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RFORMANCE CHARACTERISTICS OF AUTOMOTIVE ENGINES IN THE UNITED STATES

Third Series - Report No. 5
1978 Chevrolet, 200 CID (3.3 Liters), 2V

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INTERIM REPORT

Prepared for

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
Office of Research and Development
Washington DC 20590

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16. Abstract

Experimental data were obtained in dynamometer tests of a 1978 Chevrolet 200 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, 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 characteristic data required as input for engineering calculations involving ground transportation.

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PREFACE

This report, prepared by the U.S. Department of Energy, Bartlesville Energy Technology Center for the U.S. Department of Transportation, Transportation Systems Center, Energy Technology Branch, Cambridge, MA, presents results of experimental work to obtain information on performance characteristics of an engine used in automobiles sold in the United States. The Chevrolet 200 CID engine used in this work is one of a series of 15 engines to be tested in the current program. This is the fifth of the reports to be published covering work with those engines.

This project is funded by the National Highway Traffic Safety Administration, Office of Research and Development, Office of Passenger Vehicle Research, Technology Assessment Division.

James A. Kidd, Jr. and Ralph G. Colello of the U.S. Department of Transportation, Transportation Systems Center, are the technical monitors.

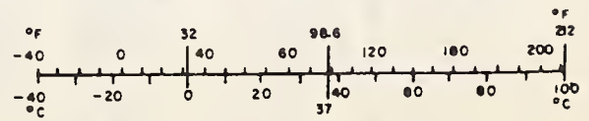
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



1. INTRODUCTION

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

The data acquired from tests of a 1978 Chevrolet 200 CID engine are presented in this report. The engine as equipped is intended for use in a forty-nine state (Federal) vehicle with automatic transmission. Chevrolet uses the 200 CID engine in vehicles in the 3,500 lb weight class. The test results are sufficient to establish steady-state maps for fuel consumption and emissions (carbon monoxide, unburned hydrocarbons, and oxides of nitrogen) over the entire operating range of the engine.

2. ENGINE TEST REPORT

The engine test set-up included a complete mean-tolerance engine (SAE definition) coupled to an eddy-current dynamometer. A cooling tower was used in place of the fan and radiator. The alternator was included but was not wired into the engine's electrical system. Emission control systems included exhaust-gas-recirculation, positive crankcase ventilation, early fuel evaporation, and an oxidation catalyst. The manufacturer's engine specifications are listed in Table 1.

Prior to testing, engine break-in consisted of 40 hours of operation at various speeds and loads representative of normal engine operation. Table 2 contains details of the break-in schedule. A single batch of unleaded regular grade gasoline was used throughout the break-in and tests; a detailed fuel analysis is given in Table 3. Engine tests began on March 15, 1978, and ended on March 30, 1978. During steady-state tests, the engine was operated at the following speed/load modes:

Speeds: 1,000; 1,300; 1,700; 2,000; 2,400; 2,800; 3,300; 3,800 rpm

Loads: 0, 10, 25, 40, 60, 75, 90, 100 pct of full load (0, 10, 25, 60, and 75 pct points were repeated at all engine speeds)

Idle speed/load modes: 750 rpm -- 0, 10, 15 lb-ft
650 rpm -- 15 lb-ft

Over speed point: 4,000 rpm -- 134 lb-ft (WOT)

Total number of test modes.....	69
Total number of repeats.....	49
Total number of tests.....	118

The following data were recorded for each test point:

Test number
Date
Barometric pressure, mm Hg
Dew point, °F
Inlet air temperature, °F
Speed, rpm
Torque, lb-ft -- Daytronics strain gauge load cell
Fuel rate, lb/hr -- Fluidyne positive displacement fuel flow meter
Ignition timing, °BTC

Manifold vacuum, in. Hg
Throttle angle, degrees
CO, pct -- Beckman NDIR
CO_2, pct -- Beckman NDIR
O_2, 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
Exhaust-gas-recirculation rate as determined by the intake manifold, CO_2

The following equations were used in calculating power, air/fuel ratio, absolute humidity, and mass emission rates of carbon monoxide (CO), unburned hydrocarbons (HC), and oxides of nitrogen (NO_x):

1. Partial pressure of water vapor in intake air (millimeters of mercury):

$$P = \exp\left[18.717 - \frac{7308.1}{393 + D}\right]$$

where D = Dew point, °F

2. Absolute humidity (grains moisture per pound dry air):

$$H = \frac{4347.8(P)}{B - P}$$

where B = Barometric pressure, mm Hg

3. Humidity correction factor (dimensionless):

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

Note: This factor is used to correct the NO_x mass emission rate to a standard humidity of 75 grains moisture per pound dry air.

4. Stoichiometric air/fuel ratio (dimensionless):

$$AF_s = \frac{69(2 + \frac{x}{2} - y)}{MW_{fuel}}$$

where x = hydrogen-carbon ratio of fuel
y = oxygen-carbon ratio of fuel
MW_{fuel} = fuel molecular weight per carbon atom
= 12.01115 + 1.00797x + 16.00000y

5. Hydrogen concentration in raw exhaust (percent):

$$H_2 = \frac{x(CO)(CO + CO_2)}{2(CO + 3CO_2)}$$

where CO = Carbon monoxide concentration (percent)
CO_2 = Carbon dioxide concentration (percent)

Note: This equation assumes a water-gas shift equilibrium constant

$$\frac{(CO)(H_2O)}{(CO_2)(H_2)} = 3$$

6. Correction factor for emission concentrations from wet basis to dry basis (dimensionless):

$$C_w = 1 + \frac{(\frac{x}{2})(CO + CO_2) - H_2}{100}$$

Note: In these tests only HC is measured on a wet basis. All other species are measured on a dry basis.

7. Air/Fuel ratio (dimensionless):

$$AF = \frac{AF_s}{2 + \frac{x}{2} - y}\left[\frac{(1 + \frac{x}{2} - y)(CO) + (2 + \frac{x}{2} - y)(CO_2) + 2(O_2) + \frac{NO_x}{10^4} - H_2}{CO + CO_2 + C_w\,(\frac{HC}{10^4})}\right]$$

where O_2 = oxygen concentration (percent)
NO_x = oxides of nitrogen (ppm)
HC = unburned hydrocarbon concentration (ppmC)

8. Exhaust flow (pounds per hour):

$$M_{EX} = M_F(1 + AF)$$

where M_F = fuel flow rate (pounds per hour)

9. Carbon monoxide mass emission rate (grams per hour):

$$M_{CO} = \left(\frac{MW_{CO}}{MW_f}\right) \left[\frac{(\%CO)(M_f)}{\%CO + \%CO_2 + C_w(\%HC)}\right] (453.59237)$$

MW_{CO} = molecular weight of CO (28.01115)
MW_f = molecular weight of fuel (12.01115 + 1.00797x + 16.00000y)
M_f = fuel rate in lbs/hour
%HC = HC(ppm)/10^4

10. Unburned hydrocarbon mass emission rate (grams per hour):

$$M_{HC} = \left(\frac{MW_{HC}}{MW_f}\right) \left[\frac{(\%HC)(M_f)(C_w)}{\%CO + \%CO_2 + C_w(\%HC)}\right] (453.59237)$$

MW_{HC} = molecular weight of hydrocarbon
= 12.01115 + 1.00797x + 16.00000y

11. Oxides of nitrogen mass emission rate (grams per hour):

$$M_{NO_X} = \left(\frac{MW_{NO_X}}{MW_f}\right) \left[\frac{\%NO_X + M_f}{\%CO + \%CO_2 + C_w(\%HC)}\right] (453.59237)$$

MW_{NO_X} = molecular weight of NO_2 = 46.0055

12. Power (brake horsepower corrected to a standard barometric pressure of 736.6 mm Hg and a standard temperature of 85° F):

$$HP = \left(\frac{N(T)}{5252.113}\right) \left(\frac{736.6}{B - P}\right) \sqrt{\frac{t + 460}{545}}$$

where N = engine speed (revolutions per minute)
T = brake torque (lb-ft)
t = air temperature (°F)
B = barometric pressure (mm Hg)
P = partial pressure of water vapor in intake air (mm Hg)

3. DISCUSSION OF TEST RESULTS

Maximum corrected brake horsepower, maximum torque, and brake specific fuel consumption (bsfc) are plotted as a function of engine speed at wide-open-throttle (WOT) (Figure 1). The maximum brake horsepower produced by the engine exceeded the value quoted in Table 1. The maximum torque produced exceeded the value quoted in Table 1 but was produced at a slightly lower speed. Fuel rates were found to be nearly a linear function of power for most engine speeds (Figure 2). Fuel rates were repeatable for all speeds duplicated.

Air-fuel ratios are plotted as a function of power for all engine speeds (Figure 3). The air-fuel ratios were repeatable for all engine speeds. Some minor deviation in the air-fuel ratios was observed at no-load operating conditions; this is typical for light load operation.

Emissions of carbon monoxide (CO), hydrocarbon (HC), and oxides of nitrogen (NO_X) are plotted as a function of power for all engine speeds (Figures 4, 5, 6). Emissions of CO and HC were effectively reduced to low levels by the oxidation catalyst at all speed/load modes except those at WOT operation. Due to enriched fuel operation at WOT, a lack of available oxygen to support the oxidation process causes the catalyst to be ineffective. Emissions of NO_X tended to peak at approximately 90 percent of maximum power at each speed and were repeatable for all speeds duplicated.

4. CONCLUSIONS

The experimental work to obtain entine performance data for a 1978 Chevrolet 200 CID engine has been completed, and these data are presented in the tables accompanying this report.

TABLE 1. MANUFACTURER'S ENGINE SPECIFICATIONS

Displacement, cubic inches	200
Maximum horsepower, bhp @ 3,800 rpm	95
Maximum torque, lb-ft @ 2,000 rpm	160
Bore and stroke, inches	3.5 - 3.48
Configuration	V-6
Compression ratio	8.2:1
Firing order	1-6-5-4-3-2
Ignition timing at idle speed, °BTDC @ 600 rpm	8
Block material	cast alloy iron
Head material	cast alloy iron
Number of crankshaft main bearings	4
Number of compression rings/piston	2
Number of oil rings/piston	1
Cam drive type	chain
Valve lift:	
Intake, inches	0.373
Exhaust, inches	0.410
Valve timing:	
Intake opens, °BTC	34
Intake closes, °ABC	86
Exhaust opens, °BBC	88
Exhaust closes, °ATC	52
Spark plug gap, inches	0.045
Engine weight, lbs	415
Exhaust-gas-recirculation system:	
Valve type	vacuum modulated
Control signal	carburetor vacuum
Point of discharge	intake manifold
Crankcase emission control:	
Control method	positive crankcase ventilation
Point of discharge	intake manifold
Carburetor type	2V downdraft
Distributor specifications:*	
Centrifugal advance, begins, ° @ 1,000 rpm	0
Centrifugal advance, intermediate, ° @ 1,700 rpm	10
Centrigugal advance, full, ° @ 2,800 rpm	20
Vacuum advance, begins, ° @ 3 in. Hg	0
Vacuum advance, maximum, ° @ 6.5 in. Hg	16
Carburetor number	17058132
EGR valve number	17056722
Distributor number	1110696

*Engine rpm, Crankshaft degrees.

TABLE 2. ENGINE BREAK-IN SCHEDULE

Simulated vehicle speed, mph	Engine speed, rpm	Intake manifold vacuum, in. Hg	Fraction of time in mode
0	800	20	1/10
20	950	18	"
30	1,100	17	"
40	1,500	16	"
50	1,900	15	"
60	2,200	13.5	"
25	1,000	17.5	"
35	1,300	16.6	"
45	1,700	15.5	"
55	2,000	13.5	"

Mileage per cycle = 90.
Total mileage simulated over 40 hours break-in period = 1,440.

TABLE 3. FUEL ANALYSIS

Fuel No.	7718
Research octane No.	91.8
Motor octane No.	84.0
Specific gravity	0.717
API gravity, degrees	65.9
Distillation, °F:	
10 pct evaporated	123
50 pct "	209
90 pct "	402
100 pct "	413
Reid vapor pressure, psi	11.26
FIA analysis, pct:	
Aromatics	9
Olefins	15
Paraffins	76
Sulfur, pct	0.016
Lead, grams per gallon	Trace
Hydrogen/carbon atomic ratio	2.038

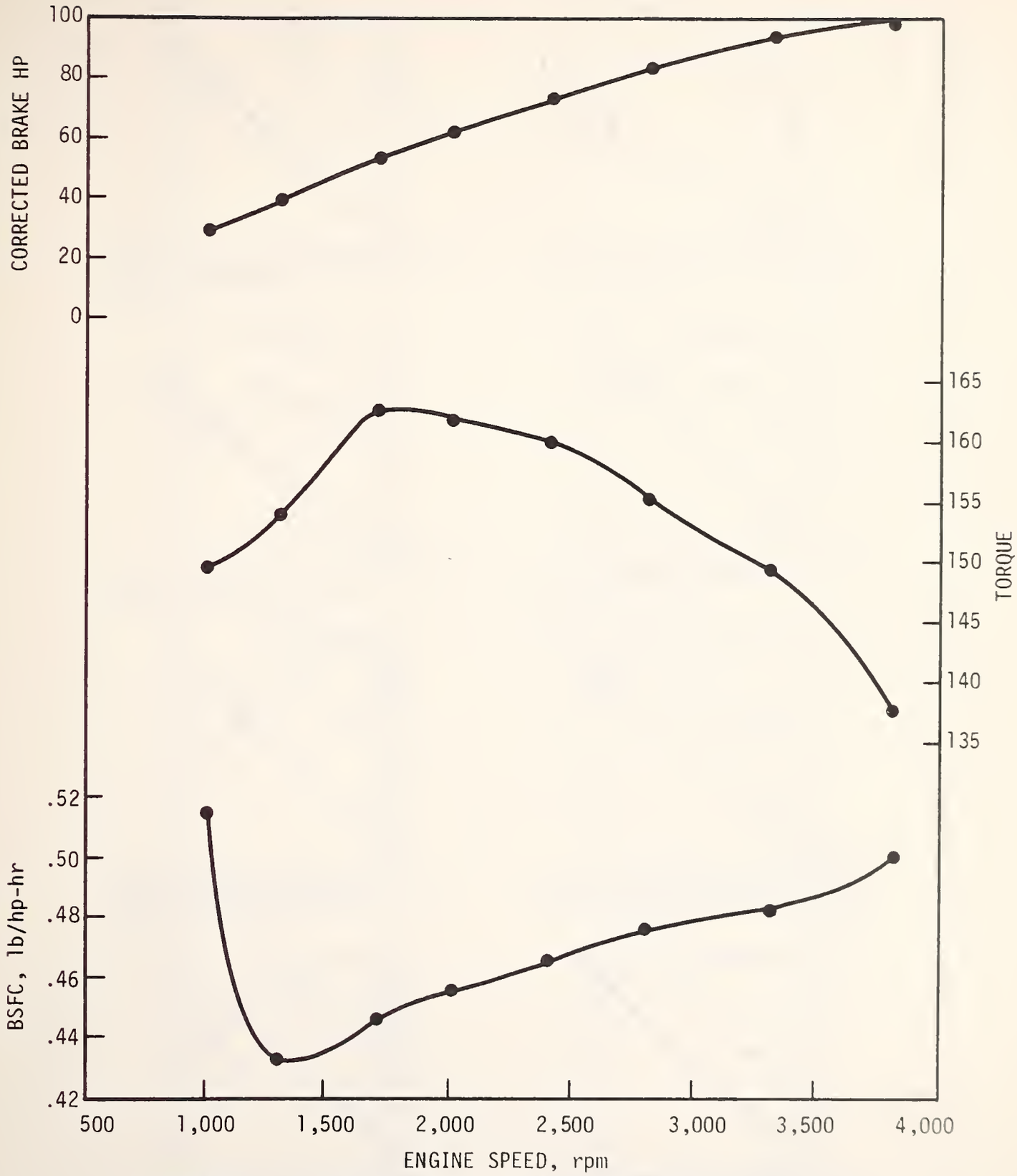


FIGURE 1. Brake Specific Fuel Consumption, Torque, and Brake Horsepower Versus Engine rpm at Wide-Open-Throttle--Chevrolet 200 CID Engine.

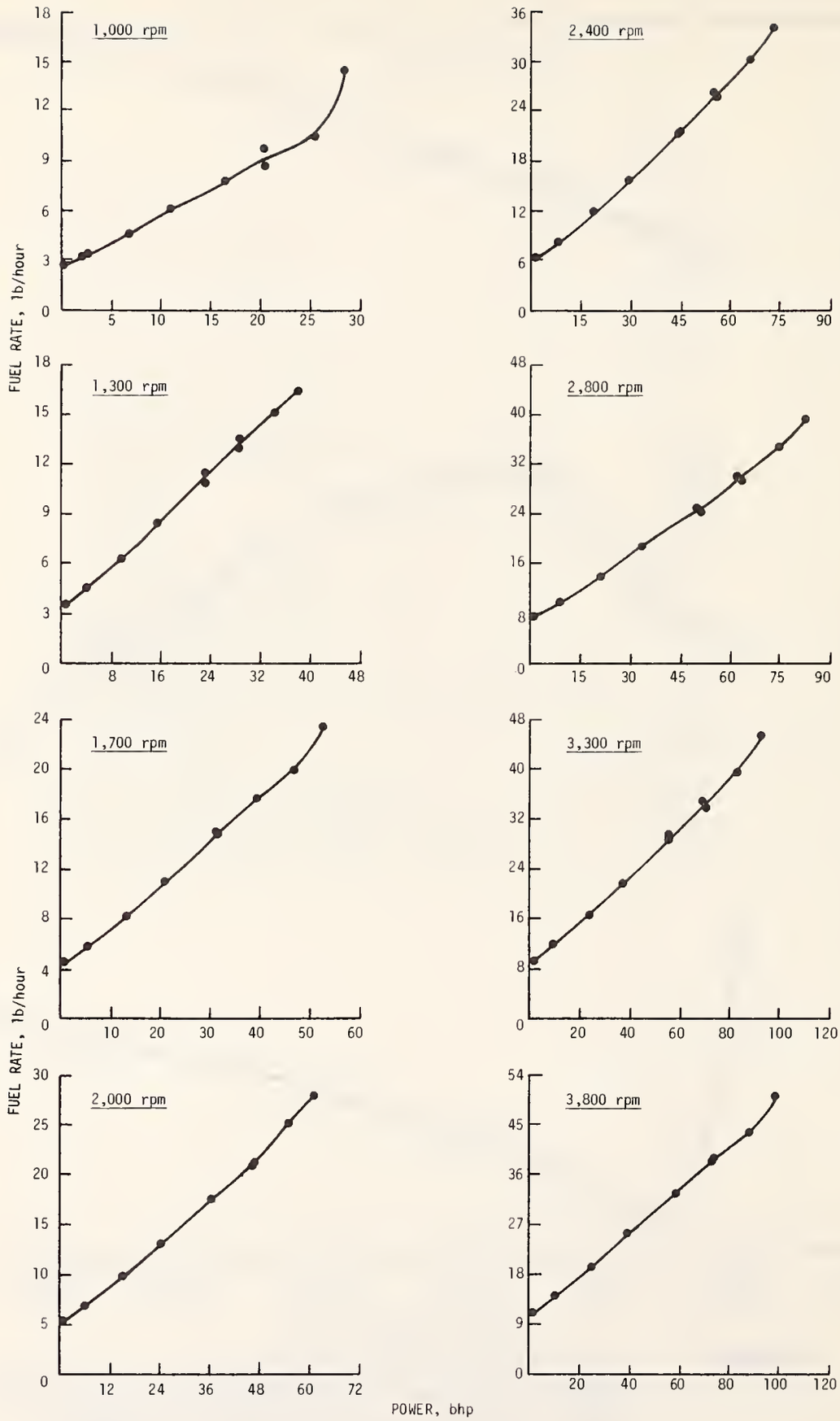


FIGURE 2. Fuel Rate Versus Power at Various Speed and Load Conditions--Chevrolet 200 CID Engine.

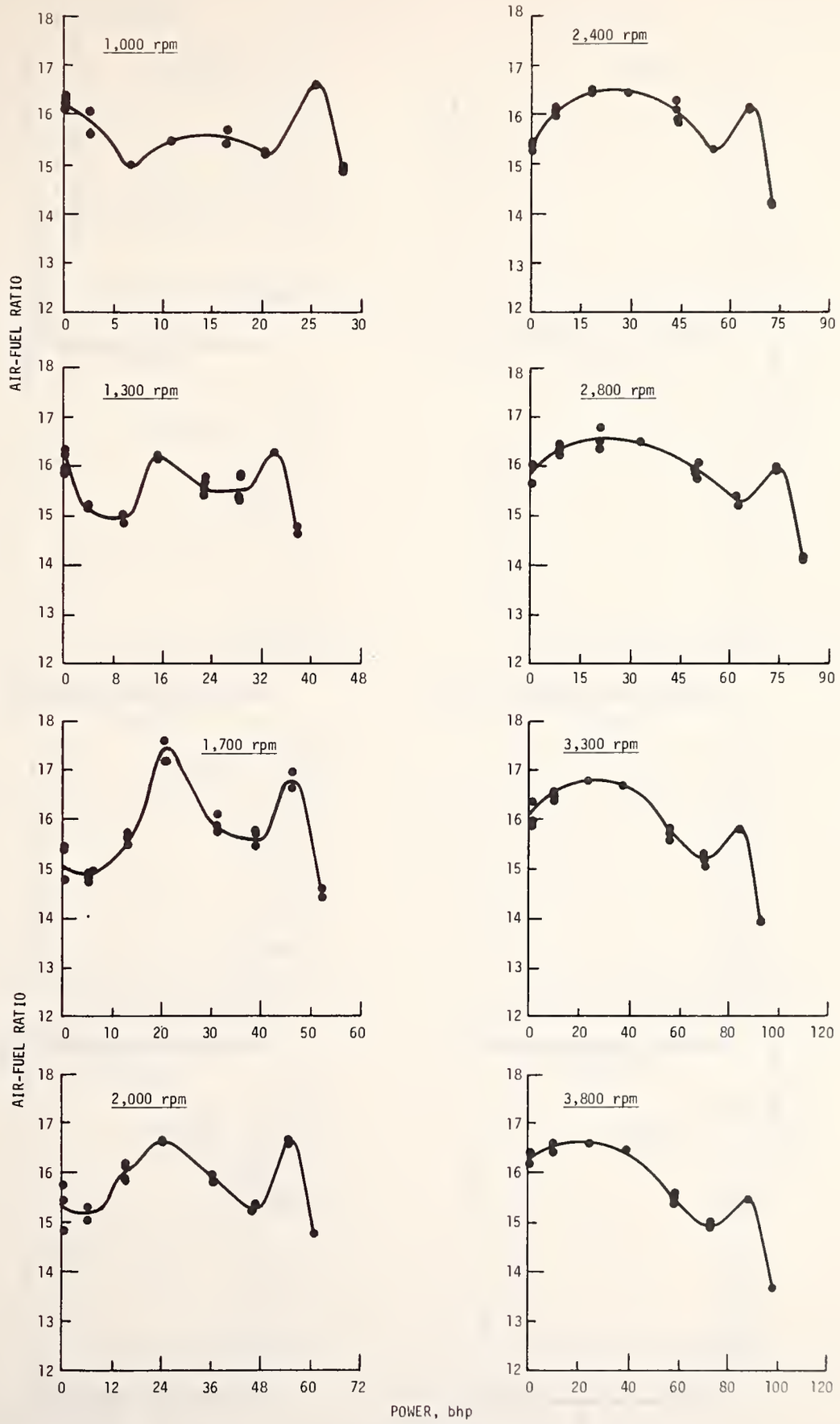


FIGURE 3. Air Fuel Ratio Versus Power at Various Speed and Load Conditions--Chevrolet 200 CID Engine.

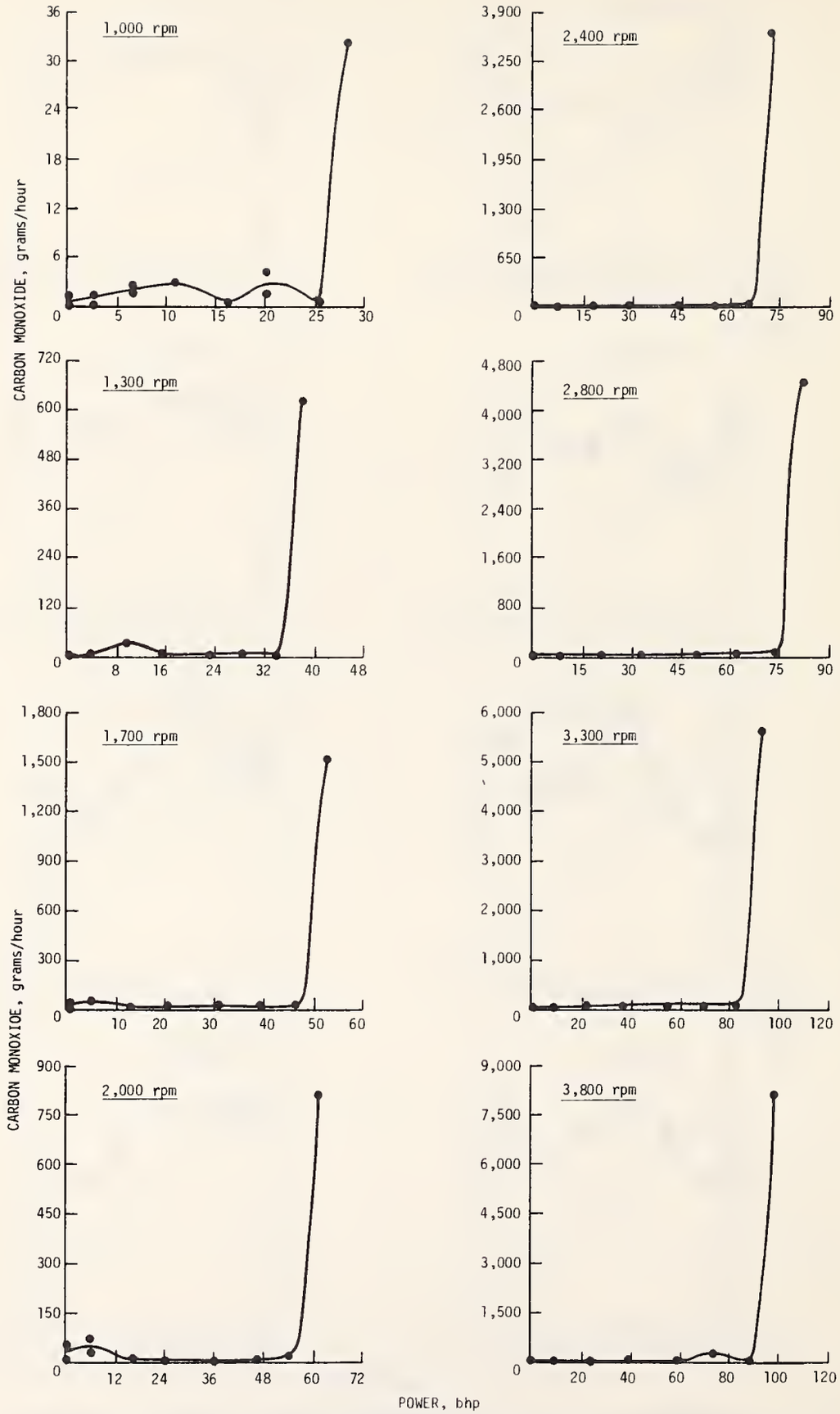


FIGURE 4. Carbon Monoxide Emissions Versus Power at Various Speed and Load Conditions--Chevrolet 200 CID Engine.

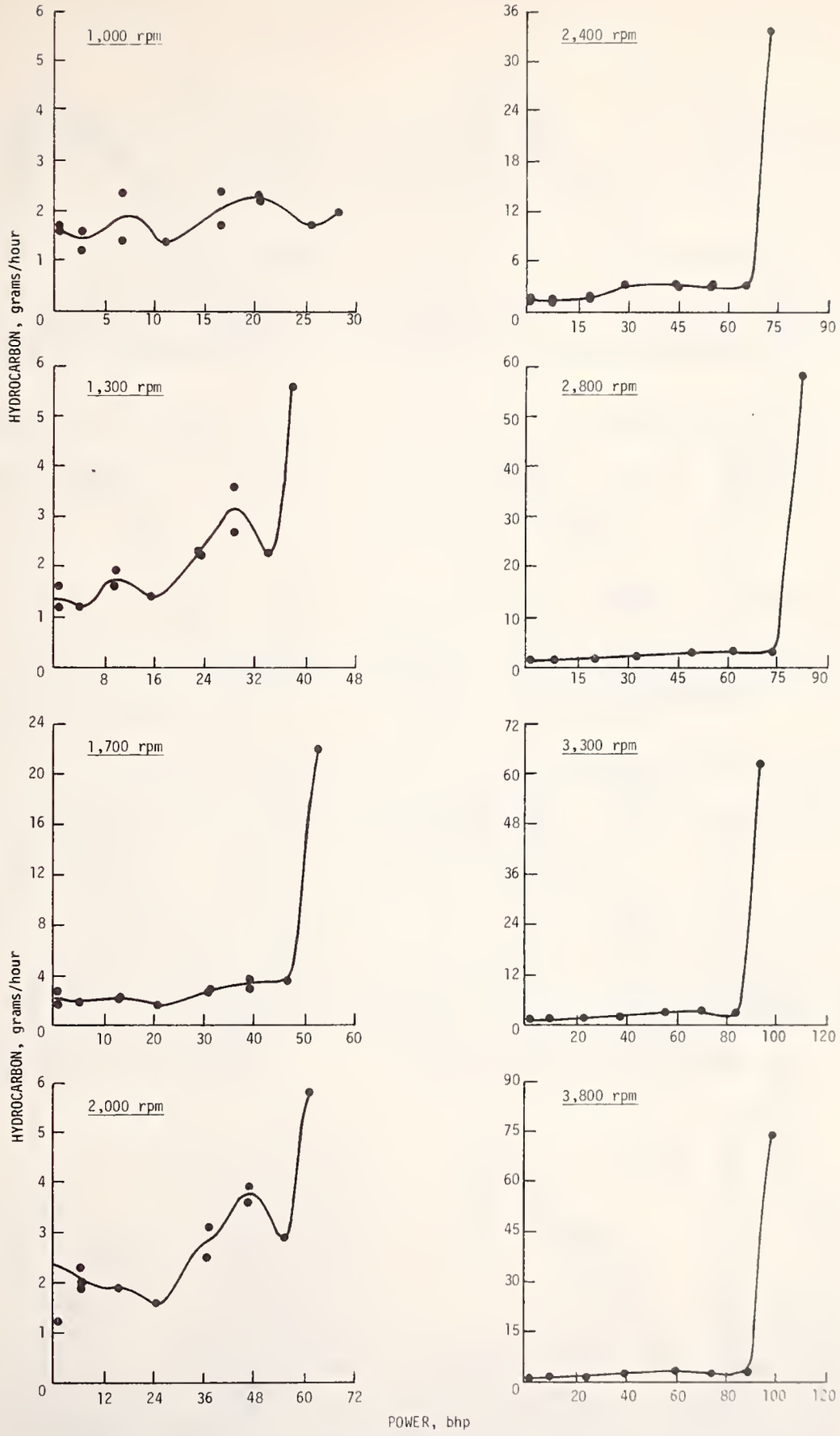


FIGURE 5. Hydrocarbon Emissions Versus Power at Various Speed and Load Conditions--Chevrolet 200 CID Engine.

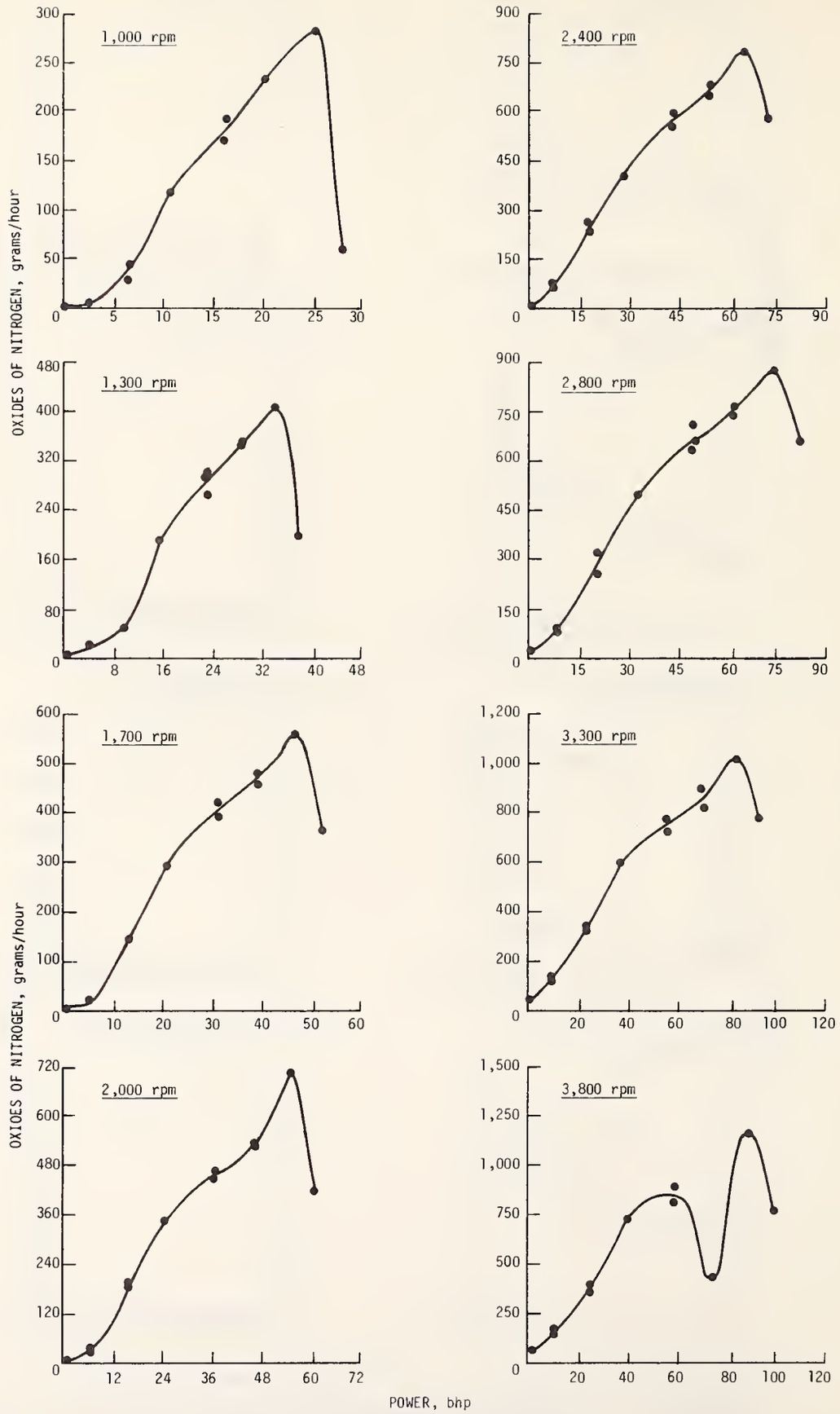


FIGURE 6. Oxides of Nitrogen Emissions Versus Power at Various Speed and Load Conditions--Chevrolet 200 CID Engine.

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	1.01	1.02	2.01	2.02	3.01	3.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/15/78	3/15/78	3/15/78	3/15/78	3/15/78	3/15/78
BAROMETER, MMHG	747.0	747.0	747.0	747.0	747.0	747.0
HUMIDITY, GRAINS/LB	41	41	41	41	41	41
TEMPERATURE, F	80	80	79	79	79	79
ENGINE SPEED, RPM	750	750	750	750	750	750
TORQUE, FT-LB	.9	.9	10.0	10.0	15.0	15.0
POWER, BHP*	.1	.1	1.4	1.4	2.1	2.1
FUEL RATE, LB/HR	2.1	2.1	2.4	2.3	2.7	2.6
IGNITION TIMING, DEG BTDC	24.0	24.0	24.0	24.0	24.0	24.0
MANIFOLD VACUUM, IN HG	20.0	20.0	19.0	19.0	18.5	18.5
THROTTLE ANGLE, DEG	.0	.0	1.0	1.0	1.5	1.5
INTAKE MAN. TEMP., F	144	144	134	134	129	129
CONCENTRATIONS, DRY BASIS						
CO, %	.1655	.0074	.1203	.0921	.0979	.0951
CO2, %	13.10	14.07	13.13	13.48	13.41	13.23
O2, %	2.67	1.68	3.04	2.70	2.59	2.75
HC, PPMC	8130	406	3146	1954	2555	2795
NOX, PPM	54	39	89	78	190	180
AIR/FUEL RATIO	15.74	15.94	16.61	16.48	16.34	16.45
EMISSION RATES, G/HR						
CO	22.7	1.0	18.9	14.0	17.4	16.7
HC	55.9	2.7	24.9	14.9	22.8	24.7
NOX+	1.0	.7	2.0	1.7	4.8	4.5
OIL TEMPERATURE, F	210	210	208	208	210	210
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	188	188	189	189	189	189
EXHAUST PRESSURE, IN. H2O	.0	.0	.0	.0	.0	.0
EXHAUST TEMPERATURE, F	354	512	385	390	396	295

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	4.01	4.02	5.01	5.02	6.01	6.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/15/78	3/15/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	747.0	747.0	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	41	41	35	35	35	35
TEMPERATURE, F	78	78	75	75	75	75
ENGINE SPEED, RPM	600	600	1000	1000	1000	1000
TORQUE, FT-LB	15.4	15.4	152.6	152.6	137.4	137.4
POWER, BHP*	1.7	1.7	28.4	28.4	25.5	25.5
FUEL RATE, LB/HR	2.1	2.1	14.6	14.6	10.6	10.6
IGNITION TIMING, DEG BTDC	24.0	24.0	8.0	8.0	8.0	8.0
MANIFOLD VACUUM, IN HG	17.5	17.5	.1	.1	.4	.4
THROTTLE ANGLE, DEG	.0	.0	81.0	81.0	67.0	67.0
INTAKE MAN. TEMP., F	131	131	106	106	107	107
CONCENTRATIONS, DRY BASIS						
CO, %	.0914	.0886	.5150	.0369	.0460	.0008
CO2, %	13.82	13.75	14.29	15.03	13.13	13.22
O2, %	1.92	2.05	.59	.05	2.49	2.29
HC, PPMC	3248	3071	1572	45	1160	47
NOX, PPM	212	213	3000	517	3085	2818
AIR/FUEL RATIO	15.76	15.88	14.92	14.84	16.61	16.61
EMISSION RATES, G/HR						
CO	12.4	12.1	454.7	32.2	33.3	.6
HC	22.2	21.1	69.7	2.0	42.1	1.7
NOX+	4.1	4.1	366.3	62.5	308.7	282.0
OIL TEMPERATURE, F	205	205	252	252	238	238
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	188	188	181	181	184	184
EXHAUST PRESSURE, IN. H2O	.0	.0	20.0	12.0	16.0	8.0
EXHAUST TEMPERATURE, F	336	284	1020	1009	894	816

* CORRECTED SAE J816B
\- CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	7.01	7.02	8.01	8.02	9.01	9.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/15/78	3/15/78	3/24/78	3/24/78	3/15/78	3/15/78
BAROMETER, MMHG	747.0	747.0	745.2	745.2	747.0	747.0
HUMIDITY, GRAINS/LB	41	41	31	31	41	41
TEMPERATURE, F	78	78	83	83	80	80
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	109.5	109.5	87.6	87.6	58.4	58.4
POWER, BHP*	20.4	20.4	16.4	16.4	10.9	10.9
FUEL RATE, LB/HR	9.9	9.8	7.7	7.8	6.1	6.2
IGNITION TIMING, DEG BTDC	24.0	24.0	24.0	24.0	24.0	24.0
MANIFOLD VACUUM, IN HG	6.3	6.3	9.5	9.5	13.6	13.6
THROTTLE ANGLE, DEG	11.5	11.5	8.0	8.0	6.0	6.0
INTAKE MAN. TEMP., F	106	106	111	111	114	114
CONCENTRATIONS, DRY BASIS						
CO, %	.0931	.0072	.0735	.0012	.0988	.0076
CO2, %	14.65	14.89	14.56	14.76	14.38	14.67
O2, %	.75	.56	1.01	.78	1.15	.88
HC, PPMC	1303	73	1591	99	1654	71
NOX, PPM	2801	2788	2755	2668	2526	2206
AIR/FUEL RATIO	15.23	15.26	15.38	15.41	15.46	15.46
EMISSION RATES, G/HR						
CO	55.8	4.3	34.4	.6	37.2	2.9
HC	39.2	2.2	37.4	2.4	31.2	1.4
NOX+	238.1	235.2	175.6	172.9	134.8	118.5
OIL TEMPERATURE, F	203	203	231	231	240	240
OIL PRESSURE, PSI	32	32	30	30	30	30
COOLANT TEMPERATURE, F	193	193	186	186	190	190
EXHAUST PRESSURE, IN. H2O	8.0	5.0	8.0	4.0	5.0	4.0
EXHAUST TEMPERATURE, F	811	757	775	743	703	691

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	10.01	10.02	11.01	11.02	12.01	12.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/15/78	3/15/78	3/15/78	3/15/78	3/15/78	3/15/78
BAROMETER, MMHG	747.0	747.0	747.0	747.0	747.0	747.0
HUMIDITY, GRAINS/LB	41	41	41	41	41	41
TEMPERATURE, F	80	80	80	80	79	79
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	36.5	36.5	14.6	14.6	1.0	1.0
POWER, BHP*	6.8	6.8	2.7	2.7	.2	.2
FUEL RATE, LB/HR	4.6	4.6	3.2	3.3	2.6	2.7
IGNITION TIMING, DEG BTDC	24.0	24.0	24.0	24.0	24.0	24.0
MANIFOLD VACUUM, IN HG	17.0	17.0	20.0	20.0	20.8	20.8
THROTTLE ANGLE, DEG	4.0	4.0	2.5	2.5	1.5	1.5
INTAKE MAN. TEMP., F	117	117	125	125	133	133
CONCENTRATIONS, DRY BASIS						
CO, %	.1652	.0094	.1070	.0067	.1598	.0063
CO2, %	14.78	15.18	14.21	14.52	13.43	14.02
O2, %	.58	.26	1.50	1.21	2.47	1.89
HC, PPMC	1855	105	2026	116	3346	178
NOX, PPM	1406	1152	306	204	99	87
AIR/FUEL RATIO	14.98	15.01	15.58	15.62	16.13	16.12
EMISSION RATES, G/HR						
CO	45.3	2.6	21.6	1.4	27.3	1.1
HC	25.5	1.4	20.6	1.2	28.7	1.6
NOX+	54.7	44.6	8.8	5.9	2.4	2.2
OIL TEMPERATURE, F	236	236	233	233	229	229
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	187	187	188	188	188	188
EXHAUST PRESSURE, IN. H2O	4.0	3.0	2.0	1.0	1.0	.0
EXHAUST TEMPERATURE, F	633	619	570	560	528	512

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	13.01	13.02	14.01	14.02	15.01	15.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/15/78	3/15/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	747.0	747.0
HUMIDITY, GRAINS/LB	53	53	53	53	41	41
TEMPERATURE, F	70	70	70	70	80	80
ENGINE SPEED, RPM	1300	1300	1300	1300	1300	1300
TORQUE, FT-LB	159.0	159.0	143.0	143.0	119.0	119.0
POWER, BHP*	38.0	38.0	34.2	34.2	28.8	28.8
FUEL RATE, LB/HR	16.4	16.5	15.0	15.1	13.5	13.5
IGNITION TIMING, DEG BTDC	13.0	13.0	13.0	13.0	21.0	21.0
MANIFOLD VACUUM, IN HG	.3	.3	.5	.5	5.5	5.5
THROTTLE ANGLE, DEG	81.0	81.0	58.0	58.0	16.0	16.0
INTAKE MAN. TEMP., F	107	107	109	109	108	108
CONCENTRATIONS, DRY BASIS						
CO, %	.7244	.6370	.0678	.0007	.0579	.0064
CO2, %	14.20	14.62	13.52	13.74	14.24	14.36
O2, %	.54	.09	2.06	1.88	1.44	1.33
HC, PPMC	1578	115	944	47	1236	86
NOX, PPM	2605	1362	2792	2751	2864	2885
AIR/FUEL RATIO	14.77	14.63	16.26	16.25	15.74	15.80
EMISSION RATES, G/HR						
CO	711.9	620.4	67.2	.7	48.8	5.4
HC	77.9	5.6	47.0	2.3	52.4	3.6
NOX+	381.1	197.5	411.9	405.7	342.6	346.3
OIL TEMPERATURE, F	248	248	243	243	256	256
OIL PRESSURE, PSI	30	30	30	30	35	35
COOLANT TEMPERATURE, F	190	190	190	190	190	190
EXHAUST PRESSURE, IN. H2O	24.0	14.0	20.0	10.0	14.0	13.0
EXHAUST TEMPERATURE, F	1071	1042	1047	981	941	900

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	16.01	16.02	17.01	17.02	18.01	18.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/15/78	3/15/78	3/15/78	3/15/78	3/24/78	3/24/78
BAROMETER, MMHG	747.0	747.0	747.0	747.0	745.2	745.2
HUMIDITY, GRAINS/LB	41	41	41	41	31	31
TEMPERATURE, F	81	81	81	81	83	83
ENGINE SPEED, RPM	1300	1300	1300	1300	1300	1300
TORQUE, FT-LB	95.4	95.4	63.6	63.6	39.8	39.8
POWER, BHP*	23.1	23.1	15.4	15.4	9.7	9.7
FUEL RATE, LB/HR	11.4	11.4	8.4	8.4	6.2	6.2
IGNITION TIMING, DEG BTDC	28.0	28.0	28.0	28.0	29.0	29.0
MANIFOLD VACUUM, IN HG	9.0	9.0	13.0	13.0	17.5	17.5
THROTTLE ANGLE, DEG	12.0	12.0	8.0	8.0	5.0	5.0
INTAKE MAN. TEMP., F	109	109	109	109	117	117
CONCENTRATIONS, DRY BASIS						
CO, %	.0566	.0065	.0645	.0063	.4188	.0812
CO2, %	14.22	14.34	13.84	13.98	14.60	15.01
O2, %	1.37	1.25	1.87	1.74	.62	.33
HC, PPMC	1317	61	1323	52	1897	99
NOX, PPM	2874	2896	2765	2464	1476	892
AIR/FUEL RATIO	15.68	15.76	16.05	16.11	14.89	15.01
EMISSION RATES, G/HR						
CO	40.6	4.7	34.8	3.4	153.7	30.3
HC	47.4	2.2	35.8	1.4	35.0	1.9
NOX+	292.4	295.6	211.4	190.2	73.8	45.3
OIL TEMPERATURE, F	256	256	253	253	240	240
OIL PRESSURE, PSI	35	35	35	35	30	30
COOLANT TEMPERATURE, F	190	190	187	187	187	187
EXHAUST PRESSURE, IN. H2O	12.0	10.0	8.0	7.0	5.0	2.0
EXHAUST TEMPERATURE, F	894	857	829	796	752	745

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	19.01	19.02	20.01	20.02	21.01	21.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/15/78	3/15/78	3/15/78	3/15/78	3/15/78	3/15/78
BAROMETER, MMHG	747.0	747.0	747.0	747.0	747.0	747.0
HUMIDITY, GRAINS/LB	41	41	41	41	41	41
TEMPERATURE, F	82	82	81	81	58	58
ENGINE SPEED, RPM	1300	1300	1300	1300	1700	1700
TORQUE, FT-LB	15.9	15.9	1.6	1.6	166.0	166.0
POWER, BHP*	3.9	3.9	.4	.4	52.6	52.6
FUEL RATE, LB/HR	4.4	4.5	3.4	3.4	23.4	23.6
IGNITION TIMING, DEG BTDC	28.0	28.0	28.0	28.0	17.0	17.0
MANIFOLD VACUUM, IN HG	20.5	20.5	21.5	21.5	.5	.5
THROTTLE ANGLE, DEG	3.0	3.0	1.5	1.5	81.0	81.0
INTAKE MAN. TEMP., F	124	124	140	140	94	94
CONCENTRATIONS, DRY BASIS						
CO, %	.1373	.0066	.1669	.0061	1.0541	1.1177
CO2, %	14.67	14.76	13.82	14.14	14.44	14.61
O2, %	.82	.62	1.89	1.64	.40	.07
HC, PPMC	1720	87	1718	101	1527	324
NOX, PPM	529	441	150	127	2655	1894
AIR/FUEL RATIO	15.14	15.23	15.87	15.94	14.55	14.41
EMISSION RATES, G/HR						
CO	36.4	1.8	36.7	1.3	1421.0	1513.4
HC	22.9	1.2	19.0	1.1	103.4	22.0
NOX+	19.9	17.0	4.7	3.9	507.8	363.8
OIL TEMPERATURE, F	243	243	239	239	272	272
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	189	189	188	188	193	193
EXHAUST PRESSURE, IN. H2O	4.0	1.0	2.0	.0	40.0	32.0
EXHAUST TEMPERATURE, F	671	665	597	584	1142	1125

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	22.01	22.02	23.01	23.02	24.01	24.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/16/78	3/16/78	3/16/78	3/16/78	3/16/78	3/16/78
BAROMETER, MMHG	752.0	752.0	752.0	752.0	752.0	752.0
HUMIDITY, GRAINS/LB	48	48	48	48	48	48
TEMPERATURE, F	63	63	82	82	80	80
ENGINE SPEED, RPM	1700	1700	1700	1700	1700	1700
TORQUE, FT-LB	149.4	149.4	125.0	125.0	99.6	99.6
POWER, BHP*	46.7	46.7	39.1	39.1	31.1	31.1
FUEL RATE, LB/HR	19.9	19.8	17.5	17.6	14.8	14.8
IGNITION TIMING, DEG BTDC	17.0	17.0	26.0	26.0	34.0	34.0
MANIFOLD VACUUM, IN HG	.6	.6	5.0	5.0	8.5	8.5
THROTTLE ANGLE, DEG	61.0	61.0	20.0	20.0	15.0	15.0
INTAKE MAN. TEMP., F	110	110	113	113	112	112
CONCENTRATIONS, DRY BASIS						
CO, %	.0793	.0072	.0936	.0072	.0737	.0071
CO2, %	12.78	12.80	13.74	13.90	13.55	13.46
O2, %	2.41	2.65	1.27	1.15	1.49	1.63
HC, PPMC	844	50	1147	50	1130	51
NOX, PPM	2791	2738	2858	2881	2874	2911
AIR/FUEL RATIO	16.60	16.93	15.64	15.71	15.82	16.10
EMISSION RATES, G/HR						
CO	110.0	10.0	106.1	8.2	71.9	7.0
HC	58.8	3.5	65.3	2.9	55.4	2.5
NOX+	565.0	558.0	472.4	479.4	408.7	420.4
OIL TEMPERATURE, F	262	262	260	260	264	264
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	190	190	190	190	190	190
EXHAUST PRESSURE, IN. H2O	32.0	25.0	24.0	19.0	18.0	15.0
EXHAUST TEMPERATURE, F	1110	1063	1035	982	991	972

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	25.01	25.02	26.01	26.02	27.01	27.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/16/78	3/16/78	3/24/78	3/24/78	3/24/78	3/24/78
BAROMETER, MMHG	752.0	752.0	745.2	745.2	745.2	745.2
HUMIDITY, GRAINS/LB	48	48	31	31	31	31
TEMPERATURE, F	80	80	82	82	83	83
ENGINE SPEED, RPM	1700	1700	1700	1700	1700	1700
TORQUE, FT-LB	66.4	66.4	41.5	41.5	16.6	16.6
POWER, BHP*	20.8	20.8	13.2	13.2	5.3	5.3
FUEL RATE, LB/HR	10.9	10.8	8.3	8.3	5.7	5.7
IGNITION TIMING, DEG BTDC	34.0	34.0	35.0	35.0	35.0	35.0
MANIFOLD VACUUM, IN HG	14.0	14.0	17.5	17.5	20.8	20.8
THROTTLE ANGLE, DEG	10.5	10.5	7.5	7.5	4.5	4.5
INTAKE MAN. TEMP., F	112	112	111	111	125	125
CONCENTRATIONS, DRY BASIS						
CO, %	.0759	.0068	.0796	.0007	.3468	.1255
CO2, %	12.32	12.29	14.19	14.46	14.56	14.94
O2, %	3.12	3.35	1.51	1.21	.75	.45
HC, PPMC	1082	38	1338	78	1623	98
NOX, PPM	2909	2540	2135	1982	598	383
AIR/FUEL RATIO	17.20	17.58	15.74	15.69	15.01	15.05
EMISSION RATES, G/HR						
CO	59.6	5.4	41.5	.4	119.0	43.1
HC	42.7	1.5	35.0	2.0	28.0	1.7
NOX+	333.2	294.3	151.6	140.1	28.0	17.9
OIL TEMPERATURE, F	260	260	245	245	246	246
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	188	188	187	187	186	186
EXHAUST PRESSURE, IN. H2O	11.0	9.0	6.0	2.0	5.0	1.0
EXHAUST TEMPERATURE, F	911	909	823	692	752	715

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	28.01	28.02	29.01	29.02	30.01	30.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/24/78	3/24/78	3/16/78	3/16/78	3/16/78	3/16/78
BAROMETER, MMHG	745.2	745.2	752.0	752.0	752.0	752.0
HUMIDITY, GRAINS/LB	31	31	48	48	48	48
TEMPERATURE, F	83	83	57	57	57	57
ENGINE SPEED, RPM	1700	1700	2000	2000	2000	2000
TORQUE, FT-LB	1.6	1.6	167.0	167.0	150.3	150.3
POWER, BHP*	.5	.5	61.4	61.4	55.3	55.3
FUEL RATE, LB/HR	4.4	4.4	28.0	27.9	25.2	25.2
IGNITION TIMING, DEG BTDC	35.0	35.0	20.0	20.0	20.0	20.0
MANIFOLD VACUUM, IN HG	22.0	22.0	.2	.2	.5	.5
THROTTLE ANGLE, DEG	3.6	3.6	81.0	81.0	54.0	54.0
INTAKE MAN. TEMP., F	145	145	96	96	94	94
CONCENTRATIONS, DRY BASIS						
CO, %	.4763	.1177	.9909	.4800	.1993	.0072
CO2, %	14.62	15.29	13.73	14.38	12.83	13.06
O2, %	.54	.02	.61	.15	2.41	2.30
HC, PPMC	1867	199	1282	69	745	33
NOX, PPM	148	30	2777	1705	2765	2783
AIR/FUEL RATIO	14.78	14.76	14.74	14.75	16.53	16.64
EMISSION RATES, G/HR						
CO	123.3	30.2	1687.2	813.3	345.5	12.5
HC	24.3	2.6	109.6	5.8	64.9	2.9
NOX+	5.2	1.0	689.6	421.2	699.3	705.8
OIL TEMPERATURE, F	243	243	274	274	272	272
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	186	186	192	192	189	189
EXHAUST PRESSURE, IN. H2O	2.0	.0	60.0	40.0	56.0	39.0
EXHAUST TEMPERATURE, F	681	680	1194	1222	1193	1150

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	31.01	31.02	32.01	32.02	33.01	33.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/24/78	3/24/78	3/16/78	3/16/78	3/16/78	3/16/78
BAROMETER, MMHG	745.2	745.2	752.9	752.9	752.9	752.9
HUMIDITY, GRAINS/LB	31	31	31	31	31	31
TEMPERATURE, F	81	81	79	79	81	81
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	125.3	125.3	100.2	100.2	66.8	66.8
POWER, BHP*	46.9	46.9	36.6	36.6	24.4	24.4
FUEL RATE, LB/HR	21.1	21.1	17.4	17.4	12.8	12.9
IGNITION TIMING, DEG BTDC	32.0	32.0	35.0	35.0	35.0	35.0
MANIFOLD VACUUM, IN HG	6.0	6.0	9.0	9.0	13.5	13.5
THROTTLE ANGLE, DEG	21.0	21.0	16.5	16.5	12.0	12.0
INTAKE MAN. TEMP., F	112	112	103	103	109	109
CONCENTRATIONS, DRY BASIS						
CO, %	.2854	.0010	.0733	.0071	.0833	.0069
CO2, %	14.44	14.89	13.65	13.83	13.05	13.18
O2, %	.99	.67	1.58	1.43	2.43	2.31
HC, PPMC	1212	61	1088	43	994	36
NOX, PPM	3031	3021	2890	2888	2898	2872
AIR/FUEL RATIO	15.32	15.35	15.89	15.92	16.57	16.63
EMISSION RATES, G/HR						
CO	366.1	1.3	83.1	8.0	72.8	6.1
HC	78.1	3.9	62.0	2.5	43.6	1.6
NOX+	529.5	525.8	446.9	446.2	345.5	345.0
OIL TEMPERATURE, F	260	260	243	243	264	264
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	188	188	188	188	188	188
EXHAUST PRESSURE, IN. H2O	32.0	24.0	22.0	15.0	16.0	11.0
EXHAUST TEMPERATURE, F	1105	1072	1036	953	988	941

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	34.01	34.02	35.01	35.02	36.01	36.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/24/78	3/24/78	3/30/78	3/30/78	3/16/78	3/16/78
BAROMETER, MMHG	745.2	745.2	746.7	746.7	752.9	752.9
HUMIDITY, GRAINS/LB	31	31	45	45	31	31
TEMPERATURE, F	85	85	88	88	81	81
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	41.8	41.8	16.7	16.7	1.7	1.7
POWER, BHP*	15.6	15.6	6.3	6.3	.6	.6
FUEL RATE, LB/HR	9.6	9.7	6.6	6.6	5.1	5.1
IGNITION TIMING, DEG BTDC	35.0	35.0	35.0	35.0	35.0	35.0
MANIFOLD VACUUM, IN HG	17.5	17.5	21.0	21.0	22.4	22.4
THROTTLE ANGLE, DEG	8.5	8.5	6.0	6.0	3.5	3.5
INTAKE MAN. TEMP., F	120	120	135	135	148	148
CONCENTRATIONS, DRY BASIS						
CO, %	.0969	.0005	.4260	.1486	.2036	.0071
CO2, %	14.17	14.35	14.37	14.89	13.69	14.46
O2, %	1.49	1.37	.77	.41	1.58	.90
HC, PPMC	1173	62	1518	118	1208	78
NOX, PPM	2289	2181	736	435	261	219
AIR/FUEL RATIO	15.74	15.82	15.00	15.02	15.71	15.42
EMISSION RATES, G/HR						
CO	58.3	.3	170.3	58.5	67.0	2.2
HC	35.4	1.9	30.5	2.3	20.0	1.2
NOX+	187.4	181.0	42.4	24.7	11.7	9.4
OIL TEMPERATURE, F	260	260	238	238	250	250
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	188	188	188	188	187	187
EXHAUST PRESSURE, IN. H2O	10.0	5.0	5.0	2.0	2.0	1.0
EXHAUST TEMPERATURE, F	946	900	765	702	714	693

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	37.01	37.02	38.01	38.02	39.01	39.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/16/78	3/16/78	3/16/78	3/16/78	3/16/78	3/16/78
BAROMETER, MMHG	752.9	752.9	752.9	752.9	752.9	752.9
HUMIDITY, GRAINS/LB	31	31	31	31	31	31
TEMPERATURE, F	66	66	67	67	81	81
ENGINE SPEED, RPM	2400	2400	2400	2400	2400	2400
TORQUE, FT-LB	166.6	166.6	150.0	150.0	125.0	125.0
POWER, BHP*	72.9	72.9	65.7	65.7	54.7	54.7
FUEL RATE, LB/HR	34.0	33.8	30.2	30.0	26.1	26.0
IGNITION TIMING, DEG BTDC	21.0	21.0	21.0	21.0	30.0	30.0
MANIFOLD VACUUM, IN HG	.4	.4	.7	.7	5.5	5.5
THROTTLE ANGLE, DEG	81.0	81.0	54.0	54.0	25.0	25.0
INTAKE MAN. TEMP., F	96	96	98	98	109	109
CONCENTRATIONS, DRY BASIS						
CO, %	1.8333	1.8440	.2851	.0071	.3729	.0077
CO2, %	13.60	13.72	13.40	13.70	14.01	14.53
O2, %	.37	.17	1.88	1.71	.95	.63
HC, PPMC	1345	341	586	29	994	35
NOX, PPM	2735	2191	2934	2925	2955	2952
AIR/FUEL RATIO	14.21	14.16	16.06	16.13	15.28	15.33
EMISSION RATES, G/HR						
CO	3611.8	3613.2	565.2	14.1	606.2	12.4
HC	133.1	33.6	58.3	2.8	81.1	2.8
NOX+	734.7	585.3	793.1	789.3	655.0	649.0
OIL TEMPERATURE, F	269	269	279	279	284	284
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	191	191	188	188	189	189
EXHAUST PRESSURE, IN. H2O	77.0	55.0	77.0	55.0	56.0	41.0
EXHAUST TEMPERATURE, F	1245	1203	1249	1226	1196	1204

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	40.01	40.02	41.01	41.02	42.01	42.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/16/78	3/16/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.9	752.9	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	31	31	13	13	13	13
TEMPERATURE, F	80	80	72	72	72	72
ENGINE SPEED, RPM	2400	2400	2400	2400	2400	2400
TORQUE, FT-LB	100.0	100.0	66.6	66.6	41.6	41.6
POWER, BHP*	43.8	43.8	29.1	29.1	18.2	18.2
FUEL RATE, LB/HR	20.9	21.0	15.7	15.7	11.9	12.0
IGNITION TIMING, DEG BTDC	36.0	36.0	37.0	37.0	37.0	37.0
MANIFOLD VACUUM, IN HG	9.0	9.0	14.0	14.0	17.5	17.5
THROTTLE ANGLE, DEG	19.5	19.5	14.0	14.0	10.0	10.0
INTAKE MAN. TEMP., F	102	102	90	90	94	94
CONCENTRATIONS, DRY BASIS						
CO, %	.0780	.0070	.0798	.0009	.0969	.0009
CO2, %	13.45	13.49	12.99	13.15	12.93	13.13
O2, %	1.86	1.88	2.21	2.08	2.29	2.15
HC, PPMC	923	49	920	57	955	50
NOX, PPM	2868	2887	2927	2946	2645	2527
AIR/FUEL RATIO	16.11	16.27	16.43	16.47	16.47	16.51
EMISSION RATES, G/HR						
CO	107.9	9.9	85.8	1.0	79.4	.7
HC	64.1	3.4	49.7	3.1	39.3	2.1
NOX+	540.7	552.3	401.4	404.0	276.5	265.1
OIL TEMPERATURE, F	272	272	263	263	264	264
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	189	189	188	188	187	187
EXHAUST PRESSURE, IN. H2O	34.0	21.0	16.0	16.0	11.0	9.0
EXHAUST TEMPERATURE, F	1111	1044	1040	1040	980	938

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	43.01	43.02	44.01	44.02	45.01	45.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	13	13	13	13	13	13
TEMPERATURE, F	72	72	73	73	60	60
ENGINE SPEED, RPM	2400	2400	2400	2400	2800	2800
TORQUE, FT-LB	16.7	16.7	1.3	1.3	161.7	161.7
POWER, BHP*	7.3	7.3	.6	.6	82.5	82.5
FUEL RATE, LB/HR	8.3	8.3	6.3	6.3	39.3	39.2
IGNITION TIMING, DEG BTDC	37.0	37.0	37.0	37.0	22.0	22.0
MANIFOLD VACUUM, IN HG	21.0	21.0	22.5	22.5	.5	.5
THROTTLE ANGLE, DEG	7.0	7.0	4.8	4.8	81.0	81.0
INTAKE MAN. TEMP., F	110	110	139	139	94	94
CONCENTRATIONS, DRY BASIS						
CO, %	.1362	.0009	.4061	.0801	1.9446	1.9484
CO2, %	13.37	13.56	13.73	14.20	13.40	13.49
O2, %	1.74	1.63	1.09	.75	.28	.12
HC, PPMC	871	56	1055	94	1262	505
NOX, PPM	1162	1104	309	234	2755	2264
AIR/FUEL RATIO	15.95	16.02	15.27	15.29	14.11	14.07
EMISSION RATES, G/HR						
CO	75.1	.5	163.0	31.8	4458.6	4449.7
HC	24.1	1.5	21.3	1.9	145.3	57.9
NOX+	81.7	77.8	15.8	11.8	805.2	659.0
OIL TEMPERATURE, F	260	260	256	256	287	287
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	187	187	187	187	190	190
EXHAUST PRESSURE, IN. H2O	6.0	4.0	3.0	1.0	98.0	66.0
EXHAUST TEMPERATURE, F	884	832	778	759	1289	1249

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	46.01	46.02	47.01	47.02	48.01	48.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	13	13	13	13	13	13
TEMPERATURE, F	61	61	75	75	75	75
ENGINE SPEED, RPM	2800	2800	2800	2800	2800	2800
TORQUE, FT-LB	145.5	145.5	121.3	121.3	97.0	97.0
POWER, BHP*	74.3	74.3	61.9	61.9	49.5	49.5
FUEL RATE, LB/HR	34.6	34.4	29.8	29.9	24.9	24.9
IGNITION TIMING, DEG BTDC	23.0	23.0	32.0	32.0	39.0	39.0
MANIFOLD VACUUM, IN HG	1.0	1.0	5.5	5.5	9.0	9.0
THROTTLE ANGLE, DEG	54.0	54.0	28.5	28.5	22.0	22.0
INTAKE MAN. TEMP., F	94	94	104	104	99	99
CONCENTRATIONS, DRY BASIS						
CO, %	.3131	.0011	.3702	.0013	.0913	.0010
CO2, %	13.33	13.68	13.77	14.29	13.56	13.72
O2, %	1.69	1.50	1.04	.70	1.53	1.40
HC, PPMC	396	24	788	32	778	33
NOX, PPM	3043	3040	3043	3060	3033	3027
AIR/FUEL RATIO	15.94	15.99	15.38	15.39	15.88	15.92
EMISSION RATES, G/HR						
CO	715.1	2.4	700.2	2.5	149.2	1.6
HC	45.4	2.7	74.9	3.0	63.8	2.7
NOX+	885.9	880.6	733.6	736.9	632.1	632.3
OIL TEMPERATURE, F	287	287	291	291	289	289
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	190	190	189	189	190	190
EXHAUST PRESSURE, IN. H2O	100.0	70.0	74.0	54.0	54.0	39.0
EXHAUST TEMPERATURE, F	1304	94	1246	1252	1196	1158

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	49.01	49.02	50.01	50.02	51.01	51.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	13	13	13	13	13	13
TEMPERATURE, F	74	74	73	73	77	77
ENGINE SPEED, RPM	2800	2800	2800	2800	2800	2800
TORQUE, FT-LB	64.7	64.7	40.4	40.4	16.2	16.2
POWER, BHP*	33.0	33.0	20.6	20.6	8.3	8.3
FUEL RATE, LB/HR	18.6	18.6	14.1	14.1	9.9	9.9
IGNITION TIMING, DEG BTDC	39.0	39.0	40.0	40.0	40.0	40.0
MANIFOLD VACUUM, IN HG	13.6	13.6	17.5	17.5	20.6	20.6
THROTTLE ANGLE, DEG	16.0	16.0	12.5	12.5	8.5	8.5
INTAKE MAN. TEMP., F	95	95	93	93	108	108
CONCENTRATIONS, DRY BASIS						
CO, %	.0956	.0009	.1091	.0009	.1353	.0009
CO2, %	13.03	13.18	13.03	13.35	13.22	13.37
O2, %	2.25	2.14	2.30	1.99	2.08	2.03
HC, PPMC	633	30	702	32	558	34
NOX, PPM	3072	3082	2658	2626	1231	1070
AIR/FUEL RATIO	16.48	16.52	16.49	16.37	16.25	16.34
EMISSION RATES, G/HR						
CO	121.8	1.1	105.4	.8	89.8	.6
HC	40.5	1.9	34.0	1.5	18.6	1.1
NOX+	499.1	501.0	327.3	319.7	104.1	90.8
OIL TEMPERATURE, F	282	282	274	274	268	268
OIL PRESSURE, PSI	37	37	40	40	40	40
COOLANT TEMPERATURE, F	189	189	189	189	188	188
EXHAUST PRESSURE, IN. H2O	33.0	24.0	18.0	14.0	9.0	6.0
EXHAUST TEMPERATURE, F	1122	1090	1054	1012	958	935

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	52.01	52.02	53.01	53.02	54.01	54.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	13	13	31	31	31	31
TEMPERATURE, F	72	72	56	56	58	58
ENGINE SPEED, RPM	2800	2800	3300	3300	3300	3300
TORQUE, FT-LB	1.0	1.0	153.5	153.5	138.2	138.2
POWER, BHP*	.5	.5	93.6	93.6	84.3	84.3
FUEL RATE, LB/HR	7.4	7.5	45.2	45.2	39.3	39.2
IGNITION TIMING, DEG BTDC	40.0	40.0	25.0	25.0	25.0	25.0
MANIFOLD VACUUM, IN HG	22.2	22.2	.8	.8	1.4	1.4
THROTTLE ANGLE, DEG	6.0	6.0	81.0	81.0	55.0	55.0
INTAKE MAN. TEMP., F	133	133	90	90	93	93
CONCENTRATIONS, DRY BASIS						
CO, %	.1904	.0008	2.1777	2.1777	.3640	.0011
CO2, %	13.74	13.98	13.53	13.53	13.55	13.96
O2, %	1.38	1.20	.10	.10	1.58	1.33
HC, PPMC	590	42	480	479	309	17
NOX, PPM	378	352	2214	2214	2938	2954
AIR/FUEL RATIO	15.65	15.66	13.97	13.97	15.82	15.85
EMISSION RATES, G/HR						
CO	91.6	.4	5640.0	5638.8	926.2	2.9
HC	14.3	1.0	62.4	62.3	39.5	2.2
NOX+	23.2	21.7	782.4	782.4	1020.2	1023.1
OIL TEMPERATURE, F	264	264	283	283	301	301
OIL PRESSURE, PSI	40	40	37	37	37	37
COOLANT TEMPERATURE, F	188	188	190	190	190	190
EXHAUST PRESSURE, IN. H2O	5.0	3.0	110.0	90.0	135.0	94.0
EXHAUST TEMPERATURE, F	846	815	1259	1259	1321	1308

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	55.01	55.02	56.01	56.02	57.01	57.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	31	31	31	31	31	31
TEMPERATURE, F	67	67	68	68	65	65
ENGINE SPEED, RPM	3300	3300	3300	3300	3300	3300
TORQUE, FT-LB	115.0	115.0	92.0	92.0	61.4	61.4
POWER, BHP*	70.1	70.1	56.1	56.1	37.4	37.4
FUEL RATE, LB/HR	34.7	34.6	29.1	29.0	21.7	21.6
IGNITION TIMING, DEG BTDC	35.0	35.0	41.0	41.0	41.0	41.0
MANIFOLD VACUUM, IN HG	5.5	5.5	9.0	9.0	13.5	13.5
THROTTLE ANGLE, DEG	30.5	30.5	24.0	24.0	18.5	18.5
INTAKE MAN TEMP., F	97	97	94	94	90	90
CONCENTRATIONS, DRY BASIS						
CO, %	.6368	.0016	.2138	.0009	.0919	.0008
CO2, %	13.71	14.50	13.86	14.08	12.98	13.13
O2, %	1.08	.65	1.25	1.18	2.54	2.43
HC, PPMC	678	24	678	30	493	23
NOX, PPM	3032	3044	3043	3044	2978	2956
AIR/FUEL RATIO	15.29	15.35	15.61	15.73	16.72	16.74
EMISSION RATES, G/HR						
CO	1383.6	3.4	397.9	1.7	137.3	1.2
HC	74.0	2.6	63.4	2.8	37.0	1.7
NOX+	899.1	895.9	772.8	773.6	607.3	600.6
OIL TEMPERATURE, F	303	303	301	301	294	294
OIL PRESSURE, PSI	37	37	38	38	38	38
COOLANT TEMPERATURE, F	190	190	190	190	189	189
EXHAUST PRESSURE, IN. H2O	104.0	10.0	74.0	50.0	46.0	32.0
EXHAUST TEMPERATURE, F	1261	1287	1214	1177	1136	1077

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	58.01	58.02	59.01	59.02	60.01	60.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	31	31	31	31	31	31
TEMPERATURE, F	64	64	62	62	57	57
ENGINE SPEED, RPM	3300	3300	3300	3300	3300	3300
TORQUE, FT-LB	38.4	38.4	15.4	15.4	1.3	1.3
POWER BHP*	23.4	23.4	9.4	9.4	.8	.8
FUEL RATE, LB/HR	16.7	16.7	12.1	12.1	9.3	9.3
IGNITION TIMING, DEG BTDC	41.0	41.0	41.0	41.0	41.0	41.0
MANIFOLD VACUUM, IN HG	17.0	17.0	20.0	20.0	22.0	22.0
THROTTLE ANGLE, DEG	15.0	15.0	11.0	11.0	8.0	8.0
INTAKE MAN TEMP., F	88	88	102	102	126	126
CONCENTRATIONS, DRY BASIS						
CO, %	.1126	.0008	.1298	.0009	.1568	.0007
CO2, %	12.93	13.06	13.21	13.34	13.22	13.44
O2, %	2.64	2.56	2.28	2.24	2.24	2.15
HC, PPMC	426	23	443	25	408	28
NOX, PPM	2241	2162	1239	1184	507	492
AIR/FUEL RATIO	16.77	16.82	16.41	16.50	16.35	16.40
EMISSION RATES, G/HR						
CO	130.1	.9	105.6	.7	98.6	.4
HC	24.7	1.3	18.1	1.0	12.9	.9
NOX+	353.3	341.4	137.5	132.5	43.5	41.9
OIL TEMPERATURE, F	285	285	281	281	279	279
OIL PRESSURE, PSI	40	40	42	42	44	44
COOLANT TEMPERATURE, F	188	188	188	188	188	188
EXHAUST PRESSURE, IN. H20	29.0	19.0	16.0	10.0	11.0	7.0
EXHAUST TEMPERATURE, F	1063	993	971	874	892	811

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	61.01	61.02	62.01	62.02	63.01	63.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	44	44	44	44	44	44
TEMPERATURE, F	78	78	80	80	85	85
ENGINE SPEED, RPM	3800	3800	3800	3800	3800	3800
TORQUE, FT-LB	140.0	140.0	126.0	126.0	105.0	105.0
POWER, BHP*	99.3	99.3	89.3	89.3	74.4	74.4
FUEL RATE, LB/HR	49.7	49.7	43.2	43.4	38.6	38.6
IGNITION TIMING, DEG BTDC	27.0	27.0	27.0	27.0	35.0	35.0
MANIFOLD VACUUM, IN HG	1.2	1.2	1.5	1.5	5.5	5.5
THROTTLE ANGLE, DEG	81.0	81.0	56.0	56.0	33.0	33.0
INTAKE MAN. TEMP., F	102	102	108	108	110	110
CONCENTRATIONS, DRY BASIS						
CO, %	2.8387	2.9117	.3949	.0014	1.0141	.0955
CO2, %	13.16	13.15	14.03	14.44	13.88	14.92
O2, %	.16	.08	1.08	.80	.71	.11
HC, PPMC	1198	522	258	14	680	12
NOX, PPM	2396	1916	2962	2994	3002	1290
AIR/FUEL RATIO	13.67	13.64	15.44	15.46	14.86	14.88
EMISSION RATES, G/HR						
CO	7905.9	8117.1	1067.6	3.9	2365.3	221.8
HC	167.6	73.1	35.0	1.9	79.7	1.4
NOX+	957.2	766.3	1148.8	1164.7	1004.4	429.8
OIL TEMPERATURE, F	276	276	298	298	300	300
OIL PRESSURE, PSI	44	44	40	40	40	40
COOLANT TEMPERATURE, F	190	190	191	191	191	191
EXHAUST PRESSURE, IN. H2O	158.0	110.0	160.0	115.0	137.0	86.0
EXHAUST TEMPERATURE, F	1335	1300	1380	1375	1324	1395

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	64.01	64.02	65.01	65.02	66.01	66.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	44	44	44	44	44	44
TEMPERATURE, F	85	85	84	84	83	83
ENGINE SPEED, RPM	3800	3800	3800	3800	3800	3800
TORQUE, FT-LB	84.0	84.0	56.0	56.0	35.0	35.0
POWER BHP*	59.6	59.6	39.7	39.7	24.8	24.8
FUEL RATE, LB/HR	31.9	31.8	25.4	25.3	19.1	19.1
IGNITION TIMING, DEG BTDC	42.0	42.0	42.0	42.0	42.0	42.0
MANIFOLD VACUUM, IN HG	9.2	9.2	12.5	12.5	16.5	16.5
THROTTLE ANGLE, DEG	26.0	26.0	21.0	21.0	16.5	16.5
INTAKE MAN. TEMP., F	108	108	104	104	105	105
CONCENTRATIONS, DRY BASIS						
CO, %	.2759	.0011	.0903	.0009	.1014	.0009
CO2, %	14.05	14.27	13.32	13.40	13.15	13.32
O2, %	1.05	.96	2.16	2.13	2.44	2.28
HC, PPMC	577	26	291	15	217	14
NOX, PPM	3084	3082	2967	2963	2097	2112
AIR/FUEL RATIO	15.45	15.58	16.42	16.48	16.62	16.57
EMISSION RATES, G/HR						
CO	552.2	2.2	153.9	1.6	131.7	1.1
HC	58.0	2.6	24.9	1.3	14.1	.9
NOX+	885.4	890.2	725.5	724.7	390.7	393.3
OIL TEMPERATURE, F	296	296	289	289	283	283
OIL PRESSURE, PSI	40	40	40	40	42	42
COOLANT TEMPERATURE, F	190	190	190	190	189	189
EXHAUST PRESSURE, IN. H2O	39.0	60.0	60.0	42.0	36.0	24.0
EXHAUST TEMPERATURE, F	1275	1246	1209	1150	1142	1075

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	67.01	67.02	68.01	68.02	69.01	69.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	44	44	44	44	35	35
TEMPERATURE, F	83	83	82	82	73	73
ENGINE SPEED, RPM	3800	3800	3800	3800	750	750
TORQUE, FT-LB	14.0	14.0	1.6	1.6	.8	.8
POWER, BHP*	9.9	9.9	1.1	1.1	.1	.1
FUEL RATE, LB/HR	14.2	14.3	11.3	11.3	2.1	2.1
IGNITION TIMING, DEG BTDC	42.0	42.0	42.0	42.0	23.0	23.0
MANIFOLD VACUUM, IN HG	19.5	19.5	21.2	21.2	20.5	20.5
THROTTLE ANGLE, DEG	12.5	12.5	10.0	10.0	.0	.0
INTAKE MAN. TEMP., F	120	120	142	142	150	150
CONCENTRATIONS, DRY BASIS						
CO, %	.1169	.0009	.1307	.0008	.1948	.0007
CO2, %	13.27	13.45	13.48	13.55	12.82	13.84
O2, %	2.29	2.16	2.01	2.16	2.89	1.74
HC, PPMC	265	16	256	19	5817	195
NOX, PPM	1138	1179	614	578	41	47
AIR/FUEL RATIO	16.45	16.43	16.19	16.39	16.17	16.02
EMISSION RATES, G/HR						
CO	111.8	.8	97.9	.6	27.0	.1
HC	12.7	.7	9.6	.7	40.5	1.4
NOX+	156.1	161.9	66.0	62.5	.8	.9
OIL TEMPERATURE, F	280	280	278	278	234	234
OIL PRESSURE, PSI	42	42	42	42	30	30
COOLANT TEMPERATURE, F	189	189	188	188	186	186
EXHAUST PRESSURE, IN. H2O	21.0	13.0	14.0	8.0	.0	.0
EXHAUST TEMPERATURE, F	1055	984	944	876	428	630

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	70.01	70.02	71.01	71.02	72.01	72.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78	3/17/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	35	35	35	35	35	35
TEMPERATURE, F	68	68	67	67	68	68
ENGINE SPEED, RPM	750	750	750	750	600	600
TORQUE, FT-LB	10.0	10.0	15.0	15.0	15.3	15.3
POWER, BHP*	1.4	1.4	2.1	2.1	1.7	1.7
FUEL RATE, LB/HR	2.5	2.4	2.8	2.7	2.2	2.2
IGNITION TIMING, DEG BTDC	23.0	23.0	24.0	24.0	24.0	24.0
MANIFOLD VACUUM, IN HG	19.0	19.0	18.5	18.5	17.5	17.5
THROTTLE ANGLE, DEG	1.0	1.0	1.5	1.5	.0	.0
INTAKE MAN. TEMP., F	133	133	128	128	134	134
CONCENTRATIONS, DRY BASIS						
CO, %	.1269	.0010	.1140	.0069	.1109	.0310
CO2, %	12.83	13.21	12.79	13.25	13.49	13.94
O2, %	2.98	2.62	3.01	2.52	2.18	1.54
HC, PPMC	2916	239	3195	513	3885	1457
NOX, PPM	53	45	83	72	99	79
AIR/FUEL RATIO	16.63	16.73	16.64	16.61	15.88	15.72
EMISSION RATES, G/HR						
CO	21.5	.2	21.6	1.3	15.4	4.3
HC	24.8	2.0	30.4	4.7	27.1	10.1
NOX+	1.3	1.0	2.2	1.8	1.9	1.5
OIL TEMPERATURE, F	223	223	223	223	223	223
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	187	187	187	187	187	187
EXHAUST PRESSURE, IN. H2O	1.0	.0	1.0	.0	.0	.0
EXHAUST TEMPERATURE, F	460	574	472	457	417	430

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	73.01	73.02	74.01	74.02	75.01	75.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/17/78	3/17/78	3/30/78	3/30/78	3/20/78	3/20/78
BAROMETER, MMHG	752.4	752.4	746.7	746.7	755.0	755.0
HUMIDITY, GRAINS/LB	35	35	45	45	53	53
TEMPERATURE, F	67	67	88	88	81	81
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	109.5	109.5	87.6	87.6	36.5	36.5
POWER BHP*	20.3	20.3	16.5	16.5	6.7	6.7
FUEL RATE, LB/HR	8.9	8.9	7.9	7.9	4.6	4.6
IGNITION TIMING, DEG BTDC	24.0	24.0	24.0	24.0	24.0	24.0
MANIFOLD VACUUM, IN HG	6.0	6.0	9.5	9.5	17.0	17.0
THROTTLE ANGLE, DEG	11.0	11.0	8.0	8.0	4.0	4.0
INTAKE MAN. TEMP., F	106	106	115	115	121	121
CONCENTRATIONS, DRY BASIS						
CO, %	.1708	.0027	.0543	.0011	.1442	.0057
CO2, %	14.37	14.78	14.19	14.52	14.58	14.99
O2, %	.80	.42	1.38	1.18	.65	.26
HC, PPMC	1452	83	1531	69	2150	174
NOX, PPM	3137	3104	2721	2721	1025	732
AIR/FUEL RATIO	15.23	15.19	15.66	15.69	15.00	14.99
EMISSION RATES, G/HR						
CO	93.4	1.5	27.0	.5	40.3	1.6
HC	39.9	2.3	38.2	1.7	30.2	2.4
NOX+	237.5	233.1	194.7	192.9	42.7	30.3
OIL TEMPERATURE, F	240	240	214	214	228	228
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	184	184	186	186	188	188
EXHAUST PRESSURE, IN. H2O	10.0	5.0	8.0	2.0	4.0	1.0
EXHAUST TEMPERATURE, F	784	777	765	695	632	626

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	76.01	76.02	77.01	77.02	78.01	78.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/24/78	3/24/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	745.2	745.2	755.0	755.0
HUMIDITY, GRAINS/LB	53	53	31	31	53	53
TEMPERATURE, F	82	82	83	83	77	77
ENGINE SPEED, RPM	1000	1000	1000	1000	1300	1300
TORQUE, FT-LB	14.6	14.6	1.4	1.4	119.0	119.0
POWER BHP*	2.7	2.7	.3	.3	28.5	28.5
FUEL RATE, LB/HR	3.3	3.3	2.6	2.6	13.0	13.0
IGNITION TIMING, DEG BTDC	24.0	24.0	24.0	24.0	21.0	21.0
MANIFOLD VACUUM, IN HG	19.0	19.0	20.5	20.5	5.6	5.6
THROTTLE ANGLE, DEG	2.0	2.0	1.0	1.0	15.0	15.0
INTAKE MAN. TEMP., F	130	130	133	133	104	104
CONCENTRATIONS, DRY BASIS						
CO, %	.1070	.0007	.1806	.0006	.1600	.0010
CO2, %	13.59	13.81	13.20	13.85	14.28	14.63
O2, %	2.23	1.86	2.87	2.08	.89	.64
HC, PPMC	2278	149	3704	199	1558	68
NOX, PPM	152	120	43	53	2853	2844
AIR/FUEL RATIO	16.09	16.12	16.38	16.26	15.28	15.33
EMISSION RATES, G/HR						
CO	23.1	.2	31.4	.1	128.4	.8
HC	24.7	1.6	32.3	1.7	62.8	2.7
NOX+	4.9	3.9	1.0	1.2	341.1	340.6
OIL TEMPERATURE, F	226	226	227	227	214	214
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	187	187	186	186	189	189
EXHAUST PRESSURE, IN. H2O	1.0	.0	1.0	.0	15.0	6.0
EXHAUST TEMPERATURE, F	568	550	556	588	887	860

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	79.01	79.02	80.01	80.02	82.01	82.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	755.0	755.0
HUMIDITY, GRAINS/LB	53	53	53	53	53	53
TEMPERATURE, F	79	79	80	80	80	80
ENGINE SPEED, RPM	1300	1300	1300	1300	1300	1300
TORQUE, FT-LB	95.4	95.4	39.8	39.8	1.2	1.2
POWER BHP*	22.8	22.8	9.5	9.5	.3	.3
FUEL RATE, LB/HR	10.8	10.8	6.2	6.1	3.3	3.4
IGNITION TIMING, DEG BTDC	28.0	28.0	28.0	28.0	28.0	28.0
MANIFOLD VACUUM, IN HG	9.0	9.0	17.0	17.0	21.0	21.0
THROTTLE ANGLE, DEG	11.0	11.0	5.0	5.0	1.5	1.5
INTAKE MAN. TEMP., F	111	111	117	117	139	139
CONCENTRATIONS, DRY BASIS						
CO, %	.0970	.0006	.4592	.0786	.1718	.0003
CO2, %	14.25	14.43	14.32	14.83	13.31	13.59
O2, %	1.02	.93	.60	.30	2.34	2.09
HC, PPMC	1471	67	1936	86	2081	141
NOX, PPM	2867	2847	1416	838	88	80
AIR/FUEL RATIO	15.41	15.54	14.86	14.99	16.19	16.30
EMISSION RATES, G/HR						
CO	65.1	.4	171.8	29.3	37.7	.1
HC	49.5	2.3	36.4	1.6	23.0	1.6
NOX+	286.4	287.1	78.9	46.4	2.9	2.7
OIL TEMPERATURE, F	238	238	238	238	231	231
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	189	189	189	189	187	187
EXHAUST PRESSURE, IN. H2O	12.0	6.0	5.0	2.0	1.0	.0
EXHAUST TEMPERATURE, F	884	859	736	769	603	571

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	83.01	83.02	84.01	84.02	85.01	85.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	755.0	755.0
HUMIDITY, GRAINS/LB	50	50	50	50	50	50
TEMPERATURE, F	76	76	77	77	79	79
ENGINE SPEED, RPM	1700	1700	1700	1700	1700	1700
TORQUE, FT-LB	125.0	125.0	99.6	99.6	41.5	41.5
POWER, BHP*	39.2	39.2	31.3	31.3	13.0	13.0
FUEL RATE, LB/HR	17.4	17.5	14.6	14.6	8.1	8.1
IGNITION TIMING, DEG BTDC	26.0	26.0	34.0	34.0	34.0	34.0
MANIFOLD VACUUM, IN HG	5.5	5.5	9.0	9.0	17.0	17.0
THROTTLE ANGLE, DEG	20.0	20.0	15.0	15.0	8.0	8.0
INTAKE MAN. TEMP., F	105	105	109	109	111	111
CONCENTRATIONS, DRY BASIS						
CO, %	.1311	.0008	.0747	.0007	.1025	.0008
CO2, %	14.36	14.62	14.16	14.32	14.27	14.39
O2, %	1.05	.84	1.40	1.23	1.20	1.03
HC, PPMC	1246	66	1256	57	1459	70
NOX, PPM	2871	2874	2888	2892	2127	1953
AIR/FUEL RATIO	15.43	15.46	15.70	15.75	15.50	15.58
EMISSION RATES, G/HR						
CO	140.6	.8	68.4	.7	51.4	.4
HC	67.1	3.6	57.7	2.7	36.8	1.8
NOX+	453.7	456.5	389.4	392.3	157.2	146.5
OIL TEMPERATURE, F	232	232	254	254	250	250
OIL PRESSURE, PSI	32	32	32	32	32	32
COOLANT TEMPERATURE, F	189	189	187	187	187	187
EXHAUST PRESSURE, IN. H2O	25.0	14.0	20.0	12.0	9.0	3.0
EXHAUST TEMPERATURE, F	1042	961	1007	975	853	860

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	86.01	86.02	87.01	87.02	88.01	88.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/30/78	3/30/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	746.7	746.7	755.0	755.0
HUMIDITY, GRAINS/LB	50	50	45	45	50	50
TEMPERATURE, F	78	78	88	88	78	78
ENGINE SPEED, RPM	1700	1700	1700	1700	2000	2000
TORQUE, FT-LB	16.6	16.6	1.5	1.5	125.3	125.3
POWER, BHP*	5.2	5.2	.5	.5	46.3	46.3
FUEL RATE, LB/HR	5.6	5.6	4.4	4.4	20.7	20.7
IGNITION TIMING, DEG BTDC	34.0	34.0	34.0	34.0	31.0	31.0
MANIFOLD VACUUM, IN HG	20.5	20.5	22.0	22.0	6.0	6.0
THROTTLE ANGLE, DEG	4.5	4.5	3.0	3.0	21.5	21.5
INTAKE MAN. TEMP., F	125	125	156	156	105	105
CONCENTRATIONS, DRY BASIS						
CO, %	.4918	.1339	.2646	.0006	.3200	.0014
CO2, %	14.47	14.96	14.21	14.63	14.35	14.90
O2, %	.48	.25	1.22	.91	.85	.51
HC, PPMC	1985	100	1552	110	1296	57
NOX, PPM	564	325	148	144	2899	2860
AIR/FUEL RATIO	14.74	14.92	15.36	15.42	15.20	15.23
EMISSION RATES, G/HR						
CO	163.7	45.2	71.4	.2	404.6	1.7
HC	33.2	1.7	21.0	1.5	82.3	3.6
NOX+	27.6	16.1	5.8	5.6	539.7	528.4
OIL TEMPERATURE, F	244	244	239	239	243	243
OIL PRESSURE, PSI	32	32	34	34	35	35
COOLANT TEMPERATURE, F	187	187	187	187	186	186
EXHAUST PRESSURE, IN. H2O	5.0	2.0	2.0	.0	31.0	22.0
EXHAUST TEMPERATURE, F	732	722	681	663	1097	1092

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	89.01	89.02	90.01	90.02	91.01	91.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	755.0	755.0
HUMIDITY, GRAINS/LB	50	50	50	50	50	50
TEMPERATURE, F	83	83	81	81	78	78
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	100.2	100.2	41.8	41.8	16.7	16.7
POWER, BHP*	37.0	37.0	15.4	15.4	6.2	6.2
FUEL RATE, LB/HR	17.3	17.3	9.7	9.7	6.6	6.6
IGNITION TIMING, DEG BTDC	35.0	35.0	35.0	35.0	35.0	35.0
MANIFOLD VACUUM, IN HG	9.0	9.0	17.0	17.0	20.6	20.6
THROTTLE ANGLE, DEG	17.0	17.0	9.5	9.5	6.0	6.0
INTAKE MAN. TEMP., F	112	112	116	116	128	128
CONCENTRATIONS, DRY BASIS						
CO, %	.0808	.0003	.0941	.0001	.3034	.0610
CO2, %	14.20	14.34	13.89	13.98	14.29	14.76
O2, %	1.47	1.34	1.88	1.75	1.05	.73
HC, PPMC	1074	57	1167	59	1647	93
NOX, PPM	2898	2907	2197	2063	766	601
AIR/FUEL RATIO	15.77	15.82	16.03	16.10	15.24	15.28
EMISSION RATES, G/HR						
CO	87.7	.3	58.4	.1	122.9	24.6
HC	58.5	3.1	36.4	1.9	33.5	1.9
NOX+	463.3	466.2	200.9	191.4	45.7	35.7
OIL TEMPERATURE, F	264	264	256	256	250	250
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	191	191	189	189	187	187
EXHAUST PRESSURE, IN. H2O	26.0	17.0	10.0	5.0	5.0	2.0
EXHAUST TEMPERATURE, F	1072	1030	926	890	795	742

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	92.01	92.02	93.01	93.02	94.01	94.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	755.0	755.0
HUMIDITY, GRAINS/LB	50	50	50	50	50	50
TEMPERATURE, F	76	76	73	73	76	76
ENGINE SPEED, RPM	2000	2000	2400	2400	2400	2400
TORQUE, FT-LB	1.3	1.3	125.0	125.0	100.0	100.0
POWER, BHP*	.5	.5	55.4	55.4	44.3	44.3
FUEL RATE, LB/HR	5.1	5.1	25.4	25.4	21.3	21.3
IGNITION TIMING, DEG BTDC	35.0	35.0	32.0	32.0	37.0	37.0
MANIFOLD VACUUM, IN HG	22.2	22.2	6.0	6.0	9.0	9.0
THROTTLE ANGLE, DEG	3.5	3.5	24.5	24.5	20.0	20.0
INTAKE MAN TEMP., F	151	151	106	106	105	105
CONCENTRATIONS, DRY BASIS						
CO, %	.4938	.1492	.3717	.0015	.1013	.0010
CO2, %	14.55	15.21	14.36	14.94	14.11	14.29
O2, %	.65	.13	1.01	.63	1.53	1.40
HC, PPMC	1985	244	1098	41	969	44
NOX, PPM	196	90	2995	3006	2996	3012
AIR/FUEL RATIO	14.83	14.81	15.30	15.32	15.81	15.87
EMISSION RATES, G/HR						
CO	149.6	44.8	574.4	2.3	136.2	1.3
HC	30.2	3.7	85.2	3.2	65.5	3.0
NOX+	8.8	4.0	681.7	679.5	593.2	595.4
OIL TEMPERATURE, F	248	248	268	268	273	273
OIL PRESSURE, PSI	35	35	37	37	37	37
COOLANT TEMPERATURE, F	188	188	189	189	189	189
EXHAUST PRESSURE, IN. H2O	4.0	1.0	50.0	35.0	38.0	25.0
EXHAUST TEMPERATURE, F	710	701	1175	1160	1150	1097

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	95.01	95.02	96.01	96.02	97.01	97.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	755.0	755.0
HUMIDITY, GRAINS/LB	50	50	50	50	50	50
TEMPERATURE, F	77	77	77	77	77	77
ENGINE SPEED, RPM	2400	2400	2400	2400	2400	2400
TORQUE, FT-LB	41.6	41.6	16.7	16.7	1.3	1.3
POWER, BHP*	18.4	18.4	7.4	7.4	.6	.6
FUEL RATE, LB/HR	11.8	11.8	8.2	8.2	6.2	6.3
IGNITION TIMING, DEG BTDC	37.0	37.0	37.0	37.0	37.0	37.0
MANIFOLD VACUUM, IN HG	17.2	17.2	20.5	20.5	22.3	22.3
THROTTLE ANGLE, DEG	11.5	11.5	8.0	8.0	5.0	5.0
INTAKE MAN. TEMP., F	107	107	120	120	147	147
CONCENTRATIONS, DRY BASIS						
CO, %	.1056	.0009	.1380	.0008	.3511	.0410
CO2, %	13.43	13.71	13.84	14.04	14.25	14.69
O2, %	2.35	2.23	1.95	1.80	1.23	.97
HC, PPMC	771	38	826	41	907	79
NOX, PPM	2152	2050	855	807	259	234
AIR/FUEL RATIO	16.45	16.47	16.05	16.09	15.39	15.44
EMISSION RATES, G/HR						
CO	82.5	.7	72.6	.4	134.6	15.8
HC	30.2	1.5	21.8	1.1	17.5	1.5
NOX+	247.5	235.1	66.2	62.6	14.6	13.3
OIL TEMPERATURE, F	265	265	256	256	253	253
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	188	188	187	187	187	187
EXHAUST PRESSURE, IN. H2O	15.0	7.0	8.0	3.0	5.0	1.0
EXHAUST TEMPERATURE, F	995	952	884	869	794	760

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	98.01	98.02	99.01	99.02	100.01	100.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78	3/20/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	755.0	755.0
HUMIDITY, GRAINS/LB	50	50	50	50	50	50
TEMPERATURE, F	77	77	78	78	78	78
ENGINE SPEED, RPM	2800	2800	2800	2800	2800	2800
TORQUE, FT-LB	121.3	121.3	97.0	97.0	40.4	40.4
POWER, BHP*	62.7	62.7	50.1	50.1	20.9	20.9
FUEL RATE, LB/HR	29.4	29.4	24.7	24.6	13.8	14.0
IGNITION TIMING, DEG BTDC	35.0	35.0	39.0	39.0	40.0	40.0
MANIFOLD VACUUM, IN HG	6.0	6.0	9.0	9.0	17.0	17.0
THROTTLE ANGLE, DEG	27.0	27.0	22.0	22.0	13.0	13.0
INTAKE MAN. TEMP., F	106	106	106	106	105	105
CONCENTRATIONS, DRY BASIS						
CO, %	.4907	.0018	.1289	.0011	.1104	.0007
CO2, %	14.38	15.03	14.10	14.25	13.20	13.37
O2, %	.90	.49	1.43	1.34	2.68	2.59
HC, PPMC	946	30	746	34	444	24
NOX, PPM	3025	2954	3088	3091	1880	1862
AIR/FUEL RATIO	15.19	15.22	15.76	15.84	16.75	16.78
EMISSION RATES, G/HR						
CO	870.8	3.2	200.7	1.6	103.3	.7
HC	84.4	2.7	58.3	2.7	20.9	1.1
NOX+	790.6	768.2	708.0	709.2	259.2	259.6
OIL TEMPERATURE, F	280	280	282	282	273	273
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	189	189	188	188	187	187
EXHAUST PRESSURE, IN. H2O	70.0	50.0	52.0	36.0	20.0	12.0
EXHAUST TEMPERATURE, F	1244	1257	1204	1156	1083	1040

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	101.01	101.02	102.01	102.02	103.01	103.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/20/78	3/20/78	3/20/78	3/20/78	3/24/78	3/24/78
BAROMETER, MMHG	755.0	755.0	755.0	755.0	745.2	745.2
HUMIDITY, GRAINS/LB	50	50	50	50	31	31
TEMPERATURE, F	77	77	76	76	83	83
ENGINE SPEED, RPM	2800	2800	2800	2800	3300	3300
TORQUE, FT-LB	16.2	16.2	1.3	1.3	115.0	115.0
POWER, BHP*	8.4	8.4	.7	.7	71.0	71.0
FUEL RATE, LB/HR	9.8	9.8	7.4	7.4	33.6	33.5
IGNITION TIMING, DEG BTDC	40.0	40.0	40.0	40.0	37.0	37.0
MANIFOLD VACUUM, IN HG	20.5	20.5	22.0	22.0	6.0	6.0
THROTTLE ANGLE, DEG	9.0	9.0	7.0	7.0	29.5	29.5
INTAKE MAN. TEMP., F	113	113	140	140	108	108
CONCENTRATIONS, DRY BASIS						
CO, %	.1319	.0006	.1588	.0005	.6534	.0023
CO2, %	13.47	13.65	13.76	14.05	14.36	15.06
O2, %	2.36	2.23	1.88	1.70	.83	.48
HC, PPMC	460	24	430	27	778	31
NOX, PPM	864	855	353	341	3118	3017
AIR/FUEL RATIO	16.43	16.44	16.03	16.01	15.09	15.22
EMISSION RATES, G/HR						
CO	85.8	.4	76.2	.2	1312.7	4.6
HC	15.0	.8	10.4	.7	78.5	3.1
NOX+	82.7	81.3	25.0	23.9	853.1	825.3
OIL TEMPERATURE, F	263	263	260	260	291	291
OIL PRESSURE, PSI	40	40	40	40	38	38
COOLANT TEMPERATURE, F	187	187	187	187	189	189
EXHAUST PRESSURE, IN. H2O	11.0	5.0	6.0	2.0	94.0	68.0
EXHAUST TEMPERATURE, F	976	909	861	819	1296	1320

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	104.01	104.02	105.01	105.02	106.01	106.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/21/78	3/21/78	3/21/78	3/21/78	3/21/78	3/21/78
BAROMETER, MMHG	744.5	744.5	744.5	744.5	744.5	744.5
HUMIDITY, GRAINS/LB	27	27	27	27	27	27
TEMPERATURE, F	77	77	78	78	77	77
ENGINE SPEED, RPM	3300	3300	3300	3300	3300	3300
TORQUE, FT-LB	92.0	92.0	38.4	38.4	15.4	15.4
POWER BHP*	56.3	56.3	23.5	23.5	9.4	9.4
FUEL RATE, LB/HR	28.4	28.3	16.3	16.4	11.8	11.9
IGNITION TIMING, DEG BTDC	41.0	41.0	41.0	41.0	41.0	41.0
MANIFOLD VACUUM, IN HG	9.0	9.0	17.0	17.0	20.0	20.0
THROTTLE ANGLE, DEG	24.5	24.5	15.0	15.0	11.0	11.0
INTAKE MAN. TEMP., F	103	103	100	100	117	117
CONCENTRATIONS, DRY BASIS						
CO, %	.2108	.0010	.1084	.0009	.1259	.0008
CO2, %	13.84	14.05	12.98	13.14	13.28	13.45
O2, %	1.46	1.35	2.65	2.54	2.38	2.33
HC, PPMC	679	32	382	22	350	23
NOX, PPM	2950	2957	2103	2101	1043	1056
AIR/FUEL RATIO	15.76	15.86	16.78	16.78	16.49	16.55
EMISSION RATES, G/HR						
CO	382.7	1.9	121.8	1.1	99.9	.7
HC	61.9	3.0	21.5	1.3	14.0	.9
NOX+	719.1	722.9	317.4	317.7	111.1	112.9
OIL TEMPERATURE, F	288	288	277	277	270	270
OIL PRESSURE, PSI	35	35	37	37	37	37
COOLANT TEMPERATURE, F	190	190	189	189	188	188
EXHAUST PRESSURE, IN. H2O	70.0	49.0	25.0	16.0	15.0	8.0
EXHAUST TEMPERATURE, F	1228	1185	1085	1014	980	915

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	107.01	107.02	108.01	108.02	109.01	109.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/21/78	3/21/78	3/21/78	3/21/78	3/21/78	3/21/78
BAROMETER, MMHG	744.5	744.5	744.5	744.5	744.5	744.5
HUMIDITY, GRAINS/LB	27	27	27	27	27	27
TEMPERATURE, F	77	77	77	77	79	79
ENGINE SPEED, RPM	3300	3300	3800	3800	3800	3800
TORQUE, FT-LB	1.7	1.7	105.0	105.0	84.0	84.0
POWER, BHP*	1.0	1.0	74.0	74.0	59.2	59.2
FUEL RATE, LB/HR	9.1	9.1	37.9	38.0	32.1	32.1
IGNITION TIMING, DEG BTDC	41.0	41.0	37.0	37.0	42.0	42.0
MANIFOLD VACUUM, IN HG	21.7	21.7	5.7	5.7	9.0	9.0
THROTTLE ANGLE, DEG	8.0	8.0	32.5	32.5	26.0	26.0
INTAKE MAN. TEMP., F	140	140	102	102	104	104
CONCENTRATIONS, DRY BASIS						
CO, %	.1672	.0008	.9635	.0984	.4020	.0014
CO2, %	13.77	13.95	13.84	14.86	14.04	14.45
O2, %	1.66	1.56	.88	.20	1.04	.84
HC, PPMC	485	32	716	17	677	28
NOX, PPM	525	527	2982	1397	3026	3033
AIR/FUEL RATIO	15.86	15.92	14.99	14.95	15.36	15.48
EMISSION RATES, G/HR						
CO	98.5	.5	2216.2	225.7	802.5	2.8
HC	14.3	.9	82.7	1.9	67.9	2.8
NOX+	41.5	41.5	920.9	429.9	811.1	817.3
OIL TEMPERATURE, F	268	268	297	297	298	298
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	188	188	191	191	190	190
EXHAUST PRESSURE, IN. H2O	10.0	4.0	120.0	84.0	87.0	60.0
EXHAUST TEMPERATURE, F	877	812	1308	1386	1280	1275

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	110.01	110.02	111.01	111.02	112.01	112.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/21/78	3/21/78	3/21/78	3/21/78	3/21/78	3/21/78
BAROMETER, MMHG	744.5	744.5	744.5	744.5	744.5	744.5
HUMIDITY, GRAINS/LB	27	27	27	27	27	27
TEMPERATURE, F	78	78	77	77	76	76
ENGINE SPEED, RPM	3800	3800	3800	3800	3800	3800
TORQUE, FT-LB	35.0	35.0	14.0	14.0	1.7	1.7
POWER, BHP*	24.7	24.7	9.9	9.9	1.2	1.2
FUEL RATE, LB/HR	18.9	18.9	13.9	13.9	11.1	11.1
IGNITION TIMING, DEG BTDC	42.0	42.0	42.0	42.0	42.0	42.0
MANIFOLD VACUUM, IN HG	16.5	16.5	19.5	19.5	21.0	21.0
THROTTLE ANGLE, DEG	16.5	16.5	13.0	13.0	10.0	10.0
INTAKE MAN. TEMP., F	103	103	117	117	136	136
CONCENTRATIONS, DRY BASIS						
CO, %	.0975	.0011	.1117	.0010	.1237	.0008
CO2, %	13.17	13.30	13.12	13.32	13.38	13.49
O2, %	2.43	2.31	2.47	2.37	2.22	2.15
HC, PPMC	215	14	230	15	246	17
NOX, PPM	2124	2079	1097	1152	584	606
AIR/FUEL RATIO	16.61	16.59	16.60	16.60	16.36	16.39
EMISSION RATES, G/HR						
CO	124.9	1.3	106.1	.9	91.6	.6
HC	13.8	.9	11.0	.7	9.1	.6
NOX+	365.4	357.3	139.8	146.1	58.1	60.4
OIL TEMPERATURE, F	287	287	280	280	279	279
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	189	189	188	188	188	188
EXHAUST PRESSURE, IN. H2O	35.0	23.0	20.0	12.0	14.0	7.0
EXHAUST TEMPERATURE, F	1153	1100	1053	963	950	846

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	113.01	113.02	114.01	114.02	115.01	115.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/21/78	3/21/78	3/24/78	3/24/78	3/24/78	3/24/78
BAROMETER, MMHG	744.5	744.5	745.2	745.2	745.2	745.2
HUMIDITY, GRAINS/LB	27	27	31	31	31	31
TEMPERATURE, F	62	62	81	81	86	86
ENGINE SPEED, RPM	4000	4000	1300	1300	2000	2000
TORQUE, FT-LB	134.0	134.0	95.4	95.4	16.7	16.7
POWER, BHP*	99.4	99.4	23.2	23.2	6.2	6.2
FUEL RATE, LB/HR	50.8	50.7	10.7	10.7	6.7	6.7
IGNITION TIMING, DEG BTDC	28.0	28.0	29.0	29.0	35.0	35.0
MANIFOLD VACUUM, IN HG	1.5	1.5	9.2	9.2	21.0	21.0
THROTTLE ANGLE, DEG	81.0	81.0	11.0	11.0	5.5	5.5
INTAKE MAN. TEMP., F	95	95	110	110	130	130
CONCENTRATIONS, DRY BASIS						
CO, %	2.4259	2.5076	.0514	.0006	.4299	.1709
CO2, %	13.33	13.35	14.19	14.40	14.47	14.93
O2, %	.31	.17	1.46	1.28	.78	.41
HC, PPMC	1068	414	1276	65	1575	100
NOX, PPM	2389	1965	2895	2878	713	558
AIR/FUEL RATIO	13.94	13.87	15.75	15.78	15.00	15.01
EMISSION RATES, G/HR						
CO	7018.0	7228.9	34.7	.4	171.9	68.1
HC	155.2	60.0	43.3	2.2	31.6	2.0
NOX+	928.1	760.7	266.4	264.1	38.8	30.3
OIL TEMPERATURE, F	300	300	240	240	251	251
OIL PRESSURE, PSI	37	37	30	30	35	35
COOLANT TEMPERATURE, F	190	190	187	187	188	188
EXHAUST PRESSURE, IN. H2O	160.0	110.0	11.0	5.0	6.0	2.0
EXHAUST TEMPERATURE, F	1369	1335	866	779	806	805

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHEVROLET 200-CID
FUEL CODE: 7718

TEST NUMBER	116.01	116.02	117.01	117.02	118.01	118.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	3/24/78	3/24/78	3/24/78	3/24/78	3/24/78	3/24/78
BAROMETER, MMHG	745.2	745.2	745.2	745.2	745.2	745.2
HUMIDITY, GRAINS/LB	31	31	31	31	31	31
TEMPERATURE, F	83	83	82	82	81	81
ENGINE SPEED, RPM	2800	2800	3300	3300	1300	1300
TORQUE, FT-LB	97.0	97.0	1.6	1.6	95.4	95.4
POWER, BHP*	50.8	50.8	1.0	1.0	23.2	23.2
FUEL RATE, LB/HR	24.1	24.2	9.0	9.1	10.7	10.7
IGNITION TIMING, DEG BTDC	40.0	40.0	41.0	41.0	29.0	29.0
MANIFOLD VACUUM, IN HG	9.5	9.5	22.0	22.0	9.2	9.2
THROTTLE ANGLE, DEG	21.0	21.0	8.0	8.0	11.0	11.0
INTAKE MAN. TEMP., F	104	104	150	150	110	110
CONCENTRATIONS, DRY BASIS						
CO, %	.0773	.0006	.1425	.0006	.0514	.0006
CO2, %	13.93	14.09	14.08	14.19	14.19	14.40
O2, %	1.77	1.65	1.62	1.67	1.46	1.28
HC, PPMC	735	33	286	23	1276	65
NOX, PPM	3117	3135	536	534	2895	2878
AIR/FUEL RATIO	16.04	16.07	15.85	15.98	15.75	15.78
EMISSION RATES, G/HR						
CO	119.6	.9	81.4	.3	34.7	.4
HC	57.1	2.6	8.2	.7	43.3	2.2
NOX+	656.6	661.2	41.7	42.0	266.4	264.1
OIL TEMPERATURE, F	269	269	279	279	240	240
OIL PRESSURE, PSI	40	40	38	38	30	30
COOLANT TEMPERATURE, F	189	189	188	188	187	187
EXHAUST PRESSURE, IN. H2O	46.0	34.0	11.0	6.0	11.0	5.0
EXHAUST TEMPERATURE, F	1181	1115	945	958	866	779

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

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