

Department of Agriculture, Rural Development, Land and Environmental
Affairs
 The Director Pollution and Waste Management
 Private Bag X11219
 Nelspruit 1200

Date
 15th December 2018
 Enquiries

Attention
 Mr M Mahlalela

Nkangala District Municipality
 PO Box 437
 Middelburg 1050

Attention
 Mr V Mahlangu

MATLA POWER STATION AIR QUALITY REPORT FOR NOVEMBER 2018

The figures reported in this report are preliminary, and are to be considered for information purposes only. Final annual figures are those reported within 60 days of the independent audit conducted at the end of the financial year (March).

1. PARTICULATE EMISSIONS: MONTHLY TONNAGES.

	BLR	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
		2017	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
Monthly Tonnage	1	90 10	46 69	Off	Off	Off	Off	Off	Off	95 56	41 79	83 20	106 92
	2	84 35	165 43	57 98	60 80	28 57	44 25	74 24	74 20	69 81	61 67	77 79	103 67
	3	82 94	172 35	55 05	62 50	29 56	35 97	86 14	79 36	173 07	71 28	60 47	Off
	4	173 61	188 43	166 34	132 22	87 07	123 63	67 06	56 07	45 66	106 44	131 91	176 72
	5	49 59	82 97	68 06	97 63	61 14	83 25	90 26	45 00	73 61	43 41	63 55	102 66
	6	22 74	53 43	62 15	50 91	52 66	44 17	47 93	46 24	74 64	15 76	96 96	117 45
	Station	503 33	709 30	409 57	404 02	258 99	331 28	365 62	300 89	532 34	340 36	513 89	607 42
GWhSO		1998 5	1783 6	1562 9	1733 7	1594 2	1627 7	1491 5	1398 1	1368 0	1550 7	1890 6	1807 9

Generation Division (Operating Unit Coal 2)
 Matla Power Station SA
 Delmas Road
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2. COAL AND LOAD FACTOR:

STATION		DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Load Factor		85.33	82.96	88.34	86.45	78.39	89.58	76.24	72.31	71.04	78.96	82.42	88.58
Ash Content	%	29.57	27.15	23.3	26.41	25.3	27.70	27.92	27.6	30.93	31.33	25.43	24.35
Sulphur Content	%	1.0	1.0	0.95	0.90	0.99	1.2	1.00	1.00	1.00	1.00	1.00	1.00
Total Moisture	%	9.64	9.43	9.60	9.57	9.21	9.7	9.47	9.43	7.91	8.03	6.69	7.81

3. GASEOUS EMISSIONS:

CO₂ emissions: kilotons emitted per month, calculated from coal analysis and emission factors.

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3												
Unit 4												
Unit 5												
Unit 6												
All Units												

SO₂ emissions: kilotons emitted per month, calculated from coal analysis and emission factors.

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3	10.31	8.25	6.95	7.84	6.62	7.68	6.18	6.34	6.02	8.74	9.30	6.75
Unit 4	3.71	2.89	2.85	3.16	3.29	3.94	3.18	3.22	2.07	2.81	2.95	3.19
Unit 5	3.50	3.31	3.02	3.51	3.07	3.95	2.77	1.67	2.77	2.82	3.33	3.27
Unit 6	2.80	3.70	2.46	3.13	3.15	3.93	2.99	2.89	2.75	1.03	3.74	3.50
All Units	20.32	18.15	15.28	17.64	16.12	19.50	15.12	14.13	13.61	15.40	19.32	16.71

NO_x emissions: kilotons emitted per month, calculated from coal analysis and emission factors.

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3	3.23	2.59	2.18	2.46	2.07	2.01	1.94	1.99	1.88	2.74	2.91	2.11
Unit 4	1.16	0.91	0.89	0.99	1.03	1.03	1.00	1.01	0.65	0.88	0.92	1.00
Unit 5	1.10	1.04	0.95	1.10	0.96	1.03	0.87	0.52	0.87	0.88	1.04	1.02
Unit 6	0.88	1.16	0.77	0.98	0.99	1.03	0.94	0.91	0.86	0.32	1.17	1.10
All Units	6.37	5.69	4.79	5.53	5.05	5.09	4.74	4.43	4.26	4.82	6.05	5.24

CO₂ emissions: kilotons emitted per month, measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only.

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3												
Unit 4												
Unit 5												
Unit 6												
All Units												

SO₂ emissions: kilotons emitted per month, measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only.

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3	9.94	7.15	5.55	8.31	6.73	6.64	6.72	6.43	6.26	8.84	9.70	6.54
Unit 4	2.43	1.61	1.81	2.28	2.18	1.96	1.86	1.84	1.15	1.83	2.13	2.94
Unit 5	2.89	2.54	2.57	2.74	2.61	2.58	2.12	1.13	2.26	2.58	2.77	3.31
Unit 6	1.06	1.44	1.03	1.22	2.73	2.65	2.40	2.38	2.18	0.80	2.81	3.32
All Units	16.33	12.74	10.96	14.55	14.26	13.83	13.10	11.79	11.85	14.06	17.41	16.11

NO_x emissions: kilotons emitted per month, measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only.

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3	5.03	3.26	2.98	3.78	2.82	2.47	2.61	2.48	2.27	3.48	4.40	3.12
Unit 4	1.52	0.98	1.30	1.26	1.01	0.84	0.87	0.81	0.53	0.79	1.00	1.53
Unit 5	1.35	1.43	1.32	1.28	1.06	1.02	0.90	0.37	0.70	0.91	0.95	1.19
Unit 6	0.54	0.79	0.55	0.63	1.25	1.10	1.19	1.11	0.89	0.33	1.27	1.45
All Units	8.44	6.46	6.15	6.95	6.15	5.43	5.57	4.77	4.40	5.52	7.62	7.28

CO₂ emissions (mg/Nm³): Average concentration per month (at 273 K, 101.3 kPa and 10% O₂), measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only

	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
Units 1-3												
Unit 4												
Unit 5												
Unit 6												

SO₂ emissions (mg/Nm³): Average concentration per month (at 273 K, 101.3 kPa and 10% O₂), measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only

Limit	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018
4000												
Units 1-3	2127	1883	1587	2246	2036	2153	2203	2116	2129	2096	2232	1919
Unit 4	1447	1476	1350	1626	1628	1685	1590	1761	1614	1791	1697	1658
Unit 5	1906	1751	1827	1856	1850	1797	1656	1533	1658	2033	1995	2148
Unit 6	1385	1353	1406	1425	1540	1620	1529	1554	1572	1361	1552	1597

SO₂ daily average emissions: AEL limit exceedances

Limit	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
3500	2017	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
Units 1-3	0	0	0	0	0	0	0	0	0	0	0	0
Unit 4	0	0	0	0	0	0	0	0	0	0	0	0
Unit 5	0	0	0	0	0	0	0	0	0	0	0	0
Unit 6	0	0	0	0	0	0	0	0	0	0	0	0

NO_x emissions (mg/Nm³): Average concentration per month (at 273 K, 101.3 kPa and 10% O₂), measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only

Limit	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1700	2017	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
Units 1-3	1074	858	851	1017	852	797	853	806	770	823	1028	913
Unit 4	894	896	970	872	752	713	735	773	745	772	799	859
Unit 5	892	982	936	859	753	708	703	493	519	719	675	769
Unit 6	705	751	751	740	711	674	757	717	646	564	702	698

NO_x daily average emissions: AEL limit exceedances

Limit	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1200	2017	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
Units 1-3	0	0	0	0	0	0	0	0	0	0	0	0
Unit 4	0	0	0	0	0	0	0	0	0	0	0	0
Unit 5	0	0	0	0	0	0	0	0	0	0	0	0
Unit 6	0	0	0	0	0	0	0	0	0	0	0	0

4. PARTICULATE EMISSION PERFORMANCE

UNIT	MONTH AVERAGE EMISSIONS	AEL LIMIT(DAILY AVERAGE)	HIGHEST DAILY AVERAGE
	mg/Nm3	mg/Nm3	mg/Nm3
1, 2 & 3	63 87	200	178 51
4	95 83	200	297 42
5	66 68	100	133 97
6	56 43	100	117 99
Station	70 69		
YTD	54 36		

ABATEMENT APPARATUS AVAILABILITY

Unit		1	2	3	4	5	6	Station
Precipitator efficiency	%	99 75	99 73	Off	99 57	99 74	99 73	99.70
Precipitator availability	%	99 75	99 69	Off	96 75	98 82	97 26	98 76
SO ₃ plant utilisation	%	99 41	99 55	Off	99 47	99 04	99 77	99 45

ATMOSPHERIC EMISSION LICENSE LIMIT EXCEEDED

UNIT	AEL LIMIT EXCEEDED (TOTAL) Days	AEL LIMIT EXCEEDED (LIGHT-UP/SHUT DOWN) Days	AEL LIMIT EXCEEDED (UPSET CONDITIONS) Days	AEL LIMIT EXCEEDED (MAINTENANCE) Days	AEL LIMIT EXCEEDED (SECTION 30 / CONTRAVENTION) Days
1, 2 & 3	0	0	0	0	0
4	1	0	1	0	0
5	2	0	1	1	0
6	2	0	2	0	0
Station	5	0	4	1	0
YTD	31	5	16	5	3

5. DISCUSSION

Unit 1:

The flue gas cleaning plant performed well during the month with particulate emissions well below the AEL limit recorded

Unit 2:

The flue gas cleaning plant performed well during the month with particulate emissions well below the AEL limit recorded

The unit experienced a few precipitator field failures with limited impact on the particulate emissions.

The unit tripped on the 30th November 2018 at 04 43 when the boiler low drum level protection operated. The unit remained off load for reheater drain line repairs

Unit 3:

The unit was taken off load on the 20th October 2018 at 21 58 The unit remained off load for the month of November 2018.

Unit 4:

The unit experienced a substantial number of precipitator field failures due to full dust hoppers The dust handling plant proved to be very sensitive to changes in dust quality in terms of density and particle size with frequent line blockages experienced The dust changed during a period when very poor quality coal was delivered to the power station

The above field failures resulted in exceedance of the AEL limit on the 2nd November 2018 after which the dust emissions were brought under control One of the dust conveying compressors failed during the latter part of the month causing frequent dust plant trips and full hoppers resulting in an increase in particulate emissions

In addition, the unit experienced a few SO₃ plant failures during the month adding to the emissions

Unit 5:

The unit experienced a substantial number of precipitator field failures due to full dust hoppers during the first few days of the month. The AEL limit was exceeded on the 6th and 7th November 2018. This full dust hoppers also emanates from conveying line blockages due to the poor quality coal delivered to the station.

The particulate emissions were controlled below the AEL limit for the remainder of the month. The unit tripped on the 13th November 2018 at 06.32 on boiler flame failure protection. The unit returned to service on the 13th November 2018 at 10.45.

Unit 6:

The unit experienced a fair number of precipitator field failures due to full dust hoppers due to line blockages during the first few days of the month. The AEL limit was exceeded on the 4th November 2018. The dust emission reduced for most of the month but an increase was noted as from the 18th November 2018 when the number of hoppers with levels increased.

SO₃ common Plant:

The SO₃ common plant tripped spuriously on the 20th November 2018 at 22.00. All of the unit plants were back in service by 00.46 on the 21st November 2018.

The SO₃ common plant tripped on the 30th November 2018 at 11.00 when the power supply the de-superheater failed. The power was restored and all of the unit plants were back in service by 15.35 on the 30th November 2018. This incident resulted in exceedances of the AEL limit on some of the units.

Gas Emissions:

The south stack O₂ analyser reading remained high. The OEM established that the sensor is faulty. The procurement process to replace the sensor has commenced. The O₂ reading is thus calculated based on the O₂/CO₂ balance.

The availability of the CEMS was good for the month of November 2018.

The gas emissions measured by the CEMS was well below the AEL limit for the duration of the month.

General:

The coal quality supplied to the station remained generally poor during the month, impacting negatively on the particulate emissions. A further periodic deterioration in coal quality resulted in a change in dust quality and full dust hoppers leading to precipitator field failures.

The change in coal quality negatively impacted on the dust handling plant due to the change in dust particle size and density.

6. LIGHT UP:

Unit:	5	
Fires in:	07 29	13 November 2018
Synchronisation	10 45	13 November 2018
Emissions below Limit:	10 45	13 November 2018
Fires in to synchronisation	3 16	Hours
Synchronisation to < Limit	0	Hours (ESP's were not taken out)

7. GRAPHS:

See attached graphs

8. COMPLAINTS

Name of complainant	Date	Description of complaint	Action taken
No Complaints			

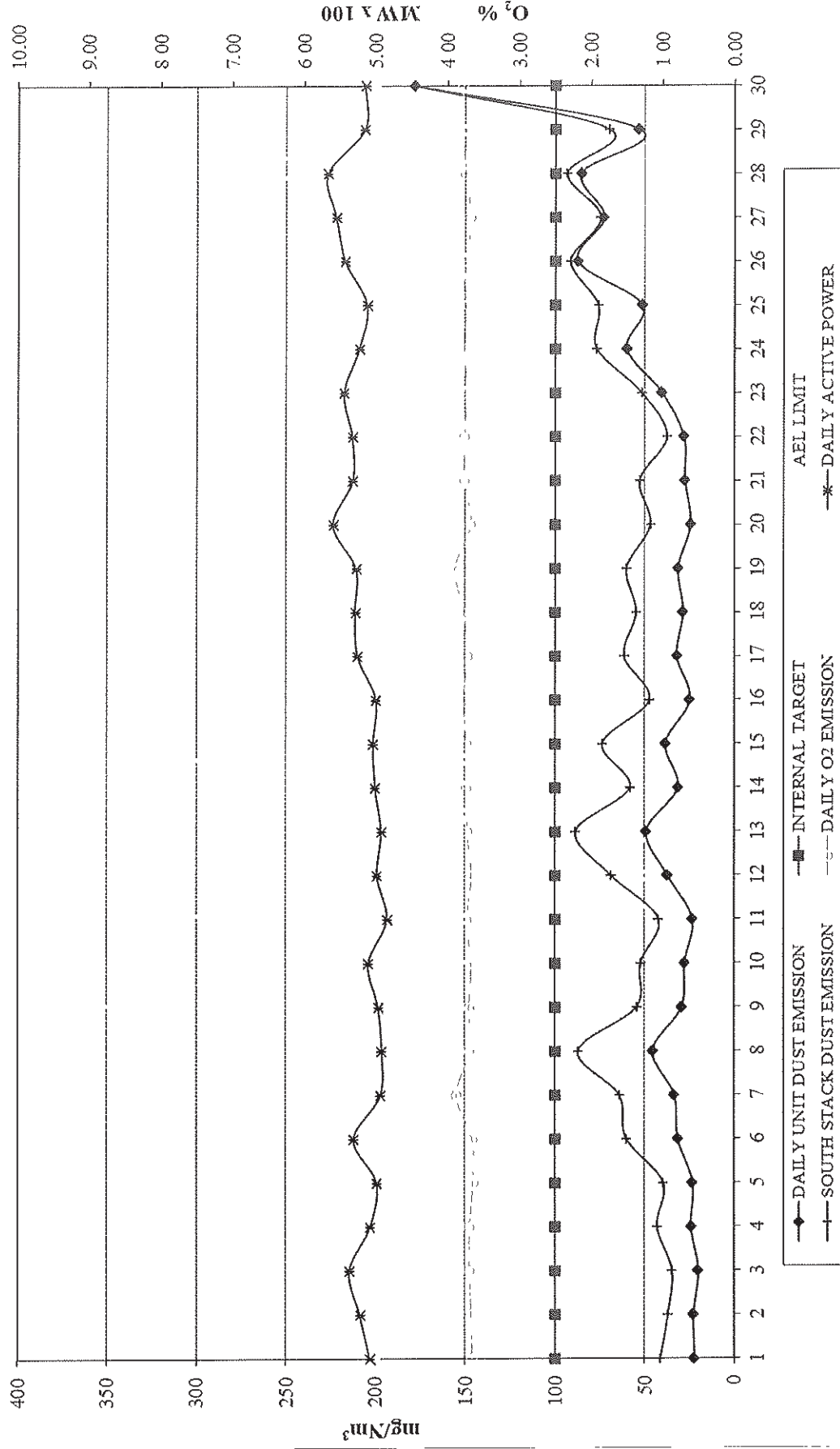
9. NOTIFICATION OF CONTRAVENTION OF EMISSION LICENCE CONDITIONS

<i>Date</i>	
<i>Power Station Unit(s)</i>	Matla Power Station --
<i>Date of incident</i> <i>Time of incident</i>	Start date and time End date
<i>Nature of incident</i>	Extended start-up <input type="checkbox"/> On-line maintenance <input type="checkbox"/> Extended shut-down <input type="checkbox"/>
<i>Emission limit exceedance</i>	
<i>Details of incident</i>	
<i>Risks posed by the incident to public health, safety and property</i>	
<i>Toxicity of substance or by-products released by the incident</i>	
<i>Mitigation to avoid or minimize the incident effects on public health and the environment</i>	
<i>Compiler and contact details</i>	Name. Tel no. Email.
<i>Responsible manager and contact details</i>	Name Tel no Email

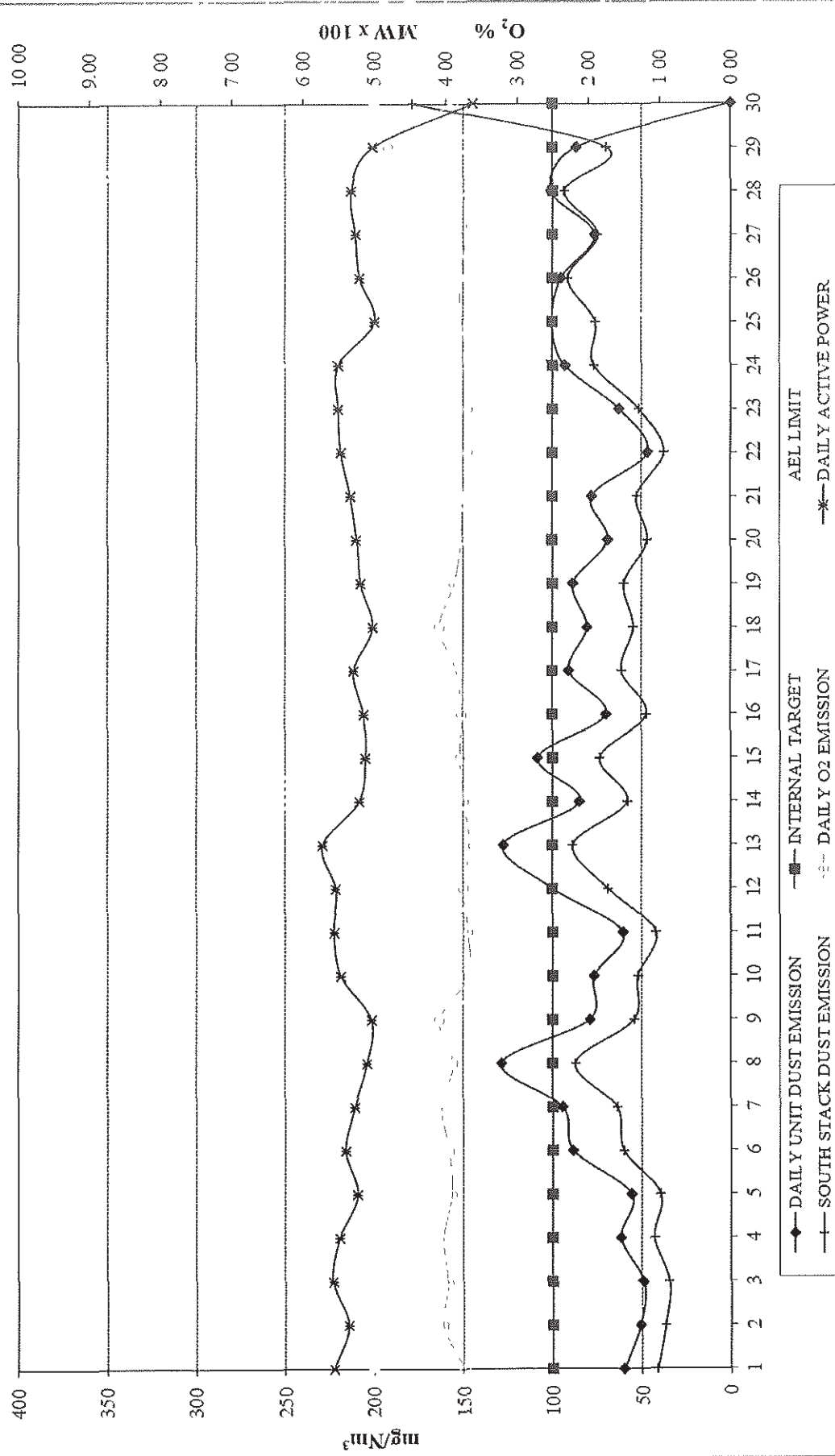
BOILER PLANT ENGINEERING

Copies to: Licensing Authority
 Power Station Manager (Acting)
 Environmental Practitioner
 Engineering Manager
 Boiler Plant Engineering Manager
 Maintenance Manager (Acting)
 Unit Electrical Maintenance Manager
 Operating Manager
 Production Manager
 Outside Plant Maintenance Manager
 Coal Manager
 Megawatt Park, Corporate Consultant Air Pollution
 Plant Performance Units 1 to 6

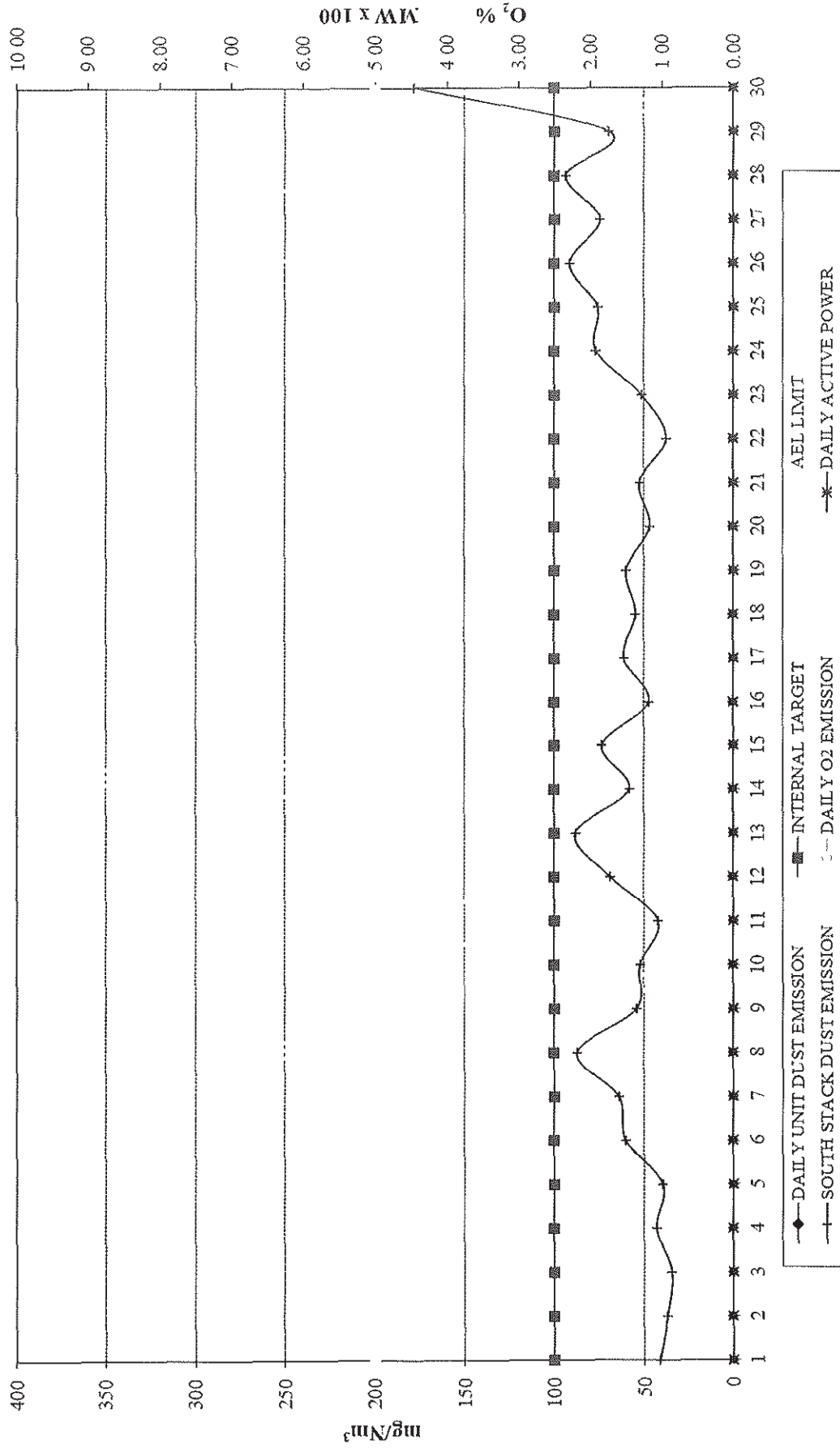
MATLA POWER STATION
UNIT 1 DUST EMISSION REPORT
NOVEMBER 2018



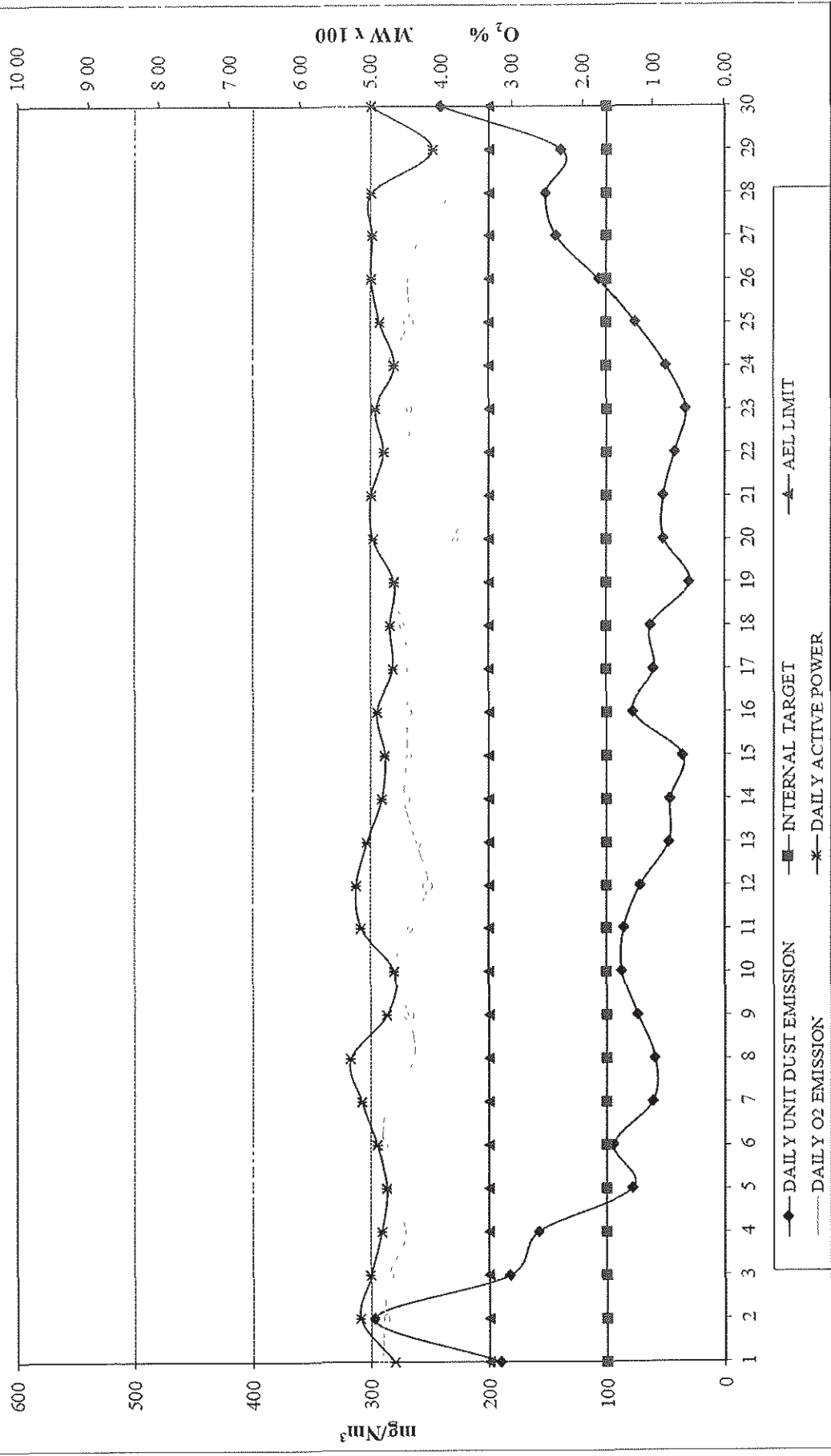
**MATLA POWER STATION
UNIT 2 DUST EMISSION REPORT
NOVEMBER 2018**



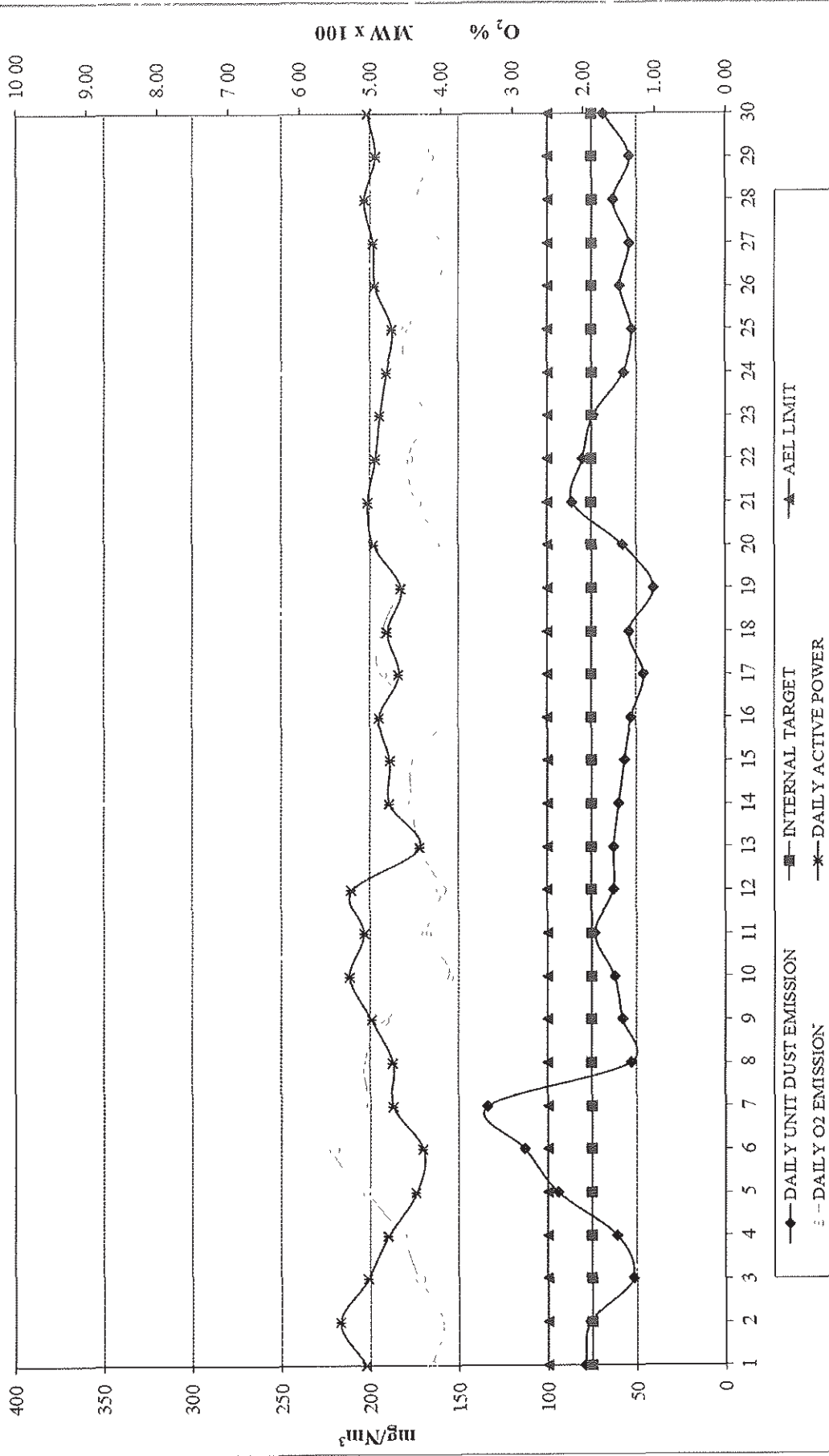
**MATLA POWER STATION
UNIT 3 DUST EMISSION REPORT
NOVEMBER 2018**



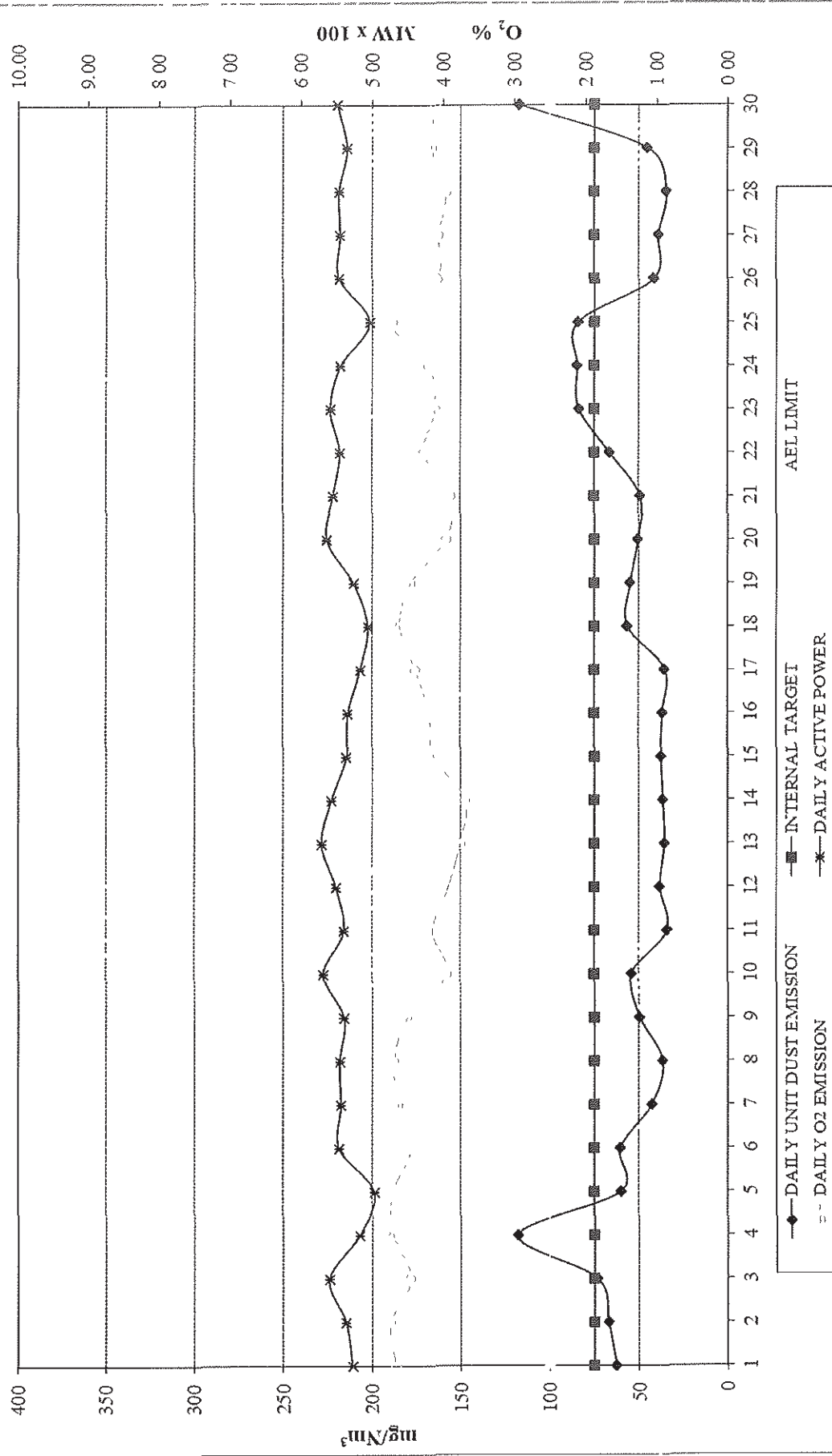
**MATLA POWER STATION
UNIT 4 DUST EMISSION REPORT
NOVEMBER 2018**



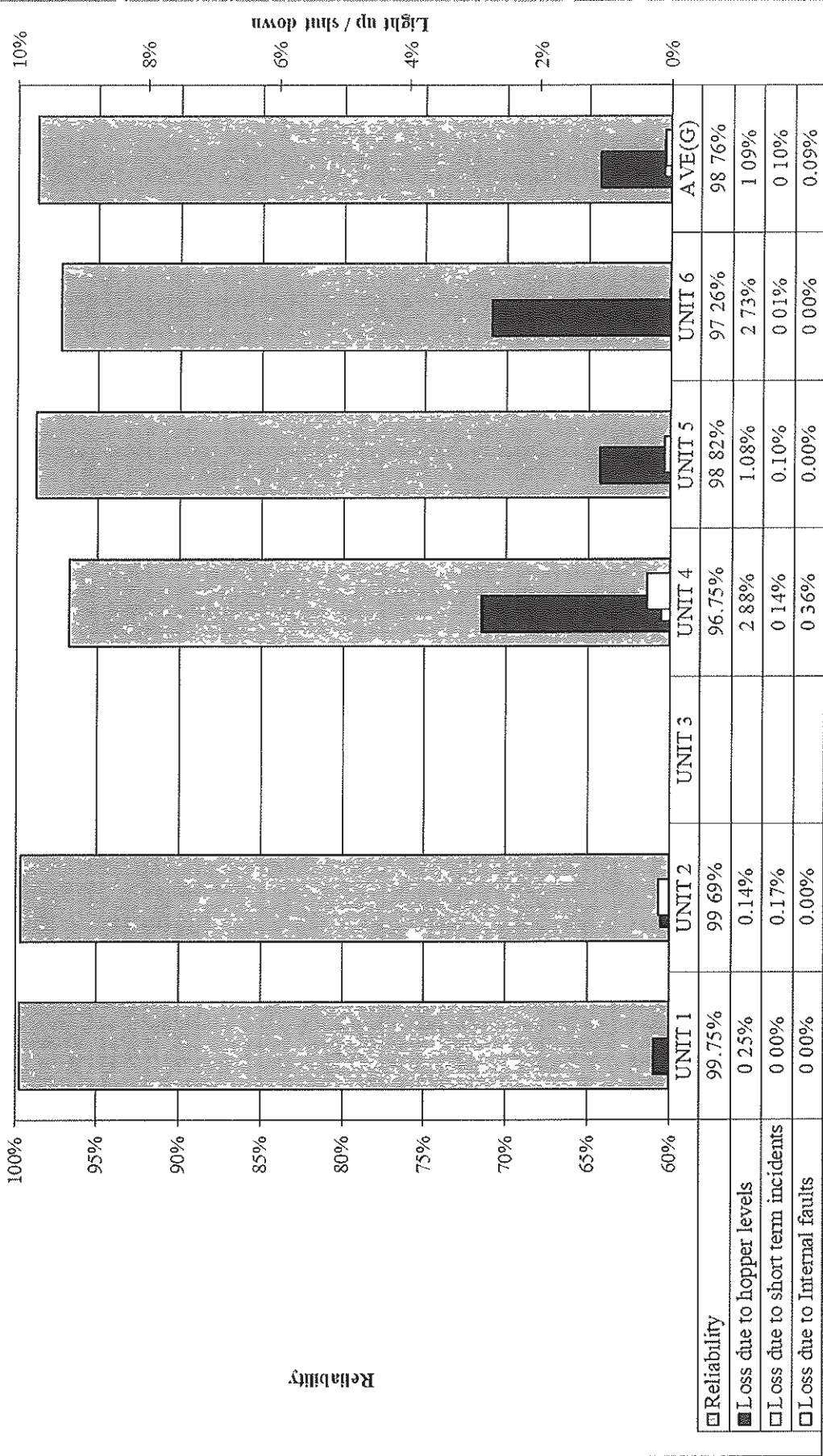
**MATLA POWER STATION
UNIT 5 DUST EMISSION REPORT
NOVEMBER 2018**



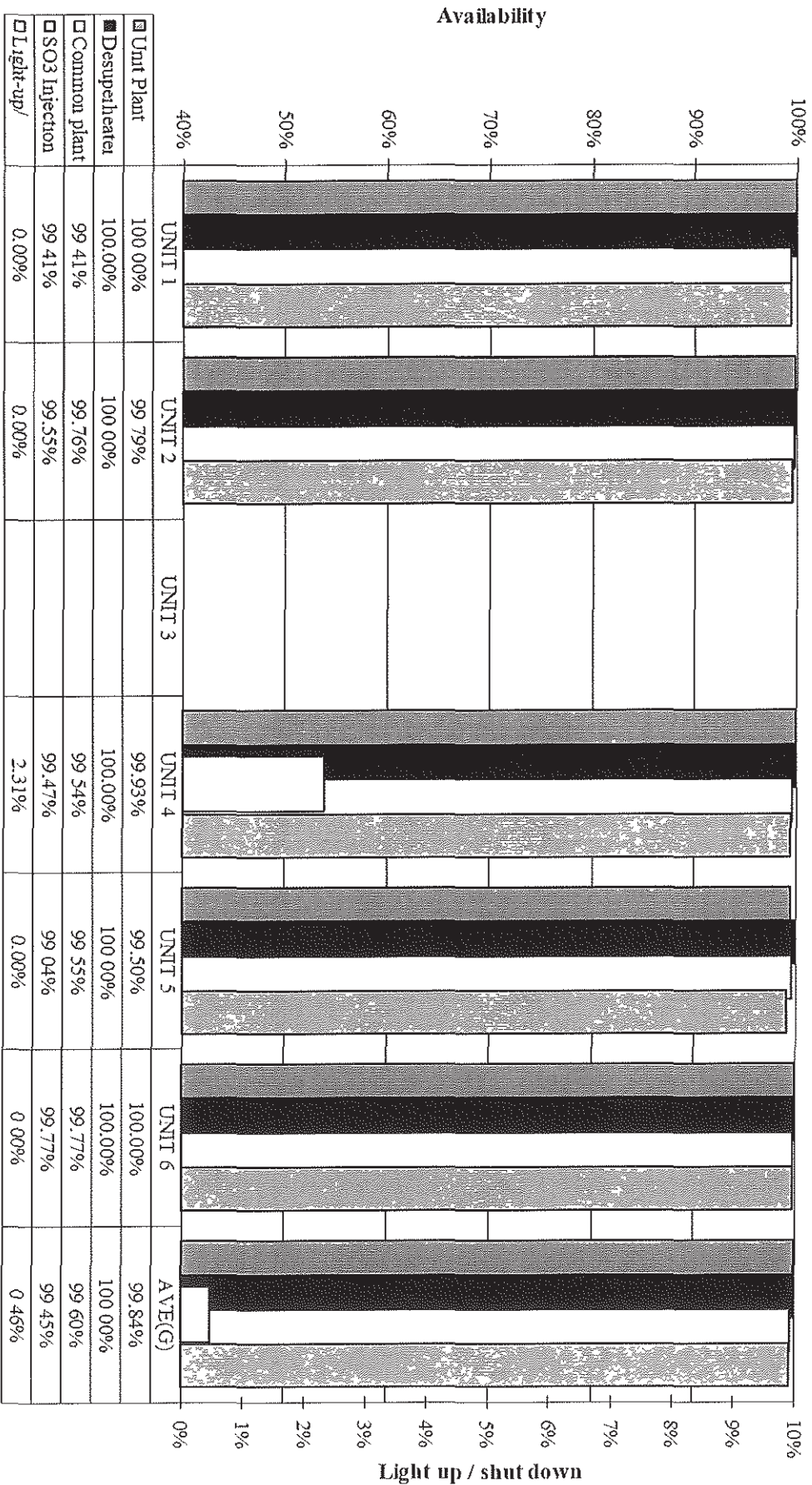
**MATLA POWER STATION
UNIT 6 DUST EMISSION REPORT
NOVEMBER 2018**



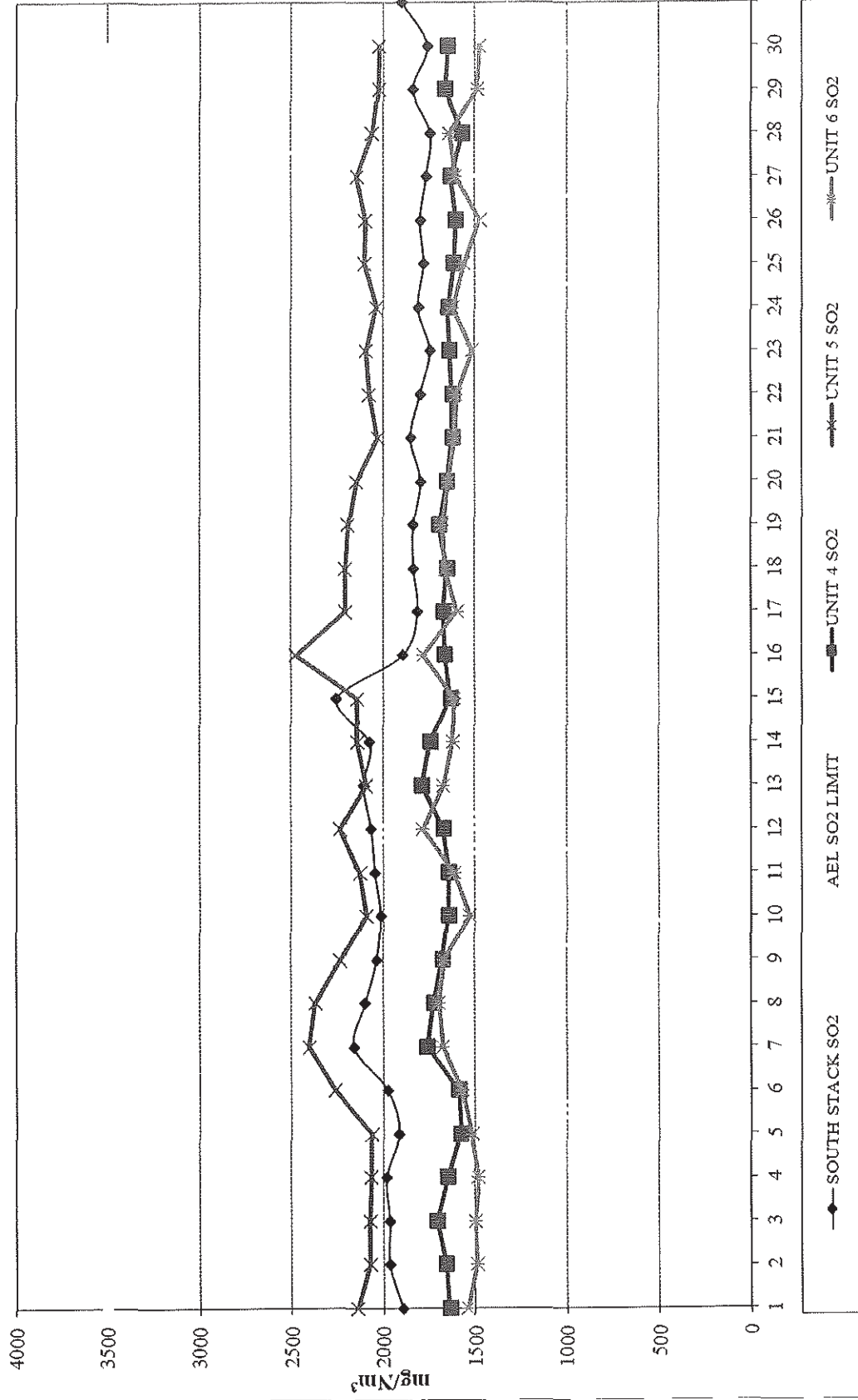
**MATLA POWER STATION
PRECIPITATOR RELIABILITY
NOVEMBER 2018**



**MATLA POWER STATION
SO₃ PLANT AVAILABILITY
NOVEMBER 2018**



**MATLA POWER STATION
SMOKE STACK SO₂ EMISSION REPORT
NOVEMBER 2018**



**MATLA POWER STATION
SMOKE STACK NO₂ EMISSION REPORT
NOVEMBER 2018**

