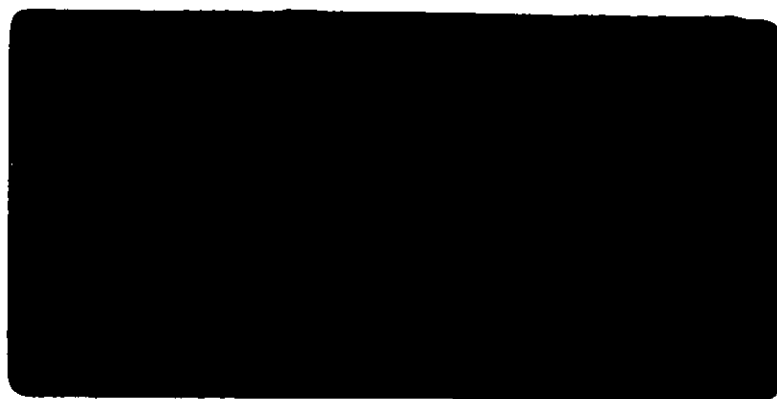


Note: This is a reference cited in AP 42, *Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

AP42 Section:	13.2.2
Background Chapter	4
Reference:	10
Title:	<i>Critical Review of Open Source Particulate Emission Measurements - Part II - Field Comparison,</i> Southern Research Institute, Birmingham, AL, August, 1984.



TRC Environmental
Consultants, Inc.



CRITICAL REVIEW OF OPEN SOURCE
PARTICULATE EMISSION MEASUREMENTS
PART II - FIELD COMPARISON



TRC PROJECT 2681-L81

Prepared by:
Edward T. Brookman
Manager, Fugitive Emissions Section

July 1984

800 Connecticut Blvd.
East Hartford, CT 06108
(203) 289-8631

TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
1.0	INTRODUCTION	1
2.0	TECHNICAL DISCUSSION	3
2.1	Test Site	3
2.2	Basic Methodology	3
2.3	Test Equipment	4
2.3.1	Exposure Profiling System (MEDUSA)	4
2.3.2	Wind Monitoring and Recording Systems	10
2.3.3	Standard High Volume Samplers	10
2.3.4	Modified High Volume Sampler	11
2.4	Test Procedures	11
2.4.1	Emissions	11
2.4.2	Road Surface Material Samples	12
2.5	Laboratory and Quality Assurance Procedures	12
2.5.1	Calibration Procedures	12
2.5.2	Filter Procedure	13
2.5.3	Silt Procedure	13
2.5.4	Particle Sizing Procedure	14
2.6	Data Analysis Procedures	14
2.6.1	Emission Factor Calculation	14
2.6.2	Silt Content Calculation	16
2.6.3	Traffic Parameter Calculations	16
3.0	RESULTS	17
3.1	Measured Emission Factors - Total Particulate	17
3.2	Measured Emission Factors - Other Particle Size Ranges	50
3.3	Empirical Emission Factors	111
3.3.1	Total Particulate Emission Factors	112
3.3.2	Emission Factors for Other Particle Size Ranges	112

APPENDICES

A	SITE LOG
B	FIELD DATA SHEETS
C	LAB SHEETS - FILTERS
D	DATA LOGGER OUTPUT
E	10 M WIND STRIP CHART
F	RESULTS OF MICROSCOPIC ANALYSIS OF FILTERS - PERFORMED BY ENERGY TECHNOLOGY CONSULTANTS
G	SIEVE ANALYSIS DATA SHEETS
H	TRAFFIC DATA SUMMARIES

LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
2-1	Sampling Network Layout, Typical for all Tests	5
2-2	TRC's MEDUSA	6
2-3	Sampling Head with 4" Nozzle	8
2-4	Nested Nozzles with Velocity Sensors	9
3-1	Calibration Curves for Ambient Velocity Sensors	32
3-2	Velocity Profiles - 6/11/84 (Tests 1 and 2)	33
3-3	Velocity Profiles - 6/12/84 (Tests 3, 4 and 5)	34
3-4	Velocity Profiles - 6/13/84 (Tests 6 and 7)	35
3-5	Velocity Profiles - 6/14/84 (Tests 8, 9 and 10)	36
3-6	Velocity Profiles - 6/15/84 (Test 11)	37
3-7	Exposure Profile - Test 1	39
3-8	Exposure Profile - Test 2	40
3-9	Exposure Profile - Test 3	41
3-10	Exposure Profile - Test 4	42
3-11	Exposure Profile - Test 5	43
3-12	Exposure Profile - Test 6	44
3-13	Exposure Profile - Test 7	45
3-14	Exposure Profile - Test 8	46
3-15	Exposure Profile - Test 9	47
3-16	Exposure Profile - Test 10	48
3-17	Exposure Profile - Test 11	49

LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
3-1	Data Analysis Summary - Test No. 1 - Total Particulate . .	18
3-2	Data Analysis Summary - Test No. 2 - Total Particulate . .	19
3-3	Data Analysis Summary - Test No. 3 - Total Particulate . .	20
3-4	Data Analysis Summary - Test No. 4 - Total Particulate . .	21
3-5	Data Analysis Summary - Test No. 5 - Total Particulate . .	22
3-6	Data Analysis Summary - Test No. 6 - Total Particulate . .	23
3-7	Data Analysis Summary - Test No. 7 - Total Particulate . .	24
3-8	Data Analysis Summary - Test No. 8 - Total Particulate . .	25
3-9	Data Analysis Summary - Test No. 9 - Total Particulate . .	26
3-10	Data Analysis Summary - Test No. 10 - Total Particulate . .	27
3-11	Data Analysis Summary - Test No. 11 - Total Particulate . .	28
3-12	Average Millivolt Readings for Ambient Velocity Sensors . .	31
3-13	Data Analysis Summary - Test No. 1 - Material Less Than 30 Microns	51
3-14	Data Analysis Summary - Test No. 2 - Material Less Than 30 Microns	52
3-15	Data Analysis Summary - Test No. 3 - Material Less Than 30 Microns	53
3-16	Data Analysis Summary - Test No. 4 - Material Less Than 30 Microns	54
3-17	Data Analysis Summary - Test No. 5 - Material Less Than 30 Microns	55
3-18	Data Analysis Summary - Test No. 6 - Material Less Than 30 Microns	56
3-19	Data Analysis Summary - Test No. 7 - Material Less Than 30 Microns	57
3-20	Data Analysis Summary - Test No. 8 - Material Less Than 30 Microns	58
3-21	Data Analysis Summary - Test No. 9 - Material Less Than 30 Microns	59

LIST OF TABLES (Continued)

<u>TABLE</u>		<u>PAGE</u>
3-22	Data Analysis Summary - Test No. 10 - Material Less Than 30 Microns	60
3-23	Data Analysis Summary - Test No. 11 - Material Less Than 30 Microns	61
3-24	Data Analysis Summary - Test No. 1 - Material Less Than 15 Microns	62
3-25	Data Analysis Summary - Test No. 2 - Material Less Than 15 Microns	63
3-26	Data Analysis Summary - Test No. 3 - Material Less Than 15 Microns	64
3-27	Data Analysis Summary - Test No. 4 - Material Less Than 15 Microns	65
3-28	Data Analysis Summary - Test No. 5 - Material Less Than 15 Microns	66
3-29	Data Analysis Summary - Test No. 6 - Material Less Than 15 Microns	67
3-30	Data Analysis Summary - Test No. 7 - Material Less Than 15 Microns	68
3-31	Data Analysis Summary - Test No. 8 - Material Less Than 15 Microns	69
3-32	Data Analysis Summary - Test No. 9 - Material Less Than 15 Microns	70
3-33	Data Analysis Summary - Test No. 10 - Material Less Than 15 Microns	71
3-34	Data Analysis Summary - Test No. 11 - Material Less Than 15 Microns	72
3-35	Data Analysis Summary - Test No. 1 - Material Less Than 10 Microns	73
3-36	Data Analysis Summary - Test No. 2 - Material Less Than 10 Microns	74
3-37	Data Analysis Summary - Test No. 3 - Material Less Than 10 Microns	75
3-38	Data Analysis Summary - Test No. 4 - Material Less Than 10 Microns	76

LIST OF TABLES (Continued)

<u>TABLE</u>		<u>PAGE</u>
3-39	Data Analysis Summary - Test No. 5 - Material Less Than 10 Microns	77
3-40	Data Analysis Summary - Test No. 6 - Material Less Than 10 Microns	78
3-41	Data Analysis Summary - Test No. 7 - Material Less Than 10 Microns	79
3-42	Data Analysis Summary - Test No. 8 - Material Less Than 10 Microns	80
3-43	Data Analysis Summary - Test No. 9 - Material Less Than 10 Microns	81
3-44	Data Analysis Summary - Test No. 10 - Material Less Than 10 Microns	82
3-45	Data Analysis Summary - Test No. 11 - Material Less Than 10 Microns	83
3-46	Data Analysis Summary - Test No. 1 - Material Less Than 5 Microns	84
3-47	Data Analysis Summary - Test No. 2 - Material Less Than 5 Microns	85
3-48	Data Analysis Summary - Test No. 3 - Material Less Than 5 Microns	86
3-49	Data Analysis Summary - Test No. 4 - Material Less Than 5 Microns	87
3-50	Data Analysis Summary - Test No. 5 - Material Less Than 5 Microns	88
3-51	Data Analysis Summary - Test No. 6 - Material Less Than 5 Microns	89
3-52	Data Analysis Summary - Test No. 7 - Material Less Than 5 Microns	90
3-53	Data Analysis Summary - Test No. 8 - Material Less Than 5 Microns	91
3-54	Data Analysis Summary - Test No. 9 - Material Less Than 5 Microns	92
3-55	Data Analysis Summary - Test No. 10 - Material Less Than 5 Microns	93

LIST OF TABLES (Continued)

<u>TABLE</u>		<u>PAGE</u>
3-56	Data Analysis Summary - Test No. 11 - Material Less Than 5 Microns	94
3-57	Data Analysis Summary - Test No. 1 - Material Less Than 2.5 Microns	95
3-58	Data Analysis Summary - Test No. 2 - Material Less Than 2.5 Microns	96
3-59	Data Analysis Summary - Test No. 3 - Material Less Than 2.5 Microns	97
3-60	Data Analysis Summary - Test No. 4 - Material Less Than 2.5 Microns	98
3-61	Data Analysis Summary - Test No. 5 - Material Less Than 2.5 Microns	99
3-62	Data Analysis Summary - Test No. 6 - Material Less Than 2.5 Microns	100
3-63	Data Analysis Summary - Test No. 7 - Material Less Than 2.5 Microns	101
3-64	Data Analysis Summary - Test No. 8 - Material Less Than 2.5 Microns	102
3-65	Data Analysis Summary - Test No. 9 - Material Less Than 2.5 Microns	103
3-66	Data Analysis Summary - Test No. 10 - Material Less Than 2.5 Microns	104
3-67	Data Analysis Summary - Test No. 11 - Material Less Than 2.5 Microns	105
3-68	Particle Size Distributions Determined by Microscopic Analysis	107
3-69	Average Particle Size Distributions	108
3-70	Emission Factor Summary	110

1.0 INTRODUCTION

During the past decade, research has shown that particulate matter emissions from open sources contribute significantly to the particulate matter levels in many areas. The specific emission contribution is, however, frequently unknown because of the variability of and confusion in the methods used to measure the emission rates from open sources. This variability and lack of standard measuring methods are of great concern to industries in particular because of the current EPA emission trading policy which allows them to trade open source emissions for process emissions.

In an effort to understand and correct the open source emission data base that was generated through the use of various measurement techniques and devices, Southern Research Institute (SRI), under contract to the U.S. Environmental Protection Agency (EPA), is conducting a critical review of the open source fugitive particulate measurement methodologies currently in use. The first phase of this review was the compilation of documents that describe in detail each of the testing methods and data reduction techniques used in developing any significant portion of the existing data base. The second phase of this review was the execution of an open source field test of the fugitive dust emissions from an unpaved road at an industrial location.

TRC Environmental Consultants, Inc. (TRC) has contributed to the open source emission data base through a number of measurement projects sponsored by both industry and government. The field test of particular interest to the critical review by SRI is the one performed during our EPA-sponsored project: "Non-Attainment Studies for Allegheny County, Pennsylvania," EPA Contract No. 68-02-3514, Task 9. The measurement methodology used during this field test was an exposure profiler sampling system known as MEDUSA (Multi-Sample

Emission Determination Unit for Source Assessment). During Phase I of this critical review, TRC produced a current procedures document describing this methodology and submitted the document to SRI for review. Southern Research Institute subsequently selected TRC as one of five participants in the second phase of the critical review, the field comparison. This report describes the methodology used during this field test, discusses the data collected and their analysis, and presents the results of the test program.

2.0 TECHNICAL DISCUSSION

2.1 Test Site

The field comparison was conducted on a section of roadway running east-west along the south shore of Lake Michigan at U.S. Steel Corporation's Gary Works in Gary, Indiana. Testing was conducted on five consecutive days during the period of June 11 to 15, 1984 with a total of 11 test runs completed. The road segment was paved, but no control was applied for several weeks prior to the testing period. This lack of control resulted in the accumulation of a heavy layer of material on the road surface, thereby causing a redesignation of the road as unpaved.

The test strip was subdivided into five sampling locations approximately 50 feet apart. Site number 1 was at the east end of the test strip and the other sites were located consecutively westward. The five participants in the field comparison test program (TRC, U.S. Steel, MRI, PEDCo, and E²M) were each assigned one of the sampling locations on the first day of testing and then rotated to each of the other locations during the four subsequent sampling days. TRC began the test program at site 5, then moved to sites 1, 2, 3 and 4, respectively.

2.2 Basic Methodology

TRC's MEDUSA was employed to obtain data on the characteristics of the particulate emissions from the road segment. The sampling technique used is generally known as the exposure profiling method. This method involves sampling the cross section of a pollutant cloud to establish the flux of pollutant through the sampling plane per sampling period. In the case of a line source (i.e., roadway) where horizontal dispersion is considered homogeneous, sampling in the vertical, up to the extent of the pollutant

plume, is sufficient for quantification of particulate emissions from the source. The sampling plane, in this case, is defined by the width of the sampling intake manifolds and the vertical extent of the sampling apparatus. Given enough sampling points in the vertical to encompass the source plume, a plot of the exposure (mass/area) versus height for a specific sampling period yields the vertical exposure profile of the dispersing cloud. Graphical integration of the area inside the exposure profile curve provides a measure of the emission rate per source length unit.

A major sampling requirement for this technique is that the extraction of the sample from the bulk cloud is done isokinetically. This means that the sampler intake must be oriented normal to the motion of the pollutant cloud and that the sampling rate must be equivalent to the speed of the moving cloud (i.e., wind speed).

2.3 Test Equipment

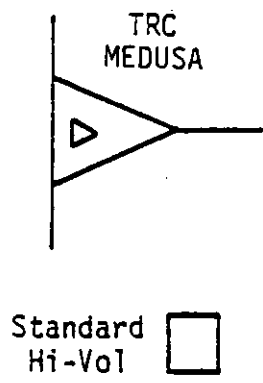
The primary pieces of equipment used for the test program included the following:

- Vertical exposure profiler (MEDUSA)
- Wind monitoring and recording systems
- Standard high volume samplers
- Modified high volume sampler

This equipment is described in the following sections. The locations of these pieces of equipment during the tests are shown in Figure 2-1.

2.3.1 Exposure Profiling System (MEDUSA)

The MEDUSA consisted of a 10 meter tower positioned 5 meters from the road with five unidirectional samplers mounted at the 1, 3, 5, 7, and 9 meter levels (Figure 2-2). Each sampler consisted of a standard General Metals high



Road Surface

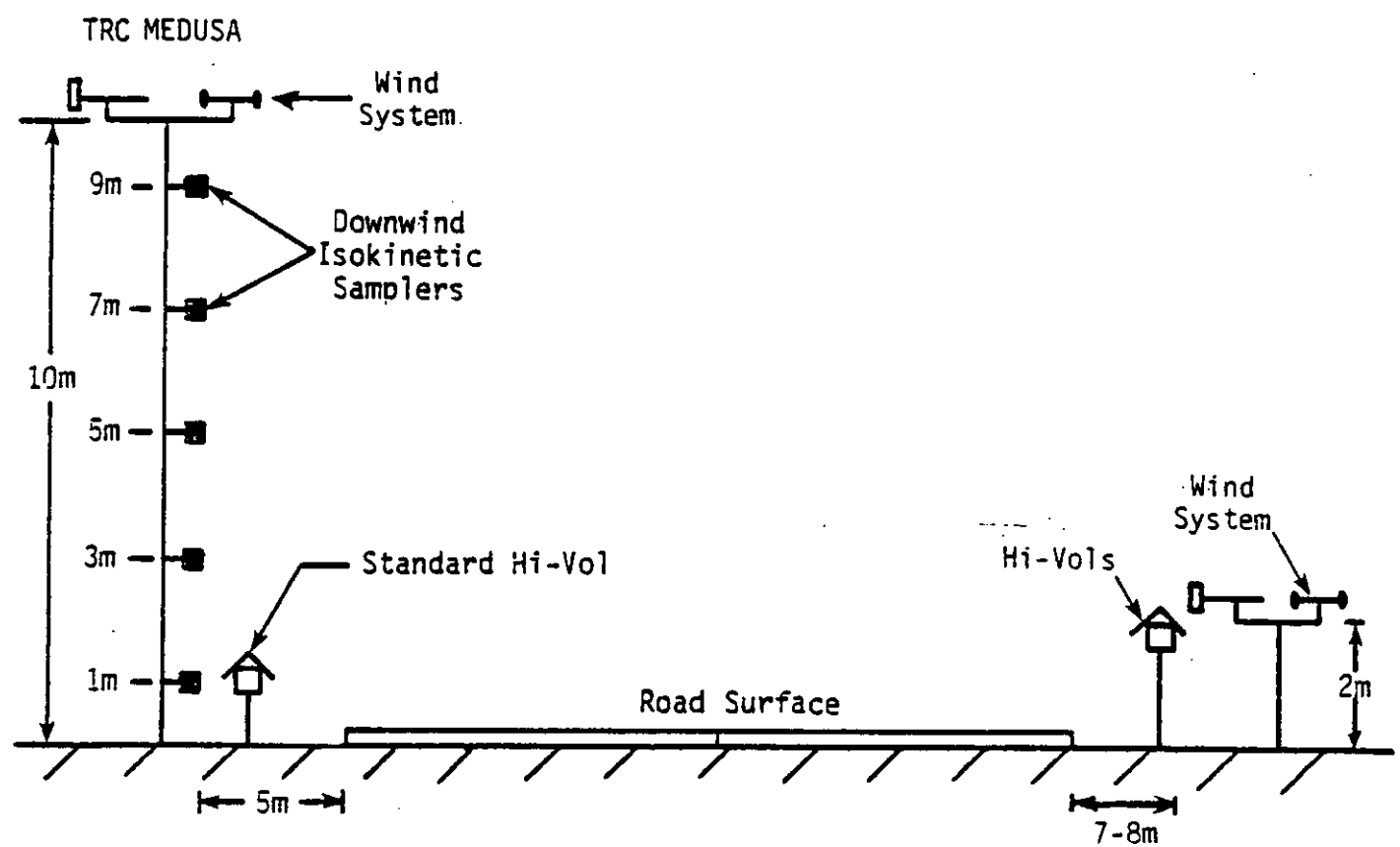
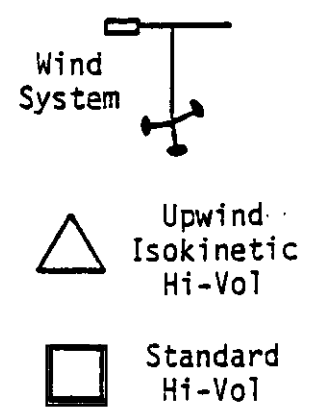


Figure 2-1. Sampling network layout, typical for all tests.

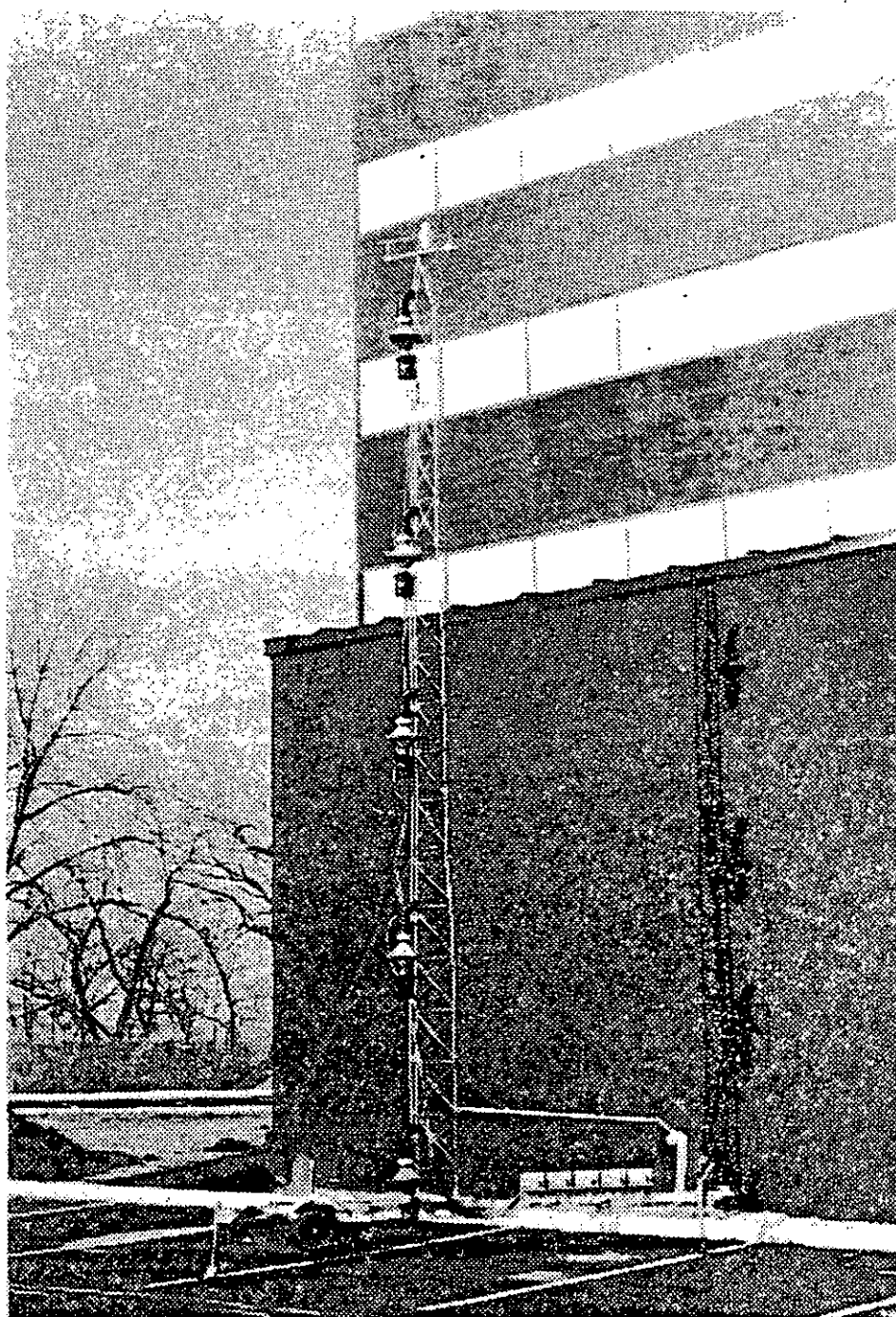


Figure 2-2. TRC's MEDUSA

volume blower capable of drawing up to 70 cubic feet of air per minute, a filter section which held a standard 8 inch by 10 inch fiberglass filter, and an intake that consisted of a set of four nested nozzles having diameters of 1, 2, 3 and 4 inches (Figures 2-3 and 2-4).

The five samplers were attached to the tower by gimbals so that the samplers remained vertical when the tower was raised and lowered by means of a winch. This feature enabled the filters to remain horizontal and thus eliminate any possibility of loss of collected material. The entire system was mounted on a modified boat trailer with telescopic stabilizing arms. The trailer was completely portable allowing for rotation of the MEDUSA to correspond with the wind direction.

The flow through each sampler was automatically isokinetic due to an electronically driven control system. Two hot-film velocity sensors (refer to Figure 2-4) are connected by means of a bridge circuit to the sampler's blower motor. One sensor measures the ambient air velocity while the second monitors the airflow through the nozzle inlet. When the signals match, the bridge is balanced and the system is operating isokinetically. When the wind velocity as measured by the ambient sensor changes, the bridge becomes unbalanced, and the controller adjusts the blower speed, and thus the flow through the nozzle, until the sampler sensor's signal again matches the ambient one.

The sensor signals, in millivolts, were monitored and recorded for each sampler by means of a Kaye Instruments Digistrip III computerized data logger. The signals were monitored 80 times per minute and averages were printed out every five minutes. Calibration curves were then utilized to convert the average millivolt readings to velocities. A thermocouple was also connected to the data logger so that the ambient temperature could be continuously monitored and recorded.

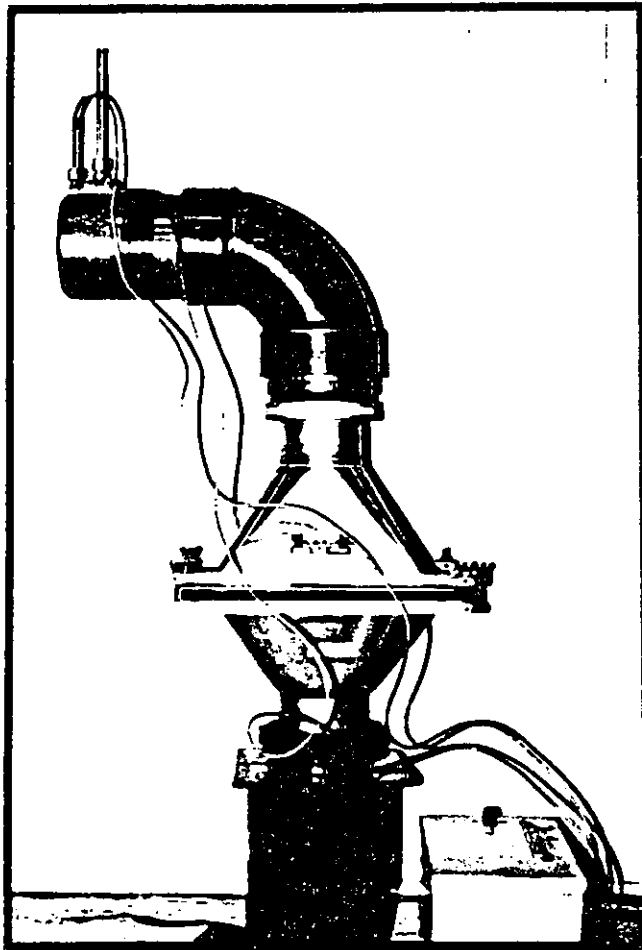


Figure 2-3. Sampling head with 4" nozzle.

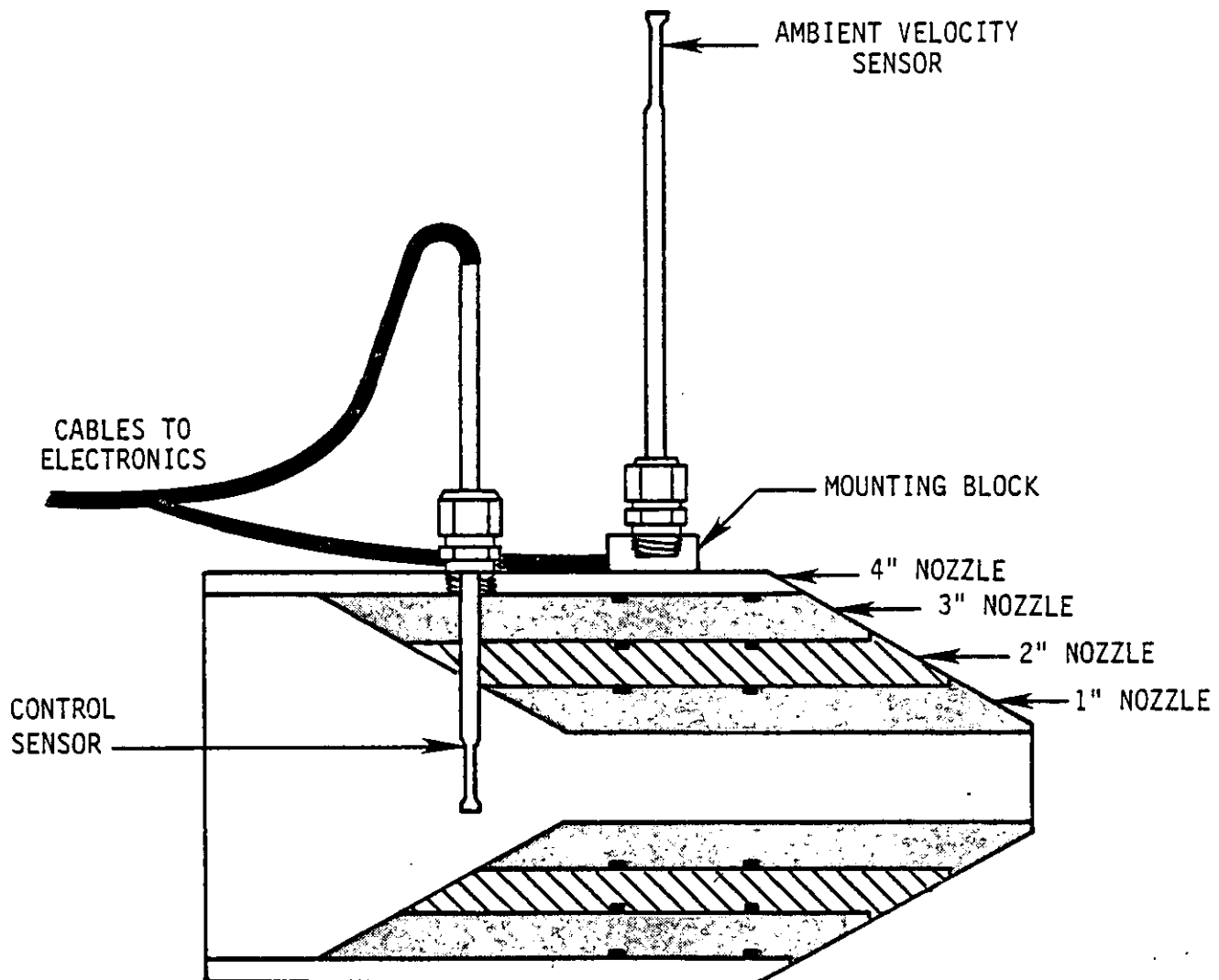


Figure 2-4. Nested nozzles with velocity sensors.

2.3.2 Wind Monitoring and Recording Systems

During each test, the wind speed and direction were monitored continuously using two Climatronics Mark III wind systems. One system was mounted on top of the 10 meter profiler tower. The other system was mounted on a tripod two meters above ground level, seven to eight meters upwind of the road segment.

Since the sampling heads used on the MEDUSA provided wind speed information at five different heights, it was not necessary to use the Mark III systems to generate wind speed profiles. Their purpose was to provide the following information:

- Wind direction for siting and directing sampling equipment.
- Wind speed regime prior to test period for proper sampler nozzle size selection.
- Back-up wind speed system to insure no loss of data.

2.3.3 Standard High Volume Samplers

Background levels of particulate matter impacting the profiler downwind of the test road were monitored using a standard high volume (hi-vol) sampler operated at 40-45 cfm. The sampler was placed approximately seven to eight meters upwind of the source, two meters above ground level. Since there were no visible nearby sources at the sampling location, it was assumed that the background concentration was uniform vertically and horizontally.

An additional standard hi-vol sampler was operated downwind of the source at the location of the profiler (approximately five meters from the road), elevated to one meter above ground. This sampler, which was operated at approximately 40 cfm, remained at the first day's test location and was used by SRI for comparison purposes, thereby eliminating location bias on the results.

2.3.4 Modified High Volume Sampler

An additional sampler was placed approximately seven to eight meters upwind of the test road, elevated two meters above ground. This sampler, which operated isokinetically, was a modified hi-vol equipped with a unidirectional sampling head similar to that of the MEDUSA samplers. The purpose of this sampler was to provide a comparison with the upwind standard hi-vol. The output signals from the two hot-film sensors of the sampling head were recorded on a strip chart at the base of the unit.

2.4 Test Procedures

2.4.1 Emissions

The following general emission test procedures were used for all of the tests conducted during the program:

Pre-Test Procedure

- Arrive at site, position equipment according to test plan and wind direction. Start wind systems. Prepare data sheet noting test location.
- Check wind speed at 10 meter level. Lower tower and insert appropriate nozzles into samplers.
- Load preweighed and numbered filters into all samplers (upwind and downwind). Record filter numbers on data sheet. Cover samplers with bags to prevent deposition of extraneous material on filters.
- At indication that test is about to start, remove bags from all samplers and raise tower.

Test Procedure

- At signal, start all samplers, data logger, and strip chart. Record start time on data sheet. Note start time on wind system and strip charts.
- Check flow rates of standard hi-vol samplers to ensure design flow operation.
- Throughout test, check wind direction to ensure that samplers on profiler are directed perpendicular to road. Rotate tower as necessary.

- Throughout test, monitor data logger to ensure all samplers are working properly.

Post-Test Procedure

- At signal that test is complete, shut off all samplers and record stop time on data sheet and charts.
- Lower tower and remove filters from all samplers. Place filters into designated envelopes (marked with filter number, test number, date, and sampler location) for return to TRC laboratory.
- Compile site log and check data sheet for completeness.

The site log compiled for the five day testing program is presented as Appendix A of this report. The 11 data sheets completed throughout the test program are presented as Appendix B of this report.

2.4.2 Road Surface Material Samples

At the end of each day of testing, a sample of the road surface material was collected for subsequent silt analysis. The collection technique consisted of using a trowel to collect a scoop of material from seven different locations, equally spaced across the road surface. Material was collected to a depth of approximately one-half inch since it was assumed that vehicle tire action only disturbs the surface to this depth. The collected material was placed into a ziplock bag, sealed, and labeled with the date.

2.5 Laboratory and Quality Assurance Procedures

2.5.1 Calibration Procedures

Prior to transporting the equipment to the test site, all sampling systems and wind systems were checked and calibrated using standard procedures. The MEDUSA samplers were calibrated in TRC's wind tunnel against a primary standard cup anemometer system traceable to the National Bureau of Standards.

The standard hi-vols were calibrated using a magnehelic gauge, BGI variable head orifice, and water manometer. The wind systems were checked and adjusted according to the manufacturer's specifications.

2.5.2 Filter Procedure

Prior to use in the field, all filters were inspected for defects, numbered, and stored for 24 hours in a desiccator. Filters were then weighed in a controlled atmosphere, and after 24 hours a randomly selected 10 percent of the filters were re-weighed to verify the accuracy of the initial weighings. After use in the field, the exposed filters were shipped back to TRC where they were desiccated for 24 hours, weighed, and audited as before. The procedures are in accordance with the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Ambient Air Specific Methods, May 1977. The difference between the initial filter weight and the final filter weight is the mass loading on the filter.

2.5.3 Silt Procedure

The collected road surface material for each test was initially riffled to obtain a suitable sample for sieving (typically 200 to 400 grams). This sample was then placed in a stack of standard 8-inch sieves, mesh sizes 10, 18, 35, 60, 120, and 200, which was then placed in a RO-TAP for 15 minutes. Following shaking, the material was removed from each sieve and weighed. The amount of material passing through the 200 mesh screen is, by definition, the silt content of the sample ($< 75 \mu\text{m}$). The sieving was performed according to standard ASTM procedure.

2.5.4 Particle Sizing Procedure

Particle sizing of the material collected on the filters was performed by a subcontractor: Energy Technology Consultants (ETC), Murrysville, Pennsylvania. The technique they utilized was computer controlled scanning electron microscopy (CCSEM). This technique provides results in terms of both number and weight distributions. Physical diameters are measured and then converted to equivalent aerodynamic diameters based on the particle's density, physical diameter and shape. Particle chemistries are also provided.

2.6 Data Analysis Procedures

The analysis procedures used to reduce the data collected during the test program included calculations of emission factors, silt contents, and average traffic parameters. These calculation procedures are described in the following subsections.

2.6.1 Emission Factor Calculation

For each test, the following general procedure was used to calculate the emission factor. Details of each step are given in the results section of this report (Section 3).

Step 1: Determine total weight of particulate matter collected by each sampler.

$$M_i = W_f - W_i$$

where:

M_i = total particulate sample weight at position i (mg)

W_f = final weight of exposed filter (mg)

W_i = initial weight of filter (mg)

Step 2: Calculate particulate concentration for all samples.

$$C_i = \left(\frac{1000 \text{ } \mu\text{g/mg}}{0.0283 \text{ m}^3/\text{ft}^3} \right) \left(\frac{M_i}{Q t} \right)$$

where:

C_i = particulate concentration at position i ($\mu\text{g/m}^3$)

Q = sampler flow rate (SCFM)

t = duration of sampling (min)

Step 3: Subtract background particulate concentration from profile sample concentrations.

$$P_i = C_i - C_{uw}$$

where:

P_i = particulate concentration at position i due to source being measured ($\mu\text{g/m}^3$)

C_{uw} = particulate concentration at upwind sampler ($\mu\text{g/m}^3$)

Step 4: Calculate particulate exposures.

$$E = \left(\frac{0.0283 \text{ m}^3/\text{ft}^3}{1000 \text{ } \mu\text{g/mg}} \right) \left(\frac{P_i Q t}{a} \right)$$

where:

E = particulate exposure at position i (mg/cm^2)

a = sampler intake area (cm^2)

Step 5: Correct for nonisokinetic conditions, using exposure multiplier:

$$U_i/u_i$$

where:

U_i = wind velocity at position i

u_i = sampling intake velocity at position i

Step 6: Plot sampler height versus particulate exposure at corresponding height.

Step 7: If exposure value at nine meter sampler is not equal to zero, extrapolate to the y-axis. Extrapolate exposure profile at the one meter level to the x-axis.

Step 8: Graphically integrate to determine the area under the vertical exposure profile.

Step 9: Calculate the emission factor:

$$EF = \left(\frac{(1 \times 10^4 \text{ cm}^2/\text{m}^2) (1.609 \times 10^3 \text{ m/mi})}{(4.5359 \times 10^5 \text{ lb/mg})} \right) \left(\frac{A}{N} \right)$$

where:

EF = particulate emission factor (lb/VMT)

A = integrated area (m-mg/cm²)

N = number of vehicle passes

Step 10: Determine particle size distribution of material collected on each filter using microscopic techniques.

Step 11: Multiply total weight of particulate matter collected by each sampler (Step 1) by percent of material less than desired particle size fraction.

Step 12: Determine the emission factor for the desired particle size range by repeating Steps 2-9 using the weight results of Step 11.

2.6.2 Silt Content Calculation

For each road surface sample collected, the silt content was calculated as the percentage of material which will pass through the 200 mesh sieve of the sieve analysis.

2.6.3 Traffic Parameter Calculations

The traffic data for each test were independently compiled by SRI. These data, which included vehicle counts subdivided by number of wheels, vehicle weight and speed regime, were provided to each program participant subsequent to the testing period. Average vehicle parameters (number of wheels, speed, weight) were then determined through basic algebraic techniques.

3.0 RESULTS

3.1 Measured Emission Factors - Total Particulate Matter

The results of the testing program for total particulate matter are presented in Tables 3-1 through 3-11 for Tests 1 to 11, respectively. The numbers presented were calculated following the data analysis procedure presented in Section 2.6.1. Details of each of the steps of that procedure are discussed below.

Step 1: Determine total weight of particulate matter collected by each sampler.

The initial and final weights of each filter along with the resulting weight difference are presented in Appendix C by filter number. The field data sheets (Appendix B) relate the filter number to the sampler location and test number.

Step 2: Calculate particulate concentration for all samplers.

Concentration is a function of the filter mass, the duration of sampling, and the sampler flow rate. The filter mass was determined in Step 1. The duration of sampling is the length of time the sampler was operating. In all cases except Test 1, the duration of sampling was the entire test run time as indicated on the field data sheets. In Test 1, there was a power outage of approximately 12 minutes for the samplers at the 1 meter and 7 meter heights of the tower (refer to the site log, Appendix A, for details). Thus, the sampling duration for these two samplers was 12 minutes less than the others, as indicated in Table 3-1.

TABLE 3-1: DATA ANALYSIS SUMMARY - TEST NO. 1
TOTAL PARTICULATE

=====

TEST NUMBER: 1 TEST DATE: 6-11-84 START TIME: 1406
 PROFILER LOCATION: 5-SOUTH
 AMBIENT TEMPERATURE: 64.2 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.53	60.63	39	.6
TOWER-7M	3.15	54.09	27	41.5
TOWER-5M	2.97	51.03	39	276.3
TOWER-3M	2.62	44.93	39	420
TOWER-1M	2.01	34.46	27	295.8
UPWIND		45	39	6.7

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	8.97	-125.93	-.104
TOWER-7M	1004.19	869.29	.64
TOWER-5M	4905.52	4770.62	3.314
TOWER-3M	8470.36	8335.46	5.098
TOWER-1M	11234.7	11099.81	5.207
UPWIND	134.9		

INTEGRATED AREA: 28.46 M-MG/CM2

NO. OF VEHICLE PASSES: 40
 AVG. VEHICLE SPEED: 34.41 KPH (21.38 MPH)
 AVG. VEHICLE WEIGHT: 20730 KG (22.85 TONS)
 AVG. NO. OF WHEELS: 12.1

SILT CONTENT: 8.17 %

EMISSION FACTOR: 7.11 KG/VKT (25.24 LB/VMT)

TABLE 3-2: DATA ANALYSIS SUMMARY - TEST NO. 2
TOTAL PARTICULATE

TEST NUMBER: 2 TEST DATE: 6-11-84 START TIME: 1554
 PROFILER LOCATION: 5 - SOUTH
 AMBIENT TEMPERATURE: 66.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.19	71.97	55	3.6
TOWER-7M	3.81	65.43	55	33.6
TOWER-5M	3.71	63.68	55	83.6
TOWER-3M	3.15	54.09	55	173
TOWER-1M	2.54	43.62	55	247
UPWIND		45	55	4.7

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	32.14	-34.96	-.048
TOWER-7M	329.94	262.84	.33
TOWER-5M	843.42	776.32	.949
TOWER-3M	2055.02	1987.92	2.064
TOWER-1M	3638.22	3571.12	2.99
UPWIND	67.1		

INTEGRATED AREA: 12.86 M-MG/CM2

NO. OF VEHICLE PASSES: 30
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 11703 KG (12.9 TONS)
 AVG. NO. OF WHEELS: 5.13

SILT CONTENT: 8.17 %

EMISSION FACTOR: 4.29 KG/VKT (15.2 LB/VMT)

TABLE 3-3: DATA ANALYSIS SUMMARY - TEST NO. 3
TOTAL PARTICULATE

TEST NUMBER: 3 TEST DATE: 6-12-84 START TIME: 951
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 87.5 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.57	44.16	25	12.6
TOWER-7M	4.11	39.75	25	33.2
TOWER-5M	4.11	39.75	25	129.3
TOWER-3M	3.43	33.12	25	218.2
TOWER-1M	2.97	28.71	25	284.5
UPWIND		45	25	15.6

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	403.26	-86.72	-.059
TOWER-7M	1180.63	690.64	.426
TOWER-5M	4598.07	4108.08	2.533
TOWER-3M	9311.35	8821.36	4.533
TOWER-1M	14008.39	13518.4	6.02
UPWIND	489.99		

INTEGRATED AREA: 27.34 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 32.57 KPH (20.24 MPH)
 AVG. VEHICLE WEIGHT: 26018 KG (28.68 TONS)
 AVG. NO. OF WHEELS: 13.46

SILT CONTENT: 12.26 %

EMISSION FACTOR: 6.67 KG/VKT (23.66 LB/VMT)

TABLE 3-4: DATA ANALYSIS SUMMARY - TEST NO. 4
TOTAL PARTICULATE

TEST NUMBER: 4 TEST DATE: 6-12-84 START TIME: 1142.
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 92.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.72	55.2	23	30.4
TOWER-7M	5.28	51.03	23	77.8
TOWER-5M	5.28	51.03	23	198.6
TOWER-3M	4.45	42.94	23	221.5
TOWER-1M	3.71	35.82	23	386.4
UPWIND		45	23	17.1

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	846.05	262.24	.207
TOWER-7M	2342.18	1758.37	1.281
TOWER-5M	5978.88	5395.07	3.93
TOWER-3M	7925.74	7341.93	4.499
TOWER-1M	16572.51	15988.7	8.175
UPWIND	583.81		

INTEGRATED AREA: 36.97 M-MG/CM2

NO. OF VEHICLE PASSES: 42
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 20221 KG (22.29 TONS)
 AVG. NO. OF WHEELS: 13.1

SILT CONTENT: 12.26 %

EMISSION FACTOR: 8.8 KG/VKT (31.23 LB/VMT)

TABLE 3-5: DATA ANALYSIS SUMMARY - TEST NO. 5
TOTAL PARTICULATE

TEST NUMBER: 5 TEST DATE: 6-12-84 START TIME: 1434
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 98.1 F NOZZLE DIAMETER: 2 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.16	22.14	20	14.7
TOWER-7M	4.19	17.99	20	26.9
TOWER-5M	4.72	20.28	20	59.1
TOWER-3M	4.01	17.23	20	85.4
TOWER-1M	2.62	11.23	20	94.9
UPWIND		45	20	15.8

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	1173.29	552.95	.342
TOWER-7M	2641.51	2021.17	1.016
TOWER-5M	5148.24	4527.9	2.565
TOWER-3M	8757.6	8137.26	3.915
TOWER-1M	14928.4	14308.07	4.488
UPWIND	620.34		

INTEGRATED AREA: 24.8 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 43.11 KPH (26.79 MPH)
AVG. VEHICLE WEIGHT: 6768 KG (7.46 TONS)
AVG. NO. OF WHEELS: 4.71

SILT CONTENT: 12.26 %

EMISSION FACTOR: 5.9 KG/VKT (20.94 LB/VMT)

TABLE 3-6: DATA ANALYSIS SUMMARY - TEST NO. 6
TOTAL PARTICULATE

=====

TEST NUMBER: 6 TEST DATE: 6-13-84 START TIME: 1133
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 95.8 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.79	47.98	28	39
TOWER-7M	2.79	47.98	28	111.3
TOWER-5M	2.39	41	28	233.4
TOWER-3M	1.96	33.59	28	297.3
TOWER-1M	1.7	29.22	28	381.3
UPWIND		45	28	61

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	1025.81	-684.88	-.321
TOWER-7M	2927.51	1216.82	.571
TOWER-5M	7184.05	5473.35	2.193
TOWER-3M	11171.22	9460.52	3.106
TOWER-1M	16466.01	14755.31	4.215
UPWIND	1710.7		

INTEGRATED AREA: 20.24 M-MG/CM2

NO. OF VEHICLE PASSES: 46
 AVG. VEHICLE SPEED: 35.52 KPH (22.07 MPH)
 AVG. VEHICLE WEIGHT: 26055 KG (28.72 TONS)
 AVG. NO. OF WHEELS: 14.04

SILT CONTENT: 13.69 %

EMISSION FACTOR: 4.4 KG/VKT (15.61 LB/VMT)

TABLE 3-7: DATA ANALYSIS SUMMARY - TEST NO. 7
TOTAL PARTICULATE

TEST NUMBER: 7 TEST DATE: 6-13-84 START TIME: 1251
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 94.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.67	45.8	27	59.9
TOWER-7M	2.59	44.49	27	122.3
TOWER-5M	2.26	38.82	27	186.1
TOWER-3M	1.8	30.97	27	273.3
TOWER-1M	1.35	23.12	27	343.6
UPWIND		45	27	9.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	1711.7	1447.05	.625
TOWER-7M	3597.63	3332.98	1.398
TOWER-5M	6274.04	6009.38	2.199
TOWER-3M	11549.73	11285.08	3.294
TOWER-1M	19452.16	19187.51	4.18
UPWIND	264.65		

INTEGRATED AREA: 24 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 35.73 KPH (22.2 MPH)
 AVG. VEHICLE WEIGHT: 31734 KG (34.98 TONS)
 AVG. NO. OF WHEELS: 15.8

SILT CONTENT: 13.69 %

EMISSION FACTOR: 5.85 KG/VKT (20.76 LB/VMT)

TABLE 3-8: DATA ANALYSIS SUMMARY - TEST NO. 8
TOTAL PARTICULATE

=====

TEST NUMBER: 8 TEST DATE: 6-14-84 START TIME: 1232
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 59.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.61	54.22	44	10.8
TOWER-7M	5.03	48.58	44	48.1
TOWER-5M	4.93	47.6	44	128.4
TOWER-3M	4.32	41.71	44	203.7
TOWER-1M	3.71	35.82	44	253.2
UPWIND		45	44	3.3

SAMPLER	CONCENTRATION ADJUSTED FOR		EXPOSURE (MG/CM2)
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	
TOWER-9M	159.96	101.07	.15
TOWER-7M	795.17	736.28	.977
TOWER-5M	2166.42	2107.53	2.739
TOWER-3M	3922.12	3863.23	4.4
TOWER-1M	5676.62	5617.73	5.495
UPWIND	58.89		

INTEGRATED AREA: 27.7 M-MG/CM2

NO. OF VEHICLE PASSES: 61
 AVG. VEHICLE SPEED: 38.38 KPH (23.85 MPH)
 AVG. VEHICLE WEIGHT: 29393 KG (32.4 TONS)
 AVG. NO. OF WHEELS: 14.62

SILT CONTENT: 6.92 %

EMISSION FACTOR: 4.54 KG/VKT (16.11 LB/VMT)

TABLE 3-9: DATA ANALYSIS SUMMARY - TEST NO. 9
TOTAL PARTICULATE

=====

TEST NUMBER: 9 TEST DATE: 6-14-84 START TIME: 1430
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.84	56.43	37	5.6
TOWER-7M	5.54	53.49	37	37.4
TOWER-5M	4.93	47.6	37	114.5
TOWER-3M	4.34	41.95	37	156.7
TOWER-1M	3.78	36.56	37	163.5
UPWIND		45	37	1

SAMPLER	CONCENTRATION ADJUSTED FOR		EXPOSURE (MG/CM2)
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	
TOWER-9M	94.77	73.55	.095
TOWER-7M	667.8	646.58	.794
TOWER-5M	2297.39	2276.16	2.488
TOWER-3M	3567	3545.78	3.416
TOWER-1M	4271.31	4250.09	3.567
UPWIND	21.22		

INTEGRATED AREA: 20.69 M-MG/CM2

NO. OF VEHICLE PASSES: 51
 AVG. VEHICLE SPEED: 42.28 KPH (26.27 MPH)
 AVG. VEHICLE WEIGHT: 9653 KG (10.64 TONS)
 AVG. NO. OF WHEELS: 5.65

SILT CONTENT: 6.92 %

EMISSION FACTOR: 4.06 KG/VKT (14.39 LB/VMT)

TABLE 3-10: DATA ANALYSIS SUMMARY - TEST NO. 10
TOTAL PARTICULATE

=====

TEST NUMBER: 10 TEST DATE: 6-14-84 START TIME: 1550
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	6.58	63.55	32	23.2
TOWER-7M	6.17	59.62	32	52.5
TOWER-5M	5.16	49.81	32	131.8
TOWER-3M	4.34	41.95	32	192.4
TOWER-1M	3.43	33.12	32	250.8
UPWIND		45	32	3

SAMPLER	CONCENTRATION ADJUSTED FOR		EXPOSURE (MG/CM2)
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	
TOWER-9M	403.15	329.54	.416
TOWER-7M	972.38	898.76	1.064
TOWER-5M	2922.14	2848.53	2.817
TOWER-3M	5063.97	4990.35	4.158
TOWER-1M	8361.33	8287.72	5.451
UPWIND	73.62		

INTEGRATED AREA: 28.25 M-MG/CM2

NO. OF VEHICLE PASSES: 50
 AVG. VEHICLE SPEED: 45.06 KPH (28 MPH)
 AVG. VEHICLE WEIGHT: 11367 KG (12.53 TONS)
 AVG. NO. OF WHEELS: 6.28

SILT CONTENT: 6.92 %

EMISSION FACTOR: 5.65 KG/VKT (20.04 LB/VMT)

TABLE 3-11: DATA ANALYSIS SUMMARY - TEST NO. 11
TOTAL PARTICULATE

=====

TEST NUMBER: 11 TEST DATE: 6-15-84 START TIME: 926
 PROFILER LOCATION: 4 - SOUTH
 AMBIENT TEMPERATURE: 62.9 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.1	53.21	26	14.2
TOWER-7M	2.97	51.03	26	72.4
TOWER-5M	2.59	44.49	26	163
TOWER-3M	2.16	37.07	26	305.1
TOWER-1M	1.75	30.1	26	391.1
UPWIND		45	26	4.7

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	362.67	220.72	.107
TOWER-7M	1928.12	1786.17	.827
TOWER-5M	4979.3	4837.35	1.953
TOWER-3M	11184.18	11042.24	3.716
TOWER-1M	17661.18	17519.23	4.785
UPWIND	141.95		

INTEGRATED AREA: 22.97 M-MG/CM2

NO. OF VEHICLE PASSES: 40
 AVG. VEHICLE SPEED: 34 KPH (21.13 MPH)
 AVG. VEHICLE WEIGHT: 29067 KG (32.04 TONS)
 AVG. NO. OF WHEELS: 14.7

SILT CONTENT: 6.39 %

EMISSION FACTOR: 5.74 KG/VKT (20.37 LB/VMT)

The flow rate for the upwind standard hi-vol was preset in TRC's laboratory at 45 cfm prior to the field test. This flow rate was periodically checked during the test program and found to remain constant.

The usual method of determining sampler flow rate for the MEDUSA heads is to take the average nozzle millivolt reading for the test and determine the flow rate from a calibration chart for that particular sampler and nozzle size. As discussed in Section 2.3.1, the voltage signals from the velocity sensors for each MEDUSA sampler were recorded using a data logger. The signals were "read" approximately 80 times per minute and millivolt averages were printed out every 5 minutes. These 5 minute averages are then averaged to obtain an overall test value. The resulting data logger output for each test is presented in Appendix D.

Subsequent to the field tests, however, it was determined that the data logger internal averaging program for the nozzle sensor output was incorrect. Since a check of the ambient sensor output showed complete accuracy, it was possible to calculate sampler flow rates using the measured ambient velocity at the location of each sampler in conjunction with the nozzle size and calibration curves. Since the pretest sampler calibrations showed essentially 100 percent matching between the ambient and nozzle sensors (i.e., no deviation from completely isokinetic flow), this calculation method introduced little uncertainty into the data analysis procedure.

The average ambient millivolt readings that were used to determine the MEDUSA sampler flow rates are presented in Table 3-12. The corresponding ambient velocity for each of these readings was determined using calibration curves (Figure 3-1). The resulting velocity profiles are presented in Figures 3-2 through 3-6. The sampler flow rates were then calculated by multiplying the nozzle inlet area by the local velocity. Concentrations were then determined for all samplers using the equation presented in Section 2.6.1.

As a check of the velocity profiles determined using the hot-film anemometers, the 10 m wind system output was used for comparison. This output is presented in Appendix E. Good agreement between the measured average 9 m velocity and the average 10 m wind system output was found in all test cases. The 2 m upwind wind system could not be used for comparison due to damage sustained during the first field test (refer to site log for details). In addition, the airflow sensed by the 2 m wind system appeared to be locally affected by the slag heaps positioned on the north side of the test strip when the wind was from the north. The flow over these piles results in local turbulence at least up to the 2 m level which would cause uncertainty in the data obtained using this wind system.

Step 3: Subtract background particulate concentration from profile sample concentrations.

As discussed in Section 2.3.3, the upwind standard hi-vol was used to determine background particulate levels and these levels were assumed homogeneous both vertically and horizontally due to the absence of

TABLE 3-12

AVERAGE MILLIVOLT READINGS FOR AMBIENT VELOCITY SENSORS

TEST NO.	SAMPLER HEIGHT				
	1 m	3 m	5 m	7 m	9 m
1	2157.5*	2290.2	2367.5	2368.9*	2526.1
2	2340.5	2454.2	2575.6	2551.9	2704.0
3	2478.3	2543.6	2684.6	2629.7	2793.4
4	2682.7	2808.3	2949.3	2897.6	3036.6
5	2367.6	2701.1	2830.9	2652.1	2922.6
6	2036.1	2063.1	2169.5	2259.4	2302.7
7	1875.7	2006.9	2131.4	2183.6	2267.2
8	2683.5	2775.5	2873.8	2846.4	3014.1
9	2707.3	2778.7	2876.2	2951.8	3059.4
10	2612.4	2782.7	2924.3	3069.6	3180.3
11	2062.9	2134.1	2237.0	2314.0**	2400.0

* Interpolated from other readings from Tests 1 and 2.

** Interpolated from other readings from Test 11.

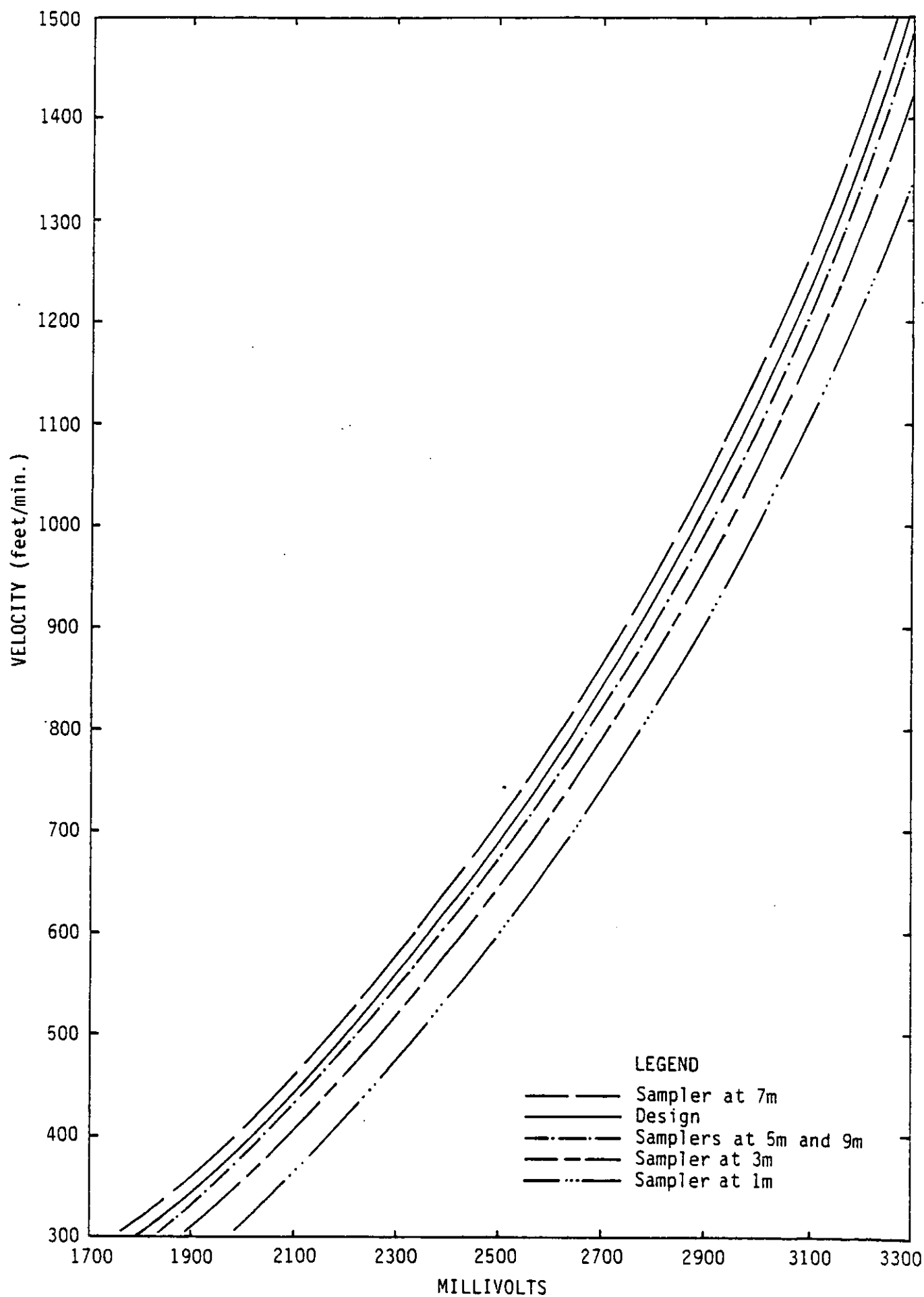


Figure 3-1. Calibration curves for ambient velocity sensors.

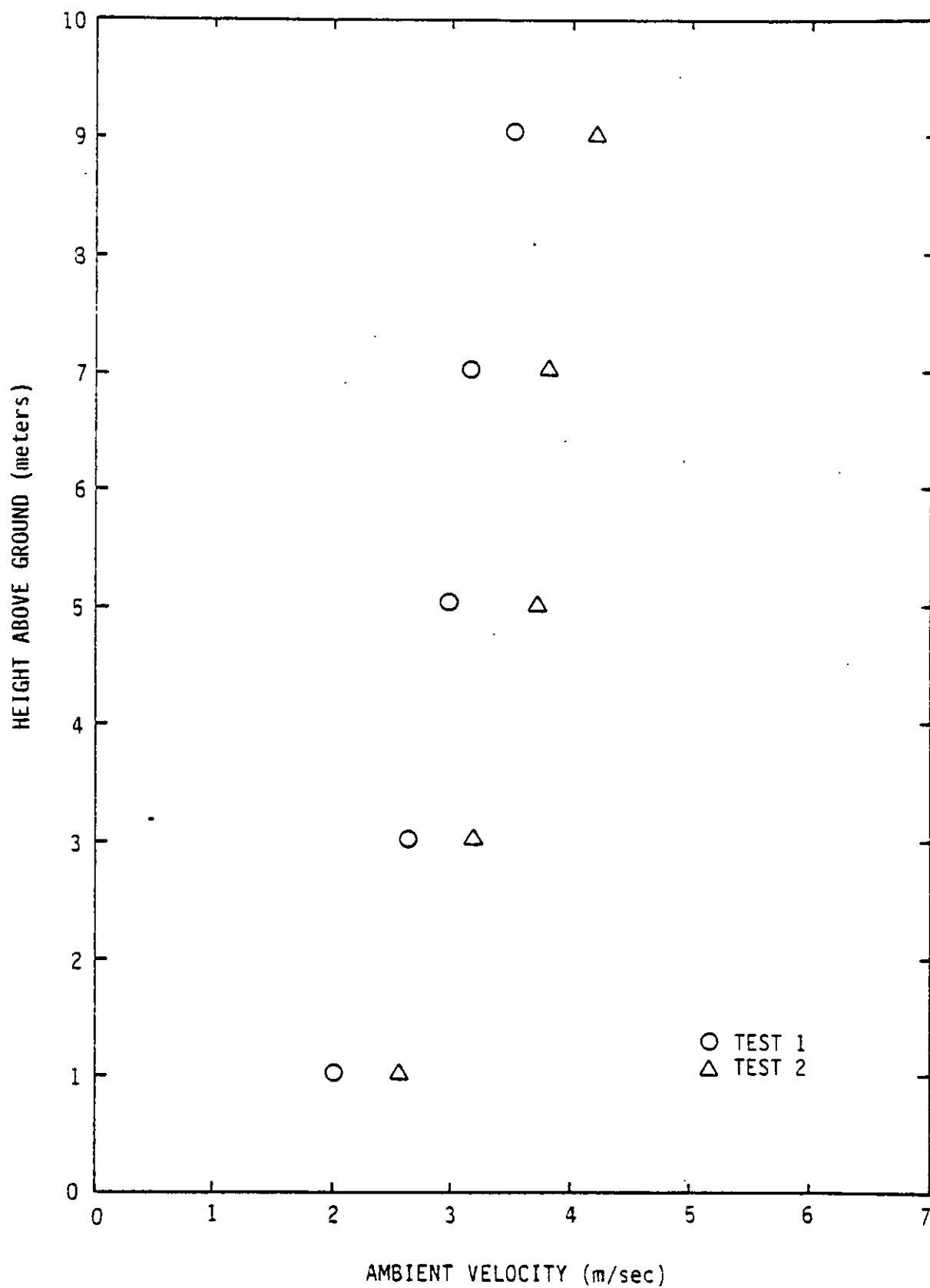


Figure 3-2. Velocity profiles - 6/11/84 (tests 1 and 2).

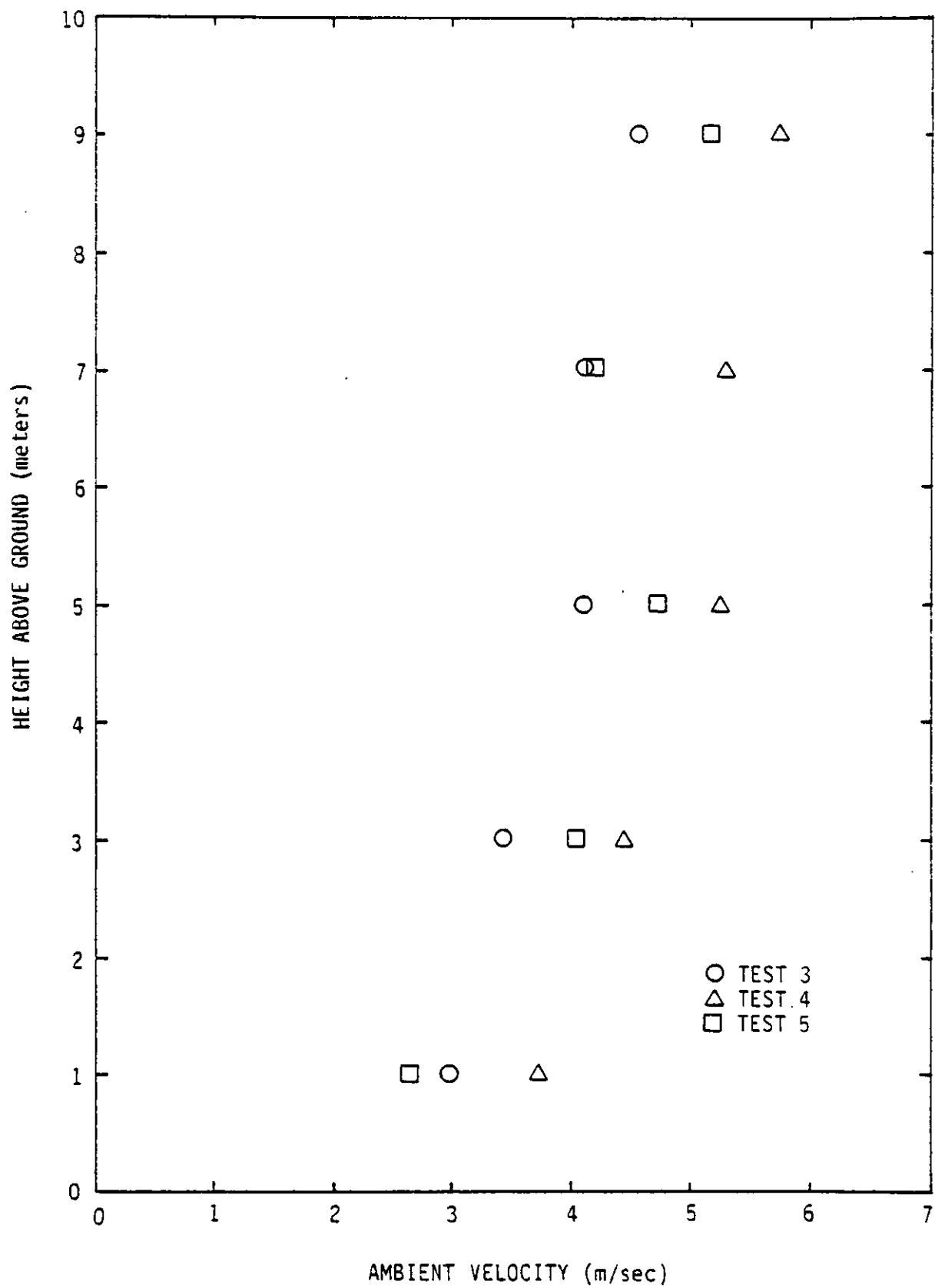


Figure 3-3. Velocity profiles - 6/12/84 (tests 3,4 and 5).

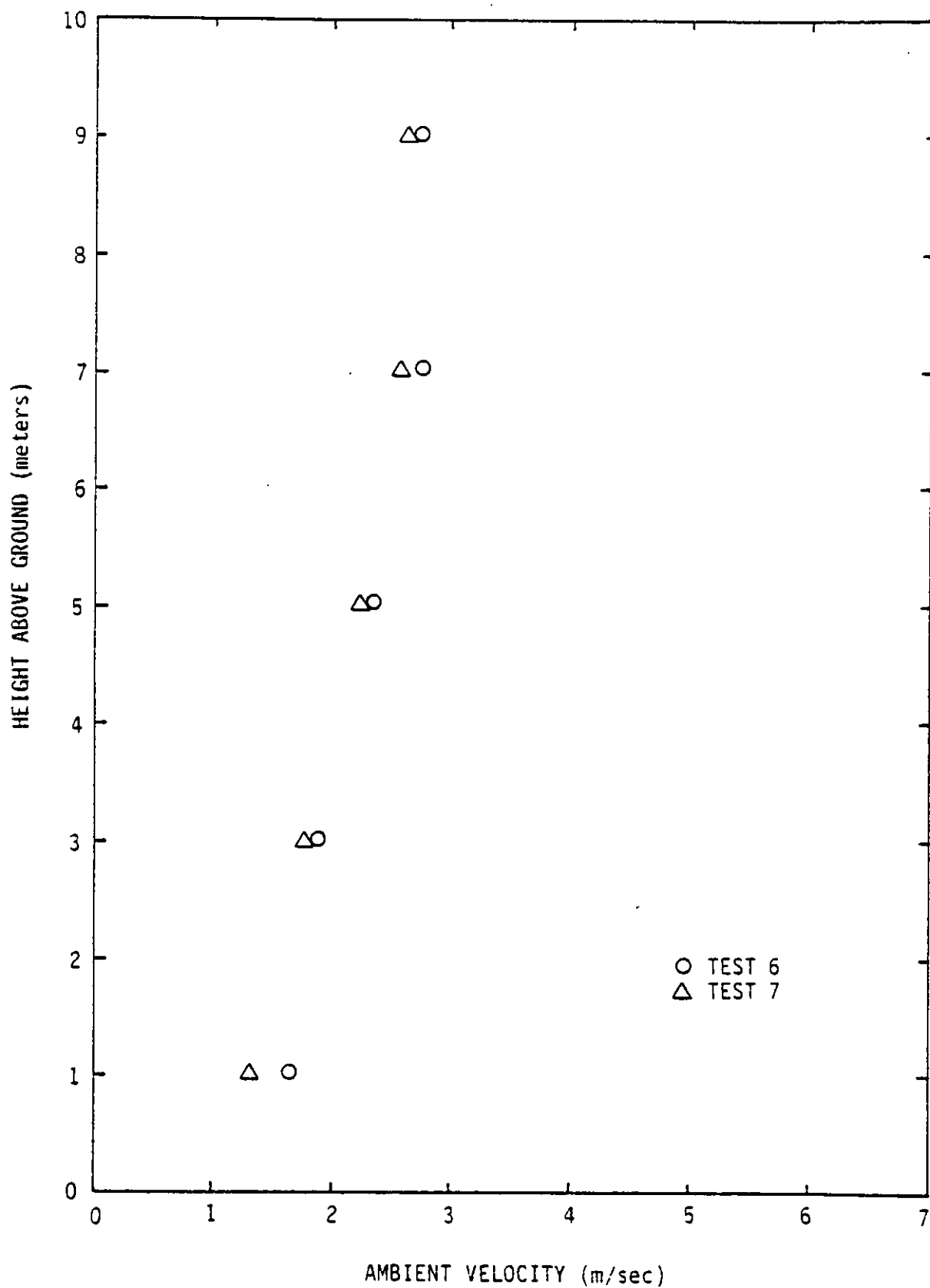


Figure 3-4. Velocity profiles - 6/13/84 (tests 6 and 7).

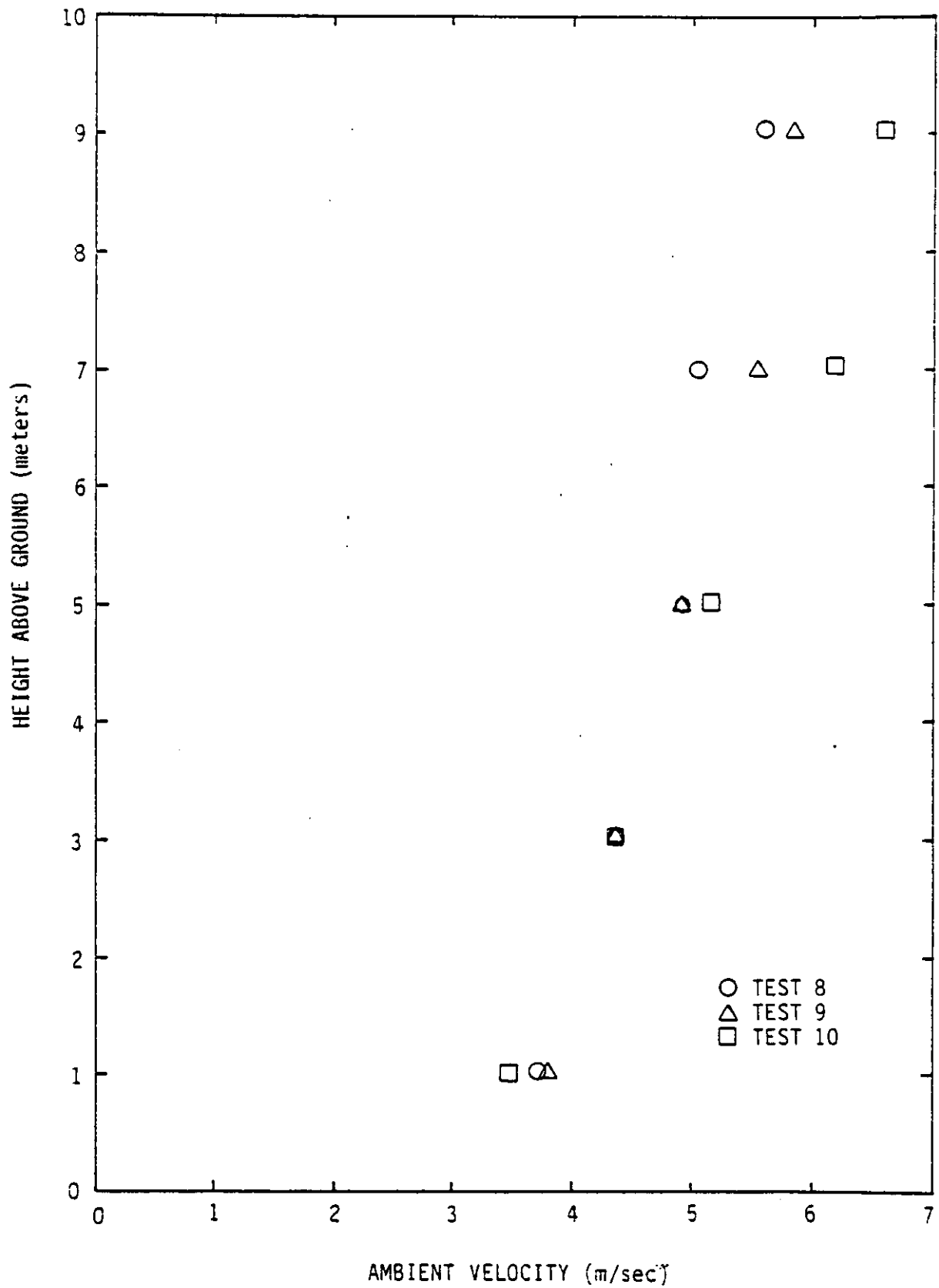


Figure 3-5. Velocity profiles - 6/14/84 (tests 8,9 and 10).

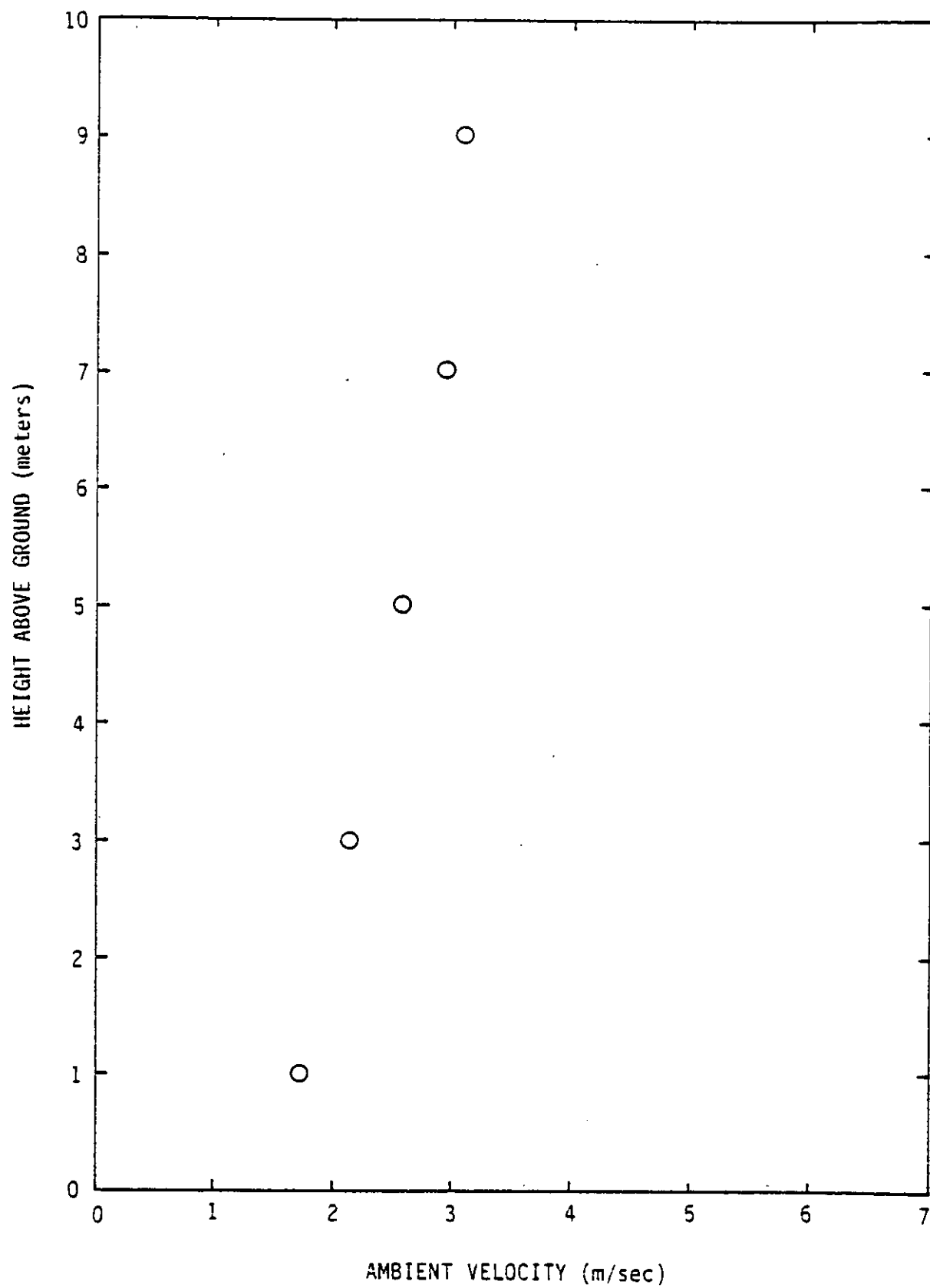


Figure 3-6. Velocity profile - 6/15/84 (test 11).

local sources. Thus, the concentration calculated for this sampler for each test was subtracted from the profiler concentrations to obtain the concentrations of particulate matter attributable solely to vehicle activity on the test road.

The background concentrations calculated using the data obtained from the operation of the isokinetic upwind hi-vol showed relatively good agreement with those obtained using the standard hi-vol, particularly when the wind was from the direction of the plant (as discussed above, the slag heaps appeared to influence local air flow when the wind was from the north). These data are merely for comparison purposes since the test procedure used previously by TRC in the Allegheny County study utilized the standard hi-vol for background particulate level determination.

Step 4: Calculate particulate exposures.

The particulate exposures for each sampler for each test were calculated using the formula presented in Section 2.6.1.

Step 5: Correct for nonisokinetic conditions.

As discussed previously, the samplers were assumed to operate 100 percent isokinetically, based on pretest calibrations.

Steps 6-7: Plot sampler height versus particulate exposure at corresponding height. Extrapolate to axes.

The plots of sampler height versus particulate exposure at the corresponding height are presented in Figures 3-7 through 3-17 for Tests 1 to 11, respectively.

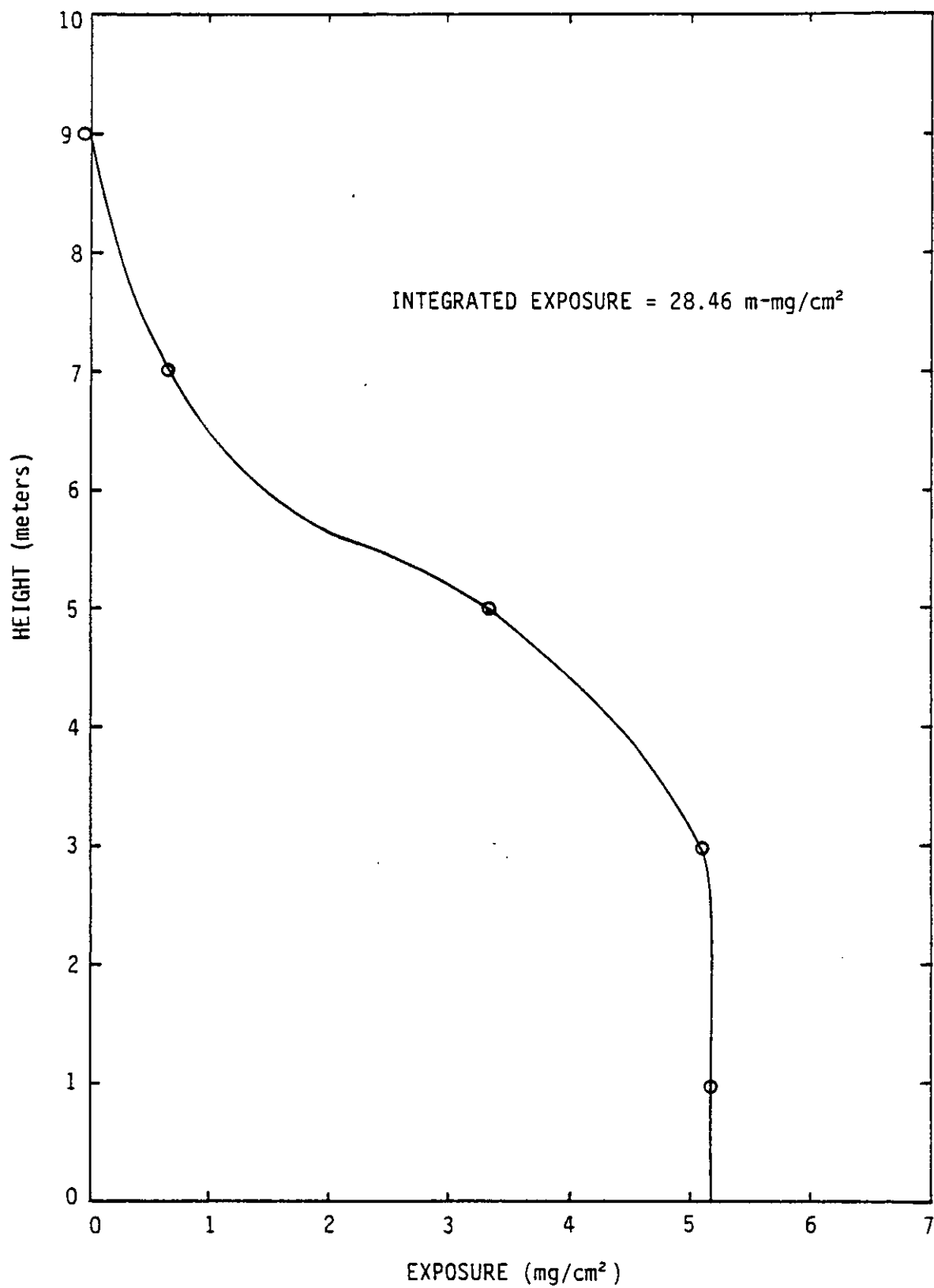


Figure 3-7. Exposure profile - test 1.

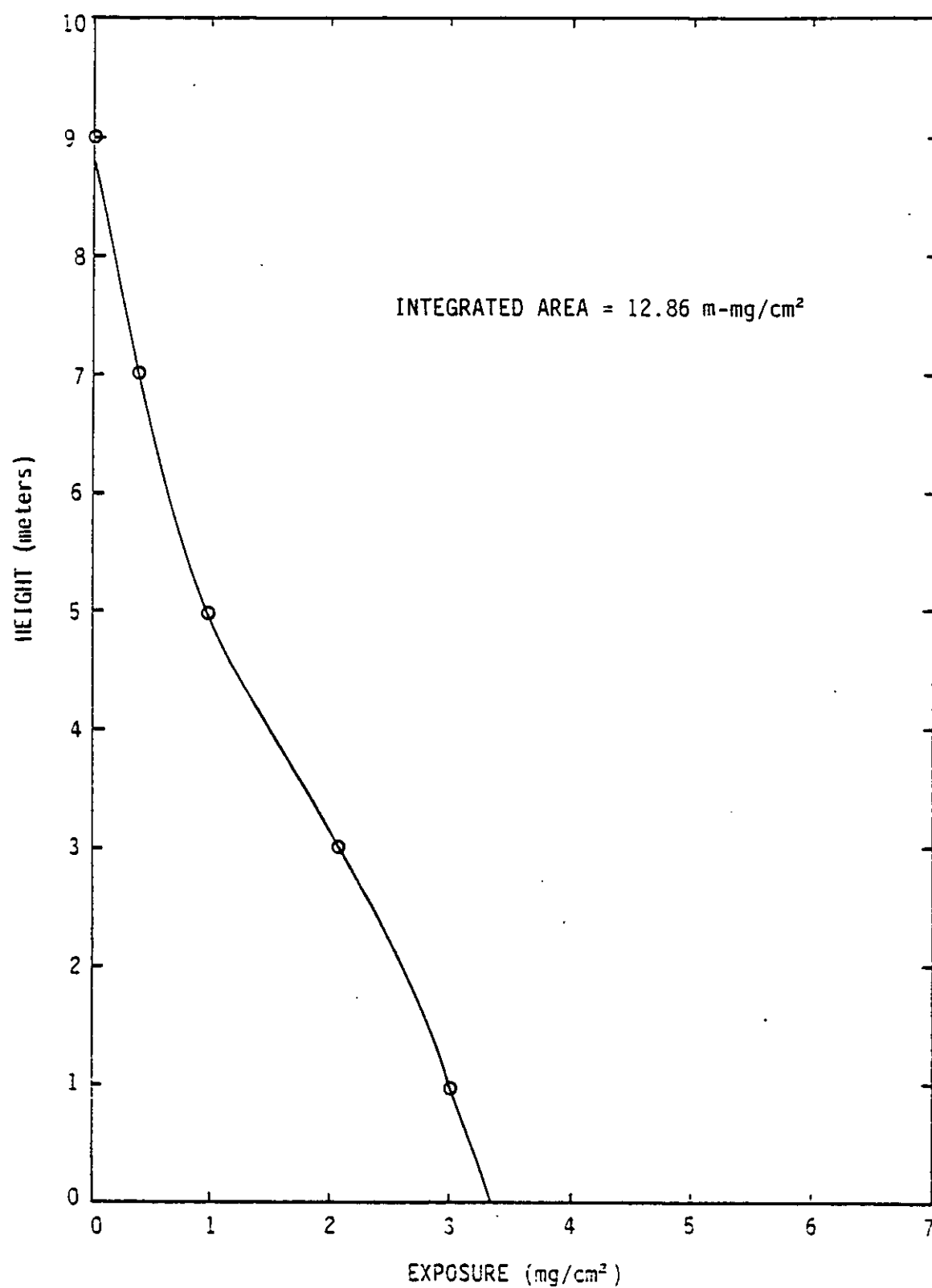


Figure 3-8. Exposure profile - test 2.

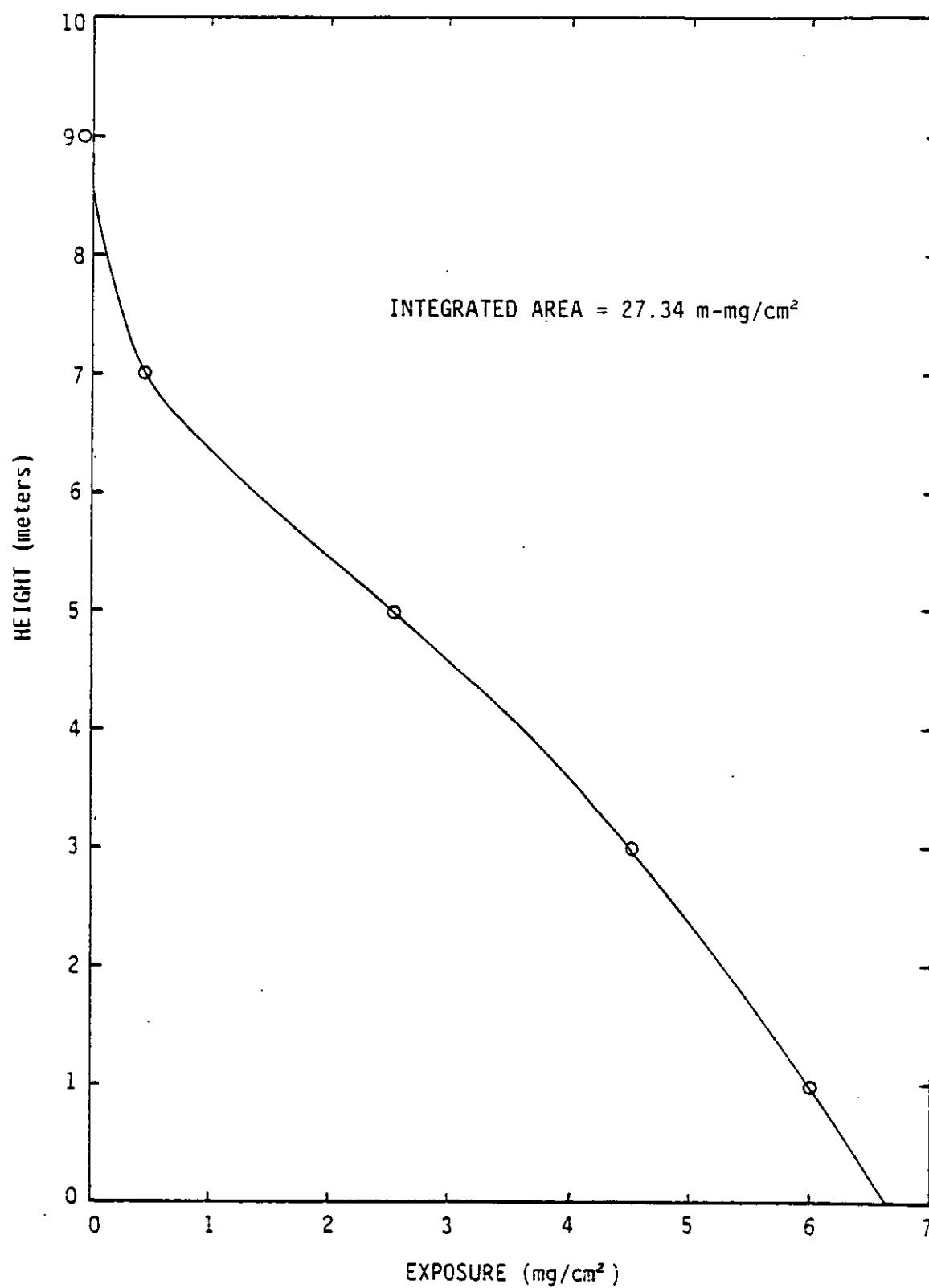


Figure 3-9. Exposure profile - test 3.

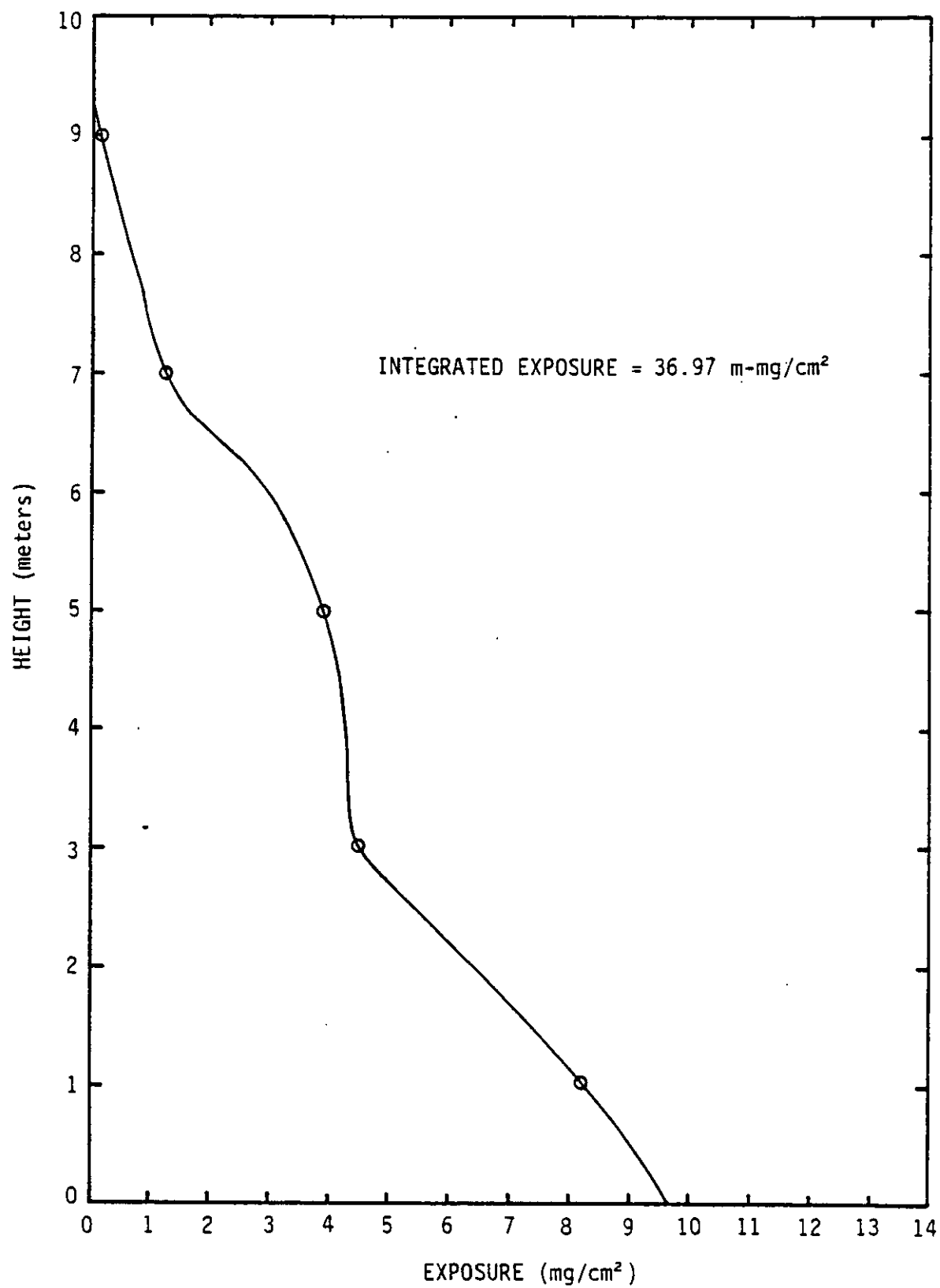


Figure 3-10. Exposure profile - test 4.

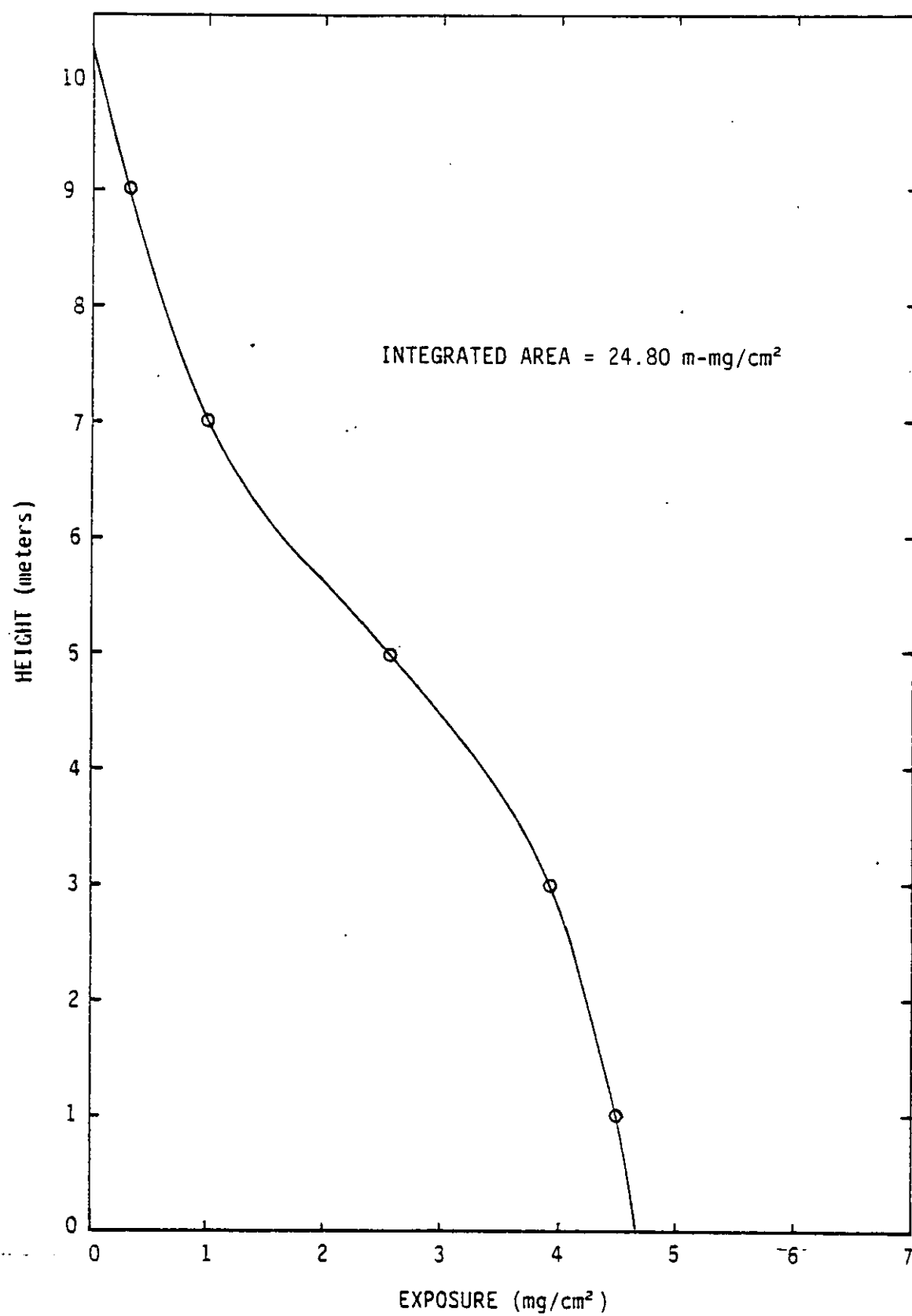


Figure 3-11. Exposure profile - test 5.

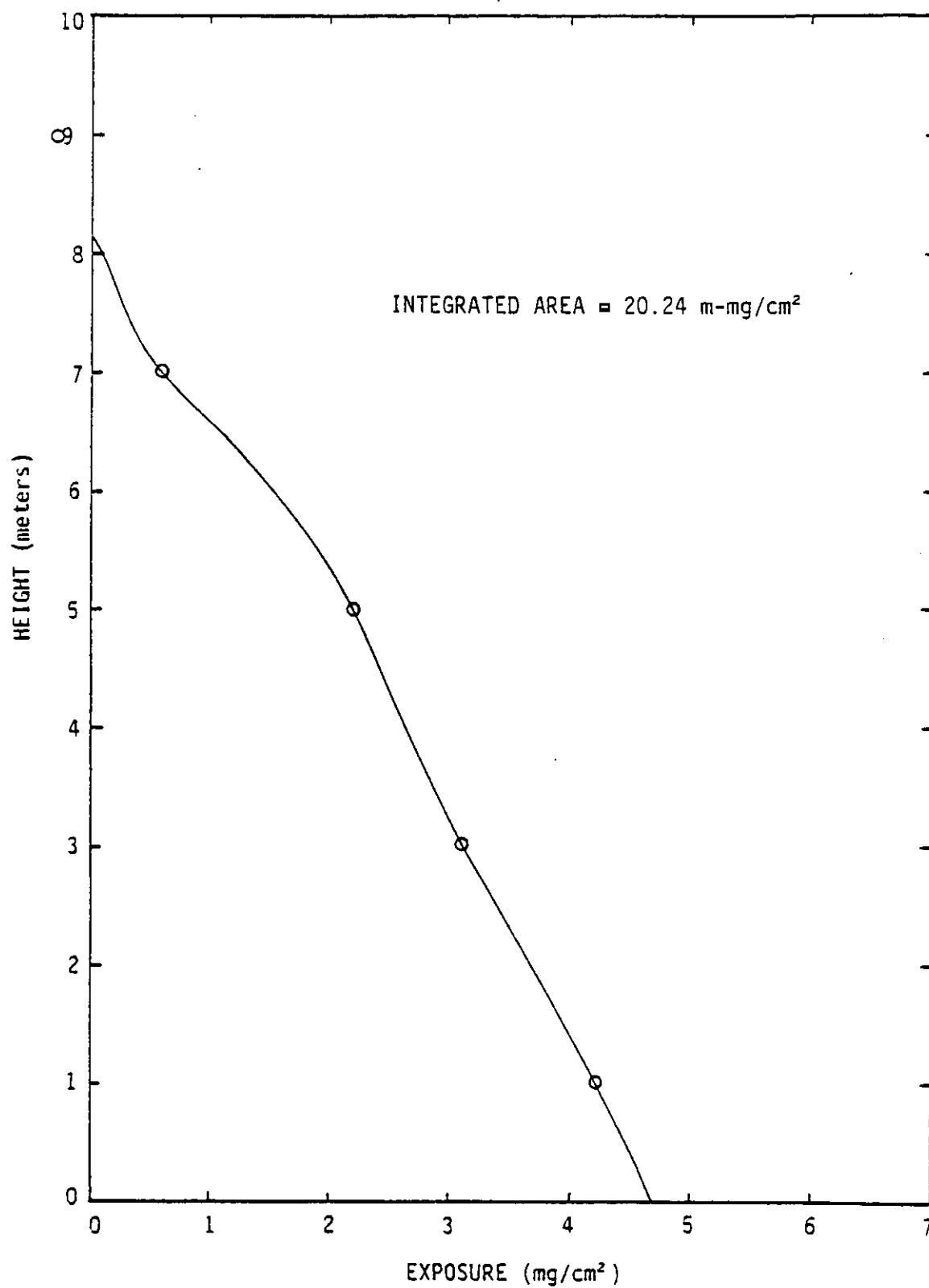


Figure 3-12. Exposure profile - test 6.

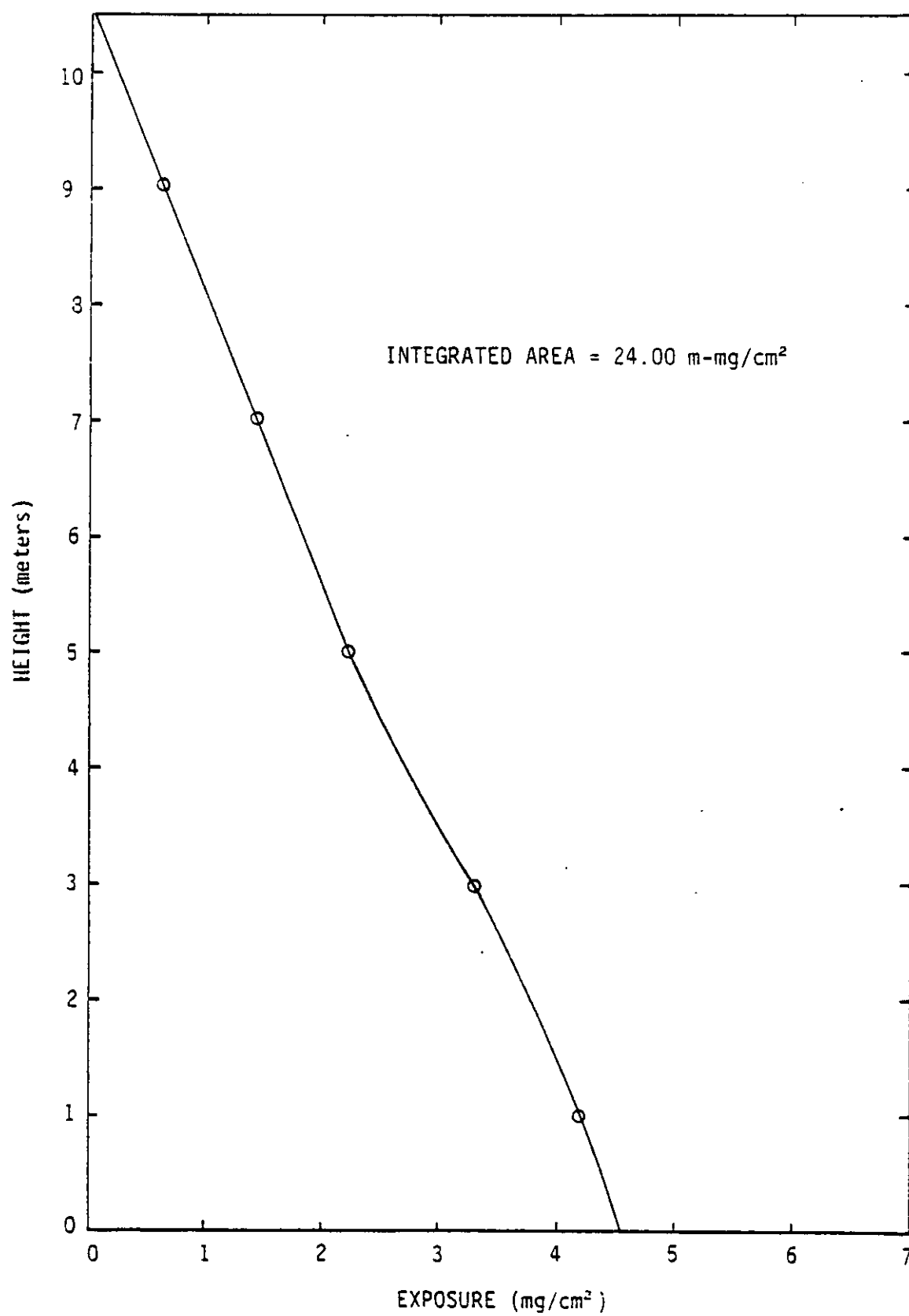


Figure 3-13. Exposure profile - test 7.

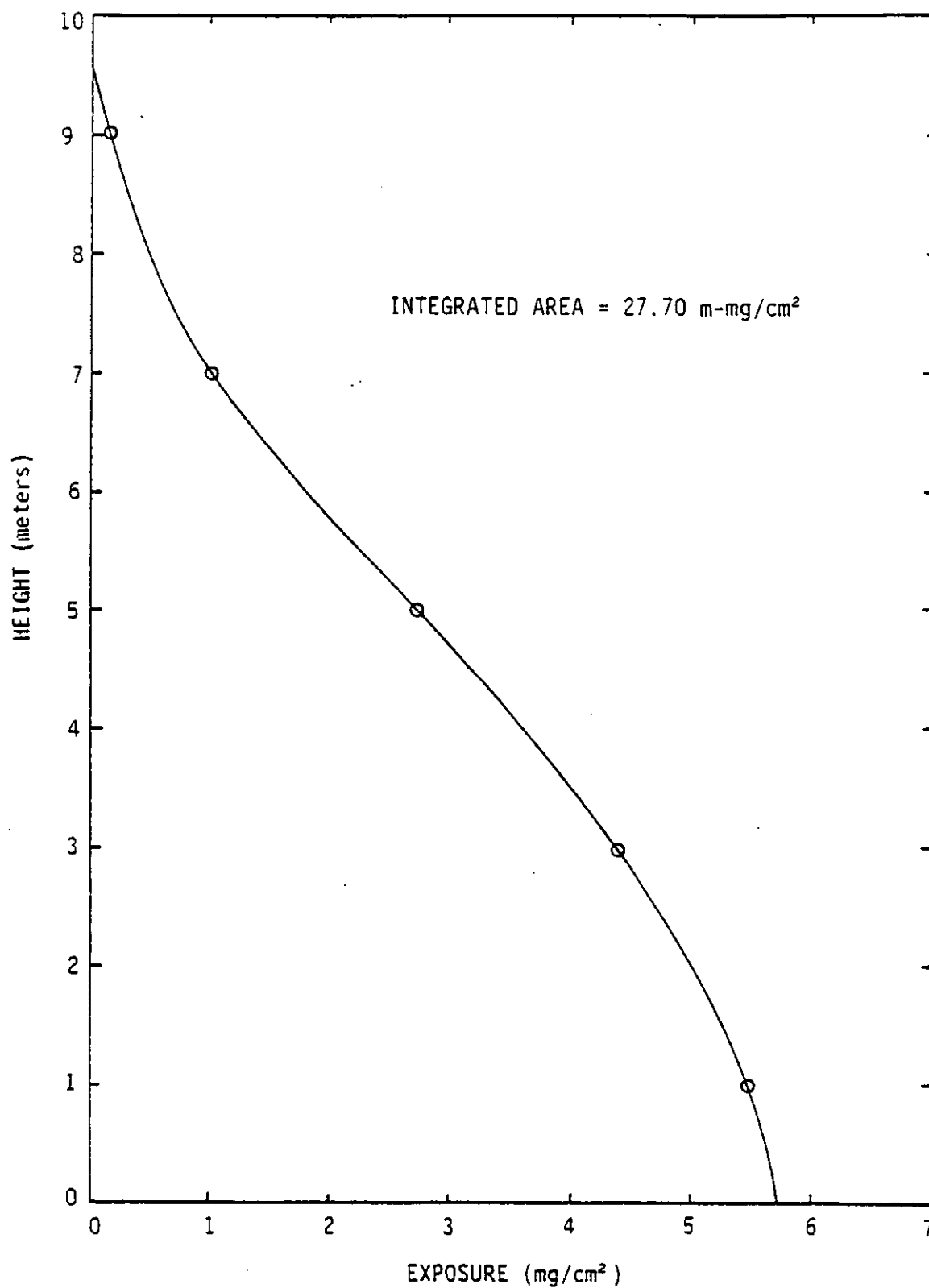


Figure 3-14. Exposure profile - test 8.

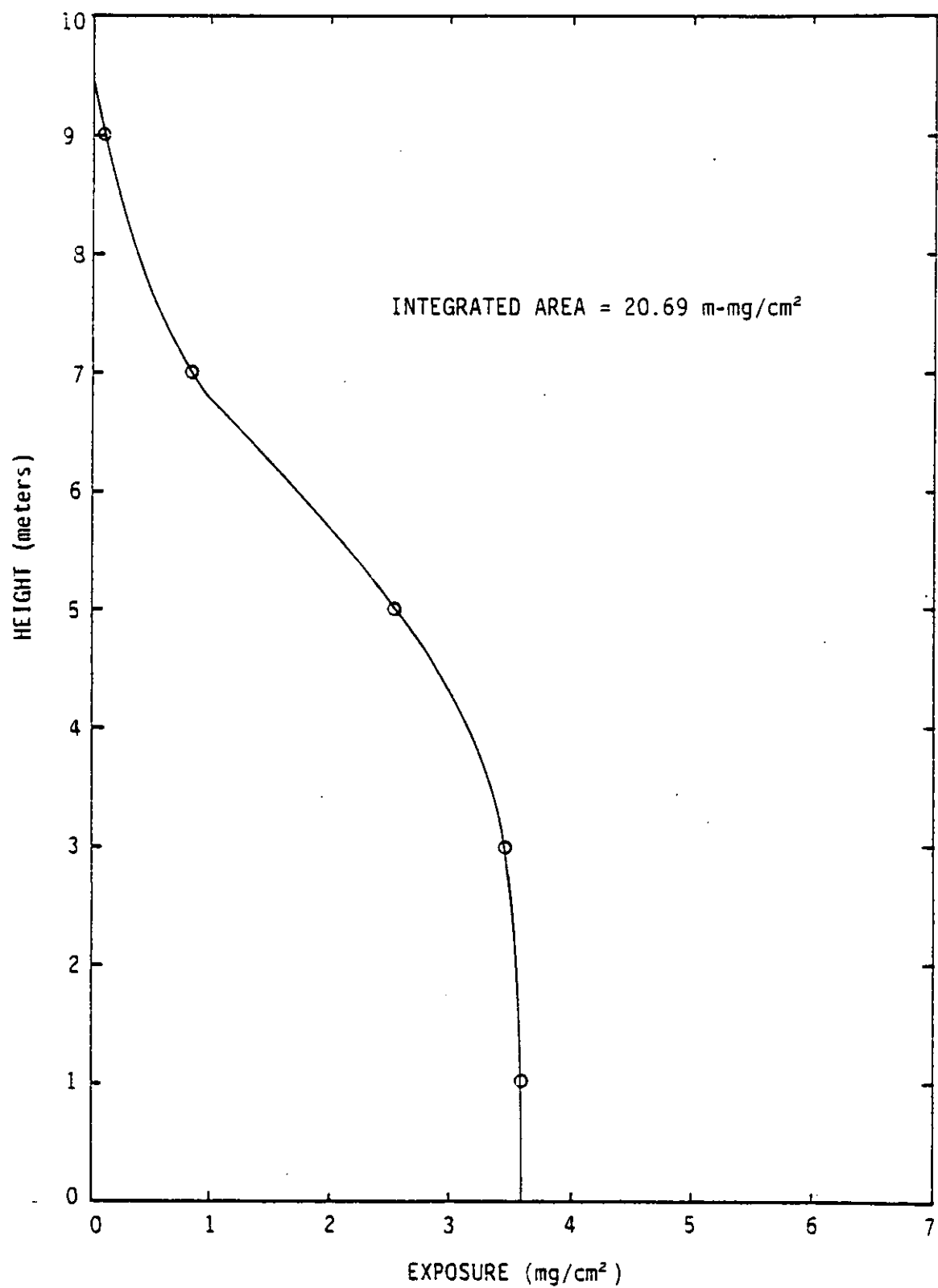


Figure 3-15. Exposure profile - test 9.

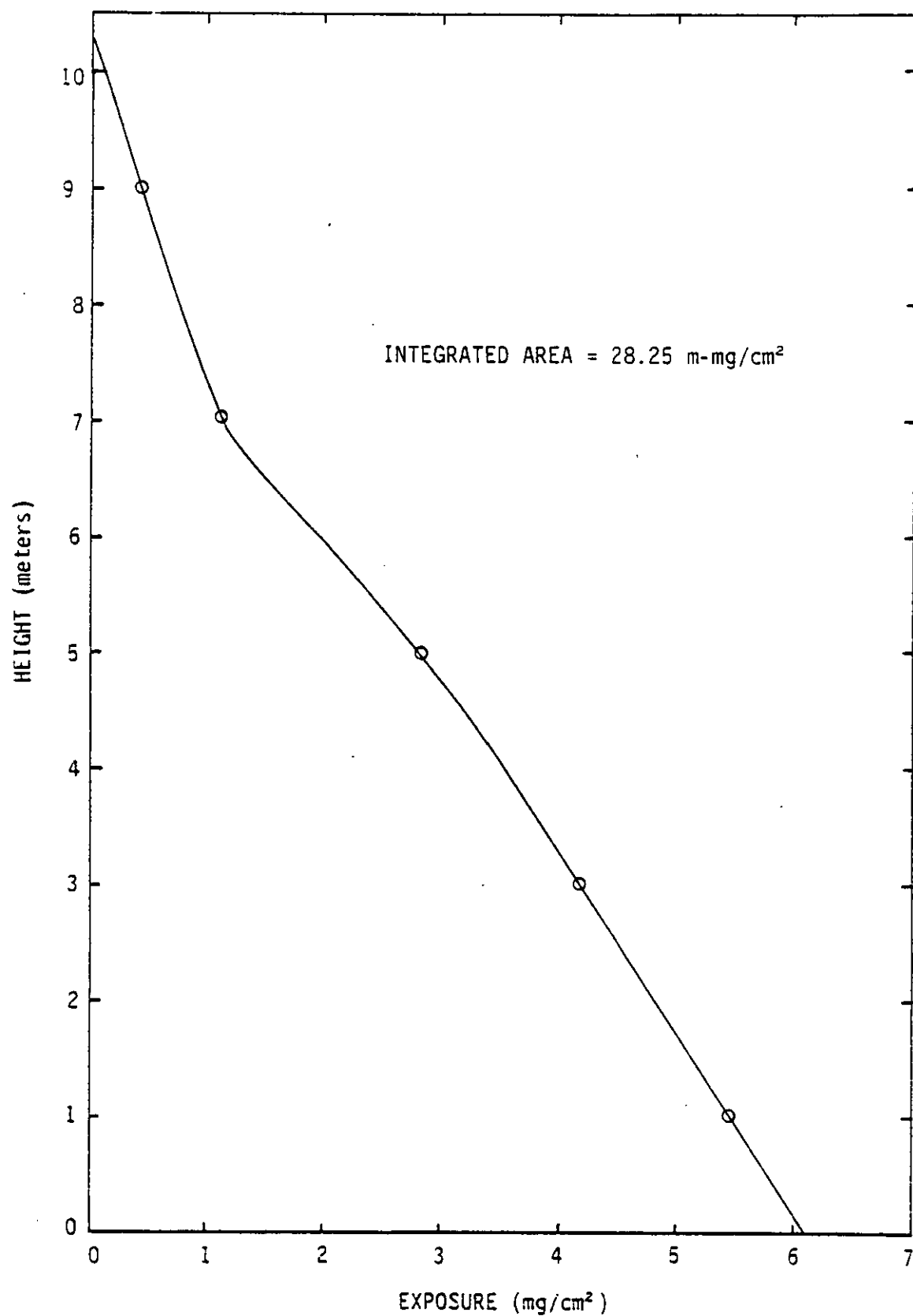


Figure 3-16. Exposure profile - test 10.

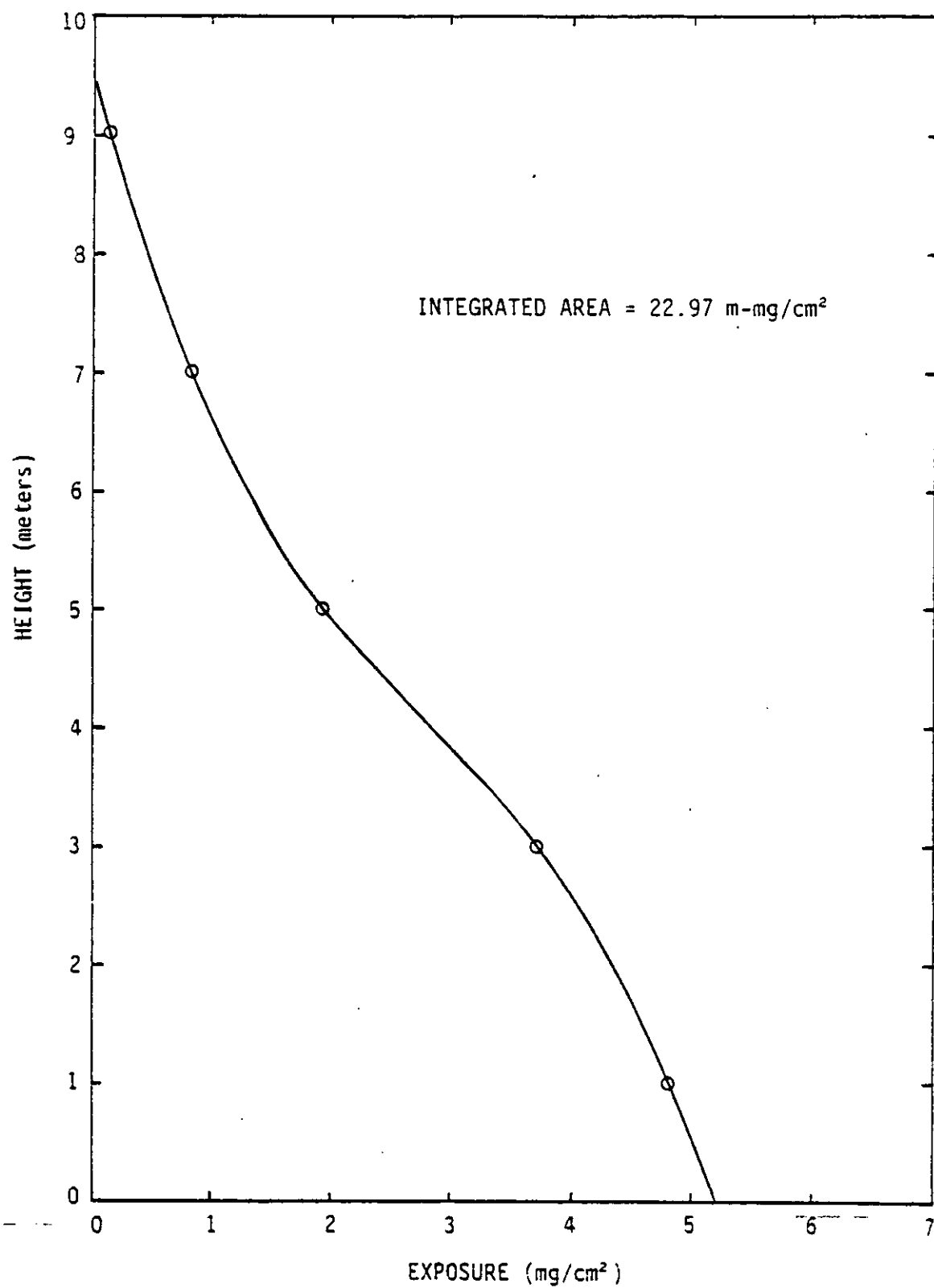


Figure 3-17. Exposure profile - test 11.

Step 8: Graphically integrate to determine the area under the vertical exposure profile.

The resulting integrated areas for Tests 1 to 11 are presented on Figures 3-7 through 3-17 and Tables 3-1 through 3-11, respectively.

Step 9: Calculate the emission factor.

The emission factor for each test was calculated using the formula presented in Section 2.6.1 in conjunction with the integrated area determined in Step 8 and the number of vehicle passes. The number of vehicle passes was provided by SRI.

3.2 Measured Emission Factors - Other Particle Size Ranges

The results of the testing program for other particle size ranges are presented in Tables 3-13 through 3-67 in the following order:

Tables 3-13 through 3-23 - Material < 30 μm : Tests 1-11, respectively.
Tables 3-24 through 3-34 - Material < 15 μm : Tests 1-11, respectively.
Tables 3-35 through 3-45 - Material < 10 μm : Tests 1-11, respectively.
Tables 3-46 through 3-56 - Material < 5 μm : Tests 1-11, respectively.
Tables 3-57 through 3-67 - Material < 2.5 μm : Tests 1-11, respectively.

The numbers presented were calculated following the data analysis procedure presented in Section 2.6.1. Details of each of the steps of that procedure are discussed below:

Step 10: Determine particle size distribution of material collected on each filter.

As discussed in Section 2.5.4, the particle size distributions were performed by ETC for selected filters using microscopic techniques. One test per each of the first four sampling days was selected for analysis, based on the assumption that the particle size distributions would not deviate greatly during the course of a day.

TABLE 3-13: DATA ANALYSIS SUMMARY - TEST NO. 1
MATERIAL LESS THAN 30 MICRONS

=====

TEST NUMBER: 1 TEST DATE: 6-11-84 START TIME: 1406
 PROFILER LOCATION: S-SOUTH
 AMBIENT TEMPERATURE: 64.2 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.53	60.63	39	.5
TOWER-7M	3.15	54.09	27	34.5
TOWER-5M	2.97	51.03	39	241.2
TOWER-3M	2.62	44.93	39	383.5
TOWER-1M	2.01	34.46	27	281.9
UPWIND		45	39	5.7

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	7.08	-106.91	-.088
TOWER-7M	835.49	721.5	.531
TOWER-5M	4282.52	4168.53	2.896
TOWER-3M	7733.44	7619.45	4.66
TOWER-1M	10706.67	10592.68	4.969
UPWIND	113.99		

INTEGRATED AREA: 26.11 M-MG/CM2

NO. OF VEHICLE PASSES: 40
 AVG. VEHICLE SPEED: 34.41 KPH (21.38 MPH)
 AVG. VEHICLE WEIGHT: 20730 KG (22.85 TONS)
 AVG. NO. OF WHEELS: 12.1

SILT CONTENT: 8.17 %

EMISSION FACTOR: 6.53 KG/VKT (23.16 LB/VMT)

TABLE 3-14: DATA ANALYSIS SUMMARY - TEST NO. 2
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 2 TEST DATE: 6-11-84 START TIME: 1534
PROFILER LOCATION: 5 - SOUTH
AMBIENT TEMPERATURE: 66.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.19	71.97	55	2.8
TOWER-7M	3.81	65.43	55	28
TOWER-5M	3.71	63.68	55	73
TOWER-3M	3.15	54.09	55	157.9
TOWER-1M	2.54	43.62	55	235.4
UPWIND		45	55	4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	25.39	-31.31	-.043
TOWER-7M	274.51	217.81	.274
TOWER-5M	736.31	679.61	.831
TOWER-3M	1876.23	1819.53	1.889
TOWER-1M	3467.22	3410.52	2.856
UPWIND	56.7		

INTEGRATED AREA: 11.9 M-MG/CM2

NO. OF VEHICLE PASSES: 30
AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
AVG. VEHICLE WEIGHT: 11703 KG (12.9 TONS)
AVG. NO. OF WHEELS: 5.13

SILT CONTENT: 8.17 %

EMISSION FACTOR: 3.97 KG/VKT (14.08 LB/VMT)

TABLE 3-15: DATA ANALYSIS SUMMARY - TEST NO. 3
MATERIAL LESS THAN 30 MICRONS

=====

TEST NUMBER: 3 TEST DATE: 6-12-84 START TIME: 951
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 87.5 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.57	44.16	25	10
TOWER-7M	4.11	39.75	25	27.6
TOWER-5M	4.11	39.75	25	112.9
TOWER-3M	3.43	33.12	25	199.2
TOWER-1M	2.97	28.71	25	271.1
UPWIND		45	25	13.2

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	318.58	-95.46	-.065
TOWER-7M	982.29	568.25	.35
TOWER-5M	4014.11	3600.07	2.22
TOWER-3M	8501.27	8087.23	4.156
TOWER-1M	13350	12935.96	5.761
UPWIND	414.04		

INTEGRATED AREA: 25.32 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 32.57 KPH (20.24 MPH)
 AVG. VEHICLE WEIGHT: 26018 KG (28.68 TONS)
 AVG. NO. OF WHEELS: 13.46

SILT CONTENT: 12.26 %

EMISSION FACTOR: 6.18 KG/VKT (21.91 LB/VMT)

TABLE 3-16: DATA ANALYSIS SUMMARY - TEST NO. 4
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 4 TEST DATE: 6-12-84 START TIME: 1142
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 92.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.72	55.2	23	24
TOWER-7M	5.28	51.03	23	64.7
TOWER-5M	5.28	51.03	23	173.4
TOWER-3M	4.45	42.94	23	202.2
TOWER-1M	3.71	35.82	23	368.2
UPWIND		45	23	14.4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	668.38	175.06	.138
TOWER-7M	1948.69	1455.38	1.06
TOWER-5M	5219.56	4726.25	3.443
TOWER-3M	7236.2	6742.88	4.132
TOWER-1M	15793.6	15300.28	7.823
UPWIND	493.32		

INTEGRATED AREA: 34.02 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
AVG. VEHICLE WEIGHT: 20221 KG (22.29 TONS)
AVG. NO. OF WHEELS: 13.1

SILT CONTENT: 12.26 %

EMISSION FACTOR: 8.1 KG/VKT (28.73 LB/VMT)

TABLE 3-17: DATA ANALYSIS SUMMARY - TEST NO. 5
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 5 TEST DATE: 6-12-84 START TIME: 1434
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 98.1 F NOZZLE DIAMETER: 2 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.16	22.14	20	11.6
TOWER-7M	4.19	17.99	20	22.4
TOWER-5M	4.72	20.28	20	51.6
TOWER-3M	4.01	17.23	20	78
TOWER-1M	2.62	11.23	20	90.4
UPWIND		45	20	13.4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	926.9	402.71	.249
TOWER-7M	2197.74	1673.55	.841
TOWER-5M	4494.41	3970.23	2.249
TOWER-3M	7995.69	7471.5	3.595
TOWER-1M	14226.77	13702.58	4.298
UPWIND	524.19		

INTEGRATED AREA: 22.6 M-MG/CM2

NO. OF VEHICLE PASSES: 42
 AVG. VEHICLE SPEED: 43.11 KPH (26.79 MPH)
 AVG. VEHICLE WEIGHT: 6768 KG (7.46 TONS)
 AVG. NO. OF WHEELS: 4.71

SILT CONTENT: 12.26 %

EMISSION FACTOR: 5.38 KG/VKT (19.09 LB/VMT)

TABLE 3-18: DATA ANALYSIS SUMMARY - TEST NO. 6
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 6 TEST DATE: 6-13-84 START TIME: 1133
PROFILER LOCATION: 2 - NORTH
AMBIENT TEMPERATURE: 95.8 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.79	47.98	28	30.8
TOWER-7M	2.79	47.98	28	92.6
TOWER-5M	2.39	41	28	203.8
TOWER-3M	1.96	33.59	28	271.4
TOWER-1M	1.7	29.22	28	363.4
UPWIND		45	28	51.5

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	810.39	-635.15	-.298
TOWER-7M	2435.69	990.15	.464
TOWER-5M	6271.68	4826.14	1.934
TOWER-3M	10199.32	8753.78	2.874
TOWER-1M	15692.11	14246.57	4.069
UPWIND	1445.54		

INTEGRATED AREA: 18.8 M-MG/CM2

NO. OF VEHICLE PASSES: 46
AVG. VEHICLE SPEED: 35.52 KPH (22.07 MPH)
AVG. VEHICLE WEIGHT: 26055 KG (28.72 TONS)
AVG. NO. OF WHEELS: 14.04

SILT CONTENT: 13.69 %

EMISSION FACTOR: 4.09 KG/VKT (14.5 LB/VMT)

TABLE 3-19: DATA ANALYSIS SUMMARY - TEST NO. 7
MATERIAL LESS THAN 30 MICRONS

=====

TEST NUMBER: 7 TEST DATE: 6-13-84 START TIME: 1251
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 94.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.67	45.8	27	47.3
TOWER-7M	2.59	44.49	27	101.8
TOWER-5M	2.26	38.82	27	162.5
TOWER-3M	1.8	30.97	27	249.5
TOWER-1M	1.35	23.12	27	327.5
UPWIND		45	27	7.7

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	1352.24	1128.61	.487
TOWER-7M	2993.23	2769.6	1.161
TOWER-5M	5477.23	5253.6	1.922
TOWER-3M	10544.9	10321.27	3.012
TOWER-1M	18537.91	18314.28	3.99
UPWIND	223.63		

INTEGRATED AREA: 21.61 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 35.73 KPH (22.2 MPH)
 AVG. VEHICLE WEIGHT: 31734 KG (34.98 TONS)
 AVG. NO. OF WHEELS: 15.8

SILT CONTENT: 13.69 %

EMISSION FACTOR: 5.27 KG/VKT (18.69 LB/VMT)

TABLE 3-20: DATA ANALYSIS SUMMARY - TEST NO. 8
MATERIAL LESS THAN 30 MICRONS

=====

TEST NUMBER: 8 TEST DATE: 6-14-84 START TIME: 1232
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 59.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.61	54.22	44	8.5
TOWER-7M	5.03	48.58	44	40
TOWER-5M	4.93	47.6	44	112.1
TOWER-3M	4.32	41.71	44	186
TOWER-1M	3.71	35.82	44	241.3
UPWIND		45	44	2.8

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	126.37	76.6	.113
TOWER-7M	661.58	611.82	.912
TOWER-5M	1891.28	1841.52	2.393
TOWER-3M	3580.9	3531.13	4.021
TOWER-1M	5409.82	5360.06	5.243
UPWIND	49.76		

INTEGRATED AREA: 25.39 M-MG/CM2

NO. OF VEHICLE PASSES: 61
 AVG. VEHICLE SPEED: 38.38 KPH (23.85 MPH)
 AVG. VEHICLE WEIGHT: 29393 KG (32.4 TONS)
 AVG. NO. OF WHEELS: 14.62

SILT CONTENT: 6.92 %

EMISSION FACTOR: 4.16 KG/VKT (14.77 LB/VMT)

TABLE 3-21: DATA ANALYSIS SUMMARY - TEST NO. 9
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 9 TEST DATE: 6-14-84 START TIME: 1430
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.84	56.43	37	4.4
TOWER-7M	5.54	53.49	37	31.1
TOWER-5M	4.93	47.6	37	100
TOWER-3M	4.34	41.95	37	143.1
TOWER-1M	3.78	36.56	37	155.8
UPWIND		45	37	.8

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	74.87	56.94	.074
TOWER-7M	555.61	537.67	.66
TOWER-5M	2005.62	1987.68	2.172
TOWER-3M	3256.67	3238.74	3.12
TOWER-1M	4070.56	4052.63	3.402
UPWIND	17.93		

INTEGRATED AREA: 18.87 M-MG/CM2

NO. OF VEHICLE PASSES: 51
AVG. VEHICLE SPEED: 42.28 KPH (26.27 MPH)
AVG. VEHICLE WEIGHT: 9653 KG (10.64 TONS)
AVG. NO. OF WHEELS: 5.65

SILT CONTENT: 6.92 %

EMISSION FACTOR: 3.7 KG/VKT (13.13 LB/VMT)

TABLE 3-22: DATA ANALYSIS SUMMARY - TEST NO. 10
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 10 TEST DATE: 6-14-84 START TIME: 1550
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	6.58	63.55	32	18.3
TOWER-7M	6.17	59.62	32	43.7
TOWER-5M	5.16	49.81	32	115.1
TOWER-3M	4.34	41.95	32	175.7
TOWER-1M	3.43	33.12	32	239
UPWIND		45	32	2.5

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	318.49	256.29	.323
TOWER-7M	809.02	746.81	.884
TOWER-5M	2551.03	2488.82	2.462
TOWER-3M	4623.4	4561.2	3.8
TOWER-1M	7968.35	7906.15	5.2
UPWIND	62.21		

INTEGRATED AREA: 25.74 M-MG/CM2

NO. OF VEHICLE PASSES: 50
AVG. VEHICLE SPEED: 45.06 KPH (28 MPH)
AVG. VEHICLE WEIGHT: 11367 KG (12.53 TONS)
AVG. NO. OF WHEELS: 6.28

SILT CONTENT: 6.92 %

EMISSION FACTOR: 5.15 KG/VKT (18.26 LB/VMT)

TABLE 3-23: DATA ANALYSIS SUMMARY - TEST NO. 11
MATERIAL LESS THAN 30 MICRONS

TEST NUMBER: 11 TEST DATE: 6-15-84 START TIME: 926
PROFILER LOCATION: 4 - SOUTH
AMBIENT TEMPERATURE: 62.9 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.1	53.21	26	11.2
TOWER-7M	2.97	51.03	26	60.2
TOWER-5M	2.59	44.49	26	142.3
TOWER-3M	2.16	37.07	26	278.6
TOWER-1M	1.75	30.1	26	372.7
UPWIND		45	26	4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	286.51	166.56	.08
TOWER-7M	1604.19	1484.25	.687
TOWER-5M	4346.93	4226.99	1.707
TOWER-3M	10211.16	10091.21	3.396
TOWER-1M	16831.11	16711.16	4.565
UPWIND	119.95		

INTEGRATED AREA: 21.1 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34 KPH (21.13 MPH)
AVG. VEHICLE WEIGHT: 29067 KG (32.04 TONS)
AVG. NO. OF WHEELS: 14.7

SILT CONTENT: 6.39 %

EMISSION FACTOR: 5.28 KG/VKT (18.71 LB/VMT)

TABLE 3-24: DATA ANALYSIS SUMMARY - TEST NO. 1
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 1 TEST DATE: 6-11-84 START TIME: 1406
PROFILER LOCATION: 5-SOUTH
AMBIENT TEMPERATURE: 64.2 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.53	60.63	39	.2
TOWER-7M	3.15	54.09	27	17
TOWER-5M	2.97	51.03	39	130.7
TOWER-3M	2.62	44.93	39	211.7
TOWER-1M	2.01	34.46	27	158.3
UPWIND		45	39	2

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	3.11	-36.68	-.03
TOWER-7M	411.72	371.92	.274
TOWER-5M	2320.31	2280.51	1.584
TOWER-3M	4269.06	4229.27	2.587
TOWER-1M	6010.57	5970.77	2.801
UPWIND	39.8		

INTEGRATED AREA: 14.52 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34.41 KPH (21.38 MPH)
AVG. VEHICLE WEIGHT: 20730 KG (22.85 TONS)
AVG. NO. OF WHEELS: 12.1

SILT CONTENT: 8.17 %

EMISSION FACTOR: 3.63 KG/VKT (12.87 LB/VMT)

TABLE 3-25: DATA ANALYSIS SUMMARY - TEST NO. 2
MATERIAL LESS THAN 15 MICRONS

=====

TEST NUMBER: 2 TEST DATE: 6-11-84 START TIME: 1554
 PROFILER LOCATION: S - SOUTH
 AMBIENT TEMPERATURE: 66.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.19	71.97	55	1.2
TOWER-7M	3.81	65.43	55	13.8
TOWER-5M	3.71	63.68	55	39.5
TOWER-3M	3.15	54.09	55	87.2
TOWER-1M	2.54	43.62	55	132.1
UPWIND		45	55	1.4

SAMPLER	CONCENTRATION ADJUSTED FOR		EXPOSURE (MG/CM2)
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	
TOWER-9M	11.15	-8.64	-.012
TOWER-7M	135.28	115.48	.145
TOWER-5M	398.94	379.14	.464
TOWER-3M	1035.73	1015.94	1.055
TOWER-1M	1946.45	1926.65	1.613
UPWIND	19.8		

INTEGRATED AREA: 6.68 M-MG/CM2

NO. OF VEHICLE PASSES: 30
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 11703 KG (12.9 TONS)
 AVG. NO. OF WHEELS: 5.13

SILT CONTENT: 8.17 %

EMISSION FACTOR: 2.23 KG/VKT (7.9 LB/VMT)

=====

TABLE 3-26: DATA ANALYSIS SUMMARY - TEST NO. 3
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 3 TEST DATE: 6-12-84 START TIME: 951
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 87.5 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.57	44.16	25	4.4
TOWER-7M	4.11	39.75	25	13.6
TOWER-5M	4.11	39.75	25	61.2
TOWER-3M	3.43	33.12	25	110
TOWER-1M	2.97	28.71	25	152.2
UPWIND		45	25	4.6

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	139.93	-4.61	-3E-03
TOWER-7M	484.06	339.51	.209
TOWER-5M	2174.89	2030.34	1.252
TOWER-3M	4692.92	4548.38	2.337
TOWER-1M	7494.49	7349.94	3.273
UPWIND	144.55		

INTEGRATED AREA: 14.37 M-MG/CM2

NO. OF VEHICLE PASSES: 41
AVG. VEHICLE SPEED: 32.57 KPH (20.24 MPH)
AVG. VEHICLE WEIGHT: 26018 KG (28.68 TONS)
AVG. NO. OF WHEELS: 13.46

SILT CONTENT: 12.26 %

EMISSION FACTOR: 3.51 KG/VKT (12.44 LB/VMT)

TABLE 3-27: DATA ANALYSIS SUMMARY - TEST NO. 4
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 4 TEST DATE: 6-12-84 START TIME: 1142
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 92.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.72	55.2	23	10.5
TOWER-7M	5.28	51.03	23	31.9
TOWER-5M	5.28	51.03	23	93.9
TOWER-3M	4.45	42.94	23	111.6
TOWER-1M	3.71	35.82	23	206.7
UPWIND		45	23	5

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	293.58	121.36	.096
TOWER-7M	960.29	788.07	.574
TOWER-5M	2828.01	2655.79	1.934
TOWER-3M	3994.57	3822.35	2.342
TOWER-1M	8866.29	8694.07	4.445
UPWIND	172.22		

INTEGRATED AREA: 19.25 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
AVG. VEHICLE WEIGHT: 20221 KG (22.29 TONS)
AVG. NO. OF WHEELS: 13.1

SILT CONTENT: 12.26 %

EMISSION FACTOR: 4.58 KG/VKT (16.26 LB/VMT)

TABLE 3-28: DATA ANALYSIS SUMMARY - TEST NO. 5
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 5 TEST DATE: 6-12-84 START TIME: 1434
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 98.1 F NOZZLE DIAMETER: 2 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.16	22.14	20	5.1
TOWER-7M	4.19	17.99	20	11
TOWER-5M	4.72	20.28	20	28
TOWER-3M	4.01	17.23	20	43
TOWER-1M	2.62	11.23	20	50.8
UPWIND		45	20	4.7

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	407.13	224.13	.139
TOWER-7M	1083.02	900.02	.452
TOWER-5M	2435.12	2252.12	1.276
TOWER-3M	4413.83	4230.83	2.036
TOWER-1M	7986.7	7803.7	2.448
UPWIND	183		

INTEGRATED AREA: 12.79 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 43.11 KPH (26.79 MPH)
AVG. VEHICLE WEIGHT: 6768 KG (7.46 TONS)
AVG. NO. OF WHEELS: 4.71

SILT CONTENT: 12.26 %

EMISSION FACTOR: 3.04 KG/VKT (10.8 LB/VMT)

TABLE 3-29: DATA ANALYSIS SUMMARY - TEST NO. 6
MATERIAL LESS THAN 15 MICRONS

=====

TEST NUMBER: 6 TEST DATE: 6-13-84 START TIME: 1133
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 95.8 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.79	47.98	28	13.5
TOWER-7M	2.79	47.98	28	45.6
TOWER-5M	2.39	41	28	110.4
TOWER-3M	1.96	33.59	28	149.8
TOWER-1M	1.7	29.22	28	204
UPWIND		45	28	18

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	355.96	-148.7	-.07
TOWER-7M	1200.28	695.62	.326
TOWER-5M	3398.06	2893.4	1.159
TOWER-3M	5630.29	5125.64	1.683
TOWER-1M	8809.31	8304.66	2.372
UPWIND	504.66		

INTEGRATED AREA: 11.2 M-MG/CM2

NO. OF VEHICLE PASSES: 46
 AVG. VEHICLE SPEED: 35.52 KPH (22.07 MPH)
 AVG. VEHICLE WEIGHT: 26055 KG (28.72 TONS)
 AVG. NO. OF WHEELS: 14.04

SILT CONTENT: 13.69 %

EMISSION FACTOR: 2.43 KG/VKT (8.63 LB/VMT)

TABLE 3-30: DATA ANALYSIS SUMMARY - TEST NO. 7
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 7 TEST DATE: 6-13-84 START TIME: 1251
PROFILER LOCATION: 2 - NORTH
AMBIENT TEMPERATURE: 94.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.67	45.8	27	20.8
TOWER-7M	2.59	44.49	27	50.1
TOWER-5M	2.26	38.82	27	88
TOWER-3M	1.8	30.97	27	137.7
TOWER-1M	1.35	23.12	27	183.8
UPWIND		45	27	2.7

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	593.96	515.89	.223
TOWER-7M	1475.03	1396.96	.586
TOWER-5M	2967.62	2889.55	1.057
TOWER-3M	5821.06	5742.99	1.676
TOWER-1M	10406.91	10328.83	2.25
UPWIND	78.07		

INTEGRATED AREA: 11.78 M-MG/CM2

NO. OF VEHICLE PASSES: 41
AVG. VEHICLE SPEED: 35.73 KPH (22.2 MPH)
AVG. VEHICLE WEIGHT: 31734 KG (34.98 TONS)
AVG. NO. OF WHEELS: 15.8

SILT CONTENT: 13.69 %

EMISSION FACTOR: 2.87 KG/VKT (10.19 LB/VMT)

TABLE 3-31: DATA ANALYSIS SUMMARY - TEST NO. 8
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 8 TEST DATE: 6-14-84 START TIME: 1232
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 59.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.61	54.22	44	3.7
TOWER-7M	5.03	48.58	44	19.7
TOWER-5M	4.93	47.6	44	60.7
TOWER-3M	4.32	41.71	44	102.7
TOWER-1M	3.71	35.82	44	135.5
UPWIND		45	44	1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	55.51	38.13	.056
TOWER-7M	326.02	308.65	.409
TOWER-5M	1024.72	1007.34	1.309
TOWER-3M	1976.75	1959.38	2.231
TOWER-1M	3036.99	3019.62	2.953
UPWIND	17.37		

INTEGRATED AREA: 14.06 M-MG/CM2

NO. OF VEHICLE PASSES: 61
AVG. VEHICLE SPEED: 38.38 KPH (23.85 MPH)
AVG. VEHICLE WEIGHT: 29393 KG (32.4 TONS)
AVG. NO. OF WHEELS: 14.62

SILT CONTENT: 6.92 %

EMISSION FACTOR: 2.31 KG/VKT (8.18 LB/VMT)

TABLE 3-32: DATA ANALYSIS SUMMARY - TEST NO. 9
MATERIAL LESS THAN 15 MICRONS

TEST NUMBER: 9 TEST DATE: 6-14-84 START TIME: 1430
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.84	56.43	37	1.9
TOWER-7M	5.54	53.49	37	15.3
TOWER-5M	4.93	47.6	37	54.2
TOWER-3M	4.34	41.95	37	79
TOWER-1M	3.78	36.56	37	87.5
UPWIND		45	37	.3

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	32.89	26.63	.034
TOWER-7M	273.8	267.34	.329
TOWER-5M	1086.66	1080.4	1.181
TOWER-3M	1797.77	1791.51	1.726
TOWER-1M	2285.15	2278.89	1.913
UPWIND	6.26		

INTEGRATED AREA: 10.39 M-MG/CM2

NO. OF VEHICLE PASSES: 51
AVG. VEHICLE SPEED: 42.28 KPH (26.27 MPH)
AVG. VEHICLE WEIGHT: 9653 KG (10.64 TONS)
AVG. NO. OF WHEELS: 5.65

SILT CONTENT: 6.92 %

EMISSION FACTOR: 2.04 KG/VKT (7.22 LB/VMT)

TABLE 3-33: DATA ANALYSIS SUMMARY - TEST NO. 10
MATERIAL LESS THAN 15 MICRONS

=====

TEST NUMBER: 10 TEST DATE: 6-14-84 START TIME: 1550
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	6.58	63.55	32	8.1
TOWER-7M	6.17	59.62	32	21.5
TOWER-5M	5.16	49.81	32	62.3
TOWER-3M	4.34	41.95	32	97
TOWER-1M	3.43	33.12	32	134.2
UPWIND		45	32	.9

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	139.89	118.18	.149
TOWER-7M	398.67	376.96	.446
TOWER-5M	1382.17	1360.46	1.346
TOWER-3M	2552.24	2530.52	2.108
TOWER-1M	4473.31	4451.6	2.928
UPWIND	21.72		

INTEGRATED AREA: 14.16 M-MG/CM2

NO. OF VEHICLE PASSES: 50
 AVG. VEHICLE SPEED: 45.06 KPH (28 MPH)
 AVG. VEHICLE WEIGHT: 11367 KG (12.53 TONS)
 AVG. NO. OF WHEELS: 6.28

SILT CONTENT: 6.92 %

EMISSION FACTOR: 2.83 KG/VKT (10.05 LB/VMT)

TABLE 3-34: DATA ANALYSIS SUMMARY - TEST NO. 11
MATERIAL LESS THAN 15 MICRONS

=====

TEST NUMBER: 11 TEST DATE: 6-15-84 START TIME: 926
 PROFILER LOCATION: 4 - SOUTH
 AMBIENT TEMPERATURE: 62.9 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.1	53.21	26	4.9
TOWER-7M	2.97	51.03	26	29.7
TOWER-5M	2.59	44.49	26	77.1
TOWER-3M	2.16	37.07	26	153.8
TOWER-1M	1.75	30.1	26	209.2
UPWIND		45	26	1.4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	125.85	83.97	.041
TOWER-7M	790.53	748.65	.347
TOWER-5M	2355.21	2313.34	.934
TOWER-3M	5636.83	5594.95	1.883
TOWER-1M	9448.73	9406.86	2.569
UPWIND	41.87		

INTEGRATED AREA: 11.69 M-MG/CM2

NO. OF VEHICLE PASSES: 40
 AVG. VEHICLE SPEED: 34 KPH (21.13 MPH)
 AVG. VEHICLE WEIGHT: 29067 KG (32.04 TONS)
 AVG. NO. OF WHEELS: 14.7

SILT CONTENT: 6.39 %

EMISSION FACTOR: 2.92 KG/VKT (10.37 LB/VMT)

=====

TABLE 3-35: DATA ANALYSIS SUMMARY - TEST NO. 1
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 1 TEST DATE: 6-11-84 START TIME: 1406
PROFILER LOCATION: 5-SOUTH
AMBIENT TEMPERATURE: 64.2 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.53	60.63	39	.1
TOWER-7M	3.15	54.09	27	9.8
TOWER-5M	2.97	51.03	39	78.2
TOWER-3M	2.62	44.93	39	126.4
TOWER-1M	2.01	34.46	27	94.1
UPWIND		45	39	.8

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	1.68	-14.51	-.012
TOWER-7M	235.99	219.8	.162
TOWER-5M	1388.26	1372.07	.953
TOWER-3M	2549.58	2533.39	1.549
TOWER-1M	3572.64	3556.45	1.668
UPWIND	16.19		

INTEGRATED AREA: 8.68 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34.41 KPH (21.38 MPH)
AVG. VEHICLE WEIGHT: 20730 KG (22.95 TONS)
AVG. NO. OF WHEELS: 12.1

SILT CONTENT: 8.17 %

EMISSION FACTOR: 2.17 KG/VKT (7.7 LB/VMT)

TABLE 3-36: DATA ANALYSIS SUMMARY - TEST NO. 2
MATERIAL LESS THAN 10 MICRONS

=====

TEST NUMBER: 2 TEST DATE: 6-11-84 START TIME: 1554
 PROFILER LOCATION: 5 - SOUTH
 AMBIENT TEMPERATURE: 66.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.19	71.97	55	.7
TOWER-7M	3.81	65.43	55	7.9
TOWER-5M	3.71	63.68	55	23.7
TOWER-3M	3.15	54.09	55	52.1
TOWER-1M	2.54	43.62	55	78.5
UPWIND		45	55	.6

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	6.01	-2.04	-3E-03
TOWER-7M	77.54	69.48	.087
TOWER-5M	238.69	230.64	.282
TOWER-3M	618.56	610.51	.634
TOWER-1M	1156.95	1148.9	.962
UPWIND	8.05		

INTEGRATED AREA: 4.01 M-MG/CM2

NO. OF VEHICLE PASSES: 30
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 11703 KG (12.9 TONS)
 AVG. NO. OF WHEELS: 5.13

SILT CONTENT: 8.17 %

EMISSION FACTOR: 1.34 KG/VKT (4.74 LB/VMT)

=====

TABLE 3-37: DATA ANALYSIS SUMMARY - TEST NO. 3
MATERIAL LESS THAN 10 MICRONS

=====

TEST NUMBER: 3 TEST DATE: 6-12-84 START TIME: 951
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 87.5 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.57	44.16	25	2.4
TOWER-7M	4.11	39.75	25	7.8
TOWER-5M	4.11	39.75	25	36.6
TOWER-3M	3.43	33.12	25	65.7
TOWER-1M	2.97	28.71	25	90.5
UPWIND		45	25	1.9

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	75.41	16.61	.011
TOWER-7M	277.45	218.65	.135
TOWER-5M	1301.25	1242.45	.766
TOWER-3M	2802.72	2743.92	1.41
TOWER-1M	4454.67	4395.87	1.958
UPWIND	58.8		

INTEGRATED AREA: 8.69 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 32.57 KPH (20.24 MPH)
 AVG. VEHICLE WEIGHT: 26018 KG (28.68 TONS)
 AVG. NO. OF WHEELS: 13.46

SILT CONTENT: 12.26 %

EMISSION FACTOR: 2.12 KG/VKT (7.52 LB/VMT)

TABLE 3-38: DATA ANALYSIS SUMMARY - TEST NO. 4
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 4 TEST DATE: 6-12-84 START TIME: 1142
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 92.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.72	55.2	23	5.7
TOWER-7M	5.28	51.03	23	18.3
TOWER-5M	5.28	51.03	23	56.2
TOWER-3M	4.45	42.94	23	66.7
TOWER-1M	3.71	35.82	23	122.9
UPWIND		45	23	2.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	158.21	88.15	.069
TOWER-7M	550.41	480.36	.35
TOWER-5M	1692.02	1621.97	1.181
TOWER-3M	2385.65	2315.59	1.419
TOWER-1M	5270.06	5200	2.659
UPWIND	70.06		

INTEGRATED AREA: 11.63 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
AVG. VEHICLE WEIGHT: 20221 KG (22.29 TONS)
AVG. NO. OF WHEELS: 13.1

SILT CONTENT: 12.26 %

EMISSION FACTOR: 2.77 KG/VKT (9.82 LB/VMT)

TABLE 3-39: DATA ANALYSIS SUMMARY - TEST NO. 5
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 5 TEST DATE: 6-12-84 START TIME: 1434
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 98.1 F NOZZLE DIAMETER: 2 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.16	22.14	20	2.7
TOWER-7M	4.19	17.99	20	6.3
TOWER-5M	4.72	20.28	20	16.7
TOWER-3M	4.01	17.23	20	25.7
TOWER-1M	2.62	11.23	20	30.2
UPWIND		45	20	1.9

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	219.41	144.96	.09
TOWER-7M	620.76	546.31	.274
TOWER-5M	1456.95	1382.51	.783
TOWER-3M	2636.04	2561.6	1.232
TOWER-1M	4747.23	4672.79	1.466
UPWIND	74.44		

INTEGRATED AREA: 7.75 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 43.11 KPH (26.79 MPH)
AVG. VEHICLE WEIGHT: 6768 KG (7.46 TONS)
AVG. NO. OF WHEELS: 4.71

SILT CONTENT: 12.26 %

EMISSION FACTOR: 1.84 KG/VKT (6.54 LB/VMT)

TABLE 3-40: DATA ANALYSIS SUMMARY - TEST NO. 6
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 6 TEST DATE: 6-13-84 START TIME: 1133
PROFILER LOCATION: 2 - NORTH
AMBIENT TEMPERATURE: 95.8 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.79	47.98	28	7.3
TOWER-7M	2.79	47.98	28	26.2
TOWER-5M	2.39	41	28	66.1
TOWER-3M	1.96	33.59	28	89.5
TOWER-1M	1.7	29.22	28	121.3
UPWIND		45	28	7.3

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	191.83	-13.46	-6E-03
TOWER-7M	687.97	482.68	.226
TOWER-5M	2033.09	1827.8	.732
TOWER-3M	3362.54	3157.25	1.036
TOWER-1M	5236.19	5030.91	1.437
UPWIND	205.28		

INTEGRATED AREA: 6.96 M-MG/CM2

NO. OF VEHICLE PASSES: 46
AVG. VEHICLE SPEED: 35.52 KPH (22.07 MPH)
AVG. VEHICLE WEIGHT: 26055 KG (28.72 TONS)
AVG. NO. OF WHEELS: 14.04

SILT CONTENT: 13.69 %

EMISSION FACTOR: 1.51 KG/VKT (5.37 LB/VMT)

TABLE 3-41: DATA ANALYSIS SUMMARY - TEST NO. 7
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 7 TEST DATE: 6-13-84 START TIME: 1251
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 94.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.67	45.8	27	11.2
TOWER-7M	2.59	44.49	27	28.7
TOWER-5M	2.26	38.82	27	52.7
TOWER-3M	1.8	30.97	27	82.3
TOWER-1M	1.35	23.12	27	109.3
UPWIND		45	27	1.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	320.09	288.33	.124
TOWER-7M	845.44	813.69	.341
TOWER-5M	1775.55	1743.79	.638
TOWER-3M	3476.47	3444.71	1.005
TOWER-1M	6185.79	6154.03	1.341
UPWIND	31.76		

INTEGRATED AREA: 7 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 35.73 KPH (22.2 MPH)
 AVG. VEHICLE WEIGHT: 31734 KG (34.98 TONS)
 AVG. NO. OF WHEELS: 15.8

SILT CONTENT: 13.69 %

EMISSION FACTOR: 1.71 KG/VKT (6.06 LB/VMT)

TABLE 3-42: DATA ANALYSIS SUMMARY - TEST NO. 8
MATERIAL LESS THAN 10 MICRONS

=====

TEST NUMBER: 8 TEST DATE: 6-14-84 START TIME: 1232
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 59.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.61	54.22	44	2
TOWER-7M	5.03	48.58	44	11.3
TOWER-5M	4.93	47.6	44	36.3
TOWER-3M	4.32	41.71	44	61.3
TOWER-1M	3.71	35.82	44	80.5
UPWIND		45	44	.4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	29.91	22.85	.034
TOWER-7M	186.86	179.8	.238
TOWER-5M	613.1	606.03	.788
TOWER-3M	1180.56	1173.49	1.336
TOWER-1M	1805.17	1798.1	1.759
UPWIND	7.07		

INTEGRATED AREA: 8.39 M-MG/CM2

NO. OF VEHICLE PASSES: 61
 AVG. VEHICLE SPEED: 38.38 KPH (23.85 MPH)
 AVG. VEHICLE WEIGHT: 29393 KG (32.4 TONS)
 AVG. NO. OF WHEELS: 14.62

SILT CONTENT: 6.92 %

EMISSION FACTOR: 1.38 KG/VKT (4.88 LB/VMT)

TABLE 3-43: DATA ANALYSIS SUMMARY - TEST NO. 9
MATERIAL LESS THAN 10 MICRONS

=====

TEST NUMBER: 9 TEST DATE: 6-14-84 START TIME: 1430
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.84	56.43	37	1
TOWER-7M	5.54	53.49	37	8.8
TOWER-5M	4.93	47.6	37	32.4
TOWER-3M	4.34	41.95	37	47.2
TOWER-1M	3.78	36.56	37	52
UPWIND		45	37	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	17.72	15.18	.02
TOWER-7M	156.93	154.39	.19
TOWER-5M	650.16	647.61	.708
TOWER-3M	1073.67	1071.12	1.032
TOWER-1M	1358.28	1355.73	1.138
UPWIND	2.55		

INTEGRATED AREA: 6.19 M-MG/CM2

NO. OF VEHICLE PASSES: 51
 AVG. VEHICLE SPEED: 42.28 KPH (26.27 MPH)
 AVG. VEHICLE WEIGHT: 9653 KG (10.64 TONS)
 AVG. NO. OF WHEELS: 5.65

SILT CONTENT: 6.92 %

EMISSION FACTOR: 1.21 KG/VKT (4.3 LB/VMT)

TABLE 3-44: DATA ANALYSIS SUMMARY - TEST NO. 10
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 10 TEST DATE: 6-14-84 START TIME: 1550
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	6.58	63.55	32	4.3
TOWER-7M	6.17	59.62	32	12.3
TOWER-5M	5.16	49.81	32	37.3
TOWER-3M	4.34	41.95	32	57.9
TOWER-1M	3.43	33.12	32	79.8
UPWIND		45	32	.4

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	75.39	66.56	.084
TOWER-7M	228.51	219.67	.26
TOWER-5M	826.97	818.13	.809
TOWER-3M	1524.25	1515.42	1.263
TOWER-1M	2658.9	2650.07	1.743
UPWIND	8.83		

INTEGRATED AREA: 8.43 M-MG/CM2

NO. OF VEHICLE PASSES: 50
AVG. VEHICLE SPEED: 45.06 KPH (28 MPH)
AVG. VEHICLE WEIGHT: 11367 KG (12.53 TONS)
AVG. NO. OF WHEELS: 6.28

SILT CONTENT: 6.92 %

EMISSION FACTOR: 1.69 KG/VKT (5.98 LB/VMT)

TABLE 3-45: DATA ANALYSIS SUMMARY - TEST NO. 11
MATERIAL LESS THAN 10 MICRONS

TEST NUMBER: 11 TEST DATE: 6-15-84 START TIME: 926
PROFILER LOCATION: 4 - SOUTH
AMBIENT TEMPERATURE: 62.9 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.1	53.21	26	2.7
TOWER-7M	2.97	51.03	26	17
TOWER-5M	2.59	44.49	26	46.1
TOWER-3M	2.16	37.07	26	91.8
TOWER-1M	1.75	30.1	26	124.4
UPWIND		45	26	.6

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	67.82	50.79	.025
TOWER-7M	453.11	436.07	.202
TOWER-5M	1409.14	1392.11	.562
TOWER-3M	3366.44	3349.41	1.127
TOWER-1M	5616.26	5599.22	1.529
UPWIND	17.03		

INTEGRATED AREA: 6.97 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34 KPH (21.13 MPH)
AVG. VEHICLE WEIGHT: 29067 KG (32.04 TONS)
AVG. NO. OF WHEELS: 14.7

SILT CONTENT: 6.39 %

EMISSION FACTOR: 1.74 KG/VKT (6.18 LB/VMT)

TABLE 3-46: DATA ANALYSIS SUMMARY - TEST NO. 1
MATERIAL LESS THAN 5 MICRONS

TEST NUMBER: 1 TEST DATE: 6-11-84 START TIME: 1406
PROFILER LOCATION: 5-SOUTH
AMBIENT TEMPERATURE: 64.2 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.53	60.63	39	0
TOWER-7M	3.15	54.09	27	3.3
TOWER-5M	2.97	51.03	39	26.2
TOWER-3M	2.62	44.93	39	45.8
TOWER-1M	2.01	34.46	27	36.4
UPWIND		45	39	.2

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	.56	-3.48	-3E-03
TOWER-7M	79.33	75.28	.055
TOWER-5M	466.02	461.98	.321
TOWER-3M	923.27	919.22	.562
TOWER-1M	1381.87	1377.82	.646
UPWIND	4.05		

INTEGRATED AREA: 3.19 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34.41 KPH (21.38 MPH)
AVG. VEHICLE WEIGHT: 20730 KG (22.85 TONS)
AVG. NO. OF WHEELS: 12.1

SILT CONTENT: 8.17 %

EMISSION FACTOR: .8 KG/VKT (2.83 LB/VMT)

TABLE 3-47: DATA ANALYSIS SUMMARY - TEST NO. 2
MATERIAL LESS THAN 5 MICRONS

=====

TEST NUMBER: 2 TEST DATE: 6-11-84 START TIME: 1554
 PROFILER LOCATION: 5 - SOUTH
 AMBIENT TEMPERATURE: 66.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.19	71.97	55	.2
TOWER-7M	3.81	65.43	55	2.7
TOWER-5M	3.71	63.68	55	7.9
TOWER-3M	3.15	54.09	55	18.9
TOWER-1M	2.54	43.62	55	30.4
UPWIND		45	55	.1

SAMPLER	CONCENTRATION ADJUSTED FOR		
	CONCENTRATION (UG/M3)	BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	2.02	.01	0
TOWER-7M	26.07	24.05	.03
TOWER-5M	80.13	78.11	.095
TOWER-3M	224	221.98	.231
TOWER-1M	447.5	445.49	.373
UPWIND	2.01		

INTEGRATED AREA: 1.49 M-MG/CM2

NO. OF VEHICLE PASSES: 30
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 11703 KG (12.9 TONS)
 AVG. NO. OF WHEELS: 5.13

SILT CONTENT: 8.17 %

EMISSION FACTOR: .5 KG/VKT (1.77 LB/VMT)

=====

TABLE 3-48: DATA ANALYSIS SUMMARY - TEST NO. 3
MATERIAL LESS THAN 5 MICRONS

TEST NUMBER: 3 TEST DATE: 6-12-84 START TIME: 951
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 87.5 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.57	44.16	25	.8
TOWER-7M	4.11	39.75	25	2.6
TOWER-5M	4.11	39.75	25	12.3
TOWER-3M	3.43	33.12	25	23.8
TOWER-1M	2.97	28.71	25	35
UPWIND		45	25	.5

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	25.41	10.71	7E-03
TOWER-7M	93.27	78.57	.048
TOWER-5M	436.82	422.12	.26
TOWER-3M	1014.94	1000.24	.514
TOWER-1M	1723.03	1708.33	.761
UPWIND	14.7		

INTEGRATED AREA: 3.24 M-MG/CM2

NO. OF VEHICLE PASSES: 41
AVG. VEHICLE SPEED: 32.57 KPH (20.24 MPH)
AVG. VEHICLE WEIGHT: 26018 KG (28.68 TONS)
AVG. NO. OF WHEELS: 13.46

SILT CONTENT: 12.26 %

EMISSION FACTOR: .79 KG/VKT (2.8 LB/VMT)

TABLE 3-49: DATA ANALYSIS SUMMARY - TEST NO. 4
MATERIAL LESS THAN 5 MICRONS

=====

TEST NUMBER: 4 TEST DATE: 6-12-84 START TIME: 1142
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 92.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.72	55.2	23	1.9
TOWER-7M	5.28	51.03	23	6.1
TOWER-5M	5.28	51.03	23	18.9
TOWER-3M	4.45	42.94	23	24.1
TOWER-1M	3.71	35.82	23	47.5
UPWIND		45	23	.5

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	53.3	35.79	.028
TOWER-7M	185.03	167.52	.122
TOWER-5M	567.99	550.48	.401
TOWER-3M	863.91	846.39	.519
TOWER-1M	2038.42	2020.9	1.033
UPWIND	17.51		

INTEGRATED AREA: 4.32 M-MG/CM2

NO. OF VEHICLE PASSES: 42
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 20221 KG (22.29 TONS)
 AVG. NO. OF WHEELS: 13.1

SILT CONTENT: 12.26 %

EMISSION FACTOR: 1.03 KG/VKT (3.65 LB/VMT)

TABLE 3-50: DATA ANALYSIS SUMMARY - TEST NO. 5
MATERIAL LESS THAN 5 MICRONS

TEST NUMBER: 5 TEST DATE: 6-12-84 START TIME: 1434
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 98.1 F NOZZLE DIAMETER: 2 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.16	22.14	20	.9
TOWER-7M	4.19	17.99	20	2.1
TOWER-5M	4.72	20.28	20	5.6
TOWER-3M	4.01	17.23	20	9.3
TOWER-1M	2.62	11.23	20	11.7
UPWIND		45	20	.5

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	73.92	55.31	.034
TOWER-7M	208.68	190.07	.095
TOWER-5M	489.08	470.47	.266
TOWER-3M	954.58	935.97	.45
TOWER-1M	1836.19	1817.58	.57
UPWIND	18.61		

INTEGRATED AREA: 2.87 M-MG/CM2

NO. OF VEHICLE PASSES: 42
 AVG. VEHICLE SPEED: 43.11 KPH (26.79 MPH)
 AVG. VEHICLE WEIGHT: 6768 KG (7.46 TONS)
 AVG. NO. OF WHEELS: 4.71

SILT CONTENT: 12.26 %

EMISSION FACTOR: .68 KG/VKT (2.42 LB/VMT)

TABLE 3-51: DATA ANALYSIS SUMMARY - TEST NO. 6
MATERIAL LESS THAN 5 MICRONS

=====

TEST NUMBER: 6 TEST DATE: 6-13-84 START TIME: 1133
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 95.8 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.79	47.98	28	2.5
TOWER-7M	2.79	47.98	28	8.8
TOWER-5M	2.39	41	28	22.2
TOWER-3M	1.96	33.59	28	32.4
TOWER-1M	1.7	29.22	28	46.9
UPWIND		45	28	1.8

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	64.63	13.31	6E-03
TOWER-7M	231.27	179.95	.084
TOWER-5M	682.48	631.16	.253
TOWER-3M	1217.66	1166.34	.383
TOWER-1M	2025.32	1974	.564
UPWIND	51.32		

INTEGRATED AREA: 2.62 M-MG/CM2

NO. OF VEHICLE PASSES: 46
 AVG. VEHICLE SPEED: 35.52 KPH (22.07 MPH)
 AVG. VEHICLE WEIGHT: 26055 KG (28.72 TONS)
 AVG. NO. OF WHEELS: 14.04

SILT CONTENT: 13.69 %

EMISSION FACTOR: .57 KG/VKT (2.02 LB/VMT)

TABLE 3-52: DATA ANALYSIS SUMMARY - TEST NO. 7
MATERIAL LESS THAN 5 MICRONS

=====

TEST NUMBER: 7 TEST DATE: 6-13-84 START TIME: 1251
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 94.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.67	45.8	27	3.8
TOWER-7M	2.59	44.49	27	9.7
TOWER-5M	2.26	38.82	27	17.7
TOWER-3M	1.8	30.97	27	29.8
TOWER-1M	1.35	23.12	27	42.3
UPWIND		45	27	.3

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	107.84	99.9	.043
TOWER-7M	284.21	276.27	.116
TOWER-5M	596.03	588.09	.215
TOWER-3M	1258.92	1250.98	.365
TOWER-1M	2392.62	2384.68	.52
UPWIND	7.94		

INTEGRATED AREA: 2.56 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 35.73 KPH (22.2 MPH)
 AVG. VEHICLE WEIGHT: 31734 KG (34.98 TONS)
 AVG. NO. OF WHEELS: 15.8

SILT CONTENT: 13.69 %

EMISSION FACTOR: .63 KG/VKT (2.22 LB/VMT)

TABLE 3-53: DATA ANALYSIS SUMMARY - TEST NO. 8
MATERIAL LESS THAN 5 MICRONS

TEST NUMBER: 8 TEST DATE: 6-14-84 START TIME: 1232
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 59.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.61	54.22	44	.7
TOWER-7M	5.03	48.58	44	3.8
TOWER-5M	4.93	47.6	44	12.2
TOWER-3M	4.32	41.71	44	22.2
TOWER-1M	3.71	35.82	44	31.1
UPWIND		45	44	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	10.08	8.31	.012
TOWER-7M	62.82	61.05	.081
TOWER-5M	205.81	204.04	.265
TOWER-3M	427.51	425.74	.485
TOWER-1M	698.22	696.46	.681
UPWIND	1.77		

INTEGRATED AREA: 3.09 M-MG/CM2

NO. OF VEHICLE PASSES: 61
AVG. VEHICLE SPEED: 38.38 KPH (23.85 MPH)
AVG. VEHICLE WEIGHT: 29393 KG (32.4 TONS)
AVG. NO. OF WHEELS: 14.62

SILT CONTENT: 6.92 %

EMISSION FACTOR: .51 KG/VKT (1.8 LB/VMT)

TABLE 3-54: DATA ANALYSIS SUMMARY - TEST NO. 9
MATERIAL LESS THAN 5 MICRONS

TEST NUMBER: 9 TEST DATE: 6-14-84 START TIME: 1430
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.84	56.43	37	.4
TOWER-7M	5.54	53.49	37	3
TOWER-5M	4.93	47.6	37	10.9
TOWER-3M	4.34	41.95	37	17.1
TOWER-1M	3.78	36.56	37	20.1
UPWIND		45	37	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	5.97	5.33	7E-03
TOWER-7M	52.76	52.12	.064
TOWER-5M	218.25	217.61	.238
TOWER-3M	388.8	388.17	.374
TOWER-1M	525.37	524.74	.44
UPWIND	.64		

INTEGRATED AREA: 2.26 M-MG/CM2

NO. OF VEHICLE PASSES: 51
AVG. VEHICLE SPEED: 42.28 KPH (26.27 MPH)
AVG. VEHICLE WEIGHT: 9653 KG (10.64 TONS)
AVG. NO. OF WHEELS: 5.65

SILT CONTENT: 6.92 %

EMISSION FACTOR: .44 KG/VKT (1.57 LB/VMT)

TABLE 3-55: DATA ANALYSIS SUMMARY - TEST NO. 10
MATERIAL LESS THAN 5 MICRONS

TEST NUMBER: 10 TEST DATE: 6-14-84 START TIME: 1550
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	6.58	63.55	32	1.5
TOWER-7M	6.17	59.62	32	4.1
TOWER-5M	5.16	49.81	32	12.5
TOWER-3M	4.34	41.95	32	21
TOWER-1M	3.43	33.12	32	30.8
UPWIND		45	32	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	25.4	23.19	.029
TOWER-7M	76.82	74.61	.088
TOWER-5M	277.6	275.39	.272
TOWER-3M	551.97	549.76	.458
TOWER-1M	1028.44	1026.24	.675
UPWIND	2.21		

INTEGRATED AREA: 3.1 M-MG/CM2

NO. OF VEHICLE PASSES: 50
AVG. VEHICLE SPEED: 45.06 KPH (28 MPH)
AVG. VEHICLE WEIGHT: 11367 KG (12.53 TONS)
AVG. NO. OF WHEELS: 6.28

SILT CONTENT: 6.92 %

EMISSION FACTOR: .62 KG/VKT (2.2 LB/VMT)

TABLE 3-56: DATA ANALYSIS SUMMARY - TEST NO. 11
MATERIAL LESS THAN 5 MICRONS

=====

TEST NUMBER: 11 TEST DATE: 6-15-84 START TIME: 926
 PROFILER LOCATION: 4 - SOUTH
 AMBIENT TEMPERATURE: 62.9 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.1	53.21	26	.9
TOWER-7M	2.97	51.03	26	5.7
TOWER-5M	2.59	44.49	26	15.5
TOWER-3M	2.16	37.07	26	33.3
TOWER-1M	1.75	30.1	26	48.1
UPWIND		45	26	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	22.85	18.59	9E-03
TOWER-7M	152.32	148.06	.069
TOWER-5M	473.03	468.78	.189
TOWER-3M	1219.08	1214.82	.409
TOWER-1M	2172.33	2168.07	.592
UPWIND	4.26		

INTEGRATED AREA: 2.58 M-MG/CM2

NO. OF VEHICLE PASSES: 40
 AVG. VEHICLE SPEED: 34 KPH (21.13 MPH)
 AVG. VEHICLE WEIGHT: 29067 KG (32.04 TONS)
 AVG. NO. OF WHEELS: 14.7

SILT CONTENT: 6.39 %

EMISSION FACTOR: .64 KG/VKT (2.28 LB/VMT)

TABLE 3-57: DATA ANALYSIS SUMMARY - TEST NO. 1
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 1 TEST DATE: 6-11-84 START TIME: 1406
PROFILER LOCATION: 5-SOUTH
AMBIENT TEMPERATURE: 64.2 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.53	60.63	39	0
TOWER-7M	3.15	54.09	27	.7
TOWER-5M	2.97	51.03	39	6.4
TOWER-3M	2.62	44.93	39	11.3
TOWER-1M	2.01	34.46	27	8.9
UPWIND		45	39	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	.12	-.56	0
TOWER-7M	18.08	17.4	.013
TOWER-5M	112.83	112.15	.078
TOWER-3M	228.7	228.03	.139
TOWER-1M	337.04	336.37	.158
UPWIND	.67		

INTEGRATED AREA: .78 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34.41 KPH (21.38 MPH)
AVG. VEHICLE WEIGHT: 20730 KG (22.85 TONS)
AVG. NO. OF WHEELS: 12.1

SILT CONTENT: 8.17 %

EMISSION FACTOR: .2 KG/VKT (.69 LB/VMT)

TABLE 3-58: DATA ANALYSIS SUMMARY - TEST NO. 2
MATERIAL LESS THAN 2.5 MICRONS

=====

TEST NUMBER: 2 TEST DATE: 6-11-84 START TIME: 1554
 PROFILER LOCATION: 5 - SOUTH
 AMBIENT TEMPERATURE: 66.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.19	71.97	55	0
TOWER-7M	3.81	65.43	55	.6
TOWER-5M	3.71	63.68	55	1.9
TOWER-3M	3.15	54.09	55	4.7
TOWER-1M	2.54	43.62	55	7.4
UPWIND		45	55	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	.42	.08	0
TOWER-7M	5.94	5.6	7E-03
TOWER-5M	19.4	19.06	.023
TOWER-3M	55.49	55.15	.057
TOWER-1M	109.15	108.81	.091
UPWIND	.34		

INTEGRATED AREA: .37 M-MG/CM2

NO. OF VEHICLE PASSES: 30
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 11703 KG (12.9 TONS)
 AVG. NO. OF WHEELS: 5.13

SILT CONTENT: 8.17 %

EMISSION FACTOR: .12 KG/VKT (.43 LB/VMT)

TABLE 3-59: DATA ANALYSIS SUMMARY - TEST NO. 3
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 3 TEST DATE: 6-12-84 START TIME: 951
 PROFILER LOCATION: 1 - NORTH
 AMBIENT TEMPERATURE: 87.5 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	4.57	44.16	25	.2
TOWER-7M	4.11	39.75	25	.6
TOWER-5M	4.11	39.75	25	3
TOWER-3M	3.43	33.12	25	5.9
TOWER-1M	2.97	28.71	25	8.5
UPWIND		45	25	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	5.24	2.79	2E-03
TOWER-7M	21.25	18.8	.012
TOWER-5M	105.76	103.31	.064
TOWER-3M	251.41	248.96	.128
TOWER-1M	420.25	417.8	.186
UPWIND	2.45		

INTEGRATED AREA: .8 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 32.57 KPH (20.24 MPH)
 AVG. VEHICLE WEIGHT: 26018 KG (28.68 TONS)
 AVG. NO. OF WHEELS: 13.46

SILT CONTENT: 12.26 %

EMISSION FACTOR: .19 KG/VKT (.69 LB/VMT)

TABLE 3-60: DATA ANALYSIS SUMMARY - TEST NO. 4
MATERIAL LESS THAN 2.5 MICRONS

=====

TEST NUMBER: 4 TEST DATE: 6-12-84 START TIME: 1142
 PROFILER LOCATION: 1. - NORTH
 AMBIENT TEMPERATURE: 92.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.72	55.2	23	.4
TOWER-7M	5.28	51.03	23	1.4
TOWER-5M	5.28	51.03	23	4.6
TOWER-3M	4.45	42.94	23	6
TOWER-1M	3.71	35.82	23	11.6
UPWIND		45	23	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	11	8.08	6E-03
TOWER-7M	42.16	39.24	.029
TOWER-5M	137.51	134.6	.098
TOWER-3M	213.99	211.08	.129
TOWER-1M	497.18	494.26	.253
UPWIND	2.92		

INTEGRATED AREA: 1.06 M-MG/CM2

NO. OF VEHICLE PASSES: 42
 AVG. VEHICLE SPEED: 37.54 KPH (23.33 MPH)
 AVG. VEHICLE WEIGHT: 20221 KG (22.29 TONS)
 AVG. NO. OF WHEELS: 13.1

SILT CONTENT: 12.26 %

EMISSION FACTOR: .25 KG/VKT (.89 LB/VMT)

TABLE 3-61: DATA ANALYSIS SUMMARY - TEST NO. 5
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 5 TEST DATE: 6-12-84 START TIME: 1434
PROFILER LOCATION: 1 - NORTH
AMBIENT TEMPERATURE: 98.1 F NOZZLE DIAMETER: 2 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.16	22.14	20	.2
TOWER-7M	4.19	17.99	20	.5
TOWER-5M	4.72	20.28	20	1.4
TOWER-3M	4.01	17.23	20	2.3
TOWER-1M	2.62	11.23	20	2.8
UPWIND		45	20	.1

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	15.25	12.15	8E-03
TOWER-7M	47.55	44.45	.022
TOWER-5M	118.41	115.31	.065
TOWER-3M	236.46	233.35	.112
TOWER-1M	447.85	444.75	.139
UPWIND	3.1		

INTEGRATED AREA: .7 M-MG/CM2

NO. OF VEHICLE PASSES: 42
AVG. VEHICLE SPEED: 43.11 KPH (26.79 MPH)
AVG. VEHICLE WEIGHT: 6768 KG (7.46 TONS)
AVG. NO. OF WHEELS: 4.71

SILT CONTENT: 12.26 %

EMISSION FACTOR: .17 KG/VKT (.59 LB/VMT)

TABLE 3-62: DATA ANALYSIS SUMMARY - TEST NO. 6
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 6 TEST DATE: 6-13-84 START TIME: 1133
PROFILER LOCATION: 2 - NORTH
AMBIENT TEMPERATURE: 95.8 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.79	47.98	28	.5
TOWER-7M	2.79	47.98	28	2
TOWER-5M	2.39	41	28	5.4
TOWER-3M	1.96	33.59	28	8
TOWER-1M	1.7	29.22	28	11.4
UPWIND		45	28	.3

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	13.34	4.78	2E-03
TOWER-7M	52.7	44.14	.021
TOWER-5M	165.23	156.68	.063
TOWER-3M	301.62	293.07	.096
TOWER-1M	493.98	485.43	.139
UPWIND	8.55		

INTEGRATED AREA: .65 M-MG/CM2

NO. OF VEHICLE PASSES: 46
AVG. VEHICLE SPEED: 35.52 KPH (22.07 MPH)
AVG. VEHICLE WEIGHT: 26055 KG (28.72 TONS)
AVG. NO. OF WHEELS: 14.04

SILT CONTENT: 13.69 %

EMISSION FACTOR: .14 KG/VKT (.5 LB/VMT)

TABLE 3-63: DATA ANALYSIS SUMMARY - TEST NO. 7
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 7 TEST DATE: 6-13-84 START TIME: 1251
 PROFILER LOCATION: 2 - NORTH
 AMBIENT TEMPERATURE: 94.4 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	2.67	45.8	27	.8
TOWER-7M	2.59	44.49	27	2.2
TOWER-5M	2.26	38.82	27	4.3
TOWER-3M	1.8	30.97	27	7.4
TOWER-1M	1.35	23.12	27	10.3
UPWIND		45	27	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	22.25	20.93	9E-03
TOWER-7M	64.76	63.43	.027
TOWER-5M	144.3	142.98	.052
TOWER-3M	311.84	310.52	.091
TOWER-1M	583.56	582.24	.127
UPWIND	1.32		

INTEGRATED AREA: .62 M-MG/CM2

NO. OF VEHICLE PASSES: 41
 AVG. VEHICLE SPEED: 35.73 KPH (22.2 MPH)
 AVG. VEHICLE WEIGHT: 31734 KG (34.98 TONS)
 AVG. NO. OF WHEELS: 15.8

SILT CONTENT: 13.69 %

EMISSION FACTOR: .15 KG/VKT (.54 LB/VMT)

TABLE 3-64: DATA ANALYSIS SUMMARY - TEST NO. 8
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 8 TEST DATE: 6-14-84 START TIME: 1232
PROFILER LOCATION: 3 - SOUTH
AMBIENT TEMPERATURE: 59.1 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.61	54.22	44	.1
TOWER-7M	5.03	48.58	44	.9
TOWER-5M	4.93	47.6	44	3
TOWER-3M	4.32	41.71	44	5.5
TOWER-1M	3.71	35.82	44	7.6
UPWIND		45	44	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	2.08	1.79	3E-03
TOWER-7M	14.31	14.02	.019
TOWER-5M	49.83	49.53	.064
TOWER-3M	105.9	105.6	.12
TOWER-1M	170.3	170	.166
UPWIND	.29		

INTEGRATED AREA: .75 M-MG/CM2

NO. OF VEHICLE PASSES: 61
AVG. VEHICLE SPEED: 38.38 KPH (23.85 MPH)
AVG. VEHICLE WEIGHT: 29393 KG (32.4 TONS)
AVG. NO. OF WHEELS: 14.62

SILT CONTENT: 6.92 %

EMISSION FACTOR: .12 KG/VKT (.44 LB/VMT)

TABLE 3-65: DATA ANALYSIS SUMMARY - TEST NO. 9
MATERIAL LESS THAN 2.5 MICRONS

=====

TEST NUMBER: 9 TEST DATE: 6-14-84 START TIME: 1430
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	5.84	56.43	37	.1
TOWER-7M	5.54	53.49	37	.7
TOWER-5M	4.93	47.6	37	2.6
TOWER-3M	4.34	41.95	37	4.2
TOWER-1M	3.78	36.56	37	4.9
UPWIND		45	37	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	1.23	1.13	1E-03
TOWER-7M	12.02	11.91	.015
TOWER-5M	52.84	52.73	.058
TOWER-3M	96.31	96.2	.093
TOWER-1M	128.14	128.03	.107
UPWIND	.11		

INTEGRATED AREA: .55 M-MG/CM2

NO. OF VEHICLE PASSES: 51
 AVG. VEHICLE SPEED: 42.28 KPH (26.27 MPH)
 AVG. VEHICLE WEIGHT: 9653 KG (10.64 TONS)
 AVG. NO. OF WHEELS: 5.65

SILT CONTENT: 6.92 %

EMISSION FACTOR: .11 KG/VKT (.38 LB/VMT)

TABLE 3-66: DATA ANALYSIS SUMMARY - TEST NO. 10
MATERIAL LESS THAN 2.5 MICRONS

=====

TEST NUMBER: 10 TEST DATE: 6-14-84 START TIME: 1550
 PROFILER LOCATION: 3 - SOUTH
 AMBIENT TEMPERATURE: 60.9 F NOZZLE DIAMETER: 3 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	6.58	63.55	32	.3
TOWER-7M	6.17	59.62	32	.9
TOWER-5M	5.16	49.81	32	3
TOWER-3M	4.34	41.95	32	5.2
TOWER-1M	3.43	33.12	32	7.5
UPWIND		45	32	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	5.24	4.87	6E-03
TOWER-7M	17.5	17.13	.02
TOWER-5M	67.21	66.84	.066
TOWER-3M	136.73	136.36	.114
TOWER-1M	250.84	250.47	.165
UPWIND	.37		

INTEGRATED AREA: .75 M-MG/CM2

NO. OF VEHICLE PASSES: 50
 AVG. VEHICLE SPEED: 45.06 KPH (28 MPH)
 AVG. VEHICLE WEIGHT: 11367 KG (12.53 TONS)
 AVG. NO. OF WHEELS: 6.28

SILT CONTENT: 6.92 %

EMISSION FACTOR: .15 KG/VKT (.53 LB/VMT)

TABLE 3-67: DATA ANALYSIS SUMMARY - TEST NO. 11
MATERIAL LESS THAN 2.5 MICRONS

TEST NUMBER: 11 TEST DATE: 6-15-84 START TIME: 926
PROFILER LOCATION: 4 - SOUTH
AMBIENT TEMPERATURE: 62.9 F NOZZLE DIAMETER: 4 IN.

SAMPLER	AMBIENT VELOCITY (M/SEC)	FLOW RATE (SCFM)	SAMPLE DURATION (MIN)	FILTER MASS (MG)
TOWER-9M	3.1	53.21	26	.2
TOWER-7M	2.97	51.03	26	1.3
TOWER-5M	2.59	44.49	26	3.7
TOWER-3M	2.16	37.07	26	8.2
TOWER-1M	1.75	30.1	26	11.7
UPWIND		45	26	0

SAMPLER	CONCENTRATION (UG/M3)	CONCENTRATION ADJUSTED FOR BACKGROUND (UG/M3)	EXPOSURE (MG/CM2)
TOWER-9M	4.71	4	2E-03
TOWER-7M	34.71	34	.016
TOWER-5M	114.52	113.81	.046
TOWER-3M	301.97	301.26	.101
TOWER-1M	529.84	529.13	.145
UPWIND	.71		

INTEGRATED AREA: .63 M-MG/CM2

NO. OF VEHICLE PASSES: 40
AVG. VEHICLE SPEED: 34 KPH (21.13 MPH)
AVG. VEHICLE WEIGHT: 29067 KG (32.04 TONS)
AVG. NO. OF WHEELS: 14.7

SILT CONTENT: 6.39 %

EMISSION FACTOR: .16 KG/VKT (.56 LB/VMT)

Tests 2, 4, 7 and 8 were selected as representative for the tests performed on June 11, 12, 13 and 14, respectively. Test 11, performed on June 15, was not selected for analysis since it was assumed, based on the emission factor analysis results, that the emissions for that day were similar in nature to those of June 14 (Test 8).

Four filters per test were selected for analysis and shipped to ETC. The chosen filters were those collected from the 9m, 5m, and 1m heights on the profiler and from the upwind standard hi-vol. An initial screening of these filters by ETC indicated that there was not enough material present on three of the filters for their analysis procedure. The filters not analyzed were those collected at the 9m height during Test 2 and the upwind hi-vol during Tests 2 and 8. The remaining filters were analyzed and the results were reported to TRC by ETC. These results are reproduced herein as Appendix F.

Table 3-68 presents a summary of ETC's results. Since the particle size distributions at the various sampler locations appeared to remain relatively constant from day to day, it was decided to use an average particle size distribution for each sampler location. These distributions, which would be representative of the entire test program, are presented in Table 3-69. The particle size distributions for the 3m and 7m sampler locations were obtained through interpolation.

TABLE 3-68

PARTICLE SIZE DISTRIBUTIONS DETERMINED BY MICROSCOPIC ANALYSIS

Sampler Location	Test Number	Percent Less Than				
		30 μ m	15 μ m	10 μ m	5 μ m	2.5 μ m
Tower - 9m	4	67	30	16	5	1
	7	88	43	26	9	2
	8	82	31	14	5	1
Tower - 5m	2	80	41	24	8	2
	4	86	47	30	9	2
	7	90	50	29	10	2
	8	93	51	30	11	3
Tower - 1m	2	96	56	35	13	3
	4	95	55	30	13	4
	7	94	51	32	12	2
	8	96	52	30	11	3
Upwind Std.	4	81	31	14	4	1
	7	88	28	10	2	0

TABLE 3-69

AVERAGE PARTICLE SIZE DISTRIBUTIONS

Sampler Location	Percent Less Than				
	30 μm	15 μm	10 μm	5 μm	2.5 μm
Tower - 9m	79.0	34.7	18.7	6.3	1.3
Tower - 7m	83.2	41.0	23.5	7.9	1.8
Tower - 5m	87.3	47.3	28.3	9.5	2.3
Tower - 3m	91.3	50.4	30.1	10.9	2.7
Tower - 1m	95.3	53.5	31.8	12.3	3.0
Upwind Std.	84.5	29.5	12.0	3.0	0.5

It is interesting to note that there appears to be a greater percentage of larger particles captured at the higher sampler elevations than at the lower sampler elevations. This is contrary to basic theory. The most likely explanation for this is that the larger particles at the lower elevations are settling out within the nozzle array due to the lower flow rates of these samplers. The upper samplers had a much higher flow rate and, thus, larger particles would not settle out as rapidly. The nozzle "catch" was not included in the calculations since this was not done during the Allegheny County study. Future test programs should include this material.

Steps 11 and 12: Emission factor determination.

The particle size distributions obtained from Step 10 were applied to the measured filter weights for each test. The emission factor calculation procedure was then repeated using the new filter weights. The results are presented in Tables 3-13 through 3-67, as discussed previously. A summary of the emission factors for each particle size is given in Table 3-70 along with the average emission factor for all of the tests and the percent of the total particulate emission factor that each average represents.

The average results of the testing program can thus be summarized by the following equation:

TABLE 3-70

EMISSION FACTOR SUMMARY

Test Number	Emission Factor (kg/KVT)					
	Total Particulate	Material < 30 μm	Material < 15 μm	Material < 10 μm	Material < 5 μm	Material < 2.5 μm
1	7.11	6.53	3.63	2.17	0.80	0.20
2	4.29	3.97	2.23	1.34	0.50	0.12
3	6.67	6.18	3.51	2.12	0.79	0.19
4	8.80	8.10	4.58	2.77	1.03	0.25
5	5.90	5.38	3.04	1.84	0.68	0.17
6	4.40	4.09	2.43	1.51	0.57	0.14
7	5.85	5.27	2.87	1.71	0.63	0.15
8	4.54	4.16	2.31	1.38	0.51	0.12
9	4.06	3.70	2.04	1.21	0.44	0.11
10	5.65	5.15	2.83	1.69	0.62	0.15
11	5.74	5.28	2.92	1.74	0.64	0.16
Average	5.73	5.26	2.94	1.77	0.66	0.16
% of Total Particulate	100.0	91.8	51.3	30.9	11.5	2.8

$$EF = k (5.73) \text{ kg/VKT}$$

where: EF = emission factor
 k = particle size multiplier
 = 1 for total particulate
 = 0.92 for material < 30 μm
 = 0.51 for material < 15 μm
 = 0.31 for material < 10 μm
 = 0.12 for material < 5 μm
 = 0.03 for material < 2.5 μm

3.3 Empirical Emission Factors

The most widely accepted emission factor for industrial unpaved roads is the one developed by MRI. The form of this equation, as published in Supplement No. 14 of EPA's AP-42, is as follows:

$$EF = k (1.7) \left(\frac{s}{12} \right) \left(\frac{S}{48} \right) \left(\frac{W}{2.7} \right)^{0.7} \left(\frac{w}{4} \right)^{0.5} \text{ kg/VKT}$$

where:

EF = emission factor
 k = particle size multiplier
 = 1 for total particulate
 = 0.80 for material < 30 μm
 = 0.57 for material < 15 μm
 = 0.45 for material < 10 μm
 = 0.28 for material < 5 μm
 = 0.16 for material < 2.5 μm
 s = silt content of road surface material (%)
 S = means vehicle speed (km/hr)
 W = mean vehicle weight (Mg)
 w = mean number of wheels

This equation was used to compare the data obtained from the field tests with empirical predictions. The data analysis procedures used for determining the input parameters to this equation for each test were presented in Section 2.6.2 (silt) and Section 2.6.3 (traffic). The work sheets for the silt and traffic analyses are presented in Appendices G and H, respectively. The resulting averages were presented in Tables 3-1 through 3-11.

3.3.1 Total Particulate Emission Factors

Figure 3-18 presents a comparison of the total particulate emission factor calculated using the MRI equation with the total particulate emission factor measured by TRC. With the exception of Tests 6 and 7 where much lower emission factors were measured than predicted, there appears to be very good agreement between the two sets of numbers. It thus appears that TRC's data is supportive of MRI's equation for total particulate. Tests 6 and 7 were conducted on the same day and the silt content determined for that day seems unusually large. This silt content may be erroneous since it was not collected using the same procedures as described in Section 2.4.2. Due to the onset of a rainstorm at the test site, the road sample was obtained from a single spot rather than being a composite from across the road.

3.3.2 Emission Factors for Other Particle Size Ranges

The values of the particle size multiplier ("k") developed by MRI and the one developed by TRC as a result of this test program are as follows:

	< 30 μm	< 15 μm	< 10 μm	< 5 μm	< 2.5 μm
MRI	0.80	0.57	0.45	0.28	0.16
TRC	0.92	0.51	0.31	0.12	0.03

The difference between the two distributions is either due to the different particle sizing techniques used (microscopic vs. size selective sampling equipment) or due to an actual physical difference in the road surface material.

The overall results of the SRI Phase II project should shed further light on this discrepancy.

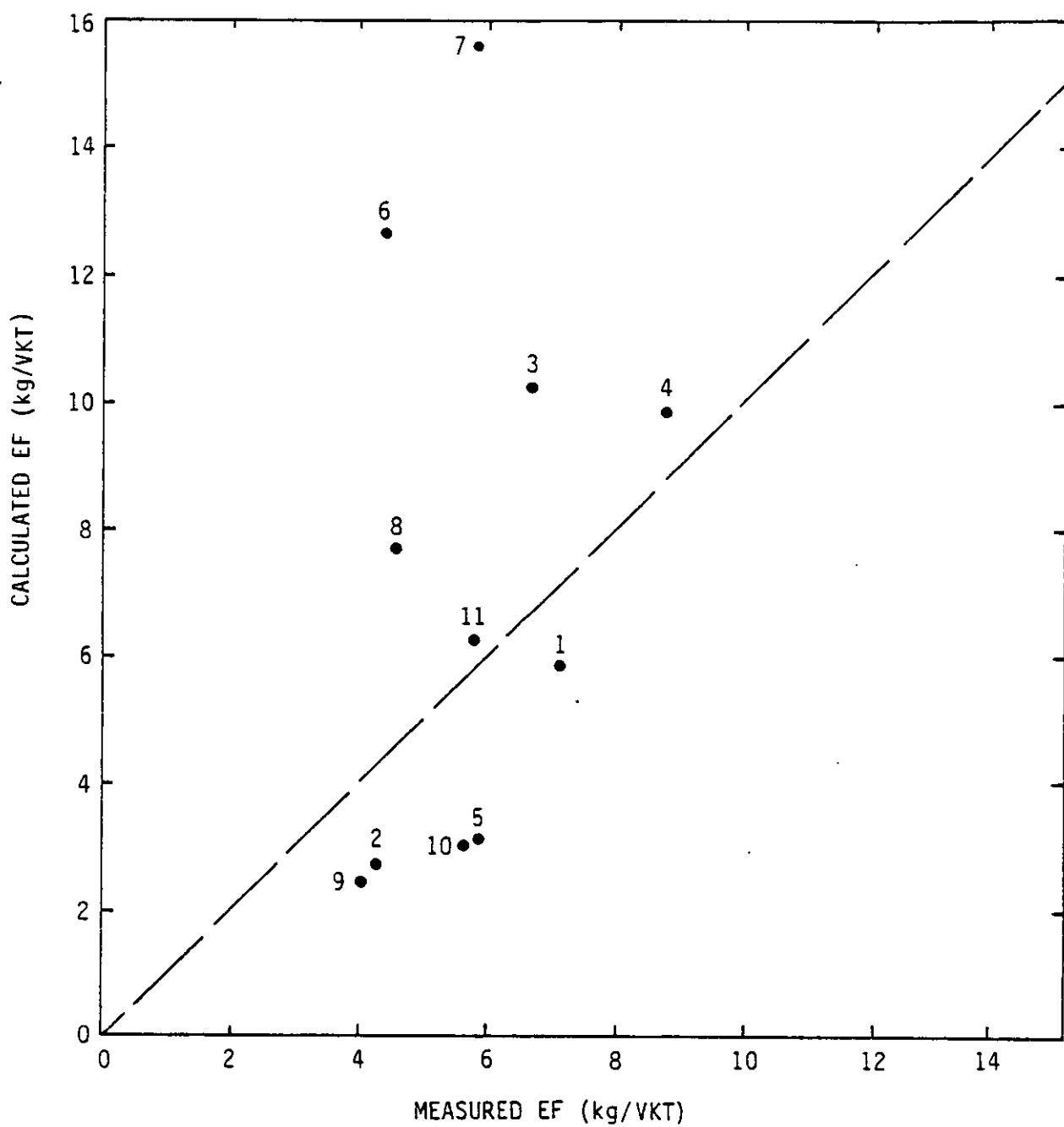


Figure 3-18. Emission factor comparison - measured vs. predicted using MRI equation.

APPENDIX A

SITE LOG

SITE LOG

Project No. 2681-L81 Date 6-10-84Site Gary, Indiana - US Steel

DATE	TIME	COMMENTS
6-10-84	—	Arrive at motel with equipment
6-11-84	0830	Arrive at site
		Set up on north side of street at site 5
	1230	Decision made to switch to south side
	1330	Ready to test on south side, position 5
		- use 4" nozzles
		(See field data sheet for position layout)
	1406	START TEST #1
		- raised upwind wind system from 2m to 3m
		to avoid flow disturbance due to slag heaps
		- 1425: plug strip circuit breaker thrown -
		1m and 7m height samplers off ≈ 10 min
	1445	Stop test test #1 ≈ 40 vehicles
		Prepare for test #2 - change filters - change
		plug strip to higher amp breaker
	1554	START TEST #2
		All systems operational
	1649	STOP TEST #2
		Move equipment to site #1
		Take surface sample for silt analysis
	≈ 1800	Leave site

SITE LOG

Project No. 2651-LS1 Date 6-12-84
 Site Gary, Indiana - US Steel

DATE	TIME	COMMENTS
6-12-84	0800	Arrive at site
		Set up equipment at site 1 - North side of road
		Switch to 3" nozzles
	0951	Start test #3
		All systems operational
	1015	Stop test #3
		Change filters
	1142	Start test #4
		Background wind system blew over-cups damaged (back up system only - get wind profile from 5 sampling head anemometers)
	1205	Stop test #4
		Set up for test #5
	≈1315	Breakdown and cover up due to impending thunderstorm
		Took surface sample for silt analysis
	1355	Bob Pyle makes decision to attempt run #5
		Wind has changed and varies from S-W
	1434	Start test #5
		Wind from S/W - gusts to 20 mph - using 2" nozzles - rotated MEDUSA ≈ 30° TO attempt to be ⊥ to plume direction

SITE LOG

Project No. 2681-L81 Date 6-12-84
 Site Gary, Indiana - US Steel

DATE	TIME	COMMENTS
6-12-84	1454	Stop test #5
	1600	Leave site
6-13-84	0815	Arrive at site
		Move to site #2 on south side of road
		Set up for test #6 - change to 3" nozzle
		Broken guy wire - repair while testing
	1000	Switched to 4" nozzles - winds 0-5 mph
		Switch to North side of road
	1133	Start test #6
		All systems operations
		Winds variable
	1201	Stop test #6
		Change filters
	1251	Start test #7
		Winds variable
		All systems operational
	1318	Stop test #7
		Few rain drops - Thunderstorm to east
	1342	Took surface sample for silt analysis
	1400	Prepare for test #8
		Test aborted due to rain + lightning
	1430	Leave site

SITE LOG

Project No. 2681-LS1 Date 6-14-84
 Site Gary, Indiana - US Steel

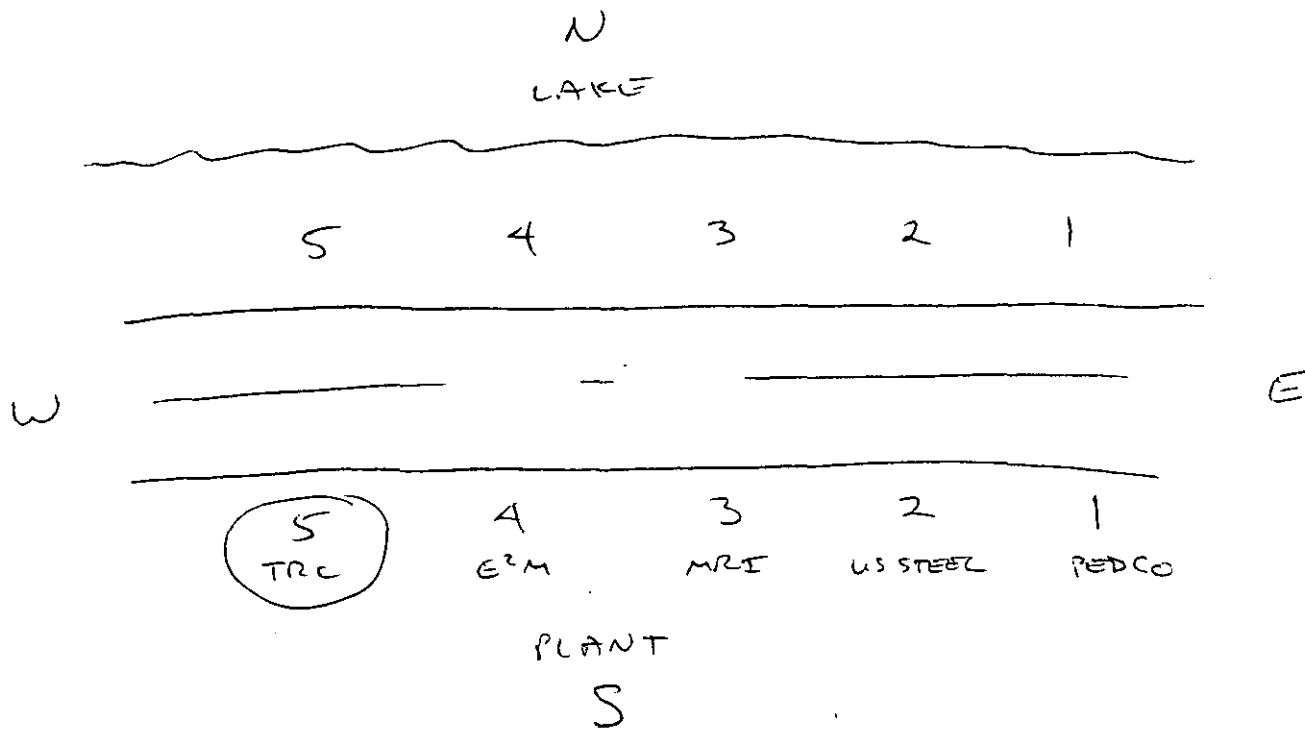
DATE	TIME	COMMENTS
6-14-84	0810	Arrive at site
		Move equipment to site #3 - South side
		Road is wet - road cover washed out in spots
	0857	Set up complete
		High winds, wet roads delay start of test
		Wind slowing to 8-12 mph - stay with 3" nozzles
	1232	Start test #8
		So vehicle test due to wet road
	1316	Stop test #8
		US Steel hi-val out of commission - delay
		test #9 to replace
	1335	Filters loaded
	1430	Start test #9
		Strip chart on upwind isokinetic sampler
		lost data due to loose leads from head -
		repaired
	1507	Stop test #9
	1530	Ready for test #10
	1550	Start test #10
		Dust generated by Bob Pyb in rental truck
	1622	End test #10
	1645	Collect surface sample
	1745	leave site

APPENDIX B
FIELD DATA SHEETS

EPA/SRI
TRC PROJECT NO. 2681-L81

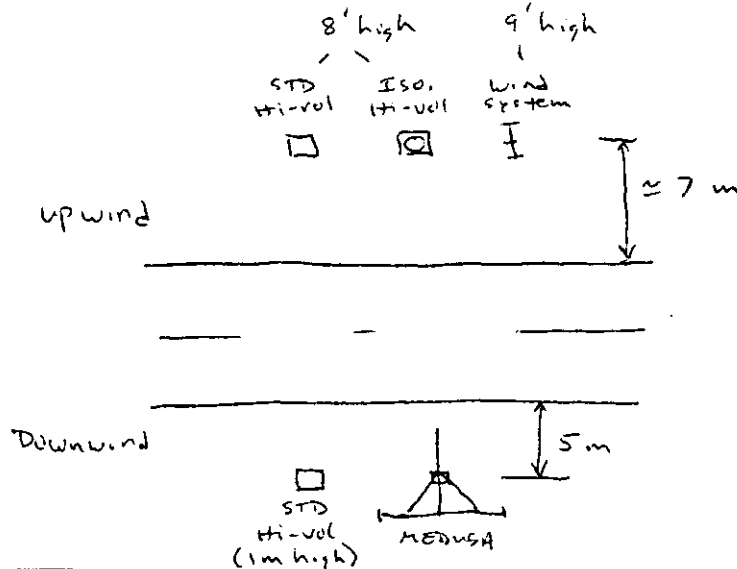
TEST NUMBER 1 DATE 6-11-84
LOCATION #5 - South side of road
START TIME 1406 STOP TIME 1445 RUN TIME(MIN.) 39
TEMPERATURE 65°F RELATIVE HUMIDITY —

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	1	5196901	4		
Tower - 7M	2	5196902	4		
Tower - 5M	7	5196903	4		
Tower - 3M	8	5196904	4		
Tower - 1M	4	5196905	4		
Downwind Std.	1039	4004		0.77	0.77 (45 CFM)
Upwind Std.	1062	5196906		0.88	0.88 (45 CFM)
Upwind Isok.	6	5196907	4		



COMMENTS:

≈ 40 Cars



EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 2 DATE 6-11-84
LOCATION #5 - South
START TIME 1554 STOP TIME 1649 RUN TIME(MIN.) 55
TEMPERATURE 66 °F RELATIVE HUMIDITY —

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	<u>1</u>	<u>5196908</u>	<u>4</u>		
Tower - 7M	<u>2</u>	<u>5196909</u>	<u>4</u>		
Tower - 5M	<u>7</u>	<u>5196910</u>	<u>4</u>		
Tower - 3M	<u>8</u>	<u>5196911</u>	<u>4</u>		
Tower - 1M	<u>4</u>	<u>5196912</u>	<u>4</u>		
Downwind Std.	<u>1039</u>	<u>4009</u>		<u>0.77</u>	<u>0.77</u>
Upwind Std.	<u>1062</u>	<u>5196913</u>		<u>0.88</u>	<u>0.88</u>
Upwind Isok.	<u>6</u>	<u>5196914</u>	<u>4</u>		

Same location as
Test # 1

COMMENTS:

≈ 30 Cars

TEST NUMBER 3 DATE 6-12-84
LOCATION Site 1- North Side of Road
START TIME 0951 STOP TIME 1016 RUN TIME(MIN.) 25
TEMPERATURE 87°F RELATIVE HUMIDITY —

A hand-drawn map showing a lake area. At the top, the word "LAKE" is written. Below it, five companies are listed from left to right: E²M, MRI, USSTEEL, PEDCO, and TRC. Below each company name is a number: 5, 4, 3, 2, and 1 respectively. The TRC label is circled. At the bottom, the word "PLANT" is written. To the left of the map is a "W" (West) and to the right is an "E" (East). Below the "PLANT" label is a "S" (South). The map is bounded by several horizontal lines representing the lake's edge.

40 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 4 DATE 6-12-84
LOCATION Site 1 - North
START TIME 1142 STOP TIME 1205 RUN TIME(MIN.) 23
TEMPERATURE 92°F RELATIVE HUMIDITY —

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	<u>1</u>	<u>5196922</u>	<u>3</u>		
Tower - 7M	<u>2</u>	<u>5196923</u>	<u>3</u>		
Tower - 5M	<u>7</u>	<u>5196924</u>	<u>3</u>		
Tower - 3M	<u>8</u>	<u>5196925</u>	<u>3</u>		
Tower - 1M	<u>A</u>	<u>5196926</u>	<u>3</u>		
Downwind Std.	<u>PEDCO'S</u>	<u>4019</u>		<u>—</u>	<u>—</u>
Upwind Std.	<u>1062</u>	<u>5196927</u>		<u>0.88</u>	<u>0.88</u>
Upwind Isok.	<u>6</u>	<u>5196928</u>	<u>3</u>		

≈ 40 CFM

Same location
as TEST # 3

COMMENTS:

≈ 40 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 5 DATE 6-12-84
LOCATION Site #1 - North
START TIME 1434 STOP TIME 1454 RUN TIME(MIN.) 20
TEMPERATURE 98 °F RELATIVE HUMIDITY —

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	1	5196929	2		
Tower - 7M	2	5196930	2		
Tower - 5M	7	5196931	2		
Tower - 3M	8	5196932	2		
Tower - 1M	4	5196933	2		
Downwind Std.	PEDCO'S	4020		—	—
Upwind Std.	1062	5196934		0.88	0.88
Upwind Isok.	6	5196935	2		

≈ 40 CFM

Same location
as TEST #3

COMMENTS:

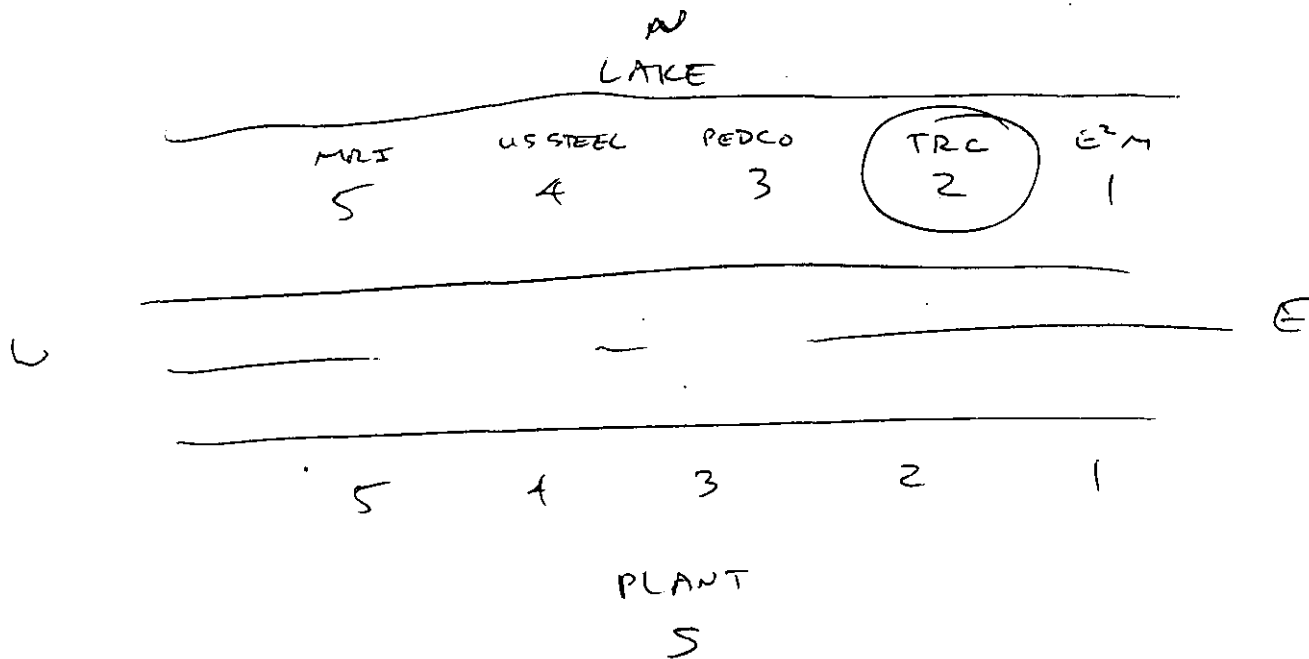
≈ 40 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 6 DATE 6-13-84
LOCATION Site 2 - North Side of Road
START TIME 1133 STOP TIME 1201 RUN TIME(MIN.) 28
TEMPERATURE 96 °F RELATIVE HUMIDITY —

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	<u>1</u>	<u>5196936</u>	<u>4</u>		
Tower - 7M	<u>2</u>	<u>5196937</u>	<u>4</u>		
Tower - 5M	<u>7</u>	<u>5196938</u>	<u>4</u>		
Tower - 3M	<u>8</u>	<u>5196939</u>	<u>4</u>		
Tower - 1M	<u>4</u>	<u>5196940</u>	<u>4</u>		
Downwind Std.	<u>US STEEL'S</u>	<u>4021</u>		<u>—</u>	<u>—</u>
Upwind Std.	<u>1062</u>	<u>5196941</u>		<u>0.88</u>	<u>0.88</u>
Upwind Isok.	<u>6</u>	<u>5196942</u>	<u>4</u>		

~40 cfm



COMMENTS:

~ 45 cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 7 DATE 6-13-84
LOCATION Site # 2 - North
START TIME 1251 STOP TIME 1318 RUN TIME(MIN.) 27
TEMPERATURE 94°F RELATIVE HUMIDITY -

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	1	5196943	4		
Tower - 7M	2	5196944	4		
Tower - 5M	7	5196945	4		
Tower - 3M	8	5196946	4		
Tower - 1M	4	5196947	4		
Downwind Std.	US Steel's	1022		-	-
Upwind Std.	1062	5196948		0.88	0.88
Upwind Isok.	6	5196949	4		

≈ 40 CFM

Same location as
Test # 6

COMMENTS:

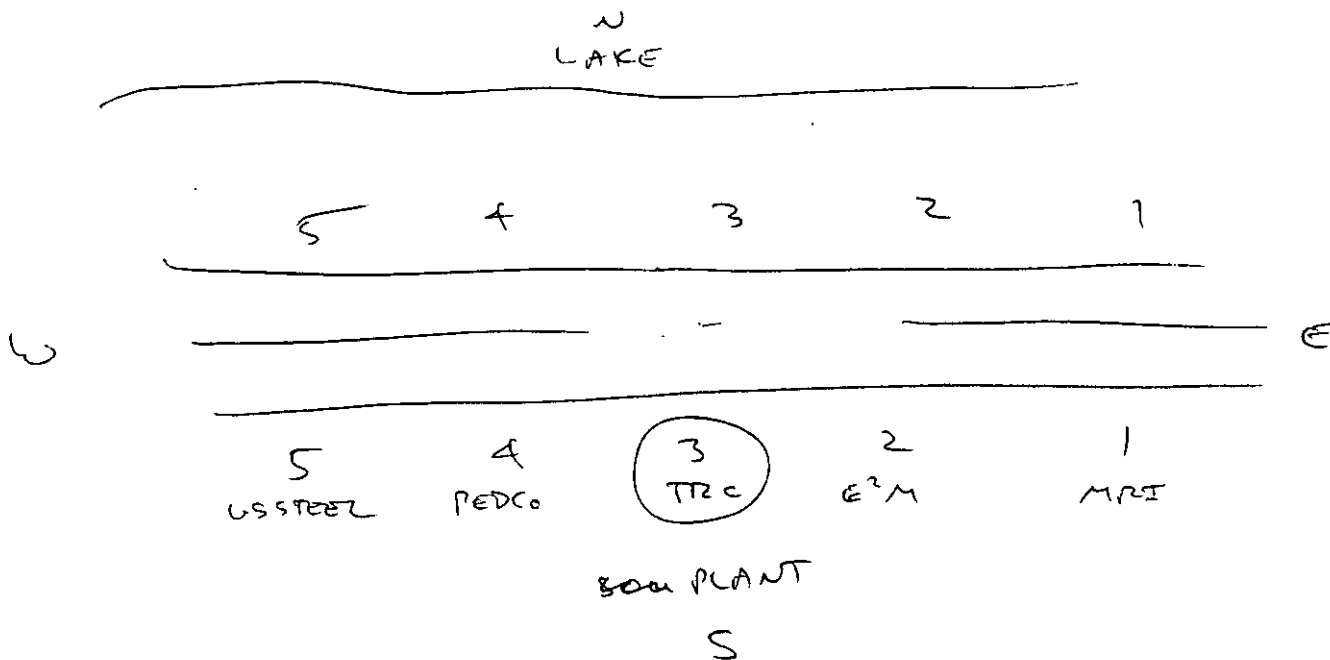
≈ 40 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 8 DATE 6-14-84
LOCATION Site 3 - South Side of Road
START TIME 1232 STOP TIME 1316 RUN TIME(MIN.) 44
TEMPERATURE 59°F RELATIVE HUMIDITY _____

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	1	5196950	3		
Tower - 7M	2	5196951	3		
Tower - 5M	7	5196952	3		
Tower - 3M	8	5196953	3		
Tower - 1M	4	5196954	3		
Downwind Std.	MRI's	4024			
Upwind Std.	1062	5196957		0.88	0.88
Upwind Isok.	6	5196955	3		

≈ 40 CFM



COMMENTS:

Initial downwind std. filter (BGI - #4023) removed and submitted to Bob Pyle as blank.

Initial upwind std. filter ⁽⁵¹⁹⁶⁹⁵⁶⁾ very dirty. Removed and replaced with filter # 5196957

≈ 50 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 9 DATE 6-14-84
LOCATION Site 3 - South
START TIME 1430 STOP TIME 1507 RUN TIME(MIN.) 37
TEMPERATURE 61 °F RELATIVE HUMIDITY _____

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	1	5196958	3		
Tower - 7M	2	5196959	3		
Tower - 5M	7	5196960	3		
Tower - 3M	8	5196961	3		
Tower - 1M	4	5196962	3		
Downwind Std.	MRE'S	4025		-	-
Upwind Std.	1062	5196963		0.88	0.88
Upwind Isok.	6	5196964	3		

~ 40 cfm

Same Location as
Test # 8

COMMENTS:

~ 50 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 10 DATE 6-14-84
LOCATION Site # 3 - South
START TIME 1550 STOP TIME 1622 RUN TIME(MIN.) 32
TEMPERATURE 61 °F RELATIVE HUMIDITY -

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	<u>1</u>	<u>5196965</u>	<u>3</u>		
Tower - 7M	<u>2</u>	<u>5196966</u>	<u>3</u>		
Tower - 5M	<u>7</u>	<u>5196967</u>	<u>3</u>		
Tower - 3M	<u>8</u>	<u>5196968</u>	<u>3</u>		
Tower - 1M	<u>4</u>	<u>5196969</u>	<u>3</u>		
Downwind Std.	<u>MNI's</u>	<u>4054</u>		<u>-</u>	<u>-</u> <u>~40 CFM</u>
Upwind Std.	<u>1062</u>	<u>5196970</u>		<u>0.88</u>	<u>0.88</u>
Upwind Isok.	<u>6</u>	<u>5196971</u>	<u>3</u>		

Same location as
Test # 38

COMMENTS:

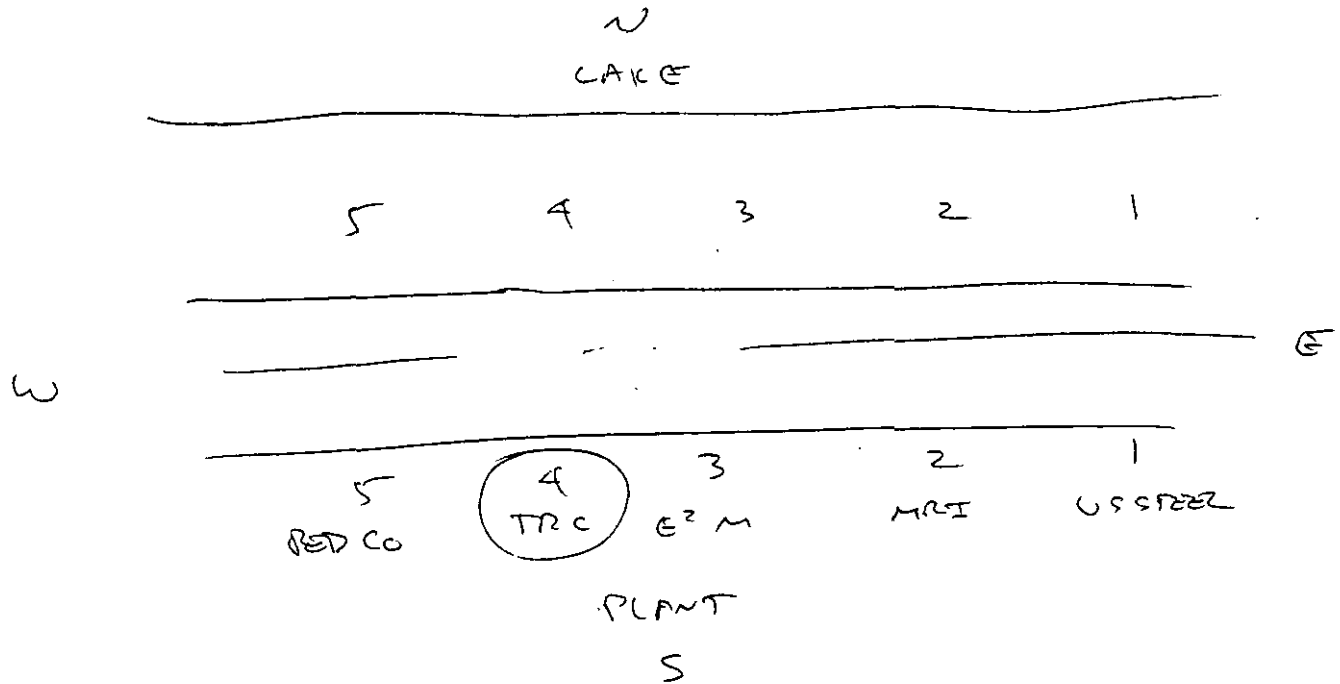
~ 50 Cars

EPA/SRI
TRC PROJECT NO. 2681-L81

TEST NUMBER 11 DATE 6-15-84
LOCATION Site # 4 - South Side of Road
START TIME 0926 STOP TIME 0952 RUN TIME(MIN.) 26
TEMPERATURE 63 °F RELATIVE HUMIDITY -

SAMPLER	ID NO.	FILTER NO.	NOZZLE SIZE (IN.)	INITIAL PRESSURE ("H ₂ O)	FINAL PRESSURE ("H ₂ O)
Tower - 9M	1	5196972	4		
Tower - 7M	2	5196973	4		
Tower - 5M	7	5196974	4		
Tower - 3M	8	5196975	4		
Tower - 1M	4	5196976	4		
Downwind Std.	E ² M's	4059		-	-
Upwind Std.	1062	5196977		0.88	0.88
Upwind Isok.	6	5196978	4		

≈ 40 CFM



COMMENTS:

≈ 40 Cars

APPENDIX C

LAB SHEETS - FILTERS

FILTER WEIGHTS

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client: SRE

Project No.: 20

	Date	Time	Temp.	Humidity	Initials
	5/31/84	6/3/84	6/4/84	6/5/84	6/5/84
	11:30	9:00	3:30	10:00	
	74°	76°	76°	70	
	45%	43%	44%	42	
	MH	MH	MH	MH	MH
Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final Ave Weight
5196901	4.6888	4.6848 ✓	4.6849 ✓		4.6848
5196902	4.6971	4.6947 ✓	4.6952 ✓		4.6950
5196903	4.7107	4.7085 ✓	4.7088 ✓		4.7086
5196904	4.7456	4.7434	4.7442 ✓	4.7446 ✓	4.7444
5196905	4.7717	4.7694 ✓	4.7699 ✓		4.7696
5196906	4.7394	4.7373 ✓	4.7372 ✓		4.7372
5196907	4.6844	4.6821 ✓	4.6824 ✓		4.6822
5196908	4.7048	4.7025 ✓	4.7028 ✓		4.7026
5196909	4.7136	4.7111	4.7118 ✓	4.7123 ✓	4.7120
5196910	4.7305	4.7269	4.7277 ✓	4.7278 ✓	4.7278
5196911	4.7017	4.6997 ✓	4.6999 ✓		4.6998
5196912	4.7897	4.7870	4.7878 ✓	4.7880 ✓	4.7879
5196913	4.7726	4.7700 ✓	4.7704 ✓		4.7702
5196914	4.7296	4.7270	4.7283 ✓	4.7280 ✓	4.7282
5196915	4.7111	4.7082	4.7095 ✓	4.7091 ✓	4.7093
5196916	4.7054	4.7030 ✓	4.7035 ✓		4.7032
5196917	4.6803	4.6877	4.6790 ✓	4.6791 ✓	4.6790
5196918	4.7135	4.7105	4.7117 ✓	4.7119 ✓	4.7118
5196919	4.7009	4.6977	4.6989 ✓	4.6992 ✓	4.6990
5196920	4.6580	4.6555 ✓	4.6560 ✓		4.6558
5196921	4.6036	4.6008	4.6017 ✓	4.6019 ✓	4.6018

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client: 20
Project No.

	Date	Time	Temp.	Humidity	Initials
	5/31/84	6/4/84	6/4/84	6/5/84	6/5/84
	11:30	9:00	3:30	10:00	
	74°	76°	76°	70°	
	45%	43%	44%	42%	
	MH	MH	MH	MH	MH
Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final Ave Weight
5196922	4.6731	4.6706	4.6717 ✓	4.6713 ✓	4.6715
5196923	4.6478	4.6450	4.6463 ✓	4.6464 ✓	4.6464
5196924	4.5928	4.5900 ✓	4.5904 ✓		4.5902
5196925	4.5777	4.5746	4.5763 ✓	4.5764 ✓	4.5764
5196926	4.6362	4.6345 ✓	4.6349 ✓		4.6347
5196927	4.5699	4.5676	4.5688 ✓	4.5688 ✓	4.5688
5196928	4.2116	4.2155 ✓	4.5539 ✓		4.5540
5196929	4.5384	4.5378 ✓	4.5378 ✓		4.5378
5196930	4.4863	4.4857 ✓	4.4855 ✓		4.4856
5196931	4.4754	4.4747 ✓	4.4749 ✓		4.4748
5196932	4.4920 ✓	4.4915 ✓			4.4918
5196933	4.4981 ✓	4.4977 ✓			4.4979
5196934	4.5608	4.5659 ✓	4.5592 ✓		4.5594
5196935	4.5188 ✓	4.5183 ✓			4.5186
5196936	4.5575 ✓	4.5576 ✓			4.5576
5196937	4.5707	4.5700 ✓	4.5700 ✓		4.5700
5196938	4.4895 ✓	4.4895 ✓			4.4895
5196939	4.5228	4.5224 ✓			4.5226
5196940	4.316828	4.6807 ✓	4.6806 ✓		4.6806
5196941	4.7026	4.7012 ✓	4.7012 ✓		4.7012
5196942	4.7329	4.7324 ✓			4.7326

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client: 20
Project No.: 1151

	Date	Time	Temp.	Humidity	Initials
	5/31/84	6/4/84	6/4/84	6/5/84	6/5/84
	11:30	9:00	3:30	10:00	
	74°	76°	76°	70°	
	45%	43%	44%	42%	
	MH	MH	MH	MH	MH
Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final Av Weight
5196943	4.6933	4.6923 ✓	4.6919 ✓		4.6921
5196944	4.6708	4.67698 ✓	4.6698 ✓		4.6698
5196945	4.6813	4.6801 ✓	4.6800 ✓		4.6800
5196946	4.6931	4.6916	4.6924 ✓	4.6921 ✓	4.6922
5196947	4.7180	4.7161 ✓	4.7158 ✓		4.7160
5196948	4.7035	4.7020	4.7028 ✓	4.7024 ✓	4.7026
5196949	4.6955	4.6933	4.6940 ✓	4.6935 ✓	4.6939
5196950	4.7051	4.7042 ✓	4.7045 ✓		4.7044
5196951	4.6637	4.6619 ✓	4.6617 ✓		4.6618
5196952	4.6636	4.6623 ✓	4.6625 ✓		4.6624
5196953	4.6793	4.6778 ✓	4.6775 ✓		4.6776
5196954	4.6670	4.6657 ✓	4.6659 ✓		4.6658
5196955	4.6826 ✓	4.6821 ✓			4.6824
5196956	4.3540	4.357102 ✓	4.7102 ✓		4.7102
5196957	4.6950	4.6933 ✓	4.6934 ✓		4.6934
5196958	4.6499 ✓	4.6494 ✓			4.6496
5196959	4.6251 ✓	4.6246 ✓			4.6248
5196960	4.6375	4.6357 ✓	4.6357 ✓		4.6354
5196961	4.6775	4.6760 ✓	4.6762 ✓		4.6761
5196962	4.6658	4.6646 ✓	4.6645 ✓		4.6646
5196963	4.6369	4.6346 ✓	4.6345 ✓		4.6346

FILTER WEIGHTS

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client: 3-357-20-1000

Project No.:

	Date	Time	Temp.	Humidity	Initials					
	5/31/84	11:30	74°	45%	MH					
	6/4/84	9:00	76°	43%	MH					
	6/4/84	3:30	76°	44%	MH					
	6/5/84	10:00	70°	42%	MH					
	6/5/84				MH					
Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final Av Weight					
5196964	4.6805	4.6793 ✓	4.6795 ✓		4.6794					
5196965	4.7036	4.7016 ✓	4.7014 ✓		4.7015					
5196966	4.7080	4.7068 ✓	4.7064 ✓		4.7066					
5196967	4.6816	4.6850 ✓	4.6852 ✓		4.6851					
5196968	4.6853	4.6836 ✓	4.6838 ✓		4.6837					
5196969	4.7417	4.7400 ✓	4.7402 ✓		4.7401					
5196970	4.7360	4.7342 ✓	4.7346 ✓		4.7347					
5196971	4.6971	4.6957 ✓	4.6952 ✓		4.6954					
5196972	4.6840	4.6824 ✓	4.6824 ✓		4.6824					
5196973	4.6586	4.6576 ✓	4.6574 ✓		4.6575					
5196974	4.3073	4.3062 ✓	4.3061 ✓		4.3062					
5196975	4.7058	4.7042 ✓	4.7038 ✓		4.7040					
5196976	4.7243	4.7229 ✓	4.7228 ✓		4.7228					
5196977	4.7922	4.7909 ✓	4.7905 ✓		4.7907					
5196978	4.7532	4.7511 ✓	4.7513 ✓		4.7512					
5196979	4.7677	4.7667 ✓	4.7663 ✓		4.7665					
5196980	4.5936	4.7176 ✓	4.7172 ✓		4.7174					
5196981	4.6903 ✓	4.6889 ✓	4.6886 ✓		4.6888					
5196982	4.6979	4.6969	4.6960 ✓	4.6961 ✓	4.6960					
5196983	4.6857	4.6838 ✓	4.6838 ✓		4.6838					
5196984	4.6506	4.6494 ✓	4.6489 ✓		4.6492					

Client: SRT 20
Project No.:

Project No.: 06-01-01-0001

[illegible]

FILTER WEIGHTS

- ☐ Put in Oven
☒ Not put in Oven
☐ Pre-weight
☐ Post-weight

Client: SRI - 20

Project No.

Date: 6/20/84

Time: 2:00

Temp.: 71

Humidity: 46

Initials: MH

Product Check

6/21/84

69

44

EMS

Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final A Weigh
5196901	4.6854 5.4139				
5196902	4.7365				
5196903	4.9849				
5196904	5.1644				
5196905	5.0654				
5196906	4.7439				
5196907	4.6834				
5196908	4.7062				
5196909	4.7456				
5196910	4.8114				
5196911	4.8728				
5196912	5.0349				
5196913	4.7749				
5196914	4.7276				
5196915	4.7219				
5196916	4.7364				
5196917	4.8083				
5196918	4.9300				
5196919	4.9835				
5196920	4.6714				
5196921	4.6115				

FILTER WEIGHTS

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client: 20

Project No. 6/20/84

Date
 Time
 Temp.
 Humidity
 Initials

6/20/84				
2:06				
71				
46				
HH				

Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final Av Weight
5196922	4.7019				
5196923	4.7242				
5196924	4.7888				
5196925	4.7979				
5196926	5.0211				
5196927	4.5859			4.5854	
5196928	4.5672				
5196929	4.5575				
5196930	4.5125				
5196931	4.5339				
5196932	4.5772				
5196933	4.5928			4.5919	
5196934	4.5752				
5196935	4.5199				
5196936	4.5966				
5196937	4.6813				
5196938	4.7229				
5196939	4.8199			4.8147	
5196940	4.50619			5.0549	
5196941	4.7622				
5196942	4.7405				

FILTER WEIGHTS

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client:
 Project No.:

Date	6/20/84			6/21/84	
Time	2:00			10:00	
Temp.	71			69	
Humidity	46			44	
Initials	MH			pm	
Filter Number	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	Final Av. Weight
5196943	4.7520				
5196944	4.7921			4.7901	
5196945	4.8661				
5196946	4.9655				
5196947	4.50596				
5196948	4.7117				
5196949	4.6986				
5196950	4.7152				
5196951	4.7099 4.789108				
5196952	4.7908				
5196953	4.8813				
5196954	4.9190			4.9163	
5196955	4.6832				
5196956					
5196957	4.6967				
5196958	4.6552				
5196959	4.6622				
5196960	4.7499				
5196961	4.8328			4.8298	
5196962	4.8281				
5196963	4.6356				

FILTER WEIGHTS

- ☐ Put in Oven
☒ Not put in Oven
☒ Pre-weight
☐ Post-weight

Client: 20
Project No.

Filter Number	6/20/84		6/21/84		Final Av Weight
	Wt. 1(g)	Wt. 2(g)	Wt. 3(g)	Wt. 4(g)	
5196964	4.6806				
5196965	4.7247				
5196966	4.7591				
5196967	4.8169				
5196968	4.8761				
5196969	4.9909				
5196970	4.7374				
5196971	4.6980				
5196972	4.6966				
5196973	4.7299				
5196974	4.4692				
5196975	5.0091				
5196976	5.1139	5		5.1080	
5196977	4.7954			4.7949	
5196978					
5196979					
5196980					
5196981					
5196982					
5196983					
5196984					

TRC ENVIRONMENTAL CONSULTANTS, INC.

REPORT FOR ANALYSIS OF STACK SAMPLES (EPA METHODS)

Project: SRI

Project No.: 2681-L81

Reviewed by: E. Scanlon

Reported to: E. Brookman

Lab # 78-84(6)
Date Received: 6/18/84
Date Reported: 6/22/84
Time for Analysis:

Test No.	Filter		Probe Wash		Silica Gel		Cascade Impactor		
	ID	mg particulate	Location #	mg particulate	ID	g. moisture	Stage	Filter	mg particulate
1	5196901	0.6	9m						
1	5196902	41.5	7m						
1	5196903	276.3	5m						
1	5196904	420.0	3m						
1	5196905	295.8	1m						
1	5196906	6.7	STD						
1	5196907	1.2	150						
2	5196908	3.6	9m						
2	5196909	33.6	7m						
2	5196910	83.6	5m						
2	5196911	173.0	3m						
2	5196912	247.0	1m						
2	5196913	4.7	STD						
2	5196914	n.d. < 0.5	150						
3	5196915	12.6	9m						
3	5196916	33.2	7m						
3	5196917	129.3	5m						
3	5196918	218.2	3m						
3	5196919	284.5	1m						
3	5196920	15.6	STD						
3	5196921	9.7	150						
4	5196922	30.4	9m						
4	5196923	77.8	7m						
4	5196924	198.6	5m						
4	5196925	221.5	3m						
4	5196926	386.4	1m						
4	5196927	17.1	STD						

TRC ENVIRONMENTAL CONSULTANTS, INC.

REPORT FOR ANALYSIS OF STACK SAMPLES (EPA METHODS)

Lab # 78-84(6)
 Date Received: 6/18/84
 Date Reported: 6/22/84
 Time for Analysis:

Project: SRI
 Project No.: 2681-L81
 Reviewed by: E. Scanlon
 Reported to: E. Brookman

Test No.	Filter		Probe Wash		Silica Gel		Cascade Impactor	
	ID	mg particulate	ID	mg particulate	ID	moisture g.	Stage	Filter mg particulate
4	5196928	13.2	150					
5	5196929	14.7	9m					
5	5196930	26.9	7m					
5	5196931	59.1	5m					
5	5196932	85.4	3m					
5	5196933	94.9	1m					
5	5196934	15.8	STD					
5	5196935	1.3	150					
6	5196936	39.0	9m					
6	5196937	111.3	7m					
6	5196938	233.4	5m					
6	5196939	297.3	3m					
6	5196940	381.3	1m					
6	5196941	61.0	STD					
6	5196942	7.9	150					
7	5196943	59.9	9m					
7	5196944	122.3	7m					
7	5196945	186.1	5m					
7	5196946	273.3	3m					
7	5196947	343.6	1m					
7	5196948	9.1	STD					
7	5196949	4.8	150					
8	5196950	10.8	9m					
8	5196951	48.1	7m					
8	5196952	128.4	5m					
8	5196953	203.7	3m					
8	5196954	253.2	1m					

Lab# 78-84(6)
Date Received: 6/18/84
Date Reported: 6/22/84
Time for Analysis:

Reported to: E. Brookman

Test No.	Filter		Probe Wash		Silica Gel		Cascade Impactor		
	ID	mg particulate	ID	mg particulate	ID	moisture g.	Stage	Filter	mg particulate
8	5196955	0.8	150						
8	5196957	3.3	STD						
9	5196958	5.6	9m						
9	5196959	37.4	7m						
9	5196960	114.5	5m						
9	5196961	156.7	3m						
9	5196962	163.5	1m						
9	5196963	1.0	STD						
9	5196964	1.2	150						
10	5196965	23.2	9m						
10	5196966	52.5	7m						
10	5196967	131.8	5m						
10	5196968	192.4	3m						
10	5196969	250.8	1m						
10	5196970	3.0	STD						
10	5196971	2.6	150						
11	5196972	14.2	9m						
11	5196973	72.4	7m						
11	5196974	163.0	5m						
11	5196975	305.1	3m						
11	5196976	391.1	1m						
11	5196977	4.7	STD						
	NO	UPW-IND	ISO KINETIC		CERAMIC	TIP ON SENSOR	BROKEN		
	</								

APPENDIX D
DATA LOGGER OUTPUT

34
0611
100
200
300

TRC 01 02 03 04

ENVIRONMENTAL CONSULTANTS
MED 1
AMB
NEST

05 06 07 08 09 10 11 12 13 14 15 16

COMPARATIVE FIELD 5 U.S. STEEL GARY INDIANA
(08)

MED 5
AMB
NEST

MED 7
AMB
NEST

MED 9
AMB
NEST

TEMP
DEG F
AMB

14:07:00 493.8 368.6 2086.3 2204.0 2304.9 2448.4 65.0

400 519.1 622.3 2436.0 2447.8 2459.6 2479.0

14:12:00 1984.9 2033.3 2142.4 2240.3 2289.9 2458.2 65.0

400 2425.3 2446.9 2457.3 2468.7 2478.6

14:17:00 2033.3 2390.5 2415.3 2440.7 2567.9 2540.8 64.7

400 2430.7 2504.5 2510.8 2547.3 2552.9 2536.4

14:22:00 384.1 2338.7 2440.7 2440.7 2567.9 2540.8 63.8

400 2497.5 2541.4 2547.3 2547.3 2552.9 2536.4

14:27:00 0.0 2393.2 2435.9 2435.9 2567.9 2540.8 63.4

400 2535.7 2510.7 2518.9 2526.9 2535.5

14:32:00 943.6 2390.0 2421.0 2407.0 2505.2 63.9

400 2502.0 2486.5 2493.5 2503.2 2511.0

14:37:00 2368.8 2290.4 2415.1 2295.6 2628.9 63.3

400 2476.1 2602.1 2608.1 2598.7 2599.4

14:42:00 2066.7 1790.7 1857.2 1833.5 2033.3 63.0

400 2032.7 2067.6 2097.8 2128.9 2153.6

14:47:00 1611.6 0.0 0.0 0.0 0.0 63.3

400 128.8 367.4 478.7 584.6

14:52:00 0.0 0.0 0.0 0.0 0.0 63.4

400 129.0 251.7 368.1 478.8 584.6

START TEST #1 - 1406

124
out about 12 min

END TEST #1 1495

TRC Environmental Consultants			Comparative Field Station			U.S. Steel Gary Indiana			Temp Deg F							
34	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
0611	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
200	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
300	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	01	02	03	04	05</											

Test #2 End @ 16:49

TRC R		ENVIRONMENTAL CONSULTANTS				COMPARATIVE FIELD S				U.S. STEEL GARY INDIANA					
34	0612	01	02	03	04	05	06	07	08	09	10	11	12	13	14
100	200	300	01	02	03	04	05	06	07	08	09	10	11	12	13
			NED 1	NED 2	NED 3	NED 4	NED 5	NED 6	NED 7	NED 8	NED 9	NED 10	NED 11	NED 12	NED 13
			AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB
			NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST
09:52:00	265.7	300.9	320.5	304.5	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0
400	438.6	554.8	657.8	753.6	847.6	847.6	847.6	847.6	847.6	847.6	847.6	847.6	847.6	847.6	847.6
09:57:00	2356.7	2448.1	2535.9	2525.4	2695.5	2695.5	2695.5	2695.5	2695.5	2695.5	2695.5	2695.5	2695.5	2695.5	2695.5
400	2654.5	2656.0	2654.6	2663.4	2664.3	2664.3	2664.3	2664.3	2664.3	2664.3	2664.3	2664.3	2664.3	2664.3	2664.3
10:02:00	2550.1	2587.6	2751.7	2703.7	2857.1	2857.1	2857.1	2857.1	2857.1	2857.1	2857.1	2857.1	2857.1	2857.1	2857.1
400	2801.5	2800.0	2794.4	2796.6	2791.6	2791.6	2791.6	2791.6	2791.6	2791.6	2791.6	2791.6	2791.6	2791.6	2791.6
10:07:00	2497.1	2571.7	2770.6	2684.8	2882.4	2882.4	2882.4	2882.4	2882.4	2882.4	2882.4	2882.4	2882.4	2882.4	2882.4
400	2827.1	2825.4	2818.4	2815.8	2817.6	2817.6	2817.6	2817.6	2817.6	2817.6	2817.6	2817.6	2817.6	2817.6	2817.6
10:12:00	2509.3	2567.0	2680.3	2604.9	2738.4	2738.4	2738.4	2738.4	2738.4	2738.4	2738.4	2738.4	2738.4	2738.4	2738.4
400	2703.4	2701.3	2700.2	2708.1	2699.9	2699.9	2699.9	2699.9	2699.9	2699.9	2699.9	2699.9	2699.9	2699.9	2699.9

6/12/84
← START TEST #3 0951

← END TEST #3 1016

16
TEMP
DEG F
AMB
86.6

87.6

87.1

87.8

87.4

TRC ENVIRONMENTAL CONSULTANTS

COMPARATIVE FIELD STUDY U.S. STEEL GARY INDIANA

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
0612	MED 1		MED 3		MED 5		MED 7		MED 9							TEMP
100	AMB		AMB		AMB		AMB		AMB							DEG F
200	NEST		NEST		NEST		NEST		NEST							AMB
300																
11:42:00	189.9		222.4		213.8		189.3		213.4							91.5
400	329.1		442.4		550.0		653.4		751.6							
11:47:00	2624.7		2785.8		2967.2		2918.6		3026.4							91.5
400	2953.3		2932.6		2921.6		2921.1		2904.5							
11:52:00	2722.7		2909.9		3025.7		2958.1		3107.8							92.2
400	3051.5		3034.7		3009.9		2994.7		2979.8							
11:57:00	2783.9		2885.9		3001.7		2949.1		3077.1							91.5
400	3014.0		3003.3		2987.8		2988.3		2963.0							
12:02:00	2599.5		2651.5		2802.7		2764.5		2935.0							93.0
400	2880.8		2867.2		2869.2		2859.7		2856.0							

START TEST #4 @ 1142

Test #4 Ends @ 1205

TRC ENVIRONMENTAL CONSULTANTS COMPARATIVE FIELD STUDY, U.S. STEEL GARY INDIANA

34	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
0612	MED 1		MED 3		MED 5		MED 7		MED 9							TEMP
100	AMB		AMB		AMB		AMB		AMB							DEG F
200	NEST		NEST		NEST		NEST		NEST							AMB
14:35:00	233.6		1082.0		1085.1		1106.2		1171.2							97.9
100	1213.5		1284.2		1351.6		1479.6		1543.4							
14:40:00	2093.4		3106.4		3200.1		3114.7		3277.0							97.5
100	3206.6		3186.8		3162.0		3139.7		3117.3							
14:45:00	2294.2		2511.5		2749.8		2442.2		2867.5							99.7
100	2793.9		2780.8		2756.1		2726.7		2716.1							
14:50:00	2813.4		2832.5		2977.6		2801.8		3097.0							96.0
100	2974.7		2959.0		2946.7		2932.7		2921.6							
14:55:00	2269.5		2353.8		2396.0		2249.5		2448.7							99.2
100	2457.8		2466.0		2461.9		2473.9		2486.8							

TEST #5
@ 1434

TEST #5
@ 1454

TRC ENVIRONMENTAL CONSULTANTS

COMPARATIVE FIELD STUDY U.S. STEEL GARY INDIANA

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	MED 1		MED 3		MED 5		MED 7		MED 9							TEMP
	AMB		AMB		AMB		AMB		AMB							DEG F
	NEST		NEST		NEST		NEST		NEST							AMB
11:34:00	630.0		634.5		727.2		890.9		859.9							95.0
400	970.5		1051.9		1130.3		1203.3		1273.4							
11:39:00	1952.0		1867.0		2044.6		2340.4		2293.9							97.2
400	2305.7		2315.3		2334.0		2357.2		2374.6							
11:44:00	2281.4		2340.4		2407.6		2393.7		2483.4							93.5
400	2456.1		2467.1		2469.6		2478.9		2488.4							
11:49:00	1843.7		2014.1		2194.4		2118.6		2228.5							93.4
400	2216.1		2228.8		2256.1		2275.5		2291.0							
11:54:00	2182.2		2190.4		2261.3		2330.8		2414.3							97.0
400	2409.5		2453.7		2465.2		2509.4		2519.0							
11:59:00	1921.2		1903.8		1939.4		2113.6		2093.2							97.7
400	2097.7		2136.4		2162.9		2188.6		2214.9							

21133

stop

Test #6

stop @ 12:01

COMPARATIVE FIELD STUDY U.S. STEEL GARY INDIANA																
TRC ENVIRONMENTAL CONSULTANTS																
34	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
0613	MED 1		MED 3		MED 5		MED 7		MED 9							TEMP
100	AMB		AMB		AMB		AMB		AMB							DEG F
200	NEST		NEST		NEST		NEST		NEST							AMB
300																
12:52:00	281.4		293.7		272.2		513.8		546.8							96.8
400	582.9		681.8		774.8		865.7		964.1							
START @ 1251																
12:57:00	2105.1		2272.6		2415.6		2450.7		2582.0							94.7
400	2547.3		2505.1		2513.8		2525.2		2556.0							
13:02:00	1826.4		2036.9		2131.4		2177.8		2244.3							96.0
400	2245.8		2270.3		2278.5		2298.7		2321.6							
13:07:00	1544.1		1606.8		1781.8		1899.6		1819.0							94.7
400	1797.2		1838.5		1892.1		1929.8		1964.9							
13:12:00	1754.5		1850.7		1932.7		2005.8		2180.7							94.1
400	2164.7		2189.6		2216.8		2244.4		2249.5							
13:17:00	2148.4		2267.4		2395.4		2384.3		2509.9							92.7
400	2486.6		2496.0		2499.7		2502.7		2511.9							
STOP @ 1318																
13:13:15	1142.9		1274.2		1911.2		1996.5		2105.3							90.9
400	2108.2		2094.0		2120.7		2146.1		2170.4							

← Disregard

Test #7

TRC ENVIRONMENTAL CONSULTANTS

COMPARATIVE FIELD STUDY U.S. STEEL GARY INDIANA

34 0614 100 200 300	01 02 03 04				05 06 07 08				09 10 11 12				13 14 15		16 TEMP DEG F AMB
	NED 1 AMB NEST		NED 3 AMB NEST		NED 5 AMB NEST		NED 7 AMB NEST		NED 9 AMB NEST						
12:33:00 400	1195.3 1395.9		1251.0 1458.4		1266.2 1517.9		1291.0 1574.1		1341.4 1627.0		START @ 1232				57.2
12:38:00 400	2724.3 2918.1		2775.5 2909.7		2845.2 2895.7		2857.6 2887.1		2980.5 2882.0		TEST				58.6
12:43:00 400	2740.9 2975.2		2846.7 2954.3		2945.9 2940.3		2919.9 2929.4		3038.5 2926.4						58.3
12:48:00 400	2705.1 2958.4		2813.6 2944.5		2914.9 2933.1		2873.5 2926.4		3023.5 2918.9						59.2
12:53:00 400	2742.4 3039.9		2889.5 3024.5		2981.3 3014.5		2948.1 2995.8		3104.6 2982.3						59.1
12:58:00 400	2743.6 3036.6		2870.3 3024.4		2947.4 3002.8		2906.9 2988.6		3089.2 2975.3						59.0
13:03:00 400	2700.4 2928.1		2760.4 2916.8		2832.6 2907.5		2803.2 2897.0		2988.0 2884.8						59.4
13:08:00 400	2618.8 2936.8		2729.8 2930.2		2823.3 2910.2		2799.1 2896.0		3005.3 2887.9						59.9
13:13:00 400	2492.6 2844.1		2517.9 2836.0		2700.0 2828.6		2662.5 2824.4		2883.1 2815.5		END @ 1316				59.5

34 0614	TRC				COMPARATIVE FIELD				U.S. STEEL GARY INDIANA				16 TEMP DEG F AMB			
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100	MED 1	MED 3	MED 3	MED 5	MED 7	MED 9	MED 9	MED 9	MED 9	MED 9	MED 9	MED 9	MED 9	MED 9	MED 9	MED 9
200	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB
300	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST	NEST
14:31:00	298.6	467.9	467.9	315.4	546.8	417.7	852.3	417.7	852.3	417.7	852.3	417.7	852.3	417.7	852.3	417.7
400	644.8	743.5	743.5	664.5	760.3	852.3	852.3	852.3	852.3	852.3	852.3	852.3	852.3	852.3	852.3	852.3
14:36:00	2842.3	2872.5	2872.5	2902.1	2938.6	2996.7	2996.7	2996.7	2996.7	2996.7	2996.7	2996.7	2996.7	2996.7	2996.7	2996.7
400	2937.4	2926.5	2926.5	2927.3	2916.6	2907.2	2907.2	2907.2	2907.2	2907.2	2907.2	2907.2	2907.2	2907.2	2907.2	2907.2
14:41:00	2731.6	2783.1	2783.1	2883.4	2940.2	3009.9	3009.9	3009.9	3009.9	3009.9	3009.9	3009.9	3009.9	3009.9	3009.9	3009.9
400	2948.5	2937.9	2937.9	2926.4	2915.6	2899.6	2899.6	2899.6	2899.6	2899.6	2899.6	2899.6	2899.6	2899.6	2899.6	2899.6
14:46:00	2751.9	2831.6	2831.6	2904.5	2957.7	3063.9	3063.9	3063.9	3063.9	3063.9	3063.9	3063.9	3063.9	3063.9	3063.9	3063.9
400	3002.8	2989.6	2989.6	2974.7	2960.3	2942.3	2942.3	2942.3	2942.3	2942.3	2942.3	2942.3	2942.3	2942.3	2942.3	2942.3
14:51:00	2665.5	2698.0	2698.0	2798.9	2908.5	3034.5	3034.5	3034.5	3034.5	3034.5	3034.5	3034.5	3034.5	3034.5	3034.5	3034.5
400	2969.6	2957.1	2957.1	2945.2	2934.7	2924.0	2924.0	2924.0	2924.0	2924.0	2924.0	2924.0	2924.0	2924.0	2924.0	2924.0
14:56:00	2674.9	2720.2	2720.2	2810.1	2945.5	3044.2	3044.2	3044.2	3044.2	3044.2	3044.2	3044.2	3044.2	3044.2	3044.2	3044.2
400	2976.8	2963.8	2963.8	2952.7	2943.9	2931.4	2931.4	2931.4	2931.4	2931.4	2931.4	2931.4	2931.4	2931.4	2931.4	2931.4
15:01:00	2615.8	2802.0	2802.0	2913.2	2952.9	3095.3	3095.3	3095.3	3095.3	3095.3	3095.3	3095.3	3095.3	3095.3	3095.3	3095.3
400	3032.7	3015.4	3015.4	3015.9	2997.5	2986.4	2986.4	2986.4	2986.4	2986.4	2986.4	2986.4	2986.4	2986.4	2986.4	2986.4
15:06:00	2669.1	2743.5	2743.5	2821.5	2919.5	3071.2	3071.2	3071.2	3071.2	3071.2	3071.2	3071.2	3071.2	3071.2	3071.2	3071.2
400	3092.9	3072.6	3072.6	3049.8	3032.6	3014.9	3014.9	3014.9	3014.9	3014.9	3014.9	3014.9	3014.9	3014.9	3014.9	3014.9

Test #9

STOP @ 1507

TRC ENVIRONMENTAL CONSULTANTS

COMPARATIVE FIELD STUDY U.S. STEEL GARY INDIANA

34	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
0614	NED 1	NED 3	NED 5	NED 7	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9
100	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB
200	NED 1	NED 3	NED 5	NED 7	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9
300	NED 1	NED 3	NED 5	NED 7	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9	NED 9
15:51:00	608.0	686.5	730.0	780.2	764.7	764.7	764.7	764.7	764.7	764.7	764.7	764.7	764.7	764.7	764.7	764.7
400	844.3	932.2	1017.9	1103.5	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9	1179.9
15:56:00	2633.0	2782.1	2911.1	3076.5	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7	3209.7
400	3128.3	3087.1	3068.0	3050.2	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0	3033.0
16:01:00	2557.3	2737.5	2957.3	3107.5	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2	3211.2
400	3120.9	3100.8	3087.9	3070.2	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6	3053.6
16:06:00	2690.4	2891.4	2966.8	3091.0	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1	3172.1
400	3102.3	3084.8	3063.3	3044.2	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8	3024.8
16:11:00	2521.9	2795.7	2876.4	3062.5	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9	3147.9
400	3081.8	3061.5	3044.7	3029.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3	3014.3
16:16:00	2598.0	2703.7	2902.8	3038.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2	3181.2
400	3101.7	3081.5	3065.1	3050.1	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3	3032.3
16:21:00	2673.6	2778.6	2931.1	3042.1	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8	3159.8
400	3063.9	3039.6	3024.6	3017.2	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9	2997.9

Test #10
START @ 1550

STOP @ 1622

TRC ENVIRONMENTAL CONSULTANTS			COMPARATIVE FIELD STATION			U.S. STEEL GARY INDIANA											
34	0615	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100	200	300															TEMP
																	DEG F
																	AMB
					</												

Test #11

Start @ 0926

Power Outage

Stop @ 0952

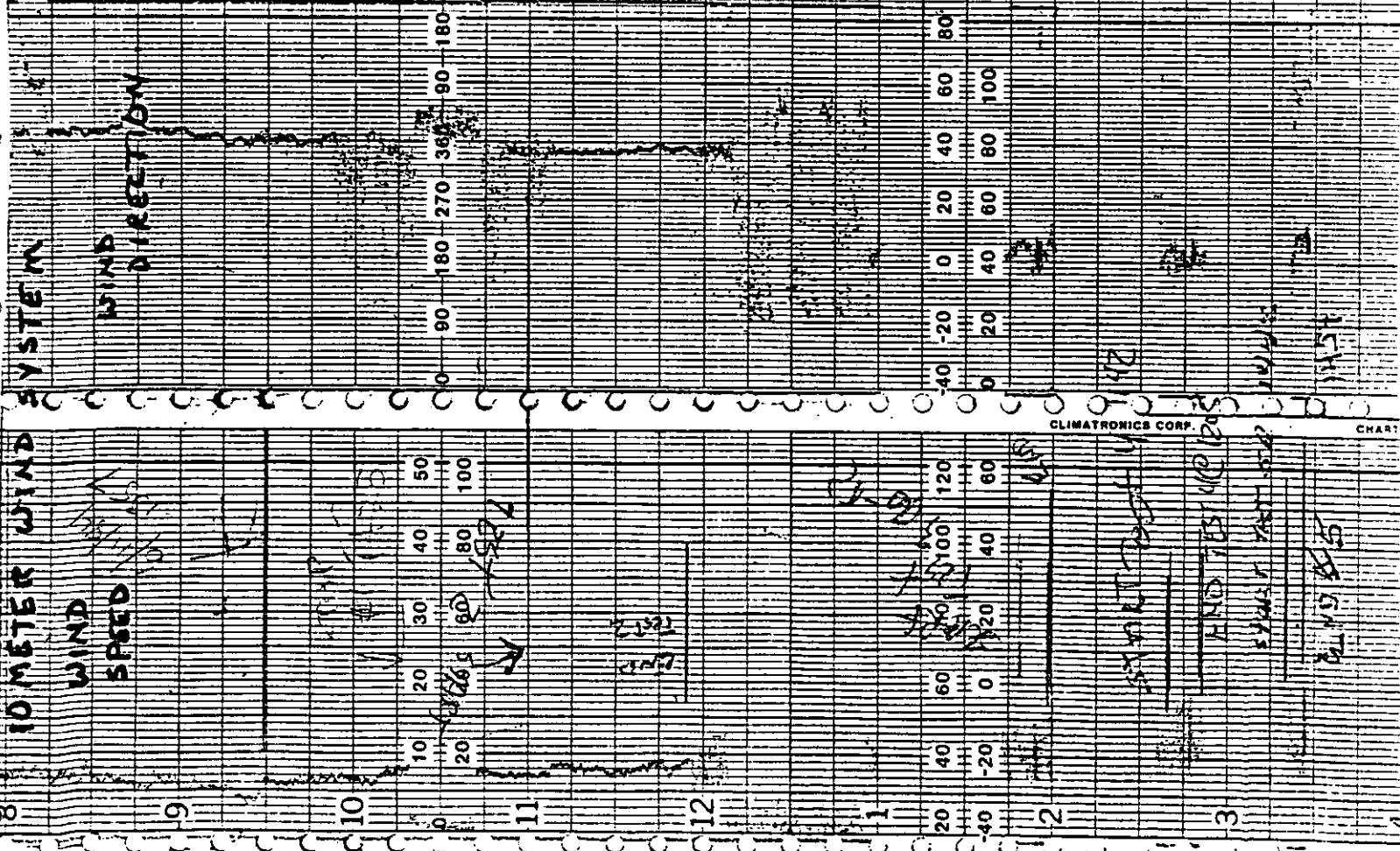
APPENDIX E

10 M WIND SYSTEM STRIP CHART

10 METER WIND
WIND
SPEED

SYSTEM

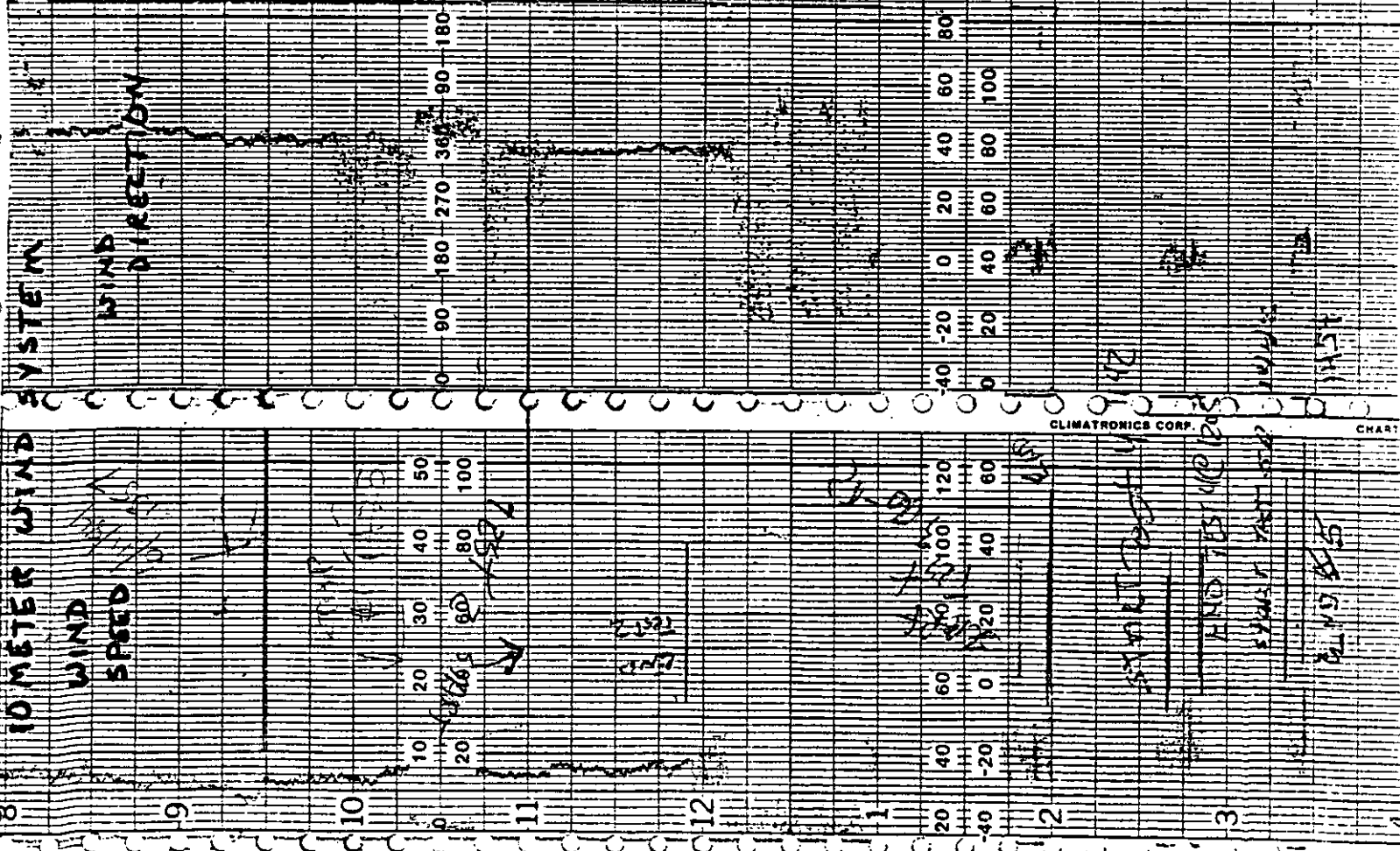
WIND
DIRECTION



10 METER WIND
WIND
SPEED

SYSTEM

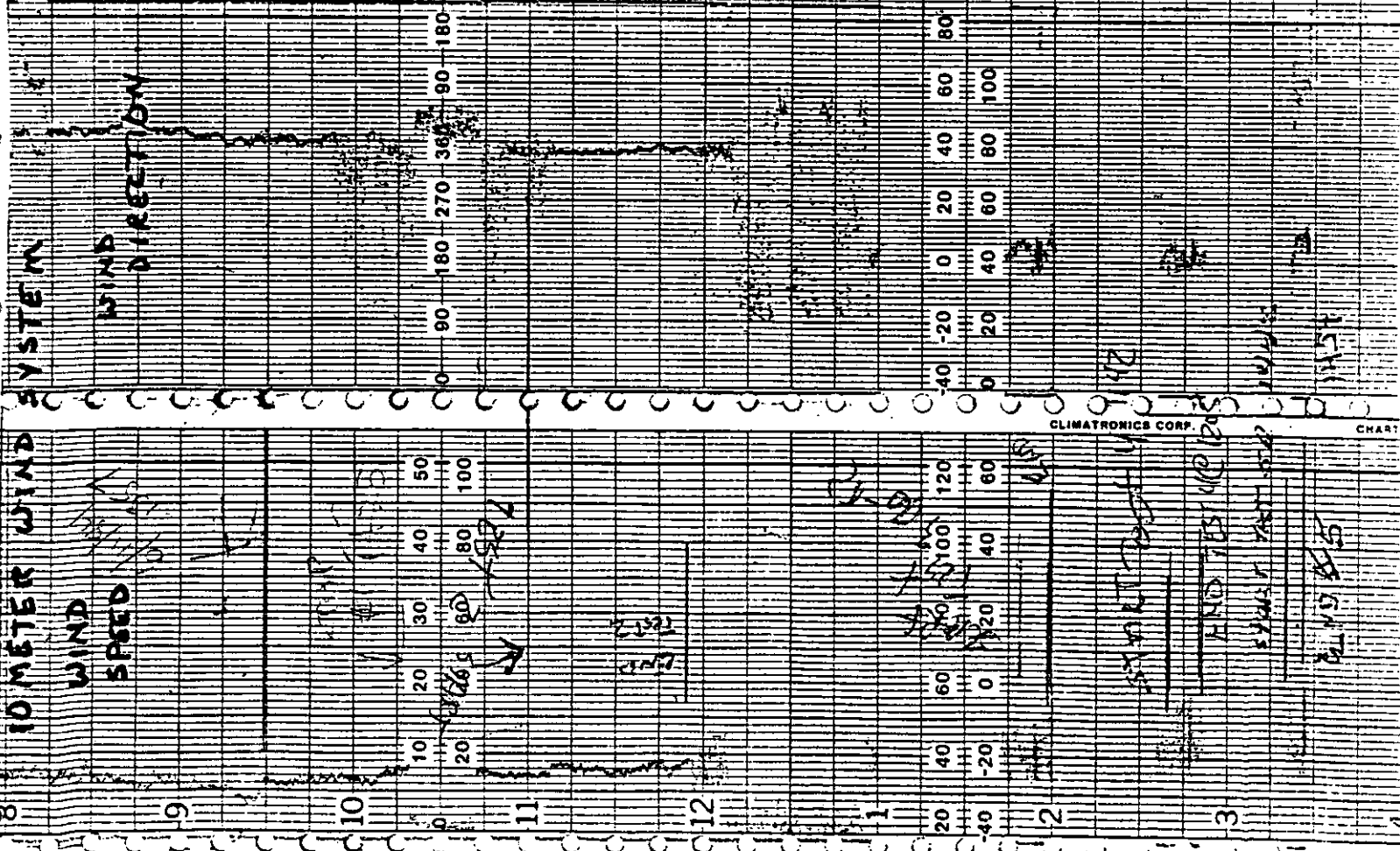
WIND
DIRECTION



10 METER WIND
WIND
SPEED

SYSTEM

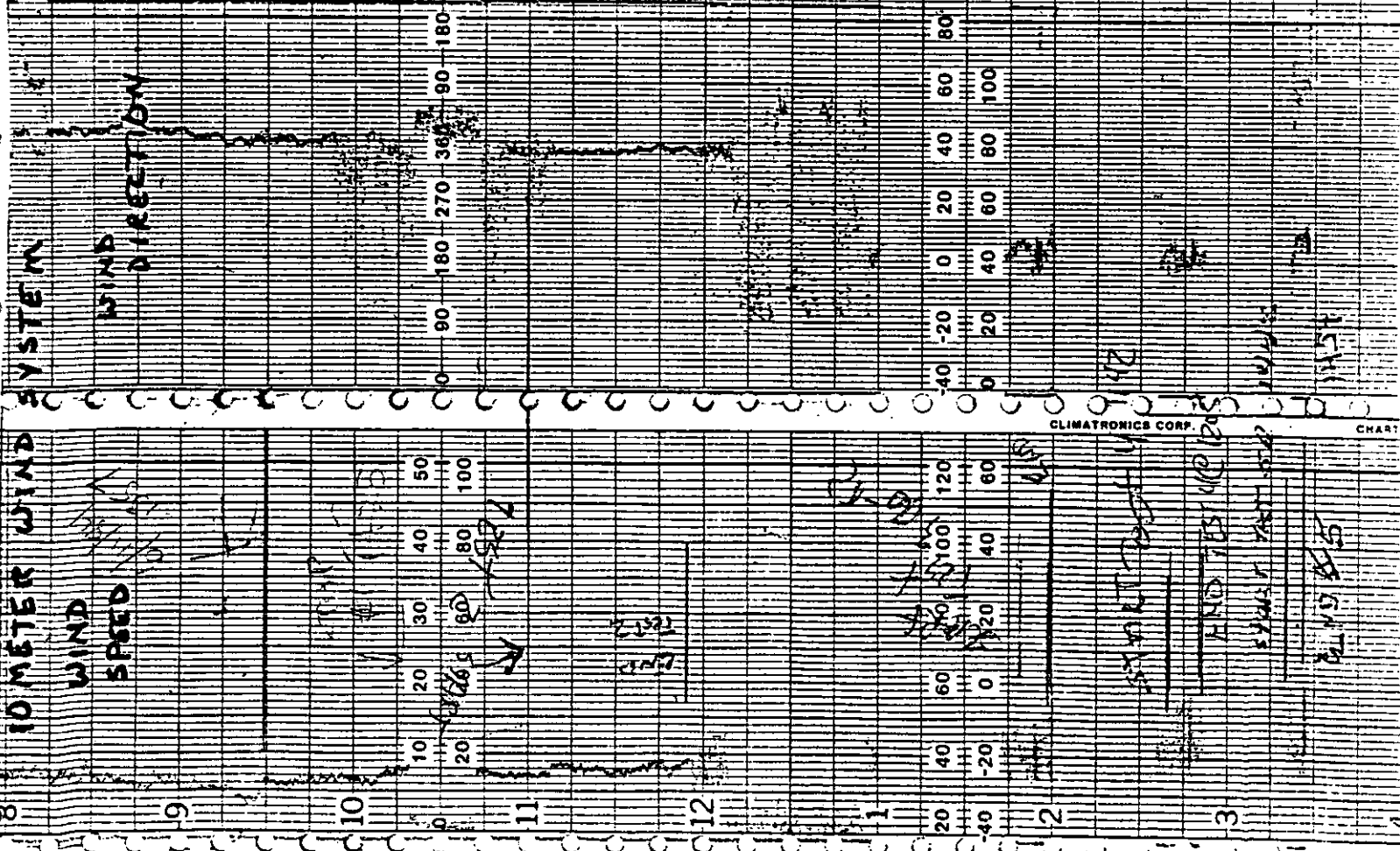
WIND
DIRECTION



10 METER WIND
WIND
SPEED

SYSTEM

WIND
DIRECTION



APPENDIX F

RESULTS OF MICROSCOPIC ANALYSIS OF
FILTERS - PERFORMED BY ENERGY TECHNOLOGY CONSULTANTS

TABLE I

SUMMARY OF CCSEM PARTICLE TYPE RESULTS

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples-

ETC#	Description	Conc. mg	-----Aerodynamic Diameter Distribution (um)-----									
			0.2-2.5	2.5-5.0	5.0-10	10-15	15-30	30-50	50-80			
			mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)
1868	#2 1M 6/11/84	247.0	7.4 (3)	24.7 (10)	54.3 (22)	51.9 (21)	98.8 (40)	9.9 (4)	0.0 (0)			
1869	#2 5M 6/11/84	83.6	1.7 (2)	5.0 (6)	13.4 (16)	14.2 (17)	32.6 (39)	16.7 (20)	0.0 (0)			
1857	#4 1M 6/12/84	386.4	15.5 (4)	34.8 (9)	65.7 (17)	96.6 (25)	154.6 (40)	15.5 (4)	0.0 (0)			
1858	#4 5M 6/12/84	198.6	4.0 (2)	13.9 (7)	41.7 (21)	33.8 (17)	77.5 (39)	21.8 (11)	4.0 (2)			
1859	#4 9M 6/12/84	30.4	0.3 (1)	1.2 (4)	3.3 (11)	4.3 (14)	11.2 (37)	5.5 (18)	4.6 (15)			
1860	#4 StdHV 6/12/84	17.1	0.2 (1)	0.5 (3)	1.7 (10)	2.9 (17)	8.6 (50)	3.2 (19)	0.0 (0)			

TABLE II

SUMMARY OF CCSEM PARTICLE TYPE RESULTS

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples-

ETC#	Description	Conc. mg	Aerodynamic Diameter Distribution (um)									
			0.2-2.5	2.5-5.0	5.0-10	10-15	15-30	30-50	50-80			
			mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)
1864	#7 1M 6/13/84	343.6	6.9 (2)	34.4 (10)	68.7 (20)	65.3 (19)	147.7 (43)	13.7 (4)	6.9 (2)			
1865	#7 5M 6/13/84	186.1	3.7 (2)	14.9 (8)	35.4 (19)	39.1 (21)	74.4 (40)	13.0 (7)	5.6 (3)			
1866	#7 9M 6/13/84	59.9	1.2 (2)	4.2 (7)	10.2 (17)	10.2 (17)	27.0 (45)	4.2 (7)	3.0 (5)			
1867	#7 BCK HV 6/13/84	9.1	0.0 (0)	0.2 (2)	0.7 (8)	1.6 (18)	5.5 (60)	1.2 (13)	0.0 (0)			
1861	#8 1M 6/14/84	253.2	7.6 (3)	20.3 (8)	48.1 (19)	55.7 (22)	111.4 (44)	10.1 (4)	0.0 (0)			
1862	#8 5M 6/14/84	128.4	3.9 (3)	10.3 (8)	24.4 (19)	27.0 (21)	53.9 (42)	7.7 (6)	0.0 (0)			
1863	#8 9M 6/14/84	10.8	0.1 (1)	0.4 (4)	1.0 (9)	1.8 (17)	5.5 (51)	1.6 (15)	0.2 (2)			

TABLE III

SUMMARY OF CCSEM MASS DISTRIBUTION RESULTS

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples-

ETC#	Description	-----Physical Diameter Distribution (um)-----									
		Conc.	0.2-2.5	2.5-5.0	5.0-10	10-15	15-30	30-50	50-80		
		mg	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)		
1868	#2 1M 6/11/84	247.5	14.8 (6)	32.1 (13)	64.2 (26)	79.0 (32)	56.8 (23)	0.0 (0)	0.0 (0)		
1869	#2 5M 6/11/84	83.6	3.3 (4)	5.9 (7)	20.1 (24)	19.2 (23)	30.1 (36)	5.9 (7)	0.0 (0)		
1857	#4 1M 6/12/84	386.4	23.2 (6)	50.2 (13)	104.3 (27)	119.8 (31)	85.0 (22)	0.0 (0)	0.0 (0)		
1858	#4 5M 6/12/84	198.6	9.9 (5)	23.8 (12)	47.7 (24)	61.6 (31)	49.7 (25)	4.0 (2)	0.0 (0)		
1859	#4 9M 6/12/84	30.4	0.9 (3)	1.8 (6)	4.6 (15)	6.7 (22)	10.9 (36)	4.0 (13)	1.2 (4)		
1860	#4 StdHV 6/12/84	17.1	0.3 (2)	0.9 (5)	2.7 (16)	4.4 (26)	8.4 (49)	0.3 (2)	0.0 (0)		

TABLE IV

SUMMARY OF CCSEM MASS DISTRIBUTION RESULTS

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples-

ETC#	Description	Conc. mg	Physical Diameter Distribution (um)									
			0.2-2.5	2.5-5.0	5.0-10	10-15	15-30	30-50	50-80			
			mg	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)	mg (%)
1864	#7 1M 6/13/84	343.6	17.2 (5)	51.5 (15)	75.6 (22)	116.8 (34)	72.2 (21)	6.9 (2)	0.0 (0)			
1865	#7 5M 6/13/84	186.1	9.3 (5)	22.3 (12)	46.5 (25)	55.8 (30)	46.5 (25)	7.4 (4)	0.0 (0)			
1866	#7 9M 6/13/84	59.9	2.4 (4)	7.2 (12)	11.4 (19)	16.8 (28)	18.6 (31)	3.6 (6)	0.0 (0)			
1867	#7 BCK HV 6/13/84	9.1	0.0 (0)	0.3 (3)	1.3 (14)	3.5 (38)	4.1 (45)	0.0 (0)	0.0 (0)			
1861	#8 1M 6/14/84	253.2	15.2 (6)	35.4 (14)	53.2 (21)	98.7 (39)	50.6 (20)	0.0 (0)	0.0 (0)			
1862	#8 5M 6/14/84	128.4	7.7 (6)	16.7 (13)	30.8 (24)	42.4 (33)	30.8 (24)	0.0 (0)	0.0 (0)			
1863	#8 9M 6/14/84	10.8	0.2 (2)	0.6 (6)	1.3 (12)	3.0 (28)	5.4 (50)	0.2 (2)	0.0 (0)			

TABLE V

SUMMARY OF CCSEM PARTICLE TYPE RESULTS (WT.%)

SRI PROFILER, - FUGITIVE DUST STUDY

-TRC Profiler Samples 6/11/84-

<u>Particle Type</u>	#2 1M		#2 5M	
	<u>mg</u>	<u>(%)</u>	<u>mg</u>	<u>(%)</u>
Al-rich	0.0	(0.0)	0.0	(0.0)
Si-rich	14.1	(5.7)	5.3	(6.3)
Ca-rich	11.9	(4.8)	4.8	(5.7)
Fe-rich	3.0	(1.2)	1.8	(2.2)
Cenosphere	15.1	(6.1)	5.7	(6.8)
Spherical Fe	0.0	(0.0)	0.0	(0.0)
Ca-S	0.5	(0.2)	0.3	(0.4)
Mg-Ca	1.5	(0.6)	0.5	(0.6)
Carbon	46.7	(18.9)	8.1	(9.7)
Mix-Clay	67.4	(27.3)	23.9	(28.6)
Clay-S	1.7	(0.7)	3.0	(3.6)
Ca-Si	4.2	(1.7)	0.9	(1.1)
Si-K	8.4	(3.4)	2.1	(2.5)
Si-Ca-Al	1.5	(0.6)	0.7	(0.8)
Si-Ca-Fe/Mg	2.2	(0.9)	0.4	(0.5)
Si-Fe	14.6	(5.9)	4.6	(5.5)
Si-Al	36.6	(14.8)	12.9	(15.4)
Fe-Si	0.0	(0.0)	0.8	(1.0)
Fe-Ca	1.0	(0.4)	0.3	(0.3)
Si-Ca	3.7	(1.5)	3.0	(3.6)
Miscellaneous	13.1	(5.3)	4.5	(5.4)
TOTAL	247.0	(100.0)	83.6	(100.0)

TABLE VI

SUMMARY OF CCSEM PARTICLE TYPE RESULTS (WT.%)

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples 6/12/84-

Particle Type	#4 1M		#4 5M		#4 9M		#4 STD
	HI-VOL		HI-VOL		HI-VOL		HI-VOL
	mg	(%)	mg	(%)	mg	(%)	mg (%)
Al-rich	0.0	(0.0)	2.8	(1.4)	0.0	(0.0)	0.1 (0.3)
Si-rich	21.3	(5.5)	9.1	(4.6)	2.1	(6.8)	1.9 (11.0)
Ca-rich	23.6	(6.1)	11.1	(5.6)	1.1	(3.5)	0.5 (3.1)
Fe-rich	11.2	(2.9)	1.6	(0.8)	3.1	(10.2)	0.9 (5.5)
Cenosphere	20.9	(5.4)	12.1	(6.1)	0.9	(2.9)	0.3 (2.0)
Spherical Fe	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.1 (0.6)
Ca-S	0.0	(0.0)	0.6	(0.3)	0.0	(0.0)	0.1 (0.7)
Mg-Ca	3.1	(0.8)	6.8	(3.4)	0.2	(0.5)	0.1 (0.7)
Carbon	63.0	(14.6)	31.6	(15.9)	6.6	(21.7)	6.3 (37.1)
Mix-Clay	85.8	(22.2)	47.7	(24.0)	6.3	(20.7)	2.0 (11.7)
Clay-S	4.3	(1.1)	1.6	(0.8)	0.4	(1.2)	0.0 (0.0)
Ca-Si	12.8	(3.3)	7.0	(3.5)	0.6	(2.0)	1.0 (5.7)
Si-K	10.4	(2.7)	5.6	(2.8)	0.5	(1.5)	0.1 (0.5)
Si-Ca-Al	3.1	(0.8)	0.0	(0.0)	0.9	(2.8)	0.1 (0.3)
Si-Ca-Fe/Mg	5.0	(1.3)	4.2	(2.1)	0.6	(2.1)	0.9 (5.0)
Si-Fe	24.7	(6.4)	14.7	(7.4)	2.0	(6.6)	0.7 (4.3)
Si-Al	59.5	(15.4)	25.6	(12.9)	2.5	(8.2)	0.9 (5.0)
Fe-Si	3.1	(0.8)	1.0	(0.5)	0.2	(0.5)	0.2 (1.0)
Fe-Ca	5.8	(1.5)	0.6	(0.3)	0.1	(0.3)	0.1 (0.5)
Si-Ca	7.0	(1.8)	6.4	(3.2)	0.9	(2.9)	0.1 (0.4)
Miscellaneous	22.0	(5.7)	8.7	(4.4)	1.7	(5.6)	0.8 (4.6)
TOTAL	386.4	(100.0)	198.6	(100.0)	30.4	(100.0)	17.1(100.0)

TABLE VII

SUMMARY OF CCSEM PARTICLE TYPE RESULTS (WT.%)

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples 6/13/84-

Particle Type	#7 1M		#7 5M		#7 9M		#7 BCK HI-VOL
	mg	(%)	mg	(%)	mg	(%)	mg (%)
Al-rich	0.0	(0.0)	2.6	(1.4)	0.0	(0.0)	0.0 (0.0)
Si-rich	15.5	(4.5)	10.2	(5.5)	2.4	(4.0)	4.1 (44.9)
Ca-rich	24.4	(7.1)	7.8	(4.2)	4.1	(6.8)	0.4 (4.5)
Fe-rich	11.0	(3.2)	1.3	(0.7)	1.4	(2.3)	0.2 (2.5)
Cenosphere	10.7	(3.1)	8.9	(4.8)	3.1	(5.1)	0.1 (0.7)
Spherical Fe	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.1 (1.2)
Ca-S	0.0	(0.0)	0.6	(0.3)	0.2	(0.3)	0.0 (0.0)
Mg-Ca	12.7	(3.7)	3.9	(2.1)	0.8	(1.3)	0.2 (2.0)
Carbon	56.4	(16.4)	30.3	(16.3)	12.9	(21.5)	2.2 (24.5)
Mix-Clay	93.5	(27.2)	48.9	(26.3)	13.8	(23.1)	0.4 (4.0)
Clay-S	7.6	(2.2)	4.1	(2.2)	0.9	(1.5)	0.1 (0.6)
Ca-Si	8.6	(2.5)	8.6	(4.6)	1.1	(1.9)	0.3 (3.3)
Si-K	2.4	(0.7)	1.3	(0.7)	1.1	(1.9)	0.1 (1.1)
Si-Ca-Al	1.4	(0.4)	1.3	(0.7)	0.7	(1.2)	0.0 (0.0)
Si-Ca-Fe/Mg	6.9	(2.0)	2.2	(1.2)	0.2	(0.4)	<0.1 (0.5)
Si-Fe	16.8	(4.9)	13.6	(7.3)	4.0	(6.7)	0.2 (2.6)
Si-Al	43.3	(12.6)	21.2	(11.4)	5.3	(8.9)	0.2 (2.6)
Fe-Si	3.1	(0.9)	0.7	(0.4)	0.8	(1.4)	0.1 (0.6)
Fe-Ca	5.8	(1.7)	2.6	(1.4)	0.3	(0.5)	<0.1 (0.3)
Si-Ca	10.0	(2.9)	9.3	(5.0)	1.1	(1.9)	0.0 (0.0)
Miscellaneous	13.7	(4.0)	6.5	(3.5)	5.6	(9.3)	0.4 (4.1)
TOTAL	343.6	(100.0)	186.1	(100.0)	59.9	(100.0)	9.1(100.0)

TABLE VIII

SUMMARY OF CCSEM PARTICLE TYPE RESULTS (WT.%)

SRI PROFILER - FUGITIVE DUST STUDY

-TRC Profiler Samples 6/14/84-

<u>Particle Type</u>	#8 1M		#8 5M REP		#8 9M	
	mg	(%)	mg	(%)	mg	(%)
Al-rich	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Si-rich	10.6	(4.2)	7.6	(5.9)	0.2	(1.9)
Ca-rich	18.5	(7.3)	9.0	(7.0)	0.2	(2.0)
Fe-rich	2.0	(0.8)	1.2	(0.9)	0.1	(1.0)
Cenosphere	13.4	(5.3)	6.9	(5.4)	<0.1	(0.4)
Spherical Fe	0.5	(0.2)	0.3	(0.2)	0.0	(0.0)
Ca-S	1.0	(0.4)	0.0	(0.0)	0.2	(2.1)
Mg-Ca	4.3	(1.7)	3.0	(2.3)	0.2	(1.4)
Carbon	35.7	(14.1)	25.8	(20.1)	6.0	(55.9)
Mix-Clay	49.1	(19.4)	26.3	(20.5)	1.0	(9.2)
Clay-S	3.0	(1.2)	1.3	(1.0)	0.2	(1.6)
Ca-Si	7.8	(3.1)	5.3	(4.1)	0.3	(2.6)
Si-K	3.5	(1.4)	2.1	(1.6)	0.1	(1.0)
Si-Ca-Al	3.3	(1.3)	2.3	(1.8)	0.1	(0.7)
Si-Ca-Fe/Mg	5.3	(2.1)	1.7	(1.3)	0.1	(0.8)
Si-Fe	17.0	(6.7)	5.8	(4.5)	0.7	(6.3)
Si-Al	34.9	(13.8)	16.8	(13.1)	0.5	(4.8)
Fe-Si	2.8	(1.1)	0.0	(0.0)	0.0	(0.0)
Fe-Ca	4.1	(1.6)	1.2	(0.9)	0.1	(0.7)
Si-Ca	21.5	(8.5)	7.6	(5.9)	0.3	(2.9)
Miscellaneous	14.7	(5.8)	4.5	(3.5)	0.5	(4.7)
TOTAL	253.2	(100.0)	128.4	(100.0)	10.8	(100.0)

COMPUTER CONTROLLED SCANNING ELECTRON MICROSCOPY RESULTS

Appendix A

COMPUTER CONTROLLED SCANNING ELECTRON MICROSCOPY RESULTS

As discussed, CCSEM analyzes individual particles and classifies them into particle types based on size, shape and chemical composition of the particle. For example, the silicon-rich (Si) particle type is composed of particles that have a majority of silicon and minor amounts of other elements, whereas the silicon-calcium (Si-Ca) particle type category is composed of particles which have elevated levels of silicon and calcium. The carbon particle type is composed of particles which have a low atomic number (e.g. particles with an atomic number less than fluorine).

As a part of the normal analysis, the results from each CCSEM analysis are summarized in tabular form. Copies of these tables are presented in Tables A1 through A52. The following paragraphs describe the tabular presentation of each type of CCSEM summary table.

The Size Distribution Tables (Tables A1 through A13) display the particle population (number) as a function of size. The first column lists the name of each particle type reported. The next seven columns are the distribution bins with the size range of each bin (in micrometers) listed at the top of each column. The last column reports the total number of particles by percent in each particle type. The number of particles in each bin is reported as relative percent, and each row totals 100 percent. The last row (Total) of the table presents the relative distribution of all particles by size.

The Weight Distribution Tables (Tables A14 through A26) present the weight percent distribution of the total sample by physical (geometric) size and particle type. Particle types (listed in the size distribution tables) that each contribute less than 0.2 weight percent of the total sample are consolidated into a "Misc." particle type on these tables. The results for

each particle type are reported in relative percent from 0.2 to 80 micrometers in seven size ranges. The Total column shows the weight percent contribution of each particle type to the whole sample. The data under the size range headings show the contribution of that size to the particle type and total 100 percent for each particle type. The last row (Total) of this table presents the relative distribution of all particles by physical size.

The Aerodynamic Weight Tables (Tables A27 through A39) present the calculated equivalent aerodynamic size distribution by weight for each particle type and for the total sample. Similar to the Weight Distribution tables, the results for each particle type are reported in relative percent from 0.2 to 80 micrometers in seven size ranges. The last column gives the contribution (either in weight percent or micrograms per cubic meter) of each particle type to the total sample concentration. The last row (Total) of this table presents the relative distribution of all particles by aerodynamic size.

In the Average Composition Tables (Tables A40 through A52) the relative elemental distribution of each sample is shown. Compositional information is presented for each particle type and for all particles (TOTAL). The elements are listed by their atomic symbol in the first row. "PC" refers to total peak counts and is reported as 1/500 of the actual value. The percentages reported for each element represent the relative intensity of the net x-ray peak counts. In this table, the concentrations do not take into account the contribution of the light, non-detectable elements (e.g. C and O).

CCSEM SIZE (NUMBER) DISTRIBUTION TABLES

SAMPLE TRC #2 1M 6/11/84

NUMBER 1868 DISK 346

FILE 151 - 156 PARTICLES

CONC. 0 UG/M3

RUN/T 48.67

TABLE A1

TYPE	SIZE DISTRIBUTION							50.-80.	NUMBER/CM2	%TOTAL
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.			
SI-.....	90	6	3	0	0	0	0	0	2.7E+04	3.8
CA-.....	88	10	1	0	0	0	0	0	4.2E+04	5.7
TI-.....	99	0	0	1	0	0	0	0	1.5E+03	0.2
FE-.....	94	5	0	0	0	0	0	0	1.2E+04	1.7
CENOSPHERE.	88	8	4	0	0	0	0	0	2.5E+04	3.5
CA-S-.....	0	0	0	100	0	0	0	0	1.1E+01	0.0
FE-CA-.....	71	29	0	0	0	0	0	0	2.1E+03	0.3
MG-CA-.....	90	7	2	0	0	0	0	0	5.2E+03	0.7
MIX-CLAY...	92	5	2	0	0	0	0	0	1.8E+05	25.0
CLAY-S-.....	99	0	0	1	0	0	0	0	5.9E+03	0.8
CA-SI-.....	92	6	2	1	0	0	0	0	8.5E+03	1.2
SI-CA-AL...	90	10	0	0	0	0	0	0	5.5E+03	0.8
SI-CA-FE-MG	89	11	0	0	0	0	0	0	8.6E+03	1.2
CARBON.....	92	6	2	0	0	0	0	0	1.1E+05	15.3
SI-AL-.....	96	4	0	0	0	0	0	0	9.8E+04	13.4
AL-SI-.....	91	7	1	0	0	0	0	0	4.7E+04	6.5
SI-V-.....	100	0	0	0	0	0	0	0	2.9E+04	4.0
SI-FE-.....	96	2	2	0	0	0	0	0	3.5E+04	4.8
SI-TI-.....	93	0	7	0	0	0	0	0	8.3E+03	1.1
SI-CA-.....	92	7	0	0	0	0	0	0	2.0E+04	2.8
SI-K-.....	78	13	8	1	0	0	0	0	5.9E+03	0.8
ZN-S-.....	0	0	0	0	100	0	0	0	7.5E+00	0.0
K-AL-.....	0	0	0	0	100	0	0	0	4.9E+00	0.0
ZN-SI-.....	0	0	100	0	0	0	0	0	1.2E+02	0.0
TOTAL.....	94	5	1	0	0	0	0	0	7.3E+05	100.0

TABLE A2

SAMPLE TRC #2 5M 6/11/84																			
NUMBER 1269 DISK 347		FILE 101 - 107		PARTICLES		CONC.		0 UG/M3		RUN/T		58.25							
TYPE		SIZE DISTRIBUTION																	
		0.2-2.5		2.5-5.0		5.0-10.		10.-15.		15.-30.		30.-50.		50.-80.		NUMBER/CM2		%TOTAL	
SI-.....	92	6	2	2	0	0	0	0	0	0	0	0	0	0	0	4.1E+04	5.4	5.4	
CA-.....	94	4	0	0	0	0	0	0	0	0	0	0	0	0	0	6.3E+04	8.3	8.3	
TI-.....	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.0E+03	0.4	0.4	
FE-.....	88	10	0	0	1	0	0	0	0	0	0	0	0	0	0	4.2E+03	0.6	0.6	
CENOSPHERE.	91	6	2	2	0	0	0	0	0	0	0	0	0	0	0	2.9E+04	3.9	3.9	
CA-S-.....	0	0	90	0	10	0	0	0	0	0	0	0	0	0	0	1.3E+02	0.0	0.0	
FE-CA-.....	96	0	4	0	0	0	0	0	0	0	0	0	0	0	0	3.0E+03	0.4	0.4	
MG-CA-.....	79	16	5	0	0	0	0	0	0	0	0	0	0	0	0	5.1E+03	0.7	0.7	
MIX-CLAY...	88	8	3	0	0	0	0	0	0	0	0	0	0	0	0	1.5E+05	20.1	20.1	
CLAY-S-.....	90	4	4	0	1	0	0	0	0	2	0	0	0	0	0	3.4E+03	0.4	0.4	
CA-SI-.....	92	7	0	0	0	0	0	0	0	0	0	0	0	0	0	9.9E+03	1.3	1.3	
SI-CA-AL...	94	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6.5E+03	0.9	0.9	
SI-CA-FE-MG	95	4	1	1	0	0	0	0	0	0	0	0	0	0	0	1.6E+04	2.2	2.2	
CARBON.....	96	2	1	1	0	0	0	0	0	0	0	0	0	0	0	2.0E+05	26.1	26.1	
SI-AL-.....	94	4	2	2	0	0	0	0	0	0	0	0	0	0	0	7.3E+04	9.6	9.6	
SI-CA-.....	76	15	8	0	1	0	0	0	0	0	0	0	0	0	0	8.1E+03	1.1	1.1	
SI-FE-.....	96	3	0	0	0	0	0	0	0	0	0	0	0	0	0	5.7E+04	7.5	7.5	
SI-TI-.....	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E+04	2.4	2.4	
AL-SI-.....	94	2	3	0	0	0	0	0	0	0	0	0	0	0	0	2.6E+04	3.7	3.7	
SI-K-.....	65	12	21	0	2	0	0	0	0	0	0	0	0	0	0	2.3E+03	0.3	0.3	
SI-CR-.....	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	2.9E+01	0.0	0.0	
S-FE-.....	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	2.2E+01	0.0	0.0	
FE-SI-.....	98	0	2	2	0	0	0	0	0	0	0	0	0	0	0	8.7E+03	1.1	1.1	
FE-MN-.....	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	6.9E+00	0.0	0.0	
SI-S-.....	0	84	0	0	0	0	0	0	12	3	0	0	0	0	0	1.4E+02	0.0	0.0	
TOTAL.....	94	4	2	0	0	0	0	0	0	0	0	0	0	0	0	7.6E+05	100.0	100.0	

SAMPLE TRC #4 1M 6/12/94

SAMPLE TRC #4 1M 6/12/94

NUMBER 1257 DISK 345

FILE 137 - 142 PARTICLES

CONC. · Ø UG/M3

55.30
RUN/T

TYPE	SIZE DISTRIBUTION						15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.					
SI-.....	78	18	2	1	0	0	0	0	0	1.5E+04	1.2
CA-.....	96	3	1	0	0	0	0	0	0	1.5E+05	11.7
TI-.....	100	0	0	0	0	0	0	0	0	3.0E+03	0.2
FE-.....	99	1	0	0	0	0	0	0	0	1.2E+05	9.3
CENOSPHERE.	70	22	6	1	0	0	0	0	0	1.4E+04	1.1
PE-CA-.....	0	66	31	2	2	0	0	0	0	8.0E+02	0.1
MG-CA-.....	98	0	2	0	0	0	0	0	0	1.2E+04	0.9
MIX-CLAY...	89	8	2	0	0	0	0	0	0	1.4E+05	10.7
CLAY-S-.....	0	0	76	18	0	0	6	0	0	1.6E+02	0.0
CA-SI-.....	96	2	1	0	0	0	0	0	0	5.7E+04	4.3
SI-CA-AL...	99	1	0	0	0	0	0	0	0	4.6E+04	3.5
SI-CA-FE-MG	99	1	0	0	0	0	0	0	0	5.9E+04	4.4
CARBON-.....	94	5	1	0	0	0	0	0	0	2.5E+05	19.3
AL-SI-.....	96	2	1	0	0	0	0	0	0	8.8E+04	6.6
SI-CA-.....	98	2	0	0	0	0	0	0	0	3.3E+04	2.5
SI-AL-.....	94	5	1	0	0	0	0	0	0	8.5E+04	6.5
SI-K-.....	85	12	2	0	0	0	0	0	0	1.0E+04	0.8
SI-S-.....	0	0	92	0	0	0	0	0	0	1.3E+02	0.0
SI-FE-.....	93	6	1	0	0	0	0	0	0	4.5E+04	3.4
SI-TI-.....	97	2	1	0	0	0	0	0	0	2.5E+04	1.9
FE-SI-.....	100	0	0	0	0	0	0	0	0	3.7E+04	2.8
SI-V-.....	0	0	0	0	0	0	100	0	0	7.3E+00	0.0
PE-AL-.....	0	71	29	0	0	0	0	0	0	4.2E+02	0.0
TOTAL.....	96	4	1	0	0	0	0	0	0	1.3E+06	100.0

49.81

TYPE	SIZE DISTRIBUTION							50.-80.	NUMBER/CM2	%TOTAL
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.			
AL.....	0	99	0	0	1	0	0	0	5.0E+02	0.1
SI.....	90	6	3	1	0	0	0	0	1.8E+04	2.8
CA.....	91	8	2	0	0	0	0	0	5.0E+04	8.9
FE.....	94	6	0	0	0	0	0	0	1.3E+04	2.1
CENOSPHERE.	94	12	3	0	0	0	0	0	2.2E+04	3.3
CA-S.....	98	0	0	2	0	0	0	0	1.5E+03	0.2
FE-CA.....	0	96	0	4	0	0	0	0	2.1E+02	0.0
MG-CA.....	69	29	0	2	0	0	0	0	2.2E+03	0.3
MIX-CLAY...	92	6	2	0	0	0	0	0	1.5E+05	23.5
CLAY-S.....	0	80	0	14	6	0	0	0	1.5E+02	0.0
CA-SI.....	89	8	2	0	0	0	0	0	2.1E+04	3.2
SI-CA-FE-MG	91	6	2	0	0	0	0	0	6.7E+03	1.0
CARBON.....	94	4	2	0	0	0	0	0	1.0E+05	15.3
AL-SI.....	97	2	1	0	0	0	0	0	7.2E+04	11.0
SI-FE.....	95	3	2	0	0	0	0	0	2.8E+04	4.3
SI-AL.....	93	5	1	0	0	0	0	0	5.6E+04	8.5
SI-CL.....	0	0	0	100	0	0	0	0	9.9E+00	0.0
SI-K.....	89	0	3	0	0	0	0	0	7.8E+03	1.2
SI-TI.....	96	4	0	0	0	0	0	0	9.5E+03	1.4
SI-CA.....	98	1	1	0	0	0	0	0	4.6E+04	7.0
FE-S.....	0	0	0	0	100	0	0	0	4.9E+00	0.0
FE-SI.....	90	9	0	0	0	0	0	0	3.4E+03	0.5
SI-V.....	0	92	0	8	0	0	0	0	1.3E+02	0.0
SI-S.....	0	0	0	0	100	0	0	0	1.2E+01	0.0
P-S.....	0	0	100	0	0	0	0	0	1.2E+02	0.0
TOTAL.....	94	5	1	0	0	0	0	0	6.6E+05	100.0

TABLE A5

SAMPLE TRC #4 9M 6/12/84

NUMBR	1259	DISK	345	FILE 149 - 155	PARTICLES	CONC.	UG/M3	RUN/T	61.26
SIZE DISTRIBUTION									
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL
SI-.....	97	2	0	0	0	0	0	9.0E+04	10.6
CA-.....	94	5	1	0	0	0	0	4.1E+04	5.5
FE-.....	99	1	0	0	0	0	0	4.1E+04	5.5
CU-.....	0	0	0	0	100	0	0	4.9E+00	0.0
CENOSPHERE.	87	9	3	1	0	0	0	8.8E+03	1.2
FE-CA.....	100	0	0	0	0	0	0	1.5E+03	0.2
MG-CA.....	86	13	0	1	0	0	0	3.6E+03	0.5
MIX-CLAY...	87	10	3	0	0	0	0	9.6E+04	12.7
CLAY-S.....	98	7	0	2	1	0	0	4.3E+03	0.6
CA-SI.....	91	4	2	0	0	0	0	1.2E+04	1.7
SI-CA-AL...	96	4	0	0	0	0	0	5.7E+03	0.8
SI-CA-FE-MC	89	8	2	1	0	0	0	6.9E+03	0.9
CARBON.....	97	2	1	0	0	0	0	2.3E+05	31.1
SI-K.....	89	9	0	1	0	0	0	7.2E+03	1.0
AL-SI.....	85	13	2	1	0	0	0	1.5E+04	2.1
SI-TI.....	96	0	2	1	0	0	0	7.9E+03	1.1
SI-AL.....	92	4	3	0	0	0	0	3.2E+04	4.3
SI-CA.....	65	25	8	1	1	0	0	4.7E+03	0.6
SI-FE.....	95	2	2	0	0	0	0	3.9E+04	5.2
SI-S.....	100	0	0	0	0	0	0	1.4E+04	1.9
FE-SI.....	100	0	0	0	0	0	0	1.6E+04	2.2
TOTAL.....	95	4	1	0	0	0	0	7.5E+05	100.0

TABLE A6

SAMPLE TRC #4 STD H-V 6/12

NUMBER	1860	DISK	346	FILE 101 - 106	PARTICLES	CONC.	0	UG/M3	RUN/T	57.53
SIZE DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL	
AL-.....	0	79	0	21	0	0	0	3.9E+01	0.0	
SI-.....	94	4	1	0	0	0	0	2.6E+04	15.8	
S -.....	0	0	0	0	100	0	0	2.5E+00	0.0	
CA-.....	94	5	1	0	0	0	0	1.7E+04	10.3	
FE-.....	92	12	4	1	0	0	0	2.9E+03	1.8	
ZN-.....	0	0	0	0	100	0	0	2.5E+00	0.0	
CENOSPHERE.	96	1	3	0	0	0	0	4.3E+03	2.5	
R-FE-.....	98	0	2	0	0	0	0	2.0E+03	1.2	
CA-S-.....	0	46	46	0	9	0	0	6.7E+01	0.0	
FE-CA-.....	0	71	0	29	0	0	0	4.3E+01	0.0	
MG-CA-.....	89	10	1	0	0	0	0	2.3E+03	1.4	
MIX-CLAY...	88	8	2	1	0	0	0	1.0E+04	6.4	
CA-SI-.....	65	23	10	2	0	0	0	3.6E+03	2.1	
SI-CA-AL...	85	14	0	0	0	0	0	7.2E+02	0.4	
SI-CA-FE-MG	98	0	1	0	0	0	0	2.1E+04	13.0	
CARBON.....	94	3	2	1	1	0	0	3.7E+04	21.8	
AL-SI-.....	83	14	2	0	0	0	0	1.4E+03	0.9	
SI-TI-.....	0	38	38	21	3	0	0	8.1E+01	0.0	
SI-AL-.....	90	8	1	0	0	0	0	5.0E+03	3.0	
SI-FE-.....	60	27	9	4	1	0	0	1.0E+03	0.6	
SI-S -.....	98	0	2	0	0	0	0	1.7E+03	1.0	
SI-CA-.....	0	0	0	69	31	0	0	1.2E+01	0.0	
AL-CL-.....	0	0	0	0	100	0	0	2.5E+00	0.0	
FE-SI-.....	93	6	1	0	0	0	0	4.5E+03	2.7	
SI-K -.....	95	0	5	0	0	0	0	6.5E+02	0.4	
AL-CA-.....	0	0	100	0	0	0	0	3.0E+01	0.0	
TOTAL.....	94	4	1	0	0	0	0	1.6E+05	100.0	

TABLE A7

SAMPLE TRC #7 1M 6/13/84										
NUMBER	1864	DISK	346	FILE 126 - 131	PARTICLES	CONC.	0	UG/M3	RUN/T	42.59
SIZE DISTRIBUTION										
0.2-2.5 2.5-5.0 5.0-10. 10.-15. 15.-30. 30.-50. 50.-80. NUMBER/CM2 XTOTAL										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	XTOTAL	
SI-.....	92	6	2	0	0	0	0	2.9E+04	4.9	
CA-.....	95	4	0	0	0	0	0	8.4E+04	14.2	
FE-.....	94	4	1	0	0	0	0	1.8E+04	3.1	
CENOSPHERE.	96	4	0	1	0	0	0	1.8E+04	3.1	
FE-CA.....	80	0	19	1	0	0	0	1.9E+03	0.3	
MG-CA.....	86	10	3	0	0	0	0	1.5E+04	2.5	
MIX-CLAY...	93	6	1	0	0	0	0	1.7E+05	29.0	
CLAY-S.....	88	0	10	2	0	0	0	3.5E+03	0.6	
CA-SI.....	73	20	6	1	0	0	0	6.3E+03	1.1	
SI-CA-AL...	97	2	0	0	0	0	0	4.8E+03	0.8	
SI-CA-FE-MG	86	11	2	0	0	0	0	5.3E+03	0.9	
CARBON.....	92	6	1	0	0	0	0	1.1E+05	18.8	
SI-AL.....	86	12	2	0	0	0	0	3.2E+04	5.5	
SI-FE.....	76	21	3	0	0	0	0	1.1E+04	1.8	
SI-TI.....	98	0	0	2	0	0	0	3.2E+03	0.5	
AL-SI.....	94	4	2	0	0	0	0	2.9E+04	4.9	
SI-CA.....	88	12	0	0	0	0	0	9.2E+03	1.5	
SI-MN.....	100	0	0	0	0	0	0	5.5E+03	0.9	
SI-S.....	0	0	0	0	100	0	0	9.9E+00	0.0	
SI-K.....	86	13	0	0	0	0	0	1.8E+03	0.3	
FE-SI.....	94	0	6	0	0	0	0	3.7E+03	0.6	
CA-P.....	76	18	6	0	0	0	0	2.0E+03	0.3	
TOTAL.....	92	6	1	0	0	0	0	5.9E+05	100.0	

SAMPLE TRC #7 5M 6/13/84

NUMBER 1865 DISK 346

FILE 132 - 138 PARTICLES

CONC.

0 UG/M3

RUN/T

62.95

TABLE A8

TYPE	SIZE DISTRIBUTION							NUMBER/CM2	XTOTAL
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.		
AL-.....	100	0	0	0	0	0	0	1.5E+03	9.3
SI-.....	72	21	5	2	0	0	0	1.0E+04	1.7
CA-.....	93	6	1	0	0	0	0	4.0E+04	6.5
FE-.....	99	2	0	0	0	0	0	1.7E+04	2.9
CENOSPHERE.	92	6	2	0	0	0	0	2.7E+04	4.4
CA-S-.....	94	6	0	0	0	0	0	4.9E+03	0.8
FE-CA-.....	97	2	0	1	0	0	0	3.1E+03	0.5
MG-CA-.....	74	19	6	1	0	0	0	4.1E+03	9.7
MIX-CLAY...	94	4	1	0	0	0	0	1.7E+05	28.2
CLAY-S-.....	99	0	1	0	0	0	0	1.5E+04	2.5
CA-SI-.....	93	5	2	0	0	0	0	1.9E+04	3.2
SI-CA-AL...	100	0	0	0	0	0	0	2.5E+04	4.2
SI-CA-FE-MG	97	2	1	0	0	0	0	1.9E+04	3.0
UNKNOWN.....	96	3	1	0	0	0	0	1.0E+04	1.7
CARBON.....	94	4	1	0	0	0	0	1.2E+05	20.4
SI-FE-.....	88	7	4	1	0	0	0	1.4E+04	2.3
AL-SI-.....	91	8	1	0	0	0	0	2.4E+04	3.9
SI-AL-.....	94	4	2	0	0	0	0	5.0E+04	8.2
SI-V-.....	100	0	0	0	0	0	0	4.6E+03	0.8
SI-TI-.....	95	4	0	0	0	0	0	6.4E+03	1.0
SI-S-.....	0	0	0	85	15	0	0	1.6E+01	0.0
SI-CA-.....	84	14	2	0	0	0	0	3.6E+03	0.6
SI-K-.....	0	99	0	1	0	0	0	9.5E+02	0.2
S-FE-.....	100	0	0	0	0	0	0	5.7E+03	0.9
FE-SI-.....	0	82	0	18	0	0	0	7.5E+01	0.0
FE-AL-.....	0	98	0	2	0	0	0	3.5E+02	0.1
TOTAL.....	94	4	1	0	0	0	0	6.1E+05	100.0

SAMPLE TRC #7 9M 6/13/84

[illegible]

TABLE A10

SAMPLE TRC #7 BCK H-V 6/13

NUMBER	1867	DISK	346	FILE 145 - 150	PARTICLES	CONC.	0	UG/M3	RUN/T	53.31
SIZE DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL	
SI-.....	88	4	4	3	1	0	0	3.7E+04	22.8	
CA-.....	57	32	6	4	1	0	0	4.0E+03	2.5	
TI-.....	0	0	0	0	100	0	0	4.9E+00	0.0	
FE-.....	94	0	4	2	0	0	0	2.2E+03	1.4	
CENOSPHERE.	0	89	7	2	1	0	0	5.4E+02	0.3	
R-FE.....	0	57	32	11	0	0	0	1.2E+02	0.1	
FE-CA.....	0	92	0	8	0	0	0	1.2E+02	0.1	
MG-CA.....	0	35	47	12	6	0	0	2.6E+02	0.2	
MIX-CLAY...	94	4	1	0	0	0	0	1.4E+04	8.7	
CLAY-S.....	0	0	0	0	100	0	0	1.1E+01	0.0	
CA-SI.....	0	49	0	42	9	0	0	2.2E+02	0.1	
SI-CA-FE-MG	98	1	1	0	0	0	0	1.2E+04	7.4	
CARBON.....	93	4	2	1	0	0	0	7.4E+04	45.4	
SI-K.....	0	86	0	10	4	0	0	1.2E+02	0.1	
ZN-P.....	0	0	0	0	100	0	0	6.6E+00	0.0	
AL-SI.....	0	0	74	19	7	0	0	1.1E+02	0.1	
SI-AL.....	92	0	5	2	1	0	0	8.3E+02	0.5	
SI-FE.....	83	14	2	1	0	0	0	5.0E+03	3.1	
ZN-FE.....	0	0	0	100	0	0	0	8.7E+00	0.0	
V-TI.....	0	0	0	100	0	0	0	1.0E+01	0.0	
SI-S.....	0	0	0	100	0	0	0	7.7E+00	0.0	
S-FE.....	0	0	0	100	0	0	0	1.4E+01	0.0	
FE-SI.....	90	0	10	0	0	0	0	8.5E+02	0.5	
TOTAL.....	91	5	2	1	0	0	0	1.6E+05	100.0	

TABLE A11

SAMPLE TRC #8 1M 6/14/84

NUMBER	1861	DISK	346	FILE 107 - 112	PARTICLES	CONC.	0	UG/M3	RUN/T	50.96
SIZE DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL	
SI-.....	86	7	6	0	0	0	0	1.6E+04	2.3	
CA-.....	96	4	0	0	0	0	0	1.0E+05	15.2	
FE-.....	98	2	0	0	0	0	0	1.0E+04	1.5	
CENOSPHERE.	58	32	8	2	0	0	0	7.9E+03	1.1	
R-FE.....	0	100	0	0	0	0	0	1.2E+02	0.0	
CA-S.....	0	0	0	100	0	0	0	2.6E+01	0.0	
FE-CA.....	96	2	1	0	0	0	0	8.9E+03	1.3	
MG-CA.....	88	11	0	1	0	0	0	1.0E+04	1.5	
MIX-CLAY...	90	7	2	1	0	0	0	9.2E+04	13.3	
CLAY-S.....	90	0	7	3	0	0	0	1.7E+03	0.2	
CA-SI.....	97	2	0	0	0	0	0	4.3E+04	6.3	
SI-CA-AL...	98	1	0	0	0	0	0	2.2E+04	3.3	
SI-CA-FE-MG	97	2	0	0	0	0	0	2.8E+04	4.1	
CARBON.....	96	4	0	0	0	0	0	1.7E+05	25.7	
SI-CA.....	85	10	4	1	0	0	0	1.8E+04	2.6	
SI-CL.....	98	2	0	0	0	0	0	6.2E+03	0.9	
SI-AL.....	88	11	1	0	0	0	0	3.0E+04	4.4	
AL-SI.....	93	6	1	0	0	0	0	3.5E+04	5.2	
SI-FE.....	96	3	0	0	0	0	0	3.9E+04	5.6	
SI-TI.....	94	3	2	0	0	0	0	1.1E+04	1.6	
SI-K.....	0	67	28	5	0	0	0	4.4E+02	0.1	
SI-MN.....	99	0	0	1	0	0	0	1.5E+03	0.2	
FE-SI.....	100	0	0	0	0	0	0	7.5E+03	1.1	
SI-S.....	0	0	0	49	51	0	0	1.9E+01	0.0	
TOTAL.....	94	5	1	0	0	0	0	6.9E+05	100.0	

TABLE A12

SAMPLE TRC #8 5M 6/14/84

NUMBER	1862	DISK	346	FILE 113 - 119	PARTICLES	CONC.	UG/M3	RUN/T	68.25
SIZE DISTRIBUTION									
0.2-2.5 2.5-5.0 5.0-10. 10.-15. 15.-30. 30.-50. 50.-80. NUMBER/CM2 %TOTAL									
SI-.....	90	7	3	0	0	0	2.6E+04	4.7	
S-.....	0	0	0	0	100	0	2.5E+00	0.0	
CA-.....	96	4	1	0	0	0	8.8E+04	15.9	
FE-.....	99	1	0	0	0	0	1.5E+04	2.7	
CENOSPHERE.	85	11	3	1	0	0	1.1E+04	2.1	
R-FE-.....	88	12	0	0	0	0	1.1E+03	0.2	
FE-CA-.....	97	2	0	0	0	0	6.2E+03	1.1	
MG-CA-.....	90	7	2	0	0	0	1.3E+04	2.5	
MIX-CLAY...	89	8	2	0	0	0	7.4E+04	13.3	
CLAY-S-.....	96	3	0	1	0	0	3.3E+03	0.6	
CA-SI-.....	94	5	1	0	0	0	2.7E+04	4.9	
SI-CA-AL...	91	8	1	0	0	0	1.1E+04	2.0	
SI-CA-FE-MG	96	4	0	0	0	0	2.9E+04	5.4	
UNKNOWN...	99	1	0	0	0	0	1.4E+04	2.5	
CARBON.....	95	3	2	0	0	0	8.9E+04	16.1	
SI-AL-.....	90	7	2	0	0	0	2.2E+04	4.1	
SI-CA-.....	97	2	0	0	0	0	4.3E+04	7.8	
AL-SI-.....	95	4	1	0	0	0	3.9E+04	7.0	
SI-FE-.....	88	9	2	1	0	0	1.0E+04	1.9	
SI-K-.....	90	2	7	1	0	0	2.6E+03	0.5	
AL-CA-.....	0	0	0	100	0	0	4.1E+00	0.0	
SI-V-.....	98	0	0	0	0	0	4.1E+03	0.7	
SI-TI-.....	97	3	0	0	0	0	1.1E+04	2.1	
SI-S-.....	0	0	0	0	100	0	2.5E+00	0.0	
FE-MN-.....	0	0	0	100	0	0	4.3E+00	0.0	
TOTAL.....	94	4	1	0	0	0	5.5E+05	100.0	

TABLE A13

SAMPLE TRC #8 9M 6/14/84		NUMBER 1963 DISK 346		FILE 120 - 125	PARTICLES	CONC.	0	UG/P3	RUN/T	54.93
TYPE		0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL
SIZE DISTRIBUTION										
		0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	NUMBER/CM2	%TOTAL
SI-.....	98	2	0	0	0	0	0	0	2.6E+04	8.2
S-.....	99	0	0	0	0	1	0	0	7.7E+02	0.2
CA-.....	94	5	0	1	0	0	0	0	1.4E+04	4.6
TI-.....	0	0	0	70	22	8	0	0	5.9E+01	0.0
FE-.....	99	0	0	1	0	0	0	0	8.2E+03	2.5
CENOSPHERE.	68	25	0	7	0	0	0	0	1.1E+03	0.4
CA-S.....	99	0	0	0	0	1	0	0	7.8E+02	0.2
FE-CA.....	91	9	0	0	0	0	0	0	3.4E+03	1.1
MG-CA.....	74	22	0	0	1	0	0	0	2.0E+03	0.6
MIX-CLAY...	87	10	2	3	0	0	0	0	2.4E+04	7.7
CLAY-S.....	0	0	0	0	53	47	0	0	2.5E+01	0.0
CA-SI.....	83	12	3	3	2	0	0	0	4.2E+03	1.3
SI-CA-AL...	0	68	21	7	7	4	0	0	1.9E+02	0.1
SI-CA-FE-MG	88	10	0	1	1	0	0	0	2.6E+03	0.8
CARBON.....	97	2	0	0	0	0	0	0	1.7E+05	52.9
SI-FE.....	98	2	1	0	0	0	0	0	1.3E+04	4.2
SI-CA.....	96	1	2	1	1	0	0	0	5.0E+03	1.6
SI-AL.....	92	7	1	1	0	0	0	0	1.2E+04	4.0
SI-K.....	99	0	0	1	0	0	0	0	4.6E+03	1.5
AL-SI.....	82	13	4	1	1	0	0	0	4.3E+03	1.3
CA-CL.....	0	0	0	0	0	100	0	0	4.9E+00	0.0
SI-TI.....	100	0	0	0	0	0	0	0	6.5E+03	2.0
PR-CA.....	0	0	0	0	0	100	0	0	4.9E+00	0.0
TOTAL.....	96	3	1	0	0	0	0	0	3.2E+05	100.0

CCSEM PHYSICAL WEIGHT DISTRIBUTION TABLES

TABLE A14

SAMPLE TRC #2 1M 6/11/94				FILE 151 - 156 PARTICLES CONC.				0 UG/M3 RUN/T 49.67											
NUMBER 1868 DISK 346																			
				WEIGHT DISTRIBUTION															
TYPE				0.2-2.5		2.5-5.0		5.0-10.		10.-15.		15.-30.		30.-50.		50.-80.		%TOTAL	
SI-.....				2	15	15	23	20	40	0	0	0	0	0	0	0	5.7		
CA-.....				8	22	22	32	28	9	0	0	0	0	0	0	0	4.8		
TI-.....				18	0	0	0	82	0	0	0	0	0	0	0	0	0.3		
FE-.....				6	40	40	0	54	0	0	0	0	0	0	0	0	1.2		
CENOSPHERE.				3	10	10	42	31	15	0	0	0	0	0	0	0	6.1		
CA-S-.....				0	0	0	0	100	0	0	0	0	0	0	0	0	0.2		
FE-CA-.....				4	96	96	0	0	0	0	0	0	0	0	0	0	0.4		
MG-CA-.....				1	20	20	18	61	0	0	0	0	0	0	0	0	0.6		
MIX-CLAY...				6	11	11	31	31	21	0	0	0	0	0	0	0	27.3		
CLAY-S-.....				3	0	0	0	97	0	0	0	0	0	0	0	0	0.7		
CA-SI-.....				3	14	14	15	44	24	0	0	0	0	0	0	0	1.7		
SI-CA-AL...				2	15	15	0	39	44	0	0	0	0	0	0	0	0.6		
SI-CA-FE-MG				14	42	42	0	44	0	0	0	0	0	0	0	0	0.9		
CARBON.....				3	9	9	17	32	38	0	0	0	0	0	0	0	18.9		
SI-AL-.....				19	19	19	13	41	8	0	0	0	0	0	0	0	7.6		
AL-SI-.....				4	23	23	18	32	23	0	0	0	0	0	0	0	7.2		
SI-V-.....				50	0	0	0	0	50	0	0	0	0	0	0	0	0.4		
SI-FE-.....				2	6	6	40	42	10	0	0	0	0	0	0	0	5.9		
SI-TI-.....				15	0	0	62	10	12	0	0	0	0	0	0	0	2.9		
SI-CA-.....				3	35	35	19	0	43	0	0	0	0	0	0	0	1.5		
SI-K-.....				4	6	6	39	43	9	0	0	0	0	0	0	0	3.4		
ZN-S-.....				0	0	0	0	0	100	0	0	0	0	0	0	0	0.4		
K-AL-.....				0	0	0	0	0	100	0	0	0	0	0	0	0	0.4		
ZN-SI-.....				0	0	0	100	0	0	0	0	0	0	0	0	0	0.3		
MISC.....				36	40	40	25	0	0	0	0	0	0	0	0	0	0.5		
TOTAL.....				6	13	13	26	32	23	0	0	0	0	0	0	0	100.0		

SAMPLE TRC #2 5M 6/11/84

TABLE A15

NUMBER	1869	DISK	347	FILE 101 - 107	PARTICLES	CONC.	0	UG/M3	RUN/T	58.25
WEIGHT DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	%TOTAL		
SI-.....	5	7	18	26	11	32	0	6.3		
CA-.....	6	10	25	32	27	0	0	5.7		
TI-.....	12	0	0	0	88	0	0	0.3		
FE-.....	2	7	0	25	66	0	0	2.2		
CENOSPHERE.	1	0	15	21	38	16	0	6.8		
CA-S-.....	0	0	81	19	0	0	0	0.4		
FE-CA-.....	1	0	99	0	0	0	0	0.3		
MG-CA-.....	4	17	79	0	0	0	0	0.6		
MIX-CLAY...	2	8	25	18	40	7	0	28.6		
CLAY-S-.....	2	2	8	10	80	0	0	3.6		
CA-SI-.....	5	11	0	28	56	0	0	1.1		
SI-CA-AL...	6	4	22	0	69	0	0	0.8		
SI-CA-FE-MG	16	39	17	0	28	0	0	0.5		
CARBON.....	7	8	24	22	38	0	0	9.7		
SI-AL-.....	3	11	47	32	6	0	0	7.2		
SI-CA-.....	7	10	28	19	35	0	0	3.6		
SI-FE-.....	3	8	18	41	30	0	0	5.5		
SI-TI-.....	7	5	0	19	47	21	0	3.2		
AL-SI-.....	5	3	36	12	44	0	0	8.2		
SI-K-.....	0	2	27	20	8	43	0	2.5		
SI-CR-.....	0	0	0	100	0	0	0	0.3		
S -FE-.....	0	0	0	100	0	0	0	0.3		
FE-SI-.....	8	0	15	57	19	0	0	1.0		
FE-MN-.....	0	0	0	0	100	0	0	0.3		
SI-S-.....	0	11	0	44	45	0	0	0.6		
MISC.....	14	14	0	72	0	0	0	0.6		
TOTAL.....	4	7	24	23	36	7	0	100.0		

SAMPLE TRC #4 1M 6/12/84

[illegible]

TABLE A17

SAMPLE TRC #4 SM 6/12/84				FILE 143 ~ 148 PARTICLES				CONC.				0 UG/M3				RUN/T 49.81			
NUMBER 1858 DISK 345																			

SAMPLE TRC #4 9M 6/12/84

TABLE A18

NUMBER	1859	DISK	345	FILE 149 - 155	PARTICLES	CONC.	0	UG/M3	RUN/T	61.26
WEIGHT DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	%TOTAL		
SI-.....	2	5	13	19	26	35	0	6.8		
CA-.....	8	10	14	33	35	0	0	3.5		
FE-.....	0	1	0	2	18	78	0	10.2		
CU-.....	0	0	0	0	100	0	0	0.7		
CENOSPHERE.	6	7	17	22	49	0	0	2.9		
FE-CA.....	2	0	0	0	98	0	0	0.3		
MG-CA.....	0	14	0	56	30	0	0	0.5		
MIX-CLAY...	2	9	21	20	26	0	22	20.7		
CLAY-S.....	0	0	0	45	55	0	0	1.2		
CA-SI.....	7	16	22	40	15	0	0	2.0		
SI-CA-AL...	0	1	0	11	18	70	0	2.8		
SI-CA-FE-MG	2	6	6	34	6	48	0	2.1		
CARBON.....	2	4	16	26	52	0	0	21.7		
SI-K.....	4	5	0	55	36	0	0	1.5		
AL-SI.....	6	14	14	40	26	0	0	2.9		
SI-TI.....	4	0	24	25	47	0	0	3.0		
SI-AL.....	10	6	35	22	27	0	0	5.3		
SI-CA.....	1	9	25	7	58	0	0	2.9		
SI-FE.....	2	4	25	19	51	0	0	6.6		
SI-S.....	3	0	0	48	48	0	0	0.8		
FE-SI.....	32	0	0	68	0	0	0	0.5		
MISC.....	4	28	0	39	29	0	0	0.9		
TOTAL.....	3	6	15	22	36	13	4	100.0		

TABLE A19

SAMPLE TRC #4 STD H-V 6/12										
NUMBER	1860	DISK	346	FILE 101 - 106	PARTICLES	CONC.	0	UG/M3	RUN/T	57.53
WEIGHT DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	%TOTAL		
AL-.....	0	17	0	83	0	0	0	2.3		
SI-.....	1	6	16	30	46	0	0	11.0		
S -.....	0	0	0	0	100	0	0	0.2		
CA-.....	14	23	16	35	13	0	0	3.1		
FE-.....	11	9	17	18	44	0	0	5.5		
ZN-.....	0	0	0	0	100	0	0	0.4		
CENOSPHERE.	6	2	36	21	35	0	0	2.0		
R-FE.....	3	0	97	0	0	0	0	0.6		
CA-S.....	0	8	27	0	65	0	0	0.7		
FE-CA.....	0	10	0	90	0	0	0	0.5		
MG-CA.....	0	19	19	29	33	0	0	0.7		
MIX-CLAY...	4	5	12	27	36	16	0	11.7		
CA-SI.....	1	8	44	30	16	0	0	5.7		
SI-CA-AL...	14	37	0	0	49	0	0	0.3		
SI-CA-FE-MG	0	1	38	12	49	0	0	5.0		
CARBON.....	0	2	8	25	64	0	0	37.1		
AL-SI.....	2	9	5	0	84	0	0	1.4		
SI-TI.....	0	6	20	48	26	0	0	1.4		
SI-AL.....	2	15	7	31	44	0	0	3.6		
SI-FE.....	4	8	24	29	35	0	0	4.3		
SI-S -.....	0	0	13	18	68	0	0	0.9		
SI-CA.....	0	0	0	42	58	0	0	0.4		
AL-CL.....	0	0	0	0	100	0	0	0.8		
FE-SI.....	15	32	12	41	0	0	0	1.0		
SI-K -.....	5	0	24	0	71	0	0	0.5		
AL-CA.....	0	0	100	0	0	0	0	0.3		
MISC.....	12	19	0	32	37	0	0	0.5		
TOTAL.....	2	5	16	26	49	2	0	100.0		

TABLE A20

SAMPLE TRC #7 1M 6/13/84										
NUMBER	1864	DISK	346	FILE 126 - 131	PARTICLES	CONC.	0	UG/M3	RUN/T	42.59
WEIGHT DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	%TOTAL		
SI-.....	2	14	25	27	33	0	0	4.5		
CA-.....	15	21	24	36	3	0	0	7.1		
FE-.....	17	12	35	36	0	0	0	3.2		
CENOSPHERE.	9	6	0	65	20	0	0	3.1		
FE-CA-.....	1	0	41	36	22	0	0	1.7		
MG-CA-.....	2	13	66	9	8	0	0	3.7		
MIX-CLAY...	4	12	21	37	16	9	0	27.2		
CLAY-S-.....	1	0	45	22	32	0	0	2.2		
CA-SI-.....	3	17	21	20	30	0	0	2.5		
SI-CA-AL...	6	21	0	72	0	0	0	0.4		
SI-CA-FE-MG	16	17	39	28	0	0	0	2.0		
CARBON.....	3	12	14	38	32	0	0	16.4		
SI-AL-.....	0	30	15	27	20	0	0	7.6		
SI-FE-.....	4	19	23	24	31	0	0	4.9		
SI-TI-.....	1	0	0	69	30	0	0	1.2		
AL-SI-.....	2	18	35	41	4	0	0	5.0		
SI-CA-.....	6	30	0	12	51	0	0	2.9		
SI-MN-.....	2	0	0	98	0	0	0	0.2		
SI-S-.....	0	0	0	0	100	0	0	1.2		
SI-K-.....	18	10	0	72	0	0	0	0.7		
FE-SI-.....	5	0	54	0	41	0	0	0.9		
CA-P-.....	7	14	79	0	0	0	0	0.5		
MISC.....	16	42	0	22	19	0	0	0.8		
TOTAL.....	5	15	22	34	21	2	0	120.0		

TABLE A21

SAMPLE TRC #7 5M 6/13/84				FILE 132 - 138 PARTICLES				CONC.		0 UG/M3		RUN/T		62.95			
NUMBER 1865 DISK 346				PARTICLES													
0.2-2.5				2.5-5.0				5.0-10.				WEIGHT DISTRIBUTION					
10.-15.				15.-30.				30.-50.				50.-80.				%TOTAL	
TYPE																	
AL-.....				0				0				91				1.4	
SI-.....				15				34				13				5.5	
CA-.....				24				24				20				4.2	
FE-.....				31				0				0				0.7	
CENOSPHERE.				3				22				14				4.8	
CA-S-.....				15				0				32				0.3	
FE-CA-.....				4				0				28				1.4	
MG-CA-.....				14				46				16				2.1	
MIX-CLAY...				10				26				32				26.3	
CLAY-S-.....				0				46				20				2.2	
CA-SI-.....				10				40				27				4.6	
SI-CA-AL...				0				14				32				0.7	
SI-CA-FE-MG				16				35				31				1.2	
UNKNOWN...				33				52				0				2.3	
CARBON.....				8				27				22				16.3	
SI-FE-.....				7				31				36				7.3	
AL-SI-.....				24				8				40				3.9	
SI-AL-.....				17				22				25				7.5	
SI-V-.....				0				0				62				0.4	
SI-TI-.....				29				0				48				1.1	
SI-S-.....				0				0				72				0.3	
SI-CA-.....				0				0				10				5.0	
SI-K-.....				84				0				16				0.7	
S -FE-.....				0				0				54				0.4	
FE-SI-.....				21				0				79				0.4	
FE-AL-.....				52				0				48				0.2	
MISC.....				19				0				44				0.7	
TOTAL.....				12				25				30				100.0	

TABLE A22

SAMPLE TRC #7 9M 6/13/84							
NUMBER	1866	DISK	346	FILE 139 - 144	PARTICLES	CONC.	0 UG/P3 RUN/T 58.19
WEIGHT DISTRIBUTION							
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80. XTOTAL
SI-.....	4	7	32	42	15	0	4.0
S -.....	0	0	0	0	100	0	0.2
CA-.....	13	18	25	18	26	0	6.8
TI-.....	0	3	0	0	0	97	2.9
FE-.....	4	16	19	45	16	0	2.3
CENOSPHERE.	7	14	30	28	21	0	5.1
CA-S.....	0	31	0	69	0	0	0.3
FE-CA.....	8	16	0	31	45	0	0.5
MG-CA.....	0	16	0	18	65	0	1.3
MIX-CLAY...	3	9	22	34	28	4	23.1
CLAY-S.....	1	4	32	29	35	0	1.5
CA-SI.....	8	14	7	42	28	0	1.9
SI-CA-AL...	2	16	16	24	42	0	1.2
SI-CA-FE-MG	1	27	0	72	0	0	0.4
CARBON.....	2	7	20	19	52	0	21.5
SI-FE.....	1	26	0	43	30	0	6.7
AL-SI.....	1	16	39	34	10	0	2.3
SI-AL.....	6	21	21	31	20	0	6.6
SI-K.....	0	11	44	19	26	0	1.9
PE-SI.....	1	0	0	28	71	0	1.4
SI-TI.....	5	15	20	12	48	0	1.9
SI-S.....	0	6	0	7	6	81	3.1
SI-CA.....	2	28	7	43	20	0	1.9
CA-V.....	100	0	0	0	0	0	0.2
MISC.....	1	35	24	40	0	0	0.7
TOTAL.....	4	12	19	28	31	6	120.0

TABLE A23

SAMPLE TRC #7 BCK R-V 6/13

NUMBER 1867 DISK 346 FILE 145 - 150 PARTICLES CONC. 0 UG/M3 RUN/T 53.31

TYPE	WEIGHT DISTRIBUTION						%TOTAL
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	
SI-.....	0	1	12	40	47	0	44.9
CA-.....	2	10	20	45	24	0	4.5
TI-.....	0	0	0	0	100	0	1.2
FE-.....	1	0	28	42	29	0	2.5
CENOSPHERE.	0	24	20	27	29	0	0.7
R-FE.....	0	4	57	39	0	0	1.2
FE-CA.....	0	15	0	85	0	0	0.3
MG-CA.....	0	3	15	36	45	0	2.0
MIX-CLAY...	1	8	12	30	50	0	4.0
CLAY-S.....	0	0	0	100	0	0	0.6
CA-SI.....	0	1	0	46	53	0	3.3
SI-CA-FE-MG	4	16	46	35	0	0	0.5
CARBON.....	0	4	14	34	48	0	24.5
SI-K	0	2	0	22	76	0	1.1
ZN-P	0	0	0	0	100	0	0.5
AL-SI.....	0	0	35	41	23	0	1.5
SI-AL.....	1	0	18	22	59	0	1.1
SI-FE.....	1	14	16	20	50	0	2.6
ZN-FE.....	0	0	0	100	0	0	0.4
V -TI.....	0	0	0	100	0	0	0.7
SI-S	0	0	0	100	0	0	0.2
S -FE.....	0	0	0	100	0	0	0.2
FE-SI.....	2	0	98	0	0	0	0.6
MISC.....	5	9	41	45	0	0	0.7
TOTAL.....	0	3	14	38	45	0	100.0

TABLE A24

SAMPLE TRC #8 1M 6/14/84							
NUMBER	1861	DISK	346	FILE 107 - 112	PARTICLES	CONC.	0 UG/M3 RUN/T 50.96
WEIGHT DISTRIBUTION							
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80. %TOTAL
SI-.....	6	6	54	21	13	0	4.2
CA-.....	9	23	8	35	24	0	7.3
FE-.....	15	16	0	68	0	0	0.9
CENOSPHERE.	5	15	30	38	12	0	5.3
R-FE-.....	0	100	0	0	0	0	0.2
CA-S-.....	0	0	0	100	0	0	0.4
FE-CA-.....	5	6	22	66	0	0	1.6
MG-CA-.....	11	28	0	60	0	0	1.7
MIX-CLAY...	6	12	21	39	22	0	19.4
CLAY-S-.....	7	0	9	48	36	0	1.2
CA-SI-.....	12	12	14	54	8	0	3.1
SI-CA-AL...	2	13	0	43	42	0	1.3
SI-CA-FE-MG	10	6	12	45	26	0	2.1
CARBON-.....	4	12	10	41	33	0	14.1
SI-CA-.....	4	12	38	38	7	0	8.5
SI-CL-.....	7	33	0	0	60	0	0.4
SI-AL-.....	8	18	20	33	22	0	7.4
AL-SI-.....	13	14	31	29	13	0	6.4
SI-FE-.....	1	14	53	59	21	0	6.7
SI-TI-.....	0	4	0	17	26	0	3.5
SI-K-.....	0	16	46	38	0	0	1.4
SI-MN-.....	6	0	0	94	0	0	0.3
FE-SI-.....	0	0	0	39	61	0	1.1
SI-S-.....	0	0	0	38	62	0	0.9
MISC-.....	28	51	20	0	0	0	0.8
TOTAL.....	6	14	21	39	20	0	100.0

TABLE A25

SAMPLE TRC #8 5M 6/14/84

NUMBER 1262 DISK 346

FILE 113 - 119 PARTICLES

CONC.

01/11/2013

B11W/T

595

TYPE	WEIGHT DISTRIBUTION							%TOTAL
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-90.	
SI-.....	4	12	37	20	26	0	0	5.9
S-.....	0	0	0	0	100	0	0	0.3
CA-.....	13	23	29	20	16	0	0	7.0
FE-.....	5	10	0	39	46	0	0	0.9
CENOSPHERE.	2	14	14	39	31	0	0	5.4
R-FE-.....	62	38	0	0	0	0	0	0.2
FE-CA-.....	4	0	0	39	49	0	0	0.9
MG-CA-.....	2	21	55	22	0	0	0	2.3
MIX-CLAY...	5	15	32	31	18	0	0	20.5
CLAY-S-.....	0	4	0	54	42	0	0	1.0
CA-SI-.....	9	17	14	37	24	0	0	4.1
SI-CA-AL...	9	21	29	33	8	0	0	1.8
SI-CA-FE-MG	7	29	0	41	23	0	0	1.3
UNKNOWN...	30	7	62	0	0	0	0	0.4
CARBON-.....	3	6	20	29	42	0	0	20.1
SI-AL-.....	7	9	33	28	24	0	0	7.5
SI-CA-.....	11	11	10	51	17	0	0	5.9
AL-SI-.....	4	17	28	35	17	0	0	5.6
SI-FE-.....	13	15	13	46	14	0	0	4.5
SI-K-.....	1	6	54	38	0	0	0	1.6
AL-CA-.....	0	0	0	100	0	0	0	0.2
SI-V-.....	1	0	28	71	0	0	0	0.4
SI-TI-.....	0	31	0	68	0	0	0	1.0
SI-S-.....	0	0	0	0	100	0	0	0.2
FE-MN-.....	0	0	0	100	0	0	0	0.2
MISC-.....	10	9	15	66	0	0	0	0.8
TOTAL-.....	6	13	24	33	24	0	0	100.0

TABLE A26

SAMPLE TRC #8 9M 6/14/84										54.93									
NUMBER 1863 DISK 346										RUN/T									
FILE 120 - 125 PARTICLES										0 UG/M3									
CONC.																			
WEIGHT DISTRIBUTION																			
0.2-2.5										30.-50.									
2.5-5.0										50.-80.									
5.0-10.										%TOTAL									
10.-15.																			
15.-30.																			
TYPE																			
SI.....										1.9									
S.....										0.5									
CA.....										2.0									
TI.....										1.2									
FE.....										1.0									
CENOSPHERE.										0.4									
CA-S.....										2.1									
PE-CA.....										0.7									
MG-CA.....										1.4									
MIX-CLAY...										9.2									
CLAY-S.....										1.6									
CA-SI.....										2.6									
SI-CA-AL...										0.7									
SI-CA-FE-MG										0.8									
CARBON.....										55.9									
SI-PE.....										6.3									
SI-CA.....										2.9									
SI-AL.....										2.8									
SI-K.....										1.0									
AL-SI.....										2.0									
CA-CL.....										1.3									
SI-TI.....										0.5									
BR-CA.....										0.5									
MISC.....										0.8									
TOTAL.....										100.0									

CCSEM AERODYNAMIC WEIGHT DISTRIBUTION TABLES

TABLE A27

SAMPLE TRC #2 IM 6/11/84

NUMBER	DISK	FILE	151 - 156	PARTICLES	CONC.	0	UG/M3	RUN/T	48.67
--------	------	------	-----------	-----------	-------	---	-------	-------	-------

TYPE	AERODYNAMIC WEIGHT DISTRIBUTION							WT %
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	
SI-.....	2	4	34	7	38	14	0	5.7
CA-.....	4	19	17	37	23	0	0	4.8
TI-.....	18	0	0	0	82	0	0	0.3
FE-.....	6	0	40	0	54	0	0	1.2
CENOSPHERE.	0	8	46	19	27	0	0	6.1
CA-S-.....	0	0	0	0	100	0	0	0.2
FE-CA-.....	4	0	96	0	0	0	0	0.4
MG-CA-.....	1	8	30	23	37	0	0	0.6
MIX-CLAY...	3	10	22	26	39	0	0	27.3
CLAY-S-.....	3	0	0	0	97	0	0	0.7
CA-SI-.....	3	8	21	20	49	0	0	1.7
SI-CA-AL...	2	15	0	0	84	0	0	0.6
SI-CA-PE-MG	14	29	12	16	28	0	0	0.9
CARBON.....	2	8	18	24	45	0	0	18.9
SI-AL-.....	6	20	12	13	45	3	0	7.6
AL-SI-.....	3	9	21	12	38	4	0	7.2
SI-V-.....	4	46	0	0	50	17	0	0.4
SI-FE-.....	2	2	12	31	53	0	0	5.9
SI-TI-.....	6	9	15	47	10	12	0	2.9
SI-CA-.....	3	22	32	0	0	43	0	1.5
SI-K-.....	1	5	28	14	52	0	0	3.4
ZN-S-.....	0	0	0	0	100	0	0	0.4
K-AL-.....	0	0	0	0	0	100	0	0.3
ZN-SI-.....	0	0	100	0	0	0	0	0.5
MISC.....	36	11	53	0	0	0	0	100.0
TOTAL.....	3	10	22	21	40	4	0	

TABLE A28

SAMPLE TRC #2 SM 6/11/84										
NUMBER	1869	DISK	347	FILE 101 - 107	PARTICLES	CONC.	0	UG/M3	RUN/T	58.25
AERODYNAMIC WEIGHT DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	WT %		
SI-.....	2	9	19	6	32	32	0	6.3		
CA-.....	4	6	23	16	30	21	0	5.7		
TI-.....	12	0	0	0	88	0	0	0.3		
FE-.....	0	2	7	0	25	66	0	2.2		
CENOSPHERE.	1	5	7	18	52	16	0	6.8		
CA-S-.....	0	0	81	19	0	0	0	0.4		
FE-CA-.....	1	0	0	99	0	0	0	0.3		
MG-CA-.....	4	17	40	40	0	0	0	0.6		
MIX-CLAY...	2	6	22	17	29	25	0	28.6		
CLAY-S-.....	2	0	2	12	47	38	0	3.0		
CA-SI-.....	5	11	0	28	56	0	0	1.1		
SI-CA-AL...	6	4	22	0	69	0	0	0.8		
SI-CA-FE-MG	4	27	41	0	29	0	0	0.5		
CARBON-.....	6	6	19	22	44	3	0	9.7		
SI-AL-.....	2	7	15	38	39	0	0	7.2		
SI-CA-.....	1	10	24	11	35	19	0	3.6		
SI-FE-.....	2	4	8	16	62	10	0	5.5		
SI-TI-.....	1	6	5	0	39	48	0	3.2		
AL-SI-.....	1	4	7	31	42	15	0	8.2		
SI-K-.....	0	2	27	0	28	43	0	2.5		
SI-CR-.....	0	0	0	0	100	0	0	2.3		
S-FE-.....	0	0	0	0	100	0	0	0.3		
FE-SI-.....	3	6	15	0	57	19	0	1.0		
FE-MN-.....	0	0	0	0	100	0	0	0.3		
SI-S-.....	0	0	11	0	44	45	0	0.6		
MISC-.....	14	0	14	0	72	0	0	0.6		
TOTAL-.....	2	6	16	17	39	20	0	100.0		

TABLE A29

SAMPLE TRC #4 1M 5/12/84							
NUMBER	1857	DISK	345	FILE 137 - 142	PARTICLES	CONC.	0 UG/M3 RUN/T 55.30
AERODYNAMIC WEIGHT DISTRIBUTION							
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.
SI-.....	1	8	17	24	43	7	0
CA-.....	11	11	16	37	24	0	0
TI-.....	18	0	0	0	82	0	0
FE-.....	6	0	13	27	28	26	0
CENOSPHERE.	1	8	28	44	18	0	0
FE-CA-.....	0	10	14	25	51	0	0
MG-CA-.....	22	0	17	61	0	0	0
MIX-CLAY...	4	11	16	26	40	3	0
CLAY-S-.....	0	0	0	40	60	0	0
CA-SI-.....	2	6	14	60	18	0	0
SI-CA-AL...	2	12	0	0	38	0	0
SI-CA-FE-MG	6	3	13	8	70	48	0
CARBON.....	2	11	16	20	50	0	0
AL-SI-.....	4	6	19	29	42	0	0
SI-CA-.....	10	0	16	0	75	0	0
SI-AL-.....	6	9	30	6	50	0	0
SI-K-.....	2	17	15	33	19	14	0
SI-S-.....	0	0	0	18	0	82	0
SI-FE-.....	2	6	12	21	49	11	0
SI-TI-.....	1	7	15	23	54	0	0
FE-SI-.....	18	31	25	0	26	0	0
SI-V-.....	0	0	0	0	100	0	0
FE-AL-.....	0	14	86	0	0	0	0
MISC.....	7	7	48	0	37	0	0
TOTAL.....	4	9	17	25	40	4	0
							100.0
							WT %
							5.5
							6.1
							0.4
							2.9
							5.4
							1.5
							0.8
							22.2
							1.1
							3.3
							0.8
							1.3
							16.3
							8.0
							1.8
							7.4
							2.7
							1.5
							6.4
							2.4
							0.8
							0.3
							0.4
							0.7

TABLE A30

SAMPLE TRC #4 5M 6/12/84

NUMBER	DISK	FILE 143 - 148	PARTICLES	CONC.	UG/M3	RUN/T
1858	345					49.81

TYPE	AERODYNAMIC WEIGHT DISTRIBUTION							WT %
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	
AL-.....	0	4	2	0	0	95	0	1.4
SI-.....	3	7	25	30	35	0	0	4.6
CA-.....	4	9	45	15	27	0	0	5.6
FE-.....	13	65	22	0	0	0	0	0.8
CENOSPHERE.	2	10	16	49	12	11	0	6.1
CA-S-.....	18	0	0	82	0	0	0	0.3
FE-CA-.....	0	0	27	0	73	0	0	0.3
MG-CA-.....	0	1	5	4	9	0	0	3.4
MIX-CLAY...	3	8	21	18	43	7	0	24.0
CLAY-S-.....	0	0	6	0	94	0	0	0.8
CA-SI-.....	4	9	24	23	25	14	0	3.5
SI-CA-FE-MG	1	10	17	0	48	24	0	2.1
CARBON-.....	2	6	19	18	46	9	0	15.9
AL-SI-.....	1	9	22	37	31	0	0	4.5
SI-FE-.....	2	1	22	0	42	33	0	7.4
SI-AL-.....	4	8	23	0	48	17	0	8.4
SI-CL-.....	0	0	0	0	100	0	0	0.2
SI-X-.....	0	7	20	37	35	0	0	2.8
SI-TI-.....	9	13	30	0	48	0	0	1.1
SI-CA-.....	2	0	22	34	43	0	0	3.2
FE-S-.....	0	0	0	0	100	0	0	0.2
FE-SI-.....	2	38	0	0	60	0	0	0.5
SI-V-.....	0	0	29	0	71	0	0	0.3
SI-S-.....	0	0	0	0	33	67	0	0.7
P-S-.....	0	0	0	0	100	0	0	1.3
MISC-.....	15	11	61	14	0	0	0	0.5
TOTAL-.....	2	7	21	17	39	11	2	100.0

TABLE A31

SAMPLE TRC #4 9M 6/12/84

NUMBER	1859	DISK	345	FILE 149 - 155	PARTICLES	CONC.	0	UG/M3	RUN/T	61.2E
AERODYNAMIC WEIGHT DISTRIBUTION										
TYPE										
0.2-2.5										
2.5-5.0										
5.0-10.										
10.-15.										
15.-30.										
30.-50.										
50.-80.										
WT %										
SI-.....	1	5	4	17	38	9	26	6.8		
CA-.....	4	10	18	11	37	20	0	3.5		
FE-.....	0	0	1	0	4	16	79	10.2		
CU-.....	0	0	0	0	0	0	100	0.7		
CENOSPHERE.	3	7	7	16	33	33	0	2.9		
PE-CA-.....	2	0	0	0	0	98	0	0.3		
MG-CA-.....	0	14	0	12	74	0	0	0.5		
MIX-CLAY...	1	5	14	19	31	8	21	20.7		
CLAY-S-.....	0	0	0	6	93	0	0	1.2		
CA-SI-.....	2	5	38	4	51	0	0	2.0		
SI-CA-AL...	0	1	0	2	13	84	0	2.8		
SI-CA-FE-MG	2	4	8	0	39	48	0	2.1		
CARBON.....	1	2	15	21	52	8	0	21.7		
SI-K -.....	4	5	0	0	91	0	0	1.5		
AL-SI-.....	2	12	11	8	55	11	0	2.9		
SI-TI-.....	1	3	15	8	25	47	0	3.0		
SI-AL-.....	2	10	16	24	32	17	0	5.3		
SI-CA-.....	1	5	9	20	40	24	0	2.9		
SI-FE-.....	1	2	15	12	27	43	0	6.6		
SI-S -.....	3	0	0	0	48	48	0	0.8		
PE-SI-.....	5	27	0	0	68	0	0	0.5		
MISC.....	4	15	13	10	58	0	0	0.9		
TOTAL.....	1	4	11	14	37	18	15	100.0		

TABLE A32

SAMPLE TRC #4 STD H-V 6/12										
NUMBER	1860	DISK	346	FILE 101 - 106	PARTICLES	CONC.	0	UG/M3	RUN/T	57.53
AERODYNAMIC WEIGHT DISTRIBUTION										
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	WT %		
AL-.....	0	0	17	0	83	0	0	0.3		
SI-.....	1	3	14	23	45	13	0	11.0		
S-.....	0	0	0	0	100	0	0	0.2		
CA-.....	7	16	21	8	48	0	0	3.1		
FE-.....	0	11	9	17	18	44	0	5.5		
ZN-.....	0	0	0	0	0	100	0	0.4		
CENOSPHERE.	1	5	23	15	56	0	0	2.0		
R-FE-.....	3	0	0	97	0	0	0	0.6		
CA-S-.....	0	0	0	27	65	0	0	0.7		
FE-CA-.....	0	0	10	0	90	0	0	0.5		
MG-CA-.....	0	0	29	0	62	0	0	0.7		
MIX-CLAY...	1	5	9	9	45	31	0	11.7		
CA-SI-.....	1	5	19	34	41	0	0	5.7		
SI-CA-AL...	14	0	37	0	49	0	0	0.3		
SI-CA-FE-MG	0	1	10	31	37	21	0	5.0		
CARBON.....	0	1	5	18	58	17	0	37.1		
AL-SI-.....	2	9	5	0	44	40	0	1.4		
SI-TI-.....	0	0	6	20	74	0	0	1.4		
SI-AL-.....	2	1	22	0	53	22	0	3.6		
SI-FE-.....	0	4	9	6	53	27	0	4.3		
SI-S-.....	0	0	13	0	87	0	0	0.9		
SI-CA-.....	0	0	0	42	58	0	0	0.4		
AL-CL-.....	0	0	0	0	0	100	0	0.8		
FE-SI-.....	3	21	36	0	41	0	0	1.0		
SI-K-.....	5	0	24	0	0	71	0	0.5		
AL-CA-.....	0	0	0	100	0	0	0	0.3		
MISC.....	12	19	0	0	69	0	0	0.5		
TOTAL.....	1	3	10	17	50	19	0	100.0		

TABLE A33

SAMPLE TRC #7 1M 6/13/84

NUMBER	1864	DISK	346	FILE 126 - 131	PARTICLES	CONC.	Ø	UC/M3	RUN/T	42.59
--------	------	------	-----	----------------	-----------	-------	---	-------	-------	-------

TYPE	AERODYNAMIC WEIGHT DISTRIBUTION						WT %
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	
SI-.....	2	9	29	3	56	0	4.5
CA-.....	6	20	24	18	32	0	7.1
FE-.....	2	15	12	35	36	0	3.2
CENOSPHERE.	4	11	0	35	50	0	3.1
FE-CA.....	1	0	41	0	58	0	1.7
MG-CA.....	2	7	21	56	14	0	3.7
MIX-CLAY...	3	6	15	19	44	0	27.2
CLAY-S.....	1	0	23	38	39	3	2.2
CA-SI.....	3	14	24	6	52	0	2.5
SI-CA-AL...	6	0	21	31	41	0	0.4
SI-CA-FE-MG	1	18	14	39	28	0	2.0
CARBON.....	2	12	11	26	48	0	16.4
SI-AL.....	2	10	33	7	29	18	7.6
SI-FE.....	1	13	21	10	39	16	4.9
SI-TI.....	1	0	0	0	99	0	1.2
AL-SI.....	2	2	36	15	46	0	5.0
SI-CA.....	2	10	25	0	63	0	2.9
SI-MN.....	2	0	0	0	99	0	0.2
SI-S.....	0	0	0	0	0	100	1.2
SI-K.....	0	18	10	0	72	0	0.7
FE-SI.....	5	0	54	0	41	0	0.9
CA-P.....	7	14	79	0	0	0	0.5
MISC.....	16	23	20	22	19	0	0.8
TOTAL.....	2	10	20	19	43	4	100.0

TABLE A34

SAMPLE TRC #7 5M 6/13/84

NUMBER	1865	DISK	346	FILE 132 - 138	PARTICLES	CONC.	Ø	UG/M3	RUN/T	62.95
--------	------	------	-----	----------------	-----------	-------	---	-------	-------	-------

TYPE	AERODYNAMIC WEIGHT DISTRIBUTION							WT %
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	
AL.....	0	9	2	0	0	91	0	1.4
SI.....	0	10	25	32	33	0	0	5.5
CA.....	6	15	23	23	33	0	0	4.2
FE.....	0	0	31	0	61	0	0	2.7
CENOSPHERE.	3	7	22	32	36	0	0	4.8
CA-S.....	31	15	0	22	32	0	0	0.3
FE-CA.....	3	0	4	0	65	28	0	1.4
MG-CA.....	1	17	26	34	22	0	0	2.1
MIX-CLAY...	3	8	21	21	38	9	0	26.3
CLAY-S.....	0	0	6	46	48	0	0	2.2
CA-SI.....	1	9	12	43	35	0	0	4.6
SI-CA-AL...	2	0	14	0	83	0	0	0.7
SI-CA-FE-MG	1	18	16	34	32	0	0	1.2
UNKNOWN....	15	21	64	0	0	0	0	2.5
CARBON.....	4	6	16	27	45	3	0	16.3
SI-FE.....	1	5	11	25	44	14	0	7.3
AL-SI.....	3	5	28	0	47	17	0	3.9
SI-AL.....	4	10	30	5	38	13	0	7.5
SI-V.....	7	0	0	0	93	0	0	0.4
SI-TI.....	6	30	0	0	65	0	0	1.1
SI-S.....	0	0	0	0	100	0	0	2.3
SI-CA.....	1	4	7	8	18	0	61	5.0
SI-K.....	0	27	57	0	16	0	0	0.7
S-FE.....	2	0	0	0	98	0	0	2.4
FE-SI.....	0	0	21	0	79	0	0	0.4
FE-AL.....	0	52	0	0	48	0	0	0.2
MISC.....	2	0	19	15	63	0	0	0.7
TOTAL.....	2	8	19	21	40	7	3	100.0

TABLE A35

SAMPLE TRC #7 9M 6/13/84

NUMBER 1266 DISK 346 FILE 139 - 144 PARTICLES CONC. 0 UG/M3 RUN/T 58.19

TYPE	AERODYNAMIC WEIGHT DISTRIBUTION										WT %
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.				
SI-.....	4	2	27	18	50	0	0	0	0	0	4.0
S-.....	0	0	0	0	100	0	0	0	0	0	0.2
CA-.....	4	17	18	18	43	0	0	0	0	0	6.8
TI-.....	0	0	3	0	0	0	0	97	0	0	2.9
FE-.....	4	0	16	19	45	16	0	0	0	0	2.3
CENOSPHERE.	4	12	27	27	31	0	0	0	0	0	5.1
CA-S-.....	0	0	31	69	0	0	0	0	0	0	0.3
FE-CA-.....	8	0	16	0	76	0	0	0	0	0	0.5
MG-CA-.....	0	10	6	6	78	0	0	0	0	0	1.3
MIX-CLAY...	2	6	18	21	37	16	0	0	0	0	23.1
CLAY-S-.....	1	4	0	32	64	0	0	0	0	0	1.5
CA-SI-.....	8	6	14	31	40	0	0	0	0	0	1.9
SI-CA-AL...	2	16	16	24	11	31	0	0	0	0	1.2
SI-CA-FE-MG	1	0	27	0	72	0	0	0	0	0	0.4
CARBON.....	2	7	14	18	56	3	0	0	0	0	21.5
SI-FE-.....	1	6	20	0	62	10	0	0	0	0	6.7
AL-SI-.....	1	10	7	38	44	0	0	0	0	0	2.3
SI-AL-.....	4	7	22	14	44	8	0	0	0	0	6.6
SI-K-.....	0	0	11	44	45	0	0	0	0	0	1.9
FE-SI-.....	1	0	0	0	68	31	0	0	0	0	1.4
SI-TI-.....	5	0	15	20	38	22	0	0	0	0	1.9
SI-S-.....	0	0	6	0	13	0	0	81	0	0	3.1
SI-CA-.....	2	11	24	0	43	20	0	0	0	0	1.9
CA-V-.....	25	75	0	0	0	0	0	0	0	0	0.2
MISC.....	1	23	36	0	40	0	0	0	0	0	0.7
TOTAL.....	2	7	17	17	45	7	5				100.0

TABLE A36

SAMPLE TRC #7 BCK B-V 6/13

NUMBER	1867	DISK	346	FILE	145 - 150	PARTICLES	CONC.	0	UG/M3	RUN/T	53.31
AERODYNAMIC WEIGHT DISTRIBUTION											
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	WT %			
SI-.....	0	1	5	19	65	11	0	44.9			
CA-.....	0	7	12	28	53	0	0	4.5			
TI-.....	0	0	0	0	0	100	0	1.2			
FE-.....	1	0	0	12	57	29	0	2.5			
CENOSPHERE.	0	19	24	27	30	0	0	0.7			
R-FE-.....	0	0	4	0	96	0	0	1.2			
FE-CA-.....	0	15	0	0	85	0	0	0.3			
MG-CA-.....	0	0	19	0	81	0	0	2.0			
MIX-CLAY...	1	2	12	17	38	31	0	4.0			
CLAY-S-.....	0	0	0	0	100	0	0	0.6			
CA-SI-.....	0	1	0	22	44	34	0	3.3			
SI-CA-FE-MG	4	6	55	0	35	0	0	0.5			
CARBON-.....	0	3	12	18	62	5	0	24.5			
SI-K -.....	0	2	0	0	22	76	0	1.1			
ZN-P -.....	0	0	0	0	0	100	0	0.5			
AL-SI-.....	0	0	11	24	65	0	0	1.5			
SI-AL-.....	1	0	0	18	22	59	0	1.1			
SI-FE-.....	1	3	14	14	20	49	0	2.6			
ZN-FE-.....	0	0	0	0	100	0	0	0.4			
V-TI-.....	0	0	0	0	100	0	0	0.7			
SI-S -.....	0	0	0	0	100	0	0	0.2			
S-FE-.....	0	0	0	0	100	0	0	0.2			
FE-SI-.....	2	0	0	0	100	0	0	0.6			
MISC-.....	5	9	41	78	0	0	0	0.7			
TOTAL-.....	0	2	8	18	60	13	0	100.0			

TABLE A37

SAMPLE TRC #8 1M 6/14/94		FILE 107 - 112	PARTICLES	CONC.	UG/M3	RUN/T	50.96
NUMBER 1861	DISK 346						
TYPE		0.2-2.5	2.5-5.0	5.0-10.	AERODYNAMIC WEIGHT DISTRIBUTION		
					10.-15..	15.-30.	30.-50.
							50.-80.
							WT %
SI-.....	2	10	29	39	20	0	4.2
CA-.....	6	13	17	20	38	7	7.3
FE-.....	15	0	16	0	69	0	0.9
CENOSPHERE.	0	16	22	40	23	0	5.3
R-FE-.....	0	0	100	0	0	0	0.2
CA-S-.....	0	0	0	55	45	0	0.4
FE-CA-.....	5	0	6	22	66	0	1.6
MG-CA-.....	5	19	15	8	53	0	1.7
MIX-CLAY...	2	9	21	23	44	0	19.4
CLAY-S-.....	0	7	9	10	74	0	1.2
CA-SI-.....	7	14	17	28	34	0	3.1
SI-CA-AL...	2	0	13	10	75	0	1.3
SI-CA-FE-MG	5	12	12	38	33	0	2.1
CARBON.....	3	7	16	27	42	5	14.1
SI-CA-.....	3	2	20	30	45	0	8.5
SI-CL-.....	7	0	33	0	60	0	0.4
SI-AL-.....	3	0	16	17	40	14	7.4
AL-SI-.....	2	12	27	16	37	5	6.4
SI-FE-.....	1	1	18	0	72	8	6.7
SI-TI-.....	0	0	9	0	65	26	3.5
SI-K-.....	0	0	16	46	38	0	1.4
SI-MN-.....	6	0	0	0	94	0	0.3
FE-SI-.....	0	0	0	0	39	61	1.1
SI-S-.....	0	0	0	0	100	0	0.8
MISC.....	28	8	64	0	0	0	2.8
TOTAL.....	3	8	19	22	44	4	100.0

TABLE A38

SAMPLE TRC #8 5M 6/14/84

NUMBER	1862	DISK	346	FILE 113 - 119	PARTICLES	CONC.	Ø	UG/M3	RUN/T	68.25
--------	------	------	-----	----------------	-----------	-------	---	-------	-------	-------

TYPE	AERODYNAMIC WEIGHT DISTRIBUTION							WT %
	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.	
SI -.....	2	8	27	27	29	7	0	5.9
S -.....	0	0	0	0	100	0	0	0.3
CA -.....	7	13	27	23	25	5	0	7.0
FE -.....	5	0	10	0	55	30	0	0.9
CENOSPHERE.	2	8	21	24	36	10	0	5.4
R-FE.....	0	62	38	0	0	0	0	0.2
FE-CA.....	4	8	0	0	51	37	0	0.9
MG-CA.....	2	8	40	32	18	0	0	2.3
MIX-CLAY...	4	9	20	28	39	0	0	20.5
CLAY-S.....	0	4	0	17	79	0	0	1.0
CA-SI.....	3	18	18	11	36	13	0	4.1
SI-CA-AL...	4	17	16	31	31	0	0	1.8
SI-CA-FE-MG	7	18	11	7	57	0	0	1.3
UNKNOWN....	30	7	62	0	0	0	0	0.4
CARBON.....	2	5	13	28	45	7	0	20.1
SI-AL.....	2	10	14	22	37	15	0	7.5
SI-CA.....	2	12	16	0	58	10	0	5.9
AL-SI.....	2	6	25	16	37	15	0	5.6
SI-FE.....	4	12	25	0	60	0	0	4.5
SI-K -.....	1	0	16	45	38	0	0	1.6
AL-CA.....	0	0	0	0	100	0	0	0.2
SI-V -.....	1	0	26	0	71	0	0	0.4
SI-TI.....	0	5	26	0	68	0	0	1.0
SI-S -.....	0	0	0	0	0	100	0	0.2
FE-MN.....	0	0	0	0	100	0	0	0.2
MISC.....	4	6	24	0	66	0	0	0.8
TOTAL.....	3	8	19	21	42	6	0	100.0

TABLE A39

SAMPLE TRC #8 9M 6/14/84							
NUMBER	1863	DISK	346	FILE	120 - 125	PARTICLES	CONC.
							0
							UG/M3
							RUN/T
							54.93
AERODYNAMIC WEIGHT DISTRIBUTION							
WT %							
TYPE	0.2-2.5	2.5-5.0	5.0-10.	10.-15.	15.-30.	30.-50.	50.-80.
SI-.....	2	3	29	52	13	0	0
S-.....	1	0	0	0	99	0	0
CA-.....	10	11	29	34	15	0	0
TI-.....	0	0	14	0	86	0	0
FE-.....	4	0	15	23	58	0	0
CENOSPHERE.	2	36	62	0	0	0	0
CA-S-.....	3	0	0	0	0	97	0
FE-CA-.....	0	23	6	0	63	0	0
MG-CA-.....	4	7	6	23	60	0	0
MIX-CLAY...	2	11	23	13	43	0	0
CLAY-S-.....	0	0	0	16	22	8	0
CA-SI-.....	2	14	8	30	44	61	0
SI-CA-AL...	0	0	0	30	39	0	0
SI-CA-FE-MG	0	10	31	31	45	0	0
CARBON.....	0	1	4	18	62	15	0
SI-FE-.....	0	1	2	16	5	33	43
SI-CA-.....	1	9	5	10	75	0	0
SI-AL-.....	1	23	21	8	47	0	0
SI-K-.....	6	7	10	0	76	0	0
AL-SI-.....	2	12	43	13	31	0	0
CA-CL-.....	0	0	0	0	0	100	0
SI-TI-.....	1	0	0	0	99	0	0
BR-CA-.....	0	0	0	0	100	0	0
MISC.....	7	32	61	0	0	0	0
TOTAL.....	1	4	9	17	51	15	2
							100.0

CCSEM AVERAGE COMPOSITION TABLES

TABLE A40

SAMPLE TRC #2 1M 6/11/84

NUMBER 1868 DISK 346 FILE 151 - 156 PARTICLES CONC. 0 UG/M3 RUN/T 49.67

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION										CA	TI	FE	MN	LN	CR	PB	V	CU	P	BR	NI	EI
						SI	S	CL	K																			
SI-.....	5.7	18	0	0	0	91	0	0	2	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	32			
CA-.....	4.8	20	0	0	2	7	1	0	0	84	0	0	0	0	0	0	0	0	0	0	0	1	0	0	32			
TI-.....	0.3	28	0	0	4	20	0	0	4	0	0	63	0	0	0	0	0	0	0	0	0	0	0	0	47			
FE-.....	1.2	20	0	1	1	6	2	0	1	4	0	0	83	1	0	0	1	0	0	0	0	0	0	0	37			
CENOSPHERE.	6.1	15	0	0	31	54	2	0	5	3	0	1	2	0	0	0	0	0	2	0	0	0	0	0	29			
CA-S-.....	0.2	22	0	0	0	0	36	0	0	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34			
FE-CA-.....	0.4	13	0	2	3	14	2	0	0	47	0	0	0	0	0	0	1	0	0	0	0	0	0	0	31			
MG-CA-.....	0.6	25	0	30	0	3	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33			
MIX-CLAY...	27.3	18	0	0	36	49	1	0	7	2	0	2	3	0	0	0	0	0	0	0	0	0	0	0	33			
CLAY-S-.....	0.7	7	0	0	28	53	13	0	4	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	27			
CA-SI-.....	1.7	21	0	4	2	29	1	0	0	56	0	2	4	0	0	0	0	0	0	0	0	0	0	0	34			
SI-CA-AL...	0.6	16	0	0	25	42	1	0	1	27	0	0	3	0	0	0	0	0	1	0	0	0	0	0	32			
SI-CA-FE-MG	0.9	12	0	0	5	32	0	1	2	30	1	0	25	2	0	0	1	0	0	0	0	0	0	1	31			
CARBON.....	18.9	2	0	0	13	27	14	4	4	10	5	5	4	0	0	0	4	5	0	0	0	4	0	0	22			
SI-AL-.....	7.6	16	0	0	29	62	1	0	2	1	1	1	1	0	0	0	0	1	1	0	0	2	0	0	28			
AL-SI-.....	7.2	17	0	0	43	43	1	0	2	2	2	2	4	0	0	0	1	0	0	1	0	0	0	0	30			
SI-V-.....	0.4	7	0	0	17	71	0	0	1	0	0	0	0	0	0	0	0	10	1	0	0	0	0	0	25			
SI-FE-.....	5.9	14	0	0	21	48	0	0	4	5	1	18	4	0	0	0	1	2	0	0	0	0	0	0	31			
SI-TI-.....	2.9	11	0	0	30	50	0	0	2	0	0	12	4	0	0	0	0	1	1	0	0	0	0	0	29			
SI-CA-.....	1.5	16	0	0	29	51	1	0	3	10	1	2	3	0	0	0	0	0	0	0	1	0	0	0	28			
SI-K-.....	3.4	16	0	0	8	74	0	0	10	2	2	0	0	0	0	0	0	0	1	0	0	0	0	0	33			
ZN-S-.....	0.4	20	0	0	0	0	16	8	0	10	0	0	0	0	0	66	0	0	0	0	0	0	0	0	58			
K-AL-.....	0.4	8	0	0	20	0	0	8	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38			
ZN-SI-.....	0.3	12	0	0	0	16	0	0	0	13	0	0	19	0	52	0	0	0	0	0	0	0	0	0	36			
TOTAL.....			0.0	0.5	25.6	49.0	1.1	2.3	4.5	9.7	1.7	5.4	0.3	0.5	0.3	0.0	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0			

TABLE A41

SAMPLE TRC #2 5M 6/11/E4

NUMBER 1869 DISK 347 FILE 101 - 107 PARTICLES CONC. 0 UG/M3 RUN/T 58.25

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION					CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	FI
						SI	S	CL	K														
SI-.....	6.3	21	0	0	1	91	0	0	2	2	1	1	0	0	0	1	0	2	0	0	0	0	33
CA-.....	5.7	21	0	0	2	8	1	0	1	83	0	0	1	0	0	0	0	0	0	0	0	0	33
TI-.....	0.3	18	0	0	7	21	0	0	1	6	47	7	0	0	0	0	0	0	0	2	0	0	34
FE-.....	2.2	24	0	0	2	6	1	0	0	4	1	78	2	0	3	0	0	0	0	0	0	2	45
CENOSPHERE.	6.8	17	0	0	33	49	2	1	4	2	2	3	0	0	2	0	0	1	0	0	0	0	32
CA-S-.....	0.4	20	0	0	3	9	31	0	0	54	0	2	0	0	0	0	2	2	0	0	0	0	35
FE-CA-.....	0.3	13	0	14	0	10	0	0	0	44	0	27	4	0	0	0	1	0	0	0	0	0	36
MG-CA-.....	0.6	18	0	30	1	3	0	0	0	65	0	0	0	0	0	0	0	0	0	1	0	0	30
MIX-CLAY...	28.6	19	0	0	36	51	0	0	6	2	2	2	0	0	0	0	1	0	0	0	0	0	34
CLAY-S-.....	3.6	7	0	0	29	44	13	1	4	5	0	1	1	0	0	0	1	0	0	0	0	0	29
CA-SI-.....	1.1	27	0	5	4	27	1	1	0	59	0	0	1	0	0	0	1	0	0	0	0	0	36
SI-CA-AL...	0.8	14	0	0	23	40	1	1	2	25	2	2	0	0	0	0	1	0	0	0	0	0	30
SI-CA-FE-MG	0.5	15	0	5	2	31	3	1	0	33	0	16	3	0	0	4	0	1	0	0	0	0	28
CARBON.....	9.7	2	0	0	11	30	12	4	6	9	3	3	3	3	4	3	3	3	0	1	3	0	22
SI-AL-.....	7.2	14	0	0	35	59	0	0	2	1	2	2	0	0	0	0	0	0	0	0	0	0	30
SI-CA-.....	3.6	15	0	0	26	55	0	0	4	10	1	4	0	0	0	0	0	0	0	0	0	0	31
SI-FE-.....	5.5	16	0	0	22	51	0	0	5	3	2	15	1	0	0	0	1	0	0	0	0	0	31
SI-TI-.....	3.2	19	0	0	26	47	1	1	2	2	2	4	0	0	0	1	0	2	0	0	0	0	31
AL-SI-.....	8.2	19	0	0	39	41	1	0	3	3	3	6	0	0	0	2	2	2	0	0	0	0	33
SI-K-.....	2.5	18	0	0	9	74	0	0	11	2	1	2	0	0	0	0	1	0	0	0	0	0	35
SI-CR-.....	0.3	8	0	0	30	59	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	28
S-FE-.....	0.3	7	0	0	11	20	35	0	0	0	0	34	0	0	0	0	0	0	0	0	0	0	31
FE-SI-.....	1.0	17	0	1	10	27	0	0	2	2	1	56	0	0	2	0	0	0	0	0	0	0	37
FE-MN-.....	0.3	30	0	0	0	0	0	0	0	0	0	81	19	0	0	0	0	0	0	0	0	0	56
SI-S-.....	0.6	9	0	0	17	43	16	0	4	8	6	5	0	0	0	0	0	0	0	0	0	0	30
TOTAL.....			0.0	0.4	25.8	48.0	1.4	0.3	3.8	9.7	2.3	6.4	0.3	0.0	0.5	0.0	0.9	0.0	0.1	0.0	0.0	0.1	

TABLE A42

SAMPLE TRC #4 1M 6/12/84

NUMBER 1857 DISK 345 FILE 137 - 142 PARTICLES CONC. 0 UG/M3 RUN/T 55.30

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION					CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	EI
SI-.....	5.5	19	0	0	1	90	1	1	3	2	81	1	0	1	0	1	0	0	0	0	0	0	33
CA-.....	6.1	19	0	0	2	9	2	0	0	0	0	0	4	1	0	0	0	0	0	1	0	0	33
TI-.....	0.4	21	0	0	10	26	1	0	5	1	2	45	4	2	0	0	0	6	0	0	0	0	36
FE-.....	2.9	19	0	0	1	6	1	0	1	5	4	0	85	1	0	0	0	2	0	1	0	0	32
CENOSPHERE	5.4	16	0	0	33	52	1	0	5	46	1	1	4	0	0	0	0	1	0	0	0	0	33
FE-CA-.....	1.5	25	0	0	1	5	2	0	0	72	0	2	38	0	0	0	0	1	0	0	0	0	45
MG-CA-.....	0.8	19	0	21	0	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	32
MIX-CLAY-...	22.2	19	0	0	36	48	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	34
CLAY-S-.....	1.1	9	0	0	29	49	13	0	2	6	0	0	2	0	0	0	0	0	0	0	0	1	31
CA-SI-.....	3.3	20	0	2	4	28	12	0	1	58	0	0	2	0	0	0	0	0	0	1	0	0	33
SI-CA-AL-...	0.8	13	0	1	14	27	16	0	2	29	0	4	2	1	0	0	0	1	0	1	0	0	26
SI-CA-FE-MG	1.3	12	0	1	3	26	1	1	10	31	0	1	22	2	0	0	0	4	0	1	0	0	27
CARBON-.....	16.3	2	0	0	12	29	15	5	3	9	0	3	6	1	1	2	0	6	0	1	2	2	23
AL-SI-.....	8.0	16	0	0	40	41	0	0	2	3	0	3	8	1	0	0	0	1	0	0	0	0	31
SI-CA-.....	1.8	15	0	0	28	49	0	0	3	12	0	1	4	0	0	0	0	2	0	0	0	0	30
SI-AL-.....	7.4	14	0	0	31	59	1	0	2	2	0	2	2	0	0	0	0	1	0	0	0	0	29
SI-K-.....	2.7	15	0	0	8	74	0	0	9	4	7	0	4	0	0	0	0	0	0	0	0	0	31
SI-S-.....	1.5	9	0	0	8	61	12	6	4	0	0	0	2	0	0	0	0	0	0	0	0	0	30
SI-FE-.....	6.4	15	0	0	23	53	1	0	3	3	0	2	15	0	0	0	0	0	0	0	0	0	32
SI-TI-.....	2.4	19	0	0	31	50	0	0	2	2	0	10	2	0	0	0	0	0	0	0	0	0	33
FE-SI-.....	0.8	15	0	2	5	24	0	0	2	6	0	4	51	3	1	1	0	2	0	0	0	0	29
SI-V-.....	0.3	7	0	0	33	56	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	25
FE-AL-.....	0.4	22	0	0	25	22	0	0	2	5	0	0	44	0	0	0	0	3	0	0	0	0	40

TOTAL.....

0.0 0.4 23.5 45.5 1.5 0.3 3.6 12.9 2.0 8.4 0.5 0.0 0.4 0.0 0.2 0.0 0.0 0.0 0.7 0.0 0.2 0.0 0.0 0.2

TABLE A43

SAMPLE TRC #4 5M 6/12/84

NUMBER 1858 DISK 345 FILE 143 - 148 PARTICLES CONC. 0 UG/M3 RUN/T 49.81

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION					CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	EI
						SI	S	CL	K														
AL-.....	1.4	15	0	0	89	5	0	0	0	0	0	2	0	0	0	0	0	3	0	0	0	0	29
SI-.....	4.6	20	0	0	1	91	1	0	3	1	1	1	1	0	0	0	0	1	0	0	0	0	34
CA-.....	5.6	20	0	0	2	7	2	0	0	82	4	0	83	0	0	1	0	0	0	0	0	0	32
FE-.....	0.8	22	0	0	2	7	2	0	3	2	2	3	5	1	0	0	0	0	0	1	0	0	36
CENOSPHERE	6.1	17	0	0	33	52	2	0	3	50	0	0	0	0	0	0	0	0	0	0	0	0	32
CA-S-.....	0.3	11	0	0	8	8	34	0	0	37	0	0	44	11	0	0	0	0	0	0	0	0	28
FE-CA-.....	0.3	24	0	3	0	6	0	0	3	65	0	0	0	0	0	0	0	0	0	1	0	0	50
MG-CA-.....	3.4	20	0	28	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	33
MIX-CLAY...	24.0	18	0	0	37	51	1	0	5	1	2	0	3	0	0	0	0	0	0	0	0	0	29
CLAY-S-.....	0.8	6	0	0	32	50	10	3	4	2	0	0	0	0	0	0	0	0	0	0	0	0	31
CA-SI-.....	3.5	18	0	3	5	26	2	0	1	56	0	0	3	1	0	0	1	0	0	0	0	0	35
SI-CA-FE-MG	2.1	18	0	2	3	32	2	0	2	27	0	3	29	0	0	0	0	0	0	1	0	0	24
CARBON-.....	15.9	1	0	0	12	29	14	5	2	12	2	4	3	1	0	4	3	4	0	1	4	1	27
AL-SI-.....	4.5	16	0	0	43	44	1	0	2	2	3	2	3	0	0	1	0	0	0	1	0	1	32
SI-FE-.....	7.4	16	0	0	25	46	0	0	4	3	1	1	16	0	0	0	2	0	0	0	0	0	30
SI-AL-.....	8.4	13	0	0	34	57	0	0	2	1	1	1	2	0	0	0	1	0	0	0	0	0	29
SI-CL-.....	0.2	7	0	0	37	46	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	33
SI-K-.....	2.8	18	0	0	11	74	0	0	9	2	2	1	2	0	0	0	0	0	0	0	0	0	28
SI-TI-.....	1.1	12	0	0	27	51	1	1	3	1	13	0	0	0	0	0	0	2	0	0	0	1	28
SI-CA-.....	3.2	15	0	0	25	50	0	2	3	10	2	5	6	0	0	0	0	2	0	0	0	0	32
FE-S-.....	0.2	15	0	0	4	10	27	0	0	0	0	1	54	0	0	0	0	0	0	0	0	0	34
FE-SI-.....	0.5	16	0	0	12	30	0	0	2	0	0	1	54	0	0	0	0	0	0	0	0	0	28
SI-V-.....	0.3	6	0	0	28	55	0	0	2	0	0	2	0	0	0	0	0	12	0	0	0	0	31
SI-S-.....	0.7	11	0	0	28	55	8	0	2	0	0	0	7	0	0	0	0	0	0	0	0	0	42
P-S-.....	1.3	11	0	0	0	0	30	0	13	0	0	0	15	0	0	0	0	0	0	42	0	0	
TOTAL.....			0.0	1.3	25.5	44.5	1.6	0.3	3.5	13.0	1.3	6.5	0.3	0.0	0.3	0.0	0.8	0.0	0.9	0.0	0.0	0.0	0.1

TABLE A44

SAMPLE TRC #4 9M 6/12/84

NUMBER 1859 DISK 345 FILE 149 - 155 PARTICLES CONC.

0 UG/M3 RUN/T 61.26

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION										CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	FI
						SI	S	CL	K																			
SI-.....	6.8	17	0	0	1	89	1	0	0	2	2	0	2	1	1	1	0	0	0	1	0	0	0	29				
CA-.....	3.5	21	0	0	1	8	2	0	0	0	83	0	3	2	0	0	0	0	1	0	0	0	0	35				
FE-.....	10.2	14	0	1	1	9	0	1	0	0	4	0	81	1	0	0	0	0	0	0	0	0	0	31				
CU-.....	0.7	12	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	0	0	0	55				
CENOSPHERE.	2.9	16	0	0	34	52	0	0	5	3	0	1	5	0	0	0	0	0	0	0	0	0	0	33				
FE-CA.....	0.3	25	0	0	0	6	0	0	0	0	52	0	41	1	0	0	0	0	0	0	0	0	0	37				
MG-CA.....	0.5	20	0	26	0	2	0	0	0	0	65	1	2	0	0	0	0	0	2	0	0	0	0	32				
MIX-CLAY...	20.7	18	0	0	34	50	1	0	7	2	2	2	4	0	0	0	0	0	0	0	0	0	1	35				
CLAY-S.....	1.2	6	0	0	26	48	11	0	0	2	4	1	5	0	0	0	0	0	2	0	0	0	0	28				
CA-SI.....	2.0	21	0	2	7	27	2	0	0	0	55	1	5	1	0	0	0	0	0	0	0	0	0	35				
SI-CA-AL...	2.8	12	0	0	19	40	4	2	2	1	31	1	2	1	0	0	0	0	0	0	0	0	0	29				
SI-CA-FE-MG	2.1	13	0	0	6	32	2	0	2	2	30	2	23	0	0	0	0	0	0	0	1	0	0	32				
CARBON.....	21.7	1	0	0	11	30	14	4	5	9	2	3	5	2	0	4	3	4	0	0	1	0	1	21				
SI-K.....	1.5	17	0	0	6	77	0	0	10	2	2	2	2	0	0	0	0	1	0	0	0	0	0	34				
AL-SI.....	2.9	15	0	0	43	45	1	0	0	2	2	2	3	0	0	0	0	1	0	0	1	0	0	31				
SI-TI.....	3.0	17	0	0	25	51	1	0	0	2	2	12	4	0	1	2	0	0	1	0	0	0	0	34				
SI-AL.....	5.3	14	0	0	32	61	1	0	0	2	1	2	2	0	0	0	0	0	0	0	0	0	0	31				
SI-CA.....	2.9	12	0	0	25	53	1	0	0	4	12	1	4	0	0	0	0	0	0	0	0	0	0	31				
SI-FE.....	6.6	16	0	0	22	49	0	1	5	4	4	2	14	0	0	1	0	1	0	0	0	0	1	32				
SI-S.....	0.8	9	0	0	15	55	14	0	3	2	2	1	5	0	0	0	0	2	0	2	0	0	0	26				
FE-SI.....	0.5	17	0	0	4	27	0	0	2	0	0	1	56	2	0	0	0	0	0	0	0	0	0	31				
TOTAL.....			2.0	0.5	19.9	44.5	1.4	0.3	3.4	10.5	1.5	15.4	0.4	0.1	0.3	0.0	0.5	0.9	0.1	2.0	0.1	2.0	0.4					

TABLE A45

SAMPLE TRC #4 STD H-V 6/12

NUMBER 1960 DISK 346 FILE 101 - 106 PARTICLES CONC. 0 UG/M3 RUN/T 57.53

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION										CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	EI
						SI	S	CL	K																			
AL.....	0.3	17	0	0	98	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	31			
SI.....	11.0	20	0	0	0	93	0	0	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	31			
S.....	0.2	5	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25				
CA.....	3.1	19	0	0	2	8	2	0	0	0	85	0	3	0	0	0	0	0	0	0	0	0	0	0	33			
FE.....	5.5	20	0	0	2	7	1	0	0	0	5	0	83	0	0	1	0	0	0	0	0	0	0	0	46			
ZN.....	0.4	6	0	0	0	12	10	11	0	0	0	0	0	0	67	0	0	0	0	0	0	0	0	0	28			
CENOSPHERE.	2.0	15	0	0	28	50	12	0	6	4	4	0	6	1	0	0	0	0	0	0	0	0	0	0	30			
R-FE.....	0.6	25	0	0	1	6	1	0	1	4	4	0	81	4	1	1	0	0	0	0	0	0	0	0	32			
CA-S.....	0.7	12	0	0	4	11	30	0	0	53	0	0	1	0	0	0	0	0	0	0	0	0	0	0	32			
FE-CA.....	0.5	20	0	0	1	10	0	0	0	51	1	1	32	3	0	1	0	0	0	0	0	0	0	0	36			
MG-CA.....	0.7	22	0	0	0	2	0	0	0	66	0	0	0	0	0	1	0	0	0	0	0	0	0	0	33			
MIX-CLAY...	11.7	18	0	0	33	50	0	0	9	2	2	2	3	0	0	0	0	0	0	0	0	0	0	0	34			
CA-SI.....	5.7	19	0	0	3	4	28	1	1	56	1	1	4	0	0	0	0	0	0	0	0	0	0	0	33			
SI-CA-AL...	0.3	12	0	0	20	44	1	0	3	21	26	1	7	0	2	0	0	0	0	0	2	0	0	0	30			
SI-CA-FE-MG	5.0	11	0	0	1	42	3	1	1	10	4	3	14	3	2	1	0	0	0	0	2	1	0	0	27			
CARBON.....	37.1	1	0	0	9	29	18	4	4	4	10	3	1	2	0	4	5	6	0	0	1	0	0	0	23			
AL-SI.....	1.4	18	0	0	43	49	0	0	1	4	4	0	2	1	0	0	0	0	0	0	0	0	0	0	30			
SI-TI.....	1.4	23	0	0	16	64	0	0	3	2	2	12	3	0	0	0	0	2	0	0	0	0	0	0	37			
SI-AL.....	3.6	14	0	0	32	58	0	0	2	2	2	2	2	0	0	0	0	2	0	0	0	0	0	0	30			
SI-FE.....	4.3	19	0	0	17	54	1	0	3	5	5	2	16	0	0	0	0	0	0	0	0	0	0	0	37			
SI-S.....	0.9	6	0	0	4	65	16	1	3	8	0	1	1	0	0	0	0	0	0	0	0	0	0	0	27			
SI-CA.....	0.4	24	0	0	6	52	0	0	0	24	0	0	1	0	0	0	0	0	0	0	0	0	0	0	42			
AL-CL.....	0.8	22	0	0	59	0	0	31	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	36			
FE-SI.....	1.0	13	0	0	1	3	26	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31			
SI-K.....	0.5	17	0	0	9	59	0	0	21	6	6	1	4	0	0	0	0	0	0	0	0	0	0	0	35			
AL-CA.....	0.3	34	0	0	71	10	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42			
TOTAL.....			0.0	0.8	14.2	46.2	1.9	0.6	2.9	15.6	1.3	13.4	0.6	0.8	0.3	0.0	0.3	0.8	0.0	0.3	0.2	0.1						

TABLE A46

SAMPLE TRC #7 1M 6/13/84

NUMBER 1864 DISK 346

FILE 126 - 131 PARTICLES

CONC.

0 UG/M3

RUN/T

42.59

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION										CA	TI	FE	MN	ZN	CR	PR	V	CU	P	BR	NI	EI
						SI	S	CL	K	SI	S	CL	K	SI	S													
SI-.....	4.5	18	0	0	2	90	0	0	3	1	80	1	2	0	0	0	0	0	0	1	0	0	0	0	31			
CA-.....	7.1	21	0	0	2	8	2	1	1	3	0	1	4	1	0	0	0	0	0	0	0	0	0	0	32			
FE-.....	3.2	19	0	0	3	6	0	0	5	4	0	2	83	2	1	0	0	0	0	0	0	0	0	0	42			
CENOSPHERE	3.1	15	0	0	31	53	1	0	0	55	0	0	3	0	0	0	0	0	0	0	0	0	0	0	31			
FE-CA-.....	1.7	20	0	0	1	9	1	0	0	65	0	0	28	2	0	1	0	0	0	0	0	0	0	0	39			
MG-CA-.....	3.7	22	0	0	27	3	0	0	0	2	0	1	1	1	0	0	0	0	1	0	0	0	0	0	33			
MIX-CLAY...	27.2	17	0	0	37	48	0	0	8	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	33			
CLAY-S-.....	2.2	8	0	0	30	47	11	3	4	1	0	2	2	0	0	0	0	0	0	0	1	0	0	0	28			
CA-SI-.....	2.5	20	0	0	3	27	2	0	0	58	0	1	2	2	0	0	0	0	0	0	1	0	0	0	34			
SI-CA-AL...	0.4	16	0	0	24	36	1	0	3	31	0	0	1	1	0	0	0	0	0	0	2	0	0	0	34			
SI-CA-FE-MG	2.0	16	0	0	7	40	1	0	1	33	0	2	14	2	0	0	0	0	0	0	2	0	0	0	33			
CARBON-.....	16.4	1	0	0	16	31	11	1	6	8	0	6	3	1	2	2	1	4	6	0	0	0	1	0	25			
SI-AL-.....	7.6	14	0	0	32	60	1	0	2	2	0	1	1	0	0	0	0	0	0	0	1	0	0	0	30			
SI-FE-.....	4.9	14	0	0	25	50	1	0	3	4	0	2	14	0	0	0	0	0	0	0	0	0	0	0	31			
SI-TI-.....	1.2	16	0	0	28	53	0	0	2	0	0	12	4	0	0	1	0	0	0	0	0	0	0	0	34			
AL-SI-.....	5.0	15	0	0	43	43	2	0	2	2	0	2	5	0	0	0	0	0	2	0	0	0	0	0	30			
SI-CA-.....	2.9	15	0	0	1	25	0	0	4	12	0	3	4	0	0	0	0	0	1	0	0	0	0	0	32			
SI-MN-.....	0.2	8	0	0	38	52	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	26			
SI-S-.....	1.2	6	0	0	25	38	16	0	0	8	0	0	0	0	0	0	0	0	4	0	0	0	0	0	29			
SI-K-.....	0.7	22	0	0	3	84	0	0	10	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	37			
FE-SI-.....	0.9	19	0	0	8	35	0	0	0	2	0	0	52	0	0	1	0	0	0	0	0	0	1	0	38			
CA-P-.....	0.5	16	0	0	4	0	0	0	0	76	0	0	0	0	0	0	0	0	0	0	28	0	0	0	35			
TOTAL.....			0.0	1.6	23.8	42.4	1.4	0.4	3.7	16.4	1.3	7.6	0.4	0.0	0.0	0.1	0.0	0.7	0.0	0.2	0.0	0.0	0.0	0.0				

TABLE A47

SAMPLE TRC #7 SM 6/13/84

NUMBER 1865 DISK 346

FILE 132 - 138 PARTICLES

CONC.

0 UG/M3

RUN/T

62.95

TYPE	WT%	PC	NA	MG	AL	SI	S	CL	K	CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	EI
AL-.....	1.4	19	0	0	88	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	31
SI-.....	5.5	23	0	0	2	94	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	32
CA-.....	4.2	19	0	0	2	9	2	0	0	82	0	0	0	0	0	0	0	0	0	0	0	36
FE-.....	0.7	21	0	0	2	5	0	0	1	5	0	86	1	0	1	0	0	0	0	0	0	33
CENOSPHERE	4.8	15	0	0	32	52	0	0	5	3	3	4	0	0	0	0	0	0	0	0	0	40
CA-S.....	0.3	10	0	0	2	1	39	0	0	55	0	4	0	0	0	0	2	0	0	0	0	32
FE-CA.....	1.4	25	0	0	2	4	1	0	1	46	1	39	0	0	0	0	0	0	0	0	0	29
MG-CA.....	2.1	22	0	26	2	4	0	0	0	63	0	2	0	0	0	0	1	0	2	0	0	47
MIX-CLAY...	26.3	20	0	0	34	51	0	0	7	2	1	2	0	0	0	0	1	0	0	0	0	34
CLAY-S.....	2.2	8	0	0	29	42	13	3	2	2	2	2	0	0	4	0	1	0	0	0	0	33
CA-SI.....	4.6	20	0	5	7	25	4	0	0	52	0	3	2	0	0	0	2	0	0	0	0	28
SI-CA-AL...	0.7	8	0	0	27	39	4	0	2	25	0	1	2	0	1	0	1	0	0	0	0	35
SI-CA-FE-MG	1.2	14	0	2	8	33	2	0	5	26	1	17	2	0	0	0	1	0	0	0	0	26
UNKNOWN....	0.3	15	0	2	3	19	1	2	0	39	0	15	7	0	4	0	0	0	1	0	3	31
CARBON.....	16.3	1	0	0	13	25	17	3	0	7	0	15	5	0	1	0	0	0	8	0	0	22
SI-FE.....	7.3	18	0	0	13	47	2	0	3	4	2	15	0	0	1	4	5	0	2	4	1	32
AL-SI.....	3.9	17	0	0	24	43	1	0	2	3	3	3	0	0	0	0	1	0	0	0	0	34
SI-AL.....	7.5	14	0	0	42	58	0	0	2	1	0	2	0	0	0	0	2	0	0	0	0	32
SI-V.....	0.4	11	0	0	34	50	0	0	2	0	2	2	1	0	0	0	0	0	0	0	0	31
SI-TI.....	1.1	12	0	0	35	50	1	1	2	1	0	1	0	0	0	0	9	0	0	0	0	26
SI-S.....	0.3	6	0	0	30	50	0	0	4	1	12	2	0	0	0	0	1	0	0	0	0	30
SI-CA.....	5.8	17	0	0	26	48	11	0	1	1	6	4	0	0	0	0	6	0	0	0	0	31
SI-K.....	0.7	13	0	1	23	52	1	1	3	11	2	4	1	0	0	0	1	0	0	0	0	35
S-FE.....	0.4	24	0	0	10	77	0	0	9	1	1	1	1	0	0	0	0	0	0	0	0	31
FE-SI.....	0.4	16	0	0	7	8	39	0	0	2	0	43	0	0	0	0	0	0	0	0	0	31
FE-AL.....	0.2	13	0	0	11	30	2	0	4	6	0	44	2	0	0	0	0	0	0	0	0	35
TOTAL.....			0.0	1.1	25.4	45.9	1.8	0.2	3.8	12.7	1.2	5.7	0.5	0.0	0.4	0.0	0.8	0.0	0.3	0.0	0.0	0.1

TABLE A48

SAMPLE TRC #7 9M 6/13/84

NUMBER	1866	DISK	346
--------	------	------	-----

FILE 139 - 144 PARTICLES

CONC.

2 UC/M3

RUN/T

58.19

TYPE	WT%	AVERAGE COMPOSITION																			TOTAL.....
		PC	NA	MG	AL	SI	S	CL	K	CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	
SI.....	4.0	24	0	0	1	94	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0
S.....	0.2	5	0	0	17	26	40	0	0	0	0	17	0	0	0	0	0	0	1	0	0
CA.....	6.8	22	0	0	2	6	1	0	0	84	0	1	0	0	0	0	0	0	0	0	0
TI.....	2.9	17	0	0	13	13	0	0	0	0	63	0	0	0	0	0	0	0	0	0	0
FE.....	2.3	18	0	0	1	8	1	0	0	4	0	1	0	0	0	0	1	0	0	0	0
CENOSPHERE.	5.1	15	0	0	32	51	3	0	4	3	3	1	0	0	0	0	1	0	0	0	0
CA-S.....	0.3	24	0	0	3	4	31	0	0	60	2	0	0	0	0	0	0	0	0	0	0
FE-CA.....	0.5	24	0	0	0	4	0	0	0	49	0	0	0	0	0	0	0	0	0	0	0
MG-CA.....	1.3	23	0	0	0	3	0	0	0	69	0	0	0	0	0	0	0	0	0	0	0
MIX-CLAY...	23.1	17	0	0	33	51	0	0	7	2	1	0	0	0	0	0	0	0	0	0	0
CLAY-S.....	1.5	8	0	0	29	45	12	1	3	4	1	0	0	0	0	0	1	0	0	0	0
CA-SI.....	1.9	21	0	0	2	27	2	0	3	61	3	1	0	0	0	0	1	0	0	0	0
SI-CA-AL...	1.2	12	0	0	23	40	2	1	0	26	0	0	0	0	0	0	1	0	0	0	0
SI-CA-FE-MG	0.4	12	0	0	0	70	5	0	0	14	0	0	0	0	0	0	1	0	0	0	0
CARBON.....	21.5	1	0	0	9	24	9	5	5	8	10	1	0	0	0	0	0	0	3	4	0
SI-FE.....	6.7	17	0	0	19	51	0	0	5	4	3	2	0	6	0	0	0	0	0	0	0
AL-SI.....	2.3	15	0	0	42	41	2	1	4	2	1	1	0	0	0	0	1	0	2	0	0
SI-AL.....	6.6	14	0	0	33	58	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0
SI-K.....	1.9	15	0	0	8	76	0	0	10	2	0	0	0	0	0	0	1	0	0	0	0
FE-SI.....	1.4	18	0	0	3	24	1	0	1	6	2	1	0	0	0	0	0	0	0	0	0
SI-TI.....	1.9	13	0	0	29	50	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0
SI-S.....	3.1	8	0	0	23	64	11	0	0	0	12	0	0	0	0	0	2	0	0	0	0
SI-CA.....	1.9	15	0	0	23	53	1	0	2	13	0	1	0	0	0	0	0	0	0	0	0
CA-V.....	0.2	15	0	0	1	0	0	0	0	43	0	0	0	0	0	0	29	0	0	0	0

TABLE A49

SAMPLE TRC #7 BCK H-V 6/13

NUMBER	1867	DISK	346	FILE 145 - 150	PARTICLES	CONC.	0	UG/M3	RUN/T	53.31																			
											AVERAGE COMPOSITION																		
TYPE	WT%	PC	NA	MG	AL	SI	S	CL	K	CA	TI	FE	MN	ZN	CR	PR	V	CU	P	BR	NI	EL							
SI-.....	44.9	27	0	0	0	96	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	26							
CA-.....	4.5	20	0	0	2	5	1	0	0	87	0	3	1	0	0	0	0	0	1	0	0	36							
TI-.....	1.2	24	0	0	0	5	0	0	0	12	65	11	0	0	0	0	7	0	0	0	0	35							
FE-.....	2.5	20	0	0	1	3	0	0	0	3	0	90	0	0	0	0	2	0	0	0	0	39							
CENOSPHERE.	0.7	16	0	0	31	54	0	0	3	6	0	6	0	0	0	0	0	0	0	0	0	47							
R-FE-.....	1.2	23	0	0	0	2	0	0	0	1	0	97	0	0	0	0	0	0	0	0	0	32							
FE-CA-.....	0.3	44	0	0	2	6	1	0	0	52	0	39	1	0	0	0	0	0	0	0	0	66							
MG-CA-.....	2.0	25	0	24	0	4	0	0	0	71	0	1	0	0	0	0	0	0	0	0	0	39							
MIX-CLAY...	4.0	16	0	0	15	61	0	0	9	2	1	9	3	0	0	0	0	0	0	0	0	35							
CLAY-S-.....	0.6	11	0	0	20	46	18	0	3	8	1	4	2	0	0	0	0	0	0	0	0	30							
CA-SI-.....	3.3	19	0	3	3	29	2	0	1	55	2	4	0	0	0	0	1	0	0	0	0	35							
SI-CA-FE-MG	0.5	14	0	1	9	61	1	0	0	22	0	12	1	0	0	0	0	0	0	0	0	27							
CARBON-.....	24.5	2	0	2	4	71	2	0	5	8	2	9	1	1	0	0	5	0	1	0	0	22							
SI-K-.....	1.1	7	0	0	7	9	7	0	12	7	0	0	0	2	0	0	2	0	0	0	0	29							
ZN-P-.....	0.5	14	0	0	4	47	0	4	2	0	4	4	0	51	0	0	0	0	0	0	0	42							
AL-SI-.....	1.5	23	0	0	44	63	0	0	2	2	2	4	0	0	0	0	0	0	17	0	0	39							
SI-AL-.....	1.1	24	0	0	29	53	0	0	4	4	2	16	0	0	0	0	2	0	0	0	0	38							
SI-FE-.....	2.6	13	0	0	16	53	0	0	0	0	0	4	0	0	1	0	0	0	0	0	1	32							
ZN-FE-.....	0.4	15	0	0	0	0	0	0	0	14	0	17	0	69	5	0	0	0	0	0	0	52							
V-TI-.....	0.7	27	0	0	0	17	0	0	0	0	24	16	0	0	0	0	36	0	0	0	0	65							
SI-S-.....	0.2	5	0	0	15	25	24	0	0	14	0	22	0	0	0	0	0	0	0	0	3	50							
S-FE-.....	0.2	26	0	0	0	2	54	0	0	0	0	44	0	0	0	0	0	0	0	0	0	56							
FE-SI-.....	0.6	15	0	0	9	22	1	0	2	4	1	59	0	0	1	0	0	0	0	0	0	39							
TOTAL.....											0.0	0.9	3.6	69.1	0.6	0.1	1.2	11.7	1.8	8.4	0.5	0.7	0.1	0.0	0.7	0.0	0.4	0.0	0.1

TABLE A50

SAMPLE TRC #8 1M 6/14/84

NUMBER 1861 DISK 346 FILE 107 - 112 PARTICLES CONC. 0 UG/M3 RUN/T 50.96

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION					CA	TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	EI
						SI	S	CL	K														
SI-.....	4.2	17	0	0	0	92	0	0	2	1	1	1	0	0	0	1	0	1	0	0	0	0	32
CA-.....	7.3	20	0	1	3	8	1	1	0	79	0	0	2	0	0	0	0	1	0	0	0	0	32
FE-.....	0.8	20	0	0	1	6	1	0	1	4	0	0	85	0	0	1	0	0	0	0	1	0	36
CENOSPHERE.	5.3	16	0	0	33	49	3	0	3	4	0	2	3	0	0	1	0	1	0	0	0	0	34
R-Fe-.....	0.2	24	0	0	2	7	0	0	0	8	0	0	83	0	0	0	0	0	0	0	0	0	53
CA-S-.....	0.4	8	0	0	7	12	24	0	0	56	0	0	0	0	0	0	0	0	0	0	0	0	30
Fe-CA-.....	1.6	16	0	0	2	10	1	1	0	47	0	0	35	3	0	0	0	1	0	0	0	0	32
MG-CA-.....	1.7	22	0	0	2	4	1	0	0	65	0	0	2	0	0	0	0	0	0	0	0	0	32
MIX-CLAY...	19.4	17	0	0	30	52	0	0	6	3	2	4	2	1	0	0	0	0	0	0	0	0	33
CLAY-S-.....	1.2	6	0	0	30	48	13	0	1	3	0	0	2	0	0	1	0	2	0	0	0	0	29
CA-SI-.....	3.1	16	0	3	7	26	4	0	0	52	0	0	3	1	0	0	0	3	0	1	0	0	30
SI-CA-AL...	1.3	15	0	0	22	41	4	1	2	24	1	1	3	0	0	0	0	0	0	0	0	0	29
SI-CA-FE-MG	2.1	13	0	1	9	32	2	2	3	27	2	2	14	2	0	4	0	2	0	1	0	0	30
CARBON.....	14.1	2	0	0	14	30	13	6	2	11	3	4	4	0	0	6	5	2	0	0	4	0	25
SI-CA-.....	8.5	14	0	1	26	50	1	0	3	12	2	4	4	1	0	1	0	0	0	0	0	0	32
SI-CL-.....	0.4	11	0	0	31	49	0	7	3	6	3	0	0	0	0	0	0	0	0	0	0	0	25
SI-AL-.....	7.4	14	0	0	32	59	0	0	2	2	3	2	2	0	0	0	0	0	0	0	0	0	31
AL-SI-.....	6.4	17	0	0	43	45	0	0	2	5	2	3	3	0	0	0	0	0	0	0	0	0	32
SI-FE-.....	6.7	15	0	0	20	46	3	0	4	6	1	16	4	1	0	0	0	2	0	0	0	0	31
SI-TI-.....	3.5	15	0	0	26	47	0	1	4	1	12	4	2	0	0	0	0	3	0	0	0	0	28
SI-K-.....	1.4	12	0	0	10	76	0	0	8	4	0	2	1	0	0	0	0	0	0	0	0	0	30
SI-MN-.....	0.3	13	0	0	11	31	1	0	0	13	0	16	29	0	0	0	0	0	0	0	0	0	28
FE-SI-.....	1.1	15	0	0	2	19	4	0	2	6	0	62	0	0	0	0	0	0	0	5	0	0	33
SI-S-.....	0.6	10	0	0	16	49	13	5	6	8	0	0	0	2	0	0	0	1	0	0	0	0	32
TOTAL.....			0.0	0.9	22.3	44.8	1.5	0.3	3.1	15.8	2.1	6.9	0.8	0.2	0.2	0.4	0.0	0.9	0.0	0.2	0.2	0.0	0.0

TABLE A51

SAMPLE TRC #8 5M 6/14/84

NUMBER 1862 DISK 346 FILE 113 - 119 PARTICLES CONC. 0 UG/M3 RUN/T 68.25

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION										TI	FE	MN	ZN	CR	PB	V	CU	P	BR	NI	EI
						SI	S	CL	K	CA	TI	FE	MN	ZN	CR												
SI-.....	5.9	19	0	0	2	92	0	0	2	15	11	1	0	0	0	0	0	0	0	0	0	0	0	0	32		
S-.....	0.3	5	0	0	0	21	35	0	0	80	0	0	2	0	0	0	0	0	0	0	0	0	0	0	27		
CA-.....	7.0	19	0	0	2	8	1	0	0	4	0	5	0	0	0	0	0	0	1	0	0	0	0	0	32		
FE-.....	0.9	17	0	0	7	10	0	0	0	5	0	77	0	0	0	0	0	0	0	0	0	0	0	0	38		
CENOSPHERE.	5.4	16	0	0	32	50	2	0	5	5	1	4	0	0	0	0	0	0	0	0	0	0	0	0	32		
R-FE.....	0.2	20	0	0	4	3	0	0	0	53	0	93	0	0	0	0	0	0	0	0	0	0	0	0	47		
FE-CA.....	0.9	22	0	2	3	5	1	0	0	68	0	31	4	0	1	0	0	0	1	0	0	0	0	0	38		
MG-CA.....	2.3	23	0	26	1	3	1	0	0	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	33		
MIX-CLAY...	20.5	18	0	0	33	50	0	0	0	3	1	2	0	0	0	0	0	2	0	0	0	0	0	0	34		
CLAY-S.....	1.0	9	0	0	25	44	13	0	0	51	1	9	1	1	1	0	0	0	1	0	0	0	0	0	30		
CA-SI.....	4.1	17	0	3	7	26	2	0	2	22	2	3	1	0	0	0	0	1	0	0	0	0	0	0	31		
SI-CA-AL...	1.8	12	0	0	23	40	4	0	2	22	2	5	0	0	0	0	0	2	0	0	0	0	0	0	28		
SI-CA-FE-MG	1.3	13	0	1	9	27	0	0	1	33	2	24	2	0	0	0	0	0	0	0	0	0	0	0	30		
UNKNOWN.....	0.4	16	0	7	11	34	2	1	0	7	1	31	0	2	2	0	0	0	0	0	0	0	0	0	28		
CARBON.....	20.1	1	0	0	16	27	13	2	3	15	3	5	0	0	0	5	3	0	1	0	0	0	0	0	24		
SI-AL.....	7.5	15	0	0	33	57	1	1	2	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	32		
SI-CA.....	5.9	15	0	0	27	51	1	0	3	10	2	4	0	0	0	0	0	0	0	0	0	0	0	0	30		
AL-SI.....	5.6	17	0	0	43	46	0	0	1	3	3	3	1	0	0	0	0	0	0	0	0	0	0	0	31		
SI-FE.....	4.5	15	0	0	21	51	1	0	3	5	2	15	0	0	0	0	0	0	0	0	0	0	0	0	32		
SI-K.....	1.6	18	0	0	11	72	0	0	9	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	33		
AL-CA.....	0.2	18	0	0	61	0	5	0	0	34	0	2	0	0	0	0	0	0	0	0	0	0	0	0	32		
SI-V.....	0.4	6	0	0	28	48	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	37		
SI-TI.....	1.0	19	0	0	27	49	0	1	2	2	12	4	0	0	0	0	0	0	0	0	0	0	0	0	26		
SI-S.....	0.2	17	0	0	17	61	9	0	9	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	31		
FE-MN.....	0.2	27	0	0	2	8	0	0	0	18	0	50	22	0	0	0	0	0	0	0	0	0	0	0	34		
TOTAL.....			0.0	1.1	22.8	45.1	1.1	0.2	3.6	16.6	1.4	5.6	0.6	0.2	0.1	0.0	1.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	53		

TABLE A52

SAMPLE TRC #8 9M 6/14/84

NUMBER 1863 DISK 346 FILE 120 - 125 PARTICLES CONC. 0 UG/M3 RUN/T 54.93

TYPE	WT%	PC	NA	MG	AL	AVERAGE COMPOSITION				CA	TI	FE	MN	ZN	CR	PB	V	CU	P	PR	NI	EI
						SI	S	CL	K													
SI-.....	1.9	12	0	0	0	89	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
S-.....	0.5	5	0	12	9	25	40	0	0	8	0	7	0	0	0	0	0	0	0	0	0	0
CA-.....	2.0	18	0	0	2	8	1	0	0	83	1	3	2	0	0	0	0	0	0	0	0	0
TI-.....	1.2	14	0	0	10	23	0	0	2	2	51	6	0	0	0	0	6	0	0	0	0	0
FE-.....	1.0	25	0	0	2	4	0	0	0	1	0	88	0	0	3	0	0	0	0	0	1	0
CENOSPHERE.	0.4	12	0	0	37	51	0	0	4	3	0	2	0	0	2	0	0	0	0	0	0	0
CA-S-.....	2.1	7	0	0	6	5	39	4	0	44	0	0	0	0	0	0	2	0	0	0	0	0
FE-CA-.....	0.7	16	0	0	3	8	0	0	0	53	1	32	2	0	0	0	0	0	0	0	0	0
MG-CA-.....	1.4	20	0	27	0	3	0	0	0	69	0	1	0	0	0	0	0	0	0	0	0	0
MI-CLAY...	9.2	15	0	0	38	48	0	0	6	3	2	2	0	0	0	0	1	0	0	0	0	0
CLAY-S-.....	1.6	11	0	0	29	44	10	0	3	4	4	3	0	0	0	0	3	0	0	0	0	0
CA-SI-.....	2.6	17	0	5	4	27	1	0	0	55	0	4	2	1	0	0	1	0	1	0	0	0
SI-CA-AL...	0.7	10	0	0	21	38	4	2	4	25	0	2	0	2	1	0	1	0	0	0	0	0
SI-CA-FE-MG	0.8	10	0	0	6	28	2	0	0	34	1	27	0	0	3	0	0	0	0	0	0	0
CARBON.....	55.9	1	0	0	9	25	13	5	3	11	5	4	4	1	3	3	6	0	0	3	4	1
SI-FE-.....	6.3	16	0	4	16	46	0	0	4	10	0	20	1	0	0	0	2	0	0	0	0	0
SI-CA-.....	2.9	18	0	0	27	49	2	1	4	8	2	3	1	0	2	0	2	0	0	0	0	0
SI-AL-.....	2.8	14	0	0	34	55	0	0	2	2	2	2	0	0	1	0	2	0	0	0	0	0
SI-K-.....	1.0	17	0	0	6	76	1	1	9	1	2	3	0	0	0	0	2	0	0	0	0	0
AL-SI-.....	2.0	12	0	0	41	45	2	0	1	2	2	2	0	0	1	0	2	0	2	0	0	0
CA-CL-.....	1.3	7	0	0	14	0	14	18	12	34	0	0	0	0	0	0	7	0	0	0	0	0
SI-TI-.....	0.5	8	0	0	3	82	0	0	1	0	13	2	0	0	0	0	0	0	0	0	0	0
BR-CA-.....	0.5	7	0	0	0	12	0	13	0	20	0	0	0	0	0	18	0	0	11	25	0	0
TOTAL.....			0.0	1.9	19.9	39.0	3.5	1.1	3.3	17.3	2.5	7.9	0.5	0.3	0.5	0.2	1.4	0.1	0.3	0.3	0.0	0.0

APPENDIX G
SIEVE ANALYSIS DATA SHEETS

SIEVE ANALYSIS

Sample Date 6-11-84

Profiler Location 5- south

1. Weigh initial sample

Weight of sample and pan = 2025 grams

Weight of pan = 350 grams

Weight of sample = 1675 grams

2. Riffle sample down to 200 to 400 grams

Weight of sample and pan = 695 grams

Weight of pan = 350 grams

Weight of reduced sample = 335 grams

3. Place reduced sample into top sieve and run 15 minutes.

Pour contents of each sieve into preweighed pans and reweigh.

Standard Sieve Mesh Number	Mesh Opening (mm)	Weight of Sample and Pan (grams)	Weight of Pan (grams)	Weight of Sample (grams)
8	2.38	170.02	56.96	113.06
16	1.19	125.01	61.31	63.70
30	0.60	99.72	60.04	39.68
60	0.25	107.73	63.98	43.75
100	0.15	78.836	59.83	19.03
200	0.074	85.61	58.69	26.92
Pan	-	82.82	55.46	27.36

4. Calculate percent silt

$$\% \text{ silt} = (\text{Pan weight} / \text{weight of reduced sample}) \times 100 = \underline{8.17} \%$$

$$27.36 / 335 \times 100$$

SIEVE ANALYSIS

Sample Date 6-12-84

Profiler Location 1 NORTH

1. Weigh initial sample

Weight of sample and pan = 4175 grams

Weight of pan = 350 grams

Weight of sample = 3825 grams

2. Riffle sample down to 200 to 400 grams

Weight of sample and pan = 700 grams

Weight of pan = 350 grams

Weight of reduced sample = 350 grams

3. Place reduced sample into top sieve and run 15 minutes.

Pour contents of each sieve into preweighed pans and reweigh.

Standard Sieve Mesh Number	Mesh Opening (mm)	Weight of Sample and Pan (grams)	Weight of Pan (grams)	Weight of Sample (grams)
8	2.38	151.72	60.04	91.68
16	1.19	110.22	63.98	46.24
30	0.60	97.34	59.83	37.51
60	0.25	111.99	58.69	53.30
100	0.15	85.08	55.46	29.62
200	0.074	105.47	56.96	48.51
Pan	-	104.21	61.31	42.90

4. Calculate percent silt

$$\% \text{ silt} = (\text{Pan weight} / \text{weight of reduced sample}) \times 100 = \underline{12.26 \%}$$

$$42.90 / 350 \times 100$$

SIEVE ANALYSIS

Sample Date 6-13-84

Profiler Location 2 NORTH

1. Weigh initial sample

Weight of sample and pan = 4865 grams

Weight of pan = 355 grams

Weight of sample = 4510 grams

2. Riffle sample down to 200 to 400 grams

Weight of sample and pan = 690 grams

Weight of pan = 355 grams

Weight of reduced sample = 335 grams

3. Place reduced sample into top sieve and run 15 minutes.

Pour contents of each sieve into preweighed pans and reweigh.

Standard Sieve Mesh Number	Mesh Opening (mm)	Weight of Sample and Pan (grams)	Weight of Pan (grams)	Weight of Sample (grams)
8	2.38	141.49	60.04	81.45
16	1.19	109.46	63.98	45.48
30	0.60	97.92	59.43	38.09
60	0.25	111.01	58.69	52.32
100	0.15	91.87	55.46	26.41
200	0.074	100.02	56.96	43.06
Pan	-	107.16	61.31	45.85

4. Calculate percent silt

$$\% \text{ silt} = (\text{Pan weight/weight of reduced sample}) \times 100 = \underline{13.69} \%$$

$$45.85 / 335 \times 100$$

SIEVE ANALYSIS

Sample Date 6-14-84
 Profiler Location 3 South

1. Weigh initial sample
 Weight of sample and pan = 3235 grams
 Weight of pan = 355 grams
 Weight of sample = 2880 grams
2. Riffle sample down to 200 to 400 grams
 Weight of sample and pan = 755 grams
 Weight of pan = 355 grams
 Weight of reduced sample = 400 grams

3. Place reduced sample into top sieve and run 15 minutes.
 Pour contents of each sieve into preweighed pans and reweigh.

Standard Sieve Mesh Number	Mesh Opening (mm)	Weight of Sample and Pan (grams)	Weight of Pan (grams)	Weight of Sample (grams)
8	2.38	171.14	60.04	111.10
16	1.19	134.19	63.98	70.21
30	0.60	109.70	59.83	49.87
60	0.25	120.30	58.69	61.61
100	0.15	83.87	55.46	28.41
200	0.074	105.78	56.96	48.82
Pan	-	88.99	61.31	27.68

4. Calculate percent silt

$$\% \text{ silt} = (\text{Pan weight/weight of reduced sample}) \times 100 = \underline{6.92 \%}$$

$$27.68/400 \times 100$$

SIEVE ANALYSIS

Sample Date 6-15-84
 Profiler Location 4-South

1. Weigh initial sample
 Weight of sample and pan = 2395 grams
 Weight of pan = 350 grams
 Weight of sample = 2045 grams
2. Riffle sample down to 200 to 400 grams
 Weight of sample and pan = 850 grams
 Weight of pan = 350 grams
 Weight of reduced sample = 500 grams

3. Place reduced sample into top sieve and run 15 minutes.
 Pour contents of each sieve into preweighed pans and reweigh.

Standard Sieve Mesh Number	Mesh Opening (mm)	Weight of Sample and Pan (grams)	Weight of Pan (grams)	Weight of Sample (grams)
8	2.38	189.01	60.04	128.97
16	1.19	155.54	63.98	91.56
30	0.60	128.08	59.83	68.25
60	0.25	138.19	58.69	79.50
100	0.15	91.57	55.46	36.11
200	0.074	116.12	56.96	59.16
Pan	-	93.28	61.31	31.97

4. Calculate percent silt
 $\% \text{ silt} = (\text{Pan weight} / \text{weight of reduced sample}) \times 100 = \underline{6.39} \%$
 $31.97 / 500 \times 100$

APPENDIX H
TRAFFIC DATA SUMMARIES

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 1

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50	1	1	4				
Pickup - Empty	2.00							
Pickup - Loaded	2.75	3	3	1				
6 Wheel - Empty	6.25							
6 Wheel - Loaded	11.25		1	2				
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00							
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00	4	2	2				
18 Wheel - Loaded	46.00	1	4	3	4			
Euclid - Empty - 6 wheel	30.00	1						
Euclid - Loaded - 4 wheel	60.00	1						
22 Wheel - Empty	22.00		1		1			
22 Wheel - Loaded	49.50							

Avg. Vehicle Weight = 22.85 TonsAvg. Vehicle Speed = 21.38 MPHNo. of Vehicles = 40Avg. No. of Wheels = 12.10

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 2

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50	1	1	2	2			
Pickup - Empty	2.00							
Pickup - Loaded	2.75	1		2	1	2		
6 Wheel - Empty	6.25	1						
6 Wheel - Loaded	11.25	2	7	1	3			
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00							
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00							
18 Wheel - Loaded	46.00							
Euclid - Empty - 4 wheel	30.00	1						
Euclid - Loaded - 6 wheel	60.00	1			2			
22 Wheel - Empty	22.00							
22 Wheel - Loaded	49.50							

Avg. Vehicle Weight = 12.90 TonsAvg. Vehicle Speed = 23.33 MPHNo. of Vehicles = 30Avg. No. of Wheels = 5.13

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 3

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50	3	1	1				
Pickup - Empty	2.00	3	1					
Pickup - Loaded	2.75							
6 Wheel - Empty	6.25			1				
6 Wheel - Loaded	11.25		2					
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00							
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00	3	2	1	2			
18 Wheel - Loaded	46.00	8	2	4		1		
Euclid - Empty	30.00							
Euclid - Loaded - 6 wheel	60.00	1			2			
22 Wheel - Empty	22.00		1		1			
22 Wheel - Loaded	49.50		1					

Avg. Vehicle Weight = 28.68 TonsAvg. Vehicle Speed = 20.24 MPHNo. of Vehicles = 41Avg. No. of Wheels = 13.46

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 4

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50	1	1					
Pickup - Empty	2.00	1			1	1		
Pickup - Loaded	2.75	1	1					
6 Wheel - Empty	6.25		2					
6 Wheel - Loaded	11.25		2	1				
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00							
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00		2		4	1	1	
18 Wheel - Loaded	46.00	5	5	2	1	1		
Euclid - Empty a - 8 wheel b - 4 wheel c - 6 wheel	30.00	1 ^a	1 ^b		2 ^c			
Euclid - Loaded - 6 wheel	60.00			1				
22 Wheel - Empty	22.00			1	1			
22 Wheel - Loaded	49.50			1				

Avg. Vehicle Weight = 27.29 TonsAvg. Vehicle Speed = 23.33 MPHNo. of Vehicles = 42Avg. No. of Wheels = 13.10

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 5

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50	2	2		3			
Pickup - Empty	2.00		1	1			1	
Pickup - Loaded	2.75	1		5	11			
6 Wheel - Empty	6.25			1				
6 Wheel - Loaded	11.25	1	1	4	3	2		
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00							
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00							
18 Wheel - Loaded	46.00							
Euclid - Empty - 6 wheel	30.00				2			
Euclid - Loaded - 6 wheel	60.00				1			
22 Wheel - Empty	22.00							
22 Wheel - Loaded	49.50							

Avg. Vehicle Weight = 7.46 TonsAvg. Vehicle Speed = 26.79 MPHNo. of Vehicles = 42Avg. No. of Wheels = 4.71

FIELD COMPARISON
TRAFFIC DATA ANALYSIS
TEST NUMBER 6

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50		1					
Pickup - Empty	2.00							
Pickup - Loaded	2.75	1	3	2				
6 Wheel - Empty	6.25		1		1			
6 Wheel - Loaded	11.25		1	1				
10 Wheel - Empty	12.50	1						
10 Wheel - Loaded	25.00	2						
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00	4	1	3	1		1	
18 Wheel - Loaded	46.00	4	5	5	3			
Euclid - Empty	30.00							
Euclid - Loaded - 6 wheel	60.00	1			1			
22 Wheel - Empty	22.00			1	1			
22 Wheel - Loaded	49.50				1			

Avg. Vehicle Weight = 28.72 Tons

Avg. Vehicle Speed = 22.07 MPH

No. of Vehicles = 46

Avg. No. of Wheels = 14.04

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 7

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50							
Pickup - Empty	2.00							
Pickup - Loaded	2.75		2		1			
6 Wheel - Empty	6.25							
6 Wheel - Loaded	11.25	1	1					
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00							
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00	2	4	3		1		
18 Wheel - Loaded	46.00	6	4	8	2			
Euclid - Empty	30.00							
Euclid - Loaded ^a - ONE 8 WHEEL OTHERS - 6 WHEEL	60.00		2 ^a		1			
22 Wheel - Empty	22.00				1	1		
22 Wheel - Loaded	49.50		1					

Avg. Vehicle Weight = 34.98 TonsAvg. Vehicle Speed = 22.20 MPHNo. of Vehicles = 41Avg. No. of Wheels = 15.85

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 8

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50			1				
Pickup - Empty	2.00							
Pickup - Loaded	2.75		4	2				
6 Wheel - Empty	6.25							
6 Wheel - Loaded	11.25				1			
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00	2	1					
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00		7	7	5			
18 Wheel - Loaded	46.00		8	8	6			
Euclid - Empty - 8 wheel	30.00	1						
Euclid - Loaded ^{a - ONE 8 wheel} others - 6 wheel	60.00	1		5 ^a				
22 Wheel - Empty	22.00				1			
22 Wheel - Loaded	49.50				1			

Avg. Vehicle Weight = 32.40 TonsAvg. Vehicle Speed = 23.85 MPHNo. of Vehicles = 61Avg. No. of Wheels = 14.62

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 9

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50							
Pickup - Empty	2.00							
Pickup - Loaded	2.75	2	5		2	1	1	
6 Wheel - Empty	6.25							
6 Wheel - Loaded	11.25	1	4	13	19	1		
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00		1					
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00							
18 Wheel - Loaded	46.00							
Euclid - Empty	30.00							
Euclid - Loaded 6 wheel	60.00				1			
22 Wheel - Empty	22.00							
22 Wheel - Loaded	49.50							

Avg. Vehicle Weight = 10.64 TonsAvg. Vehicle Speed = 26.27 MPHNo. of Vehicles = 51Avg. No. of Wheels = 5.65

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 10

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50							
Pickup - Empty	2.00							
Pickup - Loaded	2.75		1	1	1			
6 Wheel - Empty	6.25							
6 Wheel - Loaded	11.25	1	1	12	25	4		
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00		1					
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00							
18 Wheel - Loaded	46.00							
Euclid - Empty 6 wheel	30.00				2			
Euclid - Loaded	60.00							
22 Wheel - Empty	22.00							
22 Wheel - Loaded	49.50							

Avg. Vehicle Weight = 12.53 TonsAvg. Vehicle Speed = 28.00 MPHNo. of Vehicles = 50Avg. No. of Wheels = 6.28

FIELD COMPARISON

TRAFFIC DATA ANALYSIS

TEST NUMBER 11

Type of Vehicle	Assumed Weight (Tons)	Speed (MPH)						
		15	20	25	30	35	40	45
Car	1.50	3	1					
Pickup - Empty	2.00							
Pickup - Loaded	2.75	1	1	1				
6 Wheel - Empty	6.25							
6 Wheel - Loaded	11.25		1					
10 Wheel - Empty	12.50							
10 Wheel - Loaded	25.00		1					
14 Wheel - Empty	15.00							
14 Wheel - Loaded	35.00							
18 Wheel - Empty	21.00		3	1	2	2		
18 Wheel - Loaded	46.00	7	6	5	1			
Euclid - Empty 8 wheel	30.00	1						
Euclid - Loaded 6 wheel	60.00			1				
22 Wheel - Empty	22.00							
22 Wheel - Loaded	49.50		1	1				

Avg. Vehicle Weight = 32.04 TonsAvg. Vehicle Speed = 21.13 MPHNo. of Vehicles = 40Avg. No. of Wheels = 14.70



**800 Connecticut Blvd.
East Hartford, CT 06108
(203) 289-8631**

**Denver, CO
(303) 779-4940**

**Washington, D.C.
(703) 241-5535**