New York State Department of Environmental Conservation
Region 9

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.

GRAY
IRON FOUNDRIES
AP-42 Section 7.10
Reference Number
19

STACK TEST REPORT

Chevrolet Tonawanda
Metal Casting Plant
River Rd.
Tonawanda, NY

Cupola #3 and Cupola #4
August 9, 10, 11, 12, 15, 16, 1977

Dan David, Junior Engineer
Roger McCabe, Principal Engineering Technician
Gary Foersch, Senior Engineering Technician
Dominic Buccilli, Senior Engineering Technician

Certified by James L. McGarry P.E. License No. 047232

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ABSTRACT

A stack test was performed at Chevrolet Tonawanda Metal Casting Div. on River Road, Tonawanda, NY. The sources tested were emission points C3C and C4D, cupola #3 and cupola #4, respectively.

The testing was performed by the Region 9 stack test team at the request of the Region 9 Office of the New York State Department of Environmental Conservation to determine compliance with 6 NYCRR 212 "Processes and Exhaust and/or Ventilation Systems". The personnel performing the testing included Roger McCabe, Principal Engineering Technician, Dominic Buccilli and Gary Foersch, Senior Engineering Technician. Daniel David. Junior Engineer was present to supervise the testing and the gathering of process data and to document opacity.

Cupolas 1, 2, and 3 are identical and the stack test results of cupola #3 is representative of the other two cupolas. Cupola #4 is identical to cupolas 1, 2, and 3, but has a different air cleaning arrangement.

The results of the testing show that cupola #3 and cupola #4 are in compliance with 6 NYCRR 212.3 (a) Table 3 "Emissions from Existing Emission Points". Cupola #3 permissible emission rate is 33.42 lb/hr and the actual average emission rate is 20.00 lb/hr. Cupola #4 permissible emission rate is 55.34 lb/hr and the actual average emission is 38.93 lb/hr.

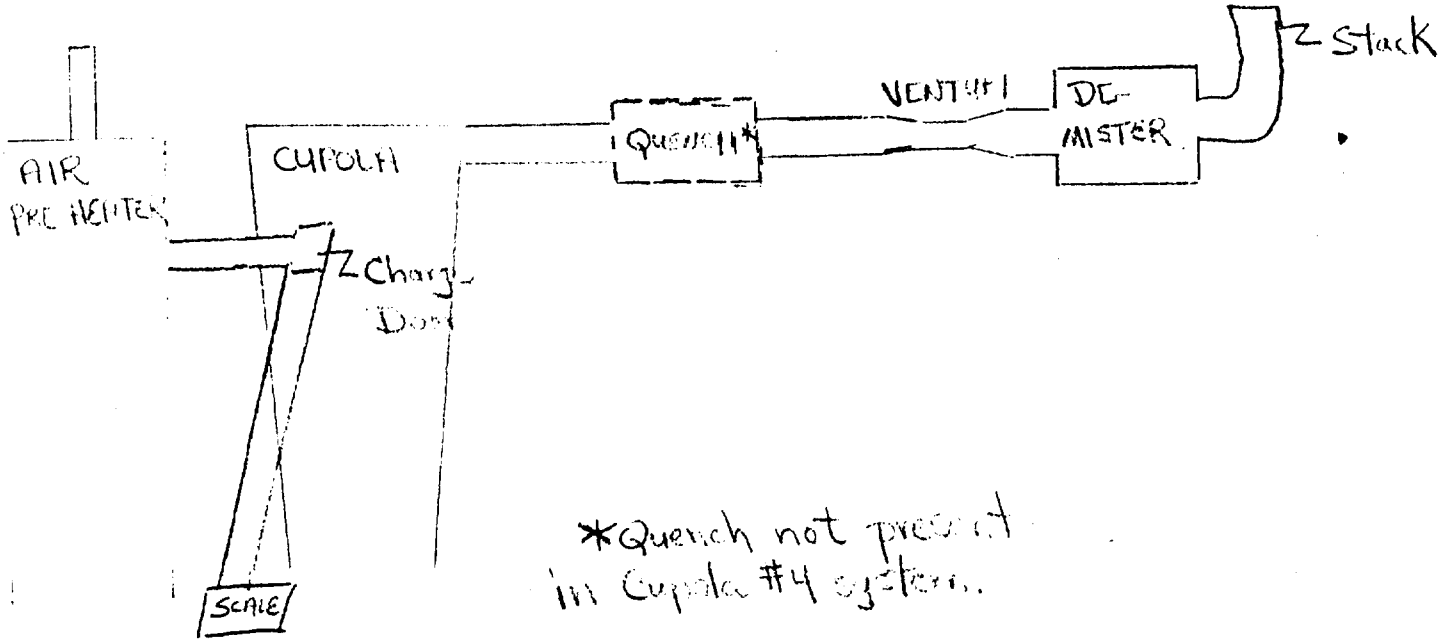
Cupola #3 and cupola #4 are not in compliance with 6 NYCRR 212.7 "Opacity of emissions limited".

SOURCE DESCRIPTION

The Chevrolet Tonawanda Metal Casting Plant is located on Irene Street, Tonawanda, New York.

Emission Point #C3C Cupola #3 was tested on August 9, 10, 11 and 12, 1977. This source is one of three identical iron melting cupolas. Each of these cupolas is charged intermittently. The charge materials are weighed on a drop-type scale and conveyed to the charge door where they are introduced to the cupola with preheated air. (When charging is not taking place, this hot air is vented through a separate relief stack.) The waste gases from each are drawn off the top of the cupola, are quenched to lower the gas temperature, and vented to a Chemico Venturi Scrubber. The gas is then demisted before venting through the stack.

Emission Point #C4D, Cupola #4 was stack tested on August 15 and 16, 1977. This source is an identical iron melting cupola. The waste gases from this cupola are vented directly to a Koch Flexi Venturi Scrubber without being quenched. The gas is again demisted before being vented through the stack.



TEST PROCEDURES

The procedures used for testing sources C3C and C4D were those set forth in the Federal Register, Volume 36, No. 247, December 23, 1971 and New York State Department of Environmental Conservation publications, 76-15-7 (9/75), AIR 200 (11/76), AIR 200.1 (3/73), AIR 200.3 (3/73), 76-11-5 (10/76).

The sampling train used was of the configuration shown in Figure 1 of this section. The testing was performed using a heated glass probe. An approved filter manufactured by MSA, Type 1106 BH was used for all of the sampling.

The sampling was performed on the stacks of cupola 3 and cupola 4. Cupola 3 sample ports are located four straight diameters downstream of any flow disturbance and more than two straight diameters upstream of the top of the stack. The stack diameter was field measured to be 60 inches. A sketch of the stack and port location, Figure 2, is included in this section. NYSDEC AIR 200 (11/76) Figure #3 gives 36 points as the minimum number of sampling points required using the above data. Figure 3 shows the sampling point location with respect to the inside stack wall.

Cupola #4 sample ports are located 8.8 straight diameters downstream of any flow disturbance and more than two straight diameters upstream. The stack diameter was field measured to be 65 inches. NYSDEC AIR 200 Figure 3 requires a minimum of 12 sampling points. A sketch of the port location and sampling point location, Figures 4 and 5 respectively, can be found in this section.

The analytical procedures used on each of the samples were according to the methods specified in the AIR 201 (12/73), Section 5, Sample Analysis. The samples were analyzed by the NYS Department of Health, Central New York Laboratory, Division of Laboratories and Research located in Syracuse, NY.

The wet catch (particulates from the condensate plus impinger wash) is given for information only and is not included in the emission rate calculations. The wet catch data may be found on the 9AIR 224.1 included in the Appendix of this report with the test data for each of the individual runs.

The molecular weight of the stack gas was determined by using electronic instrumentation, the Teledyne O_2 Meter and the Horiba CO_2 Meter. A composite gas sample was taken in an evacuated mylar sample bag during the particulate testing at the stack site. The gas samples were then analyzed at the stack test shop. The molecular weight data may be found on the AIR 221 form included in the Appendix of this report with the test data for each of the individual test runs.

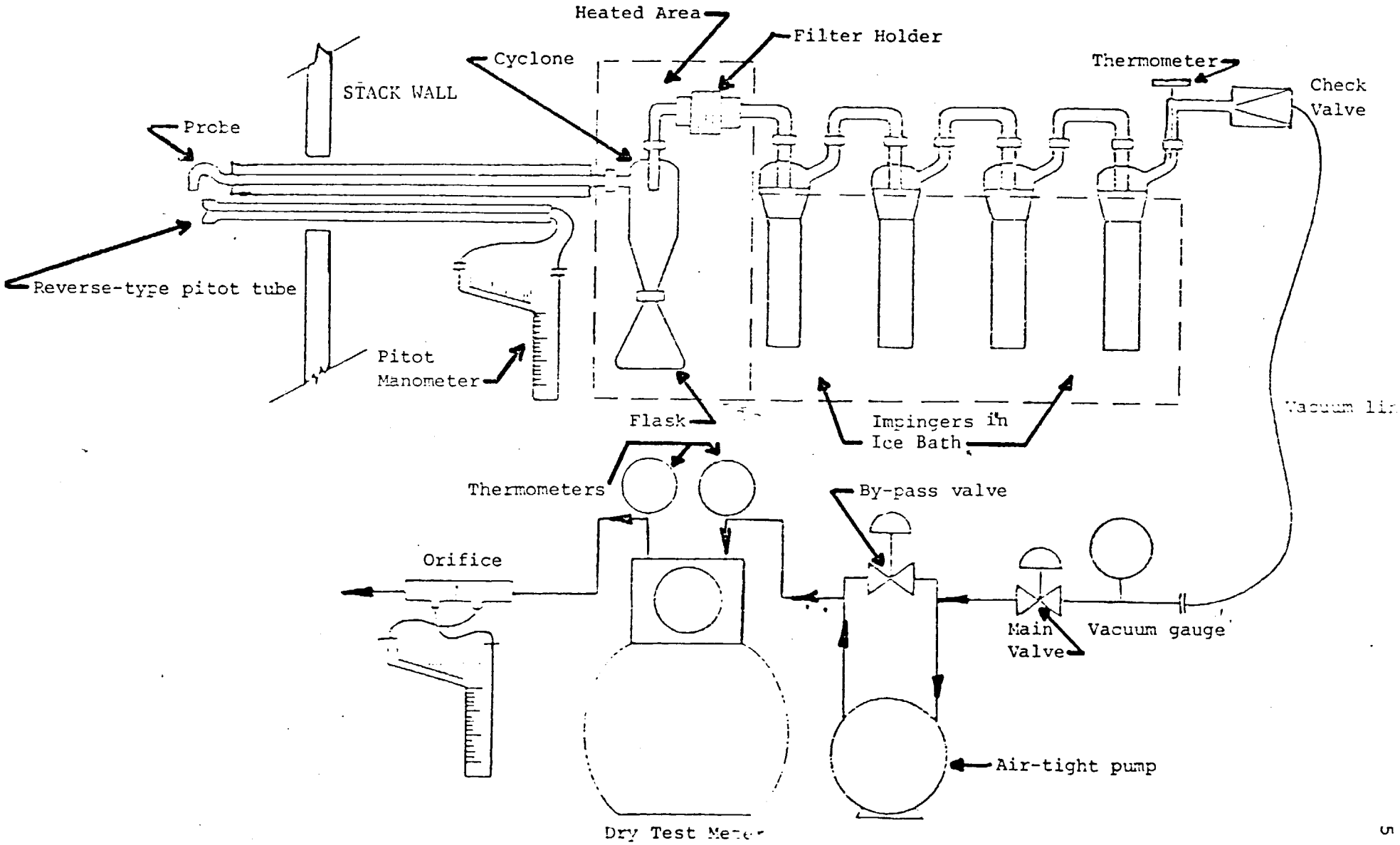


Figure 1 Particulate Sampling Train

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Peter A. A. Berle,
Commissioner

Cupola #3
Sketch of Stack
and Port Location

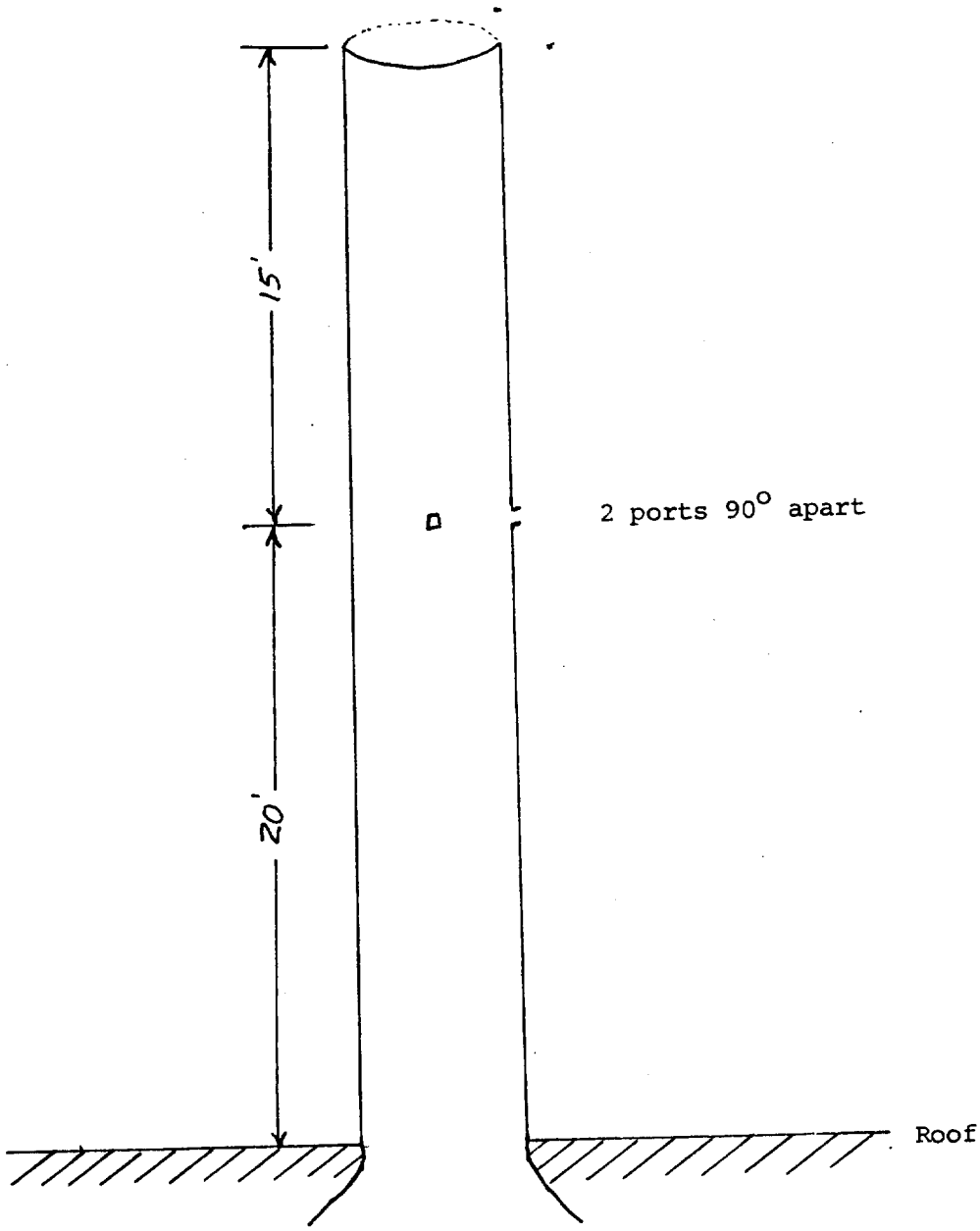


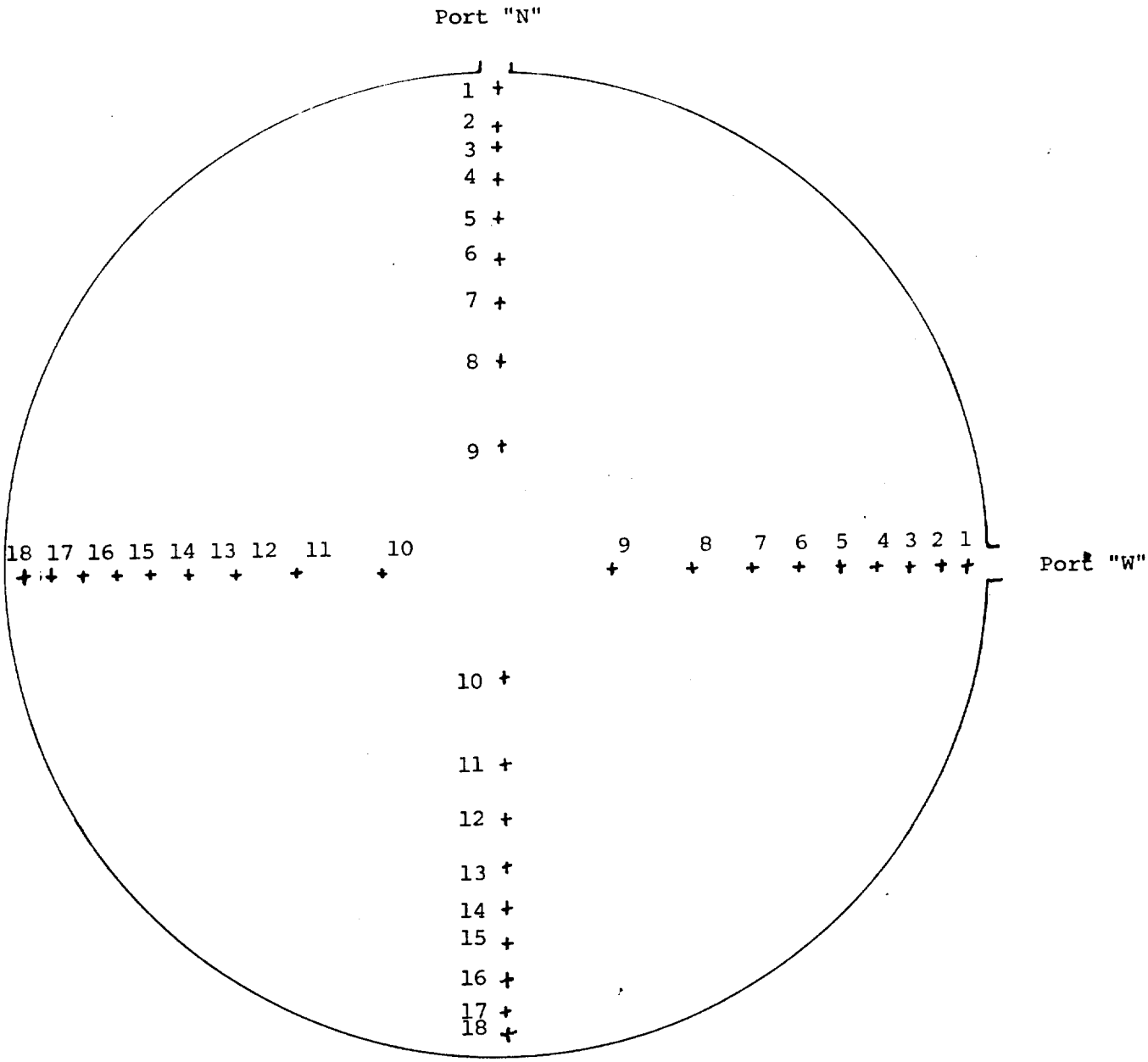
Figure 2

New York State Department of Environmental Conservation

Peter A. A. Berle,
Commissioner

N

Cupola #3
Inside Stack Diameter
60"
Sampling Point Location



Cupola #3
Sampling Point Location

Point No.	Value from AIR 200 Table #1	Inside Diameter	Distance from Inside Stack Wall
1	1.4	60"	1.0"
2	4.4	60"	2.64"
3	7.5	60"	4.5"
4	10.9	60"	6.54"
5	14.6	60"	8.76"
6	18.8	60"	11.28"
7	23.6	60"	14.16"
8	29.6	60"	17.76"
9	28.2	60"	22.92"
10	61.8	60"	37.08"
11	70.4	60"	42.24"
12	76.4	60"	45.84"
13	81.2	60"	48.72"
14	85.4	60"	51.24"
15	89.1	60"	53.46"
16	92.5	60"	55.5"
17	95.6	60"	57.36"
18	98.6	60"	59.00"

Table 1

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Commissioner

Cupola #4
Sketch of Stack
and Port Location

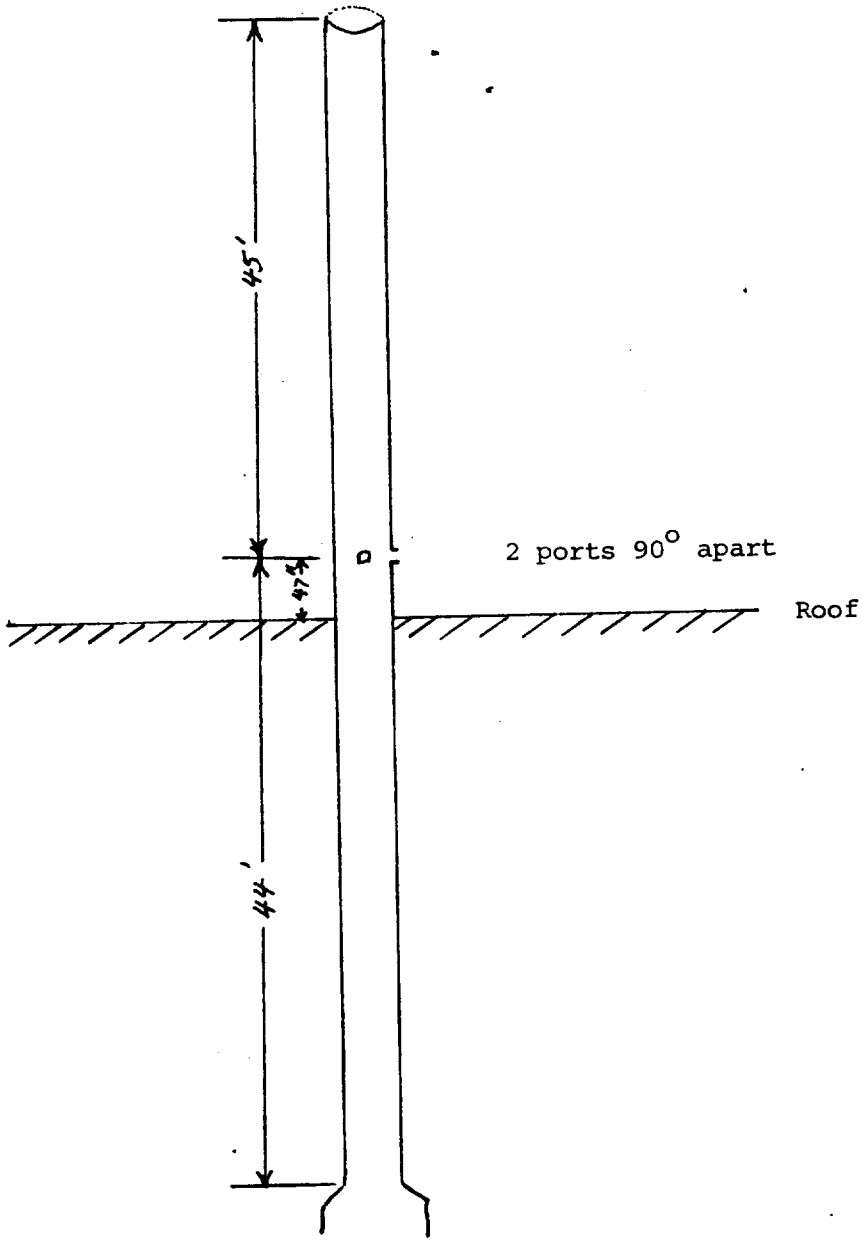

Figure 4

New York State Department of Environmental Conservation

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Cupola #4
Sampling Point Location
65" Inside Stack Diameter

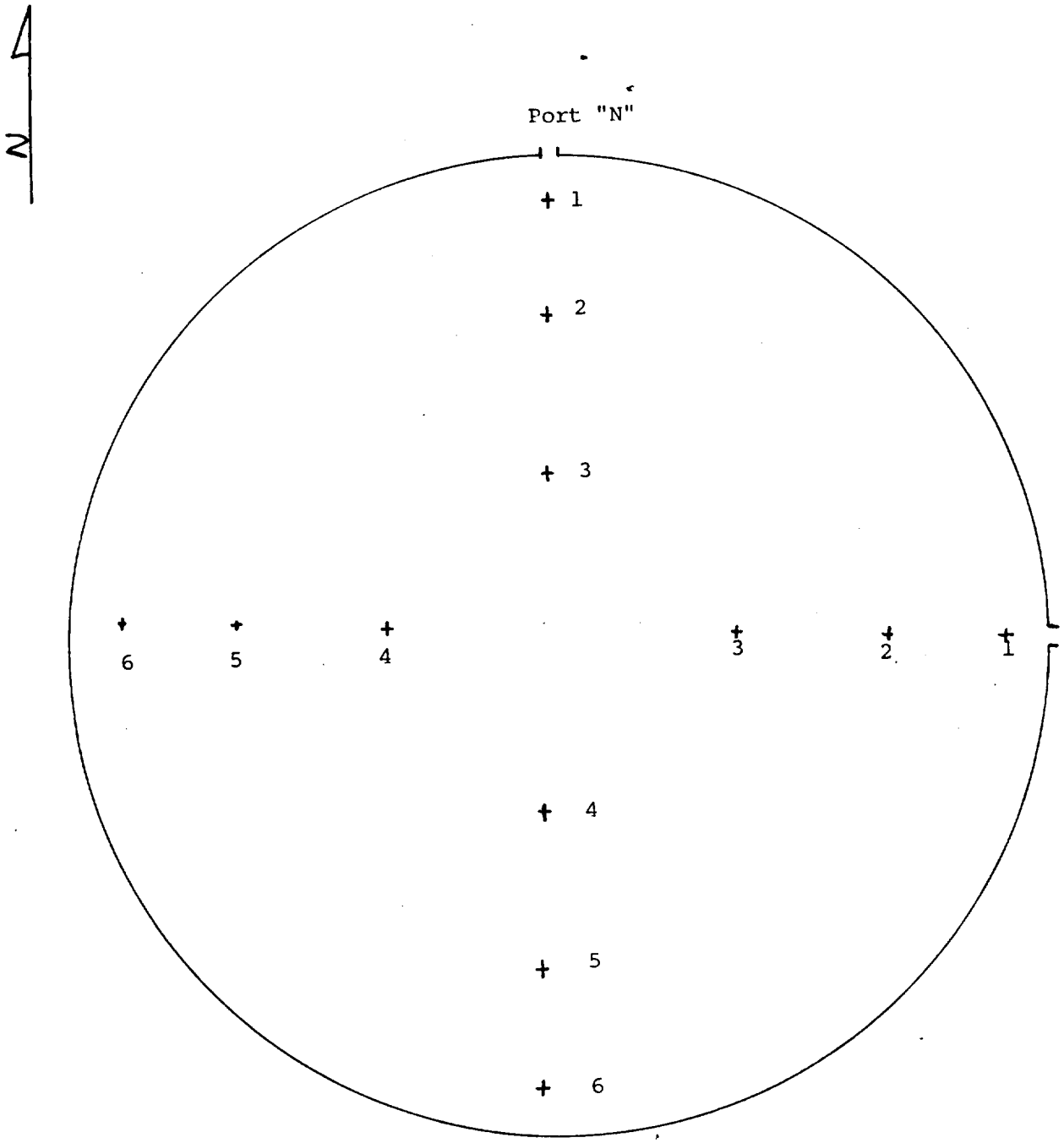

Figure 5

Cupola #4
Sampling Point Location

Point No.	Value from AIR 200 Table #1	Diameter	Distance from Inside Stack Wall
1	4.4	65"	2.86"
2	14.7	65"	9.56"
3	29.5	65"	19.18"
4	70.5	65"	45.83"
5	85.3	65"	55.45"
6	95.6	65"	62.14"

Table 2

PLUME OBSERVATIONS

During the testing, opacity observations were made by Daniel David, Junior Engineer with the Region 9 Office. Mr. David is certified by the Department of Environmental Conservation as an opacity observer. Mr. David made his opacity observations at cupola #3 stack on August 9, 10, 11, and 12, 1978. He observed cupola #4 stack on August 15 and 16, 1978. A summary of these plume observations can be found in this section -- Table 3 for cupola #3 and Table 4 for cupola #4. The original plume observation sheets can be found in the Appendix of this report.

6 NYCRR 212.7 Opacity of emissions limited, states "No person shall cause or allow emissions having an opacity of 20% or greater from any process or exhaust and/or ventilation system to be emitted to the atmosphere except only the emission of uncombined water".

During the observation made by Mr. David, there were numerous observations of 20-25% opacities for cupola #3 and cupola #4 had opacities of 20-30%. Therefore, cupola #3 and cupola #4 are not in compliance with 6 NYCRR 212.7.

SUMMARY OF OPACITY OBSERVATIONS
Cupola #3

Date	Time	Opacity Observations (minutes & seconds) 0	5	10	15	20	25	30	35-100
8-9-77	2:02-2:15 pm	1:15	:30	4:00	5:45	1:15	:15		
8-9-77	2:46-3:01 pm	0	1:00	5:15	6:30	2:15			
8-9-77	4:00-4:14 pm	1:15	1:45	4:45	4:00	1:45	:30		
8-10-77	11:25-11:35 am	0	2:30	5:00	2:30				
8-11-77	9:52-9:59 am	1:00	:15	:30	2:15	2:45	:45		
8-11-77	10:55-11:10 am	1:15	2:15	4:45	3:45	2:45	:15		
8-11-77	12:40-1:00 pm	0	0	1:15	8:45	7:30	2:30		
8-12-77	9:42-9:57 am	0	:30	5:15	8:00	1:15			
8-12-77	1:00-1:10 pm	0	0	2:15	5:00	2:45			

6 NYCRR 212.7 "Opacity of emissions limited" - No person shall cause or allow emissions having an opacity of 20 percent or greater from any process or exhaust and/or ventilation system to be emitted to the atmosphere, except only the emission of uncombined water.

Table 3

SUMMARY OF OPACITY OBSERVATIONS
Cupola #4

Date	Time	Opacity Observations (minutes & seconds)							
		0	5	10	15	20	25	30	35-100
8-15-77	10:26-10:33 am	:15	0	:15	:30	2:15	2:30	1:15	
8-15-77	1:44-2:04 pm	0	0	1:00	9:45	7:15	2:00		
8-16-77	9:17-9:37 am	:15	:15	:15	8:00	8:15	3:15	:15	
8-16-77	12:40-12:57 pm	0	:30	:15	4:45	6:15	5:30	:15	

6 NYCRR 212.7 "Opacity of emissions limited" - No person shall cause or allow emissions having an opacity of 20 percent or greater from any process or exhaust and/or ventilation system to be emitted to the atmosphere, except only the emission of uncombined water.

Table 4

DISCUSSION OF RESULTS

The rule that governs the Chevrolet Tonawanda Metal Casting Plant Cupola #3 and #4 is 6 NYCRR 212.3 (a) which requires that emission rates comply with Table 3 of the rule, Permitted Emission Rate for Solid Particulates (Environmental Rating B and C). The allowable emissions for both cupolas is dependent upon process weight.

During the testing, the cupola charging data was obtained by a Chevy Plant representative. This data can be found in the Appendix of this report. A summary of this charging data and results of the testing are included in this section as Tables 5 and 6 for Cupola #3 and Tables 7 and 8 for Cupola #4.

The stack test data and analytical data was fed into our computer in Albany via our Region 9 Office terminal. The computer printout, the calculations used to check the results of one of the tests, and the pertinent data can be found in the Appendix.

Cupola #3 average process weight, on the days stack tests were performed, is 53,388 pounds per hour and the allowable emission rate is 33.42 lb/hr. The average actual emission rate for the three particulate test runs is 20.00 pounds per hour. Therefore, cupola #3 is in compliance with 6 NYCRR 212.3 (a).

Cupola #4 average process weight, on the days stack tests were performed is 113,982 pounds per hour and the allowable emission rate is 55.34 pounds per hour. The average actual emission rate for the three particulate test runs is 38.93 pounds per hour. Therefore, cupola #4 is in compliance with the above rule.

Both cupola #3 and cupola #4 had visible emissions which were documented as equal to and greater than 20 percent. Therefore, both are not in compliance with 6 NYCRR 212.7 "Opacity of emissions limited".

PROCESS WEIGHT
CHARGING DATA
CUPOLA #3

Date	Run	Charged Materials (lbs)	Time Interval (hrs)	Process Weight (lb/hr)
8-9-77	1A	155,250	2.85	54,474
8-10-77	1B	232,250	4.00	58,063
Averaged value for Runs 1A and 1B				56,269
8-11-77	2	317,735	6.12	51,917
8-12-77	3	305,115	5.87	51,979
Average process weight introduced to the cupola on those days in which stack tests were performed.				53,388

Table 5

SUMMARY OF TEST RESULTS
CUPOLA #3

Run	Date	%I		lb/hr	Grains/scf Dry Basis	Lb/1000 lb ueg Wet Basis
1A	8-9-77	103.2	*29.98/2 =	14.99	**.1202	**.2189
1B	8-10-77	107.5	*15.68/2 =	7.84	**.0838	**.1527
1A & 1B combined to form Run 1				*22.83	**.1020	**.1858
2	8-11-77	103.3		20.09	.0921	.1672
3	8-12-77	105.2		17.07	.0835	.1526
Average Runs 1, 2, and 3				20.00	.0925	.1685

Allowable Emission Rate is given in 6 NYCRR 212 Table #3 "Permitted Emission Rate for Solid Particulate" (Environmental Rating B & C)

E = permitted emission rate (lb/hr)

P = average process weight determined during the days testing was performed

P = 53,388 lb/hr

$$E = 0.024\ P^{0.665}$$
$$= 0.024\ (53{,}388)^{0.665}$$
$$= 33.42 \text{ lb/hr}$$

Allowable Emission Rate for Cupola #3 is 33.42 lb/hr

*Emission Rate in lb/hr was calculated on the basis of the complete stack area for Run 1A and Run 1B. Since only one traverse was sampled for Run 1A and the other traverse for Run 1B, the results of each must be averaged to obtain the actual emissions for Run 1. Therefore, the calculated emission in (lb/hr) for Runs 1A and 1B must be divided by 2 and then added together to make a complete run called Run 1.

**Emission Rate in terms of concentration (gr/scf and lb/1000 lb ueg) for Runs 1A and 1B have been averaged to make a value for Run 1.

Charging Data
Process Weight
Cupola #4

Date	Run #	Weight Charged (lbs)	Time Interval (hrs)	Process Weight (lb/hr)
8-15-77	1	157,300	1.22	128,934
8-16-77	2	201,975	1.65	122,409
8-16-77	3	120,500	1.33	90,602
Average				113,982

The process weight was determined by totaling the charging materials and dividing by the production time. This charging data was obtained by plant representatives during the testing. A copy of charging weights and times is included in the Appendix of this report. If there were any unusual time lapses between charges, this time period and any charges during that period were disregarded in the calculations so as not to bias the results.

Table 7

Summary of Results
Cupola #4

Date	Run	%I	lb/hr	gr/scf Dry Basis	lb/1000 lb UEG Wet Basis
8-15-77	1	101.5	52.2	.2106	.3834
8-16-77	2	102.6	38.53	.1793	.3240
8-16-77	3	102.2	26.05	.122	.2202
Average of 3 runs			38.93	.1706	.3092

E = permitted emission rate (lb/hr)

$E = 0.024P^{0.665}$

P = average process weight determined during the days testing was performed

$E = 0.024\ (113{,}982)^{0.665}$

P = 113,982 lbs/hr

E = 55.34 lb/hr

The allowable emission rate for cupola #4 is 55.34 lb/hr.

Table 8

APPENDIX

STACK TEST CALCULATION SYMBOLS

V_m =	Volume of dry gas sample through dry gas meter (meter conditions) cu. ft.
$V_{m_{std}}$ =	Volume of dry gas sample through dry gas meter (standard conditions) cu. ft.
$V_{w_{std}}$ =	Volume of water vapor in gas sample (standard conditions) cu. ft.
V_{total} =	Total volume of gas sampled (standard conditions) cu. ft.
V_{l_c} =	Volume of liquid collected in impingers and silica gel, ml.
P_{bar} =	Barometric pressure at orifice meters in. Hg.
P_{std} =	Barometric pressure at standard conditions, 29.92 in. Hg.
P_s =	Absolute stack gas pressure, in. Hg.
T_m =	Absolute average dry gas meter temperature, ^oR
T_{std} =	Absolute temperature at standard conditions, ^oR
T_s =	Absolute average stack gas temperature ^oR
θ =	Total sample time, min.
ΔH =	Average pressure drop across the orifice, inches H_2O
M_d =	Dry molecular weight, lb/lb. - mole
M_s =	Molecular weight of stack gas (wet basis), lb/lb. mole
% CO_2 =	Percent carbon dioxide by volume, dry basis
% O_2 =	Percent oxygen by volume, dry basis
% CO =	Percent carbon monoxide by volume, dry basis
% N_2 =	Percent nitrogen by volume, dry basis
V_s =	Average stack gas velocity, feet per second
K_p =	Units constant for velocity formula 85.48 ft/sec $\left(\frac{lb}{lb\text{-}mole\text{-}^oR}\right)^{1/2}$ when using units in formula
C_p =	Pitot tube coefficient, dimensionless ~~0.155~~ 0.84 for Type S pitot tube
$(\sqrt{\Delta P})$ Ave =	Average velocity head of stack gas, inches H_2O
B_{wo} =	Proportion by volume of water vapor in the gas stream, dimensionless

STACK TEST CALCULATION SYMBOLS
(Cont.)

A_s =	Area of stack, sq. ft.
A_n =	Area of nozzle, sq. ft.
d =	Diameter of stack, inches
Q'_s =	Volumetric flow rate, wet basis standard conditions, cubic feet per hour
M_n =	Total amount of particulate matter collected, mg. (filter, probe, cyclone, and flask)
C'_s =	Concentration of particulate matter in stack gas, dry basis, gr/scf
W'_s =	Weight emission rate of particulate, lb/hr
I =	Percent of isokinetic sampling

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet METAL Casting PLANT Test Date 8-11-77

Source: Cupola #3 scrubber Run No. 2

From Field Data Sheets (AIR 224)

From Analytical Data Sheet (AIR 224.1)

V_m = 88.570 C.F.

θ = 180 min.

P_{bar} = 29.22 in. Hg

P_s = 29.21 in. Hg

T_s = 90 °F + 460 = 550 °R

T_m = 99 °F + 460 = 559 °R

Ave$\sqrt{\Delta p}$ = .417 in. H_2O

ΔH = .747 in. H_2O

V_{lc} = .119 mL

A_n = .00034 Sq. ft.

M_n = 490.4 mg

9AIR201.02 (6/74)

STACK TEST CALCULATION WORKSHEET

Firm: Chevrolet Metal Casting Plant Test Date 8-11-77

Source: Cupola #3 Scrubber Run No. 2

Moisture Content

$$B_{wo} = \frac{V_{w_{std}}}{V_{w_{std}} + V_{m_{std}}} \times 100 = \%$$

The moisture content determined using the moisture collected in the sampling train for this test run is. .069 or 6.9%. this value is grater than the moisture content calculated at staturated conditions.

Therefore. the moisture content at saturation was used.

See form 9AIR 201.09.

Dry Molecular Weight (lb/lb - mole)

$$M_d = .44\ (\%\ CO_2) + .32\ (\%\ O_2) + .28\ (\%\ CO + \%\ N_2)$$

$$= .44(7.5) + .32(7.2) + .28(85.3)$$

$$= 29.49 \text{ lb/lb-mole.}$$

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Plant Test Date 8-11-77

Source: Cupola #3 Scrubber Run No. 2

Molecular Weight of Stack Gas (Wet Basis) (lb/lb - mole)

$$M_s = M_d (1-B_{wo}) + 18 B_{wo}$$

$$= 29.49(1-.049) + 18(.049)$$

$$= 28.93 \text{ Lb/Lb-mole}$$

Average Stack Gas Velocity (feet per second)

$$V_s = K_p C_p (\sqrt{\Delta p})_{Ave} \sqrt{\frac{T_s}{P_s M_s}}$$

$$= 85.48(.84)(.417)\sqrt{\frac{550}{(29.21)(28.93)}}$$

$$= 24.156 \text{ f.p.s.}$$

9AI.R201.05 (6/74)

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Plant Test Date 8-11-77

Source Cupola #3 Scrubber Run No. 2

Area of stack (ft^2)

$$A = \frac{\frac{\pi d^2}{4}}{144}$$

$$= \frac{\pi (60)^2}{4} \Big/ 144$$

$$= 19.63 \ ft^2$$

Volumetric Flow Rate (Wet Basis) (Standard Conditions) (cu. ft./hr)

$$Q'_s = 3600 \ (V_s) \ (A) \left(\frac{T_{std}}{(T_s)}\right)\left(\frac{P_s}{P_{std}}\right)$$

$$= 3600 (24.156)(19.63)\left(\frac{530}{550}\right)\left(\frac{29.21}{29.92}\right)$$

$$= 1,605,946.12 \ SCF/H$$

9AIR201.06 (6/74)

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Plant Test Date 8-11-77

Source Cupola #3 Run No. 2

Concentration in grains per standard cubic foot (gr/scf)

$$C'_s = .0154\left(\frac{M_n}{V_{m_{std}}}\right)$$

$$= .0154\left(\frac{490.4}{82.147}\right)$$

$$= .0919 \text{ gr/scf.}$$

Total Volume Sampled (Standard Conditions) (SCF)

$$V_{total} = V_{m_{std}} + V_{w_{std}}$$

$$= 82.147 + 4.233$$

$$= 86.38 \text{ S.C.F.}$$

9AIR201.07 (6/74)

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Test Date 8-11-77

Source: Cupola #3 Scrubber Run No. 2

Emission Rate in Pounds Per Hour (lb/hr)

$$W'_s = \frac{(1.0 \text{ lb}/454{,}000 \text{ mg})\ M_n\ Q'_s}{V_{total}}$$

$$= \frac{(1.0/454{,}000)\ 490.4}{86.38}\ 1{,}605{,}946.12$$

$$= 20.08 \text{ lb/hr.}$$

Isokinetic Variation (Percent)

$$I = \left[\frac{V_{total}\ (T_s)}{A_n\ V_s\ P_s\ \theta}\right] \left(\frac{29.92}{530}\right) \left(\frac{1}{60}\right) 100$$

$$= \frac{(86.38)(550)}{(.00034)(24.156)(29.21)(180)} \left[\frac{29.92}{530}\right] \left[\frac{1}{60}\right] 100$$

$$= 103.5\ \%.$$

9AIR201.08 (1/76)

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Plant Test Date 8-11-77

Source: Cupola #3 scrubber Run No. 2

Moisture content of stack gas for saturated conditions

From EPA Course Manual "Source Sampling", Section 2, Page 6

$$B'_w = \frac{e'}{P_{mix}}$$

B'_w = Proportion by volume of water vapor in a gas mixture for saturated conditions (B_{wo})

e' = Water vapor pressure for saturated conditions and dry bulb temperature (taken from Table 2.1 in EPA course manual)

P_{mix} = Absolute pressure of the gas mixture (P_s)

$$B'_w = \frac{1.422}{29.21}$$

$$B'_w = .049 \text{ or } 4.9\%$$

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Plant Test Date 8-11-77

Source: Cupola #3 Scrubber Run No. 2

Dry Gas Volume (Standard Conditions) (SCF)

$$V_{m_{std}} = V_m (17.71) \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$$

$$= 88.57(17.71) \left[\frac{29.22 + \frac{.747}{13.6}}{559} \right]$$

$$= 82.147 \text{ S.C.F.}$$

Volume of Water Vapor (Standard Conditions) (SCF)

$$V_{w_{std}} = \frac{B_{wo} (V_{m_{std}})}{1 - B_{wo}}$$

$$= \frac{.049 (82.147)}{(1 - .049)}$$

$$= 4.233 \text{ S.C.F.}$$

STACK TEST CALCULATION WORK SHEET

Firm: Chevrolet Metal Casting Plant Date 8-11-77

Source: Cupola #3 Scrubber Run No. 2

Concentration in pounds per 1000 pounds Undiluted Exhaust Gas (lb/1000 lb U.E.G.) (Stack Conditions)

$$\text{lb/1000 lb U.E.G.} = \frac{\left(\dfrac{(2.203 \times 10^{-6}\ \text{lb/mg})\ M_n}{V_{Total_{Std}}}\right)}{\left(\dfrac{1\ \text{lb-mole}}{386.7\ \text{SCF}}\right)(M_s)} \times 1000$$

$$= \frac{\dfrac{(2.203 \times 10^{-6})\ 490.4}{86.38}}{(1/386.7)(28.93)} \times 1000$$

$$= .167\ \text{Lb.}/1000\ \text{Lb U.E.G.}$$

STACK SAMPLE INPUT DATA
PRESENT DATE 12/13/77

DATE OF TEST 8/9/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT
DESCRIPTION OF INSTALLATION CUPOLA #3 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO. 1

BAROMETRIC PRESSURE 29.31 CATCH IN GM. .3655
NOZZLE DIAM.,INCHES .25 CONDENSATE VOLUME IN MILLILITERS 71.2
METERED DRY SAMPLE VOLUME 50.065

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.255	1.080	90.0	89.0	90.0	295.0
10.000	0.255	1.080	95.0	89.0	90.0	250.0
15.000	0.250	1.050	98.0	90.0	90.0	240.0
20.000	0.310	1.330	94.0	90.0	90.0	250.0
25.000	0.390	1.700	100.0	92.0	90.0	245.0
30.000	0.390	1.700	104.0	93.0	90.0	235.0
35.000	0.320	1.380	104.0	93.0	90.0	255.0
40.000	0.360	1.550	103.0	94.0	90.0	235.0
45.000	0.320	1.400	95.0	92.0	89.0	230.0
50.000	0.210	0.890	97.0	92.0	90.0	280.0
55.000	0.180	0.780	100.0	93.0	90.0	245.0
60.000	0.160	0.690	102.0	94.0	90.0	220.0
65.000	0.170	0.740	102.0	94.0	90.0	240.0
70.000	0.160	0.690	93.0	92.0	90.0	235.0
75.000	0.160	0.690	96.0	92.0	91.0	240.0
80.000	0.150	0.650	99.0	92.0	90.0	240.0
85.000	0.130	0.570	101.0	93.0	91.0	275.0
90.000	0.070	0.310	101.0	93.0	91.0	250.0
AVERAGES	0.226	1.016	95.3		90.1	247.8

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.06
METERED DRY VOLUME AT STACK CONDITIONS: 49.73
CONDENSATE AT STACK, CUBIC FEET: 3.569
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 4.893
TOTAL SAMPLE VOLUME, CUBIC FT : 52.29

ORSAT ANALYSIS
CO2%= 6.5 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 9.2 MOL WT = 32
N2%= 84.3 MOL WT = 28
AVG MOL WT DRY BASIS = 29.41
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1652.

THE AVERAGE STACK FLOW IN ACFM = 3.243E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: .1079
THE EMISSION RATE IN POUNDS PER HOUR: 29.98
ISOKINETIC VARIATION = 103.2
HOW MANY REPORTS, 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #3 SCRUBBER

TEST DATE 8/9/77

TEST NO. 1A

STACK PARAMETERS

STACK DIAMETER	IN INCHES	60.00
TEMPERATURE	IN DEGREES FAHRENHEIT	90
VELOCITY	IN FEET PER SECOND	27.5
FLOW IN ACTUAL CUBIC FEET PER MIN.		32428
FLOW IN STANDARD CU. FT. PER MIN.		30601

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO2= 6.50% DRY BASIS
CO= 0.00% DRY BASIS
O2= 9.20% DRY BASIS
N2= 84.30% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.41

WET GAS ANALYSIS (FROM ORSAT)

CO2= 6.18% WET BASIS
CO= 0.00% WET BASIS
O2= 8.75% WET BASIS
N2=80.17% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.85

STACK TEST DATA

CUPOLA #3 SCRUBBER TEST NO.1A

SAMPLE PARAMETERS

DURATION OF TEST	IN MINUTES	90
METER VOLUME, DRY	IN SCF	46.93
TOTAL SAMPLE VOLUME	IN SCF	49.34
AVERAGE METER TEMP.	IN DEG. RANKINE	555.3
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	247.8
WEIGHT CATCH	IN MGM	365.5
ISOKINETIC VARIATION	IN PERCENT	103.2

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	29.983
GRAINS	PER SCF DRY	.1202
GRAINS	PER SCF WET	.1143
POUNDS	PER 1000 POUNDS GAS DRY	.2258
POUNDS	PER 1000 POUNDS GAS WET	.2189

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------THURSDAY 12/29/77

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.
7-9-77	Chem. Metal Casting	Tonawanda	

Description of Installation	Tested by	Run No.
Cupola # 3 Scrubber	NYSDEC R-9	1A

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	K factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %
R-9	R-9	1.92	4.32	85	29.31	5%

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER
250	5'	.250	5 Amps	Probe # (Glass)

FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
	Impinger	No. 1	No. 2	
2-273	Final	145	112	888.5
	Initial	100	[illegible]	874.3
	Difference	45	12	14.2

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps
	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	
20-18		5	282.59	.25	1.07	93	79	91	1	[illegible]	70		
[illegible]		[illegible]	285.45	.25	1.03	95	79	90	2	[illegible]	74		
16		15	288.33	.20	[illegible]	98	90	90	2	240	72		
15	[illegible]	20	291.50	.21	1.23	[illegible]	[illegible]	90	3	[illegible]	[illegible]		
14		25	[illegible]	.31	1.70	100	92	[illegible]	4	[illegible]	71		
13		30	298.70	.22	1.70	[illegible]	[illegible]	[illegible]	4	[illegible]	63		
12		35	301.98	.32	1.38	104	93	90	3	255	69		
11	[illegible]	40	305.40	.36	1.55	103	94	90	4	235	75	[illegible]	
10		45	308.67	.32	1.40	95	92	89	4	230	82		
9		50	311.37	.21	.89	97	92	90	3	280	80		
7		55	313.93	.18	.78	100	93	90	3	245	75		
7		60	316.33	.16	.69	102	94	90	2	220	75		
6	3:12 3:48	65	318.90	.17	.74	102	94	90	3	240	75	stopped at 62' 24" cupola went on idle	
5		70	321.15	.16	.69	93	92	90	3	235	88		
4		75	323.55	.16	.69	96	92	91	3	240	81		

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
8-9-77	Chaus Metal Casting			Impinger	No. 1	No. 2	
Description of Installation: Cupola #3 Scrubber	Tested by: /	Run No. 1A		Final			
Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %	Initial
Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER			Difference

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps
3		80	325.[illegible]	.15	.65	94	92	90	4	250	79		
2		85	328.11	.13	.57	[illegible]	95	91	3	275	75		
1		90	327.792	.07	.51	101	93	91	2	250	30		

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-9-77

Addressof source River Road, Tonawanda

Description of equipment Cupola # 3 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run # 1A

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	6.5	6.5%	15.8	9.3%	15.8	0%	84.2%
2	6.4	6.4%	15.5	9.1%	15.5	0%	84.5%
Avg.		6.5%		9.2%		0%	84.3%

ANALYSIS DATA

Plant Chevrolet Metal Casting Plant
Source Cupola #3 Scrubber
Date August 9, 1977 Run No. 1 A

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg) = Evaporated Solids from Acetone Washings (mg) - Volume of Acetone Wash Sample (ml) X Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

115.7 mg = 118.2 mg - (195 ml X .0033 mg/ml) - 1.9 mg ★

Impinger Wash

6.4 mg = 8.6 mg - (100 ml X .0033 mg/ml) - 1.9 mg ★

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-273			249.8 mg
2 Probe, Cyclone & Flask Wash			115.7 mg
TOTAL			365.5 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	6.4 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	8.1 mg
TOTAL WET CATCH	14.5 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	145 ml	100 ml		45 ml
3 Impinger #2 & #3	112 ml	100 ml		12 ml
4 Silica Gel	888.5 g	874.3 g	14.2 g*	14.2 ml
TOTAL CONDENSATE VOLUME				71.2 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$\frac{\text{Increase g.}}{\text{1 g./ml}}$ = Volume Water ml.

★ - Correction for Lab Acetone Particulate Content

9AIR 224.1 (10/74)

STACK SAMPLE INPUT DATA

PRESENT DATE 12/13/77

DATE OF TEST 8/10/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT

DESCRIPTION OF INSTALLATION CUPOLA #3 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO. 1F

BAROMETRIC PRESSURE 29.1 CATCH IN GM. .1991

NOZZLE DIAM.,INCHES .25 CONDENSATE VOLUME IN MILLILITERS 51.8

METERED DRY SAMPLE VOLUME 39.068

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.060	0.260	81.0	80.0	90.0	245.0
10.000	0.065	0.280	83.0	80.0	91.0	250.0
15.000	0.080	0.350	85.0	81.0	91.0	250.0
20.000	0.100	0.430	88.0	82.0	90.0	250.0
25.000	0.110	0.480	90.0	83.0	91.0	225.0
30.000	0.110	0.480	90.0	85.0	90.0	240.0
35.000	0.150	0.650	92.0	86.0	90.0	260.0
40.000	0.150	0.650	85.0	84.0	90.0	280.0
45.000	0.160	0.690	91.0	85.0	90.0	235.0
50.000	0.190	0.820	96.0	86.0	89.0	245.0
55.000	0.180	0.780	99.0	89.0	89.0	260.0
60.000	0.180	0.780	99.0	89.0	90.0	235.0
65.000	0.180	0.780	99.0	90.0	89.0	235.0
70.000	0.160	0.690	100.0	91.0	89.0	250.0
75.000	0.160	0.690	103.0	92.0	89.0	265.0
80.000	0.140	0.620	104.0	94.0	90.0	250.0
85.000	0.110	0.480	100.0	94.0	89.0	250.0
90.000	0.080	0.350	101.0	95.0	89.0	235.0
AVERAGES	0.128	0.570	90.3		89.8	247.8

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.02
METERED DRY VOLUME AT STACK CONDITIONS: 39.09
CONDENSATE AT STACK, CUBIC FEET: 2.613
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 4.877
TOTAL SAMPLE VOLUME, CUBIC FT : 41.09

ORSAT ANALYSIS
CO2%= 6.5 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 9.1 MOL WT = 32
N2%= 84.4 MOL WT = 28
AVG MOL WT DRY BASIS = 29.4
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1246.

THE AVERAGE STACK FLOW IN ACFM = 2.447E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: 7.477E-2
THE EMISSION RATE IN POUNDS PER HOUR: 15.68
ISOKINETIC VARIATION = 107.5
HOW MANY REPORTS 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #3 SCRUBBER

TEST DATE 8/10/77

TEST NO. 1B

STACK PARAMETERS

STACK DIAMETER	IN INCHES	60.00
TEMPERATURE	IN DEGREES FAHRENHEIT	90
VELOCITY	IN FEET PER SECOND	20.8
FLOW IN ACTUAL CUBIC FEET PER MIN.		24471
FLOW IN STANDARD CU. FT. PER MIN.		22943

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO2= 6.50% DRY BASIS
CO= 0.00% DRY BASIS
O2= 9.10% DRY BASIS
N2= 84.40% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.4

WET GAS ANALYSIS (FROM ORSAT)

CO2= 6.18% WET BASIS
CO= 0.00% WET BASIS
O2= 8.66% WET BASIS
N2=80.28% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.85

STACK TEST DATA

CUPOLA #3 SCRUBBER TEST NO.1

LE PARAMETERS

DURATION OF TEST	IN MINUTES	90
METER VOLUME, DRY	IN SCF	36.65
TOTAL SAMPLE VOLUME	IN SCF	38.53
AVERAGE METER TEMP.	IN DEG. RANKINE	550.3
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	247.8
WEIGHT CATCH	IN MGM	199.1
ISOKINETIC VARIATION	IN PERCENT	107.5

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	15.684
GRAINS	PER SCF DRY	8.384E-2
GRAINS	PER SCF WET	7.975E-2
POUNDS	PER 1000 POUNDS GAS DRY	.1575
POUNDS	PER 1000 POUNDS GAS WET	.1527

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------THURSDAY 12/29/77

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

Pg 1 of 2

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
[illegible]	[illegible]	IRENE ST. Buffalo		Impinger	No. 1	No. 2	
Description of Installation		Tested by	Run No.	Final	[illegible]	[illegible]	
[illegible]		[illegible] DEC	1B				
Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Initial	100	[illegible]	
[illegible]		[illegible]					
Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	Difference			

Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %	OTHER
[illegible]	29.10	[illegible]	[illegible]

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps
	[illegible]		[illegible]										
											[illegible]		
	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
		[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
		[illegible]	343.62	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	255	[illegible]		
		50	351.21	.19	.92	76	56	89	3	245	70		
		55	353.77	.18	.75	79	89	87	3	260	76		
		60	356.33	.18	.75	79	89	90	3	235	77		
		65	358.90	.18	.73	91	90	89	3	235	77		
5		70	361.33	.16	.69	100	91	89	3	250	78		

AIR-224 (3/7

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
3/15/77	Chevy MCO	[illegible] St. Buffalo		Impinger	No. 1	No. 2	
Description of Installation: Cupola #3	Tested by: Envirotec R-9	Run No. 13	9-274	Final	[illegible]	[illegible]	[illegible]
Sample Box No.: R-9	Meter Box No.: R-9	Meter ▲H in. Hg: [illegible]	C factor: [illegible]	Initial	[illegible]	[illegible]	[illegible]
Ambient Temp. °F: 80	Bar. Pres. in. Hg: 29.10	Assumed Moisture, %: 5		Difference			
Meter Box Setting, °F: 250	Probe Length, ft.: 5	Nozzle Diameter, in.: .250	Probe Heater Setting, °F: [illegible]	OTHER: [illegible]			

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot ▲p in. water	Orifice ▲H in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps
4		75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
3		80	256.10	[illegible]	[illegible]	124	[illegible]	[illegible]	3	[illegible]	[illegible]		
2		85	268.15	.11	.48	100	94	37	3	[illegible]	[illegible]		
1	1153	[illegible]	261.27	[illegible]	[illegible]	101	95	[illegible]	3	[illegible]	[illegible]		

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-10-77

Addressof source River Road, Tonawanda.

Description of equipment Cupola # 4 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run # 1B

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	6.5	6.5%	15.5	9.0%	15.5	0%	84.5%
2	6.6	6.6%	15.6	9.0%	15.6	0%	84.4%
3	6.5	6.5%	15.7	9.2%	15.7	0%	84.3%
Avg.		6.5%		9.1%		0%	84.4%

76-00-93 (7/76)

Plant Chevrolet Metal Casting Plant
Source Cupola #3 Scrubber
Date August 16, 1977 Run No. 1B

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg) = Evaporated Solids from Acetone Washings (mg) - Volume of Acetone Wash Sample (ml) X Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

33.9 mg = 35.7 mg - (170 ml X .0033 mg/ml) - 1.9 mg ★

Impinger Wash

10.1 mg = 12.5 mg - (160 ml X .0033 mg/ml) - 1.9 mg ★

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-274			165.2 mg
2 Probe, Cyclone & Flask Wash			33.9 mg
TOTAL			199.1 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	10.1 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	8.5 mg
TOTAL WET CATCH	18.6 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	131 ml	100 ml		31 ml
3 Impinger #2 & #3	106 ml	100 ml		6 ml
4 Silica Gel	835.5 g	820.7 g	14.8 g*	14.8 ml
TOTAL CONDENSATE VOLUME				51.8 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$\frac{\text{Increase g.}}{\text{1 g./ml}}$ = Volume Water ml.

★ - Correction for Lab Acetone Particulate Content

9AIR 224.1 (10/74)

STACK SAMPLE INPUT DATA
PRESENT DATE 12/13/77

DATE OF TEST 8/11/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT
DESCRIPTION OF INSTALLATION CUPOLA #3 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO. 2

BAROMETRIC PRESSURE 29.22 CATCH IN GM. .4904
NOZZLE DIAM.,INCHES .25 CONDENSATE VOLUME IN MILLILITERS 119
METERED DRY SAMPLE VOLUME 88.57

STACK DATA FOR INSTALLATION CHEVROLET METAL CASTING PLANT 2ND PAGE

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.170	0.710	90.0	87.0	92.0	250.0
10.000	0.170	0.710	92.0	87.0	92.0	265.0
15.000	0.190	0.790	95.0	88.0	92.0	235.0
20.000	0.250	1.050	100.0	90.0	93.0	230.0
25.000	0.250	1.050	103.0	91.0	93.0	240.0
30.000	0.320	1.350	102.0	93.0	93.0	270.0
35.000	0.220	0.900	105.0	95.0	93.0	275.0
40.000	0.230	0.950	106.0	96.0	93.0	260.0
45.000	0.240	1.000	97.0	96.0	93.0	270.0
50.000	0.200	0.840	103.0	98.0	93.0	275.0
55.000	0.190	0.790	94.0	94.0	90.0	270.0
60.000	0.190	0.790	99.0	95.0	90.0	270.0
65.000	0.160	0.670	99.0	95.0	90.0	255.0
70.000	0.170	0.700	101.0	95.0	90.0	280.0
75.000	0.160	0.670	101.0	96.0	90.0	245.0
80.000	0.110	0.460	94.0	94.0	90.0	255.0
85.000	0.120	0.500	98.0	96.0	90.0	250.0
90.000	0.090	0.380	97.0	96.0	90.0	270.0
95.000	0.090	0.380	96.0	96.0	90.0	270.0
100.000	0.090	0.380	97.0	97.0	89.0	215.0
105.000	0.100	0.420	98.0	97.0	90.0	215.0
110.000	0.100	0.420	99.0	97.0	90.0	240.0
115.000	0.130	0.540	94.0	94.0	90.0	255.0
120.000	0.130	0.540	98.0	94.0	90.0	255.0
125.000	0.150	0.630	104.0	96.0	90.0	270.0
130.000	0.170	0.720	107.0	98.0	89.0	265.0
135.000	0.210	0.860	111.0	100.0	89.0	265.0
140.000	0.270	1.100	113.0	102.0	88.0	258.0
145.000	0.300	1.250	114.0	103.0	88.0	250.0
150.000	0.220	0.900	101.0	101.0	89.0	250.0
155.000	0.230	0.950	107.0	101.0	89.0	250.0
160.000	0.250	1.050	110.0	101.0	89.0	235.0
165.000	0.220	0.900	112.0	103.0	89.0	265.0
170.000	0.160	0.670	113.0	104.0	89.0	245.0
175.000	0.130	0.550	103.0	102.0	87.0	230.0
180.000	0.080	0.340	98.0	99.0	87.0	250.0
AVERAGES	0.174	0.747	98.9		90.2	254.1

STACK DATA FOR INSTALLATION CHEVROLET METAL CASTING PLANT

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.11
METERED DRY VOLUME AT STACK CONDITIONS: 87.39
CONDENSATE AT STACK, CUBIC FEET: 5.985
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 4.93
TOTAL SAMPLE VOLUME, CUBIC FT : 91.93

ORSAT ANALYSIS
CO2%= 7.5 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 7.2 MOL WT = 32
N2%= 85.3 MOL WT = 28
AVG MOL WT DRY BASIS = 29.49
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1450.

THE AVERAGE STACK FLOW IN ACFM = 2.847E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: 8.233E-2
THE EMISSION RATE IN POUNDS PER HOUR: 20.09
ISOKINETIC VARIATION = 103.3
HOW MANY REPORTS 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #3 SCRUBBER

TEST DATE 8/11/77

TEST NO. 2

STACK PARAMETERS

STACK DIAMETER	IN INCHES	60.00
TEMPERATURE	IN DEGREES FAHRENHEIT	90
VELOCITY	IN FEET PER SECOND	24.2
FLOW IN ACTUAL CUBIC FEET PER MIN.		28471
FLOW IN STANDARD CU. FT. PER MIN.		26775

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO2= 7.50% DRY BASIS
CO= 0.00% DRY BASIS
O2= 7.20% DRY BASIS
N2= 85.30% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.49

WET GAS ANALYSIS (FROM ORSAT)

CO2= 7.13% WET BASIS
CO= 0.00% WET BASIS
O2= 6.85% WET BASIS
N2=81.09% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.92

STACK TEST DATA

CUPOLA #3 SCRUBBER TEST NO.2

SAMPLE PARAMETERS

DURATION OF TEST	IN MINUTES	180
METER VOLUME, DRY	IN SCF	82.19
TOTAL SAMPLE VOLUME	IN SCF	86.45
AVERAGE METER TEMP.	IN DEG. RANKINE	558.9
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	254.1
WEIGHT CATCH	IN MGM	490.4
ISOKINETIC VARIATION	IN PERCENT	103.3

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	20.091
GRAINS	PER SCF DRY	9.208E-2
GRAINS	PER SCF WET	8.754E-2
POUNDS	PER 1000 POUNDS GAS DRY	.1725
POUNDS	PER 1000 POUNDS GAS WET	.1672

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------THURSDAY 12/29/77

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source
8/11/77	Chevy Tonawanda	River Road

Description of Installation	Tested by	Run No.
#3 Cupola Wet Scrubber	N.Y.S.D.E.C. R-9	2

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	K factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %
R-9	R-9	1.91	4.15	82	29.22	5

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER
250	5'	.250	5 Amps	

FILTER NOS.

CONDENSATE; milliliters			SILICA GEL
Impinger	No. 1	No. 2	
Final	177	114	842.0
Initial	100	100	814.0
Difference	77	14	28.

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
	8:52	0	380.000		START	OF	TEST							
W-18		5	382.46	.17	.71	90	87	92	1	250	85	-.11		
17		10	384.89	.17	.71	92	87	92	1	265	78			
16		15	387.44	.19	.79	95	88	92	2	235	68			
15		20	390.36	.25	1.05	100	90	93	2	230	69			
14	9:15 9:18	25	393.25	.25	1.05	103	91	93	2	240	70		23:30	Relief
13		30	396.48	.32	1.35	102	93	93	3	270	70			
12		35	399.25	.22	.90	105	95	93	2	275	68			
11	9:34 9:48	40	402.05	.23	.95	106	96	93	3	260	72		39:32	Relief
10		45	404.88	.24	1.00	97	96	93	3	270	72			
9	9:58 10:43	50	407.55	.20	.84	103	98	93	2	275	70		49:26	Relief
8		55	410.09	.19	.79	94	94	90	3	270	76			
7		60	412.65	.19	.79	99	95	90	3	270	76			

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

Pg 2 of 3

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source
8-11-77	Chevy MCP	Tonawanda

Description of Installation	Tested by	Run No.
Cupola # 3 Scrubber	NYSDEC R-9	2

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER

FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
	Impinger	No. 1	No. 2	
9-276	Final			
	Initial	100	100	
	Difference			

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
		60	412.65											
6		65	415.00	.16	.67	99	95	90	3	255	74			
5		70	417.90	.17	.70	101	95	90	3	280	74			
4		75	419.83	.16	.67	101	96	90	3	245	73			
3	11:09 11:19	80	421.82	.11	.46	94	94	90	2	255	82		75.19	on Rel.
2	11:28 11:36	85	423.91	.12	.50	98	96	90	3	250	80		84.44	on Rel.
1	11:42	90	425.747	.09	.38	97	96	90	2	270	90			
					STOP TO CHANGE PORTS									
	11:52	90	425.747	Restart										
N-18		95	427.55	.09	.38	96	96	90	2	270	82			
17		100	429.39	.09	.38	97	97	89	2	215	75			
16		105	431.31	.10	.42	98	97	90	2	215	75			
15	12:11 12:32	110	433.49	.10	.42	99	97	90	3	240	74		108.27	on Rdg
14		115	435.44	.13	.54	94	94	90	3	255	79			
13		120	437.54	.13	.54	98	94	90	3	255	77			

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
8-11-77	Cheny MGP			Impinger	No. 1	No. 2	
Description of Installation: Cupola #3 Scrubber	Tested by: NYSDEC	Run No. 2	9-276	Final			
Sample Box No. / Meter Box No. / Meter ΔH in. Hg / C factor / Ambient Temp. °F / Bar. Pres. in. Hg / Assumed Moisture, %				Initial			
Meter Box Setting, °F / Probe Length, ft. / Nozzle Diameter, in. / Probe Heater Setting, °F / OTHER				Difference			

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
	12:45	120	437.54	—	—									
N-12		125	439.83	.15	.63	104	96	90	4	270	79			
11		130	442.25	.17	.72	107	98	89	4	265	80			
10		135	444.92	.21	.86	111	100	89	5	265	79			
9		140	447.90	.27	1.10	113	102	88	5	258	79			
8	1:09 1:25	145	451.10	.30	1.25	114	103	88	6	250	77	cupola went to relief, 23'43"		
7		150	453.80	.22	.90	101	101	89	5	250	85			
6		155	456.55	.23	.95	107	101	89	5	250	79			
5		160	459.45	.25	1.05	110	101	89	5	235	76			
4		165	462.22	.22	.90	112	103	89	6	265	76			
3	1:46 2:04	170	464.64	.16	.67	113	104	89	5	245	77	cupola went to relief 48'50"		
2	2:10 2:36	175	466.80	.13	.55	103	102	87	4	230	88	cupola went to relief 52'49"		
1	2:43	180	468.570	.08	.34	98	99	87	3	250	85			
				End of Test										

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-11-77

Addressof source River Road, Tonawanda

Desctiption of equipment Cupola # 3 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run # 2

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	7.6	7.6%	15.0	7.4%	15.0	0%	85.0%
2	7.3	7.3%	14.4	7.1%	14.4	0%	85.6%
3	7.5	7.5%	14.5	7.0%	14.5	0%	85.5%
Avg.		7.5%		7.2%		0%	85.3%

76-00-93 (7/76)

Plant: Chevrolet Metal Casting Plant
Source: Cupola # 3 Scrubber
Date: August 11, 1977 Run No. 2

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg) = Evaporated Solids from Acetone Washings (mg) - Volume of Acetone Wash Sample (ml) X Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

58.0 mg = 60.5 mg - (175 ml X .0033 mg/ml) — 1.9 mg *

Impinger Wash

53.1 mg = 55.8 mg - (260 ml X .0033 mg/ml) — 1.9 mg *

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-276			432.4 mg
2 Probe, Cyclone & Flask Wash			58.0 mg
TOTAL			490.4 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	53.1 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	17.1 mg
TOTAL WET CATCH	70.2 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	177 ml	100 ml	77 ml	
3 Impinger #2 & #3	114 ml	100 ml	14 ml	
4 Silica Gel	842.0 g	814.0 g	28.0 g*	28.0 ml
TOTAL CONDENSATE VOLUME				119.0 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$\frac{\text{Increase g.}}{\text{1 g./ml}}$ = Volume Water ml.

* - Correction for Acetone Particulate Content (Lab)

9AIR 224.1 (10/74)

STACK SAMPLE INPUT DATA

PRESENT DATE 12/14/77

DATE OF TEST 8/12/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT

DESCRIPTION OF INSTALLATION CUPOLA #3 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO.

BAROMETRIC PRESSURE 29.29 CATCH IN GM. .4243

NOZZLE DIAM.,INCHES .25 CONDENSATE VOLUME IN MILLILITERS 106.1

METERED DRY SAMPLE VOLUME 82.941

STACK DATA FOR INSTALLATION CHEVROLET METAL CASTING PLANT 2ND PAGE

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.070	0.300	73.0	72.0	90.0	265.0
10.000	0.070	0.300	75.0	73.0	90.0	240.0
15.000	0.070	0.300	77.0	73.0	90.0	240.0
20.000	0.085	0.360	80.0	74.0	90.0	235.0
25.000	0.100	0.420	83.0	76.0	90.0	235.0
30.000	0.110	0.460	86.0	77.0	90.0	240.0
35.000	0.130	0.550	88.0	79.0	90.0	250.0
40.000	0.160	0.670	89.0	80.0	90.0	245.0
45.000	0.210	0.870	90.0	81.0	89.0	265.0
50.000	0.300	1.250	93.0	82.0	90.0	245.0
55.000	0.300	1.250	95.0	83.0	90.0	250.0
60.000	0.160	0.670	95.0	83.0	90.0	265.0
65.000	0.170	0.720	95.0	84.0	90.0	260.0
70.000	0.160	0.670	95.0	85.0	90.0	270.0
75.000	0.150	0.640	95.0	86.0	90.0	255.0
80.000	0.130	0.560	94.0	86.0	90.0	255.0
85.000	0.110	0.470	94.0	87.0	90.0	230.0
90.000	0.110	0.470	96.0	87.0	89.0	250.0
95.000	0.170	0.720	96.0	89.0	88.0	245.0
100.000	0.180	0.760	99.0	91.0	87.0	245.0
105.000	0.210	0.880	101.0	91.0	87.0	240.0
110.000	0.210	0.880	102.0	93.0	88.0	215.0
115.000	0.210	0.880	103.0	93.0	88.0	240.0
120.000	0.210	0.880	103.0	94.0	88.0	250.0
125.000	0.210	0.880	103.0	94.0	88.0	250.0
130.000	0.210	0.880	103.0	95.0	88.0	255.0
135.000	0.210	0.880	103.0	94.0	89.0	225.0
140.000	0.170	0.720	86.0	88.0	89.0	235.0
145.000	0.130	0.560	88.0	87.0	89.0	260.0
150.000	0.150	0.640	93.0	88.0	89.0	240.0
155.000	0.170	0.720	96.0	89.0	89.0	235.0
160.000	0.150	0.640	98.0	90.0	89.0	225.0
165.000	0.140	0.600	96.0	92.0	89.0	250.0
170.000	0.140	0.600	97.0	92.0	89.0	260.0
175.000	0.110	0.470	97.0	92.0	89.0	255.0
180.000	0.050	0.210	95.0	92.0	89.0	270.0
AVERAGES	0.151	0.659	89.5		89.2	246.9

STACK DATA FOR INSTALLATION CHEVROLET METAL CASTING PLANT

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.07
METERED DRY VOLUME AT STACK CONDITIONS: 83.04
CONDENSATE AT STACK, CUBIC FEET: 5.312
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 4.754
TOTAL SAMPLE VOLUME, CUBIC FT : 87.19

ORSAT ANALYSIS
CO2%= 6.5 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 7.1 MOL WT = 32
N2%= 86.4 MOL WT = 28
AVG MOL WT DRY BASIS = 29.32
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1350.

THE AVERAGE STACK FLOW IN ACFM = 2.651E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: .0751
THE EMISSION RATE IN POUNDS PER HOUR: 17.07
ISOKINETIC VARIATION = 105.2
HOW MANY REPORTS 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #3 SCRUBBER

TEST DATE 8/12/77

TEST NO. 3

STACK PARAMETERS

STACK DIAMETER	IN INCHES	60.00
TEMPERATURE	IN DEGREES FAHRENHEIT	89
VELOCITY	IN FEET PER SECOND	22.5
FLOW IN ACTUAL CUBIC FEET PER MIN.		26511
FLOW IN STANDARD CU. FT. PER MIN.		25043

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO2= 6.50% DRY BASIS
CO= 0.00% DRY BASIS
O2= 7.10% DRY BASIS
N2= 86.40% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.32

WET GAS ANALYSIS (FROM ORSAT)

CO2= 6.19% WET BASIS
CO= 0.00% WET BASIS
O2= 6.76% WET BASIS
N2=82.29% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.79

STACK TEST DATA
CUPOLA #3 SCRUBBER TEST NO.3

SAMPLE PARAMETERS

DURATION OF TEST	IN MINUTES	180
METER VOLUME, DRY	IN SCF	78.44
TOTAL SAMPLE VOLUME	IN SCF	82.36
AVERAGE METER TEMP.	IN DEG. RANKINE	549.5
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	246.9
WEIGHT CATCH	IN MGM	424.3
ISOKINETIC VARIATION	IN PERCENT	105.2

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	17.066
GRAINS	PER SCF DRY	8.347E-2
GRAINS	PER SCF WET	.0795
POUNDS	PER 1000 POUNDS GAS DRY	.1573
POUNDS	PER 1000 POUNDS GAS WET	.1526

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------THURSDAY 12/29/77

AIR-224 (3/7

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

pg 2 of 3

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	Run No.
8-12-77	Chevy MCP	Tonawanda	3

Description of Installation: Cupola #3 Scrubber

Tested by: NYSDEC R-9

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %
R-9	R-9	1.91	1.08	70	29.29	(Saturation) 5%

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER
250	5	.250	4 Amps	Probe #10 (Glass)

FILTER NOS.: 9.278

CONDENSATE; milliliters			SILICA GE
Impinger	No. 1	No. 2	
Final	171	112	851.6
Initial	100	100	828.
Difference	71	12	23.

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
	9:02	0	469.772		Start	Test	Run						Cupola	on.ke
N-18	9:04 9:10	5	471.37	.07	.30	73	72	90	1	265	76	-.07	2m	.9 se
17		10	472.97	.07	.30	75	73	90	1	240	76			
16		15	474.57	.07	.30	77	73	90	1	240	73			
15		20	476.33	.085	.36	80	74	90	1	235	73			
14		25	478.25	.10	.42	83	76	90	1	235	73			
13		30	480.15	.11	.46	86	77	90	1	240	72			
12		35	482.21	.13	.55	88	79	90	1	250	74			
11		40	484.61	.16	.67	89	80	90	2	245	72			
10		45	487.27	.21	.87	90	81	89	2	265	71			
9		50	490.38	.30	1.25	93	82	90	3	245	71			
8		55	493.55	.30	1.25	95	83	90	4	250	74			
7	10:07	60	495.98	.16	.67	95	83	90	3	265	71			

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

pg 2 of 3

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source
8-12-77	Chevy MCP	Tonawanda

Description of Installation	Tested by	Run No.
Cupola #3 Scrubber	NYSDEC R-9	3

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER

FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
	Impinger	No. 1	No. 2	
	Final			
	Initial			
	Difference			

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps
	10:07	60	495.98										
N-6		65	498.43	.17	.72	95	84	90	3	260	74		
5		70	500.80	.16	.67	95	85	90	3	270	75		
4		75	503.13	.15	.64	95	86	90	3	255	74		
3		80	505.32	.13	.56	94	86	90	2	255	75		
2		85	507.35	.11	.47	94	87	90	2	230	75		
1	10:37	90	509.365	.11	.47	96	87	89	2	250	76		
				Stop		to	Change		Ports				
W-18	10:46	95	511.85	.17	.72	96	89	88	3	245	75		
17		100	514.30	.18	.76	99	91	87	3	245	67		
16		105	517.00	.21	.88	101	91	87	4	240	64		
15		110	519.70	.21	.88	102	93	88	4	215	60		
14		115	522.42	.21	.88	103	93	88	4	240	62		
13	11:11	120	525.11	.21	.88	103	94	88	4	250	62		

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

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STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
8/12/77	Chevy Tow. M.C.P.			Impinger	No. 1	No. 2	
Description of Installation	Tested by	Run No.	92278	Final			
				Initial			
				Difference			

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
W-12		125	527.81	.21	.88	103	94	88	5	250	63			
11		130	530.50	.21	.88	103	95	88	5	255	61			
10	11:27 12:17	135	533.17	.21	.88	103	94	89	4	225	64	cupola went to relief 14:25		
9		140	535.64	.17	.72	86	88	89	4	235	73			
8	12:24 12:32	145	537.80	.13	.56	88	87	89	3	260	69	cupola went to relief 20:00		
7		150	540.10	.15	.64	93	88	89	4	240	68			
6		155	542.50	.17	.72	96	89	89	4	235	69			
5	12:51 12:54	160	544.80	.15	.64	98	90	89	4	225	74	cupola went to relief 37:02		
4		165	547.05	.14	.60	96	92	89	4	250	75			
3		170	549.30	.14	.60	97	92	89	4	260	68			
2		175	551.30	.11	.47	97	92	89	3	255	68			
1	1:17	180	552.713	.05	.21	95	92	89	3	270	72			

END of TEST

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-12-77

Addressof source River Road, Tonawanda

Description of equipment Cupola # 3 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run # 3

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	6.4	6.4%	13.5	7.1%	13.5	0%	86.5%
2	6.5	6.5%	13.6	7.1%	13.6	0%	86.4%
3	6.5	6.5%	13.7	7.2%	13.7	0%	86.3%
Avg.		6.5%		7.1%		0%	86.4%

Plant Chevrolet Metal Casting Plant
Source Cupola #3 Scrubber
Date August 12, 1977 Run No. 3

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg)	=	Evaporated Solids from Acetone Washings (mg)	-	Volume of Acetone Wash Sample (ml)	X	Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

50.5 mg = 52.7 mg - (100 ml X .0033 mg/ml) -1.9 mg *

Impinger Wash

23.5 mg = 25.7 mg - (100 ml X .0033 mg/ml) -1.9 mg *

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-278			373.8 mg
2 Probe, Cyclone & Flask Wash			50.5 mg
TOTAL			424.3 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	23.5 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	5.3 mg
TOTAL WET CATCH	28.8 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	171 ml	100 ml		71 ml
3 Impinger #2 & #3	112 ml	100 ml		12 ml
4 Silica Gel	851.6 g	828.5 g	23.1 g*	23.1 ml
TOTAL CONDENSATE VOLUME				106.1 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$$\frac{\text{Increase g.}}{1\ \text{g./ml}} = \text{Volume Water ml.}$$

9AIR 224.1 (10/74)

STACK MPLE INPUT DATA
PRESENT DATE 12/8/77

DATE OF TEST 8/15/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT
DESCRIPTION OF INSTALLATION CUPOLA #4 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO. 1

BAROMETRIC PRESSURE 29.43 CATCH IN GM. .7953
NOZZLE DIAM.,INCHES .374 CONDENSATE VOLUME IN MILLILITERS 175.5
METERED DRY SAMPLE VOLUME 62.239

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.110	2.400	81.0	78.0	92.0	220.0
10.000	0.170	3.700	91.0	79.0	92.0	265.0
15.000	0.200	4.350	100.0	81.0	92.0	260.0
20.000	0.210	4.400	103.0	85.0	92.0	275.0
25.000	0.210	4.400	100.0	92.0	88.0	270.0
30.000	0.150	3.250	110.0	94.0	88.0	245.0
35.000	0.130	2.850	108.0	97.0	92.0	280.0
40.000	0.160	3.450	115.0	99.0	92.0	270.0
45.000	0.180	3.900	121.0	101.0	92.0	260.0
50.000	0.170	3.750	125.0	104.0	91.0	260.0
55.000	0.140	3.050	129.0	106.0	90.0	255.0
60.000	0.130	2.850	130.0	108.0	91.0	280.0
AVERAGES	0.162	3.529		101.5	91.0	261.7

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.07
METERED DRY VOLUME AT STACK CONDITIONS: 61.62
CONDENSATE AT STACK, CUBIC FEET: 8.775
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 5.011
TOTAL SAMPLE VOLUME, CUBIC FT : 64.87

ORSAT ANALYSIS
CO2%= 7.1 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 6.3 MOL WT = 32
N2%= 86.6 MOL WT = 28
AVG MOL WT DRY BASIS = 29.39
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1397.

THE AVERAGE STACK FLOW IN ACFM = 3.219E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: .1892
THE EMISSION RATE IN POUNDS PER HOUR: 52.2
ISOKINETIC VARIATION = 101.5
HOW MANY REPORTS 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #4 SCRUBBER

TEST DATE 8/15/77

TEST NO. 1

STACK PARAMETERS

STACK DIAMETER	IN INCHES	65.00
TEMPERATURE	IN DEGREES FAHRENHEIT	91
VELOCITY	IN FEET PER SECOND	23.3
FLOW IN ACTUAL CUBIC FEET PER MIN.		32190
FLOW IN STANDARD CU. FT. PER MIN.		30451

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO_2= 7.10% DRY BASIS
CO= 0.00% DRY BASIS
O_2= 6.30% DRY BASIS
N_2= 86.60% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.39

WET GAS ANALYSIS (FROM ORSAT)

CO_2= 6.74% WET BASIS
CO= 0.00% WET BASIS
O_2= 5.98% WET BASIS
N_2=82.26% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.82

STACK TEST DATA
CUPOLA #4 SCRUBBER TEST NO.1

SAMPLE PARAMETERS

DURATION OF TEST	IN MINUTES	60
METER VOLUME, DRY	IN SCF	58.29
TOTAL SAMPLE VOLUME	IN SCI	61.37
AVERAGE METER TEMP.	IN DEG. RANKINE	561.5
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	261.7
WEIGHT CATCH	IN MGM	795.3
ISOKINETIC VARIATION	IN PERCENT	101.5

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	52.202
GRAINS	PER SCF DRY	.2106
GRAINS	PER SCF WET	.2
POUNDS	PER 1000 POUNDS GAS DRY	.3958
POUNDS	PER 1000 POUNDS GAS WET	.3834

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------FRIDAY 12/09/77

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

Pg 1 of 1

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	Run No.
8-15-77	Chevy MCP	Tonawanda	1

Description of Installation: Cupola #4 Scrubber

Tested by: NYSDEC R-9

Sample Box No.	Meter Box No.	Meter ΔH in. Hg	C factor	Ambient Temp. °F	Bar. Pres. in. Hg	Assumed Moisture, %
R-9	R-9	1.91	1.91	75	29.43	5

Meter Box Setting, °F	Probe Length, ft.	Nozzle Diameter, in.	Probe Heater Setting, °F	OTHER
250°	5'	.375	4 Amps	Probe #10 (Glass)

FILTER NOS.: 9-279

CONDENSATE; milliliters			SILICA GEL
Impinger	No. 1	No. 2	
Final	214	138	841.3
Initial	100	100	817.8
Difference	114	38	23.5

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
					Start Test Run #1							-.07		
	10:12	0	554.783											
W-1		5	559.06	.11	2.40	81	78	92	3	220	69			
2		10	564.27	.17	3.70	91	79	92	6	265	63			
3		15	569.83	.20	4.35	100	81	92	7	260	65			
4	10:37 1:35 AM	20	575.75	.21	4.40	103	85	92	9	275	67		Vent. Rel 1"	12"
5		25	581.25	.21	4.40	100	92	88	9	270	67			
6	1:49	30	586.303	.15	3.25	110	94	88	8	245	69			
					Stop To Change Ports									
	1:53	30												
N-1		35	590.99	.13	2.85	108	97	92	7	280	75			
2		40	596.24	.16	3.45	115	99	92	9	270	69			
3		45	601.77	.18	3.90	121	101	92	11	260	71			
4		50	607.17	.17	3.75	125	104	92	12	260	73			
5		55	612.25	.14	3.05	129	106	90	11	255	76			
6	2:23	60	617.022	.13	2.85	130	108	91	4	280	76			
					End of Test									
			62.239	.402	3.53	122		91						

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-15-77

Addressof source River Road, Tonawanda

Description of equipment Cupola # 4 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run # 1

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	7.0	7.0%	13.1	6.1%	13.1	0%	86.9%
2	7.2	7.2%	13.5	6.3%	13.5	0%	86.5%
3	7.2	7.2%	13.7	6.5%	13.7	0%	86.3%
Avg.		7.1%		6.3%		0%	86.6%

76-00-93 (7/76)

Plant Chevrolet Metal Casting Plant
Source Cupola #4 Scrubber
Date August 15, 1977 Run No. 1

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg) = Evaporated Solids from Acetone Washings (mg) - Volume of Acetone Wash Sample (ml) X Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

556.4 mg = 559.6 mg - (400 ml X .0033 mg/ml) - 1.93 mg. **

Impinger Wash

9.5 mg = 11.8 mg - (110 ml X .0033 mg/ml) - 1.93 mg **

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-279			238.9 mg
2 Probe, Cyclone & Flask Wash			556.4 mg
TOTAL			795.3 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	9.5 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	10.9 mg
TOTAL WET CATCH	20.4 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	214 ml	100 ml	114 ml	
3 Impinger #2 & #3	138 ml	100 ml	38 ml	
4 Silica Gel	841.3 g	817.8 g	23.5 g*	23.5 ml
TOTAL CONDENSATE VOLUME				175.5 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$$\frac{\text{Increase g.}}{1\ \text{g./ml}} = \text{Volume Water ml.}$$

** Correction for Lab acetone particulate content

9AIR 224.1 (10/74)

STACK 1PLE INPUT DATA
PRESENT DATE 12/8/77

DATE OF TEST 8/16/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT
DESCRIPTION OF INSTALLATION CUPOLA #4 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO. 2

BAROMETRIC PRESSURE 29.28 CATCH IN GM. .5935
NOZZLE DIAM.,INCHES .374 CONDENSATE VOLUME IN MILLILITERS 150.6
METERED DRY SAMPLE VOLUME 54.298

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.120	2.600	80.0	77.0	95.0	260.0
10.000	0.150	3.300	95.0	78.0	95.0	270.0
15.000	0.150	3.300	104.0	82.0	95.0	235.0
20.000	0.120	2.600	108.0	86.0	95.0	275.0
25.000	0.110	2.400	110.0	87.0	95.0	270.0
30.000	0.100	1.980	110.0	90.0	95.0	250.0
35.000	0.100	1.980	86.0	86.0	93.0	260.0
40.000	0.120	2.600	95.0	86.0	93.0	260.0
45.000	0.130	2.850	106.0	88.0	93.0	260.0
50.000	0.140	3.100	112.0	91.0	93.0	270.0
55.000	0.140	3.100	116.0	93.0	93.0	275.0
60.000	0.120	2.600	119.0	98.0	93.0	235.0
AVERAGES	0.124	2.701	95.1		94.0	260.0

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.04
METERED DRY VOLUME AT STACK CONDITIONS: 54.56
CONDENSATE AT STACK, CUBIC FEET: 7.609
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 5.526
TOTAL SAMPLE VOLUME, CUBIC FT : 57.75

ORSAT ANALYSIS
CO2%= 8.3 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 4.8 MOL WT = 32
N2%= 86.9 MOL WT = 28
AVG MOL WT DRY BASIS = 29.52
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1230.

THE AVERAGE STACK FLOW IN ACFM = 2.835E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: .1586
THE EMISSION RATE IN POUNDS PER HOUR: 38.53
ISOKINETIC VARIATION = 102.6
HOW MANY REPORTS 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #4 SCRUBBER

TEST DATE 8/16/77

TEST NO. 2

STACK PARAMETERS

STACK DIAMETER	IN INCHES	65.00
TEMPERATURE	IN DEGREES FAHRENHEIT	94
VELOCITY	IN FEET PER SECOND	20.5
FLOW IN ACTUAL CUBIC FEET PER MIN.		28347
FLOW IN STANDARD CU. FT. PER MIN.		26536

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO_2= 8.30% DRY BASIS
CO= 0.00% DRY BASIS
O_2= 4.80% DRY BASIS
N_2= 86.90% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.52

WET GAS ANALYSIS (FROM ORSAT)

CO_2= 7.84% WET BASIS
CO= 0.00% WET BASIS
O_2= 4.53% WET BASIS
N_2=82.10% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.88

STACK TEST DATA
CUPOLA #4 SCRUBBER TEST NO.2

SAMPLE PARAMETERS

DURATION OF TEST	IN MINUTES	60
METER VOLUME, DRY	IN SCI	51.08
TOTAL SAMPLE VOLUME	IN SCI	54.06
AVERAGE METER TEMP.	IN DEG. RANKINE	555.1
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	260
WEIGHT CATCH	IN MGM	593.5
ISOKINETIC VARIATION	IN PERCENT	102.6

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	38.533
GRAINS	PER SCF DRY	.1793
GRAINS	PER SCF WET	.1694
POUNDS	PER 1000 POUNDS GAS DRY	.3356
POUNDS	PER 1000 POUNDS GAS WET	.324

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------FRIDAY 12/09/77

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

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STACK SAMPLE COLLECTION DATA

Date: 8-16-77	Name of Source: Chevy MCP	Address of Source: Tonawanda	
Description of Installation: Cupola # 4 Scrubber	Tested by: NYSDEC R-9	Run No. 2	
Sample Box No.: R-9	Meter Box No.: R-9	Meter ΔH in. Hg: 1.91	C factor: 1.10
Ambient Temp. °F: 78	Bar. Pres. in. Hg: 29.28	Assumed Moisture, %: 5	
Meter Box Setting, °F: 250°	Probe Length, ft.: 5	Nozzle Diameter, in.: .374	
Probe Heater Setting, °F: 4 Amps	OTHER: Probe #10 (Glass)		

FILTER NOS.: 9-280

CONDENSATE; milliliters			SILICA GEL
Impinger	No. 1	No. 2	
Final	185	142	847.2
Initial	100	100	823.6
Difference	85	42	23.6

Sample Point No.	Clock Time min	Sampling Time (t), min	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps
	9:00	0	618.172	START TEST									
N-1		5	622.60	.12	2.60	80	77	95	3	260	66	-.04	
2		10	627.50	.15	3.30	95	78	95	5	270	65		
3		15	632.45	.15	3.3	104	82	95	6	235	69		
4		20	637.00	.12	2.6	108	86	95	5	275	73		
5		25	641.34	.11	2.4	110	87	95	5	270	79		
6	9:30	30	645.318	.10	1.98	110	90	95	5	250	79		
W-1	10:05	35	649.20	.10	1.98	86	86	93	4	260	75		
2		40	653.57	.12	2.6	95	86	93	7	260	70		
3		45	658.20	.13	2.85	106	88	93	8	260	68		
4		50	663.03	.14	3.10	112	91	93	9	270	71		
5		55	667.90	.14	3.10	116	93	93	10	275	69		
6	10:35	60	672.470	.12	2.6	119	98	93	9	235	71		

END of Test #2

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-16-77

Addressof source River Road, Tonawanda

Description of equipment Cupola # 4 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run #2

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	8.1	8.1 %	13.1	5.0%	13.1	0%	86.9%
2	8.4	8.4 %	13.0	4.6%	13.0	0%	87.0%
3	8.5	8.5 %	13.4	4.9%	13.4	0%	86.6%
Avg.		8.3%		4.8%		0%	86.9%

ANALYTICAL DATA

Plant Chevrolet Metal Casting Plant
Source Cupola #4 Scrubber
Date August 16, 1977 Run No. 2

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg) = Evaporated Solids from Acetone Washings (mg) - Volume of Acetone Wash Sample (ml) X Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

383.8 mg = 386.5 mg - (250 ml X .0033 mg/ml) - 1.9 mg **

Impinger Wash

20.6 mg = 23.4 mg - (275 ml X .0033 mg/ml) - 1.9 mg **

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-280			209.7 mg
2 Probe, Cyclone & Flask Wash			383.8 mg
TOTAL			593.5 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	20.6 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	28.2 mg
TOTAL WET CATCH	48.8 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	185 ml	100 ml	85 ml	
3 Impinger #2 & #3	142 ml	100 ml	42 ml	
4 Silica Gel	847.2 g	823.6 g	23.6 g*	23.6 ml
TOTAL CONDENSATE VOLUME				150.6 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$$\frac{\text{Increase g.}}{1\ \text{g./ml}} = \text{Volume Water ml.}$$

** Correction for Lab Acetone particulate Content

9AIR 224.1 (10/74)

STACK SAMPLE INPUT DATA
PRESENT DATE 12/8/77

DATE OF TEST 8/16/77 NAME OF SOURCE CHEVROLET METAL CASTING PLANT
DESCRIPTION OF INSTALLATION CUPOLA #4 SCRUBBER OPERATORS NYSDEC R-9 MCCABE FOERSCH BUCCILLI RUN NO.

BAROMETRIC PRESSURE 29.22 CATCH IN GM. .3999
NOZZLE DIAM.,INCHES .374 CONDENSATE VOLUME IN MILLILITERS 114.8
METERED DRY SAMPLE VOLUME 55.125

SAMPLING TIME	PITOT P	METER P	METER T	METER T	STACK T	SAMPLE BOX T
5.000	0.090	2.000	99.0	96.0	92.0	240.0
10.000	0.120	2.650	106.0	97.0	92.0	255.0
15.000	0.140	3.100	114.0	99.0	93.0	250.0
20.000	0.150	3.250	118.0	101.0	92.0	245.0
25.000	0.130	2.850	121.0	103.0	93.0	235.0
30.000	0.110	2.400	122.0	105.0	92.0	255.0
35.000	0.110	2.400	107.0	102.0	92.0	260.0
40.000	0.110	2.400	111.0	103.0	92.0	260.0
45.000	0.150	3.250	108.0	103.0	93.0	250.0
50.000	0.140	3.100	116.0	104.0	92.0	240.0
55.000	0.130	2.850	120.0	106.0	94.0	235.0
60.000	0.100	2.200	121.0	107.0	93.0	240.0
AVERAGES	0.123	2.704	107.9		92.5	247.1

STATIC STACK PRESSURE, INCHES H20 GAUGE.-.02
METERED DRY VOLUME AT STACK CONDITIONS: 54.
CONDENSATE AT STACK, CUBIC FEET: 5.796
CONDENSATE EXCEEDS SATURATION.
PERCENT H20 IN GAS IS 5.287
TOTAL SAMPLE VOLUME, CUBIC FT : 57.01

ORSAT ANALYSIS
CO2%= 8.6 MOL WT = 44
CO%= 0 MOL WT = 28
O2%= 5.7 MOL WT = 32
N2%= 85.7 MOL WT = 28
AVG MOL WT DRY BASIS = 29.6
PITOT CONSTANT IS .84
THE AVERAGE STACK VELOCITY IS 1218.

THE AVERAGE STACK FLOW IN ACFM = 2.807E+4
PARTICULATE LOADING IN GRAINS PER CU. FT.: .1082
THE EMISSION RATE IN POUNDS PER HOUR: 26.05
ISOKINETIC VARIATION = 102.2
HOW MANY REPORTS 1

NEW YORK DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR RESOURCES
STACK TEST DATA

COMPUTATION OF STACK SAMPLING RESULTS FOR: CHEVROLET METAL CASTING PLANT

STACK IDENTIFICATION: CUPOLA #4 SCRUBBER

TEST DATE 8/16/77

TEST NO. 3

STACK PARAMETERS

STACK DIAMETER	IN INCHES	65.00
TEMPERATURE	IN DEGREES FAHRENHEIT	93
VELOCITY	IN FEET PER SECOND	20.3
FLOW IN ACTUAL CUBIC FEET PER MIN.		28074
FLOW IN STANDARD CU. FT. PER MIN.		26299

CONDENSATE EXCEEDS SATURATION

DRY GAS ANALYSIS (FROM ORSAT)

CO_2= 8.60% DRY BASIS
CO= 0.00% DRY BASIS
O_2= 5.70% DRY BASIS
N_2= 85.70% DRY BASIS

AVG. MOLE WT. DRY BASIS= 29.6

WET GAS ANALYSIS (FROM ORSAT)

CO_2= 8.15% WET BASIS
CO= 0.00% WET BASIS
O_2= 5.40% WET BASIS
N_2=81.17% WET BASIS

AVERAGE MOLE WT. WET BASIS= 28.99

STACK TEST DATA
CUPOLA #4 SCRUBBER TEST NO.3

SAMPLE PARAMETERS

DURATION OF TEST	IN MINUTES	60
METER VOLUME, DRY	IN SCF	50.59
TOTAL SAMPLE VOLUME	IN SCI	53.41
AVERAGE METER TEMP.	IN DEG. RANKINE	567.9
AVERAGE SAMPLE BOX TEMP.	IN DEG. FAH.	247.1
WEIGHT CATCH	IN MGM	399.9
ISOKINETIC VARIATION	IN PERCENT	102.2

EMISSIONS

EMISSIONS	IN POUNDS PER HOUR	26.046
GRAINS	PER SCF DRY	.122
GRAINS	PER SCF WET	.1155
POUNDS	PER 1000 POUNDS GAS DRY	.2277
POUNDS	PER 1000 POUNDS GAS WET	.2202

OPERATOR---NYSDEC R-9 MCCABE FOERSCH BUCCILLI

DATE-------FRIDAY 12/09/77

AIR-224 (3/74)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR POLLUTION CONTROL PROGRAM

STACK SAMPLE COLLECTION DATA

Date	Name of Source	Address of Source	FILTER NOS.	CONDENSATE; milliliters			SILICA GEL
8-16-77	Chevy Ton. MCP	IRENE St. Ton of Ton.		Impinger	No. 1	No. 2	
Description of Installation: Cupola #4	Tested by: NYSDEC R-9	Run No. 3		Final	170	134	861.1
Sample Box No. R-9	Meter Box No. R-9	Meter ΔH in. Hg 1.92	C factor 1.11	Initial	100	100	850.3
Ambient Temp. °F 94°	Bar. Pres. in. Hg 29.22	Assumed Moisture, % 5	9-277	Difference	70	34	10.8
Meter Box Setting, °F 300°	Probe Length, ft. 5'	Nozzle Diameter, in. .374					
Probe Heater Setting, °F 5 Amps	OTHER Probe #10 Glass						

Sample Point No.	Clock Time min.	Sampling Time (t), min.	Dry Gas Meter Reading cf	Pitot Δp in. water	Orifice ΔH in. water	Dry Gas Meter Temperature, °F In	Dry Gas Meter Temperature, °F Out	Stack Temp. °F	Vacuum at Pump in. Hg	Sample Box Temp. °F	Impinger Temp. °F	Stack Pressure in. Hg	Stack Gas Velocity fps	
	12:32	0	680.000		START	TEST								
W-1		5	683.97	.09	2.0	99	96	92	2	240	87	-.02		
2		10	688.54	.12	2.65	106	97	92	2	255	80			
3		15	693.36	.14	3.10	114	99	93	3	250	72			
4		20	698.29	.15	3.25	118	101	92	3	245	72			
5		25	703.03	.13	2.85	121	103	93	4	235	75			
6	12:58 2:16	30	707.460	.11	2.40	122	105	92	4	255	75	26:00	— Relief	
						STOP	TO	CHANGE		PORTS				
N-1	2:27	35	711.74	.11	2.40	107	102	92	4	260	75			
2	2:29 3:08	40	716.15	.11	2.40	111	103	92	5	260	76	37:09	— Relief	
3		45	721.15	.15	3.25	108	103	93	6	250	86			
4		50	726.11	.14	3.10	116	104	92	6	240	75			
5		55	730.88	.13	2.85	120	106	94	6	235	77			
6		60	735.125	.10	2.20	121	107	93	6	240	78			

ORSAT ANALYSIS DATA

Name of source Chevrolet Metal Casting Plant Date 8-16-77

Addressof source River Road, Tonawanda.

Descfiption of equipment Cupola # 4 Scrubber

Tested by NYSDEC, Region 9 Sample No. Run # 3

Remarks

Pass No.	Orsat Reading	% CO_2	Orsat Reading	% O_2	Orsat Reading	% CO	% N_2
1	8.6	8.6%	14.2	5.6%	14.2	0%	85.8%
2	8.6	8.6%	14.3	5.7%	14.3	0%	85.7%
3	8.7	8.7%	14.4	5.7%	14.4	0%	85.6%
Avg.		8.6%		5.7%			85.7%

ANALYTICAL DATA

Plant Chevrolet Metal Casting Plant
Source Cupola #4 Scrubber
Date August 16, 1977 Run No. 3

Correction for Acetone Particulate Content

Net Acetone Wash Particulate Weight (mg) = Evaporated Solids from Acetone Washings (mg) - Volume of Acetone Wash Sample (ml) X Acetone Blank Particulate Residue (mg/ml)

Probe, Cyclone, and Flask Wash

216.9 mg = 219.3 mg - (140 ml X .0033 mg/ml) - 1.9 mg **

Impinger Wash

15.4 mg = 17.7 mg - (110 ml X .0033 mg/ml) - 1.9 mg **

Weight of Particulate Collected (mg)			
Container No.	Final Weight	Tare Weight	Weight Gain
1 Filter (s) 9-277			183.0 mg
2 Probe, Cyclone & Flask Wash			216.9 mg
TOTAL			399.9 mg

Wet Catch (mg)	
Container No.	Particulate Weight
5 Impinger Wash	15.4 mg
3 Impinger Condensate Suspended Solids	— mg
3 Impinger Condensate Evaporated Solids	37.4 mg
TOTAL WET CATCH	52.8 mg

Volume of Condensate Collected (ml)				
Container Number	Final	Initial	Liquid Collected	
3 Impinger #1	170 ml	100 ml		70 ml
3 Impinger #2 & #3	134 ml	100 ml		34 ml
4 Silica Gel	861.1 g	850.3 g	10.8 g*	10.8 ml
TOTAL CONDENSATE VOLUME				114.8 ml

*Convert Weight of Water to Volume by dividing Total Weight increase by density of water (1 g./ml)

$$\frac{\text{Increase g.}}{1\ \text{g./ml}} = \text{Volume Water ml.}$$

** Correction for Lab Acetone particulate Content

9AIR 224.1 (10/74)

8/9/77 # 3 CUPOLA RUN # 1A

CHARGE DROP TIME	TOTAL WT. CHARGE #	
1:21 PM	10,250#	EXTRA 500# COKE & 125# LIMESTONE ADDED
1:30 PM	10,250#	EXTRA 500# COKE & 125# LIMESTONE ADDED.
1:32 PM	9,625#	
1:37 PM	9,625#	
1:48 PM	9,625#	
2:00 PM	9,625#	
2:08 PM	9,625#	
2:19 PM	9,625#	
2:26 PM	9,625#	
2:50 PM	9,625#	
2:56 PM	9,625#	
3:08 PM	9,625#	
3:42 PM	9,625#	
3:50 PM	9,625#	
4:05 PM	9,625#	
4:12 PM	9,625#	

9,703.1 ave charge

77.63 Tons charges

Charge Data

8/10/77 #3 CUPOLA RUN #1B

CHARGE DROP TIME	No. CHARGES		WT#/CHARGE		TOTAL WEIGHT
8:00 AM TO 9:00 AM	7	x	9625	=	67,375#
9:00 AM TO 10:00 AM	7	x	9625	=	67,375#
10:00 AM TO 11:00 AM	2	x	9625	=	19,250#
11:00 AM TO 12:00 NOON	6	x	9625	=	57,750
	* 2	x	10,250	=	20,500#

* (NOTE: ADDITIONAL COKE & LIMESTONE ADDED TO CHARGES AT 11:20 AM 500# + 125# = 625#
11:27 AM 500# + 125# = 625#)

9677.1 Ave chg
116.1 tons charged

Charge Data

8/11/77 #3 CUPOLA RUN #2

CHARGE DROP TIME	TOTAL WEIGHT #
8:51 AM	9595
9:02	9595
9:11	9195
9:21	9595
9:30	9395
9:45	9695
9:56	9895
10:07	9595
10:25	9395
10:37	9995
11:00	9595
11:10	9595
11:20	9795
11:30	9695
11:39	9595
11:47	9595
11:55	9695
12:03 PM	9595
12:12	9695
12:22	9595
12:34	9595
12:45	9495
12:57	9695
1:10	9795
1:21	9595
1:30	9495
1:42	9795
1:51	9595
1:59	9595
2:31	9595
2:40	9695
2:48	9795
2:58	9595

8/12/77 #3 CUPOLA. RUN #3

CHARGE DROP TIME		TOTAL WEIGHT #
8:34	A.M.	9400
8:44		9400
8:57		9400
9:14		9425
9:22		9395
9:29		9400
9:34		9000
9:39		9425
9:46		9420
9:52		9700
10:04		9450
10:10		9350
10:19		9270
10:24		9425
10:29		9450
10:34		9420
10:43		9400
10:48		9675
10:55		9675
11:03		9425
11:08		9465
11:14		9750
11:22		9425
11:30		9625
11:38		9795
12:34	P.M.	9695
12:41		9895
12:52		10100
1:04		9700
1:13		9200
1:19		9600
1:26		10400

8/15/77 #4 CUPOLA

RUN #1

CHARGE DROP TIME	TOTAL WEIGHT #
10:03 AM	11900
10:12	11900
10:19	12350
10:24	11850
10:28	12000
1:45 PM	12500
1:53	11625
1:57	12200
2:06	12450
2:16	12000
2:21	12550
2:29	11975
2:33	12000

8/16/77 #4 CUPOLA

RUN #2

CHARGE DROP TIME	TOTAL WEIGHT #
9:06 AM	12250
9:10	12350
9:16	11875
9:21	11775
9:26	11975
9:30	11750
9:35	12100
9:39	12000
9:44	12250
10:16	11775
10:20	12175
10:26	10700
10:30	11975
10:34	12100
10:40	11700
10:45	11675
	11650

8/16/77

4 CUPOLA

RUN #3

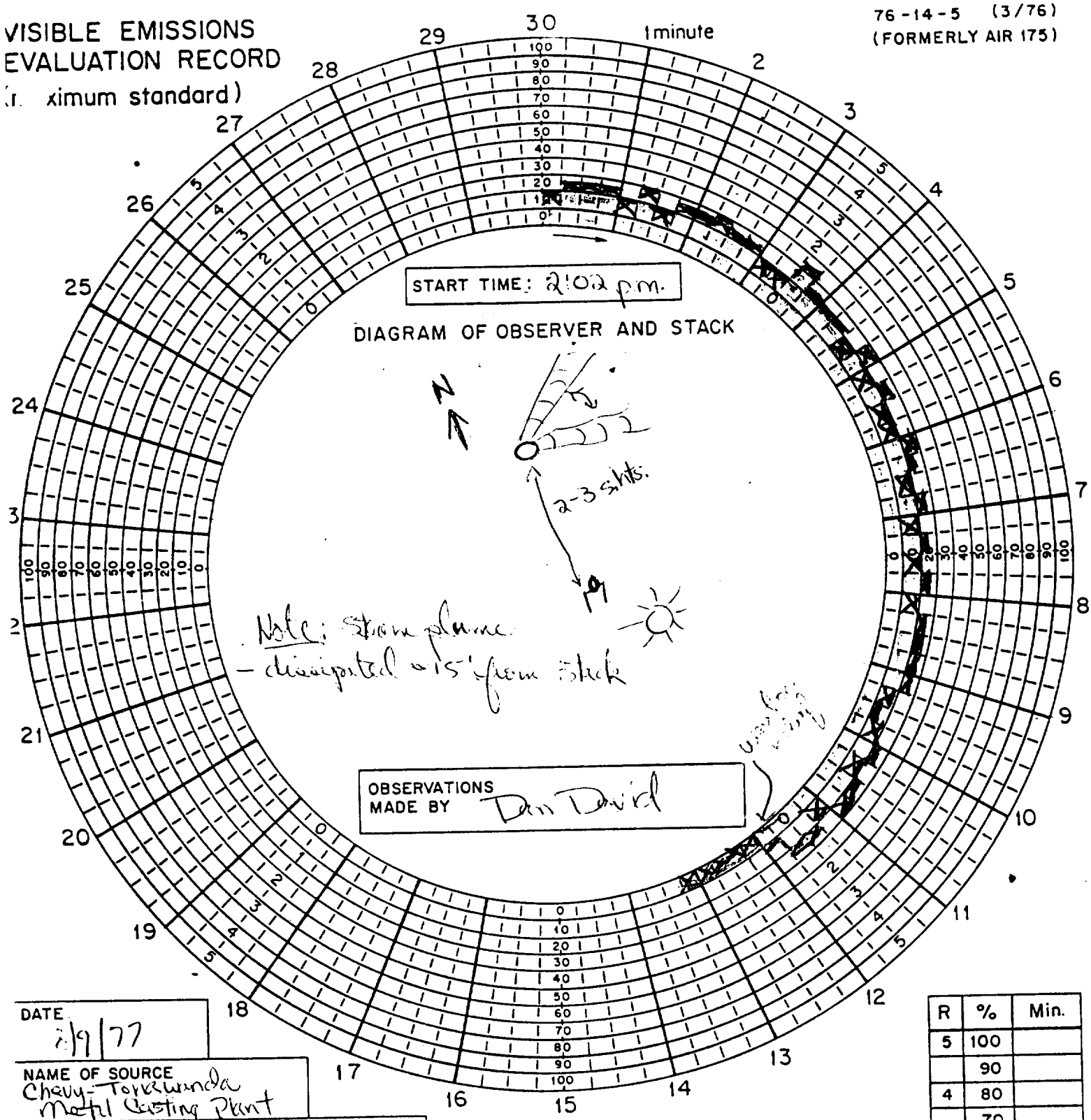
CHARGE DROP TIME	TOTAL WEIGHT#
12:43 PM	12400
12:50	12150
12:55	12750
1:00	12025
2:42	12125
2:27	11600
2:31	12450
2:35	11850
2:56	11850
3:27	11700
3:30	11725

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(r. ximum standard)



DATE	3/9/77
NAME OF SOURCE	Chevy-Tonawanda Metal Casting Plant
ADDRESS	Irene St., Tonawanda
STACK DESCRIPTION	Grey/Metal - Cupola #3
WEATHER CONDITIONS	Broken sky; hazy; sun
WIND SPEED	5-7 mph
PLUME COLOR, MOVEMENT	White, variable
BACKGROUND COLOR	Blue w/ white feather

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	50	
2	40	
	25	:15
1	20	1:15
	15	5:45
	10	4:00
	5	:30
0	0	1:15
	Total	13:15

(Use other side for additional data & diagrams)

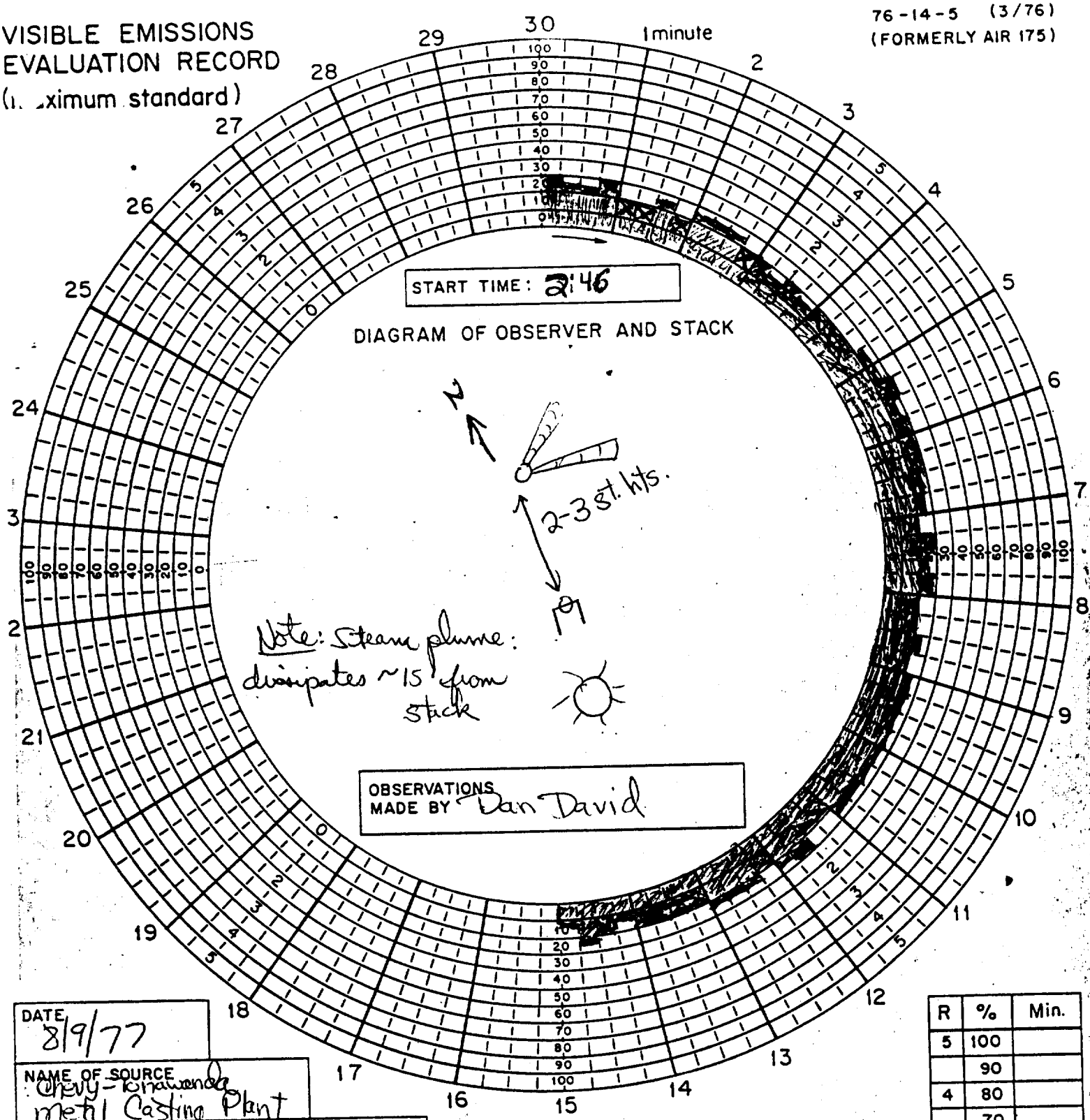
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD

(Maximum standard)



R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	50	
2	40	
	30	
1	20	2:15
	15	6:30
	10	5:15
	5	1:00
0	0	:00
X	Total	15:00

DATE 8/9/77

NAME OF SOURCE Chevy - Tonawanda Metal Casting Plant

ADDRESS Drene St., Tonawanda

STACK DESCRIPTION Grey Metal - Cupola #3

WEATHER CONDITIONS Broken sky; hazy; sun

WIND SPEED 5-7

PLUME COLOR, MOVEMENT White, variable

BACKGROUND COLOR Blue w/ white patches

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

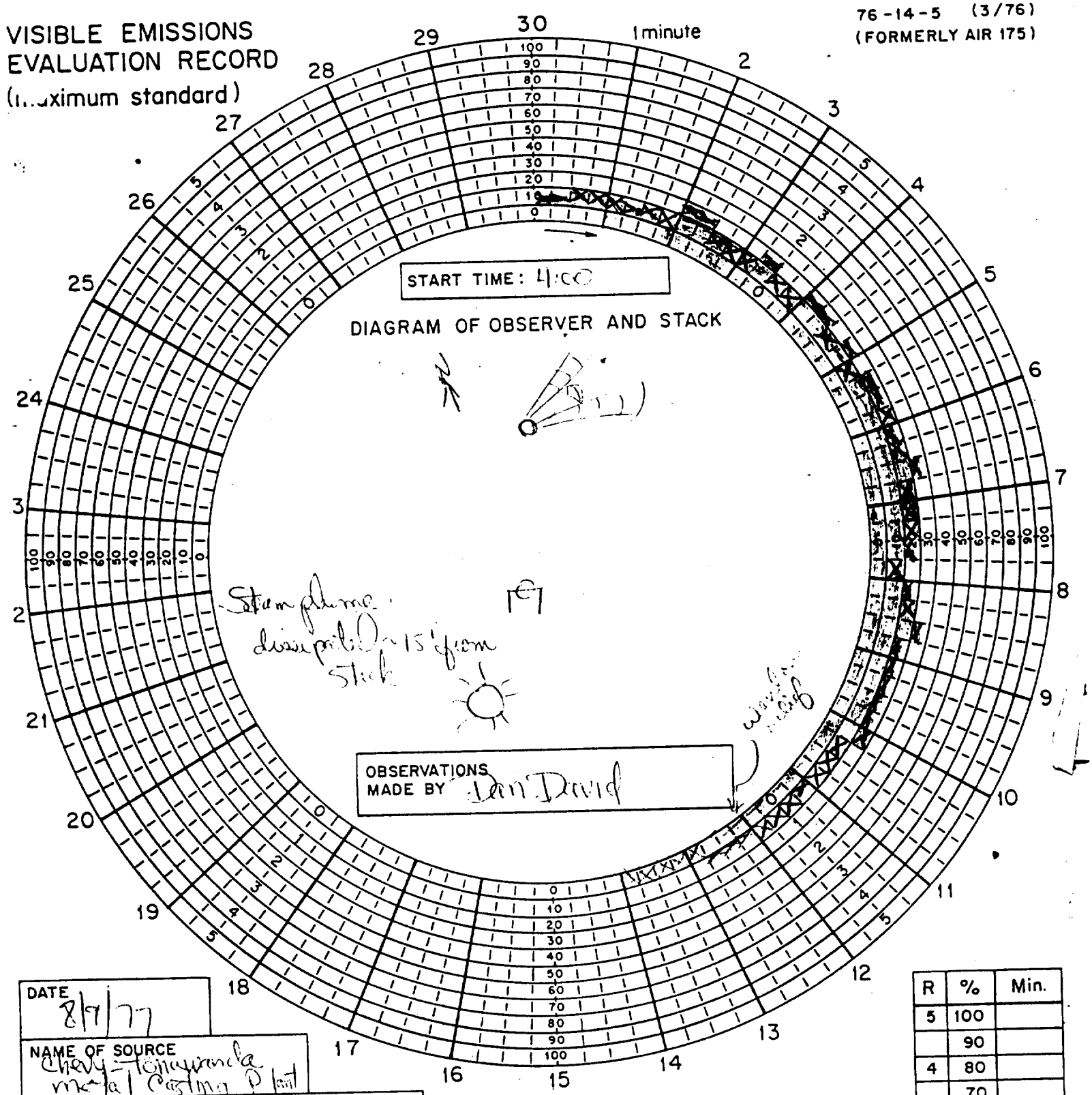
(Use other side for additional data & diagrams)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(Maximum standard)



DATE	8/9/77
NAME OF SOURCE	Chevy - Tonawanda Metal Casting Plant
ADDRESS	Irene St., Kenmore
STACK DESCRIPTION	Grey Metal - Cupola #3
WEATHER CONDITIONS	Broken sky - haze - sun
WIND SPEED	7-10
PLUME COLOR, MOVEMENT	White, variable
BACKGROUND COLOR	Some blue, brown

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	50	
2	40	
	30	
1	20	1:45
	10	4:45
0	0	1:15
X	Total	14:00

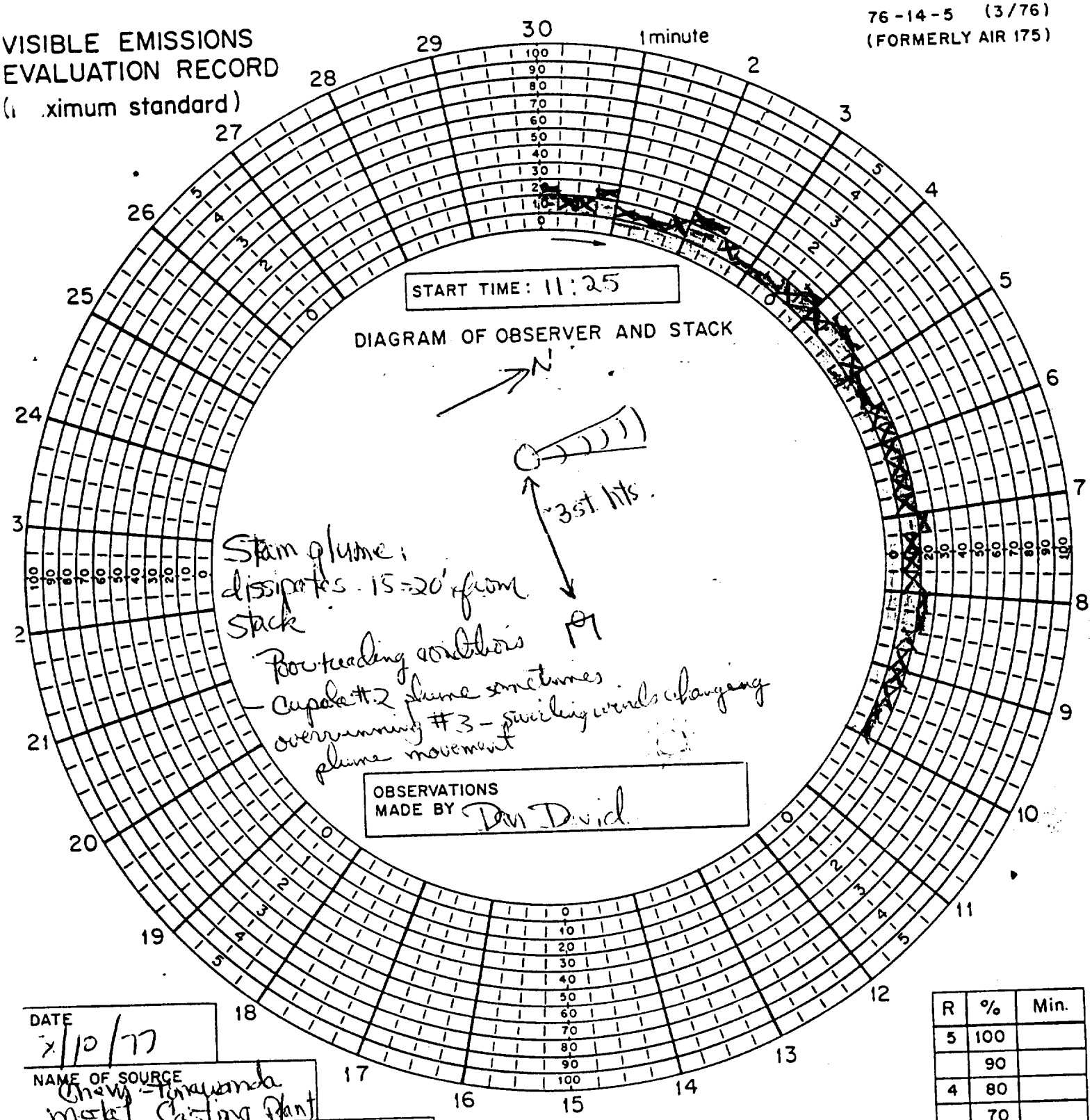
(Use other side for additional data & diagrams)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(Maximum standard)



DATE 7/10/77

NAME OF SOURCE Chevy - Tonawanda Metal Casting Plant

ADDRESS Irene St., Tonawanda

STACK DESCRIPTION Gray Metal — Cupola #3

WEATHER CONDITIONS Overcast — No sun No shadows

WIND SPEED 11-14

PLUME COLOR, MOVEMENT White, variable

BACKGROUND COLOR Grey

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	50	
2	40	
	30	
1	15	2:30
	10	5:00
0	5	2:30
X	Total	10:00

(Use other side for additional data & diagrams)

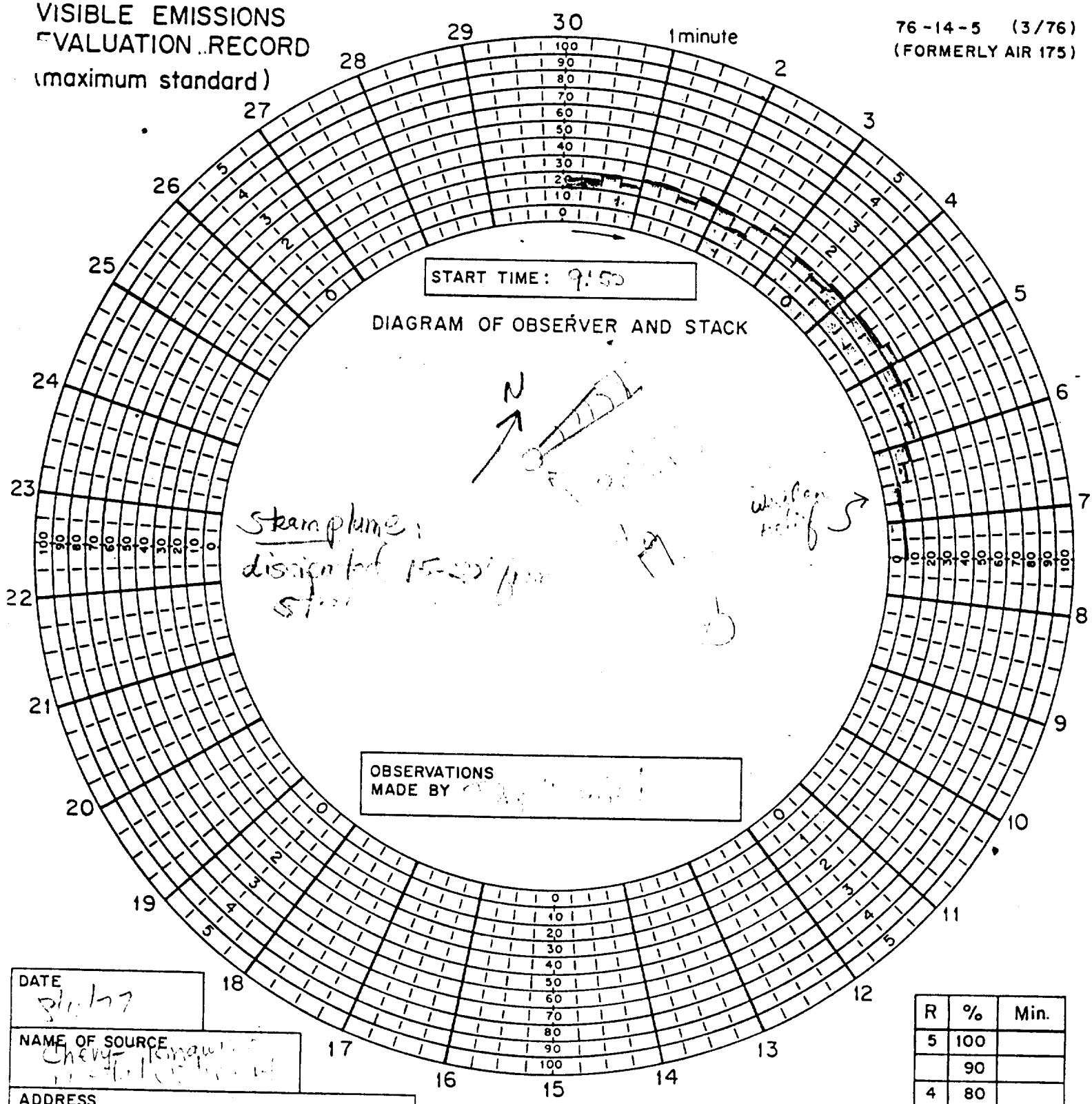
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS EVALUATION RECORD

(maximum standard)

76-14-5 (3/76)
(FORMERLY AIR 175)



DATE	9/6/77
NAME OF SOURCE	Chevy Tonawanda
ADDRESS	[illegible]
STACK DESCRIPTION	[illegible]
WEATHER CONDITIONS	[illegible]
WIND SPEED	[illegible]
PLUME COLOR, MOVEMENT	[illegible]
BACKGROUND COLOR	[illegible]

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	25	:45
2	20	2:45
	15	2:15
1	10	:30
	5	:15
0	0	1:00
	Total	7:30

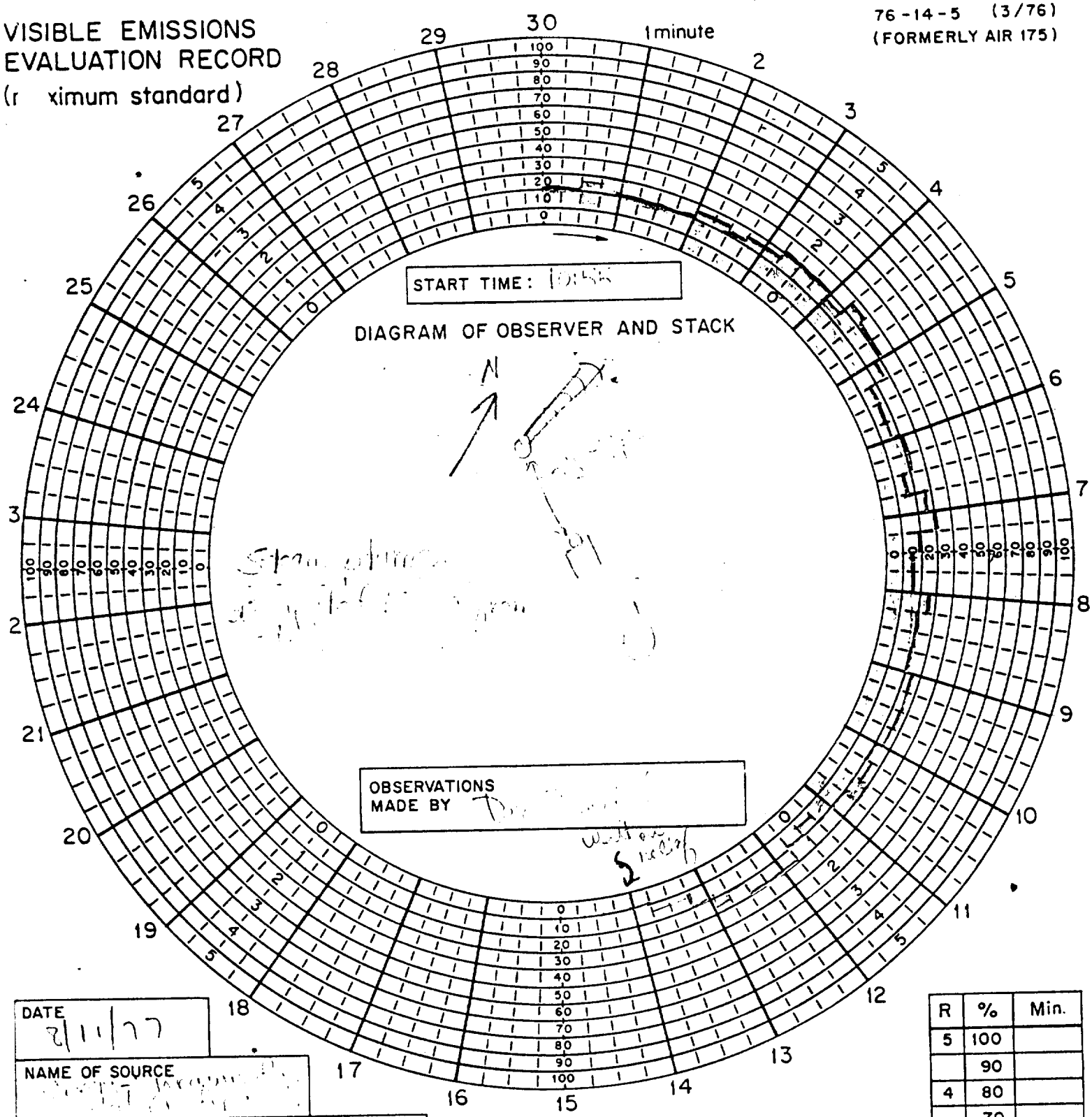
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS EVALUATION RECORD

(r ximum standard)

76-14-5 (3/76)
(FORMERLY AIR 175)



DATE 8/11/77	
NAME OF SOURCE	
ADDRESS	
STACK DESCRIPTION	
W HER CONDITIONS	WIND SPEED 7-10
PLUME COLOR, MOVEMENT	BACKGROUND COLOR

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	250	:15
2	40	2:45
	30	3:45
1	20	4:45
	10	2:15
0	0	1:15
X	Total	15:00

(Use other side for additional data & diagrams)

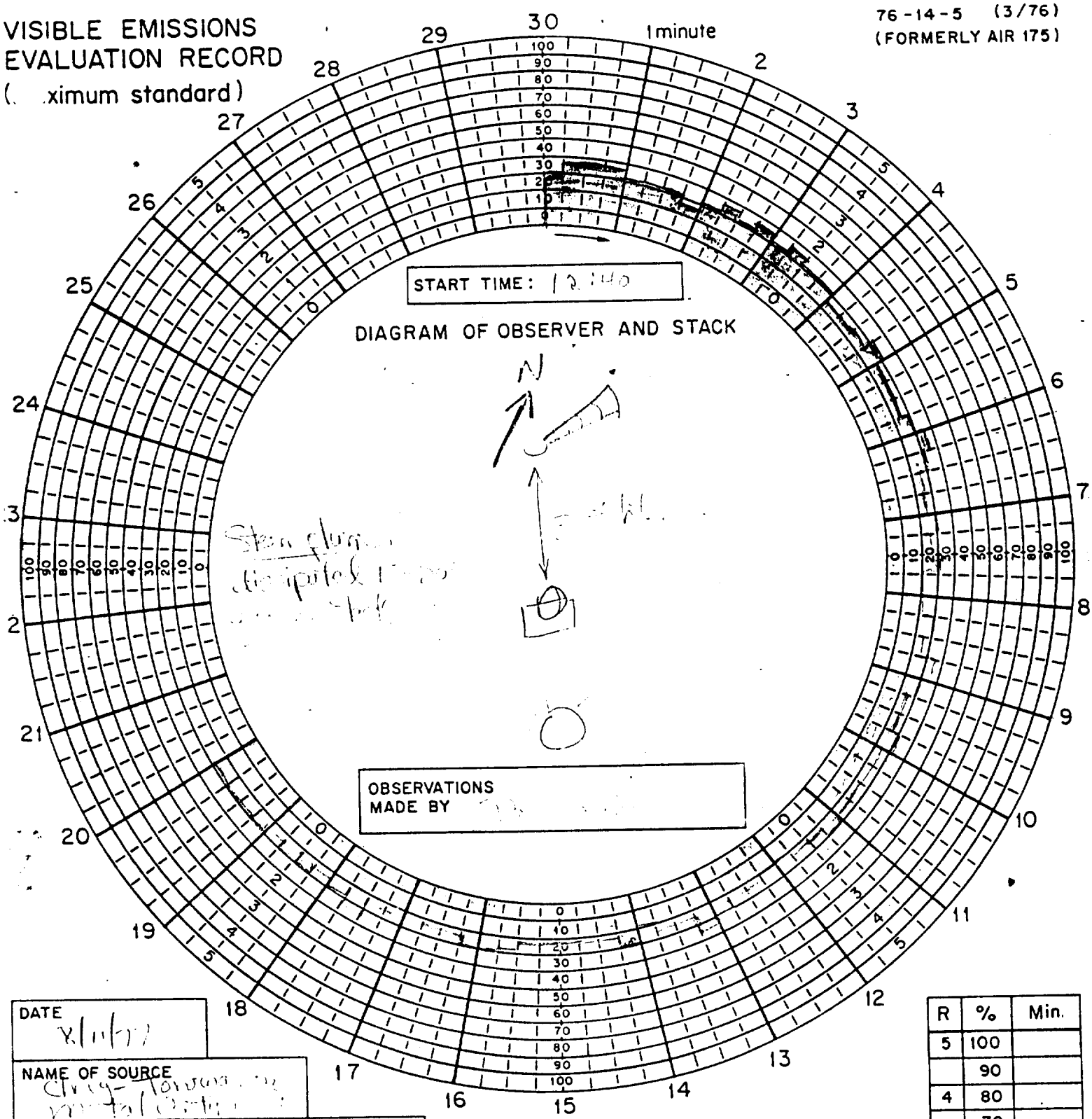
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD

(. .ximum standard)



DATE	
NAME OF SOURCE	
ADDRESS	
STACK DESCRIPTION	
WEATHER CONDITIONS	WIND SPEED
PLUME COLOR, MOVEMENT	BACKGROUND COLOR

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	250	2:30
2	80	7:30
	16	8:45
1	80	1:15
	50	0
0	0	0
	Total	20:00

(Use other side for additional data & diagrams)

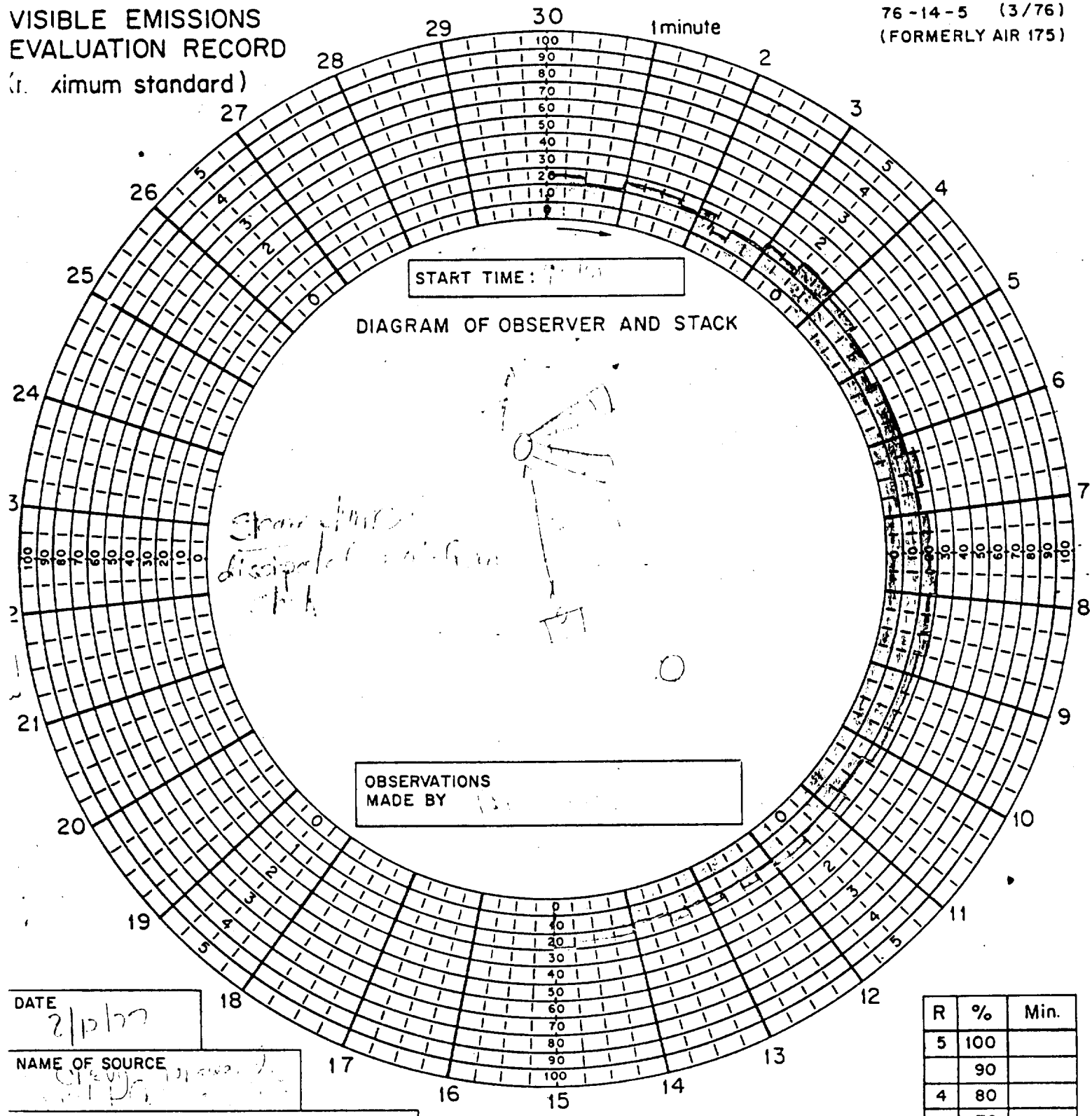
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS EVALUATION RECORD

(r. ximum standard)

76-14-5 (3/76)
(FORMERLY AIR 175)



DATE	2/12/77
NAME OF SOURCE	
ADDRESS	
STACK DESCRIPTION	
WEATHER CONDITIONS	WIND SPEED
PLUME COLOR, MOVEMENT	BACKGROUND COLOR

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	50	
2	20	1:15
	15	2:00
1	10	5:15
	5	:30
0	0	
	Total	15:00

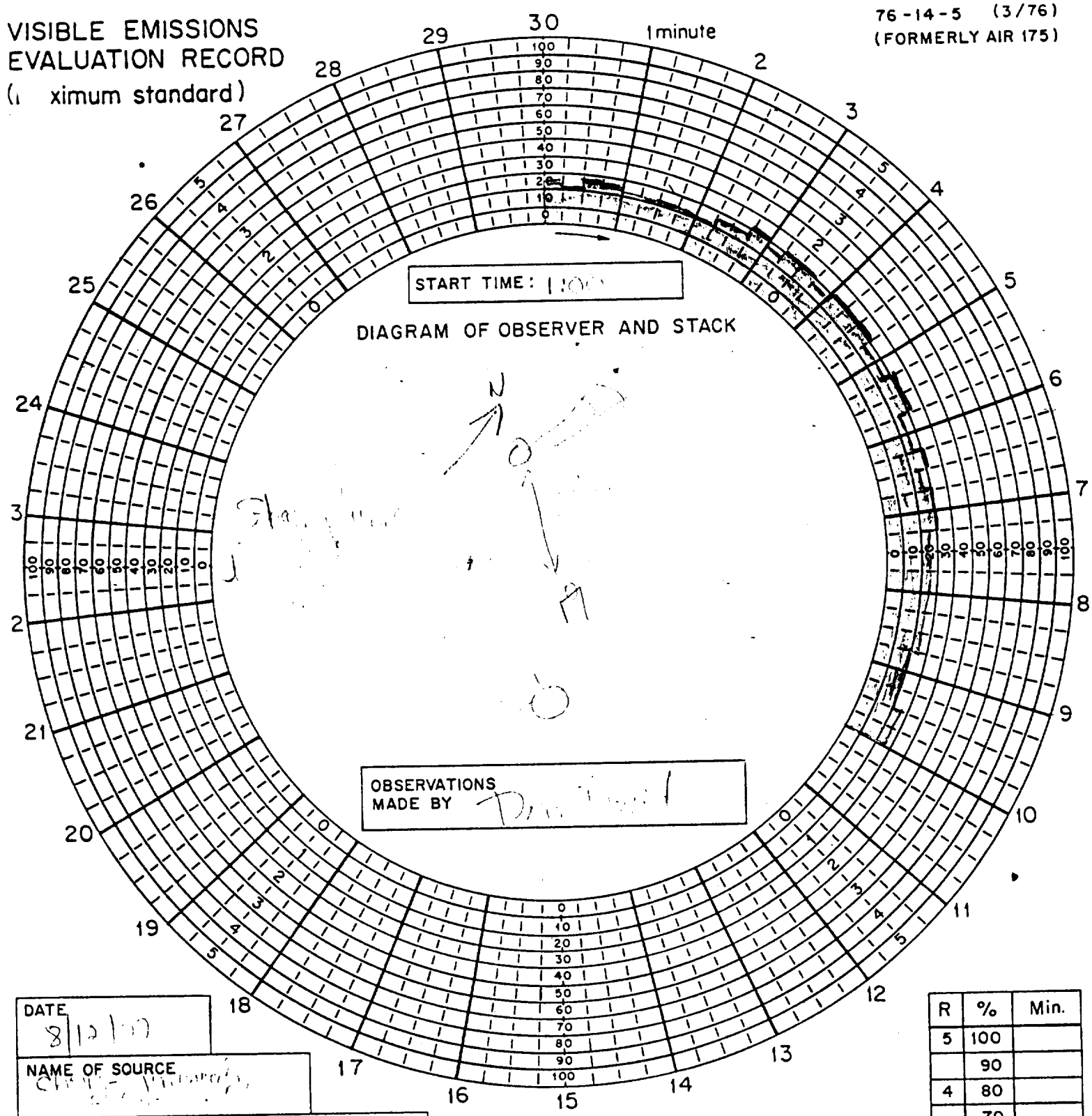
(Use other side for additional data & diagrams)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(ı ximum standard)



DATE	8/12/77
NAME OF SOURCE	[illegible]
ADDRESS	[illegible]
STACK DESCRIPTION	Green [illegible]
WEATHER CONDITIONS	[illegible]
WIND SPEED	10-11
PLUME COLOR, MOVEMENT	[illegible]
BACKGROUND COLOR	[illegible]

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	50	
2	40	2:45
	35	5:00
1	20	2:15
	15	0
0	0	0
	Total	10:00

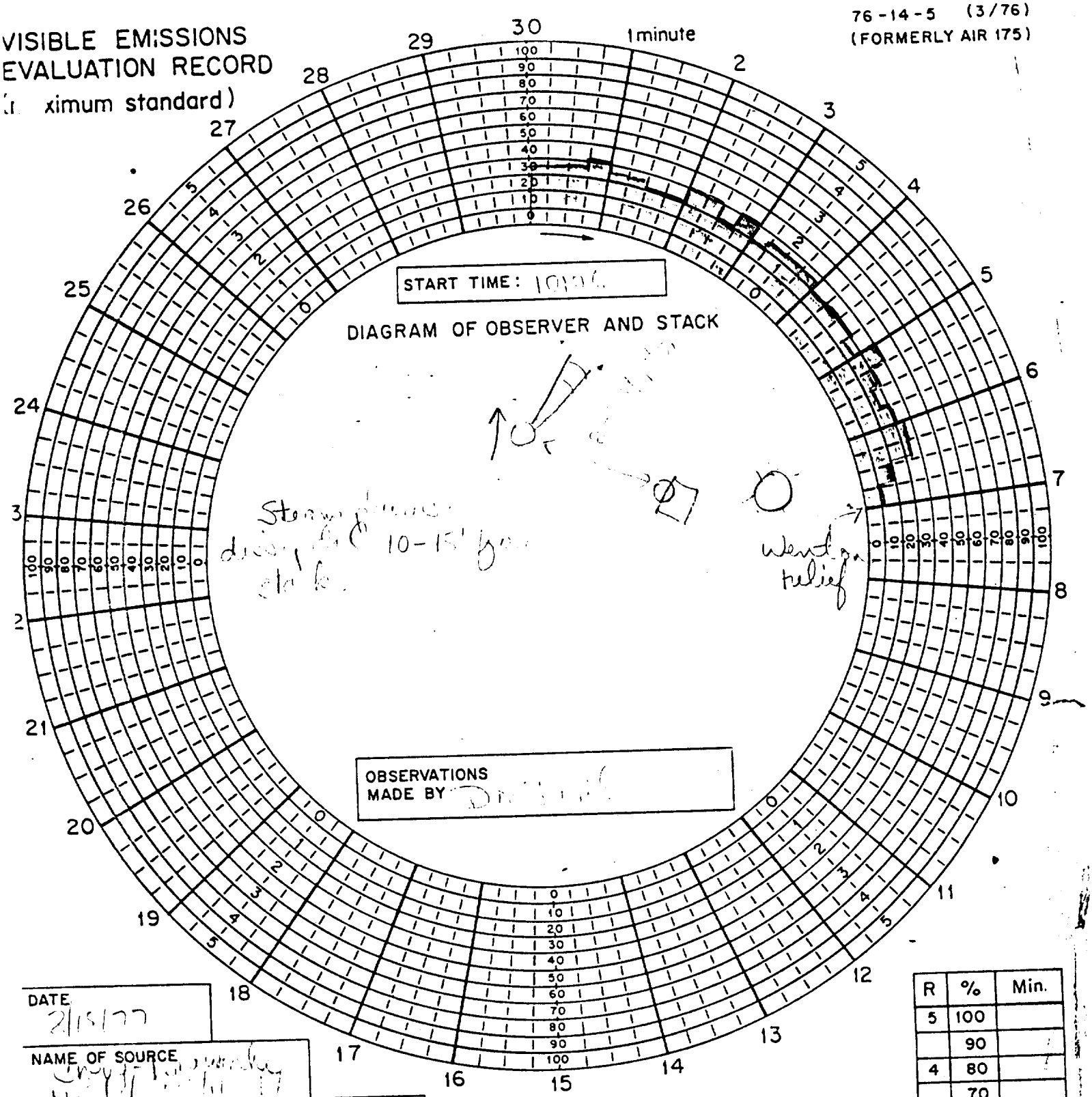
(Use other side for additional data & diagrams)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(Maximum standard)



DATE	2/15/77
NAME OF SOURCE	
ADDRESS	
STACK DESCRIPTION	
WEATHER CONDITIONS	Clear
WIND SPEED	5-7
PLUME COLOR, MOVEMENT	White
BACKGROUND COLOR	Blue

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	30	1:15
	25	2:30
2	20	2:15
	15	:30
1	10	:15
	5	
0	0	:15
	Total	7:00

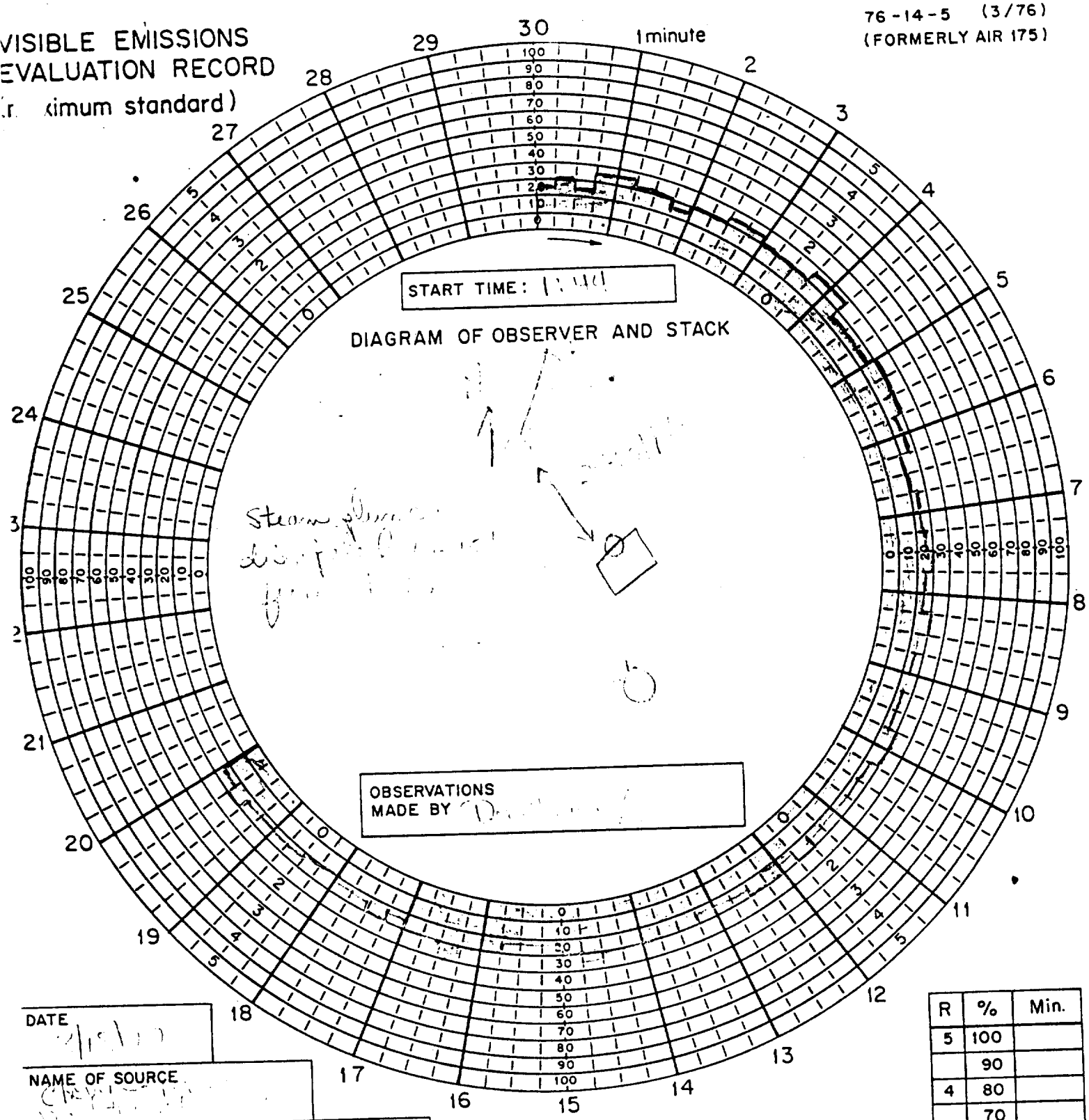
(Use other side for additional data & diagrams)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(r. ximum standard)



R	%	Min.
5	100	
	90	
4	80	
	70	
3	30	
	25	2:00
2	20	7.15
	15	9:45
1	10	1:00
	5	0
0	0	0
	Total	20:00

DATE

NAME OF SOURCE

ADDRESS

STACK DESCRIPTION

WEATHER CONDITIONS

WIND SPEED 7-10

PLUME COLOR, MOVEMENT

BACKGROUND COLOR

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

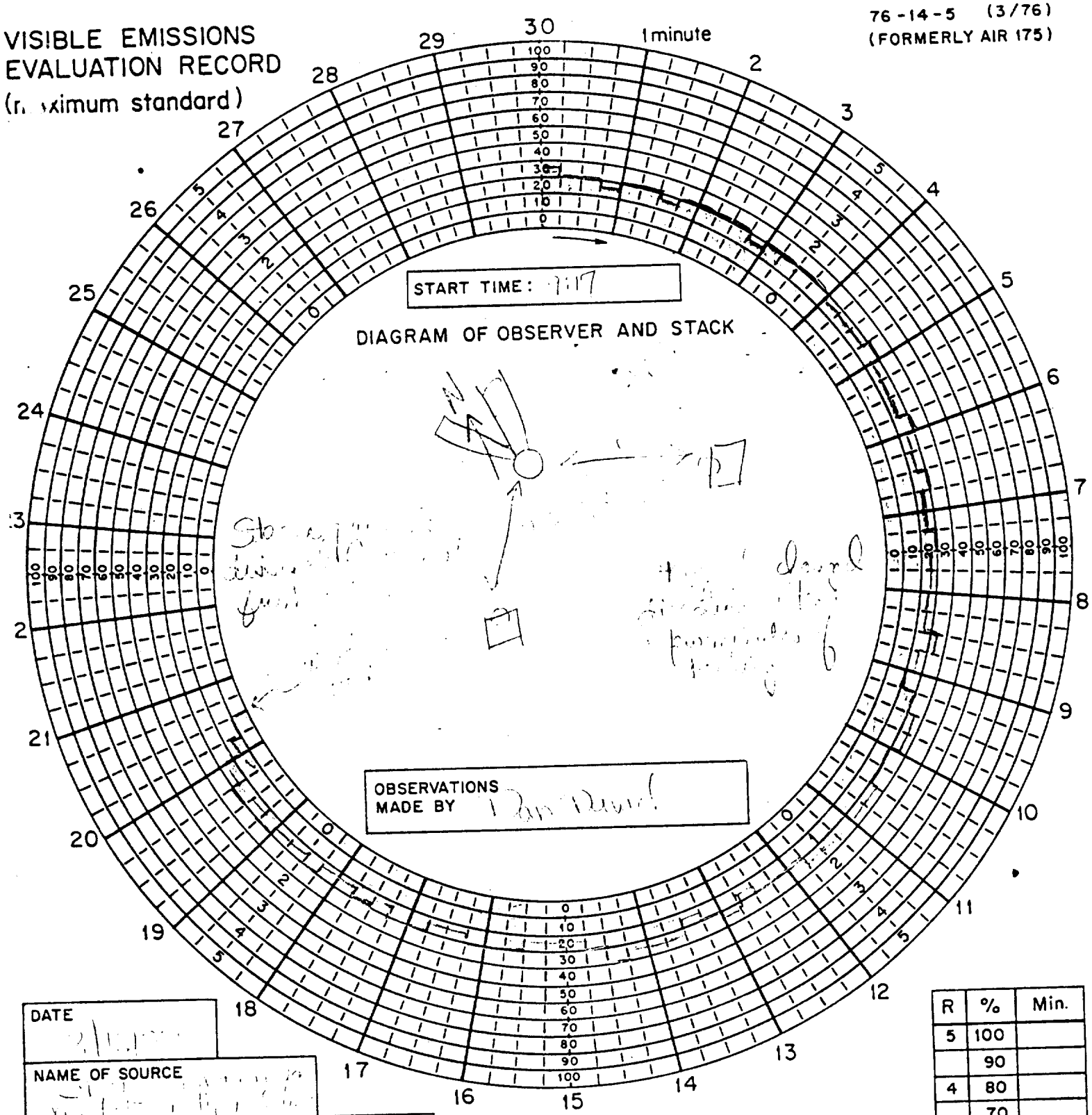
(Use other side for additional data & diagrams)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

76-14-5 (3/76)
(FORMERLY AIR 175)

VISIBLE EMISSIONS EVALUATION RECORD
(maximum standard)



R	%	Min.
5	100	
	90	
4	80	
	70	
3	30	:15
	25	3:15
2	20	8:15
	15	8:00
1	10	0:15
	5	:15
0	0	:15
	Total	20:30

DATE	
NAME OF SOURCE	
ADDRESS	
STACK DESCRIPTION	
WEATHER CONDITIONS	WIND SPEED 3-5
PLUME COLOR, MOVEMENT white	BACKGROUND COLOR Grey

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

(Use other side for additional data & diagrams)

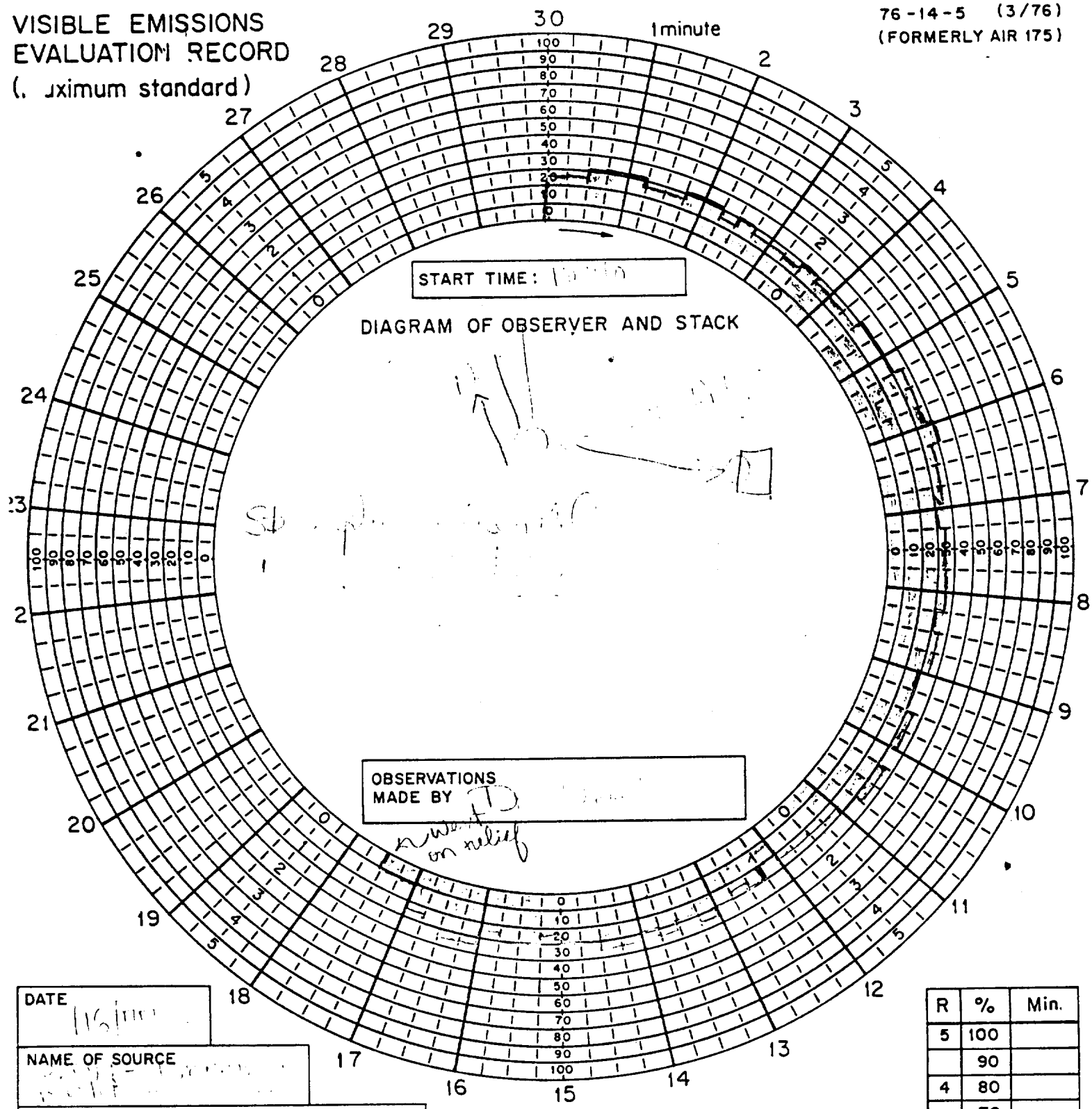
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS EVALUATION RECORD

(. uximum standard)

76-14-5 (3/76)
(FORMERLY AIR 175)



DATE	
NAME OF SOURCE	
ADDRESS	
STACK DESCRIPTION	
WEATHER CONDITIONS	WIND SPEED
PLUME COLOR, MOVEMENT	BACKGROUND COLOR

INSTRUCTIONS

IN ABOVE DIAGRAM INDICATE LOCATION OF OBSERVER, STACK AND SUN. SHOW DISTANCE FROM OBSERVER TO STACK AND DIRECTION OF PLUME. INCLUDE ELEVATION SKETCH AND IDENTIFY ALL STACKS (BY EMISSION POINT NUMBER, WHERE POSSIBLE) INDICATE NORTH BY ARROW.

R	%	Min.
5	100	
	90	
4	80	
	70	
3	60	
	30	:15
2	25	5:30
	20	6:15
1	15	4:45
	10	:15
0	0	:30
	Total	17:30

(Use other side for additional data & diagrams)

STATE OF NEW YORK
DEPARTMENT OF HEALTH

COMMISSIONER
Robert P. Whalen, M.D.

DIVISION OF LABORATORIES
AND RESEARCH

CENTRAL NEW YORK LABORATORY
677 SOUTH SALINA STREET
SYRACUSE, N. Y. 13202

REPRO
Water
Air

September 27, 1977

Mr. R. Armbrust
N.Y.S. Dept. of En. Con.
Region 9
584 Delaware Avenue
Buffalo, New York 14202

Dear Mr. Armbrust:

Attached are particulates results of samples collected 8/9 and 11/77 from Chevrolet Metal Casting Plant Cupola #3, Tonawanda, Erie County

Yours truly,

Arthur M. Hanson
Arthur M. Hanson
Associate Chemest

corrected LAB DATA Dec. 19, 1977 ATTACHED.

Test Number	Filter Number	Sample Weight (milligrams)	Condensate Volume (ml.)	Evap'd Solids (milligrams)	Notes
1A	9-273	431.3 *			
1A			195	118.2	Probe wash
1A			100	8.6	Impinger wash
1A			240	8.1	Impinger Condensate, evap'd solids
1B (Scrubber)	9-274	465.3 *			
"			170	35.7	Probe wash
"			160	12.5	Impinger wash
"			250	8.5	Impinger condensate, evap'd solids
2	9-276	130.1 *			
2			175	60.5	Probe wash
2			260	55.8	Impinger wash
2			300	17.1	Impinger condensate, evap'd solids
3	9-278	205.0 *			
3			100	52.7	Probe wash
3			100	25.7	Impinger wash
3			280	5.3	Impinger condensate, evap'd solids

* corrected Lab data Dec. 19, 1977 attached.

STATE OF NEW YORK
DEPARTMENT OF HEALTH

DIVISION OF LABORATORIES
AND RESEARCH

CENTRAL NEW YORK LABORATORY
677 SOUTH SALINA STREET
SYRACUSE, N. Y. 13202

COMMISSIONER

Robert P. Whalen, M.D.

RDPTM
Water
Air ✓
Gen
Circ.
File

December 19, 1977

Mr. R. Armbrust
N.Y.S. Dept. Environmental Conservation
Region 9 Environmental Quality Office
584 Delaware Avenue
Buffalo, New York 14202

Dear Mr. Armbrust:

Attached are the corrected filter samples for Chevrolet Metal Casting Plant, Tonawanda, New York, Erie County, collected August 9 - 11, 1977.

The original memo was sent September 27, 1977.

Yours truly,

Robert Wineburgh

Robert Wineburgh
Chemist

Att:
cc: R. McCabe

Test Number	Filter Number	Sample Weight (milligrams)	Condensate Volume (ml.)	Evap'd Solids (milligrams)	Notes
1A	9-273	249.8			
1B (Scrubber)	9-274	165.2			
2	9-276	432.4			
3	9-278	373.8			

STATE OF NEW YORK
DEPARTMENT OF HEALTH

DIVISION OF LABORATORIES
AND RESEARCH

CENTRAL NEW YORK LABORATORY
677 SOUTH SALINA STREET
SYRACUSE, N. Y. 13202

COMMISSIONER

Robert P. Whalen, M.D.

RM

September 27, 1977

Mr. R. Armbrust
N.Y.S. Dept. Environmental Conservation
Region 9
584 Delaware Avenue
Buffalo, New York 14202

Dear Mr. Armbrust:

Attached are particulate results of samples collected August 15 - August 16, 1977 from Chevrolet Casting Plant, Cupola 4, Tonawanda, Erie County.

Yours truly,

Arthur M. Hanson
Arthur M. Hanson for RW
Associate Chemist

Att:

Test Number	Filter Number	Sample Weight (milligrams)	Condensate Volume (ml.)	Evap'd Solids (milligrams)	Notes
1	9-279	238.9			
1			400	559.6	Probe wash
1			110	11.8	Impinger wash
1			375	10.9	Impinger condensate, evaporated solids
2	9-280	209.7			
2			250	386.5	Probe wash
2			275	23.4	Impinger wash
2			340	28.2	Impinger condensate, evaporated solids
3	9-277	183.0			
3			140	219.3	Probe wash
3			110	17.7	Impinger wash
3			300	37.4	Impinger condensate, evaporated solids
Acetone Blank			300	1.0	
Lab Acetone *			250	19.3	

* We estimate we use 25 ml of Lab Acetone to transfer each fluid sample. We have ordered a new supply.

New York State Department of Environmental Conservation
Region 9 - Environmental Quality Office
584 Delaware Avenue
Buffalo, NY 14202

Peter A. A. Berle,
Commissioner

July 27, 1977

Mr. R. Fontaine
Chevrolet-Tonawanda
Metal Casting Div.
River Road
Tonawanda, NY 14150

Dear Mr. Fontaine:

Source Sampling of Cupolas

This letter is to confirm the inspection of the cupolas by Messrs McCabe, Foersch, Bartz, and David of this office on June 30, 1977.

The purpose of the inspection was to determine what facilities may be required prior to the proposed source sampling of the cupolas by this Department. The following determinations were made:

1. Sampling will be performed on cupolas 3 and 4 only.

2. A scaffold will be required for access to the #3 cupola stack. Two sectional scaffolds placed "end to" the stack from each port with access between them at the platform will be acceptable. The working platforms should be 18" below the sample ports.

3. The sampling ports for the #4 cupola stack are accessible from the roof level. However, a frame to support the sampling equipment will be needed. This should also be 18" below the sampling ports.

4. A power supply of 110 volts, 60 cycles, 20 amps will be required at the base of the stacks.

During a phone conversation with Larry Ward of your office on July 20, 1977 the above requirements were discussed. It was also agreed that we would commence testing on August 8 beginning with cupola #3.

If you have any questions or the agreed on dates are no longer acceptable, please contact Mr. McCabe at 842-3837 or Mr. Sandonato at 842-3810.

Very truly yours,

Robert A. Armbrust, P.E.
Regional Air Quality
Control Engineer

RBM:ec

RBM

Region 9 - Environmental Quality Office
584 Delaware Avenue
Buffalo, New York 14202

Peter A.A. Berle
xxxxxxxxx

October 28, 1976

Richard Fontaine
General Superintendent
Plant Engineering
Chevrolet Metal Casting Plant
Irene Street
Tonawanda, NY 14207

Dear Mr. Fontaine:

Stack Testing of Cupola Sources C1A, C2B, C3C, C4D

It is the intention of this Department to conduct stack tests on one or two of the above sources pursuant to Section 202.4 of 6 NYCRR 202 (Stack Testing, Sampling, and Analytical Determinations).

Section 202.4 of this regulation also states that the source owner will provide at his own expense the sampling holes, scaffolding, and other pertinent allied facilities for the collection of stack samples. On November 5, 1976 at 1 p.m., personnel from this office will be at your plant to survey the sources to be samples and determine the scaffolding, sampling ports, and other accessory requirements following which you will be more specifically advised in writing.

If the scheduled date and time are not convenient for the survey, please notify this office by November 1, 1976 and arrange for an acceptable date.

Very truly yours,

Robert A. Armbrust, P.E.
Regional Air Quality
Control Engineer

HS:ec
cc: Messrs Wild, McCabe

Mr. Hanson - Syracuse Lab
Mr. Armbrust - Region 9
Stack Samples for Analysis, Chevrolet Metal Casting Plant,
Tonawanda, Cupola #3 and #4
September 12, 1977

Enclosed are the samples from the above-mentioned source which were obtained by the regional test team. The sampling took place during August.

The samples being shipped include:

Cupola #3

Run #1A Impinger Condensate
Impinger Wash (Acetone)
Probe Wash (Acetone)
Filter #9-273

1B Impinger Condensate
Impinger Wash
Probe Wash
Filter #9-274

2 Impinger Condensate
Impinger Wash
Probe Wash
Filter #9-276

3 Impinger Condensate
Impinger Wash
Probe Wash
Filter #9-278

Cupola #4

Run #1 Impinger Condensate
Impinger Wash
Probe Wash
Filter #9-279

2 Impinger Condensate
Impinger Wash
Probe Wash
Filter #9-280

3 Impinger Condensate
Impinger Wash
Probe Wash
Filter #9-277

Please notify this office of the results of this analysis and return the empty sample bottles to this office for reuse.

Thank you.

RBM:ec

OP	LOCATION	FACILITY	EMISSION POINT
I		60 1656	C3C

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

COPIES
WHITE - ORIGINAL
GREEN - CENTRAL OFFICE
YELLOW - APPLICANT
PINK - DEC
CARDBOARD - REGIONAL OFFICE

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR ENVIRONMENTAL ANALYSIS RATING AND PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

PLEASE PRINT OR TYPE XX

SECTION A

1 NAME OF OWNER/FIRM: [illegible]

2 NUMBER AND STREET ADDRESS: [illegible]

3 CITY-TOWN-VILLAGE: [illegible] 4 STATE: [illegible] 5 ZIP: [illegible]

6 OWNER CLASSIFICATION: A ☐ COMMERCIAL B ☐ INDUSTRIAL C ☐ UTILITY D ☐ FEDERAL E ☐ STATE F ☐ MUNICIPAL G ☐ EDUCATIONAL H ☐ RESIDENTIAL I ☐ OTHER

7 NAME & TITLE OF OWNERS REPRESENTATIVE: [illegible] 8 TELEPHONE: [illegible]

9 NAME OF AUTHORIZED AGENT: 10 TELEPHONE:

11 NUMBER AND STREET ADDRESS:

12 CITY-TOWN-VILLAGE: 13 STATE: 14 ZIP:

15 NAME OF P.E. OR ARCHITECT PREPARING PLANS: 16 NYS P.E. OR ARCHITECT NO: 17 TELEPHONE:

18 SIGNATURE OF REPRESENTATIVE OR AUTHORIZED AGENT:

19 FACILITY NAME (IF DIFFERENT FROM OWNER/FIRM): Metal Casting Plant

20 FACILITY LOCATION (NUMBER AND STREET ADDRESS): Irene St[illegible]

21 CITY-TOWN-VILLAGE: [illegible] 22 COUNTY: [illegible]

23 BLDG NAME OR NUMBER: Plant 24 FLOOR NAME OR NUMBER:

25 DATE APPLICATION COMPLETED: 11 / 13 / 7[illegible] 26 EXPECTED DATE OF OPERATION: /

27 PERMIT TO CONSTRUCT: A ☐ NEW SOURCE B ☐ MODIFICATION

28 CERTIFICATE TO OPERATE: A ☐ NEW SOURCE B ☐ MODIFICATION C ☐ EXISTING SOURCE

379-5150

FOR AGENCY USE ONLY

29 LOCATION CODE: 30 FACILITY [illegible] 31 [illegible] 32 [illegible] 33 SIC NUMBER: 34 DATE APPL. RECEIVED: / / 35 DATE APPL. ACCEPTED: / / 36 RECEIVED BY:

PERMIT TO CONSTRUCT

37 DATE ISSUED: / / 38 EXPIRATION DATE: / / 39 SIGNATURE OF APPROVAL:

40 CONDITIONS:
1 DEVIATION FROM APPROVED APPLICATION SHALL VOID THIS PERMIT
2 THIS IS NOT A CERTIFICATE TO OPERATE
3 TESTS AND/OR ADDITIONAL AIR POLLUTION CONTROL EQUIPMENT MAY BE REQUIRED PRIOR TO THE ISSUANCE OF A CERTIFICATE TO OPERATE
4 STACK TEST REQUIRED YES ☐ NO ☐

RECOMMENDATION OF C.O. APPROVAL

41 DATE ISSUED: / / 42 EXPIRATION DATE: / / 43 SIGNATURE OF APPROVAL:

44
1 ☐ INSPECTED BY
2 ☐ DOES NOT REQUIRE INSPECTION
3 ☐ INSPECTION DISCLOSED DIFFERENCES AS BUILT VS PERMIT CHANGES AS INDICATED ON FORM
4 ☐ I RECOMMEND ISSUANCE OF A PROVISIONAL CERTIFICATE TO OPERATE PENDING THE APPROVAL OF STACK TESTS
5 ☐ I RECOMMEND ISSUANCE OF A CERTIFICATE TO OPERATE THE SOURCE AS BUILT
6 ☐ HAVE EPISODE ACTION PLANS BEEN ACCEPTED FOR THIS SOURCE
EXEMPT ☐ YES ☐ NO ☐
7 ☐ APPLICATION FOR C.O. DENIED

UPON COMPLETION OF CONSTRUCTION, SIGN THE STATEMENT LISTED BELOW AND FORWARD TO THE APPROPRIATE FIELD REPRESENTATIVE

THE PROCESS, EXHAUST OR VENTILATING SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS

SIGNATURE OF AUTHORIZED REPRESENTATIVE OR AGENT: DATE: [illegible]

SEC.	45 EMISSION POINT ID.	46 GROUND ELEV (FT)	47 HT ABOVE STRUCTURES	48 STACK HT (FT)	49 INSIDE DIAM (IN)	50 EXIT TEMP (°F)	51 EXIT VELOCITY (FT/SEC)	52 EXIT FLOW RATE (SCFM)	53 DRAFT TYPE	54 WIND DIRECTION	55 RECEPTOR DISTANCE (FT)

56 DRAWING NUMBERS OF PLANS SUBMITTED:

SEC. C

57 DESCRIBE PROCESS OR UNIT:

Cupola Iron Melting

Cupola #3

58 TOTAL NUMBER OF SIMILAR PROCESSES OR UNITS:

SEC. D

59 CONTROL TYPE	60 MANUFACTURER'S NAME AND MODEL NUMBER	61 FUEL TYPE	62 FLOW RATE (SCFM)	63 TEMP (°F)	64 PRESSURE DROP (IN. H_2O)	65 HORSE POWER	66 CONTAM'T CONTROLD	67 EFFICIENCY (%)	68 HOW DET	69 DISP METH	70 INITIAL COST ($)	71 OPER COST ($)	72 DATE INSTALLED	73 USEFUL LIFE
13	Clemco Venturi	NA	27,000	110	60	700	075	99.5	1	1	500,000	55,000	12/75	15
74	75	76	77	78	79	80	81	82	83	84	85	86	87 /	88

SECTION E

CALCULATIONS IN DETERMINING INPUT OR PRODUCTION RATE, EMISSION RATE POTENTIAL AND ACTUAL EMISSIONS:

Average Melt Rate — Charge

Metal Scrap, Iron, Remelt	74,000 lb./hr.
Coke	10,430 lb./hr.
81.7 Limestone	4,132 lb./hr.
Alloys	2,580 lb./hr.

Maximum Melt Rate — Charge

Metal Scrap, Iron, Remelt	94,000 lb./hr.
Coke	10,080 lb./hr.
80.5 Limestone	3,500 lb./hr.
Alloys	3,472 lb./hr.

Emission Rate Potential

Particulates (lbs)

[illegible] lb./hr. to [illegible] lb./hr.

Actual Emissions

Particulates (lbs)

[illegible] lb./hr. to 13.6 lb.

[illegible] 17 lb./hr.

SECTION F

89 CONTAMINANT NAME	%	CODE	92 INPUT OR PRODUCTION	93 UNITS	94 E R P (LBS/HR)	95 HRS/DAY	96 DAYS/YR	97 PROPOSED RATING	98 ACTUAL EMISSIONS	99 UNITS	100 ACTUAL EMISSIONS (LBS/HR)
~~Carbon Monoxide~~ (G)		079	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		
~~Total Solids~~		09C/74	107 [illegible]	108 [illegible]	109 [illegible]	110 [illegible]	[illegible]	112	113 [illegible]	114 [illegible]	[illegible]
9 Oil Vapor (G)		095	122 [illegible]	123 [illegible]	124 [illegible]	125 [illegible]	126 [illegible]	127	128 [illegible]	129 [illegible]	130 [illegible]
134 CO		036	137 [illegible]	138 [illegible]	139 [illegible]	140 [illegible]	141 [illegible]	142	143 [illegible]	144 [illegible]	145 [illegible]
49			152	153	154	155	156	157	158 [illegible]	159	160
64			167	168	169	170	171	172	173	174	175

SEC G

SOLID FUEL TYPE	LBS/HR	%S	OIL TYPE	G P H	%S	GAS TYPE	C F H	BTU/CF
179	180	181	182	183	184	185	186	187

CONTROL EQUIPMENT TYPE	NUMBER	CONTROL EQUIPMENT TYPE	NUMBER	CONTROL EQUIPMENT TYPE	NUMBER
188	189	190	191	192	193

AGENCY USE ONLY

EMI RATING	ALLOWABLE EMISSIONS	UNITS

PROCESS CODE	APPLICABLE CODE(S)
194	195

OP LOCATION FACILITY EMISSION POINT

I C 3 C

1656

6/9/75

NOTES: 1 Plans must be submitted in triplicate with this application

2 Any person knowingly making any false statement or false report in connection with this application shall be liable for penalties as prescribed by law

AIR 100 I (7/73)

SEC. C — 57 DESCRIBE PROCESS OR UNIT: Cupola - Iron Melting Cupola #4

58 TOTAL NUMBER OF SIMILAR PROCESSES OR UNITS: 1

SEC. D

CONTROL TYPE	MANUFACTURER'S NAME AND MODEL NUMBER	FUEL TYPE	FLOW RATE (SCFM)	TEMP (°F)	PRESSURE DROP (IN. H_2O)	HORSE POWER	CONTAM'T CONTROLD	EFFICIENCY (%)	HOW DET	DISP METH	INITIAL COST ($)	OPER COST ($)	DATE INSTALLED	USEFUL LIFE
59	60 Inch Fixed Venturi	61 Nil	62 27,000	63 11.	64 80".	65 700	66 075	67 95.5	68 I	69 1	70 550,00	71 [illegible]	72 / 73	73 25
74	75	76	77	78	79	80	81	82	83	84	85	86	87 /	88

SECTION E — CALCULATIONS IN DETERMINING INPUT OR PRODUCTION RATE, EMISSION RATE POTENTIAL AND ACTUAL EMISSIONS:

Average Melt Rate — Charge — Emission Rate — Venturi — Actual Emissions

Scrap Iron, Iron, Steel — 70,000 lb./hr. — Particulates (lb/hr)

80.5% — 10,000 lb./hr. — 1,130 lb./hr. — 1,130 lb./hr. — 100% lb./hr. to [illegible] lb./hr.

Average Oil Vapor [illegible] lb./hr.

Average Melt Rate — Charge — 0 lb./hr. to 17 lb./hr. Venturi

Iron, Iron, Iron, Remelt — 50,000 lb./hr. — 10,000 lb./hr. — 1,170 lb./hr. — 1,170 lb./hr.

80.1% — Iron Foundry Stack Emissions — Iron Foundry Stack Emissions

SECTION F

CONTAMINANT NAME	%	CODE	INPUT OR PRODUCTION	UNITS	EPP (LBS/HR)	HRS/DAY	DAYS/YR	PROPOSED RATING	ACTUAL EMISSIONS	UNITS	ACTUAL EMISSIONS (LBS/HR)
89 Total Solids (C)	90	91 C9	92 221,000	93 1	94 2225	95 [illegible]	96 24	97	98	/	
104	105	106	107	108	109	110	111	112	113		
119 Oil Vapor (G)	120	121	122	123	124 Trace	125 [illegible]	126 [illegible]	127	128	129	130
134 CO	135	136	137	138	139	140	141	142	143	144	145
149	150	151	152	153	154	155	156	157	158	159	160
164	165	166	167	168	169	170	171	172	173	174	175

AGENCY USE ONLY		
EMIS. RATING	ALLOWABLE EMISSIONS	PNTS
31	32	33
46	47	48
61	62	63
76	77	78

PROCESS CODE	APPLICABLE CODE(S)
94	195 212

SEC G

SOLID FUEL TYPE	LBS/HR	%S	OIL TYPE	GPH	%S	GAS TYPE	CFH	BTU/CF
179	180	181	182	183	184	185	186	187

CONTROL EQUIPMENT TYPE	NUMBER	CONTROL EQUIPMENT TYPE	NUMBER	CONTROL EQUIPMENT TYPE	NUMBER
188	189 /	190	191	192	193

OP LOCATION FACILITY EMISSION POINT: 2 I / 4 6 [illegible] 0 0 [illegible] 0 0 4 0

NOTES: 1 Plans must be submitted in triplicate with this application
2 Any person knowingly making any false statement or false report in connection with this application shall be liable for penalties as prescribed by law

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1656 6/9/75