RESULTS OF PARTICULATE EMISSIONS
MONITORING AT

**VIP-HEINKE**
**ST PETERS ROAD**
**HUNTINGDON**
**CAMBRIDGESHIRE**
**PE29 7DA**

**Air Tech E.C.S. Reference:**

**EPN 5343**

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**13th – 14th October 2003**

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This project was completed by Air Tech E.C.S. on the basis of a defined programme of work and terms and conditions agreed with the Client. This report was compiled with all reasonable care and attention, bearing in mind the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project, as agreed.

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# DOCUMENT CONTROL SHEET

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## REPORT STATUS

| Issue | Status | Description | Prepared by | Date |
|---|---|---|---|---|
| 1 | Final Report | Issued to Client | A. Shakeri | 27/10/2003 |
| 2 | Final Report | Issued to L.A | A. Shakeri | 27/10/2003 |

Issue 1 of 2 - Client
Issue 2 of 2 - L.A

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## 1. INTRODUCTION

Mr. Gary Williamson has requested Air Tech ECS to undertake environmental monitoring within the premises of VIP-Heinke Limited, Huntingdon in order to ascertain the concentration of total particulate matter from various stacks at that site. Monitoring took place on 13th and 14th October 2003.

It is understood that the process is prescribed under Part B, Schedule 1 of the Environmental Protection (Prescribed Process and Substances) Regulations 1991, as amended, which governs industrial releases to atmosphere only. Guidance on the operation of the process and appropriate techniques that might be employed for the control and monitoring or air pollution arising from those processes is provided in the relevant Department of the Environment Process Guidance Notes, PG6/28, 'Rubber Conversion Processes.'

This report details the results of the survey and reflects conditions prevailing during the above dates. Comparisons shall be made between the limits listed in the Guidance Note and the concentration results from this survey.

## 2. PROCESS DETAILS

VIP-Heinke is one of the UK's leading manufacturers of rubber seals and gaskets for various pipe systems. The process generally involves the blending of natural rubber or synthetic elastomers with additives, the product is then milled to complete the mixing and blending process. The final product is produced via injection or compression moulding, or extrusion. The process is served by LEV extraction systems, which vent to atmosphere via a separate stacks. No abatement is applied before venting with the exception of the rubber milling process, which utilises a fabric filter system.

## 3. STRATEGY

The following parameters listed below were measured to characterise the emissions from the exhaust stack from the process:

- gas flow
- gas temperature
- total particulate matter

A preliminary velocity profile of the gas stream was measured prior to the collection of sample to determine: -

- Whether a correct sampling plane has been chosen, i.e. the flow at the sampling plane is, ideally linear with no flow swirl.
- A range of flow characteristics which are used in the K-factor calculation which determines the isokinetic sampling rate.
- How many sampling points should be used on each traverse.
- Efflux velocity.
- Volumetric flowrate.

It is understood that at the time of the survey all processes were operating under normal conditions.

# 4. METHODOLOGY.

## 4.1 Particulate Matter

Gas flow measurements were taken using an 'L' type pitot tube connected to a micro- manometer in accordance with the methods recommended in BS3405:1983 – British Standard Method for the Measurement of Particulate Emissions Including Grit and Dust (simplified method).

Gas temperatures were measured using a 'k' type thermocouple.

Gas flow and temperature measurements were taken at intervals of approximately 0.1x the duct diameter. Deviations in recorded measurements allowed for the determination of the suitability of the line for isokinetic sampling.

Duplicate samples for particulate matter were collected on 25mm pre-weighed sample filters using a TCR Tecora Isostack Plus automatic sampling unit, in accordance with the main procedural requirements of BS3405:1983. Following monitoring the sample filters were dried, re-weighed and the total quantity of particulate collected calculated. Thus the emission concentration was calculated from measurements of gas stream flow-rate and filter weight gain.

Sampling locations were x0.15 and x0.85 of the internal width from the entrance ports of circular ducts.

Control sampling filters were taken onto site and subjected to handling procedures similar to those on which the samples were collected. The weight gain from any resulting contamination was determined for each, and the average result was subtracted from results obtained for exposed filters.

## 5. EMISSION LIMITS

Under the Environmental Protection Act 1990 a number of industrial processes have to be registered. The registration for Part A processes is controlled by The Environment Agency (formerly Her Majesty's Inspectorate of Pollution). These are potentially the more polluting processes. Those which are deemed to be of a less polluting nature are classed as Part B processes and are controlled by Local Authority Environmental Health Departments.

The concentration limits which apply to the processes studied are stated in PG6/28 'Rubber Conversion Processes.' The emission limits relevant to the monitoring at Ball Packaging UK Limited are given below.

| Emission | Emission Limit |
|---|---|
| Total Particulate Matter (From the storage and handling of carbon black) | 10 $mg/m^3$ |
| Total Particulate Matter (From all other sources) | 50 $mg/m^3$ |

Emissions concentrations to be expressed at reference conditions 273 °K, 101.3 kPa.

## 6. DISCUSSION AND RESULTS

### 6.1 Particulate Matter

Particulate emissions from all stacks returned low results. The highest emission concentration recorded was from Stack 27 with an average result of 0.77mg/m. This value represents approximately 2% of the emission limit.

***Deviations from BS3405***

During the sampling programme, the following deviations from BS3405 were noted:-

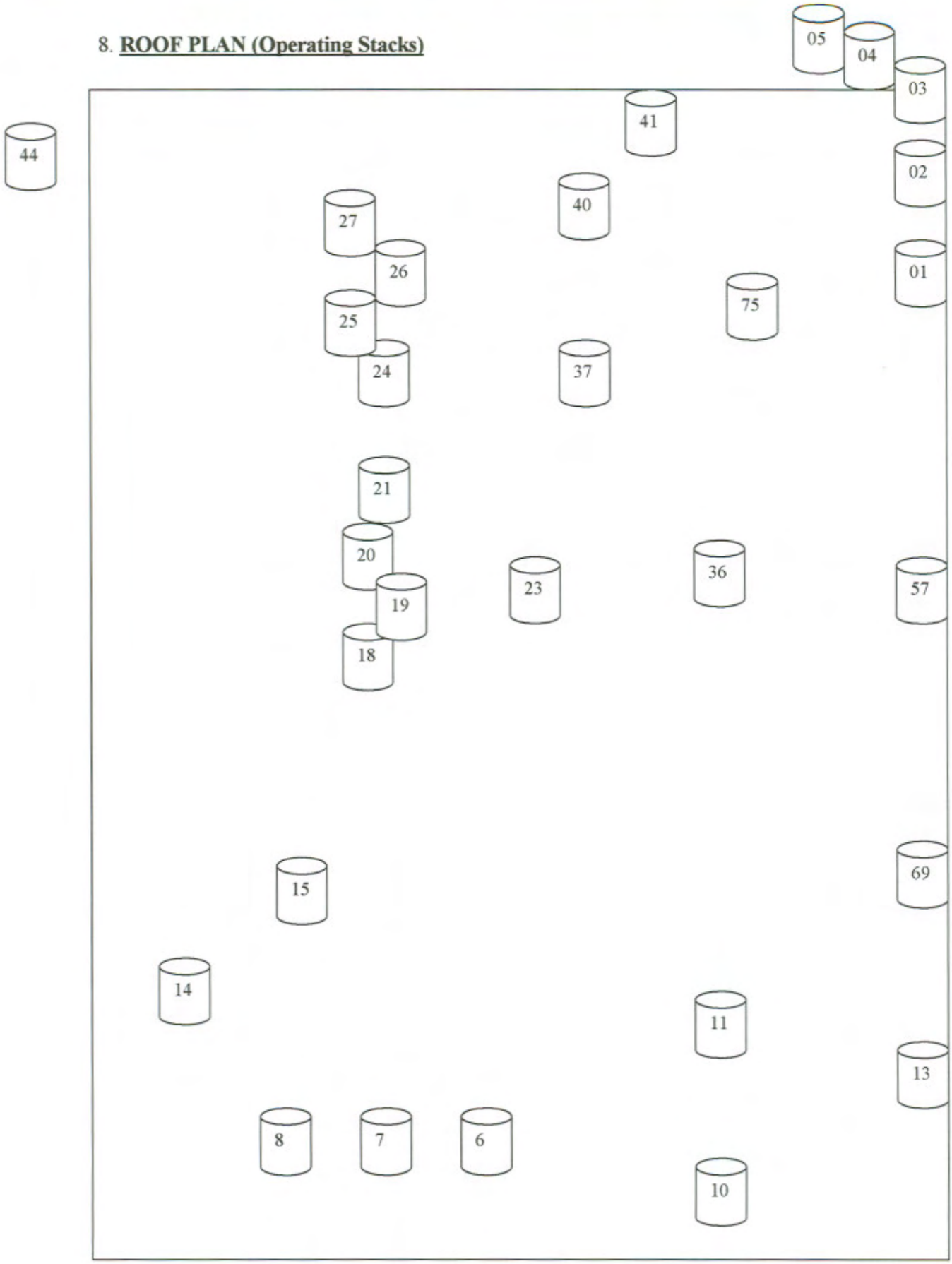
Sampling of Stack 44 could only be completed across one line because of a lack of adequate sampling points. The two available sampling sockets were rusted in place and could not be removed.

The individual results from each sampling run from Stacks 8, 23 and 43 could not be averaged because they did not fall within a ratio of 1:1.5.

## 7. CONCLUSIONS

From the results shown in the summary section it can be seen that during the monitored period, particulate emission concentrations were below those limits specified in Process Guidance Note PG/28 'Rubber Conversion Processes'

## 8. ROOF PLAN (Operating Stacks)



# SUMMARY

## SUMMARY OF PROCESS EMISSIONS, VIP-HEINKE, HUNTINGDON 13-14TH OCTOBER 2003

| Stack Reference | Determinant | Mean Emission Level (mg/m³) | Emission Limit (mg/m³) |
|---|---|---|---|
| Stack 6 | Particulate Matter (run 1) | <0.35 | 50 |
| | Particulate Matter (run 2) | <0.36 | 50 |
| | Average | <0.36 | 50 |
| Stack 7 | Particulate Matter (run 1) | 0.19 | 50 |
| | Particulate Matter (run 2) | 0.20 | 50 |
| | Average | 0.20 | 50 |
| Stack 8 | Particulate Matter (run 1) | 0.29 | 50 |
| | Particulate Matter (run 2) | 0.45 | 50 |
| | Average | - | 50 |
| Stack 20 | Particulate Matter (run 1) | 0.71 | 50 |
| | Particulate Matter (run 2) | 0.58 | 50 |
| | Average | 0.65 | 50 |
| Stack 23 | Particulate Matter (run 1) | 0.25 | 50 |
| | Particulate Matter (run 2) | 0.49 | 50 |
| | Average | - | 50 |
| Stack 25 | Particulate Matter (run 1) | 0.21 | 50 |
| | Particulate Matter (run 2) | 0.11 | 50 |
| | Average | 0.32 | 50 |
| Stack 27 | Particulate Matter (run 1) | 0.87 | 50 |
| | Particulate Matter (run 2) | 0.66 | 50 |
| | Average | 0.77 | 50 |
| Stack 37 | Particulate Matter (run 1) | 0.44 | 50 |
| | Particulate Matter (run 2) | 0.48 | 50 |
| | Average | 0.46 | 50 |
| Stack 40 | Particulate Matter (run 1) | 0.44 | 50 |
| | Particulate Matter (run 2) | 0.32 | 50 |
| | Average | 0.38 | 50 |
| Stack 43 | Particulate Matter (run 1) | 0.48 | 50 |
| | Particulate Matter (run 2) | 0.86 | 50 |
| | Average | - | 50 |
| Stack 44 | Particulate Matter (run 1) | <0.12 | 10 |
| | Particulate Matter (run 2) | <0.12 | 10 |
| | Average | <0.12 | 10 |
| Stack 60 | Particulate Matter (run 1) | <0.91 | 50 |
| | Particulate Matter (run 2) | <0.98 | 50 |
| | Average | <0.95 | 50 |

**All results expressed at reference conditions (101.3KPa, 273°K)**

# Appendix 1- Particulate Matter Sampling Data

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 14/10/2003** **System Used: TCRTecora** **Engineer(s): DT/DC**

**Stack Title: Stack 06** **Stack Diameter: 0.30m** **Stack Area: 0.07m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 4 | 4 | 5 | 5 | 4 | 5 | 4 | 3 | 4 | 4 |
| | Velocity (ms$^{-1}$) | 2.6 | 2.6 | 2.8 | 2.9 | 2.7 | 2.8 | 2.7 | 2.3 | 2.4 | 2.5 |
| | Gas temp (°C) | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| 2nd Sample Line | Pitot-static (Pa) | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 5 | 4 |
| | Velocity (ms$^{-1}$) | 2.7 | 2.6 | 2.6 | 2.7 | 2.6 | 2.3 | 2.4 | 2.2 | 2.7 | 2.5 |
| | Gas temp (°C) | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1003 |
| Gas Meter Temp (°C) | 26 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 4 | 4 | | | 4 | 5 | | | 4 | 4 | | | 4 | 5 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 2.6 | 2.4 | | | 2.6 | 2.7 | | | 2.6 | 2.4 | | | 2.6 | 2.7 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71283 | | | | Time On | | 12.20 | | 71284 | | | | Time On | | 12.35 | | | | | | | | | |
| | | | | | Time Off | | 12.32 | | | | | | Time Off | | 12.47 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 20 | | | | | | | | | |
| Dry Gas Meter Data | ON | 277711 | | | Sample Volume | | 0.122m$^3$ | | ON | 277833 | | | Sample Volume | | 0.119m$^3$ | | | | | | | | | |
| | OFF | 277833 | | | Volume at STP | | 0.114m$^3$ | | OFF | 277952 | | | Volume at STP | | 0.109m$^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | <0.04 mg | <0.04 mg | |
| **Particulate Concentration** | **<0.35 mg/m$^3$** | **<0.36 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 14/10/2003** **System Used: TCRTecora** **Engineer(s): DT/DC**

**Stack Title: Stack 07** **Stack Diameter: 0.30m** **Stack Area: 0.07m²** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 93 | 106 | 86 | 86 | 87 | 97 | 83 | 93 | 100 | 107 |
| | Velocity ($ms^{-1}$) | 12.4 | 13.3 | 11.9 | 12.0 | 12.0 | 12.7 | 11.8 | 12.4 | 12.9 | 13.4 |
| | Gas temp (°C) | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| 2nd Sample Line | Pitot-static (Pa) | 71 | 97 | 94 | 95 | 103 | 80 | 82 | 60 | 83 | 76 |
| | Velocity ($ms^{-1}$) | 10.9 | 12.7 | 12.5 | 12.6 | 13.1 | 11.5 | 11.7 | 10.0 | 11.8 | 11.3 |
| | Gas temp (°C) | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1003 |
| Gas Meter Temp (°C) | 18 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 106 | 100 | | | 97 | 60 | | | 106 | 100 | | | 97 | 60 | | | | | | | | | | |
| Velocity ($ms^{-1}$) | 13.3 | 12.9 | | | 12.7 | 10.0 | | | 13.3 | 12.9 | | | 12.7 | 10.0 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71282 | | | | Time On | | 11.40 | | 71335 | | | | Time On | | 11.55 | | | | | | | | | |
| | | | | | Time Off | | 11.52 | | | | | | Time Off | | 12.07 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 276884 | | | Sample Volume | | 0.391$m^3$ | | ON | 277275 | | | Sample Volume | | 0.436$m^3$ | | | | | | | | | |
| | OFF | 277275 | | | Volume at STP | | 0.361$m^3$ | | OFF | 277711 | | | Volume at STP | | 0.402$m^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.07 mg | 0.08 mg | |
| **Particulate Concentration** | **0.19 mg/m³** | **0.20 mg/m³** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 13/10/2003** **System Used: TCRTecora** **Engineer(s): DT/AS**

**Stack Title: Stack 08** **Stack Diameter: 0.50m** **Stack Area: 0.20m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 72 | 101 | 107 | 106 | 103 | 96 | 64 | 68 | 50 | 39 |
| | Velocity (ms$^{-1}$) | 10.9 | 13.0 | 13.4 | 13.3 | 13.1 | 12.6 | 10.4 | 10.7 | 9.2 | 8.1 |
| | Gas temp (°C) | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| 2nd Sample Line | Pitot-static (Pa) | 72 | 80 | 68 | 40 | 36 | 31 | 78 | 101 | 69 | 69 |
| | Velocity (ms$^{-1}$) | 10.9 | 11.5 | 10.7 | 8.1 | 7.8 | 8.3 | 11.4 | 12.9 | 10.7 | 10.7 |
| | Gas temp (°C) | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1023 |
| Gas Meter Temp (°C) | 19 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 101 | 50 | | | 18 | 16 | | | 101 | 50 | | | 18 | 16 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 13.0 | 9.2 | | | 11.5 | 10.7 | | | 13.0 | 9.2 | | | 11.5 | 10.7 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71326 | | | | Time On | | 09.28 | | 71327 | | | | Time On | | 09.42 | | | | | | | | | |
| | | | | | Time Off | | 09.40 | | | | | | Time Off | | 09.54 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 271088 | | | Sample Volume | | 0.370m$^3$ | | ON | 268443 | | | Sample Volume | | 0.363m$^3$ | | | | | | | | | |
| | OFF | 271458 | | | Volume at STP | | 0345m$^3$ | | OFF | 268748 | | | Volume at STP | | 0.335m$^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.10 mg | 0.15 mg | |
| **Particulate Concentration** | **0.29 mg/m$^3$** | **0.45 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 13/10/2003** **System Used: TCRTecora** **Engineer(s): DT/AS**

**Stack Title: Stack 20** **Stack Diameter: 0.28m** **Stack Area: 0.06m²** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 38 | 44 | 43 | 45 | 46 | 44 | 42 | 37 | 27 | 18 |
| | Velocity ($ms^{-1}$) | 7.9 | 8.5 | 8.4 | 8.6 | 8.7 | 8.5 | 8.4 | 7.9 | 6.7 | 5.5 |
| | Gas temp (°C) | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| 2nd Sample Line | Pitot-static (Pa) | 43 | 51 | 49 | 32 | 21 | 20 | 35 | 26 | 31 | 22 |
| | Velocity ($ms^{-1}$) | 8.5 | 9.2 | 9.1 | 7.3 | 5.9 | 5.8 | 7.7 | 6.6 | 7.2 | 6.0 |
| | Gas temp (°C) | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1020 |
| Gas Meter Temp (°C) | 29 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 44 | 37 | | | 51 | 26 | | | 44 | 37 | | | 51 | 26 | | | | | | | | | | |
| Velocity ($ms^{-1}$) | 8.5 | 7.9 | | | 9.2 | 6.2 | | | 8.5 | 7.9 | | | 9.2 | 6.2 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71317 | | | Time On | | 14.45 | | | 71294 | | | Time On | | 15.06 | | | | | | | | | | |
| | | | | Time Off | | 14.47 | | | | | | Time Off | | 15.18 | | | | | | | | | | |
| | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | | |
| Dry Gas Meter Data | ON | 274472 | | Sample Volume | | 0.296m³ | | | ON | 274768 | | Sample Volume | | 0.305m³ | | | | | | | | | | |
| | OFF | 274768 | | Volume at STP | | 0.267m³ | | | OFF | 275074 | | Volume at STP | | 0.274m³ | | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.19 mg | 0.16 mg | |
| **Particulate Concentration** | **0.71 mg/m³** | **0.58mg/m³** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 14/10/2003** **System Used: TCRTecora** **Engineer(s): DT/DC**

**Stack Title: Stack 23** **Stack Diameter: 0.48m** **Stack Area: 0.18m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 65 | 111 | 35 | 29 | 18 | 23 | 111 | 151 | 154 | 135 |
| | Velocity (ms$^{-1}$) | 10.4 | 13.6 | 8.7 | 7.0 | 5.4 | 6.2 | 13.6 | 15.8 | 16.0 | 15.0 |
| | Gas temp (°C) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 2nd Sample Line | Pitot-static (Pa) | 67 | 100 | 114 | 108 | 68 | 67 | 70 | 90 | 89 | 27 |
| | Velocity (ms$^{-1}$) | 10.5 | 12.9 | 13.8 | 13.4 | 10.6 | 10.6 | 10.4 | 12.2 | 12.1 | 6.7 |
| | Gas temp (°C) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1031 |
| Gas Meter Temp (°C) | 25 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 111 | 154 | | | 100 | 89 | | | 111 | 154 | | | 100 | 89 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 13.6 | 16.0 | | | 12.9 | 12.1 | | | 13.6 | 16.0 | | | 12.9 | 12.1 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71321 | | | | Time On | | 09.21 | | 71322 | | | | Time On | | 09.40 | | | | | | | | | |
| | | | | | Time Off | | 09.34 | | | | | | Time Off | | 09.52 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 275168 | | | Sample Volume | | 0.304m$^3$ | | ON | 275472 | | | Sample Volume | | 0.306m$^3$ | | | | | | | | | |
| | OFF | 275472 | | | Volume at STP | | 0.289m$^3$ | | OFF | 275778 | | | Volume at STP | | 0.285m$^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.07 mg | 0.14 mg | |
| **Particulate Concentration** | **0.24 mg/m$^3$** | **0.49 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 13/10/2003** **System Used: TCRTecora** **Engineer(s): DT/AS**

**Stack Title: Stack 25** **Stack Diameter: 0.32m** **Stack Area: 0.08m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 84 | 97 | 102 | 115 | 124 | 105 | 34 | 106 | 106 | 115 |
| | Velocity (ms$^{-1}$) | 11.8 | 12.7 | 13.0 | 13.9 | 14.4 | 13.3 | 7.5 | 13.3 | 13.3 | 13.8 |
| | Gas temp (°C) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 2nd Sample Line | Pitot-static (Pa) | 65 | 106 | 115 | 119 | 115 | 110 | 106 | 103 | 101 | 74 |
| | Velocity (ms$^{-1}$) | 10.4 | 13.3 | 13.8 | 14.1 | 13.8 | 13.6 | 13.3 | 13.1 | 13.0 | 11.1 |
| | Gas temp (°C) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1040 |
| Gas Meter Temp (°C) | 25 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 97 | 106 | | | 106 | 101 | | | 97 | 106 | | | 106 | 101 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 12.7 | 13.3 | | | 13.3 | 13.0 | | | 12.7 | 13.3 | | | 13.3 | 13.0 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71331 | | | Time On | | 11.30 | | | 71332 | | | Time On | | 11.45 | | | | | | | | | | |
| | | | | Time Off | | 11.42 | | | | | | Time Off | | 11.57 | | | | | | | | | | |
| | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | | |
| Dry Gas Meter Data | ON | 272443 | | Sample Volume | | 0.412m$^3$ | | | ON | 272855 | | Sample Volume | | 0.417m$^3$ | | | | | | | | | | |
| | OFF | 272865 | | Volume at STP | | 0.380m$^3$ | | | OFF | 273272 | | Volume at STP | | 0.379m$^3$ | | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.08 mg | <0.04 mg | |
| **Particulate Concentration** | **0.21 mg/m$^3$** | **<0.11 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 13/10/2003** **System Used: TCRTecora** **Engineer(s): DT/AS**

**Stack Title: Stack 27** **Stack Diameter: 0.32m** **Stack Area: 0.08m²** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 8 | 16 | 36 | 55 | 72 | 70 | 42 | 48 | 59 | 66 |
| | Velocity ($ms^{-1}$) | 3.6 | 5.2 | 7.7 | 9.5 | 10.9 | 10.8 | 8.3 | 8.9 | 9.9 | 10.5 |
| | Gas temp (°C) | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| 2nd Sample Line | Pitot-static (Pa) | 24 | 17 | 19 | 22 | 44 | 45 | 68 | 84 | 76 | 55 |
| | Velocity ($ms^{-1}$) | 6.3 | 5.3 | 5.6 | 6.1 | 8.6 | 8.6 | 10.6 | 11.8 | 11.2 | 9.8 |
| | Gas temp (°C) | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1040 |
| Gas Meter Temp (°C) | 27 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 16 | 59 | | | 17 | 76 | | | 16 | 59 | | | 17 | 76 | | | | | | | | | | |
| Velocity ($ms^{-1}$) | 5.2 | 9.9 | | | 5.3 | 11.2 | | | 5.2 | 9.9 | | | 5.3 | 11.2 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71328 | | | | Time On | | 10.40 | | 71294 | | | | Time On | | 11 | | | | | | | | | |
| | | | | | Time Off | | 10.52 | | | | | | Time Off | | 11.35 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 271821 | | | Sample Volume | | 0.340m³ | | ON | 272152 | | | Sample Volume | | 0.291m³ | | | | | | | | | |
| | OFF | 272152 | | | Volume at STP | | 0.288m³ | | OFF | 272443 | | | Volume at STP | | 0.286m³ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.25 mg | 0.19 mg | |
| **Particulate Concentration** | **0.87 mg/m³** | **0.66 mg/m³** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** | **Date: 13/10/2003** | **System Used: TCRTecora** | **Engineer(s): DT/AS**

**Stack Title: Stack 37** | **Stack Diameter: 0.30m** | **Stack Area: 0.07m$^2$** | **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 62 | 55 | 53 | 48 | 38 | 26 | 22 | 28 | 31 | 43 |
| | Velocity (ms$^{-1}$) | 10.2 | 9.6 | 9.4 | 9.0 | 8.0 | 6.5 | 6.1 | 6.8 | 7.2 | 8.4 |
| | Gas temp (°C) | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| 2nd Sample Line | Pitot-static (Pa) | 17 | 22 | 29 | 26 | 35 | 50 | 68 | 68 | 54 | 35 |
| | Velocity (ms$^{-1}$) | 5.3 | 6.1 | 6.9 | 6.6 | 7.6 | 9.1 | 10.6 | 10.6 | 9.5 | 7.6 |
| | Gas temp (°C) | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1040 |
| Gas Meter Temp (°C) | 30 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 55 | 31 | | | 22 | 54 | | | 55 | 31 | | | 22 | 54 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 9.6 | 7.2 | | | 6.1 | 9.5 | | | 9.6 | 7.2 | | | 6.1 | 9.5 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71333 | | | Time On | | 13.05 | | | 71334 | | | Time On | | 11.15 | | | | | | | | | | |
| | | | | Time Off | | 13.17 | | | | | | Time Off | | 11.35 | | | | | | | | | | |
| | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 20 | | | | | | | | | | |
| Dry Gas Meter Data | ON | 273272 | | Sample Volume | | 0.294m$^3$ | | | ON | 273566 | | Sample Volume | | 0.299m$^3$ | | | | | | | | | | |
| | OFF | 273566 | | Volume at STP | | 0.281m$^3$ | | | OFF | 273865 | | Volume at STP | | 0.273m$^3$ | | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.12mg | 0.13 mg | |
| **Particulate Concentration** | **0.44 mg/m$^3$** | **0.48 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 13/10/2003** **System Used: TCRTecora** **Engineer(s): DT/DC**

**Stack Title: Stack 43** **Stack Diameter: 0.52m** **Stack Area: 0.21m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 65 | 199 | 171 | 151 | 149 | 128 | 129 | 139 | 142 | 52 |
| | Velocity (ms$^{-1}$) | 10.4 | 18.2 | 16.9 | 15.9 | 15.8 | 14.6 | 14.7 | 15.2 | 15.4 | 9.3 |
| | Gas temp (°C) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 2nd Sample Line | Pitot-static (Pa) | 47 | 106 | 112 | 123 | 123 | 115 | 159 | 135 | 58 | 60 |
| | Velocity (ms$^{-1}$) | 8.9 | 13.3 | 13.7 | 14.3 | 14.3 | 13.9 | 16.3 | 15.0 | 9.8 | 10.0 |
| | Gas temp (°C) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1003 |
| Gas Meter Temp (°C) | 21.4 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 199 | 142 | | | 106 | 58 | | | 199 | 142 | | | 106 | 58 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 18.2 | 15.4 | | | 13.3 | 9.8 | | | 18.2 | 15.4 | | | 13.3 | 9.8 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71323 | | | | Time On | | 10.26 | | 71294 | | | | Time On | | 10.40 | | | | | | | | | |
| | | | | | Time Off | | 10.38 | | | | | | Time Off | | 10.52 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 275778 | | | Sample Volume | | 0.574m$^3$ | | ON | 276325 | | | Sample Volume | | 0.559m$^3$ | | | | | | | | | |
| | OFF | 276325 | | | Volume at STP | | 0.505m$^3$ | | OFF | 276884 | | | Volume at STP | | 0.515m$^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | 0.24 mg | 0.44 mg | |
| **Particulate Concentration** | **0.48 mg/m$^3$** | **0.86 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 14/10/2003** **System Used: TCRTecora** **Engineer(s): DT/DC**

**Stack Title: Stack 44** **Stack Diameter: 0.32m** **Stack Area: 0.08m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 190 | 216 | 201 | 198 | 211 | 224 | 207 | 153 | 188 | 228 |
| | Velocity (ms$^{-1}$) | 17.8 | 19.0 | 18.2 | 18.1 | 18.7 | 19.3 | 18.6 | 16.0 | 17.7 | 19.5 |
| | Gas temp (°C) | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 2nd Sample Line | Pitot-static (Pa) | - | - | - | - | - | - | | - | - | - |
| | Velocity (ms$^{-1}$) | - | - | - | - | - | - | - | - | - | - |
| | Gas temp (°C) | - | - | - | | - | - | - | - | - | - |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1003 |
| Gas Meter Temp (°C) | 25 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 216 | 188 | | | - | - | | | 216 | 188 | | | - | - | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 19.0 | 17.7 | | | - | - | | | 19.0 | 17.7 | | | - | - | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 360 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 360 | | | | | | | | | |
| Filter Identification Number | 71285 | | | | Time On | | 13.05 | | 71286 | | | | Time On | | 13.20 | | | | | | | | | |
| | | | | | Time Off | | 13.17 | | | | | | Time Off | | 13.32 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 277952 | | | Sample Volume | | 0.372m$^3$ | | ON | 278324 | | | Sample Volume | | 0.376m$^3$ | | | | | | | | | |
| | OFF | 278324 | | | Volume at STP | | 0.337m$^3$ | | OFF | 278700 | | | Volume at STP | | 0.341m$^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | <0.04 mg | <0.04 mg | |
| **Particulate Concentration** | **<0.12 mg/m$^3$** | **<0.12 mg/m$^3$** | |

# PARTICULATE SAMPLING DATA SHEET

**Site : VIP-Heinke** **Date: 13/10/2003** **System Used: TCRTecora** **Engineer(s): DT/AS**

**Stack Title: Stack 60** **Stack Diameter: 0.28m** **Stack Area: 0.06m$^2$** **Stack Form: Circular**

| Preliminary Traverse Points | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance Along Axis | | 0.05d | 0.15d | 0.25d | 0.35d | 0.45d | 0.55d | 0.65d | 0.75d | 0.85d | 0.95d |
| 1st Sample Line | Pitot-static (Pa) | 5 | 6 | 5 | 5 | 4 | 4 | 6 | 5 | 5 | 5 |
| | Velocity (ms$^{-1}$) | 2.9 | 3.2 | 3.0 | 2.9 | 2.7 | 2.9 | 3.1 | 3.0 | 2.8 | 2.8 |
| | Gas temp (°C) | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| 2nd Sample Line | Pitot-static (Pa) | 5 | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 6 |
| | Velocity (ms$^{-1}$) | 2.8 | 2.4 | 2.6 | 2.7 | 2.9 | 2.8 | 3.1 | 3.3 | 3.4 | 3.2 |
| | Gas temp (°C) | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |

| | |
|---|---|
| Highest/lowest pitot-static reading <9:1 | Yes |
| Max temperature variation <10% | Yes |
| Pre Sampling Leak Test Satisfactory | Yes |

| | |
|---|---|
| Barometric Pressure (Pa) | 1020 |
| Gas Meter Temp (°C) | 29 |

| Sampling Location Data | First Sample | | | | | | | | Second Sample | | | | | | | | Third Sample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Point | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | | | | | | | | |
| Pitot-static (Pa) | 6 | 5 | | | 4 | 7 | | | 6 | 5 | | | 4 | 7 | | | | | | | | | | |
| Velocity (ms$^{-1}$) | 3.2 | 2.8 | | | 2.4 | 3.4 | | | 3.2 | 2.8 | | | 2.4 | 3.4 | | | | | | | | | | |
| Pump Setting (l/m) | Automatic Pump Setting | | | | | | | | Automatic Pump Setting | | | | | | | | | | | | | | | |
| Sampling Times | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | Nozzle (mm) | | 7.6 | | Time (sec) | | 180 | | | | | | | | | |
| Filter Identification Number | 71319 | | | | Time On | | 15.45 | | 71294 | | | | Time On | | 16.08 | | | | | | | | | |
| | | | | | Time Off | | 15.57 | | | | | | Time Off | | 16.20 | | | | | | | | | |
| | | | | | Total (mins) | | 12 | | | | | | Total (mins) | | 12 | | | | | | | | | |
| Dry Gas Meter Data | ON | 275074 | | | Sample Volume | | 0.049m$^3$ | | ON | 275123 | | | Sample Volume | | 0.044m$^3$ | | | | | | | | | |
| | OFF | 275123 | | | Volume at STP | | 0..044m$^3$ | | OFF | 275167 | | | Volume at STP | | 0.041m$^3$ | | | | | | | | | |
| Post Sampling Leak Test Satisfactory | Yes | | | | | | | | Yes | | | | | | | | | | | | | | | |

| Test Result Data | First Sample | Second Sample | Third Sample |
|---|---|---|---|
| Mass Collected On Filter | <0.04 mg | <0.04 mg | |
| **Particulate Concentration** | **<0.91mg/m$^3$** | **<0.98 mg/m$^3$** | |

**VIP-Heinke**

## Solvent Usage for the Period January 03 to December 04

| Substance Name | Purchased | Used | Risk Phrase |
|---|---|---|---|
| M.E.K | 25Kgs | 25Kgs | **R11. R36/37** |
| Chemosil 211 | 1679Kgs | 1311Kgs | **R11. R36/37** |
| Chemosil 411 | 1375Kgs | 1125Kgs | **R10. R33. R38. R61. R20/21** |
| Toluene | 1700Kgs | 1600Kgs | **R11.R20** |
| Metaspray 2 | 25Kgs | 20Kgs | **R36/38** |
| Methanol (IMS) | 326Kgs | 163Kgs | **R11. R39. R23. R24. R25** |
| Chemosil 511 | 256Kgs | 228Kgs | **R11. R36/37** |
| M.I.B.K | 420Kgs | 375Kgs | **R11** |
| | **Total** | **Total** | |
| | **5806 Kgs** | **4847 Kgs** | |

# Emission Report 2003

Company: VIP-Heinke  Contact: Gary Williamson

From: 01 Jan 03  00:00:01  To: 31 Dec 03  23:59:59

Device 0 : --- Channel 1  Cal Factor: 26.26 (constant)  Average: 3.859  Averaging Period: 15 min  Maximum: 1028