Adelaide Brighton Cement Birkenhead Works. Licence Number: 1126

QUARTERLY STACK MONITORING REPORT

January - March 2016

Version: 1

Submitted: April 2016

EPA LICENCE NO: 1126

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Quarterly Report January-March 2016

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 250mg/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

- Reporting Levels
    - All emissions in excess of 80 mg/m^3 (Stack 4B) and 150 mg/m^3 (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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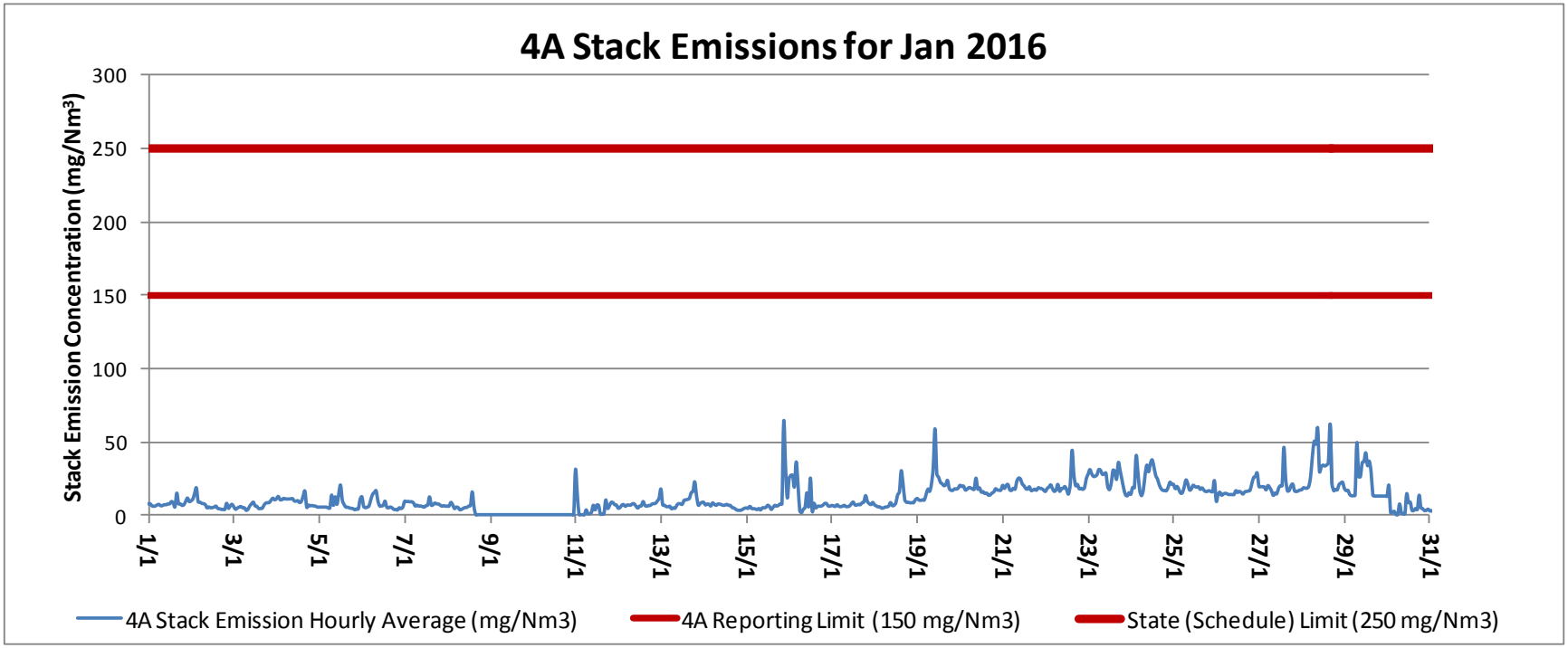

Tag	RCA Number	Description

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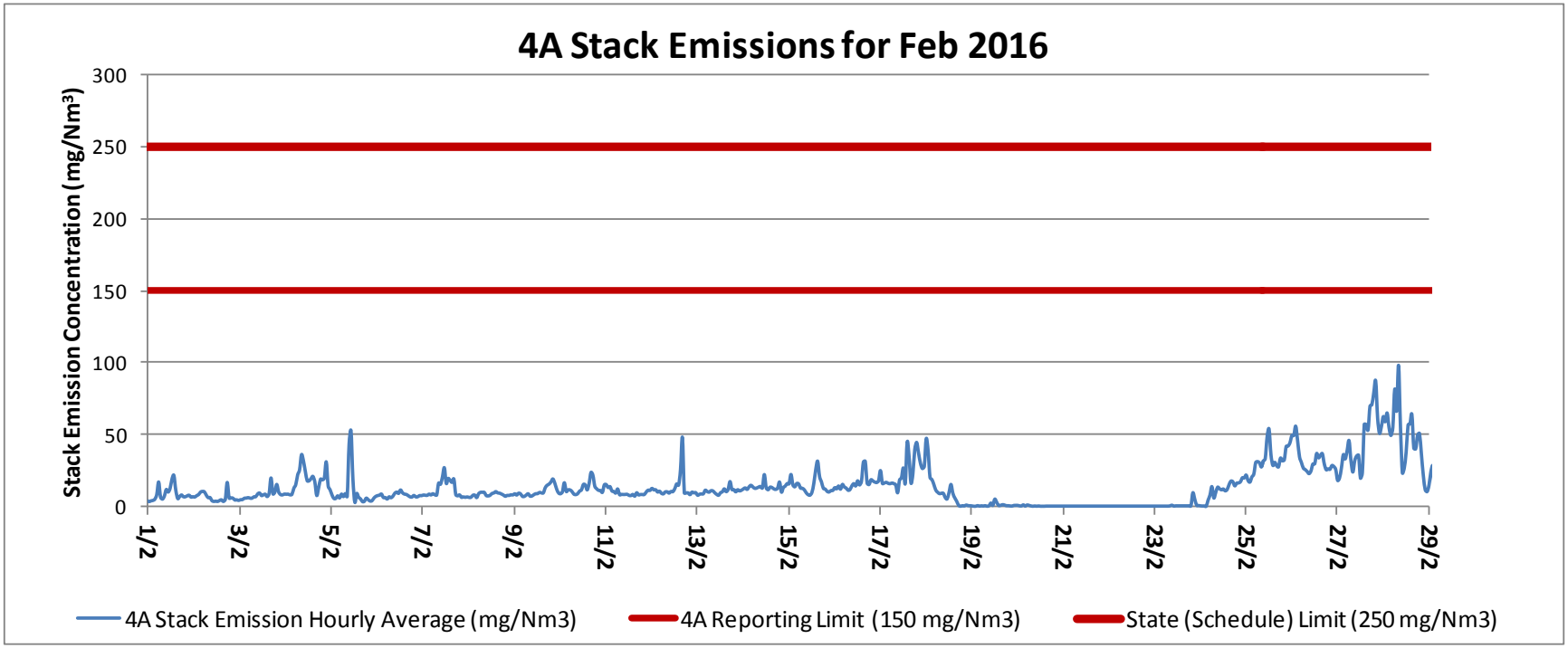

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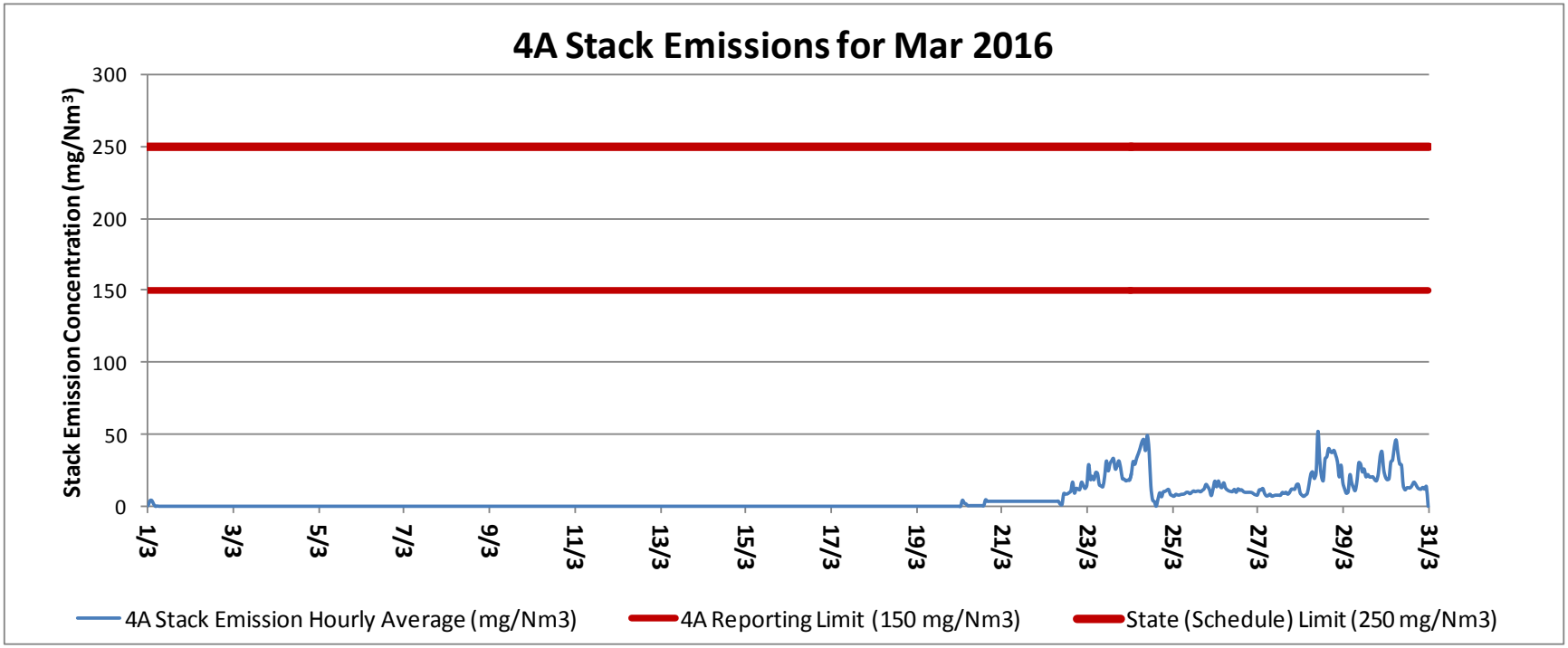

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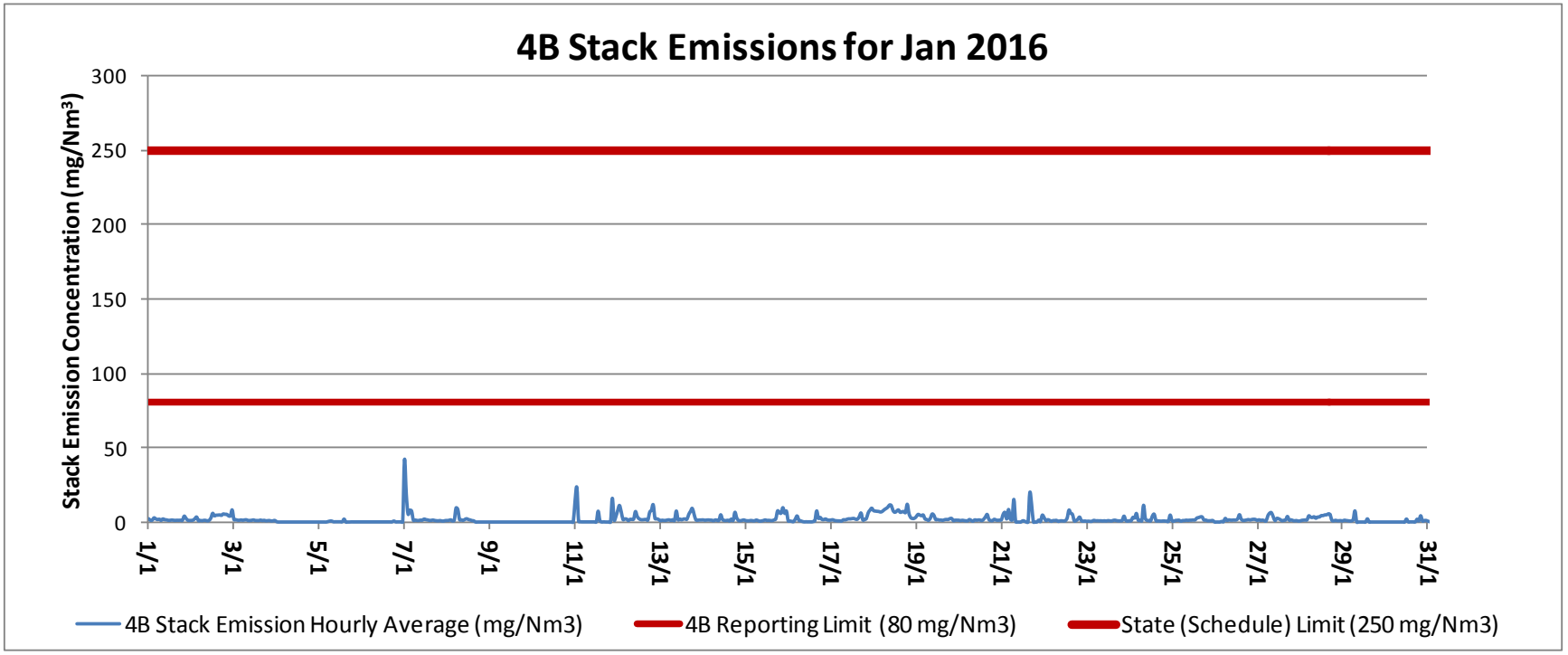

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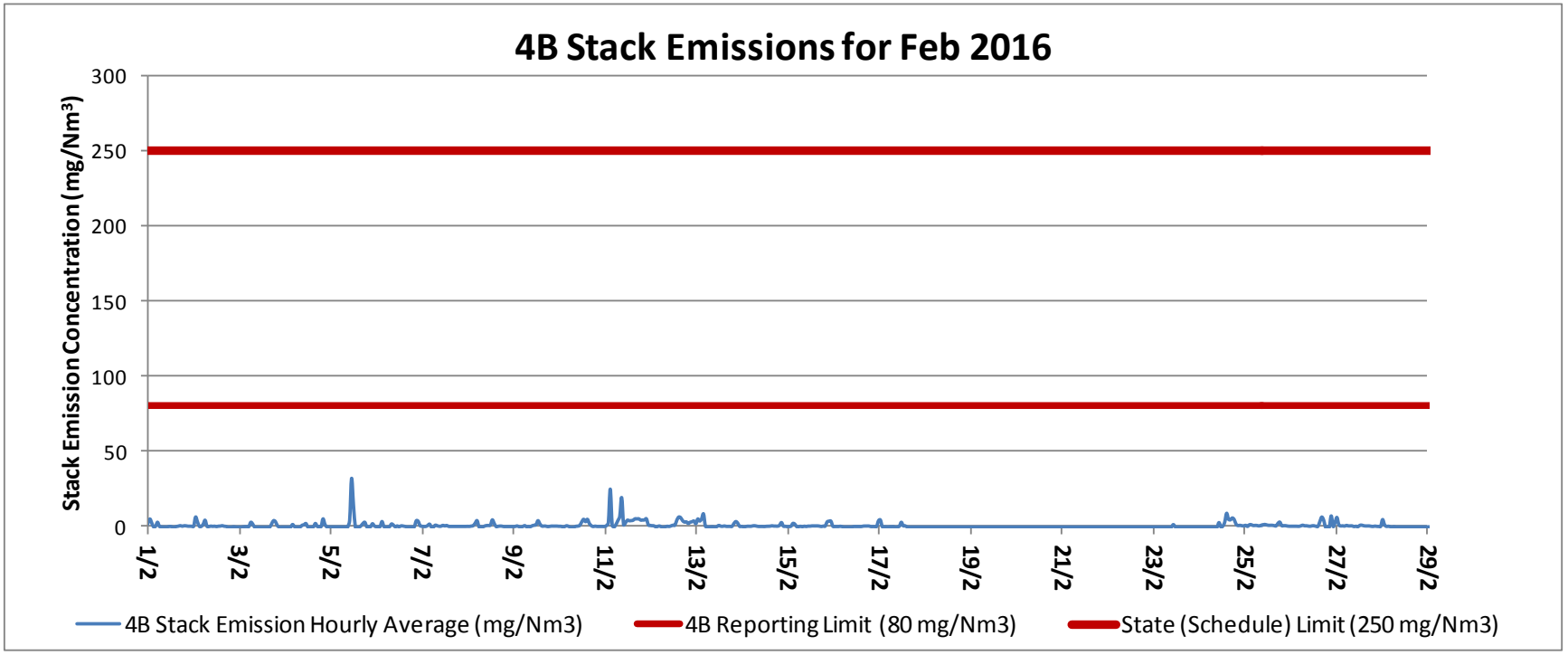

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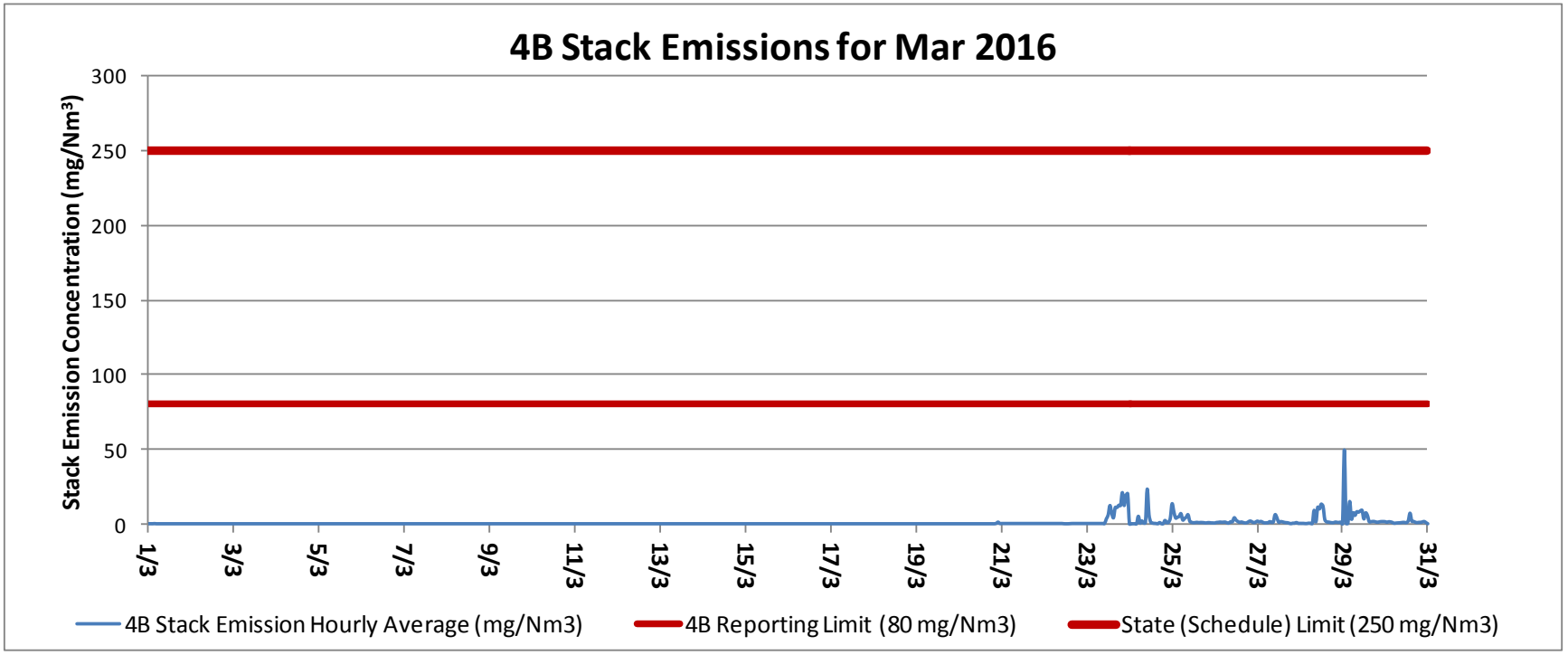

Tag	RCA Number	Description

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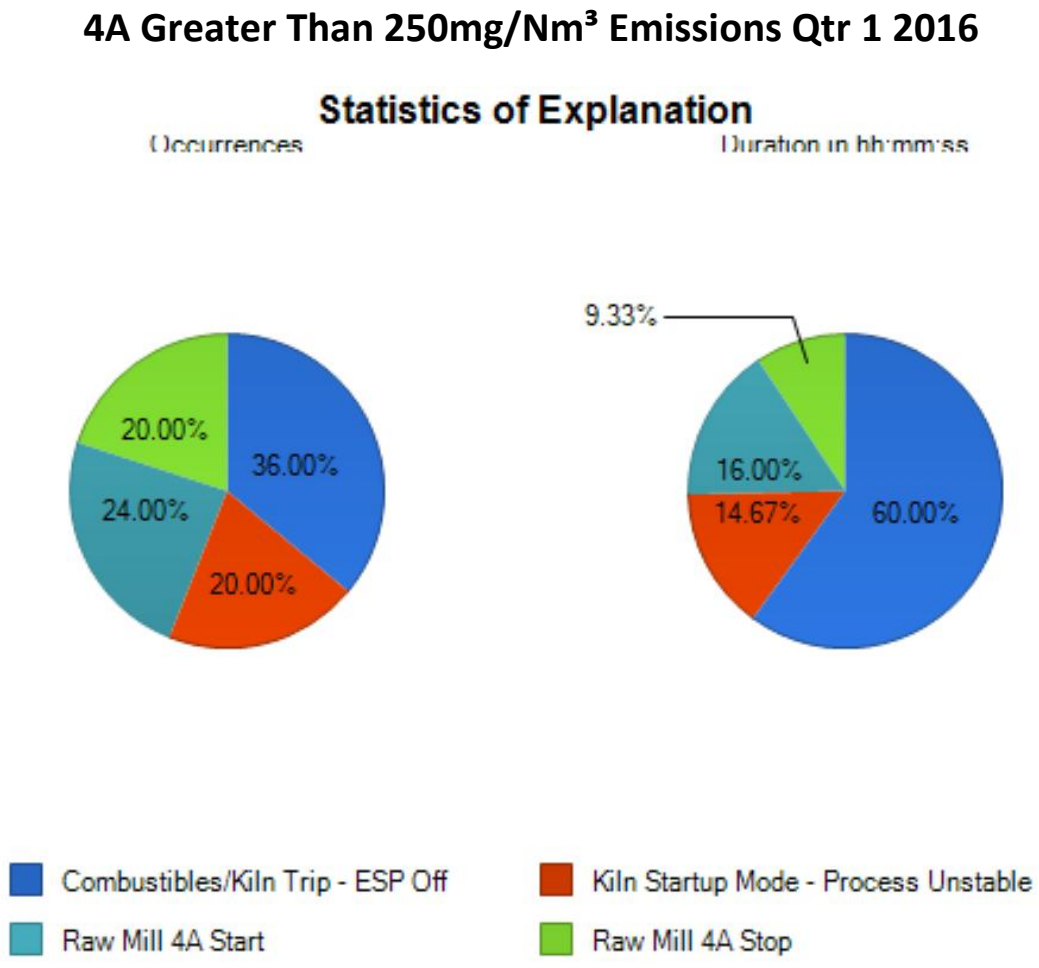
Short Term Report Summary

1. Short Term Excursions above 250mg/Nm^3

In addition to hourly averages shown earlier in the report short term excursions above 250mg/Nm^3 are reported during the period to the EPA. Below is a pie chart of the causes on both 4A and 4B stack.



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

Total number of occurrences =25; total time 12 minutes 30 seconds

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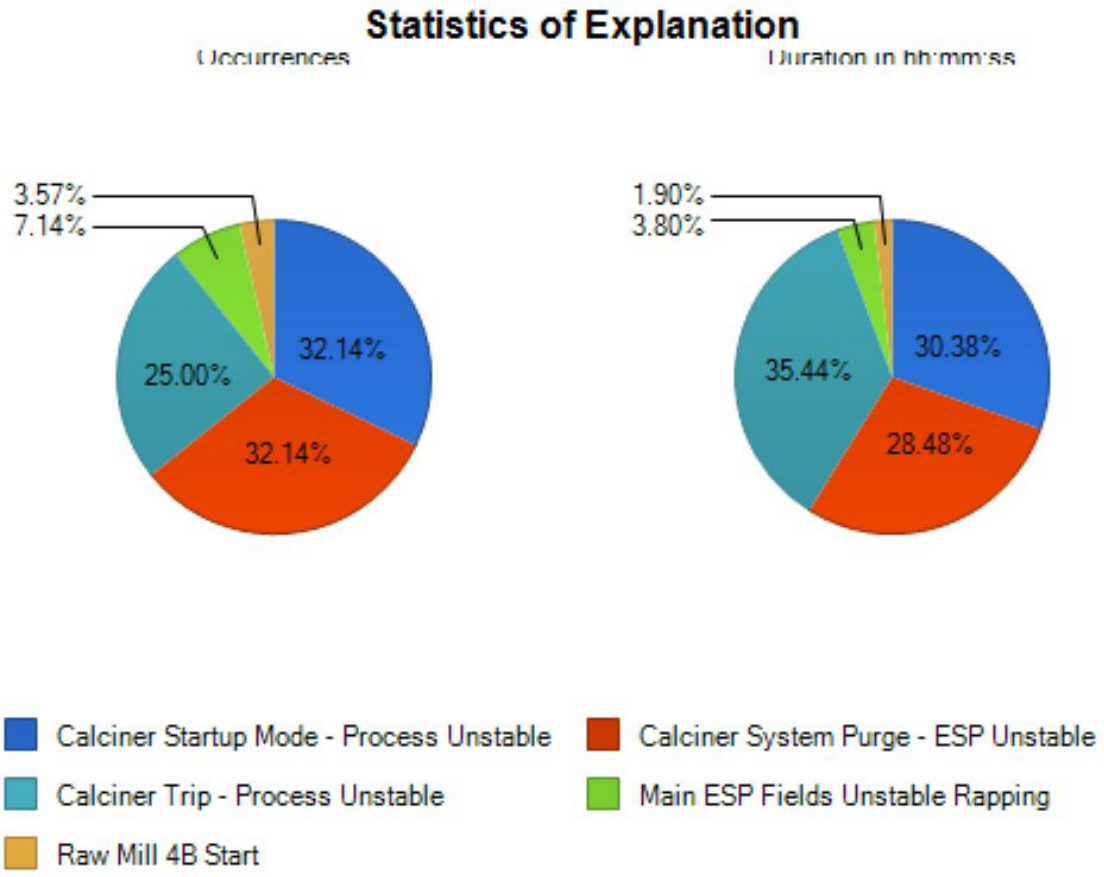
4B Greater Than 250mg/Nm³ Emissions Qtr 1 2016

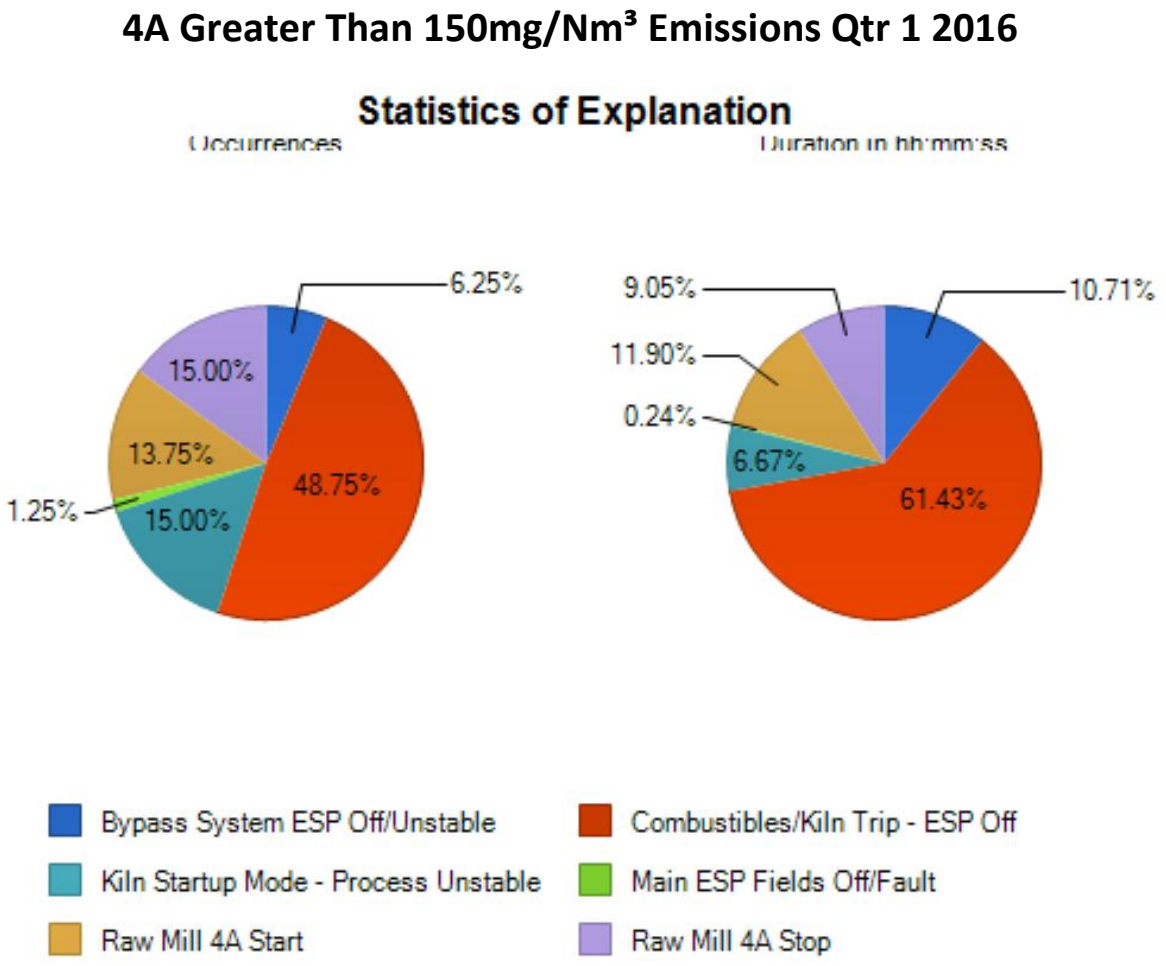


4B Stack Pie Chart of causes over 250 mg/Nm^3 in terms of number of occurrences and total time

Total number of occurrences = 28; total time 26 minutes 20 seconds

2. Causes of reporting limit excursions

Stack emissions greater than 150 mg/Nm^3 (4A Stack) and 80 mg/Nm^3 (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 June 2015.



4A Stack Pie Chart of causes over 150 mg/Nm^3 in terms of number of occurrences and total time

Total number of occurrences = 80; total time 1 hours 10 minutes 00 seconds

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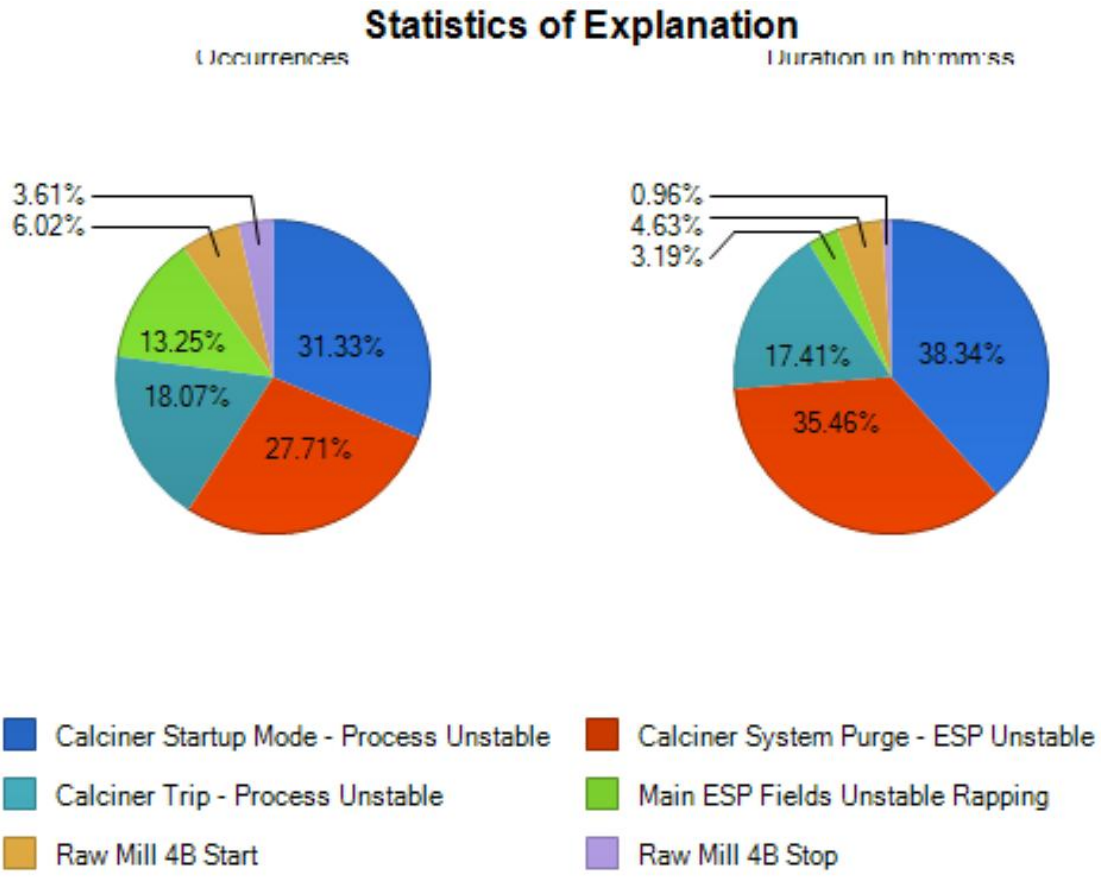
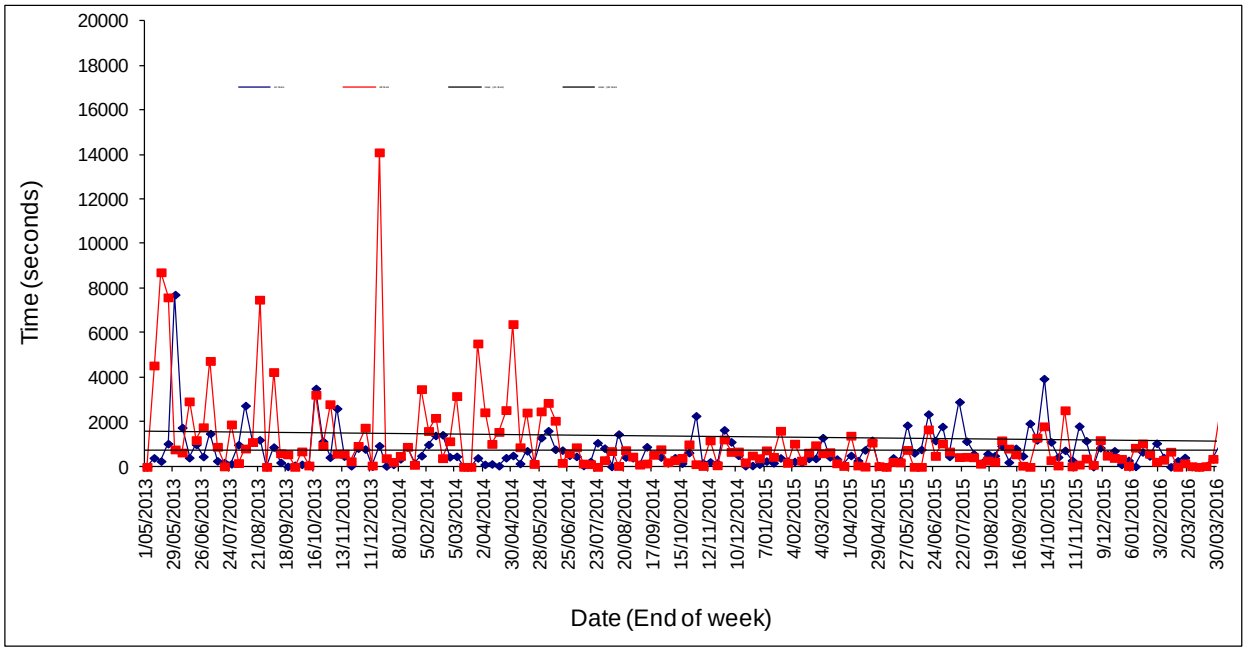
4B Greater Than 80mg/Nm³ Emissions Qtr 1 2016



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

Total number of occurrences = 83; total time 1 hours 44 minutes 00 seconds



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

The majority of the process improvements were conducted in the major kiln 4 shutdown which ran from the 29th February to 23rd March. The relevant scope of works included:

- Installation of new higher grade trial cooler filter bags.
- 4A ESP overhaul, full inspection and replacement of required mechanical components.
- 4B ESP major maintenance, with regular mechanical maintenance along with major outlet dampening wall replacement.
- Installation of build-up inhibiting kiln 'blasters' to prevent process instability from affecting the bypass system. This instability was a major cause of 4A stack excursions.
- New bypass dust handling system installed to eliminate dust blockages and potential excursions in the handling system.

Plant Stack Emissions Improvement Team

- FLSmidth airtech audit: Mechanical audit of the ESPs and their maintenance strategies performed by FLSmidth emissions expert who was present throughout the shutdown. The auditor provided valuable insight to the scope of work and possible areas for optimization.

Conclusions and Recommendations

There were no incidents above 250mg/Nm^3 for a one hour average on 4A or 4B stack in the quarter. There were no incidents above 150 mg/Nm^3 on 4A stack or 80 mg/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 mg/Nm^3. Ongoing significant emission reductions have continued for the quarter as a result of improvements made to the process.

Appendix A

See attached PDF files.


4A GT150 Emissions Q1.pdf


4A GT250 Emissions Q1.pdf


4B GT80 Emissions Q1.pdf


4B GT250 Emissions Q1.pdf