AP-42 Section 12.2
Reference
Report Sect. 4
Reference 124

The Almega Corporation

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Bensenville, Illinois 60106
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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.

April 28, 1980

Inland Steel Company
3210 Watling Street
East Chicago, Indiana 46312

Attention: Mike Turner

Subject: No. 2 Coke Side Emissions Control Gas Cleaning Car Scrubber Stack Exhaust Particulate Emissions Testing
Inland Steel Company: East Chicago, Indiana
The Almega Corporation Project I-5390

Gentlemen:

INTRODUCTION

Particulate emission testing was conducted on the scrubber stack associated with the new No. 2 coke side emissions control gas cleaning car at Inland Steel Company in East Chicago, Indiana, on April 10-11, 1980.

Testing was conducted by Mr. H. M. Taylor, Mr. D. Chapman and Mr. B. Jackson of The Almega Corporation.

Test methods generally followed the procedural requirements as detailed in Methods 1 through 5 and Method 9 of The Code of Federal Regulations, Title 40, Part 60, and included modifications as detailed in the test protocol for quench car particulate testing.

This report summarizes the results of this test series.

SUMMARY OF TEST RESULTS

Test results are summarized in Table 1.

DISCUSSION OF TEST RESULTS

Scrubber stack particulate emissions in pounds per ton of coke pushed are calculated below:

Test Repetition #	1	2	3
Particulate emission lbs/hr	28.486	23.486	32.398
Test time mins.	39.35	35.78	38.35
Coke production tons/test run	116.13	121.53	123.92
Particulate emissions* lbs/ton of coke	0.161	0.115	0.167

* For test repetition #1, this is calculated from:

$$\frac{28.486 \times \frac{39.35}{60}}{116.13} = 0.161 \text{ lbs/ton of coke pushed}$$

CONCLUSION

Particulate emission testing was conducted on the scrubber stack associated with the new No. 2 coke side emissions control gas cleaning car at Inland Steel Company in East Chicago, Indiana on April 10 - 11, 1980.

Test results indicated scrubber stack exhaust particulate concentrations of 0.071, 0.064, and 0.084 grains/scf db and particulate emission rates of 0.161, 0.115, and 0.167 lbs/ton coke pushed for test repetitions #1, #2 and #3, respectively.

Respectfully submitted,

THE ALMEGA CORPORATION

H. M. Taylor

HMT/sp

THE ALMEGA CORPORATION

SUMMARY OF EMISSION TEST DATA

TABLE: 1

PLANT: Inland Steel Company, East Chicago, Indiana

LOCATION: No. 2 Coke Side Emission Control Gas Cleaning Car Scrubber Exhaust Stack

OPERATOR: H. M. Taylor, D. Chapman, B. Jackson

REPETITION #:	1	2	3
TEST DATE:	4-10-80	4-11-80	4-11-80
STACK GAS (Average)			
Temperature, ^{o}F	140.5	140.0	144.6
Velocity average fps	88.42	78.69	85.51
Volume flow x 10^6 scfh db	2.79	2.57	2.70
Volume flow x 10^3 acfm	70.64	62.87	68.32
Moisture %	22.71	20.74	22.91
Carbon Dioxide %	0.75	0.77	1.00
Oxygen %	18.80	18.93	18.50
PARTICULATE SAMPLE			
Time, mins.	39.35	35.78	38.35
Volume scf db	25.809	22.103	24.882
Particulates collected, grams	0.1193	0.0915	0.1354
Isokinetic Ratio, I% $90 \leq I \leq 110$	97.68	99.94	100.01
PARTICULATE			
Concentration grains/scf db	0.0713	0.0639	0.0840
x 10^{-6} lbs/scf db	10.19	9.13	12.00
Emission lbs/hr	28.49	23.49	32.40
COKE PRODUCTION RATE			
Tons/Test run (12 pushes)	116.13	121.53	123.92
PARTICULATE*			
Emissions lbs/ton of coke	0.161	0.115	0.167

* See (1) in Discussion Section of Report

APPENDIX

THE ALMEGA CORPORATION

PARTICULATE: CALCULATION SUMMARY

SOURCE: Inland Steel No. 2 NS Quench Car.

REPETITION: Run 1 4-10-80

	ENGLISH UNITS (29.92in. ~~70~~ 68°F)	CONVERSION FACTOR	METRIC UNITS (760mm 20°C)

Volume of sample at standard conditions, dry basis

$$V_{mstd} = \left[17.\cancel{71}\,65 \frac{^oR}{in.Hg}\right] V_m \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right]$$ = 25.809 cu.ft. x 0.02821 _____ M^3

Volume water vapor in sample at standard conditions

$$V_{wstd} = \left[0.0474 \frac{cu.ft.}{ml}\right] V_{lc}$$ = 7.584 cu.ft. x 0.02821 _____ M^3

Moisture content in stack gas

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$ = 0.2271 _____

Particle concentration in stack gas on dry basis

$$c's = \left[0.01543 \frac{gr}{mg}\right] \left[\frac{M_n}{V_{mstd}}\right]$$ = 0.0713 grains/scf x 2297 _____ mg/M^3

$$= 2.205\ 10^{-6} \frac{M_n}{V_{mstd}}$$ = 10.1924 x10^{-6} lbs/scf

Stack gas volume flow rate on dry basis

$$Q_s = 3600\ (1-B_{wo})\ V_s\ A \left[\frac{T_{std.} P_s}{(T_s)avg\ P_{std}}\right]$$ = 2.744837 x10^6 scfh x 0.02821 _____ M^3/hr

(A = 13.3120 sq. ft. V_s = fps)

Process rate or BTU rating P_W = _____ _____

Emission Rate

Q_s c's = 28.481.2 lbs/hr. x 0.4536 _____ kg/hr

$\frac{Q_s\ c's}{P_W}$ = _____ lbs/ x 0.4536 _____ kg/

$$I = \left(1.667 \frac{min}{sec}\right) T_s \left[\frac{\left(0.00267 \frac{in.Hg.cu.ft.}{ml\ ^oR}\right) V_{lc} + \frac{V_m}{T_m}\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{\theta V_s P_s A_n}\right]$$

Average

(A_n = 0.0001917 sq.ft.) = 97.68 % _____ %

98.04 (Start Push) 97.33 (Start Quench)

The Almega Corporation

STACK VOLUME FLOW RATE CALCULATION SUMMARY

COMPANY: Inland Steel
LOCATION: No. 2 NS Quench Car
OPERATOR: HMT
TEST DATE: 4-10-80 Run 1

Dry molecular weight of stack gas

$$Md = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

0.75 18.8 80.45 = 28.872 lb/lb-mole

Molecular weight of stack gas, wet basis

$$Ms = Md\ (1-B_{wo}) + 18\ B_{wo}$$ = 26.403 lb/lb-mole

Pitot tube coefficient

Cp (from calibration curve) = 0.839

Average velocity head of stack gas, inches H_2O

Start Push / Start Quench / Average

$(\sqrt{\Delta p})$ avg. = 1.3784 / 1.4072 1.3928

Average absolute stack gas temperature

(T_s) avg. = 132.5 / 148.4 °F + 460 = 592.5 / 608.4 °R Average 600.5

Absolute stack gas pressure

$P_s = P_b$ + (Static Pressure/13.6) = 29.030 in. Hg

Stack gas velocity

$$(V_s)\ avg. = (85.48)\ Cp\ (\sqrt{\Delta p})\ avg \sqrt{\frac{(T_s)\ avg.}{P_s\ M_s}}$$

= 86.92 / 89.9 ft/sec. Average 88.42

Stack gas volume flow rate, dry basis

$$Q_s = 3{,}600\ (1-B_{wo})\ V_s A \left[\frac{T_{std} \cdot P_s}{(T_s)avg \cdot P_{std}}\right]$$ = 2,794,837 scfh Average

A = 13.3160 70,644 ACFM Average

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LABORATORY ANALYSIS
DATA SHEET

TEST NO. Run 1 No. 2 Oxygen Gas

COMPANY: Inland Steel

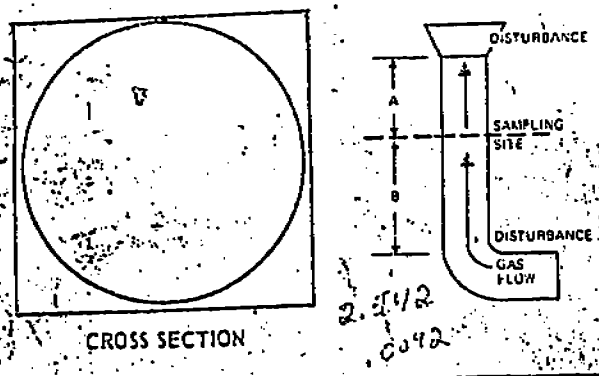
FILTER WEIGHT FINAL	GMS	0.7562
FILTER WEIGHT INITIAL	GMS	0.7393
FILTER PARTICULATE	GMS	0.0169
BEAKER WEIGHT FINAL	GMS	96.1421
BEAKER WEIGHT INITIAL	GMS	96.0397
PROBE AND PREFILTER WASHINGS PARTICULATE	GMS	0.1024
TOTAL FRONT HALF PARTICULATE CATCH (DRY)	GMS	0.1193

BEAKER WEIGHT FINAL	GMS	
BEAKER WEIGHT INITIAL	GMS	
IMPINGER CONDENSATE TOTAL SOLIDS	GMS	
BEAKER WEIGHT FINAL	GMS	
BEAKER WEIGHT INITIAL	GMS	
TOTAL EXTRACTABLE ORGANICS	GMS	
TOTAL BACK HALF CATCH (DRY)	GMS	

TOTAL	GMS	

PARTICULATE FIELD DATA

SCHEMATIC OF STACK



CROSS SECTION

PLANT: Tyson Sec

DATE: 4-10-90

LOCATION: Cor Bin Fy #9

OPERATOR: Hunter DC

STACK NO.: #2 Cor Sp Fy Stack

RUN NO.: 1

SAMPLE BOX NO.: Tyson 9

METER BOX NO.: Tyson 9

AMBIENT TEMPERATURE: 52°F

BAROMETRIC PRESSURE: 28.92

ASSUMED MOISTURE, %: 20

PROBE LENGTH, in.: 72

NOZZLE DIAMETER, in.: 3/16

STACK DIAMETER, in.: 59×32 1/2

PROBE HEATER SETTING: 250°F

HEATER BOX SETTING: 250°F

METER ΔH@:

C FACTOR: 0.839

PROCESS WEIGHT RATE:

WEIGHT OF PARTICULATE COLLECTED, mg		
SAMPLE	FILTER	PROBE WASH
FINAL WEIGHT		
TARE WEIGHT	0.7393	
WEIGHT GAIN		
TOTAL		

TRAVERSE POINT NUMBER	SAMPLING TIME (θ), min (min/sec)	STATIC PRESSURE (in. H_2O)	STACK TEMPERATURE (T_s), °F (Start Push / Stop Push)	VELOCITY HEAD (ΔP_s) (Start Push / Stop Push)	PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH), in. H_2O ACTUAL	DESIRED	GAS SAMPLE VOLUME (Vm), ft³	GAS SAMPLE TEMPERATURE AT DRY GAS METER: INLET ($T_{m_{IN}}$), °F	OUTLET ($T_{m_{OUT}}$), °F	SAMPLE BOX TEMPERATURE °F	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER °F	PUMP VACUUM in. Hg gauge	VELOCITY fps
1	2:20	12:37+1.5	130 / 145	1.20 / 1.25	.00		3434.58	40	40	270	45	3	
2	4:17		135 / 145	0.80 / 1.20	.40		3435.40	45	45	270	45	3	
3	2:29		132 / 140	1.00 / 1.00	.52		3437.00	50	50	270	45	3	
4	4:25		128 / 154	3.50 / 3.30	1.80		3438.42	50	50	275	47	6	
5	2:44		133 / 147	2.50 / 2.70	1.20		3441.15	52	52	275	48	5	
6	3:25		135 / 152	1.00 / 1.00	.55		3443.38	55	52	275	48	3	
7	2:40		135 / 150	2.50 / 2.40	1.00		3446.00	59	56	280	49	5	
8	3:47		137 / 142	2.00 / 2.00	1.10		3448.10	60	57	280	50	5	
9	3:40		130 / 152	1.50 / 1.50	.75		3451.15	55	52	280	50	4	
10	2:27		134 / 151	2.00 / 2.10	1.10		3453.29	59	52	280	50	5	
11	4:07		135 / 150	3.00 / 3.40	1.75		3455.00	59	55	270	50	6	
12	3:10		126 / 147	3.00 / 3.00	1.75		3457.65	60	55	275	50	6.5	
							3460.42						
TOTAL				1.45 / 1.3784	1.407								
AVERAGE	39.35	+1.5	132.5 / 148.4		1.044		25.84	53.5	51.3	52.4			

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME ml 1	2	3	4	SILICA GEL WEIGHT g
FINAL	354				206
INITIAL	100	100	0		200
LIQUID COLLECTED					6
TOTAL VOLUME COLLECTED	254	100			6

ORSAT MEASUREMENT	TIME	CO_2	O_2	CO	N_2
1		0.75	19.0		
2		0.5	19.0		
3		1.0	18.5		
4					

COMMENTS:

THE ALMEGA CORPORATION

PARTICULATE: CALCULATION SUMMARY

SOURCE: Inland Steel No. 2 NS Quench Car

REPETITION: Run 2 4-11-80

	ENGLISH UNITS (29.92in. ~~70~~ 68°F)	CONVERSION FACTOR	METRIC UNITS (760mm 20°C)

Volume of sample at standard conditions, dry basis

$$V_{mstd} = \left[17.\cancel{71}\,65 \frac{^oR}{in.Hg}\right] V_m \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right]$$ = 22.103 cu.ft. x 0.02821 _____ M^3

Volume water vapor in sample at standard conditions

$$V_{wstd} = \left[0.0474 \frac{cu.ft.}{ml}\right] V_{lc}$$ = 5.7828 cu.ft. x 0.02821 _____ M^3

Moisture content in stack gas

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$ = 0.2074 _____

Particle concentration in stack gas on dry basis

$$c's = \left[0.01543 \frac{gr}{mg}\right] \left[\frac{M_n}{V_{mstd}}\right]$$ = 0.0639 grains/scf x 2297 _____ mg/M^3

$$= 2.205\ 10^{-6} \frac{M_n}{V_{mstd}}$$ = 9.1281 x10^{-6} lbs/scf

Stack gas volume flow rate on dry basis

$$Q_s = 3600\ (1-B_{wo})\ V_s\ A \left[\frac{T_{std.} P_s}{(T_s)avg\ P_{std}}\right]$$ = 2.572967 x10^6 scfh x 0.02821 _____ M^3/hr

(A = 13.3160 sq. ft. V_s = fps)

Process rate or BTU rating P_W = _____ _____

Emission Rate

$Q_s\ c's$ = 23.4862 lbs/hr. x 0.4536 _____ kg/hr

$\frac{Q_s\ c's}{P_W}$ = _____ lbs/ x 0.4536 _____ kg/

$$I = \left(1.667 \frac{min}{sec}\right) T_s \left[\frac{\left(0.00267 \frac{in.Hg.cu.ft.}{ml\ ^oR}\right) V_{lc} + \frac{V_m}{T_m}\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{\theta V_s P_s A_n}\right]$$

(A_n = 0.0001917 sq.ft.) = 99.94 % _____ %

100.7 START PUSH

99.2 START QUENCH

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STACK VOLUME FLOW RATE CALCULATION SUMMARY

COMPANY: Inland Steel
LOCATION: No. 2 NS Quench Car
OPERATOR: Hunt
TEST DATE: 4-11-80 Run 2

Dry molecular weight of stack gas

$$Md = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

0.77 18.93 80.3 = 28.881 lb/lb-mole

Molecular weight of stack gas, wet basis

$$Ms = Md\ (1-B_{wo}) + 18\ B_{wo}$$ = 26.624 lb/lb-mole

Pitot tube coefficient

Cp (from calibration curve) = 0.839

Average velocity head of stack gas, inches H_2O

Start Run / Start Quench — Average

$(\sqrt{\Delta p})$ avg. = 1.2337 / 1.2666 — 1.2502

Average absolute stack gas temperature

(T_s) avg. = 133.7 / 146.3 °F + 460 = 593.7 / 606.3 °R — Average 600.0

Absolute stack gas pressure

$P_s = P_b$ + (Static Pressure/13.6) = 29.260 in. Hg

Stack gas velocity

$$(V_s)\ avg. = (85.48)\ Cp\ (\sqrt{\Delta p})\ avg \sqrt{\frac{(T_s)\ avg.}{P_s\ M_s}}$$

= 77.241 / 80.138 ft/sec. — Average 78.68

Stack gas volume flow rate, dry basis

$$Q_s = 3{,}600\ (1-B_{wo})\ V_s A \left[\frac{T_{std} \cdot P_s}{(T_s)avg \cdot P_{std}}\right]$$ = 2,572,967 scfh — Average

62,869 ACFM — Average

The Almega Corporation

LABORATORY ANALYSIS
DATA SHEET

TEST NO. Run 2 No. 2 Power Co

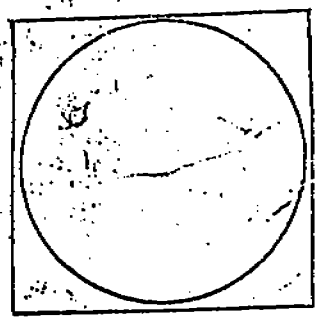
COMPANY: Inland Steel

FILTER WEIGHT FINAL	GMS	0.7755
FILTER WEIGHT INITIAL	GMS	0.7533
FILTER PARTICULATE	GMS	0.0222
BEAKER WEIGHT FINAL	GMS	104.5686
BEAKER WEIGHT INITIAL	GMS	104.4993
PROBE AND PREFILTER WASHINGS PARTICULATE	GMS	0.0693
TOTAL FRONT HALF PARTICULATE CATCH (DRY)	GMS	0.0915

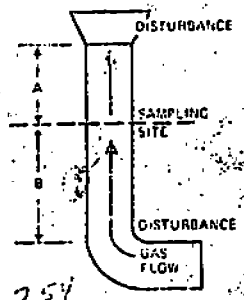
BEAKER WEIGHT FINAL	GMS
BEAKER WEIGHT INITIAL	GMS
IMPINGER CONDENSATE TOTAL SOLIDS	GMS
BEAKER WEIGHT FINAL	GMS
BEAKER WEIGHT INITIAL	GMS
TOTAL EXTRACTABLE ORGANICS	GMS
TOTAL BACK HALF CATCH (DRY)	GMS
TOTAL	GMS

PARTICULATE FIELD DATA

SCHEMATIC OF STACK



CROSS SECTION



2.54
.0092

PLANT Twin Sonic
DATE 4-11-80
LOCATION Cam Bunny #1
OPERATOR Hunt
STACK NO. #2 Oven Spent Car
RUN NO. 2
SAMPLE BOX NO. Tay
METER BOX NO. Tay

AMBIENT TEMPERATURE 75°F
BAROMETRIC PRESSURE 29.15
ASSUMED MOISTURE, % 20
PROBE LENGTH, in. 72
NOZZLE DIAMETER, in. 3/16
STACK DIAMETER, in. 59 x 32 1/2
PROBE HEATER SETTING 250°F
HEATER BOX SETTING 250°F

METER $\Delta H_@$
C FACTOR 0.339
PROCESS WEIGHT RATE

WEIGHT OF PARTICULATE COLLECTED, mg		
SAMPLE	FILTER	PROBE WASH
FINAL WEIGHT		
TARE WEIGHT	0.7533	
WEIGHT GAIN		
TOTAL		

TRAVERSE POINT NUMBER	SAMPLING TIME (θ), min. (mm/sec)	STATIC PRESSURE (in. H_2O)	STACK TEMPERATURE (T_s), °F (Stack / Probe / Gauge)	VELOCITY HEAD (ΔP_s) (Stack / Probe / Gauge)		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H_2O ACTUAL	DESIRED	GAS SAMPLE VOLUME (V_m), ft³	GAS SAMPLE TEMPERATURE AT DRY GAS METER INLET ($T_{m_{IN}}$), °F	OUTLET ($T_{m_{OUT}}$), °F	SAMPLE BOX TEMPERATURE °F	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER °F	PUMP VACUUM in. Hg gauge	VELOCITY fps
1	4/12	+1.5	125/145	2.0	2.5	1.00		3461.400	40	39	270	40	5	
2	3/26		135/145	2.0	2.1	1.00		3464.25	48	45	270	42	8	
3	3/09		131/138	1.0	1.0	.54		3466.15	50	45	270	42	7.5	
4	3/30		129/141	3.0	2.8	1.60		3469.05	60	55	270	45	10	
5	3/23		135/141	2.1	2.1	1.13		3470.68	62	60	270	45	7.8	
6	3/02		134/145	0.7	0.9	.40		3473.00	62	60	270	45	4	
7	2/39		140/151	1.6	1.6	.81		3474.41	64	60	275	46	6	
8	2/20		142/155	1.2	1.3	.62		3476.10	65	60	275	45	6	
9	2/10		130/145	1.4	1.4	.73		3477.50	66	64	275	45	6	
10	2/45		135/148	2.0	2.0	1.10		3479.82	66	64	275	45	7	
11	2/39		135/150	1.0	1.2	.54		3480.50	66	64	270	45	6	
12	2/32		133/151	1.0	1.0	.54		3482.10	67	65	270	44	6	
								3483.620						
				Avg										
TOTAL				1.233	1.266									
AVERAGE	35.78	41.51	133.7	146.3		0.834		22.222	57.7	56.8	58.3			

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME ml 1	2	3	4	SILICA GEL WEIGHT, g
FINAL	310				212
INITIAL	200				200
LIQUID COLLECTED					12
TOTAL VOLUME COLLECTED	110		(122)		12

ORSAT MEASUREMENT	TIME	CO_2	O_2	CO	N_2
1		0.8	19.0		
2		0.5	19.0		
3		1.00	18.8		
4					

COMMENTS:

1600 RPM

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THE ALMEGA CORPORATION

PARTICULATE: CALCULATION SUMMARY

SOURCE: Inland Steel No. 2 NS Coke Oven

REPETITION: Run 3 4-11-80

	ENGLISH UNITS (29.92in. ~~70~~ 60°F)	CONVERSION FACTOR	METRIC UNITS (760mm 20°C)

Volume of sample at standard conditions, dry basis

$$V_{mstd} = \left[17.\cancel{71}\,65 \frac{^oR}{in.Hg}\right] V_m \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right]$$ = 24.882 cu.ft. x 0.02821 _____ M^3

Volume water vapor in sample at standard conditions

$$V_{wstd} = \left[0.0474 \frac{cu.ft.}{ml}\right] V_{lc}$$ = 7.3944 cu.ft. x 0.02821 _____ M^3

Moisture content in stack gas

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$ = 0.2291 _____

Particle concentration in stack gas on dry basis

$$c's = \left[0.01543 \frac{gr}{mg}\right] \left[\frac{M_n}{V_{mstd}}\right]$$ = 0.0840 grains/scf x 2297 _____ mg/M^3

$$= 2.205\ 10^{-6} \frac{M_n}{V_{mstd}}$$ = 11.9987 x10^{-6} lbs/scf

Stack gas volume flow rate on dry basis

$$Q_s = 3600\ (1-B_{wo})\ V_s\ A \left[\frac{T_{std}.P_s}{(T_s)avg\ P_{std}}\right]$$ = 2.700117 x10^6 scfh x 0.02821 _____ M^3/hr

(A = 13.3160 sq. ft. V_s= fps)

Process rate or BTU rating P_W = _____ _____

Emission Rate

Q_s c's = 32.3984 lbs/hr. x 0.4536 _____ kg/hr

$\frac{Qs\ c's}{P_W}$ = _____ lbs/ x 0.4536 _____ kg/

$$I = \left(1.667 \frac{min}{sec}\right) T_s \left[\frac{\left(0.00267 \frac{in.Hg.cu.ft.}{ml\ ^oR}\right) V_{lc} + \frac{V_m}{T_m}\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{\theta V_s P_s A_n}\right]$$

(A_n = 0.000217 sq.ft.) = 100.01 % _____ %

100.73 Start Point

99.32 Stop Point

The Almega Corporation

STACK VOLUME FLOW RATE CALCULATION SUMMARY

COMPANY: Inland Steel
LOCATION: No. 2 NS Quench Car
OPERATOR: HMT
TEST DATE: 4-11-80 Run 3

Dry molecular weight of stack gas

$$Md = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

1.00 18.50 80.5

= 28.900 lb/lb-mole

Molecular weight of stack gas, wet basis

$$Ms = Md\ (1-B_{wo}) + 18\ B_{wo}$$

= 26.403 lb/lb-mole

Pitot tube coefficient

Cp (from calibration curve) = 0.839

Average velocity head of stack gas, inches H_2O

Start Pitot / Start Quench / Average

$(\sqrt{\Delta p})$ avg. = 1.3290 / 1.3671 1.3481

Average absolute stack gas temperature

(T_s) avg. = 136.0/153.2 °F + 460 = 596.0/613.2 °R Average 604.6

Absolute stack gas pressure

$P_s = P_b$ + (Static Pressure/13.6) = 29.275 in. Hg

Stack gas velocity

$$(V_s)\ avg. = (85.48)\ Cp\ (\sqrt{\Delta p})\ avg \sqrt{\frac{(T_s)\ avg.}{P_s\ M_s}}$$

= 83.695/87.328 ft/sec. Average 85.5

Stack gas volume flow rate, dry basis

$$Q_s = 3{,}600\ (1-B_{wo})\ V_s A \left[\frac{T_{std} \cdot P_s}{(T_s)avg \cdot P_{std}}\right]$$

= 2,700,114 scfh Average

68,317 ACFM Average

The Almega Corporation

LABORATORY ANALYSIS
DATA SHEET

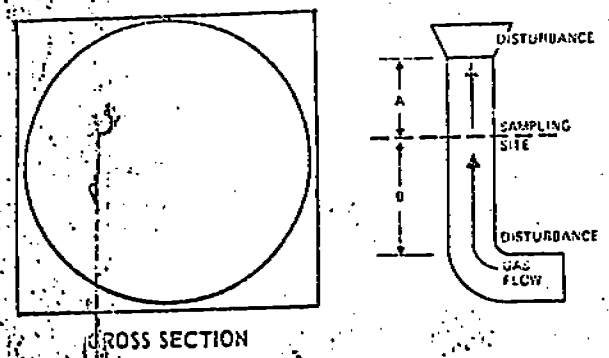
TEST NO. Run 3 No. 2 Quench Car

COMPANY: Inland Steel

FILTER WEIGHT FINAL	GMS	0.7856
FILTER WEIGHT INITIAL	GMS	0.7609
FILTER PARTICULATE	GMS	0.0247
BEAKER WEIGHT FINAL	GMS	111.4928
BEAKER WEIGHT INITIAL	GMS	111.3821
PROBE AND PREFILTER WASHINGS PARTICULATE	GMS	0.1107
TOTAL FRONT HALF PARTICULATE CATCH (DRY)	GMS	0.1354
BEAKER WEIGHT FINAL	GMS	
BEAKER WEIGHT INITIAL	GMS	
IMPINGER CONDENSATE TOTAL SOLIDS	GMS	
BEAKER WEIGHT FINAL	GMS	
BEAKER WEIGHT INITIAL	GMS	
TOTAL EXTRACTABLE ORGANICS	GMS	
TOTAL BACK HALF CATCH (DRY)	GMS	
TOTAL	GMS	

PARTICULATE FIELD DATA

SCHEMATIC OF STACK



CROSS SECTION

PLANT Leland Stas
DATE 4/11/80
LOCATION Cass Bangor MI
OPERATOR Hart
STACK NO. No. 2 Ore Spot
RUN NO. 3
SAMPLE BOX NO. Joy
METER BOX NO. Joy

AMBIENT TEMPERATURE 36°F
BAROMETRIC PRESSURE 29.15
ASSUMED MOISTURE, % 20
PROBE LENGTH, in.
NOZZLE DIAMETER, in. 3/16
STACK DIAMETER, in. 59 x 32 1/2
PROBE HEATER SETTING 250
HEATER BOX SETTING 250

METER ΔH@
C FACTOR 0.939
PROCESS WEIGHT RATE

WEIGHT OF PARTICULATE COLLECTED, mg		
SAMPLE	FILTER	PROBE WASH
FINAL WEIGHT		
TARE WEIGHT	0.7609	
WEIGHT GAIN		
TOTAL		

TRAVERSE POINT NUMBER	SAMPLING TIME (θ), min.	STATIC PRESSURE (in. H_2O)	STACK TEMPERATURE (T_s), °F (Start Rear / Start Front)	VELOCITY HEAD (ΔP_s) (Start Rear / Start Front)		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H_2O ACTUAL	DESIRED	GAS SAMPLE VOLUME (V_m), ft^3	GAS SAMPLE TEMPERATURE AT DRY GAS METER INLET ($T_{m_{IN}}$), °F	OUTLET ($T_{m_{OUT}}$), °F	SAMPLE BOX TEMPERATURE °F	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER °F	PUMP VACUUM in. Hg gauge	VELOCITY fps
1	2/03	+1.7	123/147	2.0	2.0	1.10		3424.00	60	55	250	48	5	
2	2/32		128/150	1.0	1.1	.55		3487.85	60	57	250	45	4	
3	3/07		130/165	0.8	0.9	.40		3489.2	59	57	260	45	4	
4	2/09		135/155	1.4	1.6	.73		3493.75	63	60	268	45	4	
5	3/05		128/154	1.8	2.0	.95		3497.0	60	60	270	45	4	
6	2/21		136/151	1.4	1.40	.72		3493.7	58	55	270	45	4	
7	2/15		126/152	2.0	2.0	1.10		3495.18	58	55	275	48	6	
8	2/25		135/154	2.0	2.2	1.10		3496.78	58	56	250	44	6	
9	2/19		133/150	1.5	1.5	.75		3497.5	57	56	260	44	5	
10	2/51		136/155	2.0	2.3	1.10		3501.9	59	57	275	45	6	
11	3/16		135/150	3.0	3.0	1.61		3503.7	60	58	275	45	5	
12	2/57		137/155	3.0	3.1	1.60		3506.45	60	58	265	45	5	
								3509.0						
TOTAL				1.329	1.391									
AVERAGE	38.35	+1.7	136	153.2		0.967		25.00	59.3	57.0				

58.2

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME ml 1	2	3	4	SILICA GEL WEIGHT, g
FINAL		350			206
INITIAL	100	100	0		200
LIQUID COLLECTED					6
TOTAL VOLUME COLLECTED	150		156		6

ORSAT MEASUREMENT	TIME	CO_2	O_2	CO	N_2
1		0.75	18.0		
2		0.75	18.5		
3		1.50	18.0		
4					
		1.00	18.5		

COMMENTS:

1700 (ppm)

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(312) 766-2013

THE ALMEGA CORPORATION

~~4-18~~

4-10, 11-80

STACK VISIBLE EMISSIONS TESTING
NO. 2 COKE SIDE EMISSIONS CONTROL
GAS CLEANING CAR
INLAND STEEL COMPANY
THE ALMEGA CORPORATION PROJECT
I-5390

THE ALMEGA CORPORATION

607 C Country Club Drive
Bensenville, Illinois 60106
Phone: (312) 595-0175

April 28, 1980

Inland Steel Company
3210 Watling Street
East Chicago, Indiana 46312

Attention: Mike Turner

Subject: Stack Visible Emissions Testing
No. 2 Coke Side Emissions Control Gas Cleaning Car
Inland Steel Company: East Chicago, Indiana
The Almega Corporation Project I-5390

Gentlemen:

INTRODUCTION

Visible emissions testing was conducted on the scrubber stack associated with the new No. 2 coke side emissions control gas cleaning car at Inland Steel Company in East Chicago, Indiana on April 10 - 11, 1980.

Visible emissions testing was performed simultaneously with the EPA Method 5 particulate test series and generally followed the procedural requirements as detailed in Method 9 of the Code of Federal Regulations, Title 40, Part 60.

Smoke opacity determinations were performed by Mr. Bernard Jackson of The Almega Corporation who is a certified smoke opacity observer.

SUMMARY OF TEST PROCEDURES

Visible emissions testing was conducted generally following EPA Method 9.

Due to the nature of the coke pushing operation and performance of the emission control scrubber car, smoke opacity determinations were made at both the scrubber stack exhaust and at the coke oven hood during the coke pushing sequence. Observations were made at both locations at 15 second intervals from the commencement of the coke push to the commencement of the water sprays at the quench tower.

DISCUSSION OF TEST RESULTS

Test results indicated that the majority of coke oven pushes into the car yielded negligible visible emissions from both the coke guide hood area and scrubber exhaust stack.

Those coke pushes that did result in high visible emissions were in all probability "green" pushes which resulted in abnormal and excessive scrubber inlet particulate loadings.

It should also be noted that although visible emissions observations were made and recorded for the scrubber exhaust stack, the saturated condition of the stack gas effluent coupled with the adverse ambient conditions at the battery itself resulted in extremely difficult conditions for accurate assessment of actual smoke opacity.

The field test smoke opacity observation data sheets for each of the 36 ovens pushed during the particulate emission test series are included in the Appendix.

At the request of Inland Steel, the visible emissions results have not been totaled, averaged and summarized for each individual coke oven push or each 12 push test repetition.

CONCLUSION

Visible emissions testing was conducted on the scrubber stack associated with the new No. 2 coke side emissions control gas cleaning car at Inland Steel in East Chicago, Indiana on April 10 - 11, 1980.

Test methods generally followed those as detailed in EPA Method 9 of the Code of Federal Regulations, CFR 40, Part 60.

Test results indicated zero or minimal visible emissions during normal coke pushing sequences into the gas cleaning car. However, a number of pushes yielded excessive visible emissions at both the coke guide hood and scrubber exhaust stack and were attributed primarily to abnormal conditions involving "green" coke pushes.

The Almega Corporation

The Almega Corporation is pleased to have been of service to Inland Steel Company.

Respectfully submitted,

THE ALMEGA CORPORATION

H. M. Taylor

HMT/sp

APPENDIX

THE ALMEGA CORPORATION
607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION INLAND STEEL - E. CHICAGO

DATE 4/10/80

SKY CONDITION 100% CLOUD

WIND SPEED 10-15

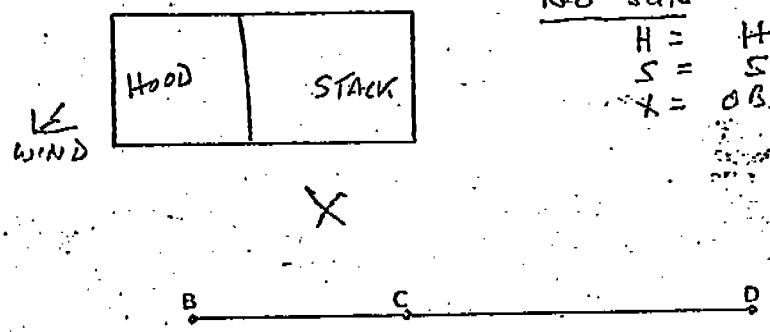
AMBIENT TEMP. 36°F

PUSHING OBSERVATIONS

INSPECTOR BW JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P1



No SUN
H = HOOD
S = STACK
X = OBSERVER

B - RAM MOVES
C - COKE IN HOT CAR
D - HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
73	12:32.

QUENCH CAR: No 2.

POSITION 60 FT.

BACKGROUND - SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	D/ 0	NP	C/ 0	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP		
2								
3								
4								
5								
6	NP =	STEAM	PLUME					
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/10/80

SKY CONDITION 100% CLOUD

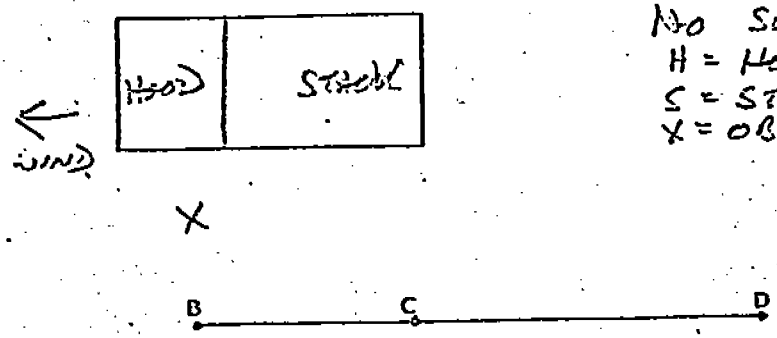
WIND SPEED 10 - 15

AMBIENT TEMP. 38° F

PUSHING OBSERVATIONS

INSPECTOR R W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



No SUN
H = HOOD
S = STACK
X = OBSERVER
B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P2

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0	S	H 15	S	H 30	S	H 45	S
	12.40	0	1/0	NP	5/0	NP	0	NP	0	NP
		1	0	NP	0	NP	0	NP		
		2								
		3								
		4								
		5	NP = Steam Plume							
		6								
		7								
		8								
		9								
		10								
		11								
		12								
		13								
		14								
		15								
		16								

QUENCH CAR: No. 2

POSITION 75 ft

BACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/10/80

SKY CONDITION 100% cloud

WIND SPEED 10 – 15

AMBIENT TEMP. 34°F

PUSHING OBSERVATIONS

INSPECTOR [illegible] JACKSON

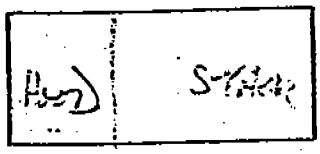
(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

NO SUN

H = HOOD
S = STACK
X = OBSERVER

P3

WIND



B – RAM MOVES
C – COKE IN HOT CAR
D = HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
83	12:51

QUENCH CAR: 2

POSITION 75 FF

BACKGROUND – SKY cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	B/O NP	C/O NP	O NP	O NP
1	O NP	O NP		
2				
3				
4				
5				
6				
7				
8	NP =	STEAM	PLUME	
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/10/86

SKY CONDITION 100% cloud

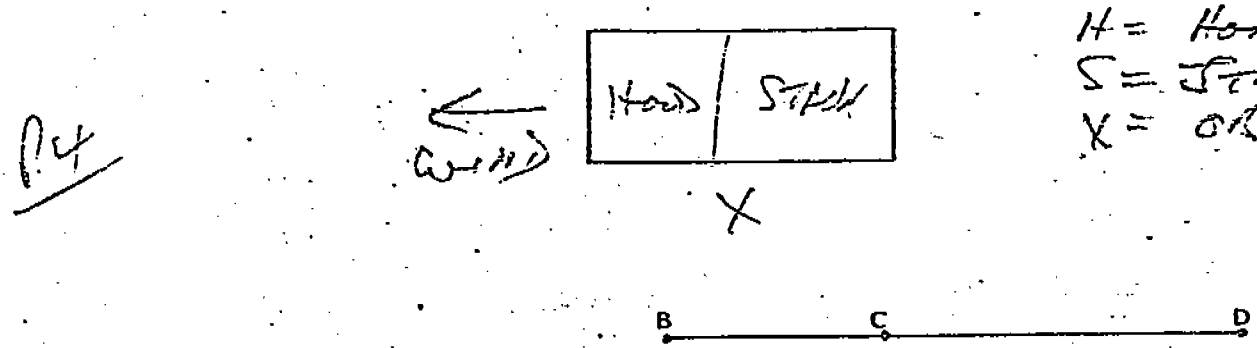
WIND SPEED 10-15

AMBIENT TEMP. 300°F

PUSHING OBSERVATIONS

INSPECTOR Ron Jackson

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = Hood
S = Stack
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

QUENCH CAR: 2

POSITION 50 FT

BACKGROUND – SKY Cloud

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0 S	H 15 S	H 30 S	H 45 S
45	1:00	0	4/0 ND	4/0 NP	0 NP	0 NP
		1	0 NP	0 NP	0 NP	0 NP
		2	0 NP			
		3				
		4				
		5				
		6	NP - S TERM PLUME			
		7				
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION [illegible]

DATE 4/10/80

SKY CONDITION 100% cloud

WIND SPEED 13-15

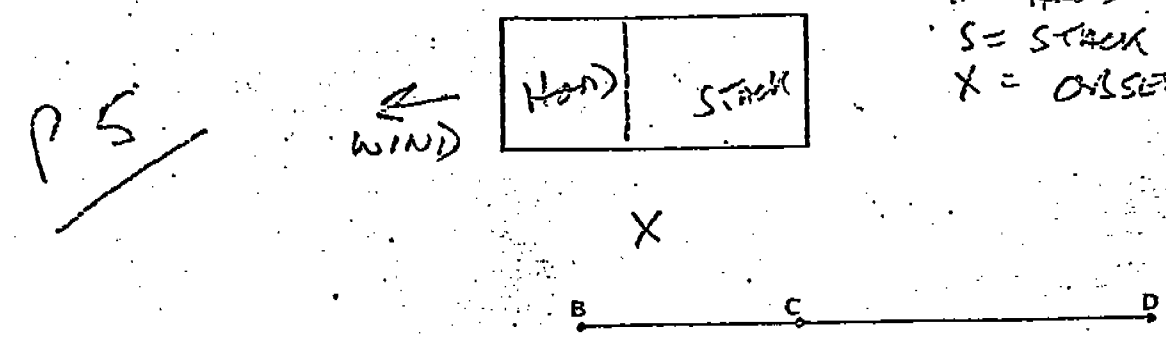
AMBIENT TEMP. 34°F

PUSHING OBSERVATIONS

INSPECTOR Ben Jackson

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

H = HOOD
S = STACK
X = OBSERVER



B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

QUENCH CAR: 2

POSITION SOUTH

BACKGROUND – SKY Cloud

BATTERY/OVEN	TIME PUSH COMMENCED
18	1:08

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	15/0	NP	5/0	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP		
2								
3								
4								
5								
6	NP = STEAM PLUME							
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/20/80

SKY CONDITION Part Cloud

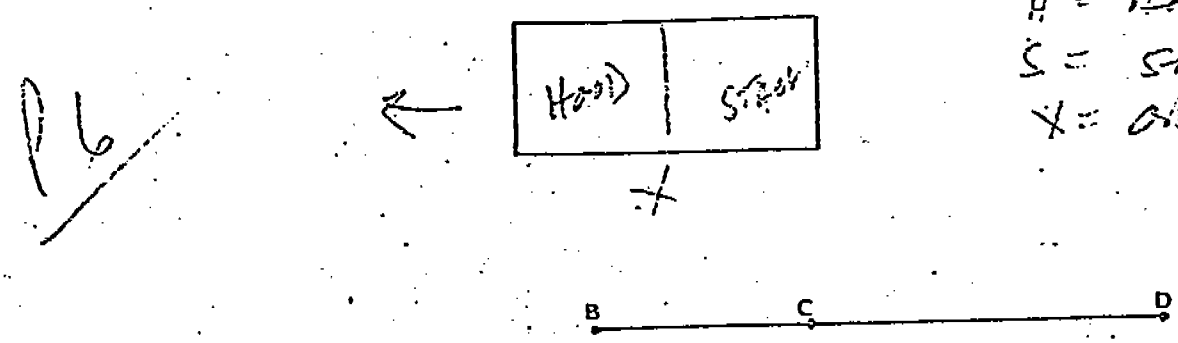
WIND SPEED 10-15

AMBIENT TEMP. 34° F

PUSHING OBSERVATIONS

INSPECTOR Bw Jackson

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
65	1:17

QUENCH CAR: 2

POSITION 70 Ft

BACKGROUND – SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	B 0 NP	C 0 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	0 NP
2				
3				
4				
5				
6	NP	Steam / cooling		
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION

DATE 6/2/87

SKY CONDITION 100% Cloud

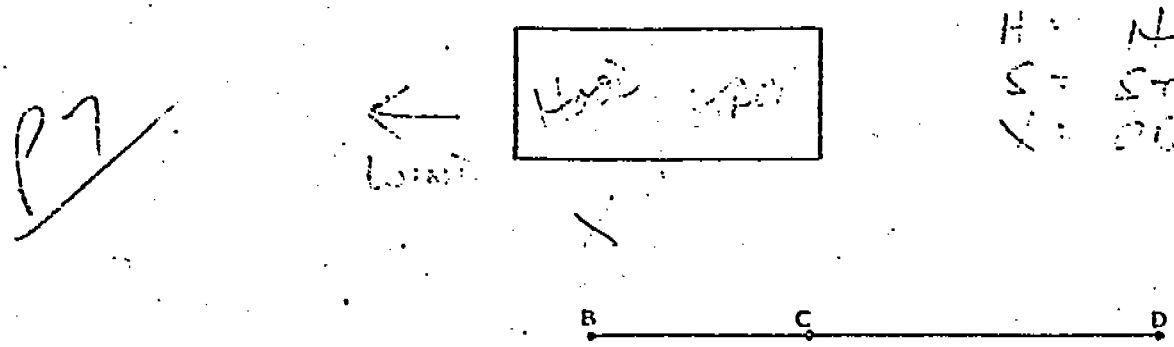
WIND SPEED 10 – 15

AMBIENT TEMP. 70°F

PUSHING OBSERVATIONS

INSPECTOR [illegible] Jackson

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



P7

← Wind

Hot Car

X

H = Head
S = Stroke
X = Observer

B – RAM MOVES
C – COKE IN HOT CAR
D – HOT CAR IN QUENCH TOWER

B ——— C ——— D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0 S	H 15 S	H 30 S	H 45 S
25	1:27	0	B/ NP	C/ 0 NP	0 NP	0 NP
		1	0 NP	0 NP		
		2		[illegible]		
		3				
		4				
		5				
		6	[illegible]	Steam	Plume	
		7				
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

QUENCH CAR: 2

POSITION 80 ft

BACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION [illegible]

DATE 4/10/80

SKY CONDITION 100% CLOUD

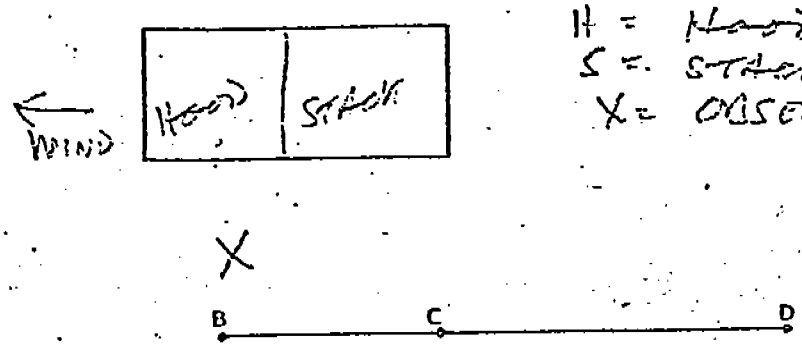
WIND SPEED 10-15

AMBIENT TEMP. 34°F

PUSHING OBSERVATIONS

INSPECTOR Bu JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = HOOD
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
75	1:37

QUENCH CAR: 2

POSITION 50 FT

BACKGROUND – SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B/0	NP	C/0	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6								
7	NP =		STEAM		PLUME			
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION [illegible]

DATE 4/10/80

SKY CONDITION 100% cloud

WIND SPEED 10-15

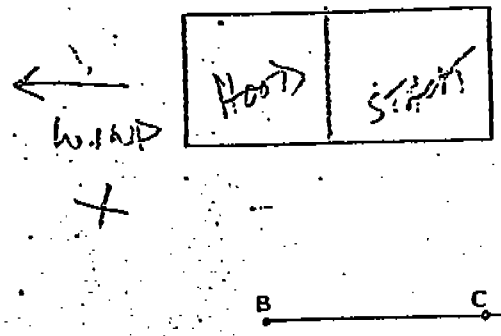
AMBIENT TEMP. 36°F

PUSHING OBSERVATIONS

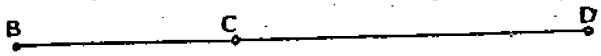
INSPECTOR [illegible]

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

H = Hood
S = STACK
X = OBSERVER



B - RAM MOVES
C - COKE IN HOT CAR
D - HOT CAR IN QUENCH TOWER



BATTERY/OVEN	TIME PUSH COMMENCED
7	2:12

QUENCH CAR: 2

POSITION 100 FT

BACKGROUND - SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	B/0 NP	C/0 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	0 NP
2	0 NP	0 NP		
3				
4				
5				
6				
7	NP = STEAM PLUME			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 11/10/80

SKY CONDITION 100% cloud

WIND SPEED 10 – 15

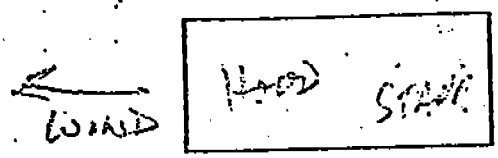
AMBIENT TEMP. 34° F

PUSHING OBSERVATIONS

INSPECTOR Ron Jackson

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

H = Hood
S = Stack
X = Observer



B – RAM MOVES
C – COKE IN HOT CAR
D – HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0	S	H 15	S	H 30	S	H 45	S
38	2.21	0	B/0	NP	C/0	NP	0	NP	0	NP
		1	0	NP	0	NP				
		2								
		3								
		4								
		5								
		6								
		7	NP = STEAM PLUME							
		8								
		9								
		10								
		11								
		12								
		13								
		14								
		15								
		16								

QUENCH CAR: 2

POSITION

BACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

SP[illegible]OR Bw Jackson

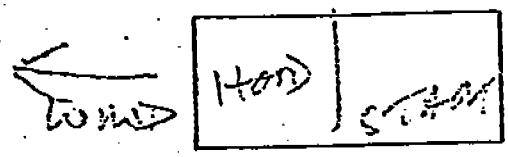
DATE 4/18/80

SKY CONDITION 100% Cloud

WIND SPEED 10 - 15

AMBIENT TEMP. 34° F

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



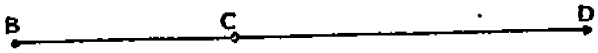
H = HOOD
S = STACK
X = OBSERVER

WIND ← | HOOD | STACK |

P 11

X

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER



B ——— C ——— D

BATTERY/OVEN	TIME PUSH COMMENCED
17	2:31

ENCH CAR: 2

OSITION 40 FT

ACKGROUND – SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	B/ 0 NP	C/ 0 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	
2				
3				
4				
5				
6				
7	NP = STEAM PLUME			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION

DATE 4/10/80

SKY CONDITION 100% cloud

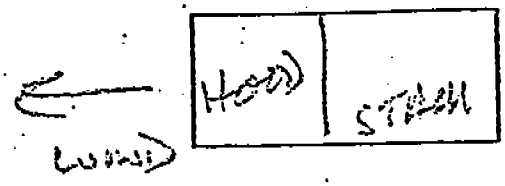
WIND SPEED 10-15

AMBIENT TEMP. 34°F

PUSHING OBSERVATIONS

INSPECTOR Bus Jackson

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = Hood
S = Stack
X = Observer

P12

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0 S	H 15 S	H 30 S	H 45 S
27	2:42	0	B/O NP	C/O NP	O NP	O NP
		1	O NP	O NP	O NP	
		2				
		3				
		4				
		5				
		6				
		7	NP =	STEAM	PLUME	
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

QUENCH CAR: 2

POSITION 50 ft

BACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

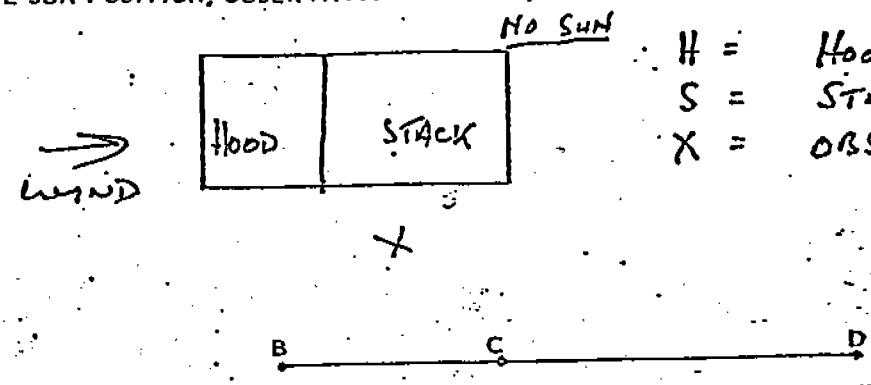
WIND SPEED 0 - 5

AMBIENT TEMP. 36°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = HOOD
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P1

QUENCH CAR: 2

POSITION 120 ft

BACKGROUND - SKY Cloud

BATTERY/OVEN	TIME PUSH COMMENCED
85	10:38

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B/75	0	C/80	NP	45	NP	20	NP
1	0	NP	0	NP	0	NP		
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% Cloud

WIND SPEED 0-5

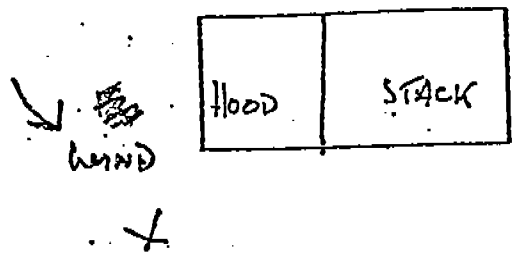
AMBIENT TEMP. 36°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P2



H = HOOD
S = STACK
X = OBSERVER

B - RAM MOVES
C - COKE IN HOT CAR
D - HOT CAR IN QUEN TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
7	10:48

QUENCH CAR: 2

POSITION 90 FT

BACKGROUND - SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B/ 0	NP	C/ 0	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/86

SKY CONDITION 100% Cloud

WIND SPEED 0-5

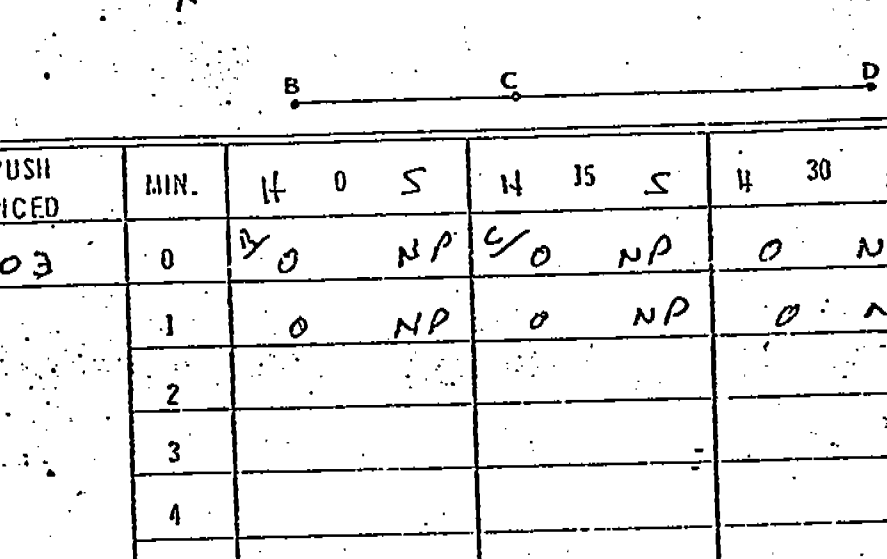
AMBIENT TEMP. 35°C

USHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P3



H = HOOD
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
17	11:03

QUENCH CAR: 2

POSITION 90 ft

BACKGROUND – SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B/0	NP	C/0	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 36°F

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 4

WIND

Hood	STACK

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
27	11:14

ENCH CAR: 2

OSITION 70 fn

ACKGROUND - SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	0	0	0	NP	0	NP	0	NP
1	0	0	0	0	0	0	0	0
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

DATE 4/17/8

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P5

WIND

Hood	Stack
	X

H = Hood
S = Stack
X = Observer

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
37	11:27

QUENCH CAR: 2

POSITION 50%

BACKGROUND - SKY cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	30	NP	30	NP	10	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2	0	NP						
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

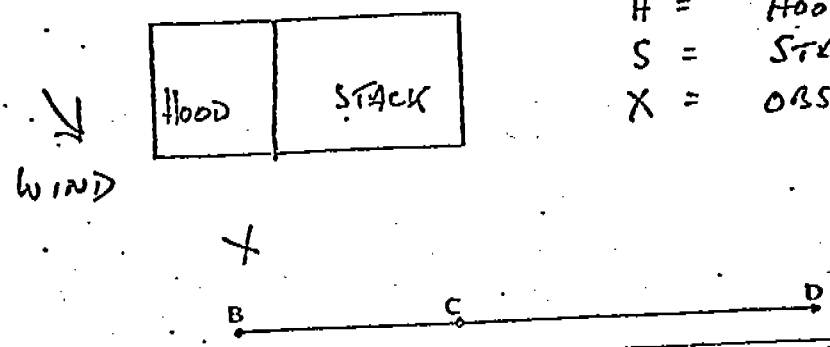
AMBIENT TEMP. 35°F

USHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 6



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES.
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
16	11:34

QUENCH CAR: 2

POSITION 100 ft

BACKGROUND – SKY cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	10 NP	15 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	
2				
3				
4				
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/86

SKY CONDITION 100% cloud

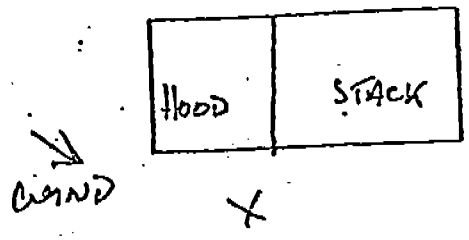
WIND SPEED 0-5

AMBIENT TEMP. 35°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P7

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
57	14:43

QUENCH CAR: 2

POSITION 60 ft

BACKGROUND – SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	0	NP	20	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% Cloud

WIND SPEED 0-5

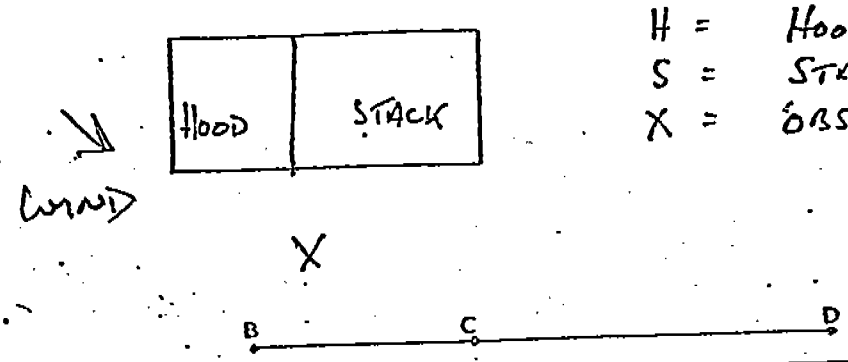
AMBIENT TEMP. 35° F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 8



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
77	11:56

QUENCH CAR: 2

POSITION 150 ft

BACKGROUND – SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	55 NP	30 NP	0 NP	0 NP
1	0 NP	0 NP		
2				
3				
4	DIRTY STEAM			
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

DATE 4/11/80

SKY CONDITION 100% cloud

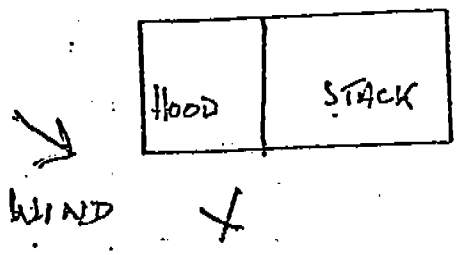
WIND SPEED 0-5

AMBIENT TEMP. 35°F

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

Pg



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
87	12:09

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	35	NP	0	NP	0	NP	0	NP
1	0	NP	0	NP				
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

ENCH CAR: 2

OSITION 100 ft

ACKGROUND - SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 10

WIND

Hood	STACK

X

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
9	12:16

ENCH CAR: 2

SITION 200 ft

ACKGROUND - SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	0 NP	0 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	
2				
3				
4				
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0.5

AMBIENT TEMP. 35°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 11

WINDS

Hood	Stack

Y

H = Hood
S = Stack
X = Observer

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
16	12:28

QUENCH CAR: 2

POSITION 100 fv

BACKGROUND – SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	0	0	10	NP	5	NP	5	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

SPECTOR B W JACKSON

DATE 4/11/80

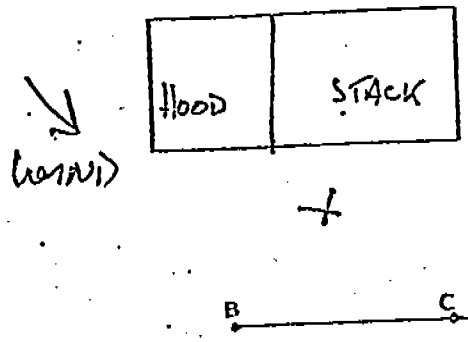
SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 12



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
49	12:34

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	40	NP	0	NP	0	NP	15	NP
1	0	NP	0	NP	0	NP		
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

ENCH CAR: 2

OSITION 75 ft

ACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C County Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% Cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

USHING OBSERVATIONS

ISPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

WIND

Hood	STACK

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P13

B C D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	0	15	30	45
		0				
		1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

NO READING TAKEN

NP = STEAM PLUME
READINGS NOT POSSIBLE

QUENCH CAR: 2

POSITION

BACKGROUND – SKY

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100 % Cloud

WIND SPEED 0-5

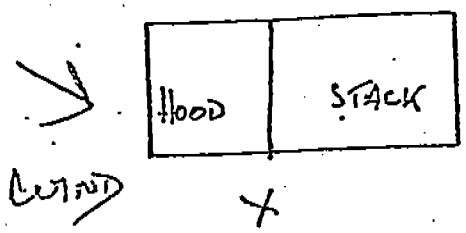
AMBIENT TEMP. 35°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 14



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
38	2:02

BENCH CAR: 2

POSITION 150 fN

BACKGROUND – SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	0 NP	0 NP	0 NP	0 NP
1	0 NP			
2				
3				
4				
5				
6	NP =	STEAM PLUME		
7		READINGS NOT POSSIBLE		
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

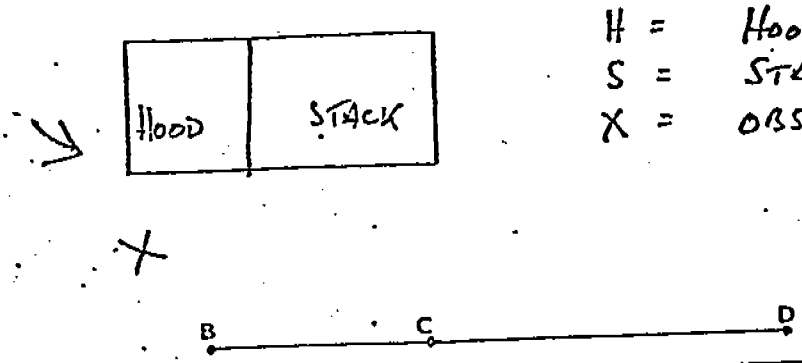
WIND SPEED 0-5

AMBIENT TEMP. 35°F

ISHING OBSERVATIONS

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P 15

BATTERY/OVEN	TIME PUSH COMMENCED
39	2:12

ENCH CAR: 2

SITION 120 ft

CKGROUND – SKY cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	85 NP	60 NP	0 NP	0 NP
1	0 NP	0 NP		
2				
3				
4	DIRTY STEAM			
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

807 E Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P16

WIND

Hood	STACK

X

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
79	2:22

QUENCH CAR: 2

POSITION 150 ft

BACKGROUND – SKY cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B 0	NP	C 5	NP	5	NP	5	NP
1	0	NP	0	NP	0	NP		
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

USHING OBSERVATIONS

DATE 4/11/80

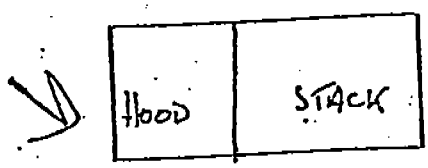
SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



P 17

COND X

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
26	2.31

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B 0	NP	C 0	NP	0	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

ENCH CAR: 2

OSITION 90 ft

BACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

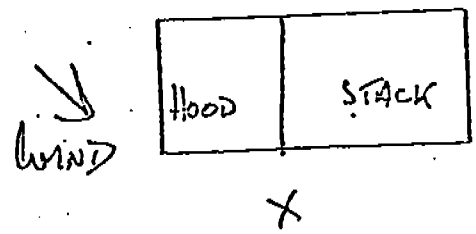
WIND SPEED 0-5

AMBIENT TEMP. 35°F

USHING OBSERVATIONS

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = HOOD
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P18

B C D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0 S	H 15 S	H 30 S	H 45 S
?	2:42	0	B/0 NP	C/85 NP	35 NP	0 NP
		1	0 NP	0 NP	0 NP	0 NP
		2				
		3				
		4				
		5				
		6	NP = STEAM PLUME			
		7	READINGS NOT POSSIBLE			
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

ENCH CAR: 2

OSITION 90 ft

ACKGROUND - SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

USHING OBSERVATIONS

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P. 19

WIND

Hood	STACK

X

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0 S	H 15 S	H 30 S	H 45 S
89	2:52	0	B/ 0 NP	4/ 0 NP	0 NP	0 NP
		1	0 NP	0 NP	0 NP	
		2				
		3				
		4				
		5				
		6	NP = STEAM PLUME			
		7	READINGS NOT POSSIBLE			
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

ENCH CAR: 2

SITION 80 Ft

ACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

OMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

SHING OBSERVATIONS

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35°F

PE R B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 20

WIND

Hood	STACK

X

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
62	3.00

ENCH CAR: 2

SITION 95 FN

CKGROUND – SKY cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	B 0 NP	E 55 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	0 NP
2	0 NP			
3				
4				
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

OMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY AND LOCATION

DATE 4/11/80

SKY CONDITION 100% cloud

WIND SPEED 0-5

AMBIENT TEMP. 35° F

USHING OBSERVATIONS

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 21

WIND

Hood	STACK

H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

B C D

BATTERY/OVEN	TIME PUSH COMMENCED	MIN.	H 0 S	H 15 S	H 30 S	H 45 S
2	3:42	0	B/0 NP	C/0 NP	0 NP	0 NP
		1	0 NP	0 NP	0 NP	0 NP
		2				
		3				
		4				
		5				
		6	NP = STEAM PLUME			
		7	READINGS NOT POSSIBLE			
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				

UNCH CAR: 2

OSITION 120 gr

ACKGROUND – SKY Cloud

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

COMPANY ...

DATE 4/11/80

SKY CONDITION 100% Cloud

WIND SPEED 0 - 5

AMBIENT TEMP. 3.5°F

USHING OBSERVATIONS

SPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

WIND | HOOD | STACK

H = HOOD
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P 22

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
2	3:21

QUENCH CAR: 2

POSITION 90 ft

BACKGROUND - SKY Cloud

MIN.	H 0	S	H 15	S	H 30	S	H 45	S
0	B/ 0	NP	C/ 60	NP	15	NP	0	NP
1	0	NP	0	NP	0	NP	0	NP
2								
3								
4								
5								
6	NP = STEAM PLUME							
7	READINGS NOT POSSIBLE							
8								
9								
10								
11								
12								
13								
14								
15								
16								

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

607 C Country Club Drive
Bensenville, Illinois 60106

DATE 4/11/80

SKY CONDITION 100% cloud

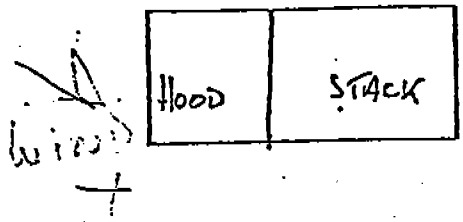
WIND SPEED 0-5

AMBIENT TEMP. 35°F

PUSHING OBSERVATIONS

INSPECTOR B W JACKSON

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)



H = Hood
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

P 23

B C D

BATTERY/OVEN	TIME PUSH COMMENCED
12	3:20

QUENCH CAR: 2

POSITION 40 ft

BACKGROUND – SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	0 NP	0 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	
2				
3				
4				
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
11				
12				
13				
14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

Bensenville, Illinois 60106

DATE 4/11/86

USHING OBSERVATIONS

SKY CONDITION [illegible]

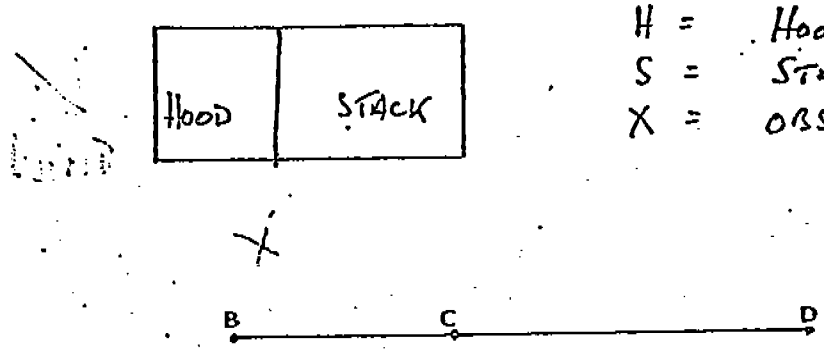
WIND SPEED [illegible]

TOR B W JACKSON

AMBIENT TEMP. 75°F

(INDICATE SUN POSITION, OBSERVATION POSITION, AND WIND DIRECTION.)

P 24



H = HOOD
S = STACK
X = OBSERVER

B-RAM MOVES
C-COKE IN HOT CAR
D-HOT CAR IN QUENCH TOWER

BATTERY/OVEN	TIME PUSH COMMENCED
12	3:38

ENCH CAR: 2

OSITION 70 FT

ACKGROUND – SKY Cloud

MIN.	H 0 S	H 15 S	H 30 S	H 45 S
0	B/0 NP	C/5 NP	0 NP	0 NP
1	0 NP	0 NP	0 NP	0 NP
2	0 NP			
3				
4				
5				
6	NP = STEAM PLUME			
7	READINGS NOT POSSIBLE			
8				
9				
10				
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12				
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14				
15				
16				

NOTE: DURING OBSERVATION ENTER DESIGNATIONS B, C, AND D IN THE BLOCK DURING WHICH THE EVENT OCCURRED.

COMMENTS:

SOTDAT/STEEL LIBRARY SYSTEM

Report Title: see title page

Plant and Location: Inland, E. Chicago, IN

SCC: 30300303

Testing Date(s): 4/10-11/80

By Whom: Almega

Stack Test Review Attached: No

Reviewed By:

Problems Seen by Reviewer:

Confidentiality Status: unknown

If status is confidential, list confidential pages or sections:

Source of Determination of the Confidentiality Status:

Report Encoded By:

Date Encoded:

Form Numbers:

Comments:

THE ALMEGA CORPORATION

4-10,11-80

NO. 2 COKE SIDE EMISSIONS CONTROL
GAS CLEANING CAR
SCRUBBER STACK EXHAUST
PARTICULATE EMISSIONS TESTING
INLAND STEEL COMPANY
THE ALMEGA CORPORATION PROJECT
I-5390

D-0 L 6