Report for the Periodic Monitoring of Emissions to Air

Part 1. Executive Summary

1506

Permit Number:	PPC/156
Operator:	Meggit Aircraft Braking Systems
Installation:	Coventry
Monitoring Date(s):	28 August 2013
E.E. Report Ref.:	65490
Client Name:	Meggit Aircraft Braking Systems
Client Address:	Holbrook Lane Coventry CV6 4QY
Monitoring Organisation:	Environmental Evaluation Ltd. (Head Office) Lawton Square Delph Oldham OL3 5DT
Date of Report:	16 September 2013
Report Written by:	P Waters
Function:	MCERTS Level 2 Team Leader
Report Approved By:	P Waters
MCERTS Registration No.:	MM 04 527
MCERTS Level:	MCERTS Level 2
Technical Endorsements:	TE1, TE2, TE3, TE4
Signed:	[redacted]

Contents

1 Part 1: Executive Summary

1.1 Monitoring Objectives

Meggit Aircraft Braking Systems has been permitted under the Environmental Protection Act and associated legislation to operate various processes at the Coventry site, and a condition of that permit is that emission monitoring is undertaken on a regular basis to prove compliance or otherwise against prescribed emission limit values.

This report details the testing undertaken on the 28 August 2013

The substance monitoring requirements for each emission point are detailed below.

Substances Monitored	**Emission Point Identification**
	Plating Area Main Stack
Flow	✓
Temperature	✓
Fluorides	✓
Total NOx	✓
Water vapour	✓

1.2 Monitoring Results

Emission Point	Substance to be Monitored	Emission Limit Value	Measured Concentration	Uncertainty	Units	Reference Conditions	Date of Monitoring	Start and End Times	Monitoring Method Reference	Accreditation for use of Method	Operating Status
Plating Area Main Stack	Fluorides	5	0.3	± 0.03	mgm^{-3}	273K and 101.3 kPa, No Oxygen Correction, Wet Basis	28/08/2013	11:16 - 11:46	BS ISO 15713:2006	UKAS MCERTS	Normal
Plating Area Main Stack	Total NOx (as NO_2)	200	4.0	± 0.4	mgm^{-3}	273K and 101.3 kPa, No Oxygen Correction, Wet Basis	28/08/2013	10:32 - 11:02	USEPA Method 7d	None	Normal

1.3 Operating Information

Emission Point Reference	Date	Process Type	Process Duration	Feedstock	Abatement
Plating Area Main Stack	28 August 2013	Plating Baths	Continuous	Metal Components	Wet Scrubber System

1.4 Monitoring Deviations

Emission Point Reference	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Plating Area Main Stack	None	None	None

Report for the Periodic Monitoring of Emissions to Air

Part 2. Supporting Information

1506

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Monitoring Date:	28 August 2013
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Technical Endorsements:	TE1, TE2, TE3, TE4
Signed:	_____ [redacted] _

APPENDICES

Appendix A: General Information

A1. Environmental Evaluation Limited Staff Details

Team Leader:	P Waters
MCERTS No.	MM 04 527
Certification Level:	MCERTS Level 2
Technical Endorsements:	TE1, TE2, TE3, TE4
Site Technician:	P Soley
MCERTS No.	MM 12 1187
Certification Level:	MCERTS Level 1
Technical Endorsements:	None

A2. Environmental Evaluation Limited Method Details

The indicated substances were measured by the standards and in house methods specified in the table below:

Substance	Standard	EE. Reference
Flow	BS EN 13284:2002	EE/P/001 & 2
Temperature	BS EN 13284:2002	EE/P/001 & 2
Fluorides	BS ISO 15713:2006	EE/P/017
Total NOx (as NO_2)	USEPA Method 7d	EE/P/029
Water vapour	BS EN 14790:2005	EE/P/013

A3. Sub-Contract

Analysis was subcontracted to a UKAS accredited laboratory.

A4. Equipment Used in the Monitoring Campaign

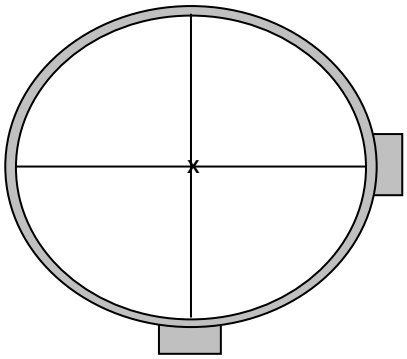
Equipment checklists appropriate to the methods were used.

Equipment Type	EE Equipment Reference Code
Low Flow Kit	LCL44
Pitot	LCL 20 1M L Type
Manometer	LCL 26
Thermosensor	LCL 15
Thermocouple	LCL 17
Tape Measure	LCL 18
Barometer	LCL 23
Stop Watch	LCL 25
Scales	LCL69
Check Weight	LCL27

Appendix B: Emission Information

B1 - Plating Area Main Stack Information

B1.1 Diagrams Showing the Dimensions and Monitoring Facilities of Plating Area Main Stack

Photograph of Monitoring Point	Schematic of Sample Plane
	

B1.2 Preliminary Velocity and Temperature Measurement of Plating Area Main Stack

Traverse Point	Sample Line A			Sample Line B			Sample Line C			Sample line D		
	Stack Temp. (^oC)	ΔP (Pa)	Swirl Angle (o)	Stack Temp. (^oC)	ΔP (Pa)	Swirl Angle (o)	Stack Temp. (^oC)	ΔP (Pa)	Swirl Angle (o)	Stack Temp. (^oC)	ΔP (Pa)	Swirl Angle (o)
1	21	91	0	21	80	0						
2	21	85	0	21	85	0						
3	21	85	0	21	87	0						
4	21	87	0	21	87	0						
5	21	88	0	21	89	0						
6	21	86	0	21	91	0						
7	21	84	0	21	90	0						
8	21	83	0	21	90	0						
9	21	83	0	21	85	0						
10	21	82	0	21	86	0						
	$\Sigma\Delta P_A$	854		$\Sigma\Delta P_B$	870		$\Sigma\Delta P_C$			$\Sigma\Delta P_D$		

Barometric Pressure (mmHg)	765	Stack velocity (actual) ms^{-1}	12
Static Pressure (mmH_2O)	5.10	Volumetric Flow (actual) m^3min^{-1}	1344
Diameter (m)	1.50	Assumed CO_2 (%)	0.0
---		Assumed O_2 (%)	20.9
Stack Area (m^2)	1.767	Assumed CO (%)	0.0
Port Size (mm)	100	Assumed H_2O (%)	2.0

Appendix B1.3 - Gaseous Fluorides to BS ISO 15713:2006 - Plating Area Main Stack

Company	Meggit Aircraft Braking System	**Test Conducted by**	P Waters & P Soley
Site	Coventry	**Date of Test**	28 August 2013
Plant Identification	Plating Area Main Stack		

Volume of Water Vapour at Standard Conditions V_{wstd}

$$V_{wstd} = (0.00124) \times V_{lc}$$

		Blank	Test 1	Test 2	Units
	=		**0.0043**		**m^3**
Where:					
Constant	=	---	0.00124		
Initial Dryer mass	=	---	839.1		g
Final Dryer mass	=	---	842.6		g
V_{lc} is the mass of water collected	=	---	3.5		g

Volume of Gas Metered, Standard Conditions V_{mstd}

$$V_{mstd} = Y_d \times V_m \times 0.3592 \times \frac{P_m}{(273 + T_m)}$$

		Blank 1	Test 1		
	=	**0.0589**	**0.0589**		**m^3**
Sample reference number - first Impinger	=	65490-HF3-280813	65490-HF1-280813		---
Sample reference number - second Impinger	=	---	65490-HF2-280813		---
Meter calibration factor Y_d	=	1.05	1.05		---
Test start time	=	---	11:16		---
Test end time	=	---	11:46		---
Test Duration	=	30	30		minutes
Initial meter reading	=	---	0		litres
Final meter reading	=	---	60.4		litres
Total meter volume V_m	=	0.0604	0.0604		m^3
Meter Pressure P_m	=	765	765		mm.Hg
Final meter temperature	=	---	26.0		(^oC)
Initial meter temperature	=	---	20.0		(^oC)
Average meter temperature T_m	=	23.0	23.0		(^oC)
Correction to standard conditions	=	0.3592	0.3592		

Hydrogen Fluoride Concentration Cmgm^{-3} - Dry Basis

$$C_{mgm^{-3}} = \frac{M_n}{V_{mstd}}$$

		Blank	Test 1		
	=	**0.2**	**0.3**		**mgm^{-3}**
Where:					
Impinger reference numbers	=	65490-HF3-280813	65490-HF1-280813		
Solution Concentration Impinger 1		0.05	0.05		mgl^{-1}
Solution Volume Impinger 1		180	180		ml
Mn1 is the Hydrogen Fluoride mass in Impinger	=	0.009	0.009		mg
Second impinger reference number	=	---	65490-HF2-280813		
Solution Concentration Impinger 1		---	0.05		mgl^{-1}
Solution Volume Impinger 1		---	180		ml
Mn2 is the Hydrogen Fluoride mass in Impinger	=	---	0.009		mg
Absorption efficiency	=	---	50.0		%
V_{mstd} is the volume of gas metered, standard con	=	0.0589	0.0589		m^3

Appendix B1.3 - Gaseous Fluorides to BS ISO 15713:2006 - Plating Area Main Stack

Gaseous Fluoride Concentration at STP - Wet Basis - mgm^{-3}					
$C_{mgm-3\,(wet)} = C_{mgm-3} \times \frac{(100 - Wv)}{100}$	=	Blank 1 **0.1**	Test 1 **0.3**		**mgm^{-3}**
Gaseous concentration at STP - Dry Basis	=	0.2	0.3		mgm^{-3}
Wv is the water vapour content	=	6.9	6.9		%

Concentration at 273k and 101.3kPa, Uncorrected for Oxygen, Wet Basis					
$C_{atX\%} = C_{mgm-3} \frac{20.9 - O_{2ref}}{20.9 - O_{2meas}}$	=	Blank 1 **0.1**	Test 1 **0.3**		**mgm^{-3}**
Gaseous concentration at STP	=	0.1	0.3		mgm^{-3}
Atmospheric oxygen concentration	=	20.9	20.9		%
O_{2ref} is the reference oxygen concentration	=	N/A	N/A		%
O_{2meas} is the measured oxygen concentration	=	N/A	N/A		%

Gaseous Fluoride Rate of Discharge ghr^{-1}					
$E_{g/hr} = C \times Q_{std} \times \frac{60}{1000}$	=	Blank 1 **10**	Test 1 **20**		**ghr^{-1}**
Gaseous concentration at STP - Dry Basis	=	0.1	0.3		mgm^{-3}
Dry Total Flow Rate of Stack Gas Q_{std}	=	1113.1	1113.1		m^3min^{-1}
60/1000 Conversion factor	=	0.06	0.06		

Comments on Compliance with BS ISO 15713:2006	
Hydrogen Fluoride absorption efficiency >95%	N/A
Temperature maintained above 150^{o}C	Pass
Leak Rate <2%	Pass
Overall Blank Value <10% of the LV[a]	Pass
Duct gas flow with regard to stack axis <15^{o}	Pass
Duct gas flow: negative velocity - not permitted	Pass
Duct gas flow: differential pressure at the pitot tube >5pa	Pass
Duct gas flow: ratio of max to min velocity <3:1	Pass

Were all of the requirements of BS ISO 15713:2003 fulfilled during the test?

✓	
Yes	No

Appendix B1.3 - Gaseous Fluorides to BS ISO 15713:2006 - Plating Area Main Stack

Uncertainty Calculations					
Measurement Data					
Measured Quantities	**Symbol**	**Value**	**Standard Uncertainty**		**Units**
Sampled Volume	V_m	0.0604	(1%) uV_m	0.00060	m^3
Sampled Gas Temperature	T_m	296.0	uT_m	3	k
Sampled Gas Pressure	ρ_m	102.0	$u\rho_m$	0.1	kPa
Sampled Gas Humidity	H_m	6.9	uH_m	0.1	% by volume
Oxygen Content	$O_{2,m}$	N/A	$uO_{2,m}$	0.01	% by volume
Mass	m	0.28	um_m	0.01	mg
Leak	L	2	%	0.02	
Uncollected Mass	UCM	0			mg
Intermediate Calculation to Correct for Standardisation of Conditions					
Factor for Std Conditions	fs	0.86			
Uncertainty Components	symbol	Sensitivity Coefficient		u (in units of fs)	
	ρ_m	0.008		0.001	
	H_m	0.009		0.001	
	T_m	0.003		0.009	
	ufs			0.009	
Corrected Volume	V	0.05	uV	0.001	**m^3**
Intermediate Calculation to Correct for Oxygen Correction					
Factor for O_2 Correction	fc	1.00			
Uncertainty Components	symbol	Sensitivity Coefficient		u (in units of fc)	
	$O_{2,m}$	1.00		0.010	
Factor for O_2 Correction	ufc	1.00		0.010	%

Calculation of Expanded Uncertainty						
Parameter		Value	Units	Sensitivity Coefficient	Uncertainty in Result	
Volume (Std conditions)	V	0.05	m^3	5.45	0.00	$mg.m^{-3}$
Mass	m	0.28	mg	1.00	0.01	$mg.m^{-3}$
Factor for O_2 Correction	fc	1.00		0.28	0.00	$mg.m^{-3}$
Leak	L	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$
Uncollected mass	UCM	0.00	mg	0.00	0.00	$mg.m^{-3}$
Combined uncertainty					0.02	$mg.m^{-3}$
Expanded Uncertainty K=2					**10.90**	**%**
Expanded Uncertainty K=2					**0.03**	**$mg.m^{-3}$**

Appendix B1.4 - Total Nox (as NO2) to USEPA Method 7d - Plating Area Main Stack

Company	Meggit Aircraft Braking Systems	**Test Conducted by**	P Waters & P Soley
Site	Coventry	**Date of Test**	28 August 2013
Plant Identification	Plating Area Main Stack		

Volume of Water Vapour at Standard Conditions V_{wstd}

$$V_{wstd} = (0.00124) \times V_{lc}$$

		Blank	Test 1		Units
	=		**0.0026**		**m^3**
Where:					
Constant	=	---	0.00124		
Initial Dryer mass	=	---	713.5		g
Final Dryer mass	=	---	715.6		g
V_{lc} is the mass of water collected	=	---	2.1		g

Volume of Gas Metered, Standard Conditions V_{mstd}

$$V_{mstd} = Y_d \times V_m \times 0.3592 \times \frac{P_m}{(273 + T_m)}$$

		Blank 1	Test 1		
	=	**0.0148**	**0.0148**		**m^3**
Sample reference number - first Impinger	=	65490-N3-280813	65490-N1-280813		---
Sample reference number - second Impinger	=	---	65490-N2-280813		---
Meter calibration factor Y_d	=	1.05	1.05		---
Test start time	=	---	10:32		---
Test end time	=	---	11:02		---
Test Duration	=	30	30		minutes
Initial meter reading	=	---	0		litres
Final meter reading	=	---	15.1		litres
Total meter volume V_m	=	0.0151	0.0151		m^3
Meter Pressure P_m	=	765	765		mm.Hg
Final meter temperature	=	---	24.0		(^oC)
Initial meter temperature	=	---	18.0		(^oC)
Average meter temperature T_m	=	21.0	21.0		(^oC)
Correction to standard conditions	=	0.3592	0.3592		

Total NOx (as NO_2) Concentration at STP - Dry Basis - mgm^{-3}

$$C_{mgm^{-3}} = \frac{M_n}{V_{mstd}}$$

		Blank	Test 1		
	=	**5.4**	**4.7**		**mgm^{-3}**
Where:					
Impinger reference numbers	=	65490-N3-280813	65490-N1-280813		
Solution Concentration Impinger 1		0.14	0.11		mgl^{-1}
Solution Volume Impinger 1		571	388		ml
Mn1 is the Nitrate mass in Imp 1	=	0.07994	0.04268		mg
Second impinger reference number	=	---	65490-N2-280813		
Solution Concentration Impinger 1		---	0.14		mgl^{-1}
Solution Volume Impinger 1		---	189		ml
Mn2 is the Nitrate mass in imp 2	=	---	0.02646		mg
Absorption efficiency	=	---	61.7		%
V_{mstd} is the volume of gas metered, standard cor	=	0.0148	0.0148		m^3

Appendix B1.4 - Total Nox (as NO2) to USEPA Method 7d - Plating Area Main Stack

Total NOx (as NO_2) Concentration at STP - Wet Basis - mgm^{-3}					
$C_{mgm-3(wet)} = C_{mgm-3} \times \frac{(100 - Wv)}{100}$	=	Blank 1 **4.6**	Test 1 **4.0**		**mgm^{-3}**
Gaseous concentration at STP - Dry Basis	=	5.4	4.7		mgm^{-3}
Wv is the water vapour content	=	14.9	14.9		%

Concentration at 273k and 101.3kPa, Uncorrected for Oxygen, Wet Basis					
$C_{atX\%} = C_{mgm-3} \frac{20.9 - O_{2ref}}{20.9 - O_{2meas}}$	=	Blank 1 **4.6**	Test 1 **4.0**		**mgm^{-3}**
Gaseous concentration at STP	=	4.6	4.0		mgm^{-3}
Atmospheric oxygen concentration	=	20.9	20.9		%
O_{2ref} is the reference oxygen concentration	=	N/A	N/A		%
O_{2meas} is the measured oxygen concentration	=	N/A	N/A		%

Total NOx (as NO_2) Rate of Discharge ghr^{-1}					
$E_{g/hr} = C \times Q_{std} \times \frac{60}{1000}$	=	Blank 1 **306**	Test 1 **311**		**ghr^{-1}**
Gaseous concentration at STP - Dry Basis	=	4.6	4.7		mgm^{-3}
Dry Total Flow Rate of Stack Gas Q_{std}	=	1113.1	1113.1		m^3min^{-1}
60/1000 Conversion factor	=	0.06	0.06		

Comments on Compliance with USEPA Method 7d	
Total NOx (as NO_2) absorption efficiency >95%	N/A
Temperature maintained above 150^oC	Pass
Leak Rate <2%	Pass
Overall Blank Value <10% of the LV[a]	Pass
Duct gas flow with regard to stack axis <15^o	Pass
Duct gas flow: negative velocity - not permitted	Pass
Duct gas flow: differential pressure at the pitot tube >5pa	Pass
Duct gas flow: ratio of max to min velocity <3:1	Pass

Were all of the requirements of USEPA Method 7d fulfilled during the test?

☑ Yes ☐ No

Appendix B1.4 - Total Nox (as NO2) to USEPA Method 7d - Plating Area Main Stack

Uncertainty Calculations					
Measurement Data					
Measured Quantities	**Symbol**	**Value**	**Standard Uncertainty**		**Units**
Sampled Volume	V_m	0.0151	(1%) uV_m	0.00015	m^3
Sampled Gas Temperature	T_m	294.0	uT_m	3	k
Sampled Gas Pressure	ρ_m	102.0	$u\rho_m$	0.1	kPa
Sampled Gas Humidity	H_m	14.9	uH_m	0.1	% by volume
Oxygen Content	$O_{2,m}$	N/A	$uO_{2,m}$	0.01	% by volume
Mass	m	3.97	um_m	0.20	mg
Leak	L	2	%	0.02	
Uncollected Mass	UCM	0			mg
Intermediate Calculation to Correct for Standardisation of Conditions					
Factor for Std Conditions	fs	0.80			
Uncertainty Components	symbol	Sensitivity Coefficient		u (in units of fs)	
	ρ_m	0.008		0.001	
	H_m	0.009		0.001	
	T_m	0.003		0.008	
	ufs			0.008	
Corrected Volume	V	0.01	uV	0.000	**m^3**
Intermediate Calculation to Correct for Oxygen Correction					
Factor for O_2 Correction	fc	1.00			
Uncertainty Components	symbol	Sensitivity Coefficient		u (in units of fc)	
	$O_{2,m}$	1.00		0.010	
Factor for O_2 Correction	ufc	1.00		0.010	%
Calculation of Expanded Uncertainty					
Parameter		Value	Units	Sensitivity Coefficient	Uncertainty in Result	
Volume (Std conditions)	V	0.01	m^3	330.36	0.06	$mg.m^{-3}$
Mass	m	3.97	mg	1.00	0.20	$mg.m^{-3}$
Factor for O_2 Correction	fc	1.00		3.97	0.04	$mg.m^{-3}$
Leak	L	0.05	$mg.m^{-3}$	1.00	0.05	$mg.m^{-3}$
Uncollected mass	UCM	0.00	mg	0.00	0.00	$mg.m^{-3}$
Combined uncertainty					0.22	$mg.m^{-3}$
Expanded Uncertainty K=2					**10.95**	**%**
Expanded Uncertainty K=2					**0.43**	**$mg.m^{-3}$**

Test Certificates

Scientific Analysis Laboratories is a limited company registered in England and Wales (No 2514788) whose address is at Hadfield House, Hadfield Street, Manchester M16 9FE

Scientific Analysis Laboratories Ltd

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2404

Report Number: 347921-1

Date of Report: 06-Sep-2013

Customer: Environmental Evaluation
Unit 10
Greenwood Court
Ramridge Road
Luton
LU2 0TN

Customer Contact: Mr Neil Teixeira

Customer Job Reference: 65490
Customer Purchase Order: STA12892PJ
Date Job Received at SAL: 30-Aug-2013
Date Analysis Started: 02-Sep-2013
Date Analysis Completed: 06-Sep-2013

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs
All results have been reviewed in accordance with QP22

UKAS TESTING
1549

Report checked and authorised by :
Kayleigh McCann
Project Manager

Issued by :
Kayleigh McCann
Project Manager

Validity unknown
Digitally signed by Kayleigh McCann
Date: 2013.09.[illegible] 17:37:36 BST
Reason: Issued
Location: SAL

SAL Reference: 347921
Customer Reference: 65490

Impinger (sodium hydroxide) Analysed as Impinger (sodium hydroxide)
Miscellaneous

				SAL Reference	**347921 001**	**347921 002**	**347921 003**
				Customer Sample Reference	**65490/28/08/13/ HF1**	**65490/28/08/13/ HF2**	**65490/28/08/13/ HF3**
				Test Sample	**AR**	**AR**	**AR**
Determinand	**Method**	**LOD**	**Units**	**Symbol**			
Hydrogen Fluoride	IC (acetate separation method)	0.05	mg/l	U	(13) <0.05	(13) <0.05	(13) <0.05
Volume	Vol	1	ml	U	**180**	**180**	**180**

Index to symbols used in 347921-1

Value	Description
AR	As Received
13	Results have been blank corrected.
U	Analysis is UKAS accredited

RPS Laboratories

UKAS TESTING 0605

Test Certificate

Date 05/09/2013

Client	Environmental Evaluation Ltd 10 Greenwood Court Ramridge Road Luton LU2 0TN	**Order No.**	STA12893PS
		Certificate No.	**WK13-5410**
		Issue No.	1
Contact	Mr Philip Waters	**Date Received**	30/08/2013
Description	3 solutions for NOX	**Technique**	IC

Sample No.	**757803**	**65490/280813/N1**		**Method**
Oxides of Nitrogen		<0.11 ug/ml	388 ml	C27(U)
Sample No.	**757804**	**65490/280813/N2**		**Method**
Oxides of Nitrogen		<0.14 ug/ml	189 ml	C27(U)
Sample No.	**757805**	**65490/280813/N3**		**Method**
Oxides of Nitrogen		<0.14 ug/ml	571 ml	C27(U)

Page 1 of 2

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

UKAS TESTING
0605

Date 05/09/2013

Test Certificate

Client	Environmental Evaluation Ltd	**Certificate No.**	**WK13-5410**
		Issue No.	1

Tested By Nicholas Lynch Date 04/09/2013

Approved By [redacted] Date 05/09/2013

Joanne Dewhurst
Laboratory Manager

For and on authority of RPS Laboratories Ltd.

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

Concentration values (mg/m3 and ppm) are provided to assist with interpretation only, they are not covered by the scope of UKAS accreditation.
Results stated as ml are refering to the sample volume.

RPS Laboratories terms and conditions apply - a copy is available on request.

Analysis carried out on samples 'as received'

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

MCERTS Certificates

Certificate of Personnel Competence

This is to certify that

Phil Waters

has been assessed by Sira Certification Service and
has demonstrated competence to the required standard of

Level 2 (team leader)

as defined in

MCERTS Personnel Competency Standard
for Manual Stack-Emission Monitoring : February 2010, Version 7

for the following Technical Endorsements:

TE1 - Particulate monitoring by isokinetic sampling techniques	**expires Jun 2016**
TE2 - Multi-phase sampling techniques	**expires Jun 2016**
TE3 - Gases/vapours by manual techniques	**expires Jun 2016**
TE4 - Gases/vapours by instrumental techniques	**expires Jun 2016**

Level 2 personnel may be required to retake the oral examination if the MCERTS Examination Board receives and upholds a complaint about them of a serious nature. The use of this certificate and the Sira Certification Mark are subject to the Regulations Applicable to Holders of Sira Certificates. The certificate holder agrees to comply with the MCERTS Code of Conduct. This certificate remains valid until the expiry date shown below.

Certificate issued :	Mar 2011	Certificate No :	Sira MP05 272 /2
Level 2 renewal date :	Mar 2016	Registration No :	MM04 527
H&S renewal date :	Jul 2014		
Certificate expiry date :	Jul 2014		

[redacted]

R Cooper I Eng MInstMC
Technical Director

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
12 Acorn Industrial Park, Crayford Road,
Crayford, Dartford, Kent DA1 4AL
Tel:+44 (0)1322 520500 Fax:+44 (0)1322 520501

sira CERTIFICATION CSA Group MCERTS Environment Agency

Certificate of Personnel Competence

This is to certify that

Phillip Soley

has been assessed by Sira Certification Service and
has demonstrated competence to the required standard of

Level 1 (technician)

as defined in

MCERTS Personnel Competency Standard
for Manual Stack-Emission Monitoring : October 2012, Version 8.1

The use of this certificate and the Sira Certification Mark are subject to the Regulations Applicable to Holders of Sira Certificates. The certificate holder agrees to comply with the MCERTS Code of Conduct. This certificate remains valid until the expiry date shown below.

Certificate issued :	Dec 2012	Certificate No :	Sira 692 /
Level 1 renewal date :	Dec 2017	Registration No :	MM12 1187
H&S renewal date :	May 2017		
Certificate expiry date :	Dec 2017		

[redacted]
R Cooper TEng MInstMC
Technical Director

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UKAS PERSONNEL CERTIFICATION 011

End of Report