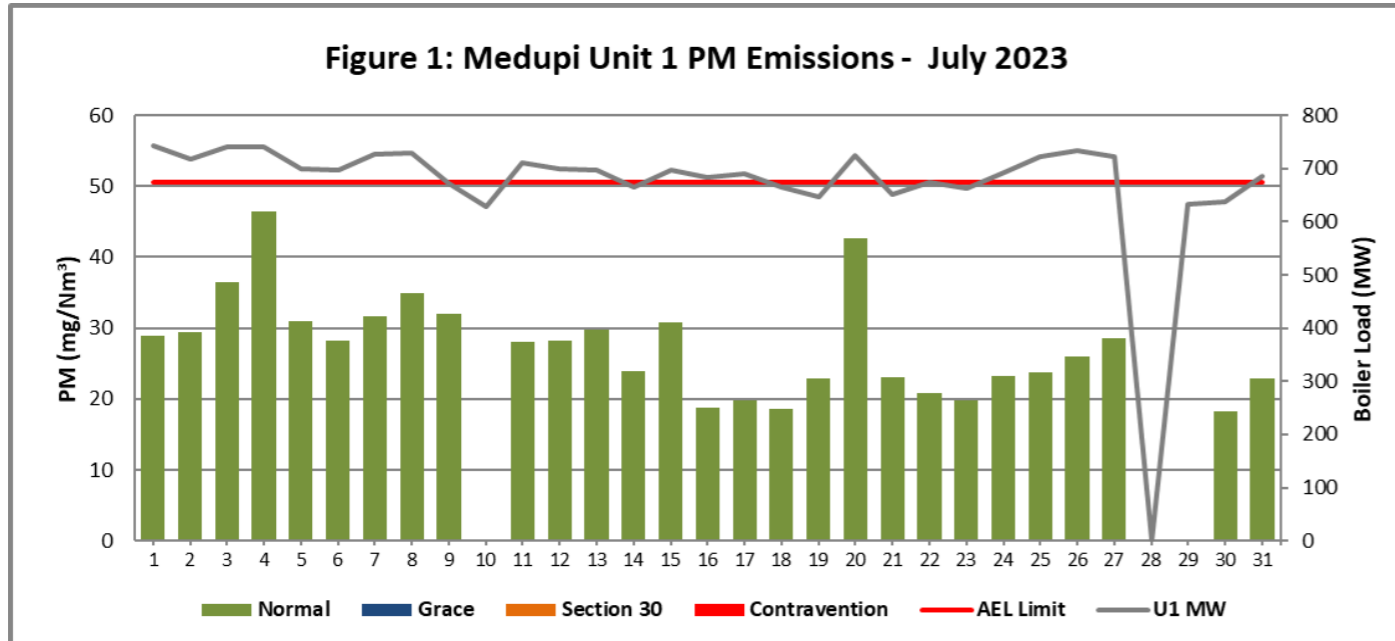
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4.1 PM Daily Averages



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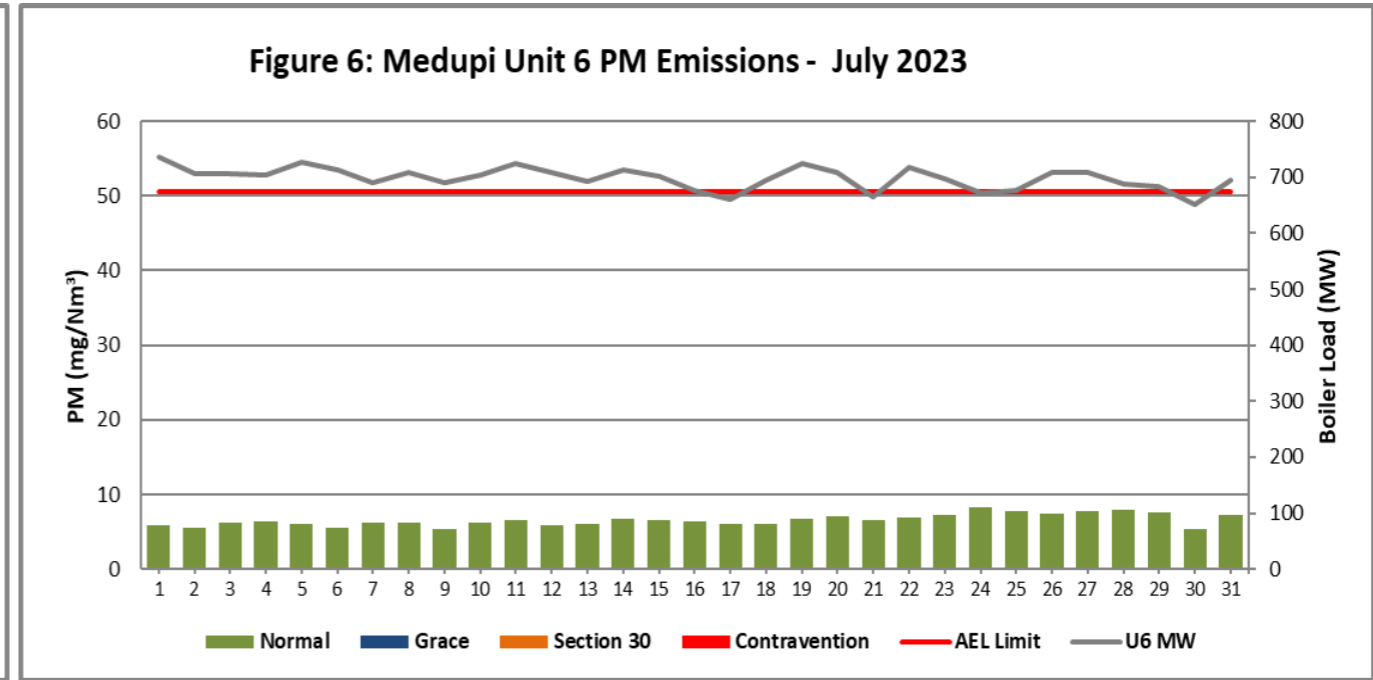
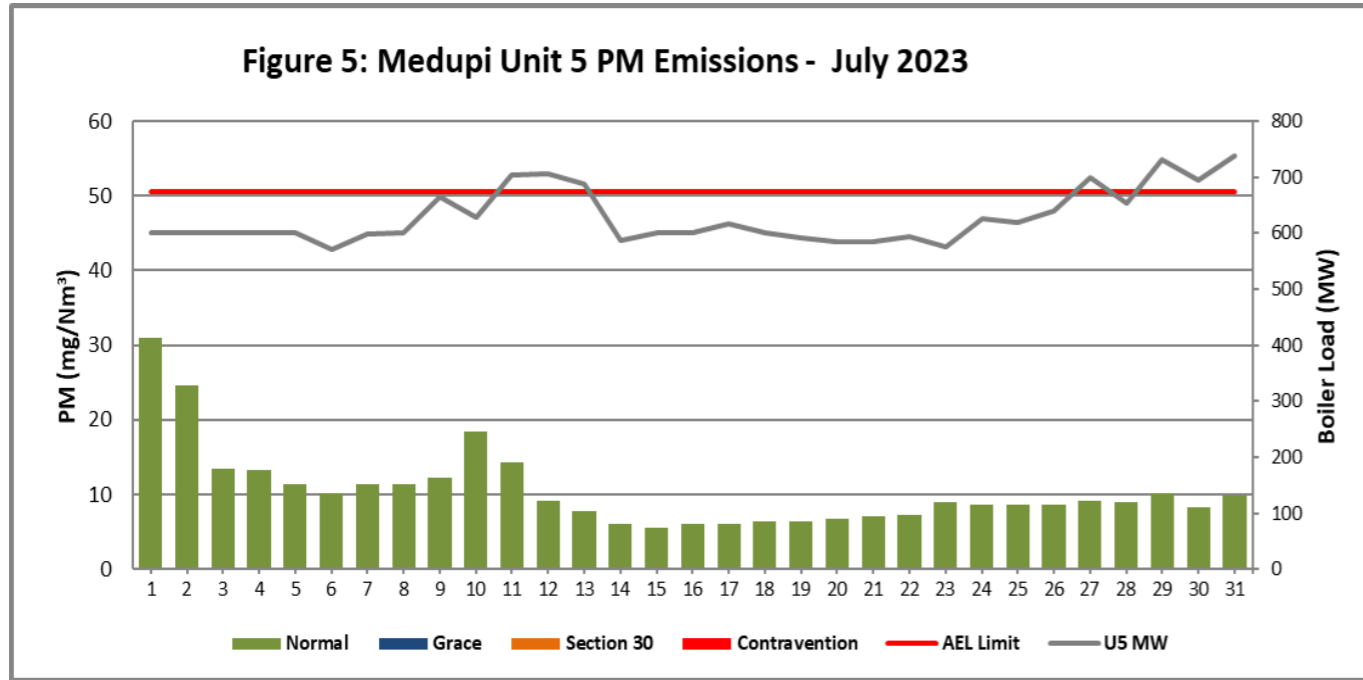
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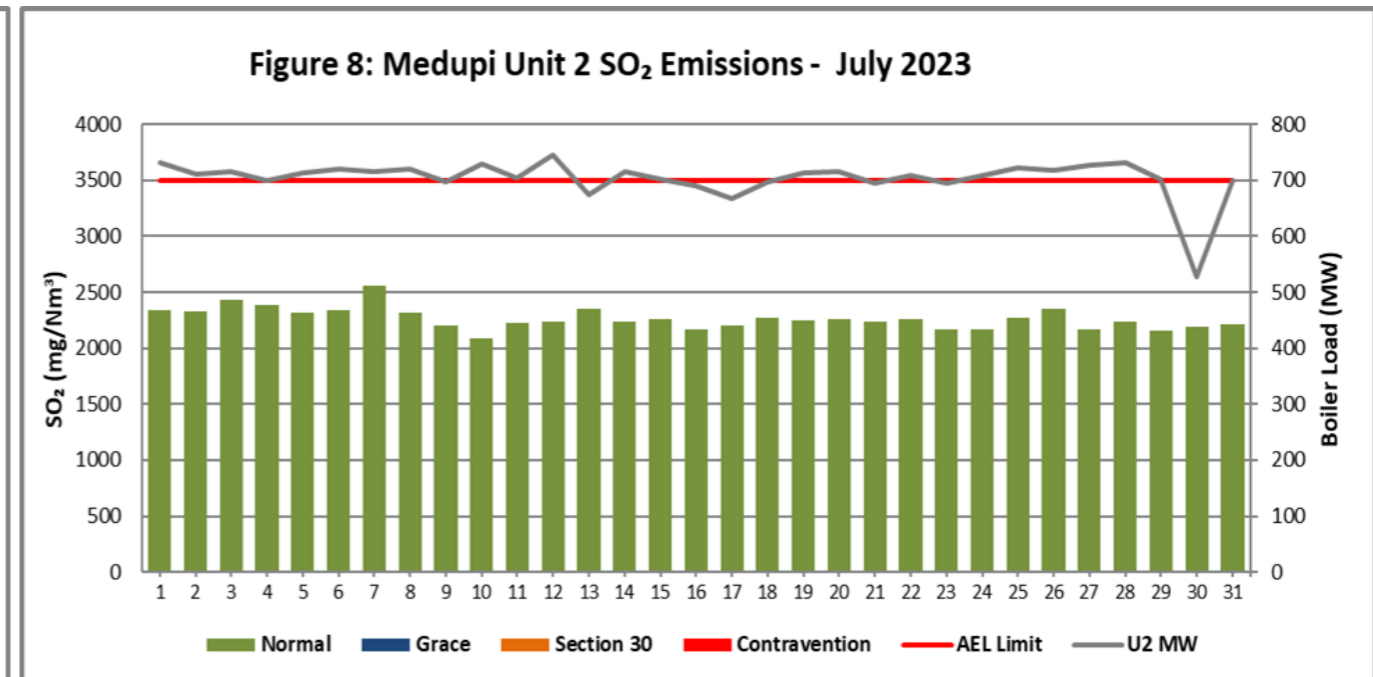
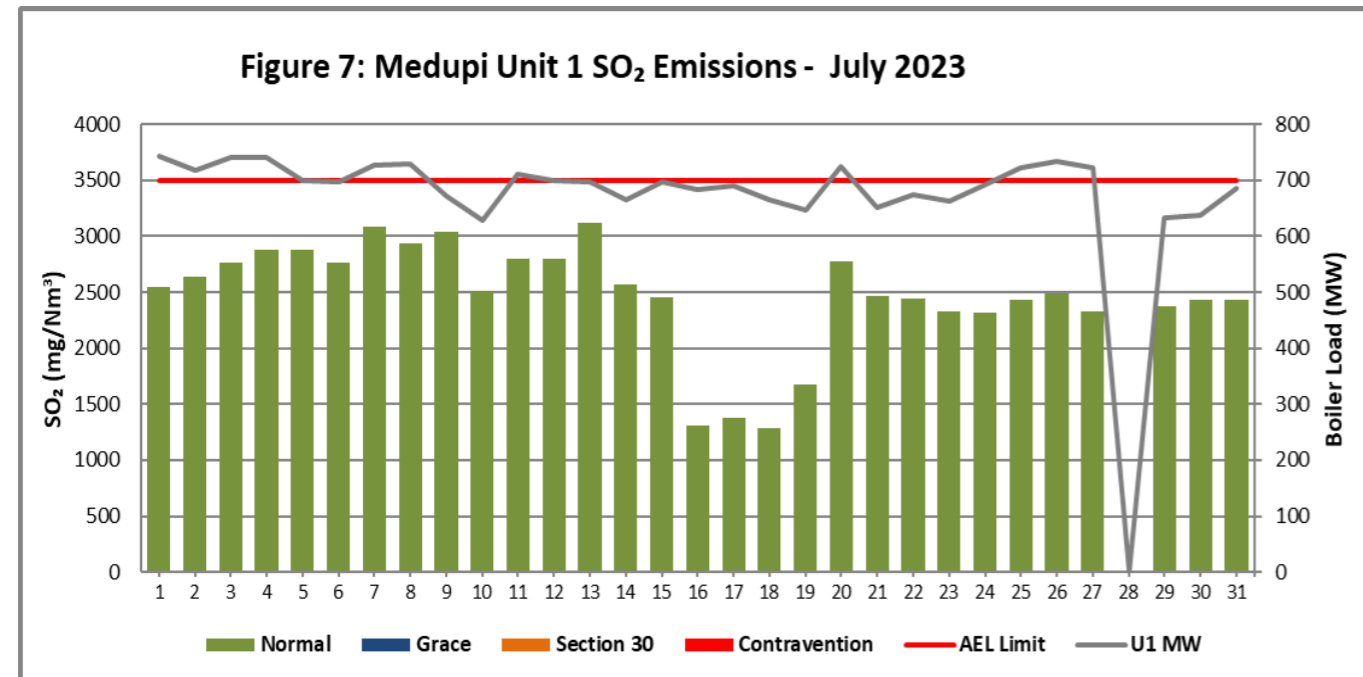


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4.2 SO_x Daily Averages



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Figure 9: Medupi Unit 3 SO₂ Emissions - July 2023

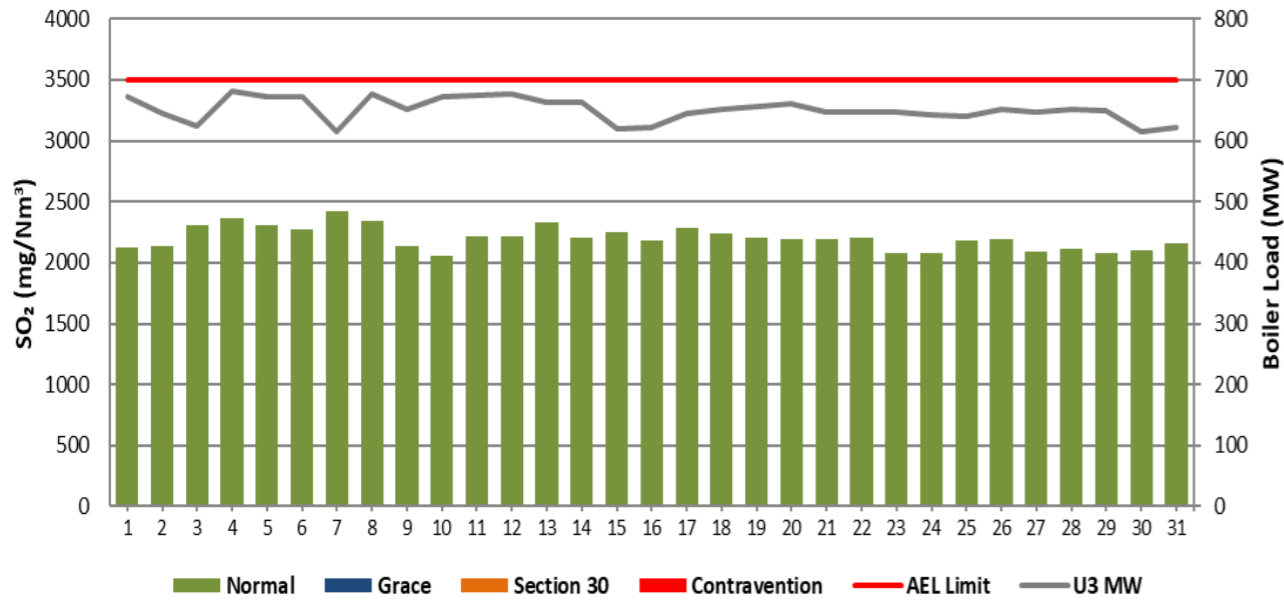


Figure 10: Medupi Unit 4 SO₂ Emissions - July 2023

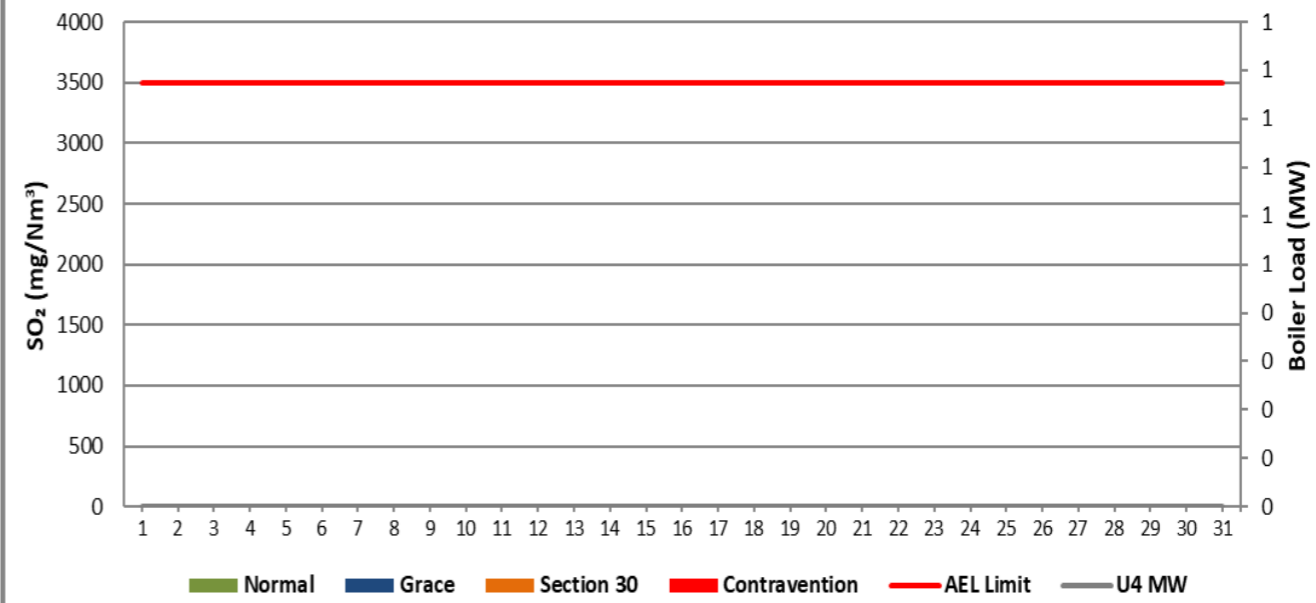


Figure 11: Medupi Unit 5 SO₂ Emissions - July 2023

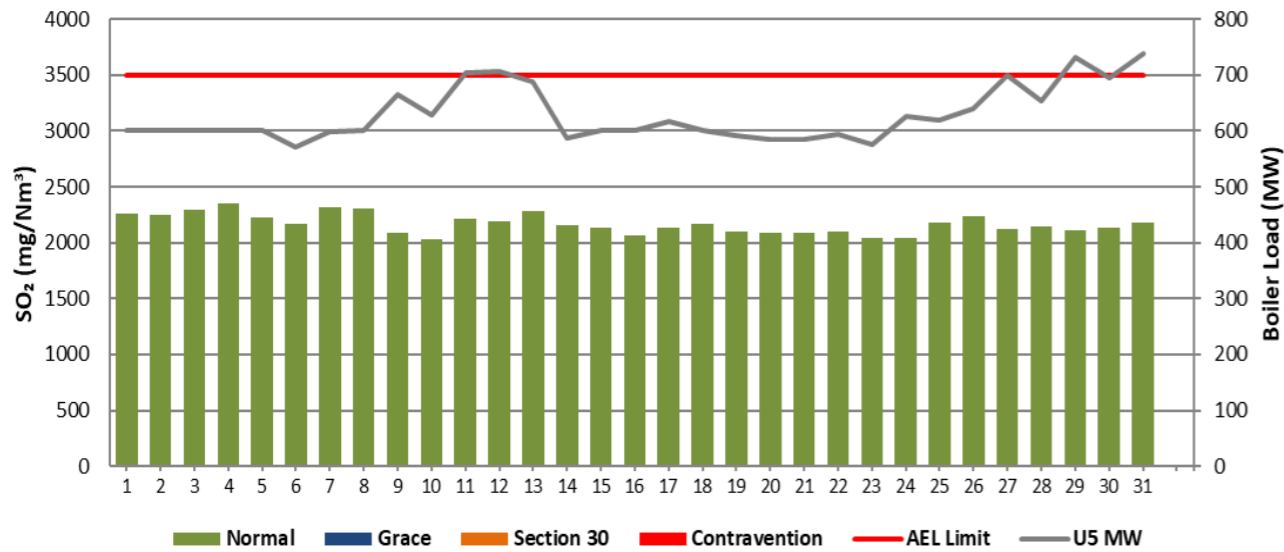
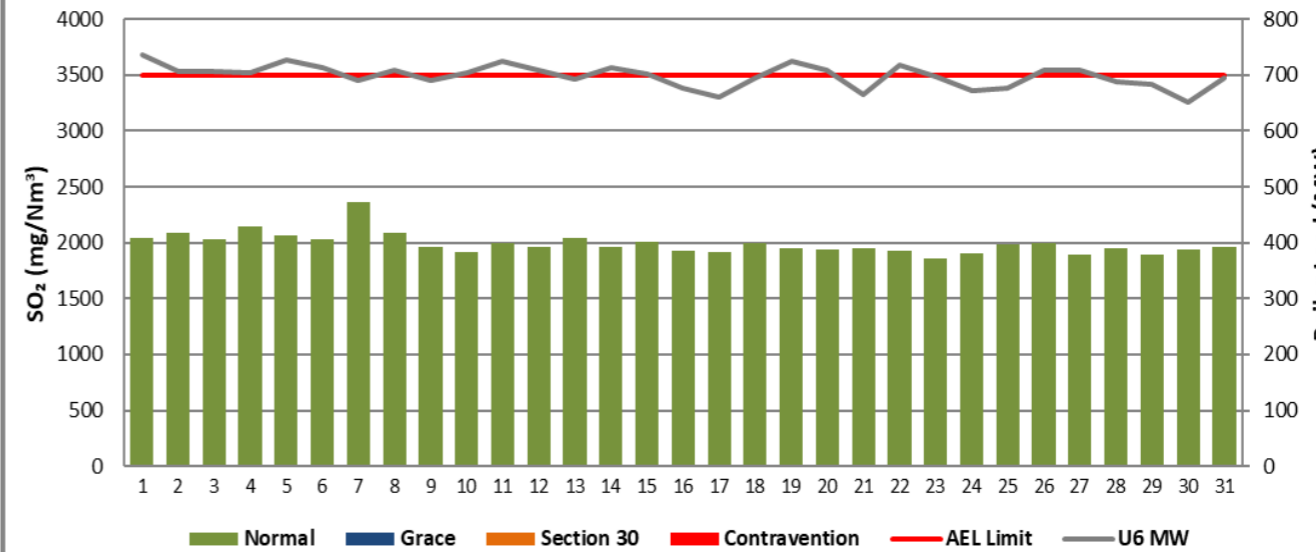


Figure 12: Medupi Unit 6 SO₂ Emissions - July 2023



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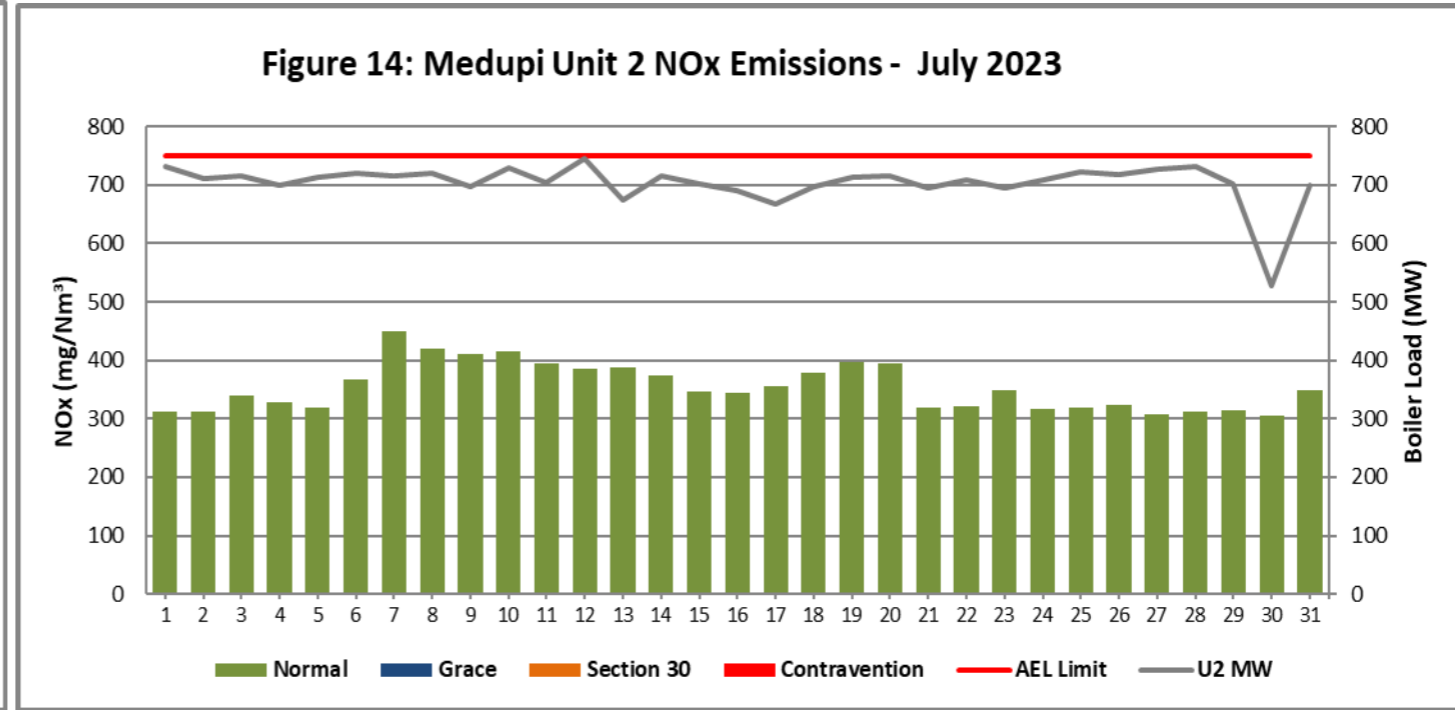
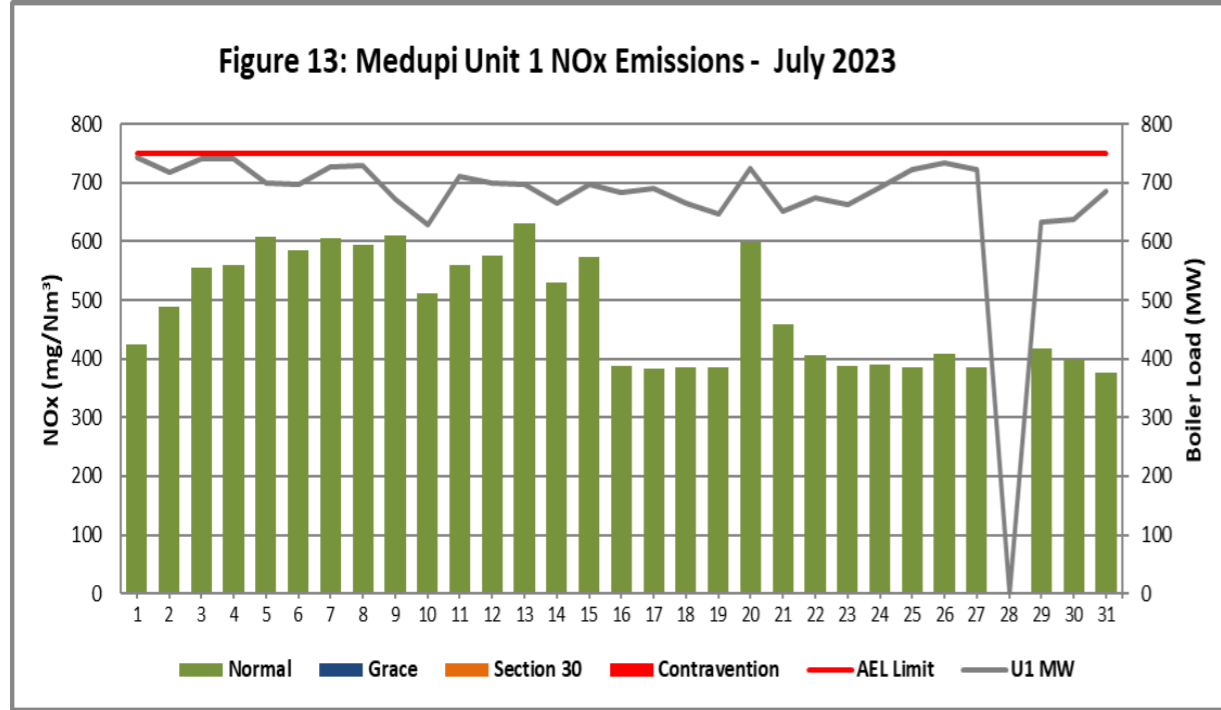
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4.3 NOx Daily Averages



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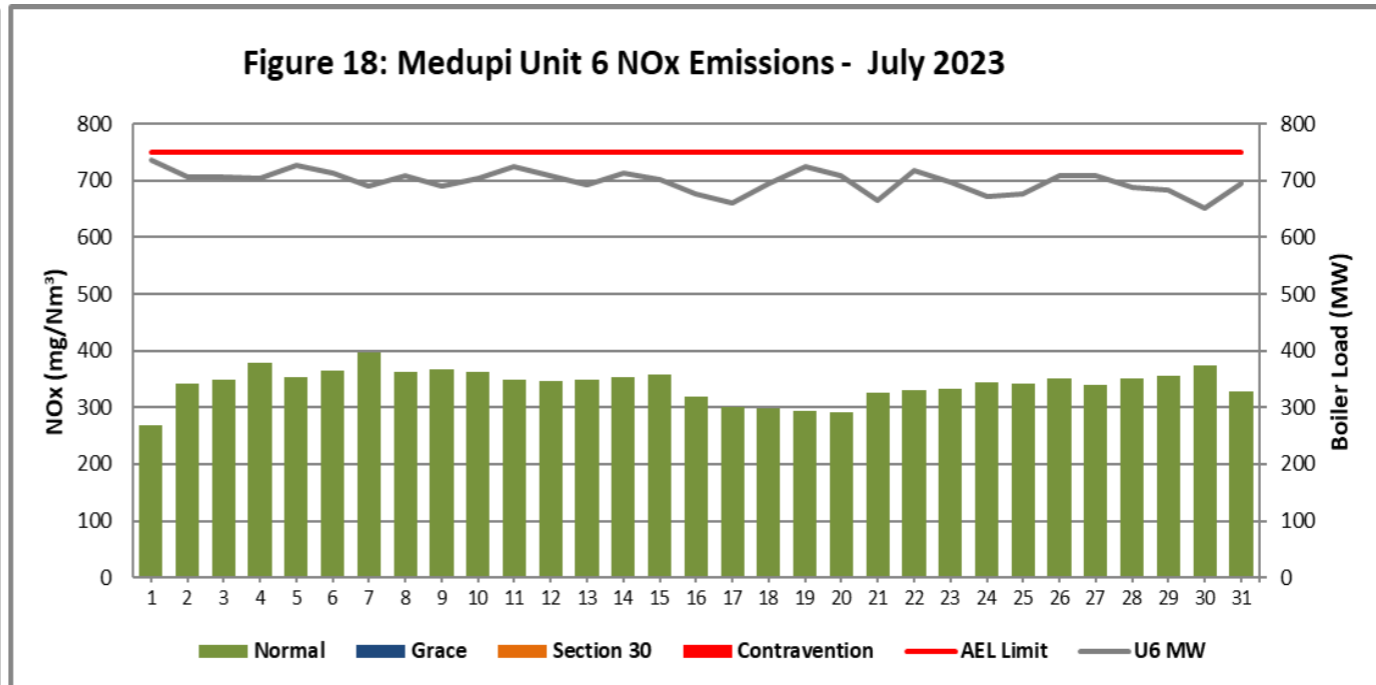
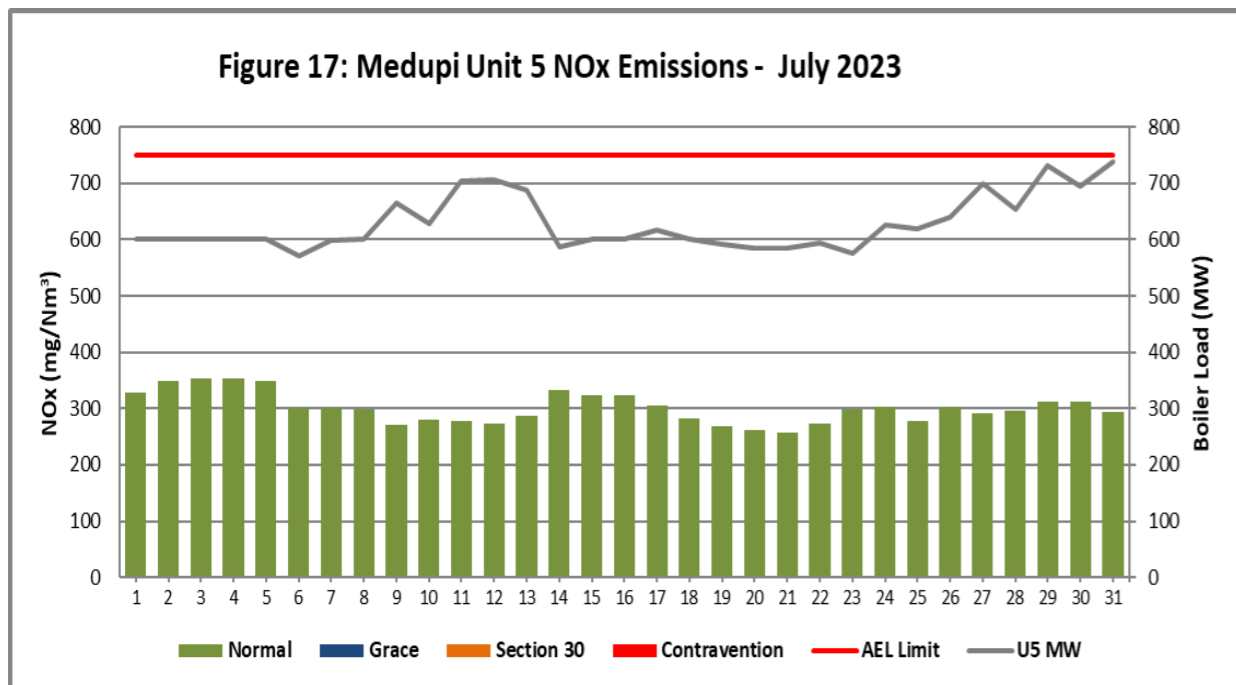
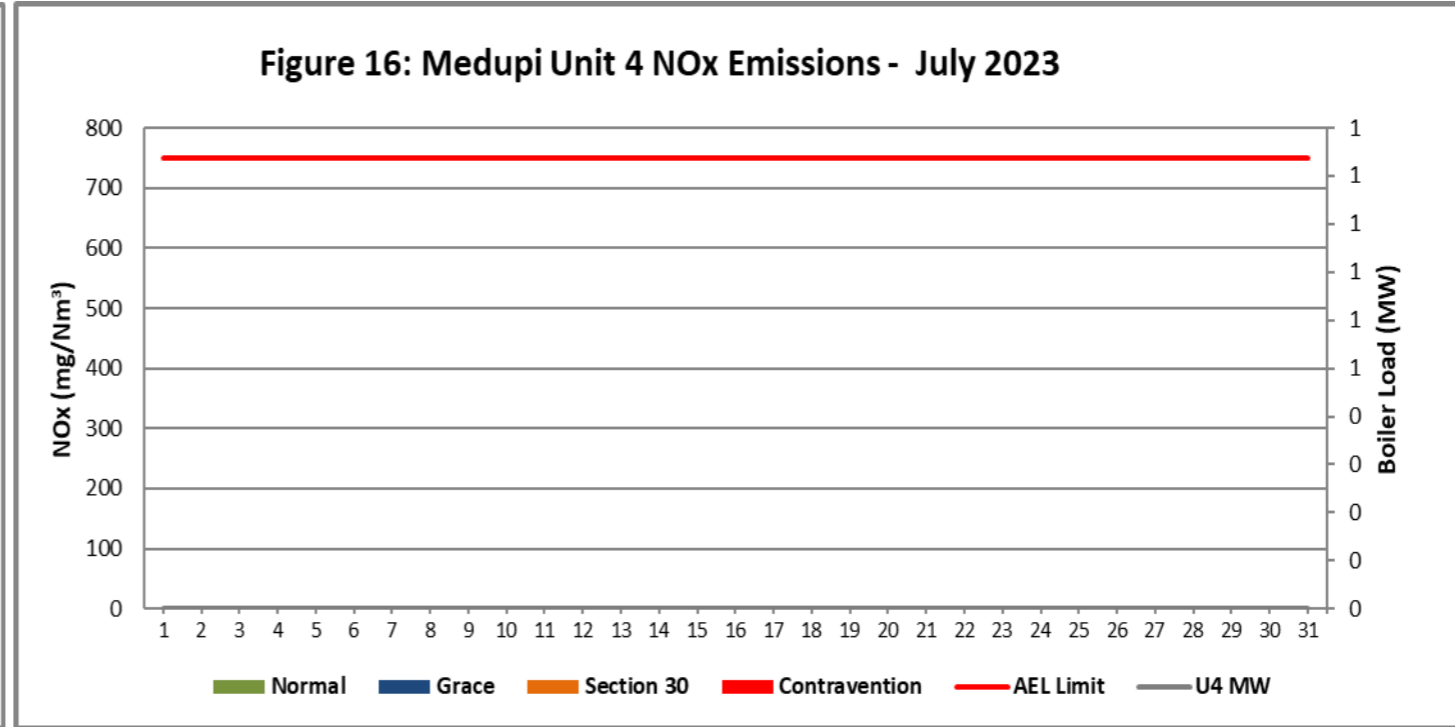
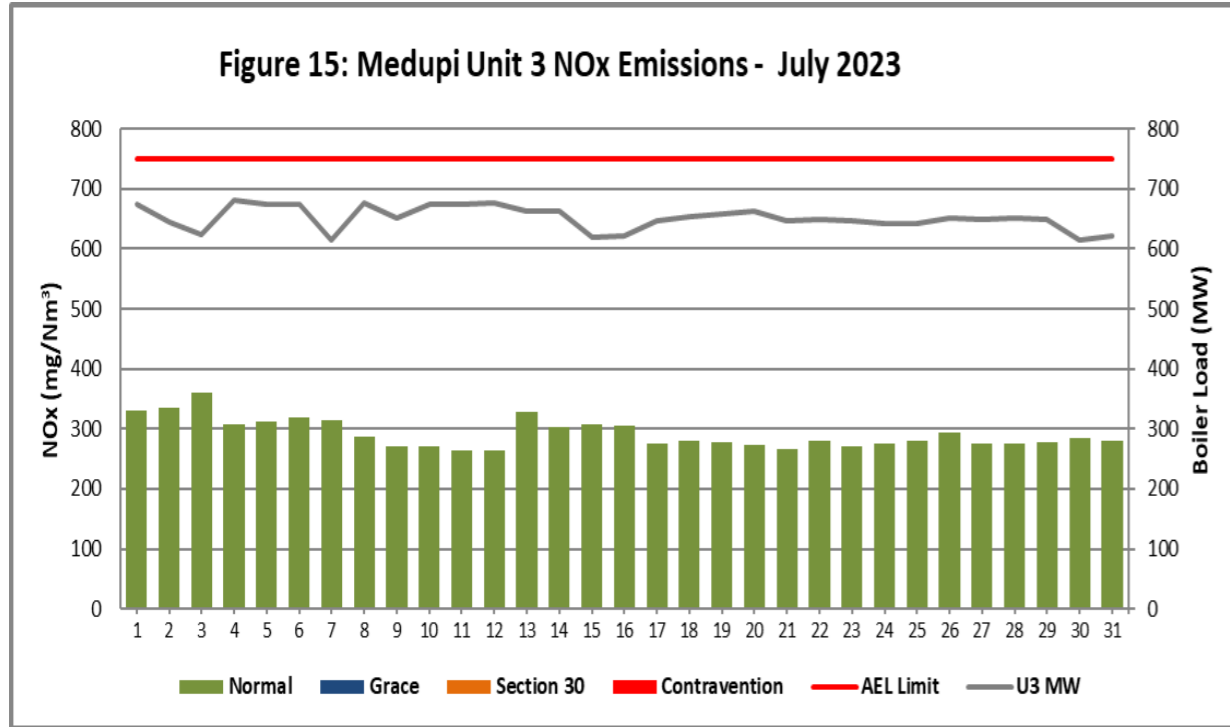
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TABLE 6: MONTHLY TONNAGES FOR THE MONTH OF JULY 2023

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	39.4	3 921.8	763.3
Unit 2	49.6	5 581.0	872.5
Unit 3	51.9	4 022.6	532.5
Unit 4	off	off	off
Unit 5	27.7	5 691.4	789.9
Unit 6	13.7	4 139.6	709.9
SUM (Tons)	182.2	23 356.4	3 668.0

TABLE 7: MONTHLY AVERAGES FOR THE MONTH OF JULY 2023

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	27.5	2 472.7	485.4
Unit 2	22.0	2 262.2	353.6
Unit 3	29.0	2 202.1	291.5
Unit 4	off	off	off
Unit 5	10.5	2 167.0	301.0
Unit 6	6.6	1 989.2	341.3

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 8: PERIODS DURING WHICH CEMS WAS INOPERATIVE

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

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TABLE 9: CEMS MONITOR RELIABILITY PERCENTAGE (%)

Associated Unit/Stack	PM	SO ₂	NO ₂	O ₂
Unit 1	99.7	99.3	99.2	98.4
Unit 2	99.5	99.6	99.6	99.6
Unit 3	99.5	0	0	0
Unit 4	Off	off	off	off
Unit 5	99.2	99.5	99.6	99.5
Unit 6	99.2	99.5	99.6	99.5

Note: 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. The service appointed for the CEMS calibration is in a process of obtaining SANAS accreditation. 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 July2023 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 10: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR JULY 2023

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Monday, 31 July 2023	
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 <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		
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:	1110	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/m ² /day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0.69 kg/month	
Working losses:	0.03 kg/month	
TOTAL LOSSES (Total TVOC Emissions for the month):	0.73 kg/month	
<small>*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.</small>		

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

No awareness campaigns for this month.

10. Complaints Register


TABLE 5: COMPLAINTS FOR THE MONTH OF JULY 2023


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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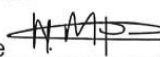
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Compiled by: Lutendo Murovhi  Date: 18/12/2023
 Environmental Officer

Verified by: Malose Langa  Date: 2023/12/20
 System Engineer Boiler

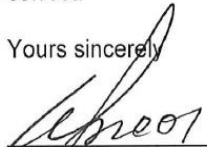
Verified by: Nontuthuko Mpangase  Date: 2023/12/20
 System Engineer C&I

Supported by: Mokgadi Dikgale  Date: 2023/12/21
 Environmental Manager

Supported by: Jabulani Mkhathswa  Date: 2023/12/21
 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

Date: 2023/12/21

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