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		Document Identifier	240-88543153	Rev	1
		Effective Date	July 2018		
		Review Date	July 2021		

Phumudzo Thivhafuni

Date: 2019/08/16

Limpopo Dept. of Economic Development, Environment and Tourism

Private Bag 9484
POLOKWANE
0700

ThivhafuniPO@ledet.gov.za

Ref: 12/4/12L-W2/A3 – July 2019

Dear Phumudzo

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JULY 2019

This document serves as the monthly report required in terms of Section 7.7.1 of Medupi Power Station Provisional Atmospheric Emission License (AEL), 12/4/12L-W2/A3.

This report is a reflection of Unit 3, 4, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of July 2019 only.

1. Raw Materials and Products

Table 1: Quantity of raw materials and products for Unit 3, 4, 5 and 6 in July 2019

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Unit 3, 4, 5 and 6 consumption July 2019
	Coal	Tons/month	1 875 000	637 768
	Fuel Oil	Tons/month	40 000	4 914
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Unit 3, 4, 5 and 6 Production Rate in Month of July 2019
	Energy	MW	4 800	2395.61
	Ash Emitted	Tons/month	not specified	167.8

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Table 2: Daily consumption and production rates

Date	Reportable hours of Operation				Fuel Consumption (tons)				Production rate (MW)			
	Unit 3	Unit 4	Unit 5	Unit 6	Oil			Coal	U3	U4	U5	U6
					Aux Boiler	Units	Total	Units				
01-July-19	0.0	24.0	24.0	24.0	0.00	173	173	18278		691	498	627
02-July-19	0.0	24.0	24.0	24.0	0.00	178	178	24196	619	676	494	625
03-July-19	19.1	24.0	24.0	24.0	0.00	179	179	24779	672	656	467	583
04-July-19	24.0	24.0	24.0	24.0	0.00	95	95	25445	740	615	414	665
05-July-19	24.0	2.0	24.0	24.0	0.00	221	221	23276	764	584	538	633
06-July-19	24.0	0.0	9.3	24.0	0.00	327	327	19529	564	402	474	564
07-July-19	12.5	0.0	4.2	24.0	0.00	430	430	20122	595	407	509	624
07-July-19	0.0	9.1	24.0	24.0	0.00	322	322	16855		631	473	617
09-July-19	0.0	0.0	24.0	24.0	0.00	28	28	12237		401	463	620
10-July-19	0.0	4.3	24.0	24.0	0.00	315	315	18246		666	501	635
11-July-19	0.0	24.0	24.0	24.0	0.00	53	53	16852		585	488	616
12-July-19	0.0	24.0	24.0	24.0	0.00	122	122	17574		620	494	636
13-July-19	0.0	24.0	24.0	24.0	0.00	169	169	18123		666	498	627
14-July-19	0.0	22.0	24.0	24.0	0.00	189	189	17189		619	462	629
15-July-19	0.0	0.0	24.0	24.0	0.00	119	119	18604		674	566	608
16-July-19	0.0	22.5	24.0	24.0	0.00	97	97	19820		691	642	623
17-July-19	0.0	24.0	24.0	24.0	0.00	15	15	20727	425	629	604	604
18-July-19	10.1	24.0	24.0	24.0	0.00	164	164	26046	768	794	500	537
19-July-19	24.0	0.0	24.0	24.0	0.00	22	22	22195	754	398	560	601
20-July-19	24.0	0.0	24.0	24.0	0.00	263	263	21115	792	487	563	633
21-July-19	24.0	0.0	24.0	24.0	0.00	50	50	22501	705	507	581	626
22-July-19	24.0	10.8	24.0	24.0	0.00	211	211	26048	668	605	579	632
23-July-19	24.0	21.8	24.0	24.0	0.00	62	62	25564	733	602	542	617
24-July-19	24.0	0.0	24.0	24.0	0.00	167	167	20986	717	283	509	606
25-July-19	24.0	0.0	24.0	24.0	0.00	415	415	23130	695	530	554	590
26-July-19	24.0	0.0	24.0	24.0	0.00	77	77	19755	749		518	654
27-July-19	24.0	0.0	24.0	24.0	0.00	0	0	19088	672		484	663
28-July-19	24.0	0.0	24.0	24.0	0.00	41	41	18651	650		516	646
29-July-19	24.0	0.0	24.0	24.0	0.00	70	70	19113	733		478	648
30-July-19	24.0	0.0	24.0	22.9	0.00	134	134	22409	668	470	468	635
31-July-19	24.0	21.8	24.0	0.0	0.00	206	206	19322	727	654	465	

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2. Abatement Technology

Table 3: Abatement Equipment Control Technology utilisation for month of July 2019

Associated Unit/Stack	Technology Type	Actual Utilisation (%) for the month of July 2019
Unit 3,4,5 and 6	Low NO _x Burners	100
	Pulse Jet Fabric Filter Plant	100

3. Energy Source Characteristics

Table 4: Energy Source Material Characteristics for the month of July 2019

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	1.26
Ash Content	35 - 39	33.65

Table 5: Energy Source Material Characteristics for the month of July 2019

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.2
Ash Content	0.02 - 0.1	0.015

4. Emissions Reporting

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

The daily emission limits are as follows:

SO₂= 3500 mg/Nm³

Dust= 50 mg/Nm³

NO₂= 750 mg/Nm³

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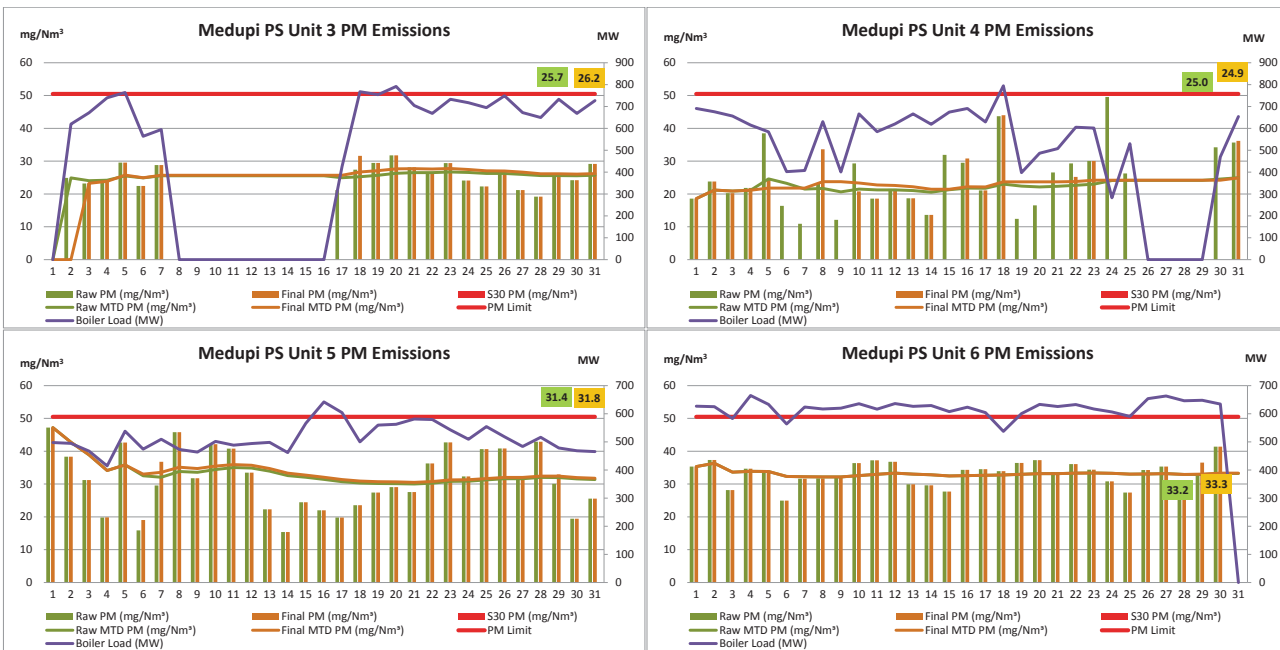


Figure 1: Medupi Power Station graphical representation of the daily average emissions for particulates

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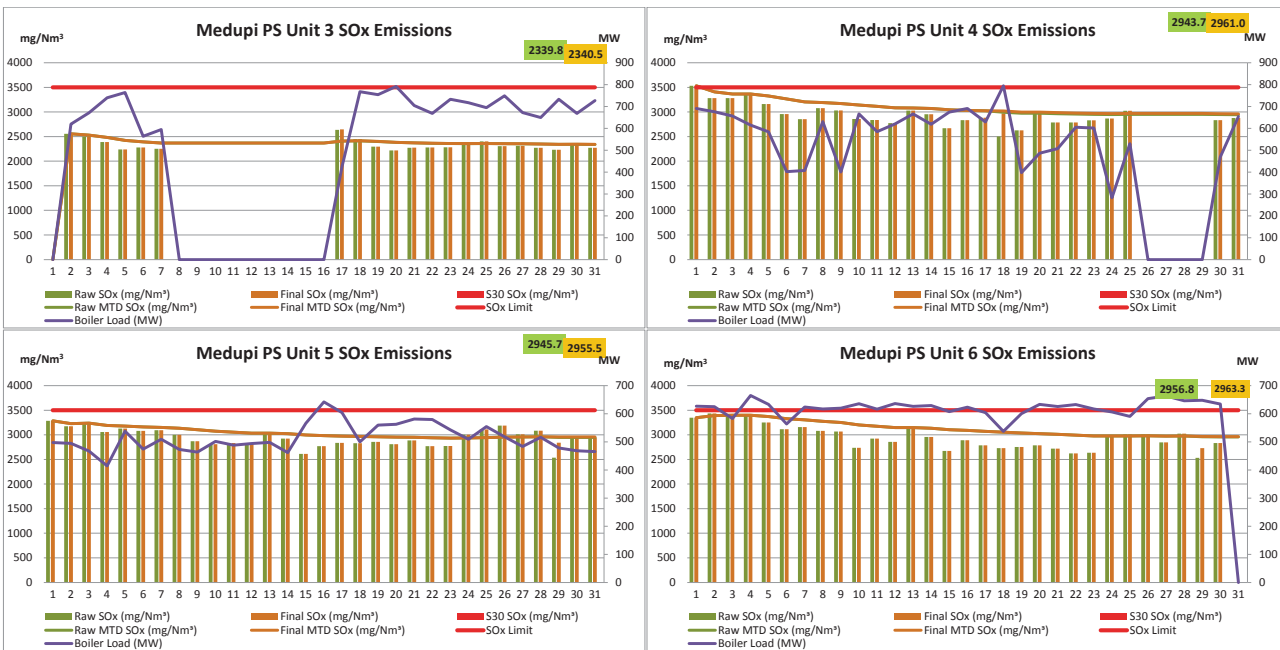


Figure 2: Medupi Power Station graphical representation of the daily average emissions for SOx

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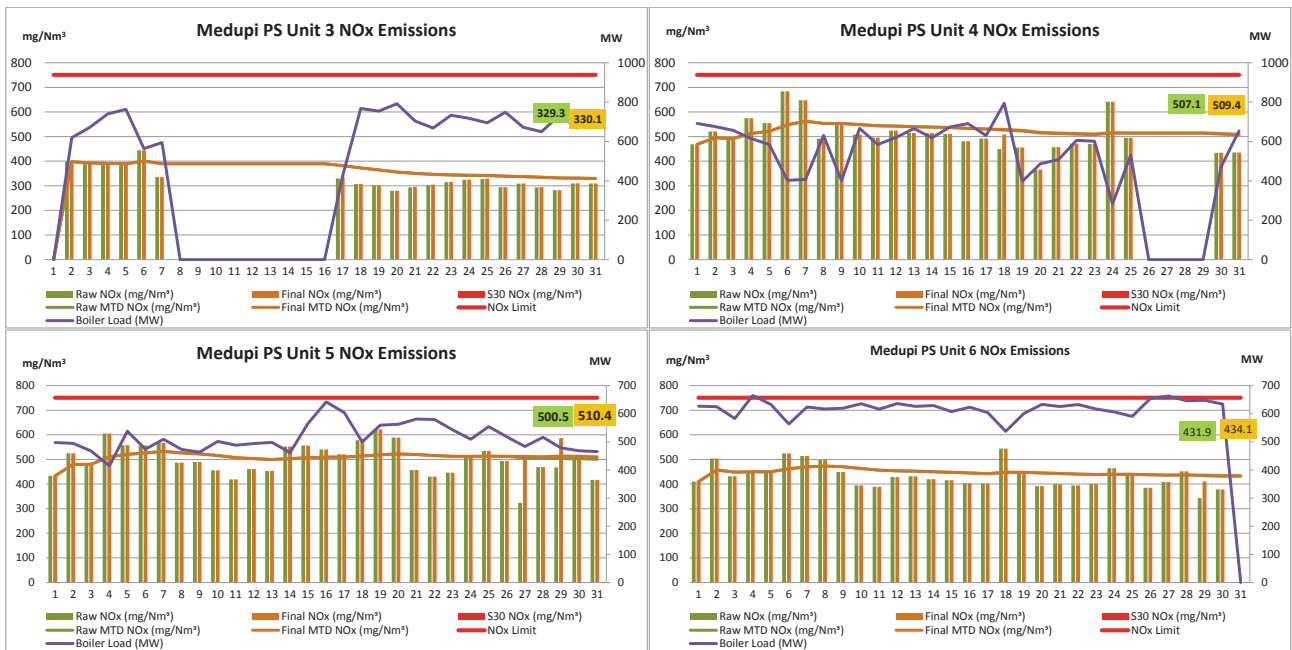


Figure 3: Medupi Power Station graphical representation of the daily average emissions for NOx

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Table 7: Monthly tonnages for the month of July 2019

Unit	PM (tons)	SO ₂ (tons)	NO ₂ (tons)	CO (tons)	CO ₂ (tons)
1	-	-	-		
2	-	-	-		
3	25.2	2 332	326		
4	24.2	3 440	568		
5	55.1	5 272	912		
6	62.6	5 554	812		
SUM	167.8	16 598	2 618		

Unit 3, 4, 5 and 6 CO₂ monitoring equipment is currently not functional, procurement process is undergoing to purchase the spare required to fix/repair the equipment. It is anticipated that, the spare will be onsite by end of August 2019.

5. Shutdown/start-up information


Table 8: Days operating under normal operation, days in grace period and section 30 days respectively

Unit	Operating Days (DD:HH:MM)			
	Normal operation	In grace period	Under S 30	Unit off load
1	-	-	-	-
2	-	-	-	-
3	19:17:40	00:00:00	00:00:00	11:06:20
4	22:00:10	00:00:00	00:00:00	08:23:50
5	30:13:25	00:00:00	00:00:00	00:10:35
6	29:22:55	00:00:00	00:00:00	01:01:05

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6. Comments on the performance and availability of each unit

Unit 3 was off from 8 to 11 July 2019 due to boiler tube leak. Unit off load for HP bypass valve 4 and spray water repairs between 26 and 30 July 2019. Unit 5 and 6 were off a period less than 2 days each for the reporting period. There was one incident of SO₂ emissions exceedance at unit July 2019 reporting period for all the units.

7. Light up information

Table 9: PM Start-up information for the month of July

Event No.	Event 1		Event 2	
Unit	Unit 4		Unit 4	
Fires in	06:00 AM	2019/07/20	05:20 PM	2019/07/28
Synchronisation with Grid	01:10 PM	2019/07/21	02:05 AM	2019/07/30
Emissions below limit from Sync (Date and Time)	<i>did not go above limit</i>	<i>did not go above limit</i>	<i>did not go above limit</i>	<i>did not go above limit</i>
Fires in to synchronization	01:07:10	Hrs (dd:hh:mm)	01:08:45	Hrs (dd:hh:mm)
Synchronization to < limit (Duration)	<i>did not go above limit</i>	Hrs (dd:hh:mm)	<i>did not go above limit</i>	Hrs (dd:hh:mm)

Table 10: Emission Average from Fires-in to Synchronisation

South Stack Emission Average from Fires-in to Synchronisation (Date and Time)							
Unit	Fires-In		Synchronisation		PM	SO ₂	NO _x
Unit 4	2019/07/20	06:00 AM	2019/07/21	01:10 PM	51.8	1951.8	525.0
Unit 4	2019/07/28	05:20 PM	2019/07/30	02:05 AM	34.1	2295.9	591.7


Table 11: Point Source emissions released during Shut-down

South Stack Emission Average Breaker Open (BO) to Draft Group Shut Down (SD) (Date & Time)							
Unit	Breaker Open		DG SD		PM	SO ₂	NO _x
Unit 4	2019/07/19	12:00 AM	2019/07/20	05:35 AM	12.2	2465.7	413.2
Unit 4	2019/07/23	09:45 PM	2019/07/27	02:40 PM	34.3	2965.2	547.5

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8. Continuous Emission Monitoring Systems (CEMS)

Unit 3, 4, 5 and 6 Continuous Emission Monitoring Systems were in operation at all times when the unit was on load.

CEMS CO₂ monitor verification test not yet conducted as a result of challenges on the equipment, the Power Station is in the process of procuring spares to fix the equipment, and the Licencing Authority will be notified prior to conducting the test.

Table 12: Periods during which CEMS was inoperative

Date	Nature of Repair/Adjustment
None	Not Applicable

Table 13: CEMS Monitor Reliability

Variable	Unit 3	Unit 4	Unit 5	Unit 6
Dust	97.6	94.9	98.4	99.7
SO ₂	94.0	81.2	98.3	99.7
NO _x	94.0	81.2	97.8	99.7
CO	93.5	81.8	98.3	70.3
O ₂	93.5	80.2	98.4	99.7
Temperature	94.0	0.0	98.3	98.8
Pressure	83.3	81.8	97.7	99.0
Velocity	94.0	17.9	98.4	99.7
CO ₂				

9. CEMS Calibration certificates and equipment used for calibration

See attached Appendix A


10. 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.

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11. Visual inspection of the exterior walls of the fuel oil tanks, fuel oil inventory data and TVOC Estimation

Visual inspection was conducted and there were no leaks observed on the exterior walls of the fuel oil tanks.


Table 14: Total Volatile Organic Compound (TVOC) for July 2019

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	31 July 2019	
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:	4914	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:	0.14	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	0.83	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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12. Air quality improvements initiatives and public education and awareness campaigns

Medupi power Station participated in the Boshveld fees held on 4 and 5 July 2019 at Mogol sports ground in Lephalale town. The objective of having a stall was to promote public environmental awareness to locals of different age groups. The Eskom Power Station was utilized to explain the possible Emission impact of electricity generation from coal, the abatement technologies in place and those proposed to reduce the impact to the environment.

13. Complaints Register


Table 15: Complaints for the month of July 2019

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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Compiled by:

Senior Environmental Advisor

Verified by:

Boiler System EIT

Supported by:

Boiler Engineering Manager

Supported by:

Environmental Manager

Supported by:

Chief Engineer

I Rudi van der Wal, declares that the information provided in this report is accurate and correct.


Yours sincerely,

GENERAL MANAGER: MEDUPI POWER STATION

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APPENDIX 1

CEMS Calibration certificates



12 Angeller Street, Bardene,
Boksburg, SA, 1459
PO Box 328, Itando, SA, 1600
VAT REG #: 421 021 3248
www.e-analytics.co.za

Tel: 0861 000 032
Int. Tel: +27 11 918 6994
Fax: +27 11 894 1037
CO REG #: 2004/007607/07
info@e-analytics.co.za

CALIBRATION CERTIFICATE

		CERTIFICATE NO: 3152	
CUSTOMER:	Medupi Power Station	JOB NO:	SC1437
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Dr Fodisch MGA 23	SERIAL NO:	13668
AUXILIARY EQUIPMENT:	Unit 4		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	-5.0 ppm	0 ppm	Air	21 %	Air
	SPAN	800 ppm	804 ppm	O ₂	803.9 ppm	80A
2	ZERO	1.0 ppm	0 ppm	Air	21 %	Air
	SPAN	911 ppm	910 ppm	NO	910 ppm	1260B
3	ZERO	-7.4 ppm	0 ppm	Air	21 %	Air
	SPAN	2205 ppm	2173 ppm	SO ₂	2172.8 ppm	1265A
4	ZERO	-0.08 %	0.0 %	N ₂	99.99 %	1260B
	SPAN	21.13 %	20.95	O ₂	20.95 %	Air

REPORT: Inspect sample lines and sample system, check diagnostics. Calibrate analyser with zero and span gas, calibration was done according to cylinder standards, analyser was responding to all test gas.

Date: 14 May 2019

Calibration Due Date: Aug 2019

Technician: J. Faber




Document Number: TH-PFC-002-F1 Rev 1

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Fax: +27 11 854 1037
CO REG #: 3004007607007
info@e-analytics.co.za

13811 Level 4 Comenza

CALIBRATION CERTIFICATE

CERTIFICATE NO: 3053

CUSTOMER:	Medupi Power Station	JOB NO:	SC1437
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Dr Fodisch MGA 23	SERIAL NO:	13670
AUXILIARY EQUIPMENT:	Unit 5		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	-7.0 ppm	0 ppm	Air	21 %	Air
	SPAN	796 ppm	804 ppm	CO	803.9 ppm	804
2	ZERO	-12.0 ppm	0 ppm	Air	21 %	Air
	SPAN	891 ppm	910 ppm	NO	910.0 ppm	12608
3	ZERO	-15.1 ppm	0 ppm	Air	21 %	Air
	SPAN	1930 ppm	2173 ppm	SO2	2172.8 ppm	12664
4	ZERO	-0.06 %	0.0 %	N2	99.99 %	12608
	SPAN	21.2 %	20.95	O2	20.95 %	Air

REPORT: Inspect sample lines and sample system, check diagnostics, sample pump was change. Calibrate analyser with zero and span gas, analyser respond to all test gas.

Date: 14 May 2019
Calibration Due Date: Aug 2019
Technician: J. Faber



Document Number: TH-PFC-002-F1 Rev 1

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CO-REG #: 2004/007607/07
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ANALYTICAL SERVICES

CALIBRATION CERTIFICATE

CERTIFICATE NO: 3064

CUSTOMER:	Medupi Power Station	JOB NO:	SC1437
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Foedisch MGA 23	SERIAL NO:	16339
AUXILIARY EQUIPMENT:	Unit 6		

CHAN	PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER	
1	ZERO	-11.0 ppm	0 ppm	Air	21 %	Air
	SPAN	787 ppm	804 ppm	CO	803.9 ppm	80A
2	ZERO	-32.0 ppm	0 ppm	Air	21 %	Air
	SPAN	882 ppm	910 ppm	NO	910.0 ppm	12608
3	ZERO	-36.0 ppm	0 ppm	Air	21 %	Air
	SPAN	2278 ppm	2173 ppm	SO2	2172.8 ppm	12664
4	ZERO	0.05 %	0.0 %	N2	99.99 %	12608
	SPAN	20.89 %	20.95 %	O2	20.95 %	Air

REPORT: Inspect sample lines and sample system, check diagnostics. Calibrate analysers with zero and span gas, calibration was done according to cylinder standards, analysers were responding to all test gas.

Date: 14 May 2019
Calibration Due Date: Aug 2019
Technician: J. Faber



Document Number: TH-PPC-002-P1 Rev 1



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