Eskom

Mr. Chakane Sibaya
Air Quality Officer
Fezile Dabi District Municipality
P.O Box 10
Sasolburg
1947

Date:
07 December 2020

Enquiries:
W de Klerk
Tel +27 16 457 5308

Ref: LRP03PLA000 _0218/20201126

Dear Mr. Sibaya

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

Lethabo Power Station has resubmitted the monthly emissions reports for the period from November 2019 to September 2020. This letter serves as explanation for the need to resubmit the reports and key factors to be considered when interpreting the attached reports.

Replacement of Particulate Matter Monitors

As part of a capital project, Lethabo Power Station replaced the emissions monitors for Particulate Matter (PM) during November 2019. Due to the Original Equipment Manufacturer (OEM) support which expired at the end of 2019. The exact dates of monitor replacements are as follow:

Unit	Monitor Replacement Date	Period Without PM Emissions Data
Unit 1	18 November 2019	18 November 2019 at 09:20, until 19 November 2019 at 14:50
Unit 2		
Unit 3		
Unit 4	14 November 2019	N/A – Unit was off during the time of replacement
Unit 5		
Unit 6		14 November 2019 at 09:54 until 16:19

Since the replacement dates above, the new monitors have been used for reporting purposes and the previous correlation curves were still valid at the time of monitor replacement. Although it was advised to have new correlation curves generated for the new monitors and correlation tests had to be redone. After the valid correlation curves were received the data had to be back fitted with valid correlation factors. It was noted in original monthly reports, as well as the Lethabo Power Station Annual Emissions Report for 2020 Financial Year, that the correlation tests used previously are invalid since the monitor replacement.

..2/

Generation Division (Cluster 1)
Lethabo; Duvha; Grootvlei; Kusile & Matla Power Stations
Viljoensdrif / Deneysville Free State
Private Bag X415 Vereeniging 1930 SA
Tel +27 16 457 5111 Fax +27 16 457 5712 www.eskom.co.za
Eskom Holdings SOC Ltd Reg No 2002/015527/30

07 December 2020

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

Conducting Correlation Tests and Implementation

The correlation test for Unit 1 and 2 were completed in December 2019 and the results were received on 27 February 2020 (Unit 1) and 2 March 2020 (Unit 2). Units 3 and 4 correlation tests were conducted in February 2020, and the reports were received in 23 May 2020 (Unit 3) and 27 June (Unit 4).

The correlation test for Unit 5 and Unit 6 took place in May 2020 and results for both Units were received on 30 June 2020. Delays in the correlation tests for Units 5 and 6 were attributed to the Units being off for outages for extended periods until February 2020 and April 2020 respectively. Thereafter COVID-19 lockdown restrictions caused additional delays to the test being conducted.

During verification of the correlation curves it was determined that the Units 4 and 6 correlations curves were not acceptable due to the coefficient factor not being within specification. Additionally, defects were identified on the new PM monitors and a decision was made redo to all PM correlations for all six units. The correlation tests were redone in July and August 2020 and the reports for second round of correlation tests were finalized and implemented in October 2020. Once the correlation tests were finalized, the station commenced with back fitting the data with valid curves.

Gaseous Emissions Investigations

Challenges were experienced with gaseous monitor reliability since February 2020, mainly due to calibration gas not being available intermittently. The lack of calibration gas meant that proper calibration of the monitors could not occur as planned. The challenge of procuring calibration gas was experienced by multiple Eskom sites; however, the station was able to place a temporary order for the procurement of calibration gas to do calibration on the monitors. Numerous investigations have been launched to determine which times have been affected by the monitors that were not properly calibrated. The findings from these investigation results have been actioned and the affected data was corrected as recommended.

Correlation Curve Validity and Back Fitting Rationale:

The table below reflects the previous and present gaseous and PM correlation dates and validity.

	PM and Gaseous Correlation Curves Validity and Implementation as at 26 October 2020					
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Correlation 1 PM	02/07/2018	17/08/2018	31/10/2019	22/06/2019	13/05/2018	22/06/2019
Expiry	02/07/2020	17/08/2020	31/10/2021	22/06/2021	13/05/2020	22/06/2021
Validity	Not Valid Due to PM Monitor change (Nov-19)	Not Valid Due to PM Monitor change (Nov-19)	Not Valid Due to PM Monitor change (Nov-19)	Not Valid Due to PM Monitor change (Nov-19)	Not Valid Due to PM Monitor change (Nov-19)	Not Valid Due to PM Monitor change (Nov-19)
Implemented	31/08/2018	05/10/2018	20/11/2019	31/07/2019	04/07/2018	12/07/2019
Reference	RSL285	RSL286	RSL345	RSL324	RSL274	RSL323

07 December 2020

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

Correlation 2 PM	10/12/2019	15/12/2019	20/02/2020	22/06/2019	20/05/2020	22/06/2019
Expiry	10/12/2022	15/12/2022	20/02/2022	22/06/2021	20/05/2022	22/06/2021
Validity	Valid	Valid	Valid	Not Valid Due to PM Monitor change (Nov-19)	Valid	Not Valid Due to PM Monitor change (Nov-19)
Implemented 1	12/03/2020	12/03/2020	-	-	-	-
Implemented 2	15/07/2020 (Reviewed curves using Eskom's Tool)	15/07/2020 (Reviewed curves using Eskom's Tool)	15/07/2020 (Reviewed curves using Eskom's Tool)		15/07/2020 (Reviewed curves using Eskom's Tool)	
Reference	RGND020(0)	RGND021(0)	RGND026(0)	RSL324	RGND031(0)	RSL323

Correlation 1 Gaseous	01/07/2018	16/08/2018	14/08/2018	24/04/2018	13/05/2018	10/06/2018
Expiry	01/07/2020	16/08/2020	14/08/2020	24/04/2020	13/05/2020	10/06/2020
Validity	Not Valid	Not Valid	Not Valid	Not Valid	Not Valid	Not Valid
Implemented	30/07/2018	29/10/2018	12/11/2018	04/06/2018	25/06/2018	20/08/2018
Reference	RSL282	RSL288	RSL290	RSL269	RSL272	RSL276

Correlation 3 PM	15/08/2020	07/08/2020	01/08/2020	26/07/2020	16/07/2020	21/07/2020
Expiry	15/08/2022	07/08/2022	01/08/2022	26/07/2022	16/07/2022	21/07/2022
Validity	Valid	Valid	Valid	Valid	Valid	Valid
Implemented	08/10/2020	08/10/2020	08/10/2020	08/10/2020	16/10/2020	08/10/2020
Reference	RSL370	RSL367	RSL365R1	RSL363R1	RSL359R3	RSL361R1

Correlation 2 Gaseous	15/08/2020	07/08/2020	01/08/2020	26/07/2020	16/07/2020	21/07/2020
Expiry	15/08/2022	07/08/2022	01/08/2022	26/07/2022	16/07/2022	21/07/2022
Validity	Valid	Valid	Valid	Valid	Valid	Valid
Implemented	16/10/2020	07/10/2020	07/10/2020	07/10/2020	07/10/2020	07/10/2020
Reference	RSL371	RSL368	RSL366	RSL364	RSL360	RSL362

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

Based on the above implementation dates and change of monitors the following back fitting exercise was undertaken to ensure reported data is correlated correctly:

- Unit 1 Gaseous curves back fitted from 01/07/2020 to 16/10/2020 (09:55 AM) using curves from RSL371.
  Reports affected: July 2020; August 2020; September 2020; October 2020)

Item	Old Curve	New Curve
Oxides of Nitrogen	y=1.2185*x-32.5304	y=0.9811*x+34.305
Sulphur Dioxide	y=1.0503*x	y=1.026*x
Carbon Monoxide	y=1.1671*x+3.8652	y=0.9948*x-0.0062
Carbon Dioxide	y=0.9119*x	y=1.0156*x
Oxygen	y=0.9487*x	y=1.0698*x
Velocity	y=x	y=0.6706*x+7.9232
Moisture	y=x	y=0.9339*x

- Unit 2 Oxygen curves back fitted from 01/11/20219 to 07/10/2020 (15:15 PM) using curves from RSL368. Due to issues with the Oxygen correlation curves it is recommended that back fitting of Oxygen data be done using curves from RSL368.
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020; April 2020; May 2020; June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxygen	y=1.408*x	y=1.0583*x

- Unit 2 Gaseous curves back fitted from 16/08/2020 to 07/10/2020 (15:15 PM) using curves from RSL368.
  Reports affected: August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxides of Nitrogen	y=1.0425*x+49.3013	y=1.0079*x+29.1776
Sulphur Dioxide	y=1.0354*x	y=1.0316*x
Carbon Monoxide	y=1.3611*x-28.5933	y=1.1025*x+26.3043
Carbon Dioxide	y=1.0698*x	y=1.0903*x
Velocity	y=x	y=1.4539*x-1.8744
Moisture	y=x	y=1.2962*x

- Unit 3 Gaseous curves back fitted from 14/08/2020 to 07/10/2020 (15:15 PM) using curves from RSL366.
  Reports affected: August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxides of Nitrogen	y=0.8459*x+35.4541	y=1.0646*x+19.9141
Sulphur Dioxide	y=0.9883x	y=1.0605*x
Carbon Monoxide	y=x	y=1.0364*x+7.0817
Carbon Dioxide	y=1.0225*x	y=0.9455*x
Oxygen	y=1.0002*x	y=1.0505*x
Velocity	y=x	y=0.4851*x+14.6883
Moisture	y=x	y=1.1852*x

07 December 2020

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

- Unit 4 Gaseous curves back fitted from 24/04/2020 to 07/10/2020 using curves from RSL364.
  Reports affected: April 2020; May 2020; June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxides of Nitrogen	y=1.183*x-26.2333	y=1.1474*x-3.4711
Sulphur Dioxide	y=1.0051*x	y=1.0282*x
Carbon Monoxide	y=1.0699*x-13.504	y=1.2766*x-25.9368
Carbon Dioxide	y=0.9542*x	y=1.0822*x
Oxygen	y=1.1686*x	y=1.0236*x
Velocity	y=x	y=1.6122*x-11.3395
Moisture	y=x	y=1.1819*x

- Unit 5 Gaseous curves back fitted from 13/05/2020 to 07/10/2020 using curves from RSL360. It is noted that the Moisture curve was incorrect and inflated during the time of the correlation. It was determined that an average of (6.4% H_2O) will be used from the point of curve expiry until the test is redone. The order has already been place to redo this correlation.
  Reports affected: May 2020; June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxides of Nitrogen	y=1.0708*x	y=1.0025*x
Sulphur Dioxide	y=0.9824*x	y=1.0251*x
Carbon Monoxide	y=0.9084*x-3.1968	y=1.5634*x+15.3230
Carbon Dioxide	y=1.0039*x	y=1.015*x
Oxygen	y=1.1186*x	y=1.0698*x
Velocity	y=x	y=0.3782*x+17.909
Moisture	y=x	y=3.2336*x+0.0349

- Unit 6 Oxygen curves back fitted from 01/11/2020 to 07/10/2020 (15:15 PM) using curves from RSL362. Due to issues with the Oxygen instrument was changed soon after the previous QAL 2 tests were done. The recommendation was to utilize a calculated curve due to this. For this reason, it was recommended that back fitting of Oxygen data be done using curves from RSL362.
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020; April 2020; May 2020; June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxygen	y=x	y=1.1686x

- Unit 6 Gaseous curves back fitted from 10/06/2020 to 07/10/2020 (15:15 PM) using curves from RSL362.
  Reports affected: June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Oxides of Nitrogen	y=1.4129*x+114.035	y=1.0959*x+0.6585
Sulphur Dioxide	y=1.0505*x	y=1.0105*x
Carbon Monoxide	y=x	y=x
Carbon Dioxide	y=1.0383*x	y=1.1272*x
Velocity	y=x	y=1.2482*x-2.8833
Moisture	y=x	y=1.1184*x

..6/

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

- Unit 1 PM curves back fitted from 18/11/2020 to 12/03/2020 (08:20 AM) using curves from RGND020(0) (Implementation 1).
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020

Item	Old Curve	New Curve
Output 1	y=6.0444*x-21.3859	y=10.2387*x-52.91
Output 2	y=40.2962*x-158.393	y=68.2582*x-284.99

- Unit 2 PM curves back fitted from 18/11/2019 to 12/03/2020 (08:20 AM) using curves from RGND021(0) (Implementation 1).
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020

Item	Old Curve	New Curve
Output 1	y=6.708*x-26.9533	y=11.4509*x-39.52
Output 2	y=33.54*x-134.281	y=57.2545*x-222.74

- Unit 3 PM curves back fitted from 18/11/2019 to 19/11/2020 using curves from RGND026(0).
  Reports affected: November 2019

Item	Old Curve	New Curve
Output 1	y=11.8552*x-42.9435	y=16.57*x-68.913
Output 2	y=39.5172*x-153.592	y=54.3377*x-219.96

- Unit 3 PM curves back fitted from 20/11/2020 to 15/07/2020 (10:10 AM) using curves from RGND026(0).
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020; April 2020; May 2020; June 2020; July 2020

Item	Old Curve	New Curve
Output 1	y=13.1908*x-52.7815	y=16.57*x-68.913
Output 2	y=37.1843*x-141.2112	y=54.3377*x-219.96

- Unit 4 PM curves back fitted from 14/11/2019 to 08/10/2020 (10:00 AM) using curves from RSL363R1. (Note after the monitor change, the correlation test did not meet the requirements and could not be used. Due to this the back fitting was done from November 2019 to the next curve implementation)
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020; April 2020; May 2020; June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Output 1	y=7.8865*x-27.5857	y=9.5164*x-38.7168
Output 2	y=26.2883*x-101.193	y=31.7214*x-127.5366

- Unit 5 PM curves back fitted from 14/11/2020 to 15/07/2020 (10:40 AM) using curves from RGND031(0).
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020; April 2020; May 2020; June 2020; July 2020

Item	Old Curve	New Curve
Output 1	y=10.9526*x-47.1537	y=8.6012*x-31.658
Output 2	y=36.5087*x-149.378	y=28.627*x-111.67

..7/

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

- Unit 6 PM curves back fitted from 14/11/2020 to 08/10/2020 (10:00 AM) using curves from RSL362. (Note after the monitor change, the correlation test did not meet the requirements and was not used. Due to this the back fitting was done from November 2019 to the next curve implementation)
  Reports affected: November 2019, December 2019; January 2020; February 2020; March 2020; April 2020; May 2020; June 2020; July 2020; August 2020; September 2020; October 2020

Item	Old Curve	New Curve
Output 1	y=4.9333*x-19.2737	y=11.2651*x-46.9329
Output 2	y=25.1964*x-94.9214	y=37.5503*x-152.0737

Other factors that affected the gaseous data especially include corrective actions stemming from investigations done on site relating to data integrity issues related to gaseous emissions. These findings and actions are summarized below:

	Finding	Action
Unit 4	SO_2 and NO data: On 25th January 2020 the gas readings dropped to zero and it was later discovered that the air purge valve was closed on the common airline at the bottom of the smoke stack. The monitor does an auto zero correction every 12 hours and if the air is closed it will cause the values to drop to zero. It was rectified on 27th January 2020. The time frame where this happened is from 25th January 2020 12:11 to 27th January 2020 11:15. On 29th January a faulty gas calibration was done. The SO_2 made a big upward step and caused a few exceedances consequently. Due to the lack of available calibration gas the problem could only be rectified on 7th March 2020. Oxygen data: When Eskom Research Training and Development (RT&D) did O_2 verifications in January they found the O_2's higher than what it is supposed to be and therefore their average of 6.18% were used from 29th January to 24th April. On 24th April RT&D did a verification again and their average of 7.12% was used from then. Due to the unavailability of calibration gas and unverified gas the oxygen had to be corrected with the verified values.	1. O_2 Data: • 29th January to 24th April 2020 use 6.18% O_2; • 25th April to 31st May 2020 use 7.12% O_2. 2. NO and SO_2 Data: • The NO and SO_2 values should be removed from 25th January 2020 12:11 to 27th January 2020 11:15 due to the air purge valve that was closed. 3. SO_2 Data: • For 29th-31st January 2020 use the average for 1-28 January 2020; • For 1st-29th February 2020 use the average of January and March which is 1st-28th January and 8th-31st March 2020. • For 1st-7th March use the average of 8th-31st March 2020

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

	Finding	**Action**
Unit 5	Oxygen adjustments: On 23rdApril 2020 RT&D did gas verifications and saw that the O_2 readings were too high. An average of their values were calculated and it was 6.8%. Therefore, this value will be used from 1st April 2020 to 13th May 2020. Calibrations were not done as frequently as supposed to due to the lack of calibration gas. The monitors were calibrated on 13th May and QAL 2 tests were completed on the 16th July 2020	O_2 Data: The QAL2 test was due and was finished on 16th July 2020, therefore 6.8% is used from 1 April 2020 until 16th July 2020
Unit 6	SO_2 and NO adjustments: On 3rd April 2020 Unit 6 came back from an outage, but the gas monitor was removed during the outage to be used on Unit 3 that had a problem at the time. On 6th April 2020 the monitor was moved back to Unit 6. Therefore, no gas values were available from 3rd to 6th April 2020. It must be noted that only on 11th April 2020 the calibration coefficients were changed and therefore the monthly averages from the 12th April 2020 to 30th April 2020 must be used for the SO_2 and NO. There was a problem with the heater on the gas analyser that started on 16th May 2020. There was a loose wire on the SSR (solid state relay) that switched the heater off. That caused the process gas temperature values to go below 110°C which caused the monitor to go into a purge mode. When that happened all the gas values dropped to zero. It mainly happened during early morning hours when ambient temperatures were low. On 9th June the loose wire was found and corrected and that rectified the problem. The following dates and times are when that happened and will be removed from the reported data: Oxygen adjustments: When RT&D did verifications on 22nd April they discovered that the O_2 measurements were reading higher and therefore the average of 6.13% was used for the period where no valid calibration was done due to the lack of calibration gas. This value is used from 3rd April to 27 May 2020.	O_2 Data: • Use 6.13% O_2 for 3 April 2020 to 27 May 2020 NO and SO_2 Data • A monthly average for SO_2 and NO should be used for 3rd-11th April 2020. That means an average from 12th-30th April 2020 will replace the SO_2 and NO values for 3rd-11th April 2020. • Also, the heater tube had a loose wire that caused the heater to operate intermittently and therefore the following dates and times must be removed when these occurrences happened. ○ 16 May 2020, 06:37-09:13; ○ 24 May 2020, 06:58-12:33; ○ 26 May 2020, 06:53-11:37; ○ 27 May 2020, 03:56-10:11; ○ 28 May 2020, 00:48-10:41; ○ 29 May 2020, 03:09-09:17; ○ 3 June 2020, 05:08-07:32; ○ 4 June 2020, 02:41-10:58; ○ 6 June 2020, 03:28-11:01; ○ 7 June 2020, 01:08-13:18; ○ 8 June 2020, 01:09-10:25; ○ 9 June 2020, 03:24-11:56.

07 December 2020

RESUBMISSION OF LETHABO POWER STATION MONTHLY EMISSIONS REPORTS

Note on use of average for gaseous emission values, where it was required to utilize averages, it is the view of the station to take it as monitor unavailability (even if the monitor was reading and available, but the data was not reliable). This would ultimately adversely affect the percentage availability of the various monitors for that period, therefore the monitor availability for respective months were affected.

Backfitting Results

A significant reduction of gaseous exceedances was observed after the back fitting exercise and the remaining exceedances are being investigated diligently.

Numerous additional PM exceedances were picked up during the back fitting exercise, some of which result in the station exceeding the 72 hours grace period during upset, maintenance, start up and shut down conditions. However, it should be noted the station was not observing the correct emission figures at the time as the monitors were not correlated for the monitors in use, as such the station could not act on emission excursion incurred during this period, as it was under the impression that the emissions were within acceptable limits. If the station was aware of such exceedances, it would have acted immediately to intervene with these emissions exceedances.

Lethabo Power Station remains committed to minimize emissions and continue to operate within the confine of legislative requirements.

Yours sincerely

Karabo Rakgolela
GENERAL MANAGER

Eskom

Mr. Chakane Sibaya
Air Quality Officer
Fezile Dabi District Municipality
P.O Box 10
Sasolburg
1947

Date:
04 December 2020

Enquiries:
W de Klerk
Tel +27 16 457 5308

Ref: LRP03PLA000 _0214/20201111 Rev 01

Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR SEPTEMBER 2020 RESUBMISSION

Please find attached Lethabo Power Station emission report for the month of September 2020.

Also attached ambient air quality monitoring report, complaints register and the fugitive dust fallout monitoring report for September 2020.

For any additional information please do not hesitate to contact us.

Yours sincerely

Karabo Rakgolela
GENERAL MANAGER

Generation Division (Cluster 1)
Lethabo; Duvha; Grootvlei; Kusile & Matla Power Stations
Viljoensdrif / Deneysville Free State
Private Bag X415 Vereeniging 1930 SA
Tel +27 16 457 5111 Fax +27 16 457 5712 www.eskom.co.za

Eskom Holdings SOC Ltd Reg No 2002/015527/30

Eskom	Report	Lethabo Power Station

Report name:	**Lethabo Power Station September 2020 Emission Report - Resubmission**	Reference number:	**LRP03PLA000 _0214/20201111 Rev 01**
		Document Type:	**Report**
		Area of Applicability:	**Environment**
		Report Date:	**November 2020**
		Classification:	**Controlled Disclosure**

Signatures:

Compiled by:	**Verified by :**	**Reviewed by:**
P Parag	W de Klerk	N Mazibuko
System Engineer	**Environmental Officer**	**BPE Manager**
Date: 27/11/2020	**Date:** 2020-11-26	**Date:** 27/11/2020

Reviewed by:	**Reviewed by:**	**Reviewed by:**
C Govinden	L Nel	M Hariram
PE Manager	**C&I Manager**	**Environmental Manager**
Date: 27/11/2020	**Date:** 2020-11-30	**Date:** 2020-12-03

Approved by:

H Sewsunker
Engineering Manager

Date: 2020/12/03

SEPTEMBER 2020

LETHABO POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License FDDM-MET-2011-08-P1

1. RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Sep-2020
	Coal	Tons	*2 000 000*	*1 105 403*
	Fuel Oil	Tons	*1 700*	*479.36*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Production Rate Sep-2020**
	Energy	GWh	*2743.2*	*1 650.68*
	Ash	Tons	*770 000*	*405 903.9*
	RE Ash	kg/MWh	*not specified*	*245.90*

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	*0.55 (Standard)*	*0.710*
Ash Content	%	*36.89 (Standard)*	*36.720*

3. EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SOx	NOx
Unit 1	*100*	*3500*	*1100*
Unit 2	*100*	*3500*	*1100*
Unit 3	*100*	*3500*	*1100*
Unit 4	*100*	*3500*	*1100*
Unit 5	*100*	*3500*	*1100*
Unit 6	*100*	*3500*	*1100*

4. ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Sep-2020
Unit 1	*Electrostatic Precipitator (ESP)*	*99.89%*
Unit 2	*Electrostatic Precipitator (ESP)*	*99.79%*
Unit 3	*Electrostatic Precipitator (ESP)*	*Unit Off-line*
Unit 4	*Electrostatic Precipitator (ESP)*	*99.88%*
Unit 5	*Electrostatic Precipitator (ESP)*	*99.91%*
Unit 6	*Electrostatic Precipitator (ESP)*	*99.85%*

5. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	CO_2
Unit 1	*94.7*	*100.0*	*100.0*	*99.0*
Unit 2	*99.6*	*99.9*	*99.9*	*99.9*
Unit 3				
Unit 4	*100.0*	*100.0*	*100.0*	*99.9*
Unit 5	*100.0*	*100.0*	*100.0*	*100.0*
Unit 6	*100.0*	*99.8*	*99.8*	*99.8*

6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of September 2020

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	83.2	2 912.8	1 305
Unit 2	152.4	3 213.8	1 223
Unit 3	0.0	0.0	0
Unit 4	101.0	4 432.4	1 922
Unit 5	70.9	2 714.9	1 309
Unit 6	72.2	2 016.2	885
SUM	479.7	15 290	6 645

Table 6.2: Operating days in compliance to PM AEL Limit - September 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	23	3	0	0	3	60.9
Unit 2	18	10	0	0	10	105.0
Unit 3	0	0	0	0	0	
Unit 4	30	0	0	0	0	45.5
Unit 5	30	0	0	0	0	51.1
Unit 6	15	2	0	0	2	73.8
SUM	**116**	**15**	**0**	**0**	**15**	

*** Please Note Conreventions found in the month of September 2020 were due to new exceedances determined during the Back fitting of valid correlation factors (Please refer to General Notes)**

Table 6.3: Operating days in compliance to SOx AEL Limit - September 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
Unit 1	27	0	0	0	0	2 061.5
Unit 2	29	0	0	0	0	2 040.1
Unit 3	0	0	0	0	0	
Unit 4	30	0	0	0	0	2 009.9
Unit 5	30	0	0	0	0	1 965.7
Unit 6	19	0	0	0	0	1 864.8
SUM	**135**	**0**	**0**	**0**	**0**	

Table 6.4: Operating days in compliance to NOx AEL Limit - September 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	27	0	0	0	0	919.3
Unit 2	29	0	0	0	0	774.4
Unit 3	0	0	0	0	0	
Unit 4	30	0	0	0	0	871.6
Unit 5	30	0	0	0	0	947.9
Unit 6	19	0	0	0	0	820.8
SUM	**135**	**0**	**0**	**0**	**0**	

Table 6.5: Legend Description

Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		Emissions above ELV but outside grace or S30 incident conditions

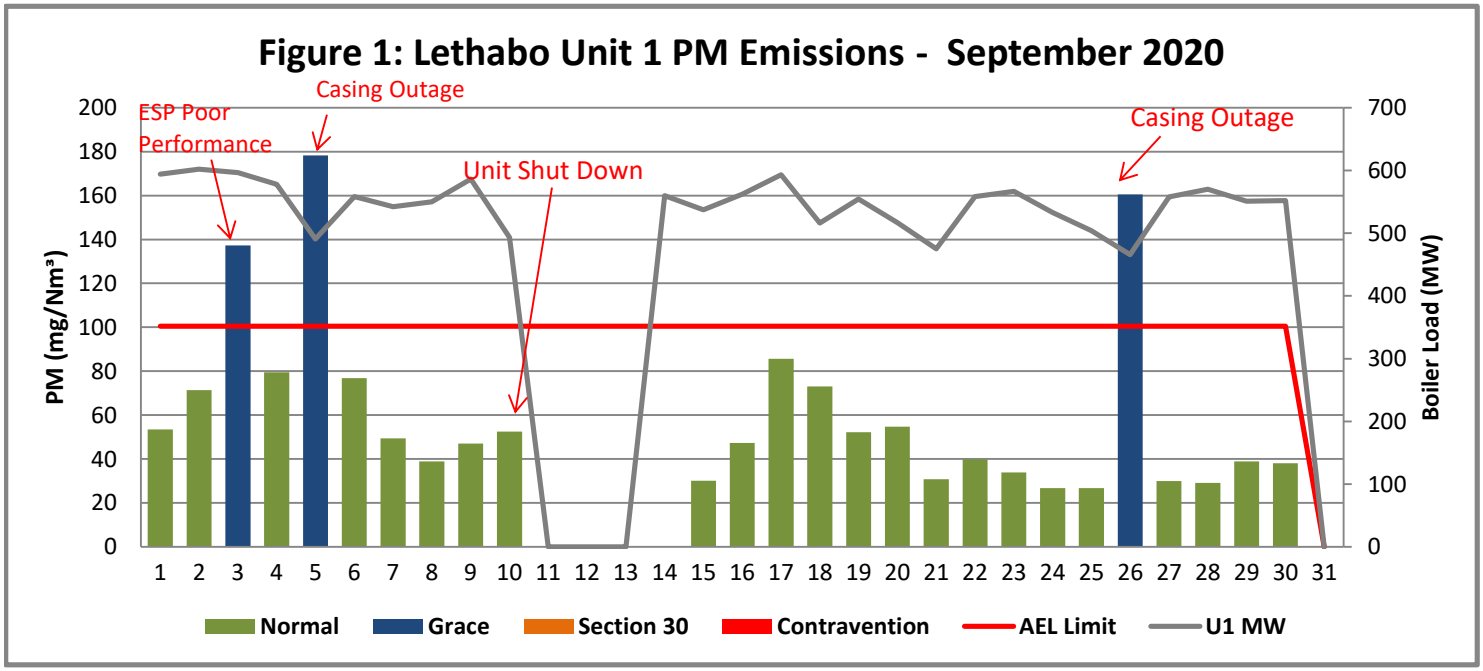


Figure 2: Lethabo Unit 2 PM Emissions - September 2020

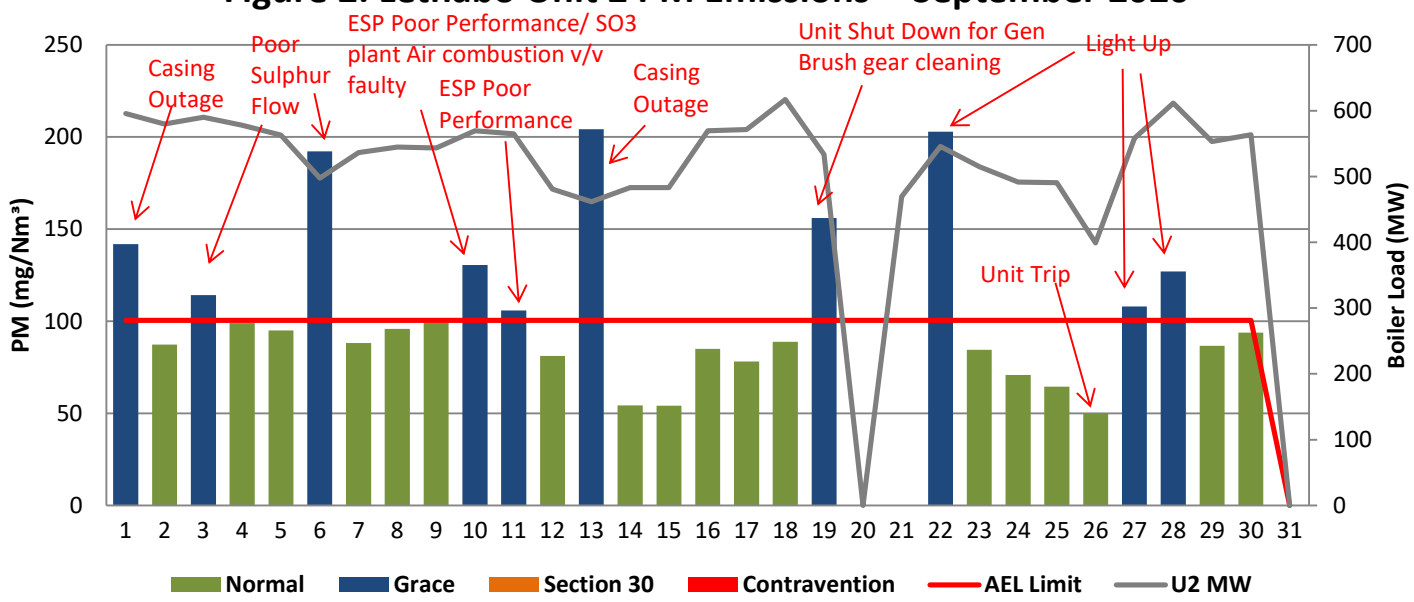


Figure 3: Lethabo Unit 3 PM Emissions - September 2020

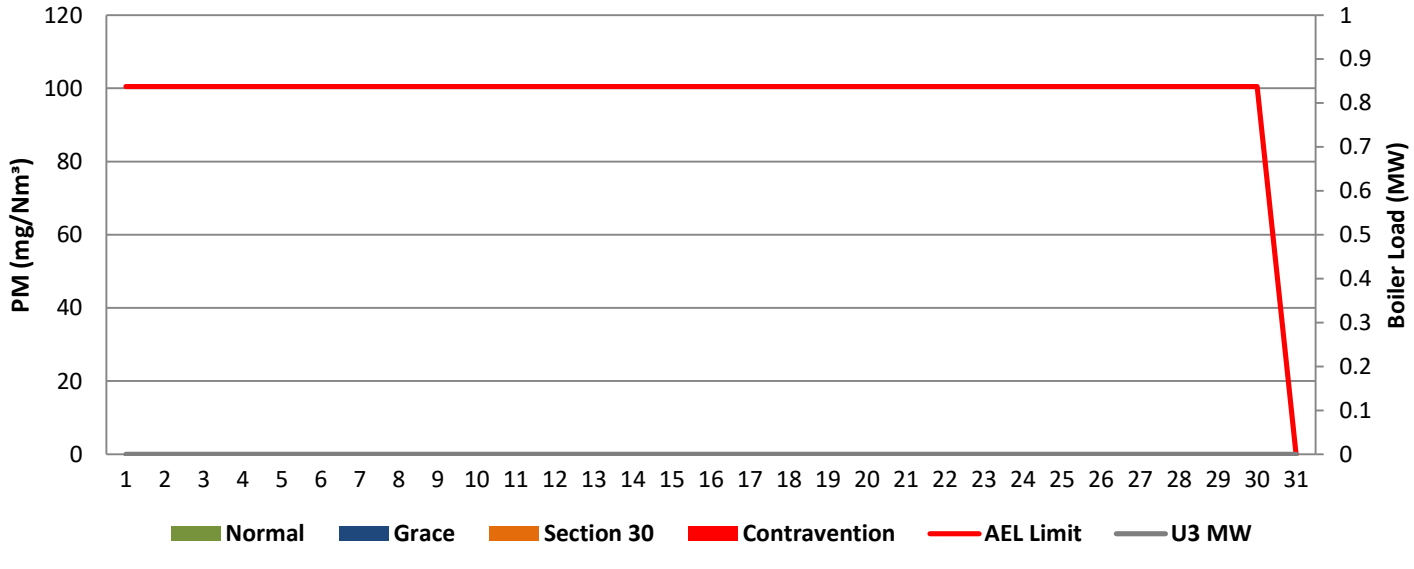


Figure 4: Lethabo Unit 4 PM Emissions - September 2020

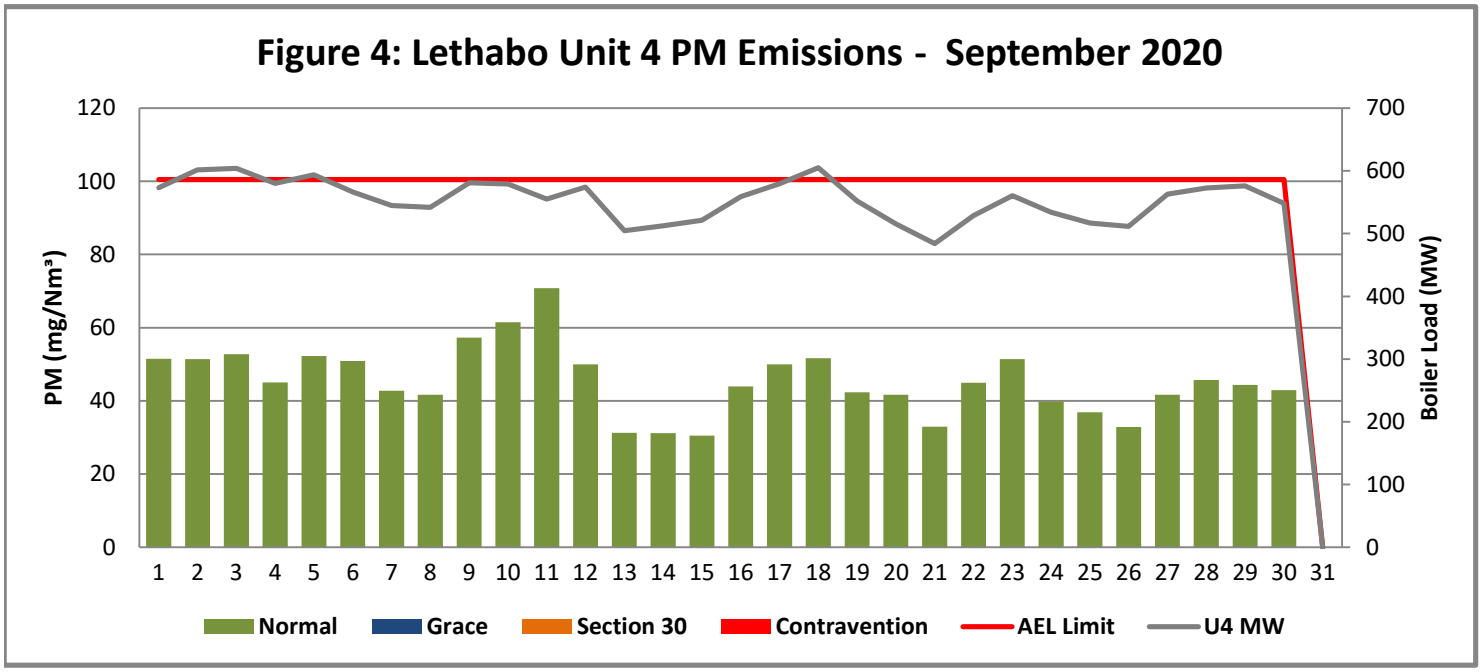


Figure 5: Lethabo Unit 5 PM Emissions - September 2020

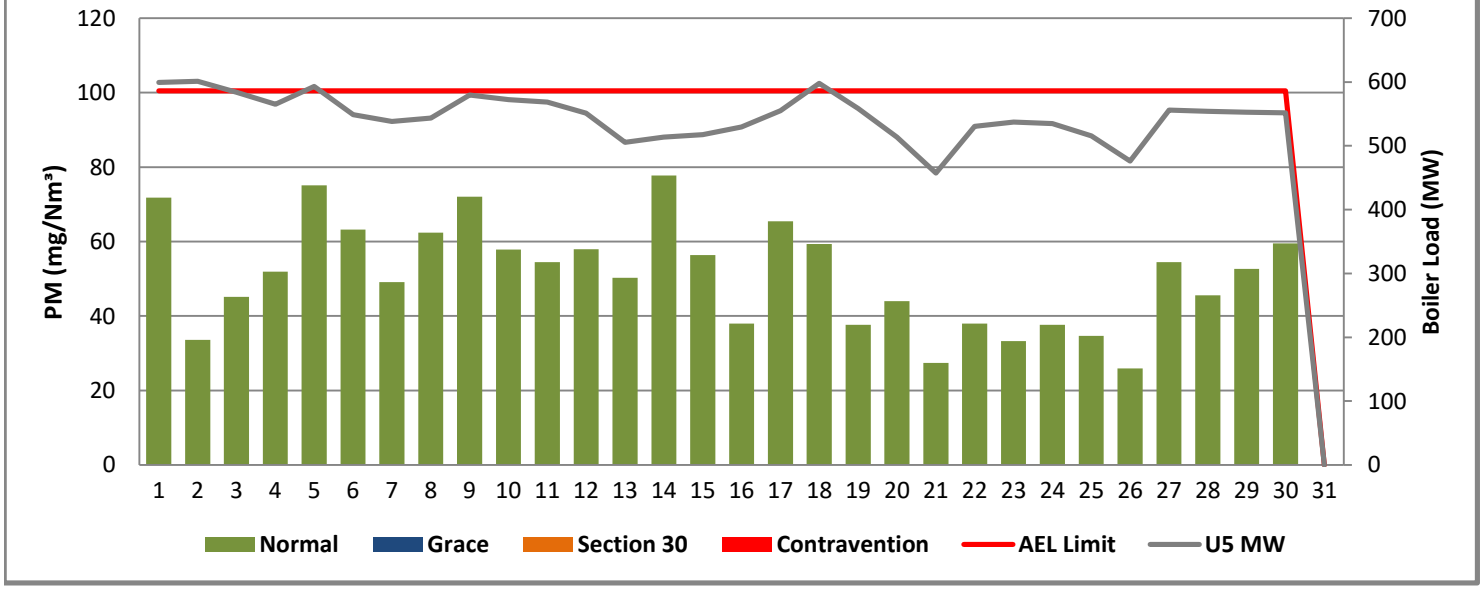


Figure 6: Lethabo Unit 6 PM Emissions - September 2020

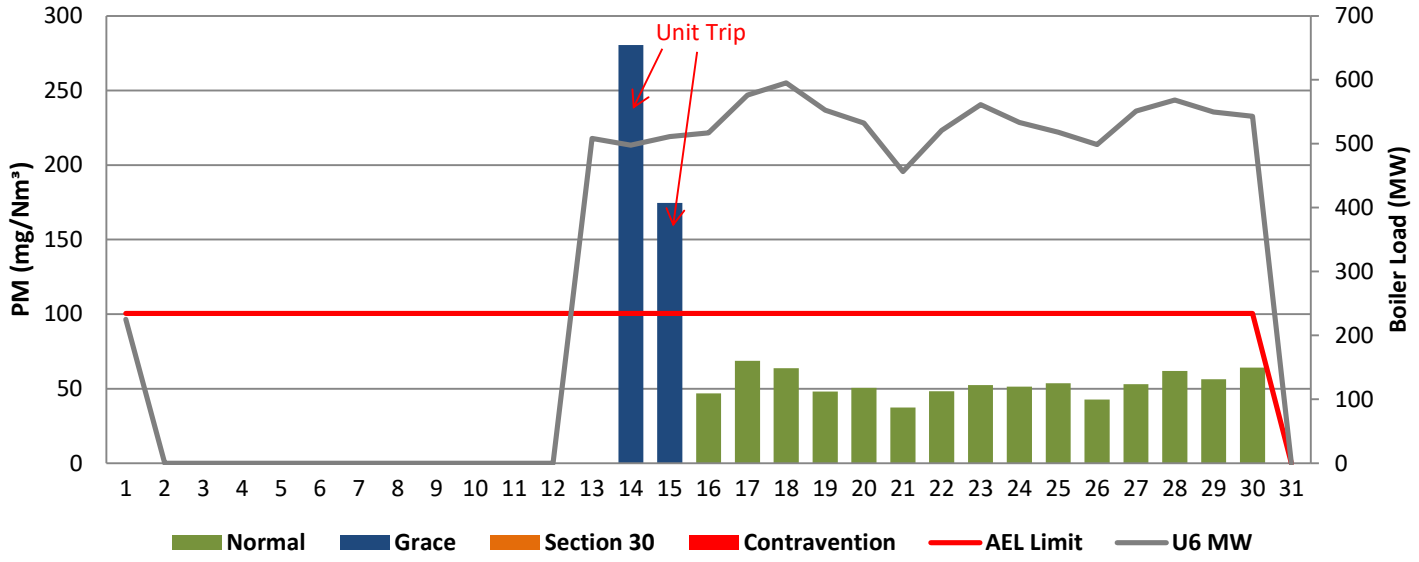
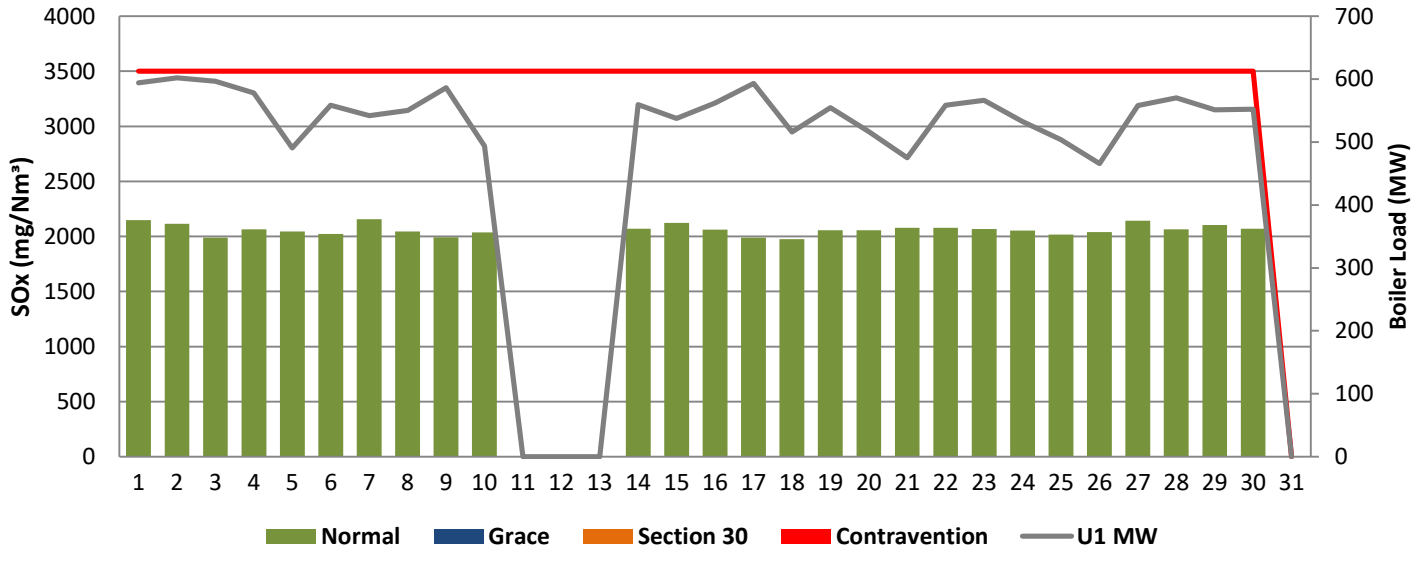


Figure 7: Lethabo Unit 1 SOx Emissions - September 2020



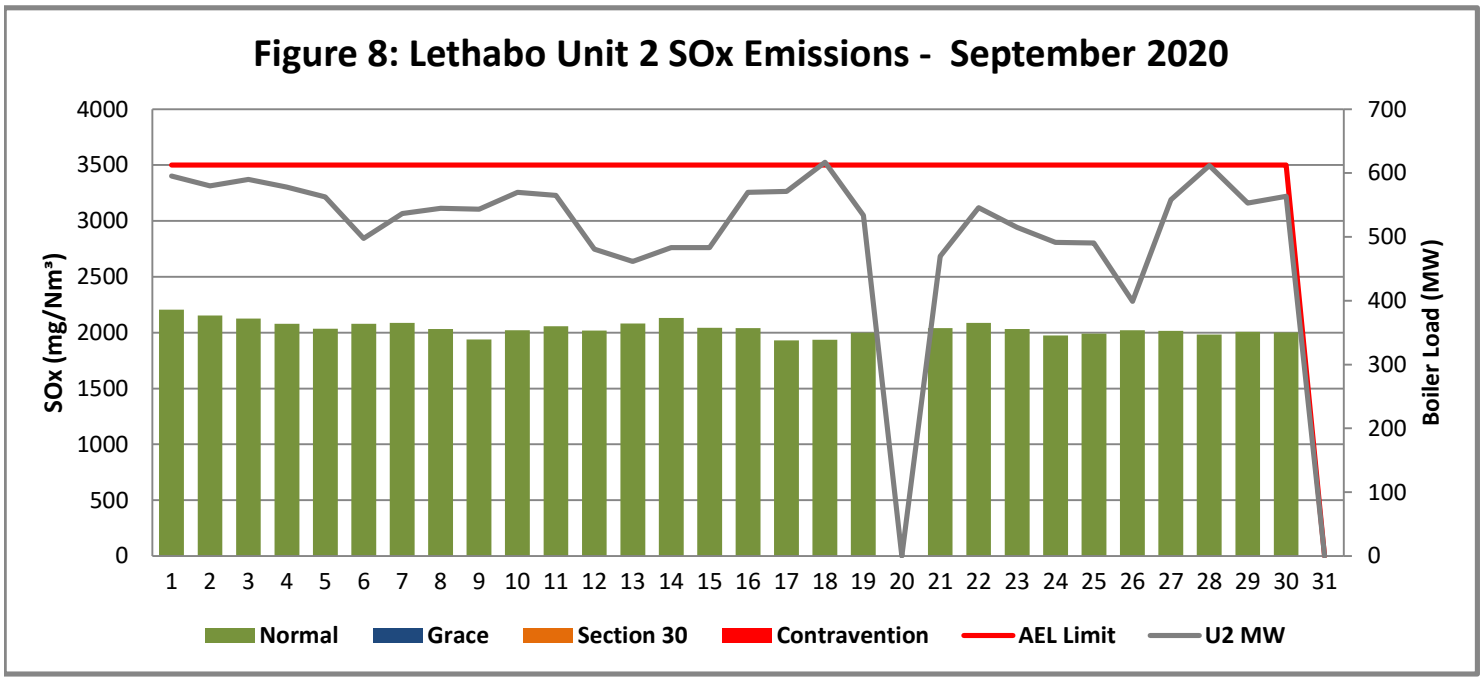


Figure 8: Lethabo Unit 2 SOx Emissions - September 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

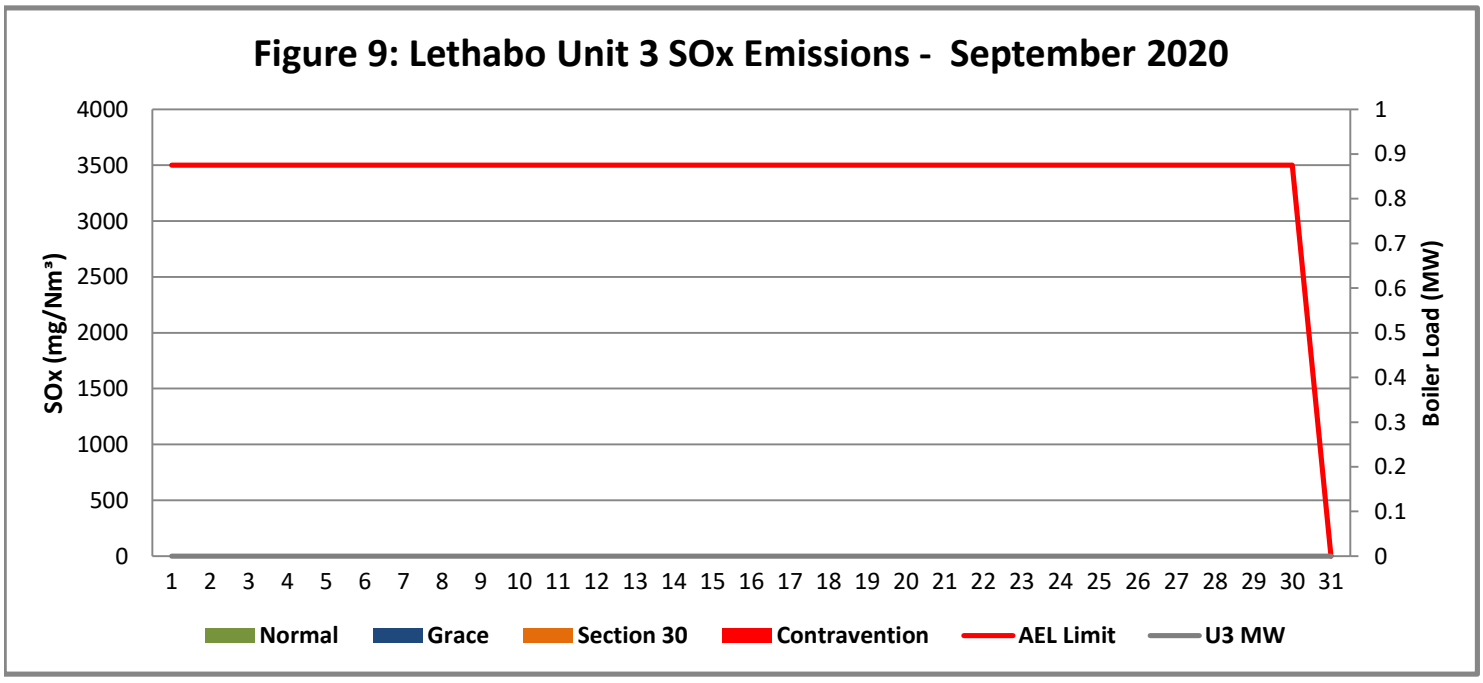


Figure 9: Lethabo Unit 3 SOx Emissions - September 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

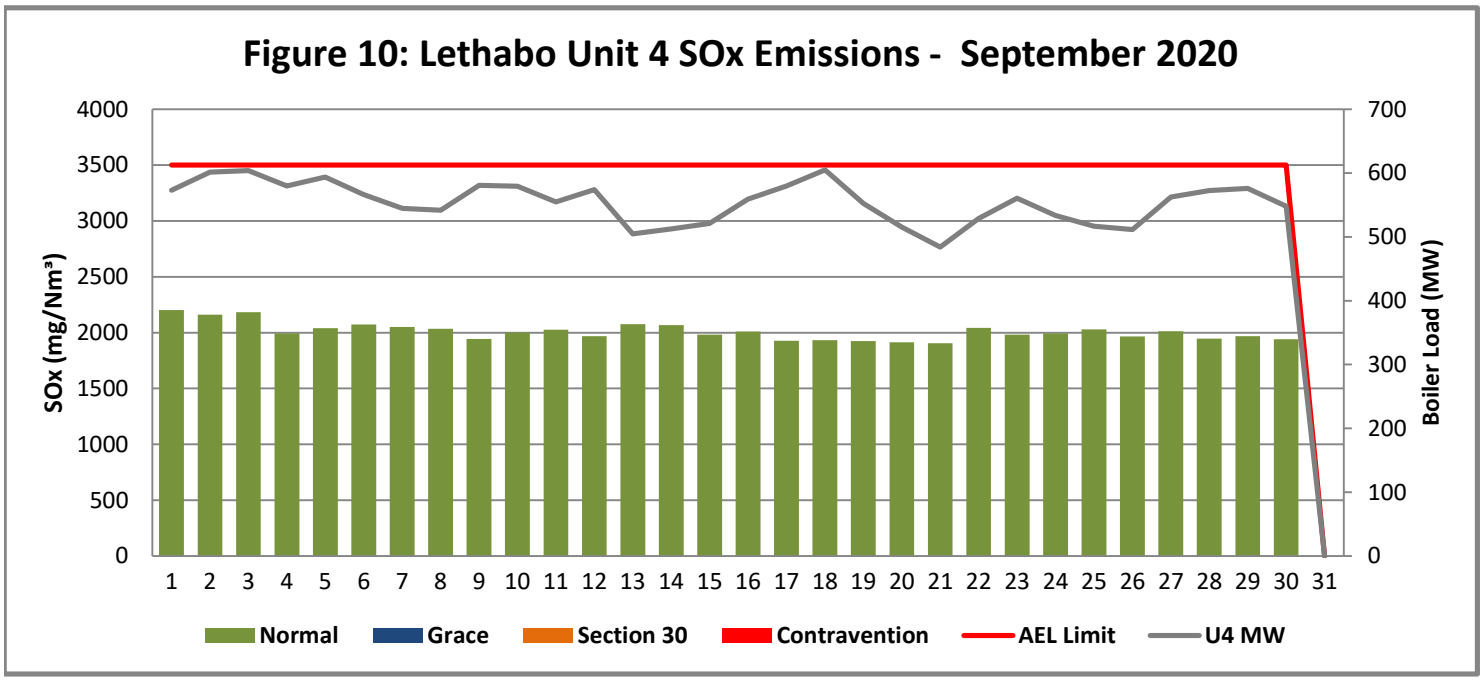


Figure 10: Lethabo Unit 4 SOx Emissions - September 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

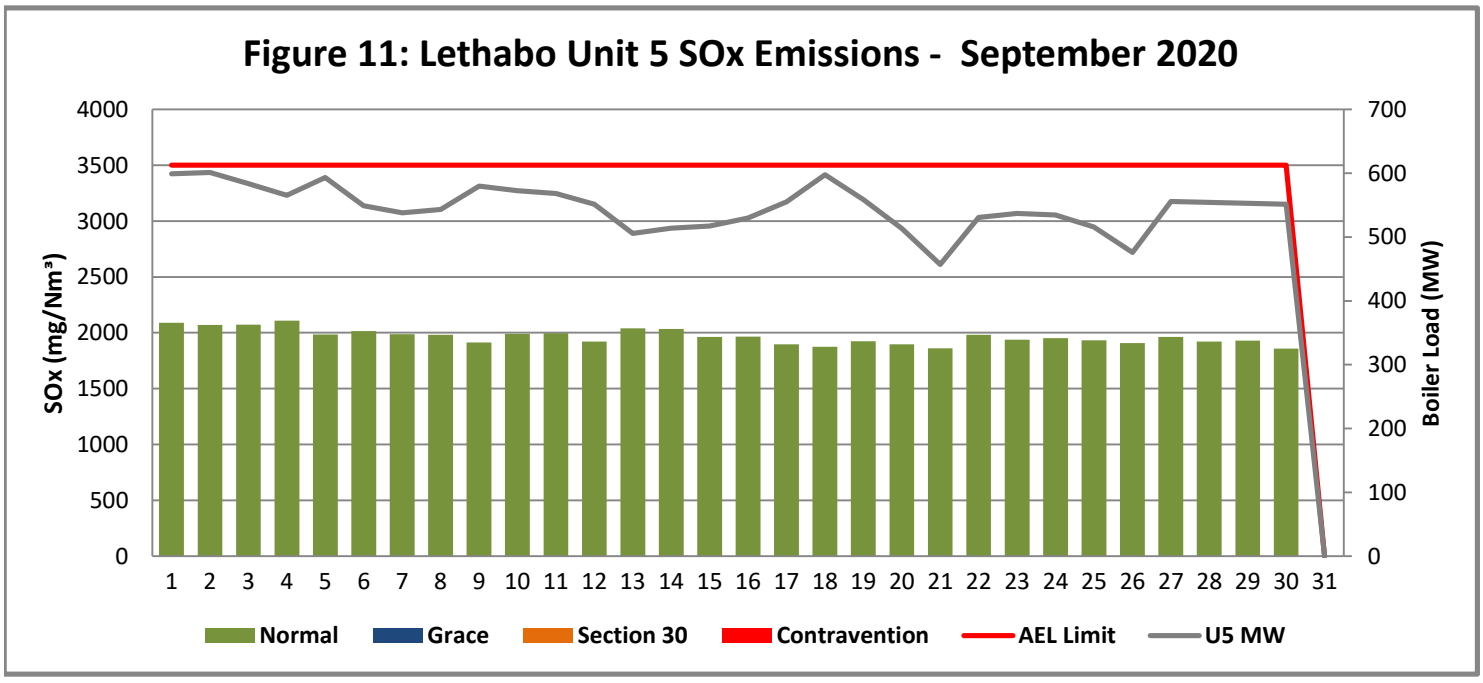


Figure 11: Lethabo Unit 5 SOx Emissions - September 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

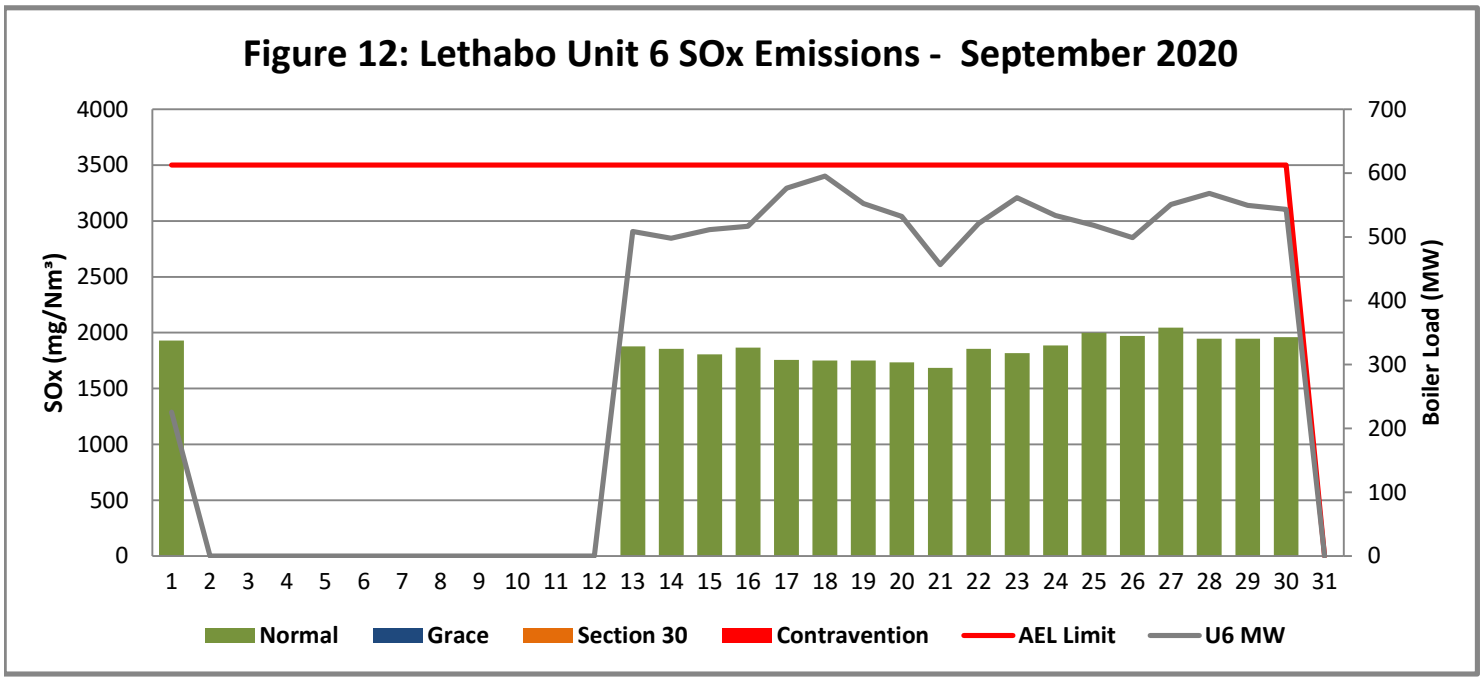


Figure 12: Lethabo Unit 6 SOx Emissions - September 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

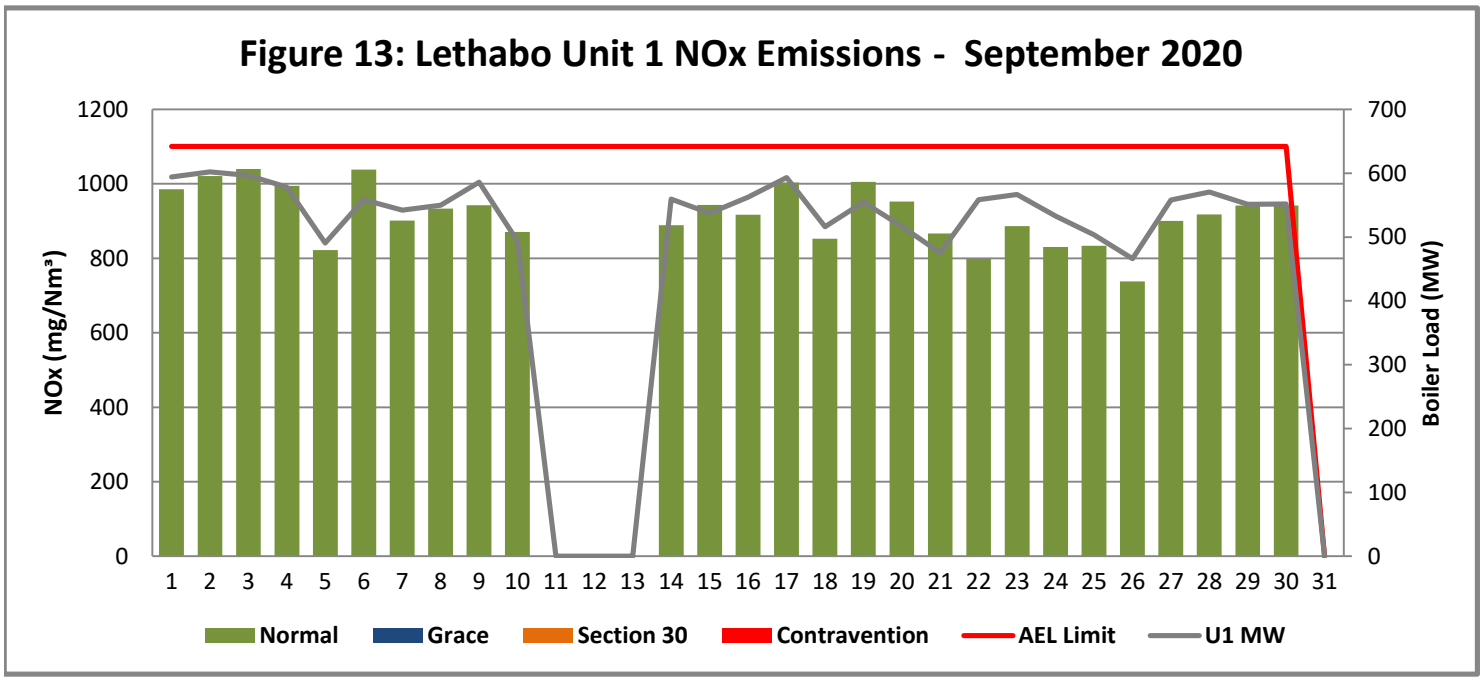


Figure 13: Lethabo Unit 1 NOx Emissions - September 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW

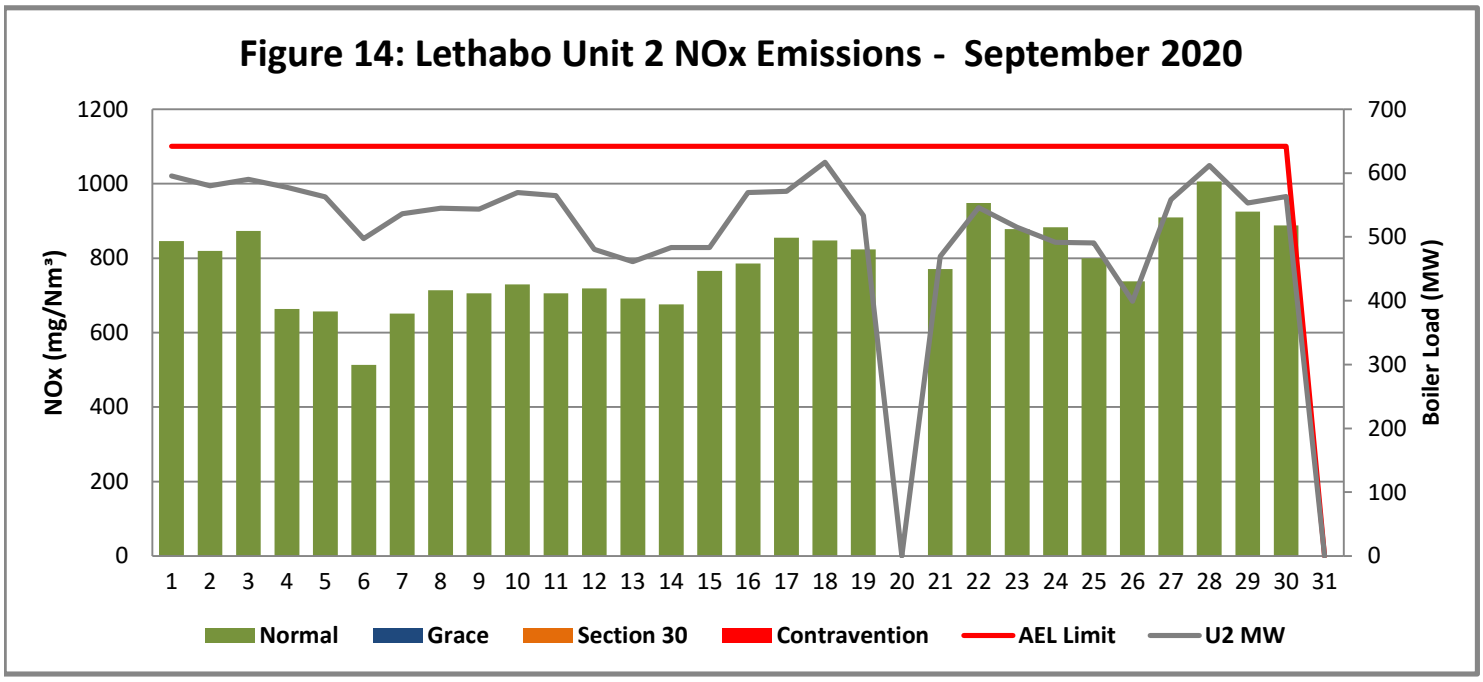


Figure 14: Lethabo Unit 2 NOx Emissions - September 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

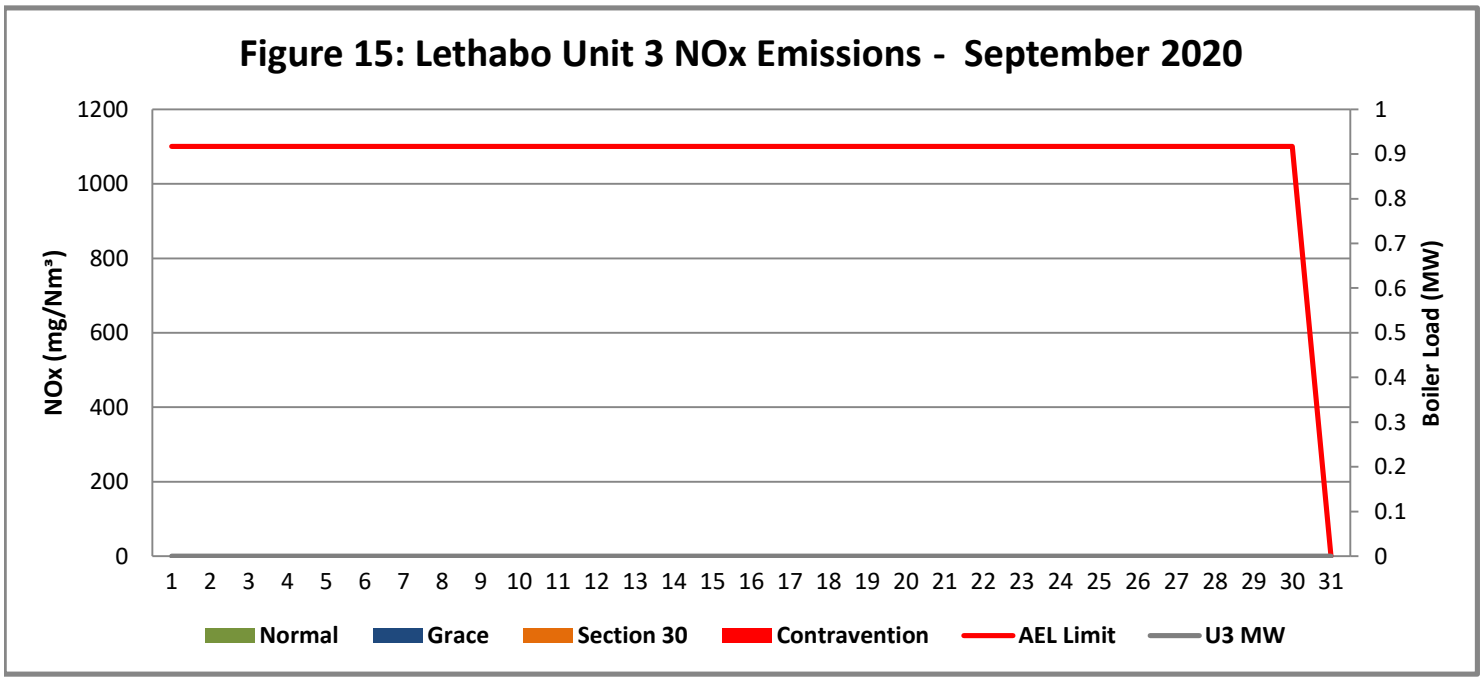


Figure 15: Lethabo Unit 3 NOx Emissions - September 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

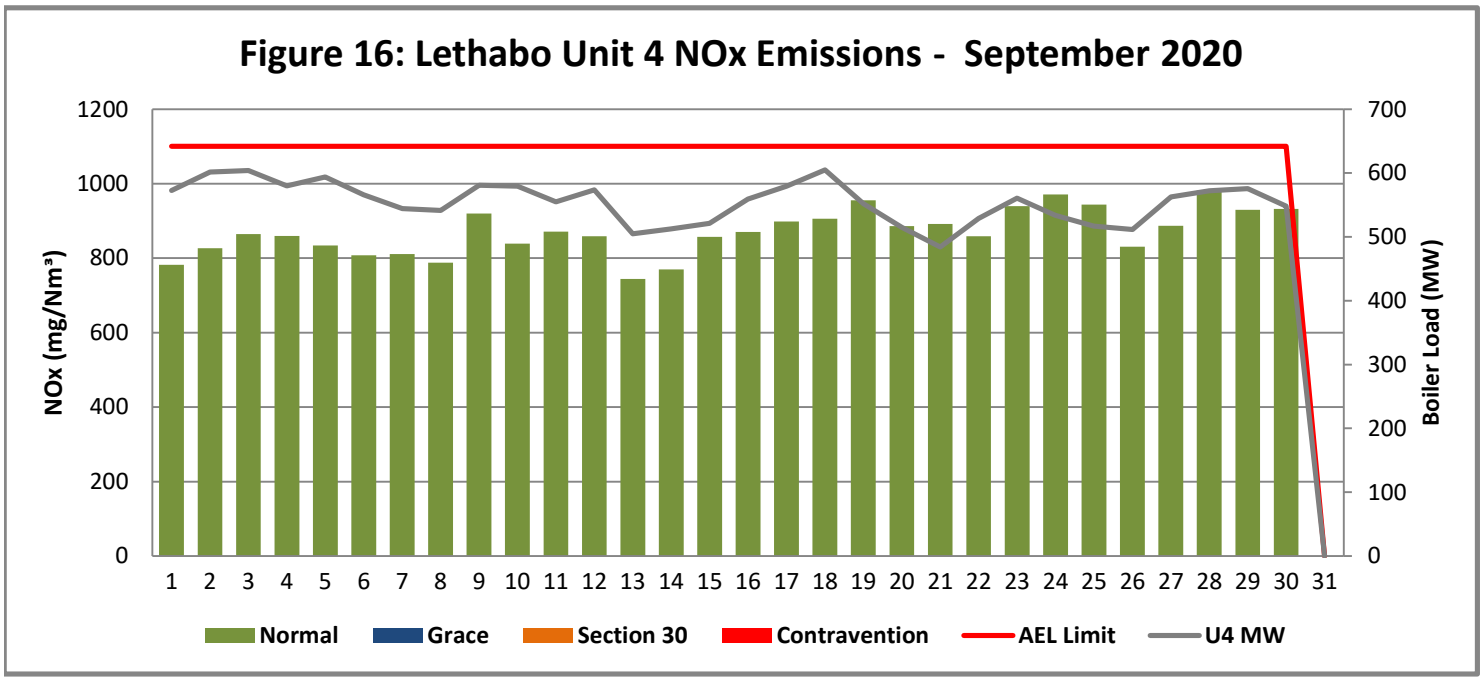


Figure 16: Lethabo Unit 4 NOx Emissions - September 2020
NOx (mg/Nm³)
Boiler Load (MW)
0
200
400
600
800
1000
1200
0
100
200
300
400
500
600
700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

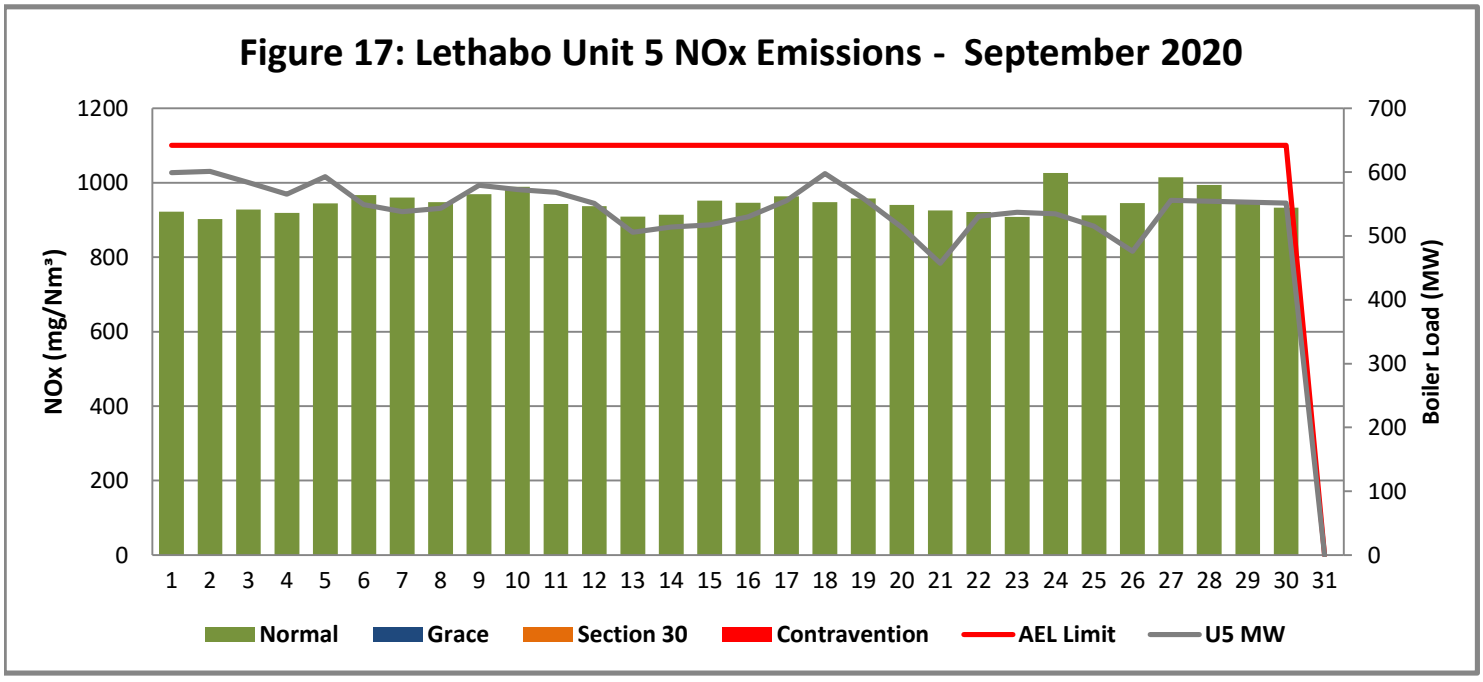
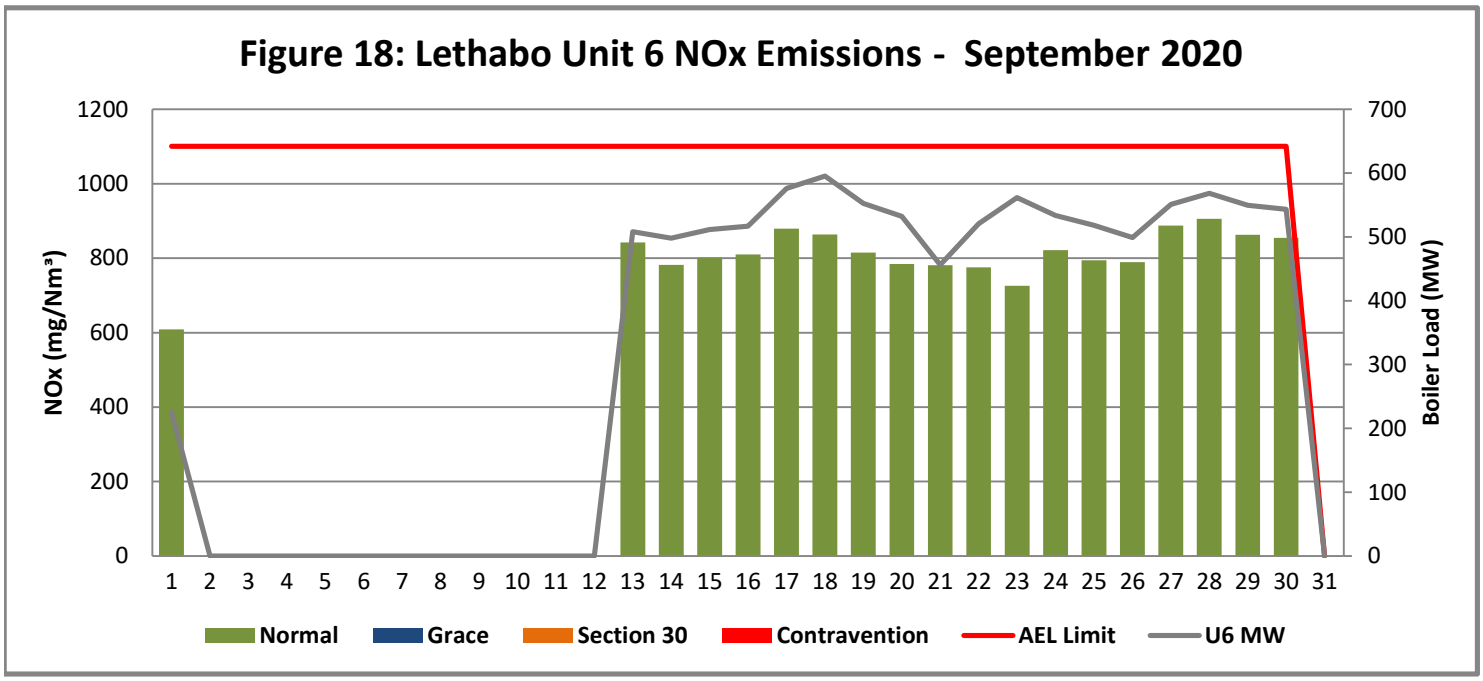


Figure 17: Lethabo Unit 5 NOx Emissions - September 2020
NOx (mg/Nm³)
Boiler Load (MW)
0
200
400
600
800
1000
1200
0
100
200
300
400
500
600
700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW



7. SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1: PM Start-up information for the month of September 2020

Unit No.1	***Boiler tube leak.***							
Breaker Open (BO)	*9:55 AM*	*2020/09/10*						
Draught Group (DG) Shut Down (SD)	*12:00 AM*	*2020/09/11*						
BO to DG SD (duration)	*00:14:05*	DD:HH:MM						
Fires in time	*2:35 AM*	*2020/09/14*						
Synch. to Grid (or BC)	*5:05 AM*	*2020/09/14*						
Fires in to BC (duration)	*00:02:30*	DD:HH:MM						
Emissions below limit from BC (end date)	*5:00 AM*	*2020/09/15*						
Emissions below limit from BC (duration)	*00:23:55*	DD:HH:MM						

Unit No.2	*Gen rear vibrations high*		*F-mill SAF isolator replacement.*					
Breaker Open (BO)	*4:05 AM*	*2020/09/19*	*12:50 AM*	*2020/09/26*				
Draught Group (DG) Shut Down (SD)	*7:50 PM*	*2020/09/20*	*4:30 AM*	*2020/09/26*				
BO to DG SD (duration)	*01:15:45*	DD:HH:MM	*00:03:40*	DD:HH:MM				
Fires in time	*4:15 AM*	*2020/09/21*	*4:45 AM*	*2020/09/26*				
Synch. to Grid (or BC)	*7:50 AM*	*2020/09/21*	*12:45 PM*	*2020/09/26*				
Fires in to BC (duration)	*00:03:35*	DD:HH:MM	*00:08:00*	DD:HH:MM				
Emissions below limit from BC (end date)	*12:00 AM*		*2:00 AM*	*2020/09/27*				
Emissions below limit from BC (duration)	*01:16:10*	DD:HH:MM	*00:13:15*	DD:HH:MM				

Unit No.3								
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)								
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)								
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)								

Unit No.4								
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)								
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)								
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)								

Unit No.5								
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)								
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)								
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)								

Unit No.6	***Unit manually tripped due to boiler tube leak***							
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)		DD:HH:MM						
Fires in time	*2:30 AM*	*2020/09/13*						
Synch. to Grid (or BC)								
Fires in to BC (duration)	*00:02:30*	DD:HH:MM						
Emissions below limit from BC (end date)	*12:00 AM*	*2020/09/16*						
Emissions below limit from BC (duration)		DD:HH:MM						

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of September 2020 in mg/Nm^3

8. MAINTENANCE

Unit 1				
Beginning of	2020/09/05 00:00:00	2020/09/26 00:01:00		
Reason for Maintenance	LHI precip casing repairs	AM:LHO precip casing repairs.		
End (Time):	2020/09/05 20:39:00	2020/09/26 15:59:00		
Duration	20:39:00	15:58:00		

Unit 2				
Beginning of	2020/09/06 00:00:00	2020/09/12 23:36:00		
Reason for Maintenance	RHI precip casing repairs	LHI Precip casing Repairs.		
End (Time):	2020/09/06 17:47:00	2020/09/13 19:22:00		
Duration	17:47:00	19:46:00		

Unit 3				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 4				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 5				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

Unit 6				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

9. GENERAL

Unit 1-6: Back Fitting of Valid Correlated Data:
Correlation Tests have been redone and implemented. Back Fitting was required based on correlation validity and implementation for the 2020 calendar year. Based on the back fitting exercise new exceedance in some cases would be added and some existing exceedances would be removed. This was the case for both Gaseous and Particulate matter emissions.

It is also noted that if the number of new exceedance days add up to greater than the allowable grace periods, it will be reported as contraventions. These would not have been reported and investigated as Section 30 incidents as the events were not known to the station at the time.

ADDENDUM TO MONTHLY EMISSIONS REPORT

10. S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

To be completed in the case of a S30 incident or a legal contravention:

Unit no	Incident Start Date	Incident End Date	Incident Cause	Remedial action	S30 initial notification sent	Date S30 investigation report sent	Date DEA Acknowledg-ment	Date DEA Acceptabe	Comments / Reference No.

11. PARTICULATE EMISSIONS

EMISSION RATE (ACTUAL EMISSION/MWh GENERATED - kg/MWh)

MONTH	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	STATION
OCT '19	0.35	0.24	0.48	OFF	OFF	0.45	0.38
NOV '19	0.31	0.47	0.37	OFF	OFF	0.59	0.43
DEC '19	0.58	0.48	0.51	OFF	OFF	0.77	0.59
JAN '20	0.42	0.52	0.62	0.25	OFF	0.73	0.49
FEB '20	0.56	0.46	0.67	0.29	0.27	OFF	0.47
MAR '20	0.37	0.58	0.72	0.26	0.33	OFF	0.45
APR '20	0.54	0.36	0.69	0.21	0.18	0.64	0.41
MAY '20	0.83	0.34	0.54	0.20	0.20	0.42	0.38
JUN '20	0.23	0.26	0.29	0.18	0.20	0.48	0.27
JUL '20	0.40	0.49	0.36	0.22	0.21	0.45	0.35
AUG '20	0.31	0.30	0.49	0.26	0.35	0.43	0.35
SEP '20	0.24	0.43	OFF	0.25	0.18	0.32	0.28

ADDENDUM TO MONTHLY EMISSIONS REPORT

12. DAILY EMISSIONS FIGURES

Final Dust Concentration (mg/Nm³) (Back Fitted Emissions)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Sep	53.5	141.9	OFF	51.5	71.8	OFF	100
02-Sep	71.4	87.4	OFF	51.4	33.6	OFF	100
03-Sep	137.3	114.2	OFF	52.7	45.1	OFF	100
04-Sep	79.4	99.0	OFF	45.1	51.9	OFF	100
05-Sep	178.3	95.1	OFF	52.2	75.1	OFF	100
06-Sep	76.9	192.2	OFF	50.9	63.2	OFF	100
07-Sep	49.4	88.2	OFF	42.7	49.1	OFF	100
08-Sep	38.8	95.8	OFF	41.6	62.4	OFF	100
09-Sep	47.1	99.3	OFF	57.3	72.1	OFF	100
10-Sep	52.5	130.5	OFF	61.5	57.9	OFF	100
11-Sep	OFF	105.9	OFF	70.8	54.5	OFF	100
12-Sep	OFF	81.2	OFF	50.0	58.0	OFF	100
13-Sep	OFF	204.3	OFF	31.3	50.3	OFF	100
14-Sep	OFF	54.3	OFF	31.2	77.8	280.5	100
15-Sep	30.1	54.2	OFF	30.5	56.3	174.6	100
16-Sep	47.4	85.1	OFF	43.9	38.0	46.9	100
17-Sep	85.6	78.2	OFF	50.0	65.4	68.8	100
18-Sep	73.1	88.8	OFF	51.6	59.4	63.8	100
19-Sep	52.2	156.0	OFF	42.3	37.7	48.1	100
20-Sep	54.7	OFF	OFF	41.6	44.0	50.5	100
21-Sep	30.8	OFF	OFF	33.0	27.4	37.4	100
22-Sep	39.9	202.8	OFF	44.9	38.0	48.2	100
23-Sep	33.9	84.4	OFF	51.4	33.3	52.3	100
24-Sep	26.8	70.9	OFF	39.8	37.7	51.5	100
25-Sep	26.7	64.4	OFF	36.9	34.7	53.7	100
26-Sep	160.5	50.2	OFF	32.8	25.9	42.7	100
27-Sep	30.0	108.0	OFF	41.6	54.5	53.1	100
28-Sep	29.1	127.1	OFF	45.7	45.5	61.8	100
29-Sep	38.9	86.6	OFF	44.4	52.6	56.4	100
30-Sep	38.1	93.8	OFF	43.0	59.5	64.2	100

Final Dust Concentration (mg/Nm³) (Pre-Back Fitting)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Sep	53.5	141.9	OFF	46.7	71.8	OFF	100
02-Sep	71.4	87.4	OFF	46.5	33.6	OFF	100
03-Sep	137.3	114.2	OFF	47.5	46.1	OFF	100
04-Sep	79.4	99.0	OFF	41.0	52.3	OFF	100
05-Sep	178.3	95.1	OFF	47.2	75.5	OFF	100
06-Sep	76.9	192.2	OFF	45.7	63.9	OFF	100
07-Sep	49.4	88.2	OFF	38.4	49.6	OFF	100
08-Sep	38.8	95.8	OFF	38.5	63.8	OFF	100
09-Sep	47.1	99.3	OFF	51.2	72.1	OFF	100
10-Sep	52.5	130.5	OFF	54.9	59.2	OFF	100
11-Sep	OFF	105.9	OFF	61.6	54.5	OFF	100
12-Sep	OFF	81.2	OFF	45.8	58.1	OFF	100
13-Sep	OFF	204.3	OFF	30.2	51.6	OFF	100
14-Sep	OFF	54.3	OFF	29.8	77.8	80.1	100
15-Sep	30.1	54.2	OFF	29.2	56.3	56.7	100
16-Sep	47.4	85.1	OFF	40.8	38.0	21.8	100
17-Sep	85.6	78.2	OFF	45.3	66.0	29.8	100
18-Sep	73.1	88.8	OFF	47.2	62.0	27.6	100
19-Sep	52.2	156.0	OFF	39.5	39.9	20.7	100
20-Sep	54.7	OFF	OFF	39.0	45.9	22.3	100
21-Sep	30.8	OFF	OFF	31.3	28.3	16.4	100
22-Sep	39.9	202.8	OFF	41.7	38.4	21.3	100
23-Sep	33.9	84.4	OFF	46.3	34.3	22.9	100
24-Sep	26.8	70.9	OFF	36.9	38.7	22.5	100
25-Sep	26.7	64.4	OFF	34.4	35.7	23.6	100
26-Sep	160.5	50.2	OFF	30.9	27.5	18.4	100
27-Sep	30.0	108.0	OFF	39.0	55.3	23.4	100
28-Sep	29.1	127.1	OFF	42.2	47.5	26.6	100
29-Sep	38.9	86.6	OFF	40.8	53.6	24.6	100
30-Sep	38.1	93.8	OFF	39.6	61.3	28.1	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final SOx Concentration (mg/Nm³) (Back Fitted Emissions)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Sep	2148	2207	OFF	2201	2088	1930	3500
02-Sep	2115	2154	OFF	2162	2071	OFF	3500
03-Sep	1989	2126	OFF	2184	2074	OFF	3500
04-Sep	2065	2080	OFF	1993	2109	OFF	3500
05-Sep	2045	2036	OFF	2039	1985	OFF	3500
06-Sep	2023	2079	OFF	2074	2015	OFF	3500
07-Sep	2158	2089	OFF	2051	1988	OFF	3500
08-Sep	2045	2032	OFF	2033	1982	OFF	3500
09-Sep	1991	1940	OFF	1945	1913	OFF	3500
10-Sep	2038	2022	OFF	2001	1990	OFF	3500
11-Sep	OFF	2057	OFF	2026	1996	OFF	3500
12-Sep	OFF	2018	OFF	1969	1922	OFF	3500
13-Sep	OFF	2083	OFF	2077	2039	1878	3500
14-Sep	2070	2132	OFF	2067	2034	1856	3500
15-Sep	2123	2043	OFF	1981	1962	1807	3500
16-Sep	2062	2040	OFF	2010	1966	1865	3500
17-Sep	1990	1931	OFF	1926	1896	1755	3500
18-Sep	1976	1937	OFF	1933	1876	1751	3500
19-Sep	2056	1998	OFF	1925	1924	1752	3500
20-Sep	2057	OFF	OFF	1913	1898	1734	3500
21-Sep	2079	2042	OFF	1906	1860	1686	3500
22-Sep	2079	2089	OFF	2042	1983	1855	3500
23-Sep	2068	2033	OFF	1981	1939	1816	3500
24-Sep	2053	1974	OFF	1993	1951	1884	3500
25-Sep	2016	1990	OFF	2029	1932	1999	3500
26-Sep	2038	2022	OFF	1967	1908	1969	3500
27-Sep	2143	2016	OFF	2011	1963	2046	3500
28-Sep	2063	1984	OFF	1948	1922	1945	3500
29-Sep	2102	2009	OFF	1969	1929	1945	3500
30-Sep	2070	2002	OFF	1941	1858	1959	3500

Final SOx Concentration (mg/Nm³) (Pre-Back Fitting)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Sep	2058	2759	OFF	2303	2036	1777	3500
02-Sep	2021	2688	OFF	2251	2025	OFF	3500
03-Sep	1904	2635	OFF	2273	2030	OFF	3500
04-Sep	1978	2557	OFF	2083	2063	OFF	3500
05-Sep	1933	2495	OFF	2125	1932	OFF	3500
06-Sep	1934	2735	OFF	2168	1960	OFF	3500
07-Sep	2065	2561	OFF	2158	1932	OFF	3500
08-Sep	1959	2504	OFF	2144	1925	OFF	3500
09-Sep	1916	2396	OFF	2041	1859	OFF	3500
10-Sep	1944	2473	OFF	2096	1926	OFF	3500
11-Sep	OFF	2522	OFF	2126	1933	OFF	3500
12-Sep	OFF	2603	OFF	2057	1863	OFF	3500
13-Sep	OFF	2693	OFF	2176	1982	1802	3500
14-Sep	1985	2725	OFF	2168	1971	1795	3500
15-Sep	2045	2632	OFF	2082	1895	1753	3500
16-Sep	2049	2588	OFF	2158	1924	1789	3500
17-Sep	1922	2390	OFF	2012	1834	1708	3500
18-Sep	1881	2344	OFF	2007	1811	1708	3500
19-Sep	1977	2411	OFF	2022	1857	1707	3500
20-Sep	1976	OFF	OFF	2012	1835	1687	3500
21-Sep	1989	2577	OFF	2023	1804	1623	3500
22-Sep	1993	2669	OFF	2150	1933	1797	3500
23-Sep	1995	2607	OFF	2067	1887	1770	3500
24-Sep	1977	2554	OFF	2092	1892	1814	3500
25-Sep	1935	2558	OFF	2138	1867	1902	3500
26-Sep	1927	2648	OFF	2080	1839	1865	3500
27-Sep	2063	2519	OFF	2110	1893	1945	3500
28-Sep	1975	2488	OFF	2044	1858	1851	3500
29-Sep	2003	2571	OFF	2058	1865	1851	3500
30-Sep	1970	2527	OFF	2035	1805	1855	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

Final NOx Concentration (mg/Nm³) (Back Fitted Emissions)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Sep	1038	513	OFF	808	967	OFF	1100
02-Sep	1021	820	OFF	827	902	OFF	1100
03-Sep	1040	873	OFF	865	928	OFF	1100
04-Sep	994	664	OFF	860	919	OFF	1100
05-Sep	822	657	OFF	834	945	OFF	1100
06-Sep	1038	513	OFF	808	967	OFF	1100
07-Sep	901	652	OFF	811	960	OFF	1100
08-Sep	933	714	OFF	788	948	OFF	1100
09-Sep	942	705	OFF	920	970	OFF	1100
10-Sep	871	730	OFF	839	990	OFF	1100
11-Sep	OFF	706	OFF	871	943	OFF	1100
12-Sep	OFF	719	OFF	859	937	OFF	1100
13-Sep	OFF	691	OFF	744	909	842	1100
14-Sep	889	676	OFF	770	914	782	1100
15-Sep	943	766	OFF	857	952	801	1100
16-Sep	917	786	OFF	871	946	810	1100
17-Sep	1004	855	OFF	898	964	879	1100
18-Sep	853	847	OFF	906	948	863	1100
19-Sep	1005	824	OFF	955	958	815	1100
20-Sep	952	OFF	OFF	887	940	784	1100
21-Sep	867	771	OFF	892	925	781	1100
22-Sep	798	948	OFF	859	921	775	1100
23-Sep	887	878	OFF	940	908	726	1100
24-Sep	830	883	OFF	971	1026	822	1100
25-Sep	834	800	OFF	944	913	795	1100
26-Sep	738	738	OFF	831	945	789	1100
27-Sep	900	910	OFF	887	1015	887	1100
28-Sep	918	1006	OFF	982	994	906	1100
29-Sep	942	925	OFF	930	952	863	1100
30-Sep	942	888	OFF	932	933	854	1100

Final NOx Concentration (mg/Nm³) (Pre-Back Fitting)

Date	U1	U2	U3	U4	U5	U6	Limit
01-Sep	1070	740	OFF	847	1048	OFF	1100
02-Sep	1048	1099	OFF	865	984	OFF	1100
03-Sep	1073	1160	OFF	906	1012	OFF	1100
04-Sep	1022	889	OFF	905	1002	OFF	1100
05-Sep	802	874	OFF	874	1025	OFF	1100
06-Sep	1070	740	OFF	847	1048	OFF	1100
07-Sep	921	866	OFF	857	1040	OFF	1100
08-Sep	952	949	OFF	832	1026	OFF	1100
09-Sep	969	937	OFF	974	1050	OFF	1100
10-Sep	869	960	OFF	884	1068	OFF	1100
11-Sep	OFF	935	OFF	921	1018	OFF	1100
12-Sep	OFF	1018	OFF	904	1012	OFF	1100
13-Sep	OFF	970	OFF	779	984	820	1100
14-Sep	927	932	OFF	808	987	761	1100
15-Sep	974	1060	OFF	907	1025	790	1100
16-Sep	971	1175	OFF	897	1023	793	1100
17-Sep	1048	1133	OFF	947	1039	888	1100
18-Sep	852	1098	OFF	952	1020	874	1100
19-Sep	1042	1073	OFF	1015	1030	813	1100
20-Sep	979	OFF	OFF	939	1014	773	1100
21-Sep	873	1050	OFF	954	1000	752	1100
22-Sep	795	1296	OFF	908	1001	755	1100
23-Sep	909	1208	OFF	992	985	706	1100
24-Sep	840	1224	OFF	1031	1110	797	1100
25-Sep	840	1107	OFF	1004	983	749	1100
26-Sep	708	1049	OFF	882	1016	736	1100
27-Sep	923	1215	OFF	938	1090	857	1100
28-Sep	932	1346	OFF	1044	1071	881	1100
29-Sep	953	1262	OFF	983	1025	829	1100
30-Sep	950	1194	OFF	987	1010	811	1100

ADDENDUM TO MONTHLY EMISSIONS REPORT

13. AVAILABILITY

ESP utilisation

Availability												
Month	**Unit 1**	**Days Affected**	**Unit 2**	**Days Affected**	**Unit 3**	**Days Affected**	**Unit 4**	**Days Affected**	**Unit 5**	**Days Affected**	**Unit 6**	**Days Affected**
Oct-19	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	0	OFF LOAD	0	100.00%	0
Nov-19	98.33%	2	99.17%	1	100.00%	0	OFF LOAD	0	OFF LOAD	0	100.00%	0
Dec-19	98.39%	2	100.00%	0	100.00%	0	OFF LOAD	0	OFF LOAD	0	99.19%	1
Jan-20	95.16%	6	99.19%	1	100.00%	0	100.00%	0	OFF LOAD	0	100.00%	0
Feb-20	94.17%	3	100.00%	0	93.33%	4	100.00%	0	100.00%	0	OFF LOAD	0
Mar-20	99.19%	1	98.39%	2	97.58%	3	100.00%	0	100.00%	0	OFF LOAD	0
Apr-20	98.33%	2	95.00%	6	100.00%	0	100.00%	0	100.00%	0	100.00%	0
May-20	98.39%	2	98.39%	2	98.39%	2	100.00%	0	100.00%	0	100.00%	0
Jun-20	98.33%	2	100.00%	0	100.00%	0	100.00%	0	100.00%	0	100.00%	0
Jul-20	98.39%	2	98.39%	2	99.19%	1	100.00%	0	100.00%	0	100.00%	0
Aug-20	100.00%	0	100.00%	0	98.39%	2	100.00%	0	98.39%	2	100.00%	0
Sep-20	98.33%	2	98.33%	2	OFF LOAD	0	100.00%	0	100.00%	0	100.00%	0

SO_3 plant utilisation

Availability												
Month	**Unit 1**	**Days Affected**	**Unit 2**	**Days Affected**	**Unit 3**	**Days Affected**	**Unit 4**	**Days Affected**	**Unit 5**	**Days Affected**	**Unit 6**	**Days Affected**
Oct-19	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	OFF LOAD	OFF LOAD	OFF LOAD	96.77%	1
Nov-19	100.00%	0	100.00%	0	96.67%	1	OFF LOAD	OFF LOAD	OFF LOAD	OFF LOAD	93.33%	2
Dec-19	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	OFF LOAD	OFF LOAD	OFF LOAD	96.77%	1
Jan-20	100.00%	0	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	OFF LOAD	100.00%	0
Feb-20	100.00%	0	100.00%	0	93.33%	1	100.00%	0	83.33%	4	OFF LOAD	OFF LOAD
Mar-20	100.00%	0	93.55%	2	87.10%	4	100.00%	0	64.52%	11	OFF LOAD	OFF LOAD
Apr-20	100.00%	0	100.00%	0	100.00%	0	100.00%	0	100.00%	0	90.00%	3
May-20	93.55%	2	100.00%	0	100.00%	0	100.00%	0	100.00%	0	100.00%	0
Jun-20	100.00%	0	100.00%	0	96.67%	1	100.00%	0	100.00%	0	100.00%	0
Jul-20	100.00%	0	96.77%	1	100.00%	0	100.00%	0	100.00%	0	100.00%	0
Aug-20	93.55%	2	100.00%	0	100.00%	0	100.00%	0	77.42%	7	100.00%	0
Sep-20	100.00%	0	93.33%	2	100.00%	0	100.00%	0	100.00%	0	100.00%	0

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Oct-19	98.07%	100.00%	99.87%	OFF	OFF	98.66%
Nov-19	95.14%	95.00%	95.83%	OFF	OFF	77.98%
Dec-19	91.40%	100.00%	96.61%	OFF	OFF	68.55%
Jan-20	91.53%	98.92%	98.73%	99.81%	OFF	63.53%
Feb-20	75.98%	99.43%	98.42%	98.91%	99.68%	OFF
Mar-20	86.67%	96.97%	96.20%	99.44%	96.84%	OFF
Apr-20	91.26%	96.53%	98.53%	98.66%	96.22%	95.18%
May-20	88.89%	99.19%	99.19%	100.00%	100.00%	98.25%
Jun-20	89.86%	99.20%	99.17%	98.75%	97.78%	90.56%
Jul-20	92.47%	98.48%	99.33%	99.35%	100.00%	99.19%
Aug-20	100.00%	100.00%	99.85%	100.00%	97.99%	100.00%
Sep-20	94.71%	99.63%	OFF	100.00%	100.00%	100.00%

Gaseous Emission Monitors

Availability												
	Unit 1		**Unit 2**		**Unit 3**		**Unit 4**		**Unit 5**		**Unit 6**	
Month	**SO_x**	**NO_x**	**SO_x**	**NO_x**	**SO_x**	**NO_x**	**SO_x**	**NO_x**	**SO_x**	**NO_x**	**SO_x**	**NO_x**
Oct-19	97.41%	97.41%	100.00%	100.00%	100.00%	100.00%	OFF	OFF	OFF	OFF	100.00%	100.00%
Nov-19	98.75%	98.75%	98.61%	98.75%	99.79%	96.45%	OFF	OFF	OFF	OFF	99.81%	99.81%
Dec-19	99.33%	99.33%	99.13%	99.13%	99.23%	99.23%	OFF	OFF	OFF	OFF	92.61%	92.61%
Jan-20	99.64%	99.64%	100.00%	100.00%	100.00%	99.90%	78.95%	90.79%	OFF	OFF	100.00%	99.20%
Feb-20	99.84%	99.84%	96.55%	98.71%	98.85%	98.71%	0.00%	99.49%	85.71%	85.71%	0.00%	0.00%
Mar-20	99.73%	99.73%	98.80%	98.80%	99.68%	99.68%	71.12%	98.45%	98.79%	98.92%	OFF	OFF
Apr-20	100.00%	99.86%	100.00%	100.00%	96.68%	96.68%	99.83%	99.97%	99.96%	99.96%	67.82%	67.82%
May-20	94.74%	94.74%	100.00%	100.00%	99.87%	100.00%	99.84%	99.84%	93.47%	93.61%	90.89%	90.89%
Jun-20	99.44%	99.44%	99.33%	99.33%	99.33%	99.33%	100.00%	100.00%	100.00%	100.00%	93.30%	93.10%
Jul-20	99.73%	99.73%	99.07%	99.07%	99.73%	99.87%	98.54%	98.85%	99.60%	99.87%	99.86%	99.87%
Aug-20	99.91%	99.91%	100.00%	100.00%	99.85%	99.85%	100.00%	100.00%	100.00%	100.00%	96.67%	96.53%
Sep-20	100.00%	100.00%	99.86%	99.86%	OFF	OFF	100.00%	100.00%	100.00%	100.00%	99.77%	99.77%

ADDENDUM TO MONTHLY EMISSIONS REPORT

Oxygen Monitor Availabilty						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Oct-19	97.41%	100.00%	100.00%	OFF	OFF	99.46%
Nov-19	98.75%	100.00%	99.79%	OFF	OFF	99.81%
Dec-19	99.19%	98.94%	99.10%	OFF	OFF	100.00%
Jan-20	99.64%	99.19%	100.00%	82.95%	OFF	99.20%
Feb-20	99.84%	99.07%	98.85%	0.00%	67.86%	0.00%
Mar-20	100.00%	99.80%	97.24%	0.00%	99.19%	OFF
Apr-20	51.08%	100.00%	97.35%	0.00%	0.00%	0.00%
May-20	89.69%	100.00%	100.00%	0.00%	0.00%	13.33%
Jun-20	99.31%	99.92%	99.33%	98.85%	0.00%	100.00%
Jul-20	99.87%	99.30%	99.87%	99.02%	48.39%	99.87%
Aug-20	99.86%	99.92%	99.85%	100.00%	100.00%	96.67%
Sep-20	99.68%	99.86%	OFF	100.00%	100.00%	98.97%

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Oct-19	99.998%	99.999%	99.998%	OFF	OFF	99.998%
Nov-19	99.868%	99.785%	99.833%	OFF	OFF	99.729%
Dec-19	99.767%	99.787%	99.782%	OFF	OFF	99.654%
Jan-20	99.825%	99.768%	99.727%	99.086%	OFF	99.662%
Feb-20	99.998%	99.999%	99.997%	99.999%	99.998%	OFF
Mar-20	99.851%	99.749%	99.698%	99.892%	99.851%	OFF
Apr-20	99.777%	99.838%	99.695%	99.909%	99.914%	99.707%
May-20	99.652%	99.847%	99.757%	99.912%	99.909%	99.805%
Jun-20	99.907%	99.883%	99.874%	99.922%	99.913%	99.783%
Jul-20	99.835%	99.777%	99.837%	99.905%	99.903%	99.788%
Aug-20	99.875%	99.872%	99.791%	99.892%	99.845%	99.809%
Sep-20	99.892%	99.793%	OFF	99.882%	99.913%	99.848%

ADDENDUM TO MONTHLY EMISSIONS REPORT

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	118	LHI precip casing repairs	2020/09/05 00:00:00	2020/09/05 20:39:00
1	118	AM:LHO precip casing repairs.	2020/09/26 00:01:00	2020/09/26 15:59:00
2	118	RHI precip casing repairs	2020/09/06 00:00:00	2020/09/06 17:47:00
2	118	LHI Precip casing Repairs.	2020/09/12 23:36:00	2020/09/13 19:22:00
2	117	EF: High stack emissions	2020/09/02 15:02:00	2020/09/02 17:00:00
2	118	EF: High stack emissions	2020/09/02 20:51:00	2020/09/03 00:04:00
2	169	EF: High stack emissions	2020/09/08 20:54:00	2020/09/09 02:02:00
2	219	EF: High stack emissions.	2020/09/09 20:36:00	2020/09/10 02:08:00
2	219	EF: High stack emissions	2020/09/11 00:51:00	2020/09/11 04:49:00
1	593	Boiler tube leak.	2020/09/10 09:46:00	2020/09/14 05:06:00
2	593	Gen rear vibrations high	2020/09/19 03:57:00	2020/09/21 07:50:00
2	593	F-mill SAF isolator replacement.	2020/09/26 00:46:00	2020/09/26 05:48:00
2	593	System Generated Slip Event linked to PCLF Event : 1480610	2020/09/26 05:48:00	2020/09/26 06:27:00
2	580	System Generated Ramp Event for Event id : 1480610 (Recalculated)	2020/09/26 06:27:00	2020/09/26 06:30:00
2	593	Generator loss of excitation	2020/09/26 06:30:00	2020/09/26 12:48:00
3	593	G/O	2020/09/01 00:00:00	2020/09/30 23:59:59
6	593	Unit manually tripped due to boiler tube leak	2020/09/01 03:22:00	2020/09/01 03:23:00
6	593	Boiler tube leak	2020/09/01 03:23:00	2020/09/13 05:03:00
1	99	Spinning Reserve	2020/09/14 08:06:00	2020/09/14 09:23:00
1	130	Spinning Reserve	2020/09/27 01:32:00	2020/09/27 03:14:00
2	115	Spinning Reserve	2020/09/11 21:25:00	2020/09/12 06:45:00
2	218	Spinning Reserve	2020/09/12 06:45:00	2020/09/12 18:05:00
2	98	Spinning Reserve	2020/09/13 11:50:00	2020/09/13 17:39:00
2	115	Spinning Reserve	2020/09/13 19:22:00	2020/09/14 06:09:00
2	217	Spinning Reserve	2020/09/21 10:50:00	2020/09/21 16:05:00
2	220	Spinning Reserve	2020/09/26 14:18:00	2020/09/26 18:23:00
2	121	Spinning Reserve	2020/09/26 18:23:00	2020/09/26 19:04:00
2	215	Spinning Reserve	2020/09/26 20:39:00	2020/09/26 23:55:00
2	118	Spinning Reserve	2020/09/26 23:55:00	2020/09/27 03:03:00
2	214	Spinning Reserve	2020/09/27 03:03:00	2020/09/27 03:32:00

2	117	Spinning Reserve	2020/09/27 03:32:00	2020/09/27 05:29:00
2	61	Spinning Reserve	2020/09/27 05:29:00	2020/09/27 18:46:00
2	50	Spinning Reserve	2020/09/28 21:23:00	2020/09/29 00:39:00
2	220	Spinning Reserve	2020/09/29 00:39:00	2020/09/29 05:54:00
4	117	Spinning Reserve	2020/09/11 01:24:00	2020/09/11 03:11:00
4	40	Spinning Reserve	2020/09/27 13:46:00	2020/09/27 18:17:00
4	68	Spinning Reserve	2020/09/29 00:15:00	2020/09/29 02:08:00
4	40	Spinning Reserve	2020/09/29 21:39:00	2020/09/29 23:15:00
5	50	Spinning Reserve-Demin consumption test.	2020/09/06 00:18:00	2020/09/06 01:26:00
5	118	Spinning Reserve	2020/09/27 03:13:00	2020/09/27 04:25:00
5	58	Spinning Reserve	2020/09/28 08:44:00	2020/09/28 10:02:00
6	122	Spinning Reserve	2020/09/27 00:27:00	2020/09/27 01:30:00

PM Exceedances		
U1.	ESP Poor Performance	03-Sep
U1.	LHI inner preip casing repairs.	05-Sep
U1.	• Unit synchronized 2020/09/14 @ 05:06	14-Sep
U1.	LHO Casing Outage	26-Sep
U2.	LHO: F1&5 POOR PERFORMANCE; F2 OFF LHI: F4 POOR PERFORMING; F2,5 & 7 OFF RHI:F2&4 POOR PERFORMANCE RHO: F3&4 POOR PERFORMANCE	01-Sep
U2.	• SO3 plant Sulphur flow is not back to normal as temperature on the lances and combustion chambers are high, and suspected blockages in the system. SI is in place to manage the plant accordingly. BPE stated that a 14 day outage will be needed to address problems, work cannot be done on load.	03-Sep
U2.	RHI inner Precip casing repairs SO3 plant Sulphur flow is not back to normal, plant needs to be planned for repairs	06-Sep
U2.	LHO: F1,3,5 POOR PERFORMANCE LHI: F2,F7,F5 OFF; F4 POOR PERFORMANCE RHI: F2,F4 POORLY PERFORMANCE; F3 ARCING AND SPARKING RHO: F3,F4,F1 POOR PERFORMANCE • RHI F4 poor performance • SO3 plant: Air combustion valve is faulty, C&I to address defect.	10-Sep
U2.	LHO: F1,3,5 POOR PERFORMANCE LHI: F2,F7,F5 OFF; F4 POOR PERFORMANCE RHI: F2,F4 POORLY PERFORMANCE; F3 ARCING AND SPARKING RHO: F3,F1 POOR PERFORMANCE; F4 ARCING AND SPARKING □	11-Sep
U2.	LHI Casing Outage	13-Sep
U2.	Unit Shut Down for replacement of No. 10 oil baffel & to clean the brush gear	19-Sep

U2.	Unit Syncronised on load 21/09/2020 @ 07:50	21-Sep
U2.	Unit Light Up	22-Sep
U2.	Unit 2 Tripped 06:31	26-Sep
U2.	Unit Light Up	27-Sep
U2.	• Emissions was high yesterday due to clean rapping being done at full load in the morning.	28-Sep
U5.	• SO3 plant work was completed, not dosing as yet. C&I Maint to calibrate the Sulphur flow meter, BPE also indicated that there are still outstanding defects on the ESPs	01-Sep
U6.	• Unit synchronized 2020/09/13 @ 05:03	13-Sep
U6.	Unit Light Up	14-Sep
U6.	Unit Light Up	15-Sep
NOX Exceedances		
SOX Exceedances		