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GLYNWED PIPE SYSTEMS

Report on Air Emission Monitoring at

Glynwed Pipe Systems

Huntingdon, Cambridgeshire

February 2002

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Glynwed Pipe Systems

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CONTENTS

1.0 INTRODUCTION

At the request of Mr E Cross of Glynwed Pipe Systems, RPS Consultants Ltd conducted air emission monitoring at the Huntingdon site on the 21st February 2002.

The purpose of the monitoring programme was to provide data on emissions to atmosphere for comparison with the limits specified in the air emission criteria for this site.

1.1 Emission Criteria

Information provided by Glynwed Pipe Systems personnel regarding the air emission limits for this site has been included in Appendix A, Table 1 for reference purposes. It is understood that the air emission concentration limits are specified in the *Huntingdonshire District Council Authorisation: 22/93 Variation 25/99,* which is based on the *Secretary of State's Guidance-Metal Decontamination Processes PG2/9(96).*

All results have been referenced to conditions of 273K, 101.3kPa without correction for water vapour content.

1.2 Emission Points

During the works undertaken on the 21st February 2002 the following release point was included in the monitoring programme:

- Fluidised Bed Exhaust

2.0 MONITORING PROCEDURES

2.1 Emission Parameters

The following emission parameters were monitored during the programme of works: -

- gas flows;
- gas temperatures;
- total particulate matter;
- volatile organic compounds (as total carbon excluding particulate matter).

2.2 Monitoring Procedures

The monitoring was carried out using the following United Kingdom Accreditation Service (UKAS, formerly NAMAS) approved procedures unless otherwise stated: -

- **gas flows** were measured using a pitot tube and manometer based on the requirements of BS 3405:1983 *Measurement of particulate emission including grit and dust (simplified method)*. (RPS/SEM/P/002)

- **gas temperatures** were measured using a "k" type thermocouple and temperature sensor based on the requirements of BS 3405:1983 *Measurement of particulate emission including grit and dust (simplified method)*. (RPS/SEM/P/002)

- **total particulate matter** was measured using a **Method 5** (US CFR- Protection of the Environment, 40, Part 60 Appendix A *Determination of particulate emissions from stationary sources*) sampling train operated in accordance with the requirements of BS 3405: *Measurement of particulate emission including grit and dust (simplified method)*. The samples were analysed by gravimetric techniques. (RPS/SEM/P/007b)

- **volatile organic compounds (as total carbon excluding particulate matter)** were measured using a Flame Ionisation Detector (FID) based on the requirements of **Method 25a** (US CFR- Protection of the Environment, 40, Part 60 Appendix A *Determination of total gaseous organic concentration using a flame ionisation analyser*). (RPS/SEM/P/004)

Sampling was undertaken during what was reported by Glynwed Pipe Systems personnel to be normal operating conditions.

Exhaust gases were conditioned as required prior to their introduction into direct reading analysers and extractive gas sampling trains.

All analyses were undertaken by RPS Laboratories, Manchester, which is a UKAS accredited laboratory.

3.0 RESULTS

A summary table of results is displayed in Appendix A, Table 1.

Full tabulated data from the monitoring period is displayed in Appendix B, Tables 2 and 3.

Graphical profiles of the results of volatile organic compounds (as total carbon excluding particulate matter) can be viewed in Appendix C, Figure 1.

It is RPS Consultants Ltd procedure to include half of any 'less than' figure when determining a mean result.

4.0 OBSERVATIONS AND CONCLUSIONS

4.1 Fluidised Bed Exhaust

The mean concentration of all parameters measured from the Fluidised Bed Exhaust on 21st February 2002 were *below* their respective emission concentration limits as specified in the *Huntingdonshire District Council Authorisation: 22/93 Variation 22/99* when referenced to 273K, 101.3 kPa, without correction for water vapour content.

Table 1

Summary Table of Emissions to Atmosphere from the Fluidised Bed Exhaust at Glynwed Pipe Systems, Huntingdon in February 2002

Emission Parameter	Units	Mean Result	Concentration Limit ψ
Total Particulate Matter	mg/m^3	6.7	50
Volatile Organic Compounds (as total carbon excluding particulate matter)	mg/m^3	15	20

Notes:

Reference conditions expressed as 273 K, 101.3 kPa, without correction for water vapour content

ψ *As expressed in the Huntingdonshire District Council Authorisation: 22/93 Variation 25/99*

Table 2

Results of Total Particulate Matter and General Emission Parameters Measured from the Fluidised Bed Exhaust at Glynwed Pipe Systems, Huntingdon on the 21st February 2002

Internal area of duct: 0.36 m^2
Barometric pressure: 103.5 kPa

Run Number	Units	1	2	Mean of Results
Sample Period	-	13:22 – 13:52	14:28 – 14:58	-
Temperature	°C	131	130	**131**
Gas Velocity (as measured at sampling plane)	m/sec	17	16	**17**
Volumetric Flowrate (as measured)	m^3/sec	5.9	5.9	**5.9**
Volumetric Flowrate (at reference conditions)	m^3/sec*	4.1	4.1	**4.1**
Total Particulate Matter Mass Emission	kg/hr	0.14	0.054	**0.097**
Total Particulate Emission Concentration	mg/m^3*	9.6	3.7	**6.7**

Notes:
* *Reference conditions expressed as 273 K, 101.3 kPa, without correction for water vapour content*

Table 3

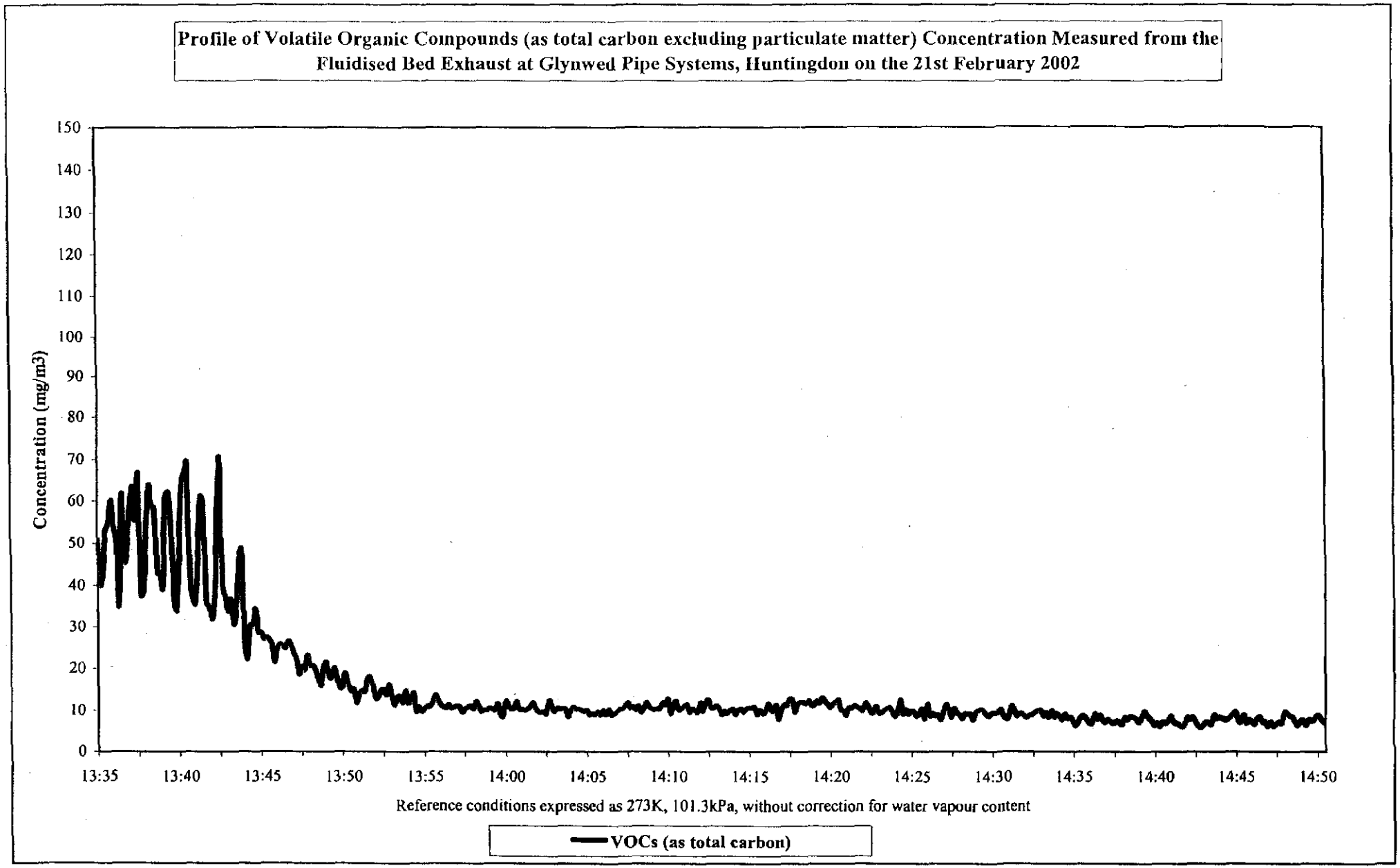
Results of Volatile Organic Compounds (expressed as total carbon excluding particulate matter) Concentration taken from the Fluidised Bed Exhaust at Glynwed Pipe Systems, Huntingdon on the 21st February 2002

Emission Reference	Sample Period	Units	VOC Concentration (as total carbon)	
Fluidised Bed Exhaust	13:35 – 14:50	mg/m^3	Maximum	70
			Mean	**15**

Notes:

Reference conditions expressed as 273 K, 101.3 kPa, without correction for water vapour content

Figure


Profile of Volatile Organic Compounds (as total carbon excluding particulate matter) Concentration Measured from the Fluidised Bed Exhaust at Glynwed Pipe Systems, Huntingdon on the 21st February 2002
Concentration (mg/m3)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
13:35
13:40
13:45
13:50
13:55
14:00
14:05
14:10
14:15
14:20
14:25
14:30
14:35
14:40
14:45
14:50
Reference conditions expressed as 273K, 101.3kPa, without correction for water vapour content
VOCs (as total carbon)

TA

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Report on Air Emission Monitoring at

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Huntingdon, Cambridgeshire

September 2001

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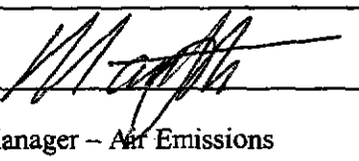
Signed:	
Position:	Manager – Air Emissions

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Report on Air Emission Monitoring at

Glynwed Pipe Systems

Huntingdon, Cambridgeshire

September 2001

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1.0 INTRODUCTION

At the request of Mr E.Cross of Glynwed Pipe Systems, RPS Consultants Ltd conducted air emission monitoring at the Huntingdon site on the 19th September 2001.

The purpose of the monitoring programme was to provide data on emissions to atmosphere for comparison with the limits specified in the air emission criteria for this site.

1.1 Emission Criteria

Information provided by Glynwed Pipe Systems personnel regarding the air emission limits for this site has been included in Appendix A, Table 1 for reference purposes. It is understood that the air emission concentration limits are specified in the *Huntingdonshire District Council Authorisation: 22/93 Variation 25/99,* which is based on the *Secretary of State's Guidance-Metal Decontamination Processes PG2/9(96).*

All results have been referenced to conditions of 273K, 101.3kPa without correction for water vapour content.

1.2 Emission Points

During the works undertaken on the 19th September 2001 the following release point was included in the monitoring programme:

- Polyethylene Burner Exhaust

2.0 MONITORING PROCEDURES

2.1 Emission Parameters

The following emission parameters were monitored during the programme of works: -

- gas flows;
- gas temperatures;
- total particulate matter;
- volatile organic compounds (as total carbon excluding particulate matter).

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The monitoring was carried out using the following United Kingdom Accreditation Service (UKAS, formerly NAMAS) approved procedures unless otherwise stated: -

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A summary table of results is displayed in Appendix A, Table 1.

Full tabulated data from the monitoring period is displayed in Appendix B, Tables 2 and 3.

Graphical profiles of the results of volatile organic compounds (as total carbon excluding particulate matter) can be viewed in Appendix C, Figure 1.

It is RPS Consultants Ltd procedure to include half of any 'less than' figure when determining a mean result.

4.0 OBSERVATIONS AND CONCLUSIONS

4.1 Polyethylene Burner Exhaust

The mean concentration of all parameters measured from the Polyethylene Burner Exhaust on 19th September 2001 were *below* their respective emission concentration limits as specified in the *Huntingdonshire District Council Authorisation: 22/93 Variation 22/99* when referenced to 273K, 101.3 kPa , without correction for water vapour content.

Table 1

Summary Table of Emissions to Atmosphere from the Polyethylene Burner Exhaust at Glynwed Pipe Systems, Huntingdon in September 2001

Emission Parameter	Units	Mean Result	Concentration Limit ψ
Total Particulate Matter	mg/m^3	2.0	50
Volatile Organic Compounds (as total carbon excluding particulate matter)	mg/m^3	11	20

Notes:

Reference conditions expressed as 273 K, 101.3 kPa, without correction for water vapour content

ψ *As expressed in the Huntingdonshire District Council Authorisation: 22/93 Variation 25/99*

Table 2

Results of Total Particulate Matter and General Emission Parameters Measured from the Polyethylene burner Exhaust at Glynwed Pipe Systems, Huntingdon on the 19th September 2001

Internal area of duct: 0.36 m^2
Barometric pressure: 101.5 kPa

Run Number	Units	1	2	Mean of Results
Sample Period	-	12:36 – 13:36	13:42 – 14:42	-
Temperature	°C	114	120	**117**
Gas Velocity (as measured at sampling plane)	m/sec	20	20	**20**
Volumetric Flowrate (as measured)	m^3/sec	7.3	7.3	**7.3**
Volumetric Flowrate (at reference conditions)	m^3/sec*	5.2	5.1	**5.2**
Total Particulate Matter Mass Emission	kg/hr	0.056	0.017	**0.037**
Total Particulate Emission Concentration	mg/m^3*	3.0	0.9	**2.0**

Notes:
* *Reference conditions expressed as 273 K, 101.3 kPa, without correction for water vapour content*

Table 3

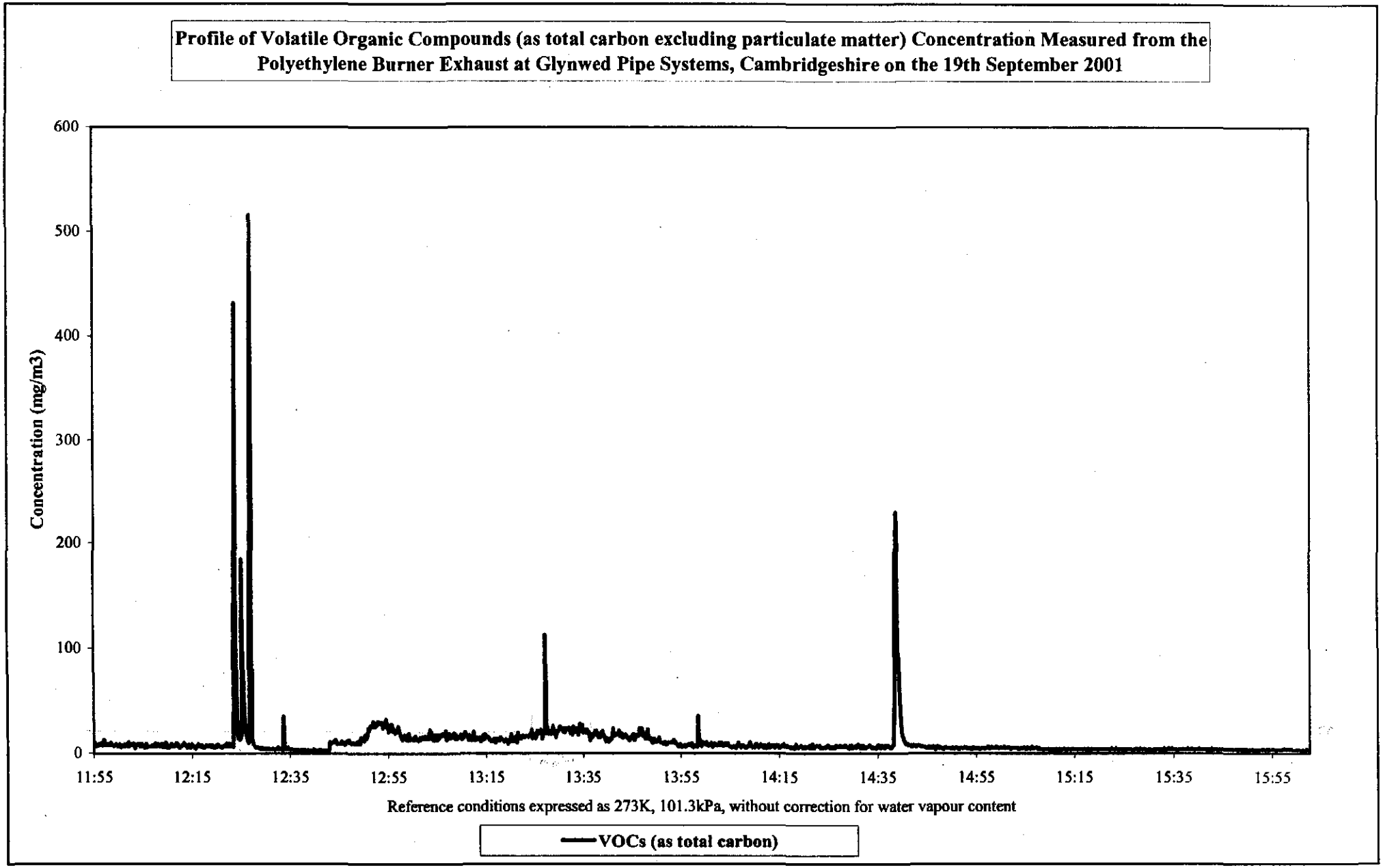
Results of Volatile Organic Compounds (expressed as total carbon excluding particulate matter) Concentration taken from the Polyethylene Burner Exhaust at Glynwed Pipe Systems, Huntingdon on the 19th September 2001

Emission Reference	Sample Period	Units	VOC Concentration (as total carbon)	
Polyethylene Burner Exhaust	11:55 – 16:03	mg/m^3	Maximum	516
			Mean	**11**

Notes:

Reference conditions expressed as 273 K, 101.3 kPa, without correction for water vapour content

Figure 1



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