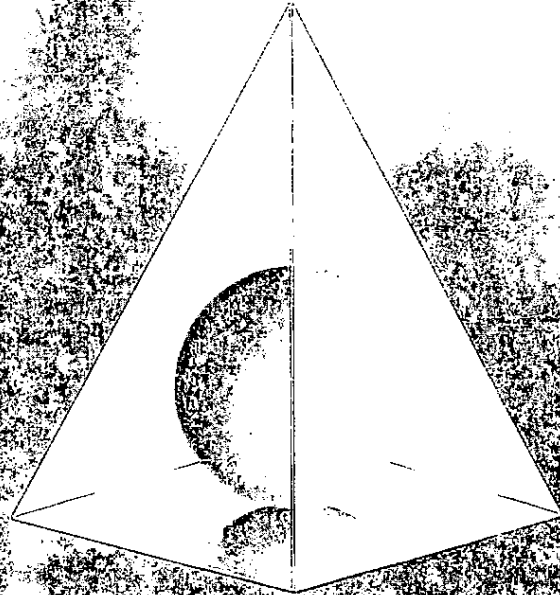


MAY 2004

Rev 1



OEHI  
EQUIPMENT LTD

Understanding

**MEASUREMENT OF ENVIRONMENTAL EMISSIONS**  
**FROM**  
**METAL COATING OPERATIONS**  
**at**

**LONDON TAXIS INTERNATIONAL**  
**HOLYHEAD ROAD**  
**COVENTRY**  
**WARWICKSHIRE**  
**CV5 8JJ**

<b>REPORT NO:</b>	OEH/32500/STAK/SL42	<b>CLIENT REF:</b>	Amanda Richards
<b>DATE OF VISIT:</b>	4 May, 2004	<b>CONTACT ON SITE:</b>	Chris Cuffin
<b>DATE OF REPORT:</b>	19 May, 2004	<b>DISK REFERENCE:</b>	OEH 32500 CS F

DATA PROTECTION ACT REGISTRATION NO: B0479 03 4

***CONFIDENTIALITY UNDERTAKING***

*We undertake that we will not knowingly make use or disclose any confidential information or photographs relating to your business which may have come to our knowledge or attention as a result of our visit on site or otherwise as a result of the work carried out by us in connection with the preparation of this report. If you have any queries or comments regarding this report, please contact the Customer Services, OEH Group Limited Tel: 0121 359 5361.*

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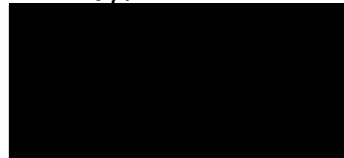
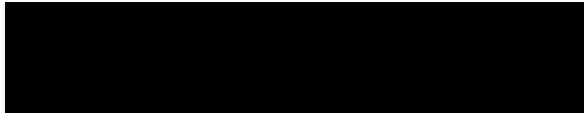
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## EXECUTIVE SUMMARY

<b>Date Of Test &amp; Test Areas</b>	Emissions sampling from the four stacks serving the main paint plant was conducted on 4 May 2004.
<b>Test Conditions</b>	The processes were being operated under normal conditions throughout the sampling period.
<b>Compliance</b>	<p>The emissions have been compared to the limits as set out in Process Guidance Note PG6/34(97) – Respraying of Road Vehicles.</p> <p>All average measured emission were below the limits as outlined in the above guidance note.</p>
<b>General Observations</b>	Two stacks serve application of water based coatings and two serve application of solvent based coatings.

Surveyed and reported by:

Verified by:



*J. L.* John Litterick *BSc (Hons)*  
Environmental Scientist

Andy Barrie *BSc (Hons)*  
Environmental Scientist

**for and on behalf of OEH Group Limited**

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*If you have any queries or comments regarding this report, please contact Customer Services, OEH Group Ltd. Tel: 0121 359 5361.*

## **1 INTRODUCTION**

### **1.1 Purpose of Survey**

The aim of the survey described in this report was to verify compliance with the requirements of the Process Authorisation, reference number 37, issued by Coventry City Council and with the relevant Process Guidance Note, PG6/34(97) – Respraying of Road Vehicles.

### **1.2 Terms of Reference**

London Taxis International, Holyhead Road, Coventry, Warwickshire, CV5 8JJ, has commissioned OEH Group Limited to carry out the work described in this report. Monitoring was carried out on 4 May 2004, by John Litterick, at the request of Chris Cuffin.

The work was carried out in accordance with OEH Proposal ref: SK-10795, dated 29 April 2004 and with the client's instructions.

OEH Group is accredited under ISO-9002 for the provision of health, safety and environmental consultancy services. The work described in this report was carried out in accord with our ISO-9000 Standard Operating Procedures and Level III: Consultancy Work Instructions.

The field sampling and interpretations made in this report are not covered by the scope of OEH's accreditation under UKAS.

### **1.3 Plant conditions**

Production schedules on the dates of the survey were described as normal. Thus, the data reported herein must be considered typical and representative of the environmental levels experienced during normal daily workloads on this site.

## **2 PROCESS DESCRIPTION**

LTI undertake the manufacture of traditional style London Taxis. The production facility utilises a large number of processes. This survey deals only with emissions from the main paint shop.

The main paint shop consists of two large booths, the first is for the application of water based basecoat and the second is for the application of solvent based clearcoat. Each of the two booths has two emissions stacks; therefore there are four stacks in total. The stacks have been assigned numbers 1 to 4 with 1 being closest to the roof edge.

The testing from each stack covers periods of spraying and periods in between spraying and as such is fully representative of the daily emissions from the site.

### 3 METHODS

#### 3.1 Stack Sampling

Handwritten notes: "Pitot + Thermocouple" and "2000"

##### 3.1.1 Stack Velocity & Temperature Measurements

Stack velocity was investigated using an ellipsoidal nosed pitot tube coupled to an electronic manometer. Temperature measurements were taken using a K-type thermocouple connected to an electronic thermometer.

The manometer and thermometer are subject to regular calibration by a UKAS accredited test house using NPL traceable standards.

Handwritten note: "checked + OK"

##### 3.1.2 Total Particulate Matter

Periodic extractive sampling for total particulate matter was conducted using a Stackmite 9096 sampling train. Duplicate samples were taken at each position. Within the limitations of the stack and field conditions, the sampling protocol was in accordance with the main procedural requirements of BS EN 13284-1:2002. The sampling train was set up and checked for leaks before commencement of the survey and between each sample. The Stackmite unit is calibrated annually and is traceable to NPL standards. Calibration dated February 2004.

##### 3.1.3 Volatile Organic Compounds

Handwritten notes: "VOCs" and "2"

Continuous extractive sampling for VOCs was conducted using a Research Engineers Flame Ionisation Detector. The instrument was calibrated on site using standard methane span gas traceable to an NPL standard. Results are expressed as methane equivalent values. The sampling protocol was in accordance with the main procedural requirements of BS EN 13526:2002.

Handwritten notes: "checked" with arrows pointing to the text above and "checked" with arrows pointing to the text below.

Continuous extractive sampling was backed up by periodic extractive sampling for vocs using a calibrated pump connected to charcoal adsorption tubes. The method is based on, and intended to satisfy the main procedural requirements of BS EN 13649:2002. The results of this tube sampling were used to provide a correction factor for the FID sampling.

##### 3.1.4 Isocyanates

Handwritten note: "checked"

Periodic extractive sampling for Isocyanates was conducted using a calibrated pump connected to an impinger sampling train containing a solution of 1-(2-methoxyphenyl)piperazine. The method is based on, and intended to satisfy the main procedural requirements of BS ISO 16702.

Handwritten notes: "checked" and "NPL"

3.2 Analysis

3.2.1 Techniques & Detection Limits

Analyte	Analysis Technique	Detection Limit	Analytical Precision, %	Method Reference
TPM	Gravimetric	20 µg	1	LSOP 202
Isocyanates	HPLC	0.02 µg NCO	10	LSOP 502
Continuous VOC	Flame Ionisation Detector	0.2 mg.m <sup>-3</sup> as carbon	5	BS EN 13526
Periodic VOC	Gas Chromatography	2 µg as carbon	5	Variation on LSOP 402

3.2.2 Accreditation

Service Category	ISO-9002	UKAS <sup>1</sup>
Consultancy	Yes	No
Analysis		
- Dusts (air filter samples); Lab Method LSOP 202.	Yes	Yes
- Solvents (B, T, X 111-T, TCE, PERC); Lab Method LSOP402, based on Various NIOSH	Yes	Yes
- Solvents (all other species); Based on Various NIOSH	Yes	No
- Isocyanates (impinger samples); Lab Method LSOP 502.	Yes	No
<sup>1</sup> UKAS lab number 1821		
Stack sampling team is a member of the Source Testing Association		

4 PRESENTATION OF RESULTS

The following table gives summary details of the mean emission concentrations measured.

Sampling Position	Mean Particulate Emission (mg.m <sup>-3</sup> )	Mean Isocyanate Emission (mg.m <sup>-3</sup> )	Mean VOC Emission (mgC.m <sup>-3</sup> )
Water Based Booth 1	4.8	n/a	<0.5* (13:40 – 14:40)
Water Based Booth 2	1.2	n/a	<0.5* (14:19 – 15:19)
Solvent Based Booth 3	6.0	<0.001 (10:16 – 11:18)	19.0
Solvent Based Booth 4	2.8	<0.001 (11:15 – 12:16)	13.3

Results reported at Standard Conditions of 273K and 101.3kPa, no correction for water vapour content.

\* The VOC levels in these stacks were below the analytical limit of detection and as such no profiling data is possible.

Appendix I lists in tabular form further details of the particulate results, including additional data from the pitot traverses, along with filter weight details and sampling parameters.

The recorded data for VOC concentrations is presented in both graphical and tabular form in Appendix II.

if not monitored in these booths.  
 should be 2min + 15 min.

**5 DISCUSSION**

The coating processes are covered by the Secretary of States Guidance Note, PG6/34(97) – Respraying of Road Vehicles, which gives the following limits

Parameter	Emissions Limit
Total Particulate Matter	10 mg.m <sup>-3</sup>
Isocyanates (expressed as total NCO group)	None Stated
Volatile Organic Compounds (as total carbon)	50 mg.m <sup>-3</sup>

**5.1 Volatile Organic Compounds**

*2 min mean sprayer baking  
15 min mean*

The average measured emissions from the water based booth stacks were less than the 0.5 mg.m<sup>-3</sup> analytical limit of detection and as such were well below the emissions limit. No profiling data is available as there were no measurable emissions.

The averages from solvent booth stacks 3 & 4 were well below the emissions limit at 19.0 & 13.3 mg.m<sup>-3</sup> respectively.

**5.2 Particulate Matter**

The average measured particulate emission concentrations from all four stacks were below the 10 mg.m<sup>-3</sup> emissions limit.

The highest average was from solvent booth 3, at 6.0 mg.m<sup>-3</sup>.

**5.3 Isocyanates**

Isocyanate emissions were less than the 0.001 mg.m<sup>-3</sup> analytical limit of detection. There is no limit in the guidance note for this parameter, and the levels were well below the 0.1 mg.m<sup>-3</sup> limit typically applied to other prescribed processes (for example PG6/23(97)). This parameter need not be measured in future visits.

**6 CONCLUSIONS**

From the data reported it can be seen that the processes demonstrate compliance with the emission limits set down in the relevant Process Guidance Notes under normal and typical workloads.

**7 APPENDICES**

Appendix I: Detailed Particulate & Flowrate Results Tables

Appendix II: VOC Profiling Data



**APPENDIX I**  
**DETAILED PARTICULATE & FLOWRATE RESULTS TABLES**





Plant Type	<b>Solvent Booth (No.3)</b>	Stack Area (m <sup>2</sup> )	1.440
Job Number	<b>OEH 32500</b>	Meter Temp (°C)	30
Client Name	<b>LTI</b>	Stack Diameter (cm)	Length 120
Date	<b>04-May-04</b>		Width 120
		Pitot Factor	1.00
		Pitot Factor (sqrt)	1.00
		Stack Pressure (Pa)	-10
		Ambient Pressure (kPa)	101.3
		Nozzle Size (mm)	6

**PITOT SURVEY**

Traverse Point	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Distance From Near Wall (D)	0.065	0.125	0.250	0.375	0.450	0.550	0.625	0.750	0.875	0.935
Pitot Reading (Pa)	25	20	22	14	11	10	14	19	22	30
Temperature (°C)	15	15	15	15	15	15	15	15	15	15
Duct Velocity (m/s)	6.4	5.7	6.0	4.8	4.2	4.0	4.8	5.6	6.0	7.0
Traverse Point	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Distance From Near Wall (D)	0.065	0.125	0.250	0.375	0.450	0.550	0.625	0.750	0.875	0.935
Pitot Reading (Pa)	25	15	11	9	5	11	19	30	35	40
Temperature (°C)	15	15	15	15	15	15	15	15	15	15
Duct Velocity (m/s)	6.4	4.9	4.2	3.8	2.9	4.2	5.6	7.0	7.6	8.1

**Absolute Mean Duct Velocity (m/s)** 5.5  
**Absolute Flow Rate (m<sup>3</sup>/hr)** 28310  
**Normalised Flow Rate (Nm<sup>3</sup>/hr)** 26833

**Sampling Run 1 Time: 10:12 - 10:42**

Sampling Point	A3	A8	B3	B8	Initial Meter Reading (l)	802532
Sampling Rate (l/min)	11.0	10.0	7.0	12.0	Final Meter Reading (l)	802821
Sampling Duration (mins)	7.5	7.5	7.5	7.5	Volume Sampled (l)	289
Filter N <sup>o</sup>	8647	8647	8647	8647	Isokineticity Error (%)	-3.7
Volume Sampled (m <sup>3</sup> )	Meter 0.289	Expected 0.300	(Maximum Allowed Error = 10%)			

Corrected Volume = 0.26 Nm<sup>3</sup> (at NTP)

**Sampling Run 2 Time: 10:43 - 11:13**

Sampling Point	A3	A8	B3	B8	Initial Meter Reading (l)	802850
Sampling Rate (l/min)	11.0	10.0	7.0	12.0	Final Meter Reading (l)	803159
Sampling Duration (mins)	7.5	7.5	7.5	7.5	Volume Sampled (l)	309
Filter N <sup>o</sup>	8648	8648	8648	8648	Isokineticity Error (%)	3.0
Volume Sampled (m <sup>3</sup> )	Meter 0.309	Expected 0.300	(Maximum Allowed Error = 10%)			

Corrected Volume = 0.28 Nm<sup>3</sup> (at NTP)

**FILTER WEIGHTS**

Test Number	Filter N <sup>o</sup>	Pre-Weight (mg)	Post-Weight (mg)	Acetone Rinse (mg)	Gain (mg)
1	8647	57.98	59.19	0.00	1.21
2	8648	57.64	59.71	0.00	2.07

**TEST RESULTS**

	Test 1	Test 2	Mean
Particulate Concentration(mg/Nm <sup>3</sup> )	4.6	7.4	6.0
Mass Emission (g/hr)	125	200	162

Plant Type	<b>Solvent Booth (No.4)</b>	Stack Area (m <sup>2</sup> )	1.440
Job Number	<b>OEH 32500</b>	Meter Temp (°C)	30
Client Name	<b>LTI</b>	Stack Diameter (cm)	Length 120
Date	<b>04-May-04</b>		Width 120
		Pitot Factor	1.00
		Pitot Factor (sqrt)	1.00
		Stack Pressure (Pa)	100
		Ambient Pressure (kPa)	101.3
		Nozzle Size (mm)	6

**PITOT SURVEY**

Traverse Point	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Distance From Near Wall (D)	0.065	0.125	0.250	0.375	0.450	0.550	0.625	0.750	0.875	0.935
Pitot Reading (Pa)	5	5	5	5	8	10	14	19	25	45
Temperature (°C)	21	21	21	21	21	21	21	21	21	21
Duct Velocity (m/s)	2.9	2.9	2.9	2.9	3.7	4.1	4.8	5.6	6.5	8.7
Traverse Point	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Distance From Near Wall (D)	0.065	0.125	0.250	0.375	0.450	0.550	0.625	0.750	0.875	0.935
Pitot Reading (Pa)	10	18	25	25	27	31	35	40	75	120
Temperature (°C)	21	21	21	21	21	21	21	21	21	21
Duct Velocity (m/s)	4.1	5.5	6.5	6.5	6.7	7.2	7.6	8.2	11.2	14.1

**Absolute Mean Duct Velocity (m/s)** 6.1  
**Absolute Flow Rate (m<sup>3</sup>/hr)** 31715  
**Normalised Flow Rate (Nm<sup>3</sup>/hr)** 29479

**Sampling Run 1 Time: 11:15 - 11:45**

Sampling Point	A3	A8	B3	B8	Initial Meter Reading (l)	803180
Sampling Rate (l/min)	3.5	6.5	7.5	9.5	Final Meter Reading (l)	803391
Sampling Duration (mins)	7.5	7.5	7.5	7.5	Volume Sampled (l)	211
Filter N <sup>o</sup>	8649	8649	8649	8649	Isokineticity Error (%)	4.2
Volume Sampled (m <sup>3</sup> )	Meter 0.211	Expected 0.203	(Maximum Allowed Error = 10%)			
Corrected Volume =	0.19 Nm <sup>3</sup> (at NTP)					

**Sampling Run 2 Time: 11:46 - 12:16**

Sampling Point	A3	A8	B3	B8	Initial Meter Reading (l)	803400
Sampling Rate (l/min)	3.5	6.5	7.5	9.5	Final Meter Reading (l)	803597
Sampling Duration (mins)	7.5	7.5	7.5	7.5	Volume Sampled (l)	197
Filter N <sup>o</sup>	8650	8650	8650	8650	Isokineticity Error (%)	-2.7
Volume Sampled (m <sup>3</sup> )	Meter 0.197	Expected 0.203	(Maximum Allowed Error = 10%)			
Corrected Volume =	0.18 Nm <sup>3</sup> (at NTP)					

**FILTER WEIGHTS**

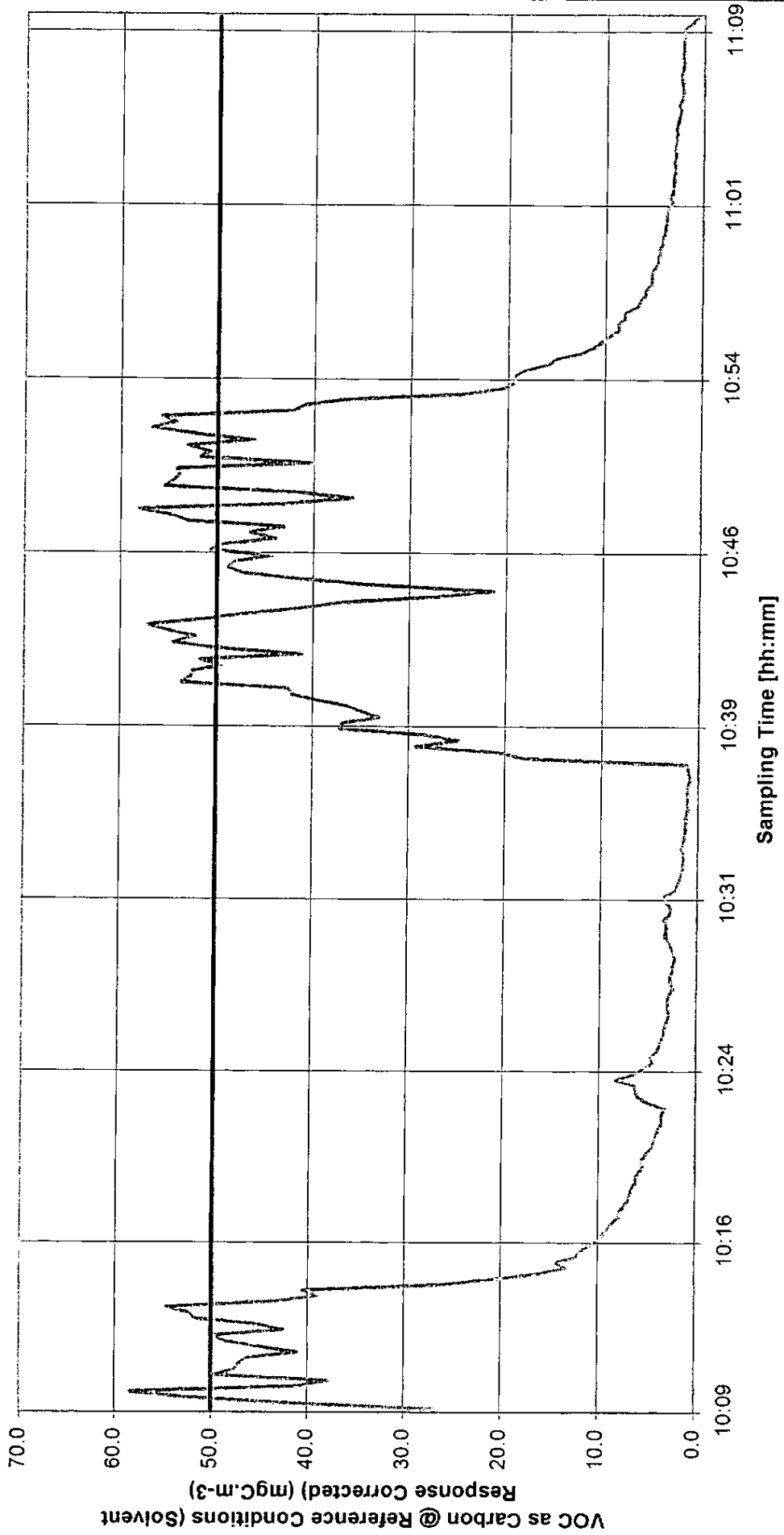
Test Number	Filter N <sup>o</sup>	Pre-Weight (mg)	Post-Weight (mg)	Acetone Rinse (mg)	Gain (mg)
1	8649	56.82	57.34	0.00	0.52
2	8650	58.82	59.32	0.00	0.50

**TEST RESULTS**

	Test 1	Test 2	Mean
Particulate Concentration(mg/Nm <sup>3</sup> )	2.7	2.8	2.8
Mass Emission (g/hr)	81	83	82

**APPENDIX II  
VOC PROFILING DATA**

VOC Profiling Data - London Taxis International  
Solvent Based Spray Booth (No.3) - 04/05/04



--- Emission Concentration

— Emission Limit

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No3)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6591</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
10:09:00	10.2	15	26.84
10:09:15	15.9	15	41.75
10:09:30	19.8	15	52.19
10:09:45	22.2	15	58.37
10:10:00	15.6	15	41.09
10:10:15	14.3	15	37.71
10:10:30	18.9	15	49.65
10:10:45	18.0	15	47.43
10:11:00	17.9	15	47.10
10:11:15	17.6	15	46.20
10:11:30	15.6	15	40.92
10:11:45	17.1	15	44.96
10:12:00	18.4	15	48.50
10:12:15	19.0	15	49.89
10:12:30	16.1	15	42.40
10:12:45	17.1	15	45.04
10:13:00	19.6	15	51.55
10:13:15	19.8	15	52.12
10:13:30	20.8	15	54.59
10:13:45	16.5	15	43.30
10:14:00	14.8	15	38.95
10:14:15	15.4	15	40.51
10:14:30	10.0	15	26.27
10:14:45	8.0	15	21.00
10:15:00	6.1	15	16.05
10:15:15	5.0	15	13.26
10:15:30	5.4	15	14.17
10:15:45	4.6	15	12.10
10:16:00	4.4	15	11.70
10:16:15	4.0	15	10.63
10:16:30	3.7	15	9.80
10:16:45	3.6	15	9.39
10:17:00	3.4	15	8.89
10:17:15	3.2	15	8.49
10:17:30	2.9	15	7.73
10:17:45	2.9	15	7.73
10:18:00	2.8	15	7.25
10:18:15	2.6	15	6.83
10:18:30	2.5	15	6.66
10:18:45	2.5	15	6.51
10:19:00	2.3	15	6.18
10:19:15	2.3	15	6.09
10:19:30	2.2	15	5.76
10:19:45	2.0	15	5.35



<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No3)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6591</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
10:20:00	2.1	15	5.52
10:20:15	1.9	15	5.11
10:20:30	1.7	15	4.52
10:20:45	1.7	15	4.37
10:21:00	1.6	15	4.11
10:21:15	1.5	15	3.95
10:21:30	1.4	15	3.62
10:21:45	1.3	15	3.45
10:22:00	1.3	15	3.45
10:22:15	1.2	15	3.21
10:22:30	1.9	15	5.02
10:22:45	2.3	15	5.92
10:23:00	2.4	15	6.25
10:23:15	2.4	15	6.35
10:23:30	3.1	15	8.23
10:23:45	2.4	15	6.35
10:24:00	2.0	15	5.35
10:24:15	1.7	15	4.52
10:24:30	1.8	15	4.69
10:24:45	1.5	15	4.04
10:25:00	1.4	15	3.78
10:25:15	1.3	15	3.54
10:25:30	1.3	15	3.30
10:25:45	1.3	15	3.30
10:26:00	1.2	15	3.21
10:26:15	1.1	15	2.88
10:26:30	1.1	15	2.97
10:26:45	1.1	15	2.97
10:27:00	1.1	15	2.97
10:27:15	1.1	15	2.80
10:27:30	0.9	15	2.38
10:27:45	1.0	15	2.71
10:28:00	1.1	15	2.80
10:28:15	0.9	15	2.47
10:28:30	0.9	15	2.47
10:28:45	0.9	15	2.31
10:29:00	0.9	15	2.38
10:29:15	1.0	15	2.64
10:29:30	1.1	15	2.88
10:29:45	1.3	15	3.30
10:30:00	1.2	15	3.21
10:30:15	1.2	15	3.13
10:30:30	1.3	15	3.38
10:30:45	1.1	15	2.88

VOC Emission Data

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No3)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6591</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
10:31:00	1.0	15	2.71
10:31:15	1.2	15	3.13
10:31:30	1.3	15	3.38
10:31:45	0.9	15	2.31
10:32:00	0.8	15	2.06
10:32:15	0.7	15	1.81
10:32:30	0.6	15	1.64
10:32:45	0.6	15	1.48
10:33:00	0.6	15	1.48
10:33:15	0.5	15	1.40
10:33:30	0.6	15	1.57
10:33:45	0.6	15	1.57
10:34:00	0.5	15	1.40
10:34:15	0.5	15	1.31
10:34:30	0.5	15	1.24
10:34:45	0.5	15	1.24
10:35:00	0.5	15	1.24
10:35:15	0.4	15	1.07
10:35:30	0.4	15	0.99
10:35:45	0.4	15	0.99
10:36:00	0.4	15	1.07
10:36:15	0.4	15	1.07
10:36:30	0.3	15	0.90
10:36:45	0.3	15	0.83
10:37:00	0.4	15	1.07
10:37:15	0.4	15	1.15
10:37:30	6.8	15	17.86
10:37:45	7.8	15	20.50
10:38:00	11.1	15	29.15
10:38:15	9.4	15	24.70
10:38:30	10.7	15	28.25
10:38:45	14.1	15	37.14
10:39:00	14.0	15	36.81
10:39:15	12.5	15	32.86
10:39:30	13.2	15	34.74
10:39:45	13.8	15	36.31
10:40:00	15.0	15	39.35
10:40:15	16.0	15	42.07
10:40:30	16.2	15	42.56
10:40:45	20.4	15	53.60
10:41:00	20.0	15	52.62
10:41:15	19.9	15	52.45
10:41:30	18.8	15	49.41
10:41:45	19.6	15	51.62

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No3)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6591</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
10:42:00	15.6	15	41.09
10:42:15	19.0	15	49.89
10:42:30	20.7	15	54.50
10:42:45	19.8	15	52.12
10:43:00	20.9	15	55.00
10:43:15	21.7	15	57.06
10:43:30	19.5	15	51.21
10:43:45	17.7	15	46.68
10:44:00	15.6	15	41.00
10:44:15	14.0	15	36.72
10:44:30	10.4	15	27.25
10:44:45	8.0	15	21.16
10:45:00	12.9	15	34.00
10:45:15	15.7	15	41.33
10:45:30	17.9	15	47.18
10:45:45	18.6	15	48.82
10:46:00	18.3	15	48.00
10:46:15	16.8	15	44.13
10:46:30	19.3	15	50.64
10:46:45	18.8	15	49.32
10:47:00	16.7	15	43.89
10:47:15	17.7	15	46.51
10:47:30	16.3	15	42.90
10:47:45	20.2	15	53.02
10:48:00	20.8	15	54.67
10:48:15	22.1	15	58.04
10:48:30	16.2	15	42.73
10:48:45	13.7	15	35.90
10:49:00	15.9	15	41.75
10:49:15	21.1	15	55.40
10:49:30	20.7	15	54.43
10:49:45	20.5	15	53.93
10:50:00	20.6	15	54.17
10:50:15	15.3	15	40.18
10:50:30	19.7	15	51.71
10:50:45	19.3	15	50.72
10:51:00	20.2	15	53.02
10:51:15	17.6	15	46.20
10:51:30	19.8	15	51.95
10:51:45	21.6	15	56.73
10:52:00	20.6	15	54.17
10:52:15	21.2	15	55.74
10:52:30	16.0	15	42.07
10:52:45	15.6	15	41.00

VOC Emission Data

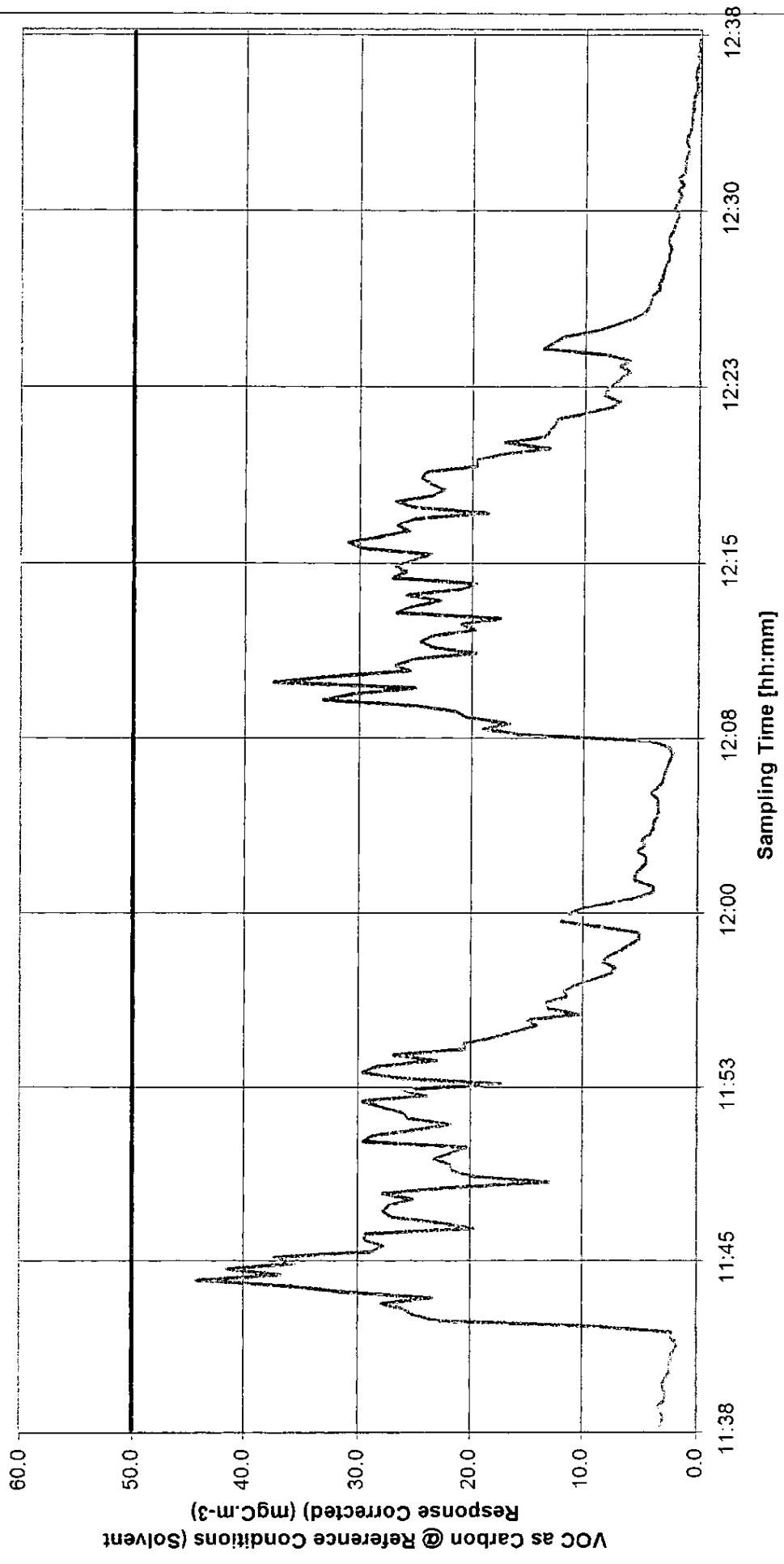
<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No3)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6591</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
10:53:00	13.9	15	36.64
10:53:15	9.3	15	24.45
10:53:30	7.7	15	20.26
10:53:45	7.3	15	19.26
10:54:00	7.3	15	19.19
10:54:15	7.0	15	18.28
10:54:30	6.0	15	15.81
10:54:45	5.7	15	14.98
10:55:00	4.7	15	12.43
10:55:15	4.2	15	11.03
10:55:30	3.9	15	10.29
10:55:45	3.6	15	9.56
10:56:00	3.3	15	8.56
10:56:15	3.3	15	8.65
10:56:30	3.0	15	7.90
10:56:45	3.0	15	7.90
10:57:00	2.5	15	6.66
10:57:15	2.4	15	6.42
10:57:30	2.3	15	5.92
10:57:45	2.2	15	5.85
10:58:00	2.0	15	5.28
10:58:15	2.0	15	5.28
10:58:30	2.0	15	5.18
10:58:45	1.8	15	4.85
10:59:00	1.8	15	4.61
10:59:15	1.7	15	4.52
10:59:30	1.7	15	4.45
10:59:45	1.6	15	4.11
11:00:00	1.6	15	4.11
11:00:15	1.5	15	3.87
11:00:30	1.5	15	3.87
11:00:45	1.4	15	3.71
11:01:00	1.4	15	3.71
11:01:15	1.4	15	3.62
11:01:30	1.2	15	3.21
11:01:45	1.3	15	3.38
11:02:00	1.2	15	3.13
11:02:15	1.2	15	3.13
11:02:30	1.2	15	3.04
11:02:45	1.2	15	3.04
11:03:00	1.1	15	2.97
11:03:15	1.2	15	3.04
11:03:30	1.1	15	2.88
11:03:45	1.2	15	3.04

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No3)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6591</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
11:04:00	1.1	15	2.88
11:04:15	1.1	15	2.80
11:04:30	1.1	15	2.88
11:04:45	1.1	15	2.80
11:05:00	1.0	15	2.64
11:05:15	1.0	15	2.55
11:05:30	0.9	15	2.38
11:05:45	1.0	15	2.55
11:06:00	0.8	15	2.22
11:06:15	0.8	15	2.14
11:06:30	0.8	15	2.22
11:06:45	0.9	15	2.31
11:07:00	0.9	15	2.38
11:07:15	0.8	15	2.22
11:07:30	0.8	15	2.06
11:07:45	0.8	15	2.14
11:08:00	0.8	15	2.14
11:08:15	0.8	15	2.14
11:08:30	0.8	15	2.14
11:08:45	0.8	15	1.97
11:09:00	0.8	15	2.14
11:09:15	0.5	15	1.24
11:09:30	0.3	15	0.74
<b>Average</b>	<b>7.2</b>		<b>19.0</b>

VOC Profiling Data - London Taxis International  
Solvent Based Spray Booth (No.4) - 04/05/04



----- Emission Concentration  
----- Emission Limit

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No4)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6594</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
11:38:00	1.1	21	3.16
11:38:15	1.0	21	3.08
11:38:30	1.0	21	2.89
11:38:45	1.0	21	3.08
11:39:00	1.1	21	3.35
11:39:15	0.9	21	2.70
11:39:30	0.9	21	2.70
11:39:45	1.0	21	2.89
11:40:00	1.0	21	2.97
11:40:15	0.9	21	2.70
11:40:30	0.8	21	2.33
11:40:45	0.8	21	2.41
11:41:00	0.8	21	2.23
11:41:15	0.8	21	2.23
11:41:30	0.7	21	1.95
11:41:45	0.6	21	1.68
11:42:00	0.8	21	2.23
11:42:15	0.7	21	2.14
11:42:30	2.9	21	8.73
11:42:45	7.7	21	22.75
11:43:00	8.4	21	24.98
11:43:15	8.7	21	25.81
11:43:30	9.4	21	27.76
11:43:45	7.9	21	23.29
11:44:00	10.4	21	30.91
11:44:15	12.1	21	35.92
11:44:30	14.9	21	44.19
11:44:45	12.4	21	36.66
11:45:00	14.0	21	41.40
11:45:15	11.9	21	35.37
11:45:30	12.6	21	37.23
11:45:45	9.6	21	28.59
11:46:00	9.3	21	27.57
11:46:15	9.9	21	29.24
11:46:30	9.9	21	29.24
11:46:45	6.6	21	19.59
11:47:00	7.7	21	22.75
11:47:15	9.0	21	26.83
11:47:30	9.3	21	27.66
11:47:45	9.1	21	27.01
11:48:00	8.4	21	24.98
11:48:15	9.3	21	27.66
11:48:30	7.5	21	22.09
11:48:45	4.4	21	12.91

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No4)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6594</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
11:49:00	6.7	21	19.86
11:49:15	7.3	21	21.54
11:49:30	7.3	21	21.73
11:49:45	7.8	21	23.12
11:50:00	7.3	21	21.73
11:50:15	6.8	21	20.24
11:50:30	9.9	21	29.43
11:50:45	9.6	21	28.59
11:51:00	8.4	21	24.87
11:51:15	7.3	21	21.73
11:51:30	8.6	21	25.43
11:51:45	8.7	21	25.89
11:52:00	9.4	21	27.85
11:52:15	10.0	21	29.51
11:52:30	8.0	21	23.85
11:52:45	8.8	21	25.99
11:53:00	5.8	21	17.26
11:53:15	8.8	21	25.99
11:53:30	10.0	21	29.51
11:53:45	9.5	21	28.31
11:54:00	7.7	21	22.94
11:54:15	9.0	21	26.74
11:54:30	6.9	21	20.52
11:54:45	6.9	21	20.52
11:55:00	6.0	21	17.92
11:55:15	5.4	21	15.87
11:55:30	4.8	21	14.12
11:55:45	5.0	21	14.85
11:56:00	3.4	21	10.21
11:56:15	4.4	21	13.00
11:56:30	4.4	21	13.18
11:56:45	3.8	21	11.33
11:57:00	3.9	21	11.60
11:57:15	3.6	21	10.58
11:57:30	3.0	21	9.00
11:57:45	2.5	21	7.53
11:58:00	2.4	21	7.15
11:58:15	2.8	21	8.17
11:58:30	2.6	21	7.71
11:58:45	2.3	21	6.69
11:59:00	2.0	21	5.84
11:59:15	1.7	21	5.11
11:59:30	1.7	21	5.11
11:59:45	2.7	21	7.99



<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No4)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6594</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
12:00:00	4.0	21	11.89
12:00:15	3.9	21	11.52
12:00:30	3.5	21	10.31
12:00:45	2.7	21	7.99
12:01:00	1.9	21	5.49
12:01:15	1.3	21	3.81
12:01:30	1.3	21	3.91
12:01:45	1.8	21	5.45
12:02:00	1.8	21	5.45
12:02:15	1.7	21	5.08
12:02:30	1.5	21	4.52
12:02:45	1.5	21	4.52
12:03:00	1.8	21	5.27
12:03:15	1.6	21	4.62
12:03:30	1.7	21	4.89
12:03:45	1.4	21	4.16
12:04:00	1.3	21	3.87
12:04:15	1.3	21	3.87
12:04:30	1.2	21	3.50
12:04:45	1.2	21	3.50
12:05:00	1.2	21	3.50
12:05:15	1.2	21	3.50
12:05:30	1.4	21	4.06
12:05:45	1.2	21	3.50
12:06:00	1.0	21	3.04
12:06:15	1.0	21	2.96
12:06:30	0.9	21	2.77
12:06:45	0.9	21	2.58
12:07:00	0.8	21	2.40
12:07:15	0.7	21	2.21
12:07:30	0.9	21	2.58
12:07:45	1.5	21	4.33
12:08:00	5.2	21	15.29
12:08:15	6.4	21	18.91
12:08:30	5.6	21	16.60
12:08:45	6.9	21	20.41
12:09:00	7.2	21	21.32
12:09:15	8.4	21	24.94
12:09:30	11.2	21	33.11
12:09:45	10.3	21	30.60
12:10:00	8.4	21	24.94
12:10:15	12.6	21	37.38
12:10:30	10.9	21	32.37
12:10:45	8.6	21	25.42

VOC Emission Data

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No4)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6594</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
12:11:00	9.0	21	26.71
12:11:15	8.4	21	24.94
12:11:30	6.6	21	19.56
12:11:45	7.9	21	23.28
12:12:00	8.3	21	24.48
12:12:15	7.9	21	23.46
12:12:30	6.6	21	19.56
12:12:45	7.0	21	20.86
12:13:00	5.9	21	17.43
12:13:15	9.0	21	26.62
12:13:30	8.5	21	25.32
12:13:45	7.7	21	22.72
12:14:00	8.7	21	25.69
12:14:15	7.0	21	20.86
12:14:30	6.6	21	19.56
12:14:45	9.1	21	26.98
12:15:00	8.7	21	25.77
12:15:15	9.0	21	26.71
12:15:30	8.5	21	25.13
12:15:45	7.9	21	23.55
12:16:00	10.0	21	29.77
12:16:15	10.4	21	30.89
12:16:30	9.4	21	27.91
12:16:45	8.6	21	25.50
12:17:00	8.9	21	26.52
12:17:15	8.4	21	24.94
12:17:30	6.2	21	18.45
12:17:45	8.5	21	25.13
12:18:00	9.0	21	26.71
12:18:15	7.9	21	23.36
12:18:30	7.6	21	22.44
12:18:45	8.0	21	23.65
12:19:00	8.2	21	24.38
12:19:15	8.1	21	24.02
12:19:30	6.6	21	19.56
12:19:45	6.6	21	19.56
12:20:00	5.8	21	17.24
12:20:15	4.4	21	13.07
12:20:30	5.8	21	17.06
12:20:45	4.6	21	13.52
12:21:00	4.4	21	13.07
12:21:15	4.3	21	12.61
12:21:30	4.2	21	12.42
12:21:45	3.3	21	9.91

VOC Emission Data

<b>Job Ref:</b>	<b>OEH32500</b>	<b>Technical Details</b>	
<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No4)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6594</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
12:22:00	2.6	21	7.68
12:22:15	2.3	21	6.93
12:22:30	2.8	21	8.24
12:22:45	2.7	21	8.05
12:23:00	2.5	21	7.41
12:23:15	2.3	21	6.85
12:23:30	2.1	21	6.10
12:23:45	2.3	21	6.85
12:24:00	2.1	21	6.10
12:24:15	2.7	21	8.14
12:24:30	4.6	21	13.71
12:24:45	4.3	21	12.69
12:25:00	4.0	21	11.86
12:25:15	3.1	21	9.07
12:25:30	2.5	21	7.41
12:25:45	2.0	21	6.01
12:26:00	1.7	21	4.89
12:26:15	1.5	21	4.52
12:26:30	1.5	21	4.33
12:26:45	1.4	21	4.16
12:27:00	1.2	21	3.60
12:27:15	1.2	21	3.60
12:27:30	1.1	21	3.31
12:27:45	1.1	21	3.23
12:28:00	1.0	21	3.04
12:28:15	0.9	21	2.77
12:28:30	0.9	21	2.67
12:28:45	0.8	21	2.48
12:29:00	0.9	21	2.67
12:29:15	0.9	21	2.67
12:29:30	0.8	21	2.40
12:29:45	0.7	21	2.21
12:30:00	0.7	21	2.02
12:30:15	0.6	21	1.83
12:30:30	0.7	21	2.21
12:30:45	0.6	21	1.92
12:31:00	0.6	21	1.65
12:31:15	0.6	21	1.92
12:31:30	0.5	21	1.46
12:31:45	0.6	21	1.92
12:32:00	0.5	21	1.38
12:32:15	0.4	21	1.27
12:32:30	0.5	21	1.38
12:32:45	0.4	21	1.09

VOC Emission Data

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<b>Client Name:</b>	<b>LTI</b>	<b>Instrument Type:</b>	<b>FID</b>
<b>Location:</b>	<b>Solvent Booth(No4)</b>	<b>Calibration Gas:</b>	<b>Methane</b>
<b>Date:</b>	<b>4-May-04</b>	<b>% Carbon:</b>	<b>75%</b>
<b>Scientist:</b>	<b>J Litterick</b>	<b>Sample Number:</b>	<b>6594</b>
		<b>Instrument Ran:</b>	<b>1</b>
		<b>Emission Limit:</b>	<b>50</b>

Sampling Time	VOC as Methane Equivalent@ Reference Conditions (mgC.m <sup>-3</sup> )	Stack Temp (°C)	VOC as Carbon @ Reference Conditions (Solvent Response Corrected) (mgC.m <sup>-3</sup> )
12:33:00	0.3	21	1.00
12:33:15	0.4	21	1.19
12:33:30	0.4	21	1.19
12:33:45	0.3	21	0.82
12:34:00	0.3	21	0.90
12:34:15	0.2	21	0.71
12:34:30	0.2	21	0.71
12:34:45	0.2	21	0.63
12:35:00	0.2	21	0.63
12:35:15	0.2	21	0.53
12:35:30	0.1	21	0.25
12:35:45	0.1	21	0.25
12:36:00	0.1	21	0.44
12:36:15	0.1	21	0.36
12:36:30	0.1	21	0.25
12:36:45	0.0	21	0.07
12:37:00	0.1	21	0.25
12:37:15	0.0	21	0.07
12:37:30	0.1	21	0.17
12:37:45	0.0	21	0.07
12:38:00	0.0	21	0.07
<b>Average</b>	<b>4.5</b>		<b>13.3</b>