



**Trona Injection Tests
Mirant Potomac River Station
Unit 1
November 12 to December 23, 2005
Summary Report**

Mirant Corporation
January 17, 2006

1. INTRODUCTION

Trona injection tests were conducted at Mirant's Potomac River Station on Unit 1 between November 12 and December 23, 2005. The purpose of these tests was to determine the capability of dry injection of trona to achieve substantial SO₂ removal from the stack discharge, and the determination of other operating impacts from the trona injection, if any.

Temporary trona injection equipment was installed on Unit 1, to inject dry trona in the duct between the boiler economizer outlet and the hot precipitator inlet.

Trona was obtained with rail car delivery directly from the mine in Green River, Wyoming.

Temporary test instrumentation was set up to measure SO₂ concentration before and after trona injection, and compared with the permanent continuous emissions monitoring system (CEMS) installed in the Unit 1 stack.

A total of 32 test runs are described in this report covering various unit loads, using both Central Appalachian and Colombian coals, and variations in trona particle size.

2. EXECUTIVE SUMMARY

The primary objectives of this series of tests were to determine if substantial SO₂ removal could be achieved with trona injection, and if there were any adverse unforeseen impacts from trona injection, primarily with unfavorable opacity or particulate emissions.

SO₂ Removal

A series of 32 tests were conducted at various unit loads, with several different sizes of trona particles, and on both Central Appalachian and Colombian coals (representing two different coal sulfur levels). For all these tests 80% SO₂ removal could be achieved. The trona consumption was higher than initially predicted, but was reasonably consistent across the range of coals and operating variables. The consistency of the data provides the ability to accurately predict the trona feed rate required to achieve a given SO₂ removal on a controlled basis.

Particulate / Opacity Performance

Opacity was continuously monitored during the entire test period. There were no instances in any of the tests where opacity increased during trona injection. Opacity remained consistently below 4% with no spikes of any kind. The precipitator particulate collection improvement experienced with high sodium ash (trona) at AEP's Gavin Station, described in PowerGen 2004 technical paper "Successful SO₃ Mitigation While Enhancing the ESP Performance at AEP's Gavin Plant by Dry Injection of Trona Upstream of the ESP", was demonstrated in these tests at the Potomac River station.

EPA method 201A and 202 stack tests were also conducted both with and without trona injection. The summary conclusions from these tests are included later in this report.

In summary, high SO₂ removal from trona injection was demonstrated across the load range, and across various operational parameters. No adverse effects were seen from the trona injection. Stack opacity and particulate emissions were excellent and were not impacted by the trona injection. Trona consumption was higher than originally predicted however, and follow up tests are recommended to investigate the cause, optimize trona feed rates, and assure consistent performance at anticipated levels of SO₂ removal.

Chart 1

Potomac River Trona Injection Nov - Dec 2005
Composite Data All Tests

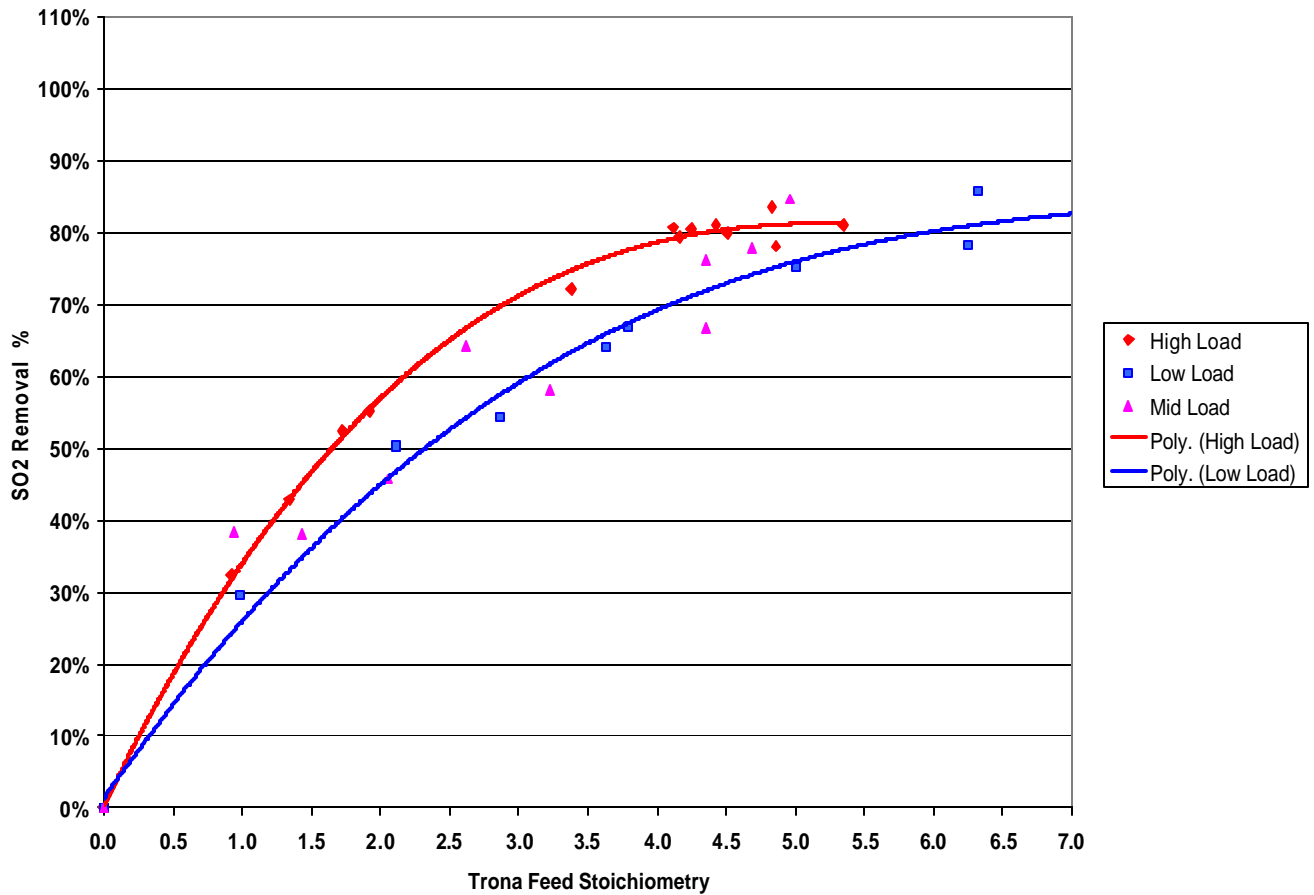


Chart 1 shows that even with the variation of all the operational parameters, the SO₂ removal performance is reasonably consistent across the range of trona feed rates and SO₂ removal rates. Further testing will be required to identify the key operational parameters that could potentially reduce the trona consumption required for a given SO₂ removal rate.

3. TEST CONCLUSIONS

1. SO₂ removal with trona injection up to 80% was consistently demonstrated over the load range with different coal constituencies, trona particle size, gas temperatures, and other operating parameters.
2. Trona consumption was higher than expected for a given SO₂ removal. Follow up characterization tests are recommended in order to optimize the trona consumed as a function of unit operating parameters.
3. The precipitator performance was not impacted in any way due to trona injection, regardless of trona injection rate. Stack particulate test results indicate precipitator performance actually improves with trona present, even with the increase in particulate to be collected by the precipitator when trona is injected.
4. The test accuracy was very good, with excellent correlation between the test instrumentation and the stack CEMS for SO₂ emissions, and with accurate scales for trona consumptions.
5. The test results are consistent between tests, and the resultant data is suitable to allow predictable and respectable control of the outlet SO₂ emissions rate.