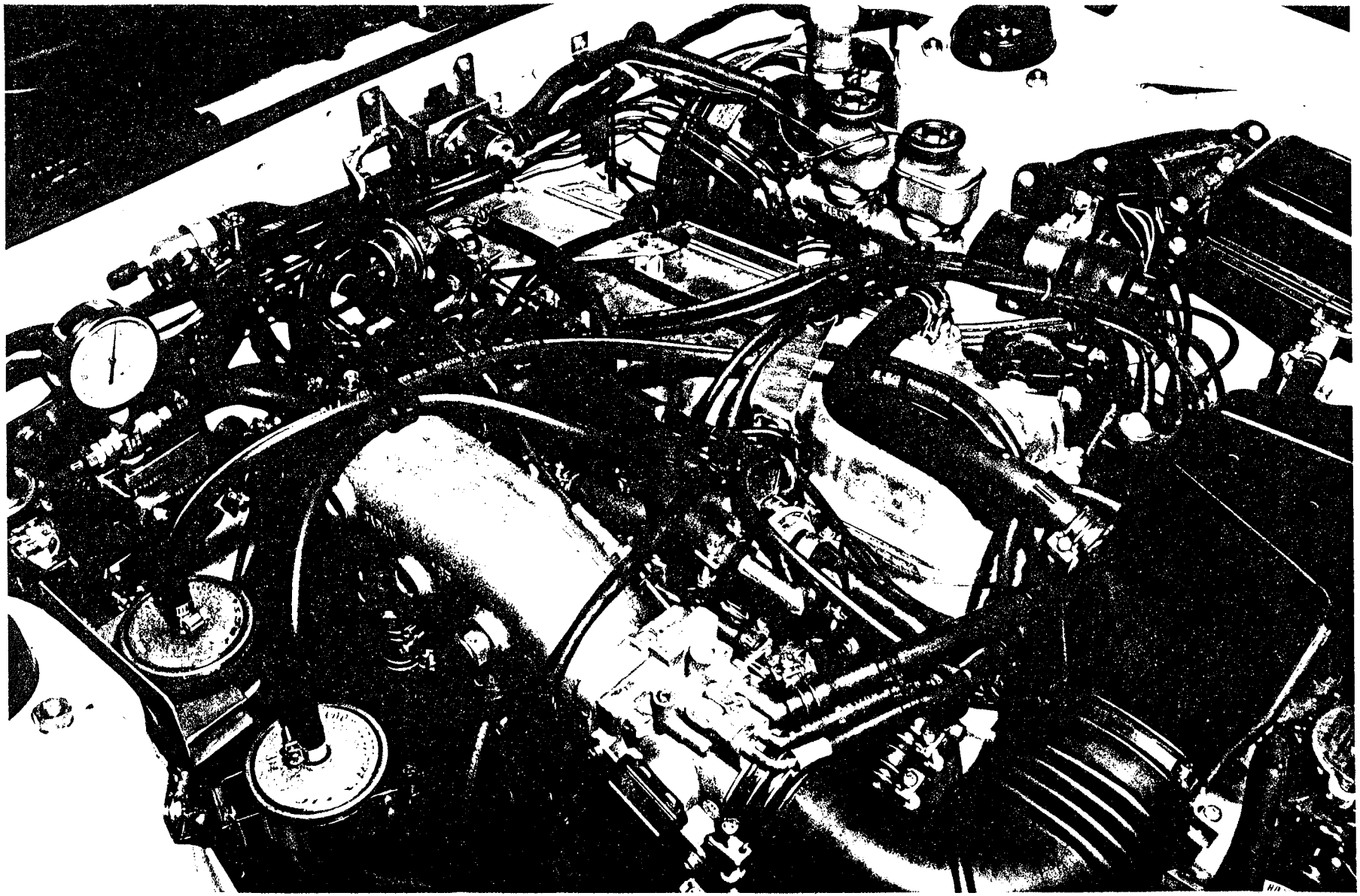


Figure 6. Completed Installation of Dual Fuel Injection System on Datsun 200SX Engine.

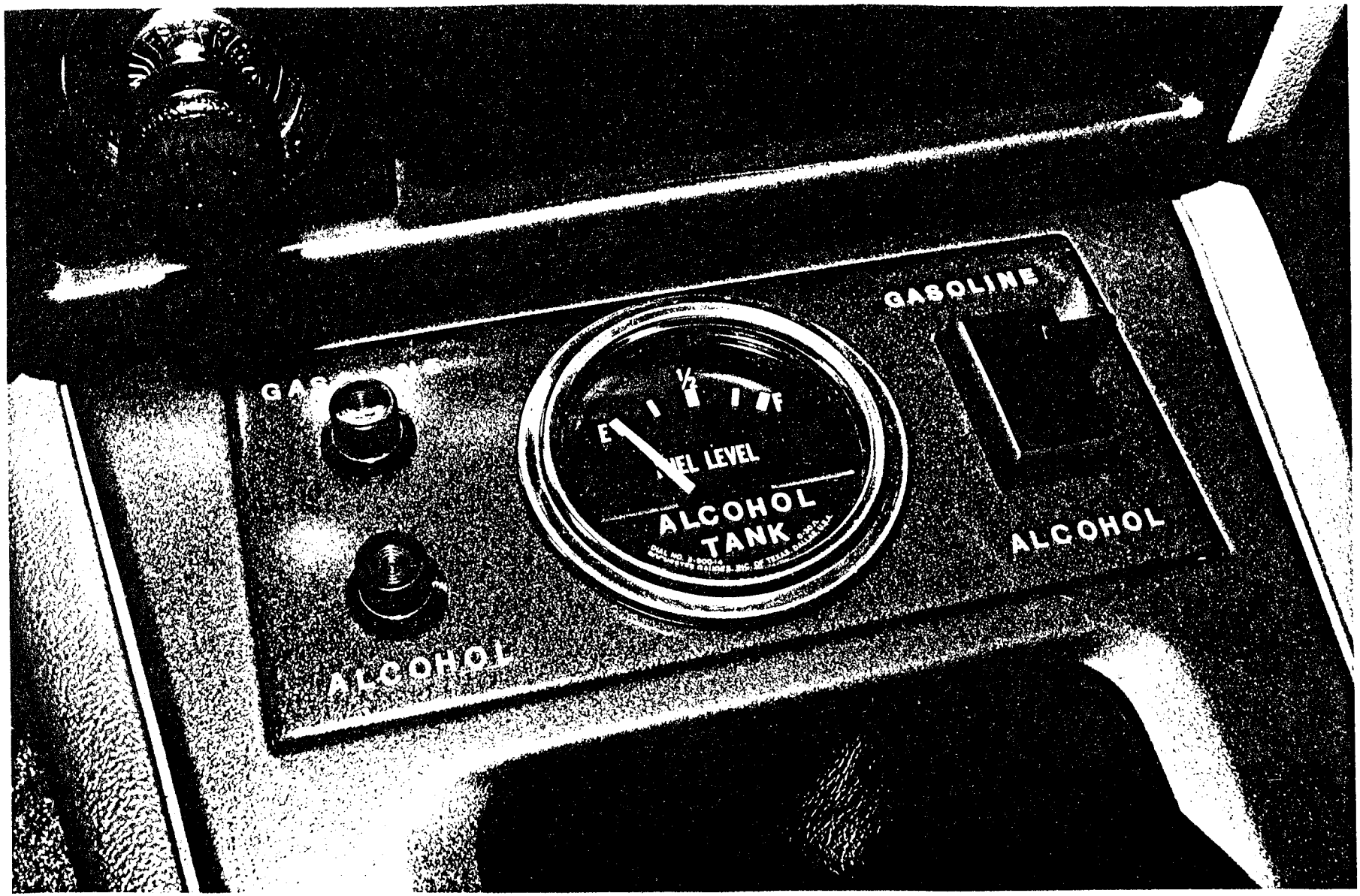


Figure 6a. Fuel Selection Switch Inside Vehicle.

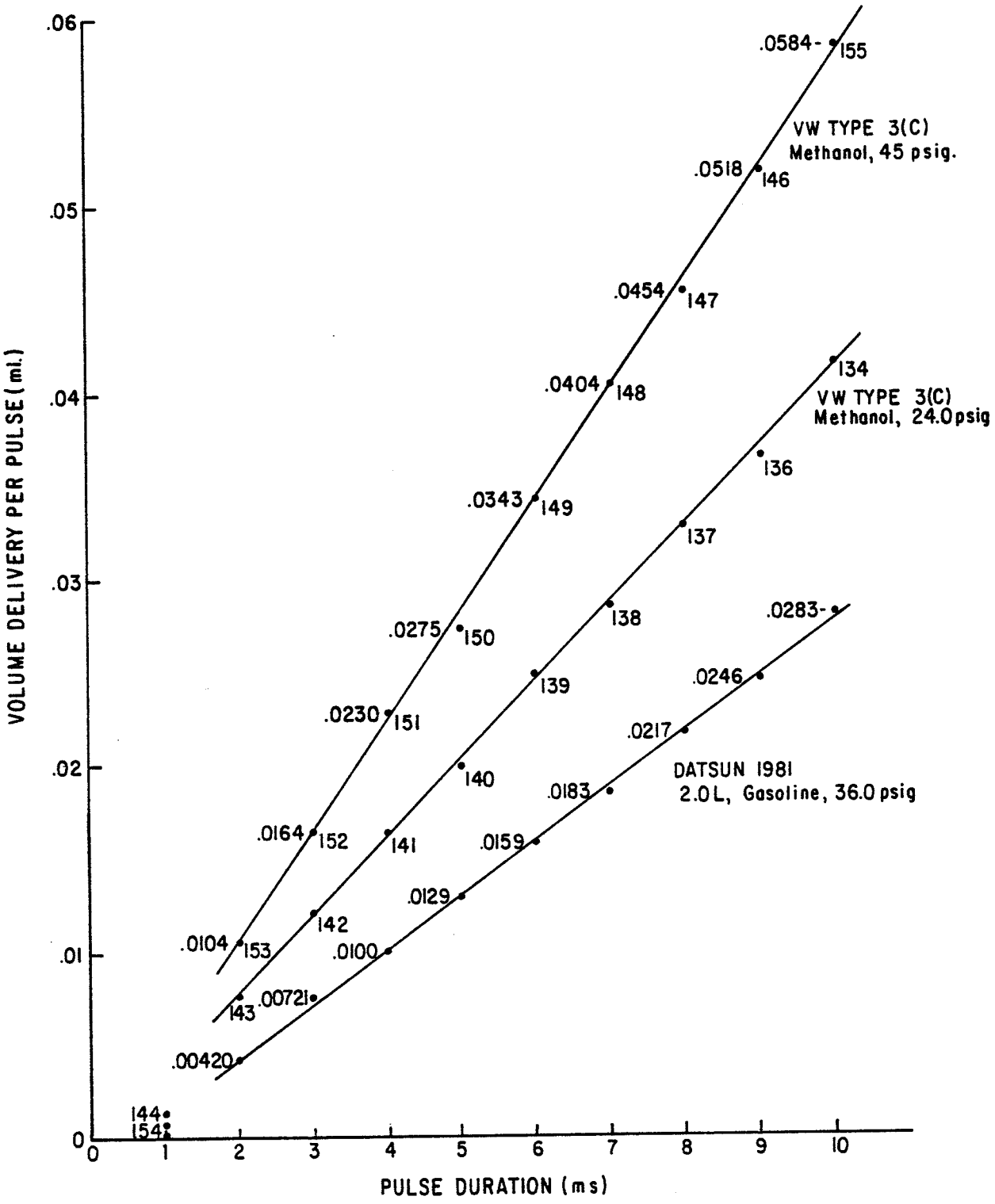


FIGURE 7. COMPARITIVE INJECTOR CALIBRATION DATA

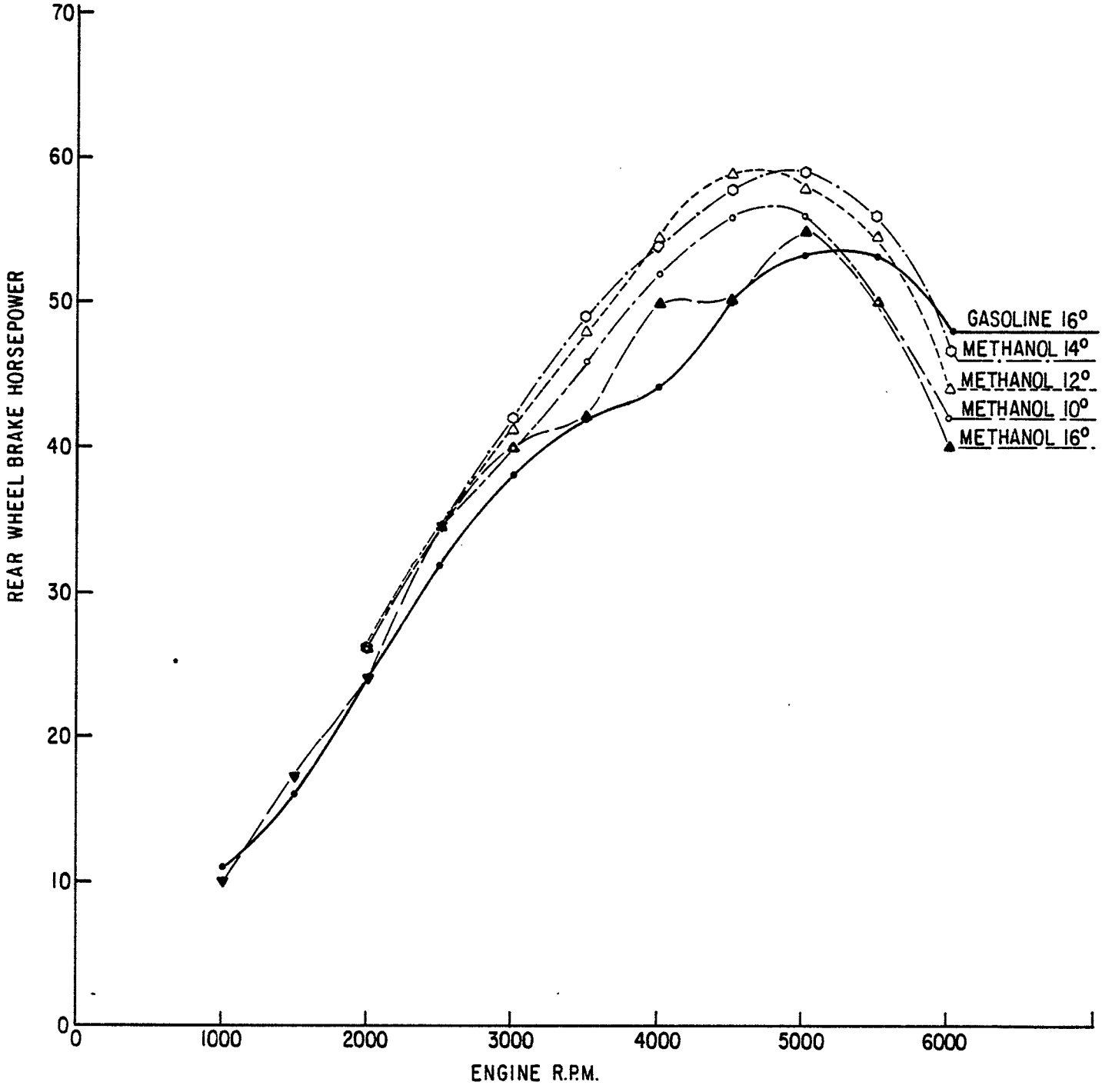


FIGURE 8. FULL THROTTLE - VARIABLE RPM TESTS. REAR WHEEL BRAKE HORSEPOWER vs. ENGINE RPM, FOR METHANOL AND GASOLINE, PARAMETRIC WITH IGNITION TIMING.

9. Appendix

I. Laboratory report on analysis of alcohol fuel samples and fuel cell foam.

II. Correction to SAE J1094a, SS 5-4, for use of alcohol fuels.

III. Modal emissions plots from 3-phase Full Test Procedures on gasoline and methanol.

IV. BTU adjusted equivalent fuel consumption calculations.

V. Computor printouts of data from EPA standard emissions and fuel economy tests.

VI. SAE Clean Air and Fuel Economy Rally rules and results.

Appendix I

Ellis - Kendall Laboratories
2605 Table Mesa Court
Boulder, CO 80303
August 5, 1981

Mr. Carl MacCarley
Denver Research Institute
2450 South Gaylord
Denver, CO 80208

Dear Mr. MacCarley;

Analysis of the alcohol and foam samples submitted by you has led to the results which follow.
Description of samples: Methanol and ethanol used for fuel and a foam fuel tank insert.

Object: Determine impurities in fuels and determine components of foam extractable in alcohol.

Results: 1) The submitted methanol was of high purity. About 0.1% of an alkyl phthalate ester, very similar to dioctyl or didecyl phthalate, was found. This type of phthalate ester is used as a plasticizer with vinyl polymers.
2) The submitted ethanol is denatured with methanol. Other volatile components found include about 2% of an alkyl ketone and about 1% ethyl acetate. Also present was about 1% of a non-volatile aromatic ester, not further identified.
3) The foam is polyurethane. About 3% by weight of the foam could be extracted by boiling ethanol in a 36 hour period. The non-volatile components of this extract contained carbon, hydrogen, oxygen, silicon, phosphorus, sulfur and probably chlorine. The latter four elements are present in about equal amounts. The silicon is probably present as a methyl silicone oil. The major organic component is an aromatic ester. Most, if not all, of these components could be removed from the foam prior to use with a rigorous alcohol extraction.

Details: The two alcohols were examined in a similar manner. The infrared spectrum of the submitted sample was scanned as was the spectrum of pure methanol or ethanol. The spectrum of the pure alcohol was subtracted from the spectrum of the fuel alcohol. The difference spectrum was interpreted to give the above results; no impurities were detected in the methanol by this method.

In order to detect the non-volatile impurities in the alcohols approximately 200 mL of each was evaporated. The residue was dissolved in carbon tetrachloride, deposited on a KBr plate and the infrared spectrum scanned. The

ethanol sample yielded a substantial amount of a light brown non-volatile substance and the methanol yielded a small amount of a non-volatile yellow liquid.

A portion of the foam was extracted for 36 hours with boiling ethanol in a Sohxlet extractor. The solvent was evaporated and the light brown residue was analyzed by infrared spectroscopy and energy dispersive X-ray fluorescence with results as reported above.

The composition of the foam was determined by interpreting the spectrum of the pyrolysis products.

If there are any further questions, please contact us. A bill for our services will be submitted shortly.

Very truly yours,

Douglas Kendall

Douglas Kendall

Andrew T Ellis

Andrew Ellis

Correction to SAE J1094a, SS 5.4, Fuel Economy Calculation from Exhaust Emissions, for use of alcohol fuels.

Ethanol (C_2H_5OH) LHV = 26.8 MJ/kg

Fuel density g/gal = $(8.331 \frac{lb}{gal})(.79)(453.6 \frac{g}{lb})$

(.79 ↑ sp. grav of ethanol)

$= 2985 \frac{g}{gal}$

Weight fraction of carbon in fuel $\frac{g\ C}{g\ fuel}$ =

$$\frac{\overbrace{2 \times 12.011 \frac{g\ C}{mole\ C}}^{\text{mass C}}}{\underbrace{2 \times 12.011 \frac{g\ C}{mole\ C}}_{\text{mass C}} + \underbrace{6 \times 1.008 \frac{g\ H}{mole\ H}}_{\text{mass H}} + \underbrace{1 \times 15.999 \frac{g\ O}{mole\ O}}_{\text{mass O}}}$$

$= .5214 \frac{g\ C}{g\ fuel}$.

Mass C per gallon of fuel $\frac{g\ C}{gal\ fuel}$:

$= (2985 \frac{g\ fuel}{gal\ fuel})(.5214 \frac{g\ C}{g\ fuel}) = 1556.4 \frac{g\ C}{gal\ fuel}$

Mass C from HC emissions =

$$(HC \ \ g/mi)\left(.5214 \ \frac{g\,C}{g\,HC}\right)$$

↑ HC assumed to be UBF

Mass C from CO emissions =

$$(CO \ \ g/mi)\left(0.429 \ \frac{g\,C}{g\,CO}\right)$$

Mass C from CO_2 emissions =

$$(CO_2 \ \ g/mi)\left(0.273 \ \frac{g\,C}{g\,CO_2}\right)$$

Total mass of C in exhaust, gC/mi =

$HC \times .5214 + CO \times .429 + CO_2 \times .273$

Where HC, CO and CO_2 are in g/mi

Vehicle fuel economy:

$$mi/gal = \frac{g\,C/gal\ fuel}{g\,C/mi}$$

$$= \frac{1556.4}{(HC \times .5214) + (CO \times .429) + (CO_2 \times .273)} \ mi/gal$$

HC, CO and CO_2 are in g/mi

Methanol (CH_3OH) LHV = 19.7 MJ/kg

Fuel density = 2985 g/gal

Weight fraction of carbon in fuel =

$$\frac{12.011 \frac{g\,C}{mole\,C}}{12.011 \frac{g\,C}{mole\,C} + 4 \times 1.008 \frac{g\,H}{mole\,H} + 15.999 \frac{g\,O}{mole\,O}}$$

$$= .3749 \frac{g\,C}{g\,fuel}$$

Mass C per gallon of fuel =

$$\left(2985 \frac{g\,fuel}{gal\,fuel}\right)\left(.3749 \frac{g\,C}{g\,fuel}\right) = 1119 \frac{g\,C}{gal\,fuel}$$

Total mass of C in exhaust =

$HC \times .3749 + CO \times .429 + CO_2 \times .273$ $\frac{g\,C}{mi}$

where HC, CO, and CO_2 are in g/mi

Vehicle fuel economy:

$$mi/gal = \frac{g\,C/gal\,fuel}{g\,C/mi}$$

$$= \frac{1119}{(HC \times .3749) + (CO \times .429) + (CO_2 \times .273)} \; mi/gal$$

HC, CO and CO_2 are in g/mi

Gasoline (Clear indoline) $\times CH_{1.85}$ LHV = 43.5 MJ/kg

(For comparison)

Fuel density g/gal = 2798

Weight fraction of carbon in fuel = 0.866 $\frac{g\ C}{g\ fuel}$

Mass C per gallon of fuel = 2423 $\frac{g\ C}{gal}$

$$mi/gal = \frac{2423}{(HC \times 0.866) + (CO \times 0.429) + (CO_2 \times 0.273)}$$

HC, CO and CO_2 in g/mi

Ratios of Heating Values per volume fuel:

Gasoline: $(43.5\ MJ/kg)(.74\ kg/L) = 32.19\ MJ/L$

Ethanol: $(26.8\ MJ/kg)(.79\ kg/L) = 21.17\ MJ/L$

Methanol: $(19.7\ MJ/kg)(.79\ kg/L) = 15.56\ MJ/L$

Ratio, Ethanol to gasoline $\frac{21.17}{32.19} = .658$

Ratio, Methanol to gasoline $\frac{15.56}{32.19} = .483$

Appendix III

Modal Emissions Plots from 3-Phase Full Test Procedures on Gasoline and Methanol

Nomenclature:

ENG Concentration: Exhaust sampled prior to catalytic convertor,

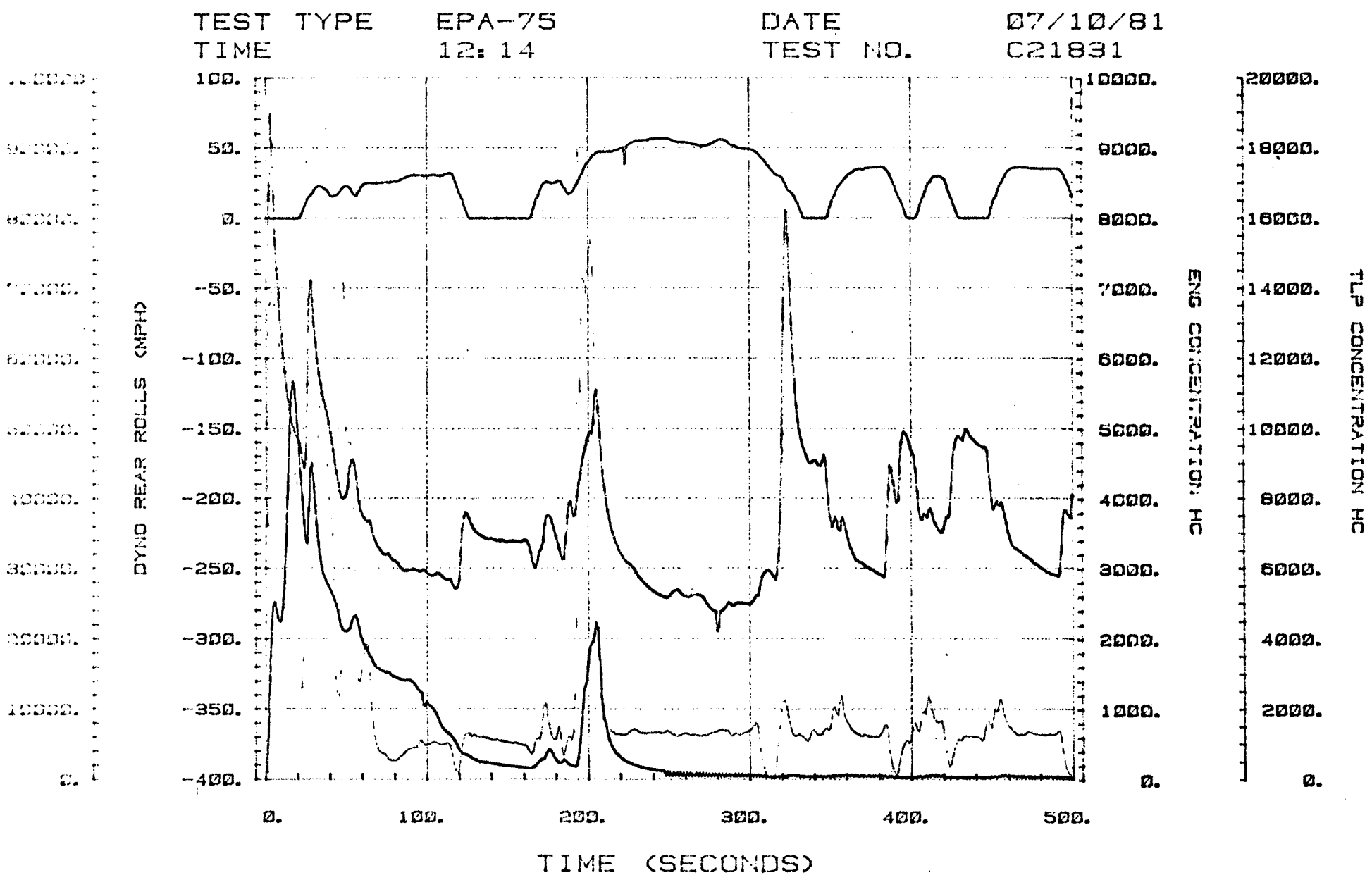
TLP Concentration: Exhaust sampled at tailpipe, after catalytic convertor

HC = Hydrocarbons

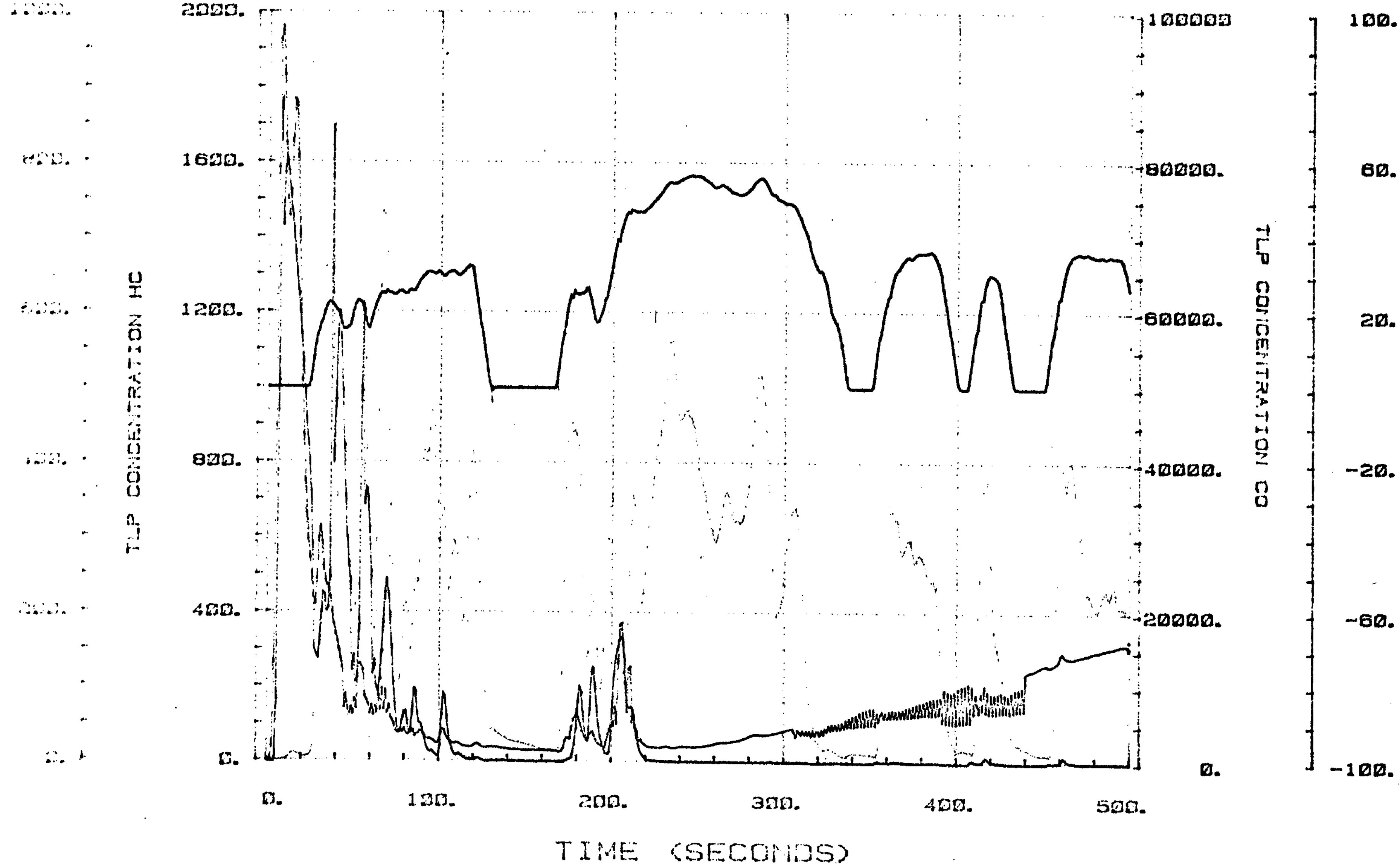
CO = Carbon Monoxide

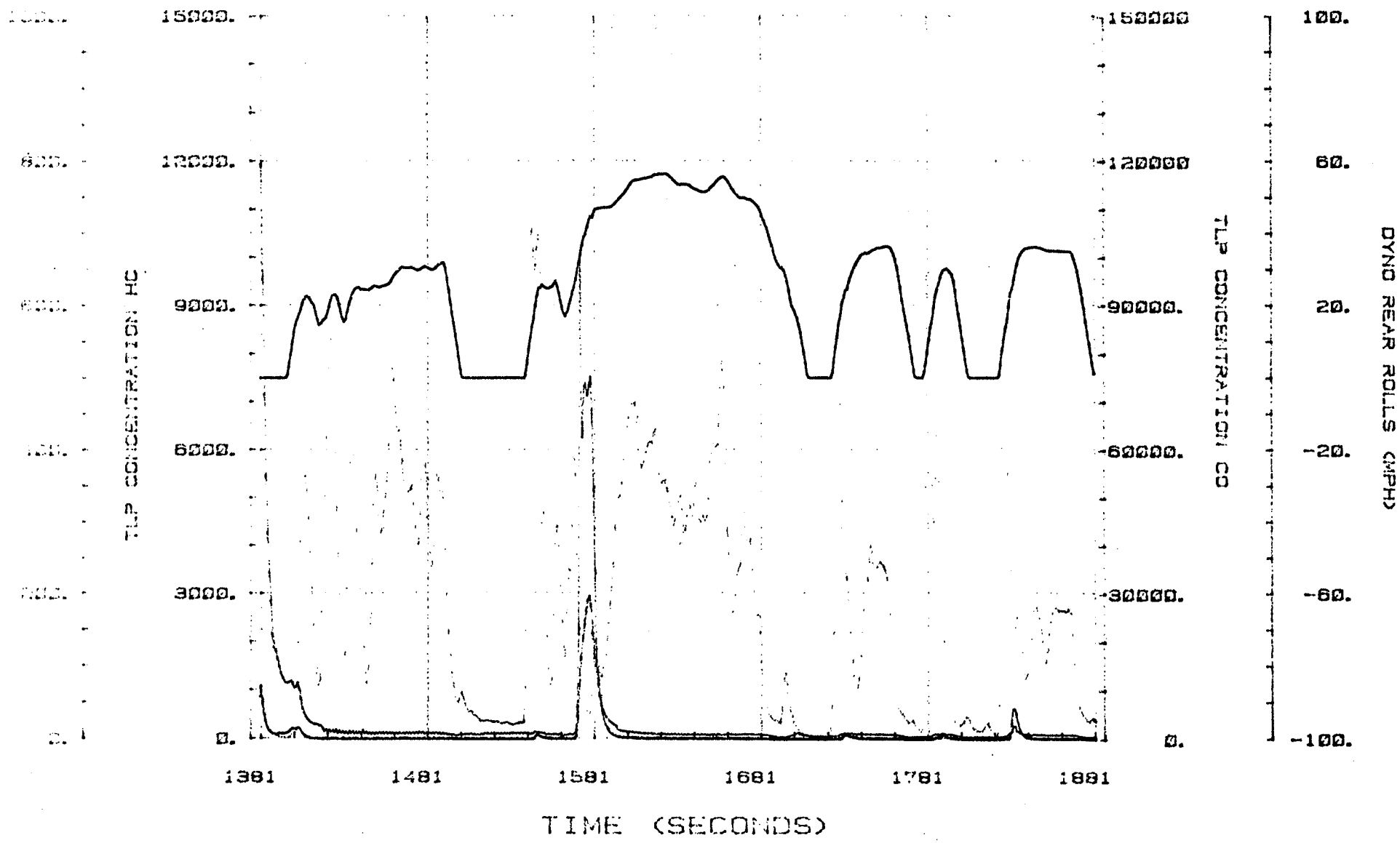
NOX = Oxides of Nitrogen

All emission concentrations reported in parts per million (ppm).

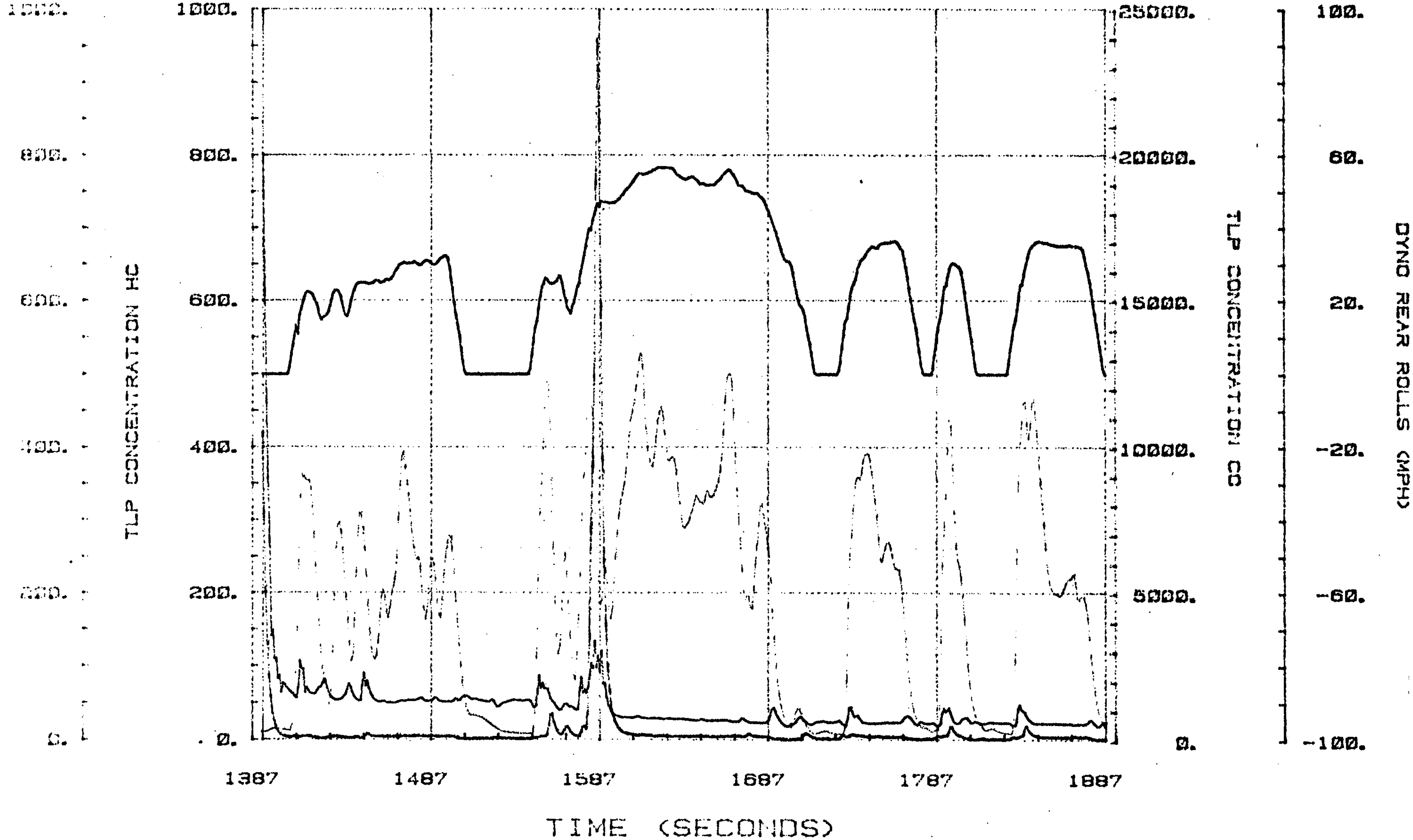

TEST TYPE EPA-75
TIME 12:14
DATE 07/10/81
TEST NO. C21831
DYNO REAR ROLLS (MPH)
ENG CONCENTRATION HC
TLP CONCENTRATION HC
TIME (SECONDS)
100.
50.
0.
-50.
-100.
-150.
-200.
-250.
-300.
-350.
-400.
10000.
9000.
8000.
7000.
6000.
5000.
4000.
3000.
2000.
1000.
0.
20000.
18000.
16000.
14000.
12000.
10000.
8000.
6000.
4000.
2000.
0.
0.
100.
200.
300.
400.
500.

TEST TYPE EPA-75 DATE 07/14/81
TIME 13:08 TEST NO. C21843

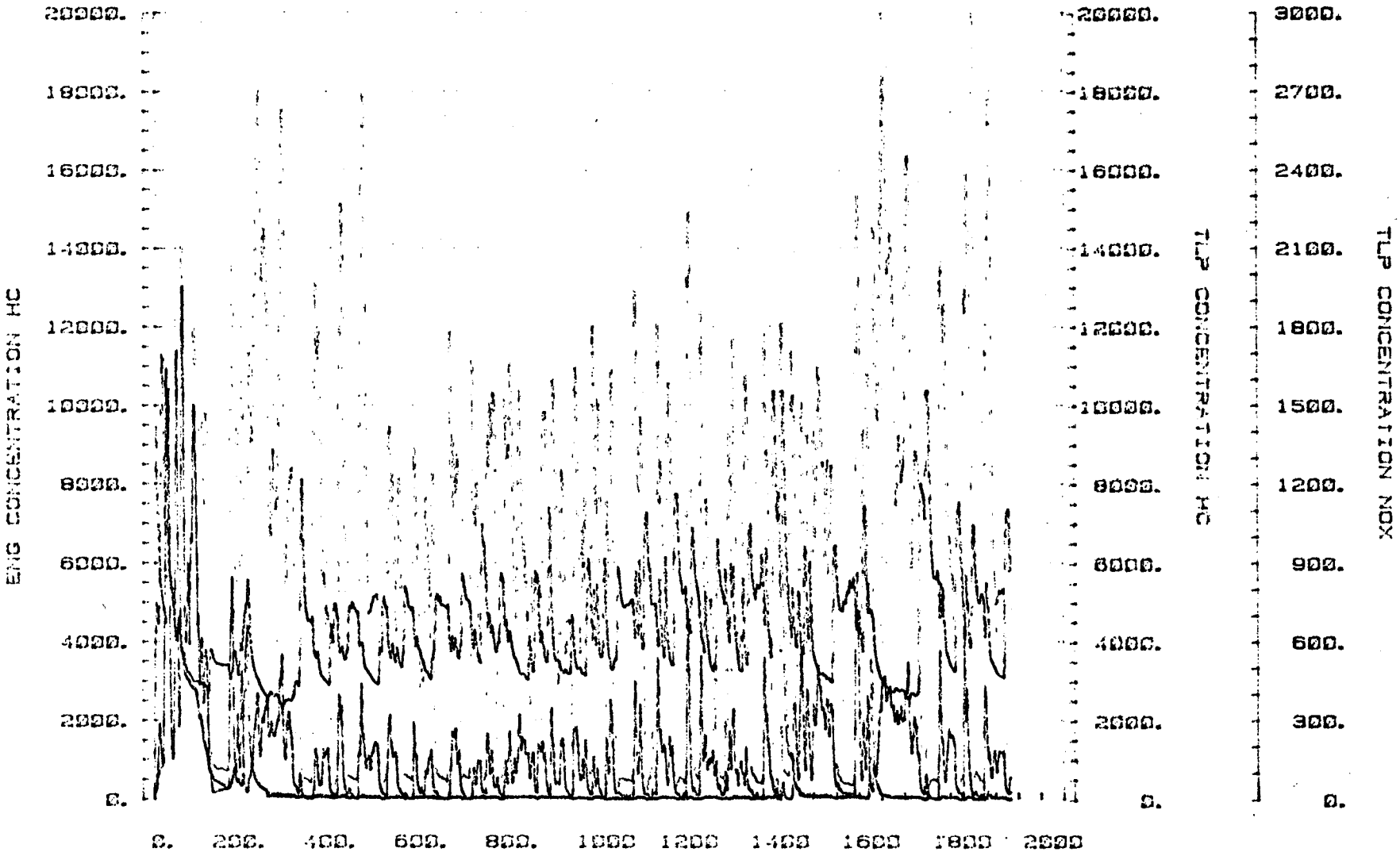



TEST TYPE EPA--75
TIME 12: 14
DATE 07/10/81
TEST NO. C21831
15000.
12000.
9000.
6000.
3000.
0.
TLP CONCENTRATION HC
150000
120000
90000.
60000.
30000.
0.
TLP CONCENTRATION CO
100.
60.
20.
-20.
-60.
-100.
DYNO REAR ROLLS (MPH)
1381
1481
1581
1681
1781
1881
TIME (SECONDS)

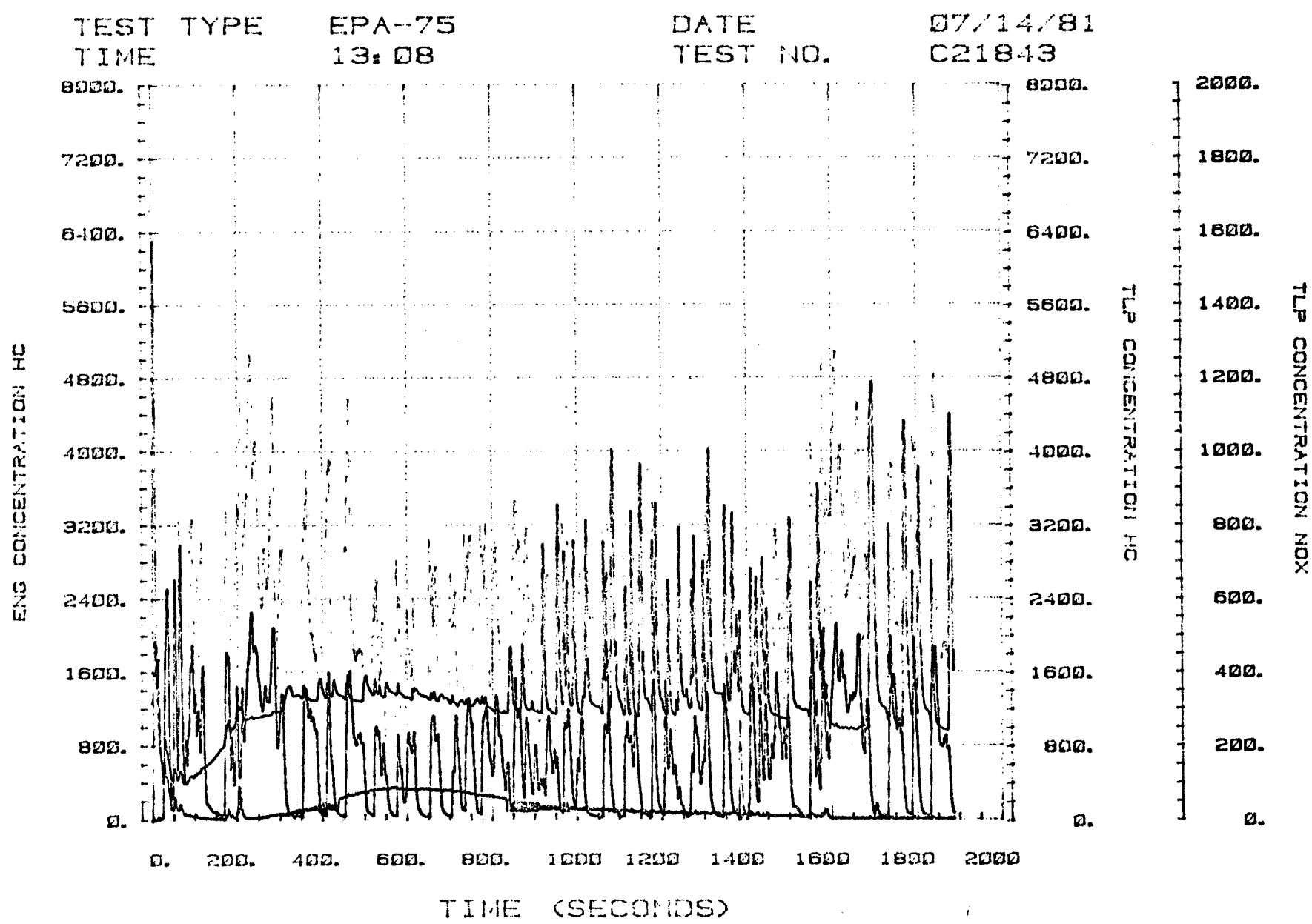
TEST TYPE EPA-75   DATE 07/14/81
TIME 13:08   TEST NO. C21843



Gasoline., Catalyst Efficiency



Methanol - catalyst efficiency



Appendix IV

BTU adjusted equivalent fuel consumption calculations.

Gasoline: (43.5 MJ/kg)(.74 kg/L) = 32.19 MJ/L

Ethanol: (26.8 MJ/kg)(.79 kg/L) = 21.17 MJ/L

Methanol: (19.7 MJ/kg)(.79 kg/L) = 15.56 MJ/L

Ratio, Ethanol to gasoline $\frac{21.17}{32.19} = .658$

Ratio, Methanol to gasoline $\frac{15.56}{32.19} = .483$

MJ = Megajoule

1MJ = 10^6 Joules = 948 BTU

L = Liter

1 Liter = 0.26 Gal.

Appendix V

Computer Printouts of Data from EPA Standard Emissions and Fuel Economy Tests

Test	Description
1	Gasoline, Highway Fuel Economy Test
2	Ethanol, Highway Fuel Economy Test
3	Methanol, Highway Fuel Economy Test
4	Gasoline, 3-Phase Full Test Procedure
5	Methanol, 3-Phase Full Test Procedure

TEST SUMMARY 2:14 PM TUE., 14 JULY, 1981

PRE - TEST

CVS 3 Phase Methanol

TEST NUMBER	:DC1343	BARO (MMHG)	:626.9
WET BULB (DEG. F)	:55.94	DRY BULB (DEG.F)	:76.25
MAKE/MODEL	:DAISUN/200 SX	VEHICLE NUMBER	:153
ODOMETER	:247	OPERATOR/DRIVER	:BRIAN WINDECKER
ENGINEER	:CARL MACCARLEY	COMMENTS	:COLD START
COMMENTS	:METHANOL	SHIFT DATA TABLE #	:241
REQUESTED INERTIA	:2075	REQUESTED ACT HP	:9.6
FUEL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:Z-20	FUEL SYSTEM	:METHANOL
TANK CAPACITY	:/	TIRE PRESSURE	:45 PSI

		HC	CO	CO2	NOX	F/E	
TAILPIPE GRAMS	PHASE 1	.407	27.819	1085.203	1.972	28.162	
	PHASE 2	.557	.903	1181.608	1.239	28.896	
	PHASE 3	.111	3.561	969.022	1.688	32.647	
ENGINE GRAMS	PHASE 1	3.090	44.728	1066.755	4.263		
	PHASE 2	4.303	27.065	1170.220	3.299		
	PHASE 3	3.822	25.557	948.687	4.052		
SAMPLE CONC.	PHASE 1	50.897	299.282	.807	36.974		
	PHASE 2	6.157	3.842	.502	14.595		
	PHASE 3	7.628	49.468	.721	32.473		
BKGND. CONC.	PHASE 1	5.519	.148	.021	-.249		
	PHASE 2	5.352	.215	.021	-.219		
	PHASE 3	5.662	1.216	.027	-.184		
MDL. COR. GR	PHASE 1	.035	2.354	76.869	.133		
	PHASE 2	.062	.093	132.261	.137		
	PHASE 3	.010	.203	76.561	.122		
BAG GRAMS	PHASE 1	1.871	26.581	1079.523	4.485		
	PHASE 2	.131	.526	1182.642	3.093		
	PHASE 3	.100	4.077	960.335	3.901		
BAG GR/MI	PHASE 1	.522	7.420	301.334	1.252	28.239	13.066
	PHASE 2	.034	.155	306.911	.803	28.916	13.343
	PHASE 3	.028	1.138	268.053	1.089	32.915	15.182
WEIGHTED GM/MI		.133	1.930	295.035	.974	29.761	13.741

Methanol, 3 Phase

TEST PARAMETER	PHASE 1	PHASE 2	PHASE 3
DRIVER UTILS. (SEC.)	0.0	0.0	0.0
NOX CORR FACTOR	.8832	.8832	.8832
DILUTION FACTOR	15.916	26.618	18.428
CVS VOLUME (FT3) ✓	2457.031	4202.329 ✓	2432.506 ✓
AVE CVS PRES. (MMHG)	620.1	620.2	620.2
AVE CVS TEMP (DEG. F)	75.1	77.1	80.8
ACTUAL DIST (MI.)	3.580	3.850	3.580
AUXILLIARY SIGNAL #1	8.248	8.388	8.692
AUXILLIARY SIGNAL #2	.114	.110	.109
AUXILLIARY SIGNAL #3	-.662	-.464	-.43
AUXILLIARY SIGNAL #4	5.221	5.221	5.221
AUXILLIARY SIGNAL #5	78.619	79.401	81.180
AUXILLIARY SIGNAL #6	82.067	83.147	84.095

02 ENVIRONMENTAL TESTING CORPORATION
HWFET - WITHOUT WARM
10 JUL 81 13:43

GASOLINE HWFET

TEST RUN NUMBER C21832
PRE - TEST

TEST NUMBER	:C21832	BARO (MMHG)	:626.1
WET BULB (DEG. F)	:62.38	DRY BULB (DEG.F)	:75.13
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:152
ODOMETER	:128	OPERATOR/DRIVER	:MIKE CARTER
ENGINEER	:CARL MACCARLEY	COMMENTS	:HWFET(BAG ONLY)
COMMENTS	:1 BAG (SITE #2)	SHIFT DATA TABLE #	:249
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FUEL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:Z 20	FUEL SYSTEM	:CLEAR
TANK CAPACITY	:402=5.6 US GAL	TIRE PRESSURE	:45 PSI

HORSEPOWER
ROADLOAD 6.9
FRONT ROLL FRICTION 2.7
TOTAL 9.6

REAR ROLL FRICTION .2

65 THE CORRECT DYNO SETTINGS SHOULD BE 2875LBS. INERTIA AND 6.9 PAU HP

BACKGROUND CONCENTRATIONS

HC	CO	CO2	NOX
6.5459	-.1066	.02007	-.2431

START TIME: 13:47:04

PHASE 1 ENDED AT 13:59:49

TEST TIME: 765.20 SEC

BAG READINGS FOR PHASE 1

UNCORRECTED BAG SNIFF READINGS

HC -1	CO -1	CO2 -1	NOX -2
17.587	29.121	1.2801	36.218

ZERO/SPAN CALIBRATION

RANGE	HC 1	CO 1	CO2 1	NOX 2
ZERO CONC	.43402	.38794	-.0037	.04986
ZERO SPEC	.56607	-.3592	.00144	-.1502
% OFFSET	.44015	-1.494	.51262	-.2001
SPAN CONC	32.382	46.676	1.8663	92.711
SPAN SPEC	32.221	46.534	1.8704	92.352
% OFFSET	-.5364	-.2837	.41277	-.3593

BAG ANALYSIS

	HC	CO	CO2	NOX
SAMPLE	19.860	32.522	1.3274	36.902
ST DEV(V)	.00106	.00170	.00049	.00129
BACKGROUND	6.5026	-.0296	.02104	-.4062
ST DEV(V)	.00053	.00114	.00040	.00073

BAG READ COMPLETED AT 14: 2:59

TEST SUMMARY 2:03 PM FRI., 10 JULY, 1981

PRE - TEST

TEST NUMBER	:C21032	BARO (MMHG)	:626.1
WET BULB (DEG. F)	:62.38	DRY BULB (DEG.F)	:75.13
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:152
DYNOMETER	:198	OPERATOR/DRIVER	:MIKE CARTER
ENGINEER	:CARL MACCARLEY	COMMENTS	:HARTT(BAG ONLY)
COMMENTS	:1 BAG (SITE #2)	SHIFT DATA TABLE #	:249
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FUEL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:Z 20	FUEL SYSTEM	:CLEAR
TANK CAPACITY	:40Z=5.6 US GAL	TIRE PRESSURE	:45 PSI

	HC	CO	CO2	NOX	F/E
SAMPLE CONC. PHASE 1	19.860	32.522	1.327	36.902	
BKGND. CONC. PHASE 1	6.503	-.030	.021	-.402	
BAG GRAMS PHASE 1	.836	3.921	2477.891	7.566	
BAG GR/MI PHASE 1	.082	.382	241.735	.738	36.624

GAS

Mi/gal actual fuel used

Hwy Test

TEST PARAMETER	PHASE 1
DRIVER VIOLS. (SEC.)	0.0
NOX CORR FACTOR	1.0271
DILUTION FACTOR	10.056
CVS VOLUME (FT3)	3654.592
AVE. CVS PRES. (MMHG)	619.4
AVE CVS TEMP (DEG. F)	86.3
ACTUAL DIST (MI.)	10.242
AUXILLIARY SIGNAL #1	0.000
AUXILLIARY SIGNAL #2	0.000
AUXILLIARY SIGNAL #3	0.000
AUXILLIARY SIGNAL #4	0.000
AUXILLIARY SIGNAL #5	0.000
AUXILLIARY SIGNAL #6	0.000

ETHANOL HWFET

02 ENVIRONMENTAL TESTING CORPORATION
HWFET - WITHOUT WARM
10 JUL 81 14:07

TEST RUN NUMBER C21833
PRE - TEST

TEST NUMBER	:C21033	BARO (MMHG)	:626.2
WET BULB (DEG. F)	:62.24	DRY BULB (DEG.F)	:74.69
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:152
ODOMETER	:209	OPERATOR/DRIVER	:MIKE CARTER
ENGINEER	:CARL MACCARLEY	COMMENTS	:HWFET(BAG ONLY)
COMMENTS	:1 BAG (SITE #2)	SHIFT DATA TABLE #	:249
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FUEL TYPE INDEX	:3 - 85% ETHANOL	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:2 20	FUEL SYSTEM	:CLEAR
TANK CAPACITY	:40%=5.6 US GAL	TIRE PRESSURE	:45 PSI

HORSEPOWER	
ROAD LOAD	6.9
FRONT ROLL FRICTION	2.7
TOTAL	9.6

REAR ROLL FRICTION .2

THE CORRECT DYNO SETTINGS SHOULD BE 2875LBS. INERTIA AND 6.9 PAU HP

89

BACKGROUND CONCENTRATIONS

HC	CO	CO2	NOX
6.4209	-.2029	.02041	-.1633

START TIME: 14:10:28

PHASE 1 ENDED AT 14:23:13

TEST TIME: 765.18 SEC

BAG READINGS FOR PHASE 1

UNCORRECTED BAG SNIFF READINGS

HC -1	CO -1	CO2 -1	NOX -2
9.0210	7.7399	1.1953	49.545

ZERO/SPAN CALIBRATION

RANGE	HC 1	CO 1	CO2 1	NOX 2
ZERO CONC	.35012	.06612	-.0040	.62965
ZERO SPEC	.56607	-.3592	.00144	-.1502
% OFFSET	.71983	-.8505	.54312	-.7799
SPAN CONC	32.320	46.490	1.8654	92.193
SPAN SPEC	32.221	46.534	1.8704	92.352
% OFFSET	-.3576	.08620	.50356	.15924

BAG ANALYSIS

	HC	CO	CO2	NOX
SAMPLE	9.5864	7.6610	1.2389	50.779
ST DEV(V)	.00035	.00069	.00057	.00128
BACKGROUND	6.5507	.25301	.02197	-.9802
ST DEV(V)	.00037	.00118	.00030	.00087

BAG READ COMPLETED AT 14:26:23

TEST SUMMARY 2:26 PM FRI., 10 JULY, 1981

PRE - TEST

TEST NUMBER	:C21833	BARO (MMHG)	:626.2
WET BULB (DEG. F)	:62.24	DRY BULB (DEG.F)	:74.69
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:152
ODOMETER	:209	OPERATOR/DRIVER	:KIKE CARTER
ENGINEER	:CARL MACGARLEY	COMMENTS	:UNFET(BAG ONLY)
COMMENTS	:1 BAG (SITE #2)	SHIFT DATA TABLE #	:249
REQUESTED INERTIA	:2075	REQUESTED ACT HP	:9.6
FULL TYPE INDEX	:3 — Ethanol	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5-SPEED
ENGINE DISP/# CYL.	:Z 20 1952 cc, 4 cyl.	FUEL SYSTEM	:CLEAR
TANK CAPACITY	:40Z=5.6 US GAL	TIRE PRESSURE	:45 PSI

Ethanol Hwy Test

	HC	CO	CO2	NOX	F/E
SAMPLE CONC. PHASE 1	2.586	7.661	1.239	50.779	
BKGND. CONC. PHASE 1	6.551	.254	.022	.280	
BAG GRAMS PHASE 1	.217	.892	2301.035	10.455	
BAG GR/MI PHASE 1	.021	.087	224.812	1.021	38.883

Wrong ETH. Mi/gal. actual fuel used

Actually it is 25.3 mi/gal

TEST PARAMETER	PHASE 1
DRIVER VIOLS. (SEC.)	0.0
NOX-CORR FACTOR	1.0270
DILUTION FACTOR	10.801
CVS VOLUME (FT3)	3642.881
AVE CVS PRES. (MMHG)	619.4
AVE CVS TEMP (DEG. F)	69.
ACTUAL DIST (MI.)	10.227
AUXILIARY SIGNAL #1	0.00
AUXILIARY SIGNAL #2	0.000
AUXILIARY SIGNAL #3	0.000
AUXILIARY SIGNAL #4	0.000
AUXILIARY SIGNAL #5	0.000
AUXILIARY SIGNAL #6	0.000

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02 ENVIRONMENTAL TESTING CORPORATION
HWFET - WITHOUT WARM
14 JUL 81 14:22

Highway, Methanol

TEST RUN NUMBER C21844
PRE - TEST

METHANOL HWFET

TEST NUMBER	:C21844	BARO (MMHG)	:626.5
WET BULB (DEG. F)	:58.18	DRY BULB (DEG.F)	:76.45
MAKE/MODEL	:DATSUN/280 SX	VEHICLE NUMBER	:153
ODOMETER	:379	OPERATOR/DRIVER	:BRIAN WINDECKER
ENGINEER	:CARL MACCARLEY	COMMENTS	:HWFET
COMMENTS	:METHANOL	SHIFT DATA TABLE #	:241
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FULL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:Z-20	FUEL SYSTEM	:METHANOL
TANK CAPACITY	:/	TIRE PRESSURE	:45 PSI

HORSEPOWER

ROADLOAD	6.9
FRONT ROLL FRICTION	2.7
TOTAL	9.6

REAR ROLL FRICTION .2

THE CORRECT DYNO SETTINGS SHOULD BE 2875LBS. INERTIA AND 6.9 PAU HP

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BACKGROUND CONCENTRATIONS

HC	CO	CO2	NOX
5.5669	.30266	.02037	-.3262

START TIME: 14:25:32

PHASE 1 ENDED AT 14:38:18

TEST TIME: 765.16 SEC

BAG READINGS FOR PHASE 1

UNCORRECTED BAG SNIFF READINGS

HC -1	CO -1	CO2 -1	NOX -2
6.3267	7.8184	1.1405	66.569

ZERO/SPAN CALIBRATION

RANGE	HC 1	CO 1	CO2 1	NOX 2
ZERO CONC	.52618	-.0829	.00175	.29484
ZERO SPEC	.56607	-.3592	.00144	-.1502
% OFFSET	.13296	-.5526	-.0305	-.4451
SPAN CONC	32.254	47.012	1.8685	92.728
SPAN SPEC	32.221	46.534	1.8704	92.352
% OFFSET	-.1101	-.9564	.10554	-.3757

BAG ANALYSIS

	HC	CO	CO2	NOX
SAMPLE	6.9904	8.0056	1.1768	62.876
ST DEV(V)	.00037	.00152	.00057	.00177
BACKGROUND	5.4268	.66359	.02094	-.6863
ST DEV(V)	.00043	.00113	.00026	.00067

BAG READ COMPLETED AT 14:41:27

TEST SUMMARY 2:41 PM TUE., 14 JULY, 1981

PRE - TEST

TEST NUMBER	:C21044	BARO (MMHG)	:626.5
WET BULB (DEG. F)	:58.18	DRY BULB (DEG.F)	:76.45
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:153
ODOMETER	:379	OPERATOR/DRIVER	:BRIAN WINDECKER
ENGINEER	:CARL MACCARLEY	COMMENTS	:INJET
COMMENTS	:METHANOL	SHIFT DATA TABLE #	:241
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FULL TYPE INDEX	:1	ENGINE FAMILY	:/
TYPE FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:Z-20	FUEL SYSTEM	:METHANOL
TANK CAPACITY	:/	TIRE PRESSURE	:45 PSI

	HC	CO	CO2	NOX	F/E
SAMPLE CONC. PHASE 1	6.990	8.006	1.177	62.876	
BKGND. CONC. PHASE 1	5.427	.664	.021	=.686	
BAG GRAMS PHASE 1	.122	.892	2194.940	11.591	
BAG GR/MI PHASE 1	.012	.087	213.934	1.130	~~11.456~~ 19.146

Methanol
Hwy Test

TEST PARAMETER	PHASE 1
DRIVER VIOLS. (SEC.)	0.0
NOX-CORR FACTOR	.9225
DILUTION FACTOR	11.372
CVS VOLUME (FTS)	3658.594
AVE CVS PRES. (MMHG)	620.4
AVE CVS TEMP (DEG. F)	86.1
ACTUAL DIST (MI.)	10.252
AUXILIARY SIGNAL #1	0.000
AUXILIARY SIGNAL #2	0.000
AUXILIARY SIGNAL #3	0.000
AUXILIARY SIGNAL #4	0.000
AUXILIARY SIGNAL #5	0.000
AUXILIARY SIGNAL #6	0.000

02 ENVIRONMENTAL TESTING CORPORATION
EPA - 75
10 JUL 81 12:14

GASOLINE FTP

TEST RUN NUMBER C21831
PRE - TEST

TEST NUMBER	:C21831	BARO (MMHG)	:626.6
WET BULB (DEG. F)	:61.50	DRY BULB (DEG.F)	:73.91
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:152
DYNAMOMETER	:187	OPERATOR/DRIVER	:MIKE CARTER
ENGINEER	:CARL MACCARLEY	COMMENTS	:COLD START(CONV. EFF.)
COMMENTS	:3 BAGS (SITE #2)	SHIFT DATA TABLE #	:241
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FUEL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:2 20	FUEL SYSTEM	:CLEAR
TANK CAPACITY	:40%=5.6 US GAL	TIRE PRESSURE	:45 PSI

HORSEPOWER

ROADLOAD	6.9
FRONT ROLL FRICTION	2.7
TOTAL	9.6

REAR ROLL FRICTION .2

THE CORRECT DYNO SETTINGS SHOULD BE 2875LBS. INERTIA AND 6.9 PAU HP

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BACKGROUND CONCENTRATIONS

HC	CO	CO2	NOX
6.7606	1.0194	.01682	-.0101

START TIME: 12:39:24 CRANK TIME: .82 S

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********** 1975 EPA CITY TEST **********
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CONVERTER EFFICIENCY
OXYGEN AIR TO FUEL RATIO

MD	TIME (S)		CONCENTRATIONS HC (PPM)	CO (PPM)	CO2 (%)	NOX (PPM)	CO2T (%)	O2 (%)	MODAL GRAMS HC	CO	CO2	NOX	VOL (F^3)	D/V (SEC)	F/E (MPG)	A/F	AUX1 -CONV EFF (%)- HC	AUX2 CO	AUX3 NOX	AUX4	AUX5	AUX6
H	1.0	TP	214.90	39.428	.1408	2.795	.029		.0017	.0006	.03018	.0001	.4953	0.000			12.81	.1846	-.814	5.221	78.80	83.0
		ENG	3631.7	50693.	1.177	171.7		14.5	.0294	.8225	.30215	.0047	.4953		.000	26.73	94.1	99.9	98.4			
I	20.0	TP	8135.1	52329.	10.57	170.0	.297		.3935	5.106	16.211	.0276	2.961	0.000			13.14	.1784	-.814	5.221	78.79	83.0
		ENG	5679.0	50327.	11.29	142.7		1.48	.2747	4.911	17.326	.0232	2.961		.525	12.84	-43.	-4.0	-19.			
A	11.0	TP	7922.8	36097.	12.57	1241.	1.15		.6544	6.014	32.923	.3447	5.055	0.000			13.35	.1776	-.814	5.221	78.80	83.1
		ENG	5836.2	35664.	12.68	1333.		.797	.4820	5.942	33.223	.3702	5.055		8.48	13.88	-36.	-1.2	6.9			
C	84.0	TP	3367.9	15638.	13.54	871.0	.912		1.580	14.80	201.41	1.374	28.71	0.000			12.26	.1824	-.763	5.221	78.81	83.0
		ENG	3581.9	15087.	13.63	1231.		1.02	1.600	14.20	202.84	1.942	28.71		22.8	14.27	6 0	-3.7	29.3			
D	10.0	TP	881.37	383.32	7.395	177.3	.450		.0405	.0391	11.859	.0301	3.095	0.000			12.63	.1868	-.671	5.221	78.80	82.9
		ENG	3402.9	4215.3	6.817	239.1		10.5	.1721	.4300	10.932	.0486	3.095		31.2	27.48	76.5	90.9	25.8			
CYCLE	1		DISTANCE = .6760 MI				TP	GR/MI	3.950	38.40	388.24	2.628	40.32	0.000								
							ENG	GR/MI	3.903	39.04	391.47	3.522	40.32		19.1	15.89	-1.2	1.62	25.4			
I	38.0	TP	420.47	159.27	13.84	36.90	.357		.0369	.0282	38.547	.0109	5.373	0.000			12.89	.1850	-.798	5.221	78.81	83.0
		ENG	3427.9	5371.5	14.04	147.2		1.26	.3009	.9513	39.099	.0434	5.373		.443	14.88	87.7	97.8	74.9			
A	42.0	TP	1622.1	25405.	12.40	271.0	1.30		.5816	10.38	141.82	.3267	21.95	0.000			12.92	.1855	-.417	5.221	78.80	83.0
		ENG	4160.2	34811.	11.95	1008.		2.49	1.492	25.18	135.90	1.215	21.95		15.0	14.26	61.0	27.0	73.1			
C	95.0	TP	412.94	1634.0	15.02	286.7	1.57		.3315	2.970	382.55	.7738	49.13	0.000			11.07	.1772	-.548	5.221	78.79	83.0
		ENG	2642.8	6934.7	14.24	1779.		.938	2.282	11.23	362.46	4.803	49.13		31.9	14.65	85.5	73.6	83.9			
D	33.0	TP	87.795	84.645	5.710	57.65	.260		.0116	.0224	23.909	.0256	8.081	0.000			7.763	.1646	-1.11	5.221	78.75	82.9
		ENG	3570.4	4479.8	4.823	220.6		8.08	.4714	1.193	20.194	.0979	8.081		99.9	27.65	97.5	98.1	73.9			
CYCLE	2		DISTANCE = 1.961 MI				TP	GR/MI	.4905	10.91	298.91	.5799	84.53	0.000								
							ENG	GR/MI	2.319	19.67	284.43	3.141	84.53		27.5	16.67	78.8	44.5	81.5			
I	13.0	TP	83.618	89.130	13.88	2.642	.196		.0015	.0032	7.9425	.0002	1.104	0.000			9.026	.1612	-1.22	5.221	78.75	82.9
		ENG	4559.6	6677.1	14.07	111.1		1.15	.0823	.2430	8.0543	.0067	1.104		.271	14.64	98.2	98.7	97.6			
A	20.0	TP	108.28	389.76	14.85	94.40	1.38		.0165	.1195	71.601	.0482	9.301	0.000			8.513	.1636	-1.24	5.221	78.76	82.9
		ENG	3568.9	8635.4	13.81	1601.		1.31	.5412	2.647	66.570	.6101	9.301		15.3	14.75	97.0	95.5	94.1			
C	17.0	TP	102.39	162.65	15.06	159.7	1.04		.0099	.0319	46.224	.0520	5.925	0.000			9.184	.1636	-1.26	5.221	78.76	82.9
		ENG	3806.3	6320.6	14.27	786.9		.957	.2910	1.234	43.808	.2561	5.925		32.1	14.67	96.6	97.4	79.7			
D	14.0	TP	68.196	82.800	6.360	25.31	.242		.0031	.0077	9.2894	.0039	2.819	0.000			9.550	.1606	-1.28	5.221	78.76	83.0
		ENG	4553.3	3862.8	6.381	79.08		11.1	.2097	.3588	9.3206	.0122	2.819		63.0	28.87	98.5	97.9	68.0			
CYCLE	3		DISTANCE = .3684 MI				TP	GR/MI	.0042	.4402	366.58	.2831	19.15	0.000								

			ENG	GR/MI	3.051	12.17	346.75	2.967	19.15			23.7	17.79	97.2	96.4	90.5				
I	5.0	TP	71.413	65.764	11.61	20.30	.483		.0011	.0020	5.4901	.0010	.9123	0.000			8.780	.1641	-.936	5.221	78.76	83.0
		ENG	4033.4	7006.6	13.68	191.2		1.55	.0688	.2107	6.4058	.0096	.9123		.568	14.89	98.5	99.1	89.4			
A	13.0	TP	99.318	432.93	14.53	298.7	1.34		.0097	.0854	45.855	.0982	5.984	0.000			8.752	.1568	-1.03	5.221	78.76	83.0
		ENG	3790.7	9425.6	13.59	1853.		1.50	.3706	1.859	42.137	.6092	5.984		13.1	14.82	97.4	95.4	83.9			
D	14.0	TP	81.176	192.38	10.75	38.20	.331		.0031	.0146	12.829	.0048	2.304	0.000			8.703	.1573	-.886	5.221	78.77	83.0
		ENG	4153.3	5550.2	10.03	486.6		7.25	.1563	.4215	11.978	.0616	2.304		49.3	20.32	98.0	96.5	92.1			
CYCLE	4		DISTANCE =	.1412	MI	TP	GR/MI		.0979	.7220	448.70	.7366	9.200	0.000								
						ENG	GR/MI		4.218	17.64	428.93	4.817	9.200		18.9	17.24	97.7	95.9	84.7			
I	18.0	TP	68.969	79.487	12.98	11.00	.264		.0023	.0054	13.845	.0013	2.058	0.000			9.023	.1544	-1.10	5.221	78.77	83.0
		ENG	4789.8	6661.1	13.91	144.0		1.30	.1611	.4518	14.831	.0163	2.058		.361	14.71	98.6	98.8	92.3			
A	17.0	TP	100.50	431.39	14.83	244.8	1.61		.0150	.1298	70.177	.1228	9.130	0.000			8.731	.1613	-1.02	5.221	78.77	83.1
		ENG	3748.1	8827.0	13.70	2030.		1.39	.5591	2.656	64.824	1.018	9.130		14.1	14.77	97.3	95.1	87.9			
C	27.0	TP	84.599	161.64	15.68	170.7	.951		.0119	.0460	67.521	.0010	8.638	0.000			8.244	.1613	-.980	5.221	78.78	83.0
		ENG	3071.6	6480.2	14.25	767.4		.965	.4335	1.845	63.767	.3642	8.638		34.7	14.66	97.2	97.5	77.8			
D	14.0	TP	49.892	84.476	5.796	35.30	.230		.0024	.0081	8.7791	.0057	2.923	0.000			8.322	.1616	-1.08	5.221	78.78	83.0
		ENG	4564.1	3999.6	6.229	95.64		11.5	.2180	.3853	9.4360	.0154	2.923		59.0	29.63	98.9	97.9	63.1			
CYCLE	5		DISTANCE =	.4496	MI	TP	GR/MI		.0704	.4212	356.56	.4487	22.75	0.000								
						ENG	GR/MI		3.051	11.87	339.96	3.144	22.75		24.1	17.46	97.7	96.5	85.1			

COLD TRANSIENT MODAL SUMMARY

GRAMS		HC	CO	CO2	NOX	VOL	D/V	DIST	F/E	A/F	--CONV. EFF.--		
IDLE	TP	.437	5.15	82.	.041	12.9	0.0	.00					
	ENG	.917	7.60	86.	.104	12.9			159.2	14.51	52.3	32.3	40.5
ACCEL	TP	1.277	24.73	301.	.941	51.4	0.0	.65					
	ENG	3.445	38.29	343.	4.030	51.4			14.35	14.38	62.9	35.4	76.7
CRUISE	TP	1.933	17.85	698.	2.281	92.4	0.0	2.42					
	ENG	4.687	28.59	673.	7.365	92.4			29.35	14.51	58.8	37.6	69.0
DECEL	TP	.061	.09	67.	.070	19.2	0.0	.53					
	ENG	1.237	2.79	62.	.228	19.2			69.80	26.95	95.1	96.7	69.2
TOTAL	TP	3.708	47.81	1207.	3.332	175.9	0.0	3.60					
	ENG	10.276	77.26	1163.	11.727	175.9			24.69	16.57	63.9	38.1	71.4

EQUIVALENT MASS BAG RESULTS

GRAMS/MILE

TP	1.031	13.30	336.	.927
ENG	2.858	21.49	324.	3.261

MD	TYP	TIM (S)	HC (PPM)	CO (PPM)	CO2 (%)	NOX (PPM)	CO2T (%)	O2 (%)	HC	CO	CO2	NOX	VOL (F^3)	D/V (SEC)	F/E (MPG)	A/F	AUX1 -CONV HC	AUX2 EFF CO	AUX3 (%)- NOX	AUX4	AUX5	AUX6
I		5.0	TP	52.686	68.568	11.71	13.03	.311		.0086	.0016	4.3558	.0005	.7176	0.000			8.543	.1563	-1.22	5.221	78.81	83.1
	ENG		4840.0	7377.7	13.41	123.4		1.81	.0568	.1745	4.9365	.0049	.7176		.441	15.03	98.9	99.1	89.4			
A		19.0	TP	73.669	144.32	14.76	206.7	.803		.0078	.0275	44.288	.0657	5.790	0.000			8.318	.1568	-.867	5.221	78.80	83.1
	ENG		3736.0	7154.6	13.83	1119.		1.39	.3536	1.365	41.505	.3560	5.790		15.0	14.85	98.8	98.8	81.5			
C		14.0	TP	79.956	143.53	14.73	78.11	.615		.0040	.0144	23.383	.0131	3.052	0.000			8.449	.1581	-.938	5.221	78.79	83.1
	ENG		3590.3	6890.8	13.70	927.6		1.55	.1790	.6931	21.666	.1555	3.052		37.2	14.99	97.8	97.9	91.6			
D		9.0	TP	51.748	85.967	9.478	16.93	.215		.0010	.0032	5.5746	.0012	1.135	0.000			8.727	.1563	-.678	5.221	78.80	83.0
	ENG		4797.3	5146.6	8.661	174.5		8.99	.0890	.1925	5.0944	.0109	1.135		54.6	22.87	98.9	98.3	89.1			
CYCLE		1	DISTANCE = .2830 MI				TP	GR/MI	.0403	.2251	372.72	.3972	10.70	0.000								
							ENG	GR/MI	3.262	11.66	352.20	2.535	10.70		23.3	16.45	98.2	98.1	84.7			
I		16.0	TP	50.266	73.802	12.89	7.532	.263		.0015	.0045	12.262	.0008	1.835	0.000			9.217	.1579	-.814	5.221	78.80	83.1
	ENG		4864.6	6810.5	13.88	159.8		1.40	.1459	.4119	13.125	.0160	1.835		.360	14.77	99.0	98.9	95.3			
A		8.0	TP	71.015	126.18	14.56	201.8	.885		.0029	.0103	18.691	.0275	2.476	0.000			8.217	.1590	-.916	5.221	78.80	83.1
	ENG		4044.2	8140.8	13.66	1156.		1.71	.1636	.6645	17.532	.1572	2.476		12.0	15.00	98.2	98.5	82.5			
C		35.0	TP	77.934	141.41	14.96	94.88	.732		.0113	.0412	68.537	.0461	8.839	0.000			8.289	.1589	-.831	5.221	78.81	83.1
	ENG		3380.5	7329.8	14.04	822.8		1.18	.4082	2.135	64.311	.3991	8.839		24.6	14.74	97.7	98.1	86.5			
D		9.0	TP	60.257	137.83	9.710	32.81	.240		.0012	.0055	6.1201	.0022	1.215	0.000			8.332	.1611	-.882	5.221	78.82	83.1
	ENG		4673.2	5123.4	8.757	265.5		8.85	.0928	.2052	5.5151	.0177	1.215		50.4	22.67	98.7	97.3	87.6			
CYCLE		2	DISTANCE = .2519 MI				TP	GR/MI	.0448	.2441	419.27	.3036	14.37	0.000								
							ENG	GR/MI	3.535	13.57	398.93	2.343	14.37		20.6	15.83	98.1	98.2	87.0			
I		25.0	TP	47.884	75.977	13.18	4.635	.215		.0019	.0060	16.292	.0006	2.386	0.000			8.116	.1568	-.724	5.221	78.83	83.1
	ENG		4939.3	6799.8	13.84	123.4		1.35	.1925	.5347	17.106	.0162	2.386		.301	14.73	99.0	98.9	96.2			
A		15.0	TP	70.270	137.08	14.78	167.6	1.05		.0062	.0243	41.257	.0496	5.388	0.000			7.792	.1585	-.760	5.221	78.82	83.1
	ENG		3972.5	7511.1	13.67	1342.		1.65	.3477	1.334	38.164	.3971	5.388		14.1	15.00	98.2	98.2	87.5			
D		20.0	TP	64.123	118.76	11.93	125.2	.390		.0036	.0136	21.402	.0238	3.462	0.000			7.950	.1592	-.824	5.221	78.82	83.1
	ENG		4386.9	6237.9	11.42	734.4		5.67	.2482	.7119	20.494	.1397	3.462		40.7	18.31	98.5	98.1	83.8			
CYCLE		3	DISTANCE = .1682 MI				TP	GR/MI	.0694	.2608	469.36	.4400	11.24	0.000								
							ENG	GR/MI	4.699	15.34	450.41	3.287	11.24		18.2	15.99	98.5	98.3	86.6			
I		13.0	TP	41.963	73.538	13.06	4.694	.217		.0009	.0030	8.4861	.0003	1.254	0.000			7.658	.1569	-.469	5.221	78.83	83.1
	ENG		5065.1	6624.2	13.87	102.9		1.35	.1037	.2737	9.0092	.0071	1.254		.384	14.73	99.2	98.9	95.4			
A		22.0	TP	71.273	144.03	14.85	88.35	.833		.0073	.0300	48.578	.0306	6.312	0.000			7.880	.1568	-.721	5.221	78.84	83.1
	ENG		3887.5	6900.6	14.01	1104.		1.19	.4009	1.436	45.822	.3827	6.312		16.9	14.72	98.2	97.9	92.0			
D		12.0	TP	72.808	89.350	11.16	42.13	.301		.0021	.0052	10.149	.0041	1.755	0.000			7.871	.1584	-.729	5.221	78.86	83.1
	ENG		6031.1	6780.8	10.97	160.9		6.28	.1729	.3922	9.9742	.0155	1.755		31.5	18.66	98.8	98.7	73.8			
CYCLE		4	DISTANCE = .1334 MI				TP	GR/MI	.0772	.2861	503.88	.2625	9.320	0.000								
							ENG	GR/MI	5.079	15.75	485.83	3.038	9.320		16.9	15.72	98.5	98.2	91.4			

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A 18.0 TP   78.306 298.11 14.38 148.4 1.08      .0087 .0667 50.586 .0553 6.787 0.000          7.970 .1611 -.644 5.221 78.88 83.1
      ENG   4491.6 8483.7 13.47 1329.      1.70 .4981 1.898 47.370 .4957 6.787      15.3 14.93  98.3 96.5 88.8

D 21.0 TP   52.677 101.99 9.946 32.44 .382      .0036 .0142 21.737 .0075 4.218 0.000          8.012 .1590 -.630 5.221 78.88 83.1
      ENG   4783.9 6512.9 10.28 495.9      7.01 .3297 .9054 22.465 .1149 4.218      35.7 19.77  98.9 98.4 93.5

CYCLE   5     DISTANCE = .1895 MI TP   GR/MI   .0650 .4267 381.58 .3315 11.01 0.000
                                  ENG  GR/MI   4.367 14.79 368.45 3.221 11.01      21.9 17.54  98.5 97.1 89.7


A 17.0 TP   78.618 312.36 14.46 120.3 1.10      .0084 .0671 48.866 .0431 6.520 0.000          8.208 .1613 -.551 5.221 78.89 83.2
      ENG   4318.1 8439.0 13.42 1375.      1.79 .4592 1.814 45.338 .4926 6.520      16.1 15.01  98.2 96.3 91.3

C 163. TP   70.971 127.21 14.30 147.8 .675      .0462 .1670 295.08 .3233 39.83 0.000          8.479 .1521 -.623 5.221 78.93 83.3
      ENG   3765.6 6962.9 13.43 950.7      1.90 2.464 9.141 277.10 2.080 39.83      36.5 15.22  98.1 98.2 84.5

D 11.0 TP   38.423 76.357 9.526 67.65 .236      .0009 .0038 7.3018 .0056 1.495 0.000          8.446 .1502 -.721 5.221 79.00 83.4
      ENG   5332.6 5627.4 9.504 239.3      8.10 .1303 .2774 7.3646 .0197 1.495      45.9 21.19  99.3 98.6 71.7

CYCLE   6     DISTANCE = 1.360 MI TP   GR/MI   .0408 .1749 258.25 .2734 47.85 0.000
                                  ENG  GR/MI   2.244 8.257 242.43 1.906 47.85      33.9 15.54  98.2 97.9 85.7


A 18.0 TP   67.483 360.41 14.24 80.13 1.06      .0074 .0797 49.546 .0295 6.713 0.000          9.122 .1495 -.475 5.221 79.02 83.4
      ENG   4612.8 9079.6 13.50 1306.      1.63 .5059 2.009 46.975 .4816 6.713      13.9 14.84  98.5 96.8 93.9

C 32.0 TP   48.307 107.41 13.89 128.0 .539      .0051 .0231 46.953 .0459 6.522 0.000          9.217 .1495 -.680 5.221 79.04 83.4
      ENG   4043.5 6580.9 12.75 924.2      2.77 .4309 1.415 43.092 .3311 6.522      41.8 15.87  98.8 98.4 86.1

D 16.0 TP   42.309 80.092 12.97 48.82 .268      .0012 .0048 12.151 .0048 1.808 0.000          9.217 .1504 -.483 5.221 79.07 83.4
      ENG   4421.8 6212.6 12.40 245.8      3.74 .1306 .3702 11.617 .0243 1.808      52.8 16.60  99.0 98.7 80.1

CYCLE   7     DISTANCE = .3754 MI TP   GR/MI   .0348 .2866 282.39 .2138 15.04 0.000
                                  ENG  GR/MI   2.843 10.11 270.84 2.230 15.04      30.0 15.77  98.7 97.2 90.4


I 29.0 TP   35.850 67.255 13.42 13.64 .194      .0014 .0056 17.425 .0019 2.505 0.000          8.968 .1485 -.400 5.221 79.10 83.4
      ENG   4969.4 7362.9 13.73 97.55      1.44 .2034 .6079 17.818 .0134 2.505      .271 14.76  99.3 99.1 86.0

A 18.0 TP   72.370 149.92 14.70 233.4 1.05      .0075 .0320 49.290 .0829 6.469 0.000          8.661 .1500 -.644 5.221 79.12 83.4
      ENG   4802.4 7652.1 13.70 1463.      1.52 .5076 1.632 45.929 .5198 6.469      16.6 14.82  98.5 98.0 84.0

D 38.0 TP   41.493 89.347 10.47 30.82 .241      .0026 .0113 20.859 .0065 3.843 0.000          8.385 .1475 -.488 5.221 79.15 83.4
      ENG   5632.9 6525.2 10.55 249.6      5.16 .3537 .8265 21.013 .0527 3.843      43.3 17.93  99.3 98.6 87.7

CYCLE   8     DISTANCE = .2079 MI TP   GR/MI   .0557 .2349 421.14 .4392 12.82 0.000
                                  ENG  GR/MI   5.120 14.74 407.62 2.818 12.82      19.9 16.81  98.9 98.4 84.4


A 22.0 TP   70.401 135.55 14.77 245.7 .885      .0077 .0308 51.360 .0906 6.712 0.000          7.907 .1488 -.647 5.221 79.20 83.4
      ENG   4310.7 6814.0 13.93 1088.      1.35 .4728 1.508 48.455 .4010 6.712      15.7 14.79  98.4 98.0 77.4

C 19.0 TP   72.212 131.81 14.79 142.6 .644      .0051 .0187 33.016 .0337 4.307 0.000          7.725 .1494 -.535 5.221 79.20 83.4
      ENG   4073.7 7120.6 13.85 1188.      1.36 .2867 1.011 30.911 .2811 4.307      36.6 14.88  98.2 98.1 88.0

D 12.0 TP   34.148 70.498 7.308 23.45 .202      .0010 .0041 6.8288 .0023 1.784 0.000          8.513 .1493 -.458 5.221 79.20 83.5
      ENG   7099.0 5252.8 7.266 91.84      10.6 .2069 .3088 6.7158 .0090 1.784      53.2 25.53  99.5 98.7 74.5
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CYCLE 9	DISTANCE = .2772 MI	TP	GR/MI	.0498	.1986	328.90	.4567	12.88	0.000														
		ENG	GR/MI	3.406	10.20	310.50	2.493	12.80		26.3	17.22	98.6	98.1	81.7									
I 15.0	TP	39.840	68.596	12.90	14.49	.217	.0010	.0033	9.7603	.0012	1.460	0.000	9.017	.1493	-.271	5.221	79.21	83.4					
	ENG	5359.7	7550.3	13.57	130.3	1.58	.1229	.3638	10.269	.0105	1.460	.304	14.81	99.3	99.1	88.9							
A 9.0	TP	66.093	222.75	14.48	504.2	1.16	.0039	.0266	27.187	.1004	3.623	0.000	8.924	.1434	-.543	5.221	79.22	83.4					
	ENG	4438.7	8256.4	13.59	1911.	1.55	.2628	.9868	25.513	.3802	3.623	10.9	14.84	98.5	97.3	73.6							
D 10.0	TP	49.277	149.56	11.01	62.82	.267	.0011	.0065	7.5715	.0046	1.327	0.000	9.431	.1486	-.448	5.221	79.23	83.5					
	ENG	5968.3	5569.6	9.751	356.2	7.65	.1294	.2436	6.7059	.0260	1.327	41.0	20.51	99.2	97.3	82.4							
CYCLE 10	DISTANCE = .0690 MI	TP	GR/MI	.0860	.5285	645.52	1.538	6.411	0.000														
		ENG	GR/MI	7.541	23.10	616.08	6.042	6.411		13.1	16.49	98.9	97.7	74.5									
I 9.0	TP	34.764	72.336	12.38	19.70	.240	.0006	.0023	6.3158	.0011	.9841	0.000	9.517	.1461	-.520	5.221	79.26	83.5					
	ENG	5388.4	7044.4	13.46	90.31	1.74	.0866	.2285	6.8624	.0049	.9841	.337	14.94	99.4	99.0	78.2							
A 20.0	TP	67.562	136.26	14.60	217.5	.791	.0061	.0249	41.990	.0663	5.550	0.000	9.491	.1477	-.549	5.221	79.28	83.5					
	ENG	4304.8	6741.7	13.86	1058.	1.32	.3903	1.233	39.858	.3200	5.550	14.6	14.77	98.4	96.0	79.3							
C 17.0	TP	78.498	128.94	14.92	142.8	.623	.0040	.0150	28.668	.0291	3.709	0.000	9.114	.1495	-.598	5.221	79.31	83.4					
	ENG	3443.4	6512.4	14.17	621.5	1.02	.2087	.7961	27.234	.1266	3.709	30.1	14.66	97.7	98.0	77.8							
D 11.0	TP	54.135	87.545	11.32	61.61	.206	.0010	.0033	6.7099	.0039	1.143	0.000	9.900	.1457	-.259	5.221	79.34	83.4					
	ENG	5756.9	5757.5	10.73	151.4	5.73	.1076	.2170	6.3583	.0095	1.143	35.7	18.42	99.1	98.5	59.3							
CYCLE 11	DISTANCE = .1977 MI	TP	GR/MI	.0630	.2344	423.34	.5075	11.39	0.000														
		ENG	GR/MI	4.813	12.52	406.28	2.332	11.39		20.3	15.47	98.4	98.1	78.2									
I 12.0	TP	46.373	77.241	13.51	43.12	.249	.0010	.0032	6.8532	.0030	1.265	0.000	9.698	.1457	-.305	5.221	79.34	83.5					
	ENG	5320.1	7383.3	13.62	170.2	1.58	.1100	.3078	8.9263	.0118	1.265	.329	14.82	99.1	99.0	74.7							
A 23.0	TP	65.238	243.46	14.40	190.1	.821	.0071	.0537	49.966	.0699	6.698	0.000	9.048	.1466	-.548	5.221	79.36	83.4					
	ENG	4089.3	7186.3	13.43	1051.	1.83	.5329	1.586	46.689	.3868	6.698	14.4	15.05	98.7	96.6	81.9							
C 23.0	TP	71.302	144.39	14.97	109.8	.824	.0076	.0309	50.276	.0388	6.483	0.000	7.965	.1465	-.628	5.221	79.39	83.5					
	ENG	3767.8	7348.7	13.96	927.7	1.21	.3991	1.570	46.912	.3304	6.483	28.3	14.72	98.1	98.0	88.3							
D 11.0	TP	44.710	115.90	10.01	38.45	.246	.0011	.0056	7.6718	.0031	1.479	0.000	8.015	.1476	-.388	5.221	79.42	83.4					
	ENG	6041.6	6112.2	9.141	359.5	8.28	.1459	.2979	7.0035	.0292	1.479	53.5	21.39	99.3	98.1	89.3							
CYCLE 12	DISTANCE = .2923 MI	TP	GR/MI	.0572	.3198	399.52	.3930	15.92	0.000														
		ENG	GR/MI	4.064	12.87	374.49	2.594	15.92		21.8	15.91	98.6	97.5	84.9									
I 24.0	TP	40.731	79.533	13.14	12.32	.285	.0015	.0058	15.816	.0015	2.205	0.000	8.315	.1482	-.297	5.221	79.43	83.4					
	ENG	5488.3	7518.1	13.52	111.5	1.63	.1974	.5463	15.442	.0135	2.205	.286	14.83	99.3	98.9	88.9							
A 14.0	TP	69.993	124.52	14.76	306.2	.953	.0052	.0188	35.063	.0771	4.585	0.000	8.449	.1480	-.610	5.221	79.46	83.4					
	ENG	4970.8	6843.1	13.78	1290.	1.38	.3724	1.034	32.740	.3249	4.585	14.6	14.75	98.6	98.2	76.3							
D 16.0	TP	76.862	111.81	13.09	66.89	.314	.0026	.0078	14.299	.0077	2.108	0.000	8.083	.1466	-.572	5.221	79.49	83.4					
	ENG	6625.2	7432.5	11.79	243.3	4.96	.2202	.5164	12.674	.0282	2.108	41.8	17.26	98.8	98.5	72.5							
I 8.0	TP	40.395	72.539	10.23	15.43	.072	.0003	.0010	2.2403	.0004	.4242	0.000	8.644	.1461	-.163	5.221	79.50	83.4					
	ENG	6723.1	4393.1	13.45	51.16	1.60	.0466	.0614	2.9561	.0012	.4242	.148	14.84	99.4	98.3	69.9							

CYCLE 13 DISTANCE = .1251 MI TP GR/MI .0770 .2667 532.44 .6931 9.321 0.000
ENG GR/MI 6.749 17.25 511.54 2.939 9.321 15.9 15.43 98.9 98.5 76.4

COLD STABILIZED MODAL SUMMARY

GRAMS		HC	CO	CO2	NOX	VOL	D/V	DIST	F/E	A/F	--CONV. EFF.--		
IDLE	TP	.010	.04	101.	.011	15.0	0.0	.00					
	ENG	1.271	3.51	107.	.099	15.0			237.8	14.80	99.2	99.0	88.8
ACCEL	TP	.086	.49	557.	.789	73.6	0.0	.95					
	ENG	5.270	18.50	522.	5.026	73.6			15.19	14.87	98.4	97.3	84.5
CRUISE	TP	.084	.31	546.	.530	72.7	0.0	2.13					
	ENG	4.456	16.76	511.	3.784	72.7			34.69	15.13	98.1	98.1	85.7
DECEL	TP	.023	.09	148.	.077	26.8	0.0	.77					
	ENG	2.365	5.42	141.	.427	26.8			45.87	19.56	99.0	98.4	84.5
TOTAL	TP	.203	.93	1352.	1.407	188.2	0.0	3.86					
	ENG	13.362	44.24	1283.	9.396	188.2			25.31	15.96	98.5	97.9	85.0

EQUIVALENT MASS BAG RESULTS
----------GRAMS/MILE----------

TP	.053	.24	351.	.365
ENG	3.465	11.47	333.	2.437

ENGINE STOP TIME: 1.32 S

BAG READINGS FOR PHASE 1

UNCORRECTED BAG SNIFF READINGS

HC -2	CO -3	CO2 -1	NOX -1
86.788	556.48	.89201	25.849

ZERO/SPAN CALIBRATION

RANGE	HC 2	CO 3	CO2 1	NOX 1
ZERO CONC	.28799	-1.672	-.0036	.00198
ZERO SPEC	.62362	-1.465	.00144	-.0572
% OFFSET	.33563	.02068	.50652	-.1973
SPAN CONC	108.30	1044.5	1.8680	27.413
SPAN SPEC	100.55	1034.5	1.8704	27.265
% OFFSET	.25172	-1.001	.24235	-.4927

BAG ANALYSIS

	HC	CO	CO2	NOX
SAMPLE	91.282	554.59	.91017	25.722
ST DEV(V)	.00069	.00028	.00028	.00247
BACKGROUND	7.8941	.44461	.02111	-.1601
ST DEV(V)	.00066	.00031	.00034	.00193

BAG READINGS FOR PHASE 2

UNCORRECTED BAG SNIFF READINGS

HC -1	CO -1	CO2 -1	NOX -1
9.4832	6.2495	.57208	6.5659

ZERO/SPAN CALIBRATION

RANGE	HC 1	CO 1	CO2 1	NOX 1
ZERO CONC	.56432	.41602	-.0037	.07402
ZERO SPEC	.56607	-.3592	.00144	-.0572
% OFFSET	.00917	-1.550	.51262	-.4374
SPAN CONC	32.356	46.454	1.8674	27.497
SPAN SPEC	32.221	46.534	1.8704	27.265
% OFFSET	-.4493	.16008	.29917	-.7714

BAG ANALYSIS

	HC	CO	CO2	NOX
SAMPLE	8.7925	5.4534	.57912	6.3740
ST DEV(V)	.00022	.00105	.00047	.00249
BACKGROUND	6.2739	.72407	.02132	-.3310
ST DEV(V)	.00031	.00084	.00016	.00184

SOAK LENGTH: 501.9 SEC

START TIME: 13:12: 3 CRANK TIME : .50 S

MD	TIME (S)		CONCENTRATIONS HC (PPM)	CO (PPM)	CO2 (%)	NOX (PPM)	CO2T (%)	O2 (%)	MODAL GRAMS HC	CO	CO2	NOX	VOL (F^3)	D/V (SEC)	F/E (MPG)	A/F	AUX1 -CONV HC	AUX2 EFF (%)- CO	AUX3 NOX	AUX4	AUX5	AUX6
K	.5	TP	2312.4	75.419	5.143	14.42	.050		.0010	.0001	.07131	.0000	.0268	0.000			8.069	.1174	-1.22	5.221	80.08	83.5
		ENG	10357.	32665.	4.287	114.9		12.0	.0045	.0200	.05860	.0002	.0268		.808	25.64	77.7	99.7	87.5			
I	20.0	TP	4280.9	2968.7	11.50	15.81	.190		.1328	.1855	11.291	.0016	1.895	0.000			9.283	.1270	-.397	5.221	80.18	83.6
		ENG	7202.0	10717.	12.60	159.0		2.54	.2230	.6695	12.379	.0166	1.895		.286	15.14	40.4	72.3	90.1			
A	11.0	TP	954.91	1865.6	14.45	129.2	1.81		.0607	.2392	29.119	.0276	3.890	0.000			8.984	.1207	-.629	5.221	80.11	83.6
		ENG	4569.4	8139.0	13.81	1445.		1.13	.2904	1.043	27.831	.3087	3.890		12.2	14.56	79.1	77.1	91.1			
C	84.0	TP	133.01	135.13	13.91	314.5	.756		.0509	.1044	168.90	.4049	23.44	0.000			8.593	.1294	-.557	5.221	80.18	83.4
		ENG	3904.4	5564.3	12.74	1080.		2.63	1.495	4.299	154.75	1.398	23.44		31.4	15.85	96.6	97.6	70.9			
D	10.0	TP	70.027	89.496	8.018	84.97	.232		.0018	.0046	6.4786	.0073	1.559	0.000			9.194	.1302	-.387	5.221	80.28	83.4
		ENG	5937.3	4233.7	7.311	196.8		10.9	.1513	.2176	5.9073	.0168	1.559		57.0	26.45	98.8	97.9	56.6			
CYCLE	1		DISTANCE = .6721 MI				TP	GR/MI	.3679	.7941	321.19	.6569	30.81	0.000								
							ENG	GR/MI	3.221	9.299	298.97	2.578	30.81		27.4	16.58	88.6	91.5	74.5			
I	38.0	TP	95.355	68.372	12.84	27.94	.194		.0053	.0077	22.645	.0052	3.403	0.000			9.332	.1291	-.305	5.221	80.23	83.4
		ENG	5178.1	6726.7	13.58	102.3		1.60	.2079	.7546	23.956	.0191	3.403		.278	14.88	98.2	97.0	72.7			
A	42.0	TP	931.10	26536.	12.48	248.8	1.17		.2983	17.15	126.84	.2680	19.61	0.000			8.647	.1208	-.513	5.221	80.23	83.3
		ENG	4941.2	35329.	11.58	1123.		2.83	1.583	22.83	117.67	1.209	19.61		16.9	14.35	81.2	24.9	77.8			
C	95.0	TP	156.00	981.84	15.02	335.5	1.42		.1137	1.444	347.17	.8223	44.62	0.000			8.788	.1272	-.538	5.221	80.26	83.2
		ENG	2859.7	7203.2	14.16	1838.		.940	2.085	10.59	327.43	4.505	44.62		35.2	14.63	94.5	86.4	81.7			
D	33.0	TP	47.913	89.582	7.184	54.66	.241		.0047	.0178	22.445	.0181	6.029	0.000			8.912	.1268	-.506	5.221	80.28	83.2
		ENG	7328.6	5645.3	5.934	243.7		8.26	.7219	1.122	18.541	.0807	6.029		104.	24.15	99.3	98.4	77.6			
CYCLE	2		DISTANCE = 1.955 MI				TP	GR/MI	.2159	9.535	265.56	.5697	74.66	0.000								
							ENG	GR/MI	2.393	18.06	249.44	2.974	73.66		31.1	16.13	91.8	47.3	90.8			
I	13.0	TP	41.289	74.922	13.68	2.253	.142		.0006	.0021	6.1484	.0001	.8661	0.000			9.071	.1242	-.469	5.221	80.28	83.2
		ENG	5720.4	7679.1	13.73	102.4		1.39	.0811	.2192	6.1632	.0049	.8661		.211	14.64	99.3	99.0	97.8			
A	20.0	TP	81.987	397.71	14.78	222.2	1.29		.0117	.1144	66.815	.1065	8.725	0.000			9.106	.1250	-.529	5.221	80.28	83.2
		ENG	4676.7	8516.6	13.63	1747.		1.43	.6667	2.449	61.629	.8374	8.725		16.2	14.73	98.2	95.3	87.3			
C	17.0	TP	83.101	154.24	15.04	230.4	.983		.0076	.0286	43.848	.0712	5.626	0.000			8.696	.1241	-.586	5.221	80.28	83.2
		ENG	3400.2	6521.8	14.16	914.4		.975	.3126	1.209	41.295	.2826	5.626		33.8	14.64	97.6	97.6	74.8			
D	14.0	TP	36.018	79.932	6.765	31.91	.223		.0015	.0065	8.6552	.0043	2.469	0.000			8.915	.1215	-.567	5.221	80.30	83.2
		ENG	6673.0	4512.3	6.650	95.15		11.0	.2692	.3672	8.5079	.0329	2.469		67.5	27.25	99.5	98.2	66.5			
CYCLE	3		DISTANCE = .3668 MI				TP	GR/MI	.0582	.4134	342.03	.4965	17.69	0.000								
							ENG	GR/MI	3.605	11.57	320.59	3.102	17.69		25.4	17.42	98.4	96.4	84.8			
I	5.0	TP	32.231	69.838	11.44	13.32	.350		.0004	.0019	4.8058	.0006	.8108	0.000			9.017	.1224	-.529	5.221	80.29	83.2
		ENG	5226.8	6440.4	13.28	224.1		1.86	.0692	.1726	5.5012	.0100	.8108		.492	15.07	99.4	98.9	94.1			
A	13.0	TP	75.131	356.79	14.40	363.1	1.28		.0071	.0679	43.119	.1152	5.778	0.000			8.707	.1210	-.391	5.221	80.32	83.2
		ENG	4810.6	9577.5	13.39	2040.		1.64	.4541	1.824	40.103	.6474	5.778		13.5	14.81	98.4	96.3	82.2			

D 14.0	TP	51.165	197.15	10.82	36.98	.304		.0018	.0138	11.873	.0043	2.117	0.000				9.211	.1230	-.552 5.221 80.32 83.2
	ENG	5454.5	6229.8	9.992	516.9		7.36	.1886	.4346	10.960	.0601	2.117		53.6	20.13		99.1	96.8	92.8
CYCLE 4		DISTANCE = .1413 MI				TP	GR/MI	.0652	.5913	423.11	.8500	8.705	0.000						
						ENG	GR/MI	5.038	17.20	400.79	5.077	8.705		20.8	17.18		98.7	96.6	83.3
I 18.0	TP	31.839	72.403	12.87	11.87	.225		.0009	.0043	12.080	.0012	1.811	0.000				9.089	.1192	-.271 5.221 80.34 83.3
	ENG	5086.9	7365.2	13.64	134.8		1.48	.1508	.4396	12.797	.0134	1.811		.314	14.78		99.4	99.0	91.2
A 17.0	TP	119.93	2197.5	14.66	223.7	1.52		.0171	.6331	66.426	.1074	8.741	0.000				8.626	.1160	-.598 5.221 80.34 83.3
	ENG	4391.3	10819.	13.52	2042.		1.32	.6272	3.117	61.471	.9807	8.741		14.3	14.58		97.3	79.7	89.8
C 27.0	TP	73.602	194.81	15.00	157.3	.896		.0099	.0497	63.756	.0709	8.201	0.000				8.793	.1200	-.452 5.221 80.36 83.3
	ENG	3229.8	6721.2	14.20	820.9		.956	.4328	1.817	60.352	.3698	8.201		36.6	14.63		97.7	97.3	80.8
D 14.0	TP	31.329	99.573	6.242	34.78	.210		.0013	.0002	8.1186	.0048	2.510	0.000				8.788	.1182	-.538 5.221 80.36 83.3
	ENG	6677.0	4913.4	5.970	110.7		11.6	.2738	.4065	7.7651	.0153	2.510		68.8	29.22		99.5	98.8	68.6
CYCLE 5		DISTANCE = .4478 MI				TP	GR/MI	.0652	1.553	335.84	.4115	21.26	0.000						
						ENG	GR/MI	3.315	12.91	317.99	3.088	21.26		25.5	17.34		98.8	88.0	86.6

HOT TRANSIENT MODAL SUMMARY

										--CONV. EFF.--		
GRAMS		HC	CO	CO2	NOX	VOL	D/V	DIST	F/E	A/F		
IDLE	TP	.141	.20	52.	.009	8.8	0.0	.00				
	ENG	.817	2.20	61.	.064	8.8			250.8	14.95	82.7	91.1 86.3
ACCEL	TP	.395	18.20	332.	.625	46.7	0.0	.64				
	ENG	3.621	31.27	309.	3.933	46.7			15.82	14.54	89.1	41.8 84.3
CRUISE	TP	.182	1.63	624.	1.369	81.9	0.0	2.41				
	ENG	4.335	17.92	584.	6.548	81.9			34.15	15.09	95.8	90.9 79.1
DECEL	TP	.011	.05	58.	.039	14.7	0.0	.53				
	ENG	1.605	2.55	52.	.186	14.7			81.47	25.11	99.3	98.0 79.1
TOTAL	TP	.729	20.09	1071.	2.042	152.1	0.0	3.58				
	ENG	10.369	54.01	1005.	10.731	152.1			28.83	16.64	93.0	62.8 81.1

EQUIVALENT MASS BAG RESULTS

----------GRAMS/MILE----------

TP	.204	5.61	299.	.570
ENG	2.824	15.07	281.	3.009

WEIGHTED TOTAL EQUIVALENT MASS BAG RESULTS FUEL

	HC	CO	CO2	NOX	ECON
	----------GRAMS/MILE----------				
TP	.297	4.42	333.	.538	
PR	3.182	14.54	316.	2.765	25.43

BAG READINGS FOR PHASE 3

UNCORRECTED BAG SNIFF READINGS

HC -2	CO -3	CO2 -1	NOX -1
24.573	259.22	.79225	15.520

ZERO/SPAN CALIBRATION

RANGE	HC 2	CO 3	CO2 1	NOX 1
ZERO CONC	.27033	-1.967	-.0039	.00841
ZERO SPEC	.62362	-1.465	.00144	-.0572
% OFFSET	.35330	.05023	.53702	-.2187
SPAN CONC	107.75	1045.8	1.8660	27.241
SPAN SPEC	100.55	1034.5	1.8704	27.265
% OFFSET	.79933	-1.131	.43545	.08200

BAG ANALYSIS

	HC	CO	CO2	NOX
SAMPLE	26.778	265.00	.80511	15.698
ST DEV(V)	.00036	.00037	.00049	.00275
BACKGROUND	6.8382	-.0216	.02132	-.1664
ST DEV(V)	.00020	.00029	.00036	.00176

TEST SUMMARY 1:24 PM FRI., 10 JULY, 1981

PRE - TEST

TEST NUMBER	:C21831	BARO (MMHG)	:626.6
WETBULB (DEG. F)	:61.50	DRY BULB (DEG.F)	:73.91
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:152
DRIVER	:152	OPERATOR/DRIVER	:MIKE CARTER
ENGINEER	:CARL MACCARLEY	COMMENTS	:COLD START(CONV. EFF.)
COMMENTS	:3 BAGS (SITE #2)	SHIFT DATA TABLE #	:241
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FUEL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP. FAMILY	:7	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:2.20	FUEL SYSTEM	:CLEAR
TANK CAPACITY	:40%=5.6 US GAL	TIRE PRESSURE	:45 PSI

		HC	CO	CO2	NOX	FUE
TLPIPE GRAMS	PHASE 1	3.700	47.810	1207.225	3.332	24.693
	PHASE 2	.203	.928	1351.968	1.407	25.307
	PHASE 3	.729	20.084	1070.599	2.042	28.827
ENGINE GRAMS	PHASE 1	10.276	77.257	1163.467	11.727	
	PHASE 2	13.362	44.236	1282.732	9.396	
	PHASE 3	10.368	54.009	1005.143	10.781	
SAMPLE CONC.	PHASE 1	91.282	554.591	.910	25.722	
	PHASE 2	8.792	5.453	.579	6.374	
	PHASE 3	26.778	264.797	.805	15.698	
BKGND. CONC.	PHASE 1	7.894	.445	.021	-.160	
	PHASE 2	6.224	.224	.021	-.551	
	PHASE 3	6.838	-.022	.021	-.166	
MDL. COR. GR	PHASE 1	.240	2.829	78.758	.185	
	PHASE 2	.020	.084	140.203	.112	
	PHASE 3	.067	.733	99.866	.118	
BAG GRAMS	PHASE 1	3.574	47.228	1200.524	3.636	
	PHASE 2	.210	.740	1350.357	1.647	
	PHASE 3	.873	21.906	1066.038	2.228	
BAG GR/MI	PHASE 1	.924	13.131	333.791	1.011	24.847
	PHASE 2	.055	.192	350.116	.427	25.342
	PHASE 3	.244	6.113	297.408	.622	28.859
WEIGHTED GM/MI		.301	4.502	332.281	.602	26.108

Gasoline, 3 Phase

TEST PARAMETER	PHASE 1	PHASE 2	PHASE 3
DRIVER VIOLS. (SEC.)	0.0	0.0	0.0
NOX-CORR FACTOR	1.0141	1.0141	1.0141
DILUTION FACTOR	13.747	23.082	16.062
CVS VOLUME (FT3)	2430.663	4179.732	2423.92
AVE CVS PRES. (MMHG)	619.8	619.2	619.1
AVE CVS TEMP (DEG. F)	80.3	80.0	81.1
ACTUAL DIST (MI.)	3.594	3.854	3.581
AUXILLIARY SIGNAL #1	10.722	8.528	8.860
AUXILLIARY SIGNAL #2	.173	.152	.126
AUXILLIARY SIGNAL #3	-.835	-.608	-.498
AUXILLIARY SIGNAL #4	5.221	5.221	5.221
AUXILLIARY SIGNAL #5	78.786	79.049	80.253
AUXILLIARY SIGNAL #6	83.039	83.343	83.357

02 ENVIRONMENTAL TESTING CORPORATION
EPA - 75
14 JUL 81 13:08

METHANOL / FTP

TEST RUN NUMBER C21843
PRE - TEST

TEST NUMBER	:C21843	BARO (MMHG)	:626.9
WET BULB (DEG. F)	:55.94	DRY BULB (DEG.F)	:76.25
MAKE/MODEL	:DATSUN/200 SX	VEHICLE NUMBER	:153
ODOMETER	:367	OPERATOR/DRIVER	:BRIAN WINDECKER
ENGINEER	:CARL MACCARLEY	COMMENTS	:COLD START
COMMENTS	:METHANOL	SHIFT DATA TABLE #	:241
REQUESTED INERTIA	:2875	REQUESTED ACT HP	:9.6
FULL TYPE INDEX	:1	ENGINE FAMILY	:/
EVAP. FAMILY	:/	TRANSMISSION TYPE	:5 SPEED
ENGINE DISP/# CYL.	:Z-20	FUEL SYSTEM	:METHANOL
TANK CAPACITY	:/	TIRE PRESSURE	:45 PSI

HORSEPOWER
ROADLOAD 6.9
FRONT ROLL FRICTION 2.7
TOTAL 9.6

REAR ROLL FRICTION .2

THE CORRECT DYNO SETTINGS SHOULD BE 2875LBS. INERTIA AND 6.9 PAU HP

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BACKGROUND CONCENTRATIONS

HC	CO	CO2	NOX
5.1455	.12255	.01854	-.1737

START TIME: 13:30:16 CRANK TIME: 4.10 S