

Report for the Periodic Monitoring of Emissions to Air

Part 1. Executive Summary



Permit Number: PPC/156

Operator: Meggitt Aircraft Breaking Systems

Installation: Coventry

Monitoring Date(s): 21 July 2014

E.E. Report Ref.: 70495

Client Name: Meggitt Aircraft Breaking Systems

Client Address: Holbrook Lane
Coventry
West Midlands
CV6 4AA

Monitoring Organisation: Environmental Evaluation Ltd. (Head Office)
Lawton Square
Delph
Oldham
OL3 5DT

Date of Report: 31 July 2014

Report Written by: N Teixeira

Function: MCERTS Level 2 Team Leader

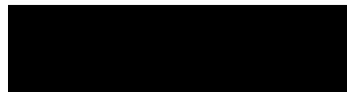
Report Approved By: P Waters

MCERTS Registration No.: MM 04 527

MCERTS Level: MCERTS Level 2

Technical Endorsements: TE1, TE2, TE3, TE4

Signed:



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1 Part 1: Executive Summary

1.1 Monitoring Objectives

Meggitt Aircraft Breaking 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 21 July 2014

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

Substances Monitored	Emission Point Identification
	<i>Plating Line</i>
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 Line	Fluorides	5	0.2	± 0.02	mgm ⁻³	273K and 101.3 kPa, No Oxygen Correction, Wet Basis	21/07/2014	11:45 - 12:45	BS ISO 15713:2006	UKAS MCERTS	Normal
Plating Line	Total NOx (as NO ₂)	200	11.2	± 1.2	mgm ⁻³	273K and 101.3 kPa, No Oxygen Correction, Wet Basis	21/07/2014	10:30 - 11:30	USEPA Method 7d	None	Normal

1.3 Operating Information

Emission Point Reference	Date	Process Type	Process Duration	Feedstock	Abatement
Plating Line	21 July 2014	Metal anodising, Nitric acid passivation, Pickling of Aluminium and Titanium	Continuous	Metal components	Caustic scrubber

1.4 Monitoring Deviations

Emission Point Reference	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Plating Line	None	The velocity in the stack varied by greater than the 3:1 ratio specified in BS EN 13284 for flow measurement at one point.	None

Report for the Periodic Monitoring of Emissions to Air

Part 2. Supporting Information



Permit Number: PPC/156

Operator: Meggitt Aircraft Breaking Systems

Installation: Coventry

Monitoring Date: 21 July 2014

E.E. Report Ref.: 70495

Client Name: Meggitt Aircraft Breaking Systems

Client Address: Holbrook Lane
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MCERTS Registration No.: MM 04 527

MCERTS Level: MCERTS Level 2

Technical Endorsements: TE1, TE2, TE3, TE4

Signed: _____

APPENDICES

Appendix A: General Information

A1. Environmental Evaluation Limited Staff Details

Team Leader: N Teixeira
 MCERTS No. MM 05 583
 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 NO _x (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

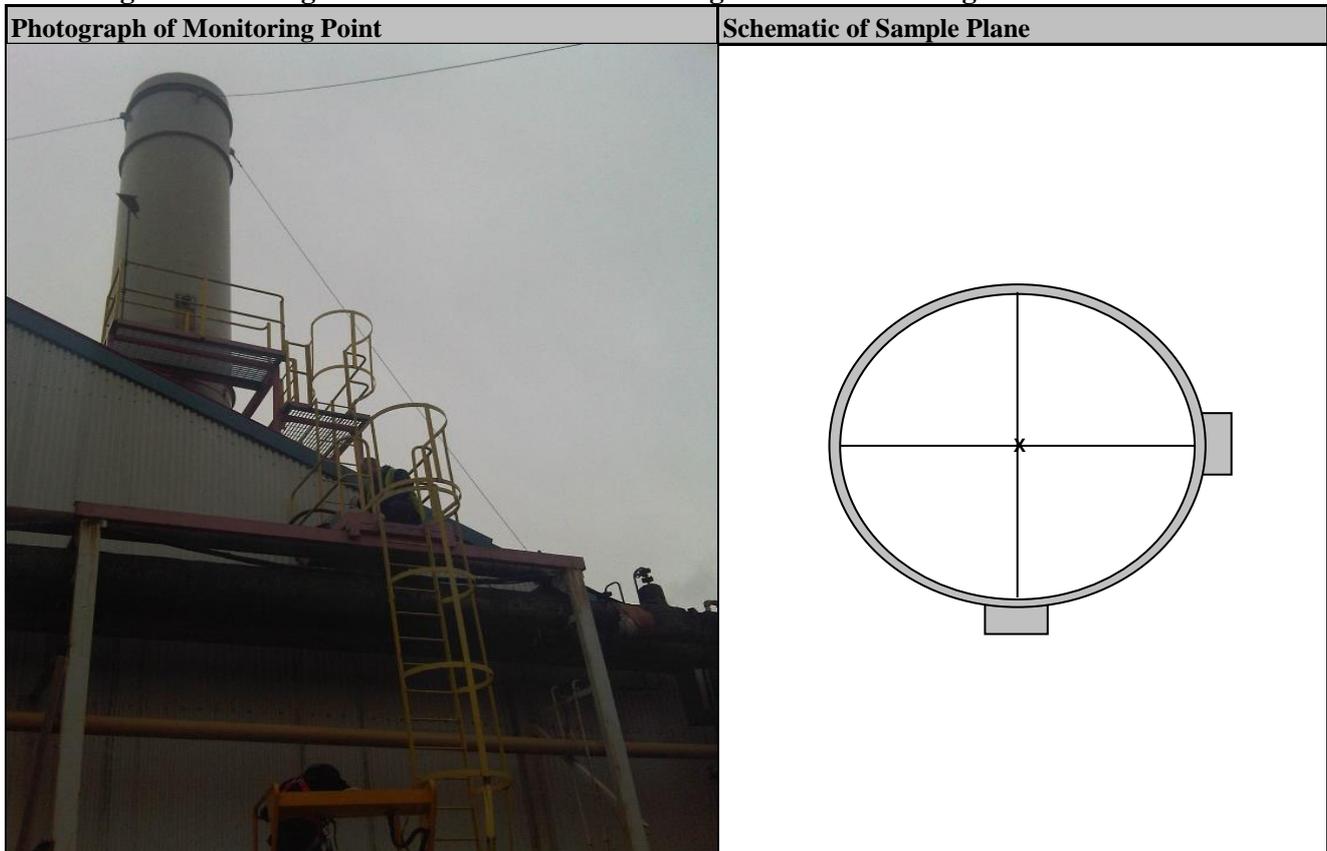
Equipment checklists appropriate to the methods were used.

Equipment Type	EE Equipment Reference Code
Low Flow Kit	LCL44
Pitot	LCL 21 2m 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	LCL89

Appendix B: Emission Information

B1 - Plating Line Information

B1.1 Diagrams Showing the Dimensions and Monitoring Facilities of Plating Line



B1.2 Preliminary Velocity and Temperature Measurement of Plating Line

Traverse Point	Sample Line A			Sample Line B			Sample Line C			Sample line D		
	Stack Temp. (°C)	ΔP (Pa)	Swirl Angle (°)	Stack Temp. (°C)	ΔP (Pa)	Swirl Angle (°)	Stack Temp. (°C)	ΔP (Pa)	Swirl Angle (°)	Stack Temp. (°C)	ΔP (Pa)	Swirl Angle (°)
1	21	63	0	21	75	0						
2	21	78	0	21	75	0						
3	21	58	0	21	67	0						
4	21	28	0	21	41	0						
5	21	34	0	21	53	0						
6	21	19	0	21	18	0						
7	21	23	0	21	16	0						
8	21	17	0	21	22	0						
9	21	48	0	21	21	0						
10	21	35	0	21	5	0						
	ΣΔP _A	403		ΣΔP _B	393		ΣΔP _C			ΣΔP _D		

Barometric Pressure (mmHg)	760	Stack velocity (actual) ms ⁻¹	8
Static Pressure (mmH ₂ O)	-3.47	Volumetric Flow (actual) m ³ min ⁻¹	1144
Diameter (m)	1.70	Assumed CO ₂ (%)	0.0
---		Assumed O ₂ (%)	20.9
Stack Area (m ²)	2.270	Assumed CO (%)	0.0
Port Size (mm)	100	Assumed H ₂ O (%)	0.0

Appendix B1.3 - Gaseous Fluorides to BS ISO 15713:2006 - Plating Line

Company	Meggitt Aircraft Breaking Systems	Test Conducted by	N Teixeira & P Soley		
Site	Coventry	Date of Test	21 July 2014		
Plant Identification	Plating Line				
Volume of Water Vapour at Standard Conditions V_{wstd}					
$V_{wstd} = (0.00124) \times V_{lc}$	=	Blank	Test 1	Test 2	Units
			0.0022		m³
Where:					
Constant	=	---	0.00124		
Initial Dryer mass	=	---	936.6		g
Final Dryer mass	=	---	938.4		g
V_{lc} is the mass of water collected	=	---	1.8		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		Units
		0.1131	0.1131		m³
Sample reference number - first Impinger	=	70495-21/07/14-H3	70495-21/07/14-H1		---
Sample reference number - second Impinger	=	---	70495-21/07/14-H2		---
Meter calibration factor Y_d	=	1.016	1.016		---
Test start time	=	---	11:45		---
Test end time	=	---	12:45		---
Test Duration	=	60	60		minutes
Initial meter reading	=	---	0		litres
Final meter reading	=	---	120.3		litres
Total meter volume V_m	=	0.1203	0.1203		m ³
Meter Pressure P_m	=	760	760		mm.Hg
Final meter temperature	=	---	22.0		(°C)
Initial meter temperature	=	---	22.0		(°C)
Average meter temperature T_m	=	22.0	22.0		(°C)
Correction to standard conditions	=	0.3592	0.3592		
Hydrogen Fluoride Concentration $C_{mgm^{-3}}$ - Dry Basis					
$C_{mgm^{-3}} = \frac{n}{V_{mstd}}$	=	Blank	Test 1		Units
		0.1	0.2		mgm⁻³
Where:					
Impinger reference numbers	=	70495-21/07/14-H3	70495-21/07/14-H1		
Solution Concentration Impinger 1		0.05	0.13		mg l ⁻¹
Solution Volume Impinger 1		260	130		ml
Mn1 is the Hydrogen Fluoride mass in Impinger	=	0.013	0.0169		mg
Second impinger reference number	=	---	70495-21/07/14-H2		
Solution Concentration Impinger 1		---	0.06		mg l ⁻¹
Solution Volume Impinger 1		---	150		ml
Mn2 is the Hydrogen Fluoride mass in Impinger	=	---	0.009		mg
Absorption efficiency	=	---	65.3		%
V_{mstd} is the volume of gas metered, standard conditions	=	0.1131	0.1131		m ³

Appendix B1.3 - Gaseous Fluorides to BS ISO 15713:2006 - Plating Line

Gaseous Fluoride Concentration at STP - Wet Basis - mgm^{-3}				
$C_{\text{mgm}^{-3}(\text{wet})} = C_{\text{mgm}^{-3}} \times 100$		Blank 1	Test 1	
	=	0.1	0.2	mgm^{-3}
Gaseous concentration at STP - Dry Basis	=	0.1	0.2	mgm^{-3}
Wv is the water vapour content	=	1.9	1.9	%

Concentration at 273k and 101.3kPa, Uncorrected for Oxygen, Wet Basis				
$C_{\text{at } 273\text{k}} = \frac{20.9 - O_{2\text{meas}}}{20.9} \times C_{\text{mgm}^{-3}}$		Blank 1	Test 1	
	=	0.1	0.2	mgm^{-3}
Gaseous concentration at STP	=	0.1	0.2	mgm^{-3}
Atmospheric oxygen concentration	=	20.9	20.9	%
$O_{2\text{ref}}$ is the reference oxygen concentration	=	N/A	N/A	%
$O_{2\text{meas}}$ is the measured oxygen concentration	=	N/A	N/A	%

Gaseous Fluoride Rate of Discharge g hr^{-1}				
$C_{\text{at } 273\text{k}} \times \frac{60}{1000} \times Q_{\text{std}}$		Blank 1	Test 1	
	=	7	14	g hr^{-1}
Gaseous concentration at STP - Dry Basis	=	0.1	0.2	mgm^{-3}
Dry Total Flow Rate of Stack Gas Q_{std}	=	1020.9	1020.9	$\text{m}^3 \text{min}^{-1}$
60/1000 Conversion factor	=	0.06	0.06	

Comments on Compliance with BS ISO 15713:2006	
Hydrogen Fluoride absorption efficiency >95%	Pass
Temperature maintained above 150°C	Pass
Leak Rate <2%	Pass
Overall Blank Value <10% of the LV ^a	Pass
Duct gas flow with regard to stack axis <15°	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	Fail

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 Line

Uncertainty Calculations					
Measurement Data					
Measured Quantities	Symbol	Value	Standard Uncertainty		Units
Sampled Volume	V_m	0.1203	(1%) uV_m	0.00120	m^3
Sampled Gas Temperature	T_m	295.0	uT_m	3	k
Sampled Gas Pressure	ρ_m	101.3	$u\rho_m$	0.1	kPa
Sampled Gas Humidity	H_m	1.9	uH_m	0.1	% by volume
Oxygen Content	$O_{2,m}$	N/A	$uO_{2,m}$	0.01	% by volume
Mass	m	0.22	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	0.91			
Uncertainty Components	symbol	Sensitivity Coefficient		u (in units of fs)	
	ρ_m	0.009		0.001	
	H_m	0.009		0.001	
	T_m	0.003		0.009	
	ufs			0.009	
Corrected Volume	V	0.11	uV	0.002	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	0.11	m^3	2.06	0.00
Mass	m	0.22	mg	1.00	0.01
Factor for O ₂ Correction	fc	1.00		0.22	0.00
Leak	L	0.00	$mg.m^{-3}$	1.00	0.00
Uncollected mass	UCM	0.00	mg	0.00	0.00
Combined uncertainty					0.01
Expanded Uncertainty K=2					10.88
Expanded Uncertainty K=2					0.02
					mg.m⁻³

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

Company	Meggitt Aircraft Breaking Systems	Test Conducted by	N Teixeira & P Soley
Site	Coventry	Date of Test	21 July 2014
Plant Identification	Plating Line		
Volume of Water Vapour at Standard Conditions V_{wstd}			
$V_{wstd} = (0.00124) \times V_{lc}$	=	Blank	Test 1
			0.0010
			Units
			m³
Where:			
Constant	=	---	0.00124
Initial Dryer mass	=	---	1175.5
Final Dryer mass	=	---	1176.3
V_{lc} is the mass of water collected	=	---	0.8
			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
		0.0301	0.0301
			m³
Sample reference number - first Impinger	=	70495-21/07/14-N3	70495-21/07/14-N1

Sample reference number - second Impinger	=	---	70495-21/07/14-N2

Meter calibration factor Y_d	=	1.016	1.016

Test start time	=	---	10:30

Test end time	=	---	11:30

Test Duration	=	60	60
			minutes
Initial meter reading	=	---	0
			litres
Final meter reading	=	---	32
			litres
Total meter volume V_m	=	0.0320	0.0320
			m ³
Meter Pressure P_m	=	760	760
			mm.Hg
Final meter temperature	=	---	22.0
			(°C)
Initial meter temperature	=	---	22.0
			(°C)
Average meter temperature T_m	=	22.0	22.0
			(°C)
Correction to standard conditions	=	0.3592	0.3592
Total NOx (as NO₂) Concentration at STP - Dry Basis - mgm⁻³			
$C_{mgm^{-3}} = \frac{M_n}{V_{mstd}}$	=	Blank	Test 1
		4.9	11.6
			mgm⁻³
Where:			
Impinger reference numbers	=	70495-21/07/14-N3	70495-21/07/14-N1
Solution Concentration Impinger 1	=	0.25	0.25
			mg l ⁻¹
Solution Volume Impinger 1	=	592	394
			ml
Mn1 is the Nitrate mass in Imp 1	=	0.148	0.0985
			mg
Second impinger reference number	=	---	70495-21/07/14-N2
Solution Concentration Impinger 1	=	---	1.33
			mg l ⁻¹
Solution Volume Impinger 1	=	---	188
			ml
Mn2 is the Nitrate mass in imp 2	=	---	0.25004
			mg
Absorption efficiency	=	---	28.3
			%
V_{mstd} is the volume of gas metered, standard con	=	0.0301	0.0301
			m ³

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

Total NOx (as NO₂) Concentration at STP - Wet Basis - mgm⁻³				
$C_{mgm-3(wet)} = C_{mgm-3} \times \frac{(100 - W_v)}{100}$	=	Blank 1 4.8	Test 1 11.2	mgm⁻³
Gaseous concentration at STP - Dry Basis	=	4.9	11.6	mgm ⁻³
W _v is the water vapour content	=	3.2	3.2	%

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 4.8	Test 1 11.2	mgm⁻³
Gaseous concentration at STP	=	4.8	11.2	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 NO₂) Rate of Discharge ghr⁻¹				
$E_{g/hr} = C \times Q_{std} \times \frac{60}{1000}$	=	Blank 1 292	Test 1 710	ghr⁻¹
Gaseous concentration at STP - Dry Basis	=	4.8	11.6	mgm ⁻³
Dry Total Flow Rate of Stack Gas Q _{std}	=	1020.9	1020.9	m ³ min ⁻¹
60/1000 Conversion factor	=	0.06	0.06	

Comments on Compliance with USEPA Method 7d	
Total NOx (as NO ₂) absorption efficiency >95%	Pass
Temperature maintained above 150°C	Pass
Leak Rate <2%	Pass
Overall Blank Value <10% of the LV ^a	Pass
Duct gas flow with regard to stack axis <15°	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	Fail

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 Line

Uncertainty Calculations						
Measurement Data						
Measured Quantities	Symbol	Value	Standard Uncertainty		Units	
Sampled Volume	V _m	0.0320	(1%) uV _m	0.00032	m ³	
Sampled Gas Temperature	T _m	295.0	uT _m	3	k	
Sampled Gas Pressure	p _m	101.3	up _m	0.1	kPa	
Sampled Gas Humidity	H _m	3.2	uH _m	0.1	% by volume	
Oxygen Content	O _{2,m}	N/A	uO _{2,m}	0.01	% by volume	
Mass	m	11.21	um _m	0.56	mg	
Leak	L	2	%	0.02		
Uncollected Mass	UCM	0			mg	
Intermediate Calculation to Correct for Standardisation of Conditions						
Factor for Std Conditions	fs	0.90				
Uncertainty Components	symbol	Sensitivity Coefficient		u (in units of fs)		
	p _m	0.009		0.001		
	H _m	0.009		0.001		
	T _m	0.003		0.009		
	ufs			0.009		
Corrected Volume	V	0.03	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	0.03	m ³	391.19	0.17	mg.m ⁻³
Mass	m	11.21	mg	1.00	0.56	mg.m ⁻³
Factor for O ₂ Correction	fc	1.00		11.21	0.11	mg.m ⁻³
Leak	L	0.13	mg.m ⁻³	1.00	0.13	mg.m ⁻³
Uncollected mass	UCM	0.00	mg	0.00	0.00	mg.m ⁻³
Combined uncertainty					0.61	mg.m ⁻³
Expanded Uncertainty K=2					10.89	%
Expanded Uncertainty K=2					1.22	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
Combrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2404

Report Number: 410537-1

Date of Report: 30-Jul-2014

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

Customer Contact: Mr Neil Teixeira

Customer Job Reference: 70495

Customer Purchase Order: STA 14278NT

Date Job Received at SAL: 23-Jul-2014

Date Analysis Started: 24-Jul-2014

Date Analysis Completed: 30-Jul-2014

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



Report checked
and authorised by :
Kayleigh McCann
Project Manager

Issued by :
Kayleigh McCann
Project Manager

Validity unknown

Digitally signed by Kayleigh McCann
Date: 2014.07.30 17:24:40 BST
Reason: Issue
Location: SAL

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SAL Reference: 410537							
Customer Reference: 70495							
Impinger (sodium hydroxide)		Analysed as Impinger (sodium hydroxide)					
Miscellaneous							
SAL Reference				410537 001	410537 002	410537 003	
Customer Sample Reference				70495/210714/H 1	70495/210714/H 2	70495/210714/H 3	
Test Sample				AR	AR	AR	
Date Sampled				21-JUL-2014	21-JUL-2014	21-JUL-2014	
Determinand	Method	LOD	Units	Symbol			
Hydrogen Fluoride	IC (acetate separation method)	0.05	mg/l	U	(13) 0.13	(13) 0.06	(13) 0.05
Volume	Vol	1	ml	U	130	150	260

Index to symbols used in 410537-1

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





Test Certificate

Date 31/07/2014

Client	Environmental Evaluation Ltd 10 Greenwood Court Ramridge Road Luton LU2 0TN	Order No.	STA14277NT
		Certificate No.	WK14-4809
		Issue No.	1
Contact	Mr Philip Waters	Date Received	23/07/2014
Description	3 solutions for NOx	Technique	IC Stack

Sample No.	801447	70495/210714/N1	Method
Oxides of Nitrogen	<0.25 ug/ml	394 ml	C27(U)
Sample No.	801448	70495/210714/N2	Method
Oxides of Nitrogen	1.33 ug/ml	188 ml	C27(U)
Sample No.	801449	70495/210714/N3	Method
Oxides of Nitrogen	<0.25 ug/ml	592 ml	C27(U)



Test Certificate

Date 31/07/2014

Client	Environmental Evaluation Ltd	Certificate No.	WK14-4809
		Issue No.	1

Tested By Nicholas Lynch **Date** 31/07/2014

Approved By [Redacted] **Date** 31/07/2014
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 calculated on the basis of information provided by the customer.
Results stated as ml are referring to the sample volume.

RPS Laboratories terms and conditions apply - a copy is available on request.
Analysis carried out on samples 'as received'
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MCERTS Certificates



Certificate of Personnel Competence

This is to certify that

Neil Teixeira

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 : April 2011, Version 7.2**

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 2017
TE4 - Gases/vapours by instrumental techniques	expires Mar 2017

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 : Dec 2011

Level 2 renewal date : Jun 2016

H&S renewal date : Sep 2015

Certificate expiry date : Sep 2015

Certificate No : Sira MP05 333 /5

Registration No : MM05 583


R. Cooper Eng MInstMC
Technical Director

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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
Level 1 renewal date : Dec 2017
H&S renewal date : May 2017

Certificate No : Sira-692 /
Registration No : MM12 1187

Certificate expiry date : Dec 2017


R Cooper Eng MInstMC
Technical Director

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End of Report