Our Ref: P-RED11-087/EB/R1/Rev0
Client Ref:

22nd November 2011

Andy Jack
Lawrence Automotive VMC Ltd
Browns Lane
Allesley
Coventry CV5 9DR

Dear Andy

Re: Emissions Monitoring

Please find enclosed two copies of your report for the monitoring carried out on the 12th, 13th and 15th September 2011.

If you have any questions with respect to the report please contact me on the numbers below or directly on 07971 628431; alternatively you can email me at elena@redwing.org.uk.

Yours sincerely

Elena Berek BSc (Hons), MSc, CSci, CChem MRSC
Director

PROJECT TEAM

Project work carried out by:	**Elena Berek – Team Leader** MCerts Level 2 – MM 02 029 **Tony Berek – Env Technician** MCerts Level 1 – MM 06 702
Report prepared by:	**Elena Berek – Director**
Signature:	[redacted]
Date:	20th October 2011
Report reviewed by:	**Philip Butler - Director**
Signature:	[redacted]
Date:	20th October 2011
Report authorised by:	Philip Butler
Signature:	[redacted]
Date:	20th October 2011

redwing ENVIRONMENTAL

SEPTEMBER 2011

EMISSIONS MONITORING

Andy Jack
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Report Number P-RED11-087/EB/R1/Rev0

20th October 2011

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EXECUTIVE SUMMARY (Page 1 of 1)

The following document details the emissions to air monitoring survey undertaken by Elena Berek and Tony Berek of Redwing Environmental Ltd at Lawrence Automotive, Browns Lane, Coventry during September 2011.

All results pertain to the dates monitored only; these dates include 12th, 13th and 15th September 2011.

A summary of results is shown below:-

Emission point reference Stack N°	Total Particulate Matter range at reference conditions (mg/m³)	Highest 30 minute VOC Concentrations at reference conditions (mg/m³)	Isocyanate Concentrations at reference conditions (mg/m³)	Velocity corrected to reference conditions (m/s)	Volume flow corrected to reference conditions (m³/hr)
VMC 3 Polyester Auto Cell 1	3.2 ± 4.4%	60.5 ± 3.3% **(37.6)**	<0.0001	8.9	9,069
VMC 3 Polyester Auto Cell 2	4.0 ± 4.3%	52.5 ± 4.0% **(48.1)**	<0.0001	8.6	8,796
VMC 3 Polyester Auto Cell 3	4.3 ± 4.5%	55.5 ± 3.3% **(48.2)**	<0.0001	7.3	7,448
VMC 3 Manual PU Spray 1	0.9 ± 9%	22.3 ± 2.5% **(22.1)**	<0.0001	9.4	17,081
VMC 3 PU Auto	1.5 ± 8.2%	23.7 ± 2.4% **(20.4)**	<0.0001	13.7	16,395

The figures in blue are the average concentrations obtained for the duration of the run

NOTE 1: Reference conditions are standard temperature (273K) and standard pressure (101.3kPa)

1.0 INTRODUCTION

The monitoring of the seven exhausts were monitored with respect to quotation **Q-RED11-087/EB/v0** for the compliance check monitoring of emissions to air. The substances requested for monitoring at each emission point are listed below:

Monitoring Programme

Substances to be monitored	Emission Point Identification				
	VMC 3 Auto Cell 1	***VMC 3 Auto Cell 2***	***VMC 3 Auto Cell 3***	***VMC 3 Manual 1***	***VMC 3 PU Auto***
Total Particulate Matter	✓	✓	✓	✓	✓
Volatile Organic Compounds	✓	✓	✓	✓	✓
Isocyanates	✓	✓	✓	✓	✓

Special requirements *Monitoring is only carried out during normal operations, no monitoring was carried out during scheduled or unscheduled breaks.*

1.1 The emission results will be compared to the results listed in the local authority permit.

1.2 The velocity and temperature profiles were within the required parameters or 3:1 metres/second and ± 10% for temperature profile. This information indicates that the sample ports are in ideal positions to collect the samples under representative conditions.

1.3 Monitoring Results

Emission Point Reference	Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty expressed at 95% confidence	Reference Conditions 273 K, 101.3 kPa	Date of Sampling	Start and End Times	Monitoring Method Reference	Operating Status
VMC 3 Polyester Auto Cell 1	Total Particulate Matter	50	3.2	mg/m^3	± 4.4%	273, 101.3kPa	13/09/11	0835 – 0936	BS EN 13284-1	Normal
	Volatile Organic Compounds	50	37.6	mg/m^3	± 3.3%			0828 – 0928	BS EN 13526	
	Isocyanates	0.1	<0.0001	mg/m^3	N/A			0950 – 1050	USEPA Method 36	
VMC 3 Polyester Auto Cell 2	Total Particulate Matter	50	4.0	mg/m^3	± 4.3%	273, 101.3kPa	12/09/11	1335 – 1437	BS EN 13284-1	Normal
	Volatile Organic Compounds	50	48.1	mg/m^3	± 4.0%			1223 – 1323	BS EN 13526	
	Isocyanates	0.1	<0.0001	mg/m^3	N/A			1445 – 1545	USEPA Method 36	
VMC 3 Polyester Auto Cell 3	Total Particulate Matter	50	4.3	mg/m^3	± 4.5%	273, 101.3kPa	12/09/11	1050 – 1153	BS EN 13284-1	Normal
	Volatile Organic Compounds	50	48.2	mg/m^3	± 4.0%			1123 – 1223	BS EN 13526	
	Isocyanates	0.1	<0.0001	mg/m^3	N/A			1225 – 1325	USEPA Method 36	

Emission Point Reference	Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty expressed at 95% confidence	Reference Conditions 273 K, 101.3 kPa	Date of Sampling	Start and End Times	Monitoring Method Reference	Operating Status
VMC 3 PU Manual Spray 1	Total Particulate Matter	50	0.9	mg/m^3	± 9.0%	273, 101.3kPa	15/09/11	0835 – 0935	BS EN 13284-1	Normal
	Volatile Organic Compounds	50	22.1	mg/m^3	± 2.5%			0844 – 0944	BS EN 13526	
	Isocyanates	0.1	<0.0001	mg/m^3	N/A			1000 – 1100	USEPA Method 36	
VMC 3 PU Auto	Total Particulate Matter	50	1.5	mg/m^3	± 8.2%	273, 101.3kPa	13/09/11	1100 – 1201	BS EN 13284-1	Normal
	Volatile Organic Compounds	50	20.4	mg/m^3	± 2.4%			0946 – 1046	BS EN 13526	
	Isocyanates	0.1	<0.0001	mg/m^3	N/A			1215 - 1315	USEPA Method 36	

2 Supporting Information (Held by Redwing Environmental Ltd)

2.1 General Information

2.1.1 Redwing Environmental Ltd staff details

Elena Berek MCerts Level 2 – TE1, TE2, TE3 & TE4
Registration number MM 02 029

Tony Berek – MCerts Level 1
Registration number MM 06 702

2.2 Redwing Environmental Ltd method details

2.2.1 Test Methods

2.2.2 Particulate matter BS EN 13284-1: 2002

2.2.3 Total particulate matter was sampled using a Zambelli isokinetic sampling system in accordance with BS EN 13284-1: 2002 – Determination of Low Range Mass Concentration of dust (< 50mg/m^3).

2.2.4 The Zambelli sampling system monitors temperature, static pressure and velocities within the duct using an S-type pitot tube and K-type thermocouple. The sampling rate is continuously monitored and adjusted relative to the duct velocity to ensure isokinetic-sampling conditions are maintained throughout the monitoring period.

2.2.5 Exhaust gases were drawn under isokinetic conditions from the exhaust points using the Zambelli sampling probe, particulate matter was then collected on a pre-weighed quartz filter (or most suitable filter for process) contained within the filter cassette holder, and the total particulate matter determined gravimetrically.

2.2.6 It is also necessary to wash the probe and nozzle out with water and then acetone between sampling and the weight of the probe washing added to that collected on the sample filter. Analysis of an acetone/water blank will be carried out and the result corrected accordingly.

2.2.7 The sample positions were calculated with respect to BS EN 13284-1: 2002 – Stationary source emissions – Determination of Low Range Mass Concentration of dust.

2.2.8 Sampling may be carried out internally or externally, the method used will be reported and provided there are no deviations from the method the uncertainty for the monitoring procedure is reported to be within the requirements specified by the Hazardous Waste Directive (HWD) as stated in the Environment Agency Technical Document M2

Uncertainty: $\pm$ 30%

2.3 Stack Velocity, Pressure and Temperature Measurements

2.3.1 The stack velocity, pressure and temperature were measured by full pitot traverses of the duct using the points provided. Measurements were taken at ten equally spaced points along each proposed sampling line, excluding the 5% of the effective flue diameter from the wall.

2.4 Volatile organic compounds (BS EN 13526: 2001)

2.4.1 Monitoring to determine VOC emission concentrations was in accordance with BS EN 13526: 2001.

2.4.2 Volatile organic compound concentrations were measured using a Signal 3030PM portable heated VOC analyser. The analyser works by burning the gas sample in a hydrogen flame. This ionises any organic compounds present and the current produced across an electric field is proportional to the number of carbon atoms.

2.4.3 The analyser and heated line were zeroed and calibrated with a test gas (80 ppm and 800ppm propane) prior to each sampling run. VOC sampling was undertaken over a period of at least 60 minutes to cover any process variation.

2.4.4 All data was logged onto a Grant Squirrel data logger set at 5 second logging intervals.

2.4.5 A list of response factors are available so that specific concentrations can be calculated for known solvents within the sample exhaust.

2.4.6 A heated line from the sample point to analyser was used to ensure that condensation did not occur therefore minimising the loss of sample concentration.

2.5 Leak tests for extractive techniques

2.5.1 All extractive-sampling techniques were tested for leaks before sampling proceeded. Any leaks present were eliminated prior to sampling and will be reported.

2.5.2 Leak checks are carried out during the calibration procedure, as the concentration of the calibration gas is known it is easily noticed if air is entering the sample line and diluting the gas.

2.6 Isocyanates (USEPA Method 36)

2.6.1 There are several Isocyanates; these include TDI, MDI, HDI and IPDI. The isocyanate monitored was TDI (Toluene diisocyanate). All Isocyanates follow the same procedure for sampling and analysis.

2.6.2 Isocyanates can be sampled non-isokinetically following MDHS 25 or isokinetically following USEPA Method 36. The same equipment used for Particulate sampling was used for the monitoring of Isocyanates.

3.0 Quality Assurance

3.1 Redwing Environmental Ltd will always endeavour to follow the methods specified in the Environment Agency Technical Guidance M2. The methods followed are listed as our Technical Procedures and will be put forward for UKAS accreditation.

3.2 Redwing Environmental Ltd is accredited to ISO 9001: 2008, ISO 14001:2044 and ISO 17025:2005

4.0 Disclaimer

4.1 Redwing Environmental Ltd confirms that in preparing this report all reasonable skill and care has been exercised.

4.1.1 Unless specifically assigned or transferred within the terms of the agreement, Redwing Environmental Ltd asserts and retains all copyright, and other Intellectual Property Rights, in and over the report and its contents.

APPENDIX 1

Particulate and Velocity Certificates

Stack Reference ID	VMC3 Polyester Autocell 1				
	Lawrence Automotive				
	RUN 1				
Filter Reference No	Q47/090911-11				
Date	13th September 2011				
Sample Period	8:35	to	09:36		
Velocity (m/s)	8.91				
Volumetric flowrate of Stack gas (m^3/hr)	9069				
Average Stack Temp (°C)	21.4				
Temperature Range - ± 5% (°C)	6.68	to	36.12		
Lowest Velocity Reading (m/s)	8.10				
Highest Velocity Reading (m/s)	9.58				
Ratio (less than 3:1)	1.18	:	1		
Pre-conditioning temperature of Filter (°C)	180				
Instack sampling - Max Filter temperature (°C)	21.4				
Post-conditioning temperature Filter/Wash (°C)	160				
Oxygen %	19.7				
Carbon Dioxide %	0.20				
Moisture (%)	3.87				
Litres sampled	1889				
Corrected volume sampled - STP (m^3)	1.742				
Blank Filter Run weight gain (mg)	0.010	Blank Concentration (mg/m^3)	0.006		
Blank Wash Run weight gain (mg)	0.020		0.011		
Weighing uncertainty of balance (mg)	0.085	This must be <5% of ELV	ELV =	50	2.5
Overall Blank value (mg/m^3)	0.017	This must be <10% of ELV	ELV =	50	5.0
Particulate weight collected on filter (mg)	3.4				
Particulate weight collected in Wash (mg)	2.4				
Total Particulate weight collected (mg)	5.9				
Total Particulate Concentration, *STP, dry gas (mg/m^3)	3.4				
Total Particulate Concentration, *STP, wet gas (mg/m^3)	3.2				
Total Particulate Concentration corrected for 3% Oxygen, *STP, dry gas (mg/m^3)	N/A				
Total Particulate Mass Emission (kg/hour)	0.03				

Stack Reference ID	VMC3 Polyester Autocell 2				
	Lawrence Automotive				
	RUN 1				
Filter Reference No	Q47/090911-09				
Date	12th September 2011				
Sample Period	13:35	to	14:37		
Velocity (m/s)	8.64				
Volumetric flowrate of Stack gas (m^3/hr)	8796				
Average Stack Temp (°C)	20.2				
Temperature Range - ± 5% (°C)	5.54	to	34.86		
Lowest Velocity Reading (m/s)	8.05				
Highest Velocity Reading (m/s)	9.40				
Ratio (less than 3:1)	1.17	:	1		
Pre-conditioning temperature of Filter (°C)	180				
Instack sampling - Max Filter temperature (°C)	20.2				
Post-conditioning temperature Filter/Wash (°C)	160				
Oxygen %	19.7				
Carbon Dioxide %	0.20				
Moisture (%)	3.91				
Litres sampled	1811				
Corrected volume sampled - STP (m^3)	1.653				
Blank Filter Run weight gain (mg)	0.010	Blank Concentration (mg/m^3)	0.006		
Blank Wash Run weight gain (mg)	0.060		0.036		
Weighing uncertainty of balance (mg)	0.090	This must be <5% of ELV	ELV = 50	2.5	
Overall Blank value (mg/m^3)	0.042	This must be <10% of ELV	ELV = 50	5.0	
Particulate weight collected on filter (mg)	4.7				
Particulate weight collected in Wash (mg)	2.2				
Total Particulate weight collected (mg)	6.8				
Total Particulate Concentration, *STP, dry gas (mg/m^3)	4.1				
Total Particulate Concentration, *STP, wet gas (mg/m^3)	4.0				
Total Particulate Concentration corrected for 3% Oxygen, *STP, dry gas (mg/m^3)	N/A				
Total Particulate Mass Emission (kg/hour)	0.04				

Stack Reference ID	VMC3 Polyester Autocell 3				
	Lawrence Automotive				
	RUN 1				
Filter Reference No	Q47/090911-07				
Date	12th September 2011				
Sample Period	10:50	to	11:53		
Velocity (m/s)	7.32				
Volumetric flowrate of Stack gas (m^3/hr)	7448				
Average Stack Temp (°C)	20.4				
Temperature Range - ± 5% (°C)	5.73	to	35.07		
Lowest Velocity Reading (m/s)	6.46				
Highest Velocity Reading (m/s)	8.43				
Ratio (less than 3:1)	1.30	:	1		
Pre-conditioning temperature of Filter (°C)	180				
Instack sampling - Max Filter temperature (°C)	20.4				
Post-conditioning temperature Filter/Wash (°C)	160				
Oxygen %	19.7				
Carbon Dioxide %	0.20				
Moisture (%)	3.91				
Litres sampled	1474				
Corrected volume sampled - STP (m^3)	1.351				
Blank Filter Run weight gain (mg)	0.020	Blank Concentration (mg/m^3)	0.015		
Blank Wash Run weight gain (mg)	0.020		0.015		
Weighing uncertainty of balance (mg)	0.086	This must be <5% of ELV	ELV =	50	2.5
Overall Blank value (mg/m^3)	0.030	This must be <10% of ELV	ELV =	50	5.0
Particulate weight collected on filter (mg)	3.9				
Particulate weight collected in Wash (mg)	2.2				
Total Particulate weight collected (mg)	6.1				
Total Particulate Concentration, *STP, dry gas (mg/m^3)	4.5				
Total Particulate Concentration, *STP, wet gas (mg/m^3)	4.3				
Total Particulate Concentration corrected for 3% Oxygen, *STP, dry gas (mg/m^3)	N/A				
Total Particulate Mass Emission (kg/hour)	0.03				

Stack Reference ID	VMC3 Automatic PU Spray Booth				
	Lawrence Automotive				
	RUN 1				
Filter Reference No	Q47/090911-13				
Date	13th September 2011				
Sample Period	11:00	to	12:01		
Velocity (m/s)	13.72				
Volumetric flowrate of Stack gas (m^3/hr)	16395				
Average Stack Temp (°C)	18.4				
Temperature Range - ± 5% (°C)	3.83	to	32.97		
Lowest Velocity Reading (m/s)	13.34				
Highest Velocity Reading (m/s)	14.48				
Ratio (less than 3:1)	1.09	:	1		
Pre-conditioning temperature of Filter (°C)	180				
Instack sampling - Max Filter temperature (°C)	18.4				
Post-conditioning temperature Filter/Wash (°C)	160				
Oxygen %	19.7				
Carbon Dioxide %	0.20				
Moisture (%)	3.87				
Litres sampled	1434				
Corrected volume sampled - STP (m^3)	1.327				
Blank Filter Run weight gain (mg)	0.030	Blank Concentration (mg/m^3)	0.023		
Blank Wash Run weight gain (mg)	0.030		0.023		
Weighing uncertainty of balance (mg)	0.076	This must be <5% of ELV	ELV = 50	2.5	
Overall Blank value (mg/m^3)	0.045	This must be <10% of ELV	ELV = 50	5.0	
Particulate weight collected on filter (mg)	1.2				
Particulate weight collected in Wash (mg)	0.9				
Total Particulate weight collected (mg)	2.1				
Total Particulate Concentration, *STP, dry gas (mg/m^3)	1.6				
Total Particulate Concentration, *STP, wet gas (mg/m^3)	**1.5**				
Total Particulate Concentration corrected for 3% Oxygen, *STP, dry gas (mg/m^3)	N/A				
Total Particulate Mass Emission (kg/hour)	0.03				

Stack Reference ID	VMC3 Manual PU Spray Booth				
	Lawrence Automotive				
	RUN 1				
Filter Reference No	Q47/090911-15				
Date	15th September 2011				
Sample Period	8:35	to	09:37		
Velocity (m/s)	9.44				
Volumetric flowrate of Stack gas (m³/hr)	17081				
Average Stack Temp (°C)	21.6				
Temperature Range - ± 5% (°C)	6.87	to	36.33		
Lowest Velocity Reading (m/s)	8.91				
Highest Velocity Reading (m/s)	10.36				
Ratio (less than 3:1)	1.16	:	1		
Pre-conditioning temperature of Filter (°C)	180				
Instack sampling - Max Filter temperature (°C)	21.6				
Post-conditioning temperature Filter/Wash (°C)	160				
Oxygen %	19.7				
Carbon Dioxide %	0.20				
Moisture (%)	3.83				
Litres sampled	1998				
Corrected volume sampled - STP (m³)	1.906				
Blank Filter Run weight gain (mg)	0.030	Blank Concentration (mg/m³)	0.016		
Blank Wash Run weight gain (mg)	0.030		0.016		
Weighing uncertainty of balance (mg)	0.076	This must be <5% of ELV	ELV =	50	2.5
Overall Blank value (mg/m³)	0.031	This must be <10% of ELV	ELV =	50	5.0
Particulate weight collected on filter (mg)	0.2				
Particulate weight collected in Wash (mg)	1.5				
Total Particulate weight collected (mg)	1.7				
Total Particulate Concentration, *STP, dry gas (mg/m³)	0.9				
Total Particulate Concentration, *STP, wet gas (mg/m³)	0.9				
Total Particulate Concentration corrected for 3% Oxygen, *STP, dry gas (mg/m³)	N/A				
Total Particulate Mass Emission (kg/hour)	0.01				

APPENDIX 2

Volatile Organic Compound Results

VMC3 Polyester Autocell 1

Date	Time	VOC mg/m3	Date	Time	VOC mg/m3
13-Sep-11	08:28:06	25.23	13-Sep-11	09:17:06	9.24
13-Sep-11	08:29:06	53.92	13-Sep-11	09:18:06	8.92
13-Sep-11	08:30:06	64.21	13-Sep-11	09:19:06	8.60
13-Sep-11	08:31:06	40.34	13-Sep-11	09:20:06	8.44
13-Sep-11	08:32:06	56.17	13-Sep-11	09:21:06	8.28
13-Sep-11	08:33:06	67.90	13-Sep-11	09:22:06	7.96
13-Sep-11	08:34:06	64.85	13-Sep-11	09:23:06	8.76
13-Sep-11	08:35:06	62.28	13-Sep-11	09:24:06	11.97
13-Sep-11	08:36:06	68.06	13-Sep-11	09:25:06	8.44
13-Sep-11	08:37:06	77.22	13-Sep-11	09:26:06	8.12
13-Sep-11	08:38:06	73.04	13-Sep-11	09:27:06	50.71
13-Sep-11	08:39:06	79.96			
13-Sep-11	08:40:06	74.81	**Average**		**37.6**
13-Sep-11	08:41:06	69.03			
13-Sep-11	08:42:06	81.24			
13-Sep-11	08:43:06	89.28			
13-Sep-11	08:44:06	88.07			
13-Sep-11	08:45:06	84.46			
13-Sep-11	08:46:06	86.54			
13-Sep-11	08:47:06	80.12			
13-Sep-11	08:48:06	82.77			
13-Sep-11	08:49:06	51.83			
13-Sep-11	08:50:06	79.63			
13-Sep-11	08:51:06	37.77			
13-Sep-11	08:52:06	30.70			
13-Sep-11	08:53:06	29.89			
13-Sep-11	08:54:06	26.04			
13-Sep-11	08:55:06	23.95			
13-Sep-11	08:56:06	22.10			
13-Sep-11	08:57:06	21.05			
13-Sep-11	08:58:06	20.33			
13-Sep-11	08:59:06	20.09			
13-Sep-11	09:00:06	19.29			
13-Sep-11	09:01:06	17.76			
13-Sep-11	09:02:06	16.23			
13-Sep-11	09:03:06	15.27			
13-Sep-11	09:04:06	14.79			
13-Sep-11	09:05:06	13.90			
13-Sep-11	09:06:06	13.98			
13-Sep-11	09:07:06	13.74			
13-Sep-11	09:08:06	13.34			
13-Sep-11	09:09:06	12.70			
13-Sep-11	09:10:06	12.05			
13-Sep-11	09:11:06	11.49			
13-Sep-11	09:12:06	11.01			
13-Sep-11	09:13:06	10.37			
13-Sep-11	09:14:06	10.04			
13-Sep-11	09:15:06	9.88			
13-Sep-11	09:16:06	9.24			

VMC3 Polyester Autocell 2

Date	Time	VOC mg/m3	Date	Time	VOC mg/m3
12-Sep-11	12:23:54	5.39	12-Sep-11	13:12:54	17.84
12-Sep-11	12:24:54	51.76	12-Sep-11	13:13:54	15.10
12-Sep-11	12:25:54	62.25	12-Sep-11	13:14:54	13.23
12-Sep-11	12:26:54	19.31	12-Sep-11	13:15:54	11.91
12-Sep-11	12:27:54	5.54	12-Sep-11	13:16:54	12.21
12-Sep-11	12:28:54	49.85	12-Sep-11	13:17:54	12.84
12-Sep-11	12:29:54	59.70	12-Sep-11	13:18:54	12.45
12-Sep-11	12:30:54	61.27	12-Sep-11	13:19:54	12.16
12-Sep-11	12:31:54	63.53	12-Sep-11	13:20:54	11.91
12-Sep-11	12:32:54	75.63	12-Sep-11	13:21:54	11.47
12-Sep-11	12:33:54	32.16	12-Sep-11	13:22:54	10.93
12-Sep-11	12:34:54	22.65			
12-Sep-11	12:35:54	19.41	**Average**		**48.1**
12-Sep-11	12:36:54	19.12			
12-Sep-11	12:37:54	53.82			
12-Sep-11	12:38:54	30.44			
12-Sep-11	12:39:54	58.63			
12-Sep-11	12:40:54	65.98			
12-Sep-11	12:41:54	71.42			
12-Sep-11	12:42:54	70.10			
12-Sep-11	12:43:54	66.47			
12-Sep-11	12:44:54	63.33			
12-Sep-11	12:45:54	56.17			
12-Sep-11	12:46:54	58.04			
12-Sep-11	12:47:54	65.49			
12-Sep-11	12:48:54	70.73			
12-Sep-11	12:49:54	65.88			
12-Sep-11	12:50:54	67.99			
12-Sep-11	12:51:54	64.21			
12-Sep-11	12:52:54	63.53			
12-Sep-11	12:53:54	65.59			
12-Sep-11	12:54:54	69.65			
12-Sep-11	12:55:54	75.14			
12-Sep-11	12:56:54	74.95			
12-Sep-11	12:57:54	64.36			
12-Sep-11	12:58:54	68.72			
12-Sep-11	12:59:54	65.19			
12-Sep-11	13:00:54	68.23			
12-Sep-11	13:01:54	72.20			
12-Sep-11	13:02:54	72.89			
12-Sep-11	13:03:54	64.02			
12-Sep-11	13:04:54	66.47			
12-Sep-11	13:05:54	62.45			
12-Sep-11	13:06:54	56.66			
12-Sep-11	13:07:54	60.00			
12-Sep-11	13:08:54	36.71			
12-Sep-11	13:09:54	62.06			
12-Sep-11	13:10:54	67.55			
12-Sep-11	13:11:54	22.35			

VMC3 Polyester Autocell 3

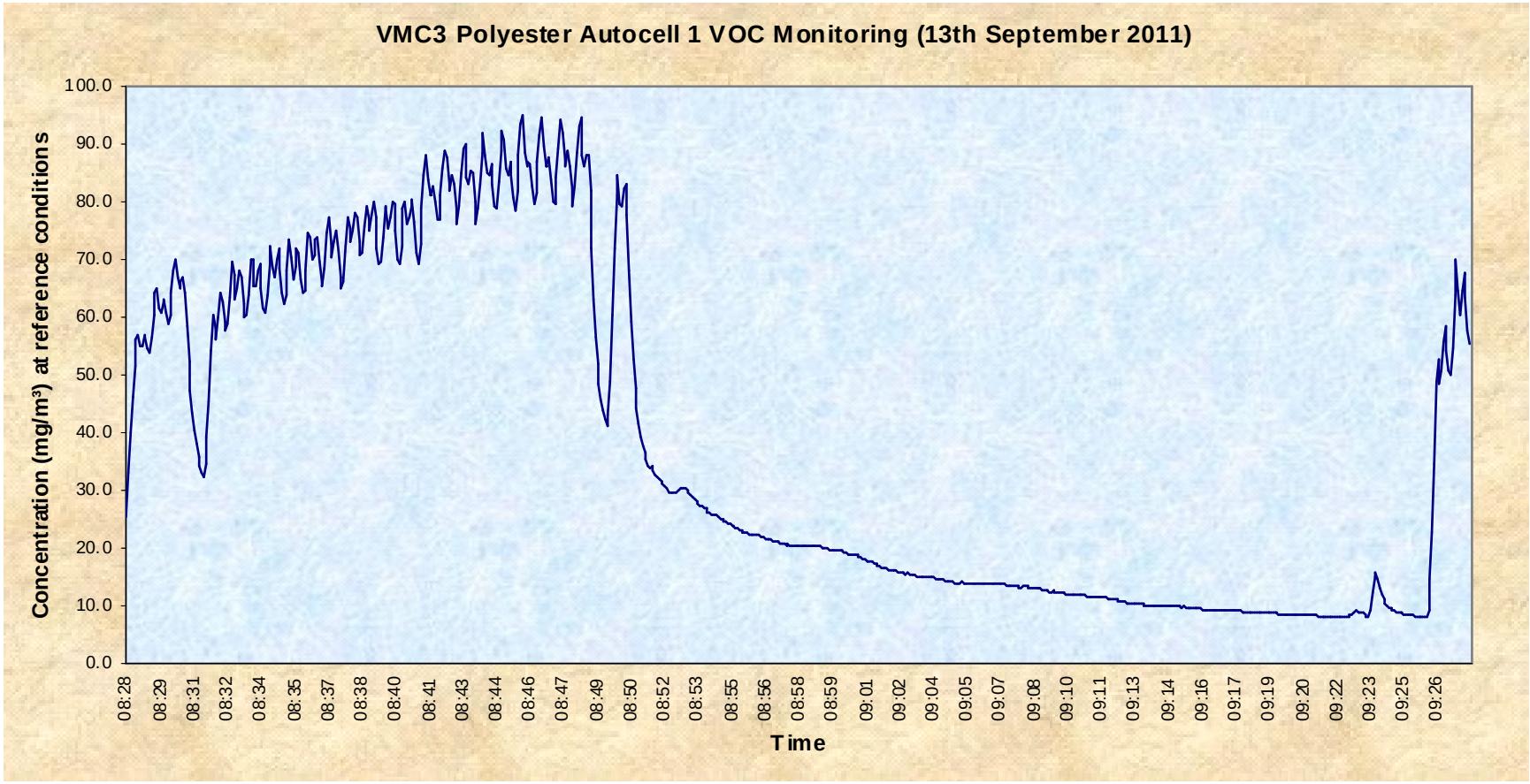
Date	Time	VOC mg/m3	Date	Time	VOC mg/m3
12-Sep-11	11:23:54	5.68	12-Sep-11	12:12:54	20.02
12-Sep-11	11:24:54	93.23	12-Sep-11	12:13:54	19.56
12-Sep-11	11:25:54	45.26	12-Sep-11	12:14:54	20.29
12-Sep-11	11:26:54	49.23	12-Sep-11	12:15:54	19.56
12-Sep-11	11:27:54	55.18	12-Sep-11	12:16:54	18.21
12-Sep-11	11:28:54	57.79	12-Sep-11	12:17:54	17.13
12-Sep-11	11:29:54	54.19	12-Sep-11	12:18:54	16.05
12-Sep-11	11:30:54	22.63	12-Sep-11	12:19:54	14.97
12-Sep-11	11:31:54	48.01	12-Sep-11	12:20:54	13.88
12-Sep-11	11:32:54	51.39	12-Sep-11	12:21:54	12.80
12-Sep-11	11:33:54	59.51	12-Sep-11	12:22:54	11.72
12-Sep-11	11:34:54	62.53			
12-Sep-11	11:35:54	57.25	**Average**		**48.2**
12-Sep-11	11:36:54	55.63			
12-Sep-11	11:37:54	58.60			
12-Sep-11	11:38:54	64.65			
12-Sep-11	11:39:54	58.87			
12-Sep-11	11:40:54	61.40			
12-Sep-11	11:41:54	67.08			
12-Sep-11	11:42:54	61.85			
12-Sep-11	11:43:54	57.43			
12-Sep-11	11:44:54	60.41			
12-Sep-11	11:45:54	67.12			
12-Sep-11	11:46:54	63.02			
12-Sep-11	11:47:54	61.81			
12-Sep-11	11:48:54	74.79			
12-Sep-11	11:49:54	64.78			
12-Sep-11	11:50:54	25.43			
12-Sep-11	11:51:54	61.94			
12-Sep-11	11:52:54	61.22			
12-Sep-11	11:53:54	56.40			
12-Sep-11	11:54:54	57.61			
12-Sep-11	11:55:54	64.19			
12-Sep-11	11:56:54	61.49			
12-Sep-11	11:57:54	60.50			
12-Sep-11	11:58:54	67.58			
12-Sep-11	11:59:54	65.01			
12-Sep-11	12:00:54	59.42			
12-Sep-11	12:01:54	57.43			
12-Sep-11	12:02:54	63.56			
12-Sep-11	12:03:54	65.82			
12-Sep-11	12:04:54	61.26			
12-Sep-11	12:05:54	67.17			
12-Sep-11	12:06:54	68.16			
12-Sep-11	12:07:54	49.14			
12-Sep-11	12:08:54	70.91			
12-Sep-11	12:09:54	32.23			
12-Sep-11	12:10:54	23.08			
12-Sep-11	12:11:54	21.28			

VMC3 PU Manual Spray Booth

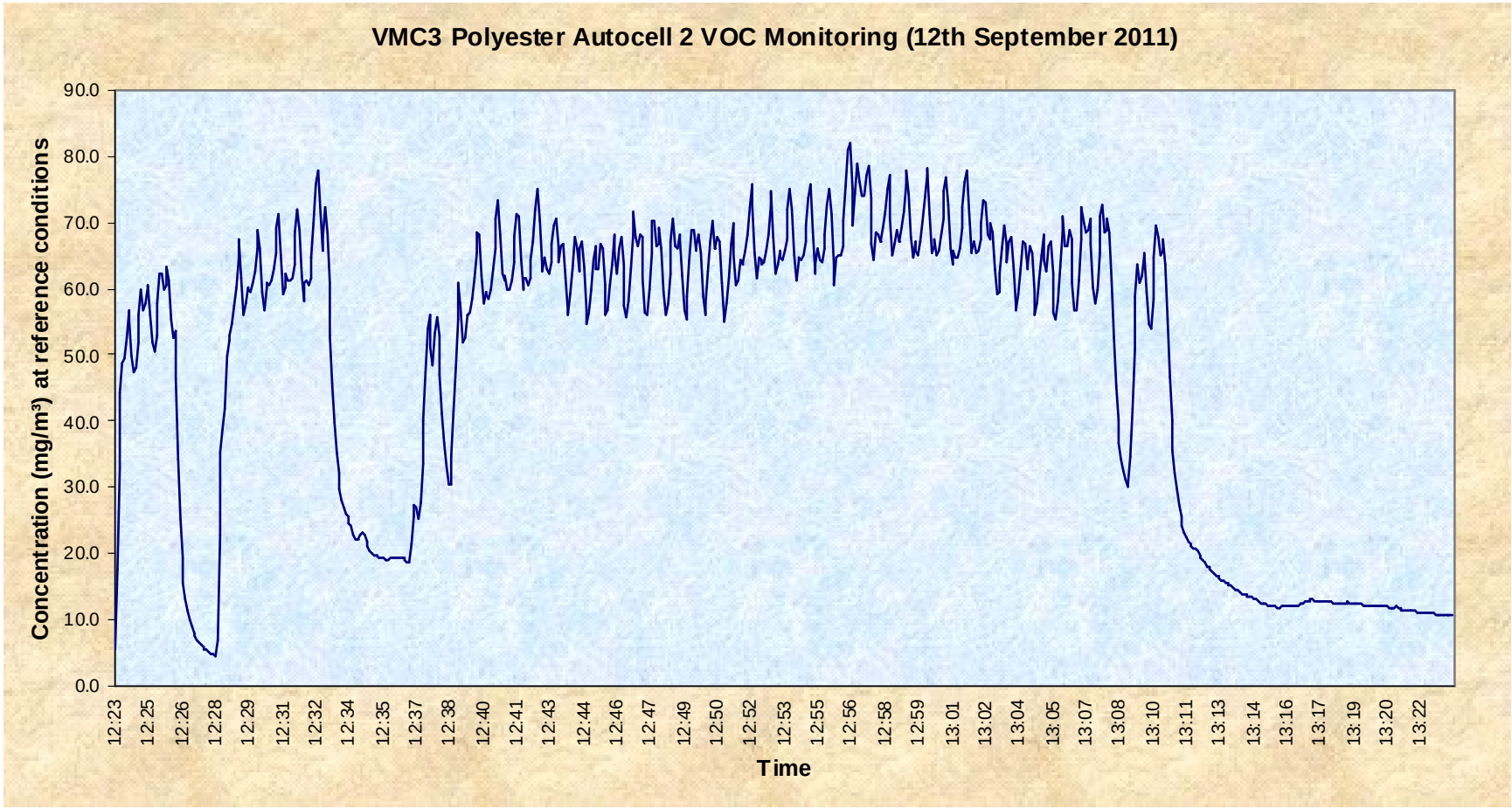
Date	Time	VOC mg/m3	Date	Time	VOC mg/m3
15-Sep-11	08:44:41	15.27	15-Sep-11	09:33:41	23.30
15-Sep-11	08:45:41	18.48	15-Sep-11	09:34:41	23.30
15-Sep-11	08:46:41	20.09	15-Sep-11	09:35:41	23.30
15-Sep-11	08:47:41	20.09	15-Sep-11	09:36:41	23.30
15-Sep-11	08:48:41	21.70	15-Sep-11	09:37:41	21.70
15-Sep-11	08:49:41	22.50	15-Sep-11	09:38:41	21.70
15-Sep-11	08:50:41	21.70	15-Sep-11	09:39:41	21.70
15-Sep-11	08:51:41	23.30	15-Sep-11	09:40:41	21.70
15-Sep-11	08:52:41	23.30	15-Sep-11	09:41:41	21.70
15-Sep-11	08:53:41	23.30	15-Sep-11	09:42:41	21.70
15-Sep-11	08:54:41	23.30	15-Sep-11	09:43:41	21.70
15-Sep-11	08:55:41	23.30			
15-Sep-11	08:56:41	23.30	**Average**		**22.1**
15-Sep-11	08:57:41	24.91			
15-Sep-11	08:58:41	23.30			
15-Sep-11	08:59:41	23.30			
15-Sep-11	09:00:41	23.30			
15-Sep-11	09:01:41	23.30			
15-Sep-11	09:02:41	23.30			
15-Sep-11	09:03:41	23.30			
15-Sep-11	09:04:41	23.30			
15-Sep-11	09:05:41	23.30			
15-Sep-11	09:06:41	23.30			
15-Sep-11	09:07:41	23.30			
15-Sep-11	09:08:41	21.70			
15-Sep-11	09:09:41	21.70			
15-Sep-11	09:10:41	21.70			
15-Sep-11	09:11:41	23.30			
15-Sep-11	09:12:41	21.70			
15-Sep-11	09:13:41	21.70			
15-Sep-11	09:14:41	21.70			
15-Sep-11	09:15:41	21.70			
15-Sep-11	09:16:41	20.09			
15-Sep-11	09:17:41	21.70			
15-Sep-11	09:18:41	21.70			
15-Sep-11	09:19:41	21.70			
15-Sep-11	09:20:41	21.70			
15-Sep-11	09:21:41	23.30			
15-Sep-11	09:22:41	21.70			
15-Sep-11	09:23:41	20.09			
15-Sep-11	09:24:41	20.09			
15-Sep-11	09:25:41	21.70			
15-Sep-11	09:26:41	21.70			
15-Sep-11	09:27:41	20.09			
15-Sep-11	09:28:41	21.70			
15-Sep-11	09:29:41	21.70			
15-Sep-11	09:30:41	21.70			
15-Sep-11	09:31:41	21.70			
15-Sep-11	09:32:41	23.30			

VMC3 PU Automatic Spray Booth

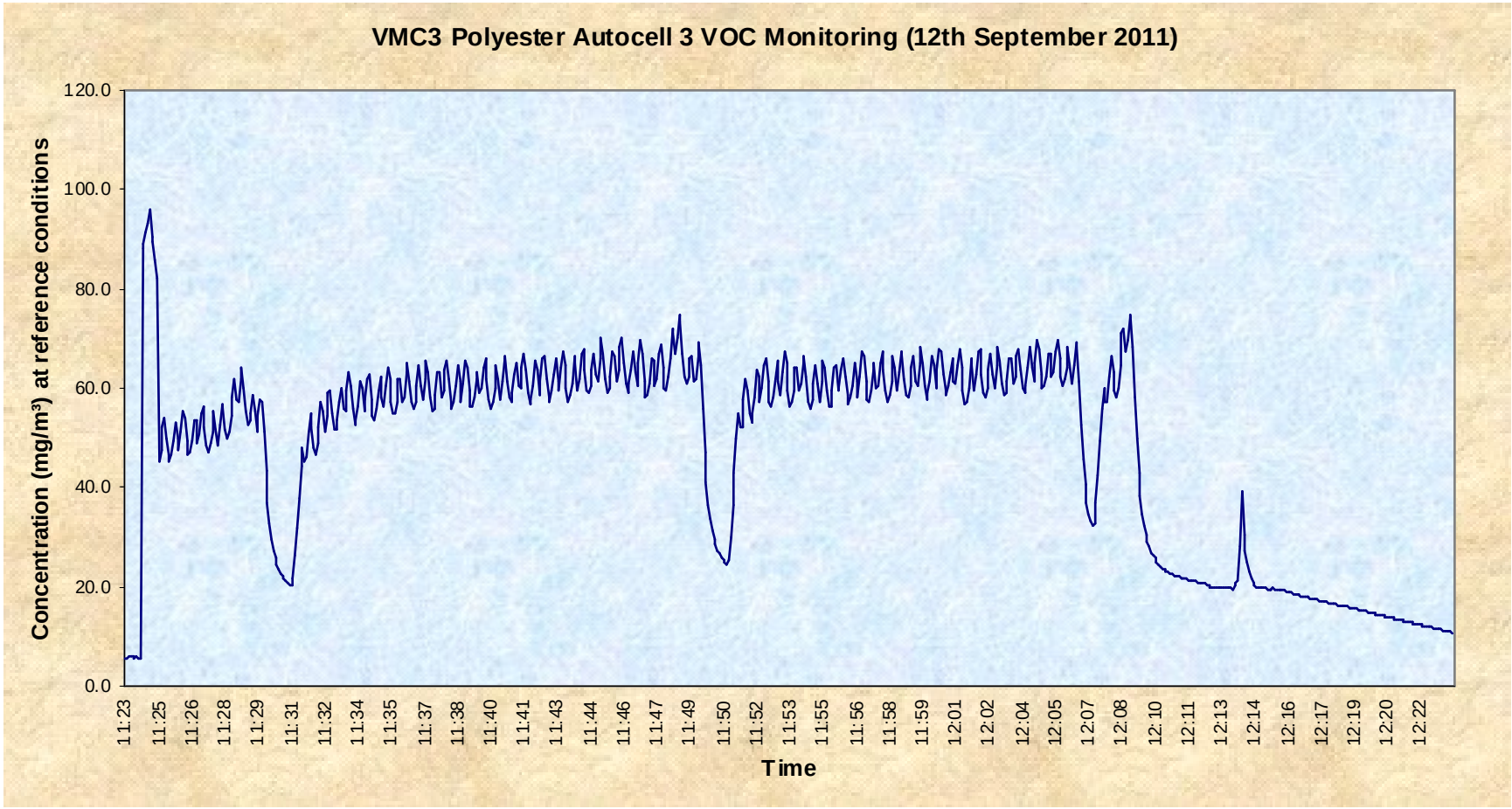
Date	Time	VOC mg/m3	Date	Time	VOC mg/m3
13-Sep-11	09:46:24	10.29	13-Sep-11	10:35:24	19.61
13-Sep-11	09:47:24	39.54	13-Sep-11	10:36:24	18.32
13-Sep-11	09:48:24	36.32	13-Sep-11	10:37:24	20.89
13-Sep-11	09:49:24	31.18	13-Sep-11	10:38:24	46.61
13-Sep-11	09:50:24	27.32	13-Sep-11	10:39:24	62.68
13-Sep-11	09:51:24	24.11	13-Sep-11	10:40:24	63.96
13-Sep-11	09:52:24	23.46	13-Sep-11	10:41:24	13.82
13-Sep-11	09:53:24	22.18	13-Sep-11	10:42:24	29.25
13-Sep-11	09:54:24	21.54	13-Sep-11	10:43:24	33.75
13-Sep-11	09:55:24	20.89	13-Sep-11	10:44:24	10.61
13-Sep-11	09:56:24	20.25	13-Sep-11	10:45:24	9.96
13-Sep-11	09:57:24	19.61			
13-Sep-11	09:58:24	19.61	**Average**		**20.4**
13-Sep-11	09:59:24	18.32			
13-Sep-11	10:00:24	18.32			
13-Sep-11	10:01:24	18.32			
13-Sep-11	10:02:24	17.04			
13-Sep-11	10:03:24	16.39			
13-Sep-11	10:04:24	16.39			
13-Sep-11	10:05:24	15.75			
13-Sep-11	10:06:24	15.75			
13-Sep-11	10:07:24	15.75			
13-Sep-11	10:08:24	15.11			
13-Sep-11	10:09:24	15.11			
13-Sep-11	10:10:24	14.46			
13-Sep-11	10:11:24	14.46			
13-Sep-11	10:12:24	14.46			
13-Sep-11	10:13:24	13.82			
13-Sep-11	10:14:24	13.82			
13-Sep-11	10:15:24	13.82			
13-Sep-11	10:16:24	13.82			
13-Sep-11	10:17:24	13.82			
13-Sep-11	10:18:24	13.18			
13-Sep-11	10:19:24	13.18			
13-Sep-11	10:20:24	13.18			
13-Sep-11	10:21:24	13.18			
13-Sep-11	10:22:24	13.18			
13-Sep-11	10:23:24	13.18			
13-Sep-11	10:24:24	13.18			
13-Sep-11	10:25:24	13.18			
13-Sep-11	10:26:24	13.18			
13-Sep-11	10:27:24	13.18			
13-Sep-11	10:28:24	13.18			
13-Sep-11	10:29:24	12.54			
13-Sep-11	10:30:24	13.18			
13-Sep-11	10:31:24	14.46			
13-Sep-11	10:32:24	14.46			
13-Sep-11	10:33:24	18.96			
13-Sep-11	10:34:24	20.89			



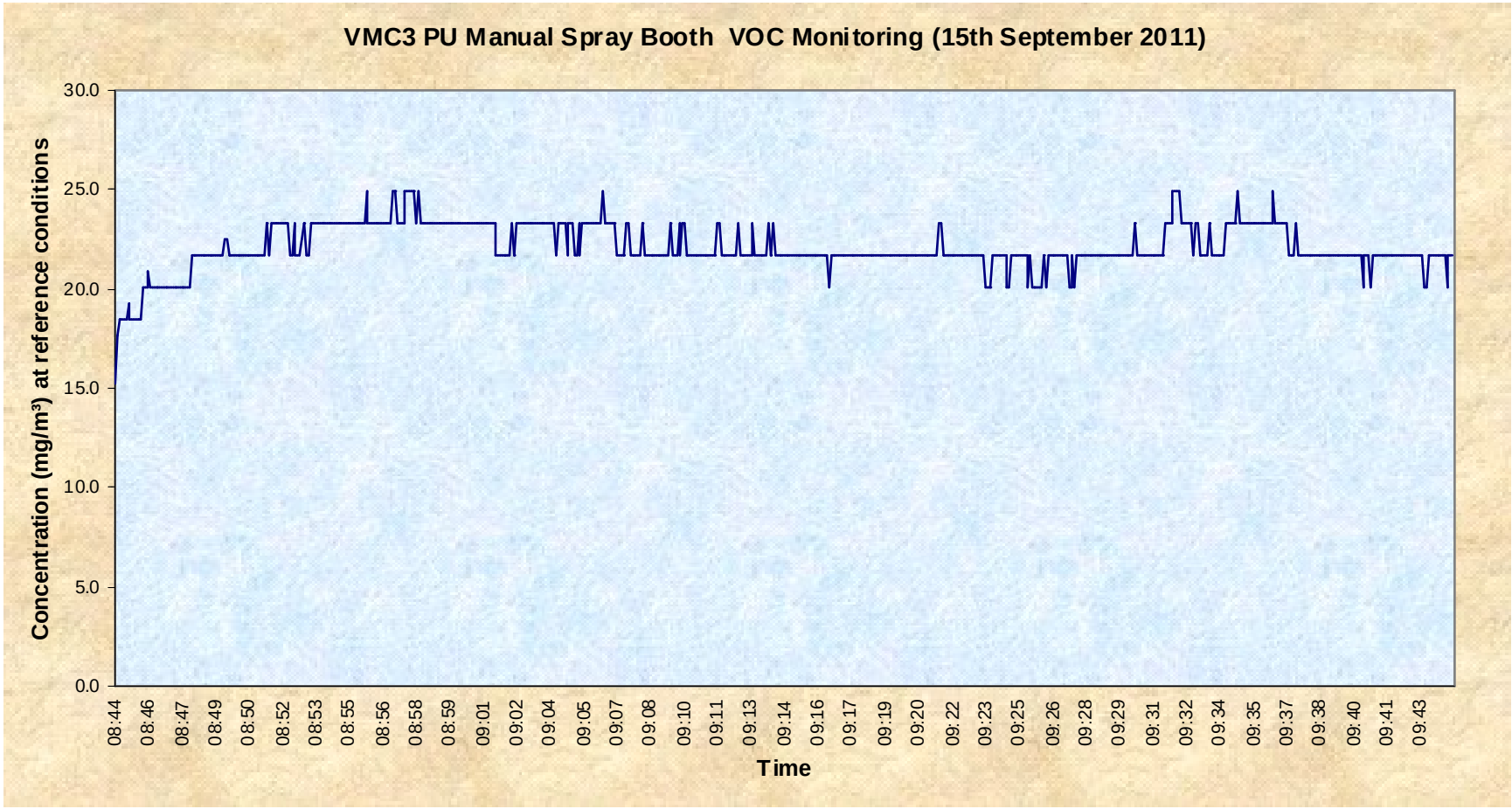
Average Run Time			Volatile Organic Compounds (ppm)			Volatile Organic Compounds (mg/m³)		
			Mean	Max	Min	Mean	Max	Min
8:28	to	8:58	37.63	59.00	12.55	60.48	94.82	20.17
8:58	to	9:28	9.10	43.45	4.95	14.62	69.83	7.96



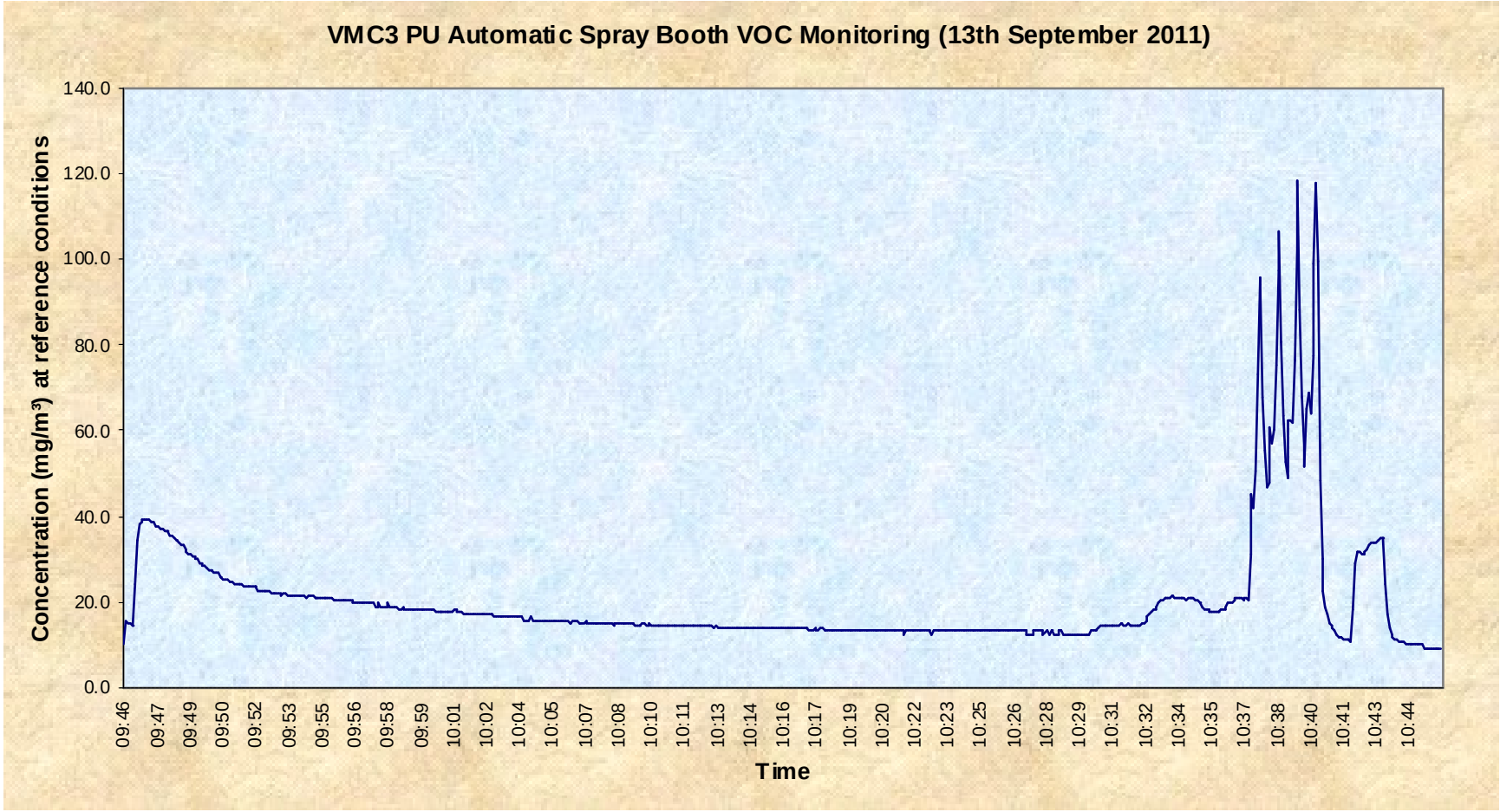
Average Run Time			Volatile Organic Compounds (ppm)			Volatile Organic Compounds (mg/m³)		
			Mean	Max	Min	Mean	Max	Min
12:23	to	12:53	32.66	48.46	2.78	52.48	77.89	4.46
12:53	to	13:23	27.22	51.03	6.56	43.74	82.01	10.54



Average Run Time			Volatile Organic Compounds (ppm)			Volatile Organic Compounds (mg/m³)		
			Mean	Max	Min	Mean	Max	Min
11:23	to	11:53	34.51	59.80	3.45	55.46	96.11	5.54
11:53	to	12:23	25.49	46.59	6.68	40.97	74.88	10.73



Average Run Time			Volatile Organic Compounds (ppm)			Volatile Organic Compounds (mg/m³)		
			Mean	Max	Min	Mean	Max	Min
8:44	to	9:14	13.88	15.50	9.50	22.30	24.91	15.27
9:14	to	9:44	13.61	15.50	12.50	21.88	24.91	20.09



Average Run Time			Volatile Organic Compounds (ppm)			Volatile Organic Compounds (mg/m³)		
			Mean	Max	Min	Mean	Max	Min
9:46	to	10:16	14.74	24.60	6.40	23.69	39.54	10.29
10:16	to	10:46	9.44	11.40	8.60	15.17	18.32	13.82

APPENDIX 3

Velocity raw information

Client	Lawrence Automotive
Site Address	Coventry
Job Number	P-RED11-087/EB/R1/Rev0
Date	13th September 2011
Operator(s)	Elena Berek & Tony Berek

Stack Reference		VMC3 Polyester Autocell 1			**Isokinetic Sample Positions (%) multiply by diameter to obtain sample points**		**Sampling Plane Diagram**	
					1	14.60		
Number of Stacks			1		**2**	85.40		
Stack Configuration			Round		**3**	N/A		
Dimensions (mtrs)			0.60		**4**	N/A		
Outlet Diameter (if applicable) (metres)					**5**	N/A		
Number of Sample Ports			2		**6**	N/A		
Number of Samples per Axis / Port			2		**7**	N/A		
Nozzle Diameter (mm)			8.0		**8**	N/A		
Nozzle Area (m²)			0.00005024		**Average Isokinetic Flow Rate (ltrs/min)**		**Axis 1**	**Axis 2**
Stack Area (m²)			0.283				27.58	26.13

Pitot Coefficient	0.85	**Pitot Calibration Due Date**			**March 2011**			**Atmos. Pressure (kPa)**
Position	**Distance**	**Axis 1**	**Temperature**	**Swirl Test**	**Axis 2**	**Temperature**	**Swirl Test**	100.5
No.	**(cms)**	**(pa)**	**(C)**	**Degree**	**(pa)**	**(C)**	**Degree**	**Static Pressure (pa)**
1	8.76	71	21.4	1.0	54	21.4	1.0	-29.0
2	51.24	66	21.4	1.0	69	21.4	1.0	**1 Axis** / **2 Axis**
3	N/A							**Velocity of flow (m/s)**
4	N/A							9.15 / 8.67
5	N/A							**Volume Flow Rate (m³/s)**
6	N/A							2.59 / 2.45
7	N/A							**Reduced Exit**
8	N/A							
Averages		69	21.4		62	21.4		N/A

Mean Flue Gas Temp (in K) Tp = ((Mean T1 + Mean T2)/2)+273)) =		294.40	
Range of gas temperature readings ± 5% (°C) = (0.95Tp-273) to (1.05Tp-273) =	6.68	to	36.12
Highest Velocity Reading (m/s) =		9.6	
Lowest Velocity Reading (m/s) =		8.1	
Ratio Highest/Lowest (Max permitted = 3:1)		1.18 : 1	

On site Checklist

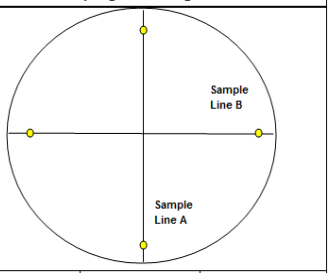
Range of Gas Temps		OK			Manometer Leak Check	OK	
Initial Leak Check	<0.2	Final leak check	<0.2		Pitot Leak Check	OK	
Acceptable Leak Check < 2% Vol (l/min)		0.55			Overall Isokinetic Ratio (%) (must be 95 to 115%)	**Run 1**	**Run 2**
Passed minimum Velocity requirements (>5pa)			YES			113.7	N/A
Negative Local Flow Present, YES or NO (Yes = Fail)			NO		Are there sufficient rails and kick board? (YES , NO or N/A)		YES
Is the Platform area greater than 5m²? (YES, NO or N/A)			YES		Is the area infront of the sample line the length of the probe + 1 metre? (YES or NO)		YES
Passed Highest to lowest Velocity (3:1)			YES				

Site Equipment Used

Pitot Reference	030605	Manometer Reference	RED 0132
Thermometer Reference	RED 0351 & 0352	Thermocouple Reference	RED 0344, 0273 & 0359
Balance Reference	N/A	Sampling Pump Reference	RED 0258
Tape Measure Reference	RED 0121	Barometer Reference	RED 0243

Client	Lawrence Automotive
Site Address	Coventry
Job Number	P-RED11-087/EB/R1/Rev0
Date	12th September 2011
Operator(s)	Elena Berek & Tony Berek

Stack Reference			VMC3 Polyester Autocell 2		**Isokinetic Sample Positions (%) multiply by diameter to obtain sample points**		**Sampling Plane Diagram**		
					1	14.60			
Number of Stacks			1		**2**	85.40			
Stack Configuration			Round		**3**	N/A			
Dimensions (mtrs)			0.60		**4**	N/A			
Outlet Diameter (if applicable) (metres)					**5**	N/A			
Number of Sample Ports			2		**6**	N/A			
Number of Samples per Axis / Port			2		**7**	N/A			
Nozzle Diameter (mm)			8.0		**8**	N/A			
Nozzle Area (m²)			0.00005024		**Average Isokinetic Flow Rate (ltrs/min)**			**Axis 1**	**Axis 2**
Stack Area (m²)			0.283					26.10	26.00



Pitot Coefficient	0.85	**Pitot Calibration Due Date**			**March 2011**			**Atmos. Pressure (kPa)**	
Position	**Distance**	**Axis 1**	**Temperature**	**Swirl Test**	**Axis 2**	**Temperature**	**Swirl Test**	99.5	
No.	**(cms)**	**(pa)**	**(C)**	**Degree**	**(pa)**	**(C)**	**Degree**	**Static Pressure (pa)**	
1	8.76	58	20.2	1.0	68	20.2	1.0	-30.0	
2	51.24	64	20.2	1.0	53	20.2	1.0	**1 Axis**	**2 Axis**
3	N/A							**Velocity of flow (m/s)**	
4	N/A							8.66	8.62
5	N/A							**Volume Flow Rate (m³/s)**	
6	N/A							2.45	2.44
7	N/A							**Reduced Exit**	
8	N/A								
Averages		61	20.2		61	20.2		N/A	

Mean Flue Gas Temp (in K) Tp = ((Mean T1 + Mean T2)/2)+273)) =		293.20	
Range of gas temperature readings ± 5% (°C) = (0.95Tp-273) to (1.05Tp-273) =	5.54	to	34.86
Highest Velocity Reading (m/s) =		9.4	
Lowest Velocity Reading (m/s) =		8.0	
Ratio Highest/Lowest (Max permitted = 3:1)		1.17 : 1	

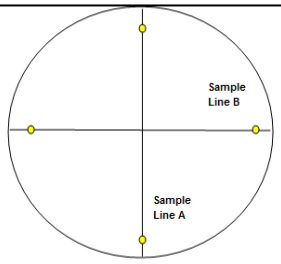
On site Checklist

Range of Gas Temps		OK		Manometer Leak Check	OK	
Initial Leak Check	<0.2	Final leak check	<0.2	Pitot Leak Check	OK	
Acceptable Leak Check < 2% Vol (l/min)		0.52		Overall Isokinetic Ratio (%) (must be 95 to 115%)	**Run 1**	**Run 2**
Passed minimum Velocity requirements (>5pa)		YES			113.5	N/A
Negative Local Flow Present, YES or NO (Yes = Fail)		NO		Are there sufficient rails and kick board? (YES , NO or N/A)		YES
Is the Platform area greater than 5m²? (YES, NO or N/A)		YES		Is the area infront of the sample line the length of the probe + 1 metre? (YES or NO)		YES
Passed Highest to lowest Velocity (3:1)		YES				

Site Equipment Used

Pitot Reference	030605	Manometer Reference	RED 0132
Thermometer Reference	RED 0351 & 0352	Thermocouple Reference	RED 0344, 0273 & 0359
Balance Reference	N/A	Sampling Pump Reference	RED 0258
Tape Measure Reference	RED 0121	Barometer Reference	RED 0243

Client	Lawrence Automotive
Site Address	Coventry
Job Number	P-RED11-087/EB/R1/Rev0
Date	12th September 2011
Operator(s)	Elena Berek & Tony Berek

Stack Reference		VMC3 Polyester Autocell 3			**Isokinetic Sample Positions (%) multiply by diameter to obtain sample points**		**Sampling Plane Diagram**			
					1	14.60				
Number of Stacks		1			**2**	85.40				
Stack Configuration		Round			**3**	N/A				
Dimensions (mtrs)		0.60			**4**	N/A				
Outlet Diameter (if applicable) (metres)					**5**	N/A				
Number of Sample Ports		2			**6**	N/A				
Number of Samples per Axis / Port		2			**7**	N/A				
Nozzle Diameter (mm)		8.0			**8**	N/A				
Nozzle Area (m²)		0.00005024			**Average Isokinetic Flow Rate (ltrs/min)**			**Axis 1**	**Axis 2**	
Stack Area (m²)		0.283						23.48	20.63	

Pitot Coefficient	**0.84**	**Pitot Calibration Due Date**			**March 2011**			**Atmos. Pressure (kPa)**	
Position	**Distance**	**Axis 1**	**Temperature**	**Swirl Test**	**Axis 2**	**Temperature**	**Swirl Test**	99.5	
No.	**(cms)**	**(pa)**	**(C)**	**Degree**	**(pa)**	**(C)**	**Degree**	**Static Pressure (pa)**	
1	8.76	56	20.4	1.0	35	20.4	1.0	-37.0	
2	51.24	45	20.4	1.0	43	20.4	1.0	**1 Axis**	**2 Axis**
3	N/A							**Velocity of flow (m/s)**	
4	N/A							7.79	6.84
5	N/A							**Volume Flow Rate (m³/s)**	
6	N/A							2.20	1.94
7	N/A							**Reduced Exit**	
8	N/A								
Averages		51	20.4		39	20.4		N/A	

Mean Flue Gas Temp (in K) Tp = ((Mean T1 + Mean T2)/2)+273)) =		293.40	
Range of gas temperature readings ± 5% (°C) = (0.95Tp-273) to (1.05Tp-273) =	5.73	to	35.07
Highest Velocity Reading (m/s) =		8.4	
Lowest Velocity Reading (m/s) =		6.5	
Ratio Highest/Lowest (Max permitted = 3:1)		1.30 : 1	

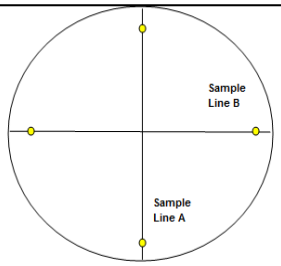
On site Checklist

Range of Gas Temps		OK			Manometer Leak Check	OK	
Initial Leak Check	<0.2	Final leak check	<0.2		Pitot Leak Check	OK	
Acceptable Leak Check < 2% Vol (l/min)		0.47			Overall Isokinetic Ratio (%) (must be 95 to 115%)	**Run 1**	**Run 2**
Passed minimum Velocity requirements (>5pa)			YES			109.7	N/A
Negative Local Flow Present, YES or NO (Yes = Fail)			NO		Are there sufficient rails and kick board? (YES , NO or N/A)		YES
Is the Platform area greater than 5m²? (YES, NO or N/A)			YES		Is the area infront of the sample line the length of the probe + 1 metre? (YES or NO)		YES
Passed Highest to lowest Velocity (3:1)			YES				

Site Equipment Used

Pitot Reference	030605	Manometer Reference	RED 0132
Thermometer Reference	RED 0351 & 0352	Thermocouple Reference	RED 0344, 0273 & 0359
Balance Reference	N/A	Sampling Pump Reference	RED 0258
Tape Measure Reference	RED 0121	Barometer Reference	RED 0243

Client	Lawrence Automotive
Site Address	Coventry
Job Number	P-RED11-087/EB/R1/Rev0
Date	13th September 2011
Operator(s)	Elena Berek & Tony Berek

Stack Reference		VMC3 Automatic PU Spray Booth			**Isokinetic Sample Positions (%) multiply by diameter to obtain sample points**		**Sampling Plane Diagram**		
					1	14.60			
Number of Stacks		1			**2**	85.40			
Stack Configuration		Round			**3**	N/A			
Dimensions (mtrs)		0.65			**4**	N/A			
Outlet Diameter (if applicable) (metres)					**5**	N/A			
Number of Sample Ports		2			**6**	N/A			
Number of Samples per Axis / Port		2			**7**	N/A			
Nozzle Diameter (mm)		6.0			**8**	N/A			
Nozzle Area (m²)		0.00002826			**Average Isokinetic Flow Rate (ltrs/min)**			**Axis 1**	**Axis 2**
Stack Area (m²)		0.332						23.63	22.92

Pitot Coefficient	0.85	**Pitot Calibration Due Date**			**March 2011**			**Atmos. Pressure (kPa)**	
Position	**Distance**	**Axis 1**	**Temperature**	**Swirl Test**	**Axis 2**	**Temperature**	**Swirl Test**	100.5	
No.	**(cms)**	**(pa)**	**(C)**	**Degree**	**(pa)**	**(C)**	**Degree**	**Static Pressure (pa)**	
1	9.49	157	18.4	1.0	148	18.4	1.0	57.0	
2	55.51	164	18.4	1.0	154	18.4	1.0	**1 Axis**	**2 Axis**
3	N/A							**Velocity of flow (m/s)**	
4	N/A							13.93	13.51
5	N/A							**Volume Flow Rate (m³/s)**	
6	N/A							4.62	4.48
7	N/A							**Reduced Exit**	
8	N/A								
Averages		161	18.4		151	18.4		N/A	

Mean Flue Gas Temp (in K) Tp = ((Mean T1 + Mean T2)/2)+273)) =		291.40	
Range of gas temperature readings ± 5% (°C) = (0.95Tp-273) to (1.05Tp-273) =	3.83	to	32.97
Highest Velocity Reading (m/s) =		14.5	
Lowest Velocity Reading (m/s) =		13.3	
Ratio Highest/Lowest (Max permitted = 3:1)		1.09 : 1	

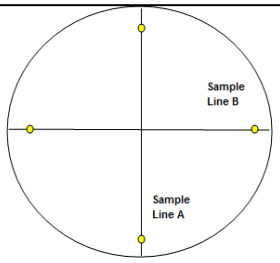
On site Checklist

Range of Gas Temps		OK			Manometer Leak Check	OK	
Initial Leak Check	<0.2	Final leak check	<0.2		Pitot Leak Check	OK	
Acceptable Leak Check < 2% Vol (l/min)		0.47			Overall Isokinetic Ratio (%) (must be 95 to 115%)	**Run 1**	**Run 2**
Passed minimum Velocity requirements (>5pa)			YES			**107.6**	**N/A**
Negative Local Flow Present, YES or NO (Yes = Fail)			NO		Are there sufficient rails and kick board? (YES , NO or N/A)		YES
Is the Platform area greater than 5m²? (YES, NO or N/A)			YES		Is the area infront of the sample line the length of the probe + 1 metre? (YES or NO)		YES
Passed Highest to lowest Velocity (3:1)			YES				

Site Equipment Used

Pitot Reference	030605	Manometer Reference	RED 0132
Thermometer Reference	RED 0351 & 0352	Thermocouple Reference	RED 0344, 0273 & 0359
Balance Reference	N/A	Sampling Pump Reference	RED 0258
Tape Measure Reference	RED 0121	Barometer Reference	RED 0243

Client	Lawrence Automotive
Site Address	Coventry
Job Number	P-RED11-087/EB/R1/Rev0
Date	15th September 2011
Operator(s)	Elena Berek & Tony Berek

Stack Reference		VMC3 Manual PU Spray Booth			**Isokinetic Sample Positions (%) multiply by diameter to obtain sample points**		**Sampling Plane Diagram**			
					1	14.60				
Number of Stacks		1			**2**	85.40				
Stack Configuration		Round			**3**	N/A				
Dimensions (mtrs)		0.80			**4**	N/A				
Outlet Diameter (if applicable) (metres)					**5**	N/A				
Number of Sample Ports		2			**6**	N/A				
Number of Samples per Axis / Port		2			**7**	N/A				
Nozzle Diameter (mm)		8.0			**8**	N/A				
Nozzle Area (m²)		0.00005024			**Average Isokinetic Flow Rate (ltrs/min)**			**Axis 1**	**Axis 2**	
Stack Area (m²)		0.503						27.44	29.47	

Pitot Coefficient	0.85	**Pitot Calibration Due Date**			**March 2011**			**Atmos. Pressure (kPa)**	
Position	**Distance**	**Axis 1**	**Temperature**	**Swirl Test**	**Axis 2**	**Temperature**	**Swirl Test**	101.6	
No.	**(cms)**	**(pa)**	**(C)**	**Degree**	**(pa)**	**(C)**	**Degree**	**Static Pressure (pa)**	
1	11.68	71	21.6	1.0	84	21.6	1.0	-27.0	
2	68.32	66	21.6	1.0	74	21.6	1.0	**1 Axis**	**2 Axis**
3	N/A							**Velocity of flow (m/s)**	
4	N/A							9.10	9.78
5	N/A							**Volume Flow Rate (m³/s)**	
6	N/A							4.58	4.91
7	N/A							**Reduced Exit**	
8	N/A								
Averages		69	21.6		79	21.6		N/A	

Mean Flue Gas Temp (in K) Tp = ((Mean T1 + Mean T2)/2)+273)) =		294.60	
Range of gas temperature readings ± 5% (°C) = (0.95Tp-273) to (1.05Tp-273) =	6.87	to	36.33
Highest Velocity Reading (m/s) =		10.4	
Lowest Velocity Reading (m/s) =		8.9	
Ratio Highest/Lowest (Max permitted = 3:1)		1.16 : 1	

On site Checklist

Range of Gas Temps		OK		Manometer Leak Check		OK	
Initial Leak Check	<0.2	Final leak check	<0.2	Pitot Leak Check		OK	
Acceptable Leak Check < 2% Vol (l/min)		0.55		Overall Isokinetic Ratio (%) (must be 95 to 115%)		**Run 1**	**Run 2**
Passed minimum Velocity requirements (>5pa)		YES				114.7	N/A
Negative Local Flow Present, YES or NO (Yes = Fail)		NO		Are there sufficient rails and kick board? (YES , NO or N/A)			YES
Is the Platform area greater than 5m²? (YES, NO or N/A)		YES		Is the area infront of the sample line the length of the probe + 1 metre? (YES or NO)			YES
Passed Highest to lowest Velocity (3:1)		YES					

Site Equipment Used

Pitot Reference	030605	Manometer Reference	RED 0132
Thermometer Reference	RED 0351 & 0352	Thermocouple Reference	RED 0344, 0273 & 0359
Balance Reference	N/A	Sampling Pump Reference	RED 0258
Tape Measure Reference	RED 0121	Barometer Reference	RED 0243

APPENDIX 4

Isocyanate Results

Client	**Lawrence Automotive**
Site Address	**Browns Lane, Coventry**
Job Number	**P-RED11-087/EB/R1/Rev0**
Date	**12th to 15th September 2011**
Operator(s)	**Tony Berek & Vicki Gavin**

Pump Reference	Sample ID	Location / Process / Operator	Pump Flow (mls/min)		Sample Duration (mins)		Total Volume (l)	Mass of Analyte (ug)	Concentration (mg/m³)
RED 0258	11/087/21	VMC 3 POLYESTER AUTOMATIC SPRAY CELL 3 12th September 2011	Initial	111080.00	Start	12:25	1511	<0.2	<0.0001
			Final	112591.00	Finish	13:25			
			Average	1511.00	Total	60			
RED 0258	11/087/22	VMC 3 POLYESTER AUTOMATIC SPRAY CELL 2 12th September 2011	Initial	114402.00	Start	14:45	1777	<0.2	<0.0001
			Final	116179.00	Finish	15:45			
			Average	1777.00	Total	60			
RED 0258	11/087/23	VMC 3 POLYESTER AUTOMATIC SPRAY CELL 1 13th September 2011	Initial	118068.00	Start	9:50	1687	<0.2	<0.0001
			Final	119755.00	Finish	10:50			
			Average	1687.00	Total	60			
RED 0258	11/087/24	P U AUTOMATIC SPRAY CELL 13th September 2011	Initial	121399.00	Start	12:15	1634	<0.2	<0.0001
			Final	123033.00	Finish	13:15			
			Average	1634.00	Total	60			
RED 0258	11/087/25	VMC 3 PU MANUAL SPRAY 1 15th September 2011	Initial	125034.00	Start	10:00	1812	<0.2	<0.0001
			Final	126846.00	Finish	11:00			
			Average	1812.00	Total	60			
N/A	11/087/26	Blank	Initial	n/a	Start	n/a	n/a	<0.2	<0.0001
			Final	n/a	Finish	n/a			
			Average	n/a	Total	n/a			