

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

Report Date: 24<sup>th</sup> 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**



1709



1709

**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: **11<sup>th</sup> to 14<sup>th</sup> December 2007**



1709



1709

Contract Reference: **FTA 6712**

Operator: **Meggitt Aircraft Braking Systems**

Address: **Holbrook Lane  
Coventry  
CV6 4AA**

Monitoring Organisation: **RPS Health, Safety & Environment**

Address: **Stedings Barn, Pury Hill Business Park, nr Alderton,  
Towcester, Northamptonshire, NN12 7LS**

Report Date: **24<sup>th</sup> January 2008**

Report Approved By: **Matthew Sumner**

Position: **Consultant**

MCERTS Registration No.: **MM 05 622**

Signature:



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.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

### 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			
	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)	-	-	✓	-	✓	✓	✓	-	-	-
<b>Specific Requirements</b>	Normal Operating Conditions (See Table 5 & 6)									

Notes:

- ✓ Represents the actual parameters monitored
- \* Represent parameters requested but not actually monitored

**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 <sup>3</sup> ) #	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 <sup>3</sup>	± < 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 <sup>3</sup>	± 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 <sup>3</sup>	± 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 <sup>3</sup>	± 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.

**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? 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	

**Monitoring Deviations**

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

<b>Substance Deviations</b>	<b>Monitoring Deviations</b>	<b>Other Relevant Issues</b>
<u>DAS 1 – All Stacks</u> None	<u>DAS 1 – All Stacks</u> None	<u>DAS 1 – All Stacks</u> None
<u>DAS 2 – All Stacks</u> None	<u>DAS 2 – All Stacks</u> DAS 2 Spraybooth – Only one sample port used during monitoring due to health and safety considerations.	<u>DAS 2 – All Stacks</u> None
<u>W &amp; B – All Stacks</u> None	<u>W &amp; B – All Stacks</u> None	<u>W &amp; B – All Stacks</u> 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**



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**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**

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## **APPENDIX 1: General Information**

**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

## 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 <sub>2</sub> O)	Neg. Flow?	Spin <15°
0.15	20	1.2	No	Yes

Barometric pressure (kPa)	101.3
Static Pressure (mm H <sub>2</sub> O)	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 <sub>2</sub> O)	Neg. Flow?	Spin <15°	T (°C)	ΔP (mm H <sub>2</sub> O)	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 <sub>2</sub> O)	Negative 5.8
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 <sub>2</sub> O)	Neg. Flow?	Spin <15°	T (°C)	ΔP (mm H <sub>2</sub> O)	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 <sub>2</sub> O)	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 <sub>2</sub> O)	Neg. Flow?	Spin <15°	T (°C)	ΔP (mm H <sub>2</sub> O)	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 <sub>2</sub> O)	1.2
Stack Dimension Ø (m)	0.50

**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 <sup>2</sup>	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 <sup>3</sup> /sec	0.26	2.2	0.30	2.6
Volumetric Flowrate (at reference conditions)	m <sup>3</sup> /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 <sup>3</sup> **	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 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 <sup>3</sup>	<0.00085
DAS 2 Spraybooth	Sample Date	-	13-Dec-07
	Sample Period	-	13:28 – 14:01
	Mean Concentration of Isocyanates	mg/m <sup>3</sup>	0.0066
W & B Spraybooth (LHS)	Sample Date	-	11-Dec-07
	Sample Period	-	14:49 – 15:23
	Mean Concentration of Isocyanates	mg/m <sup>3</sup>	0.0052
W & B Spraybooth (RHS)	Sample Date	-	12-Dec-07
	Sample Period	-	09:33 – 10:38
	Mean Concentration of Isocyanates	mg/m <sup>3</sup>	0.0087

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 <sup>3</sup>	< 1.1
DAS 2 Spraybooth	Total Particulate Matter	14-Dec-07	mg/m <sup>3</sup>	< 0.96
W & B Spraybooth (LHS)	Total Particulate Matter	11-Dec-07	mg/m <sup>3</sup>	< 0.96
W & B Spraybooth (RHS)	Total Particulate Matter	12-Dec-07	mg/m <sup>3</sup>	1.7

Notes:

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

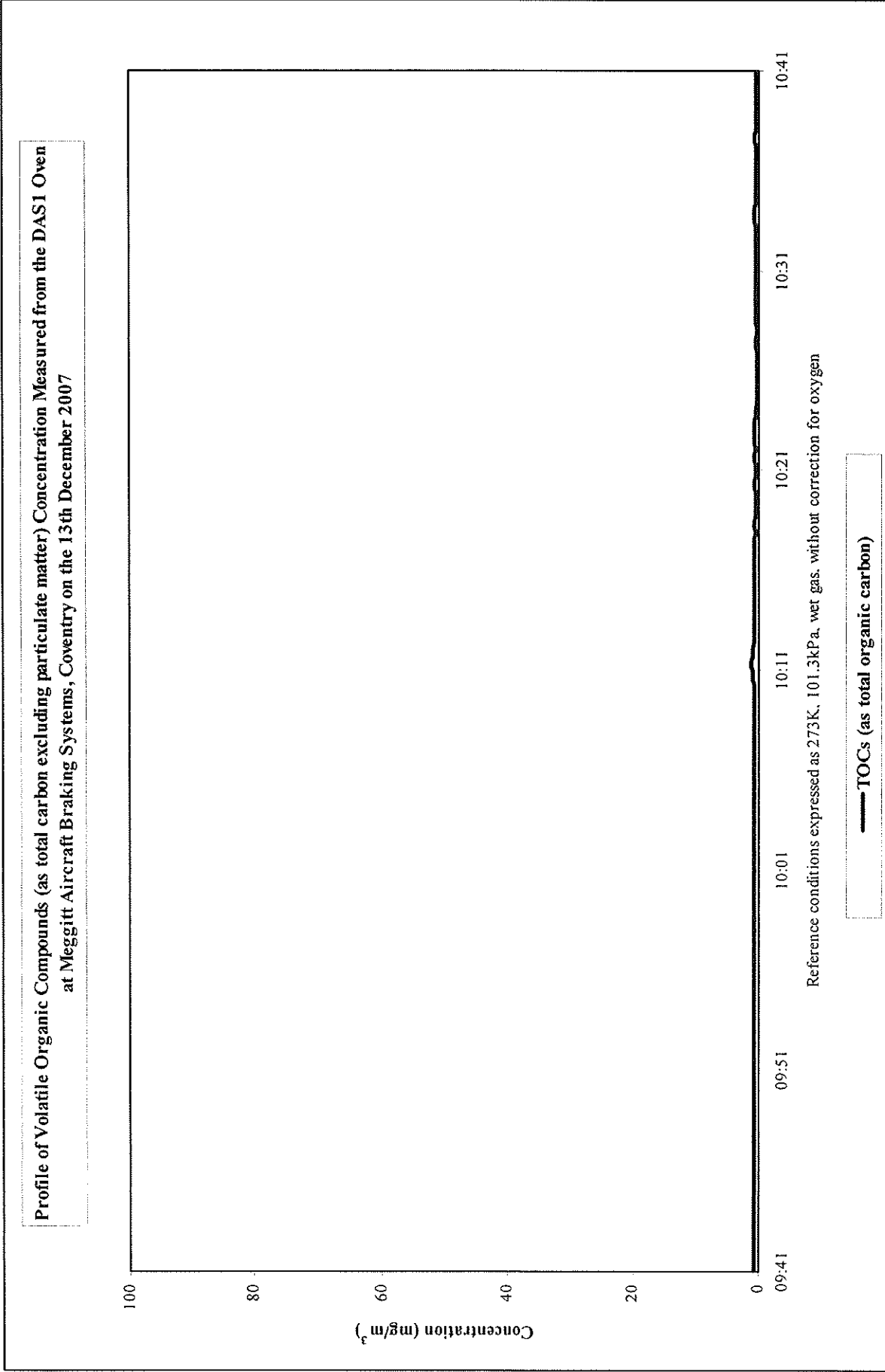
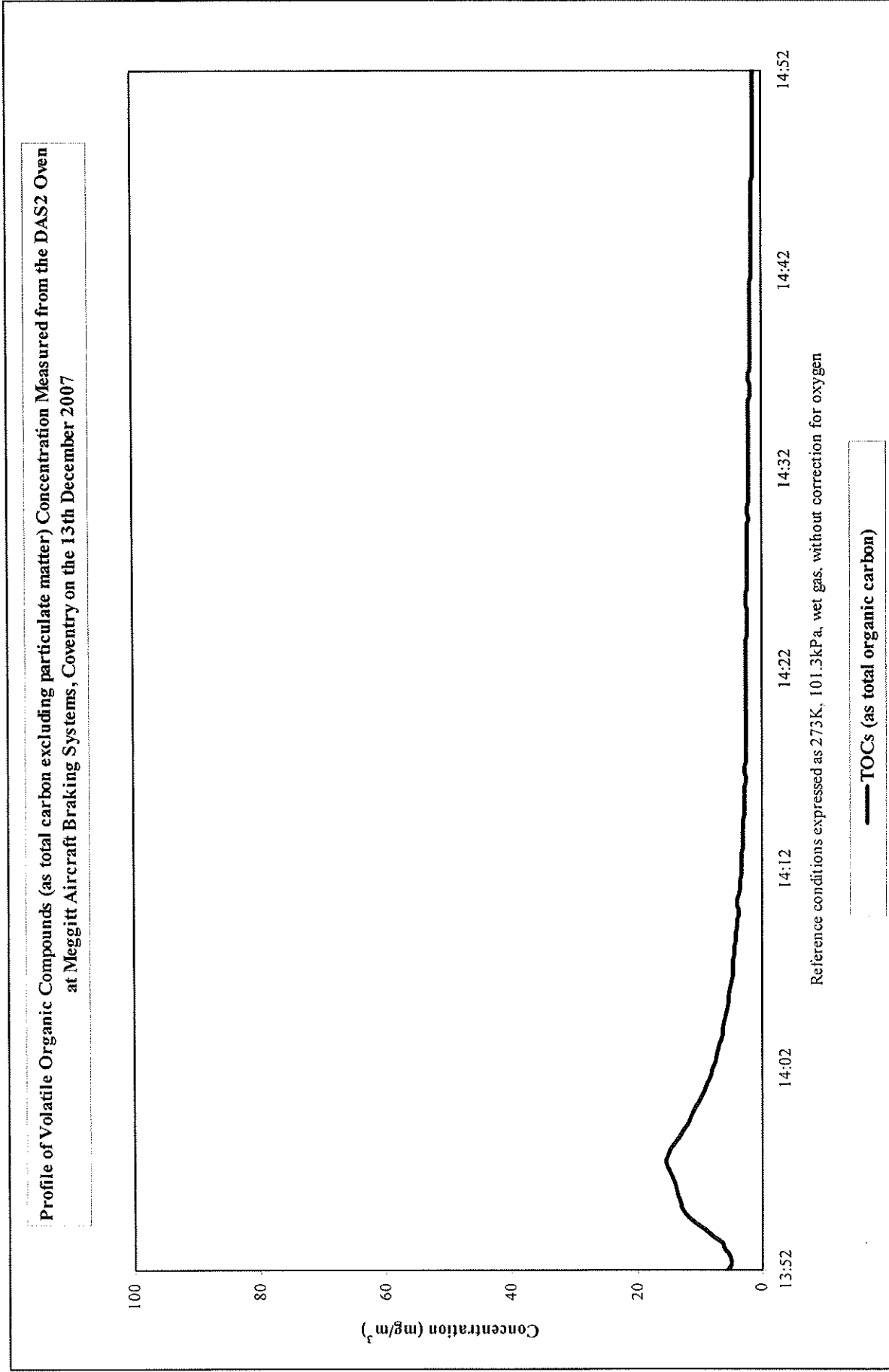




Figure 4 - Results of TOCs (as total carbon excluding particulate matter) Concentrations



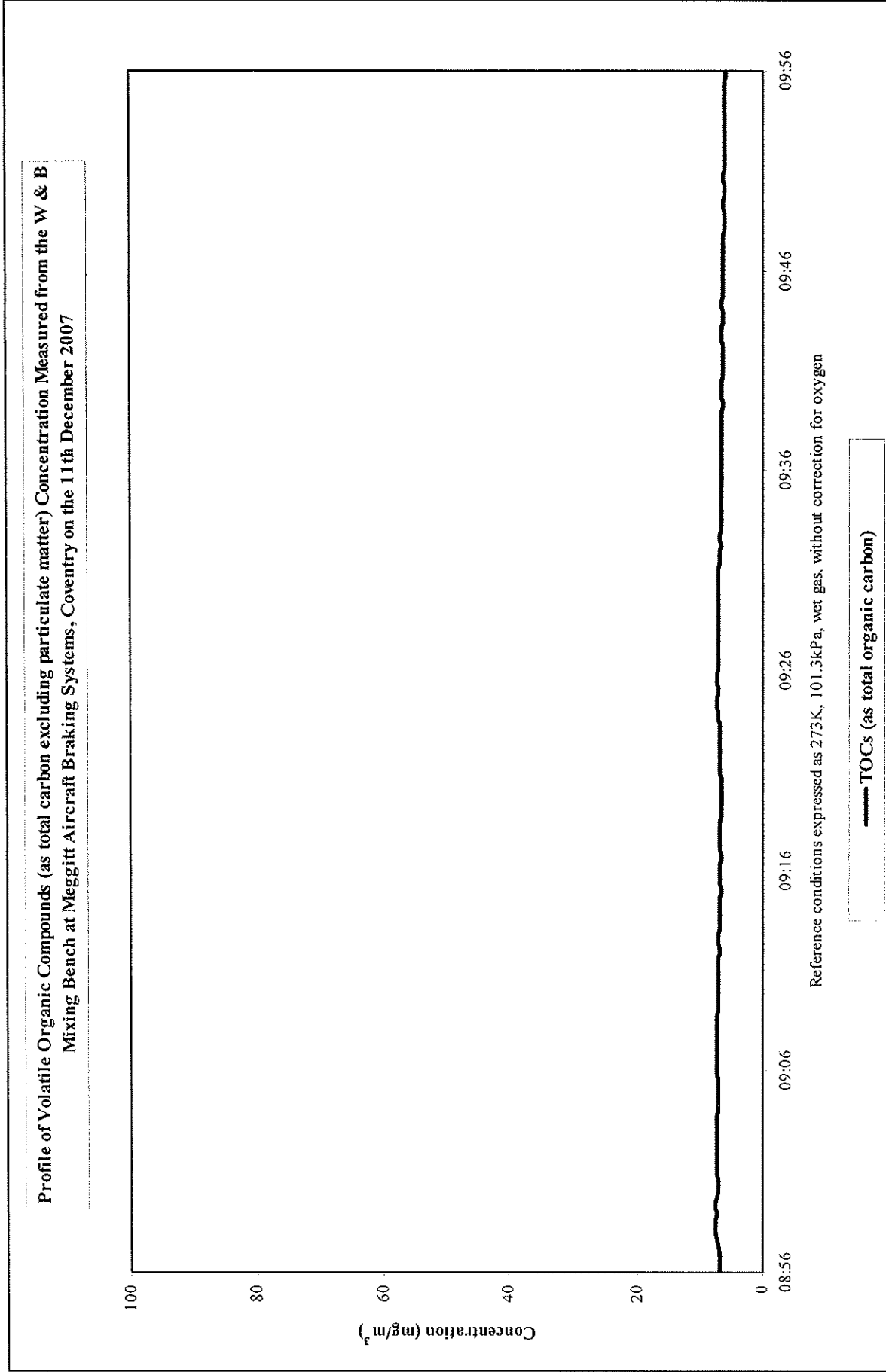
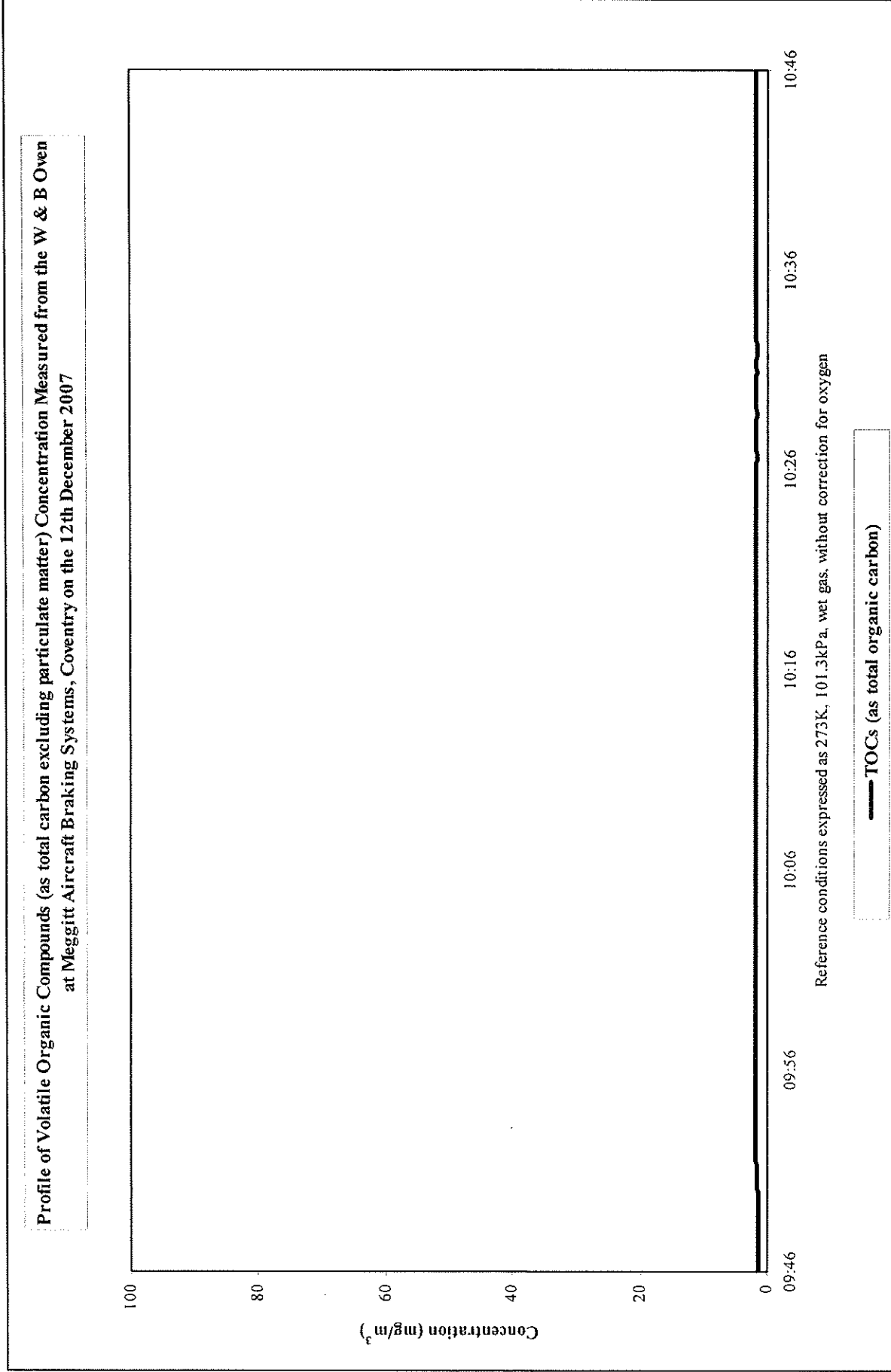


Figure 8 - Results of TOCs (as total carbon excluding particulate matter) Concentrations





Test Certificate

Date 07/01/2008

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

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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/m<sup>3</sup> 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'

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