AP42 Section:	12.2
Reference:	87
Title:	Report on Source Tests, Visible Emissions, and Plant Observations, Kaiser Steel Corporation, Fontana, California, Coke Oven Battery B, July 26-27, 1979, Engineering-Science, Arcadia, California, August 1979.

REPORT ON SOURCE TESTS, VISIBLE EMISSIONS, AND PLANT OBSERVATIONS

Facility Inspection

KAISER STEEL CORPORATION
FONTANA, CALIFORNIA

Coke Oven Battery B

Dates of Inspection

July 26, 27, 1979

Inspected By

Donald Holtz & Robert Tomlinson
Environmental Engineers

Prepared For

U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION IX
215 FREMONT STREET
SAN FRANCISCO, CALIFORNIA 94105

Task Order 66/TSA 3
Contract No. 68-01-4146

August 1979

Submitted By

ENGINEERING-SCIENCE
125 West Huntington Drive
Arcadia, California 91006

OBSERVATION OF SOURCE TESTS AT KAISER STEEL CORPORATION FONTANA, CALIFORNIA

July 26, 27, 1979

INTRODUCTION

Tests to determine particulate emissions from the baghouse serving Coke Oven Battery B were conducted on the above dates by technical personnel of Environmental Quality Control, Kaiser Steel Corporation. Visual emission observations of the discharge stack were also made during the same period by a South Coast Air Quality Management District Inspector.

The tests and observations were conducted pursuant to Paragraph X of the Amended Consent Decree entered on September 30, 1977 at the U.S. District Court, Central District of California (Case No. CV76-0675MML).

PROCESS DESCRIPTION

Pertinent data for the coke batteries at Kaiser Steel Corporation have been reported previously (see report for Coke Battery E, March 1979). Each oven is charged with about 14 tons of coal from an overhead larry car and heated for 16 to 18 hours to complete the coking process. At the end of this period, the incandescent coke is horizontally pushed from the oven into a receiving ("hot") car for quenching and transfer to the blast furnaces. The pushing is accomplished with a ram which travels on the side of the ovens opposite to the hot car. Charging is done immediately after the expulsion of the coked product.

The ovens of Battery B are heated with coke oven gas, using 110,000 to 165,000 cubic feet per hour of gas of about 550 BTU/ft.^{3} heat content (the variations in observed gas usage are a function of the charging activity at the battery during the tests). The brick work surrounding the ovens is used for regenerative heating of the combustion air being introduced, employing a reversal cycle every 30 minutes.

SAMPLING AND ANALYTICAL PROCEDURES

The sampling was conducted at the outlet duct of the baghouse at a point upstream of the induced draft fan and stack. The gases travel horizontally across with an approximate 20-foot run prior to the sampling station. The SCAQMD permitted the Kaiser Source Team to conduct two traverses in series through the horizontal sampling port instead of separate traverses through the horizontal and vertical sampling ports. Sampling was done at six points along each traverse with five minute sampling times for each point. Great care was used in the introduction and removal of the sampling probe and nozzle into and from the duct due

to the negative static pressure (7" to 9" H_2O).

The procedure followed EPA Method 5 equipment and procedures, also including the processing of "back-half" (impinger) collection to determine total particulate matter. This was necessary to determine compliance with applicable local regulations (see discussion of Data and Results).

In addition to particulate sampling, samples of gas were aspirated from the duct at five-minute intervals into a 2-cubic foot plastic bag to obtain an integrated average gas sample for each one-hour test. The contents of each bag were analyzed at the laboratory using Horiba MEXA/200 and MEXA/201 infrared analyzers for carbon dioxide and carbon monoxide, respectively, and a Teledyne oxygen analyzer. Nitrogen was determined by difference.

The technique used by Kaiser Steel Corporation personnel during the sampling and sample processing (nozzle-probe, filter, impingers) appeared excellent to this observer. The personnel have many years' experience in sampling for particulates; also, the equipment was in excellent condition and showed careful maintenance. The weighing of the filters and determination of the impinger residue weights was not observed due not only to practical limitations, but also deemed unnecessary because of the competence demonstrated by the laboratory personnel.

DATA AND RESULTS

The test data, calculations, and results as submitted by Kaiser Steel Environmental Quality are included in the Appendix. The particulate matter concentration and emission rates were determined by two methods due to the different regulations promulgated by (a) the former San Bernardino County APCD, and (b) the present SCAQMD. These are as follows:

(1) Rule 52A: This rule was formerly in effect during the existence of the San Bernardino County APCD. Rule 52A, rather than Rule 404(a) of the SCAQMD (see (2) below), apparently is part of the California SIP as submitted to EPA, hence is still considered effective for compliance determinations. Rule 52A requires all collected particulate matter, liquid or solid, to be included in concentration calculations; i.e., "front-half" plus total condensables in the "back-half" of the Method 5 sampling train. The Rule 52A test results and maximum allowables are shown on Table 1, and are a supplement to the test result summary by Kaiser Steel Corporation at the beginning of the Appendix.

(2) Rule 404(a): This, the present particulate matter concentration rule of the SCAQMD, requires exclusion of all liquid sulfur compounds from the particulate matter weight. In practical terms, this excludes sulfuric acid which is known to exist as the dihydrate ($H_2SO_4 \cdot 2H_2O$) when the impinger residue is evaporated to dryness and desiccated (the determination of H_2SO_4 is made by titration; this yields the most conservative value, as has been determined in analyses over many years by the Los Angeles County APCD laboratories).

(3) Rule 405 (a): This, the present particulate matter mass flow rate rule of the SCAQMD, is based upon solid particulate matter, as defined by SCAQMD Rule 102. The latter defines solid particulate matter as "particulate matter which exists as a solid at standard conditions". This definition does not exclude any solid particulate matter which may be collected by the "back-half" of EPA Method 5 train. Thus, solid particulate matter as defined by the SCAQMD includes the total front and back-half collection of the sampling train, less sulfuric acid dihydrate [as for Rule 404(a)] Unless the presence of other liquid particulate matter can be shown.

TABLE 1

KAISER STEEL CORPORATION
COKE PLANT BATTERY B COMPLIANCE TEST

RULE 52A RESULTS(a)

Test No.	Date & Time	Gas Flow Rate (fscfm)	Particulate Matter Concentration Rule 52A - gr/dscf	
			Test(b)	Allowed
B-1	7/26/79 0935-1095		Test Discarded	
B-2	7/26/79 1345-1415		Test Discarded	
B-3	3/27/79 0925-1035	34511	.0188	.0516
B-4	3/27/79 1138-1278	39625	.0278	.0497

(a) See Appendix for all other results, data and calculations performed by Environmental Quality Control-Kaiser Steel Corporation.

(b) The variability in Rule 52A concentration, as compared to the Rule 404(a) results, are caused by the differences in the H_2SO_4 content in the "back-half" condensables for the three tests.

All of the Kaiser Steel Corporation calculations were checked and found to be accurate. Tests B-1 and B-2 conducted on 7/26/79 were discarded due to pitot tube error. Water was found in the pitot line after sampling, causing high pitot tube readings.

PROCESS EQUIPMENT OBSERVATIONS

Process equipment observations were recorded by Mr. Eldon Winterbourne of Kaiser Steel.

According to the control instrument setting, the baghouse filter bags are cleaned by reverse and pressure when the pressure drop attains 8 inches of water. One cleaning cycle apparently occurred as 0955 on July 27 during test B-3.

VISIBLE EMISSION OBSERVATIONS

Mr. Robert Bean of the South Coast Air Quality Management District observed emissions from battery B stack during the source tests. His observations are included in the appendix.

The writer and Mr. Al Gubey, SCAQMD, informally observed the stack at intervals and noted visible emissions of 0% opacity at those times. The battery B baghouse transmissometer was not on line during the tests becauce the contractor had not yet satisfied the operation/calibration contract specifications.

APPENDIX

Summary - Kaiser Steel Corporation Battery B
Compliance Tests

Compliance Test Notes

Test B-3
- Particulate Field Data
- Laboratory Analysis Data
- Calculations

Test B-4
- Particulate Field Data
- Laboratory Analysis Data
- Calculations

Visual Emission Observations
- All Tests: Robert Bean SCAQMD

Baghouse Process Data

TEST RESULTS
KSC - COKE PLANT BATTERY "B" BAGHOUSE

DATE / TIME	TEST NO.*	EXHAUST GAS ACFM / DSCFM	°F	%H_2O	Rule 404(a) Concentration Allowable gr/dscf	Rule 404(a) Concentration Actual gr/dscf	Rule 405(a) Solid Particulate Allowable lbs/hr	Rule 405(a) Solid Particulate Actual lbs/hr	% Isokinetic	Baghouse Average Δp "H_2O
7/27/79 0925-1035	B-3	69044 / 34511	415	10.7	0.0498 @34511 dscfm	0.0114	13.4 @35,000 lb/hr proc.wt.	3.29	96.4	6.48
7/27/79 1138-1238	B-4	79219 / 39625	407	11.2	0.0473 @39625 dscfm	0.0151	13.4 @35,000 lb/hr proc.wt.	4.60	91.50	6.96

*Tests B-1 and B-2 run on 7/26/79 discarded due to pitot tube error. Water was found in impact line after sampling causing high pitot tube readings.

JAM:pw
8/1/79

Btry. "B" Compliance Test Notes.

I. Test B-1, 7/26/79, 0936-1036

(1) Post leak check OK - <0.01 cfm @7.2"Hg
(2) Pitot reading went to above 1.0" H_2O after 10 minutes and stayed very constant.

II. Test B-2, 7/26/79, 1345-1445

(1) Post leak check indicated 0.06 cfm leak @5.5"Hg.
(2) Pitot reading went to above 1.00"H_2O within 15 minutes and stayed constant for remainder of test.

(3) Ran out of ice for impingers, temp.up to 81°F.
(4) Difficulty in maintaining sample box and probe temperature. Sample box range (219-275°F), Probe range (156-291°F).

III. Test B-3, 7/27/79, 0925-1035

(1) Post leak check OK - 0.01 cfm @4.5"Hg.
(2) Changed umbilical cord.
(3) Could not keep impingers below 70°F.
Suspect faulty impinger T.C. had plenty of ice in system.

IV. Test B-4, 7/27/79, 1138-1238.

(1) Post leak check indicated 0.04 cfm leak @5.2"Hg.

(2) Could not maintain impinger temperature below 70°F. Suspect bad T.C.

General

(1) Checked umbilical cord used on 7/26/79 and found about 6.5 cc of water in the pitot tube impact line. Pitot readings were faulty on 7/26/79. The samples on 7/26/79 were not taken at an isokinetic sampling rate due to the pitot tube problem.

(2) Checked umbilical cord used on 7/27/79 and did not find any water in pitot lines.

V. Rule 404(a) Straight Line Interpolation

Test B-1 Exhaust Volume = 47503 dscfm

@45910 dscfm allowable = 0.0445 gr/dscf
@49440 dscfm allowable = 0.0437 gr/dscf

Allowable @47503 dscfm =

$$0.0445 - (0.0445-0.0437)\frac{(47503-45910)}{(49440-45910)}$$

$= 0.0445 - 0.00036$
$= 0.04414$ round off to 0.0441

V-Contd: Rule 404(a) Straight Line Interpolation

Test B-2 Exhaust Volume = 46420 dscfm

@45910 dscfm allowable = 0.0445 gr/dscf
@49440 dscfm allowable = 0.0437 gr/dscf

Allowable @46420 dscfm =

$$0.0445 - (0.0445-0.0437)\ \frac{(46420-45910)}{49440-45910)}$$

= 0.0445-0.00012

= 0.04438 round off to 0.0444 gr/dscf

Test B-3 Exhaust Volume = 34511 dscfm

@31780 dscfm allowable = 0.0515 gr/dscf

@35310 dscfm allowable = 0.0493 gr/dscf

Allowable @34511 dscfm =

$$0.0515 - (0.0515-0.0493)\ \frac{(34511-31780)}{(35310-31780)}$$

= 0.0515-0.0017

= 0.0498 gr/dscf @34511 dscfm

Test B-4 Exhaust Volume = 39625 dscfm

@38850 dscfm allowable = 0.0476 gr/dscf

@42380 dscfm allowable = 0.0463

Allowable @ 39625 dscfm

$$= 0.0476-(0.0476-0.0463)\ \frac{(39625-38850)}{(42380-38850)}$$

= 0.0476-0.00028

= 0.04732 round off to 0.0473 gr/dscf

VI Rule 405(a) Allowable Rate based on Process Weight.

7/26/79 29 charges of 14 tons each

VI-Contd: Rule 405(a) Allowable Rate based on Process Weight.

$$\text{Process wt.} = \frac{29 \times 14 \times 2000}{24} = 33{,}833 \text{ lbs/hr}$$

Table 405(a)

@33,070 lbs/hr allowable = 13.2 lbs/hr.
@38,580 lbs/hr allowable = 13.7 lbs/hr.

Allowable @33,833 lbs/hr.

$$= 13.2 + (13.7-13.2)\ \frac{(33833-33070)}{(38580-33070)}$$

$$= 13.2 + 0.07 = 13.27 \text{ Round off to } \underline{13.3} \text{ lbs/hr}$$

7/27/79 30 charges of 14 tons each

$$\text{Process wt.} = \frac{30 \times 14 \times 2000}{24} = 35{,}000 \text{ lbs/hr.}$$

Allowable @35,000 lbs/hr.

$$= 13.2 + (13.7-13.2)\ \frac{(350000-33070)}{(38580-33070)}$$

$$= 13.2 + 0.18 = 13.38 \text{ round off to } \underline{13.4} \text{ lbs/hr.}$$

VII. Stack height shown on visible emission observation sheets should be 225' not 125'.

JAM:pw
8/1/79

PARTICULATE [illegible]

Plant KSC - Coke Plant
Run No. B-3
Location [illegible] "B" [illegible]
Date 7/27/[illegible]
Operator [illegible]
R F Holby
Reversal [illegible]

Start Time 0925
Stop Time 1035
Ambient Temp. °F 80
Barom. Press. "Hg 28.95
Nozzle Diam. In. 0.250
Probe Length 8'

Sample Box No. #1
Meter Box No. #2
Meter ΔH@ 1.8[illegible]
Heater Box Setting, °F 250
Probe Heater Setting, °F 250
Leak Rate @ "Hg 4.5 Post-Test 0.01
All test = 2.245 × ΔP

POINT	TIME MIN.	GAS VOLUME CF	PITOT ΔP "H_2O	ORIF. ΔH "H_2O	STACK TEMP. °F	BOX TEMP °F	IMP. TEMP. °F	PROBE TEMP. °F	DRY GAS TEMP. °F IN	DRY GAS TEMP. °F OUT	PUMP VAC. "Hg	STACK S.P. "H_2O
S-6	0	492.8	0.54	1.21	405	260	81	274	82	74	4.2	-10.4
S-5	5	495.8	0.58	1.30	418	263	78	284	89	75	4.2	
S-4	10	498.9	0.58	1.30	419	249	76	229	93	78	4.2	
S-3	15	502.1	0.58	1.30	417	235	75	276	97	80	4.2	
S-2	20	505.2	0.54	1.21	417	264	77	269	100	83	4.1	
S-1	25	508.2	0.40	0.90	409	260	84	292	103	86	3.3	
S-6	30	510.8	0.54	1.21	412	248	78	289	105	88	4.0	
S-5	35	513.8	0.60	1.34	417	236	75	257	107	91	4.3	
S-4	40	517.0	0.60	1.34	419	261	73	241	108	92	4.3	
S-3	45	520.2	0.58	1.30	419	268	75	227	110	94	4.3	
S-2	50	523.4	0.52	1.17	416	246	76	239	111	96	4.2	-10.5
S-1	55	526.4	0.38	0.85	407	245	80	253	112	98	3.3	
	60	529.0							ave	ave		ave:
			ave $\sqrt{\Delta P}$	ave ΔH	ave T_{stk}				101	86		-10.45
		V_m = 36.2	= 0.731	= 1.20	= 415°F				94			

PART. gr/dscf ______ lb/hr ______
TOTAL ______ ______
NET ______ ______
SOLID ______ ______

GAS VEL., fps ______
VOLUME, dscfm ______
MOISTURE, % ______

COMMENTS:

TEST OBSERVERS:
Bob Tomlinson - EST - EPA
Al Gyborg - SCAQMD

LABORATORY ANALYSIS DATA
PARTICULATE SOURCE SAMPLE

nalysis Date(s) 7/30/79 + 7/31/79   Analytical Chemist Samuel Deutsch

ample Date 7/27/79   Run No. B-3   Location CO. 'B' STACK BAGHOUSE
Lab. No. 40393

OISTURE DATA:

. Final Vol. H_2O in Imp. 275 ml.		5. Final Wt. Silica Gel 808.50 gm.	
. Initial Vol. H_2O in Imp. 200 ml.		6. Initial Wt. Silica Gel 798.40 gm.	
. Vol. H_2O Condensed 75 ml.		7. Weight Gain 10.10 gm.	
. Vol. wash H_2O 150 ml.			

ARTICULATE DATA: (Front Half:) (Back Half:)

Front Half		Back Half	
. Final Filter Weight	354.3 mg.	13. Organic Extract	0.5 mg.
. Initial Filter Weight	338.4 mg.	14. Aqueous Insolubles	0.2 mg.
. Filter Particulate	15.9 mg.	15. Aqueous Solubles	19.2 mg.
. Probe Particulate	4.3 mg.	16. Total Particulate	19.9 mg.
. Total Particulate	20.2 mg.	17. $H_2SO_4 \cdot 2H_2O$	15.8 mg.
		18. Net Particulate	4.1 mg.
. Acetone Wash	30 ml.		

FLUE GAS ANALYSES J. G. [illegible]

olecular Weight Determination: Room Temp. 77°F Barom. Press. 28.92" Hg

Component		% Dry	
20. $\%CO_2$	4.4 @ 3.2% H_2O	4.55	Horiba Mexa 204 IR Analyzer
21. $\%O_2$	15.5 "	16.01	Teledyne O_2 Analyzer
22. $\%CO$	0.05 "	0.05	Horiba Mexa 201 IR Analyzer
23. $\%N_2$		79.39	by Difference

Other

24. ______
25. ______
26.

METHOD 5 PARTICULATE TEST CALCULATION FORM:

LOCATION KSC - Coke Plant Battery "B" DATE 7/27/79

RUN NO. B-3

I. Necessary Data:

A. No. of traverse points 6

B. Total test time, (θ) 60 minutes

C. Water collected:
1. Impinger H_2O; V_{H_2O} 75 ml.
2. Silica Gel, W_{H_2O} 10.10 gm.

D. Particulate Weight:
1. Front Half, M_f 0.0202 gm.
2. Back Half, M_b 0.0199 gm.
3. Back Half $H_2SO_4 \cdot 2H_2O$ 0.0158 gm.
4. Back Half Organic, M_o 0.0005 gm.

E. Volume metered

V_m = 36.2 CF x DGMCF (1) = 36.2 CF

F. Average $\sqrt{\Delta P}$ 0.731 $("H_2O)^{\frac{1}{2}}$

G. Average ΔH 1.20 $"H_2O$ / 13.6 = 0.088 "Hg

H. Average meter temperature, T_m 94 °F + 460 = 554 °R

I. Average stack temperature, T_s 415 °F + 460 = 875 °R

J. Stack absolute pressure, P_s 28.18 "Hg

K. Stack static pressure −10.45 $"H_2O$

L. Barometric pressure, P_b 28.95 "Hg

M. % CO_2 4.55 ; % O_2 16.01 ; % CO 0.05 ; % N_2 79.39

N. Area of stack, A_s 20.63 ft^2

O. Area of nozzle, A_n 0.000341 ft^2

P. Pitot tube factor, C_p 0.85

II. Calculations:

A. Standard Volume Metered

$$V_{m(std)} = V_m \times \frac{T_{std}}{P_{std}} \times \frac{(P_b + \frac{H}{13.6})}{T_m}$$

$$V_{m(std)} = 17.380 \times (\underline{36.2}\ CF) \times \frac{(\underline{29.04}\ "Hg)}{(\underline{554}\ ^oR)} = \underline{32.98}\ dscf$$

B. Moisture Content of Stack Gas

1. H_2O collected in impingers

$$V_{wc(std)} = K\ (V_{H2O})$$

$$V_{wc(std)} = 0.04636 \times (\underline{75}\ ml.) = \underline{3.48}\ scf$$

2. H_2O collected in silica gel

$$V_{wsg(std)} = K \times (V_{H2O})$$

$$V_{wsg(std)} = 0.04644 \times (\underline{10.10}\ gm.) = \underline{0.47}\ scf$$

3. Moisture Content of Stack Gas, B_{ws}

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws} = \frac{(\underline{3.48}\ scf) + (\underline{0.47}\ scf)}{(\underline{3.48}\ scf) + (\underline{0.47}\ scf) + (\underline{32.98}\ scf)} = \underline{0.107}$$

C. Molecular Weight of Stack Gas, lb/lb-mole

1. M_d (Dry Molecular Weight) = $\sum M_x B_x$

$$M_d = (0.44)\underline{4.55}\ \%\ CO_2 + (0.32)\underline{16.01}\ \%\ O_2 + (0.28)\underline{79.44}\ \%(N_2+CO)$$

$$= \underline{29.37}\ lb/lb\text{-mole}$$

2. M_s (Wet Molecular Weight) = $M_d\ (1 - B_{ws}) + 18\ B_{ws}$

$$M_s = (\underline{29.37})\ (1 - \underline{0.107}) + 18\ (\underline{0.107}) = \underline{28.15}\ lb/lb\text{-mole}$$

D. Average Stack Gas Velocity

$$\bar{V}_s = K_p\ C_p\ (\frac{T_s}{P_s\ M_s})^{\frac{1}{2}} \sqrt{\Delta P}$$

$$\bar{V}_s = 85.48\ (\underline{0.85}) \left[\frac{(\underline{875}\ ^oR)}{(\underline{28.13}\ "Hg)\ (\underline{28.15}\ lb/mole)}\right]^{\frac{1}{2}} (\underline{0.731}\ "H_2O^{\frac{1}{2}})$$

$$= \underline{55.73}\ ft/sec$$

$acfm = 55.73 \times 60 \times 20.63 = 69,044\ acfm$

E. Average Stack Gas Volumetric Flow Rate

$$\bar{Q}_s = (3600 \text{ sec/hr})\, \bar{V}_s\, A_s\, (1 - B_{ws}) \frac{T_{std}}{P_{std}} \frac{P_s}{T_s}$$

$$= 62566.8\ (55.78 \text{ ft/sec})(20.63 \text{ ft}^2)(1 - 0.107) \frac{(28.18 \text{ "Hg})}{(875 \ ^\circ\text{R})}$$

$$= 2,070,647 \text{ dscfh}/60 = 34,511 \text{ dscfm}$$

F. Pollutant Mass Rate (*Solid Part.* – Rule 405a)

$$PMR = \frac{M_f + M'}{V_{m(std)}} \times \bar{Q}_s$$

$M' = M_b - M_o - (H_2SO_4 \cdot 2H_2O)$

$M' = 0.0199 - 0.0005 - 0.0153$

$M' = 0.0036$

$$PMR = \frac{(0.0238 \text{ gm.})}{(32.98 \text{ dscf})} \times (2,070,647 \text{ dscfh}) \times \frac{1}{454 \text{ gm/lb}}$$

$$= 3.29 \text{ lb/hr}$$

G. Particulate Concentration

1. Total Particulate

$$C_t = \frac{M_f + M_b}{V_{m(std)}} \times 15.43$$

$$C_t = \frac{(0.0202 \text{ gm}) + (0.0199 \text{ gm})}{(32.98 \text{ dscf})} \times 15.43 = 0.0188 \text{ gr/dscf}$$

2. Net Particulate (Total less $H_2SO_4 \cdot 2H_2O$ – Rule 404a)

$$C_n = \frac{M_f + M_b - (H_2SO_4 \cdot 2H_2O)}{V_{m(std)}} \times 15.43$$

$$C_n = \frac{(0.0202 \text{ gm}) + (0.0199 \text{ gm}) - (0.0153 \text{ gm})}{(32.98 \text{ dscf})} \times 15.43$$

$$= 0.0114 \text{ gr/dscf}$$

3. Front Half Particulate

$$C_f = \frac{M_f}{V_{m(std)}} \times 15.43$$

$$C_f = \frac{(0.0202 \text{ gm})}{(32.98 \text{ dscf})} \times 15.43 = 0.0094 \text{ gr/dscf}$$

H. % Isokinetic Variation

$$\% I = \frac{T_s \, V_{m(std)} \, P_{std} \times 100}{\theta \, \bar{V}_s \, A_n \, P_s \, T_{std} \, (1 - B_{ws}) \times 60}$$

$$\% I = 0.0959 \times \frac{(\underline{875}\ ^{\circ}R)(\underline{32.93}\ dscf)}{(\underline{60}\ min)(\underline{55.78}\ ft/sec)(\underline{0.00341}\ ft^2)(\underline{28.13}\ "Hg)(1 - \underline{0.107})}$$

$$= \underline{96.4\%}$$

(Std Conditions: 60 °F and 29.92 "Hg)

PARTICULATE FIELD DATA

Plant KSC - Coke Plant
Run No. 8-4
Location Exit "B" Baghouse
Date 7/27/79
Operator J.A. Hartzell
RF Holtz

Start Time 1138
Stop Time 1238
Ambient Temp. °F 93
Barom. Press. "Hg 28.92
Nozzle Diam. In. 0.250
Probe Length 8'

Sample Box No. 1/2
Meter Box No.
Meter ΔH@ 1.89
Heater Box Setting, °F 250
Probe Heater Setting, °F 250
Leak Rate @ "Hg 5.2 Post-Test 0.04
ΔH test = 2.248 ΔP

POINT	TIME MIN.	GAS VOLUME CF	PITOT ΔP "H2O	ORIF. ΔH "H2O	STACK TEMP. °F	BOX TEMP °F	IMP. TEMP. °F	PROBE TEMP. °F	DRY GAS TEMP. - °F IN	DRY GAS TEMP. - °F OUT	PUMP VAC. "Hg	STACK S.P. "H2O	
S-6	0	529.8	0.74	1.65	409	231	83	304	95	86	4.5	-11.1	
S-5	5	532.7	0.78	1.75	414	260	73	210	103	88	4.8		
S-4	10	536.4	0.78	1.75	413	269	74	229	104	90	4.8		
S-3	15	540.0	0.82	1.84	416	245	71	241	103	93	5.2		
S-2	20	543.8	0.76	1.71	411	226	70	235	110	95	5.0		
S-1	25	547.5	0.45	1.01	383	252	79	258	112	96	3.5		
S-6	30	550.3	0.72	1.62	412	267	77	227	115	99	4.6		
S-5	35	553.7	0.74	1.66	413	281	75	243	116	100	4.8		
S-4	40	557.3	0.76	1.71	412	257	72	253	116	100	5.0		
S-3	45	561.0	0.78	1.75	411	279	71	275	117	102	5.2		
S-2	50	564.6	0.78	1.75	412	238	70	272	118	103	5.2		
S-1	55	568.4	0.45	1.01	383	253	80	237	119	105	3.6	-11.1	
	60	571.2											
			ave √P	ave ΔH	ave Temp				ave	ave		ave	
									111	96		-11.1	
		V_m = 41.4	= 0.841	= 1.60	= 401°F								
	corr. V_m	= 40.2							104				
	see calcs.												

PART. gr/dscf lb/hr
TOTAL
NET
SOLID

GAS VEL., fps
VOLUME, dscfm
MOISTURE, %

COMMENTS:

TEST OBSERVERS:
Bob Tomlinson ESE - EPA
Al Gubey - SCAQMD

LABORATORY ANALYSIS DATA
PARTICULATE SOURCE SAMPLE

alysis Date(s) 7/30/79 + 7/30/79 Analytical Chemist Samuel Deutsch

mple Date 7/27/79 Run No. B-4 Location C.O. "B" Stack Baghouse
Lab. No. 45335

ISTURE DATA:

Final Vol. H_2O in Imp.	288 ml.	5.	Final Wt. Silica Gel	792.60 gm.
Initial Vol. H_2O in Imp.	200 ml.	6.	Initial Wt. Silica Gel	782.85 gm.
Vol. H_2O Condensed	88 ml.	7.	Weight Gain	9.75 gm.
Vol. wash H_2O	260 ml.			

ARTICULATE DATA: (Front Half:) (Back Half:)

Final Filter Weight	372.9 mg.	13.	Organic Extract	3.6 mg.
Initial Filter Weight	351.7 mg.	14.	Aqueous Insolubles	0.6 mg.
Filter Particulate	21.2 mg.	15.	Aqueous Solubles	32.9 mg.
Probe Particulate	6.5 mg.	16.	Total Particulate	37.1 mg.
Total Particulate	27.7 mg.	17.	$H_2SO_4 \cdot 2H_2O$	29.6 mg.
		18.	Net Particulate	7.5 mg.
Acetone Wash	112 ml.			

FLUE GAS ANALYSES J. A. [signature]

Molecular Weight Determination: Room Temp. 77°F Barom. Press. 23.92" Hg

Component		% Dry	
20. $\%CO_2$	4.8 @ 3.2% H_2O	4.96	Horiba Mexa 204 IR Analyzer
21. $\%O_2$	14.9 @ 3.2% H_2O	15.39	Teledyne O_2 Analyzer
22. %CO	0.05 " "	0.05	Horiba Mexa 201 IR Analyzer
23. $\%N_2$		79.60	by difference

Other

24.

25.

26.

METHOD 5 PARTICULATE TEST CALCULATION FORM

LOCATION KSC - Coke Plant Battery "B" DATE 7/27/79

RUN NO. B-4

6.5" Duct

I. Necessary Data:

A. No. of traverse points 6

B. Total test time, (θ) 60 minutes

C. Water collected:
1. Impinger H_2O; V_{H_2O} 88 ml.
2. Silica Gel, W_{H_2O} 9.75 gm.

D. Particulate Weight:
1. Front Half, M_f 0.0277 gm.
2. Back Half, M_b 0.0371 gm.
3. Back Half $H_2SO_4 \cdot 2H_2O$ 0.0296 gm.
4. Back Half Organic, M_o 0.0036 gm.

E. Volume metered *

V_m = 40.2 CF x DGMCF = 40.2 CF

* Note: Total Meter Volume = 41.4 cf
Adjusted for 0.04 cfm leak by subtracting ½ of leak
Corr. V_m = 41.4 - (60)(½)(0.04) = 40.2 cf

F. Average $\sqrt{\Delta P}$ 0.841 $("H_2O)^{\frac{1}{2}}$

G. Average ΔH 1.60 $"H_2O/13.6$ = 0.118 "Hg

H. Average meter temperature, T_m 104 °F + 460 = 564 °R

I. Average stack temperature, T_s 407 °F + 460 = 867 °R

J. Stack absolute pressure, P_s 28.10 "Hg

K. Stack static pressure −11.1 $"H_2O$

L. Barometric pressure, P_b 28.92 "Hg

M. % CO_2 4.96 ; % O_2 15.39 ; % CO 0.05 ; % N_2 79.60

N. Area of stack, A_s 20.63 ft^2

O. Area of nozzle, A_n 0.000341 ft^2

P. Pitot tube factor, C_p 0.85

II. Calculations:

A. Standard Volume Metered

$$V_{m(std)} = V_m \times \frac{T_{std}}{P_{std}} \times \frac{(P_b + \frac{H}{13.6})}{T_m}$$

$$V_{m(std)} = 17.380 \times (\underline{40.2}\ CF) \times \frac{(\underline{29.04}\ "Hg)}{(\underline{564}\ ^oR)} = \underline{35.97}\ dscf$$

B. Moisture Content of Stack Gas

1. H_2O collected in impingers

$$V_{wc(std)} = K\ (\ V_{H_2O}\ )$$

$$V_{wc(std)} = 0.04636 \times (\underline{88}\ ml.) = \underline{4.08}\ scf$$

2. H_2O collected in silica gel

$$V_{wsg(std)} = K \times (\ W_{H_2O})$$

$$V_{wsg(std)} = 0.04644 \times (\underline{9.75}\ gm.) = \underline{0.45}\ scf$$

3. Moisture Content of Stack Gas, B_{ws}

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws} = \frac{(\underline{4.08}\ scf) + (\underline{0.45}\ scf)}{(\underline{4.08}\ scf) + (\underline{0.45}\ scf) + (\underline{35.97}\ scf)} = \underline{0.112}$$

C. Molecular Weight of Stack Gas, lb/lb-mole

1. M_d (Dry Molecular Weight) = $\sum M_x B_x$

$$M_d = (0.44)\ \underline{4.96}\ \%\ CO_2 + (0.32)\ \underline{15.39}\ \%\ O_2 + (0.28)\ \underline{79.65}\ \%(N_2+CO)$$

$$= \underline{29.41}\ lb/lb\text{-}mole$$

2. M_s (Wet Molecular Weight) = $M_d\ (1 - B_{ws}) + 18\ B_{ws}$

$$M_s = (\underline{29.41})\ (1 - \underline{0.112}) + 18\ (\underline{0.112}) = \underline{28.13}\ lb/lb\text{-}mole$$

D. Average Stack Gas Velocity

$$\bar{V}_s = K_p\ C_p\ (\frac{T_s}{P_s\ M_s})^{\frac{1}{2}} \sqrt{\Delta P}$$

$$\bar{V}_s = 85.48\ (\underline{0.85}) \left[\frac{(\underline{867}\ ^oR)}{(\underline{28.10}\ "Hg)\ (\underline{28.13}\ lb/mole)}\right]^{\frac{1}{2}} (\underline{0.341}\ "H_2O^{\frac{1}{2}})$$

$$= \underline{64.00}\ ft/sec$$

$acfm = 64.0 \times 60 \times 20.63 = 79,219\ acfm$

E. Average Stack Gas Volumetric Flow Rate

$$\bar{Q}_s = (3600 \text{ sec/hr})\, \bar{V}_s\, A_s\, (1 - B_{ws})\, \frac{T_{std}}{P_{std}}\, \frac{P_s}{T_s}$$

$$= 62566.8\ (64.00 \text{ ft/sec})(20.63 \text{ ft}^2)(1 - 0.112)\, \frac{(28.10 \text{ "Hg})}{(867 \text{ °R})}$$

$$= 2,377,515 \text{ dscfh}/60 = 39,625 \text{ dscfm}$$

F. Pollutant Mass Rate (Solid Part. – Rule 405a)

$$PMR = \frac{M_f + M'}{V_{m(std)}} \times \bar{Q}_s$$

$M' = M_b - M_o - (H_2SO_4 \cdot 2H_2O)$

$M' = 0.0371 - 0.0036 - 0.0296$

$M' = 0.0039$

$$PMR = \frac{(0.0316 \text{ gm.})}{(35.97 \text{ dscf})} \times (2,377,515 \text{ dscfh}) \times \frac{1}{454 \text{ gm/lb}}$$

$$= 4.60 \text{ lb/hr}$$

G. Particulate Concentration

1. Total Particulate

$$C_t = \frac{M_f + M_b}{V_{m(std)}} \times 15.43$$

$$C_t = \frac{(0.0277 \text{ gm}) + (0.0371 \text{ gm})}{(35.97 \text{ dscf})} \times 15.43 = 0.0278 \text{ gr/dscf}$$

2. Net Particulate (Total less $H_2SO_4 \cdot 2H_2O$ – Rule 404a)

$$C_n = \frac{M_f + M_b - (H_2SO_4 \cdot 2H_2O)}{V_{m(std)}} \times 15.43$$

$$C_n = \frac{(0.0277 \text{ gm}) + (0.0371 \text{ gm}) - (0.0296 \text{ gm})}{(35.97 \text{ dscf})} \times 15.43$$

$$= 0.0151 \text{ gr/dscf}$$

3. Front Half Particulate

$$C_f = \frac{M_f}{V_{m(std)}} \times 15.43$$

$$C_f = \frac{(0.0277 \text{ gm})}{(35.97 \text{ dscf})} \times 15.43 = 0.0119 \text{ gr/dscf}$$

H. % Isokinetic Variation

$$\% I = \frac{T_s \, V_{m(std)} \, P_{std} \times 100}{\theta \, \bar{V}_s \, A_n \, P_s \, T_{std} \, (1 - B_{ws}) \times 60}$$

$$\% I = 0.0959 \times \frac{(867\ ^{\circ}R)(35.97\ \text{dscf})}{(60\ \text{min})(64.00\ \text{ft/sec})(0.005344\ \text{ft}^2)(28.10\ \text{"Hg})(1 - 0.112)}$$

$$= 91.50\%$$

(Std Conditions: 60 °F and 29.92 "Hg)

VISIBLE EMISSION OBSERVATION RECORD

Company KAISER STEEL CORP RUN #1

Date 7-27-79 Time First Sighted Plume -0-

Time Start 0925 Time Stop 1025

Air Temperature 77° Relative Humidity

Wind Speed 3-5 MPH Wind Direction 200°

Sky Condition CLEAR Background HAZY

Plume Characteristics: Continuous: ( ) yes (✓) no

Color -0- Dispersion Description -0-

Stack Height 125 (ft) Observer location: 900 (ft) SE of stack

Sun location
( ) Back of Observer ( ) Left Shoulder
(✓) Right Shoulder ( ) Other

Emission Point BATTERY "B" STACK

Min	0	15	30	45
01	0	0	0	0
02	0	0	0	0
03	0	0	0	0
04	0	0	0	0
05	0	0	0	0
06	0	0	0	0
07	0	0	0	0
08	0	0	0	0
09	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0

Min	0	15	30	45
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0

Min	0	15	30	45
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0
60	0	0	0	0

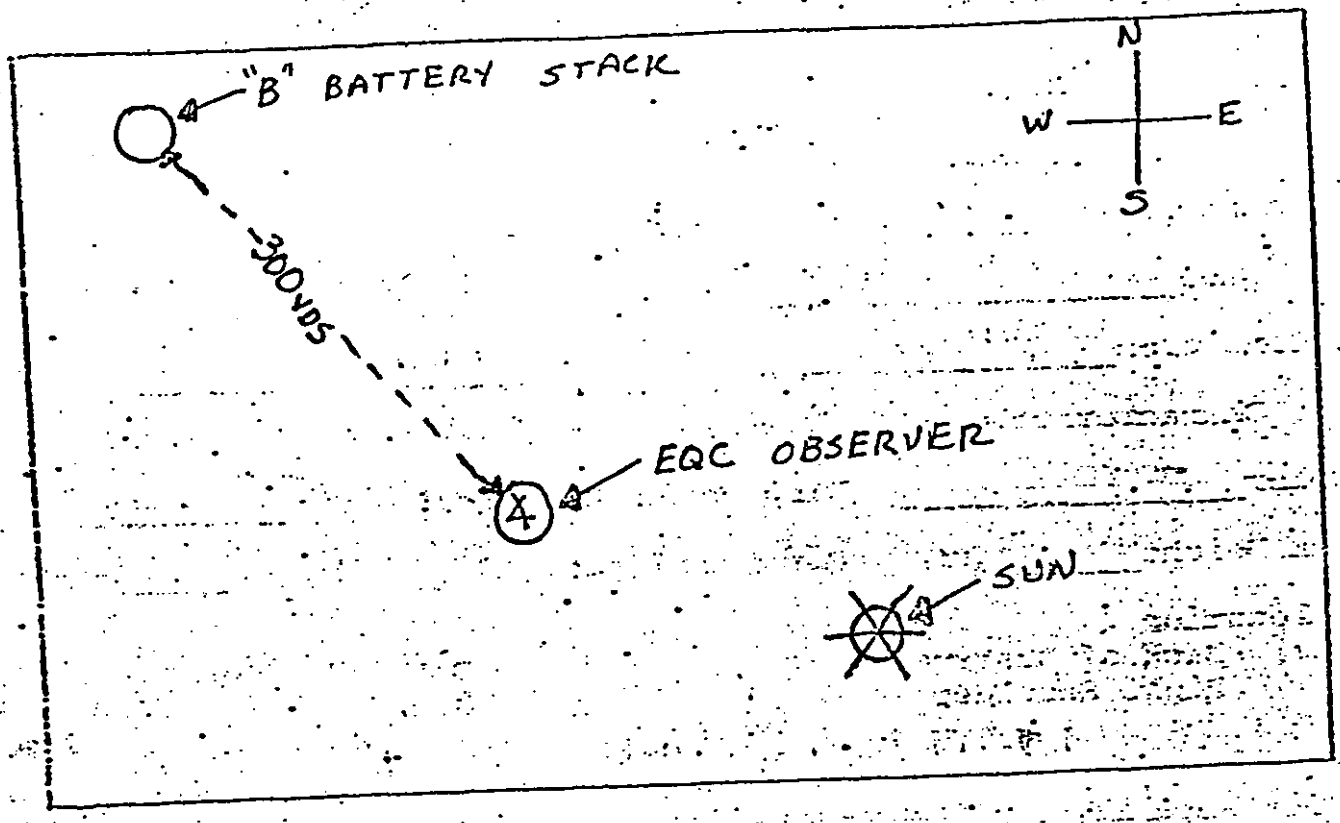
NOTES: NO VISIBLE EMISSIONS.

Inspector R. L. Skipper Date 7-27-79

TSB-A-8 EPA-IX-FORM 208 Certified by C.A.R.B. 5-10-79

MAP

0925 – 1025



Symbols

Sun = ☼
Plume direction = ——→

Point where plume observed = - - - -
Observer = 4

Water Vapor Condensate

Photographs: S&A File ( ) Enclosed ( ) None ( )

Comments

Signature R. L. Kilpatrick Date 7-27-79

VISIBLE EMISSION OBSERVATION RECORD

Company KAISER STEEL RUN #2

Date 7-27-79 Time First Sighted Plume _____

Time Start 1140 Time Stop 1240

Air Temperature 90° Relative Humidity _____

Wind Speed 8-11 MPH Wind Direction 224°

Sky Condition CLEAR Background HAZY

Plume Characteristics: Continuous: ( ) yes ( ) no

Color _____ Dispersion Description _____

Stack Height 125 (ft) Observer location: 900 (ft) SE of stack

Sun location
(✓) Back of Observer ( ) Left Shoulder
( ) Right Shoulder ( ) Other

Emission Point _____

Min	0	15	30	45
01	0	0	0	0
02	0	0	0	0
03	0	0	0	0
04	0	0	0	0
05	0	0	0	0
06	0	0	0	0
07	0	0	0	0
08	0	0	0	0
09	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0

Min	0	15	30	45
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0

Min	0	15	30	45
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0
60	0	0	0	0

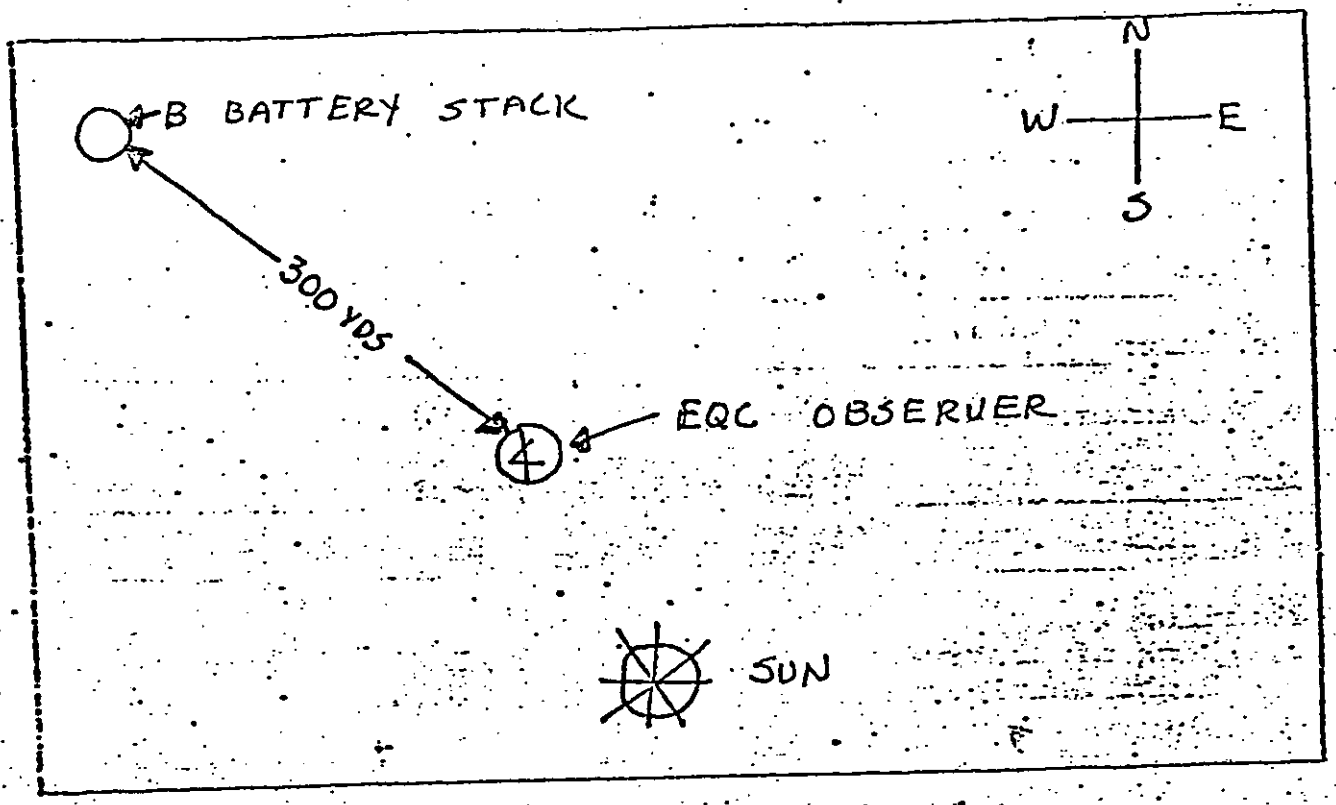
NOTES: NO VISIBLE EMISSIONS

Inspector R. L. Shupe Date 7-26-79

TSB-A-8 EPA-IN-FORM 298 ABOVE INSPECTOR CERTIFIED BY C.A.R.B. ON 5-10-79.

MAP

1140 1240



Symbols

Sun = ☼
Plume direction = ——→
Point where plume observed = ...
Observer = 🚶

Water Vapor Condensate _____

Photographs: S&A File ( ) Enclosed ( ) None ( )

Comments _____

Signature R. L. Skipper Date 7-27-79

VISIBLE EMISSION OBSERVATION RECORD

Company KAISER STEEL CORP

Date 27 July 79

Time Start 0925

Air Temperature 77°

Wind Speed 3-5 MPH

Sky Condition CLEAR HAZE

Time First Sighted Plume

Time Stop 1025

Relative Humidity

Wind Direction SSW

Background SKY

Plume Characteristics:

Continuous: ( ) yes (X) no

Color

Dispersion Description

Stack Height 125 (ft)

Observer location: 975 (ft) SW of stack

Sun location
( ) Back of Observer
(X) Right Shoulder
( ) Left Shoulder
( ) Other

Emission Point B BATTERY COKE OVEN STACK

Min	0	15	30	45
01	0	0	0	0
02	0	0	0	0
03	0	0	0	0
04	0	0	0	0
05	0	0	0	0
06	0	0	0	0
07	0	0	0	0
08	0	0	0	0
09	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0

Min	0	15	30	45
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0

Min	0	15	30	45
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0
60	0	0	0	0

NOTES:

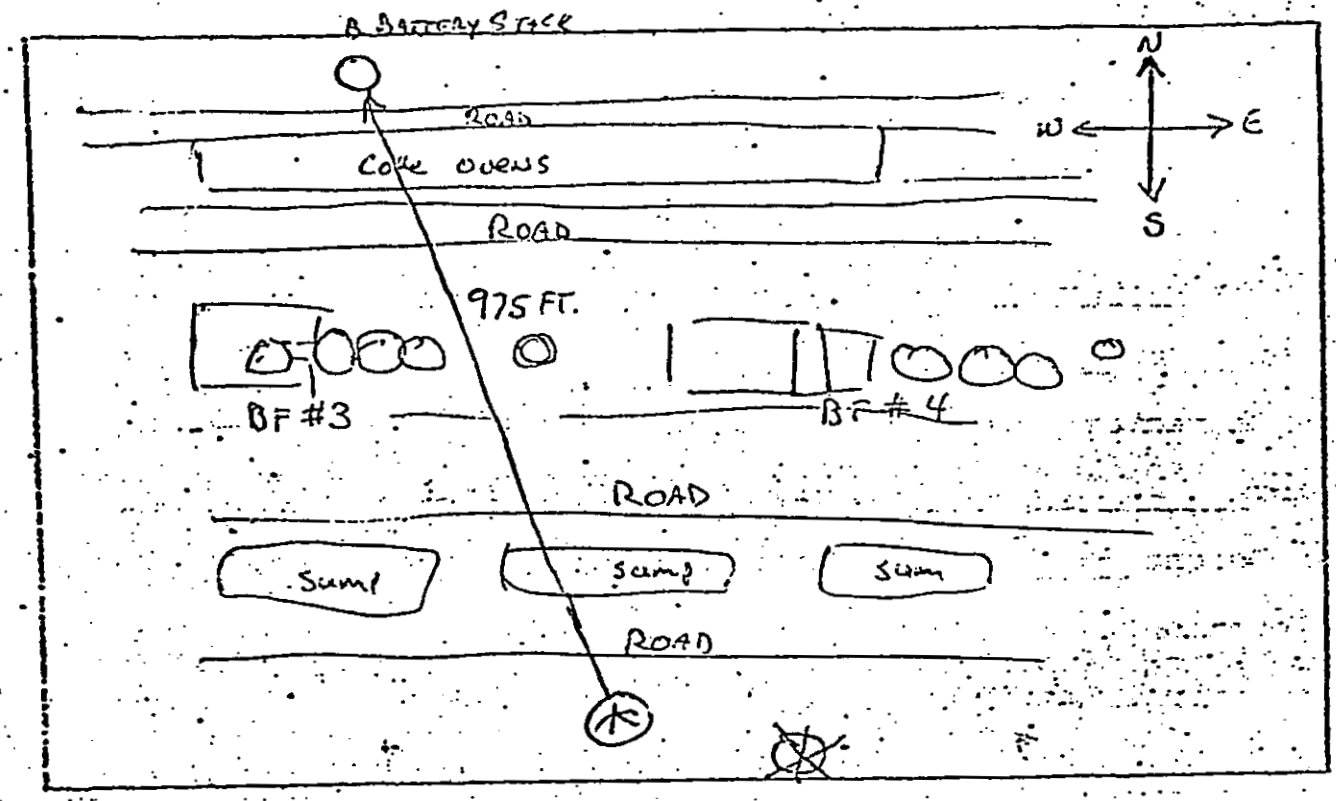
Inspector R. Bass

Date 7/27/79

TSB-A-8 EPA-IX-FORM 208

MAP

0925 – 1025



Symbols

Sun = ☼
Plume direction = ⟶
Point where plume observed = ...
Observer = 4

Water Vapor Condensate _____

Photographs: S&A File ( ) Enclosed ( ) None ( )

Comments _____

Signature Robert B Bean Date 7/27/79

VISIBLE EMISSION OBSERVATION RECORD

Company KAISER STEEL CORP RUN 2

Date 7/27/77 Time First Sighted Plume

Time Start 1140 Time Stop 1240

Air Temperature 90°F Relative Humidity

Wind Speed 8-11 MPH Wind Direction SW

Sky Condition CLEAR - HAZE Background SKY

Plume Characteristics: Continuous: ( ) yes (→) no

Color NA Dispersion Description NA

Stack Height 125 (Ft) Observer location: 975 (Ft) SE of stack

Sun location
- (X) Back of Observer
- ( ) Right Shoulder
- ( ) Left Shoulder
- ( ) Other

Emission Point B BATTERY COKE OVEN STACK

Min	0	15	30	45
01	0	0	0	0
02	0	0	0	0
03	0	0	0	0
04	0	0	0	0
05	0	0	0	0
06	0	0	0	0
07	0	0	0	0
08	0	0	0	0
09	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0

Min	0	15	30	45
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0

Min	0	15	30	45
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0
60	0	0	0	0

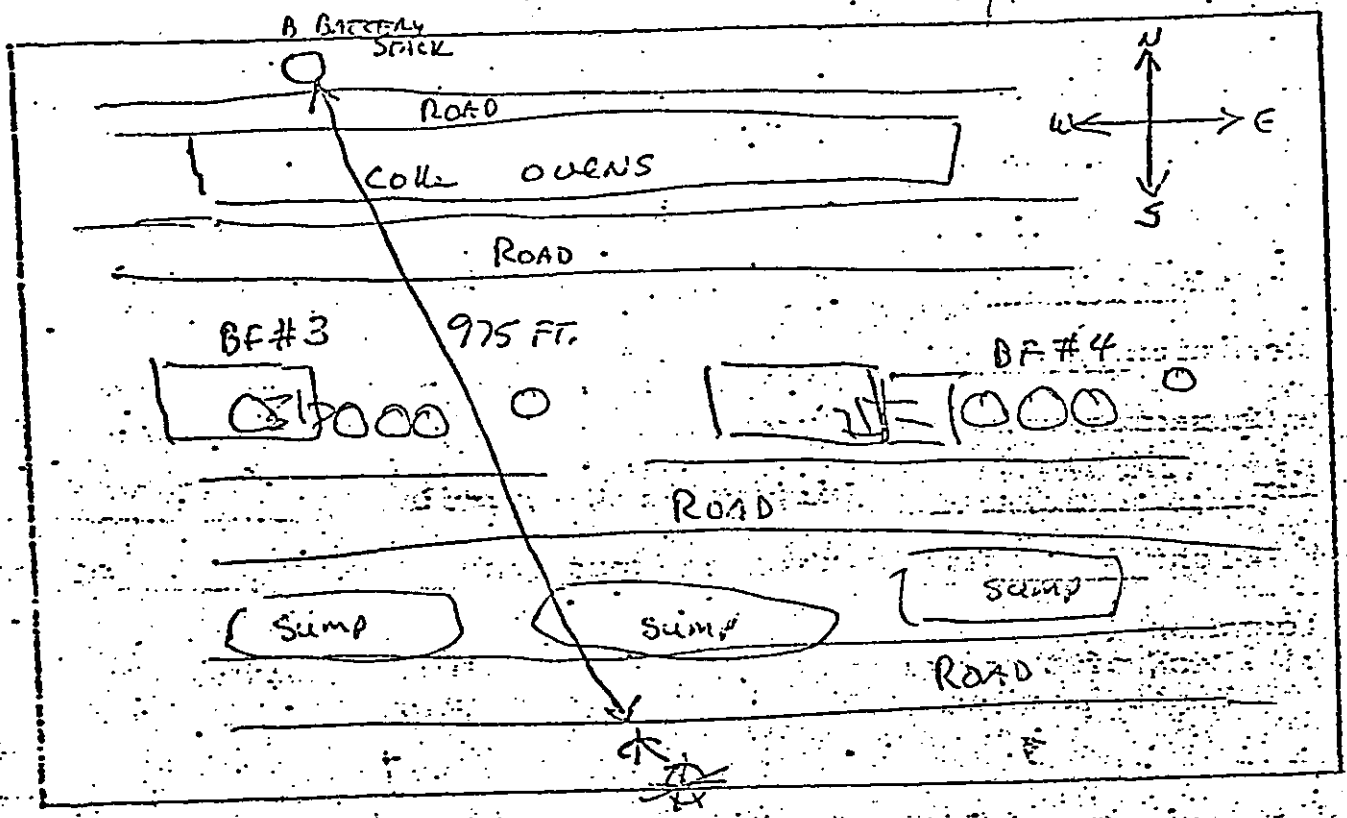
NOTES: OBSERVATIONS MADE WITH EYE AND BINOCULARS - IF THERE WERE EMISSIONS FROM A BATTERY STACK THEY WERE LESS THAN 5% OPACITY AND NOT VISIBLE FROM MY LOCATION

Inspector Robert B Bass Date 27 July 77

TSB-A-8 EPA-IH-FORM 208

MAP

1140 - 1240



Symbols

Sun =
Plume direction =
Point where plume observed = - - - -
Observer =

Water Vapor Condensate

Photographs: S&A File ( ) Enclosed ( ) None ( )

Comments

Signature Robert B Bain Date 7/27/77

7/27/79 FRIDAY

"B" STACK BAGHOUSE

	compartments						Total ΔP	INLET TEMP.	o/o Opacity
e	1	2	3	4	5	6			
25	7.15	6.70	6.50	8.10	5.95		6.20	450	
30	7.15	6.75	6.50	8.15	5.95		6.20	450	
35	7.15	6.75	6.50	8.15	6.00		6.00	450	
40	7.15	6.80	6.50	8.15	6.05		6.30	450	
45	7.20	6.80	6.50	8.20	6.05		6.50	450	
50	7.25	6.85	6.60	8.25	6.15		6.50	450	
55		6.85	6.60	8.25	6.05		8.00	450	
00		6.90	6.65	8.25	6.20		6.50	450	
05		6.85	6.65	8.25	6.20		6.40	455	
10		6.95	6.70	8.35	6.20		6.40	455	
15		6.85	6.60	8.25	6.15		6.40	450	
20		6.85	6.55	8.20	6.15		6.40	455	
25		6.85	6.60	8.25	6.15		6.40	455	
							ave.	ave.	
							6.43	452	

INSTRUMENT NOT ON LINE - CONTRACTOR HAS NOT SATISFIED Operation/Calibration on test specs.

H 0955 Disconnected #1 Compartment Manometer - All Readings from then until 1025 are with 1 off.

Charge 84 @ 0928 - Charge 56 @ 1020

Push 56 @ 1010 - Push 66 @ 1019

"B" STACK BAGHOUSE

7/27/79
FRIDAY

	compartments						Total ΔP	INLET TEMP.	o/o Opacity
2	1	2	3	4	5	6			
35		7.15	6.75	8.45	6.30		7.00	465	
40		7.20	6.75	8.50	6.35		7.00	465	
45		7.20	6.80	8.50	6.35		7.00	465	
50		7.20	6.80	8.55	6.35		7.00	465	
55		7.20	6.80	8.50	6.35		6.90	465	
00		7.15	6.80	8.45	6.35		6.90	465	
05		7.15	6.80	8.45	6.35		6.90	465	
10		7.25	6.80	8.50	6.35		7.00	465	
15		7.25	6.80	8.55	6.45		6.90	465	
20		7.25	6.80	8.55	6.45		6.90	465	
25		7.25	6.80	8.55	6.45		7.00	465	
30		7.25	6.80	8.60	6.45		7.00	465	
35		7.25	6.80	8.60	6.45		7.00	465	
							ave =	ave =	
							6.9%	465	

Instrument Not On Line
Operation / Calibration Contractor Specs.
Has Not Satisfied

#1 Compartment Pressure Still Off.

Push 58 @ 1138 - Push 78 @ 1145
Charge 58 @ 1148 - Charge 78 @ 1155

SOTDAT/STEEL LIBRARY SYSTEM

Report Title:

Plant and Location: Kaiser Steel Fontana, CA

SCC: 30300306

Testing Date(s): 7/26-27/79

By Whom: company

Stack Test Review Attached:

Reviewed by:

Problems Seen by Reviewer:

Confidentiality Status: Clear

If status is confidential, list confidential pages or sections:

Source of Determination of the Confidentiality Status: Memo entitled: "Steel Technical Support Materials", From: Edward Reich, Director DSSE. To: Tom Voltaggio

Report Encoded by:

Date Encoded:

Form Numbers:

Comments:

Title: see title page

Plant and Location: Kaiser Steel, Fontana, CA

SCC: 30 300306

Test Date: 7/26-27/79

By Whom: Company

Encoded By:

Date Encoded:

Completed By:

Form No.:

ENGINEERING-SCIENCE

125 WEST HUNTINGTON DRIVE • P.O. BOX 538 • ARCADIA, CALIFORNIA 91006 • 213/445-7560

CABLE ADDRESS: ENGINSCI
TELEX: 67-5426

3126.00

20 August 1979

Mr. Gary Lavagnino
Task Manager (S-2-1)
Surveillance and Analysis Division
U.S. Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Lavagnino:

Attached is a report on observations made during a series of source tests conducted at Kaiser Steel Corporation, Fontana, California on July 26-27, 1979. These tests were to determine particulate emissions from a baghouse controlling stack gases in the battery B coke ovens.

The tests were conducted by the Environmental Quality Control Section of Kaiser Steel Corporation, pursuant to Paragraph X of the Amended Consent Decree entered on September 30, 1977, Case No. CV 76-0675MML (U.S. District Court, Central District of California).

Four EPA Method 5 tests were conducted of which the first two tests were discarded due to pitot tube error. Water was found in the pitot tube lines, causing incorrect pitot tube readings.

The source test results and visual opacity observations of July 26-27, 1979 indicate compliance of the baghouse emissions with Rules 409A and 405A of the South Coast Air Quality Management District.

Very truly yours,

Robert L. Tomlinson
Environmental Engineer

RLT:he
Enclosures

cc: J. R. Busik
S. J. Hitte
E. McLean
L. Genoble (ES)

ENGINEERING-SCIENCE

125 WEST HUNTINGTON DRIVE • P.O. BOX 538 • ARCADIA, CALIFORNIA 91006 • 213/445-7560

CABLE ADDRESS: ENGINSCI
TELEX: 67-5428

12 September 1979

Mr. Gary Lavagnino, Task Manager
Surveillance & Analysis Division
U.S. EPA, Region IX
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Lavagnino:

The following information is submitted in answer to your August 30, 1979 questions regarding the Kaiser Steel Battery B source test observation and the Firestone Tire Company and Seaside Paint and Lacquer Company SIP inspection reports.

(1) The Kaiser Steel source test team was not equipped to conduct a 90° traverse without considerable effort and possible sampling train breakdown problems. The only probe available for the test was 10 feet long, and without a monorail for support, the heavy probe would have been difficult to hand-hold for a 30-minute traverse. The SCAQMD agreed with Kaiser Steel that two horizontal traverses conducted one immediately after the other would be sufficient for the EPA Method 5 test.

(2) Several of the source tested Battery B coke ovens were being repaired or relined with bricks during the test. The result of these repairs was a process weight of 37,000 lbs./hr. instead of the typical 60,000-70,000 lbs./hr.

(3) Specific design data for the Battery B baghouse will be available from Kaiser Steel on September 13, 1979 during the inspector's visit to the plant for cast house visible emission observations. The information will then be forwarded to your office.

(4) Attached is a copy of SCAQMD Rule 462 which regulates the operation of organic liquid loading facilities. The Firestone Tire Company and Seaside Paint and Lacquer Company organic liquid storage tanks are all under the Rule 462 applicable size of 20,000 gallons. No other rules in the SCAQMD regulations appear to require submerged fill pipes for such organic liquid storage tanks.

Very truly yours,

Robert L. Tomlinson
Environmental Engineer

RLT:eh
Attachment

ENGINEERING-SCIENCE

125 WEST HUNTINGTON DRIVE • P.O. BOX 538 • ARCADIA, CALIFORNIA 91006 • 213/445-7560

CABLE ADDRESS: ENGINSCI
TELEX: 67-5428

18 September 1979

Mr. Gary Lavagnino
Task Manager (S-2-1)
Surveillance & Analysis Division
EPA Region IX
215 Fremont Street
San Francisco, CA 94105

Subject: Requested information for the
Kaiser Steel Battery B Coke Oven Baghouse

Dear Mr. Lavagnino:

The baghouse utilized by Kaiser Steel to control emissions from the Battery B coke ovens is an American Air Filter Type 8, size 5-180 continuous automatic suction dust collector. Five collector modules for the system are arranged back to back in two rows of five modules. The collector utilizes a common reverse air system with the Battery C baghouse. Design air/cloth ratio is approximately 1.5:1.

Attached are copies of the correspondence between the SCAQMD and Kaiser Steel that documents the District's approval of Kaiser Steel's source test method for the Battery B baghouse.

Very truly yours,

Robert L. Tomlinson
Environmental Engineer

RLT:eh

Enclosure

bcc: J. D. Carlson
W. P. Smith
R. E. Garner, FO
A. M. Kashay, FO
R. E. Robinson, FC
G. L. Rounds, FO
H. M. Smith, FO
R. D. Wight, FO
D. W. Jordan, Sr., Esq.,
San Bernardino

June 20, 1979

Certified Mail - Return Receipt Requested

U. S. Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, California 94105

Attention: Director, Enforcement Division

Gentlemen:

As discussed by Mr. H. M. Smith with Ms. Lois Green of your staff, this confirms that intended testing of "B" Battery stack has been changed to July 26 and 27, 1979 from June 26 and 27 as notified in our letter of May 25, 1979. Your accommodation to this change is greatly appreciated.

Very truly yours,

KAISER STEEL CORPORATION

By James E. Good
Attorney for Defendant

JEG:lf

cc: Mr. Thomas Austin, ARB
Mr. C. A. O'Malley, Eastern Zone, SCAQMD
Mr. L. Stiles, Eastern Zone, SCAQMD

South Coast
AIR QUALITY MANAGEMENT DISTRICT
EASTERN ZONE
22850 COOLEY DRIVE, COLTON, CALIFORNIA 92324 (714) 824-2660

April 20, 1979

Mr. G. L. Rounds, Director
Environmental Quality Control
Steel Manufacturing Division
Kaiser Steel Corporation
P. O. Box 217
Fontana, CA 92335

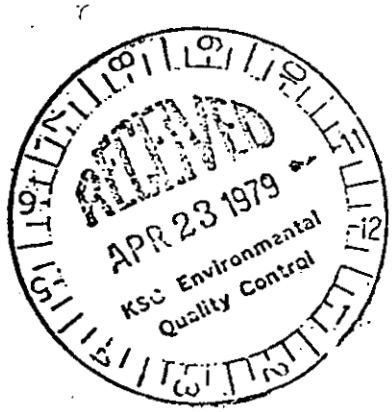
Dear Mr. Rounds:

REF: Your letter of April 18, 1979, "KSC Coke Plant Battery "B" Stack Compliance Tests"

The District has no objection to sampling the horizontal diameter, only, as described in subject letter on Coke Ovens Battery "B" Baghouse compliance tests. In all other matters, we expect you to follow the South Coast Air Quality Management District "Source Testing Manual", Second Printing, August, 1978.

You are reminded that SCAQMD source testing procedures, regarding particulates collection, are more strict than EPA Method 5, and you are expected to follow them.

We await your 30 day advance notification of the firm testing dates, and, as usual, we will provide a qualified source test observer.



Very truly yours,

Robert J. MacKnight
Director of Engineering

Charles A. O'Malley
Chief Engineer, Colton Office

CAO:eas

cc: EPA, Region IX, Director of Enforcement,
Clyde B. Eller

KAISER STEEL

KAISER STEEL CORPORATION
STEEL MANUFACTURING DIVISION
P. O. BOX 217 ■ FONTANA, CA 92335

April 18, 1979

Mr. Charles A. O'Malley
Chief Engineer, Colton Office
South Coast Air Quality Management District
22850 Cooley Drive
Colton, California
92324

Subject: KSC Coke Plant Battery "B" Stack Compliance Tests.

Ref: Amended EPA Consent Decree No CV 76-0675 MML. Pages 1-5 incl.

Dear Mr. O'Malley:

We are required by section IVB, 5, C, of the reference to demonstrate compliance with SCAQMD Rule 50A (opacity) by August 1, 1979 for coke battery "B" stack. In addition to demonstrating compliance with Rule 50A we will also demonstrate compliance with Rules 404(a), and 405(a) as we have done for Coke Battery Stacks "C", "D", and "E".

The baghouse exit sampling locations for batteries C, D, and E, were all in the vertical duct immediately prior to the exhaust fan. Sampling equipment used for demonstration of compliance with Rules 404(a) and 405(a) was a GII (Glass Inovators Inc.) super probe 8' long with an EPA 5 type sampling train. The baghouse exit sampling location on "B" Battery is in a long run of 61" ID horizontal duct.

We will not be able to use our GII EPA 5 sampling train on "B" battery baghouse if we are required to sample the horizontal duct on two diameters as specified in EPA Method 5. We, therefore, request your concurrence in sampling only the horizontal diameter with the GII sampling train. The sampling location has approximately 12 unobstructed pipe diameters upstream and 4 diameters downstream. We feel that sampling the horizontal diameter only would yield a valid sample. Of course, velocity profiles will be determined on both horizontal and vertical planes.

The sample dates for compliance testing of "B" battery baghouse are tentatively set for June 26 and 27, 1979. Please advise us of your thoughts about sampling the horizontal plane only. We will notify you 30 days in advance of firm testing dates.

Sincerely yours,

G. L. Rounds, Director
Envir. Quality Control

CLR:JAM:mm