

EMISSIONS MONITORING SURVEY

Prepared for:

London Taxis International Ltd.
Holyhead Road
Coventry
Warwickshire
CV5 8JJ


Permit Number	: PPC/037
Variation Number	: V002
Installation	: Paintshop
Visit Details	: Annual Compliance
Job Number	: P1417
Report Number	: R001
Report Issue Date	: 19 th June 2012
Survey Dates	: 29 th May 2012

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Report Issue:		FINAL	
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<i>Date:</i>	18/06/12	<i>Date:</i>	19/06/12

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PART 1 - EXECUTIVE SUMMARY

1 Monitoring Objectives

Environmental Compliance Ltd (ECL) was commissioned by **London Taxis International Ltd** to undertake an emission monitoring survey at their **Paint Plant in Coventry**. This report presents the findings of the study.

The monitoring at this installation was carried out in accordance with our quotation reference **mdw/P1417/Q001**, for compliance check monitoring of emissions to air. The substances requested for monitoring at each emissions point are listed below:

Substances to be monitored	Emission Point Identification			
	Tack Booth	Base Booth 1	Base Booth 2	Lacquer Booth 3
Particulates	● U	● U	● U	● U

Substances to be monitored	Emission Point Identification		
	Lacquer Booth 4	Main Combi Booth	PDI Combi Booth
Particulates	● U	● U	● U

- Denotes the substances to be monitored.
- U Denotes UKAS accreditation is held for monitoring that substance, but does not mean that it has been claimed which will depend on whether the testing could be completed in accordance with the Standard Reference Method.

Special Requirements: *“Normal Operating Conditions.”*

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1.1 Monitoring Results

Emission Point Reference	Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty %	Reference Conditions 273 K, 101.3 kPa	Date of Sampling	Start and End Times	Monitoring Method Reference	Accreditation for use of Method	Tick if non-conforming test (see Section 2 & 5)	Operating Status
Tack Booth	Particulates ^s	10	0.22	mg/m ³	>100	& wet gas	29/05/12	10:50 – 11:20	BS EN 13284-1	NU	✓	Normal 10 Taxis per day (3 days per week)
	Particulates ^s	10	0.22	mg/m ³	>100	& wet gas	29/05/12	11:25 – 11:55	BS EN 13284-1	NU	✓	
Basecoat Booth 1	Particulates ^s	10	1.97	mg/m ³	23	& wet gas	29/05/12	07:45 – 08:15	BS EN 13284-1	NU	✓	
	Particulates ^s	10	3.53	mg/m ³	14	& wet gas	29/05/12	08:20 – 08:50	BS EN 13284-1	NU	✓	
Basecoat Booth 2	Particulates ^s	10	6.07	mg/m ³	10	& wet gas	29/05/12	07:52 – 08:22	BS EN 13284-1	NU	✓	
	Particulates ^s	10	8.92	mg/m ³	8	& wet gas	29/05/12	08:25 – 08:55	BS EN 13284-1	NU	✓	
Lacquer Booth 3	Particulates ^s	10	5.01	mg/m ³	11	& wet gas	29/05/12	09:00 – 09:30	BS EN 13284-1	NU	✓	
	Particulates ^s	10	8.95	mg/m ³	8	& wet gas	29/05/12	10:00 – 10:30	BS EN 13284-1	NU	✓	
Lacquer Booth 4	Particulates ^s	10	3.48	mg/m ³	14	& wet gas	29/05/12	09:00 – 09:30	BS EN 13284-1	NU	✓	
	Particulates ^s	10	2.68	mg/m ³	17	& wet gas	29/05/12	10:00 – 10:30	BS EN 13284-1	NU	✓	
Main Combi (Bake)	Particulates ^s	10	0.88	mg/m ³	>100	& wet gas	29/05/12	10:40 – 11:10	BS EN 13284-1	NU	✓	
Main Combi (Spray)	Particulates ^s	10	2.09	mg/m ³	22	& wet gas	29/05/12	11:50 – 12:20	BS EN 13284-1	NU	✓	
PDI Combi (Spray)	Particulates ^s	10	3.44	mg/m ³	15	& wet gas	29/05/12	12:15 – 12:45	BS EN 13284-1	NU	✓	

Notes

Emission Limit Value
 Periodic Monitoring Result
 Uncertainty
 Reference Conditions
 Monitoring Method Reference
 Accreditation for use of Method
 Operating Status^s

The emission limit value is that stated in the permit and will be expressed as a concentration or a mass emission.
 The result given is expressed in the same terms and units as the emission limit value.
 The uncertainty associated with the quoted result is at the 95% confidence interval. The Uncertainty results **DO NOT** take into account the effect of the sample location limitations.
 All results are expressed at 273 K and 101.3kPa. The oxygen and moisture corrections are stated.
 The method stated is in accordance with the Environment Agency Technical Guidance Note M2, or other method approved by the Environment Agency.
The details indicate the accreditation for the use of the complete monitoring method, e.g. MCERTs, UKAS. If use of the method is not accredited " NA" is stated.
 The details indicate the feedstock and the loading rate of the plant during monitoring.
 Chemical Analysis on sample reagents was performed by an External Laboratory as detailed in Section 4
 UKAS Accreditation Held but UKAS Accreditation cannot be claimed for the test as sampling did not comply with the Standard Reference Method (SRM), see section 2 & 5
Method is NOT UKAS Accredited.

NU
 NA

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1.2 Operating Information

Emission Point Reference	Process Type	Process Duration	Fuel	Feedstock	Abatement	Load	Comparison of Operator CEMS and Periodic Monitoring Results					
							Parameter	Date	Time	CEMS Results	Periodic Monitoring Results	Units
Tack Booth	Batch	Various	n/a	n/a	None	Normal	n/a
Basecoat Booths	Batch	Various	n/a	n/a	Wet	Normal	n/a
Lacquer Booths	Batch	Various	n/a	n/a	Wet	Normal	n/a
Main Combi Booth	Batch	Various	n/a	n/a	Dry	Normal	n/a
PDI Combi Booth	Batch	Various	n/a	n/a	Dry	Normal	n/a

Notes:

Process Type State whether the process is a continuous or batch process.
 Process Duration If a batch process, state the duration, frequency and details of the portion of the batch sampled. If continuous state "NA"
 Fuel If applicable, state the fuel type If not applicable state "NA"
 Feedstock State the feedstock type
 Abatement State the type and whether operational during monitoring. If not applicable state "NA"
 Load State the normal load, throughput or rating of the plant
 CEMS Data Enter this data for each CEM installed if it has been provided by operator otherwise state "NP" (NOT PROVIDED)

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2 Monitoring Deviations

The objective of the survey was to measure the concentrations of pollutants from the processes / locations as detailed in Section 1. This survey meets the requirements of the site's **PPC Permit Number: PPC/037** where UKAS and MCERTS accreditation has and could be claimed for the testing in the monitoring results table.

There was one substance deviation from the original and agreed emissions monitoring schedule. Due to limited production, only 1 particulate sample could be taken from the PDI combi. (There was only 1 spray cycle and no bake cycle available to be tested).

Non-conforming tests are as follows.

Particulate samples from all stacks are non-conforming, the sampling planes do not meet the flow requirements of the standard, as there are a number of positions on the sampling planes where the angle of gas flow is greater than 15 degrees from the duct axis. Sampling in all cases took place from the positions with least swirl.

Base Booth 1 & 2 and Tack Booth stacks, only one port is fitted, BSEN 13284 stipulates two should be fitted for circular ducts with this area. Lacquer Booth 3 & 4 two ports are fitted, BSEN 13284 stipulates four ports should be fitted for rectangular ducts with this area.

For the main combi booth, the first sample was taken during the bake cycle, when there was no flow. This test therefore had to be non-isokinetic.

A single blank sample is shared between all stacks, rather than one blank sample being taken per stack.

Homogeneity tests have not been completed and are not required for pollutants at any of the sampling locations.

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PART 2 – SUPPORTING INFORMATION

3 SAMPLING STAFF DETAILS

Site Sampling Team

Names of Site Team	Dates on Site	MCERTS No.	LEVEL	Technical Endorsements
Andy Barnes	29/05/12	MM 03 235	2	TE1, TE2, TE3, TE4
Paul Calland	29/05/12	MM 03 212	2	TE1, TE2, TE3, TE4

Report Reviewer

Name	MCERTS No.	LEVEL	Technical Endorsements
Andy Barnes	MM 03 235	2	TE1, TE2, TE3, TE4

Technical Endorsement Key:-

TE1 – Isokinetic Particulates, Temperature & Velocity Profiles, Oxygen.
TE2 – Isokinetic Extractive Pollutants:- Metals, Dioxin & Furans, PAHs, PCBs, HCL, HF.
TE3 – Non-Isokinetic Extractive Pollutants:- Speciated VOCs, HF, HCL, Cyanide.
TE4 – Continuous Analysers (Combustion Gases):- TOCs, CO, NOx, SO2.

4 SAMPLING PROTOCOLS / METHODOLOGIES

Particulates

Testing was carried out using a Manual Stack Sampling system in accordance with **BS EN 13284-1 & MID** and In-house technical procedure **ECL/TPD/027a**.

Isokinetic particulate sampling is achieved when the velocity of gas entering the sampling nozzle is exactly equal to the velocity of the approaching gas stream within the stack.

A measured volume of sample gas is withdrawn from the stack isokinetically through a sampling nozzle and through a pre-weighed filter positioned in an unheated housing inserted into the stack.

Particulate matter is collected on the filter. Following testing the front half of the filter housing, and the sample nozzle are rinsed to remove any particulate matter which, may have impacted on the surfaces during testing.

The filters and rinses are subsequently analysed to determine the amount of particulate matter captured.

Scientific Analysis Laboratories Ltd (SAL) who are situated in Manchester carried out the analysis of the samples. **SAL** are UKAS accredited for all analysis conducted. In addition to the survey samples, a field blank is submitted as part of the technical procedure.

Pressure, Temperature and Velocity

Testing was carried out using a sampling system in accordance with **BS EN 13284-1 & MID**, and In-house technical procedure **ECL/TPD/022**.

Temperature was recorded using a thermocouple and digital temperature reader.

Velocity and pressure was recorded using an "L" type pitot and digital manometer data being recorded in Pascals.

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5 SAMPLE POINT DESCRIPTIONS

The sample locations that were monitored are detailed below:-

Samples for Particulates from all locations are described as non-conforming tests, due to the fact that swirl was recorded in excess of the maximum 15 degrees allowed by the SRM. As sampling could not be carried out in accordance with the Standard Reference Method, UKAS accreditation cannot be claimed for the results for Particulates even though UKAS accreditation is held for monitoring.

There are no alternative sampling locations that can be safely accessed.

Furthermore, A single blank sample is shared between all stacks, rather than one blank sample being taken per stack.

The Uncertainty of the reported concentrations for these pollutant results DO NOT take into account the effect of the sample location limitations.

Tack Booth

Sampling takes place in a straight section of horizontal ductwork with 50cm diameter. The sample plane is after the fan, 1m after a bend and 2m before a bend, only one sampling line is available. As such the sampling plane does not meet the positional *recommendations* of BSEN 13284.

Basecoat Booths 1 & 2

Sampling takes place in straight sections of vertical ductwork with 120cm diameter. The sample planes are 1m above the fan, only one sampling line is available. As such the sampling planes do not meet the positional *recommendations* of BSEN 13284.

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Lacquer Booths 3 & 4

Sampling takes place in straight sections of vertical ductwork with dimensions of 120 x 120 cm. The sample planes are 2m above the fan, two sampling lines are available. As such the sampling planes do not meet the positional *recommendations* of BSEN 13284.

Main Combi Booth

Sampling takes place in a straight section of vertical ductwork with 80cm diameter. The sample plane is after the fan, 0.5m after a bend and 2 m before a bend. As such the sampling plane does not meet the positional *recommendations* of BSEN 13284.

Two tests were taken, one during the bake cycle when the fan is off, and a second during the spray cycle, when the fan is on. It is not possible to sample isokinetically during the bake cycle, with the fan off, so it was sampled non-isokinetically, at the same sampling rate that would subsequently be used with the fan on.

PDI Combi Booth

Sampling takes place in a straight section of vertical ductwork with 80cm diameter. The sample plane is after the fan, 2.5m above the fan and at least 4m before the exit. As such the sampling plane does meet the positional *recommendations* of BSEN 13284.

On this occasion no baking was required so a single test was made during spraying.

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EQUIPMENT IDs
(Pre site checklist from SSP)

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PRE SITE EQUIPMENT CHECKLIST/ EQUIPMENT USED

(Completed before departure to site and when on site in full)

Equipment	Equip. Type	ID No:	ID No:	ID No:	ID No:	ID No:	ID No:	ID No:	ID No:
MST console/pump	E001								
MST Nozzle set									
MST "S" Type Pitot									
MST Probe									
MST Hot Box									
MST Impinger Arm									
Barometer		629							
Site Balance									
Site Check weights									
Horiba		E002							
Heated Probe									
Chiller									
Sonimix									
Heated Line									
FID	E003								
Heated Line									
Testo	E004								
FTIR	E005								
Heated Probe									
Heated Line									
Stackmite	E006	366	367						
"L" Type Pitot		489							
Digital Manometer		357	504						
Stack Thermocouple		464							
Thermocouple Reader		358							
Nozzle Set		800	802						
Workhorse Pumps	E007								
Low Flow Pumps									

Quantity of Ice Required / Used for Survey	ZERO	Bags (2kg bags)
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TABLES

Table 1 – Particulates
Data Recorded from Paint Plant - Tack Booth

Emission Parameter	Units	TPM 1	Blank
Stack Diameter	metres	0.50	...
			...
Area of Sample Plane	m ²	0.196	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	9.60	...
Gas Velocity (Reference Conditions)	m/sec*	8.90	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	1.88	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	1.75	...
Sample Date	...	29/05/2012	...
Sample Period	...	10:50 - 11:20	...
Sample Volume (at Stack)	m ³	0.72	...
Sample Volume (reference Conditions)	m ³ *	0.67	0.67
Isokinetic Sampling Rate	%	106.3	...
Sample Reference (ECL ID)	ECL/12/	2718 & 2719	2746 & 2747
Mass of Particulate Matter Collected	mg	0.15	0.15
Concentration of Particulate Matter	mg/m ³ *	0.22	0.22
Emission Rate of Particulate Matter	g/hr	1.41	...
Expanded Uncertainty (% Relative)	%	>100%	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.24

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 2 – Particulates
Data Recorded from Paint Plant - Tack Booth

Emission Parameter	Units	TPM 2	Blank
Stack Diameter	metres	0.50	...
			...
Area of Sample Plane	m ²	0.196	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	9.60	...
Gas Velocity (Reference Conditions)	m/sec*	8.90	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	1.88	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	1.75	...
Sample Date	...	29/05/2012	...
Sample Period	...	11:25 - 11:55	...
Sample Volume (at Stack)	m ³	0.73	...
Sample Volume (reference Conditions)	m ³ *	0.68	0.68
Isokinetic Sampling Rate	%	108.3	...
Sample Reference (ECL ID)	ECL/12/	2720 & 2721	2746 & 2747
Mass of Particulate Matter Collected	mg	0.15	0.15
Concentration of Particulate Matter	mg/m ³ *	0.22	0.22
Emission Rate of Particulate Matter	g/hr	1.39	...
Expanded Uncertainty (% Relative)	%	>100%	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.20

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 3 – Particulates
Data Recorded from Paint Plant - Base Booth 1

Emission Parameter	Units	TPM 1	Blank
Stack Diameter	metres	1.20	...
			...
Area of Sample Plane	m ²	1.131	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.01	...
Gas Velocity (Reference Conditions)	m/sec*	9.31	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	11.33	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	10.53	...
Sample Date	...	29/05/2012	...
Sample Period	...	07:45 - 08:15	...
Sample Volume (at Stack)	m ³	0.77	...
Sample Volume (reference Conditions)	m ³ *	0.71	0.71
Isokinetic Sampling Rate	%	108.6	...
Sample Reference (ECL ID)	ECL/12/	2722 & 2723	2746 & 2747
Mass of Particulate Matter Collected	mg	1.40	0.15
Concentration of Particulate Matter	mg/m ³ *	1.97	0.21
Emission Rate of Particulate Matter	g/hr	74.51	...
Expanded Uncertainty (% Relative)	%	23	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.11

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 4 – Particulates
Data Recorded from Paint Plant - Base Booth 1

Emission Parameter	Units	TPM 2	Blank
Stack Diameter	metres	1.20	...
			...
Area of Sample Plane	m ²	1.131	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.01	...
Gas Velocity (Reference Conditions)	m/sec*	9.31	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	11.33	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	10.53	...
Sample Date	...	29/05/2012	...
Sample Period	...	08:20 - 08:50	...
Sample Volume (at Stack)	m ³	0.76	...
Sample Volume (reference Conditions)	m ³ *	0.71	0.71
Isokinetic Sampling Rate	%	107.8	...
Sample Reference (ECL ID)	ECL/12/	2724 & 2725	2746 & 2747
Mass of Particulate Matter Collected	mg	2.50	0.15
Concentration of Particulate Matter	mg/m ³ *	3.53	0.21
Emission Rate of Particulate Matter	g/hr	133.98	...
Expanded Uncertainty (% Relative)	%	14	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.12

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 5 – Particulates
Data Recorded from Paint Plant - Base Booth 2

Emission Parameter	Units	TPM 1	Blank
Stack Diameter	metres	1.20	...
			...
Area of Sample Plane	m ²	1.131	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.00	...
Gas Velocity (Reference Conditions)	m/sec*	9.32	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	11.31	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	10.54	...
Sample Date	...	29/05/2012	...
Sample Period	...	07:52 - 08:22	...
Sample Volume (at Stack)	m ³	0.72	...
Sample Volume (reference Conditions)	m ³ *	0.68	0.68
Isokinetic Sampling Rate	%	102.6	...
Sample Reference (ECL ID)	ECL/12/	2728 & 2729	2746 & 2747
Mass of Particulate Matter Collected	mg	4.10	0.15
Concentration of Particulate Matter	mg/m ³ *	6.07	0.22
Emission Rate of Particulate Matter	g/hr	230.31	...
Expanded Uncertainty (% Relative)	%	10	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.22

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 6 – Particulates
Data Recorded from Paint Plant - Base Booth 2

Emission Parameter	Units	TPM 2	Blank
Stack Diameter	metres	1.20	...
			...
Area of Sample Plane	m ²	1.131	...
Moisture Content	%	0.09	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.00	...
Gas Velocity (Reference Conditions)	m/sec*	9.32	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	11.31	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	10.54	...
Sample Date	...	29/05/2012	...
Sample Period	...	08:25 - 08:55	...
Sample Volume (at Stack)	m ³	0.79	...
Sample Volume (reference Conditions)	m ³ *	0.74	0.74
Isokinetic Sampling Rate	%	112.3	...
Sample Reference (ECL ID)	ECL/12/	2730 & 2731	2746 & 2747
Mass of Particulate Matter Collected	mg	6.60	0.15
Concentration of Particulate Matter	mg/m ³ *	8.92	0.20
Emission Rate of Particulate Matter	g/hr	338.60	...
Expanded Uncertainty (% Relative)	%	8	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.03

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 7 – Particulates
Data Recorded from Paint Plant - Lacquer Booth 3

Emission Parameter	Units	TPM 1	Blank
Duct Length	metres	1.20	...
Duct Width	metres	1.20	...
Area of Sample Plane	m ²	1.440	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.03	...
Gas Velocity (Reference Conditions)	m/sec*	9.30	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	14.44	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	13.39	...
Sample Date	...	29/05/2012	...
Sample Period	...	09:00 - 09:30	...
Sample Volume (at Stack)	m ³	0.75	...
Sample Volume (reference Conditions)	m ³ *	0.70	0.70
Isokinetic Sampling Rate	%	106.4	...
Sample Reference (ECL ID)	ECL/12/	2732 & 2733	2746 & 2747
Mass of Particulate Matter Collected	mg	3.50	0.15
Concentration of Particulate Matter	mg/m ³ *	5.01	0.21
Emission Rate of Particulate Matter	g/hr	241.35	...
Expanded Uncertainty (% Relative)	%	11	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.15

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 8 – Particulates
Data Recorded from Paint Plant - Lacquer Booth 3

Emission Parameter	Units	TPM 2	Blank
Duct Length	metres	1.20	...
Duct Width	metres	1.20	...
Area of Sample Plane	m ²	1.440	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.03	...
Gas Velocity (Reference Conditions)	m/sec*	9.30	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	14.44	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	13.39	...
Sample Date	...	29/05/2012	...
Sample Period	...	10:00 - 10:30	...
Sample Volume (at Stack)	m ³	0.75	...
Sample Volume (reference Conditions)	m ³ *	0.69	0.69
Isokinetic Sampling Rate	%	105.5	...
Sample Reference (ECL ID)	ECL/12/	2734 & 2735	2746 & 2747
Mass of Particulate Matter Collected	mg	6.20	0.15
Concentration of Particulate Matter	mg/m ³ *	8.95	0.22
Emission Rate of Particulate Matter	g/hr	431.21	...
Expanded Uncertainty (% Relative)	%	8	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.16

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 9 – Particulates
Data Recorded from Paint Plant - Lacquer Booth 4

Emission Parameter	Units	TPM 1	Blank
Duct Length	metres	1.20	...
Duct Width	metres	1.20	...
Area of Sample Plane	m ²	1.440	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.03	...
Gas Velocity (Reference Conditions)	m/sec*	9.30	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	14.44	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	13.39	...
Sample Date	...	29/05/2012	...
Sample Period	...	09:00 - 09:30	...
Sample Volume (at Stack)	m ³	0.74	...
Sample Volume (reference Conditions)	m ³ *	0.69	0.69
Isokinetic Sampling Rate	%	105.2	...
Sample Reference (ECL ID)	ECL/12/	2736 & 2737	2746 & 2747
Mass of Particulate Matter Collected	mg	2.40	0.15
Concentration of Particulate Matter	mg/m ³ *	3.48	0.22
Emission Rate of Particulate Matter	g/hr	167.84	...
Expanded Uncertainty (% Relative)	%	14	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.18

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 10 – Particulates
Data Recorded from Paint Plant - Lacquer Booth 4

Emission Parameter	Units	TPM 2	Blank
Duct Length	metres	1.20	...
Duct Width	metres	1.20	...
Area of Sample Plane	m ²	1.440	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.03	...
Gas Velocity (Reference Conditions)	m/sec*	9.30	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	14.44	...
Volumetric Flow rate (Reference Conditions)	m ³ /sec*	13.39	...
Sample Date	...	29/05/2012	...
Sample Period	...	10:00 - 10:30	...
Sample Volume (at Stack)	m ³	0.76	...
Sample Volume (reference Conditions)	m ³ *	0.71	0.71
Isokinetic Sampling Rate	%	108.2	...
Sample Reference (ECL ID)	ECL/12/	2738 & 2739	2746 & 2747
Mass of Particulate Matter Collected	mg	1.90	0.15
Concentration of Particulate Matter	mg/m ³ *	2.68	0.21
Emission Rate of Particulate Matter	g/hr	129.15	...
Expanded Uncertainty (% Relative)	%	17	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.12

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 11 – Particulates
Data Recorded from Paint Plant - Main Combi

Emission Parameter	Units	TPM 1 - Bake	Blank
Stack Diameter	metres	0.80	...
			...
Area of Sample Plane	m ²	0.503	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	70	...
Gas Velocity (at Stack Conditions)	m/sec	1.40	...
Gas Velocity (Reference Conditions)	m/sec*	1.11	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	0.70	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	0.56	...
Sample Date	...	29/05/2012	...
Sample Period	...	10:40 - 11:10	...
Sample Volume (at Stack)	m ³	0.89	...
Sample Volume (reference Conditions)	m ³ *	0.70	0.70
Sample Reference (ECL ID)	ECL/12/	2740 & 2741	2746 & 2747
Mass of Particulate Matter Collected	mg	0.62	0.15
Concentration of Particulate Matter	mg/m ³ *	0.88	0.21
Emission Rate of Particulate Matter	g/hr	1.77	...
Expanded Uncertainty (% Relative)	%	163	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.14

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 12 – Particulates
Data Recorded from Paint Plant - Main Combi

Emission Parameter	Units	TPM 2 - Spray	Blank
Stack Diameter	metres	0.80	...
			...
Area of Sample Plane	m ²	0.503	...
Moisture Content	%	0.10	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	10.03	...
Gas Velocity (Reference Conditions)	m/sec*	9.30	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	5.04	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	4.67	...
Sample Date	...	29/05/2012	...
Sample Period	...	11:50 - 12:20	...
Sample Volume (at Stack)	m ³	0.76	...
Sample Volume (reference Conditions)	m ³ *	0.71	0.71
Isokinetic Sampling Rate	%	108.2	...
Sample Reference (ECL ID)	ECL/12/	2742 & 2743	2746 & 2747
Mass of Particulate Matter Collected	mg	1.48	0.15
Concentration of Particulate Matter	mg/m ³ *	2.09	0.21
Emission Rate of Particulate Matter	g/hr	35.12	...
Expanded Uncertainty (% Relative)	%	22	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.12

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Table 13 – Particulates
Data Recorded from Paint Plant - PDI Combi

Emission Parameter	Units	TPM 1	Blank
Stack Diameter	metres	0.80	...
			...
Area of Sample Plane	m ²	0.503	...
Moisture Content	%	0.11	...
Oxygen Content	%	20.90	...
Stack Temperature	°C	20	...
Gas Velocity (at Stack Conditions)	m/sec	11.21	...
Gas Velocity (Reference Conditions)	m/sec*	10.40	...
Volumetric Flowrate (Stack Conditions)	m ³ /sec	5.64	...
Volumetric Flowrate (Reference Conditions)	m ³ /sec*	5.23	...
Sample Date	...	29/05/2012	...
Sample Period	...	12:15 - 12:45	...
Sample Volume (at Stack)	m ³	0.66	...
Sample Volume (reference Conditions)	m ³ *	0.61	0.61
Isokinetic Sampling Rate	%	109.4	...
Sample Reference (ECL ID)	ECL/12/	2744 & 2745	2746 & 2747
Mass of Particulate Matter Collected	mg	2.09	0.15
Concentration of Particulate Matter	mg/m ³ *	3.44	0.25
Emission Rate of Particulate Matter	g/hr	64.64	...
Expanded Uncertainty (% Relative)	%	15	...
Emission Limit Value (ELV)	mg/m ³ *	10	...
Blank Concentration as Percentage of ELV	%	...	2.47

*Reference Conditions (273K, 101.3kPa, Wet Gas)

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417

: R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012

VELOCITY TRAVERSE PROFILES

Environmental Compliance Limited

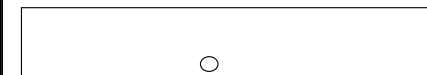
London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417

: R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
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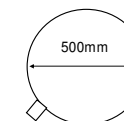
Environmental Compliance Limited		Traverse Data Profoma		Date of Measurement		29/05/2012
Company	London Taxis	Stack Diameter (mm)	500	Pitot tube coefficient	1.00	
Site	Coventry	Port Length (mm)	50	Pitot ID	489	
Location	Paint Plant	Duct Length (mm) A		Stack Thermocouple ID	464	
Stack	Tack Booth	Duct width (mm) B		Stack Thermocouple Reader ID	358	
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504	
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	2.5	Barometer ID	629	

Diagram/ Description of Cross Section of Stack/Duct



Horizontal duct 1 x 2" BSP fitted.

Access via stepladder



Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
25	A1	20.0	35.0	25				
75	A2	20.0	45.0	30				
125	A3	20.0	50.0	25				
175	A4	20.0	55.0	20				
225	A5	20.0	55.0	15				
275	A6	20.0	55.0	10				
325	A7	20.0	55.0	20				
375	A8	20.0	50.0	25				
425	A9	20.0	40.0	35				
475	A10	20.0	30.0	45				
Total		200				0		
Max		20	55.0			0	0.0	
Min		20	30.0			0	0.0	
Average		20.0	47.0					

Average temp (K)	293
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Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	1.83:1
Average deviation of flow from axis <15°	NO
X-sectional area for stacks= πr ²	0.20 m ²
X-sectional area for ducts = L x B	0.000 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Moleular Weight	28.836	g/g mole

Gas Velocity (as Measured)	8.83	m/sec
Gas Velocity (Reference Conditions)	8.19	m/sec*
Volumetric Flowrate (as Measured)	1.7343	m ³ /sec
Volumetric Flowrate (Reference Conditions)	1.6083	m ³ /sec*

Deviations from procedure/ non - conformities

only 1 port available and swirl at many points.
Centre point sampling only

Compliance With Positional Requirements?

Height of sample ports from Platform	4m
Number of sample ports	1
Width of platform (port back to handrail)	>2m

Nearest downstream disturbance	Bend	2m
Nearest upstream disturbance	Bend	1m

Disturbances are classed as bends, fans or diameter variations

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	Traverse Data Profoma	Date of Measurement	29/05/2012
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Company	London Taxis	Stack Diameter (mm)	1200	Pitot tube coefficient	1.00
Site	Coventry	Port Length (mm)	50	Pitot ID	489
Location	Paint Plant	Duct Length (mm) A		Stack Thermocouple ID	464
Stack	Base Booth 1	Duct width (mm) B		Stack Thermocouple Reader ID	358
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	30	Barometer ID	629

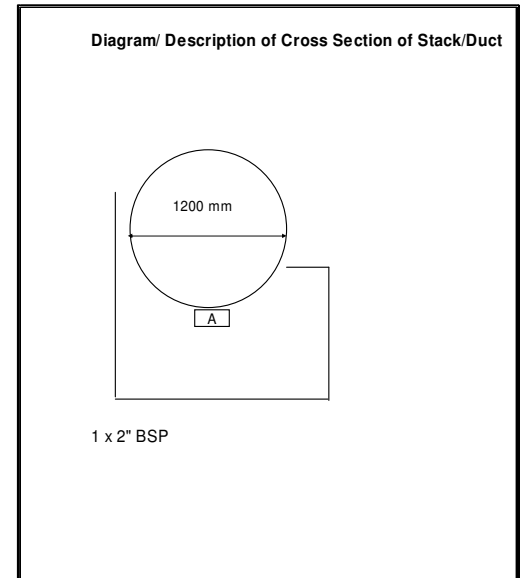
	Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
	60	A1	20.0	20.0	50				
	180	A2	20.0	30.0	40				
	300	A3	20.0	40.0	30				
	420	A4	20.0	50.0	25				
	540	A5	20.0	60.0	10				
	660	A6	20.0	60.0	10				
	780	A7	20.0	50.0	20				
	900	A8	20.0	40.0	25				
	1020	A9	20.0	30.0	35				
	1140	A10	20.0	20.0	40				
Total			200				0		
Max			20	60.0			0	0.0	
Min			20	20.0			0	0.0	
Average			20.0	40.0					

Average temp (K)	293
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Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	3:1
Average deviation of flow from axis <15°	NO
X-sectional area for stacks= πr ²	1.13 m ²
X-sectional area for ducts = L x B	0.000 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Molecular Weight	28.836	g/g mole

Gas Velocity (as Measured)	8.04	m/sec
Gas Velocity (Reference Conditions)	7.47	m/sec*
Volumetric Flowrate (as Measured)	9.0915	m ³ /sec
Volumetric Flowrate (Reference Conditions)	8.4537	m ³ /sec*



Deviations from procedure/ non - conformities

Flow profile shows swirl in many places, centre point only used as flow is ok at that point only.

A5 & A6

Compliance With Positional Requirements?

Height of sample ports from Platform	1.5m
Number of sample ports	1
Width of platform (port back to handrail)	>2m

Nearest downstream disturbance	Exit	>4m
Nearest upstream disturbance	Fan	<1m

Disturbances are classed as bends, fans or diameter variations

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Environmental Compliance Limited

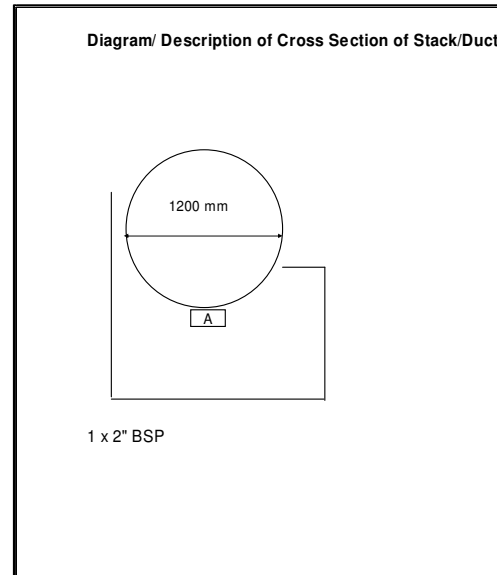
London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	Traverse Data Profoma	Date of Measurement	29/05/2012
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Company	London Taxis	Stack Diameter (mm)	1200	Pitot tube coefficient	1.00
Site	Coventry	Port Length (mm)	50	Pitot ID	489
Location	Paint Plant	Duct Length (mm) A		Stack Thermocouple ID	464
Stack	Base Booth 2	Duct width (mm) B		Stack Thermocouple Reader ID	358
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	50	Barometer ID	629



	Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
	60	A1	20.0	15.0	50				
	180	A2	20.0	28.0	40				
	300	A3	20.0	35.0	35				
	420	A4	20.0	45.0	25				
	540	A5	20.0	60.0	10				
	660	A6	20.0	60.0	10				
	780	A7	20.0	50.0	50				
	900	A8	20.0	45.0	35				
	1020	A9	20.0	30.0	40				
	1140	A10	20.0	15.0	45				
Total			200				0		
Max			20	60.0			0	0.0	
Min			20	15.0			0	0.0	
Average			20.0	38.3					

Average temp (K)	293
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Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	4:1
Average deviation of flow from axis <15°	NO
X-sectional area for stacks= πr ²	1.13 m ²
X-sectional area for ducts = L x B	0.000 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Molecular Weight	28.836	g/g mole

Gas Velocity (as Measured)	7.80	m/sec
Gas Velocity (Reference Conditions)	7.27	m/sec*
Volumetric Flowrate (as Measured)	8.8239	m ³ /sec
Volumetric Flowrate (Reference Conditions)	8.2208	m ³ /sec*

Deviations from procedure/ non - conformities

Flow profile shows swirl in many places, centre point only used as flow is ok at that point only.
 A5 & A6

Compliance With Positional Requirements?		
Height of sample ports from Platform		1.5m
Number of sample ports		1
Width of platform (port back to handrail)		>2m

Nearest downstream disturbance	Exit	>4m
Nearest upstream disturbance	Fan	<1m
Disturbances are classed as bends, fans or diameter variations		

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Environmental Compliance Limited

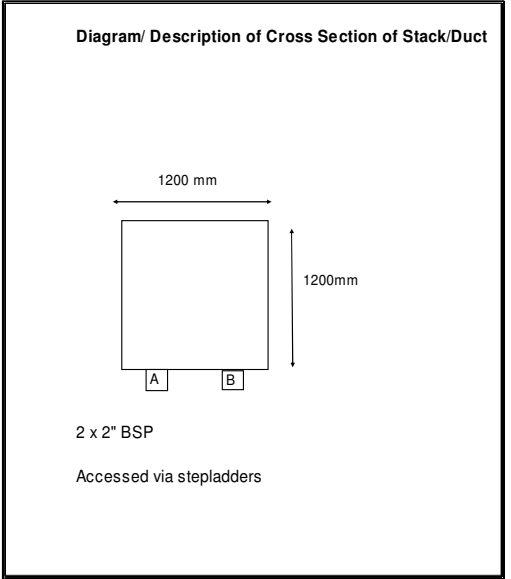
London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	Traverse Data Profoma	Date of Measurement	29/05/2012
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Company	London Taxis	Stack Diameter (mm)		Pitot tube coefficient	1.00
Site	Coventry	Port Length (mm)	50	Pitot ID	489
Location	Paint Plant	Duct Length (mm) A	1200	Stack Thermocouple ID	464
Stack	Lacquer Booth 3	Duct width (mm) B	1200	Stack Thermocouple Reader ID	358
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	2.5	Barometer ID	629



Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
60	A1	20.0	160.0	50	B1	20.0	160.0	20
180	A2	20.0	100.0	40	B2	20.0	120.0	20
300	A3	20.0	90.0	35	B3	20.0	95.0	25
420	A4	20.0	70.0	25	B4	20.0	70.0	16
540	A5	20.0	60.0	10	B5	20.0	60.0	10
660	A6	20.0	20.0	10	B6	20.0	25.0	40
780	A7	20.0	20.0	50	B7	20.0	25.0	42
900	A8	20.0	30.0	35	B8	20.0	30.0	40
1020	A9	20.0	30.0	40	B9	20.0	35.0	35
1140	A10	20.0	35.0	45	B10	20.0	35.0	35
Total		200				200		
Max		20	160.0			20	160.0	
Min		20	20.0			20	25.0	
Average		20.0	61.5			20.00	65.50	

Average temp (K)	293
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Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	8:1
Average deviation of flow from axis <15°	NO
X-sectional area for stacks= πr ²	0.00 m ²
X-sectional area for ducts = L x B	1.440 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Molecular Weight	28.836	g/g mole

Gas Velocity (as Measured)	9.76	m/sec
Gas Velocity (Reference Conditions)	9.05	m/sec*
Volumetric Flowrate (as Measured)	14.0584	m ³ /sec
Volumetric Flowrate (Reference Conditions)	13.0373	m ³ /sec*

Deviations from procedure/ non - conformities

Flow profile is poor, swirl at many positions, restricted points used. Flow is OK at those points only.
 A5 & B5

Compliance With Positional Requirements?

Height of sample ports from Platform	4m
Number of sample ports	2
Width of platform (port back to handrail)	>2m

Nearest downstream disturbance	Exit	>4m
Nearest upstream disturbance	Fan	2m

Disturbances are classed as bends, fans or diameter variations

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	Traverse Data Profoma	Date of Measurement	29/05/2012
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Company	London Taxis	Stack Diameter (mm)		Pitot tube coefficient	1.00
Site	Coventry	Port Length (mm)	50	Pitot ID	489
Location	Paint Plant	Duct Length (mm) A	1200	Stack Thermocouple ID	464
Stack	Lacquer Booth 4	Duct width (mm) B	1200	Stack Thermocouple Reader ID	358
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	2	Barometer ID	629

Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
60	A1	20.0	180.0	25	B1	20.0	180.0	30
180	A2	20.0	140.0	20	B2	20.0	145.0	35
300	A3	20.0	110.0	20	B3	20.0	115.0	30
420	A4	20.0	90.0	20	B4	20.0	100.0	25
540	A5	20.0	75.0	18	B5	20.0	80.0	20
660	A6	20.0	60.0	13	B6	20.0	60.0	10
780	A7	20.0	25.0	18	B7	20.0	30.0	25
900	A8	20.0	20.0	20	B8	20.0	25.0	30
1020	A9	20.0	25.0	25	B9	20.0	30.0	30
1140	A10	20.0	35.0	25	B10	20.0	45.0	35
Total		200				200		
Max		20	180.0			20	180.0	
Min		20	20.0			20	25.0	
Average		20.0	76.0			20.00	81.00	

Average temp (K)	293
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Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	9:1
Average deviation of flow from axis <15°	NO
X-sectional area for stacks= πr ²	0.00 m ²
X-sectional area for ducts = L x B	1.440 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Molecular Weight	28.836	g/g mole

Gas Velocity (as Measured)	10.85	m/sec
Gas Velocity (Reference Conditions)	10.06	m/sec*
Volumetric Flowrate (as Measured)	15.6168	m ³ /sec
Volumetric Flowrate (Reference Conditions)	14.4818	m ³ /sec*

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Diagram/ Description of Cross Section of Stack/Duct

Diagram Description:
 A square stack with side length 1200mm. Two ports, A and B, are located at the bottom edge, separated by 1200mm. The stack is labeled "2 x 2" BSP". It is accessed via stepladders.

Deviations from procedure/ non - conformities

Flow profile is poor, swirl at many positions, restricted points used. Flow is OK at those points only.
 A6 & B6

Compliance With Positional Requirements?

Height of sample ports from Platform	4m
Number of sample ports	2
Width of platform (port back to handrail)	>2m

Nearest downstream disturbance	Exit	>4m
Nearest upstream disturbance	Fan	2m

Disturbances are classed as bends, fans or diameter variations

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	Traverse Data Profoma	Date of Measurement	29/05/2012
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Company	London Taxis	Stack Diameter (mm)	800	Pitot tube coefficient	1.00
Site	Coventry	Port Length (mm)	50	Pitot ID	489
Location	Paint Plant	Duct Length (mm) A		Stack Thermocouple ID	464
Stack	Main Combi	Duct width (mm) B		Stack Thermocouple Reader ID	358
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	5	Barometer ID	629

	Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
		40	A1	20.0	70.0	18	B1	20.0	70.0
	120	A2	20.0	60.0	10	B2	20.0	60.0	12
	200	A3	20.0	45.0	20	B3	20.0	55.0	18
	280	A4	20.0	25.0	20	B4	20.0	50.0	25
	360	A5	20.0	30.0	25	B5	20.0	35.0	30
	440	A6	20.0	35.0	30	B6	20.0	30.0	35
	520	A7	20.0	40.0	25	B7	20.0	40.0	30
	600	A8	20.0	35.0	25	B8	20.0	40.0	30
	680	A9	20.0	40.0	20	B9	20.0	45.0	25
	760	A10	20.0	50.0	20	B10	20.0	45.0	20
Total			200				200		
Max			20	70.0			20	70.0	
Min			20	25.0			20	30.0	
Average			20.0	43.0			20.00	47.00	

Average temp (K)	293
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Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	2.8:1
Average deviation of flow from axis <15 ⁰	NO
X-sectional area for stacks= πr ²	0.50 m ²
X-sectional area for ducts = L x B	0.000 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Molecular Weight	28.836	g/g mole

Gas Velocity (as Measured)	8.60	m/sec
Gas Velocity (Reference Conditions)	7.98	m/sec*
Volumetric Flowrate (as Measured)	4.3235	m ³ /sec
Volumetric Flowrate (Reference Conditions)	4.0105	m ³ /sec*

Diagram/ Description of Cross Section of Stack/Duct

800mm

A B

2 x 4" BSP
 Accessed via stepladders
 No flow during bake cycle, so grab sampled.

Deviations from procedure/ non - conformities
 Flow profile is poor, swirl at many positions, restricted points used.
 Flow is at those points only.
 A2 & B2

Compliance With Positional Requirements?

Height of sample ports from Platform	3m
Number of sample ports	2
Width of platform (port back to handrail)	>2m

Nearest downstream disturbance	Bend	2m
Nearest upstream disturbance	Bend	0.5m

Disturbances are classed as bends, fans or diameter variations

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417

: R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012

Environmental Compliance Limited	Traverse Data Profoma	Date of Measurement	29/05/2012
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Company	London Taxis	Stack Diameter (mm)	800	Pitot tube coefficient	1.00
Site	Coventry	Port Length (mm)	50	Pitot ID	489
Location	Paint Plant	Duct Length (mm) A		Stack Thermocouple ID	464
Stack	PDI Combi	Duct width (mm) B		Stack Thermocouple Reader ID	358
Job No	P1417	Barometric Pressure. (mb)	1008	Manometer ID	357/ 504
Operators	AB/ PC	Static Pressure. (mm H ₂ O) (= Pa/9.81)	2	Barometer ID	629

Distance to Point (mm)	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference	Port	Temp. (°C)	(ΔP) (Pa)	Swirl Test ° From Reference
40	A1	20.0	40.0	25	B1	20.0	35.0	30
120	A2	20.0	45.0	20	B2	20.0	45.0	25
200	A3	20.0	55.0	20	B3	20.0	50.0	25
280	A4	20.0	60.0	20	B4	20.0	60.0	20
360	A5	20.0	65.0	18	B5	20.0	65.0	20
440	A6	20.0	75.0	10	B6	20.0	75.0	15
520	A7	20.0	70.0	20	B7	20.0	75.0	20
600	A8	20.0	65.0	25	B8	20.0	65.0	20
680	A9	20.0	55.0	30	B9	20.0	50.0	35
760	A10	20.0	45.0	35	B10	20.0	45.0	40
Total		200				200		
Max		20	75.0			20	75.0	
Min		20	40.0			20	35.0	
Average		20.0	57.5			20.00	56.50	

Average temp (K)	293
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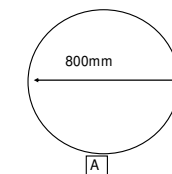
Suitability of Sampling Position	Actual Stack Conditions
Permitted highest:lowest flow pressure ratio =9:1	2.14:1
Average deviation of flow from axis <15°	NO
X-sectional area for stacks= πr ²	0.50 m ²
X-sectional area for ducts = L x B	0.000 m ²
Suitability of Position for Sampling	OK

Stack Moisture	0.1	%
Measured Oxygen	20.9	%
Measured Carbon Dioxide		%
Dry Gas Molecualr Weight	28.836	g/g mole

Gas Velocity (as Measured)	9.72	m/sec
Gas Velocity (Reference Conditions)	9.01	m/sec*
Volumetric Flowrate (as Measured)	4.8847	m ³ /sec
Volumetric Flowrate (Reference Conditions)	4.5297	m ³ /sec*

*Reference Conditions: 273K, 101.3kPa, Wet Gas

Diagram/ Description of Cross Section of Stack/Duct



2 x 2" BSP

Accessed via stepladders

No spraying or baking expected, so trial with 1/2 gun lacquer.
No test 2 (bake) possible.

Deviations from procedure/ non - conformities

Flow profile is poor, swirl at many positions, restricted points used.
Flow OK at those points only.
A6, B6

Compliance With Positional Requirements?

Height of sample ports from Platform	4m
Number of sample ports	3
Width of platform (port back to handrail)	>2m

Nearest downstream disturbance	Bend	4m
Nearest upstream disturbance	Bend	2.5m
Disturbances are classed as bends, fans or diameter variations		

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
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: R001

Installation Name : Paintshop
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Report Issue Date : 19th June 2012

FIELD SAMPLING DATA

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0	Start Time	10:50	End Time	11:20	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	0.20	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	Tack Booth	Stat Pres. (mm H ² O) (Pa/9.81)	2.5	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.07	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	300	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1140970.0				
Final Volume	1141695.0				
Total Volume	725.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	628.48
	Actual Sample Volume	668.00
725.0	Isokinetic Percentage	106.29

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	10:47	11:22							
Leak % of set rate	0.8	0.8							

Traverse Point	CP	CP	CP	CP	CP	CP		Total
Time Interval (mins)	5	5	5	5	5	5		
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30		
ΔP (Pa)	55	55	55	55	55	55		55.0
Velocity at Stack (m/s)	9.60	9.60	9.60	9.60	9.60	9.60		
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	23.6	23.7	23.8	23.8	23.9	23.9		23.8
Meter (Tm)	34	36	37	37	38	39		36.8
Stack Temp (Ts)	20	20	20	20	20	20		20.0

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0	Start Time	11:25	End Time	11:55	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	0.20	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	Tack Booth	Stat Pres. (mm H ² O) (Pa/9.81)	2.5	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 2	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.07	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	303	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1141705.0				
Final Volume	1142445.0				
Total Volume	740.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	628.49
	Actual Sample Volume	680.72
740.0	Isokinetic Percentage	108.31

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	11:24	11:56							
Leak % of set rate	0.8	0.8							

Traverse Point	CP	CP	CP	CP	CP	CP		Total
Time Interval (mins)	5	5	5	5	5	5		
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30		
ΔP (Pa)	55	55	55	55	55	55		55.0
Velocity at Stack (m/s)	9.60	9.60	9.60	9.60	9.60	9.60		
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	23.6	23.8	23.9	23.8	23.9	23.9		23.8
Meter (Tm)	35	37	38	37	38	39		37.3
Stack Temp (Ts)	20	20	20	20	20	20		20.0

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0	Start Time	07:45	End Time	08:15	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.13	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	367	Start Weight (g)	0.00
Stack ID	Base Booth 1	Stat Pres. (mm H ² O) (Pa/9.81)	30	DGM Yd	1.0544	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1	Pitot coefficient	1	Nozzle ID	802	Dry Gas Meter ID	367	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.06	Timer ID	367		
ECL Site Staff	AB/ PC	Console ID	367	Filter ID	270	Rotameter ID	367		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1179413.0				
Final Volume	1180148.0				
Total Volume	735.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	655.48
	Actual Sample Volume	711.66
735.0	Isokinetic Percentage	108.57

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	28	28				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	07:44	08:16							
Leak % of set rate	0.7	0.7							

Traverse Point	CP	CP	CP	CP	CP	CP	Total
Time Interval (mins)	5	5	5	5	5	5	
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	
ΔP (Pa)	60	60	60	60	60	60	60.0
Velocity at Stack (m/s)	10.01	10.01	10.01	10.01	10.01	10.01	
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	23.3	23.4	23.7	23.9	23.9	24.0	23.7
Meter (Tm)	18	19	23	25	26	27	23.0
Stack Temp (Ts)	20	20	20	20	20	20	20.0

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0	Start Time	08:20	End Time	08:50	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.13	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	367	Start Weight (g)	0.00
Stack ID	Base Booth 1	Stat Pres. (mm H ² O) (Pa/9.81)	30	DGM Yd	1.0544	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 2	Pitot coefficient	1	Nozzle ID	802	Dry Gas Meter ID	367	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.06	Timer ID	367		
ECL Site Staff	AB/ PC	Console ID	367	Filter ID	275	Rotameter ID	367		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1180155.0				
Final Volume	1180905.0				
Total Volume	750.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	655.47
	Actual Sample Volume	706.69
750.0	Isokinetic Percentage	107.81

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	28	28				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	08:18	08:51							
Leak % of set rate	0.7	0.7							

Traverse Point	CP	CP	CP	CP	CP	CP	Total
Time Interval (mins)	5	5	5	5	5	5	
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	
ΔP (Pa)	60	60	60	60	60	60	60.0
Velocity at Stack (m/s)	10.01	10.01	10.01	10.01	10.01	10.01	
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	24.1	24.2	24.3	24.4	24.5	24.7	24.3
Meter (Tm)	28	29	30	32	33	35	31.2
Stack Temp (Ts)	20	20	20	20	20	20	20.0

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
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 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0	Start Time	07:52	End Time	08:22	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.13	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	Base Booth 2	Stat Pres. (mm H ² O) (Pa/9.81)	50	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.07	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	249	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1137840.0				
Final Volume	1138548.0				
Total Volume	708.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	657.94
	Actual Sample Volume	674.87
708.0	Isokinetic Percentage	102.57

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	07:51	08:23							
Leak % of set rate	0.8	0.8							

Traverse Point	CP	CP	CP	CP	CP	CP		Total
Time Interval (mins)	5	5	5	5	5	5		
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30		
ΔP (Pa)	60	60	60	60	60	60		60.0
Velocity at Stack (m/s)	10.00	10.00	10.00	10.00	10.00	10.00		
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	23.7	23.9	24.0	24.2	24.3	24.3		24.1
Meter (Tm)	22	24	26	28	29	30		26.5
Stack Temp (Ts)	20	20	20	20	20	20		20.0

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0	Start Time	08:25	End Time	08:55	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.13	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	Base Booth 2	Stat Pres. (mm H ² O) (Pa/9.81)	50	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 2	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.07	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	288	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1138570.0				
Final Volume	1139350.0				
Total Volume	780.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	657.99
	Actual Sample Volume	738.98
780.0	Isokinetic Percentage	112.31

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.09
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	08:24	08:56							
Leak % of set rate	0.8	0.8							

Traverse Point	CP	CP	CP	CP	CP	CP	Total
Time Interval (mins)	5	5	5	5	5	5	
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	
ΔP (Pa)	60	60	60	60	60	60	60.0
Velocity at Stack (m/s)	10.00	10.00	10.00	10.00	10.00	10.00	
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	24.0	24.1	24.2	24.3	24.3	24.3	24.2
Meter (Tm)	26	27	28	29	30	30	28.3
Stack Temp (Ts)	20	20	20	20	20	20	20.0

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0.5	Start Time	09:00	End Time	09:30	Duration (mins)	30
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Client	London Taxis	Stack Profile	Rectangular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.44	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	Lacquer Booth 3	Stat Pres. (mm H ² O) (Pa/9.81)	2.5	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.07	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	279	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1139460.0				
Final Volume	1140200.0				
Total Volume	740.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	656.45
	Actual Sample Volume	698.38
740.0	Isokinetic Percentage	106.39

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	08:58	09:32							
Leak % of set rate	0.8	0.8							

Traverse Point	A5	A5	A5	B5	B5	B5			Total
Time Interval (mins)	5	5	5	5	5	5			
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30			
ΔP (Pa)	60	60	60	60	60	60			60.0
Velocity at Stack (m/s)	10.03	10.03	10.03	10.03	10.03	10.03			
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	23.8	24.0	24.2	24.3	24.5	24.7			24.2
Meter (Tm)	24	26	29	30	33	35			29.5
Stack Temp (Ts)	20	20	20	20	20	20			20.0

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0.5	Start Time	10:00	End Time	10:30	Duration (mins)	30
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Client	London Taxis	Stack Profile	Rectangular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.44	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	Lacquer Booth 3	Stat Pres. (mm H ² O) (Pa/9.81)	2.5	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 2	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.07	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	277	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1140215.0				
Final Volume	1140960.0				
Total Volume	745.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	656.44
	Actual Sample Volume	692.42
745.0	Isokinetic Percentage	105.48

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	09:45	10:32							
Leak % of set rate	0.8	0.8							

Traverse Point	A5	A5	A5	B5	B5	B5			Total
Time Interval (mins)	5	5	5	5	5	5			
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30			
ΔP (Pa)	60	60	60	60	60	60			60.0
Velocity at Stack (m/s)	10.03	10.03	10.03	10.03	10.03	10.03			
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	24.4	24.5	24.6	24.7	24.7	24.8			24.6
Meter (Tm)	32	33	34	35	35	36			34.2
Stack Temp (Ts)	20	20	20	20	20	20			20.0

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0.5	Start Time	09:00	End Time	09:30	Duration (mins)	30
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Client	London Taxis	Stack Profile	Rectangular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.44	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	367	Start Weight (g)	0.00
Stack ID	Lacquer Booth 4	Stat Pres. (mm H ² O) (Pa/9.81)	2	DGM Yd	1.0544	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1	Pitot coefficient	1	Nozzle ID	802	Dry Gas Meter ID	367	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.06	Timer ID	367		
ECL Site Staff	AB/ PC	Console ID	367	Filter ID	272	Rotameter ID	367		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1180918.0				
Final Volume	1181656.0				
Total Volume	738.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	654.57
	Actual Sample Volume	688.59
738.0	Isokinetic Percentage	105.20

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	08:58	09:31							
Leak % of set rate	0.8	0.8							

Traverse Point	A6	A6	A6	B6	B6	B6			Total
Time Interval (mins)	5	5	5	5	5	5			
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30			
ΔP (Pa)	60	60	60	60	60	60			60.0
Velocity at Stack (m/s)	10.03	10.03	10.03	10.03	10.03	10.03			
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	24.5	24.5	24.5	24.5	24.6	24.7			24.5
Meter (Tm)	33	33	34	34	35	36			34.2
Stack Temp (Ts)	20	20	20	20	20	20			20.0

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0.5	Start Time	10:00	End Time	10:30	Duration (mins)	30
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Client	London Taxis	Stack Profile	Rectangular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	1.44	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	367	Start Weight (g)	0.00
Stack ID	Lacquer Booth 4	Stat Pres. (mm H ² O) (Pa/9.81)	2	DGM Yd	1.0544	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 2	Pitot coefficient	1	Nozzle ID	802	Dry Gas Meter ID	367	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.06	Timer ID	367		
ECL Site Staff	AB/ PC	Console ID	367	Filter ID	274	Rotameter ID	367		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1181670.0				
Final Volume	1182433.0				
Total Volume	763.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	654.58
	Actual Sample Volume	708.45
763.0	Isokinetic Percentage	108.23

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	09:35	10:32							
Leak % of set rate	0.8	0.8							

Traverse Point	A6	A6	A6	B6	B6	B6		Total
Time Interval (mins)	5	5	5	5	5	5		
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30		
ΔP (Pa)	60	60	60	60	60	60		60.0
Velocity at Stack (m/s)	10.03	10.03	10.03	10.03	10.03	10.03		
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	24.5	24.6	24.7	24.7	24.8	24.8		24.7
Meter (Tm)	33	35	36	36	37	37		35.7
Stack Temp (Ts)	20	20	20	20	20	20		20.0

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
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ECL/TPD/	27a	Time taken to change Ports	0.5	Start Time	10:40	End Time	11:10	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	0.50	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	367	Start Weight (g)	0.00
Stack ID	Main Combi	Stat Pres. (mm H ² O) (Pa/9.81)	5	DGM Yd	1.0544	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1 - Bake	Pitot coefficient	1	Nozzle ID	802	Dry Gas Meter ID	367	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.06	Timer ID	367		
ECL Site Staff	AB/ PC	Console ID	367	Filter ID	291	Rotameter ID	367		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1182440.0				
Final Volume	1183195.0				
Total Volume	755.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	78.13
	Actual Sample Volume	701.75
755.0	Isokinetic Percentage	898.21

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	10:35	11:12							
Leak % of set rate	0.8	0.8							

Traverse Point	A2	A2	A2	B2	B2	B2			Total
Time Interval (mins)	5	5	5	5	5	5			
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30			
ΔP (Pa)	1	1	1	1	1	1			1.0
Velocity at Stack (m/s)	1.38	1.38	1.40	1.40	1.42	1.42			
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	3.0	3.0	2.9	2.9	2.9	2.9			2.9
Meter (Tm)	33	34	35	36	36	37			35.2
Stack Temp (Ts)	60	60	70	70	80	80			70.0

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

Traverse Point									Total
Time Interval (mins)									
Time/Point (mins)									
ΔP (Pa)									
Velocity at Stack (m/s)									
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas									
Meter (Tm)									
Stack Temp (Ts)									

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

: R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
----------------------------------	------------------------------------	---------------------	------------

ECL/TPD/	27a	Time taken to change Ports	0.5	Start Time	11:50	End Time	12:20	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	0.50	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	367	Start Weight (g)	0.00
Stack ID	Main Combi	Stat Pres. (mm H ² O) (Pa/9.81)	5	DGM Yd	1.0544	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 2 - Spray	Pitot coefficient	1	Nozzle ID	802	Dry Gas Meter ID	367	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	7.06	Timer ID	367		
ECL Site Staff	AB/ PC	Console ID	367	Filter ID	821	Rotameter ID	367		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1183222.0				
Final Volume	1183978.0				
Total Volume	756.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	654.68
	Actual Sample Volume	708.46
756.0	Isokinetic Percentage	108.21

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.10
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	11:13	12:25							
Leak % of set rate	0.8	0.8							

Traverse Point	A2	A2	A2	B2	B2	B2		Total
Time Interval (mins)	5	5	5	5	5	5		
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30		
ΔP (Pa)	60	60	60	60	60	60		60.0
Velocity at Stack (m/s)	10.03	10.03	10.03	10.03	10.03	10.03		
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	24.2	24.3	24.4	24.5	24.6	24.7		24.4
Meter (Tm)	30	31	32	33	35	36		32.8
Stack Temp (Ts)	20	20	20	20	20	20		20.0

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

Traverse Point								Total
Time Interval (mins)								
Time/Point (mins)								
ΔP (Pa)								
Velocity at Stack (m/s)								
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas								
Meter (Tm)								
Stack Temp (Ts)								

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417 : R001

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Environmental Compliance Limited	PARTICULATE DATA SAMPLING PROFORMA	Date of Measurement	29/05/2012
----------------------------------	------------------------------------	---------------------	------------

ECL/TPD/	27a	Time taken to change Ports	0	Start Time	12:15	End Time	12:45	Duration (mins)	30
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Client	London Taxis	Stack Profile	Circular	Pitot ID	489	Stack Thermocouple ID	464	Impingers	n/a
Site	Coventry	Stack Area (m ²)	0.50	Manometer ID	504/ 357	Stack Temp Reader ID	358	SOL/	n/a
Location	Paint Plant	Barometric Pressure (mb)	1008	Barometer ID	629	Meter Thermocouple ID	366	Start Weight (g)	0.00
Stack ID	PDI Combi	Stat Pres. (mm H ² O) (Pa/9.81)	2	DGM Yd	1.0503	Meter Temp Reader ID	358	End Weight (g)	0.55
Test No.	TPM 1	Pitot coefficient	1	Nozzle ID	800	Dry Gas Meter ID	366	Total weight (g)	0.55
Job No	P1417	Balance ID	n/a	Nozzle Size (mm)	6.15	Timer ID	366		
ECL Site Staff	AB/ PC	Console ID	366	Filter ID	275	Rotameter ID	366		

	Sample	Leak 1	Leak 2	Leak 3	Leak 4
Start Volume	1142460.0				
Final Volume	1143120.0				
Total Volume	660.0	0.0	0.0	0.0	0.0

Total	Volume (litres) @ STP Dry	
	Expected Sample Volume	555.27
	Actual Sample Volume	607.57
660.0	Isokinetic Percentage	109.42

Leak Check	First	Second	Third	Final	Maximum allowed leak rate is 2% of the set rate	Measured O ₂	20.90	Moisture	0.11
Leak Rate l/min	0.2	0.2				Measured CO ₂ %		Ref O ₂	20.9
Set Rate (l/min)	26	26				Measured CO ppm		Dry Gas Molecular Weight	28.84
Time Of Leak Check	12:10	12:50							
Leak % of set rate	0.8	0.8							

Traverse Point	CP	CP	CP	CP	CP	CP	Total
Time Interval (mins)	5	5	5	5	5	5	
Time/Point (mins)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	
ΔP (Pa)	75	75	75	75	75	75	75.0
Velocity at Stack (m/s)	11.21	11.21	11.21	11.21	11.21	11.21	
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas	20.9	20.9	21.0	21.1	21.1	21.2	21.0
Meter (Tm)	35	36	37	38	38	39	37.2
Stack Temp (Ts)	20	20	20	20	20	20	20.0

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

Traverse Point							Total
Time Interval (mins)							
Time/Point (mins)							
ΔP (Pa)							
Velocity at Stack (m/s)							
Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas							
Meter (Tm)							
Stack Temp (Ts)							

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights may be included to produce a nominal 0.1% moisture value.

Acetone SOL/	1827
DI Rinse SOL/	1808

Original Flowrate Settings	
Tm	35
Ts	20
% moisture	0.1

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417

: R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012

LABORATORY ANALYSIS RESULTS

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417 : R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012



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

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Report Number: 282032-1

Date of Report: 18-Jun-2012

Customer: Environmental Compliance Ltd
Unit G1
Main Avenue
Treforest Industrial Estate
Pontypridd
CF37 5YL.

Customer Contact: Mr Andrew Barnes

Customer Job Reference: P1417

Customer Purchase Order: E0076

Date Job Received at SAL: 07-Jun-2012

Date Analysis Started: 12-Jun-2012

Date Analysis Completed: 15-Jun-2012

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



Report checked
and authorised by :
Jennifer Wraith
Sales Support Manager

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Jennifer Wraith
Sales Support Manager

Validity unknown
Digitally signed by Jennifer Wraith
Date: 2012.06.19 17:52:23 BST
Reason: Issued
Location: SAL

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417 : R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012

SAL Reference: 282032 Customer Reference: P1417									
Wash(Acetone) Analysed as Wash(Acetone)									
Miscellaneous									
SAL Reference		282032 002	282032 004	282032 006	282032 008	282032 010			
Customer Sample Reference		ECL/12/2719	ECL/12/2721	ECL/12/2723	ECL/12/2725	ECL/12/2727			
Test Sample		AR	AR	AR	AR	AR			
Determinand	Method	LOD	Units	Symbol					
Particulates (Total)	Grav	0.1	mg	U	<0.1	<0.1	<0.1	0.9	1.3

SAL Reference: 282032 Customer Reference: P1417									
Wash(Acetone) Analysed as Wash(Acetone)									
Miscellaneous									
SAL Reference		282032 012	282032 014	282032 016	282032 018	282032 020			
Customer Sample Reference		ECL/12/2729	ECL/12/2731	ECL/12/2733	ECL/12/2735	ECL/12/2737			
Test Sample		AR	AR	AR	AR	AR			
Determinand	Method	LOD	Units	Symbol					
Particulates (Total)	Grav	0.1	mg	U	<0.1	5.6	<0.1	<0.1	<0.1

SAL Reference: 282032 Customer Reference: P1417									
Wash(Acetone) Analysed as Wash(Acetone)									
Miscellaneous									
SAL Reference		282032 022	282032 024	282032 026	282032 028	282032 030			
Customer Sample Reference		ECL/12/2739	ECL/12/2741	ECL/12/2743	ECL/12/2745	ECL/12/2747			
Test Sample		AR	AR	AR	AR	AR			
Determinand	Method	LOD	Units	Symbol					
Particulates (Total)	Grav	0.1	mg	U	<0.1	<0.1	1.4	2.0	<0.1

SAL Reference: 282032 Customer Reference: P1417									
Filter GFA 37mm Analysed as Filter GFA 37mm									
Miscellaneous									
SAL Reference		282032 001	282032 003	282032 005	282032 007	282032 009			
Customer Sample Reference		ECL/12/2718	ECL/12/2720	ECL/12/2722	ECL/12/2724	ECL/12/2726			
Test Sample		AR	AR	AR	AR	AR			
Determinand	Method	LOD	Units	Symbol					
Particulates (Total)	Grav (5 Dec)	0.05	mg	U	<0.05	<0.05	1.3	1.6	5.9

SAL Reference: 282032 Customer Reference: P1417									
Filter GFA 37mm Analysed as Filter GFA 37mm									
Miscellaneous									
SAL Reference		282032 011	282032 013	282032 015	282032 017	282032 019			
Customer Sample Reference		ECL/12/2728	ECL/12/2730	ECL/12/2732	ECL/12/2734	ECL/12/2736			
Test Sample		AR	AR	AR	AR	AR			
Determinand	Method	LOD	Units	Symbol					
Particulates (Total)	Grav (5 Dec)	0.05	mg	U	4.0	1.0	3.4	6.1	2.3

Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417 : R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012

SAL Reference: 282032									
Customer Reference: P1417									
Filter GFA 37mm					Analysed as Filter GFA 37mm				
Miscellaneous									
SAL Reference		282032 021	282032 023	282032 025	282032 027	282032 029			
Customer Sample Reference		ECL/12/2738	ECL/12/2740	ECL/12/2742	ECL/12/2744	ECL/12/2746			
Test Sample		AR	AR	AR	AR	AR			
Determinand	Method	LOD	Units	Symbol					
Particulates (Total)	Grav (5 Dec)	0.05	mg	U	1.8	0.52	0.08	0.09	<0.05

Index to symbols used in 282032-1

Value	Description
AR	As Received
U	Analysis is UKAS accredited



Environmental Compliance Limited

London Taxis International Ltd
Permit No : PPC/037
Variation No : V002
Report Ref : P1417

: R001

Installation Name : Paintshop
Visit Details : Annual Compliance
Survey Dates : 29th May 2012
Report Issue Date : 19th June 2012

UNCERTAINTY CALCULATIONS

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Tack Booth

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1								
Particulates	0.0500	0.10	0.15	0.14	0.27	0.0700	0.14	0.15

TPM 1			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.73	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	309.98	k	uT _m	1.5	k
Static Pressure of Stack (P _{static})	2.50	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure (p _s)	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure (p _b)	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	5.61	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.10	% by volume	uH ₂ O	0.23	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.922$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>ufstp</th> </tr> </thead> <tbody> <tr> <td>uΔH</td> <td>0.49</td> <td>0.49</td> <td>0.0000476</td> <td>0.0000119</td> </tr> <tr> <td>upb</td> <td>0.49</td> <td>0.49</td> <td>0.000648</td> <td>0.00243</td> </tr> <tr> <td>uT_m</td> <td>0.49</td> <td>0.49</td> <td>0.000841</td> <td>0.00126</td> </tr> <tr> <td>H₂O</td> <td>0.49</td> <td>0.49</td> <td>0.00491</td> <td>0.00111</td> </tr> </tbody> </table> $\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100-H_2O)}\right)^2} = 0.0405$		Maximum	Minimum	Sensitivity	ufstp	uΔH	0.49	0.49	0.0000476	0.0000119	upb	0.49	0.49	0.000648	0.00243	uT _m	0.49	0.49	0.000841	0.00126	H ₂ O	0.49	0.49	0.00491	0.00111	$V_{std} = V_{measured} \times f_s = 0.6684$ <table border="1"> <thead> <tr> <th></th> <th>Maximum m³</th> <th>Minimum m³</th> <th>Sensitivity</th> <th>Standard Uncertainty (m³)</th> </tr> </thead> <tbody> <tr> <td>Effect of uf_s</td> <td>0.70</td> <td>0.64</td> <td>0.72</td> <td>0.0293</td> </tr> <tr> <td>Effect of uV_m</td> <td>0.67</td> <td>0.67</td> <td>0.92</td> <td>0.000922</td> </tr> </tbody> </table> $\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0213$		Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)	Effect of uf _s	0.70	0.64	0.72	0.0293	Effect of uV _m	0.67	0.67	0.92	0.000922
	Maximum	Minimum	Sensitivity	ufstp																																					
uΔH	0.49	0.49	0.0000476	0.0000119																																					
upb	0.49	0.49	0.000648	0.00243																																					
uT _m	0.49	0.49	0.000841	0.00126																																					
H ₂ O	0.49	0.49	0.00491	0.00111																																					
	Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)																																					
Effect of uf _s	0.70	0.64	0.72	0.0293																																					
Effect of uV _m	0.67	0.67	0.92	0.000922																																					

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component (ufO ₂) & Uncertainty in final measurement @ reference conditions due to uncertainty component arising from leak and/or loss (assumed 2% max) in the sample system (uL)	Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component (ufO ₂) and STP volume uncertainty component (uVstp)																														
$f_{O_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>Standard Uncertainty</th> </tr> </thead> <tbody> <tr> <td>uf_{O₂}</td> <td>...</td> <td>...</td> <td>...</td> <td>...</td> </tr> </tbody> </table> $uL = \frac{Conc \times \frac{2}{100}}{\sqrt{3}} = \frac{mg/Nm^3}{0.00259}$		Maximum	Minimum	Sensitivity	Standard Uncertainty	uf _{O₂}	$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 0.22$ <table border="1"> <thead> <tr> <th></th> <th>Maximum mg/Nm³</th> <th>Minimum mg/Nm³</th> <th>Sensitivity</th> <th>u mg/Nm³</th> </tr> </thead> <tbody> <tr> <td>uM</td> <td>0.45</td> <td>-3.096E-03</td> <td>1.50</td> <td>0.23</td> </tr> <tr> <td>uO₂</td> <td>...</td> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>uV_{stp}</td> <td>0.23</td> <td>0.22</td> <td>0.34</td> <td>0.00716</td> </tr> </tbody> </table>		Maximum mg/Nm ³	Minimum mg/Nm ³	Sensitivity	u mg/Nm ³	uM	0.45	-3.096E-03	1.50	0.23	uO ₂	uV _{stp}	0.23	0.22	0.34	0.00716
	Maximum	Minimum	Sensitivity	Standard Uncertainty																											
uf _{O₂}																											
	Maximum mg/Nm ³	Minimum mg/Nm ³	Sensitivity	u mg/Nm ³																											
uM	0.45	-3.096E-03	1.50	0.23																											
uO ₂																											
uV _{stp}	0.23	0.22	0.34	0.00716																											

Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uf_{O_2})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.23	0.46	0.22	202.9%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Tack Booth

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 2								
Particulates	0.0500	0.10	0.15	0.14	0.27	0.0700	0.14	0.15

TPM 2			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.74	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	310.48	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	2.50	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure p _s	756.06	mmHg	uP _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	uP _b	3.8	mmHg
Average Differential Pressure (ΔH)	5.61	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.10	% by volume	uH ₂ O	0.22	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.920$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>ufstp</th> </tr> </thead> <tbody> <tr> <td>uΔH</td> <td>0.49</td> <td>0.49</td> <td>0.0000476</td> <td>0.0000119</td> </tr> <tr> <td>upb</td> <td>0.49</td> <td>0.49</td> <td>0.000647</td> <td>0.00243</td> </tr> <tr> <td>uT_m</td> <td>0.49</td> <td>0.49</td> <td>0.000839</td> <td>0.00126</td> </tr> <tr> <td>H₂O</td> <td>0.49</td> <td>0.49</td> <td>0.00490</td> <td>0.00109</td> </tr> </tbody> </table> $\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{(100/(100-H_2O))}\right)^2} = 0.0404$		Maximum	Minimum	Sensitivity	ufstp	uΔH	0.49	0.49	0.0000476	0.0000119	upb	0.49	0.49	0.000647	0.00243	uT _m	0.49	0.49	0.000839	0.00126	H ₂ O	0.49	0.49	0.00490	0.00109	$V_{std} = V_{measured} \times f_s = 0.6811$ <table border="1"> <thead> <tr> <th></th> <th>Maximum m³</th> <th>Minimum m³</th> <th>Sensitivity</th> <th>Standard Uncertainty (m³)</th> </tr> </thead> <tbody> <tr> <td>Effect of uV_s</td> <td>0.71</td> <td>0.65</td> <td>0.74</td> <td>0.0299</td> </tr> <tr> <td>Effect of uV_m</td> <td>0.68</td> <td>0.68</td> <td>0.92</td> <td>0.000920</td> </tr> </tbody> </table> $\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0221$		Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)	Effect of uV _s	0.71	0.65	0.74	0.0299	Effect of uV _m	0.68	0.68	0.92	0.000920
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Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component (ufo ₂) & uncertainty in final measurement @ reference conditions due to uncertainty component arising from leak and/or loss (assumed 2% max) in the sample system (uL)	Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component (ufoxy) and STP volume uncertainty component (uVstp)																														
$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>Standard Uncertainty</th> </tr> </thead> <tbody> <tr> <td>ufo₂</td> <td>...</td> <td>...</td> <td>...</td> <td>...</td> </tr> </tbody> </table> $uL = \frac{Conc \times \frac{2}{100}}{\sqrt{3}} = \frac{mg/Nm^3}{0.577} = 0.00254$		Maximum	Minimum	Sensitivity	Standard Uncertainty	ufo ₂	$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{o_2}} = 0.22$ <table border="1"> <thead> <tr> <th></th> <th>Maximum mg/Nm³</th> <th>Minimum mg/Nm³</th> <th>Sensitivity</th> <th>u mg/Nm³</th> </tr> </thead> <tbody> <tr> <td>uM</td> <td>0.44</td> <td>-3.038E-03</td> <td>1.47</td> <td>0.22</td> </tr> <tr> <td>uO₂</td> <td>...</td> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>uV_{stp}</td> <td>0.23</td> <td>0.21</td> <td>0.32</td> <td>0.00716</td> </tr> </tbody> </table>		Maximum mg/Nm ³	Minimum mg/Nm ³	Sensitivity	u mg/Nm ³	uM	0.44	-3.038E-03	1.47	0.22	uO ₂	uV _{stp}	0.23	0.21	0.32	0.00716
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (u_{foxy})^2 + (u_{Vstp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.22	0.45	0.22	202.9%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Base Booth 1

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1								
Particulates	1.30	0.10	1.40	0.14	0.27	0.0700	0.14	0.15

TPM 1			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.74	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	296.15	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	30.00	mmH ₂ O	uP _{static}	0.25	mmH ₂ O
Absolute Stack Pressure p _s	756.06	mmHg	uP _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	uP _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmH ₂ O	uΔH	0.25	mmH ₂ O
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0957	% by volume	uH ₂ O	0.21	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
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Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component (uf _{O2}) & Uncertainty in final measurement @ reference conditions due to uncertainty component arising from leak and/or loss (assumed 2% max) in the sample system (uL)	Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component (uf _{Oxy}) and STP volume uncertainty component (uVstp)																														
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (u_{f_{O_2}})^2 + (u_{V_{stp}})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.22	0.45	1.97	22.7%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Base Booth 1

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 2								
Particulates	1.60	0.90	2.50	0.14	0.27	0.0700	0.14	0.15

TPM 2			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.75	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	304.32	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	30.00	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure p _s	756.06	mmHg	uP _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	uP _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0964	% by volume	uH ₂ O	0.21	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i=uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uf_{O_2})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.24	0.49	3.54	13.8%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Base Booth 2

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1								
Particulates	4.00	0.10	4.10	0.14	0.27	0.0700	0.14	0.15

TPM 1			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.71	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	299.65	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	50.00	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.10	% by volume	uH ₂ O	0.22	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.954$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>ufstp</th> </tr> </thead> <tbody> <tr> <td>uΔH</td> <td>0.50</td> <td>0.50</td> <td>0.0000485</td> <td>0.0000121</td> </tr> <tr> <td>up_b</td> <td>0.50</td> <td>0.50</td> <td>0.000659</td> <td>0.00247</td> </tr> <tr> <td>uT_m</td> <td>0.50</td> <td>0.50</td> <td>0.000871</td> <td>0.00131</td> </tr> <tr> <td>H₂O</td> <td>0.50</td> <td>0.50</td> <td>0.00500</td> <td>0.00112</td> </tr> </tbody> </table> $\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100-H_2O)}\right)^2} = 0.0391$		Maximum	Minimum	Sensitivity	ufstp	uΔH	0.50	0.50	0.0000485	0.0000121	up _b	0.50	0.50	0.000659	0.00247	uT _m	0.50	0.50	0.000871	0.00131	H ₂ O	0.50	0.50	0.00500	0.00112	$V_{std} = V_{measured} \times f_s = 0.6752$ <table border="1"> <thead> <tr> <th></th> <th>Maximum m³</th> <th>Minimum m³</th> <th>Sensitivity</th> <th>Standard Uncertainty (m³)</th> </tr> </thead> <tbody> <tr> <td>Effect of uf_s</td> <td>0.70</td> <td>0.65</td> <td>0.71</td> <td>0.0277</td> </tr> <tr> <td>Effect of uV_m</td> <td>0.68</td> <td>0.67</td> <td>0.95</td> <td>0.000954</td> </tr> </tbody> </table> $\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0196$		Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)	Effect of uf _s	0.70	0.65	0.71	0.0277	Effect of uV _m	0.68	0.67	0.95	0.000954
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (u_{foxy})^2 + (u_{Vstp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.29	0.59	6.07	9.7%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Base Booth 2

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 2								
Particulates	1.00	5.60	6.60	0.14	0.27	0.0700	0.14	0.15

TPM 2			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.78	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	301.48	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	50.00	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0922	% by volume	uH ₂ O	0.21	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.948$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>ufstp</th> </tr> </thead> <tbody> <tr> <td>uΔH</td> <td>0.50</td> <td>0.50</td> <td>0.0000483</td> <td>0.0000121</td> </tr> <tr> <td>up_b</td> <td>0.50</td> <td>0.49</td> <td>0.000657</td> <td>0.00247</td> </tr> <tr> <td>uT_m</td> <td>0.50</td> <td>0.50</td> <td>0.000866</td> <td>0.00130</td> </tr> <tr> <td>H₂O</td> <td>0.50</td> <td>0.50</td> <td>0.00498</td> <td>0.00102</td> </tr> </tbody> </table> $\frac{u f_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100-H_2O)}\right)^2} = 0.0387$		Maximum	Minimum	Sensitivity	ufstp	uΔH	0.50	0.50	0.0000483	0.0000121	up _b	0.50	0.49	0.000657	0.00247	uT _m	0.50	0.50	0.000866	0.00130	H ₂ O	0.50	0.50	0.00498	0.00102	$V_{std} = V_{measured} \times f_s = 0.7393$ <table border="1"> <thead> <tr> <th></th> <th>Maximum m³</th> <th>Minimum m³</th> <th>Sensitivity</th> <th>Standard Uncertainty (m³)</th> </tr> </thead> <tbody> <tr> <td>Effect of u f_s</td> <td>0.77</td> <td>0.71</td> <td>0.78</td> <td>0.0302</td> </tr> <tr> <td>Effect of uV_m</td> <td>0.74</td> <td>0.74</td> <td>0.95</td> <td>0.000948</td> </tr> </tbody> </table> $\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0236$		Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)	Effect of u f _s	0.77	0.71	0.78	0.0302	Effect of uV _m	0.74	0.74	0.95	0.000948
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (u_{foxy})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.37	0.73	8.93	8.2%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant , Stack ID: Lacquer Booth 3

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1								
Particulates	3.40	0.10	3.50	0.14	0.27	0.0700	0.14	0.15

TPM 1			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.74	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	302.65	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	2.50	mmH ₂ O	uP _{static}	0.25	mmH ₂ O
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmH ₂ O	uΔH	0.25	mmH ₂ O
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0976	% by volume	uH ₂ O	0.22	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i=uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (u_{foxy})^2 + (u_{Vstp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.27	0.54	5.01	10.8%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant , Stack ID: Lacquer Booth 3

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Filter mg	Uncert (%) K=2 Solution mg	Standard Filter mg	Solution mg	Combined Uncertainty mg
TPM 2								
Particulates	6.10	0.10	6.20	0.14	0.27	0.0700	0.14	0.15

TPM 2			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.75	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	307.32	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	2.50	mmH ₂ O	uP _{static}	0.25	mmH ₂ O
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmH ₂ O	uΔH	0.25	mmH ₂ O
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0984	% by volume	uH ₂ O	0.22	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

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Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.930$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>ufstp</th> </tr> </thead> <tbody> <tr> <td>uΔH</td> <td>0.49</td> <td>0.49</td> <td>0.0000479</td> <td>0.0000120</td> </tr> <tr> <td>up_b</td> <td>0.49</td> <td>0.49</td> <td>0.000651</td> <td>0.00244</td> </tr> <tr> <td>uT_m</td> <td>0.49</td> <td>0.49</td> <td>0.000849</td> <td>0.00127</td> </tr> <tr> <td>H₂O</td> <td>0.49</td> <td>0.49</td> <td>0.00493</td> <td>0.00108</td> </tr> </tbody> </table> $\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100-H_2O)}\right)^2} = 0.0376$		Maximum	Minimum	Sensitivity	ufstp	uΔH	0.49	0.49	0.0000479	0.0000120	up _b	0.49	0.49	0.000651	0.00244	uT _m	0.49	0.49	0.000849	0.00127	H ₂ O	0.49	0.49	0.00493	0.00108	$V_{std} = V_{measured} \times f_s = 0.6928$ <table border="1"> <thead> <tr> <th></th> <th>Maximum m³</th> <th>Minimum m³</th> <th>Sensitivity</th> <th>Standard Uncertainty (m³)</th> </tr> </thead> <tbody> <tr> <td>Effect of uf_s</td> <td>0.72</td> <td>0.66</td> <td>0.75</td> <td>0.0280</td> </tr> <tr> <td>Effect of uV_m</td> <td>0.69</td> <td>0.69</td> <td>0.93</td> <td>0.000930</td> </tr> </tbody> </table> $\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0209$		Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)	Effect of uf _s	0.72	0.66	0.75	0.0280	Effect of uV _m	0.69	0.69	0.93	0.000930
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uf_{Oxy})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.36	0.73	8.95	8.1%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant , Stack ID: Lacquer Booth 4

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1								
Particulates	2.30	0.10	2.40	0.14	0.27	0.0700	0.14	0.15

TPM 1			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.74	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	307.32	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	2.00	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0989	% by volume	uH ₂ O	0.22	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
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Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component (uf _{O2}) & Uncertainty in final measurement @ reference conditions due to uncertainty component arising from leak and/or loss (assumed 2% max) in the sample system (uL)	Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component (uf _{Oxy}) and STP volume uncertainty component (uVstp)																														
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uf_{Oxy})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.25	0.50	3.48	14.2%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Lacquer Booth 4

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 2								
Particulates	1.80	0.10	1.90	0.14	0.27	0.0700	0.14	0.15

TPM 2			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.76	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	308.82	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	2.00	mmH ₂ O	uP _{static}	0.25	mmH ₂ O
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmH ₂ O	uΔH	0.25	mmH ₂ O
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0962	% by volume	uH ₂ O	0.21	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uf_{Oxy})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.23	0.46	2.68	17.3%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Main Combi

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1 - Bake								
Particulates	0.52	0.10	0.62	0.14	0.27	0.0700	0.14	0.15

TPM 1 - Bake			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.76	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	308.32	k	uT _m	1.5	k
Static Pressure of Stack (P _{static})	5.00	mmH ₂ O	uP _{static}	0.25	mmH ₂ O
Absolute Stack Pressure (p _s)	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure (p _b)	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	0.10	mmH ₂ O	uΔH	0.25	mmH ₂ O
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
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Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.930$ <table border="1"> <thead> <tr> <th></th> <th>Maximum</th> <th>Minimum</th> <th>Sensitivity</th> <th>ufstp</th> </tr> </thead> <tbody> <tr> <td>uΔH</td> <td>0.49</td> <td>0.49</td> <td>0.0000480</td> <td>0.0000120</td> </tr> <tr> <td>upb</td> <td>0.50</td> <td>0.49</td> <td>0.000652</td> <td>0.00245</td> </tr> <tr> <td>uT_m</td> <td>0.49</td> <td>0.49</td> <td>0.000848</td> <td>0.00127</td> </tr> <tr> <td>H₂O</td> <td>0.49</td> <td>0.49</td> <td>0.00494</td> <td>0.00107</td> </tr> </tbody> </table> $\frac{u f_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100-H_2O)}\right)^2} = 2.26$		Maximum	Minimum	Sensitivity	ufstp	uΔH	0.49	0.49	0.0000480	0.0000120	upb	0.50	0.49	0.000652	0.00245	uT _m	0.49	0.49	0.000848	0.00127	H ₂ O	0.49	0.49	0.00494	0.00107	$V_{std} = V_{measured} \times f_s = 0.7021$ <table border="1"> <thead> <tr> <th></th> <th>Maximum m³</th> <th>Minimum m³</th> <th>Sensitivity</th> <th>Standard Uncertainty (m³)</th> </tr> </thead> <tbody> <tr> <td>Effect of uf_s</td> <td>2.41</td> <td>-1.004E+00</td> <td>0.76</td> <td>1.71</td> </tr> <tr> <td>Effect of uV_m</td> <td>0.70</td> <td>0.70</td> <td>0.93</td> <td>0.000930</td> </tr> </tbody> </table> $\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 1.29$		Maximum m ³	Minimum m ³	Sensitivity	Standard Uncertainty (m ³)	Effect of uf _s	2.41	-1.004E+00	0.76	1.71	Effect of uV _m	0.70	0.70	0.93	0.000930
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (u_{f_{O_2}})^2 + (u_{V_{stp}})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.72	1.44	0.88	162.7%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant, Stack ID: Main Combi

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 2 - Spray								
Particulates	0.0800	1.40	1.48	0.14	0.27	0.0700	0.14	0.15

TPM 2 - Spray			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.76	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	305.98	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	5.00	mmHg	uP _{static}	0.25	mmHg
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	6.12	mmHg	uΔH	0.25	mmHg
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.0962	% by volume	uH ₂ O	0.21	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas	Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)																																								
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Combined Uncertainty

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uf_{O_2})^2 + (uV_{stp})^2}$$

Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.23	0.45	2.09	21.6%

Environmental Compliance Limited

London Taxis International Ltd
 Permit No : PPC/037
 Variation No : V002
 Report Ref : P1417

Installation Name : Paintshop
 Visit Details : Annual Compliance
 Survey Dates : 29th May 2012
 Report Issue Date : 19th June 2012

Site: London Taxis, Coventry
 Location: Paint Plant , Stack ID: PDI Combi

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

Determinand	Filter mg	Solution mg	Recovered Mass mg	LAB Method Uncert (%)	K=2	Standard Uncertainty Filter mg	Solution mg	Combined Uncertainty mg
TPM 1								
Particulates	0.0900	2.00	2.09	0.14	0.27	0.0700	0.14	0.15

TPM 1			Standard Uncertainty @ 95%		
Sampled Volume (V _m)	0.66	m ³	uV _m	0.001	m ³
Meter Correction Factor (Y _d)	1.05
Meter Temperature (T _m)	310.32	k	uT _m	1.5	k
Static Pressure of Stack P _{static}	2.00	mmH ₂ O	uP _{static}	0.25	mmH ₂ O
Absolute Stack Pressure p _s	756.06	mmHg	up _s	0.8	mmHg
Barometric Pressure p _b	756.25	mmHg	up _b	3.8	mmHg
Average Differential Pressure (ΔH)	7.65	mmH ₂ O	uΔH	0.25	mmH ₂ O
Oxygen content (O _{2,m})	20.90	% by volume	uO _{2,m} = σ/√n	0.00	% by volume
Moisture Content (H ₂ O)	0.11	% by volume	uH ₂ O	0.25	% by volume

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by C_iu_i where C is the sensitivity coefficient, u is the standard uncertainty and i is the index identifying the contributing factor e.g. i = uV_m, uT_m etc.

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Combined Uncertainty mg/Nm ³	Expanded Uncertainty mg/Nm ³	Measured Concentration mg/Nm ³	Percent of Measured Concentration
0.26	0.53	3.44	15.3%