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.

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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

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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

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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

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- 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

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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

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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

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	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.

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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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Ref: LRP03PLA000 _0211/20201111 Rev 01

Dear Mr. Sibaya

LETHABO POWER STATION EMISSION MONTHLY REPORT FOR JUNE 2020 RESUBMISSION

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

Also attached ambient air quality monitoring report, complaints register and the fugitive dust fallout monitoring report for June 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 June 2020 Emission Report - Resubmission**	Reference number:	**LRP03PLA000 _0211/20201111 Rev 01**
		Document Type:	**Report**
		Area of Applicability:	**Environment**
		Report Date:	**November 2020**
		Classification:	**Controlled Disclosure**

Signatures:

Compiled by:	**Verified by :**	**Reviewed by:**
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System Engineer	**Environmental Officer**	**BPE Manager**
Date: ……...	**Date:** 2020-11-26 ……..……...	**Date:** ……...

Reviewed by:	**Reviewed by:**	**Reviewed by:**
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C Govinden	L Nel	M Hariram
PE Manager	**C&I Manager**	**Environmental Manager**
Date: ……...	**Date:** ……...	**Date:** ……...

Approved by:

……
H Sewsunker
Engineering Manager

Date: ……..……...

June-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 Jun-2020
	Coal	Tons	*2 000 000*	*1 413 545*
	Fuel Oil	Tons	*1 700*	*766.57*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Production Rate Jun-2020**
	Energy	GWh	*2743.2*	*2 093.41*
	Ash	Tons	*770 000*	*557 219.4*
	RE Ash	kg/MWh	*not specified*	*266.18*

2. ENERGY S Seen True Exceedance (Investigation pending, possibly related to heater tube issue on monitor)

Coal Characteristic		Units	Stipulated Range	Monthly Average Content
Sulphur Content		%	*0.55 (Standard)*	*0.720*
Ash Content		%	*36.89 (Standard)*	*39.420*
Unit 2	*100*	*3500*	*1100*	
Unit 3	*100*	*3500*	*1100*	

Unit 4	*100*	*3500*	*1100*	

Associated Unit/Stack	**Technology Type**	**Efficiency Jun-2020**
Unit 1	*Electrostatic Precipitator (ESP)*	*99.91%*
Unit 2	*Electrostatic Precipitator (ESP)*	*99.88%*
Unit 3	*Electrostatic Precipitator (ESP)*	*99.87%*
Unit 4	*Electrostatic Precipitator (ESP)*	*99.92%*
Unit 5	*Electrostatic Precipitator (ESP)*	*99.91%*
Unit 6	*Electrostatic Precipitator (ESP)*	*99.78%*

5. MONITOR RELIABILITY (%)

Associated Unit/Stack	**PM**	**SO_2**	**NO**	**CO_2**
Unit 1	*89.9*	*99.4*	*99.4*	*99.4*
Unit 2	*99.2*	*99.3*	*99.3*	*99.3*
Unit 3	*99.2*	*99.3*	*99.3*	*99.3*
Unit 4	*98.8*	*100.0*	*100.0*	*100.0*
Unit 5	*97.8*	*100.0*	*100.0*	*0.0*
Unit 6	*90.6*	*93.3*	*93.1*	*93.4*

6. EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of June 2020

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	86.4	2 849	1 332
Unit 2	81.6	2 814	1 024
Unit 3	101.1	3 154	1 397
Unit 4	68.3	4 213	1 889
Unit 5	75.3	2 746	1 147
Unit 6	184.4	3 778	1 855
SUM	597.0	19 555	8 646

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	27	3	0	0	3	58.8
Unit 2	25	1	0	0	1	63.0
Unit 3	25	2	0	0	2	73.0
Unit 4	29	1	0	0	1	33.5
Unit 5	30	0	0	0	0	50.2
Unit 6	15	12	0	3	15	100.3
SUM	**151**	**19**	**0**	**3**	**22**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
Unit 1	30	0	0	0	0	1 831.4
Unit 2	28	0	0	0	0	2 030.3
Unit 3	29	0	0	0	0	2 113.5
Unit 4	30	0	0	0	0	2 053.4
Unit 5	30	0	0	0	0	1 829.9
Unit 6	30	0	0	0	0	2 066.6
SUM	**177**	**0**	**0**	**0**	**0**	

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

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	30	0	0	0	0	851.4
Unit 2	28	0	0	0	0	734.3
Unit 3	29	0	0	0	0	935.1
Unit 4	30	0	0	0	0	920.0
Unit 5	30	0	0	0	0	764.5
Unit 6	22	0	0	8	8	1 014.1
SUM	**169**	**0**	**0**	**8**	**8**	

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

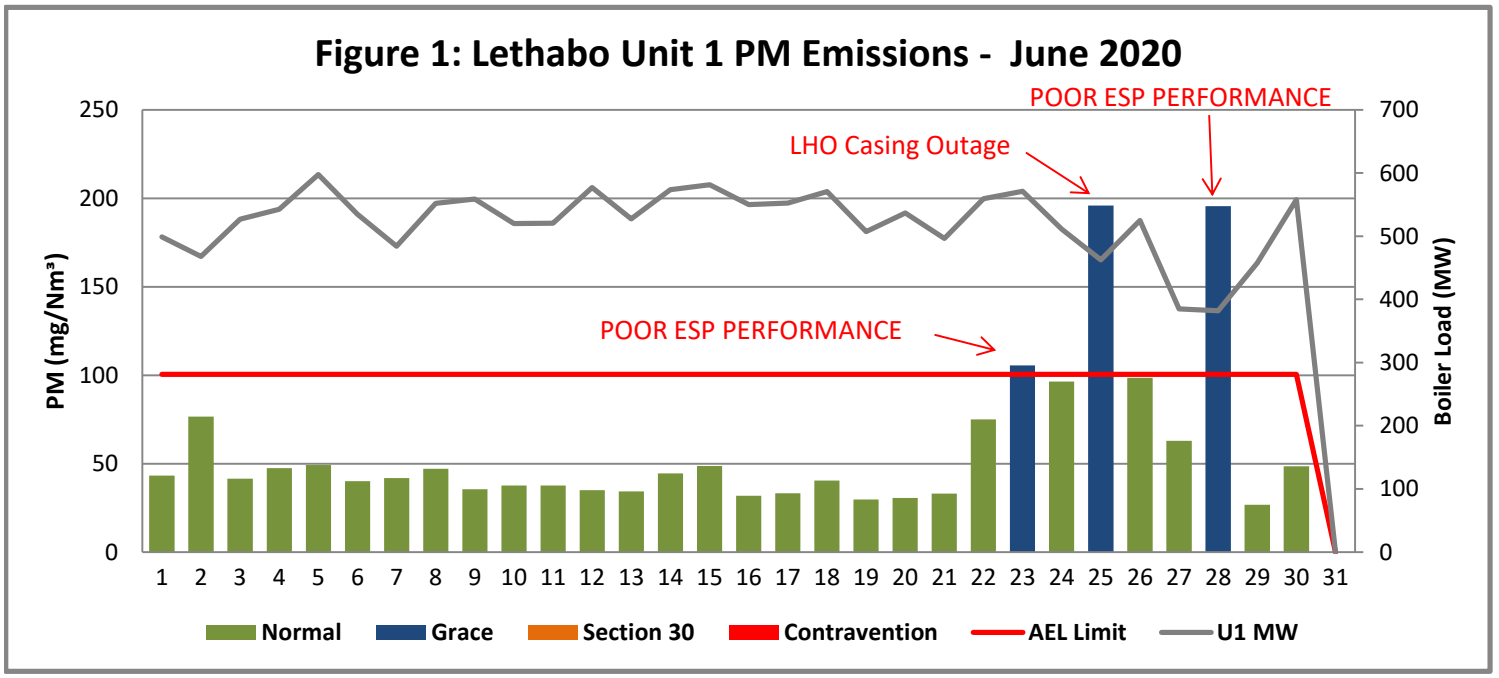


Figure 2: Lethabo Unit 2 PM Emissions - June 2020

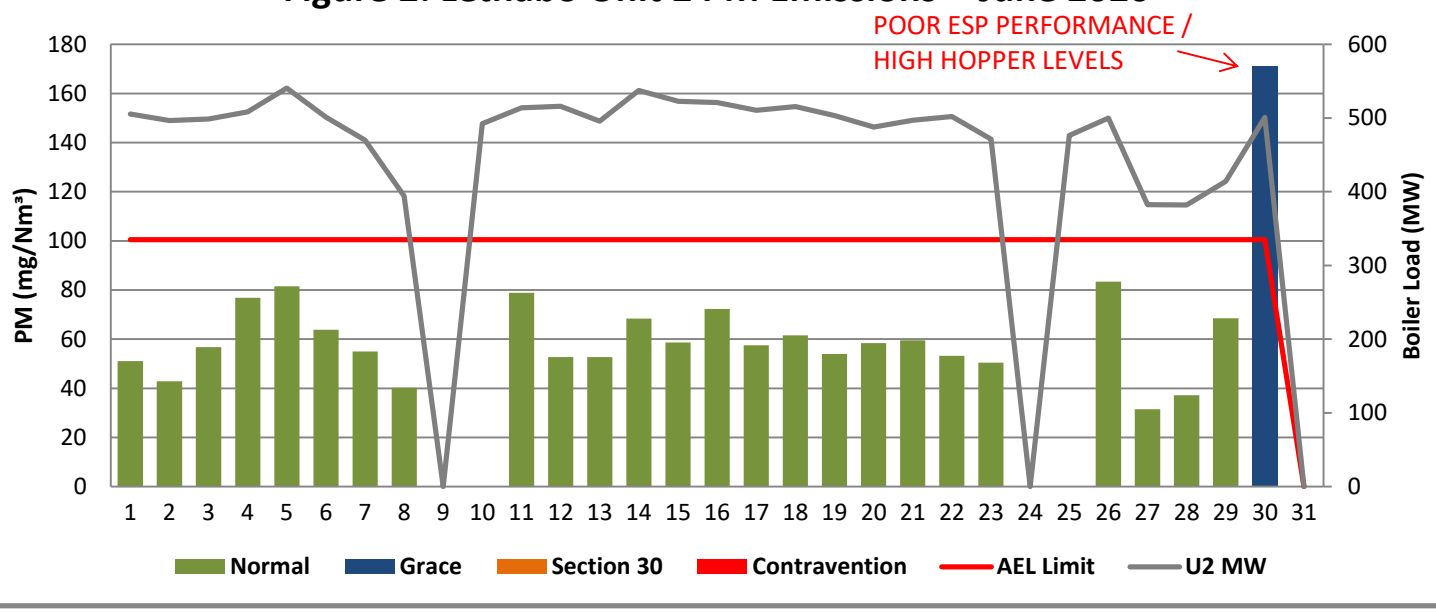
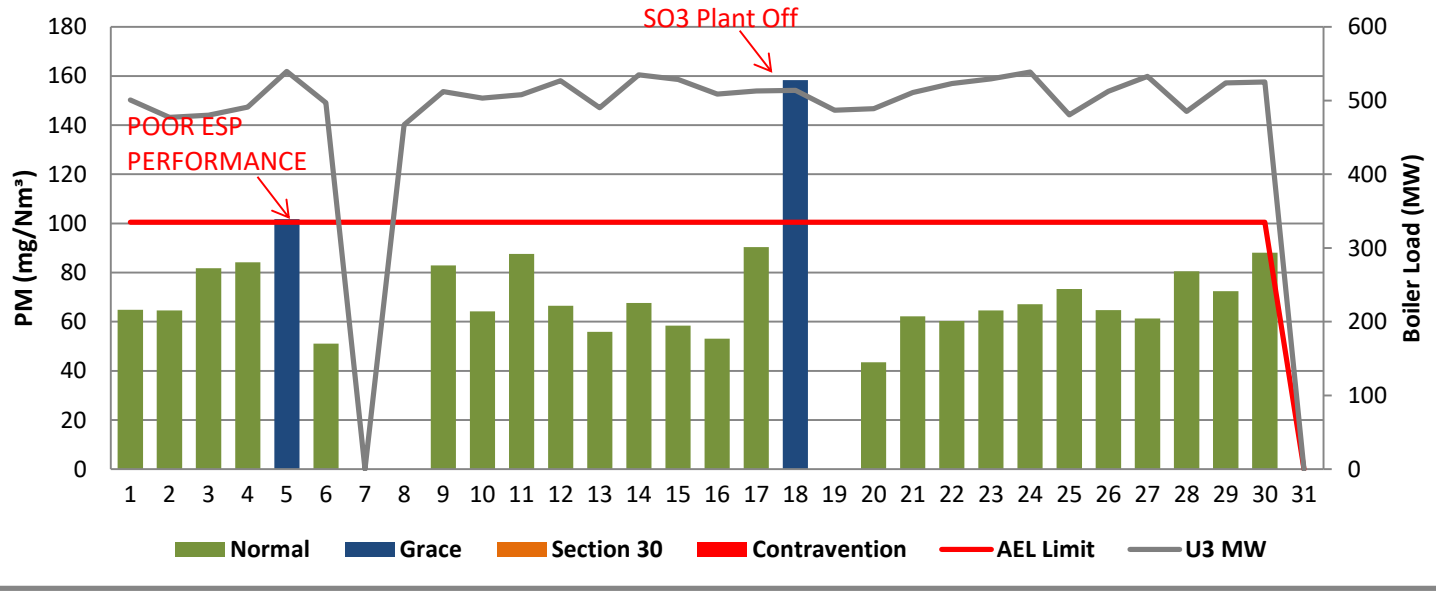


Figure 3: Lethabo Unit 3 PM Emissions - June 2020



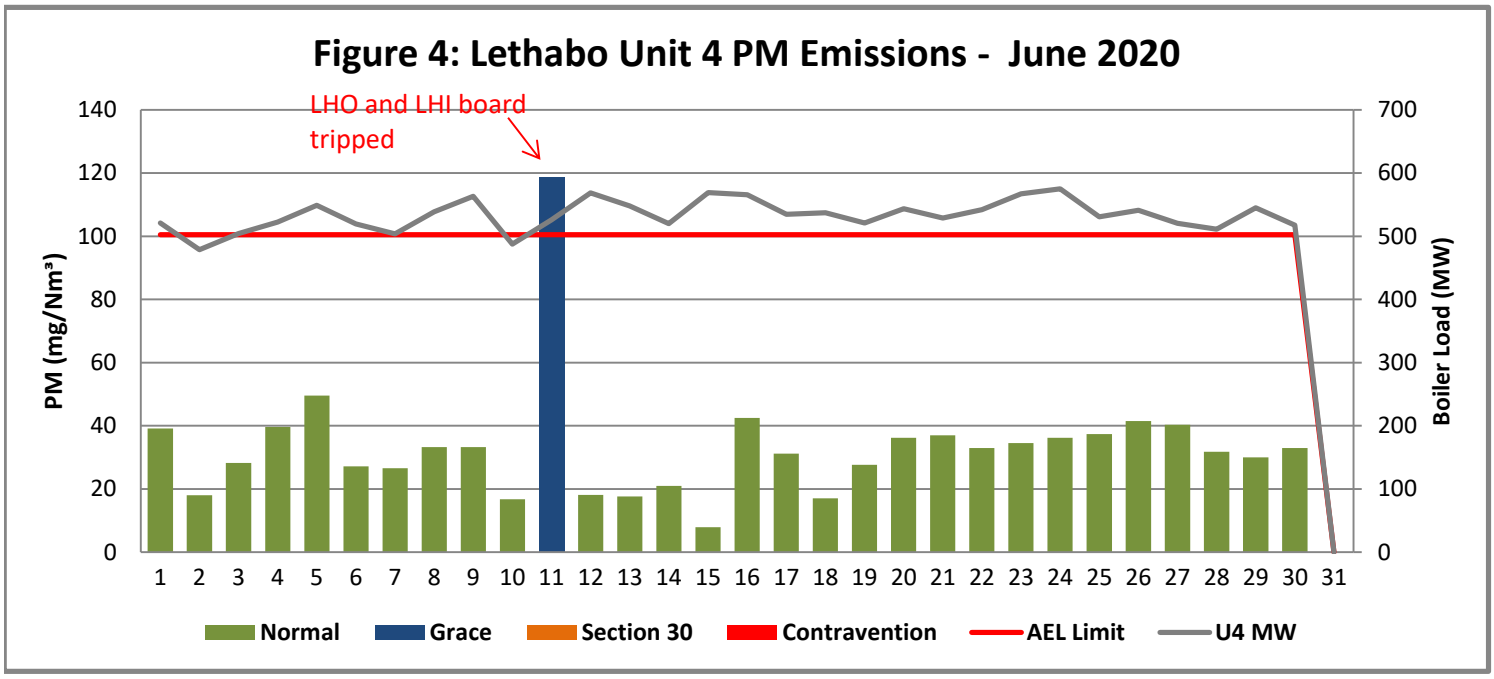


Figure 4: Lethabo Unit 4 PM Emissions - June 2020
LHO and LHI board tripped
PM (mg/Nm³)
Boiler Load (MW)
140
120
100
80
60
40
20
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

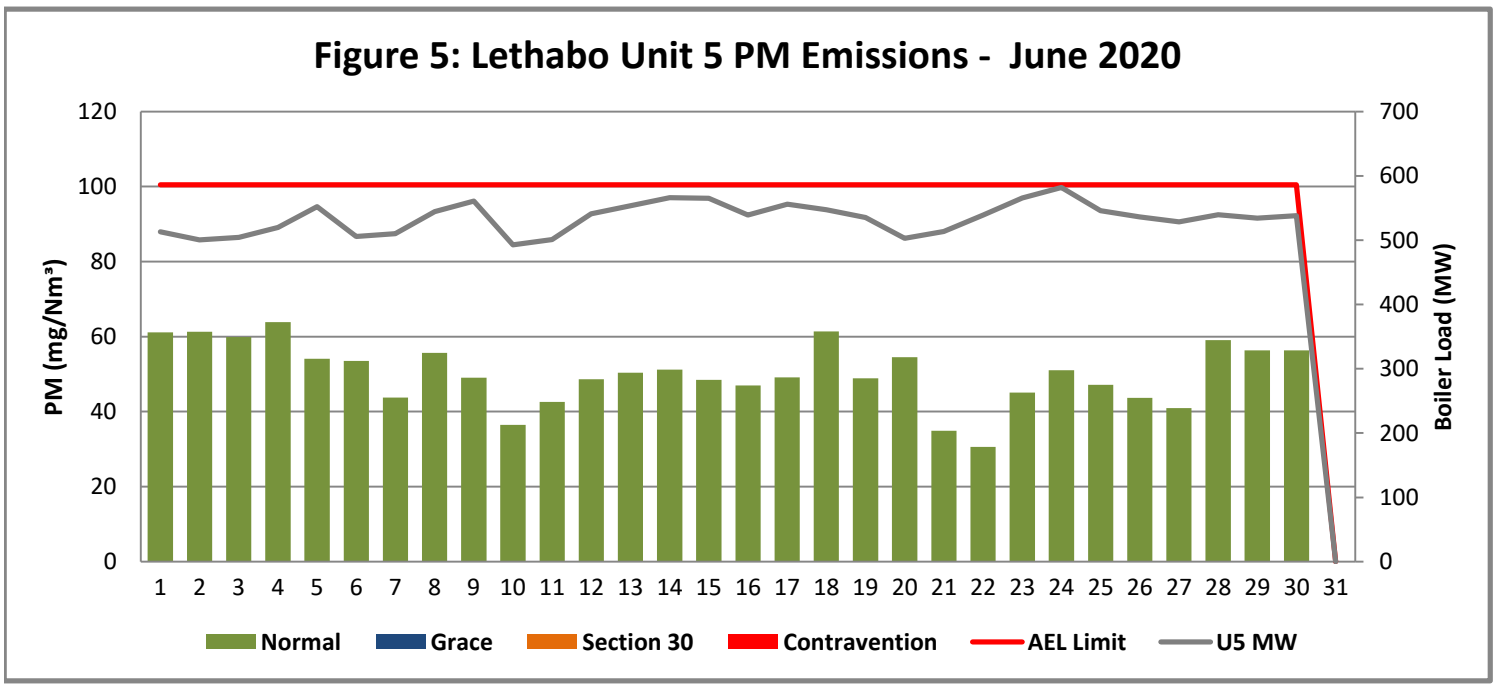


Figure 5: Lethabo Unit 5 PM Emissions - June 2020
PM (mg/Nm³)
Boiler Load (MW)
120
100
80
60
40
20
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

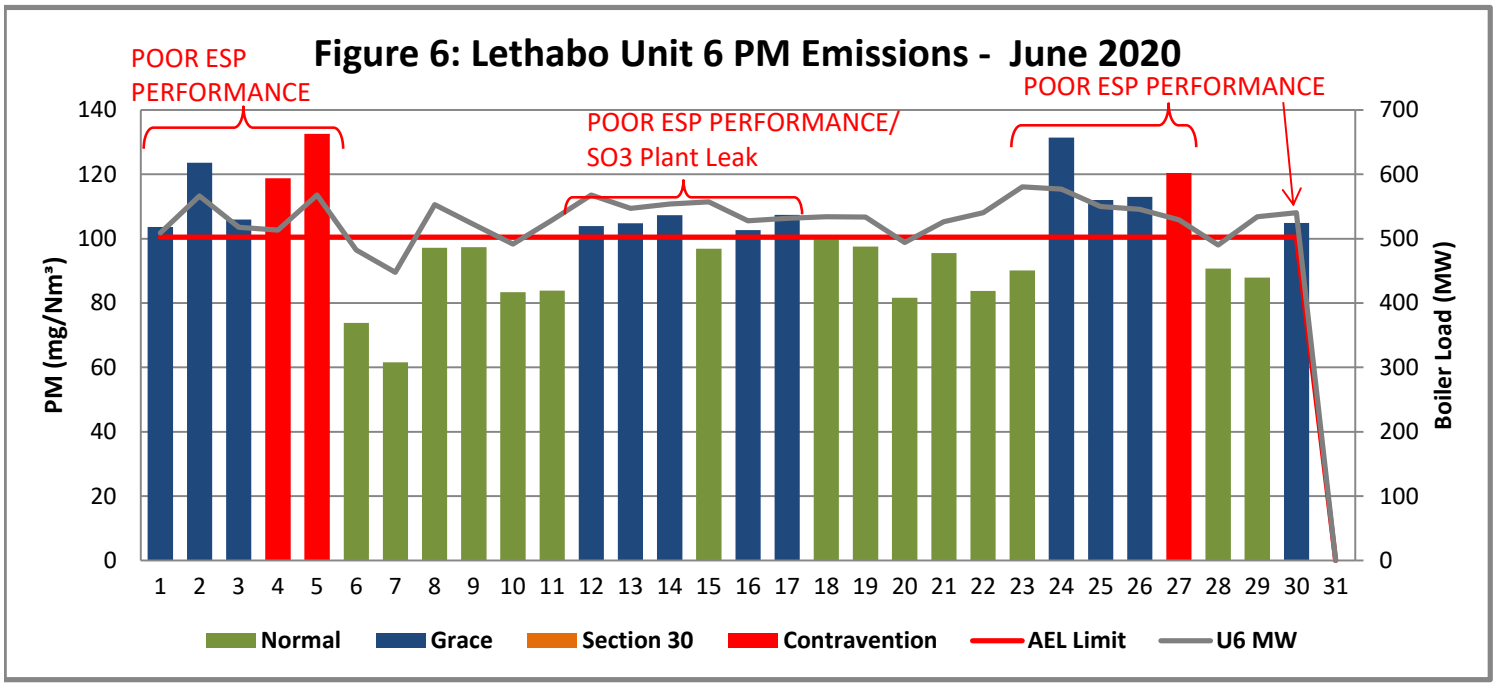


Figure 6: Lethabo Unit 6 PM Emissions - June 2020
POOR ESP PERFORMANCE
POOR ESP PERFORMANCE/ SO3 Plant Leak
POOR ESP PERFORMANCE
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

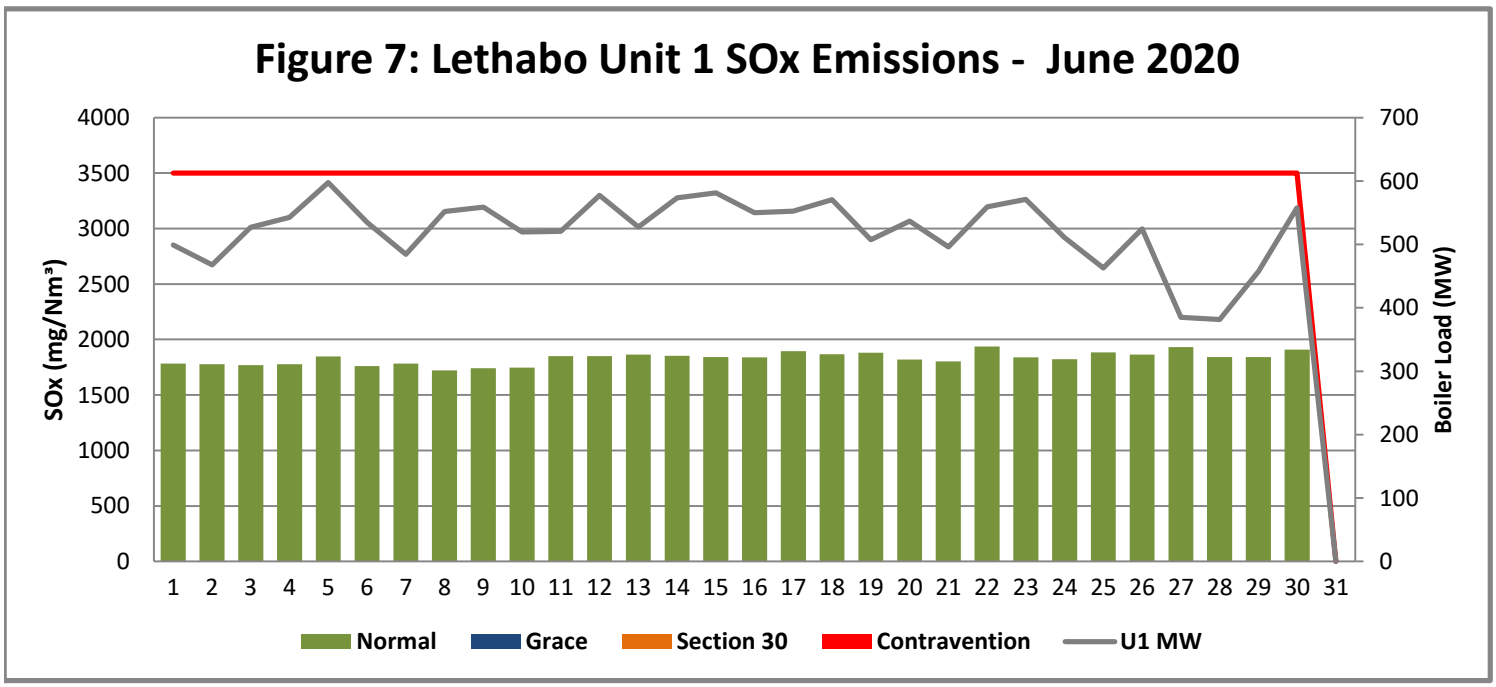


Figure 7: Lethabo Unit 1 SOx Emissions - June 2020
SOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
U1 MW

Figure 8: Lethabo Unit 2 SOx Emissions - June 2020

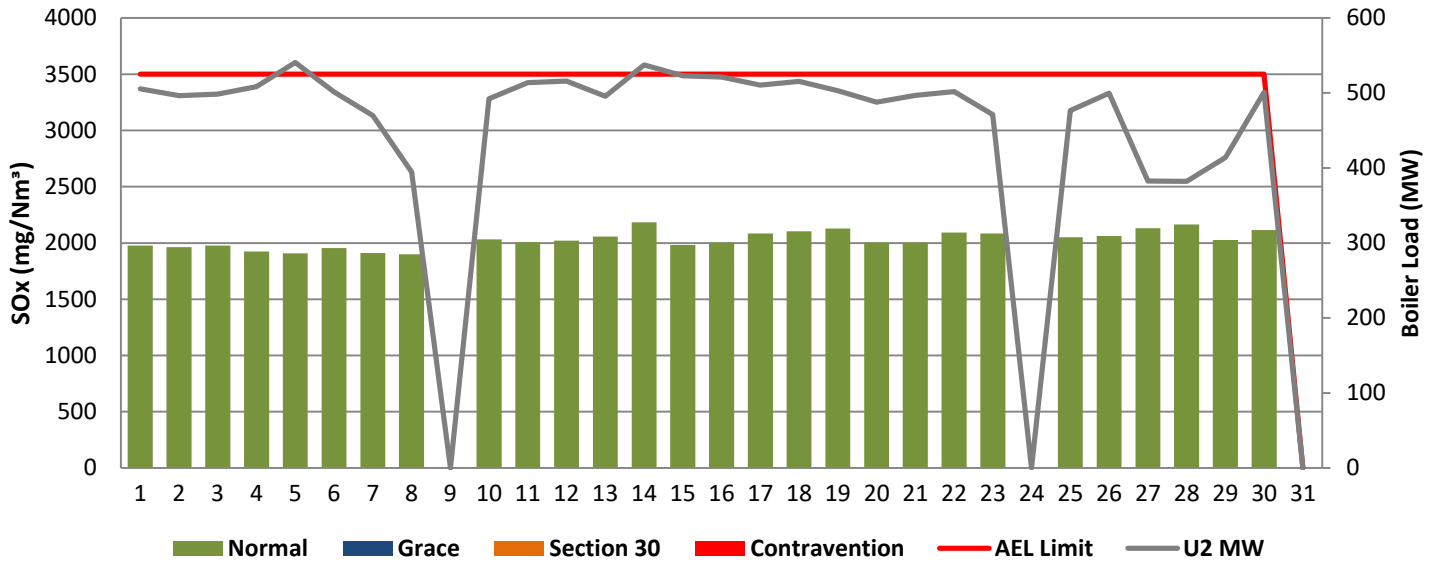
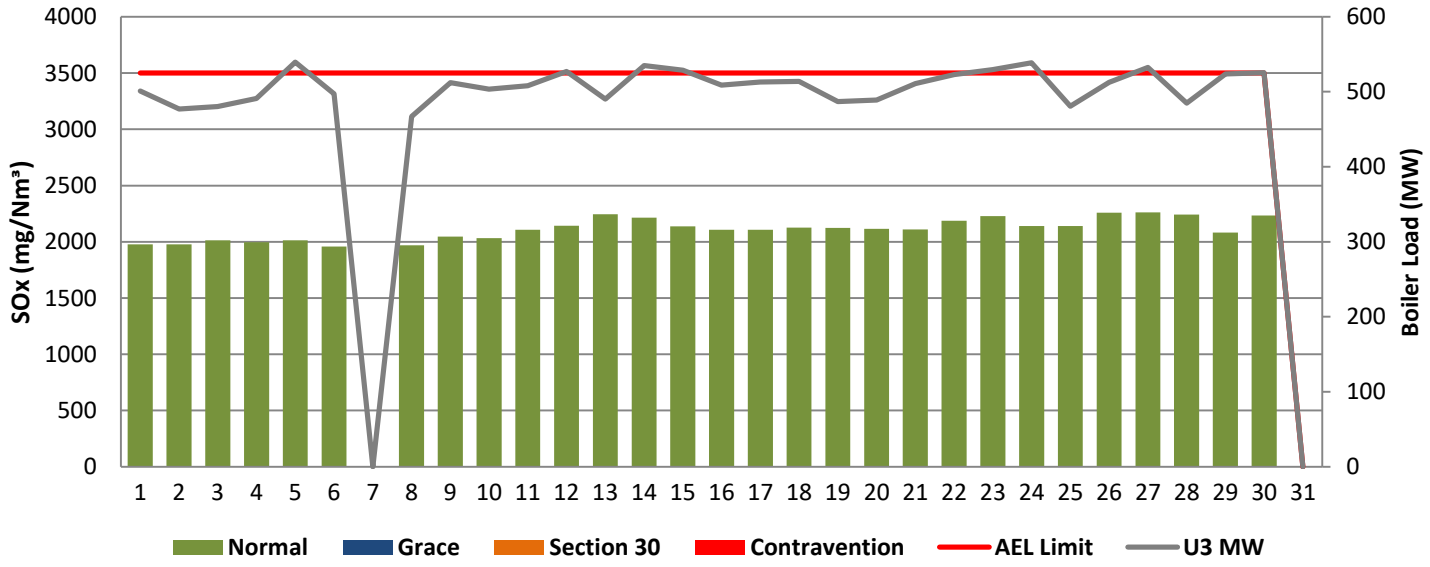


Figure 9: Lethabo Unit 3 SOx Emissions - June 2020



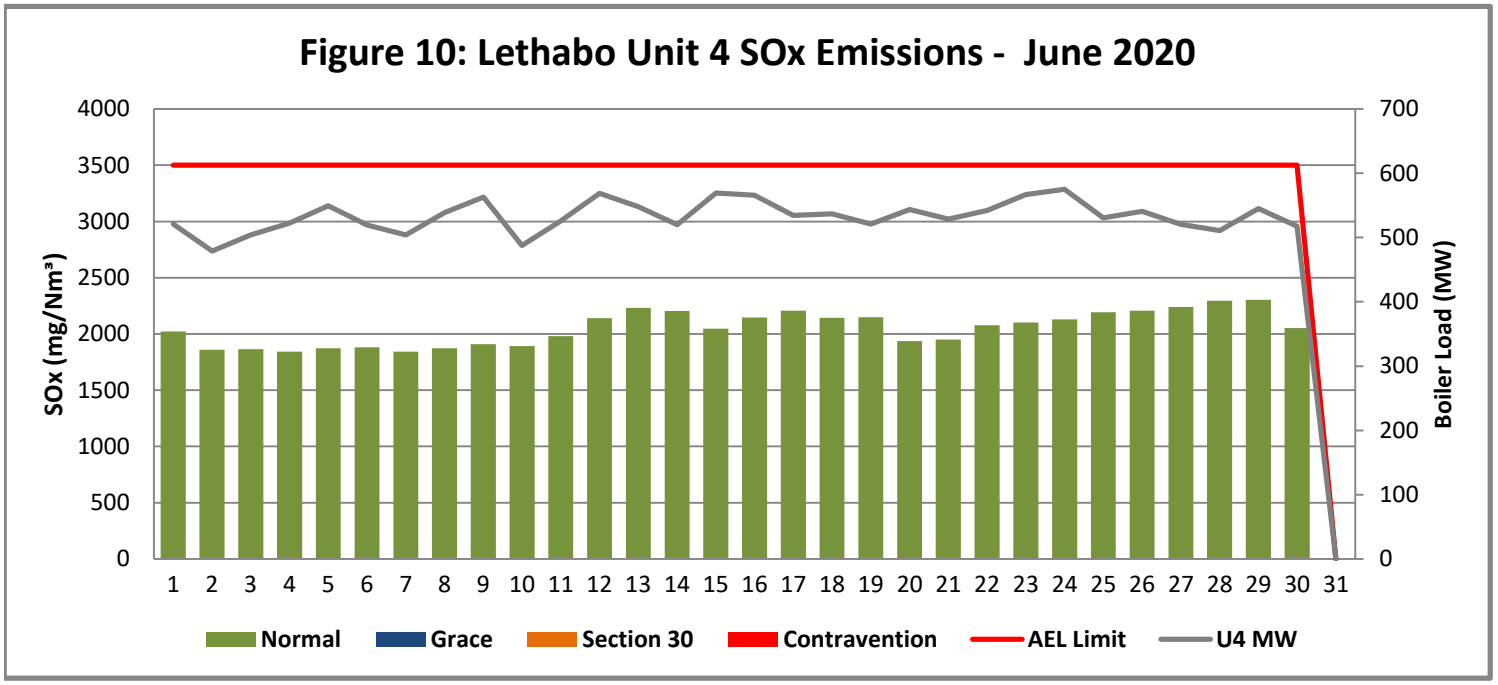


Figure 10: Lethabo Unit 4 SOx Emissions - June 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

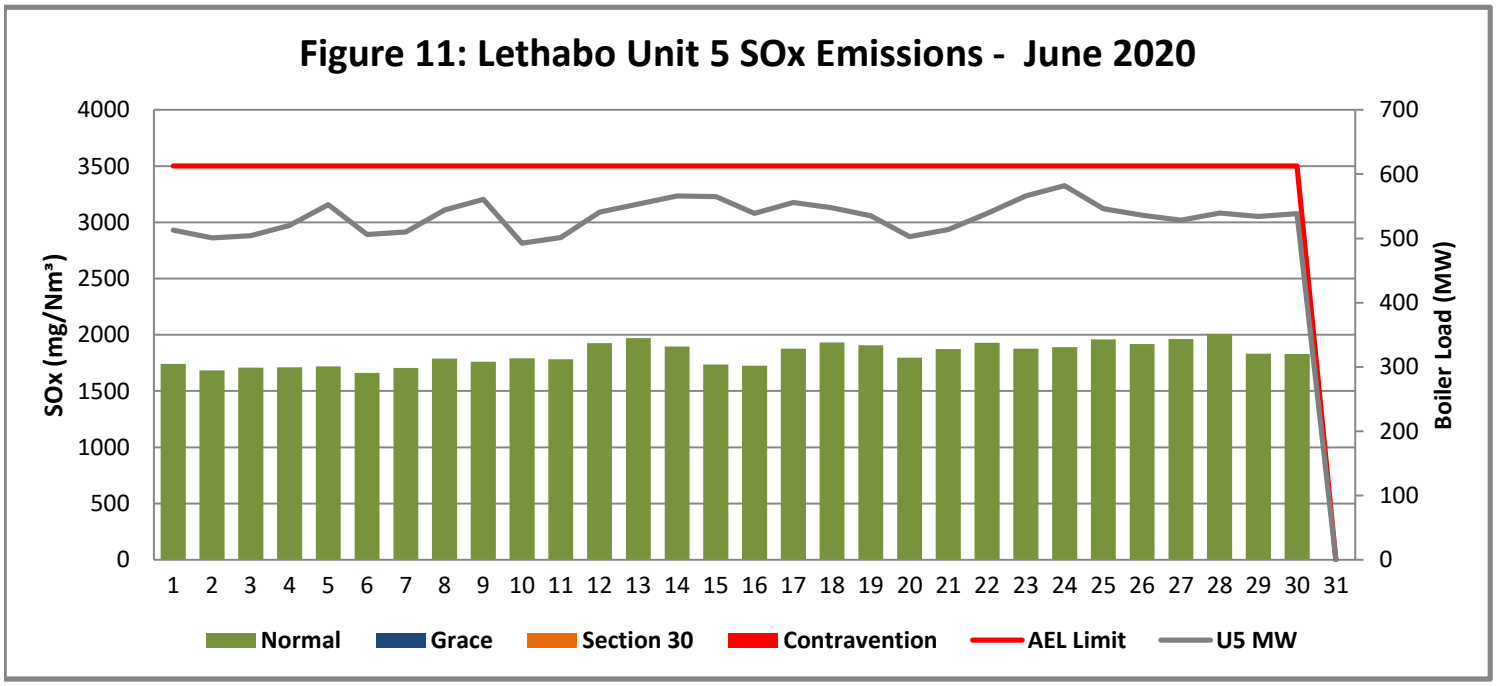


Figure 11: Lethabo Unit 5 SOx Emissions - June 2020
SOx (mg/Nm³)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

Figure 12: Lethabo Unit 6 SOx Emissions - June 2020

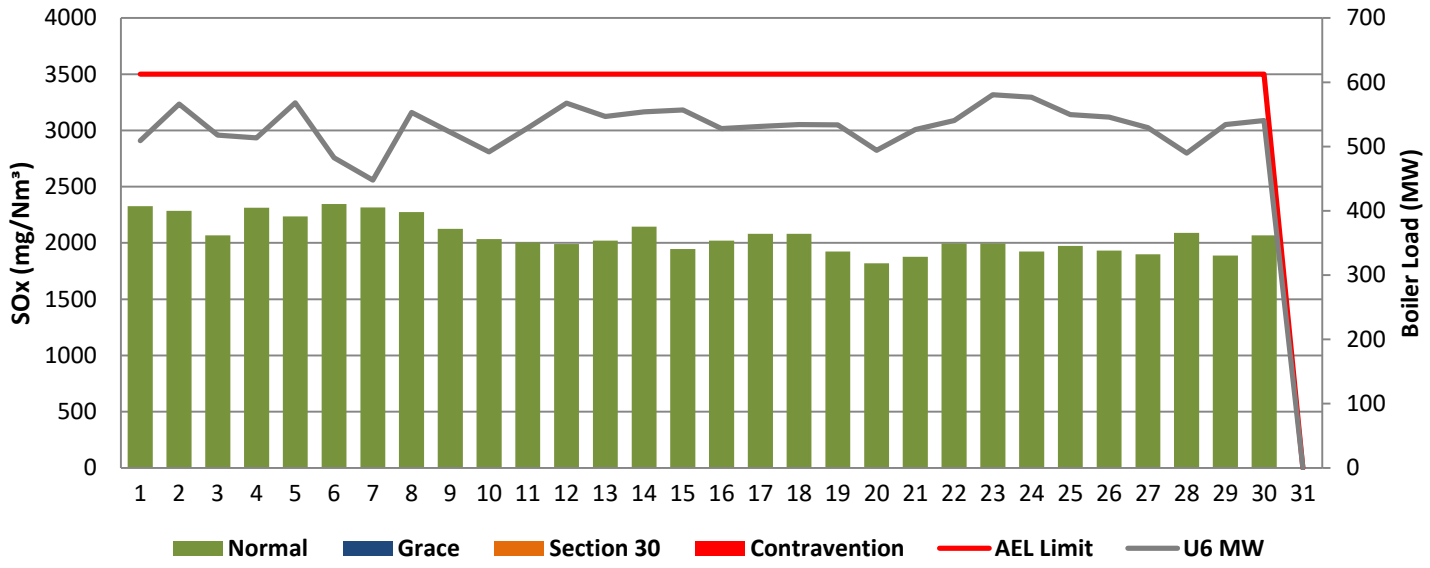
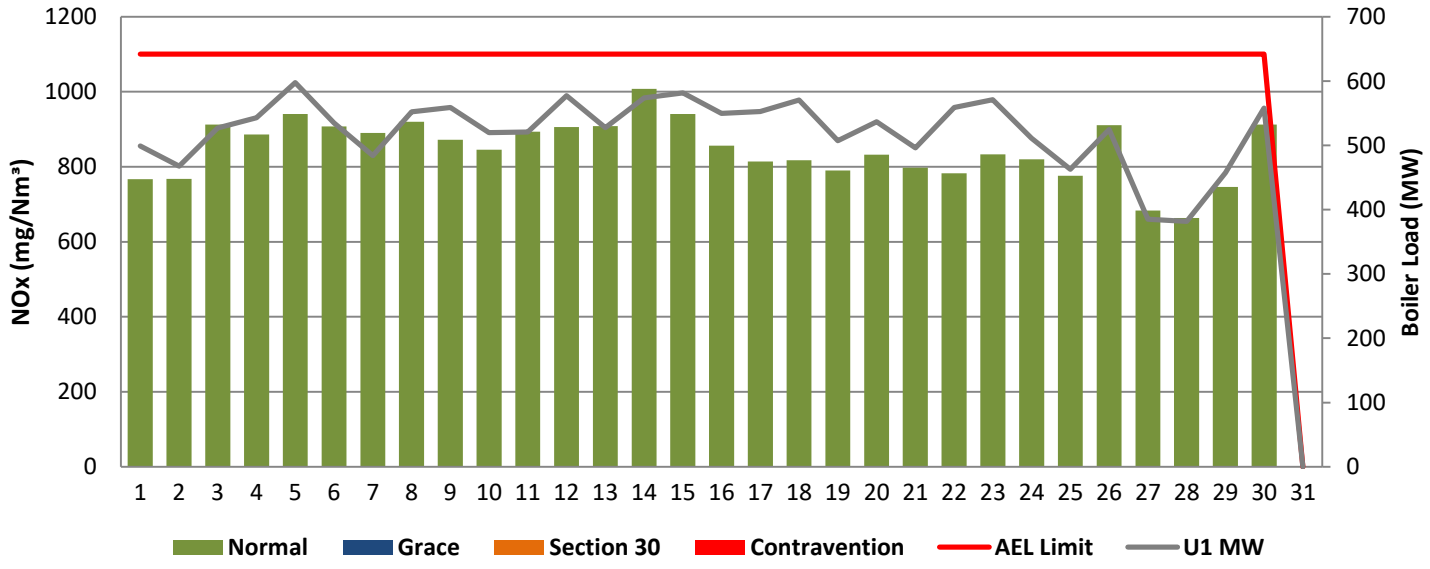


Figure 13: Lethabo Unit 1 NOx Emissions - June 2020



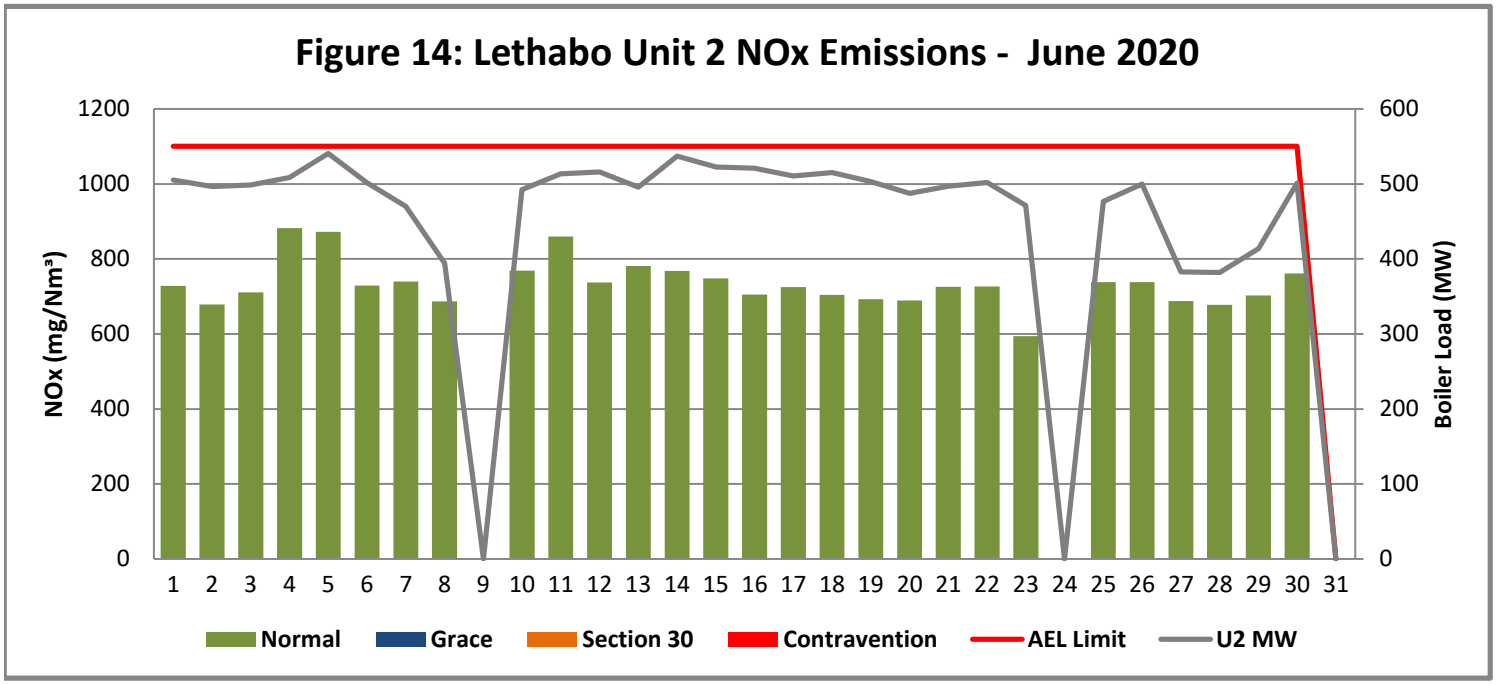


Figure 14: Lethabo Unit 2 NOx Emissions - June 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

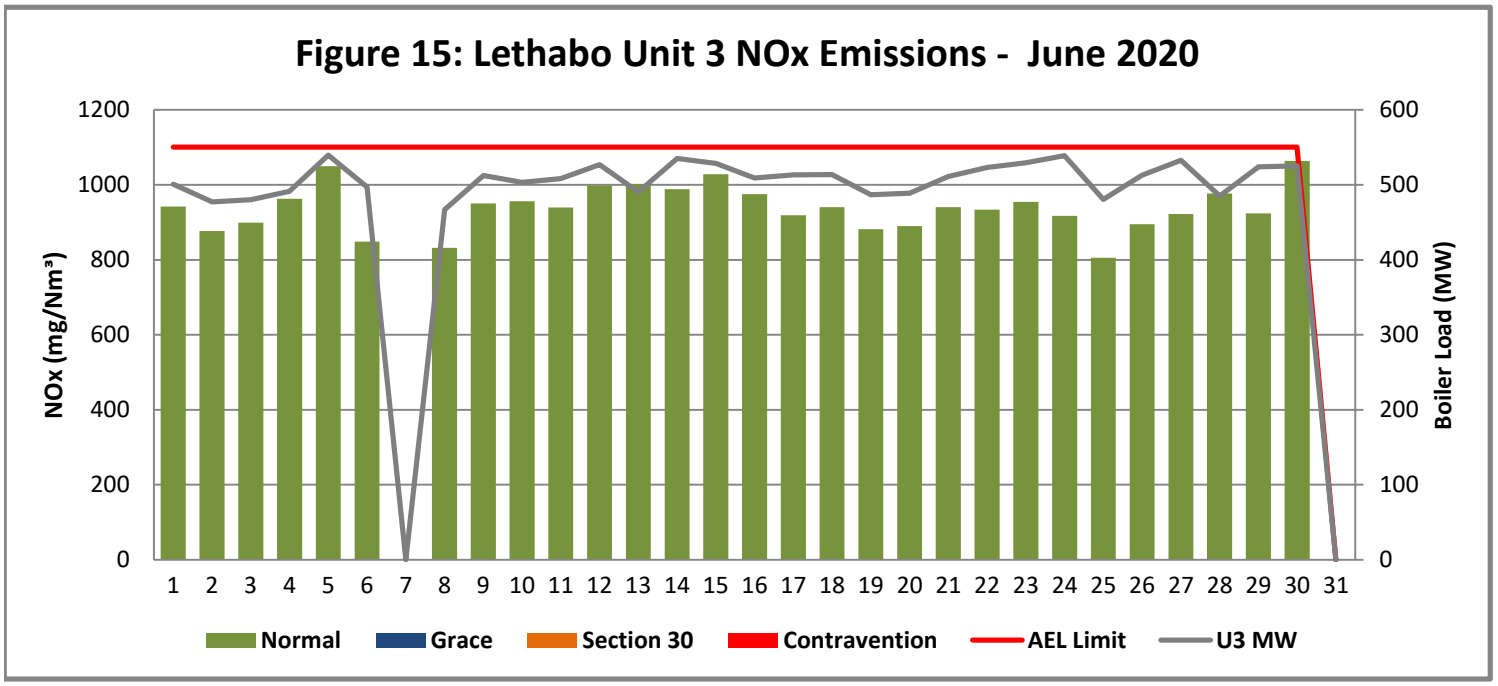


Figure 15: Lethabo Unit 3 NOx Emissions - June 2020
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

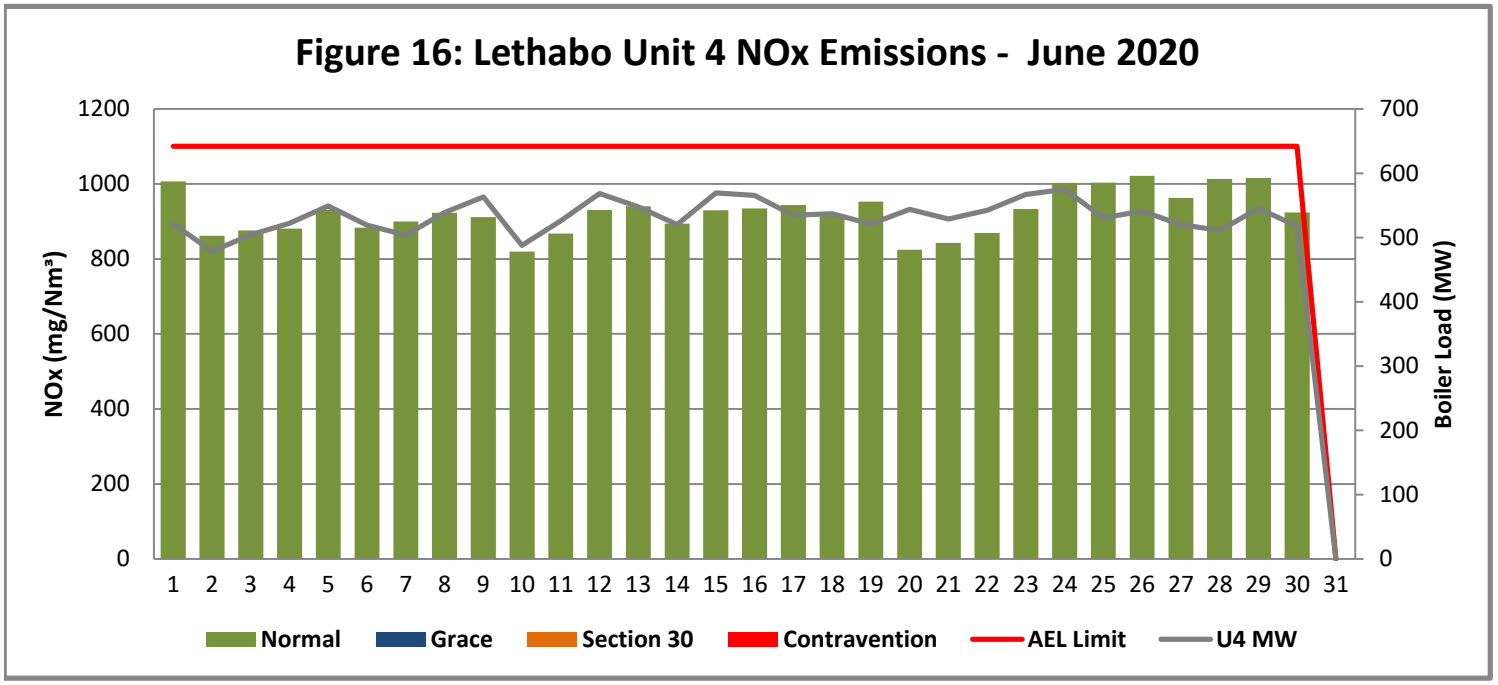


Figure 16: Lethabo Unit 4 NOx Emissions - June 2020
NOx (mg/Nm³)
Boiler Load (MW)
0
200
400
600
800
1000
1200
0
100
200
300
400
500
600
700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

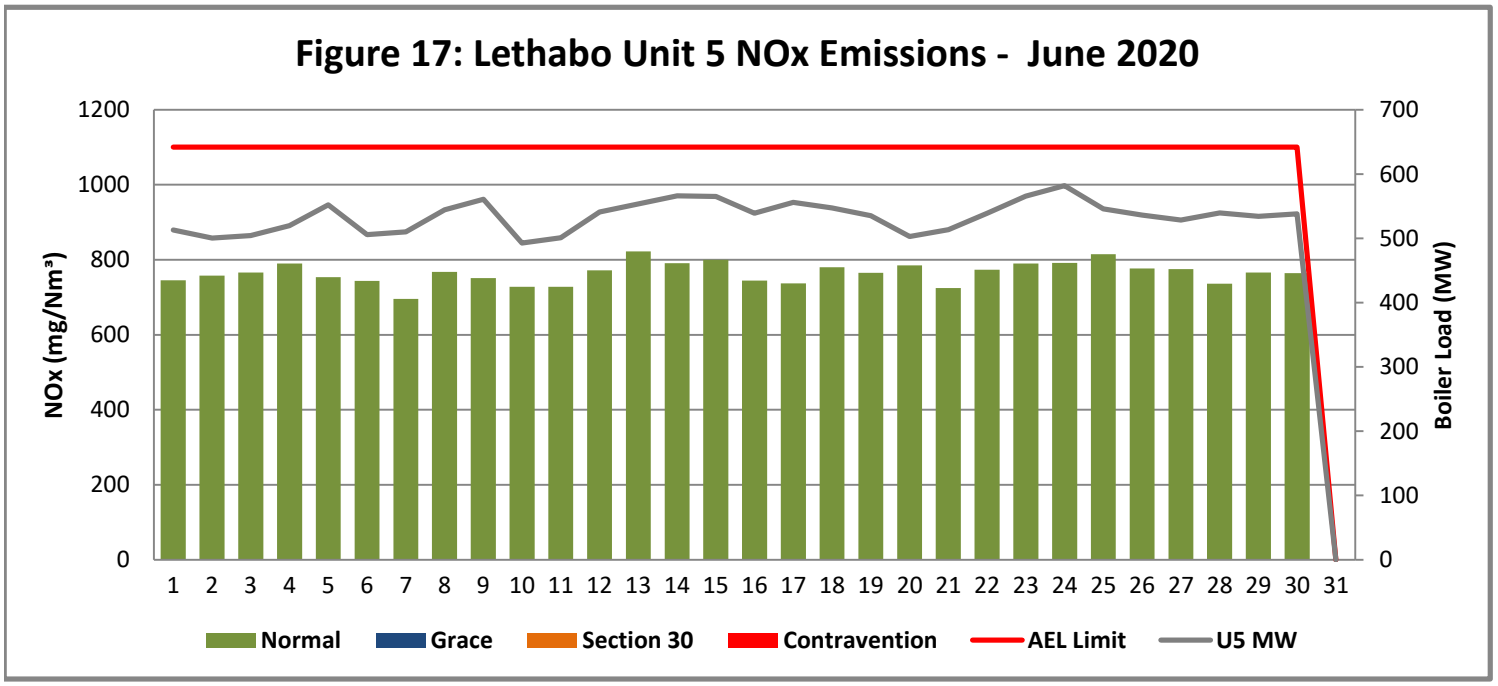
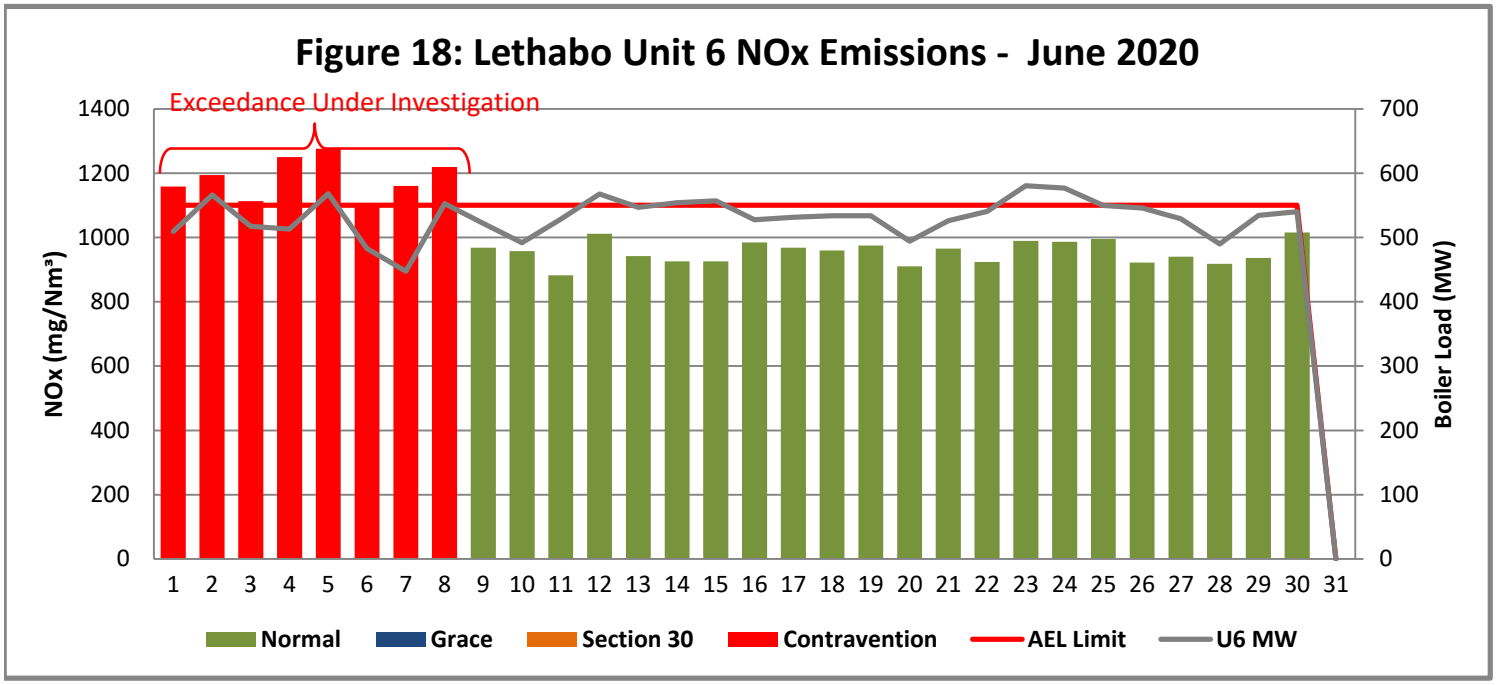


Figure 17: Lethabo Unit 5 NOx Emissions - June 2020
NOx (mg/Nm³)
Boiler Load (MW)
0
200
400
600
800
1000
1200
0
100
200
300
400
500
600
700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW



7. SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1	***HP case Top/Bottom steam DT > 40K***							
Breaker Open (BO)	*7:27 AM*	*2020-06-02*						
Draught Group (DG) Shut Down (SD)	*DG did not trip or SD*	*DG did not trip or SD*						
BO to DG SD (duration)	*n/a*	DD:HH:MM						
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD:HH:MM						
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		DD:HH:MM						

Unit No.2	*Boiler tube leak repairs.*		*AM: Boiler Tube Leak*					
Breaker Open (BO)	*10:49 AM*	*2020-06-08*	*12:43 PM*	*2020-06-23*				
Draught Group (DG) Shut Down (SD)	*10:40 PM*	*2020-06-08*	*12:40 AM*	*2020-06-24*				
BO to DG SD (duration)	*00:11:51*	DD:HH:MM	*00:11:57*	DD:HH:MM				
Fires in time	*3:25 AM*	*2020-06-10*	*3:35 AM*	*2020-06-25*				
Synch. to Grid (or BC)	*10:29 AM*	*2020-06-10*	*6:49 AM*	*2020-06-25*				
Fires in to BC (duration)	*00:07:04*	DD:HH:MM	*00:03:14*	DD:HH:MM				
Emissions below limit from BC (end date)	*5:00 AM*		*5:00 AM*	*2020-06-26*				
Emissions below limit from BC (duration)	*00:18:31*	DD:HH:MM	*00:22:11*	DD:HH:MM				

Unit No.3	*Boiler tube leak.*							
Breaker Open (BO)	*9:58 PM*	*2020-06-06*						
Draught Group (DG) Shut Down (SD)	*10:05 AM*	*2020-06-07*						
BO to DG SD (duration)	*00:12:07*	DD:HH:MM						
Fires in time	*5:15 AM*	*2020-06-08*						
Synch. to Grid (or BC)	*9:45 AM*	*2020-06-08*						
Fires in to BC (duration)	*00:04:30*	DD:HH:MM						
Emissions below limit from BC (end date)	*10:00 AM*	*2020-06-09*						
Emissions below limit from BC (duration)	*01:00:15*	DD:HH:MM						

Unit No.4	*Unit tripped on generator long time reverse power protection*							
Breaker Open (BO)	*2:39 PM*	*2020-06-14*						
Draught Group (DG) Shut Down (SD)	*DG did not trip or SD*	*DG did not trip or SD*						
BO to DG SD (duration)	*n/a*	DD:HH:MM						
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD:HH:MM						

Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		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 June 2020 in mg/Nm^3

8. MAINTENANCE

Unit 1				
Beginning of	2020-06-25 00:00:00	2020-06-28 00:00:00		
Reason for Maintenance	LHO Precip Casing repairs	AM: LHI precip casing repairs		
End (Time):	2020-06-25 17:15:00	2020-06-28 14:26:00		
Duration	17:15:00	14:26:00		

Unit 2				
Beginning of				
Reason for Maintenance				
End (Time):				
Duration				

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

Unit 4				
Beginning of	2020-06-18 23:59:00			
Reason for Maintenance	AM: Bucket elevator 4B repairs			
End (Time):	2020-06-19 03:35:00			
Duration	3:36:00			

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

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

9. GENERAL

Unit5
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 for the whole of June 2020. This resulted in most of the previously reported NOx and SOx exceedances to no longer be exceedances

Unit 6:
There was a problem with the heater on the gas analyser that started on 16 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 happens all the gas values drop to zero. It mainly happened during early morning hours when ambient temperatures were low. On 9 June 2020 the loose wire was found and that rectified the problem. The following dates and times are when that happened and will be removed from the reported data:

- 3 June 05:08-07:32 (2.4 hours)
- 4 June 02:41-10:58 (8.28 hours
- 6 June 03:28-11:01 (7.55 hours)
- 7 June 01:08-13:18 (12.17 hours)
- 8 June 01:09-10:25 (9.27 hours)
- 9 June 03:24-11:56 (8.56 hours)

Exceedance on the 4th, 5th and 8thh of June 2020 are under investigation and is possibly related to heater tube issue on monitor.

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 calender year. Based on the back fitting exercise new exceedance in some cases would be added and some exisiting exccedances would be removed. This was the case for both Gaseuos and Particulate matter emissions.

It is also noted that a number of new exceedance that sum to greater the allowable grace periods 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 Exceendance from the 1st-5th June 2020 was found to be an exceedance after the backfitting of the correlation curves were done. This would result in a Section 30 incident.

Unit 6 PM Exceendance from the 24th-27th June 2020 was found to be an exceedance after the backfitting of the correlation curves were done. This would result in a Section 30 incident.

Unit 6 Nox emissions from the 1st-3rd June 2020 and 6th-7th June 2020 was found to be an exceedance after the backfitting of the correlation curves were done. These exceedances are under investigation and are possibly related to heater tube issue on monitor.

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
JULY '19	0.40	0.31	0.47	0.34	OFF	0.36	0.38
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	0.38	0.38	0.44	OFF	OFF	0.45	0.41
DEC '19	0.44	0.30	0.62	OFF	OFF	0.40	0.44
JAN '20	0.43	0.32	0.60	0.20	OFF	0.40	0.39
FEB '20	0.38	0.28	0.65	0.23	0.43	OFF	0.39
MAR '20	0.37	0.56	0.68	0.21	0.52	OFF	0.46
APR '20	0.70	0.46	0.63	0.16	0.28	0.38	0.41
MAY '20	0.83	0.34	0.50	0.16	0.28	0.22	0.35
JUN '20	0.23	0.26	0.29	0.18	0.20	0.48	0.27

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-Jun	43	51	65	39	61	104	100
02-Jun	77	43	65	18	61	124	100
03-Jun	42	57	82	28	60	106	100
04-Jun	47	77	84	40	64	114	100
05-Jun	49	81	102	50	54	133	100
06-Jun	40	64	51	27	54	74	100
07-Jun	42	55	OFF	27	44	62	100
08-Jun	47	40	OFF	33	56	97	100
09-Jun	36	OFF	83	33	49	97	100
10-Jun	38	OFF	64	17	36	83	100
11-Jun	38	79	88	119	43	84	100
12-Jun	35	53	67	18	49	104	100
13-Jun	34	53	56	18	50	105	100
14-Jun	44	68	68	21	51	107	100
15-Jun	49	59	58	8	48	97	100
16-Jun	32	72	53	42	47	103	100
17-Jun	33	57	90	31	49	107	100
18-Jun	40	62	158	17	61	100	100
19-Jun	30	54	OFF	28	49	98	100
20-Jun	31	58	44	36	54	82	100
21-Jun	33	59	62	37	35	96	100
22-Jun	75	53	60	33	31	84	100
23-Jun	106	50	65	35	45	90	100
24-Jun	96	OFF	67	36	51	131	100
25-Jun	196	OFF	73	37	47	112	100
26-Jun	99	83	65	41	44	113	100
27-Jun	63	31	61	40	41	120	100
28-Jun	196	37	80	32	59	91	100
29-Jun	27	69	72	30	56	88	100
30-Jun	49	171	88	33	56	105	100

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jun	43	51	54	37	71	49	100
02-Jun	77	43	53	19	71	63	100
03-Jun	42	57	66	27	69	52	100
04-Jun	47	77	68	37	74	56	100
05-Jun	49	81	82	46	62	63	100
06-Jun	40	64	42	27	61	36	100
07-Jun	42	55	OFF	26	49	30	100
08-Jun	47	40	OFF	32	64	55	100
09-Jun	36	OFF	68	32	56	47	100
10-Jun	38	OFF	53	18	40	40	100
11-Jun	38	79	71	103	47	45	100
12-Jun	35	53	54	19	55	50	100
13-Jun	34	53	46	19	57	50	100
14-Jun	44	68	55	22	58	51	100
15-Jun	49	59	48	11	55	46	100
16-Jun	32	72	44	40	53	51	100
17-Jun	33	57	73	30	56	50	100
18-Jun	40	62	124	19	71	47	100
19-Jun	30	54	OFF	27	55	46	100
20-Jun	31	58	37	35	63	39	100
21-Jun	33	59	51	35	42	45	100
22-Jun	75	53	49	32	50	42	100
23-Jun	106	50	53	33	51	59	100
24-Jun	96	OFF	54	34	58	62	100
25-Jun	196	OFF	60	36	53	59	100
26-Jun	99	83	53	39	49	55	100
27-Jun	63	31	50	38	45	56	100
28-Jun	196	37	66	31	68	43	100
29-Jun	27	69	59	29	64	49	100
30-Jun	49	171	72	32	65	96	100

ADDENDUM TO MONTHLY EMISSIONS REPORT

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jun	1783	1976	1976	2022	1742	2327	3500
02-Jun	1779	1962	1979	1861	1683	2285	3500
03-Jun	1768	1976	2014	1864	1707	2067	3500
04-Jun	1777	1925	1996	1844	1711	2313	3500
05-Jun	1846	1906	2012	1872	1719	2235	3500
06-Jun	1761	1954	1958	1881	1662	2346	3500
07-Jun	1782	1910	OFF	1842	1705	2315	3500
08-Jun	1722	1898	1969	1874	1789	2273	3500
09-Jun	1740	OFF	2046	1908	1760	2125	3500
10-Jun	1746	2032	2033	1893	1791	2035	3500
11-Jun	1851	2008	2107	1981	1783	2004	3500
12-Jun	1851	2020	2142	2141	1926	1990	3500
13-Jun	1865	2056	2245	2231	1971	2019	3500
14-Jun	1853	2184	2215	2205	1896	2144	3500
15-Jun	1841	1983	2136	2048	1736	1947	3500
16-Jun	1839	2005	2107	2146	1726	2021	3500
17-Jun	1894	2083	2106	2207	1877	2081	3500
18-Jun	1866	2102	2127	2145	1932	2082	3500
19-Jun	1882	2129	2122	2149	1906	1924	3500
20-Jun	1820	2003	2116	1936	1795	1819	3500
21-Jun	1804	2005	2110	1950	1873	1877	3500
22-Jun	1936	2094	2187	2077	1930	1997	3500
23-Jun	1840	2084	2227	2101	1877	1997	3500
24-Jun	1822	OFF	2141	2130	1891	1925	3500
25-Jun	1885	2050	2141	2194	1960	1974	3500
26-Jun	1863	2063	2258	2208	1918	1932	3500
27-Jun	1932	2132	2260	2240	1961	1898	3500
28-Jun	1842	2165	2241	2296	2005	2090	3500
29-Jun	1841	2025	2083	2303	1832	1888	3500
30-Jun	1910	2116	2233	2053	1830	2067	3500

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jun	1783	2719	1976	2113	1556	2107	3500
02-Jun	1779	2700	1979	1928	1503	2086	3500
03-Jun	1768	2722	2014	1933	1525	1910	3500
04-Jun	1777	2653	1996	1904	1529	2086	3500
05-Jun	1846	2568	2012	1933	1537	2030	3500
06-Jun	1761	2717	1958	1944	1482	2100	3500
07-Jun	1782	2670	OFF	1913	1521	2070	3500
08-Jun	1722	2676	1969	1939	1599	2064	3500
09-Jun	1740	OFF	2046	1965	1573	1921	3500
10-Jun	1746	2770	2033	1953	1599	1877	3500
11-Jun	1851	2746	2107	2045	1594	1862	3500
12-Jun	1851	2809	2142	2217	1724	1853	3500
13-Jun	1865	2905	2245	2320	1762	1884	3500
14-Jun	1853	3014	2215	2320	1695	2006	3500
15-Jun	1841	2746	2136	2129	1553	1824	3500
16-Jun	1839	2797	2107	2240	1545	1870	3500
17-Jun	1894	2925	2106	2323	1683	1922	3500
18-Jun	1866	2930	2127	2248	1732	1929	3500
19-Jun	1882	2976	2122	2250	1709	1791	3500
20-Jun	1820	2793	2116	1948	1606	1710	3500
21-Jun	1804	2800	2110	1989	1674	1767	3500
22-Jun	1936	2928	2187	2144	1727	1875	3500
23-Jun	1840	2909	2227	2171	1678	1883	3500
24-Jun	1822	OFF	2141	2215	1690	1820	3500
25-Jun	1885	2857	2141	2305	1755	1855	3500
26-Jun	1863	2888	2258	2297	1717	1826	3500
27-Jun	1932	3110	2260	2362	1753	1790	3500
28-Jun	1842	3139	2241	2463	1795	1955	3500
29-Jun	1841	2916	2083	2448	1642	1780	3500
30-Jun	1910	2931	2233	2076	1727	1835	3500

ADDENDUM TO MONTHLY EMISSIONS REPORT

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jun	908	729	849	883	743	1101	1100
02-Jun	768	679	877	862	758	1194	1100
03-Jun	913	711	899	876	766	1114	1100
04-Jun	886	882	963	881	790	1250	1100
05-Jun	940	872	1050	930	754	1277	1100
06-Jun	908	729	849	883	743	1101	1100
07-Jun	890	740	OFF	900	696	1161	1100
08-Jun	920	687	832	923	768	1219	1100
09-Jun	872	OFF	950	912	751	968	1100
10-Jun	845	769	956	820	728	958	1100
11-Jun	894	860	940	868	728	883	1100
12-Jun	906	738	998	931	772	1012	1100
13-Jun	909	781	1001	941	822	942	1100
14-Jun	1008	768	989	895	791	926	1100
15-Jun	940	748	1028	930	800	926	1100
16-Jun	856	705	975	935	745	985	1100
17-Jun	814	725	919	944	738	968	1100
18-Jun	818	704	940	919	781	959	1100
19-Jun	790	692	882	953	765	975	1100
20-Jun	833	689	890	825	785	911	1100
21-Jun	798	726	940	843	725	965	1100
22-Jun	782	727	934	869	774	924	1100
23-Jun	833	594	955	933	790	990	1100
24-Jun	820	OFF	917	1003	791	986	1100
25-Jun	776	738	806	1004	815	996	1100
26-Jun	911	738	895	1022	777	922	1100
27-Jun	683	688	922	963	775	940	1100
28-Jun	663	678	976	1014	736	918	1100
29-Jun	746	702	924	1016	766	936	1100
30-Jun	913	762	1063	924	765	1016	1100

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

Date	U1	U2	U3	U4	U5	U6	Limit
01-Jun	908	1014	849	922	739	986	1100
02-Jun	768	934	877	901	754	1090	1100
03-Jun	913	980	899	917	763	1010	1100
04-Jun	886	1216	963	919	787	1128	1100
05-Jun	940	1175	1050	973	751	1160	1100
06-Jun	908	1014	849	922	739	986	1100
07-Jun	890	1033	OFF	945	692	1038	1100
08-Jun	920	970	832	966	765	1107	1100
09-Jun	872	OFF	950	951	748	873	1100
10-Jun	845	1052	956	853	724	886	1100
11-Jun	894	1176	940	904	725	814	1100
12-Jun	906	1027	998	976	770	966	1100
13-Jun	909	1105	1001	990	819	888	1100
14-Jun	1008	1063	989	946	788	874	1100
15-Jun	940	1036	1028	978	797	876	1100
16-Jun	856	983	975	985	743	923	1100
17-Jun	814	1019	919	1003	737	900	1100
18-Jun	818	981	940	972	780	896	1100
19-Jun	790	969	882	1008	765	922	1100
20-Jun	833	961	890	837	783	867	1100
21-Jun	798	1015	940	869	723	931	1100
22-Jun	782	1016	934	906	772	878	1100
23-Jun	833	830	955	976	787	964	1100
24-Jun	820	OFF	917	1058	789	963	1100
25-Jun	776	1035	806	1068	813	964	1100
26-Jun	911	1032	895	1077	775	889	1100
27-Jun	683	1003	922	1026	772	905	1100
28-Jun	663	983	976	1097	734	866	1100
29-Jun	746	1011	924	1091	765	899	1100
30-Jun	913	1055	1063	931	739	913	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**
Jul-19	100%	0	100%	0	100%	0	100%	0	OFF LOAD	0	100%	0
Aug-19	100%	0	100%	0	100%	0	100%	0	OFF LOAD	0	100%	0
Sep-19	100%	0	100%	0	100%	0	OFF LOAD	0	OFF LOAD	0	100%	0
Oct-19	100%	0	100%	0	100%	0	OFF LOAD	0	OFF LOAD	0	100%	0
Nov-19	99%	0	99%	0	100%	0	OFF LOAD	0	OFF LOAD	0	100%	0
Dec-19	98%	2	100%	0	100%	0	OFF LOAD	0	OFF LOAD	0	99%	1
Jan-20	95%	6	99%	1	100%	0	100%	0	OFF LOAD	0	100%	0
Feb-20	94%	3	100%	0	93%	4	100%	0	100%	0	0%	OFF LOAD
Mar-20	99%	1	98%	2	98%	3	100%	0	100%	0	0%	OFF LOAD
Apr-20	98%	2	95%	6	100%	0	100%	0	100%	0	100%	0
May-20	98%	2	98%	2	98%	2	100%	0	100%	0	100%	0
Jun-20	98%	2	100%	0	100%	0	100%	0	100%	0	100%	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**
Jul-19	100.00%	0	100.00%	0	100.00%	0	100.00%	0	OFF LOAD	OFF LOAD	93.54%	2
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	100.00%	0	OFF LOAD	OFF LOAD	OFF LOAD	OFF LOAD	90.00%	1
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	0%	OFF LOAD
Mar-20	100.00%	0	93.55%	2	87.10%	4	100.00%	0	64.52%	11	0%	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

ADDENDUM TO MONTHLY EMISSIONS REPORT

Particulate Emission Monitors

Availability						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Jul-19	97%	97%	98%	98%	OFF	99%
Aug-19	98%	100%	100%	92%	OFF	98%
Sep-19	96%	99%	99%	OFF	OFF	99%
Oct-19	98%	100%	100%	OFF	OFF	99%
Nov-19	95%	95%	96%	OFF	OFF	78%
Dec-19	91%	100%	97%	OFF	OFF	69%
Jan-20	92%	99%	99%	100%	OFF	64%
Feb-20	76%	99%	98%	99%	100%	OFF
Mar-20	87%	97%	96%	99%	97%	OFF
Apr-20	91%	97%	99%	99%	96%	95%
May-20	89%	99%	99%	100%	100%	98%
Jun-20	90%	99%	99%	99%	98%	91%

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**
Jul-19	97%	96%	96%	96%	98%	98%	97%	97%	OFF	OFF	100%	100%
Aug-19	96%	96%	100%	100%	100%	100%	86%	86%	OFF	OFF	94%	94%
Sep-19	96%	96%	99%	99%	99%	99%	OFF	OFF	OFF	OFF	91%	90.80%
Oct-19	97%	97%	100%	100%	100%	100%	OFF	OFF	OFF	OFF	100%	100.00%
Nov-19	99%	99%	99%	99%	95%	95%	OFF	OFF	OFF	OFF	98%	98%
Dec-19	99%	99%	95%	95%	95%	95%	OFF	OFF	OFF	OFF	93%	93%
Jan-20	97%	97%	100%	100%	99%	99%	83%	85%	OFF	OFF	95%	95%
Feb-20	99%	99%	97%	99%	99%	99%	95%	95%	85%	85%	OFF	OFF
Mar-20	98%	98%	97%	97%	97%	97%	97%	97%	97%	97%	OFF	OFF
Apr-20	98%	98%	99%	99%	86%	86%	98%	98%	96%	96%	86%	86%
May-20	95%	95%	100%	100%	100%	100%	100%	100%	93%	94%	91%	91%
Jun-20	99%	99%	99%	99%	99%	99%	100%	100%	100%	100%	93%	93%

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Oxygen Monitor Availabilty						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Jul-19	96%	96%	98%	97%	OFF	100%
Aug-19	97%	99%	100%	86%	OFF	94%
Sep-19	96%	99%	99%	OFF	OFF	91%
Oct-19	97%	100%	100%	OFF	OFF	99%
Nov-19	99%	99%	95%	OFF	OFF	98%
Dec-19	99%	94%	95%	OFF	OFF	93%
Jan-20	97%	99%	99%	90%	OFF	95%
Feb-20	99%	99%	99%	95%	67%	OFF
Mar-20	99%	95%	95%	98%	97%	OFF
Apr-20	49%	97%	87%	94%	96%	86%
May-20	90%	100%	100%	100%	100%	100%
Jun-20	99%	100%	99%	99%	100%	100%

14. EFFICIENCY

ESP Efficiency (%)						
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Jul-19	99.998%	99.998%	99.998%	99.998%	OFF	99.998%
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	99.998%	99.998%	99.998%	OFF	OFF	99.998%
Dec-19	99.998%	99.999%	99.997%	OFF	OFF	99.998%
Jan-20	99.998%	99.998%	99.997%	99.999%	OFF	99.998%
Feb-20	99.998%	99.999%	99.997%	99.999%	99.998%	OFF
Mar-20	99.998%	99.997%	99.997%	99.999%	99.997%	OFF
Apr-20	99.997%	99.998%	99.997%	99.999%	99.999%	99.998%
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%

ADDENDUM TO MONTHLY EMISSIONS REPORT

15. REMARKS

UNIT	MWLOSS	REASON	ACTUALSTARTDATE	ACTUALENDDATE
1	593	HP case Top/Bottom steam DT > 40K	2020-06-02 07:27:00	2020-06-02 08:51:00
1	116	High stack emmissions.	2020-06-24 10:58:00	2020-06-24 12:01:00
1	216	EF: High stack emissions.	2020-06-24 12:01:00	2020-06-24 16:43:00
1	218	high stack emissions	2020-06-24 21:14:00	2020-06-25 00:00:00
1	100	High stack emissions.	2020-06-25 00:00:00	2020-06-25 04:19:00
1	118	LHO Precip Casing repairs	2020-06-25 00:00:00	2020-06-25 17:15:00
1	217	AM: Dust plant standing	2020-06-26 22:31:00	2020-06-27 04:08:00
1	236	AM: Dust plant standing	2020-06-27 04:08:00	2020-06-28 00:00:00
1	118	AM: Dust plant standing	2020-06-28 00:00:00	2020-06-28 14:26:00
1	118	AM: LHI precip casing repairs	2020-06-28 00:00:00	2020-06-28 14:26:00
1	236	AM:Dust plant standing.	2020-06-28 14:26:00	2020-06-29 16:31:00
2	593	Boiler tube leak repairs.	2020-06-08 10:49:00	2020-06-09 10:29:00
2	593	AM: Boiler Tube Leak	2020-06-23 12:43:00	2020-06-25 06:49:00
2	150	AM: Dust plant standing	2020-06-26 22:34:00	2020-06-27 03:58:00
2	170	AM: Dust plant standing	2020-06-27 03:58:00	2020-06-29 17:08:00
2	150	EF: High ash hopper levels	2020-06-29 21:35:00	2020-06-30 06:45:00
3	593	Boiler tube leak.	2020-06-06 21:58:00	2020-06-08 09:45:00
4	593	Unit tripped on generator long time reverse power protection	2020-06-14 14:39:00	2020-06-14 18:17:00
4	218	AM: Bucket elevator 4B repairs	2020-06-18 23:59:00	2020-06-19 03:35:00
6	98	Dust plant high hoper levels.	2020-06-06 21:51:00	2020-06-07 09:24:00

PM Exceedances		
U1.	LHO F7 tripping on under voltage; F2 ISOLATOR BURNED; F5 INTERNAL FAULT; F6 & 7 SPARKING. LHI F1 & 4 SPARKING. RHI F7 TRANSFORMER FAULTY TO BE CHANGED. RHO F1 SPARKING	23-Jun
U1.	LHO Precip Casing Outage Three high hopper levels: LHO F4, RHI F4 & 5, Ops confirmed that there are true reflection, there are some hoppers which are blocked, six blocked hoppers reported. RHI F5 Tripping on under voltage LHO casing was out however there are still defects awaiting plant, EMS provided feedback F7 was the only field which still had defects during the still air test F2 isolator to be changed but board need to be on outage F3 was in service during still air test, need to do an open circuit test	25-Jun
U1.	LHO: F6 POOR PERFORMANCE; F5 CE RAPPER NOT RAPPING; F2 CE RAPPER FAULTY; F7 TRIPPING ON UNDER VOLTAGE; F3 OFF LHI: F1 & 2 ARCING & SPARKING; F4 POOR PERFORMANCE; F6 UNDERVOLTAGE FAULT / ARCING AND SPARKING RHI: F7 OFF RHO: F1 OFF; F7 POOR PERFORMANCE	26-Jun
U1.	• LHI casing was on outage yesterday, Will be monitored during the day. • The clean rapping for Unit 1 and 2 was disabled last night due to DHP issues. Will be put back once all hopper levels are cleared, 4 hoppers still blocked • EMS LHI all fiends in service, F2 was arcing and sparking a little bit. No Mechanical defects were observed in LHI • LHO: F3, EMS confirmed it is in service; F7 defect, open circuit is planned	28-Jun
U2.	Unit Shut down for Boiler Tube Leak	23-Jun
U2.	• Issues on DHP. • Ops reported more than 15 high hopper levels • Emissions are high due to ESP casings performing poorly as a result of high hopper levels • RHO F4 undervoltage trip, EMS will address. • Elec Eng raised concerns that the load was increased yesterday even though the hoppers levels were not cleared, this could have causes more damaged to the ESP fields. • Clean rapping is still disabled, Elec Eng will enable it tonight to clear fields	30-Jun
U3.	LHO: F4 - Poorly performing; F6 Off; F1,2 & 6 Not rapping LHI: F1&4 - comms fault; F5 Off RHI: F4 - DE Rapper faulty RHO: F6 Not rapping; F1 -Off Due to Failed Cooling pump	05-Jun

U3.	SO3 plant off due to Sulphur Control Valve Issues, no dosing for some time. SO3 plant back on auto at 04:03 LHO: F6 off; f4 comms fault; F1,2&6 not rapping LHI: F3&5 performing poorly; F4 comms fault RHI: F4 DE Rapper Faulty RHO: F6 DE Rapper Faulty and internal fault; F1 off due to failed cooling pump Clean Rapping was done with high load.	18-Jun
U4.	LHO and LHI board tripped at 13:00, therefor there was a spike in emissions. 13:00 to 18:00.	11-Jun
U5.	Opacity meter faulty from 13:00 to 19:00, meter read full scale.Faulty mechanism was replaced and monitor reset.	21-Jun
U5.	Opacity monitors not reading due to c&i working on monitors. Back at 18:50	22-Jun
U6.	• High hopper levels • 13WX23 hopper 3 has high hopper levels LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking	01-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; F6 - Poorly performing RHO: F2 - Poorly performing	02-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; F6 - Poorly performing RHO: F2 - Poorly performing	03-Jun
U6.	LHO F3 High hopper levels LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking;	04-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; F5 - Poorly performing RHO: F2 - Poorly performing	05-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; F5 - Poorly performing; F4 Tripped on undervoltage RHO: F2 - Poorly performing; F3 Poorly performing SO3 Plant: Temperature on Sulphur -2°C. There is a Sulphur leak on the lines to the converter, BPE to evaluate and provide urgent feedback. Gasses pose a risk health of employees at the work week management	12-Jun
U6.	SO3 plant leak LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; F5 - Poorly performing; F4 Tripped on undervoltage RHO: F2 - Poorly performing; F3 Poorly performing	13-Jun
U6.	SO3 plant leak LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; F5 - Poorly performing; F4 Tripped on undervoltage RHO: F2 - Poorly performing; F3 Poorly performing	14-Jun

U6.	SO3 plant leak LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; RHO: F2 - Poorly performing; F3 Poorly performing	16-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; RHO: F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local	17-Jun
U6.	00:00-03:00 monitor fault due to belt failure, and was resolved. Not a true exceedances during this time as monitor when into maximum reading mode.	23-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; RHO: F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local	24-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; RHO: F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local	25-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; RHO: F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local	26-Jun
U6.	LHO: F2 Tripped on UnderVoltage; F7 - Poorly performing LHI: F1 Off and On LOCAL RHI: F1 Perfoming Poorly - Excessive Sparking; RHO: F2 - Poorly perfroming (Sparking & arcing) & DE rapper not running; F3 - Poorly performing (Sparking & arcing)- Local	27-Jun
U6.	• THE OPACITY (EMISSION) METER READING FULL OFF SCALE,TRIPPED • Ops reported Opacity meter power supply was resetted by C&I and emissions dropped	29-Jun
U6.	Between 08:00 and 11:00 there was a spike in emissions, C&I commented the reflector plat had problems causing monitor going into “error state”. Ops to take note that nothing was done to correct the monitor, no one call outs were made.	30-Jun
NOX Exceedances		
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	01-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	02-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	03-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	04-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	05-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	06-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	07-Jun
U6.	Exceedance under invetigation, possibly related to heater tube issue on monitor	08-Jun
SOX Exceedances		