

Adelaide Brighton Cement Birkenhead Works. Licence Number: 1126

**QUARTERLY STACK
MONITORING REPORT**

April – June 2017

Version: 1

Submitted: 31st July 2017

EPA LICENCE NO: 1126

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Quarterly Report April – June 2017

Monitoring Objective

The aim of the Quarterly Stack Monitoring Report is to identify and report on emissions to compare actual emissions from Adelaide Brighton Cement Birkenhead Works against the Environment Protection (Air Quality) Policy 1994, Authorisation 1126 and Exemption Authorisation 12368. Furthermore the aim of the report is to continuously monitor and provide reasons for the particulate emissions exceeding reporting limits in order to establish key areas where opportunities lie for process and mechanical improvements to reduce the level of stack dust emissions from the site.

Monitoring Plan

Monitoring of stacks 4A and 4B on the Birkenhead site is performed using Durag Dust and Opacity Meters. These meters provide a continuous % opacity and this is converted to mg/Nm^3 using a calibration curve. The results are then summarized as one hourly averages based on 10 minute averages for the purpose of this report.

The license that Adelaide Brighton Cement operates under in regard to stack emissions is summarized below.

Environment Protection (Air Quality) Policy

- Schedule 1 (1) - limit of $250\text{mg}/\text{Nm}^3$ stack 4A and 4B
- Exemptions License
 - Kiln or calciner light up &/or purge – max 10 minutes
 - Level 3 combustibles trip – max 5 minutes
 - Power failure – duration of emergency situation
 - Stack emissions testing for calibration of opacity meter – provided that an EPA authorised officer is on site

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- Reporting Levels
 - All emissions in excess of 80 mg/m³ (Stack 4B) and 150 mg/m³ (Stack 4A)

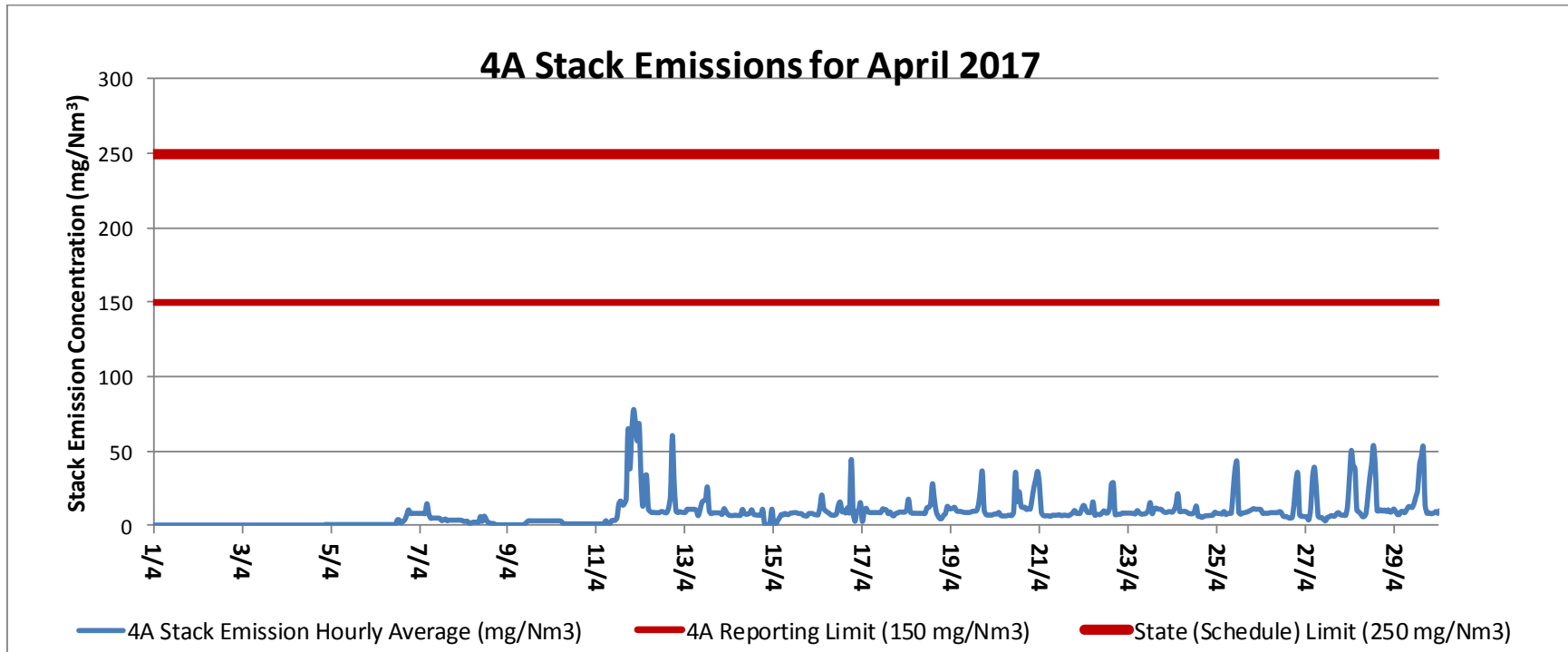
The Environmental Protection Authority (EPA) must be notified as soon as practicably possible of all emissions in excess of the Schedule 1 (1) limit or reporting limit and cause as well as remedial actions must be communicated. Where particulate emissions exceed the Schedule 1(1) limit and the cause is not explicitly covered by the exemptions an investigation will be carried out by the EPA to ensure that ABC Birkenhead has taken all reasonable and practicable measures to reduce the emissions.

Monitoring Results

Presentation of Results

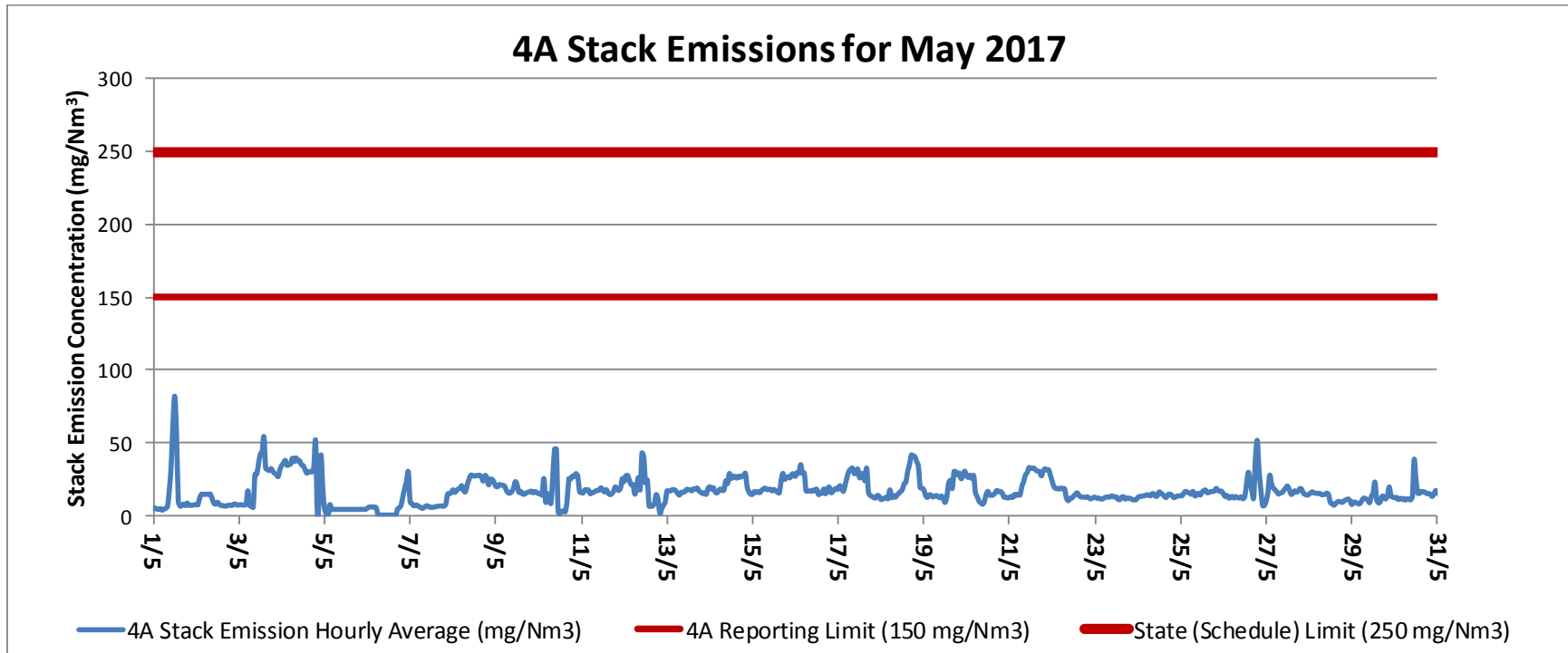
The graphs on the following pages detail the hourly averages of 10 minute averages of stack emissions from 4A and 4B stacks by month. The tables below each chart show the results of RCA (root cause analysis) that was undertaken for plant stoppages resulting in emissions above either the reporting limit or the Air Quality Policy Schedule 1 (1) limit on an hourly average.

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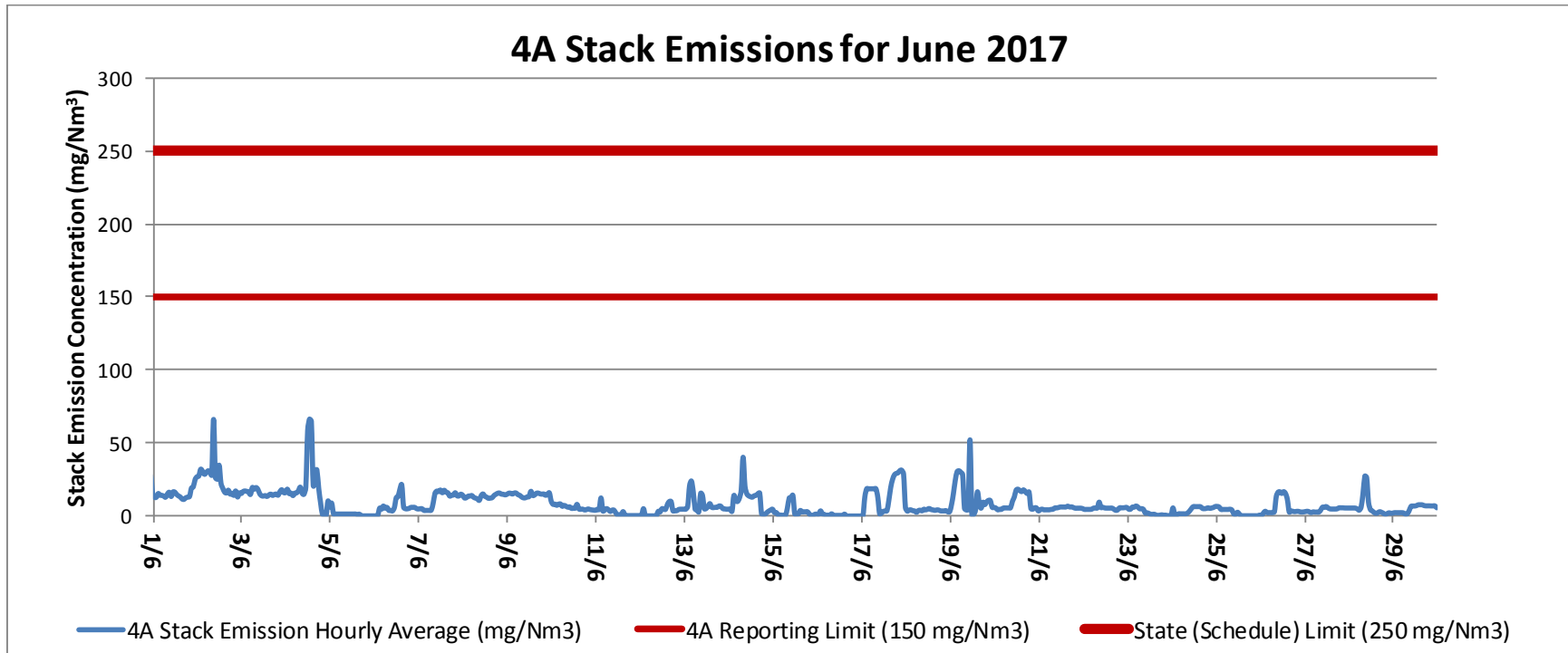
Tag	RCA Number	Description

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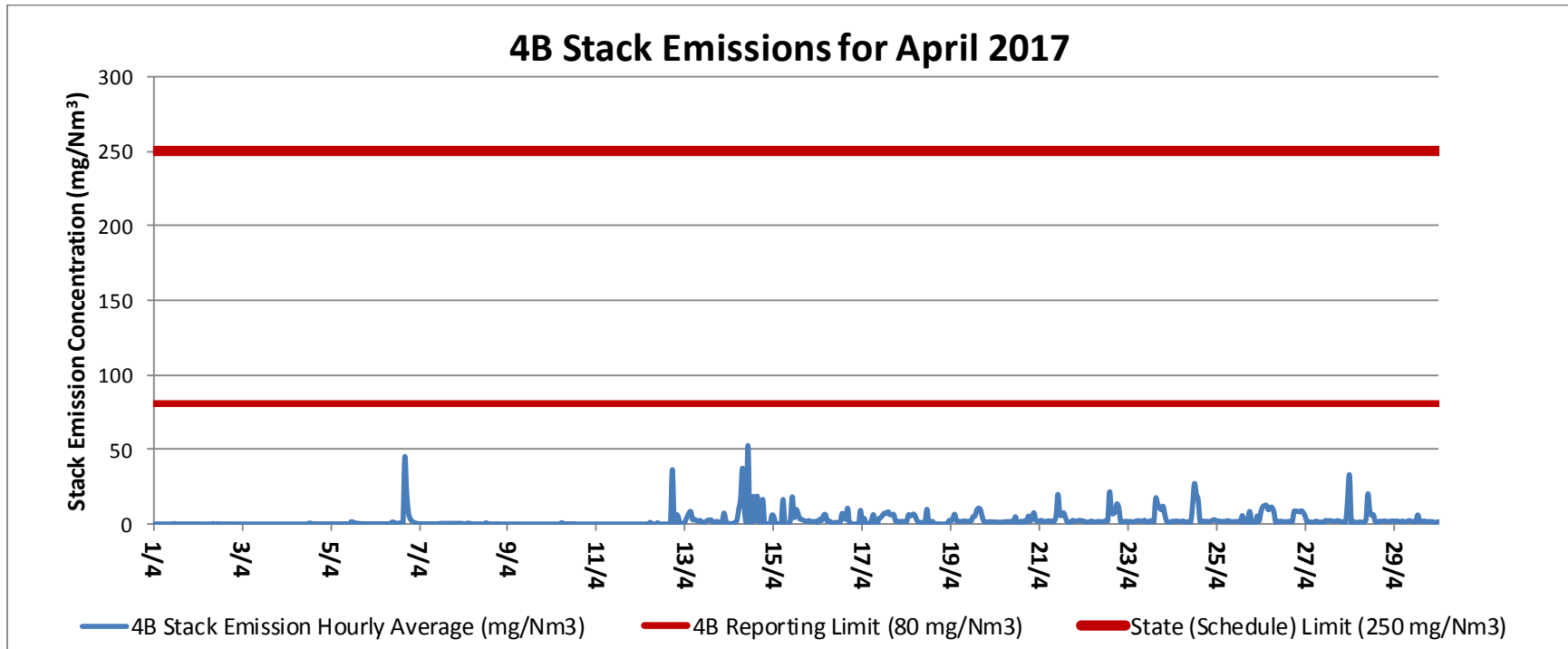
Tag	RCA Number	Description

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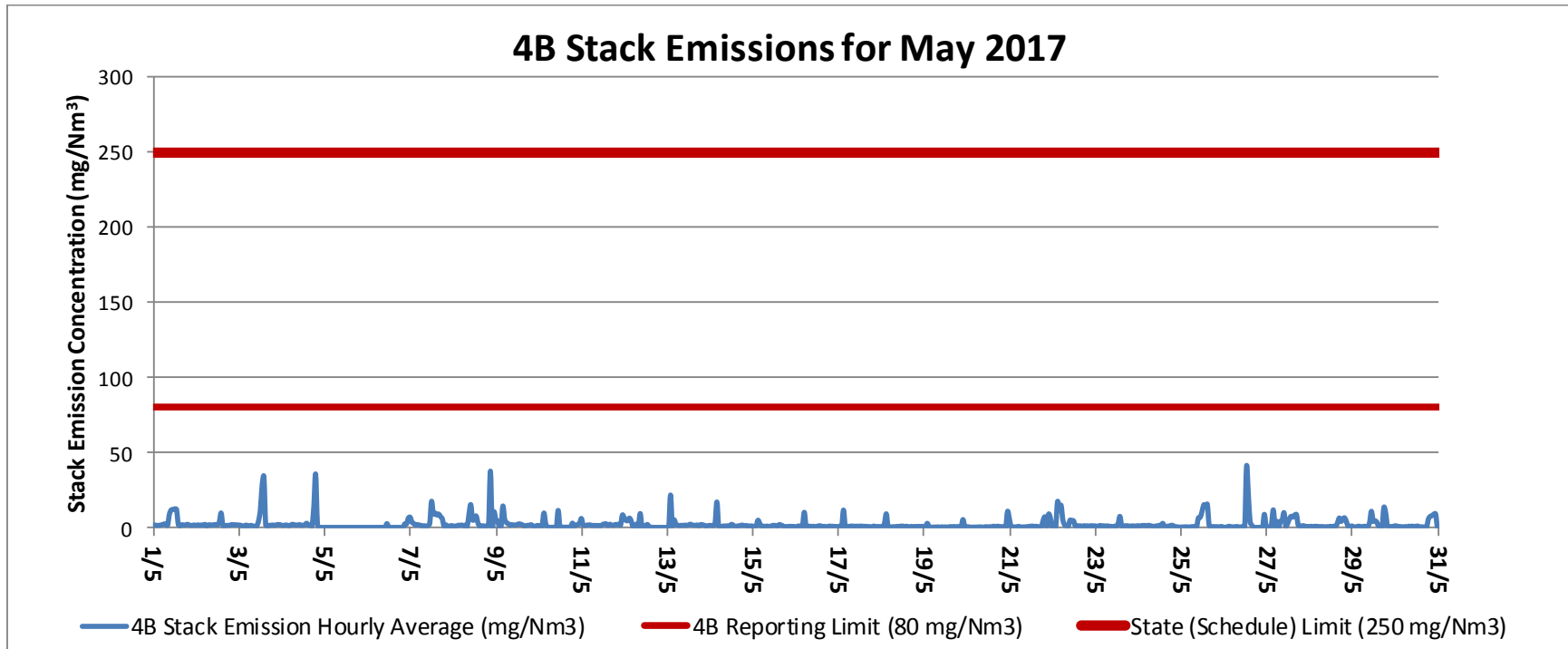
Tag	RCA Number	Description

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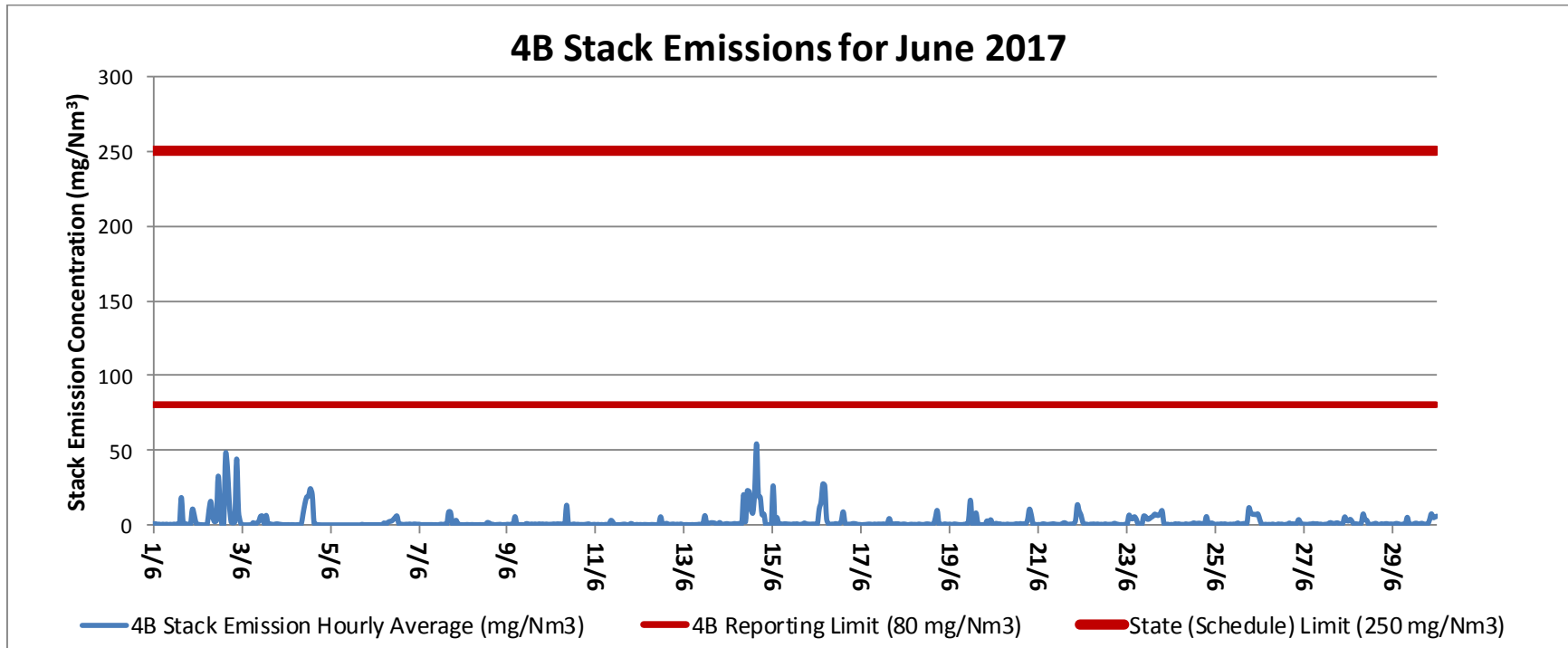
Tag	RCA Number	Description

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Tag	Description
B1 & B2	Field instability in 4B Electrostatic Precipitator. Repaired 8/2.

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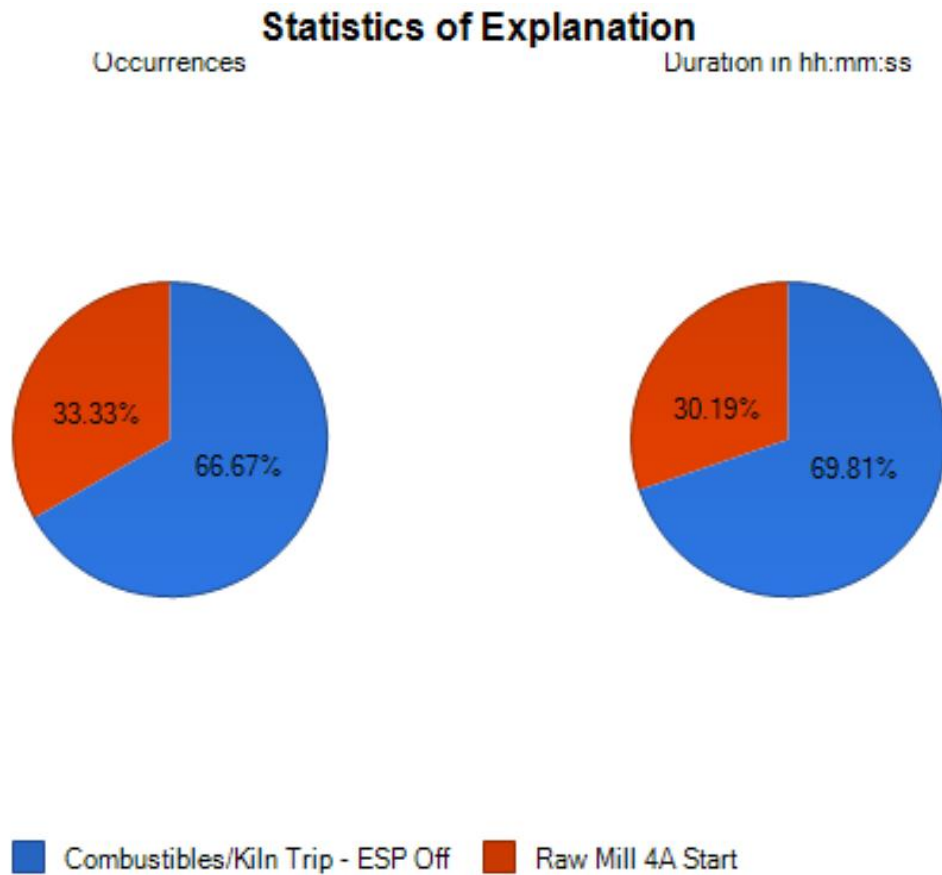
Tag		Description

Short Term Report Summary

1. Short Term Excursions above 250mg/Nm³

In addition to hourly averages shown earlier in the report short term excursions above 250mg/Nm³ are reported during the period to the EPA. Below is a pie chart of the causes on both 4A and 4B stack.

4A Greater Than 250mg/Nm³ Emissions Qtr 2 2017

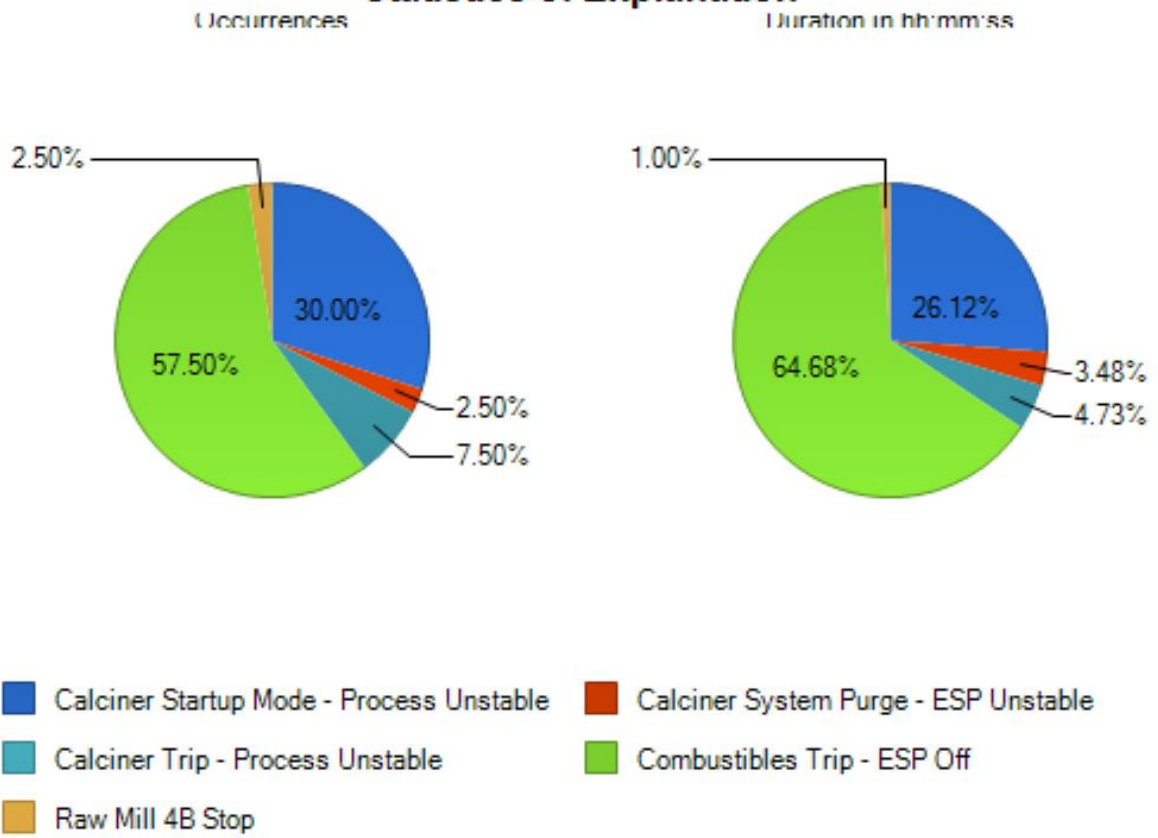


4A Stack Pie Chart of causes over 250 mg/Nm³ in terms of number of occurrences and total time

Total number of occurrences =12; total time 8 minutes 50 seconds

4B Greater Than 250mg/Nm³ Emissions Qtr 2 2017

Statistics of Explanation



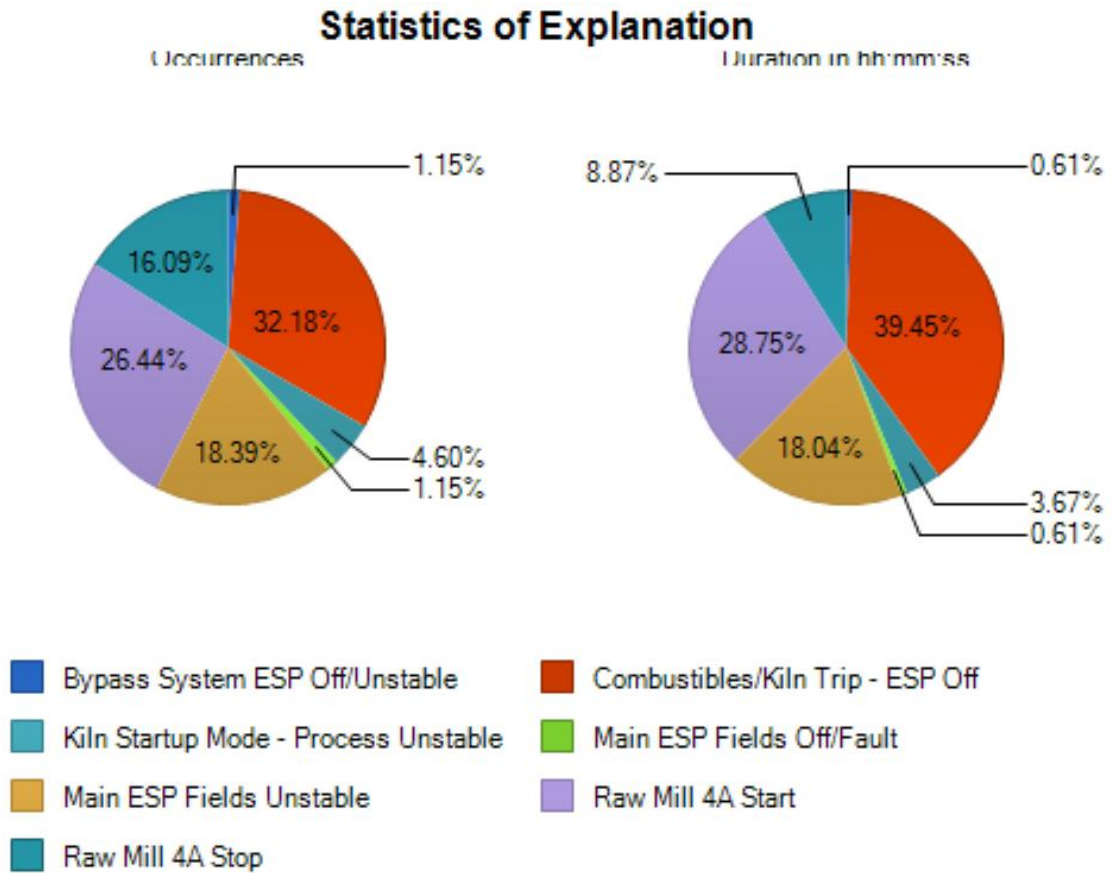
4B Stack Pie Chart of causes over 250 mg/Nm³ in terms of number of occurrences and total time

Total number of occurrences = 40; total time 67 minutes 0 seconds

2. Causes of reporting limit excursions

Stack emissions greater than 150 mg/Nm³ (4A Stack) and 80 mg/Nm³ (4B Stack) are reported to the EPA on a weekly basis. A pie chart and the total time are presented. Below are pie charts for 4A and 4B stack for the three-month period; and also the total time charts up until the end of September 2016.

4A Greater Than 150mg/Nm³ Emissions Qtr 2 2017

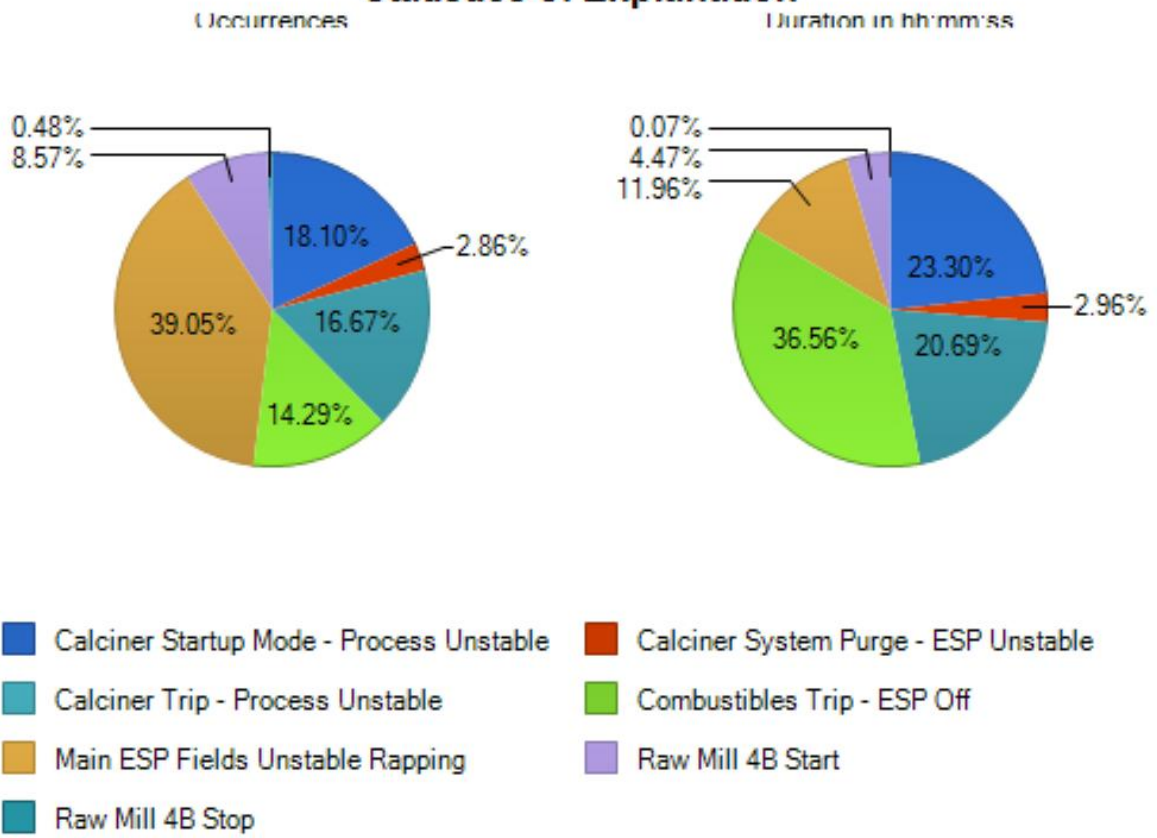


4A Stack Pie Chart of causes over 150 mg/Nm³ in terms of number of occurrences and total time

Total number of occurrences = 87; total time 0 hours 54 minutes 30 seconds

4B Greater Than 80mg/Nm³ Emissions Qtr 2 2017

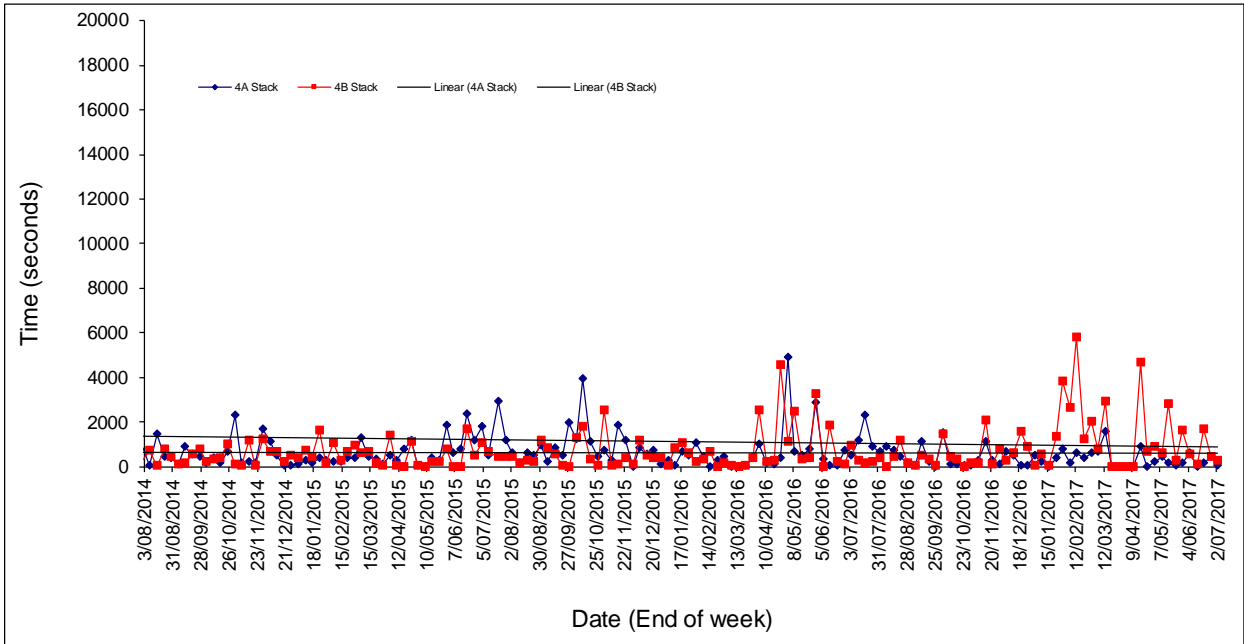
Statistics of Explanation



4B Stack Pie Chart of causes over 80mg/Nm³ in terms of number of occurrences and total time

Total number of occurrences = 210; total time 4 hours 02 minutes 30 seconds

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Tracking total time for stack emissions greater than the reporting levels of 150mg/Nm³ on 4A stack and 80mg/Nm³ on 4B stack.

Monitoring Results – Quality Assurance / Quality Control Evaluation

The data shown in the graphs above was calculated using an opacity curve generated by a number of iterations of spot testing by Axiom Air whom are accredited for compliance with ISO/IEC 17025. The opacity meters are also calibrated daily and via regular planned maintenance as per the suppliers’ standard.

Process Improvement for the Quarter

As part of our continuous improvement commitment the emissions reduction team formed last year has continued to work on new and existing projects to mitigate emissions, including:

Cooler bagfilter improvement project

During the kiln shutdown, a new control system was installed on the clinker cooler bag filter. The clinker cooler bag filter takes hot gas from the kiln cooler and dedusts it before being exhausted in 4A stack. The new control system allows for much higher degree of process optimization on the pulsation frequency and pressure for the cleaning of the bags. This will greatly increase bag life and performance over the campaign.

New bag types were used in the cooler bag filter this campaign based on data from the previous bag samples. This is also expected to increase performance and campaign life of the bags. So far in the campaign, this has been very effective in reducing emissions from the cooler baghouse. The increased feedback has allowed for easier and more frequent maintenance of the bags which has resulted in lower emissions.

Conditioning tower spray project

As part of the kiln shutdown, the cut-in work was completed for the conditioning tower upgrades on 4A conditioning tower and the bypass system conditioning tower. This upgrade will increase the response rate and effectiveness of the water sprays in the conditioning tower which will increase the performance of the electrostatic precipitators.

Conclusions and Recommendations

There were no incidents above $250\text{mg}/\text{Nm}^3$ for a one hour average on 4A or 4B stack in the quarter. There were no incidents above $150\text{ mg}/\text{Nm}^3$ on 4A stack and no incidents above $80\text{ mg}/\text{Nm}^3$ on 4B stack for a one-hour average in the quarter. A process of review and improvement (including root cause analysis) is utilized to reduce these situations, thereby reducing the number of occurrences of emissions greater than $250\text{ mg}/\text{Nm}^3$. Ongoing emission reductions have continued for the quarter because of improvements made to the process.

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Appendix A

See attached PDF files.



2017Q2.zip