Eskom

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Date:
07 December 2020

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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/

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

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

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Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR JULY 2020 RESUBMISSION

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

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

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

Yours sincerely

Karabo Rakgolela
GENERAL MANAGER

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Eskom	Report	Lethabo Power Station

Report name:	**Lethabo Power Station July 2020 Emission Report - Resubmission**	Reference number:	**LRP03PLA000_0212/20201111 Rev 01**
		Document Type:	**Report**
		Area of Applicability:	**Environment**
		Report Date:	**November 2020**
		Classification:	**Controlled Disclosure**

Signatures:

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Date: 27/11/2020	**Date:** 2020-11-26	**Date:** 27/11/2020

Reviewed by:	**Reviewed by:**	**Reviewed by:**
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Date: 27/11/2020	**Date:** 2020-11-30	**Date:** 2020-12-03

Approved by:

H Sewsunker
Engineering Manager

Date: 2020/12/03

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July-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 Jul-2020
	Coal	Tons	*2 000 000*	*1 362 042*
	Fuel Oil	Tons	*1 700*	*671.64*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Production Rate Jul-2020**
	Energy	GWh	*2834.64*	*2 020.42*
	Ash	Tons	*770 000*	*523 160.2*
	RE Ash	kg/MWh	*not specified*	*258.94*

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	*0.55 (Standard)*	*0.720*
Ash Content	%	*36.89 (Standard)*	*38.410*

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 Jul-2020
Unit 1	*Electrostatic Precipitator (ESP)*	*99.83%*
Unit 2	*Electrostatic Precipitator (ESP)*	*99.78%*
Unit 3	*Electrostatic Precipitator (ESP)*	*99.84%*
Unit 4	*Electrostatic Precipitator (ESP)*	*99.91%*
Unit 5	*Electrostatic Precipitator (ESP)*	*99.90%*
Unit 6	*Electrostatic Precipitator (ESP)*	*99.79%*

5. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	CO_2
Unit 1	*92.5*	*99.7*	*99.7*	*99.7*
Unit 2	*98.5*	*99.1*	*99.1*	*96.8*
Unit 3	*99.3*	*99.7*	*99.9*	*99.7*
Unit 4	*99.4*	*98.5*	*98.8*	*98.5*
Unit 5	*100.0*	*99.6*	*99.9*	*60.8*
Unit 6	*99.2*	*99.9*	*99.9*	*99.9*

6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of July 2020

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	158.2	3 052	1 401
Unit 2	94.9	1 636	539
Unit 3	140.1	3 205	1 418
Unit 4	66.3	3 248	1 495
Unit 5	85.6	2 984	1 364
Unit 6	186.6	3 755	1 818
SUM	731.7	17 880	8 036

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	22	9	0	0	9	96.7
Unit 2	5	9	2	0	11	148.2
Unit 3	27	4	0	0	4	85.6
Unit 4	21	1	0	0	1	52.8
Unit 5	31	0	0	0	0	55.7
Unit 6	18	3	0	10	13	95.5
SUM	**124**	**26**	**2**	**10**	**38**	

*** Please Note Conreventions found in the month of July 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 - July 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
Unit 1	31	0	0	0	0	1 852.8
Unit 2	18	0	0	0	0	1 954.7
Unit 3	31	0	0	0	0	1 957.1
Unit 4	25	0	0	0	0	2 031.4
Unit 5	31	0	0	0	0	1 954.6
Unit 6	31	0	0	0	0	1 937.3
SUM	**167**	**0**	**0**	**0**	**0**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	31	0	0	0	0	847.9
Unit 2	18	0	0	0	0	638.6
Unit 3	29	0	0	2	2	865.9
Unit 4	24	0	0	1	1	926.7
Unit 5	31	0	0	0	0	895.6
Unit 6	29	0	0	2	2	937.8
SUM	**162**	**0**	**0**	**5**	**5**	

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

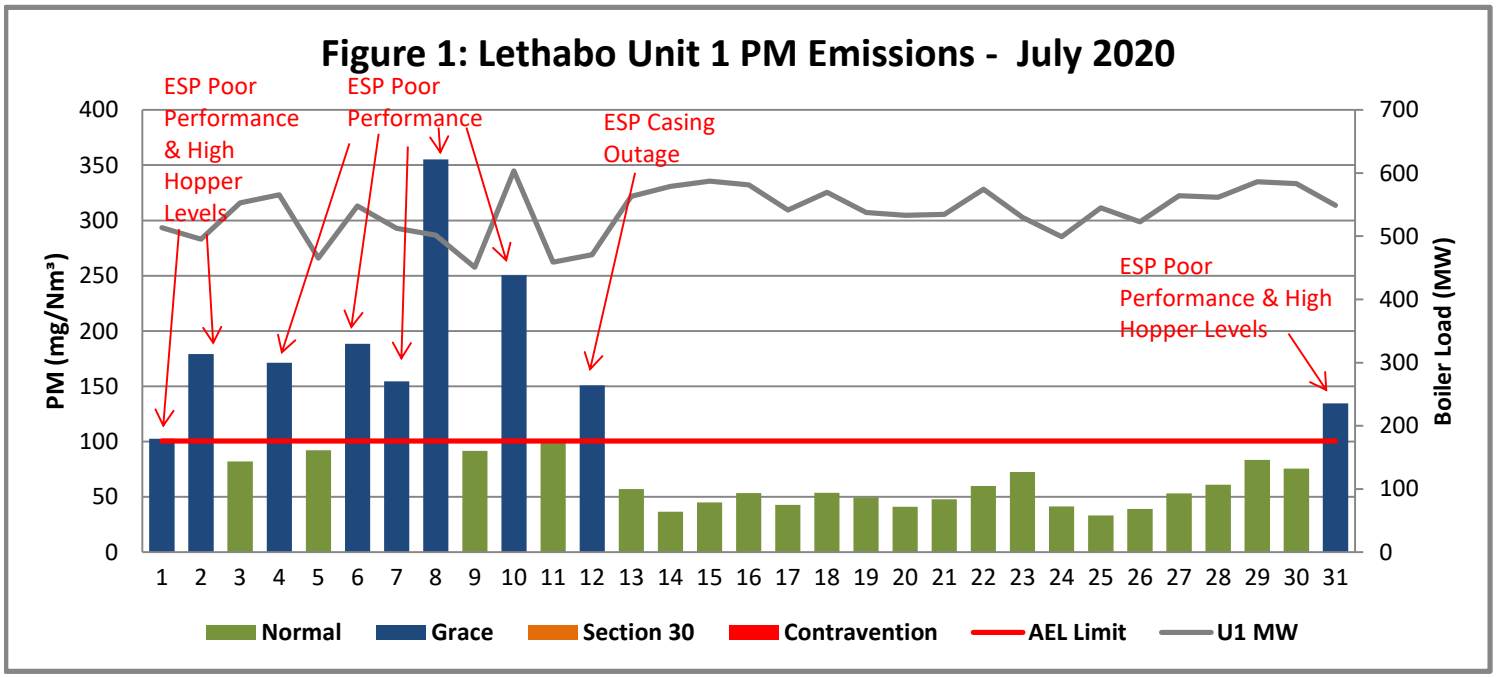


Figure 2: Lethabo Unit 2 PM Emissions - July 2020

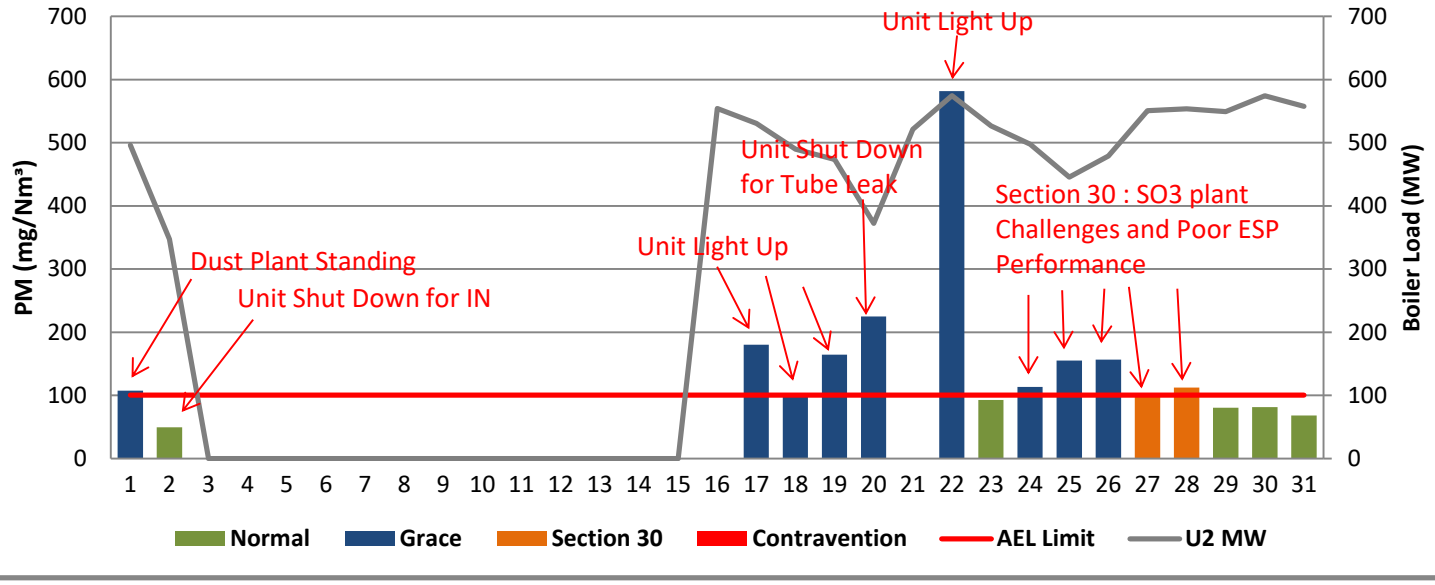
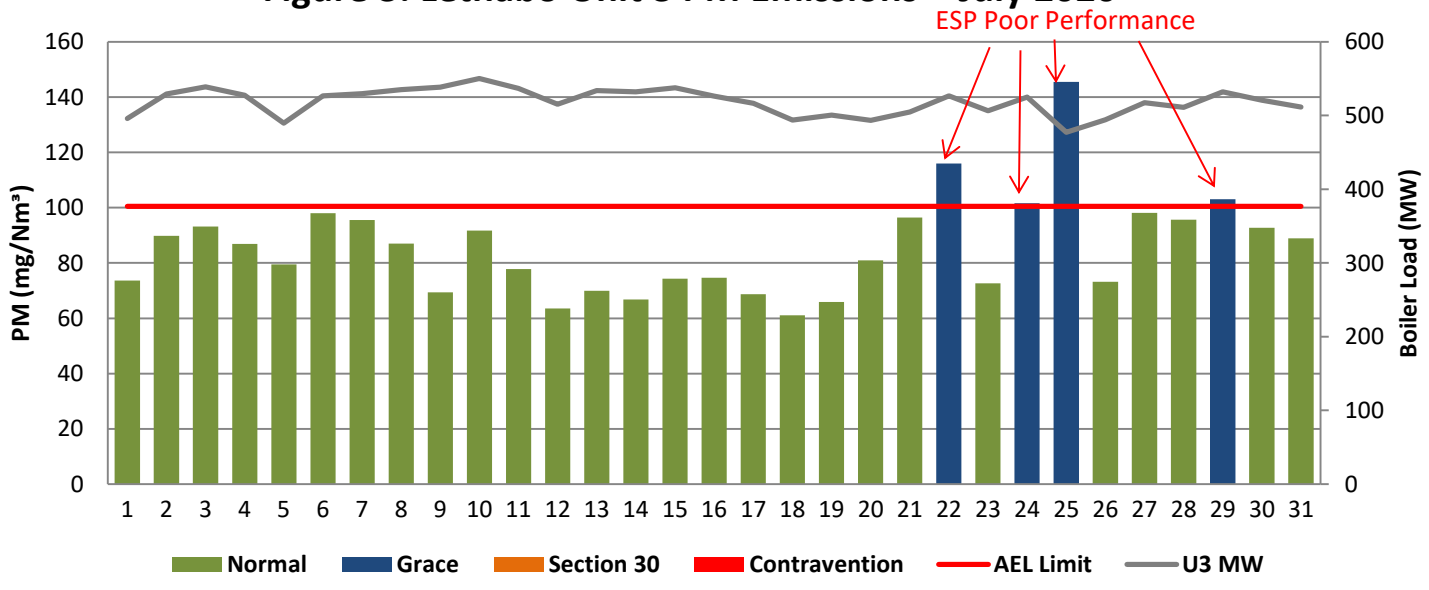


Figure 3: Lethabo Unit 3 PM Emissions - July 2020



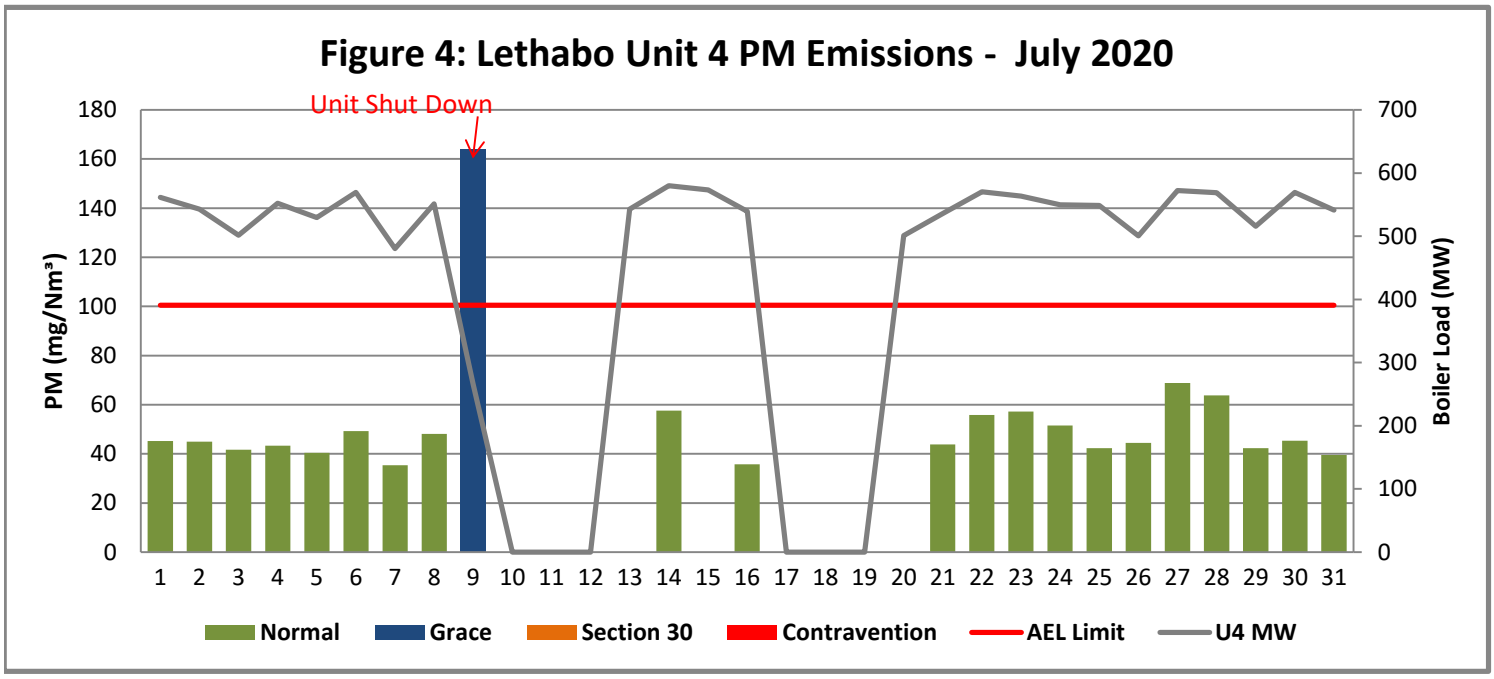


Figure 4: Lethabo Unit 4 PM Emissions - July 2020
Unit Shut Down
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

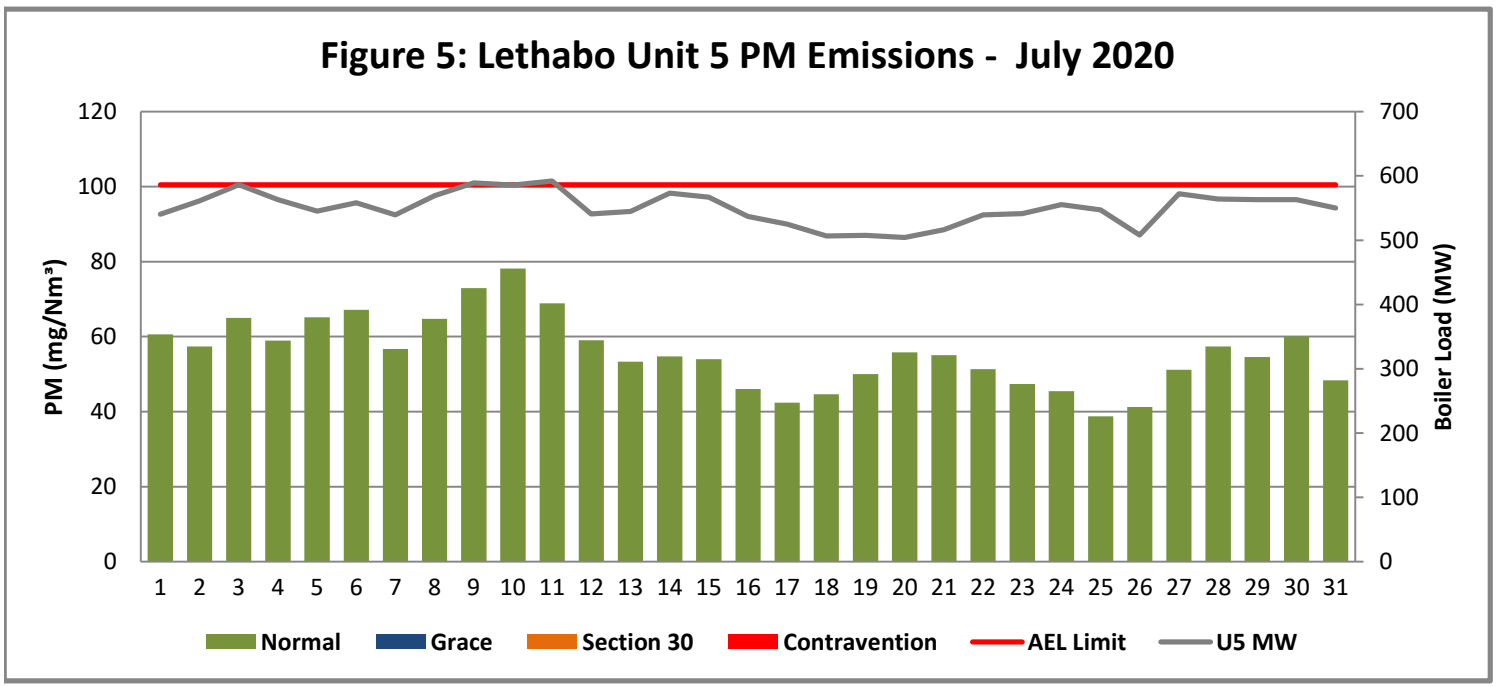


Figure 5: Lethabo Unit 5 PM Emissions - July 2020
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

Figure 6: Lethabo Unit 6 PM Emissions - July 2020

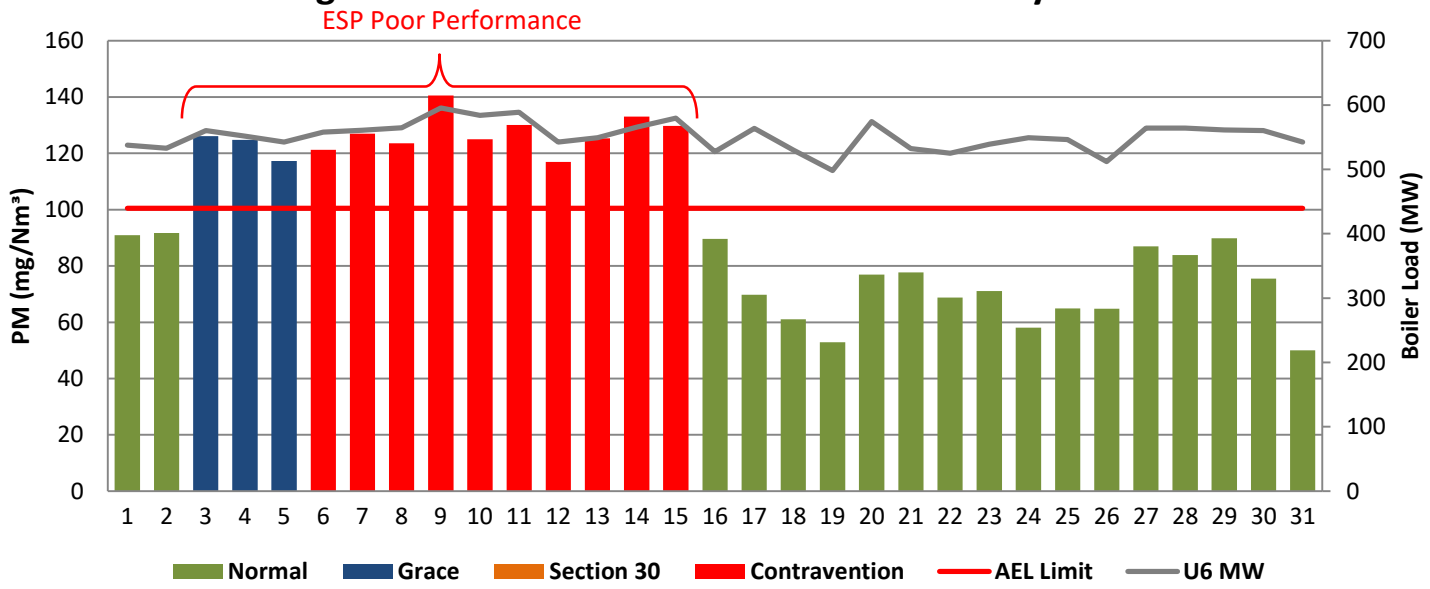
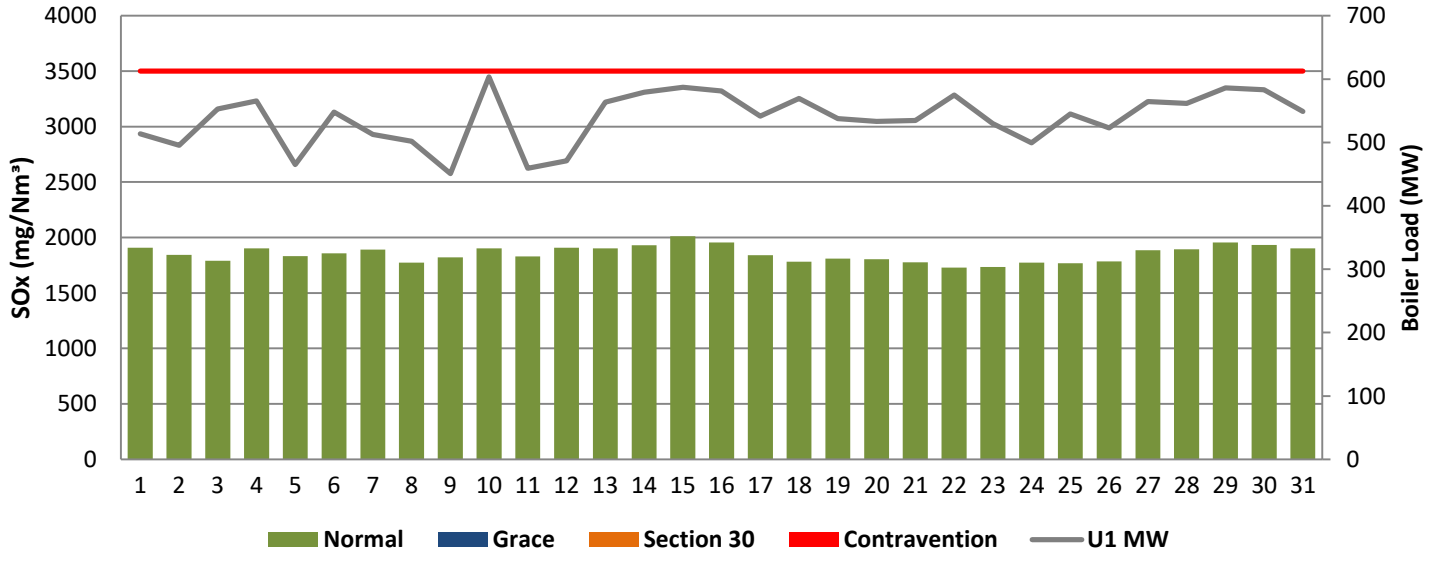


Figure 7: Lethabo Unit 1 SOx Emissions - July 2020



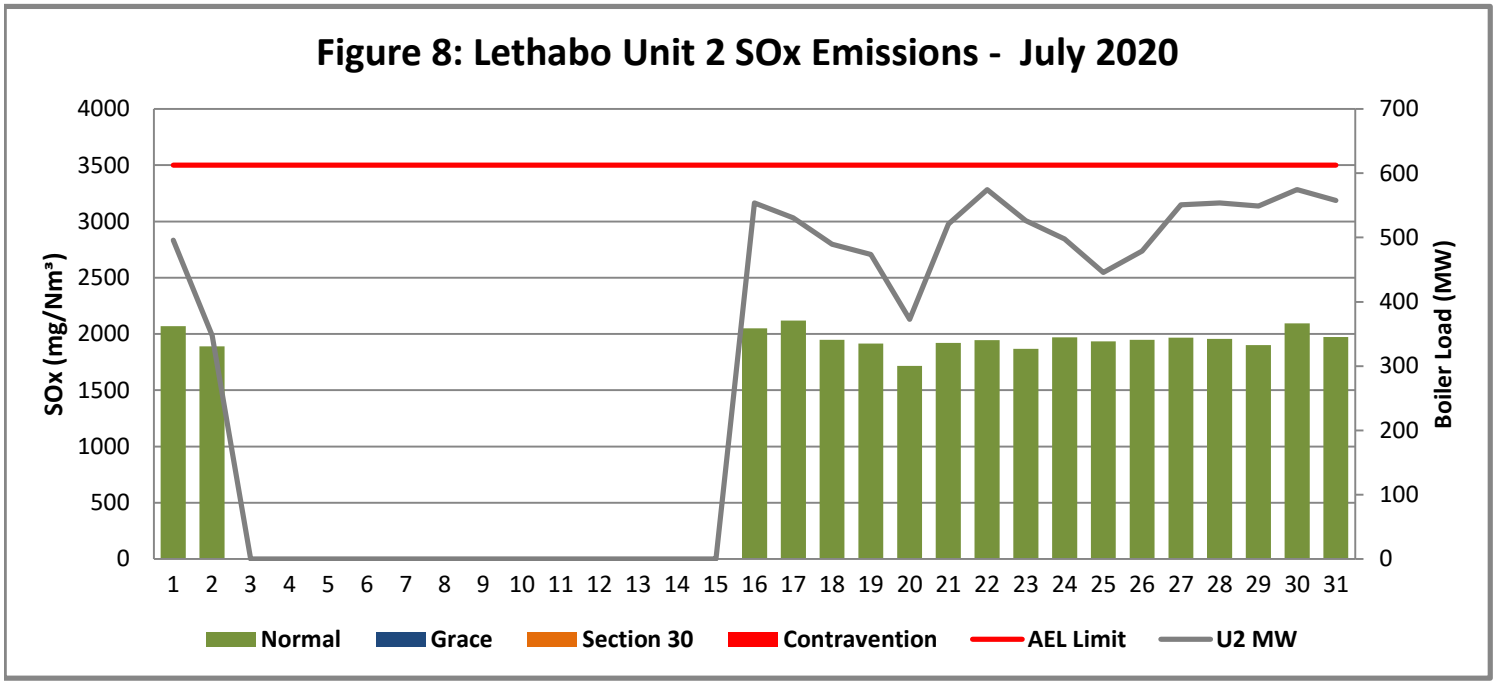


Figure 8: Lethabo Unit 2 SOx Emissions - July 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

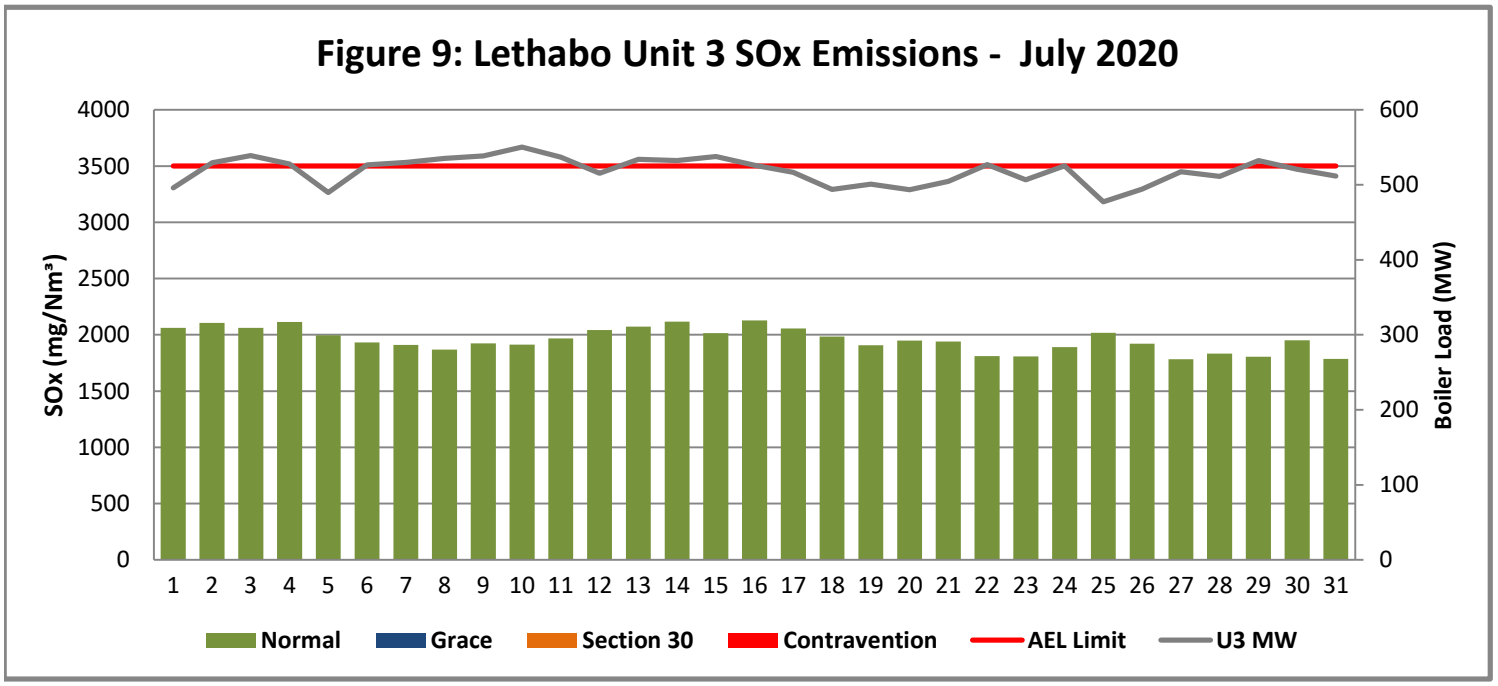


Figure 9: Lethabo Unit 3 SOx Emissions - July 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

Figure 10: Lethabo Unit 4 SOx Emissions - July 2020

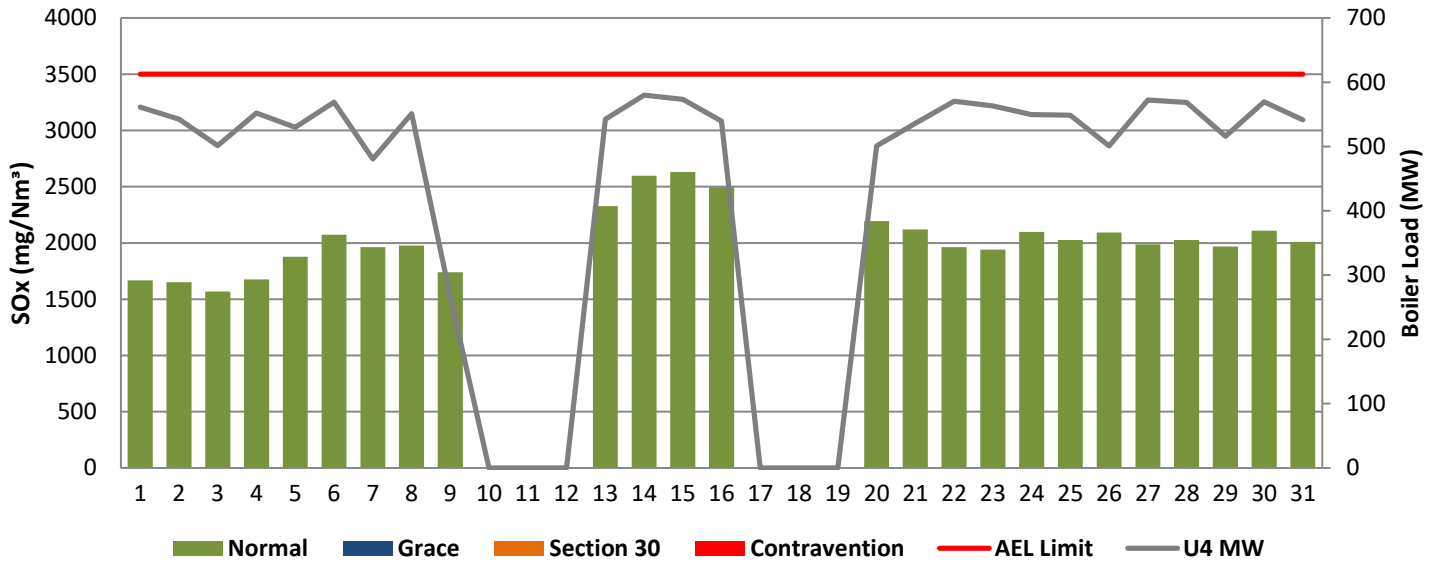


Figure 11: Lethabo Unit 5 SOx Emissions - July 2020

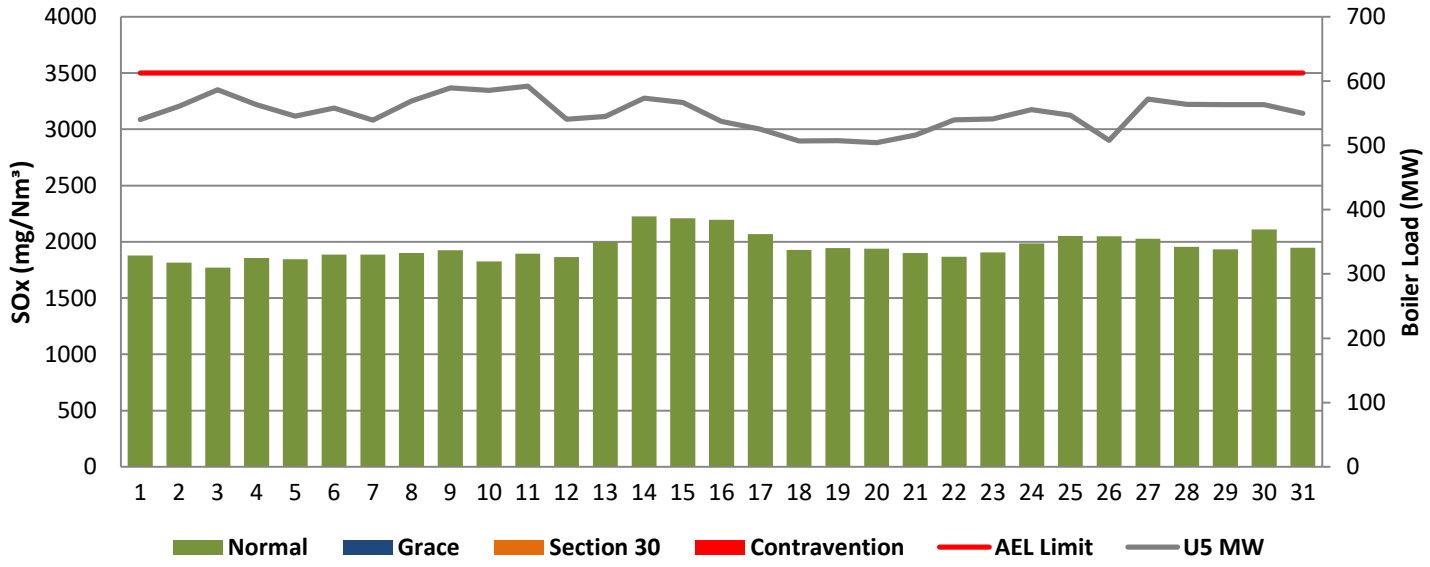


Figure 12: Lethabo Unit 6 SOx Emissions - July 2020

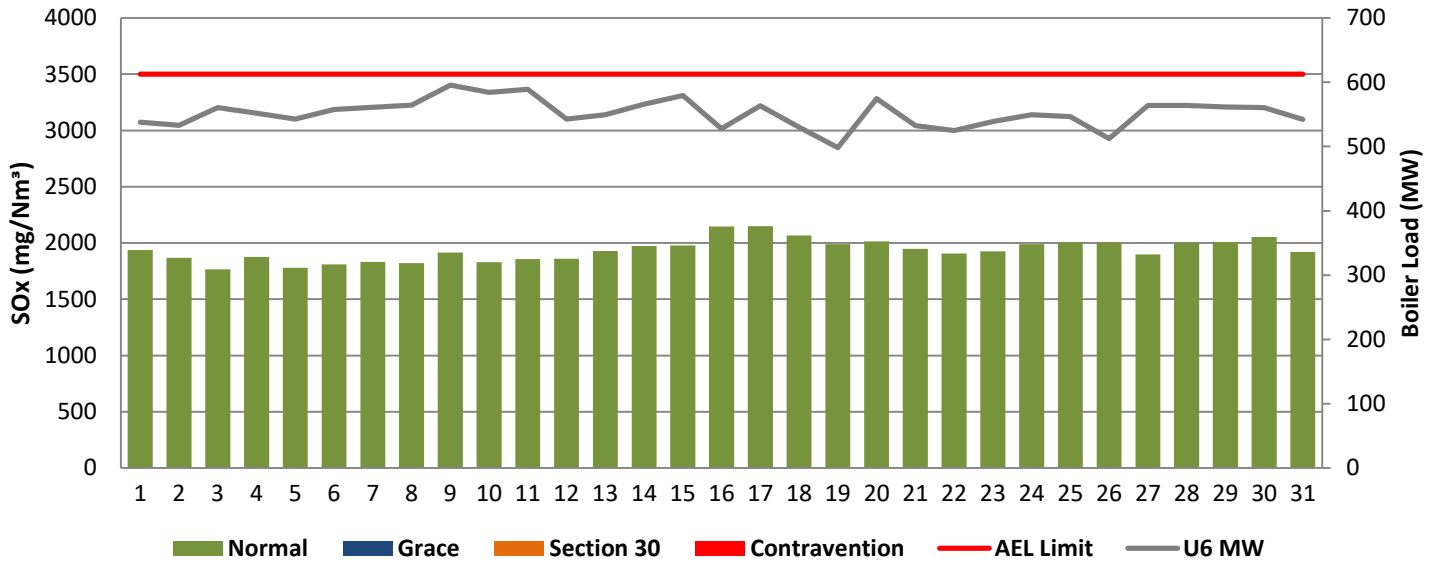
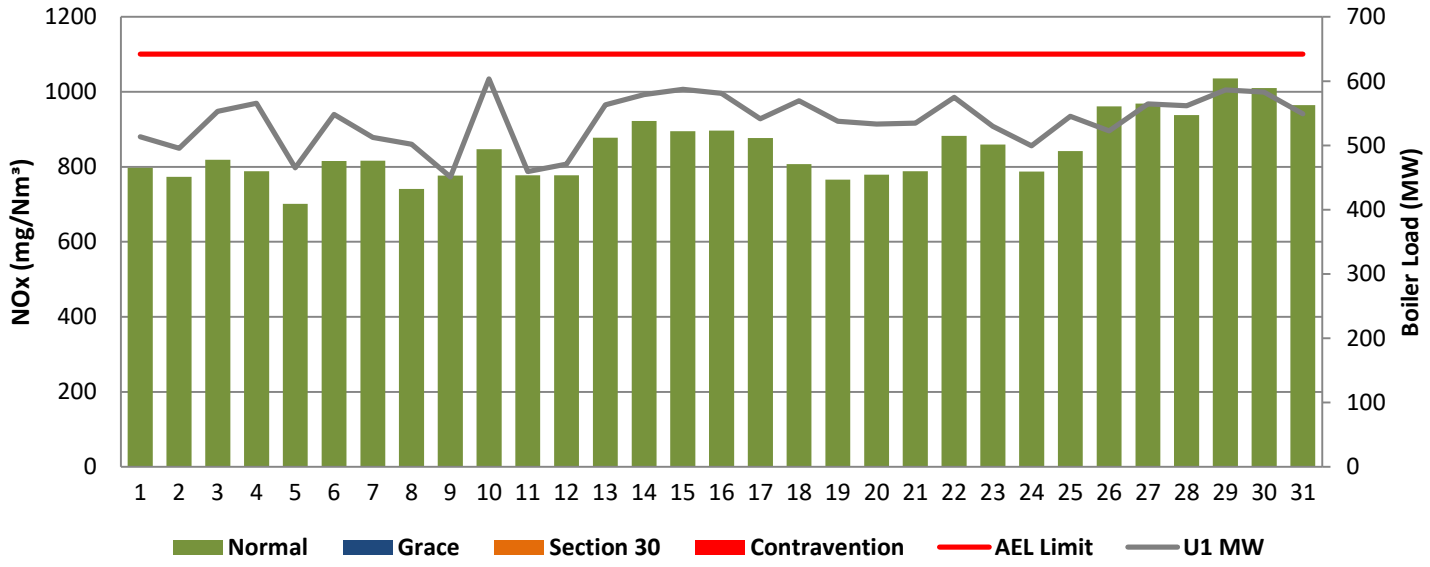


Figure 13: Lethabo Unit 1 NOx Emissions - July 2020



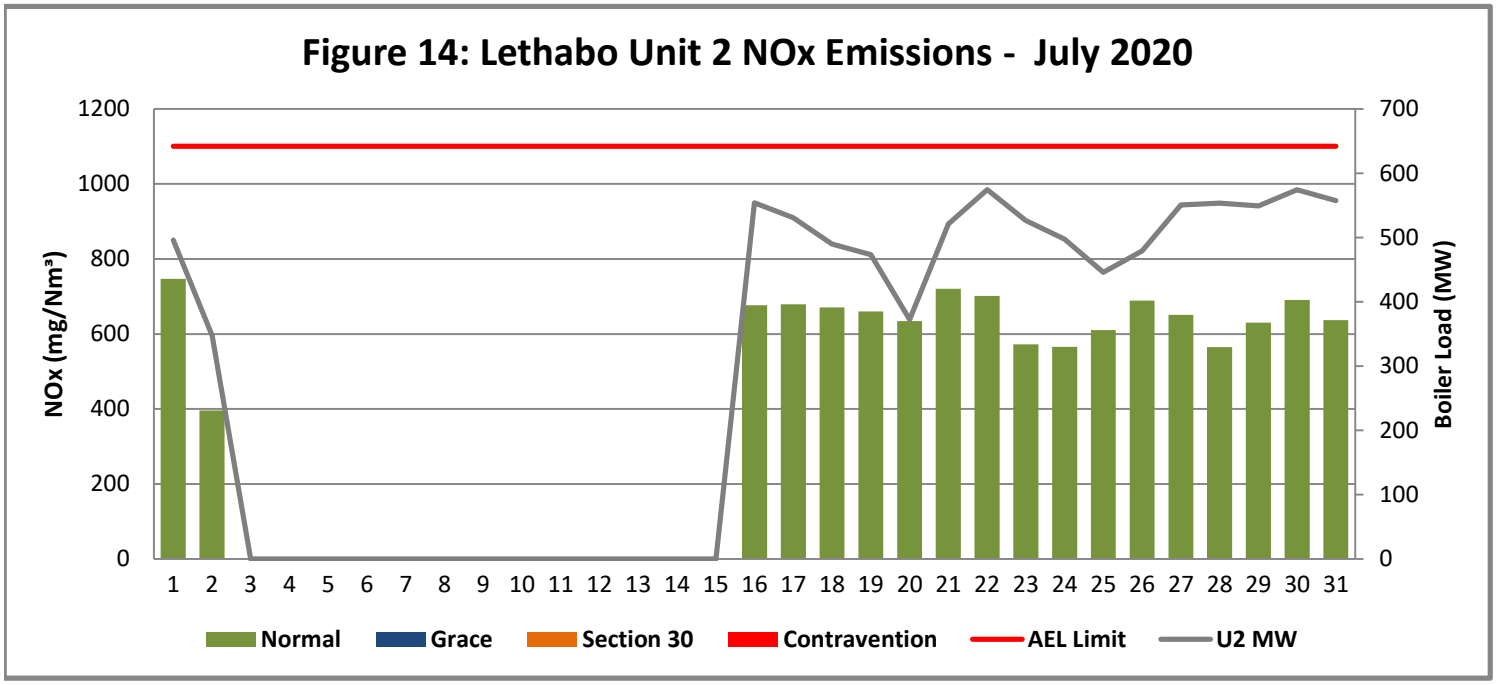


Figure 14: Lethabo Unit 2 NOx Emissions - July 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

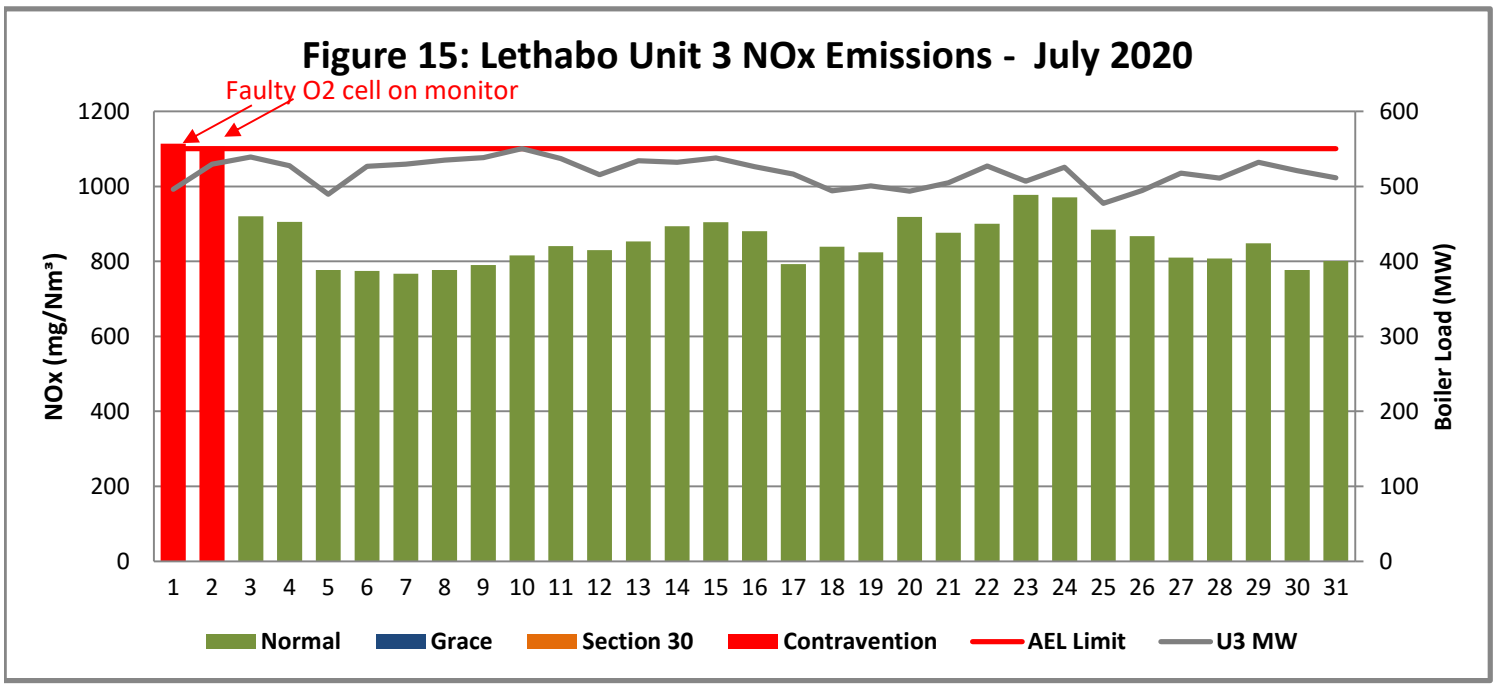


Figure 15: Lethabo Unit 3 NOx Emissions - July 2020
Faulty O2 cell on monitor
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

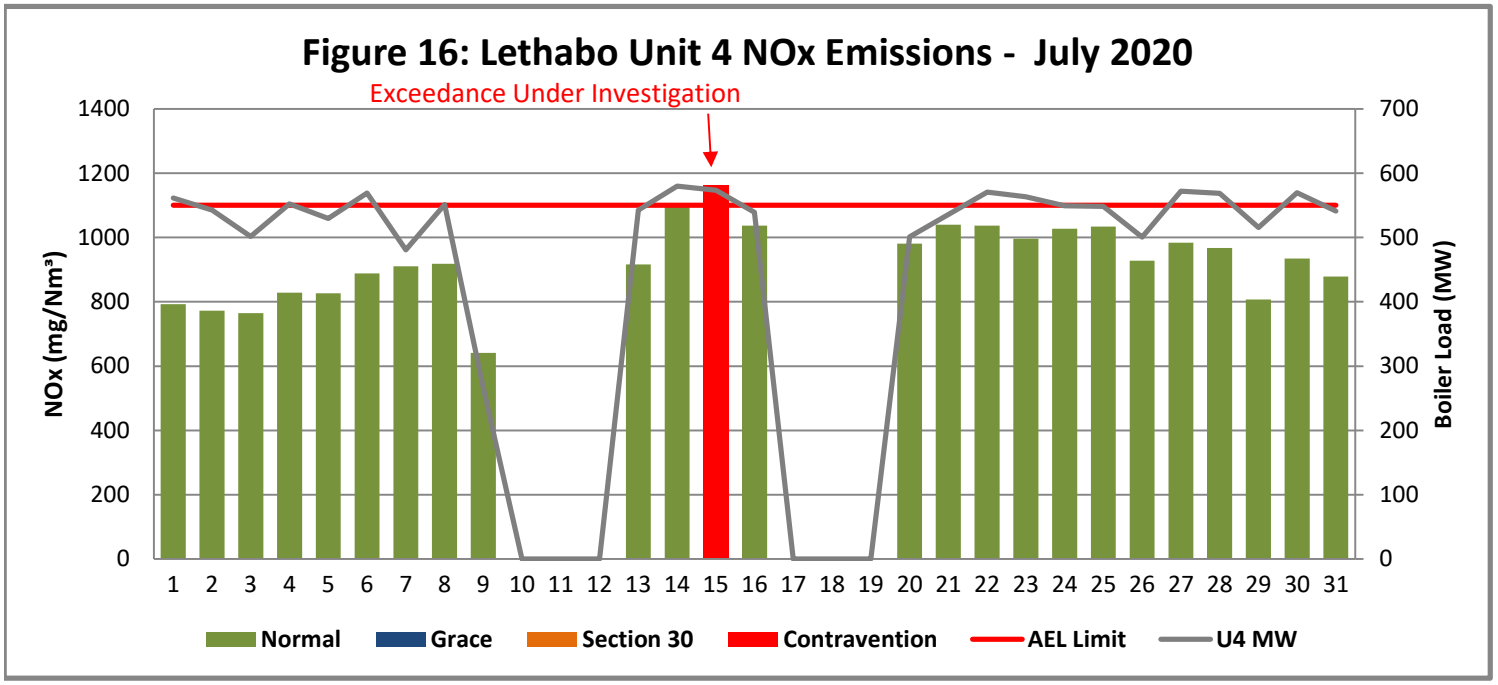


Figure 16: Lethabo Unit 4 NOx Emissions - July 2020
Exceedance Under Investigation
NOx (mg/Nm³)
Boiler Load (MW)
1400
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

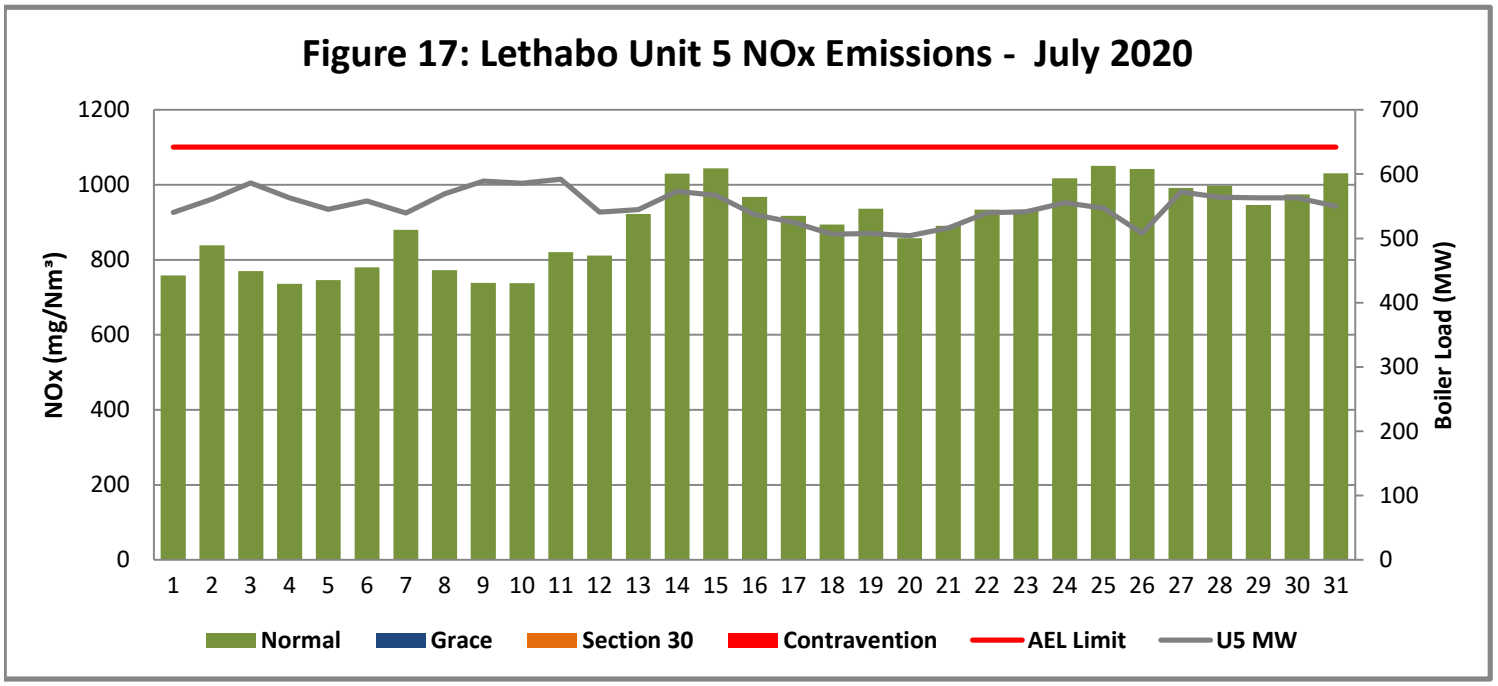
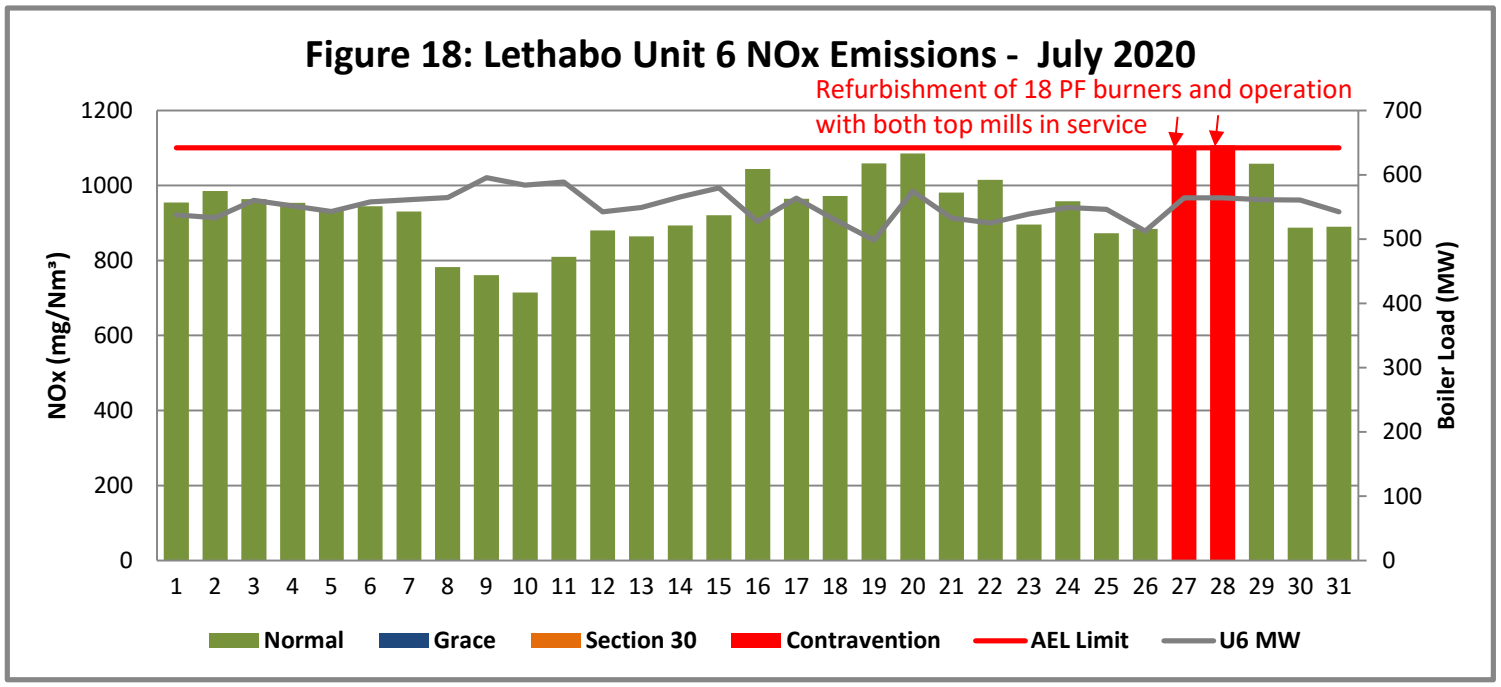


Figure 17: Lethabo Unit 5 NOx Emissions - July 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW



7. SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1								
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.2	*Inspection Outage*		*Boiler economizer tube leak*					
Breaker Open (BO)	*1:40 AM*	*2020/07/02*	*1:05 AM*	*2020/07/20*				
Draught Group (DG) Shut Down (SD)	*12:35 AM*	*2020/07/03*	*1:30 PM*	*2020/07/20*				
BO to DG SD (duration)	*00:22:55*	DD:HH:MM	*00:12:25*	DD:HH:MM				
Fires in time	*10:15 PM*	*2020/07/15*	*10:10 AM*	*2020/07/21*				
Synch. to Grid (or BC)	*12:45 AM*	*2020/07/16*	*12:55 PM*	*2020/07/21*				
Fires in to BC (duration)	*00:02:30*	DD:HH:MM	*00:02:45*	DD:HH:MM				
Emissions below limit from BC (end date)	*12:00 AM*		*12:00 AM*	*2020/07/25*				
Emissions below limit from BC (duration)	*01:23:15*	DD:HH:MM	*03:11:05*	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	*AM SSC Hoppers full.*							
Breaker Open (BO)	*1:10 AM*	*2020/07/09*						
Draught Group (DG) Shut Down (SD)	*2:35 AM*	*2020/07/09*						
BO to DG SD (duration)	*00:01:25*	DD:HH:MM						
Fires in time	*9:05 PM*	*2020/07/12*						
Synch. to Grid (or BC)	*5:45 AM*	*2020/07/13*						
Fires in to BC (duration)	*00:08:40*	DD:HH:MM						
Emissions below limit from BC (end date)	*12:00 AM*	*2020/07/14*						
Emissions below limit from BC (duration)	*00:18:15*	DD:HH:MM						

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								
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)								

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

8. MAINTENANCE

Unit 1				
Beginning of	2020/07/08 00:01:00	2020/07/12 00:21:00	2020/07/22 23:49	
Reason for Maintenance	LHO Precip Casing repairs	AM: LHI precip casing repairs	AM : LH precip board repairs	
End (Time):	2020/07/08 17:36:00	2020/07/12 22:46:00	2020/07/23 03:10	
Duration	17:35:00	22:25:00	3:21:00	

Unit 2				
Beginning of	2020/07/25 10:58	2020/07/26 00:01		
Reason for Maintenance	RHO precip casing repairs.	AM: RHI precip casing repairs		
End (Time):	2020/07/25 23:40	2020/07/26 23:59		
Duration	12:42:00	23:58:00		

Unit 3				
Beginning of	2020/07/25 00:00			
Reason for Maintenance	AM: LHI precip casing repairs			
End (Time):	2020/07/25 10:48			
Duration	10:48:00			

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 5
Calibrations were not done because of unavailability of calibration gas and unverified gas therefore the oxygen values were questionable and had to be adjusted. An average oxygen value of 6.8% was used from 1 -16 July 2020 until the QAL2 test was done. This resulted in most of the previously reported NOx and SOx exceedances to no longer be exceedances

Unit 3: 1st & 2nd July NOx exceedances
The O2 cell was faulty and was replaced on Unit 3 after which a decrease was seen in the oxygen readings which showed a decrease in NOx readings as well, the exceedances were therefore monitor related.

Unit 4 (15 July) NOx exceedances

All 36 PF burners were refurbished on Unit 4 during its outage to improve combustion. The refurbishment of all the burners simultaneously has a major impact on the combustion process, which improves the heat released and absorbed in the furnace. This directly influences the NOx produced.
The OEM performed an assessment on the burners to determine the amount of NOx produced after the refurbishment. The results from the assessment indicates that the expected NOx could vary between 904mg/Nm³ and 1166mg/Nm³ which is already higher than the limit of 1100mg/Nm³.
The production of NOx is increased when operating with high air flows and high temperatures. When the units are operated with top mills in service, the already high NOx (from after the refurbishment) is further increased which results in exceedance of the NOx limit of 1100mg/Nm³. The unit operated with two top mills in service.

Unit 6 Exceedances on 27 and 28 July:
18 PF burners were refurbished on Unit 6 during its outage to improve combustion. The refurbishment of all the burners simultaneously has a major impact on the combustion process, which improves the heat released and absorbed in the furnace. This directly influences the NOx produced.
The OEM performed an assessment on the burners to determine the amount of NOx produced after the refurbishment. The results from the assessment indicates that the expected NOx could vary between 904mg/Nm³ and 1166mg/Nm³ which is already higher than the limit of 1100mg/Nm³.
The production of NOx is increased when operating with high air flows and high temperatures. When the units are operated with top mills in service or with higher air flows, the already high NOx (from after the refurbishment) is further increased which results in exceedance of the NOx limit of 1100mg/Nm³.
The unit operated with both top mills in service on both occasions.

Unit 2 PM Exceedances:
17 - 20 July 2020: Unit was under light up conditions (synchronised 16/07/2020 00:45 AM) and Shut down again on the 20th July 2020 01:05 AM due to a boiler tube leak. It was initially thought that there was no exceedance on the 18th July 2020 as the reporting tool had shown 100.49 mg/Nm3 for the day. However, there was a correlation curve update on the 15th July 2020 at 09:51. When we received the new tool and implemented the curve in the middle of the month it was found that the daily average was 101.7mg/Nm3 as reported in this revision. It is noted that this may change again when back fitting is done as correlations were redone during July to August 2020.

24-28 July 2020: Unit was under light up conditions (synchronised 21/07/2020 12:55 PM). There were challenges with the SO3 plant tripping and poor ESP performance. A section 30 had been reported.

Note on the use of average values:
It is noted that, 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.

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. These new contraventions will be reported and investigated promptly. The following exceedances and associated contraventions are noted:

Unit 6 PM exceedances from the 3rd-15th July 2020 was found to be an exceedance after the back fitting of the correlation curves were done.

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
AUG '19	0.30	0.19	0.49	0.23	OFF	0.38	0.33
SEPT '19	0.31	0.17	0.46	OFF	OFF	0.35	0.32
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

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-Jul	102.5	107.7	73.6	45.2	60.6	91.0	100
02-Jul	179.3	49.3	89.9	45.0	57.4	91.7	100
03-Jul	81.9	OFF	93.2	41.7	65.0	126.1	100
04-Jul	171.3	OFF	86.9	43.3	58.9	124.8	100
05-Jul	92.1	OFF	79.5	40.4	65.2	117.3	100
06-Jul	188.5	OFF	98.0	49.2	67.1	117.5	100
07-Jul	154.5	OFF	95.5	35.3	56.7	127.0	100
08-Jul	355.2	OFF	87.0	48.2	64.7	123.5	100
09-Jul	91.6	OFF	69.3	163.8	73.0	140.5	100
10-Jul	250.3	OFF	91.7	OFF	78.1	125.0	100
11-Jul	99.4	OFF	77.8	OFF	68.9	130.1	100
12-Jul	150.9	OFF	63.6	OFF	59.0	117.0	100
13-Jul	57.0	OFF	69.9	OFF	53.3	125.4	100
14-Jul	36.5	OFF	66.8	57.7	54.7	133.0	100
15-Jul	44.8	OFF	74.3	OFF	54.0	129.7	100
16-Jul	53.5	OFF	74.7	35.7	46.1	89.6	100
17-Jul	42.7	180.4	68.7	OFF	42.4	69.7	100
18-Jul	53.7	101.7	61.1	OFF	44.6	61.1	100
19-Jul	49.5	164.3	65.9	OFF	50.0	52.9	100
20-Jul	41.1	225.0	81.0	OFF	55.8	77.0	100
21-Jul	47.8	OFF	96.5	43.8	55.0	77.8	100
22-Jul	60.0	581.4	116.0	55.9	51.4	68.8	100
23-Jul	72.5	92.9	72.6	57.3	47.4	71.1	100
24-Jul	41.3	113.2	101.7	51.6	45.5	58.1	100
25-Jul	33.2	155.1	145.6	42.4	38.8	64.9	100
26-Jul	39.1	156.6	73.2	44.5	41.2	64.8	100
27-Jul	53.0	102.0	98.1	68.9	51.2	86.9	100
28-Jul	60.9	112.4	95.6	63.8	57.4	83.9	100
29-Jul	83.5	80.4	103.1	42.3	54.5	89.9	100
30-Jul	75.7	81.3	92.7	45.4	60.0	75.5	100
31-Jul	134.4	68.0	88.9	39.6	48.4	50.0	100

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jul	102.5	107.7	59.9	41.9	70.3	47.0	100
02-Jul	179.3	49.3	72.7	41.8	66.2	45.8	100
03-Jul	81.9	OFF	75.5	39.1	76.0	59.4	100
04-Jul	171.3	OFF	70.0	40.4	68.2	58.9	100
05-Jul	92.1	OFF	64.5	38.0	76.2	57.5	100
06-Jul	188.5	OFF	79.4	45.3	78.7	60.8	100
07-Jul	154.5	OFF	77.3	33.8	65.3	62.9	100
08-Jul	355.2	OFF	70.4	44.4	75.6	60.4	100
09-Jul	91.6	OFF	56.7	140.3	86.1	65.8	100
10-Jul	250.3	OFF	73.9	OFF	92.7	60.6	100
11-Jul	99.4	OFF	62.8	OFF	80.9	62.0	100
12-Jul	150.9	OFF	52.0	OFF	68.4	56.5	100
13-Jul	57.0	OFF	56.8	OFF	61.3	60.5	100
14-Jul	36.5	OFF	54.4	52.3	62.7	63.9	100
15-Jul	44.8	OFF	66.7	OFF	56.9	64.2	100
16-Jul	53.5	OFF	74.7	34.1	46.1	53.1	100
17-Jul	42.7	180.4	68.7	OFF	51.3	54.8	100
18-Jul	53.7	101.7	61.1	OFF	44.6	49.4	100
19-Jul	49.5	164.3	65.9	OFF	50.0	44.5	100
20-Jul	41.1	225.0	81.0	OFF	64.0	59.6	100
21-Jul	47.8	OFF	96.5	40.8	56.8	61.6	100
22-Jul	60.0	581.4	116.0	50.8	53.1	54.6	100
23-Jul	72.5	95.6	73.2	52.0	48.8	56.9	100
24-Jul	41.3	113.2	101.7	47.3	47.2	47.5	100
25-Jul	33.2	155.1	145.6	39.6	40.6	51.5	100
26-Jul	39.1	156.6	73.2	41.4	41.2	52.6	100
27-Jul	53.0	102.0	98.1	61.6	51.2	67.7	100
28-Jul	60.9	112.4	95.6	57.4	59.1	65.3	100
29-Jul	83.5	80.4	103.1	39.5	56.3	69.1	100
30-Jul	75.7	81.3	92.7	42.1	61.7	59.1	100
31-Jul	134.4	68.0	88.9	37.3	50.2	41.9	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jul	1908	2069	2062	1669	1877	1937	3500
02-Jul	1843	1891	2107	1651	1816	1868	3500
03-Jul	1791	OFF	2061	1568	1771	1766	3500
04-Jul	1903	OFF	2113	1676	1857	1877	3500
05-Jul	1834	OFF	1994	1877	1844	1780	3500
06-Jul	1858	OFF	1933	2072	1887	1809	3500
07-Jul	1891	OFF	1910	1964	1886	1831	3500
08-Jul	1773	OFF	1868	1977	1901	1822	3500
09-Jul	1821	OFF	1925	1741	1925	1916	3500
10-Jul	1902	OFF	1913	OFF	1827	1828	3500
11-Jul	1831	OFF	1969	OFF	1896	1858	3500
12-Jul	1908	OFF	2043	OFF	1865	1861	3500
13-Jul	1904	OFF	2072	2328	1998	1927	3500
14-Jul	1931	OFF	2116	2598	2227	1972	3500
15-Jul	2012	OFF	2014	2629	2210	1979	3500
16-Jul	1955	2051	2129	2495	2196	2147	3500
17-Jul	1842	2118	2057	OFF	2068	2149	3500
18-Jul	1783	1948	1984	OFF	1928	2065	3500
19-Jul	1809	1915	1908	OFF	1945	1988	3500
20-Jul	1803	1715	1948	2195	1939	2013	3500
21-Jul	1776	1921	1940	2120	1901	1948	3500
22-Jul	1729	1946	1809	1964	1866	1907	3500
23-Jul	1735	1867	1807	1940	1907	1927	3500
24-Jul	1775	1971	1891	2098	1986	1990	3500
25-Jul	1767	1935	2018	2026	2052	2004	3500
26-Jul	1785	1948	1922	2094	2048	2006	3500
27-Jul	1885	1966	1782	1989	2026	1899	3500
28-Jul	1893	1957	1833	2025	1955	2003	3500
29-Jul	1956	1901	1805	1969	1933	2008	3500
30-Jul	1933	2094	1951	2110	2109	2052	3500
31-Jul	1901	1972	1786	2009	1946	1920	3500

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jul	1856	2858	2062	1655	1681	1842	3500
02-Jul	1795	2544	2107	1649	1624	1769	3500
03-Jul	1746	OFF	2061	1581	1583	1671	3500
04-Jul	1861	OFF	2113	1683	1659	1774	3500
05-Jul	1785	OFF	1994	1919	1646	1689	3500
06-Jul	1812	OFF	1933	2141	1685	1723	3500
07-Jul	1841	OFF	1910	2060	1689	1743	3500
08-Jul	1710	OFF	1868	2049	1702	1733	3500
09-Jul	1764	OFF	1925	1948	1725	1832	3500
10-Jul	1861	OFF	1913	OFF	1637	1748	3500
11-Jul	1775	OFF	1969	OFF	1696	1776	3500
12-Jul	1839	OFF	2043	OFF	1666	1771	3500
13-Jul	1856	OFF	2072	2415	1783	1848	3500
14-Jul	1876	OFF	2116	2691	1990	1879	3500
15-Jul	1963	OFF	2014	2723	1977	1883	3500
16-Jul	1907	2518	2129	2595	1981	2019	3500
17-Jul	1791	2591	2057	OFF	1986	2054	3500
18-Jul	1742	2398	1984	OFF	1848	1965	3500
19-Jul	1763	2373	1908	OFF	1869	1873	3500
20-Jul	1758	2227	1948	2279	1865	1916	3500
21-Jul	1733	2334	1940	2203	1827	1848	3500
22-Jul	1692	2346	1809	2028	1803	1801	3500
23-Jul	1691	2289	1807	2003	1853	1832	3500
24-Jul	1725	2454	1891	2175	1936	1893	3500
25-Jul	1722	2470	2018	2092	1999	1919	3500
26-Jul	1730	2502	1922	2174	1997	1901	3500
27-Jul	1821	2428	1782	2059	1977	1800	3500
28-Jul	1828	2374	1833	2094	1905	1902	3500
29-Jul	1895	2329	1805	2049	1878	1904	3500
30-Jul	1869	2581	1951	2186	2045	1965	3500
31-Jul	1835	2424	1786	2091	1888	1830	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jul	797	747	1114	793	758	955	1100
02-Jul	773	396	1105	773	838	985	1100
03-Jul	819	OFF	920	765	770	964	1100
04-Jul	788	OFF	906	828	736	954	1100
05-Jul	701	OFF	777	826	746	934	1100
06-Jul	816	OFF	774	888	780	945	1100
07-Jul	816	OFF	767	911	880	930	1100
08-Jul	741	OFF	777	918	773	782	1100
09-Jul	776	OFF	790	641	738	761	1100
10-Jul	847	OFF	816	OFF	738	715	1100
11-Jul	777	OFF	841	OFF	821	809	1100
12-Jul	777	OFF	830	OFF	811	880	1100
13-Jul	878	OFF	853	917	922	864	1100
14-Jul	922	OFF	894	1095	1030	893	1100
15-Jul	895	OFF	905	1160	1044	921	1100
16-Jul	896	676	881	1037	967	1044	1100
17-Jul	876	679	792	OFF	917	964	1100
18-Jul	807	671	839	OFF	894	972	1100
19-Jul	766	660	824	OFF	936	1059	1100
20-Jul	779	635	919	981	858	1085	1100
21-Jul	788	720	877	1040	891	981	1100
22-Jul	882	701	900	1037	933	1015	1100
23-Jul	859	572	977	997	933	896	1100
24-Jul	787	565	970	1027	1018	958	1100
25-Jul	842	610	885	1034	1050	873	1100
26-Jul	961	689	867	928	1042	884	1100
27-Jul	968	651	810	984	992	1104	1100
28-Jul	938	565	808	967	997	1107	1100
29-Jul	1036	630	848	808	946	1058	1100
30-Jul	1010	691	777	934	974	888	1100
31-Jul	964	637	801	878	1031	890	1100

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jul	817	1032	1114	796	757	929	1100
02-Jul	842	OFF	767	964	879	911	1100
03-Jul	847	OFF	920	780	767	939	1100
04-Jul	816	OFF	906	843	733	925	1100
05-Jul	706	OFF	777	856	743	910	1100
06-Jul	844	OFF	774	927	776	928	1100
07-Jul	842	OFF	767	964	879	911	1100
08-Jul	743	OFF	777	963	771	734	1100
09-Jul	787	OFF	790	699	737	718	1100
10-Jul	885	OFF	816	OFF	737	661	1100
11-Jul	790	OFF	841	OFF	818	775	1100
12-Jul	784	OFF	830	OFF	807	850	1100
13-Jul	917	OFF	853	963	918	841	1100
14-Jul	967	OFF	894	1154	1026	868	1100
15-Jul	938	OFF	905	1225	1041	898	1100
16-Jul	939	829	881	1094	973	1023	1100
17-Jul	912	831	792	OFF	981	957	1100
18-Jul	837	826	839	OFF	955	958	1100
19-Jul	789	818	824	OFF	1002	1042	1100
20-Jul	800	816	919	1032	919	1093	1100
21-Jul	812	874	877	1097	954	963	1100
22-Jul	928	845	900	1090	1005	995	1100
23-Jul	894	701	977	1045	1011	868	1100
24-Jul	805	704	970	1082	1106	941	1100
25-Jul	876	780	885	1090	1136	851	1100
26-Jul	1007	887	867	974	1132	850	1100
27-Jul	1013	808	810	1031	1079	1109	1100
28-Jul	975	689	808	1014	1083	1114	1100
29-Jul	1098	773	848	844	1025	1053	1100
30-Jul	1064	851	777	980	1053	868	1100
31-Jul	1007	782	801	922	1114	865	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**
Aug-19	100.00%	0	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	0	100.00%	0
Sep-19	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	0	OFF LOAD	0	100.00%	0
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

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**
Aug-19	100.00%	0	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	OFF LOAD	100.00%	0
Sep-19	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	OFF LOAD	OFF LOAD	OFF LOAD	94.60%	2
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

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Aug-19	98.19%	99.85%	100.00%	92.42%	OFF	98.26%
Sep-19	95.99%	99.28%	98.75%	OFF	OFF	98.51%
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%

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**
Aug-19	96.10%	95.97%	99.55%	99.55%	99.87%	99.87%	85.98%	85.98%	OFF	OFF	93.75%	93.91%
Sep-19	95.98%	96.13%	99.17%	99.31%	99.31%	99.31%	OFF	OFF	OFF	OFF	90.95%	90.80%
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%

ADDENDUM TO MONTHLY EMISSIONS REPORT

Oxygen Monitor Availabilty						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Aug-19	96.77%	99.26%	99.87%	85.98%	OFF	93.91%
Sep-19	96.28%	99.17%	99.31%	OFF	OFF	90.95%
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%

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Aug-19	99.998%	99.999%	99.997%	99.999%	OFF	99.998%
Sep-19	99.998%	99.999%	99.998%	OFF	OFF	99.998%
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%

ADDENDUM TO MONTHLY EMISSIONS REPORT

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	118	LHO precip casing repairs	2020/07/08 00:01:00	2020/07/08 17:36:00
1	118	AM: LHI precip casing repairs	2020/07/12 00:21:00	2020/07/12 22:46:00
1	280	AM : LH precip board repairs	2020/07/22 23:49:00	2020/07/23 03:10:00
2	118	RHO precip casing repairs.	2020/07/25 10:58:00	2020/07/25 23:40:00
2	118	AM: RHI precip casing repairs	2020/07/26 00:01:00	2020/07/26 23:59:00
3	50	AM: LHI precip casing repairs	2020/07/25 00:00:00	2020/07/25 10:48:00
1	216	High stack emissions	2020/07/07 09:29:00	2020/07/07 16:31:00
1	218	AM: High stack emissions.	2020/07/09 00:00:00	2020/07/09 08:19:00
1	218	AM: High stack emissions.	2020/07/09 19:24:00	2020/07/11 09:23:00
1	118	High stack emissions	2020/07/11 09:23:00	2020/07/11 11:54:00
1	218	High stack emissions	2020/07/11 11:54:00	2020/07/11 17:28:00
1	218	EF: High stack emissions	2020/07/11 19:43:00	2020/07/11 22:01:00
1	243	EF: High stack emissions	2020/07/11 22:01:00	2020/07/12 00:21:00
2	218	High stack emissions.	2020/07/24 16:27:00	2020/07/25 10:58:00
2	118	EF: High stack emissions	2020/07/27 20:30:00	2020/07/28 00:00:00
1	218	AM: High dust hoppers	2020/07/24 23:16:00	2020/07/25 04:53:00
1	118	AM:Dust plant standing	2020/07/29 11:21:00	2020/07/29 16:48:00
2	218	Dust plant high hopper levels	2020/07/19 10:30:00	2020/07/19 11:12:00
2	182	Dust plant high hopper levels.	2020/07/19 11:12:00	2020/07/19 16:26:00
2	118	AM:Dust plant standing	2020/07/29 11:20:00	2020/07/29 16:52:00
1	228	High hopper levels	2020/07/02 09:33:00	2020/07/02 17:20:00
1	215	AM:High hoppers	2020/07/02 22:09:00	2020/07/03 06:20:00
1	218	High hopper levels.	2020/07/24 08:19:00	2020/07/24 17:11:00
1	118	AM: FAB high hopper levels	2020/07/31 13:18:00	2020/07/31 17:02:00
4	593	AM SSC Hoppers full.	2020/07/09 01:03:00	2020/07/13 05:44:00
5	118	AM: Fab hopper levels high	2020/07/31 13:11:00	2020/07/31 17:01:00
6	118	AM: Fab hopper levels high	2020/07/31 13:26:00	2020/07/31 17:09:00
2	593	Inspection	2020/07/02 01:34:00	2020/07/16 00:49:00
2	593	Boiler economizer tube leak	2020/07/20 01:00:00	2020/07/21 12:56:00
4	593	Main turbine overspeed trip test.	2020/07/14 23:46:00	2020/07/15 00:43:00
4	593	SSC repairs	2020/07/16 23:24:00	2020/07/20 10:02:00

PM Exceedances		
U1.	• High hopper levels in all casings due to DHP backlog. • OPS reported 33 high hopper levels • 11WX42 is standing • MMS to continue with purging and unblocking of plant, • Ops advised that loadloss being taken due high hopper on DHP, to be discussed with GM. • C&I to check level indications of the compartments • Emissions running high • LHO F4 off, Casing not performing at all • LHI F7 Poor performances	01-Jul
U1.	• Emissions running high due to high hopper levels in the past 24 hours • Operating is reducing the number of high hopper levels • Opacity meter read negative at some time, need to be attended to LHO: F5&F2 CE RAPPER FAULTY; F4 & 3 OFF; F7 TRIPPING ON UNDERVOLTAGE; F6 POOR PERFORMANCE. LHI: F1,2 &5 Sparking and arcing; F4 POOR PERFORMANCE RHI: F7 OFF FOR OPEN CIRCUIT TEST RHO: F1 UNDERVOLTAGE FAULT; F7 POOR PERFORMANCE	02-Jul
U1.	LHI: F6 poor performance; F7 off, EMS provided feedback that it was in service last week LHO F4 off OPS to do manual rapping	04-Jul
U1.	RHI: F3 poor performance LHO and LHI casings performing very poor; Might be because of the ash backlog on unit 2 LHO: casing outage planned	06-Jul
U1.	RHI: F3 poor performance LHO and LHI casings performing very poor; Might be because of the ash backlog on unit 2 LHO: casing outage planned	07-Jul
U1.	Ops reported 10 ESP fields fault: LHO: F2, F4, F5 & F6 fields faulty LHI: F4, F5, F6 & F7 fields faulty RHI: F7 field faulty RHO: F1 fields faulty LHO: F2 board to be switched off for an hour tonight after midnight LHO: F5 faulty program, Elec. Eng. to check RHI: F3 arcing and sparking	08-Jul

U1.	-LHO F3 poor performance -LHO and LHI not performing -LHI Casing that is planned for saturday - 6 slide gates failing to open on unit 1 - A bucket drive unit collapsed, MMS busy to address.	10-Jul
U1.	LHO and LHI not performing	11-Jul
U1.	LHO is not performing LHO: F6 OFF; F5 OFF; F2 CE ISOLATOR TO BE REPLACED; F7 TRIPPING ON UNDERVOLTAGE; F4 OFF; F3 PERFORMING POORLY -LHI inspection was done and lots of loose wires found, feedback to be provided to -LHI: F3 off, F5 OFF; F4 PERFORMING POORLY -Casing outage took place on Sunday	12-Jul
U1.	• High hopper levels LHO 3; LHI ; RHI 4; RHO 4 • Emissions are running high from 06:00 due to high hopper levels LHO: F4,5 & 7 OFF LHI: F4 POOR PERFORMANCE; F2 ARCING AND SPARKING; F7 & 3 OFF RHI: F3 POOR PERFORMANCE; F7 OFF RHO: F1 OFF; F7 POOR PEFORMANCE	31-Jul
U2.	Dust Plant was standing	01-Jul
U2.	Unit Shut Down for IN	02-Jul
U2.	Unit Light up from IN outage	17-Jul
U2.	Unit Light up from IN outage. Note Not an Exceedance as below 100.49mg/Nm3	18-Jul
U2.	Unit Light up from IN outage	19-Jul
U2.	Unit Shut Down for Boiler Tube Leak	20-Jul
U2.	Unit synchronized on 2020/07/21 @ 12:56	21-Jul
U2.	Unit Light up from Boiler tube leak repairs 17 High hopper levels, Operating and BAUX to resolve issues as soon as possible Monitor was left on maintenance for some period	22-Jul

U2.	Unit Light up from Boiler tube leak repairs • High hopper levels recorded, manual rapping was done and caused high hopper levels again. 14 full hoppers reported, all are flowing and backlogging in progress. Fields are not performing adequately because ash is not cleared out of the casings. LHO: F5 ARCING & SPARKING (UNDERVOLTAGE TRIP); F1 OFF LHI: F2 ARCING AND SPARKING & POOR PERFORMANCE RHI: F1 OFF; F2 & F7 PERFORMING POORLY RHO: F1 & F2 OFF Highest emissions were not considered when the monitors were on "test" – those hours to be took off from monitor availability for the month	23-Jul
U2.	• Unit synchronized on 2020/07/21 @ 12:56 • High hopper level, Ops reported 8, also related full FAB levels. Casings Outages were requested for the weekend on Unit 2 LHO: F5 ARCING & SPARKING (UNDERVOLTAGE TRIP); F1 POOR PERFORMANCE LHI: F2 ARCING AND SPARKING RHI: F1, F2 & F7 POOR PERFORMANCE RHO: F1 & F2 POOR PERFORMANCE	24-Jul
U2.	• Unit 2 exceedances from 2020-07-24 to current, to be reported as NEMA Section 30 for extended start up conditions. Casing Outages took place.	25-Jul
U2.	• Unit 2 exceedances from 2020-07-24 to current, to be reported as NEMA Section 30 for extended start up conditions. Casing Outages took place.	26-Jul
U2.	• High hopper levels on the unit, 25 in total and backlogging in progress. 2A bucket tripped and is running again, Ops is busy reinstating plant. • EMS Reported number of defects repaired. RHI F2 DE rapper still off; F7; F3 POORLY PERFORMING LHO: F5 and F6 transformer keep tripping; F4 OFF LHI: F4 PERFORMING POORLY; F2 ARCING AND SPARKING; F3 TO BE REPROGRAMMED RHO: F1 UNDERVOLTAGE FAULT/OFF; F7 POOR PERFORMANCE	28-Jul
U3.	• Note that the emissions for the 22nd were 92 as the Highest emissions were not considered when the monitors were on "test" – those hours to be taken off from monitor availability for the month	22-Jul

U3.	LHO: F1 ON LOCAL; F5 & 6 OFF LHI: F4 OFF RHI: F4 DE RAPPER FAULTY RHO: F1 OFF DUE TO FAILED COOLING PUMP; F6 OFF ACRING AND SPARKING Highest emissions were not considered when the monitors were on "test" – those hours to be took off from monitor availability for the month	23-Jul
U3.	LHO: F1 ON LOCAL; F5 & 6 OFF LHI: F4 OFF RHI: F4 DE RAPPER FAULTY RHO: F6 OFF; F1 OFF DUE TO FAILED COOLING PUMP	24-Jul
U3.	LHO 1 CE Rapper running on Test LHI 7 is on LOCAL RHI 4 DE Rapper Not Rapping RHO 6 and 7 DE rappers not rapping	25-Jul
U3.	LHO Casing performing poorly, Casing outage requested. LHO: F5 & F6 OFF LHI: F4 OFF RHI:F4 DE RAPPER FAULTY RHO: F6 OFF; F1 OFF DUE TO FAILED COOLING PUMP	29-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) RHI: F1- Perfoming Poorly - Excessive Sparking RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing	03-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) RHI: F1- Perfoming Poorly - Excessive Sparking RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking)	04-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) RHI: F1- Perfoming Poorly - Excessive Sparking RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking)	05-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - DE rapper faulty RHI: F1- Perfoming Poorly - Excessive Sparking; F5 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing (Legal Contravention [exceedance 3rd-15th July 2020, post back fitting])	06-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - DE rapper faulty RHI: F1- Perfoming Poorly - Excessive Sparking; F5 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing	07-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - DE rapper faulty RHI: F1- Perfoming Poorly - Excessive Sparking; F5 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing	08-Jul

U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - DE rapper faulty RHI: F1- Perfoming Poorly - Excessive Sparking; F5 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing	09-Jul
U6.	LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - DE rapper faulty RHI: F1- Perfoming Poorly - Excessive Sparking; F5 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing • LHI F2 poor performance • RHI F5 EMS confirmed is arcing and sparking, • F4, performance better after changing settings	10-Jul
U6.	ESP Poor Performance LHI F2 complete LHI F3 DE rapper faulty in progress, RHI F4 arcing and sparking, awaiting plant SO3 plant gas leak, BPE is monitoring.	11-Jul
U6.	ESP Poor Performance LHI F2 complete LHI F3 DE rapper faulty in progress, RHI F4 arcing and sparking, awaiting plant SO3 plant gas leak, BPE is monitoring.	12-Jul
U6.	ESP Poor Performance LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - Poorly performing (Sparking & arcing)- Local RHI: F1- Perfoming Poorly - Excessive Sparking; F4 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing SO3 plant gas leak, BPE is monitoring.	13-Jul
U6.	ESP Poor Performance LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - Poorly performing (Sparking & arcing)- Local RHI: F1- Perfoming Poorly - Excessive Sparking; F4 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing SO3 plant gas leak, BPE is monitoring.	14-Jul
U6.	ESP Poor Performance LHO: F2- Tripped on UnderVoltage -Poor performimg; F7 - Poorly performing (Sparking & arcing) LHI: F3 - Poorly performing (Sparking & arcing)- Local RHI: F1- Perfoming Poorly - Excessive Sparking; F4 - Poorly performing RHO:F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local; F4 - Poorly performing (arcing and sparking); F6 - Poorly performing SO3 plant gas leak, BPE is monitoring.	15-Jul

NOX Exceedances		
U3.	Faulty O2 cell on monitor	01-Jul
U3.	Faulty O2 cell on monitor	02-Jul
U4.	Exceedance Under Investigation	15-Jul
U6.	Refurbishment of 18 PF burners and operation with both top mills in service	27-Jul
U6.	Refurbishment of 18 PF burners and operation with both top mills in service	28-Jul
SOX Exceedances		