

REPORT NO. DOT-TSC-OST-77-50

PERFORMANCE CHARACTERISTICS OF
AUTOMOTIVE ENGINES IN THE UNITED STATES

Report No. 10 -- Chevrolet (1975) 250 CID 1-bbl Engine

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NOTICE

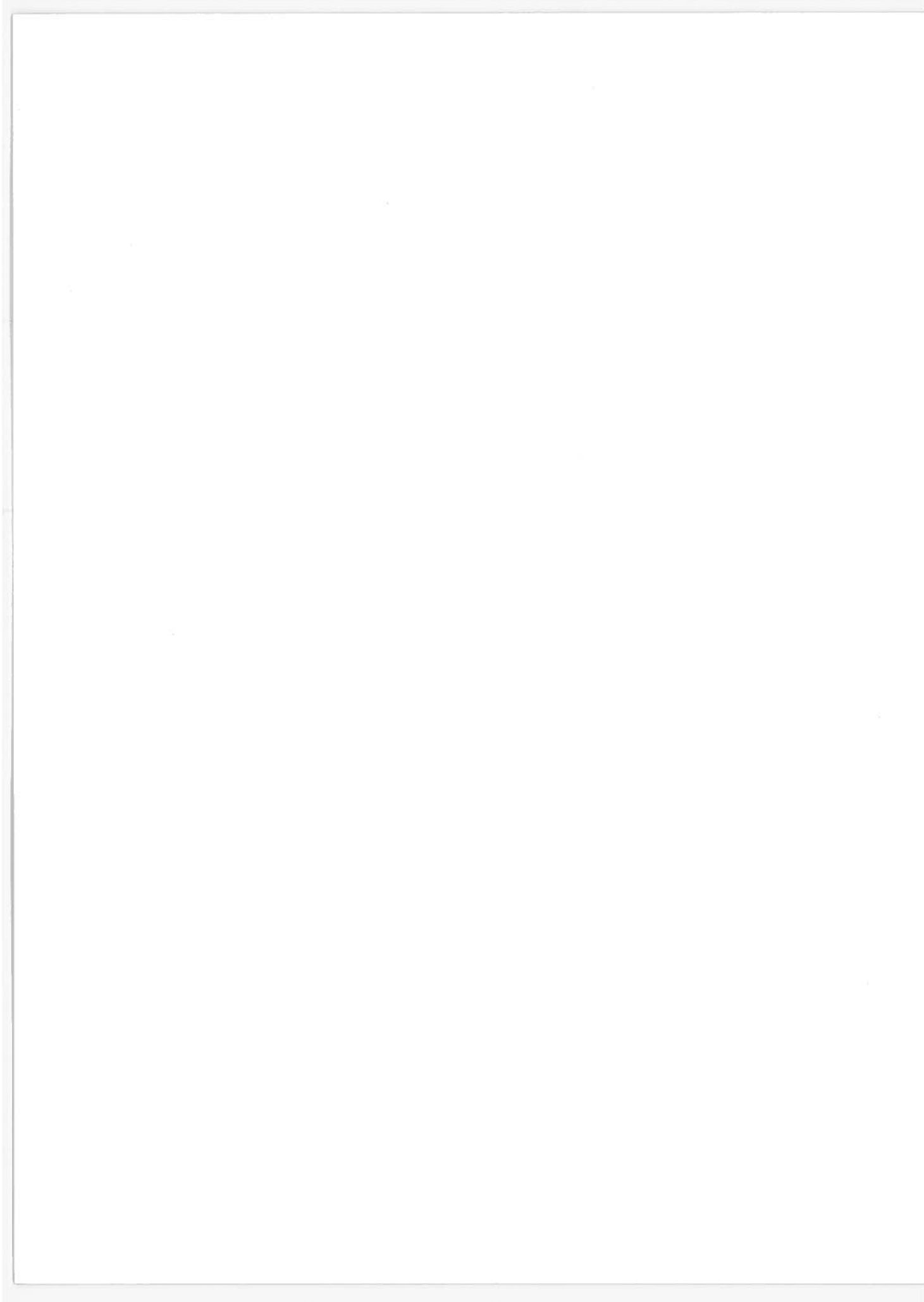
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16. Abstract Experimental data were obtained in dynamometer tests of a 1975 Chevrolet 250-CID, 1-bbl engine to determine fuel consumption and emissions (hydrocarbons, carbon monoxide, and oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristics data required as input for engineering calculations involving ground transportation.					
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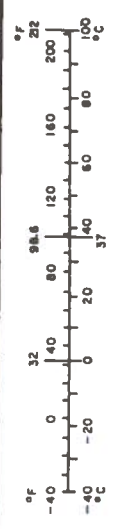
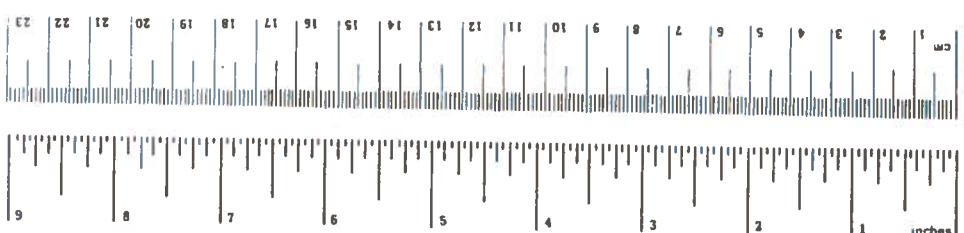
PREFACE

This report, prepared by the Energy Research and Development Administration, Bartlesville Energy Research Center for the U.S. Department of Transportation, Transportation Systems Center, Energy Technology Branch, Cambridge, Massachusetts presents results of experimental work to obtain information on performance characteristics of an engine used in automobiles sold in the United States. The engine used in this work is one of a series of 23 engines to be tested in the current program.

Mr. Ralph G. Colello is the technical monitor on this project.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find
LENGTH							
in	inches	2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	1.1	yards
AREA							
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	km ²	square kilometers	0.4	square miles
mi ²	square miles	2.6	square kilometers	ha	hectares (10,000 m ²)	2.5	acres
MASS (weight)							
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME							
teaspoon	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces
Tablespoon	tablespoons	15	milliliters	ml	liters	2.1	pints
fluid ounce	fluid ounces	30	milliliters	ml	liters	1.06	quarts
c	cups	0.24	liters	l	liters	0.26	gallons
pt	pints	0.47	liters	l	cubic meters	36	cubic feet
qt	quarts	0.95	liters	m ³	cubic meters	1.3	cubic yards
gal	gallons	3.8	cubic meters	m ³			
ft ³	cubic feet	0.03	cubic meters				
yd ³	cubic yards	0.76	cubic meters				
TEMPERATURE (exact)							
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature



1. INTRODUCTION

The data acquired from tests of a 1975 Chevrolet 250-CID 1-bb1 engine are presented in this report. This engine is used by Chevrolet in the Chevelle, Nova, and Camaro models. The test results are sufficient to establish steady-state maps for fuel consumption and emissions (carbon monoxide, unburned hydrocarbon, and oxides of nitrogen) over the entire operating range of the engine.

The objective of this program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of this work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

2. ENGINE TEST REPORT

The engine test setup included a complete engine with the exception of a fan and a cooling tower which was used in place of the radiator. The alternator was included but was not wired into the engine's electrical system. The engine was equipped with emission control systems including early fuel evaporation, an oxidation catalyst, and exhaust-gas recirculation. General engine specifications are listed in table 1. A single batch of unleaded regular-grade gasoline was used throughout the breakin and test; a detailed fuel analysis is given in table 2. The engine breakin consisted of 40 hours of engine operation on the dynamometer. The engine was operated at various speeds and loads designed to simulate road-load conditions; details of the breakin schedule are shown in table 3. Engine testing began on Dec. 29, 1975, and ended on Jan. 8, 1976 for a total engine operating time of about 95 hours. The engine was tested while operating at the following steady-state modes:

Speeds: 900; 1,200; 1,500; 2,100; 2,700; 3,300; 3,800 rpm

Loads: 0, 5, 10, 25, 40, 60, 75, 90, 100 pct of full load
(repeated at 0, 5, 25, 40 pct of full load for all speeds)

Idle-speed loads: 1, 2, 6 bhp (repeated at each condition)

Total number of original test modes.....	67
Total number of repeats.....	42
Total number of tests.....	<u>109</u>

The following data were recorded:

Test number
Date
Barometric pressure, mm Hg
Dew point, °F
Inlet air temperature, °F
Speed, rpm
Torque, lb-ft -- BLH strain gauge load cell; Daytronics indicator
Fuel rate, lb/hr -- Fluidyne positive displacement fuel flow meter
Ignition timing, °BTC
Manifold vacuum, in. Hg
Throttle Angle, degrees
CO, pct -- Beckman NDIR
CO₂, pct -- Beckman NDIR
O₂, pct -- Beckman polarographic detector
HC, ppmC -- Custom-built heated flame ionization detector

NO_x , ppm -- Thermo-Electron chemiluminescent detector
 Oil temperature, °F
 Oil pressure, psig
 Coolant temperature, °F
 Exhaust temperature, °F
 Exhaust pressure, in. H_2O
 Intake manifold temperature, °F .

The computed data include absolute humidity (grains per pound dry air), power (bhp), air-fuel ratio (includes air injection), and emission rates of carbon monoxide (CO), unburned hydrocarbons (HC), and oxides of nitrogen (NO_x) in grams per hour. The following equations were applied in the computations:

$$W = \exp 12.02 \left(\frac{D - 1.4}{D + 212} \right) , \quad (1)$$

$$H = \frac{4348 W}{B - W} , \quad (2)$$

$$P = \left(\frac{N \times T}{5252} \right) \left(\frac{736.6}{B - W} \right) \left(\frac{t + 460}{545} \right)^{0.5} , \quad (3)$$

$$A/F = 4.895 \frac{(CO) + 2(CO_2) + 2(O_2) + \left(\frac{NO_x}{10^4} \right) + 3.148(CO_2) \left(\frac{CO + CO_2}{CO + 3CO_2} \right)}{(CO) + (CO_2) + \left(\frac{HC}{10^4} \right) 1 + 0.03148(CO_2) \left(\frac{CO + CO_2}{CO + 3CO_2} \right)} , \quad (4)$$

The equation for A/F is based on:

1. Fuel = $\text{CH}_{2.099}$
2. Water-gas-shift equilibrium constant = $\frac{(CO) (H_2O)}{(CO_2) (H_2)} = 3$
3. HC was determined on a raw exhaust, wet basis, all other species measured on a dry basis.
4. All NO_x is NO.

$$\text{Mass CO} = (\text{exhaust flow rate}) \times (CO) \times \frac{\text{Mol. wt CO}}{\text{Mol. wt exhaust}}$$

x correction for water removal,

$$\text{Mass CO} = 4.383 (F) (A/F + 1) (\text{CO}) \left[\frac{1}{1 + 0.03148(\text{CO}_2) \left(\frac{\text{CO} + \text{CO}_2}{\text{CO} + 3\text{CO}_2} \right)} \right], \quad (5)$$

$$\text{Mass HC} = 0.0002207 (F) (A/F + 1) (\text{HC}), \quad (6)$$

$$\text{Mass NO}_x = 0.0007201 (F) (A/F + 1) (\text{NO}_x) \left[\frac{1}{1 + 0.03148(\text{CO}_2) \left(\frac{\text{CO} + \text{CO}_2}{\text{CO} + 3\text{CO}_2} \right)} \right] \times K_H, \quad (7)$$

$$K_H = \frac{1}{1 - 0.0047 (H - 75)}, \quad (8)$$

where A/F = air-fuel ratio

B = barometric pressure, mm Hg

CO = carbon monoxide concentration, pct, vol

CO₂ = carbon dioxide concentration, pct, vol

D = intake air dew point, °F

F = fuel rate, lb/hr

H = humidity, grains H₂O/lb dry air

HC = unburned hydrocarbon concentration, ppmC, vol

K_H = humidity correction factor

N = engine speed, rpm

NO = nitric oxide concentration, ppm, vol

NO_x = nitrogen oxides concentration, ppm, vol

O₂ = oxygen concentration, pct, vol

P = corrected power, brake horsepower

t = intake air temperature, °F

T = torque, ft-lb

W = water vapor pressure, mm Hg .

TABLE 1. - MANUFACTURER'S ENGINE SPECIFICATIONS

Displacement, cubic inches.....	250
Maximum horsepower, bhp @ 3,800 rpm.....	105
Maximum torque, lb-ft @ 1,200 rpm.....	185
Bore and stroke, inches.....	3.875 x 3.53
Configuration.....	In-line, upright 6-cylinder
Compression ratio.....	8.25:1
Firing order.....	1-5-3-6-2-4
Ignition timing at idle speed, °BTDC @ 850 rpm.....	10
Block material.....	Cast iron
Head material.....	Cast iron
Number of crankshaft main bearings.....	7
Number of compression rings/piston.....	2
Number of oil rings/piston.....	1
Cam drive type.....	Chain and sprocket
Valve lift:	
Intake, inches.....	0.381
Exhaust, inches.....	0.398
Valve timing:	
Intake opens, °BTC.....	66
Intake closes, °ABC.....	270
Exhaust opens, °BBC.....	260
Exhaust closes, °ATC.....	64
Spark plug gap, inches.....	0.060
Engine weight, lbs.....	525
Exhaust-gas recirculation system:	
Valve type.....	Tapered stem
Control signal.....	Manifold vacuum
Point of discharge.....	Intake manifold
Crankcase emission control:	
Control method.....	Positive crank- case ventilation
Point of discharge.....	Breather
Carburetor type.....	Single bore, downdraft
Distributor specifications:	
Centrifugal advance, begins, ° @ 1,100 rpm.....	0
Centrifugal advance, intermediate, ° @ 2,300 rpm.....	7
Centrifugal advance, full, ° @ 4,200 rpm.....	16
Vacuum advance, begins, ° @ 4 in. Hg.....	0
Vacuum advance, maximum, ° @ 12 in. Hg.....	18
Carburetor number.....	7045013
EGR valve number.....	17050492
Distributor number.....	1112863

TABLE 2. - FUEL SPECIFICATIONS

Fuel No.....	7516
Research octane No.....	91.0
Motor octane No.....	83.5
Reid vapor pressure, psig.....	9.86
(by micro vapor pressure test)	
Distillation, °F:	
10 pct.....	125
50 pct.....	212
95 pct.....	390
100 pct.....	416
API gravity, °.....	66.1
FIA analysis, pct:	
Aromatics.....	11
Olefins.....	15
Paraffins.....	74
Sulfur, pct.....	0.0288
Lead, grams per gallon.....	Trace

TABLE 3. - ENGINE BREAKIN SCHEDULE

Simulated vehicle speed, mph	Engine speed, rpm	Manifold vacuum, in. Hg	Fraction of time in mode
25	825	12.0	1/8 hr
30	950	10.0	"
35	1,075	9.0	"
40	1,200	8.25	"
45	1,500	7.8	"
50	1,820	7.5	"
55	2,025	7.3	"
60	2,150	6.8	"

Time per cycle = 2 hours.

Mileage per cycle = 85 miles.

Total mileage accumulated over the 40-hr breakin period = 1,700 miles.

3. DISCUSSION OF TEST RESULTS

The maximum power output of the engine gave results similar to those quoted in table 1. The maximum torque was found at a slightly higher rpm than specified, but the value quoted in the table was exceeded at the prescribed engine speed. Maximum corrected brake horsepower, maximum corrected torque, and brake specific fuel consumption (BSFC) are plotted as a function of engine speed at wide-open throttle (WOT) in figure 1. The minimum BSFC values are found in a range of 90 to 75 percent of maximum power for any engine speed as can be seen in a plot of fuel consumption rate versus power for a given engine speed (figure 2). The conditions which promote the low BSFC value are thought to be operation at an air-fuel ratio near stoichiometric (figure 3), little or no exhaust-gas recirculation (EGR) (as evidenced by the high NO_x emissions shown in figure 4), and slightly advanced spark timing. Emissions of unburned HC and CO are maintained at low levels except conditions near WOT (figures 5 and 6).

4. CONCLUSION

The repeatability of emission rates and fuel consumption is satisfactory for the purposes of this test.

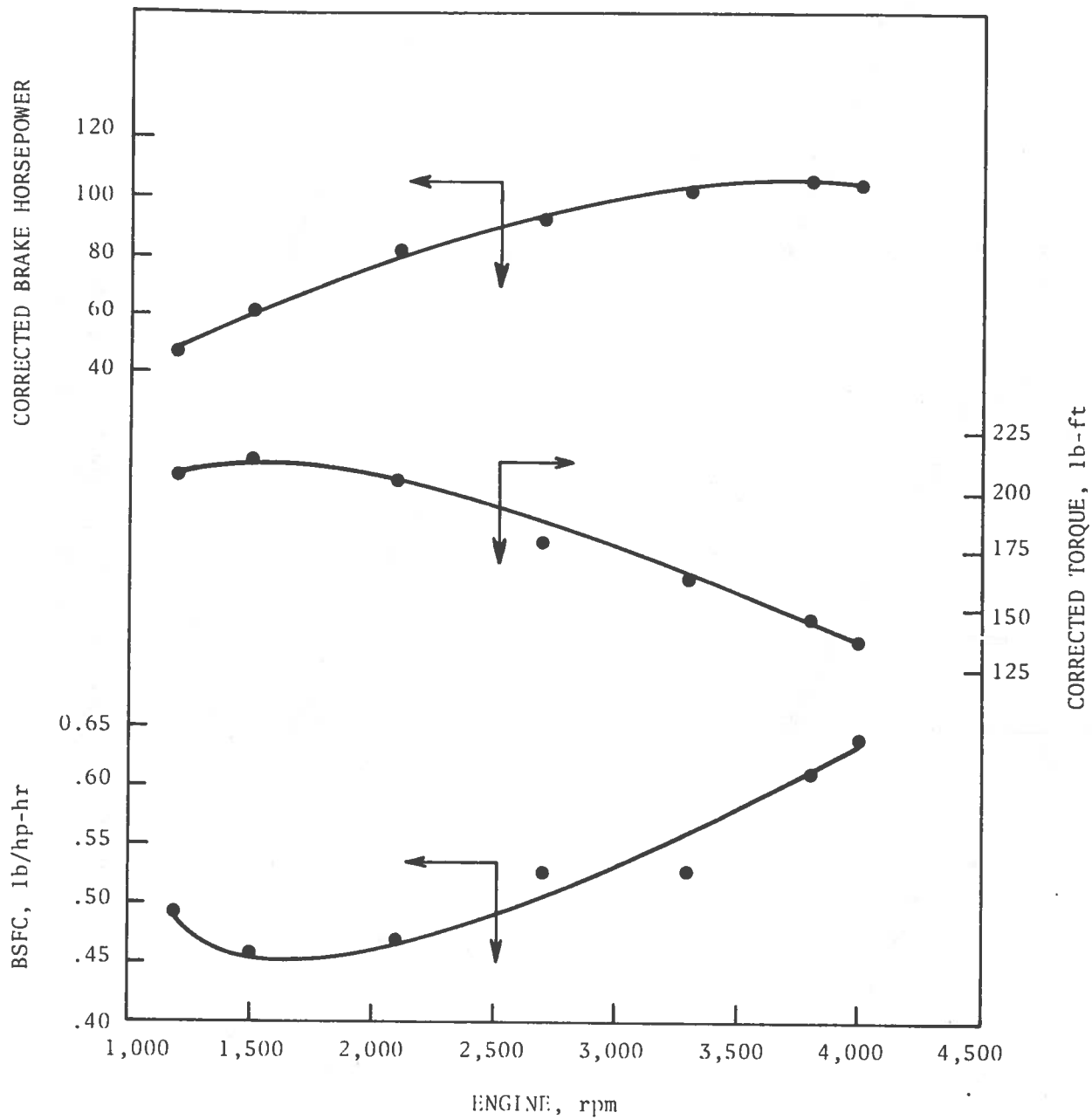


FIGURE 1. - BRAKE SPECIFICATION FUEL CONSUMPTION, TORQUE, AND BRAKE HORSEPOWER VERSUS ENGINE RPM AT WIDE OPEN THROTTLE--CHEVROLET 250-CID ENGINE.

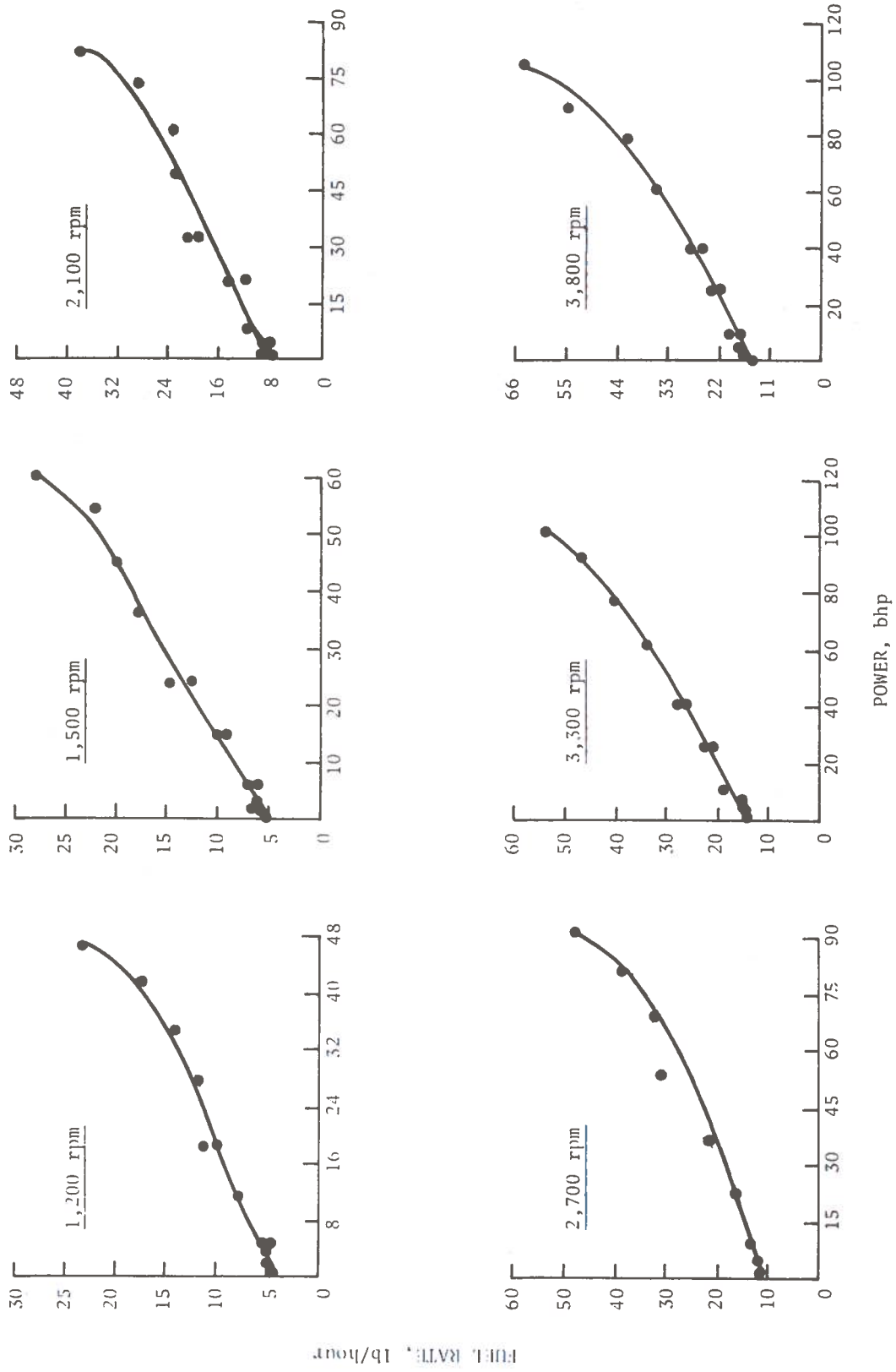


FIGURE 2. - FUEL RATE VERSUS POWER AT SEVERAL SPEEDS--CHEVROLET 250-CID ENGINE.

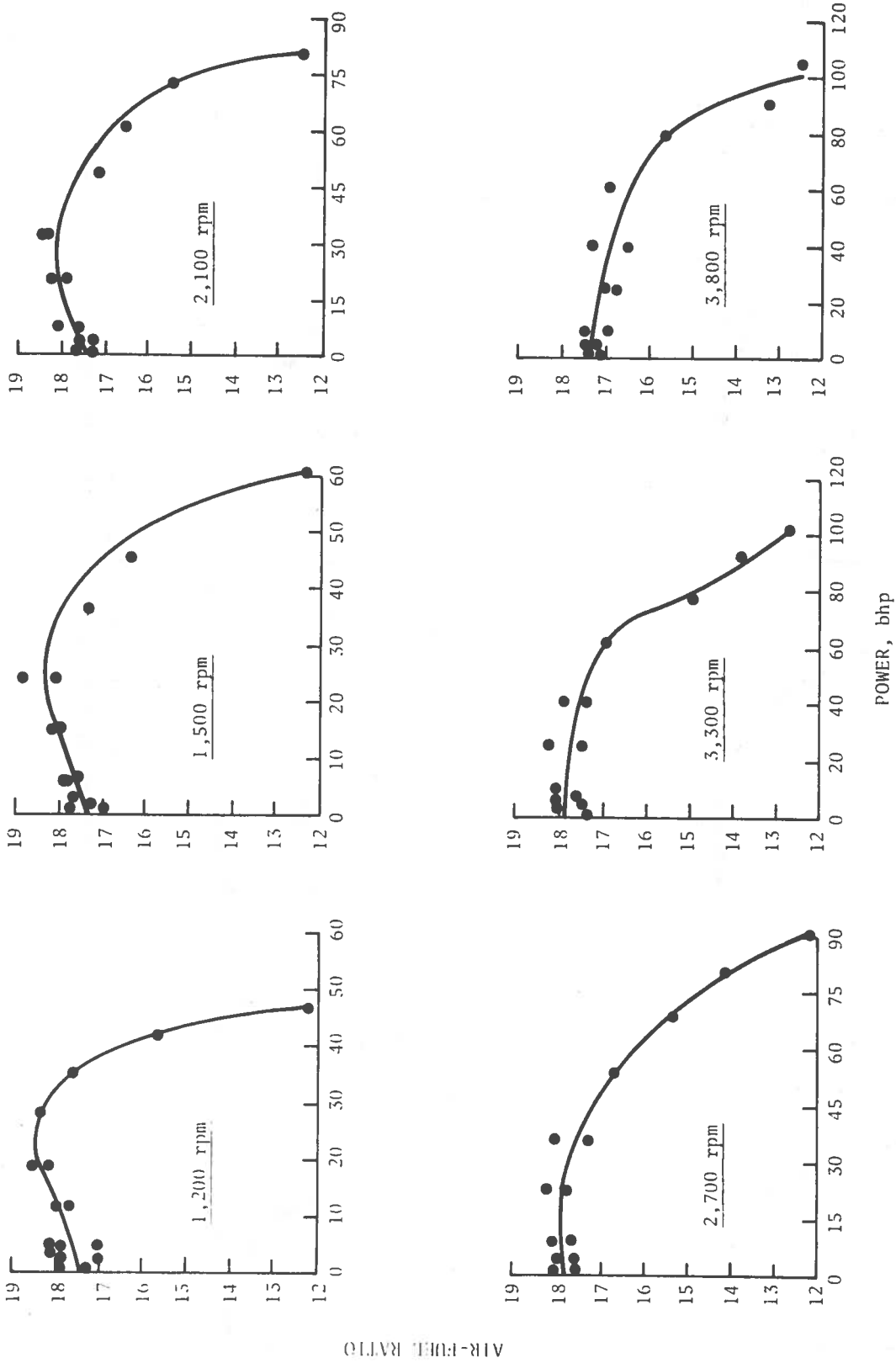


FIGURE 3. - AIR-FUEL RATIO VERSUS POWER AT SEVERAL SPEEDS--CHEVROLET 250-CID ENGINE.

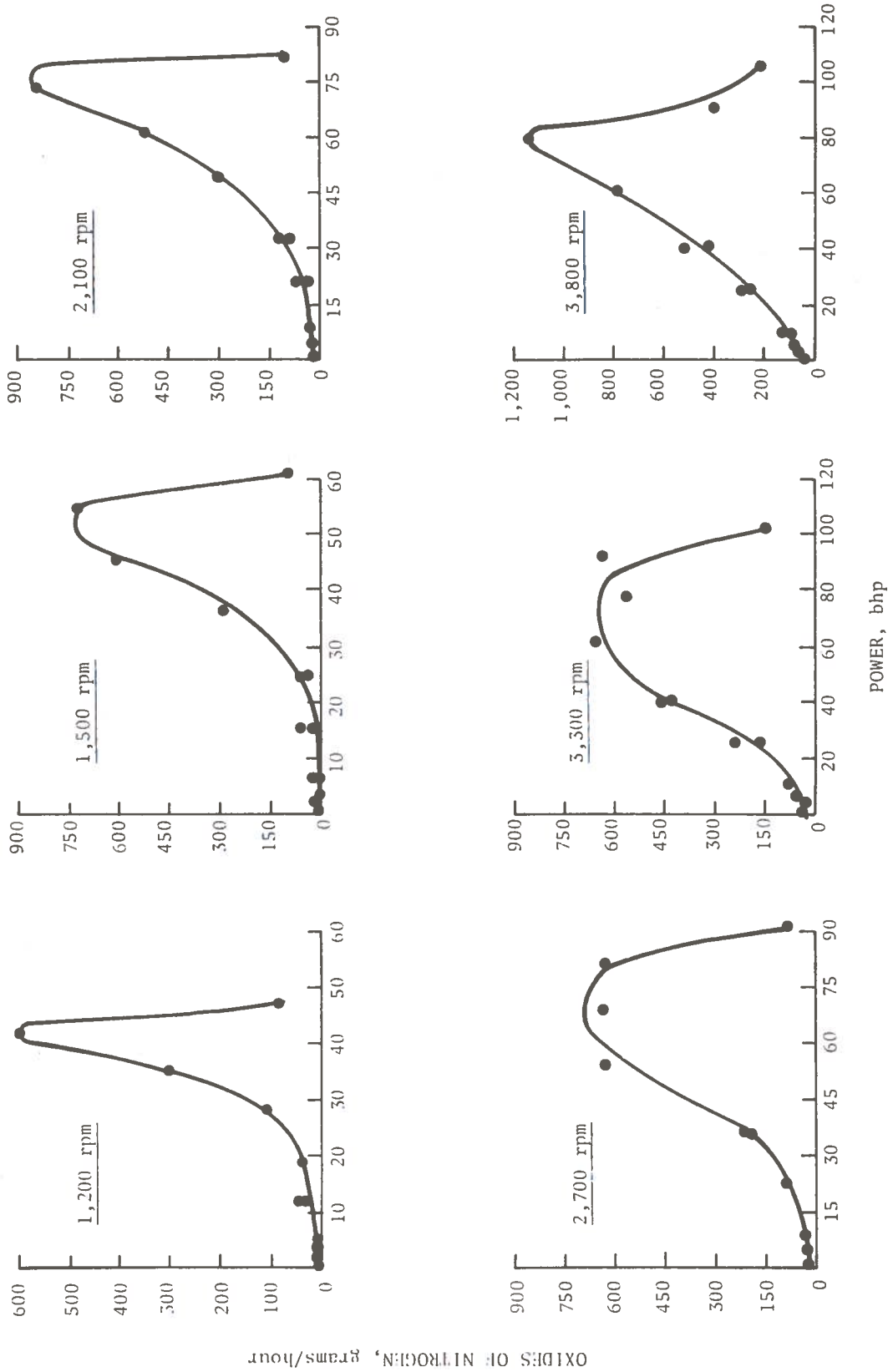


FIGURE 4. - OXIDES OF NITROGEN EMISSIONS VERSUS POWER AT SEVERAL SPEEDS--CHEVROLET 250-CID ENGINE.

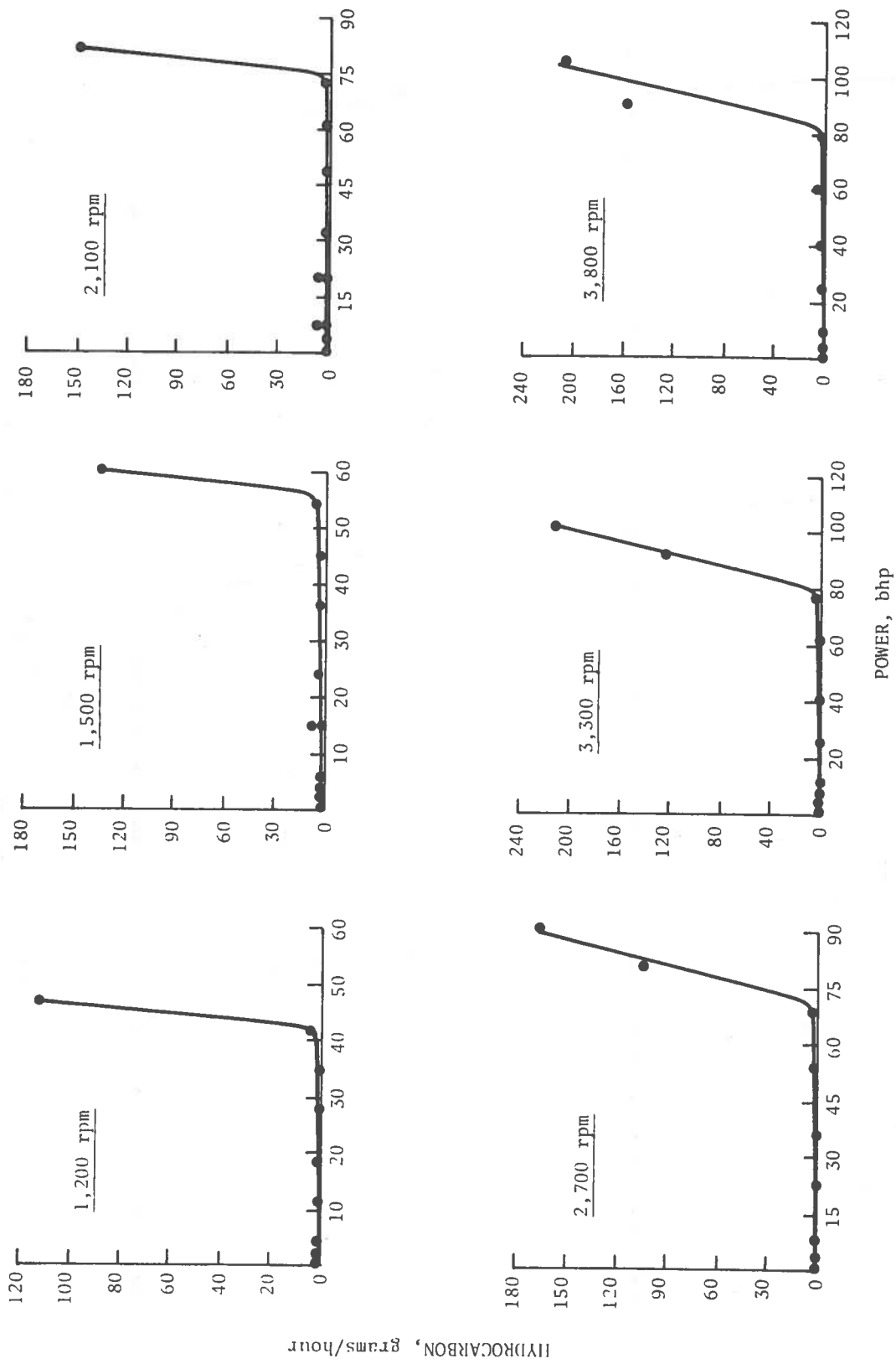


FIGURE 5. - HYDROCARBON EMISSIONS VERSUS POWER AT SEVERAL SPEEDS--CHEVROLET 250-CID ENGINE.

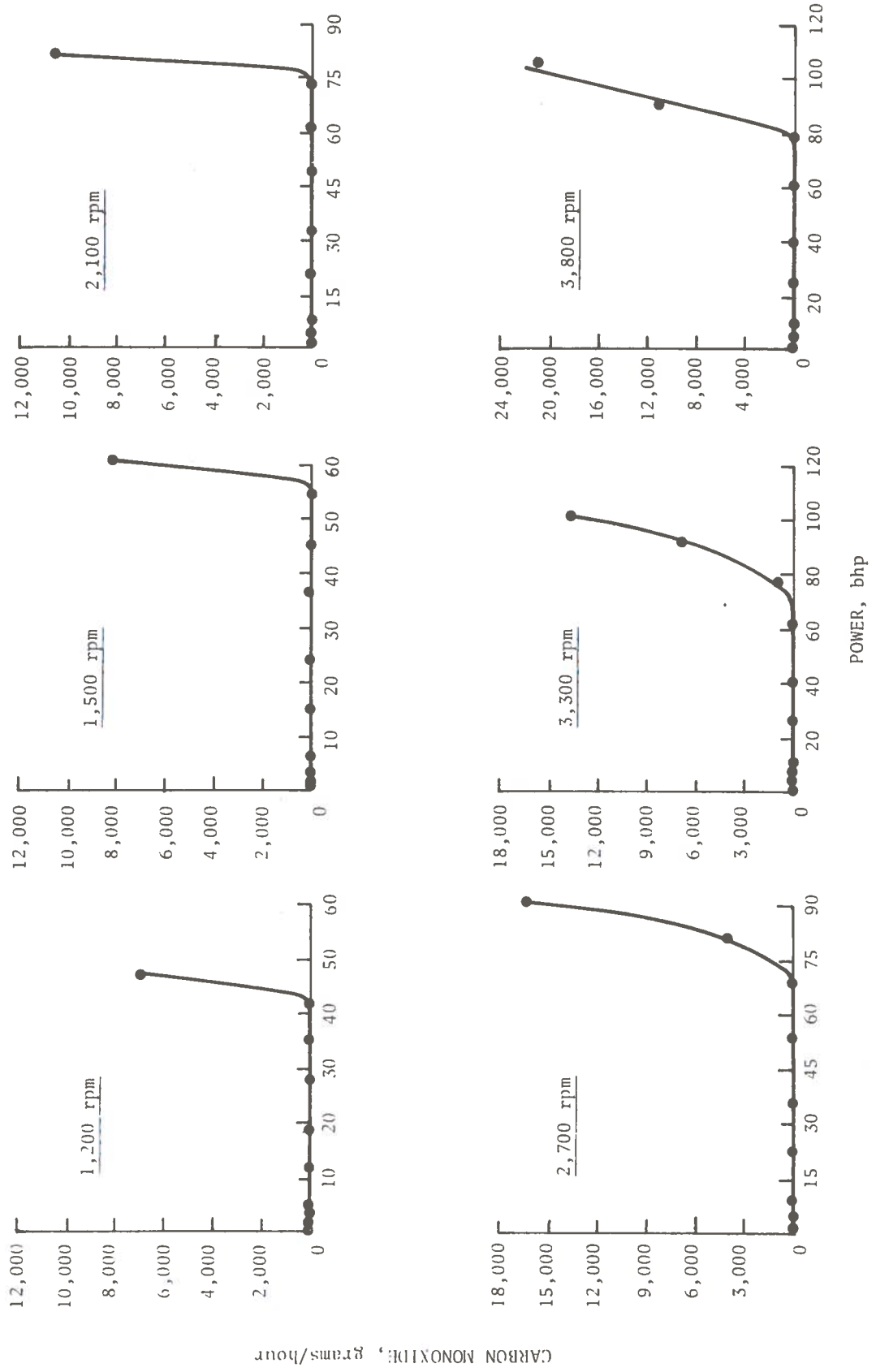


FIGURE 6. - CARBON MONOXIDE EMISSIONS VERSUS POWER AT SEVERAL SPEEDS--CHEVROLET 250-CID ENGINE.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	1	2	3	4	5
Test Date.....	12/29/75	12/29/75	12/29/75	12/29/75	12/29/75
Barometer, mm Hg.....	740.2	740.2	740.2	740.2	740.2
Humidity, grains/lb.....	52	52	52	52	52
Temperature, F.....	70	71	74	74	74
Engine speed, rpm.....	850	550	850	550	750
Torque, lb-ft.....	10.0	53.4	10.2	55.0	8.8
Power, bhp*.....	1.6	5.6	1.6	5.7	1.3
Fuel rate, lb/hr.....	3.6	3.6	3.6	4.5	3.6
Ignition timing, deg BTC....	25.0	25.5	27.0	25.0	26.0
Manifold vacuum, in Hg.....	17.0	12.0	17.0	13.0	17.0
Throttle angle, deg.....	0.0	0.0	0.0	0.0	0.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.3494	.0653	.1420	.0677	.1373
CO2, %.....	10.80	11.00	10.70	11.33	10.70
O2, %.....	5.25	4.85	5.25	4.25	5.50
HC, ppmC.....	4358	2786	3554	1905	3949
NOx, ppm.....	35	130	75	265	85
Air-fuel ratio.....	18.60	18.72	18.96	18.25	19.12
Emission rates, g/hr:					
CO.....	97.2	18.0	40.3	23.1	39.0
HC.....	61.1	38.6	50.9	32.7	56.6
NOx**.....	1.4	5.3	3.2	13.4	3.6
Oil temperature, F.....	197	196	191	182	192
Oil pressure, psi.....	32	26	34	34	32
Coolant temperature, F.....	192	196	196	187	196
Exhaust temperature, F.....	713	631	694	716	712
Exhaust pressure, in H2O....	3.0	3.0	3.0	4.0	4.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0024	.0024
CO2, %.....	11.22	11.22	11.11	11.55	11.11
O2, %.....	4.45	4.45	4.75	3.95	4.95
HC, ppmC.....	222	613	844	292	1478
NOx, ppm.....	41	140	95	275	100
Air-fuel ratio.....	18.77	18.71	18.97	18.24	19.04
Emission rates, g/hr:					
CO.....	.7	.7	.7	.8	.7
HC.....	3.1	8.5	12.1	5.0	21.0
NOx**.....	1.7	5.7	4.0	13.9	4.2
Exhaust temperature, F.....	664	596	520	662	574
Exhaust pressure, in H2O....	0.0	0.0	0.0	0.0	0.0

* Corrected - SAE J816b

** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	6	7	8	9	10
Test Date.....	12/29/75	12/29/75	12/29/75	12/29/75	12/29/75
Barometer, mm Hg.....	740.2	740.2	740.2	740.2	740.2
Humidity, grains/lb.....	52	52	52	52	52
Temperature, F.....	72	74	74	71	71
Engine speed, rpm.....	750	900	900	900	900
Torque, lb-ft.....	9.6	78.0	70.0	50.0	30.0
Power, bhp*.....	1.4	13.3	12.0	8.5	5.1
Fuel rate, lb/hr.....	3.4	6.7	5.9	5.7	4.0
Ignition timing, deg BTC....	26.0	26.0	24.5	25.5	25.5
Manifold vacuum, in Hg.....	16.5	11.0	12.0	13.0	15.5
Throttle angle, deg.....	0.0	6.0	5.0	4.5	2.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1373	.0653	.0630	.0724	.0892
CO2, %.....	10.40	11.33	11.33	11.32	10.90
O2, %.....	5.75	4.07	4.20	4.15	4.80
HC, ppmC.....	6563	1567	1610	1673	2237
NOx, ppm.....	80	590	430	360	105
Air-fuel ratio.....	19.00	18.16	18.26	18.20	18.77
Emission rates, g/hr:					
CO.....	36.8	32.7	27.9	31.1	27.8
HC.....	88.7	39.6	35.9	36.3	35.1
NOx**.....	3.2	43.9	28.3	23.0	4.9
Oil temperature, F.....	191	192	197	193	201
Oil pressure, psi.....	34	33	31	32	32
Coolant temperature, F.....	194	192	194	191	191
Exhaust temperature, F.....	633	781	774	774	734
Exhaust pressure, in H2O....	4.0	10.0	9.0	7.0	4.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0024	.0024
CO2, %.....	11.11	11.55	11.55	11.55	11.33
O2, %.....	4.75	3.95	3.88	3.90	4.35
HC, ppmC.....	1584	233	218	212	318
NOx, ppm.....	95	540	470	300	125
Air-fuel ratio.....	18.85	18.26	18.20	18.21	18.64
Emission rates, g/hr:					
CO.....	.6	1.2	1.1	1.0	.7
HC.....	21.1	5.9	4.8	4.6	4.9
NOx**.....	3.7	40.3	30.8	19.1	5.7
Exhaust temperature, F.....	585	707	670	636	641
Exhaust pressure, in H2O....	0.0	2.0	1.0	1.0	0.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	11	12	13	14	15
Test Date.....	12/29/75	12/29/75	12/29/75	12/29/75	1/ 9/76
Barometer, mm Hg.....	740.2	740.2	740.2	740.2	748.0
Humidity, grains/lb.....	52	52	52	52	61
Temperature, F.....	71	71	71	72	74
Engine speed, rpm.....	900	900	900	900	900
Torque, lb-ft.....	20.0	15.0	10.0	3.9	3.0
Power, bhp*.....	3.4	2.6	1.7	.7	.5
Fuel rate, lb/hr.....	4.0	3.9	4.0	4.0	3.5
Ignition timing, deg BTC....	26.5	25.5	26.0	25.0	27.0
Manifold vacuum, in Hg.....	16.0	17.0	17.0	17.0	18.0
Throttle angle, deg.....	2.0	1.8	1.5	1.4	1.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1132	.1229	.1396	.1373	.1890
CO2, %.....	10.90	10.70	10.70	10.70	10.40
O2, %.....	4.90	4.75	5.20	5.10	5.45
HC, ppmC.....	2426	2190	2317	2317	5935
NOx, ppm.....	90	40	33	32	18
Air-fuel ratio.....	18.81	18.77	19.13	19.05	18.80
Emission rates, g/hr:					
CO.....	34.9	37.5	43.7	42.8	51.1
HC.....	37.7	33.7	36.6	36.4	80.9
NOx**.....	4.1	1.8	1.5	1.5	.8
Oil temperature, F.....	197	174	186	183	156
Oil pressure, psi.....	31	34	32	33	34
Coolant temperature, F.....	195	196	195	196	186
Exhaust temperature, F.....	726	681	721	734	576
Exhaust pressure, in H2O....	4.0	4.0	4.0	4.0	5.5
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0049	.0024	.0024	.0049
CO2, %.....	11.11	11.11	11.00	11.00	11.32
O2, %.....	4.55	4.40	4.75	4.75	4.35
HC, ppmC.....	486	581	454	422	266
NOx, ppm.....	100	50	43	42	38
Air-fuel ratio.....	18.86	18.71	19.08	19.08	18.64
Emission rates, g/hr:					
CO.....	.7	1.5	.7	.7	1.3
HC.....	7.6	8.9	7.1	6.6	3.6
NOx**.....	4.6	2.3	2.0	1.9	1.6
Exhaust temperature, F.....	611	485	517	553	687
Exhaust pressure, in H2O....	0.0	0.0	0.0	0.0	1.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	16	17	18	19	20
Test Date.....	12/29/75	12/29/75	12/29/75	12/29/75	12/29/75
Barometer, mm Hg.....	740.2	740.7	740.2	740.2	740.2
Humidity, grains/lb.....	52	52	52	52	52
Temperature, F.....	72	77	77	74	74
Engine speed, rpm.....	1200	1200	1200	1200	1200
Torque, lb-ft.....	208.0	185.0	154.0	123.0	82.0
Power, bhp*.....	47.3	42.2	35.2	28.0	18.7
Fuel rate, lb/hr.....	23.3	17.5	14.1	11.7	10.0
Ignition timing, deg BTC....	13.0	12.5	12.0	16.0	26.0
Manifold vacuum, in Hg.....	.5	.5	2.5	5.5	9.0
Throttle angle, deg.....	74.0	33.2	22.8	16.8	12.2
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	6.0100	.1420	.0067	.0700	.0748
CO2, %.....	10.40	13.27	12.02	11.33	11.11
O2, %.....	.12	1.10	3.15	4.10	4.35
HC, ppmC.....	2209	1025	607	636	1003
NOx, ppm.....	400	3700	1750	850	370
Air-fuel ratio.....	12.22	15.68	17.47	18.34	18.54
Emission rates, g/hr:					
CO.....	7088.6	159.0	6.8	62.1	57.2
HC.....	131.3	57.8	31.0	28.4	38.7
NOx**.....	70.0	614.7	263.1	111.8	42.0
Oil temperature, F.....	214	217	220	216	212
Oil pressure, psi.....	32	31	32	32	32
Coolant temperature, F.....	199	187	201	191	197
Exhaust temperature, F.....	1041	1132	1082	1024	972
Exhaust pressure, in H2O....	28.0	27.7	22.0	19.0	14.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	5.8900	.0024	.0024	.0024	.0024
CO2, %.....	10.25	13.53	12.02	11.44	11.33
O2, %.....	.10	.90	3.25	4.00	4.20
HC, ppmC.....	1891	75	20	20	68
NOx, ppm.....	480	3600	2000	820	350
Air-fuel ratio.....	12.25	15.70	17.65	18.38	18.56
Emission rates, g/hr:					
CO.....	5972.9	2.7	2.5	2.1	1.8
HC.....	112.8	4.3	1.0	.9	2.6
NOx**.....	84.3	598.0	303.6	108.0	39.7
Exhaust temperature, F.....	918	984	965	925	861
Exhaust pressure, in H2O....	13.0	13.0	10.0	8.0	6.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	21	22	23	24	25
Test Date.....	12/29/75	12/29/75	1/ 9/76	1/ 9/76	12/29/75
Barometer, mm Hg.....	740.2	740.2	748.0	748.0	740.2
Humidity, grains/lb.....	52	52	61	61	52
Temperature, F.....	76	77	77	77	74
Engine speed, rpm.....	1200	1200	1200	1200	1500
Torque, lb-ft.....	51.0	20.0	10.0	3.2	214.0
Power, bhp*.....	11.6	4.6	2.3	.7	60.9
Fuel rate, lb/hr.....	7.8	4.7	5.0	4.4	27.9
Ignition timing, deg BTC....	32.0	27.5	29.0	28.5	15.0
Manifold vacuum, in Hg.....	14.5	17.5	18.5	19.3	.5
Throttle angle, deg.....	8.2	3.9	3.2	2.2	76.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0964	.1325	.1511	.1769	5.7900
CO2, %.....	11.55	11.55	11.55	11.22	10.50
O2, %.....	3.80	3.70	3.85	4.25	.17
HC, ppmC.....	933	976	1237	2945	2078
NOx, ppm.....	480	135	50	33	500
Air-fuel ratio.....	17.94	17.81	17.88	18.01	12.35
Emission rates, g/hr:					
CO.....	55.7	45.3	55.5	57.8	8249.3
HC.....	27.2	16.8	22.9	48.5	149.2
NOx**.....	41.1	6.9	2.8	1.7	105.7
Oil temperature, F.....	212	201	186	192	211
Oil pressure, psi.....	34	33	35	35	35
Coolant temperature, F.....	192	186	192	187	197
Exhaust temperature, F.....	921	807	804	807	1127
Exhaust pressure, in H2O....	11.0	6.0	5.5	5.5	47.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0049	.0049	5.8100
CO2, %.....	11.66	11.55	11.78	11.90	10.40
O2, %.....	3.60	3.75	3.55	3.65	.08
HC, ppmC.....	101	138	111	259	1860
NOx, ppm.....	400	81	66	50	440
Air-fuel ratio.....	17.95	18.09	17.86	17.89	12.29
Emission rates, g/hr:					
CO.....	1.4	.8	1.8	1.6	8246.2
HC.....	2.9	2.4	2.1	4.2	133.1
NOx**.....	34.3	4.2	3.7	2.5	92.7
Exhaust temperature, F.....	812	717	690	626	927
Exhaust pressure, in H2O....	4.0	1.0	1.0	1.0	25.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	26	27	28	29	30
Test Date.....	12/29/75	12/29/75	12/29/75	12/29/75	12/29/75
Barometer, mm Hg.....	740.2	740.2	740.2	740.2	740.2
Humidity, grains/lb.....	52	52	52	52	52
Temperature, F.....	77	73	77	77	77
Engine speed, rpm.....	1500	1500	1500	1500	1500
Torque, lb-ft.....	192.0	160.0	128.0	85.0	53.0
Power, bhp*.....	54.8	45.5	36.5	24.3	15.1
Fuel rate, lb/hr.....	22.0	20.0	17.9	12.6	9.4
Ignition timing, deg BTC....	15.0	15.5	15.5	20.5	29.0
Manifold vacuum, in Hg.....	1.5	2.5	4.0	6.5	13.0
Throttle angle, deg.....	35.0	30.0	25.0	18.0	10.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.2789	.0700	.0820	.1036	.1036
CO2, %.....	13.27	12.75	12.40	11.11	11.55
O2, %.....	1.10	2.10	3.00	4.55	3.95
HC, ppmC.....	971	537	401	687	892
NOx, ppm.....	3500	3000	1600	270	580
Air-fuel ratio.....	15.60	16.54	17.25	18.74	18.07
Emission rates, g/hr:					
CO.....	390.5	94.6	103.9	100.8	72.2
HC.....	68.5	36.6	25.6	33.7	31.3
NOx**.....	727.2	601.9	300.9	39.0	60.0
Oil temperature, F.....	224	224	231	227	222
Oil pressure, psi.....	35	35	35	35	35
Coolant temperature, F.....	196	191	191	193	197
Exhaust temperature, F.....	1196	1204	1182	1111	1000
Exhaust pressure, in H2O....	39.2	39.0	36.0	22.0	14.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0024	.0024
CO2, %.....	13.67	13.00	12.25	11.22	11.66
O2, %.....	1.00	1.75	2.90	4.50	3.75
HC, ppmC.....	75	44	32	58	64
NOx, ppm.....	3500	3100	1550	290	590
Air-fuel ratio.....	15.76	16.36	17.30	18.86	18.09
Emission rates, g/hr:					
CO.....	3.4	3.2	3.1	2.3	1.7
HC.....	5.4	3.0	2.0	2.9	2.2
NOx**.....	732.6	614.2	292.9	42.1	61.0
Exhaust temperature, F.....	1084	1065	1052	1017	937
Exhaust pressure, in H2O....	20.0	20.0	17.0	10.0	5.0

* Corrected - SAE J816b

** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	31	32	33	34	35
Test Date.....	12/29/75	1/ 9/76	1/ 9/76	12/29/75	12/29/75
Barometer, mm Hg.....	740.2	748.0	748.0	740.2	740.2
Humidity, grains/lb.....	52	61	61	52	52
Temperature, F.....	76	76	76	77	77
Engine speed, rpm.....	1500	1500	1500	2100	2100
Torque, lb-ft.....	21.0	10.0	3.6	204.0	183.0
Power, bhp*.....	6.0	2.8	1.0	81.5	73.1
Fuel rate, lb/hr.....	6.1	5.2	5.5	38.1	28.9
Ignition timing, deg BTC....	28.0	29.5	29.0	17.0	16.5
Manifold vacuum, in Hg.....	17.5	19.0	19.8	.5	2.5
Throttle angle, deg.....	6.2	5.0	3.9	76.0	36.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1325	.1511	.1603	5.5400	.4910
CO2, %.....	11.66	11.78	11.78	10.50	13.27
O2, %.....	3.70	3.95	3.70	.17	1.10
HC, ppmC.....	967	878	878	1946	756
NOx, ppm.....	145	68	76	550	3200
Air-fuel ratio.....	17.79	17.96	17.75	12.44	15.50
Emission rates, g/hr:					
CO.....	59.2	69.4	64.8	10874.4	897.6
HC.....	21.8	20.3	17.9	192.5	69.7
NOx**.....	9.6	4.8	4.7	160.2	868.1
Oil temperature, F.....	217	197	202	224	250
Oil pressure, psi.....	35	36	38	37	36
Coolant temperature, F.....	192	192	188	196	197
Exhaust temperature, F.....	897	876	894	1227	1330
Exhaust pressure, in H2O....	5.5	5.5	5.5	67.0	65.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	5.3800	.0024
CO2, %.....	12.02	12.02	12.02	10.70	13.93
O2, %.....	3.55	3.35	3.45	.10	.70
HC, ppmC.....	107	65	92	1515	44
NOx, ppm.....	155	94	70	350	3100
Air-fuel ratio.....	17.81	17.65	17.73	12.51	15.52
Emission rates, g/hr:					
CO.....	1.1	1.1	1.0	10600.9	4.4
HC.....	2.4	1.5	1.9	150.5	4.0
NOx**.....	10.3	6.5	4.4	102.3	839.4
Exhaust temperature, F.....	786	664	676	1061	1246
Exhaust pressure, in H2O....	2.0	1.5	1.5	36.0	35.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	36	37	38	39	40
Test Date.....	12/29/75	12/29/75	12/29/75	12/29/75	12/29/75
Barometer, mm Hg.....	740.2	740.2	740.2	740.2	740.2
Humidity, grains/lb.....	52	52	52	52	52
Temperature, F.....	76	81	82	82	81
Engine speed, rpm.....	2100	2100	2100	2100	2100
Torque, lb-ft.....	153.0	122.0	81.0	51.0	20.0
Power, bhp*.....	61.1	48.9	32.5	20.5	8.0
Fuel rate, lb/hr.....	23.5	23.2	19.5	11.9	11.6
Ignition timing, deg BTC....	17.0	22.0	29.0	31.0	35.0
Manifold vacuum, in Hg.....	4.0	5.0	8.0	11.5	14.0
Throttle angle, deg.....	30.2	27.9	24.0	14.8	13.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0892	.0940	.1349	.1534	.1796
CO2, %.....	12.88	12.75	11.32	11.33	11.44
O2, %.....	2.15	2.85	4.30	4.25	4.05
HC, ppmC.....	403	295	445	1271	1273
NOx, ppm.....	2200	1225	500	235	175
Air-fuel ratio.....	16.54	17.06	18.48	18.27	18.05
Emission rates, g/hr:					
CO.....	141.7	152.3	200.6	137.8	155.0
HC.....	32.3	24.1	33.3	57.5	55.3
NOx**.....	518.5	294.5	110.4	31.3	22.4
Oil temperature, F.....	247	244	242	231	231
Oil pressure, psi.....	35	37	37	37	37
Coolant temperature, F.....	197	200	197	192	197
Exhaust temperature, F.....	1287	1307	1246	1112	1111
Exhaust pressure, in H2O....	52.0	49.0	44.4	22.2	19.4
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0024	.0024
CO2, %.....	13.01	12.38	11.55	11.55	11.66
O2, %.....	2.10	2.85	4.15	4.00	3.85
HC, ppmC.....	22	20	20	138	159
NOx, ppm.....	2200	1225	540	255	210
Air-fuel ratio.....	16.59	17.23	18.46	18.31	18.14
Emission rates, g/hr:					
CO.....	3.8	3.9	3.6	2.2	2.1
HC.....	1.7	1.7	1.5	6.2	7.0
NOx**.....	519.6	298.4	118.9	34.0	27.0
Exhaust temperature, F.....	1206	1157	1115	1052	968
Exhaust pressure, in H2O....	28.0	29.0	22.0	10.0	8.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	41	42	43	44	45
Test Date.....	12/30/75	12/30/75	1/19/76	12/30/75	12/30/75
Barometer, mm Hg.....	744.0	744.0	751.9	744.0	744.0
Humidity, grains/lb.....	68	68	24	68	68
Temperature, F.....	77	76	80	84	101
Engine speed, rpm.....	2100	2100	2700	2700	2700
Torque, lb-ft.....	10.2	4.0	182.4	158.0	132.0
Power, bhp*.....	4.1	1.6	91.9	81.6	69.2
Fuel rate, lb/hr.....	8.9	9.3	48.3	39.0	32.0
Ignition timing, deg BTC....	32.5	33.0	22.0	20.0	24.0
Manifold vacuum, in Hg.....	19.5	19.5	1.5	2.0	4.5
Throttle angle, deg.....	10.0	9.0	0.0	43.0	33.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1373	.1465	6.3100	1.9500	.6500
CO2, %.....	12.02	11.78	9.99	12.75	13.27
O2, %.....	3.05	3.35	.10	.25	1.15
HC, ppmC.....	462	471	1968	1286	484
NOx, ppm.....	150	130	450	2075	2450
Air-fuel ratio.....	17.25	17.53	12.07	14.14	15.46
Emission rates, g/hr:					
CO.....	86.5	98.5	16197.5	4403.7	1311.0
HC.....	14.7	16.0	254.5	146.3	49.2
NOx**.....	15.0	13.9	153.1	745.6	786.2
Oil temperature, F.....	186	221	227	193	251
Oil pressure, psi.....	40	40	40	41	39
Coolant temperature, F.....	196	194	183	181	196
Exhaust temperature, F.....	1052	1098	1306	1396	1398
Exhaust pressure, in H2O....	11.1	10.5	100.0	91.5	77.6
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	6.3200	1.7000	.0149
CO2, %.....	12.02	11.90	9.99	13.00	14.08
O2, %.....	3.30	3.35	.15	.10	.50
HC, ppmC.....	52	46	1279	910	24
NOx, ppm.....	145	150	210	1750	2000
Air-fuel ratio.....	17.61	17.68	12.14	14.18	15.34
Emission rates, g/hr:					
CO.....	1.5	1.6	16309.7	3846.6	29.7
HC.....	1.7	1.6	166.4	103.8	2.4
NOx**.....	14.8	16.2	71.8	630.0	634.7
Exhaust temperature, F.....	875	841	1163	1211	1307
Exhaust pressure, in H2O....	4.0	4.0	59.0	52.0	44.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	46	47	48	49	50
Test Date.....	12/30/75	12/30/75	12/30/75	12/30/75	12/30/75
Barometer, mm Hg.....	744.0	744.0	744.0	744.0	744.0
Humidity, grains/lb.....	68	68	68	68	68
Temperature, F.....	81	85	82	80	77
Engine speed, rpm.....	2700	2700	2700	2700	2700
Torque, lb-ft.....	105.0	70.0	44.0	17.0	8.8
Power, bhp*.....	54.1	36.2	22.7	8.7	4.5
Fuel rate, lb/hr.....	31.1	21.2	16.3	13.5	11.8
Ignition timing, deg BTC....	24.0	35.0	35.0	36.0	37.0
Manifold vacuum, in Hg.....	5.5	9.5	13.0	16.0	17.0
Throttle angle, deg.....	32.5	22.9	17.0	13.5	11.2
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0820	.3730	.1721	.2205	.2327
CO2, %.....	12.62	11.33	11.33	11.33	11.33
O2, %.....	2.35	3.95	4.05	4.00	3.95
HC, ppmC.....	204	356	675	806	960
NOx, ppm.....	1850	800	360	165	102
Air-fuel ratio.....	16.74	18.00	18.19	18.07	17.99
Emission rates, g/hr:					
CO.....	174.9	586.7	210.4	222.7	204.5
HC.....	21.9	28.2	41.6	41.0	42.5
NOx**.....	628.0	200.2	70.0	26.5	14.3
Oil temperature, F.....	237	254	247	242	241
Oil pressure, psi.....	40	39	39	40	40
Coolant temperature, F.....	197	195	196	195	195
Exhaust temperature, F.....	1367	1271	1216	1204	1207
Exhaust pressure, in H2O....	65.0	50.0	33.3	22.0	19.4
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0024	.0024
CO2, %.....	12.75	11.55	11.55	11.55	11.66
O2, %.....	2.20	3.65	3.90	3.75	3.65
HC, ppmC.....	23	18	24	36	29
NOx, ppm.....	1850	820	420	195	125
Air-fuel ratio.....	16.68	18.05	18.25	18.11	17.99
Emission rates, g/hr:					
CO.....	5.1	3.8	2.9	2.4	2.1
HC.....	2.4	1.4	1.5	1.8	1.3
NOx**.....	625.5	205.8	81.9	31.4	17.4
Exhaust temperature, F.....	1211	1173	1101	1046	1037
Exhaust pressure, in H2O....	44.0	25.0	15.0	10.0	8.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	51	52	53	54	55
Test Date.....	12/30/75	12/30/75	12/30/75	12/30/75	12/30/75
Barometer, mm Hg.....	744.0	744.0	744.0	744.0	744.0
Humidity, grains/lb.....	68	68	68	68	68
Temperature, F.....	76	71	84	87	88
Engine speed, rpm.....	2700	3300	3300	3300	3300
Torque, lb-ft.....	2.4	164.0	147.0	123.0	98.0
Power, bhp*.....	1.2	102.3	92.8	77.9	62.1
Fuel rate, lb/hr.....	11.6	54.0	47.1	40.4	34.0
Ignition timing, deg BTC....	35.0	21.5	22.0	27.0	29.0
Manifold vacuum, in Hg.....	17.5	2.0	3.0	5.0	5.5
Throttle angle, deg.....	110.0	76.0	49.5	39.0	36.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.2335	5.0600	2.6300	.9900	.0700
CO2, %.....	11.33	10.50	12.50	13.27	12.26
O2, %.....	3.95	.10	.20	.45	2.75
HC, ppmC.....	948	1761	1336	630	85
NOx, ppm.....	90	550	1800	2350	1500
Air-fuel ratio.....	18.00	12.56	13.81	14.79	17.12
Emission rates, g/hr:					
CO.....	200.7	14222.4	7001.5	2415.3	167.1
HC.....	41.1	249.5	179.2	77.5	10.2
NOx**.....	12.3	246.0	762.4	912.2	569.7
Oil temperature, F.....	237	217	267	276	276
Oil pressure, psi.....	40	42	40	40	39
Coolant temperature, F.....	194	191	196	199	197
Exhaust temperature, F.....	1221	1342	1452	1462	1432
Exhaust pressure, in H2O....	18.0	125.0	120.0	111.0	103.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	4.8900	2.5900	.3910	.0024
CO2, %.....	11.55	10.71	12.50	13.80	12.50
O2, %.....	3.70	.05	.12	.15	2.45
HC, ppmC.....	36	1497	922	37	6
NOx, ppm.....	110	320	1500	1450	1750
Air-fuel ratio.....	18.06	12.64	13.80	14.90	16.91
Emission rates, g/hr:					
CO.....	2.1	13800.6	6892.8	959.1	5.7
HC.....	1.6	212.9	123.6	4.5	.7
NOx**.....	15.1	143.7	635.1	565.9	655.8
Exhaust temperature, F.....	1021	1151	1311	1390	1304
Exhaust pressure, in H2O....	7.0	80.0	79.0	70.0	61.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	56	57	58	59	60
Test Date.....	12/30/75	12/30/75	12/30/75	12/30/75	12/30/75
Barometer, mm Hg.....	744.0	744.0	744.0	744.0	744.0
Humidity, grains/lb.....	68	68	68	68	68
Temperature, F.....	87	86	87	81	81
Engine speed, rpm.....	3300	3300	3300	3300	3300
Torque, lb-ft.....	65.0	41.0	16.0	8.0	5.8
Power, bhp*.....	41.1	25.9	10.1	5.0	3.7
Fuel rate, lb/hr.....	27.8	20.9	19.1	14.7	14.6
Ignition timing, deg BTC....	38.0	39.0	40.0	40.0	39.5
Manifold vacuum, in Hg.....	9.0	12.5	16.0	17.5	17.5
Throttle angle, deg.....	28.0	22.0	17.0	14.5	14.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1180	.1721	.1682	.1721	.1744
CO2, %.....	11.55	11.11	11.44	11.55	11.33
O2, %.....	3.60	4.25	3.85	3.80	3.95
HC, ppmC.....	178	367	308	374	379
NOx, ppm.....	1350	570	320	162	155
Air-fuel ratio.....	17.91	18.48	18.05	17.95	18.14
Emission rates, g/hr:					
CO.....	242.3	274.5	238.7	186.6	191.1
HC.....	18.5	29.5	22.1	20.4	20.9
NOx**.....	441.0	144.7	72.3	27.9	27.0
Oil temperature, F.....	271	267	257	254	251
Oil pressure, psi.....	40	40	40	40	40
Coolant temperature, F.....	192	192	193	196	197
Exhaust temperature, F.....	1341	1292	1284	1261	1277
Exhaust pressure, in H2O....	72.0	50.0	33.3	28.0	26.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0024	.0024
CO2, %.....	11.78	11.55	11.55	11.55	11.55
O2, %.....	3.50	3.90	3.75	3.75	3.75
HC, ppmC.....	6	11	11	21	21
NOx, ppm.....	1400	650	330	185	175
Air-fuel ratio.....	17.89	18.26	18.12	18.11	18.11
Emission rates, g/hr:					
CO.....	4.9	3.8	3.4	2.6	2.6
HC.....	.6	.9	.8	1.2	1.2
NOx**.....	456.2	162.6	74.8	32.2	30.4
Exhaust temperature, F.....	1250	1176	1127	1102	1084
Exhaust pressure, in H2O....	41.0	25.0	16.0	11.0	11.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	61	62	63	64	65
Test Date.....	1/ 8/76	12/30/75	1/ 8/76	12/31/75	12/31/75
Barometer, mm Hg.....	758.0	744.0	758.0	740.4	740.4
Humidity, grains/lb.....	56	68	56	94	94
Temperature, F.....	74	87	77	94	82
Engine speed, rpm.....	3800	3800	3800	3800	3800
Torque, lb-ft.....	149.8	124.0	111.7	82.0	55.0
Power, bhp*.....	105.6	90.4	79.0	60.8	40.3
Fuel rate, lb/hr.....	64.5	55.0	42.0	35.6	25.7
Ignition timing, deg BTC....	26.5	27.0	30.5	330.0	39.0
Manifold vacuum, in Hg.....	2.5	3.5	6.0	7.5	11.5
Throttle angle, deg.....	76.0	51.0	37.8	33.5	24.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	6.8200	3.7300	.6100	.1132	.1180
CO2, %.....	12.50	11.90	13.01	13.14	12.50
O2, %.....	1.20	.17	.98	2.20	3.05
HC, ppmC.....	1804	1676	310	175	185
NOx, ppm.....	650	1275	2825	1950	1325
Air-fuel ratio.....	12.91	13.28	15.40	16.55	17.26
Emission rates, g/hr:					
CO.....	22872.3	11160.9	1612.9	271.9	214.2
HC.....	304.9	252.7	41.3	21.2	16.9
NOx**.....	329.4	607.0	1128.8	845.6	434.1
Oil temperature, F.....	246	274	281	223	264
Oil pressure, psi.....	40	39	38	41	39
Coolant temperature, F.....	191	200	201	187	187
Exhaust temperature, F.....	1405	1464	1474	1407	1347
Exhaust pressure, in H2O....	166.3	155.2	122.0	99.8	63.8
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	6.5100	3.7300	.0049	.0024	.0024
CO2, %.....	12.62	11.90	13.53	13.00	12.50
O2, %.....	.10	.10	.85	2.55	3.00
HC, ppmC.....	1273	1045	21	51	46
NOx, ppm.....	410	830	2800	1775	1275
Air-fuel ratio.....	12.49	13.27	15.64	16.91	17.32
Emission rates, g/hr:					
CO.....	21168.0	11157.7	13.1	5.9	4.4
HC.....	208.6	157.6	2.8	6.3	4.3
NOx**.....	201.5	395.0	1133.8	787.1	419.4
Exhaust temperature, F.....	1282	1341	1366	1236	1246
Exhaust pressure, in H2O....	114.0	101.0	125.0	59.0	35.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	66	67	68	69	70
Test Date.....	12/31/75	12/31/75	12/31/75	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	740.4	740.4	740.4	746.5	746.5
Humidity, grains/lb.....	94	94	94	76	76
Temperature, F.....	82	81	84	76	75
Engine speed, rpm.....	3800	3800	3800	3800	900
Torque, lb-ft.....	34.0	13.0	6.0	3.0	20.0
Power, bhp*.....	24.9	9.5	4.4	2.2	3.4
Fuel rate, lb/hr.....	22.6	17.5	17.8	16.7	4.2
Ignition timing, deg BTC....	40.0	40.0	39.0	40.0	25.0
Manifold vacuum, in Hg.....	14.5	16.5	17.5	17.5	14.5
Throttle angle, deg.....	20.0	16.0	15.0	14.5	2.2
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1132	.1277	.1229	.1890	.1277
CO2, %.....	12.50	12.02	12.26	12.13	11.90
O2, %.....	2.75	3.25	3.05	3.40	4.00
HC, ppmC.....	103	194	133	226	1233
NOx, ppm.....	975	350	325	280	250
Air-fuel ratio.....	17.03	17.46	17.27	17.51	17.94
Emission rates, g/hr:					
CO.....	178.7	160.7	155.2	227.0	39.6
HC.....	8.2	12.3	8.5	13.7	19.2
NOx**.....	277.9	79.5	74.1	55.6	12.8
Oil temperature, F.....	266	264	257	201	212
Oil pressure, psi.....	40	40	40	44	30
Coolant temperature, F.....	196	196	196	194	188
Exhaust temperature, F.....	1332	1312	1336	1303	781
Exhaust pressure, in H2O....	49.9	33.3	27.7	30.5	5.5
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0024	.0024	.0024	.0470	.0470
CO2, %.....	12.62	12.26	12.13	12.38	10.80
O2, %.....	2.65	3.20	3.10	3.10	5.00
HC, ppmC.....	31	25	41	30	121
NOx, ppm.....	1000	380	325	290	110
Air-fuel ratio.....	17.02	17.49	17.44	17.35	19.40
Emission rates, g/hr:					
CO.....	3.8	3.0	3.1	55.9	15.9
HC.....	2.4	1.6	2.6	1.8	2.1
NOx**.....	284.7	86.3	74.9	57.0	6.1
Exhaust temperature, F.....	1182	1152	1127	1057	864
Exhaust pressure, in H2O....	25.0	16.0	14.0	14.0	1.0

* Corrected - SAE J816b

** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	71	72	73	74	75
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	746.5
Humidity, grains/lb.....	76	76	76	76	76
Temperature, F.....	74	76	76	77	76
Engine speed, rpm.....	900	900	900	900	1200
Torque, lb-ft.....	15.0	10.0	3.0	1.6	82.0
Power, bhp*.....	2.6	1.7	.5	.3	18.7
Fuel rate, lb/hr.....	4.5	4.2	3.7	3.7	11.2
Ignition timing, deg BTC....	25.0	26.5	26.0	26.5	19.5
Manifold vacuum, in Hg.....	17.0	17.5	18.0	18.0	6.0
Throttle angle, deg.....	2.0	1.8	1.5	1.0	13.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1180	.1325	.1682	.1826	.0796
CO2, %.....	11.76	11.60	11.11	10.90	11.11
O2, %.....	3.35	3.50	4.30	4.30	4.60
HC, ppmC.....	1801	1701	3256	7312	1037
NOx, ppm.....	140	115	87	82	240
Air-fuel ratio.....	17.37	17.53	18.05	17.47	18.74
Emission rates, g/hr:					
CO.....	38.0	39.8	46.7	48.4	68.7
HC.....	29.2	25.7	45.5	97.7	45.1
NOx**.....	7.4	5.7	4.0	3.6	34.2
Oil temperature, F.....	204	201	197	196	196
Oil pressure, psi.....	34	31	32	32	34
Coolant temperature, F.....	188	187	186	191	182
Exhaust temperature, F.....	796	765	746	746	991
Exhaust pressure, in H2O....	5.5	5.5	5.5	5.5	13.9
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	.0470
CO2, %.....	12.09	11.90	11.55	11.55	11.33
O2, %.....	3.10	3.10	3.60	3.90	3.85
HC, ppmC.....	133	153	357	357	81
NOx, ppm.....	153	120	102	100	280
Air-fuel ratio.....	17.39	17.43	17.89	18.14	18.21
Emission rates, g/hr:					
CO.....	15.1	14.0	12.9	12.8	39.4
HC.....	2.2	2.3	4.9	4.9	3.4
NOx**.....	8.1	5.9	4.6	4.5	38.8
Exhaust temperature, F.....	684	640	585	602	677
Exhaust pressure, in H2O....	.5	.5	.5	.5	6.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	76	77	78	79	80
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	746.5
Humidity, grains/lb.....	76	76	76	76	76
Temperature, F.....	74	76	76	76	74
Engine speed, rpm.....	1200	1200	1200	1200	1500
Torque, lb-ft.....	51.0	20.0	9.0	2.6	85.0
Power, bhp*.....	11.6	4.6	2.0	.6	24.1
Fuel rate, lb/hr.....	7.8	5.3	5.2	4.6	14.8
Ignition timing, deg BTC....	28.0	27.0	26.5	27.5	19.0
Manifold vacuum, in Hg.....	13.5	19.0	18.5	19.5	6.0
Throttle angle, deg.....	7.5	5.5	3.5	20.0	18.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0892	.1420	.1420	.1650	.1036
CO2, %.....	11.66	12.02	12.02	11.78	11.55
O2, %.....	3.65	2.95	2.95	3.30	4.10
HC, ppmC.....	1185	1149	1231	2047	653
NOx, ppm.....	425	152	145	95	330
Air-fuel ratio.....	17.76	17.07	17.06	17.25	18.23
Emission rates, g/hr:					
CO.....	51.0	52.5	52.2	54.4	115.4
HC.....	34.1	21.4	22.8	34.0	36.7
NOx**.....	40.1	9.3	8.8	5.2	60.8
Oil temperature, F.....	201	202	202	164	194
Oil pressure, psi.....	34	34	34	35	35
Coolant temperature, F.....	187	196	196	187	194
Exhaust temperature, F.....	904	854	851	802	1100
Exhaust pressure, in H2O....	11.1	5.5	5.5	.2	1.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	.0470
CO2, %.....	11.90	12.26	12.33	12.26	11.66
O2, %.....	3.40	2.70	2.70	3.00	3.80
HC, ppmC.....	61	103	81	205	51
NOx, ppm.....	445	165	165	112	285
Air-fuel ratio.....	17.70	17.04	17.03	17.27	18.08
Emission rates, g/hr:					
CO.....	26.7	17.3	17.2	15.5	51.9
HC.....	1.7	1.9	1.5	3.4	2.8
NOx**.....	41.8	10.1	10.0	6.1	52.1
Exhaust temperature, F.....	804	722	676	500	781
Exhaust pressure, in H2O....	4.0	1.0	.5	.5	12.0

* Corrected - SAE J816b

** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	81	82	83	84	85
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	746.5
Humidity, grains/lb.....	76	76	76	76	76
Temperature, F.....	72	76	77	76	76
Engine speed, rpm.....	1500	1500	1500	1500	2100
Torque, lb-ft.....	53.0	21.0	6.0	2.6	81.0
Power, bhp*.....	15.0	6.0	1.7	.7	32.2
Fuel rate, lb/hr.....	9.9	6.9	6.4	5.3	21.1
Ignition timing, deg BTC....	29.0	29.0	30.0	29.0	29.0
Manifold vacuum, in Hg.....	11.5	18.0	19.5	20.0	8.0
Throttle angle, deg.....	10.5	5.5	4.5	3.1	21.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1325	.1325	.1420	.1511	.1180
CO2, %.....	11.39	11.90	11.90	12.02	12.02
O2, %.....	4.05	3.20	2.90	2.80	3.40
HC, ppmC.....	1305	768	655	821	441
NOx, ppm.....	200	220	172	122	675
Air-fuel ratio.....	18.10	17.36	17.12	16.99	17.57
Emission rates, g/hr:					
CO.....	97.9	64.9	63.9	56.3	180.0
HC.....	48.6	18.9	14.9	15.4	33.9
NOx**.....	24.4	17.8	12.8	7.5	170.2
Oil temperature, F.....	207	211	212	211	214
Oil pressure, psi.....	35	36	35	35	38
Coolant temperature, F.....	186	192	197	194	191
Exhaust temperature, F.....	1032	936	921	907	1186
Exhaust pressure, in H2O....	16.6	8.3	5.5	5.5	36.0
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	.0470
CO2, %.....	11.66	12.02	12.13	12.40	11.44
O2, %.....	3.70	3.30	2.90	2.60	4.05
HC, ppmC.....	163	41	51	61	35
NOx, ppm.....	235	230	170	135	320
Air-fuel ratio.....	17.98	17.58	17.23	16.95	18.36
Emission rates, g/hr:					
CO.....	34.4	23.3	21.3	17.4	75.2
HC.....	6.0	1.0	1.2	1.1	2.8
NOx**.....	28.5	18.8	12.7	8.3	84.6
Exhaust temperature, F.....	943	834	744	714	916
Exhaust pressure, in H2O....	6.0	3.0	1.0	1.0	18.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	86	87	88	89	90
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	746.5
Humidity, grains/lb.....	76	76	76	76	76
Temperature, F.....	77	73	76	76	75
Engine speed, rpm.....	2100	2100	2100	2100	2700
Torque, lb-ft.....	51.0	20.0	10.0	2.2	70.0
Power, bhp*.....	20.3	7.9	4.0	.9	35.8
Fuel rate, lb/hr.....	14.5	11.5	8.3	7.8	20.7
Ignition timing, deg BTC....	32.0	32.0	31.0	33.0	35.0
Manifold vacuum, in Hg.....	11.0	15.0	19.0	20.0	11.0
Throttle angle, deg.....	15.0	11.1	7.5	6.2	20.5
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1465	.2327	.1465	.1511	.1325
CO2, %.....	11.90	11.55	11.90	11.78	12.02
O2, %.....	3.60	3.80	3.30	3.40	3.60
HC, ppmC.....	563	1328	378	409	358
NOx, ppm.....	460	150	225	160	780
Air-fuel ratio.....	17.71	17.76	17.48	17.53	17.74
Emission rates, g/hr:					
CO.....	155.0	196.4	87.6	85.0	199.5
HC.....	30.0	56.5	11.4	11.6	27.2
NOx**.....	80.4	20.9	22.2	14.9	194.1
Oil temperature, F.....	226	223	226	226	227
Oil pressure, psi.....	38	38	38	38	40
Coolant temperature, F.....	194	194	190	192	194
Exhaust temperature, F.....	1154	1147	1071	1044	1217
Exhaust pressure, in H2O....	27.7	16.6	11.1	11.1	38.8
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	.0470
CO2, %.....	11.72	12.02	12.08	12.13	12.26
O2, %.....	3.70	3.40	3.10	3.00	2.95
HC, ppmC.....	35	51	20	20	15
NOx, ppm.....	370	190	235	190	775
Air-fuel ratio.....	17.99	17.66	17.41	17.32	17.28
Emission rates, g/hr:					
CO.....	50.6	39.3	28.0	26.0	68.9
HC.....	1.9	2.1	.6	.6	1.1
NOx**.....	65.8	26.3	23.1	17.4	187.8
Exhaust temperature, F.....	1036	1001	962	874	978
Exhaust pressure, in H2O....	13.0	8.0	4.0	3.0	20.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	91	92	93	94	95
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	746.5
Humidity, grains/lb.....	76	76	76	76	76
Temperature, F.....	76	77	77	78	80
Engine speed, rpm.....	2700	2700	2700	2700	3300
Torque, lb-ft.....	44.0	17.0	8.0	2.8	65.0
Power, bhp*.....	22.5	8.7	4.1	1.4	40.8
Fuel rate, lb/hr.....	16.0	13.2	11.7	11.4	26.2
Ignition timing, deg BTC....	34.0	34.5	35.0	35.0	40.0
Manifold vacuum, in Hg.....	13.0	16.5	17.5	18.0	11.0
Throttle angle, deg.....	16.0	12.9	11.0	10.5	24.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1721	.2205	.2327	.2354	.1132
CO2, %.....	11.66	11.66	11.66	11.66	12.50
O2, %.....	3.70	3.65	3.60	3.60	2.70
HC, ppmC.....	511	716	869	869	206
NOx, ppm.....	375	200	155	135	1625
Air-fuel ratio.....	17.83	17.71	17.64	17.64	17.00
Emission rates, g/hr:					
CO.....	202.1	213.1	198.0	195.2	206.8
HC.....	30.2	34.9	37.3	36.3	19.0
NOx**.....	72.8	31.9	21.8	18.5	490.5
Oil temperature, F.....	233	237	236	234	231
Oil pressure, psi.....	40	40	40	40	40
Coolant temperature, F.....	196	194	192	194	196
Exhaust temperature, F.....	1214	1216	1211	1212	1296
Exhaust pressure, in H2O....	27.7	22.2	19.4	16.6	58.2
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	.0470
CO2, %.....	11.90	12.02	12.02	12.02	12.38
O2, %.....	3.50	3.40	3.30	3.30	3.10
HC, ppmC.....	20	20	30	25	10
NOx, ppm.....	405	210	175	150	1400
Air-fuel ratio.....	17.78	17.67	17.58	17.58	17.40
Emission rates, g/hr:					
CO.....	55.0	45.2	39.8	38.8	87.9
HC.....	1.2	1.0	1.3	1.0	1.0
NOx**.....	78.3	33.4	24.5	20.5	432.6
Exhaust temperature, F.....	1077	1040	1034	1031	1107
Exhaust pressure, in H2O....	14.0	9.0	7.0	6.0	31.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	96	97	98	99	100
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	12/29/75
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	740.2
Humidity, grains/lb.....	76	76	76	76	52
Temperature, F.....	79	78	77	77	72
Engine speed, rpm.....	3300	3300	3300	3300	1200
Torque, lb-ft.....	41.0	10.0	8.0	2.0	208.0
Power, bhp*.....	25.7	6.3	5.0	1.3	47.3
Fuel rate, lb/hr.....	22.4	15.1	14.8	14.3	23.3
Ignition timing, deg BTC....	39.0	40.0	39.5	40.0	13.0
Manifold vacuum, in Hg.....	13.0	17.0	17.0	18.0	.5
Throttle angle, deg.....	21.0	14.0	13.5	13.0	74.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.1465	.1650	.1682	.1650	6.0100
CO2, %.....	12.02	12.02	12.02	11.90	10.40
O2, %.....	3.55	3.40	3.10	3.30	.12
HC, ppmC.....	236	358	358	266	2209
NOx, ppm.....	620	270	255	210	400
Air-fuel ratio.....	17.70	17.53	17.29	17.49	12.22
Emission rates, g/hr:					
CO.....	238.8	179.8	176.9	170.0	7088.6
HC.....	19.4	19.7	19.0	13.8	131.3
NOx**.....	167.0	48.6	44.3	35.7	70.0
Oil temperature, F.....	252	252	247	247	214
Oil pressure, psi.....	40	40	40	40	32
Coolant temperature, F.....	194	194	194	194	199
Exhaust temperature, F.....	1296	1282	1280	1284	1041
Exhaust pressure, in H2O....	49.9	27.7	27.7	24.9	27.7
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	5.8900
CO2, %.....	12.38	12.13	12.13	12.13	10.25
O2, %.....	3.25	3.30	3.25	3.10	.10
HC, ppmC.....	10	10	10	10	1891
NOx, ppm.....	905	260	265	215	480
Air-fuel ratio.....	17.50	17.57	17.53	17.40	12.25
Emission rates, g/hr:					
CO.....	75.6	51.3	50.1	48.1	6972.9
HC.....	.8	.6	.5	.5	112.8
NOx**.....	240.6	46.9	46.7	36.4	84.3
Exhaust temperature, F.....	1144	1107	1084	1086	918
Exhaust pressure, in H2O....	25.0	11.0	11.0	11.0	13.0

* Corrected - SAE J816b

** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	101	104	105	106	107
Test Date.....	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76	1/ 5/76
Barometer, mm Hg.....	746.5	746.5	746.5	746.5	746.5
Humidity, grains/lb.....	76	76	76	76	76
Temperature, F.....	78	82	81	82	82
Engine speed, rpm.....	3800	3800	3800	3800	3800
Torque, lb-ft.....	55.0	34.0	13.0	6.0	1.4
Power, bhp*.....	39.7	24.6	9.4	4.3	1.0
Fuel rate, lb/hr.....	27.9	23.4	19.9	17.5	15.4
Ignition timing, deg BTC....	40.0	40.0	39.5	39.0	40.0
Manifold vacuum, in Hg.....	12.0	13.0	16.0	16.5	17.5
Throttle angle, deg.....	24.5	20.9	17.5	17.0	14.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0988	.1132	.1132	.1132	.1325
CO2, %.....	12.75	12.62	12.50	12.26	12.26
O2, %.....	2.20	2.50	2.65	2.85	2.85
HC, ppmC.....	154	82	82	61	103
NOx, ppm.....	1700	1000	490	350	245
Air-fuel ratio.....	16.60	16.82	16.93	17.13	17.10
Emission rates, g/hr:					
CO.....	187.2	182.6	156.0	139.5	143.7
HC.....	14.7	6.6	5.7	3.8	5.6
NOx**.....	532.3	266.6	111.6	71.3	43.9
Oil temperature, F.....	256	265	264	262	262
Oil pressure, psi.....	40	40	40	40	40
Coolant temperature, F.....	192	194	194	194	189
Exhaust temperature, F.....	1336	1332	1332	1336	1312
Exhaust pressure, in H2O....	66.5	49.9	41.6	38.8	27.7
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	.0470	.0470	.0470	.0470	.0470
CO2, %.....	13.01	12.62	12.50	12.38	12.38
O2, %.....	2.05	2.40	2.60	3.00	2.80
HC, ppmC.....	10	6	6	6	6
NOx, ppm.....	1650	950	510	300	255
Air-fuel ratio.....	16.50	16.79	16.95	17.28	17.12
Emission rates, g/hr:					
CO.....	88.4	75.8	64.8	58.4	51.0
HC.....	1.0	.5	.4	.4	.3
NOx**.....	512.7	253.0	116.3	61.6	45.7
Exhaust temperature, F.....	1157	1177	1157	1146	1126
Exhaust pressure, in H2O....	35.0	35.0	20.0	18.0	12.0

Corrected - SAE J816b

* Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	108	109	110	111	112
Test Date.....	1/ 8/76	12/29/75	12/29/75	12/29/75	12/29/75
Barometer, mm Hg.....	758.0	740.2	740.2	740.2	740.2
Humidity, grains/lb.....	56	52	52	52	52
Temperature, F.....	76	71	76	78	76
Engine speed, rpm.....	4000	900	1200	1200	1500
Torque, lb-ft.....	140.2	12.2	18.0	16.0	20.4
Power, bhp*.....	104.2	2.1	4.1	3.7	5.8
Fuel rate, lb/hr.....	66.9	3.9	5.1	5.0	6.2
Ignition timing, deg BTC....	25.5	26.5	27.0	22.0	29.0
Manifold vacuum, in Hg.....	3.0	17.0	18.0	18.0	17.5
Throttle angle, deg.....	76.0	1.0	3.8	3.2	6.0
<u>Before Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	7.1500	.1373	.1349	.1325	.1325
CO2, %.....	12.26	10.70	11.44	11.33	11.66
O2, %.....	.10	5.00	3.95	4.05	3.75
HC, ppmC.....	1696	2190	1294	1441	1063
NOx, ppm.....	575	35	32	82	135
Air-fuel ratio.....	12.25	18.98	17.99	18.09	17.81
Emission rates, g/hr:					
CO.....	23692.4	42.3	50.9	49.3	59.8
HC.....	283.2	34.0	24.6	27.0	24.2
NOx**.....	287.9	1.6	4.6	4.5	9.0
Oil temperature, F.....	284	192	206	207	212
Oil pressure, psi.....	39	33	32	33	35
Coolant temperature, F.....	192	196	195	191	194
Exhaust temperature, F.....	1436	741	825	812	872
Exhaust pressure, in H2O....	180.2	5.5	5.5	5.5	5.5
<u>After Catalyst</u>					
Concentrations, dry basis:					
CO, %.....	7.2300	.0024	.0024	.0024	.0024
CO2, %.....	12.38	11.00	11.66	11.66	11.90
O2, %.....	.10	4.65	3.60	3.80	3.55
HC, ppmC.....	1381	396	169	169	111
NOx, ppm.....	390	45	96	70	150
Air-fuel ratio.....	12.26	19.00	17.93	18.09	17.84
Emission rates, g/hr:					
CO.....	23945.6	.7	.9	.9	1.1
HC.....	230.5	6.1	3.2	3.2	2.5
NOx**.....	195.2	2.1	5.3	3.9	10.1
Exhaust temperature, F.....	1336	567	667	651	722
Exhaust pressure, in H2O....	125.0	0.0	1.0	1.0	2.0

* Corrected - SAE J816b
 ** Corrected for humidity.

Engine..... Chev 250-CID
 Fuel..... 7516

Test Number.....	113	0
Test Date.....	12/29/75	
Barometer, mm Hg.....	740.2	0.0
Humidity, grains/lb.....	52	0
Temperature, F.....	77	0
Engine speed, rpm.....	1500	0
Torque, lb-ft.....	20.0	0.0
Power, bhp*.....	5.7	0.0
Fuel rate, lb/hr.....	6.1	0.0
Ignition timing, deg BTC....	28.5	0.0
Manifold vacuum, in Hg.....	17.5	0.0
Throttle angle, deg.....	6.0	0.0
<u>Before Catalyst</u>		
Concentrations, dry basis:		
CO, %.....	.1325	0.0000
CO2, %.....	11.55	0.00
O2, %.....	3.75	0.00
HC, ppmC.....	1062	0
NOx, ppm.....	135	0
Air-fuel ratio.....	17.84	0.00
Emission rates, g/hr:		
CO.....	59.3	0.0
HC.....	23.9	0.0
NOx**.....	9.0	0.0
Oil temperature, F.....	203	0
Oil pressure, psi.....	34	0
Coolant temperature, F.....	196	0
Exhaust temperature, F.....	864	0
Exhaust pressure, in H2O....	5.5	0.0
<u>After Catalyst</u>		
Concentrations, dry basis:		
CO, %.....	.0024	0.0000
CO2, %.....	11.78	0.00
O2, %.....	3.60	0.00
HC, ppmC.....	117	0
NOx, ppm.....	145	0
Air-fuel ratio.....	17.91	0.00
Emission rates, g/hr:		
CO.....	1.1	0.0
HC.....	2.6	0.0
NOx**.....	9.7	0.0
Exhaust temperature, F.....	698	0
Exhaust pressure, in H2O....	2.0	0.0

* Corrected - SAE J816b
 ** Corrected for humidity.

