

Adelaide Brighton Cement Birkenhead Works. Licence Number: 1126

**QUARTERLY STACK  
MONITORING REPORT**

**January – March 2017**

**Version: 1**

**Submitted: 30<sup>th</sup> April 2017**

**EPA LICENCE NO: 1126**

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# Quarterly Report January – March 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  $\text{mg}/\text{Nm}^3$  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

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- Stack emissions testing for calibration of opacity meter – provided that an EPA authorised officer is on site
- Reporting Levels
  - All emissions in excess of 80 mg/m<sup>3</sup> (Stack 4B) and 150 mg/m<sup>3</sup> (Stack 4A)

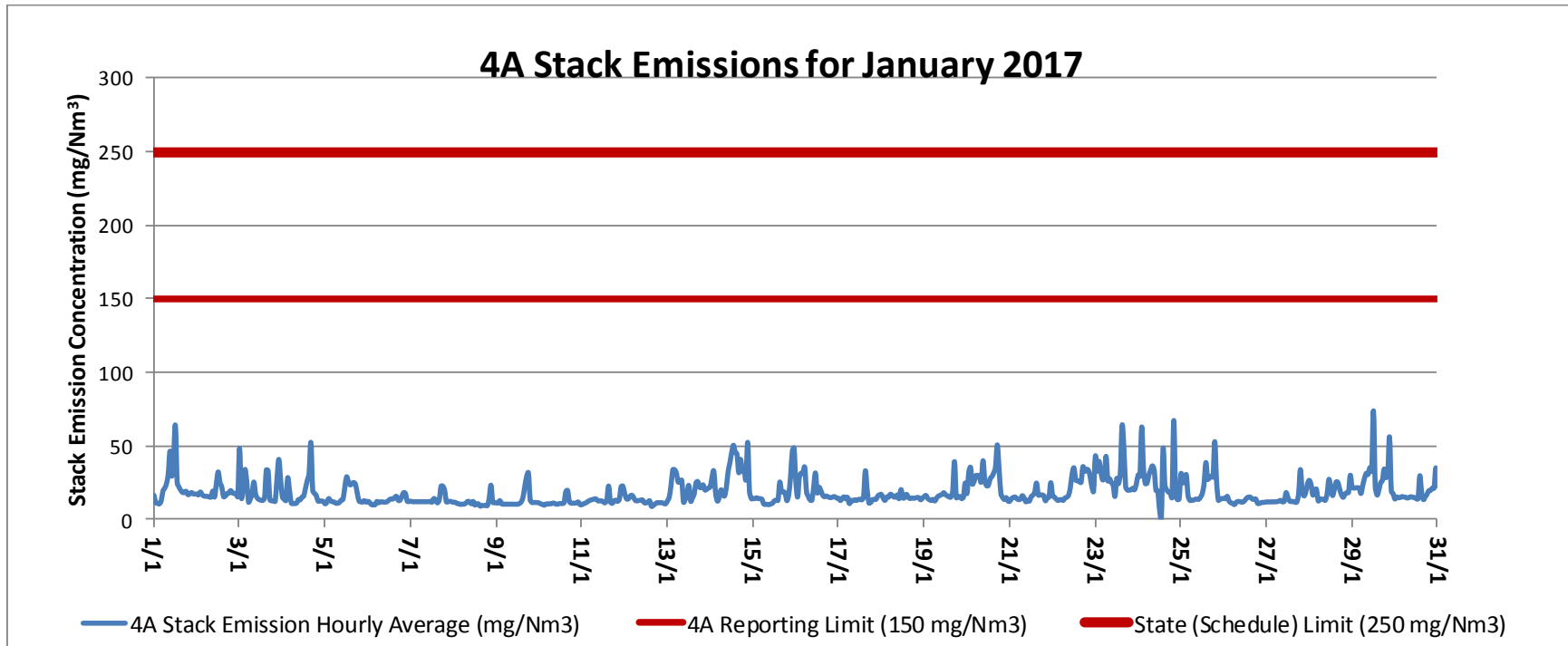
The Environmental Protection Authority (EPA) must be notified as soon as practicably possible of all emissions in excess of the Schedule 1 (1) limit or reporting limit and cause as well as remedial actions must be communicated. Where particulate emissions exceed the Schedule 1(1) limit and the cause 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**

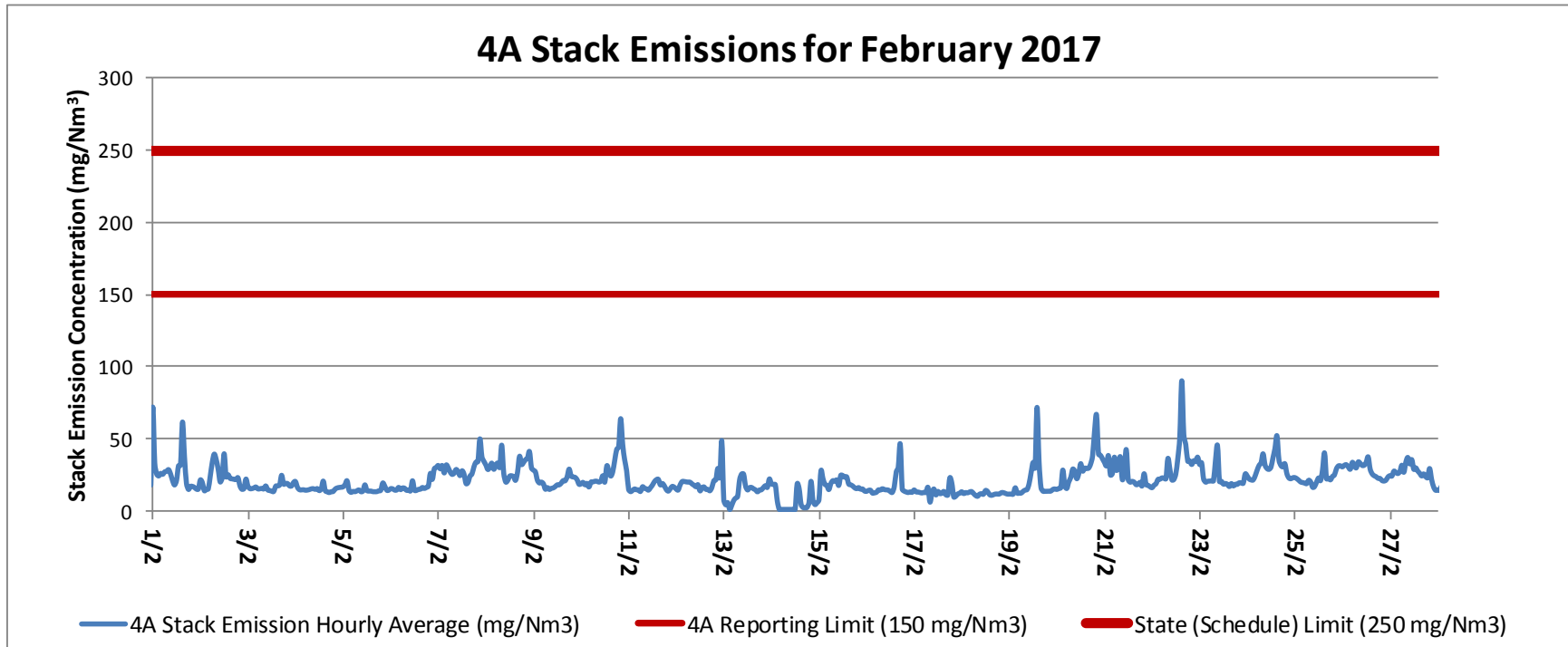
The graphs on the following pages detail the hourly averages of 10 minute averages of stack emissions from 4A and 4B stacks by month. The tables below each chart show the results of RCA (root cause analysis) that was undertaken for plant stoppages resulting in emissions above either the reporting limit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

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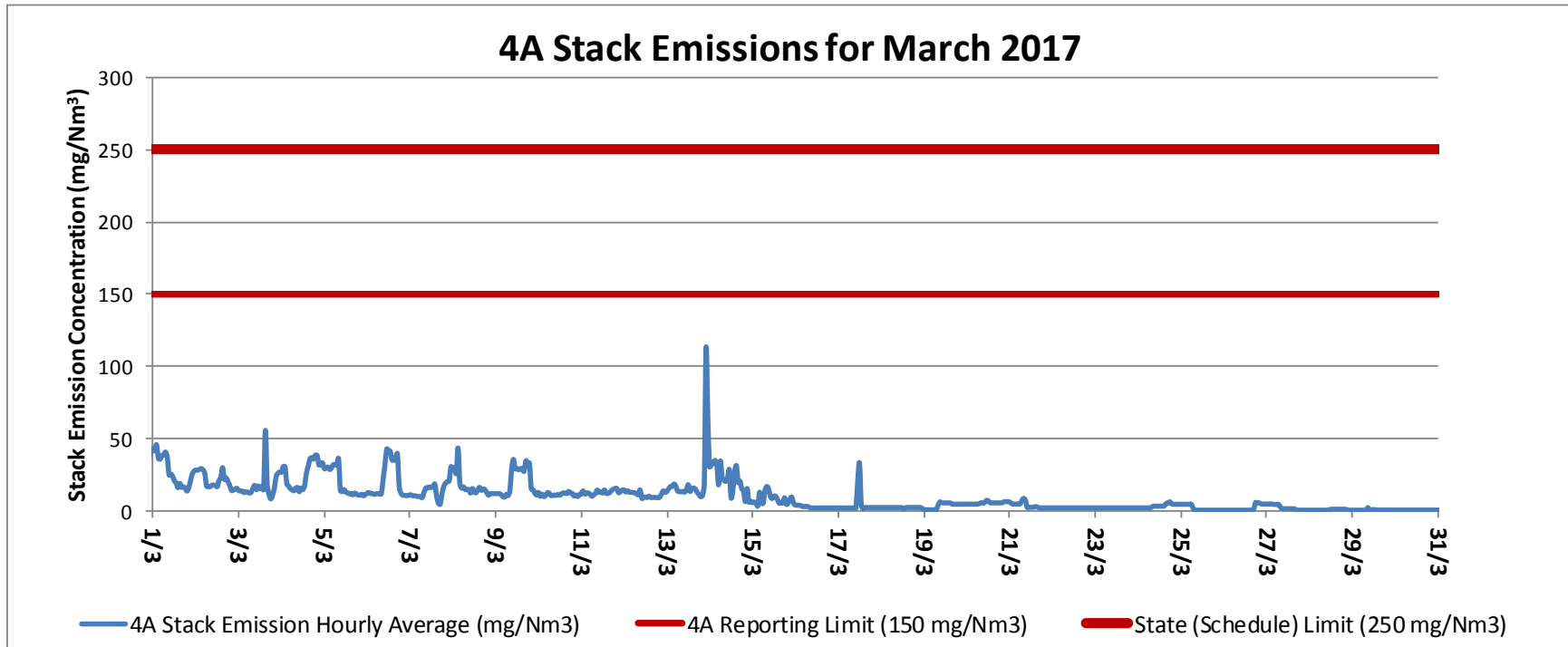
Tag	RCA Number	Description

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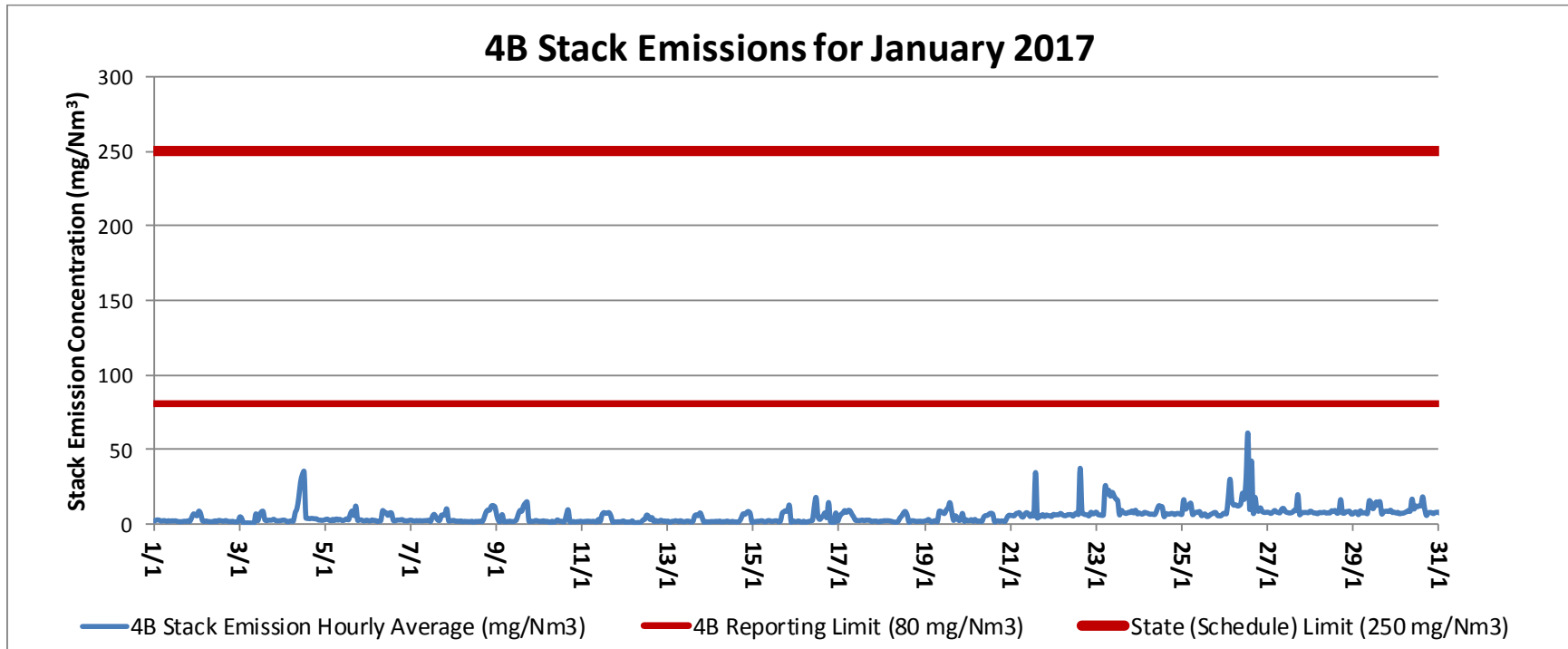
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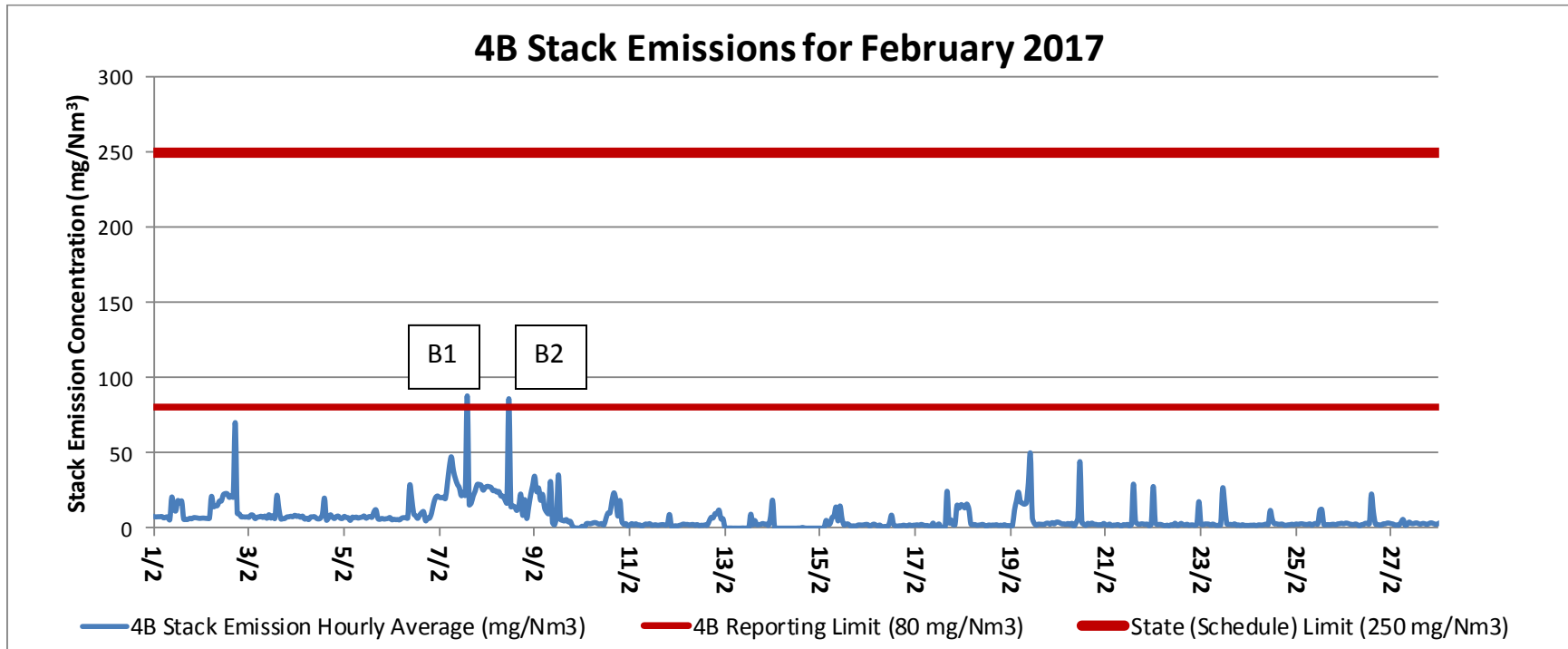
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Tag	RCA Number	Description

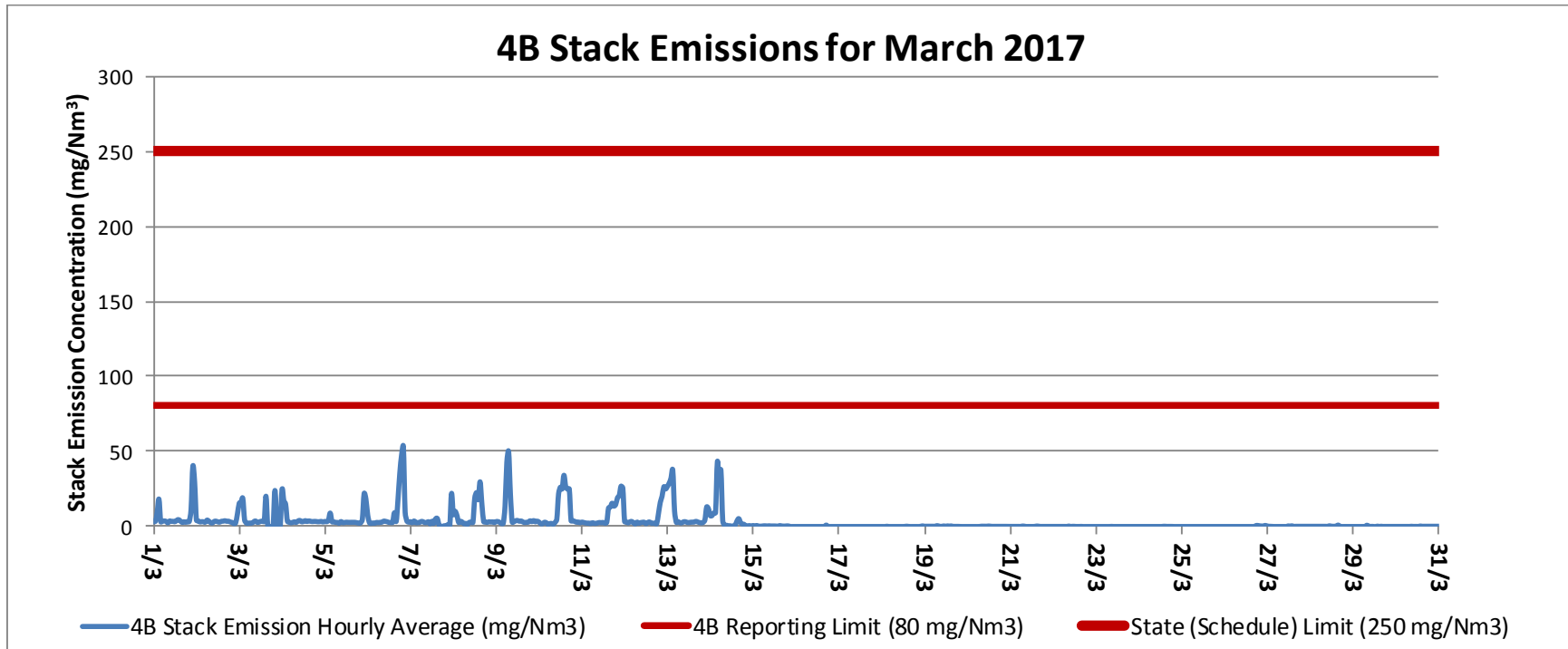
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Tag	Description
B1 & B2	Field instability in 4B Electrostatic Precipitator. Repaired 8/2.



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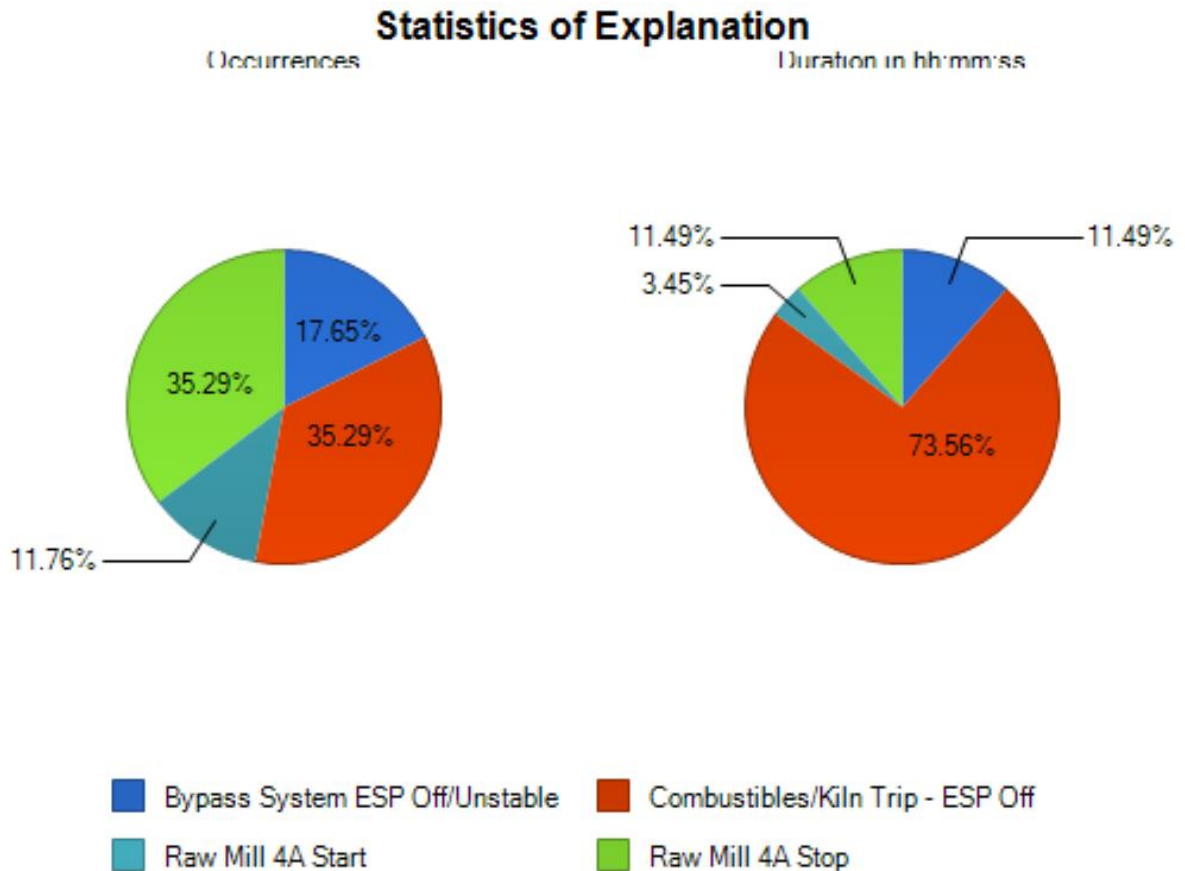
Tag	Description

## Short Term Report Summary

### 1. Short Term Excursions above 250mg/Nm<sup>3</sup>

In addition to hourly averages shown earlier in the report short term excursions above 250mg/Nm<sup>3</sup> 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/Nm<sup>3</sup> Emissions Qtr 1 2017



4A Stack Pie Chart of causes over 250 mg/Nm<sup>3</sup> in terms of number of occurrences and total time

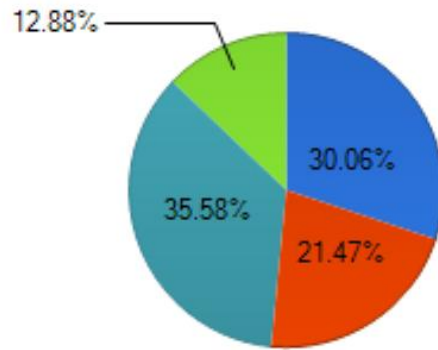
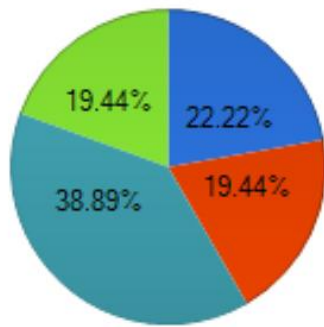
Total number of occurrences =17; total time 14 minutes 30 seconds

### 4B Greater Than 250mg/Nm<sup>3</sup> Emissions Qtr 1 2017

#### Statistics of Explanation

Occurrences

Duration in hh:mm:ss



- Calciner Startup Mode - Process Unstable
- Calciner Trip - Process Unstable
- Raw Mill 4B Start
- Raw Mill 4B Stop

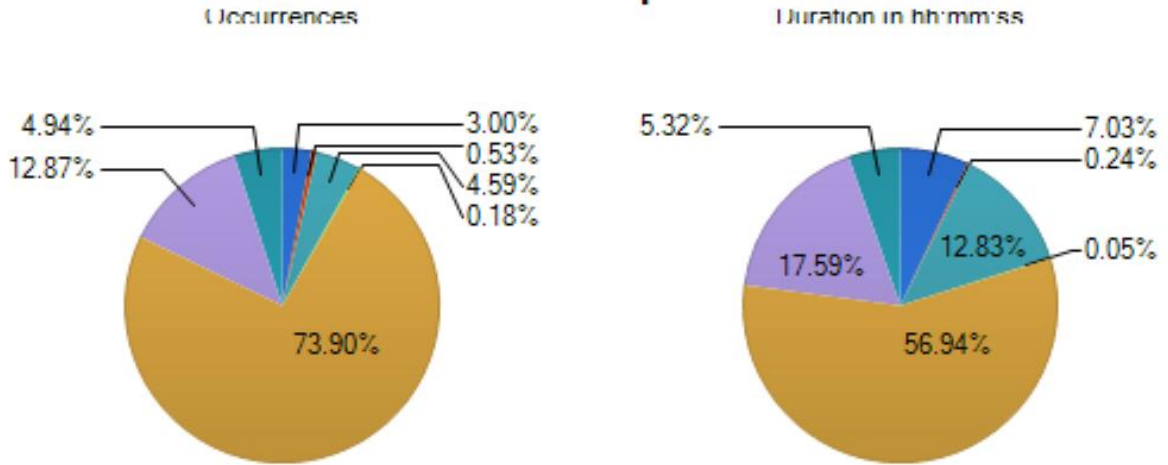
4B Stack Pie Chart of causes over 250 mg/Nm<sup>3</sup> in terms of number of occurrences and total time

Total number of occurrences = 36; total time 27 minutes 10 seconds



## 4B Greater Than 80mg/Nm<sup>3</sup> Emissions Qtr 1 2017

### Statistics of Explanation

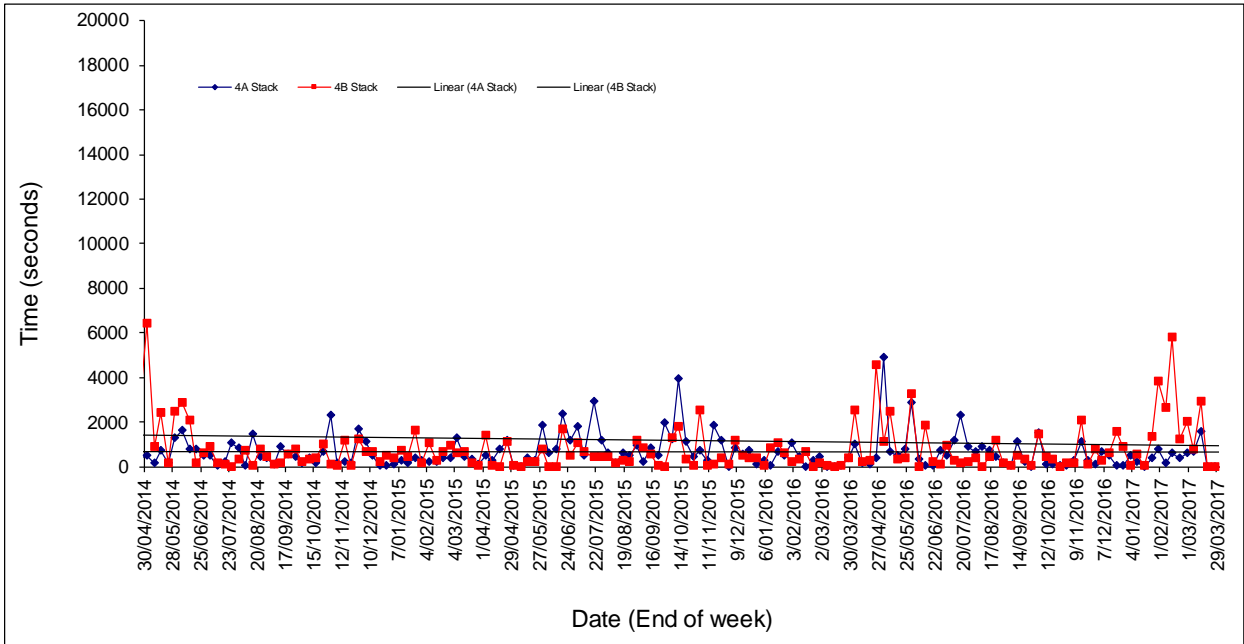


- Calciner Startup Mode - Process Unstable
- Calciner System Purge - ESP Unstable
- Calciner Trip - Process Unstable
- Combustibles Trip - ESP Off
- Main ESP Fields Unstable Rapping
- Raw Mill 4B Start
- Raw Mill 4B Stop

4B Stack Pie Chart of causes over 80mg/Nm<sup>3</sup> in terms of number of occurrences and total time

Total number of occurrences = 567; total time 5 hours 50 minutes 40 seconds

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Tracking total time for stack emissions greater than the reporting levels of 150mg/Nm<sup>3</sup> on 4A stack and 80mg/Nm<sup>3</sup> 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.

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### **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:

#### **4A Clinker Cooler Baghouse improvement project**

During the March 2017 kiln shutdown, a dynamic Differential pressure control system and particle sensor to detect broken bags were installed on the 4A Clinker Cooler Baghouse. 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 pressure and pulsation cleaning frequency of the bags. The broken bag detection system allows for the rapid detection of holes in bags and their subsequent isolation. 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.

### **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 2 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  $250\text{ mg}/\text{Nm}^3$ .

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## Appendix A

See attached PDF files.



2017 q1.zip