**RPS Health, Safety and Environment**
Steadings Barn
Pury Hill Business Park
Nr Alderton
Towcester
Northants NN12 7LS

Report Date: 24th January 2008
Report Ref: FTA 6712

# MEGGITT AIRCRAFT BRAKING SYSTEMS

**Report on Air Emission Monitoring at**

**Meggitt Aircraft Braking Systems**

**Holbrook Lane, Coventry, CV6 4AA**

**January 2008**

**Stack Emission Monitoring Report – Executive Summary**
**Ref. FTA 6712**


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| **Report for Periodic Monitoring of Emissions to Atmosphere** | |
|---|---|
| Part 1: | **Executive Summary** |
| Permit Number: | **PPC/157** |
| Operator: | **Meggitt Aircraft Braking Systems** |
| Installation: | **Surface Treatment & Spraybooths, Holbrook Lane, Coventry** |
| Emission Points: | **DAS1 Stacks, DAS2 Stacks & W & B Stacks** |
| Monitoring Dates: | **11th to 14th December 2007** |

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| | |
|---|---|
| Contract Reference: | FTA 6712 |
| Operator: | Meggitt Aircraft Braking Systems |
| Address: | Holbrook Lane<br>Coventry<br>CV6 4AA |
| Monitoring Organisation: | RPS Health, Safety & Environment |
| Address: | Steadings Barn, Pury Hill Business Park, nr Alderton, Towcester, Northamptonshire, NN12 7LS |
| Report Date: | 24th January 2008 |
| Report Approved By: | Matthew Sumner |
| Position: | Consultant |
| MCERTS Registration No.: | MM 05 622 |
| Signature: | [redacted] |

**RPS Health, Safety and Environment has produced this report within the term of the contract with the client and taking account of the resources devoted to it by agreement with the client.**

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## CONTENTS

### Part 1: Executive Summary

Monitoring Objectives ..... 3

Monitoring Results ..... 4

Operating Information ..... 7

Monitoring Deviations ..... 9

## Monitoring Objectives

At the request of Mr D Warrington of Meggitt Aircraft Braking Systems, RPS Health, Safety and Environment conducted air emission monitoring at the Holbrook Lane site, Coventry in December 2007.

The monitoring programme at this installation was carried out to provide data on emissions to atmosphere for comparison with the limits specified in the air emission criteria for this site.

The parameters requested for monitoring at each emission point and the actual monitoring conducted are detailed below.

**Table 1**

| Parameters Requested to be Monitored | Emission Points | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DAS 1 | | | DAS 2 | | W & B Spraybooths | | | W & B | |
| | Mixing Room Bench | Oven | Spraybooth | Oven | Spraybooth | (LHS) | (RHS) | Mixing Bench | Mixing Room (Floor Level Extraction) | Oven |
| Total Organic Compounds (as total organic carbon excluding particulate matter) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Total Particulate Matter | - | - | ✓ | - | ✓ | ✓ | ✓ | - | - | - |
| Isocyanates (as NCO group excluding particulate matter) | - | - | ✓ | - | ✓ | ✓ | ✓ | - | - | - |
| Specific Requirements | Normal Operating Conditions (See Table 5 & 6) | | | | | | | | | |

*Notes:*
✓ *Represents the actual parameters monitored*
✖ *Represent parameters requested but not actually monitored*

## Monitoring Results

**Table 2 – Monitoring Results of Total Particulate Matter from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Reference | Emission Limit Value | Periodic Monitoring Result | Units | Uncertainty ($mg/m^3$) # | Reference Conditions 273K, 101.3kPa | Sampling Date | Sampling Times | Monitoring Reference Method | Accreditation Status | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|
| DAS 1 Spraybooth | 50 | 1.5 | $mg/m^3$ | ± 0.16 | wet gas, without correction for oxygen | 13-Dec-07 | 08:50 – 09:24 | BS-EN 13284-1 2002 | MCERTS | Refer to Table 5 |
| DAS 2 Spraybooth | 50 | 6.9 | $mg/m^3$ | ± 0.75 | wet gas, without correction for oxygen | 14-Dec-07 | 10:05 – 10:39 | BS-EN 13284-1 2002 | MCERTS | Refer to Table 5 |
| W & B Spraybooth (LHS) | 50 | 7.4 | $mg/m^3$ | ± 0.81 | wet gas, without correction for oxygen | 11-Dec-07 | 11:23 – 11:56 | BS-EN 13284-1 2002 | MCERTS | Refer to Table 6 |
| W & B Spraybooth (RHS) | 50 | 4.0 | $mg/m^3$ | ± 0.44 | wet gas, without correction for oxygen | 12-Dec-07 | 11:55 – 12:25 | BS-EN 13284-1 2002 | MCERTS | Refer to Table 6 |

*Notes:*
*# The uncertainty associated with the quoted result is at the 95% confidence interval.*

**Table 3 – Monitoring Results of Isocyanates (as NCO group excluding particulate matter) from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Reference | Emission Limit Value | Periodic Monitoring Result | Units | Uncertainty ($mg/m^3$) # | Reference Conditions 273K, 101.3kPa | Sampling Date | Sampling Times | Monitoring Reference Method | Accreditation Status | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|
| DAS 1 Spraybooth | 0.1 | < 0.00085 | $mg/m^3$ | ± < 0.00011 | wet gas, without correction for oxygen | 13-Dec-07 | 10:13 – 10:46 | USEPA Method 207-1 | MCERTS | Refer to Table 5 |
| DAS 2 Spraybooth | 0.1 | 0.0066 | $mg/m^3$ | ± 0.00089 | wet gas, without correction for oxygen | 13-Dec-07 | 13:28 – 14:01 | USEPA Method 207-1 | MCERTS | Refer to Table 5 |
| W & B Spraybooth (LHS) | 0.1 | 0.0052 | $mg/m^3$ | ± 0.00070 | wet gas, without correction for oxygen | 11-Dec-07 | 14:49 – 15:23 | USEPA Method 207-1 | MCERTS | Refer to Table 6 |
| W & B Spraybooth (RHS) | 0.1 | 0.0087 | $mg/m^3$ | ± 0.00090 | wet gas, without correction for oxygen | 12-Dec-07 | 09:53 – 10:38 | USEPA Method 207-1 | MCERTS | Refer to Table 6 |

*Notes:*

*# The uncertainty associated with the quoted result is at the 95% confidence interval.*

**Table 4 – Monitoring Results of Volatile Organic Compounds (as total organic carbon excluding particulate matter) from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Reference | Emission Limit Value | Periodic Monitoring Result | Units | Uncertainty ($mg/m^3$) # | Reference Conditions 273K, 101.3kPa | Sampling Date | Sampling Times | Monitoring Reference Method | Accreditation Status | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|
| DAS 1 Mixing Room Bench | 50 | < 1.0 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 13-Dec-07 | 08:41 – 09:41 | BS EN 13526:2002 | MCERTS | Refer to Table 5 |
| DAS 1 Oven | 50 | < 1.0 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 13-Dec-07 | 09:41 – 10:41 | BS EN 13526:2002 | MCERTS | Refer to Table 5 |
| DAS 1 Spraybooth | 50 | 1.8 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 13-Dec-07 | 08:49 – 09:49 | BS EN 13526:2002 | MCERTS | Refer to Table 5 |
| DAS 2 Oven | 50 | 4.1 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 13-Dec-07 | 13:52 – 14:52 | BS EN 13526:2002 | MCERTS | Refer to Table 5 |
| DAS 2 Spraybooth | 50 | 7.4 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 13-Dec-07 | 13:27 – 14:27 | BS EN 13526:2002 | MCERTS | Refer to Table 5 |
| W & B Mixing Bench | 50 | 6.8 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 11-Dec-07 | 08:56 – 09:56 | BS EN 13526:2002 | MCERTS | Refer to Table 6 |
| W & B Mixing Room Floor (Ground Level Extraction) | 50 | 3.4 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 11-Dec-07 | 10:11 – 11:11 | BS EN 13526:2002 | MCERTS | Refer to Table 6 |
| W & B Oven | 50 | 1.8 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 12-Dec-07 | 09:46 – 10:46 | BS EN 13526:2002 | MCERTS | Refer to Table 6 |
| W & B Spraybooth (LHS) | 50 | 10 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 11-Dec-07 | 11:23 – 12:23 | BS EN 13526:2002 | MCERTS | Refer to Table 6 |
| W & B Spraybooth (RHS) | 50 | 5.8 | $mg/m^3$ | ± 2.5 | wet gas, without correction for oxygen | 11-Dec-07 | 14:46 – 15:17 | BS EN 13526:2002 | MCERTS | Refer to Table 6 |

*Notes: # - The uncertainty associated with the quoted result is at the 95% confidence interval.*

## Operating Information

**Table 5 – Operating Information During Monitoring of the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Parameter | DAS 1 | | | DAS 2 | |
|---|---|---|---|---|---|
| | Mixing Room Bench | Oven | Spraybooth | Oven | Spraybooth |
| Sample Date | 13-Dec-07 | 13-Dec-07 | 13-Dec-07 | 13-Dec-07 | 14-Dec-07 |
| Process Type | Batch | Batch | Batch | Batch | Batch |
| Process Duration | 6 mins | 40 minutes | 22 minutes | 50 minutes | 11 minutes |
| If 'Batch', was monitoring carried out over the whole batch?<br><br>If 'No', give details | Mixing from 08:41 – 08:47 | 09:41 – Oven on, components in. 10:21 – Components removed Braking components are coated in high temperature aluminium paint oven set at 190°C. | Spraying from 08:55 – 09:17 | 13:52 – Oven on, components in. 14:42 – Components removed Braking components are coated in high temperature aluminium paint oven set at 190°C. | Spraying from 10:05 – 10:16. |
| Abatement/Operational? | Carbon Bed/Yes | Carbon Bed/Yes | Wet back booths, Carbon Bed / Yes | - | Wet back booths, Carbon Bed / Yes |
| Fuel Type | N/K | N/K | 2 pack primer | N/K | N/K |
| Feedstock | N/K | Braking components | Brake components | Braking components | N/K |
| Load | N/K | N/K | N/K | N/K | N/K |
| Throughput | N/K | N/K | N/K | N/K | N/K |

**Table 6 – Operating Information During Monitoring of the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Parameter | W & B Spraybooths | | W & B | | |
|---|---|---|---|---|---|
| | (LHS) | (RHS) | Mixing Bench | Mixing Room (Floor Level Extraction) | Oven |
| Sample Date | 11-Dec-07 | 12-Dec-07 | 11-Dec-07 | 11-Dec-07 | 12-Dec-07 |
| Process Type | Batch | Batch | Batch | Batch | Batch |
| Process Duration | < 30 minutes | 13 minutes | ~10 mins | ~10 mins | ~1 hour |
| If 'Batch', was monitoring carried out over the whole batch?<br><br>If 'No', give details | Spraying from 11:23 – 11:44 | Spraying from 09:33 – 09:46 | Mixing conducted over sample run. | Mixing conducted over sample run. | Braking components are coated in high temperature aluminium paint oven set at 190°C. |
| Abatement/ Operational? | Wet back booths, Carbon Bed / Yes | Wet back booths, Carbon Bed / Yes | Carbon Bed / Yes | Carbon Bed / Yes | Carbon Bed / Yes |
| Fuel Type | N/K | N/K | N/K | N/K | N/K |
| Feedstock | Braking components | Braking components | Braking components | Braking components | Braking components |
| Load | N/K | N/K | N/K | N/K | N/K |
| Throughput | N/K | N/K | N/K | N/K | N/K |

## Monitoring Deviations

**Table 7 – Monitoring Deviations During Monitoring of the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Substance Deviations | Monitoring Deviations | Other Relevant Issues |
|---|---|---|
| DAS 1 – All Stacks<br>None | DAS 1 – All Stacks<br>None | DAS 1 – All Stacks<br>None |
| DAS 2 – All Stacks<br>None | DAS 2 – All Stacks<br>DAS 2 Spraybooth – Only one sample port used during monitoring due to health and safety considerations. | DAS 2 – All Stacks<br>None |
| W & B – All Stacks<br>None | W & B – All Stacks<br>None | W & B – All Stacks<br>None |

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# MEGGITT AIRCRAFT BRAKING SYSTEMS

**Report on Air Emission Monitoring at**

**Meggitt Aircraft Braking Systems**

**Holbrook Lane, Coventry, CV6 4AA**

**January 2008**

**Supplementary Information to the Stack Emission Monitoring Report – Executive Summary**

**Ref. FTA 6712**

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

1709

UKAS TESTING

1709

| **Report for Periodic Monitoring of Emissions to Atmosphere** | |
|---|---|
| Part 2: | **Supporting Information** |
| Permit Number: | **PPC/157** |
| Operator: | **Meggitt Aircraft Braking Systems** |
| Installation: | **Surface Treatment & Spraybooths, Holbrook Lane, Coventry** |
| Emission Points: | **DAS1 Stacks, DAS2 Stacks & W & B Stacks** |
| Monitoring Dates: | **11th to 14th December 2007** |

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| | |
|---|---|
| Contract Reference: | FTA 6712 |
| Operator: | Meggitt Aircraft Braking Systems |
| Address: | Holbrook Lane<br>Coventry<br>CV6 4AA |
| Monitoring Organisation: | RPS Health, Safety & Environment |
| Address: | Steadings Barn, Pury Hill Business Park, nr Alderton, Towcester, Northamptonshire, NN12 7LS |
| Report Date: | 24th January 2008 |
| Report Approved By: | Matthew Sumner |
| Position: | Consultant |
| MCERTS Registration No.: | MM 05 622 |
| Signature: | [redacted] |

**RPS Health, Safety and Environment has produced this report within the term of the contract with the client and taking account of the resources devoted to it by agreement with the client.**

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## CONTENTS

### Part 2: Supporting Information

APPENDIX 1: General Information ..... 3

Monitoring Organisation Staff Details ..... 4

Monitoring Organisation Method Details ..... 5

APPENDIX 2: Emission Point Details – DAS 1 Stacks (Mixing Room Bench, Oven & Spraybooth), DAS 2 Stacks (Oven & Spraybooth), W & B Stacks (Spraybooths LHS & RHS, Mixing Bench, Mixing Room (Ground Level Extraction), & Oven) ..... 6

Stack Gas Measurements ..... 7

Reportable Blank Results ..... 15

Monitoring Profiles ..... 16

Instrumental Gas Analyser - Site Calibration Measurements ..... 26

Certificates of Analyses ..... 27

# APPENDIX 1: General Information

## Monitoring Organisation Staff Details

### Table 8

| Site Team | Position | MCERTS Level | Technical Endorsements | MCERTS Registration Number |
|---|---|---|---|---|
| Carl Redgrove | Consultant | 2 | 1, 2, 3 & 4 | MM 03 173 |
| Richard Carter | Technician | Trainee | - | MM 07 861 |

| Report Author | Position | MCERTS Level | Technical Endorsements | MCERTS Registration Number |
|---|---|---|---|---|
| Carl Redgrove | Consultant | 2 | 1, 2, 3 & 4 | MM 03 173 |

| Report Reviewer | Position | MCERTS Level | Technical Endorsements | MCERTS Registration Number |
|---|---|---|---|---|
| Matthew Sumner | Consultant | 2 | 1, 2, 3 & 4 | MM 05 622 |

## Monitoring Organisation Method Details

### Table 9

| Emission Parameter | Standard Method | Monitoring Procedure No. | Monitoring Accreditation Status | Analysis Technique | Analysis Procedure No. | Analytical Laboratory | Analysis Accreditation Status |
|---|---|---|---|---|---|---|---|
| Practical Considerations Prior to Monitoring | N/A | RPSCE/1/1 | MCERTS | N/A | N/A | N/A | N/A |
| Gas Flows | BS-EN 13284-1:2001 | RPSCE/1/2 | MCERTS | N/A | N/A | N/A | N/A |
| Gas Temperatures | BS-EN 13284-1:2001 | RPSCE/1/2 | MCERTS | N/A | N/A | N/A | N/A |
| TOCs (as total organic carbon) | BS EN 13526:2002 | RPSCE/1/4c | MCERTS | FID | N/A | N/A | N/A |
| Total Particulate Matter | BS EN 13284-1:2001 | RPSCE/1/7c | MCERTS | Gravimetric | D9 | RPS Laboratories, Manchester | UKAS |

# APPENDIX 2: Emission Point Details – DAS 1 Stacks (Mixing Room Bench, Oven & Spraybooth), DAS 2 Stacks (Oven & Spraybooth), W & B Stacks (Spraybooths LHS & RHS, Mixing Bench, Mixing Room (Ground Level Extraction), & Oven)

**Stack Gas Measurements**

**Table 10 - Temperature and Velocity Profile**

**Results of Gas Flows and Gas Temperatures Measured from the DAS 1 Oven / Mixing Room Bench at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | |
|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.15 | 20 | 1.2 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 101.3 |
| Static Pressure (mm $H_2O$) | Negative 1.0 |
| Stack Dimension Ø (m) | 0.30 |

**Table 11 - Results of Gas Flows and Gas Temperatures Measured from the DAS 1 Spraybooth at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | | Sample Line B | | | |
|---|---|---|---|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.07 | 16 | 12.2 | No | Yes | 16 | 14.2 | No | Yes |
| 0.43 | 16 | 12.8 | No | Yes | 16 | 15.4 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 101.8 |
| Static Pressure (mm $H_2O$) | Negative 5.8 |
| Stack Dimension Ø (m) | 0.50 |

**Table 12 - Temperature and Velocity Profile**

**Results of Gas Flows and Gas Temperatures Measured from the DAS 2 Oven at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | |
|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.15 | 85 | 1.3 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 100.3 |
| Static Pressure (mm $H_2O$) | Negative 0.6 |
| Stack Dimension Ø (m) | 0.30 |

**Table 13 - Results of Gas Flows and Gas Temperatures Measured from the DAS 2 Spraybooth at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | | Sample Line B | | | |
|---|---|---|---|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.07 | 15 | 16.6 | No | Yes | 15 | 17.2 | No | Yes |
| 0.43 | 15 | 16.8 | No | Yes | 15 | 15.2 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 101.8 |
| Static Pressure (mm $H_2O$) | Negative 4.2 |
| Stack Dimension Ø (m) | 0.50 |

**Table 14 - Temperature and Velocity Profile**

**Results of Gas Flows and Gas Temperatures Measured from the W & B Spraybooth (LHS) at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | | Sample Line B | | | |
|---|---|---|---|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.07 | 12 | 1.4 | No | Yes | 11 | 3.0 | No | Yes |
| 0.43 | 12 | 2.8 | No | Yes | 11 | 3.0 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 101.0 |
| Static Pressure (mm $H_2O$) | 0.5 |
| Stack Dimension Ø (m) | 0.50 |

**Table 15 - Temperature and Velocity Profile**

**Results of Gas Flows and Gas Temperatures Measured from the W & B Spraybooth (RHS) at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | | Sample Line B | | | |
|---|---|---|---|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.07 | 13 | 1.4 | No | Yes | 13 | 2.2 | No | Yes |
| 0.43 | 13 | 1.2 | No | Yes | 13 | 2.6 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 101.5 |
| Static Pressure (mm $H_2O$) | 1.2 |
| Stack Dimension Ø (m) | 0.50 |

**Table 16 - Temperature and Velocity Profile**

**Results of Gas Flows and Gas Temperatures Measured from the W & B Oven and Mixing Room Bench at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Traverse Point (m) | Sample Line A | | | |
|---|---|---|---|---|
| | T (°C) | ΔP (mm $H_2O$) | Neg. Flow? | Spin <15° |
| 0.16 | 14 | 1.3 | No | Yes |

| | |
|---|---|
| Barometric pressure (kPa) | 101.9 |
| Static Pressure (mm $H_2O$) | Negative 1.1 |
| Stack Dimension Ø (m) | 0.32 |

**Table 17 - Gas Measurements (continued)**

**Results of Total Particulate Matter and General Emission Parameters Measured from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Parameter | Units | DAS 1 Mixing Room / Oven | DAS 1 Spraybooth | DAS 2 Oven | DAS 2 Spraybooth |
|---|---|---|---|---|---|
| Sample Date | - | 13-Dec-07 | 13-Dec-07 | 14-Dec-07 | 14-Dec-07 |
| Sample Period | - | - | 08:50 – 09:24 | - | 10:05 – 10:39 |
| Barometric Pressure | kPa | 101.3 | 101.8 | 100.3 | 100.3 |
| Internal Area Of Duct | $m^2$ | 0.071 | 0.20 | 0.071 | 0.20 |
| Stack Moisture Content | % | 1.5 | 0.70 | 1.5 | 1.0 |
| Stack Temperature | °C | 20 | 13 | 85 | 17 |
| Gas Velocity (as measured at sampling plane) | m/sec | 3.7 | 11 | 4.2 | 13 |
| Volumetric Flowrate (as measured) | $m^3$/sec | 0.26 | 2.2 | 0.30 | 2.6 |
| Volumetric Flowrate (at reference conditions) | $m^3$/sec* | 0.25 | 2.1 | 0.23 | 2.5 |
| | | | | | |
| Total Particulate Matter Mass Emission | kg/hr | NM | 0.011 | NM | 0.062 |
| Total Particulate Matter Concentration | $mg/m^3$* | NM | 1.5 | NM | 6.9 |

*Notes:*
* *Reference conditions expressed as 273 K, 101.3 kPa, wet gas without correction for oxygen*
*NM Not Monitored*

**Table 18 - Gas Measurements (continued)**

**Results of Total Particulate Matter and General Emission Parameters Measured from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Parameter | Units | W & B Spraybooth LHS | W & B Spraybooth RHS | W & B Mixing Bench / Oven |
|---|---|---|---|---|
| Sample Date | - | 11-Dec-07 | 12-Dec-07 | 13-Dec-07 |
| Sample Period | - | 11:23 – 11:56 | 11:55 – 12:25 | - |
| Barometric Pressure | kPa | 101.0 | 101.5 | 101.9 |
| Internal Area Of Duct | $m^2$ | 0.20 | 0.20 | 0.080 |
| Stack Moisture Content | % | 1.2 | 1.0 | 1.5 |
| Stack Temperature | °C | 11 | 13 | 14 |
| Gas Velocity (as measured at sampling plane) | m/sec | 5.6 | 5.2 | 3.8 |
| Volumetric Flowrate (as measured) | $m^3$/sec | 1.1 | 1.0 | 0.30 |
| Volumetric Flowrate (at reference conditions) | $m^3$/sec* | 1.1 | 0.98 | 0.30 |
| | | | | |
| Total Particulate Matter Mass Emission | kg/hr | 0.029 | 0.014 | NM |
| Total Particulate Matter Concentration | $mg/m^3$* | 7.4 | 4.0 | NM |

*Notes:*
* *Reference conditions expressed as 273 K, 101.3 kPa, wet gas without correction for oxygen*
*NM Not Monitored*

**Table 19 - Gas Measurements (continued)**

**Results of Isocyanates (as NCO group excluding particulate matter) Concentration Measured from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Reference | Emission Parameter | Units | Result |
|---|---|---|---|
| DAS 1 Spraybooth | Sample Date | - | 13-Dec-07 |
| | Sample Period | - | 10:13 – 10:46 |
| | Mean Concentration of Isocyanates | $mg/m^3$ | < 0.00085 |
| DAS 2 Spraybooth | Sample Date | - | 13-Dec-07 |
| | Sample Period | - | 13:28 – 14:01 |
| | Mean Concentration of Isocyanates | $mg/m^3$ | 0.0066 |
| W & B Spraybooth (LHS) | Sample Date | - | 11-Dec-07 |
| | Sample Period | - | 14:49 – 15:23 |
| | Mean Concentration of Isocyanates | $mg/m^3$ | 0.0052 |
| W & B Spraybooth (RHS) | Sample Date | - | 12-Dec-07 |
| | Sample Period | - | 09:33 – 10:38 |
| | Mean Concentration of Isocyanates | $mg/m^3$ | 0.0087 |

*Notes:*
* *Reference conditions expressed as 273 K, 101.3 kPa, wet gas without correction for oxygen*

**Table 20 - Gas Measurements (continued)**

**Results of Total Organic Compounds (as total organic carbon excluding particulate matter) Concentration Measured from the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

| Emission Reference | Sample Date | Sample Period | Units | | TOCs (as total organic carbon) |
|---|---|---|---|---|---|
| DAS 1 Mixing Room Bench | 13-Dec-07 | 08:41 – 09:41 | $mg/m^3$ | Maximum | 1.4 |
| | | | | **Mean** | **< 1.0** |
| DAS 1 Oven | 13-Dec-07 | 09:41 – 10:41 | $mg/m^3$ | Maximum | 1.2 |
| | | | | **Mean** | **< 1.0** |
| DAS 1 Spraybooth | 13-Dec-07 | 08:49 – 09:49 | $mg/m^3$ | Maximum | 2.0 |
| | | | | **Mean** | **1.8** |
| DAS 2 Oven | 13-Dec-07 | 13:52 – 14:52 | $mg/m^3$ | Maximum | 15 |
| | | | | **Mean** | **4.1** |
| DAS 2 Spraybooth | 13-Dec-07 | 13:27 – 14:27 | $mg/m^3$ | Maximum | 26 |
| | | | | **Mean** | **7.4** |
| W & B Mixing Bench | 11-Dec-07 | 08:56 – 09:56 | $mg/m^3$ | Maximum | 7.6 |
| | | | | **Mean** | **6.8** |
| W & B Mixing Room (Floor Level Extraction) | 11-Dec-07 | 10:11 – 11:11 | $mg/m^3$ | Maximum | 6.8 |
| | | | | **Mean** | **3.4** |
| W & B Oven | 12-Dec-07 | 09:46 – 10:46 | $mg/m^3$ | Maximum | 1.9 |
| | | | | **Mean** | **1.8** |
| W & B Spraybooth (LHS) | 11-Dec-07 | 11:23 – 12:23 | $mg/m^3$ | Maximum | 11 |
| | | | | **Mean** | **10** |
| W & B Spraybooth (RHS) | 11-Dec-07 | 14:46 – 15:17 | $mg/m^3$ | Maximum | 8.7 |
| | | | | **Mean** | **5.8** |

*Notes:*

* *Reference conditions expressed as 273 K, 101.3 kPa, wet gas without correction for oxygen*

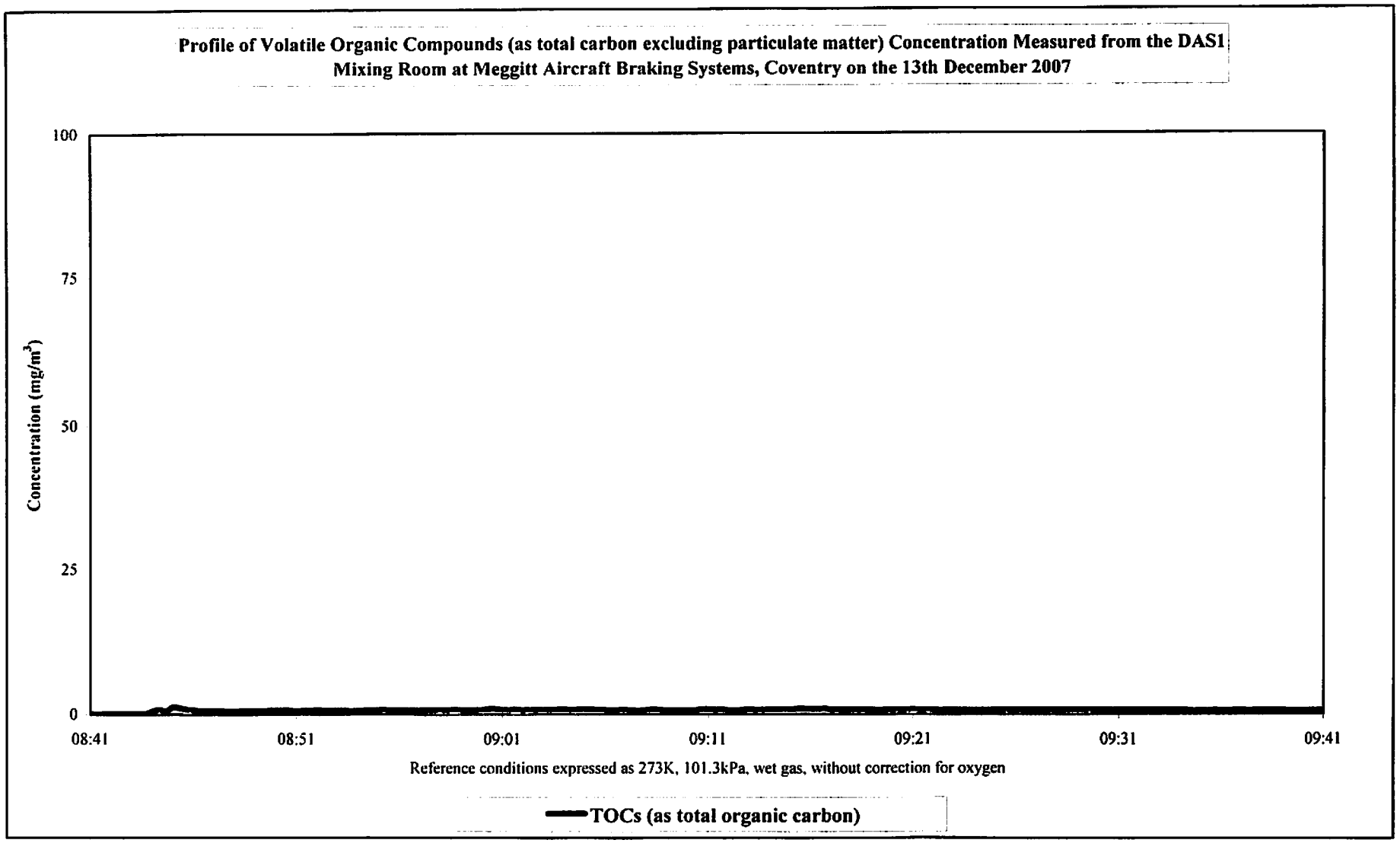
**Reportable Blank Results**

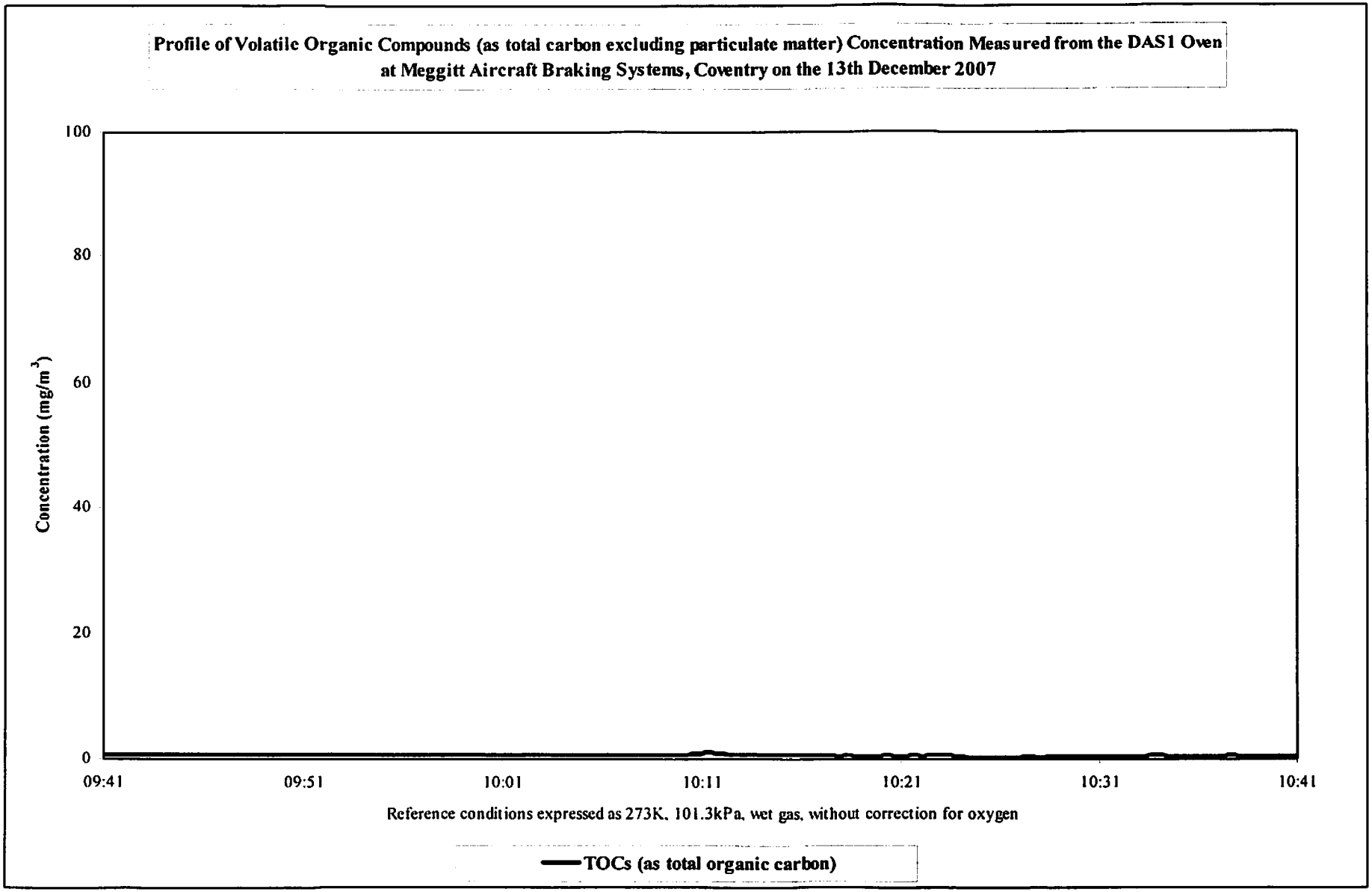
**Table 21 - Results of the Reportable Blank Concentrations for Total particulate Matter taken for the Specified Process Exhausts at Meggitt Aircraft Braking Systems, Coventry in December 2007**

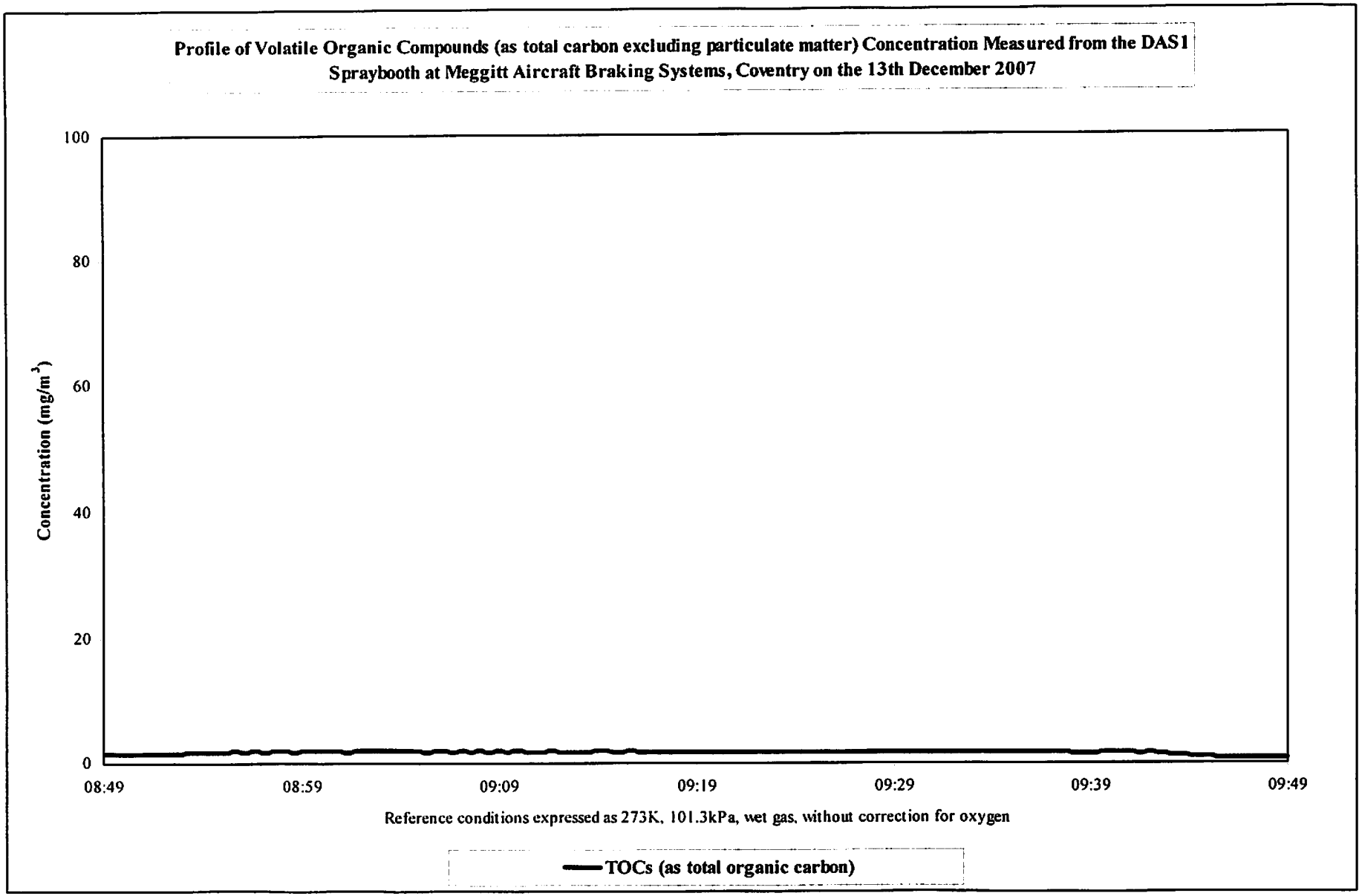
| Emission Reference | Parameter Monitored | Sample Date | Units* | Blank Concentration |
|---|---|---|---|---|
| DAS 1 Spraybooth | Total Particulate Matter | 13-Dec-07 | $mg/m^3$ | < 1.1 |
| DAS 2 Spraybooth | Total Particulate Matter | 14-Dec-07 | $mg/m^3$ | < 0.96 |
| W & B Spraybooth (LHS) | Total Particulate Matter | 11-Dec-07 | $mg/m^3$ | < 0.96 |
| W & B Spraybooth (RHS) | Total Particulate Matter | 12-Dec-07 | $mg/m^3$ | 1.7 |

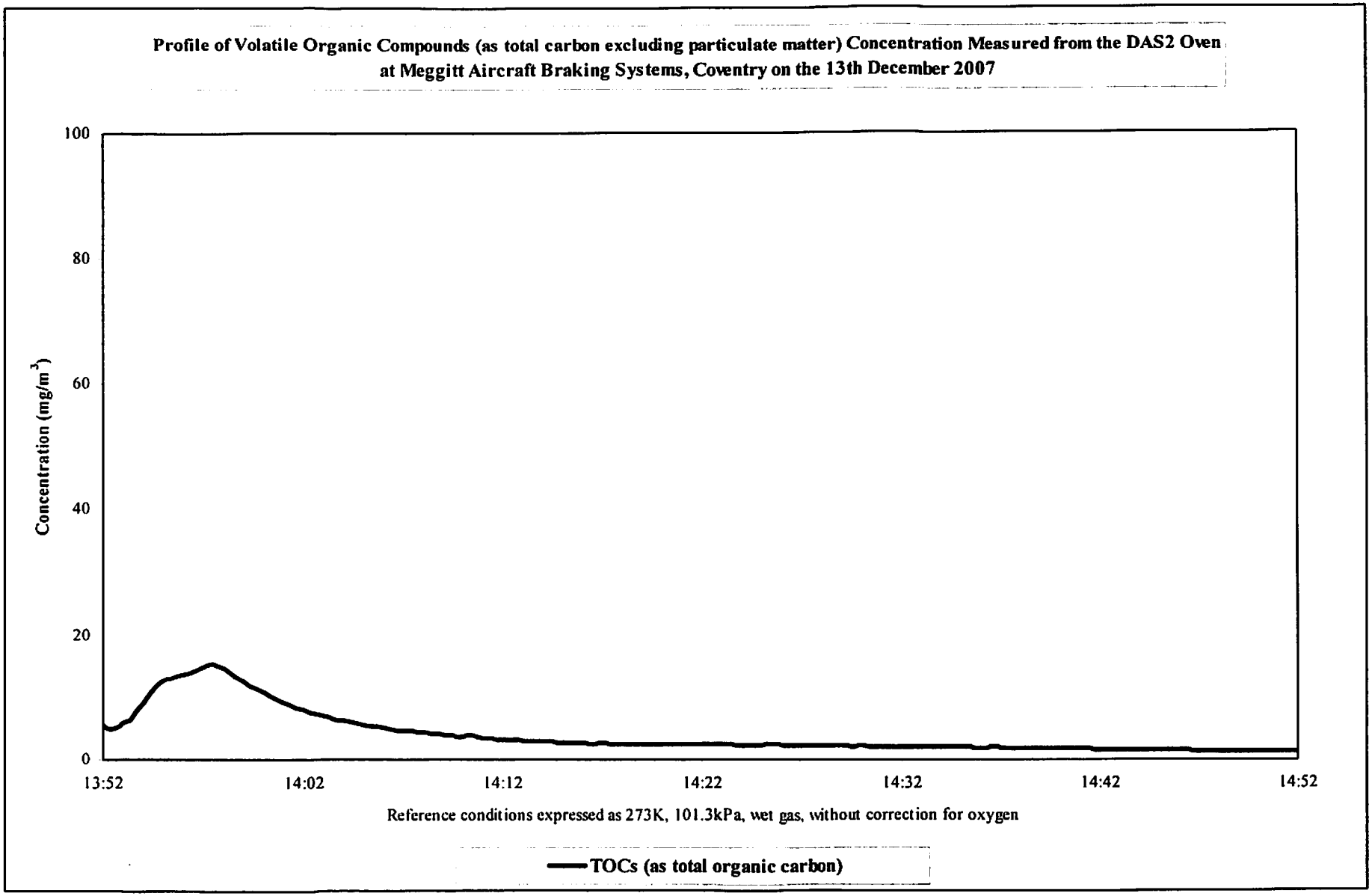
*Notes:*
* *Reference conditions expressed as 273 K, 101.3 kPa, wet gas without correction for oxygen*

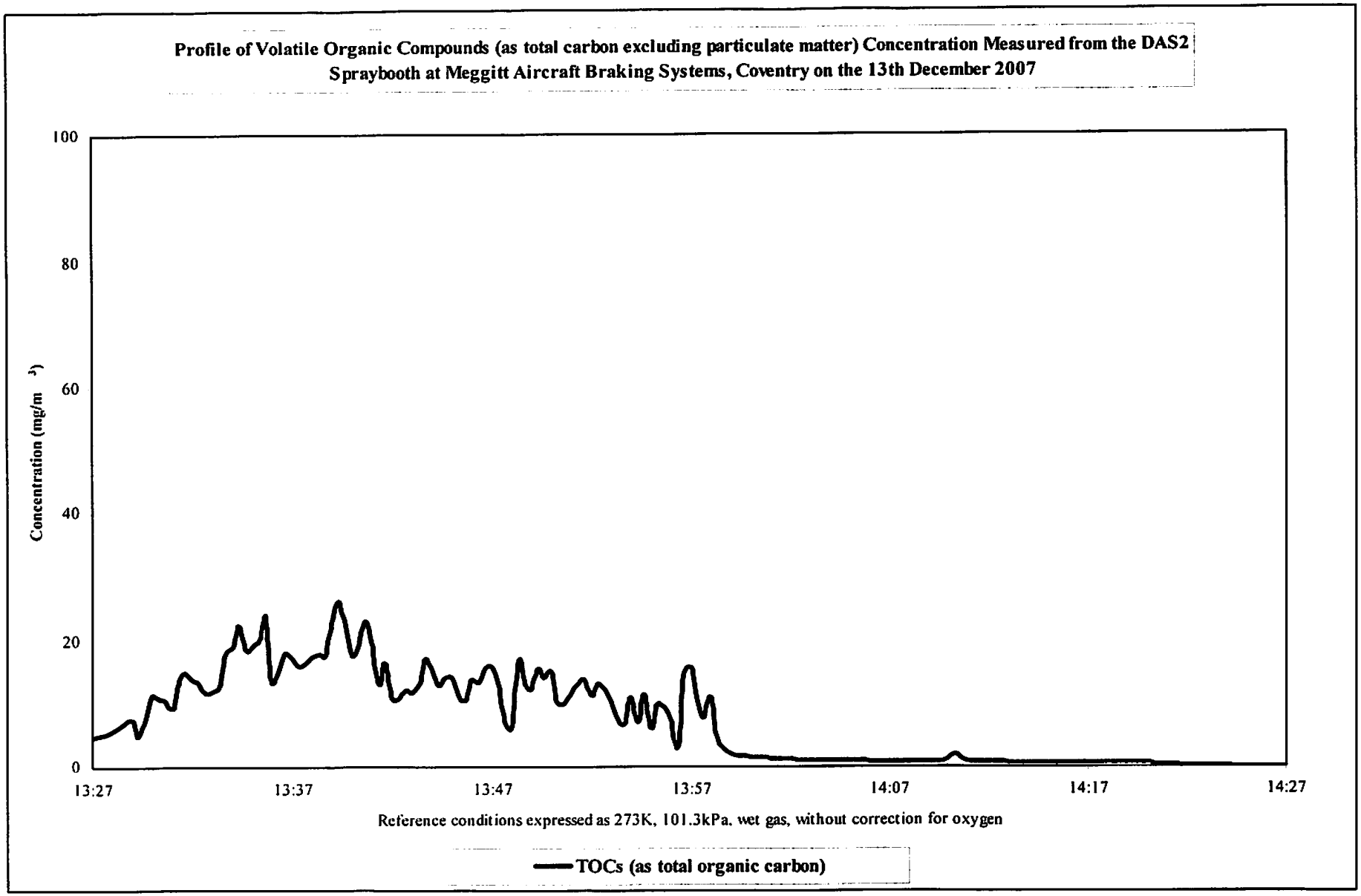
## Monitoring Profiles

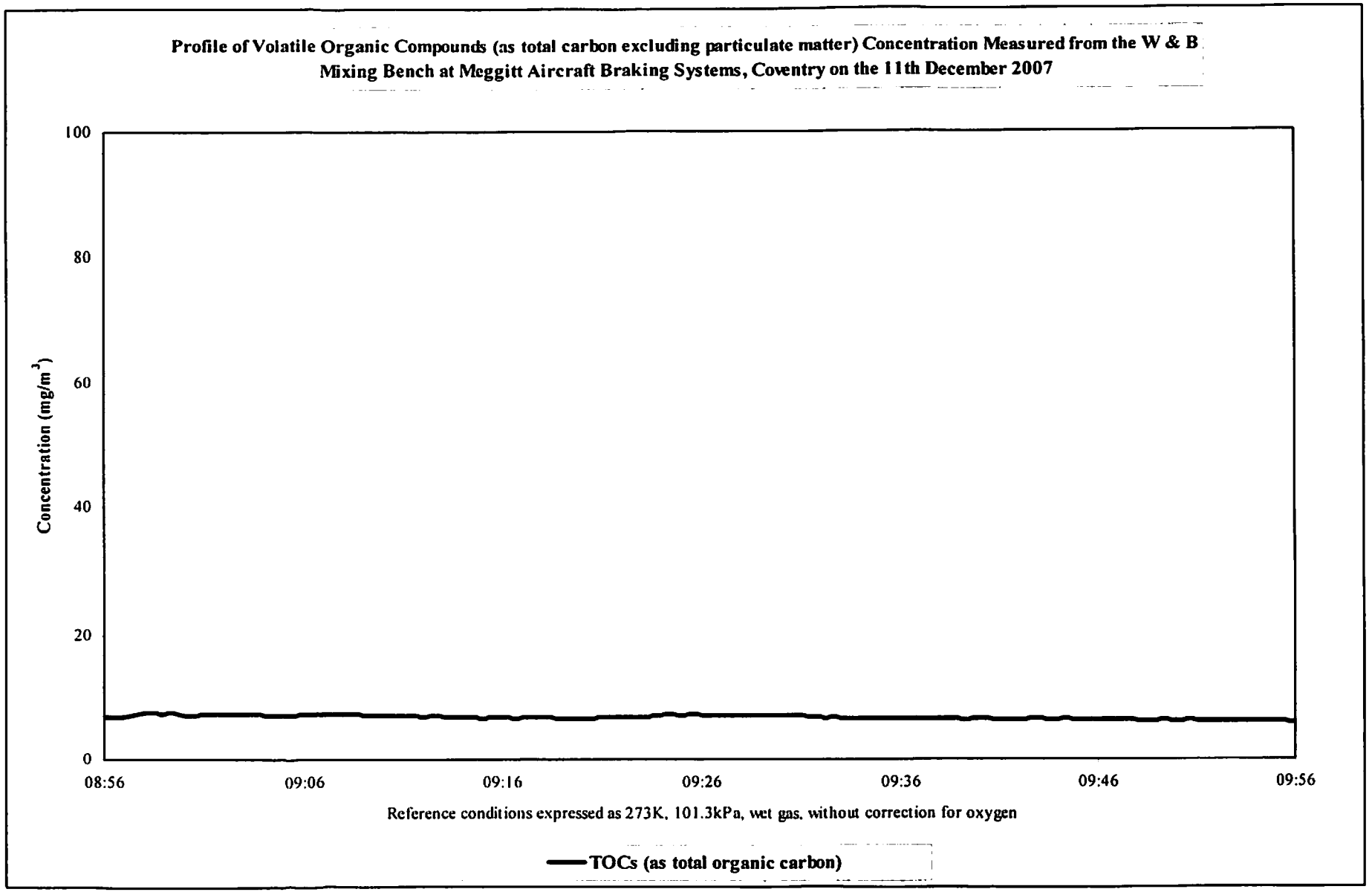


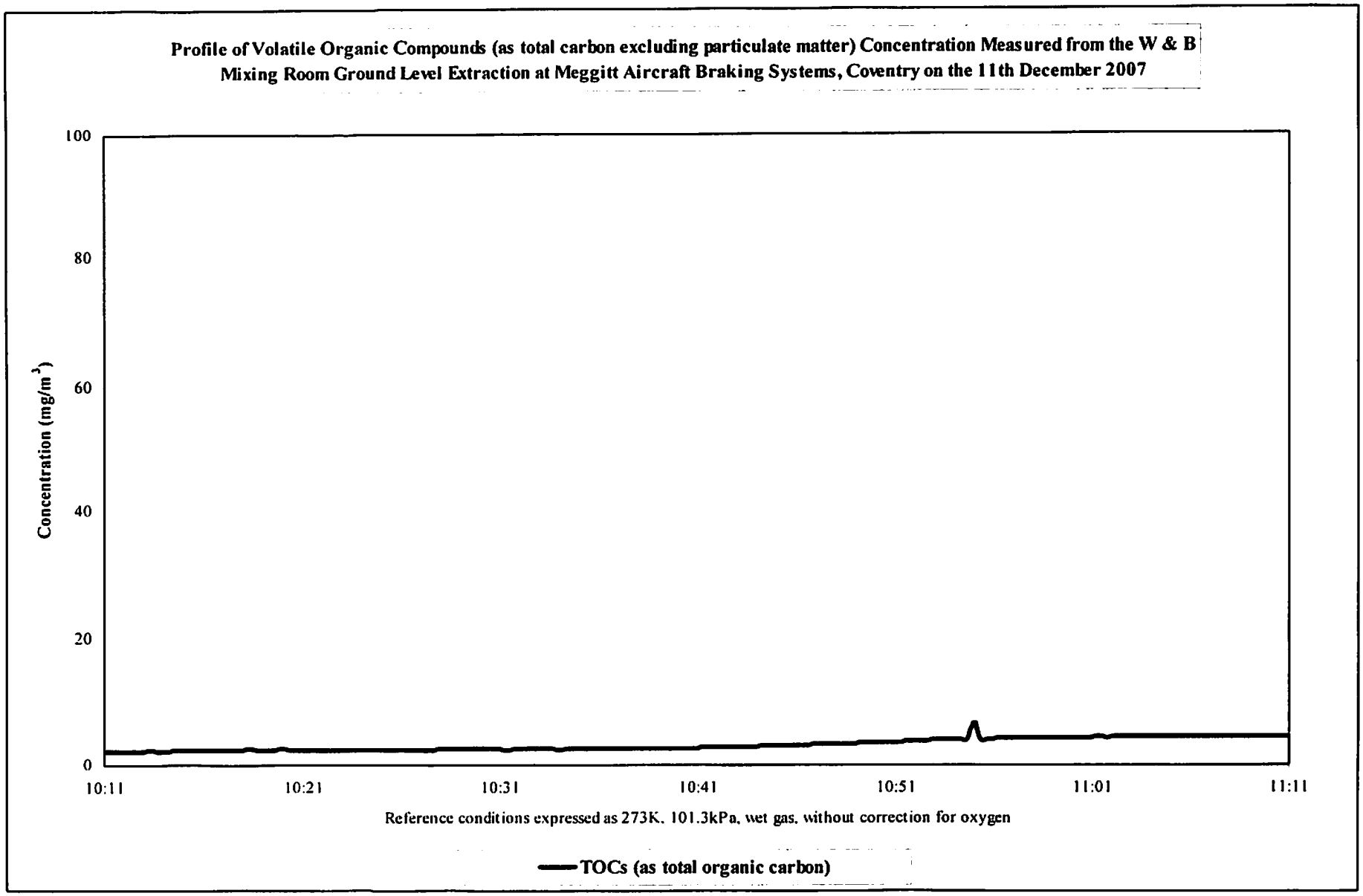

Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the DAS1 Oven at Meggitt Aircraft Braking Systems, Coventry on the 13th December 2007
Concentration (mg/m3)
100
80
60
40
20
0
09:41
09:51
10:01
10:11
10:21
10:31
10:41
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)

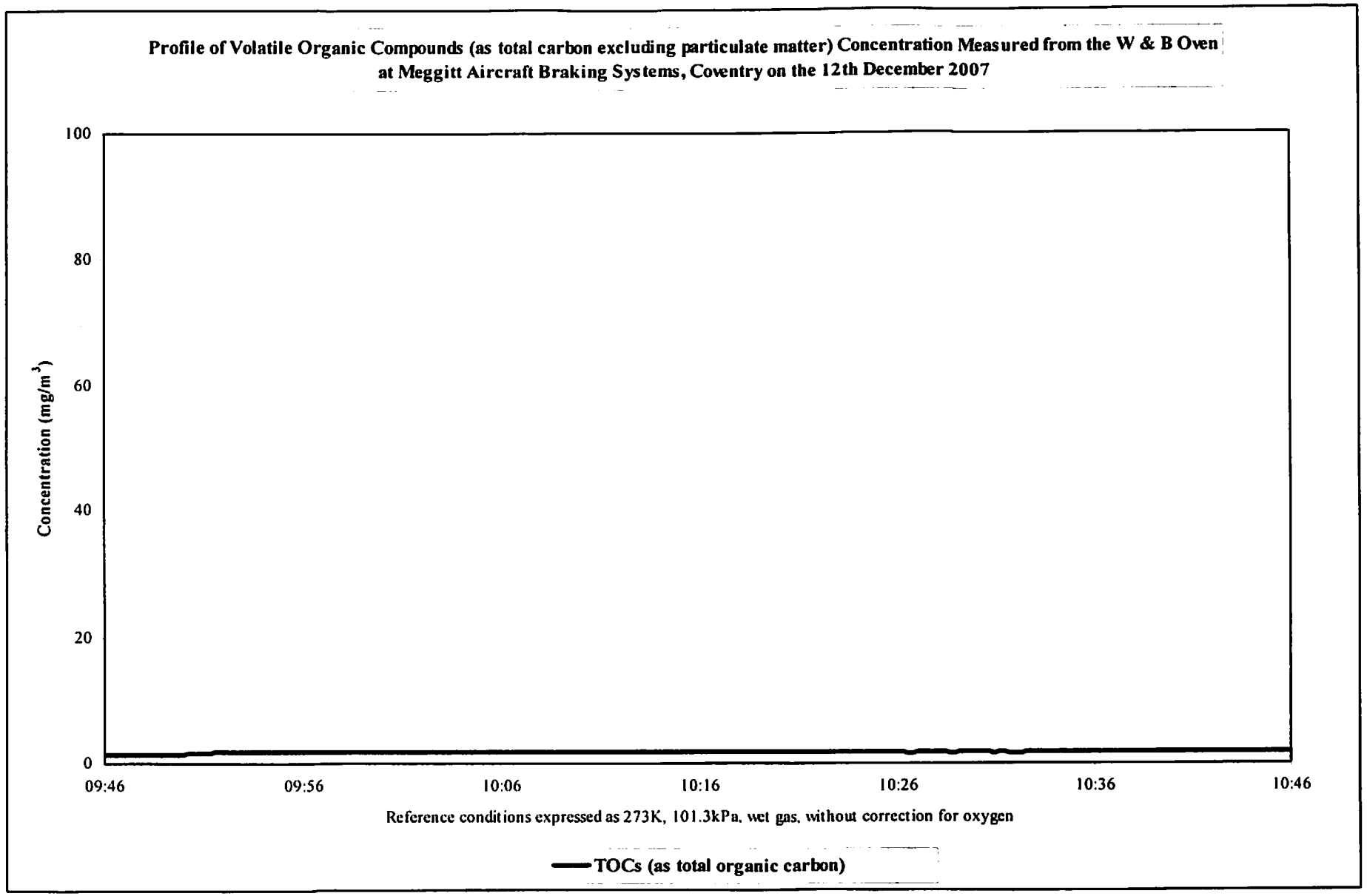

Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the DAS1 Spraybooth at Meggitt Aircraft Braking Systems, Coventry on the 13th December 2007
Concentration (mg/m3)
100
80
60
40
20
0
08:49
08:59
09:09
09:19
09:29
09:39
09:49
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)


Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the DAS2 Oven at Meggitt Aircraft Braking Systems, Coventry on the 13th December 2007
Concentration (mg/m3)
100
80
60
40
20
0
13:52
14:02
14:12
14:22
14:32
14:42
14:52
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)


Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the DAS2 Spraybooth at Meggitt Aircraft Braking Systems, Coventry on the 13th December 2007
Concentration (mg/m 3)
100
80
60
40
20
0
13:27
13:37
13:47
13:57
14:07
14:17
14:27
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)


Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the W & B Mixing Bench at Meggitt Aircraft Braking Systems, Coventry on the 11th December 2007
Concentration (mg/m3)
100
80
60
40
20
0
08:56
09:06
09:16
09:26
09:36
09:46
09:56
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)


Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the W & B Mixing Room Ground Level Extraction at Meggitt Aircraft Braking Systems, Coventry on the 11th December 2007
Concentration (mg/m3)
100
80
60
40
20
0
10:11
10:21
10:31
10:41
10:51
11:01
11:11
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)


Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the W & B Oven at Meggitt Aircraft Braking Systems, Coventry on the 12th December 2007
Concentration (mg/m3)
100
80
60
40
20
0
09:46
09:56
10:06
10:16
10:26
10:36
10:46
Reference conditions expressed as 273K, 101.3kPa, wet gas, without correction for oxygen
TOCs (as total organic carbon)

UKAS TESTING 0605

Date 07/01/2008

## Test Certificate

| | | | |
|---|---|---|---|
| Client | RPS Towcester | Certificate No. | WK07-7831 |
| | | Issue No. | 1 |

| Sample No. | 480228 | T111849 | Method |
|---|---|---|---|
| Total particulate matter | 0.9 mg | | D9(U) |

| Sample No. | 480229 | 033643 | Method |
|---|---|---|---|
| Total particulate matter | 0.6 mg | | D9(U) |

| Sample No. | 480230 | T111852 | Method |
|---|---|---|---|
| Total particulate matter | <0.5 mg | | D9(U) |

| Sample No. | 480231 | 033642 | Method |
|---|---|---|---|
| Total particulate matter | <0.1 mg | | D9(U) |

| Sample No. | 480232 | T111851 | Method |
|---|---|---|---|
| Total particulate matter | <0.5 mg | | D9(U) |

| Sample No. | 480233 | 033646 | Method |
|---|---|---|---|
| Total particulate matter | <0.1 mg | | D9(U) |

Damaged filter

| Sample No. | 480234 | T111860 | Method |
|---|---|---|---|
| Total particulate matter | 4.3 mg | | D9(U) |

| Sample No. | 480235 | 033647 | Method |
|---|---|---|---|
| Total particulate matter | <0.1 mg | | D9(U) |

| Sample No. | 480238 | T111859 | Method |
|---|---|---|---|
| Total particulate matter | <0.5 mg | | D9(U) |



RPS Laboratories Ltd. Unit 12, Waters Edge Business Park, Modwen Road Salford, M5 3EZ
Tel: (0161) 872 2443 Fax: (0161) 877 3959

Date 07/01/2008

## Test Certificate

| | | | |
|---|---|---|---|
| Client | RPS Towcester | Certificate No. | WK07-7831 |
| | | Issue No. | 1 |

| | | | |
|---|---|---|---|
| Tested By | Catherine Weatherall | Date | 07/01/2008 |
| Approved By | [redacted] | Date | 07/01/2008 |

Jon Ashcroft
Senior Chemist

For and on authority of RPS Laboratories Ltd.
Standard terms and conditions are applicable, a copy is available on request.

Method Symbols
(U) Analysis is UKAS Accredited
(N) Analysis is not UKAS Accredited
(S) Analysis is Subcontracted

Concentration values (mg/m3 and ppm) are provided to assist with interpretation only, they are not covered by the scope of UKAS accreditation

Analysis carried out on samples 'as received'



Page 3 of 3

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