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.

ATS

3000 Tech Center Drive
Monroeville, Pennsylvania 15146-3055
Telephone (412) 829-2208
FAX (412) 829-2415

ADVANCED TECHNOLOGY SYSTEMS, INC.

Ref. No. IKM-0847

March 22, 1995

AP-42 Section 12.2
Reference
Report Sect. 4
Reference 173

Ms. Coleen M. Hart
Environmental Control Engineer
Chester Environmental
USS Clairton Works
400 State Street
Mail Stop 71
Clairton, PA 15025

Dear Ms. Hart:

Re: Measurement of Respirable Dust Concentrations and Emission Rates from Coal Pulverizers - Letter Report

This letter, with attachments, constitutes the report for the respirable dust measurements performed by Advanced Technology Systems, Inc. (ATS) at the First Unit Primary Pulverizer, First Unit Secondary Pulverizer, Second Unit Primary Pulverizer, and Second Unit Secondary Pulverizer at the USS Clairton Works facility located in Clairton, Pennsylvania. Ambient air sampling for respirable dust within the pulverizer buildings was performed on December 19, 1994 (Second Unit Primary Pulverizer and Second Unit Secondary Pulverizer) and December 20, 1994 (First Unit Primary Pulverizer, First Unit Secondary Pulverizer) to quantify the respirable dust emission rates from these structures.

Respirable dust sampling was performed to satisfy the requirements of Allegheny County Health Department (ACHD) Rules and Regulations, Article XXI - Air Pollution Control, Part D (Pollutant Emission Standards), Section 2104.6 (Particulate Mass Emissions), Paragraph e (Specific Controlled Process Sources). Respirable dust sampling was performed in accordance with ACHD Division of Air Quality (DAQ) Source Testing Manual, Chapter 53, "Determination of Inhalable Fugitive Particulate Emissions from Air Pollution Sources Within a Structure." A copy of this test method can be found in the attachment. Respirable dust measurements were conducted using a sampling train which consisted of a particle sizing cyclone, 37 mm filter, and a personnel sampling pump capable of sampling air at a flow rate between 1.615 and 1.785 liters per minute. Sample train air flow was monitored with the use of a primary gas flow standard (Buck Calibrator, Model M-5, manufactured by A.P. Buck, Inc.). Air velocity measurements were conducted with the use of a calibrated Sierra Instruments, Inc. air velocity measuring device (serial number 12161). Respirable dust and air velocity measurements were conducted at three (3) window openings per structure. The air flow at the test sites was outward from the structure during the appropriate two-hour sampling period. This was confirmed by measuring the air velocity at the sampling sites before and after each test period.

For each structure, respirable dust measurements were conducted simultaneously at the three test sites. The reported respirable dust concentration for each structure was calculated as the average of the three respirable dust concentrations for that structure. The reported outward air velocity for each structure was calculated as the average of the three air velocity measurements for that structure. Emission rates of respirable dust from each

pulverizer were calculated from the knowledge of the average respirable dust concentrations, average outward air velocity from the pulverizer, and total open window or door area in which the air flow was outward during the testing period. A determination of whether the air flow at each open window or door was inward to the pulverizer or outward from the pulverizer was made immediately prior to and after the testing period. If the air flow was determined to be inward prior to and / or after the sampling period, then the air flow was considered to be inward during the sampling period. The air flow was considered to be outward during the sampling period if the air flow was determined to be outward prior to and after the sampling period.

The results of the test effort are summarized in the table below. Measured respirable dust emission rates are listed in units of pounds per hour (lb/hr). For comparison purposes, the maximum allowable emission rates for each pulverizer are also listed in units of grains per ton of coal (gr/ton coal) and equivalent pounds per hour (lb/hr). The equivalent pounds per hour emissions standard was calculated from knowledge of the appropriate coal pulverization rate (ton of coal per hour).

Pulverizer	Measured Respirable Dust Emission Rate (lb/hr)	Maximum Allowable Emission Rates (gr/ton coal)	(lb/hr)
First Unit Primary	0.159	5.17	0.26
First Unit Secondary	0.039	11.86	0.17
Second Unit Primary	0.037	8.26	0.25
Second Unit Secondary	0.013	11.02	0.51

For each pulverizer, the measured respirable dust emission rate is less than the appropriate maximum allowable emission rate. Copies of the field data sheets, equipment calibration results, analytical results, and calculations can be found in the attachment.

ATS appreciates the opportunity to provide air quality engineering services to USS Clairton Works and Chester Environmental. If you have any questions regarding this letter report, please call me at (412) 829-2208.

Very truly yours,

John P. Shimshock

John P. Shimshock
Air Quality Project Scientist
Advanced Technology Systems, Inc.

MEASUREMENT OF RESPIRABLE DUST CONCENTRATIONS AND EMISSION RATES FROM COAL PULVERIZERS

USS CLAIRTON WORKS
A DIVISION OF USX CORPORATION
CLAIRTON, PENNSYLVANIA

ATTACHMENT

ALLEGHENY COUNTY HEALTH DEPARTMENT - DIVISION OF AIR QUALITY REFERENCE TEST METHOD, FIELD DATA SHEETS, EQUIPMENT CALIBRATION RESULTS, ANALYTICAL RESULTS, CALCULATIONS

ATS
ADVANCED TECHNOLOGY SYSTEMS, INC.

CHAPTER 53

DETERMINATION OF INHALABLE FUGITIVE PARTICULATE EMISSIONS FROM AIR POLLUTION SOURCES WITHIN A STRUCTURE

Principle and Applicability and Limitations:

a. The method measures the mass concentration of respirable dust smaller than 10 micron particle size.

b. This method is applicable to respirable dust from the fugitive emission sources enclosed within a structure.

c. Depending on predominant wind direction during the sampling, air flow will be inward at some openings and outward at others. Only the openings with outward air flow will be responsible for fugitive emission and therefore, the area and air velocity through these openings will be taken into consideration for calculating emission rate. OK

d. Since the wind direction may change during sampling, the air flow which was outward may become inward at the same openings where the test is being carried out. Under this situation, the sampling must continue at the same opening.

If the air flow remains inward for more than 50 percent of sampling time, then the sample must be discarded and another opening should be selected for sampling.

A. Sample Points

By visual determination, select the openings with the most fugitive dust leakage out of the enclosed structure.

Each sampling area should be divided into 12 equal areas with the sample point at the centroid of each area.

B. Velocity and Temperature

The velocity of the air flowing through the sample point can be measured with a vane anemometer or Kurtz Model 441 or equivalent at the centroid of the sample point. The velocity should be measured at the beginning and end of the sampling period for each sample point. The total of 24 velocity measurements shall be made per two hour run.

The temperature of the air can be measured with a mercury thermometer before and after each test run.

C. Moisture

The moisture in the sampled air will be the relative humidity of the ambient air. This can be determined with a sling psychrometer and should be measured at least once at each opening.

D. Area of Openings

The area of every opening shall be measured in square feet.

E. Sample for Inhalable Particulates:

1.0 Apparatus

1.1 Sampling train: The sample train consists of a 10 millimeter Dorr-Oliver cyclone connected to a filter holder (37 mm) loaded with a tared quartz filter and personal sampling pump

1.1.1 Personal sampling pump: A personal sampling pump capable of sampling air at 1.7 L/min ±5% with flexible tygon connecting tubing.

NOTE: Pulsation in the pump flowrate must be within ±20% of the mean flow.

1.1.2 Filter: Whatman type QM-A, 37 mm diameter quartz filter or equivalent supported with backup pad in a two-piece, 37 mm cassette filter holder held together by tape or cellulose shrink band.

1.1.3 Cyclone: 10 mm Dorr-Oliver nylon cyclone.

1.1.4 Sampling head holder: This holder must keep the cassette, cyclone and coupler together rigidly so that air enters only at the cyclone inlet.

2.0 Equipment for analysis:

2.1. Environmental chamber for balance. It shall be maintained at 20 degrees C ±0.3 degrees C and 50% ±5% relative humidity.

2.2. Vacuum desiccator.

3. Filter cassette preparation and pre-weighing before sampling.

3.1 Dry filters and backup pads under vacuum in the vacuum desiccator for at least 15 minutes. Release the vacuum, remove the desiccator cover, and equilibrate the filters in the environmental chamber for at least 1 hr. or,

3.2 Desiccate the filters and backup pads in the desiccator for 24 hrs.

3.3 Number the backup pads with a ballpoint pen and place one pad, the numbered side down, in the filter cassette bottom section.

3.4 Weigh the filters in the environmental chamber. Record the filter tare weight, W_1 (mg).

3.4.1 Zero the balance before each weighing.

3.4.2 Handle the filter with forceps (nylon forceps, if further analysis will be done).

3.5 Place a weighed filter on top of the backup pad in the filter cassette bottom section and allow to stand an additional 8 to 16 hours in the environmental chamber.

3.6 Reweigh the filters. If this tare weight differs by more than 0.01 mg from the first tare weight obtained in step 3.4 above, discard the filter.

NOTE: Insert a rod through the outlet hole of the filter cassette bottom section to raise the backup pad and filter so that the filter can be grasped with forceps.

3.7 Reassemble the filters in the filter cassettes and close firmly so that leakage around the filter will not occur. Place a plug in each opening of the filter cassette. Place a cellulose shrink band around the filter cassette, allow to dry, and mark with the same number as the backup pad.

3.8 Remove the cyclone's grit cap and vortex finder before use and inspect the cyclone interior. If the inside is visibly scored, discard this cyclone since the dust separation characteristics of the cyclone might be altered. Clean the interior of the cyclone to prevent reentrainment of large particles.

3.9 Assemble the sampler head. Check alignment of filter holder and cyclone in the sampling head to prevent leakage.

4. Procedure.

4.1 Calibration

4.1.1 Calibrate each personal sampling pump to 1.7 L/min. with a representative quartz filter in line.

4.2 Sampling procedure.

4.2.1 For door or window openings, sample at the centroid of each of 12 equal areas used during the velocity traverse for 10 minutes per point for a total of 120 minutes per run. The sample flow rate shall be 1.7 L/min. Three runs shall comprise a test, one each at three different window or door openings. The cyclone air intake shall face the window or door opening and shall be no more than 6 inches outside the plane of the door or the window.

NOTE: Do not allow the sampler assembly to be inverted at any time. Turning the cyclone to anything more than a horizontal orientation may deposit oversized material from the cyclone body onto the filter.

5. Sample preparation.

5.1 Wipe dust from the external surface of the filter cassette with a moist paper towel to minimize contamination. Discard the paper towel.

5.2 Remove the top and bottom plugs from the filter cassette. Place the filter cassettes in a vacuum desiccator for at least 15 min. followed by equilibration for at least 1 hr. in the environmental chamber, or desiccate the filter in desiccator for 24 hrs.

5.3 Remove the filter cassette band, pry open the filter cassette, and remove the filter by inserting a rod in the outlet hole of the filter cassette. Handle the filters very carefully by the edge to avoid loss of dust.

5.4 Zero the microbalance before all weighings. Use the same microbalance for weighing filters before and after sample collection. Calibrate the balance with National Bureau of Standards Class M weights.

5.5 Take two replicate blank filters for every batch of field samples for quality assurance on the sampling procedures. The set of replicate blank filters should be exposed to the same dust environment, either in a laboratory dust chamber or in the field. The quality control samples must be taken with the same equipment, procedures and personnel used in the routine field samples. Calculate precision from these replicates.

Take corrective action when the precision is out of control.

5.6 Weigh each filter, including field blanks. Record this post-sampling weight, W_2 (mg), beside its corresponding tare weight. Record anything remarkable about a filter (e.g., visible particles, overloaded, leaking, wet, torn, etc.).

6. Calculations.

6.1 Calculate the concentration of respirable dust, C (mg/m^3), in the air volume sampled, V (liters):

$$C = \frac{(W_2 - W_1) + B}{V} \cdot 10^3, \ mg/m^3 \qquad (1)$$

where: W_1 = tare weight of filter before sampling (mg).

W_2 = post-sampling weight of sample-containing filter (mg).

B = mean change in field blank filter weights between tare and post-sampling (mg) (+ or -).

V = Air volume sampled (liters)

6.2 Calculation of Air Volume rate through a door or window.

$$Vo_s = V_s \times A_s \qquad (2)$$

where: Vo_s = Volumetric flowrate from a single window or door opening of ft^3/min.

Vs = Average of 24 velocity measurements by anemometer (ft/min) for a single window or door opening.

A_s = Cross-sectional area of a single window or ft^2 door opening.

6.3 Calculation of Total Air Volume rate through the building.

$$Vo_t = V_A \times A_t \qquad (3)$$

where: Vo_t = total volumetric outward flowrate from all building openings (ft^3/min).

V_A = opening velocity averaged for 3 runs (ft/min).

A_t = cross-sectional area (ft^2) of all building openings where air flow was outwards.

6.4 Emission Rate Calculation (lb/hr)

$$C_t = 1.3216 \times 10^{-4}\ C_{avg} \times \frac{VO_t}{35.3} \qquad (4)$$

where: C_t = total concentration lb/hr. from all openings.

C_{avg} = average concentration mg/m^3 of 3 runs at 3 different openings.

$C_{avg} = (C_1 + C_2 + C_3)/3$

C_1 = concentration from run 1 mg/m^3

C_2 = concentration from run 2 mg/m^3

C_2 = concentration from run 3 mg/m^3

VO_t = total volumetric flowrate from all building openings $\frac{ft^3}{min.}$

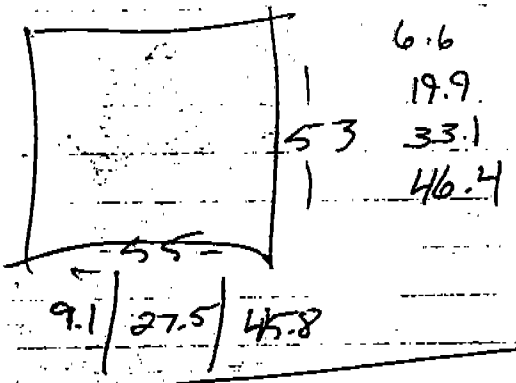
35.3 = conversion factor for converting cubic feet to cubic meters.

chap53

55 X 53 WEST WINDOW 4TH FLOOR

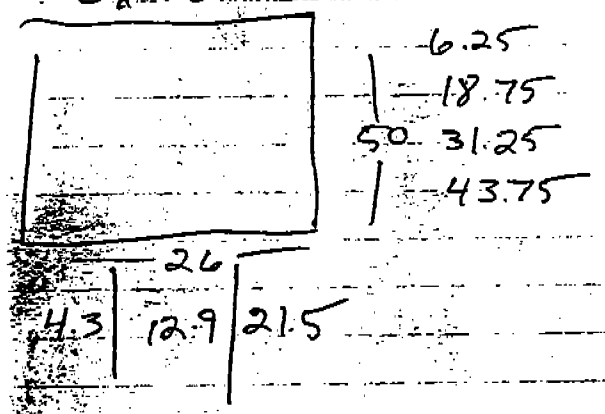
Dick Kernis
Unloader Foreman
12/19/94 1650

1st Unit Secondary
"B"

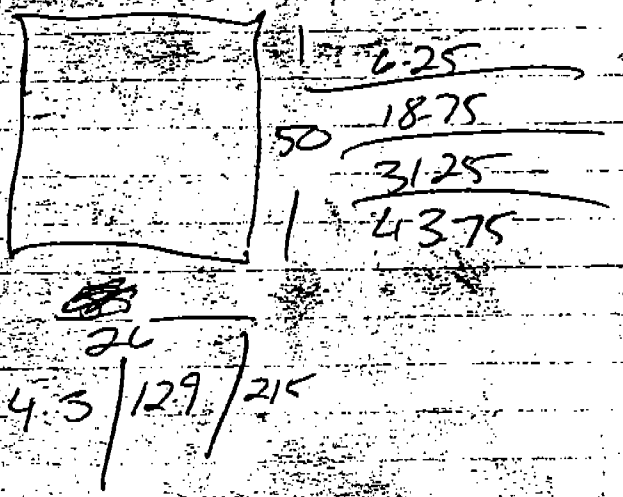


EAST WINDOW 4TH FLOOR

26 x 50

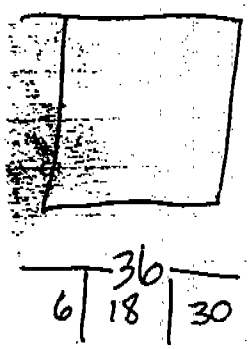


NORTH EAST WINDOW 3RD FLOOR



12-20-94
1ST UNIT
PRIMARY
Rheuger

12-20-94 1ST UNIT SECONDARY



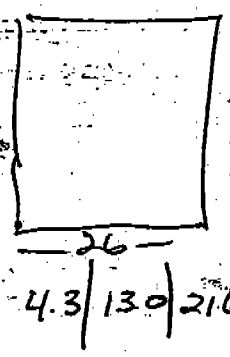
44 | 5.5 | 16.5 | 27.5 | 38.5

3RD LEVEL SOUTH ~~EAST~~ WEST WINDOW
36x44

4TH LEVEL NORTH WINDOW
26x46

46 | 5.7 | 17.2 | 28.7 | 40.2

4TH LEVEL WEST WINDOW



46 | 5.7 | 17.2 | 28.7 | 40.2

Facility USX CLAIRTON WORKS · B.P. 29.65 in Hg

Location UNIT #1 PRIMARY PULVERIZER · Filter # 7

Test Port NORTH EAST WINDOW 3RD FLOOR · Pump # SKC UNIT #2

Date 12-20-94 · Test Time 10:30 — 12:30 EST

Operator KA · Relative Humidity PRE 51 %

POST 21 %

Sampling Point	Flow (FPM) Pre	Temp Pre °F	Flow (FPM) Post	Temp. Post	cc/min	Area
#1 4.3x6.25	190	55	244	59	1756	9.0
#2 4.3x18.75	204	55	207	59	1721	9.0
#3 4.3x31.25	205	55	215	59	1680	9.0
#4 4.3x43.75	161	56	180	59	1687	9.0
#5 12.9x6.25	133	55	171	59	1696	9.0
#6 12.9x18.75	174	55	173	59	1702	9.0
#7 12.9x31.25	124	56	171	59	1699	9.0
#8 12.9x43.75	120	56	161	59	1699	9.0
#9 21.5x6.25	102	55	164	59	1743	9.0
#10 21.5x18.75	92	55	111	59	1704	9.0
#11 21.5x31.25	53	56	98	59	1710	9.0
#12 21.5x43.75	62	56	61	59	1701	9.0

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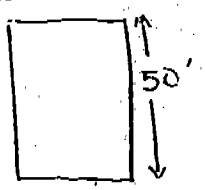

4.3 : 12.9 : 21.5

6.25
18.75
31.25
43.75

Average air velocity = 149.0 fpm

Air volume sampled = 205.0

Facility USX-Clairton Works

Location Unit #1 Primary Pulverizer

Test Port West Window 4th Floor

Date 12-20-94

Operator RPC

B.P. 29.65 in Hg

Filter # #8

Pump # SKC Unit #1

Test Time 10:30 - 1230 EST

Relative Humidity Pre 51%

✓ Post 21%

Sampling Point	Flow (FPM) Pre	Temp Pre°F	Flow (FPM) Post	Temp. Post	cc/min	Area
#1 9.1 x 6.6	440	61	479	62	1755	20.2
#2 9.1 x 19.9	415	61	389	63	1695	20.2
#3 9.1 x 33.1	366	61	357	63	1685	20.2
#4 9.1 x 46.4	363	61	290	63	1688	20.2
#5 27.5 x 6.6	316	61	197	63	1686	20.2
#6 27.5 x 19.9	388	61	218	63	1725	20.2
#7 27.5 x 33.1	366	61	244	63	1727	20.2
#8 27.5 x 46.4	356	61	284	63	1740	20.2
#9 45.8 x 6.6	329	61	266	63	1748	20.2
#10 45.8 x 19.9	360	61	307	63	1750	20.2
#11 45.8 x 33.1	311	61	339	63	1740	20.2
#12 45.8 x 46.4	267	~~300~~ 61	318	63	1755	20.2

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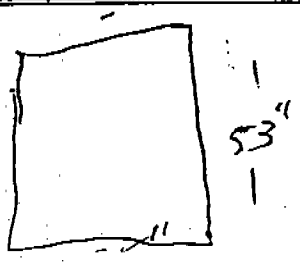

6.6
19.9
33.1
46.4

9.1 | 27.5 | 45.8

Average Air Velocity = 331.9 fpm

Air volume sampled = 1.725 L/min * 120 min =

Facility USX-Clairton Works

Location Unit #1 Primary Pulverizer

Test Port East Window - 4th Level

Date 12/20/94

Operator [illegible]

B.P. 29.65 in. Hg

Filter # 9

Pump # SKC Unit # 3

Test Time 10:30 - 1230 EST

Relative Humidity Pre 51%
Post 21%

Sampling Point	Flow Pre FPM	Temp Pre °F	Flow Post FPM	Temp. Post	cc/min.	Area
#1 4.3X6.25	134	59	158	62	1760	9.0
#2 4.3X18.75	300	59	188	62	1722	9.0
#3 4.3X31.25	188	59	181	62	1722	9.0
#4 4.3X43.75	505	59	171	62	1721	9.0
#5 12.9X6.25	268	59	83	62	1723	9.0
#6 12.9X18.75	124	59	141	62	1730	9.0
#7 12.9X31.25	316	60	172	62	1735	9.0
#8 12.9X43.75	297	60	183	62	1735	9.0
#9 21.5X6.25	132	59	160	62	1740	9.0
#10 21.5X18.75	139	59	205	62	1740	9.0
#11 21.5X31.25	219	60	237	62	1735	9.0
#12 21.5X43.75	226	59	242	62	1739	9.0

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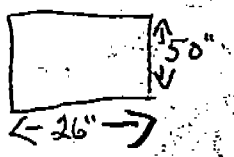

6.25
18.75
31.25
43.75

Average air velocity = 207.0 fpm

Air volume sampled = 1734 L/min * 12 min =

Facility USX-CLAIRTON WORKS

B.P. 29.65 in. Hg

Location 1ST UNIT SECONDARY PULVERIZER

Filter # 14

Test Port 3RD LEVEL SOUTH ~~EAST~~ WEST WINDOW

Pump # SKC UNIT # 3

Date 12-20-94

Test Time 15:00 – 17:00 EST

Operator K.A

Relative Humidity PRE 31% POST 41%

Sampling Point	Flow Pre (FPM)	Temp Pre °F	Flow Post (FPM)	Temp. Post	cc/MIN	Area
#1 6" x 5.5"	157	56	200	52	1704	11.0
#2 6" x 16.5"	84	57	206	52	1688	11.0
#3 6" x 27.5"	88	57	87	53	1691	11.0
#4 6" x 38.5"	91	57	47	53	1687	11.0
#5 18" x 5.5"	92	57	24	53	1666	11.0
#6 18" x 16.5"	66	57	41	53	1684	11.0
#7 18" x 27.5"	76	57	81	53	1675	11.0
#8 18" x 38.5"	80	57	116	53	1671	11.0
#9 30" x 5.5"	121	58	203	53	1678	11.0
#10 30" x 16.5"	122	58	162	53	1657	11.0
#11 30" x 27.5"	166	57	109	53	1660	11.0
#12 30" x 38.5"	145	57	113	53	1650	11.0

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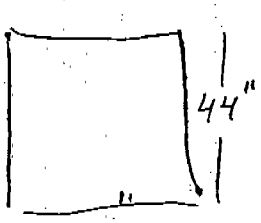

5.5
16.5
27.5
38.5

6/18/30

Average air velocity = 111.5 fpm

Air volume sampled =
1.676 L/min * 120 min = 201.1 L

Facility USX-CLAIRTON WORKS

Location 1ST UNIT SECONDARY PULVERIZER

Test Port 4TH LEVEL NORTH WINDOW

Date 12-20-94

Operator RPC

B.P. 29.65 in. Hg

Filter # 10

Pump # SKC UNIT # 1

Test Time 1500 - 1700 EST

Relative Humidity PRE 37%
POST 41%

Sampling Point	Flow (FPM) Pre	Temp Pre °F	Flow (FPM) Post	Temp. Post	cfm	Area
#1 4.3" x 5.7"	155	58	71	52	1705	8.3
#2 4.3" x 17.2"	131	58	111	52	1707	8.3
#3 4.3" x 28.7"	90	58	138	52	1704	8.3
#4 4.3" x 40.2"	59	58	133	52	1701	8.3
#5 13.0" x 5.7"	133	58	153	52	1691	8.3
#6 13.0" x 17.2"	141	58	148	52	1695	8.3
#7 13.0" x 28.7"	192	58	151	52	1685	8.3
#8 13.0" x 40.2"	200	58	135	52	1680	8.3
#9 21.6" x 5.7"	221	58	120	52	1678	8.3
#10 21.6" x 17.2"	169	58	170	52	1675	8.3
#11 21.6" x 28.7"	200	58	90	52	1680	8.3
#12 21.6" x 40.2"	155	58	76	52	1675	8.3

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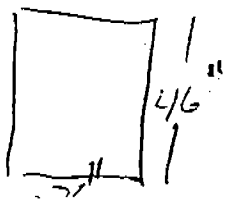
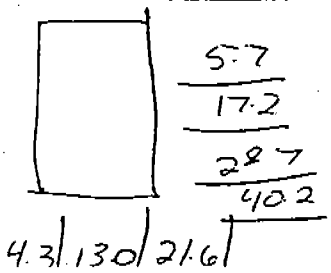




Average air velocity = 139.3 fpm

Air volume sampled = 1.690 L/min *
120 min =
202.8 L

Facility USX-CLAIRTON WORKS B.P. 29.65 in. Hg

Location 1ST UNIT SECONDARY PULVERIZER ~~North To South~~ ~~Stack~~ Filter # 12

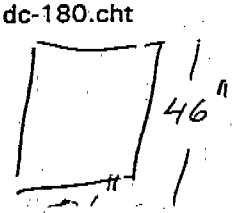
Test Port 4TH LEVEL WEST WINDOW #1 (South to North) Pump # SKC UNIT #2

Date 12-20-94 Test Time 1500 - 1700 EST

Operator RJS Relative Humidity PRE 37% POST 41%

Sampling Point	Flow Pre FPM	Temp Pre °F	Flow Post FPM	Temp. Post	cc/min.	Area
#1 4.3" x 5.7	73	58	21	51	1675	8.3
#2 4.3" x 17.2	178	58	103	51	1695	8.3
#3 4.3" x 28.7	200	58	71	51	1695	8.3
#4 4.3" x 40.2	225	58	77	52	1702	8.3
#5 30" x 5.7	273	58	150	52	1697	8.3
#6 13" x 17.2	196	58	86	52	1695	8.3
#7 13" x 28.7	146	58	80	52	1686	8.3
#8 13" x 40.2	102	58	42	52	1675	8.3
#9 21.6" x 5.7	92	57	109	52	1690	8.3
#10 21.6" x 17.2	155	57	51	52	1693	8.3
#11 21.6" x 28.7	188	57	55	52	1680	8.3
#12 21.6" x 40.2	120	57	58	51	1675	8.3

dc-180.cht



5.7
17.2
28.7
40.2

Average air velocity = 118.8 fpm

Air volume sampled = 1.688 L/min * 120 min = 202.6 L

Facility USX- CLAIRTON WORKS

Location 2ND UNIT PRIMARY POLLUTION

Test Port 2ND LEVEL SW WINDOW

Date 12-19-94

Operator RICH CASSILBERRY

B.P. 29.60 in. Hg

Filter # #1

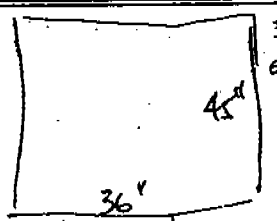
Pump # SKC - UNIT #1

Test Time 11:50 AM - 13:50 EST

Relative Humidity PRE-56 %
POST-47 %

Sampling Point	Flow Pre (FPM)	Temp Pre °F	Flow Post (FPM)	Temp. Post	cf/min	Area
#1 6" x 39.2"	163	58	141	45	1750 1744	11.25
#2 6" x 28.0"	41	58	73	45	1741 1744	11.25
#3 6" x 16.8"	49	58	60	45	1757	11.25
#4 6" x 5.6"	44	58	79	44	1707	11.25
#5 18" x 39.2"	39	58	122	44	1745	11.25
#6 18" x 28.0"	71	57	82	44	1732	11.25
#7 18" x 16.8"	92	57	177	44	1706	11.25
#8 18" x 5.6"	111	57	131	44	1727	11.25
#9 30" x 39.2"	141	57	158	43	1728	11.25
#10 30" x 28.0"	167	56	122	43	1718	11.25
#11 30" x 16.8"	108	56	210	43	1726	11.25
#12 30" x 5.6"	76	56	181	43	1722	11.25

dc-180.cht



Average air velocity = 109.9 fpm

Air volume sampled =

1,730 [redacted] cf/min * 120 min =

Facility USX-CLAIRTON WORKS

Location 2nd UNIT PRIMARY PULVERIZER

Test Port 3RD LEVEL SE. WINDOW

Date 12-19-94

Operator K.A.

B.P. 28.60 in. Hg

Filter # 2

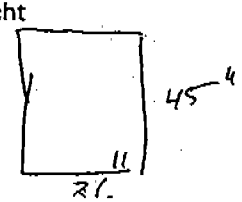
Pump # SKC UNIT # 2

Test Time 11:50 – 13:50 EST

Relative Humidity PRE 56 %
POST 47 %

Sampling Point	Flow (FPM) Pre (FPM)	Temp Pre °F	Flow (FPM) Post	Temp. Post	cc/min	Area
#1 6" x 39.2	131	56 °F	149	46	1675	11.25
#2 6" x 28.0"	230	56 °F	75	46	1681	11.25
#3 6" x 16.8"	147	56°	76	46	1680	11.25
#4 6" x 5.6"	109	56°	54	46	1670	11.25
#5 18" x 39.2"	124	55°	117	45	1670	11.25
#6 18" x 28.0"	149	56	99	46	1660	11.25
#7 18" x 16.8"	239	56	114	46	1705	11.25
#8 18" x 5.6"	315	56	146	46	1710	11.25
#9 30" x 39.2"	142	56	141	45	1750	11.25
#10 30" x 28.0"	199	56	173	46	1745	11.25
#11 30" x 16.8"	227	56	103	46	1730	11.25
#12 30" x 5.6"	210	56	91	46	1710	11.25

dc-180.cht



5.6 39.2
16.8 28.0
28.0 16.8
5.6

Average air velocity = 148.3 fpm

Air volume sampled =
1.699 L/min * 120 min =
203.9 L

6/18/30

Facility USX-CLAIRTON

B.P. 28.60 in. Hg

Location 2ND UNIT PRIMARY PULVERIZER

Filter # 3

Test Port 3RD LEVEL S-W-WINDOW

Pump # 3 SKC UNIT #3

Date 12-19-94

Test Time 11:50 - 13:50 EST

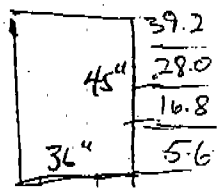
Operator PJZ

Relative Humidity PRE 56%

POST 47%

Sampling Point	Flow (Fpm) Pre	Temp Pre °F	Flow Fpm Post	Temp. Post	cc/min.	Area
#1 6" x 39.2"	47	58	158	48	1685	11.25
#2 6" x 28.0"	99	58	145	48	1680	11.25
#3 6" x 16.8"	73	59	212	48	1670	11.25
#4 6" x 5.6"	46	59	117	48	1665	11.25
#5 18" x 39.2"	70	59	44	48	1665	11.25
#6 18" x 28.0"	157	59	114	48	1660	11.25
#7 18" x 16.8"	136	59	69	48	1660	11.25
#8 18" x 5.6"	61	59	24	48	1665	11.25
#9 30" x 39.2"	102	59	70	48	1750	11.25
#10 30" x 28.0"	103	59	133	48	1750	11.25
#11 30" x 16.8"	88	59	114	48	1725	11.25
#12 30" x 5.6"	94	59	151	48	1705	11.25

dc-180.cht



Average air velocity = 101.1 fpm

Air volume sampled = 1.690 L/min * 120 min

= 202.8 L

Facility USX - CLAIRTON WORKS

B.P. 29.60 in Hg

Location 2ND LEVEL S-E WINDOW

Filter # 4

Test Port 2ND UNIT ~~POLVERIZER~~ SECONDARY Pulverizer

Pump # SKC UNIT # 3

Date 12-19-94

Test Time 1515-~~1715~~ PM

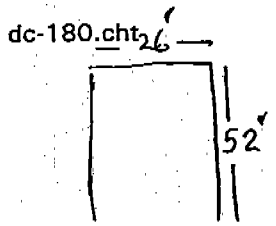
Shift change OFF @ 1521 ON @ 1605 Finish 1759 EST

Operator RPC

Relative Humidity PRE 58 POST 60

Sampling Point	Flow (Fpm) Pre	Temp Pre °F	Flow (fpm) Post	Temp. Post	cc/min	Area
#1 4.3x6.5	200	45	146	42	1695	9.4
#2 4.3 x 19.5	200	45	186	42	1708	9.4
#3 4.3x 32.5	301	45	118	42	1715	9.4
#4 4.3x45.5	260	45	072	42	1720	9.4
#5 12.9x6.5	140	44	040	42	1725	9.4
#6 12.9x19.5	120	44	040	42	1718	9.4
#7 12.9x32.5	186	44	071	42	1719	9.4
#8 12.9x45.5	174	44	123	42	1723	9.4
#9 21.5x6.5	208	44	100	42	1720	9.4
#10 21.5x19.5	213	44	080	42	1715	9.4
#11 21.5x32.5	222	44	082	42	1721	9.4
#12 21.5x45.5	241	44	106	42	1715	9.4

dc-180.cht



6.5
19.5
32.5
45.5

Average air velocity = 151.2 fpm

Air volume sampled = 1716 L/min * 120 min

Facility USX-CLAIRTON WORKS B.P. 29.60 in. Hg

Location 2ND UNIT ~~2ND LEVE~~ SECONDARY PULVERIZER Filter # 5

Test Port 2ND UNIT ~~Secondary Pulverizer~~ 2ND Level SW WINDOW Pump # SKC UNIT # 2

Date 12/19/94 Test Time 1515 - ~~1715~~ P/F SHIFT CHANGE OFF @ 1521 ON @ 1605 FINISH 1759 EST

Operator P/F Relative Humidity PRE 58 POST 60

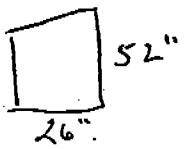
Sampling Point	Flow Pre FPM	Temp Pre °F	Flow Post FPM	Temp. Post	cc/min.	Area
#1 4.3 x 6.5	251	44	199	41	1705	9.4
#2 4.3 x 19.5	300	43	200	41	1690	9.4
#3 4.3 x 32.5	308	43	208	41	1700	9.4
#4 4.3 x 45.5	365	43	240	42	1702	9.4
#5 12.9 x 6.5	370	44	131	41	1701	9.4
#6 12.9 x 19.5	239	43	156	41	1708	9.4
#7 12.9 x 32.5	198	43	89	41	1701	9.4
#8 12.9 x 45.5	218	43	65	41	1695	9.4
#9 21.5 x 6.5	219	43	63	42	1701	9.4
#10 21.5 x 19.5	175	43	75	42	1702	9.4
#11 21.5 x 32.5	200	43	76	41	1700	9.4
#12 21.5 x 45.5	197	43	58	41	1697	9.4

dc-180.cht

45.5
32.5
19.5
6.5

Average air velocity = 191.7 fpm

Air volume sampled = 1700 L/min x 120 min =



4.3 | 12.9 | 21.5

Facility USX-CLAIRTON

B.P. 28.60 in. Hg

Location 2ND UNIT SECONDARY PULVERIZER

Filter # 6

Test Port 4TH LEVEL EAST WINDOW

Pump # SKC UNIT # 1

Date 12-19-94

Test Time START 15:15 / STOP 15:21 SHIFT CHANGE 16:05 START 18:05 END EST

Operator KA

Relative Humidity PRE 58 POST 60

Sampling Point	Flow (FPM) Pre	Temp Pre °F	Flow (FPM) Post	Temp. Post	cf/min	Area
#1 4.3 x 6.5	139	44	100	42	1715	9.4
#2 4.3 x 19.5	98	44	165	42	1710	9.4
#3 4.3 x 32.5	82	44	158	42	1718	9.4
#4 4.3 x 45.5	65	44	76	42	1699	9.4
#5 12.9 x 6.5	170	44	103	42	1706	9.4
#6 12.9 x 19.5	200	44	171	42	1704	9.4
#7 12.9 x 32.5	209	44	230	42	1707	9.4
#8 12.9 x 45.5	222	44	188	42	1695	9.4
#9 21.5 x 6.5	173	44	142	42	1701	9.4
#10 21.5 x 19.5	203	44	185	42	1687	9.4
#11 21.5 x 32.5	308	44	181	42	1666	9.4
#12 21.5 x 45.5	309	44	156	42	1711	9.4

dc-180.cht

6.5
19.5
32.5
45.5

Average air velocity = 3168.9 fpm

Air volume sampled =

1.702 L/min * 120 min =

52"

4.3 | 12.9 | 21.5

2-20-94

π UNIT Primary Pressurized.

→ 1st Level

South East Door - closed
36"X80" = 20.0 ft²

South Central Door - closed
36"X84" = 21.0 ft²

Southwest - Double Door - Open
71" X 83" = 40.9 ft² (IN) (IN)

Inside North Door - closed
36"X84" = 21 ft²

→ 2ND Level

Southwest Door - OPEN
36"X84" = 21 ft² (IN) (IN)

East Inside single Door - closed - 36"X84" = 21 ft²

West Window - closed
52" X 48" = 17.3 ft²

West Loading Dock Door - OPEN
144" X 139" = 139 ft² (IN) (IN)

Northwest window - closed
52" X 48" = 17.3 ft²

North East window - OPEN
26" X 51" = 9.2 ft² (OUT) (IN)

North To South

① East window - closed
55" X 49" = 18.7 ft²

② East window - closed
53" X 45" = 16.6 ft²

③ East window - closed
54" X [illegible] = 11.6 ft²

1ST UNIT PRIMARY PUL.
12-20-94

2ND Level

South East side single Door - closed
36" X 84" = 21 ft²

South Inside Loading Dock Doors - closed
74" X 140" 71.9 ft²

→ 3RD Level

South to North

① East side window - closed
52" X 55" = 19.9 ft²

② East side window - OPEN
25" X 51" = 3.6 ft²

IN — IN

* North ~~side~~ EAST window - ~~closed~~ OPEN ← sampling site
~~[illegible]~~" 26" X 50" = 9.0 ft² OUT — OUT (outward flow)

North West window - closed
55" X 53" = 20.2 ft²

West Loading Dock Doors - closed
124" X 143" = 123.1 ft²

West side window - closed
55" X 48" = 18.3 ft²

South side window - closed
55" X 53" = 20.2 ft²

→ 4th Level

1st UNIT Primary PUL

12-20-94

South To North

① East window - closed
55"X53" = 20.2 ft²

② EAST WINDOW - OPEN
26" X 50" = 9.0 ft²

← Sampling site (outward flow)

③ EAST WINDOW - ~~OPEN~~ CLOSED
55"X51" = 19.5 ft²

North EAST window - closed
55"X51" = 19.5 ft²

Northwest window - closed
55" X 51" = 19.5 ft²

West side LOADING DOCK DOORS - CLOSED
66"X240" = 110 ft²

North To South

① West window - closed
55" X51" = 19.5 ft²

② West window - open
55" X53" 20.2 ft²

← Sampling site (outward flow)

South West window - closed
55" X 51" = 19.5 ft²

12-20-94

ST UNIT SECONDARY PULVERIZER

ST LEVEL

EAST SINGLE DOOR CLOSED 39" x 86" = 29.3 ft² ~~0 X 0~~

EAST WINDOW CLOSED 24" x 24" = 4.0 ft² ~~0 X 0~~

WEST SINGLE DOOR CLOSED 39" x 86" = 23.3 ft² ~~0 X 0~~

2ND LEVEL

SINGLE DOOR WEST SIDE CLOSED
35" x 83" = 20.2 ft² ~~0 X 0~~

WINDOW WEST SIDE 31" x 44" OPEN = 9.5 ft² IN IN

WEST SIDE DOUBLE DOORS CLOSED
96" x 79" = 52.7 ft² IN IN

EAST INSIDE SINGLE DOORS CLOSED
36" x 84" = 21.0 ft² ~~0 X 0~~

SOUTH WEST WINDOW CLOSED
36" x 44" = 11.0 ft² ~~0 X 0~~

SOUTH EAST WINDOW OPEN
36" x 44" = 11.0 ft² IN IN

NORTH DOUBLE LOADING DOCK DOORS. CLOSED
168" x 72" = 84 ft² ~~0 X 0~~

1ST UNIT SECONDARY PULV -

12-20-94

3RD LEVEL

WEST WINDOW OPEN
36" x 44" = 11.0 ft² (OUT) — (IN)

WEST DOUBLE DOORS OPEN
72" x 84" = 42 ft² (IN) — (IN)

SOUTH WEST WINDOW OPEN
36" x 44" = 11.0 ft² (OUT) — (OUT) ← sampling site (outward flow)

SOUTH EAST WINDOW OPEN
36" x 44" = 11.0 ft² (OUT) — (OUT) ← outward flow

~~EF~~ SOUTH TO NORTH
EAST WINDOW OPEN
36" x 44" = 11.0 ft² (OUT) — (OUT) ← outward flow

EAST WINDOW OPEN
36" x 44" = 11.0 ft² (IN) — (IN)

4TH LEVEL

NORTH TO SOUTH OPEN
~~26 x 46~~
EAST WINDOW OPEN
26" x 46" = 8.3 ft² (OUT) — (OUT) ← outward flow

EAST WINDOW OPEN
33" x 42" = 9.6 ft² (OUT) — (IN) EAST

EAST SIDE LOADING DOCK DOORS CLOSED
150" x 63" = 65.6 ft² ~~OUT~~

NORTH WINDOW OPEN
26" x 46" = 8.3 ft² (OUT) — (OUT) ← sampling site (outward flow)

NORTH TO SOUTH SOUTH TO NORTH
WEST WINDOW OPEN
26" x 46" = 8.3 ft² (OUT) — (OUT) ← sampling site (outward flow)

LARGE WEST DOOR CLOSED
72" x 100" = 50 ft² ~~OUT~~ WEST

OPEN
WEST WINDOW
36" x 44" = 11.0 ft² (OUT) — (OUT) OUT ← outward flow

12-19-94 (MW)

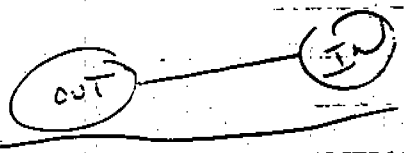
WS UNIT Primary Pulverizer

1st LEVEL

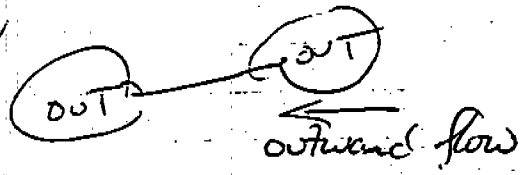
SW Door - OPEN
Total Area = 23.6 sq. Ft.

SE Double Door - Always closed
Total Area = 45.3 sq. Ft.

West Double Door - OPEN
Total Area = 60.4 sq. Ft.

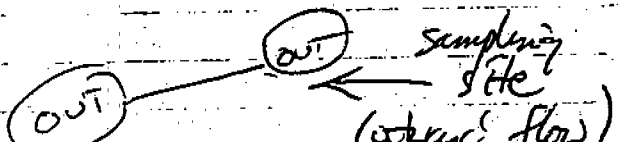


North Inside Door - OPEN
Total Area = 21.8 sq. Ft.

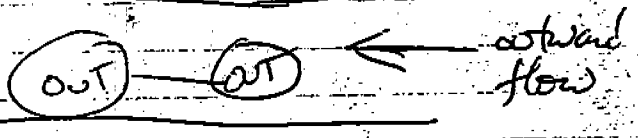


2ND LEVEL

SW WINDOW - OPEN
Total Area = 11.25 sq. Ft.

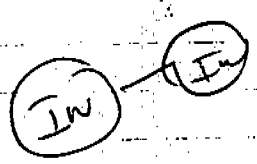


SE WINDOW - OPEN
Total Area = 11.25 sq. Ft.

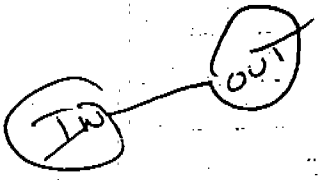


South To North

① EAST WINDOW - OPEN
Total Area = 11.25 sq. Ft.



② EAST WINDOW - OPEN
Total Area = 11.25 sq. Ft.



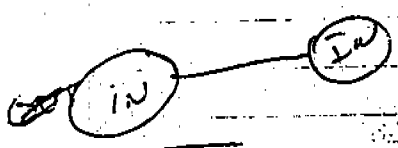
③ EAST WINDOW - closed
Total Area = 11.25 sq. Ft.

#2 Unit - Primary Pulverizer 12-19-94

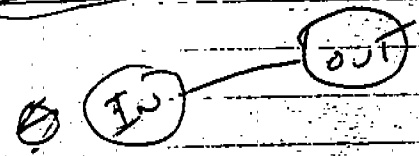
1ST Level

South To North

① West window - open
Total Area = 15.0 sq. Ft.

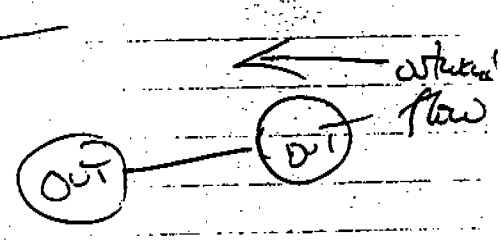


② West Door - open
Total Area = 20.2 sq. Ft.

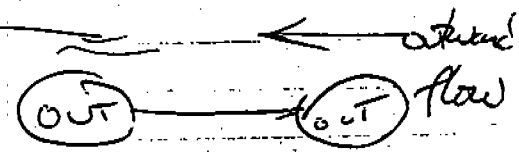


South To North

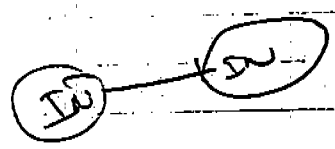
① East window - open
Total Area = 7.3 sq. Ft.



② East Double Door - open
Total Area = 35.8 sq. Ft.



East ~~sing~~ Door - open
Total Area = 20.2 sq. Ft.



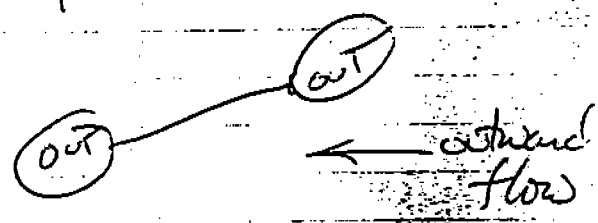
2ND UNIT - PRIMARY 12-19-94

Pulvenger

2ND LEVEL

South To North

① West window - Open
Total Area = 11.25 sq. Ft.

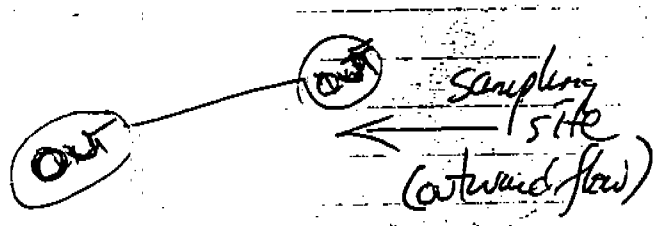


② West window - Open
Total Area = 11.25 sq. Ft.

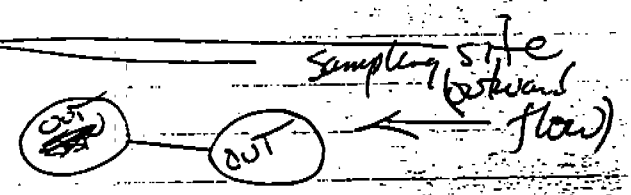
③ West window - closed
Total Area = 11.25 sq. Ft.

3RD LEVEL

* 1 to SW window - open
Total Area = 11.25 sq. Ft.

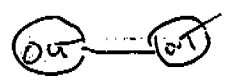


Test site SE window - open
Total Area = 11.25 sq. Ft.



~~East~~

South To North



① East window - open
Total Area = 11.25 sq. Ft.

② East window - open
Total Area = 11.25 sq. Ft.

③ East window - closed
Total Area = 11.25 sq. Ft.

④ East window - closed
Total Area = 17.9 sq. Ft.

⑤ East window - open
Total Area = 6.3 sq. Ft.

⑥ East window - open
Total Area = 6.3 sq. Ft.

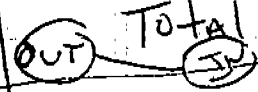
outward flow

⑦ East window - open
Total Area = 6.3 sq. Ft.

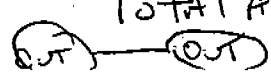
⑧ East window - open
Total Area = 6.3 sq. Ft.

outward flow

⑨ East window - open
Total Area = 8.1 sq. Ft.



⑩ East window - open
Total Area = 6.3 sq. Ft

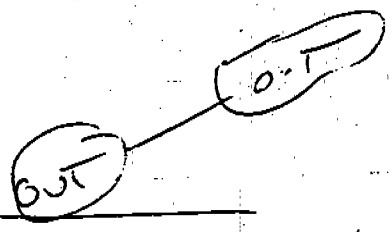


2nd Unit – Primary Rescuer 12-19-94

3RD Level

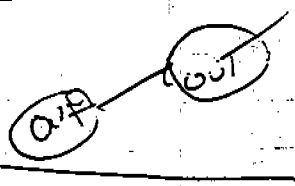
South To North

(11) EAST WINDOW – OPEN
Total Area = 6.3 sq. Ft.



← outward flow

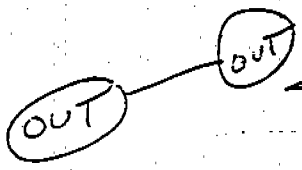
(12) EAST WINDOW – open
Total Area = 6.3 sq. Ft.



← outward flow

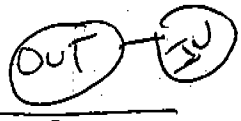
South To North

(1) WEST WINDOW – open
Total Area = 11.25 sq. Ft.

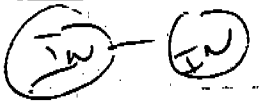


← outward flow

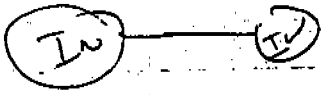
(2) WEST WINDOW – open
Total Area = 11.25 sq. Ft



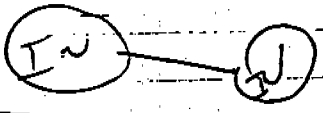
(3) West WINDOW – open
Total Area = 11.25 sq. Ft.



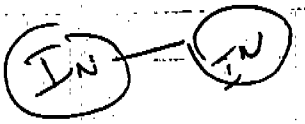
(4) West WINDOW – open
Total Area = 8.4 sq. Ft.



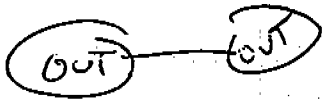
(5) West WINDOW – open
Total Area = 8.4 sq. Ft.



(6) West WINDOW – open
Total Area = 8.4 sq. Ft.



(7) WEST WINDOW OPEN
26" x 47" = 8.5 ft²



← outward flow

2 UNIT SECONDARY PULVERIZER 12-19-94

1ST LEVEL

DOUBLE DOORS NORTH END OPEN
72" x 87" = 43.5 ft² IN IN

SINGLE DOOR WEST SIDE OPEN
77" x 34" = 18.2 ft² OUT IN

2ND LEVEL

OPENING IN WEST WALL OPEN
19" x 43" = 5.7 ft² IN IN

DOUBLE LOADING DOCK DOORS CLOSED
92" x 116" = 74.1 ft²

WINDOW SW SIDE OPEN
26" x 52" = 9.4 ft² OUT OUT TEST SITE (outward flow)

WINDOW SE SIDE OPEN
26" x 52" = 9.4 ft² OUT OUT TEST SITE (outward flow)

3RD LEVEL

DOUBLE LOADING DOCK DOORS OPEN
68" x 116" = 54.8 ft² IN IN

WINDOW SE CLOSED
52" x 52" = 18.8 ft²

WINDOW SW CLOSED
52" x 52" = 18.8 ft²

~~SE window - 2ND Level - Blowing OUT~~

~~SE window - 3RD Level - Blowing OUT~~

~~SW window - 3RD level - Blowing out~~

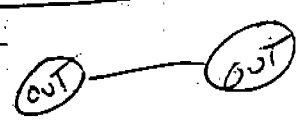
~~West window #1 - 3RD level - Blowing out~~

~~West window #2 - 3RD level - Blowing out~~

2ND UNIT PUL VERIZON SECOND DAMPY 12-19-94

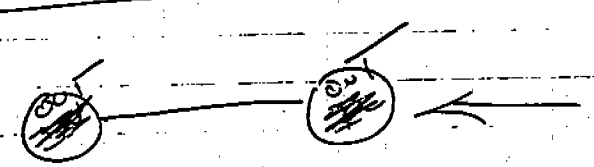
4TH FLOOR

EAST WINDOW OPEN
26" X 52" = 9.4 ft²



TEST site (outward flow)

WEST WINDOW OPEN
26" X 52" = 9.4 ft²



SIERRA
INSTRUMENTS, INC.

5 Harris Court
Monterey, CA 93940

Outside CA (800) 866-0200
Inside CA (408) 373-0200

Telex: 337795 CVBS CARV
FAX (408) 373-4402

CERTIFICATE OF CALIBRATION
VELOCITY/TEMPERATURE

(Calibrated in Sierra Instruments' Calibration Lab)

I HEREBY CERTIFY THAT SIERRA INSTRUMENTS, PART NUMBER 634, SERIAL NUMBER(S) 12161 SUPPLIED TO Keystone Envir. Res. ON PURCHASE ORDER NUMBER 9921 WAS MANUFACTURED IN ACCORDANCE WITH ALL THE TERMS AND SPECIFICATIONS OF THE PURCHASE ORDER REFERENCED TO THE ABOVE. I FURTHER CERTIFY THAT THIS INSTRUMENT HAS AN ACCURACY OF ±2% of Rdg. 1% FULL SCALE AND THAT ALL STANDARDS USED TO CALIBRATE VELOCITY METERS OR SYSTEMS BY SIERRA INSTRUMENTS ARE TRACEABLE TO NATIONAL BUREAU OF STANDARDS TESTS AND CALIBRATIONS. TEMPERATURE IS TRACEABLE TO ASTM #50F. THE ACURACY OF THIS INSTRUMENT IS WITHIN STATED SPECIFICATIONS.

CAL. LAB. MGR. SIGNATURE

DATE 2/7/92

APPLICABLE NBS TEST NUMBER FOR AIR VELOCITY: TN235890
7750608

APPLICABLE ASTM #50F FOR TEMPERATURE

SIERRA
INSTRUMENTS, INC.

5 Harris Court
Monterey, CA 93940

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Telex: 337795 CVBS CARV
FAX (408) 373-4402

CERTIFICATE OF CALIBRATION
VELOCITY/TEMPERATURE

(Calibrated in Sierra Instruments' Calibration Lab)

I HEREBY CERTIFY THAT SIERRA INSTRUMENTS, PART NUMBER 631-HT2, SERIAL NUMBER(S) 12161 SUPPLIED TO ADVANCED TECHNOLOGY SYSTEMS ON PURCHASE ORDER NUMBER 1046 WAS MANUFACTURED IN ACCORDANCE WITH ALL THE TERMS AND SPECIFICATIONS OF THE PURCHASE ORDER REFERENCED TO THE ABOVE. I FURTHER CERTIFY THAT THIS INSTRUMENT HAS AN ACCURACY OF ±2.50F READING & ±2% , FULL SCALE AND THAT ALL STANDARDS USED TO CALIBRATE VELOCITY METERS OR SYSTEMS BY SIERRA INSTRUMENTS ARE TRACEABLE TO NATIONAL BUREAU OF STANDARDS TESTS AND CALIBRATIONS. TEMPERATURE IS TRACEABLE TO ASTM #50F. THE ACURACY OF THIS INSTRUMENT IS WITHIN STATED SPECIFICATIONS.

JAIME PEREZ

CAL. LAB. MGR. SIGNATURE

MARCH 06, 1995
DATE

APPLICABLE NBS TEST NUMBER FOR AIR VELOCITY: TN235890
7750608

APPLICABLE ASTM #50F FOR TEMPERATURE

ATS
AIR QUALITY ENGINEERING
ANALYTICAL REPORTING FORM

CLIENT: USS - Clairton Works
PLANT LOCATION: Clairton, PA
PROJECT NUMBER: IKM 0847
UNIT TESTED: #1 + #2 Pulverizer Buildings

TEST DATE: 12/19 + 12/20/94
DATE RECEIVED: 12/19 + 12/20/94
DATE ANALYZED: 1/3/95
ANALYTICAL METHOD:

	Test Number	Filter ID Number	Component	Cyclone Weight Units ( )	Filter Weight Units (grams)	Soluble Portion of Front Half H2O Rinse Units ( )	Soluble Portion of Front Half Acetone Rinse Units ( )	Soluble Portion of Back Half H2O Rinse Units ( )	Soluble Portion of Back Half Acetone Rinse Units ( )	0.22µm Filter Insoluble Portion of Back Half H2O Rinse Units ( )
PP	2ND FL SW WINDOW	1	RESPIRABLE DUST		0.00003					
PP	3RD FL SE WINDOW	2			0.00012					
PP	3RD FL SW WINDOW	3			0.00013					
SP	2ND FL SE WINDOW	4			0.00007					
SP	2ND FL SW WINDOW	5			0.00009					
SP	4TH FL EAST WINDOW	6			0.00018					
PP	3RD FL NE WINDOW	7			0.00098					
PP	4TH FL WEST WINDOW	8			0.00083					
PP	4TH LEVEL EAST WINDOW	9			0.00120					
SP	4TH LEVEL NORTH WINDOW	10			0.00040					
SP	4TH LEVEL WEST WINDOW	12			0.00035					
SP	3RD LEVEL SW WINDOW	14			0.00000					
	BLANK	11			0.00000					

Analyst's Signature: Patrick J. Stockton
Date: 1/4/95

Comments

AQE 10/92

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA
MEASUREMENT OF RESPIRABLE DUST CONCENTRATIONS AND EMISSION RATES
FROM THE COAL PULVERIZER BUILDINGS

FIRST UNIT - PRIMARY PULVERIZER
TEST DATE: DECEMBER 20, 1994
TEST TIMES: 1030 - 1230 EST

SITE NAME	RESPIRABLE DUST COLLECTED (g)	AIR VOLUME SAMPLED (L)	RESPIRABLE DUST CONCENTRATION (mg/m3)	AVERAGE AIR VELOCITY (fpm)	OPENING AREA FOR OUTWARD AIR FLOW (sq ft)	VOLUMETRIC FLOW RATE (cf/min)	RESPIRABLE DUST EMISSION RATE (lb/hr)
THIRD FLOOR N.E. WINDOW	0.00098	205.0	4.78	149.0			
FOURTH FLOOR WEST WINDOW	0.00083	206.9	4.01	331.9			
FOURTH FLOOR EAST WINDOW	0.00120	208.0	5.77	207.0			
AVERAGE			4.85	229.3			
TOTAL					38.2	8759.3	0.159

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA
MEASUREMENT OF RESPIRABLE DUST CONCENTRATIONS AND EMISSION RATES
FROM THE COAL PULVERIZER BUILDINGS

FIRST UNIT - SECONDARY PULVERIZER
TEST DATE: DECEMBER 20, 1994
TEST TIMES: 1500 - 1700 EST

SITE NAME	RESPIRABLE DUST COLLECTED (g)	AIR VOLUME SAMPLED (L)	RESPIRABLE DUST CONCENTRATION (mg/m3)	AVERAGE AIR VELOCITY (fpm)	OPENING AREA FOR OUTWARD AIR FLOW (sq ft)	VOLUMETRIC FLOW RATE (cf/min)	RESPIRABLE DUST EMISSION RATE (lb/hr)
THIRD FLOOR S.W. WINDOW	0.00000	201.1	0.00	111.5			
FOURTH FLOOR NORTH WINDOW	0.00040	202.8	1.97	139.3			
FOURTH FLOOR WEST WINDOW #1 (SOUTH TO NORTH)	0.00035	202.6	1.73	118.8			
AVERAGE			1.23	123.2			
TOTAL					68.9	8488.5	0.039

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA
MEASUREMENT OF RESPIRABLE DUST CONCENTRATIONS AND EMISSION RATES
FROM THE COAL PULVERIZER BUILDINGS

SECOND UNIT - PRIMARY PULVERIZER
TEST DATE: DECEMBER 19, 1994
TEST TIMES: 1150 - 1350 EST

SITE NAME	RESPIRABLE DUST COLLECTED (g)	AIR VOLUME SAMPLED (L)	RESPIRABLE DUST CONCENTRATION (mg/m3)	AVERAGE AIR VELOCITY (fpm)	OPENING AREA FOR OUTWARD AIR FLOW (sq ft)	VOLUMETRIC FLOW RATE (cf/min)	RESPIRABLE DUST EMISSION RATE (lb/hr)
SECOND FLOOR S.W. WINDOW	0.00003	207.6	0.14	109.9			
THIRD FLOOR S.E. WINDOW	0.00012	203.9	0.59	148.3			
THIRD FLOOR S.W. WINDOW	0.00013	202.8	0.64	101.1			
AVERAGE			0.46	119.8			
TOTAL					178.7	21402.3	0.037

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA
MEASUREMENT OF RESPIRABLE DUST CONCENTRATIONS AND EMISSION RATES
FROM THE COAL PULVERIZER BUILDINGS

SECOND UNIT - SECONDARY PULVERIZER
TEST DATE: DECEMBER 19, 1994
TEST TIMES: 1515 - 1521, 1605 - 1759 EST (plant shift change)

SITE NAME	RESPIRABLE DUST COLLECTED (g)	AIR VOLUME SAMPLED (L)	RESPIRABLE DUST CONCENTRATION (mg/m3)	AVERAGE AIR VELOCITY (fpm)	OPENING AREA FOR OUTWARD AIR FLOW (sq ft)	VOLUMETRIC FLOW RATE (cf/min)	RESPIRABLE DUST EMISSION RATE (lb/hr)
SECOND FLOOR S.E. WINDOW	0.00007	205.9	0.34	151.2			
SECOND FLOOR S.W. WINDOW	0.00009	204.0	0.44	191.7			
FOURTH FLOOR EAST WINDOW	0.00018	204.2	0.88	168			
AVERAGE			0.55	170.3			
TOTAL					37.6	6403.3	0.013