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PERFORMANCE CHARACTERISTICS OF AUTOMOTIVE ENGINES IN THE UNITED STATES
First Series--Report No. 13
1975 American Motors 258 CID (4.2 Liters), IV

W.F. Marshall
K.R. Stamper

U.S. DEPARTMENT OF ENERGY
BARTLESVILLE ENERGY RESEARCH CENTER
P.O. Box 1398
Bartlesville OK 74003

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INTERIM REPORT

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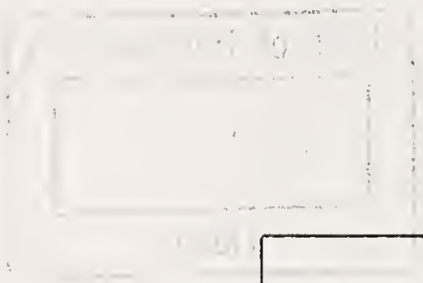

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16. Abstract

Experimental data were obtained in dynamometer tests of a 1975 AMC 258-CID production 1V 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 was prepared by the U.S. Department of Energy, Bartlesville Energy Research Center, for the U.S. Department of Transportation, Transportation Systems Center, Energy Technology Branch, Cambridge MA. Presented are results of experimental work to obtain information on the 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.

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

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

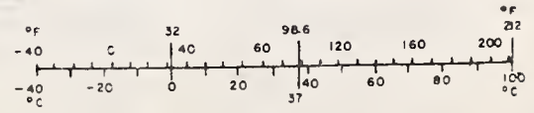
METRIC CONVERSION FACTORS

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

This report presents data acquired from tests of a 1975 AMC 258-CID production IV engine. American Motors uses this particular engine in the 49 states production Gremlin equipped with a manual transmission. Similar versions of this engine with slight modification to emission control hardware are found in the Hornet and Matador automobiles. The test results are sufficient to establish steady-state maps for engine performance, fuel consumption and emission rates (carbon monoxide, unburned hydrocarbons, oxides of nitrogen) over the entire operating range of the engine.

The objective of this program is to provide 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

General engine specifications for the AMC 258-CID I-V engine are given in table 1. The engine breakin (table 2) and tests were run using a single batch of unleaded, regular-grade gasoline; a detailed fuel analysis is given in table 3.

The engine breakin and tests were conducted with a new mean-tolerance engine mounted on a test stand and coupled to an eddy-current dynamometer. The engine was complete except for a fan. A cooling tower was used in place of the radiator. The engine was equipped with an alternator, but it was not wired into the engine electrical system. The operative emission-control systems included exhaust-gas recirculation (EGR), positive crankcase ventilation, thermostatically controlled intake air temperature, and evaporative emission control.

The engine was operated at various speeds and loads designed to approximate road-load conditions over a 33-hour break-in period. The engine tests began on 1 and ended on 4 October 1975, giving a total engine operating time of approximately 80 hours. The engine was tested while operating at the following steady-state modes:

Speeds: 900; 1,200; 1,500; 1,800; 2,000; 2,500; 3,000; 3,500 rpm

Loads: 0, 10, 25, 40, 60, 75, 90, 100 pct of full load (repeated at 0, 10, 60, 90, 100 pct of full load at each speed except 3,500 rpm)

Idle speed loads: 0, 1.5, 2.5, 3.5 bhp

Total number of test modes.....	74
Total repeats.....	30
Total number of tests.....	104.

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 gage load sell; Daytronics indicator
Fuel rate, lb/hr -- Fluidyne positive displacement fuel flowmeter
Ignition timing, °BTC
Manifold vacuum, in. Hg
Throttle Angle, deg
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.

The computed data include absolute humidity (grains/lb dry air), corrected power (bhp), air-fuel ratio, 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:

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

$$H = \frac{4348\ W}{B - W},$$

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

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

The equation for A/F is based on:

Fuel = $CH_{2.099}$,

Water-gas-shift equilibrium constant = $\frac{(CO)\ (H_2O)}{(CO_2)\ (H_2)} = 3$,

HC determined on a raw exhaust, wet basis; all other species measured on a dry basis.

$$\text{Mass CO} = \begin{pmatrix}\text{exhaust}\\ \text{flow}\\ \text{rate}\end{pmatrix}(CO)\left(\frac{\text{Mol. Wt. of CO}}{\text{Mol. Wt. of exhaust}}\right)\begin{pmatrix}\text{correction}\\ \text{for}\\ \text{water removal}\end{pmatrix},$$

$$\text{Mass CO} = 4.383\ (F)\ (A/F + 1)\ (CO)\left[\frac{1}{1 + 0.03148(CO_2)\left(\frac{CO + CO_2}{CO + 3CO_2}\right)}\right],$$

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

$$\text{Mass } NO_x = 0.0007201\ (F)\ (A/F + 1)\ (NO_x)\left[\frac{1}{1 + 0.03148(CO_2)\left(\frac{CO + CO_2}{CO + 3CO_2}\right)}\right]\left(K_H\right),$$

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

where A/F = air-fuel ratio

B = barometric pressure, mm Hg

CO = carbon monoxide concentration, pct, vol

CO_2 = carbon dioxide concentration, pct, vol

D = intake air dewpoint, °F

F = fuel rate, lb/hr

H = humidity, grains H_2O/lb dry air

HC = unburned hydrocarbon concentration, ppmC, vol

K_H = humidity correction factor

N = engine speed, rpm

NO_x = nitrogen oxides concentration, ppm, vol

O_2 = oxygen concentration, pct, vol

P = corrected power, brake horsepower

t = intake air temperature, °F

T = torque, ft-lb

W = water vapor pressure, mm Hg.

3. DISCUSSION OF TEST RESULTS

The maximum brake horsepower output and peak torque produced by the test engine were less than those quoted in table 1. The peak torque did occur at the prescribed engine speed and coincided with the minimum brake specific fuel consumption (figure 1). Air-fuel ratio was maintained at lean conditions for all engine speeds (figure 2) except for enrichment near wide-open throttle (WOT). Fuel consumption was found to be nearly a linear function of power at light to moderate loads (figure 3). The fuel consumption at low engine speeds near WOT, however, indicates that the maximum fuel consumption might occur at 90 percent of maximum load. This could possibly be due to fuel-metering inaccuracies, or the fact that the air/fuel ratio is closer to stoichiometric at WOT. Emissions of HC and CO were controled at light to moderate loads for all engine speeds (figures 4 and 5). NO_x emissions exhibited peak values when the A/F ratio was near stoichiometric (figure 6).

4. CONCLUSIONS

The repeatability of emission rates, fuel consumption, and performance data was satisfactory for the purposes of these tests.

TABLE 1. MANUFACTURER'S ENGINE SPECIFICATIONS

Displacement, cu in	258
Maximum brake horsepower, bhp @ 3,500 rpm	110
Maximum torque, lb-ft @ 2,000 rpm	195
Bore, in	3.75
Stroke, in	3.895
Configuration	in-line 6-cylinder, OHV
Compression ratio	8.0:1
Firing order	1-5-3-6-2-4
Ignition timing, °BTC @ 600 rpm	5
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	Chain
Valve port size:	
Intake, in	1.78
Exhaust, in	1.4
Valve timing:	
Intake opens, °BTC	12.12
Intake closes, °ABC	64.80
Exhaust opens, °BBC	53.12
Exhaust closes, °ATC	23.80
Spark plug gap, in	0.035
Engine weight, lb	590
Exhaust gas recirculation system:	
Valve number	7030881
Valve type	Pintle
Control signal	Ported vacuum
Point of discharge	Intake manifold
Crankcase emission control:	
Control method	Positive crankcase ventilation
Point of discharge	Intake manifold
Carburetor type	Single-barrel, downdraft
Carburetor number	7039
Distributor specifications:	
Centrifugal advance begins, deg at 1,000 rpm	0
Centrifugal advance intermediate, degrees at 1,500 rpm	9.5
Centrifugal advance maximum, deg at 3,000 rpm	16.5
Vacuum advance begins, in. Hg	6
Vacuum advance maximum, deg, @ in. Hg	9 @ 13.1
Distributor number	3224968

TABLE 2. ENGINE BREAK-IN SCHEDULE

Simulated vehicle speed, mph	Engine speed, rpm	Manifold vacuum, in. Hg	Time in mode, hr
0	750	17.0	1/5
20	1,000	14.0	"
30	1,250	13.5	"
40	1,500	13.0	"
50	2.000	12.5	"

Total mileage per cycle = 35.
Total mileage accumulated over 33-hour break-in period = 1,100 miles.

TABLE 3. FUEL ANALYSIS

Fuel No.	7516
Research octane No.	91.0
Motor octane No.	83.5
Reid vapor pressure, psig	9.86
Distillation, °F:	
10 pct	125
50 pct	212
95 pct	390
100 pct	416
API gravity, deg	66.1
FIA analysis, pct:	
Aromatics	11
Olefins	15
Paraffins	74
Sulfur, pct	0.0288
Lead, grams/gal	Trace
Hydrogen-to-carbon ratio	2.09

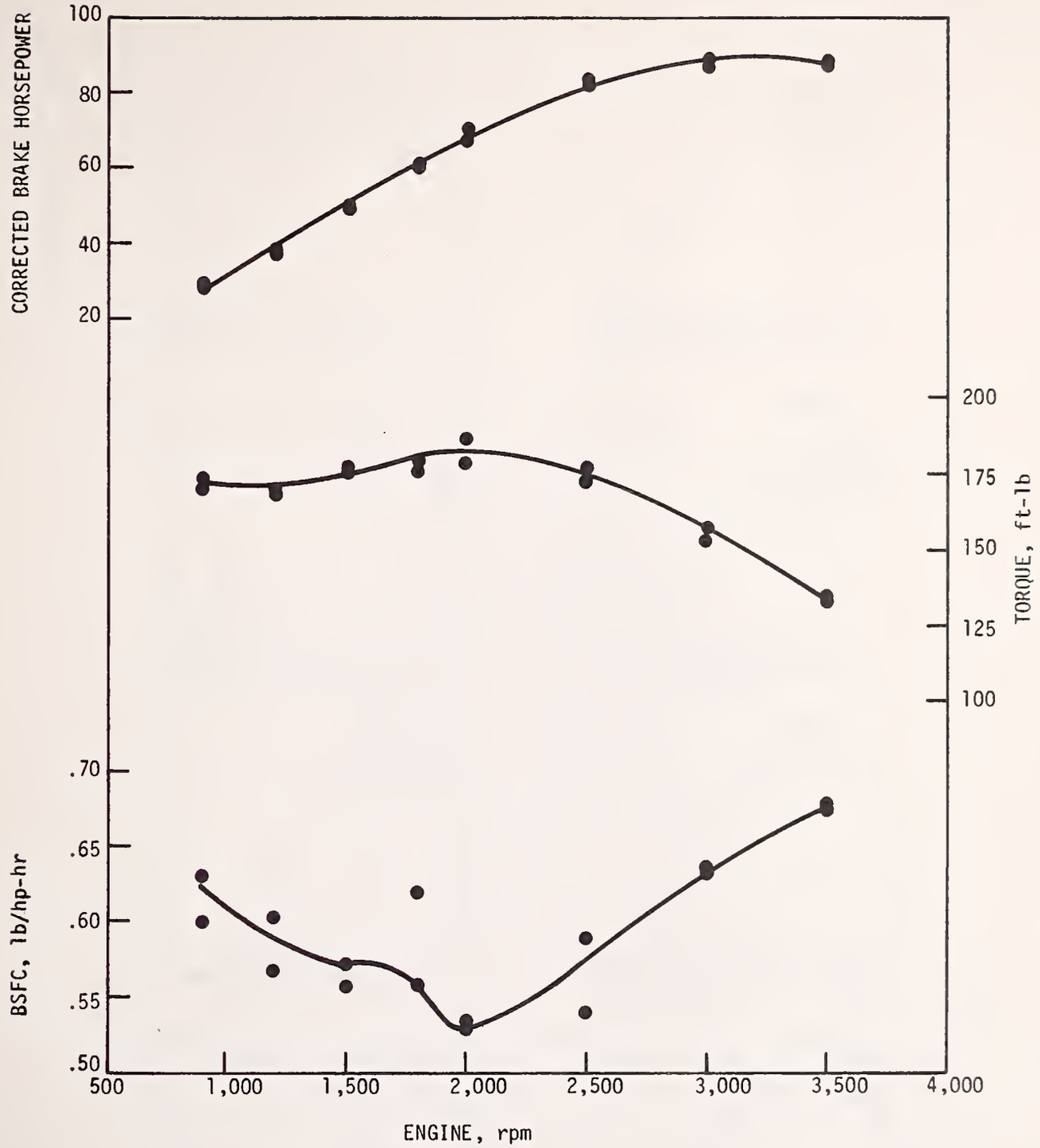


FIGURE 1. Brake Specific Fuel Consumption, Torque and Brake Horsepower versus Engine rpm at Wide-Open-Throttle--AMC 258-CID Engine

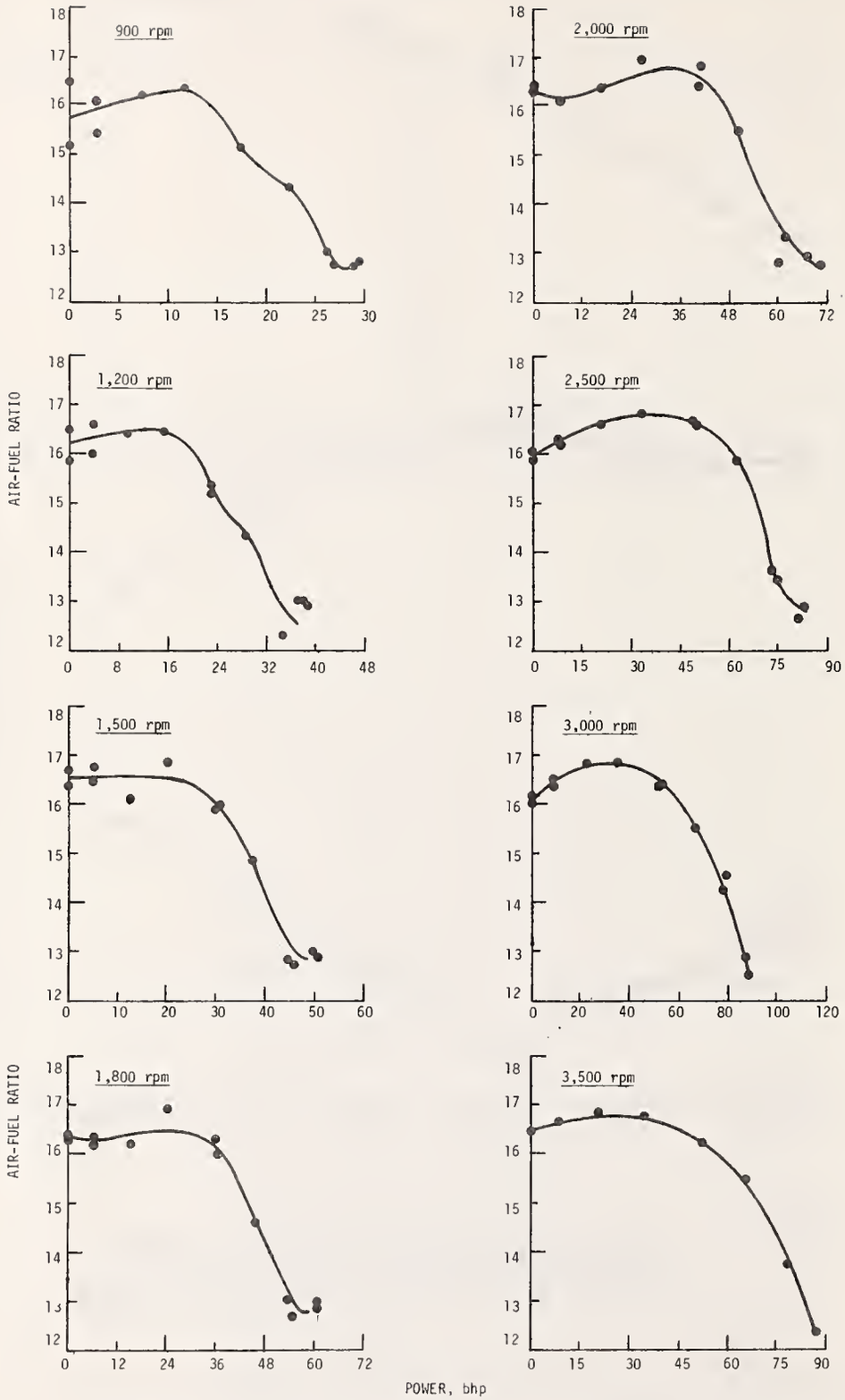


FIGURE 2. Air-Fuel Ratio versus Power at Various Speed and Load Conditions--AMC 258-CID Engine

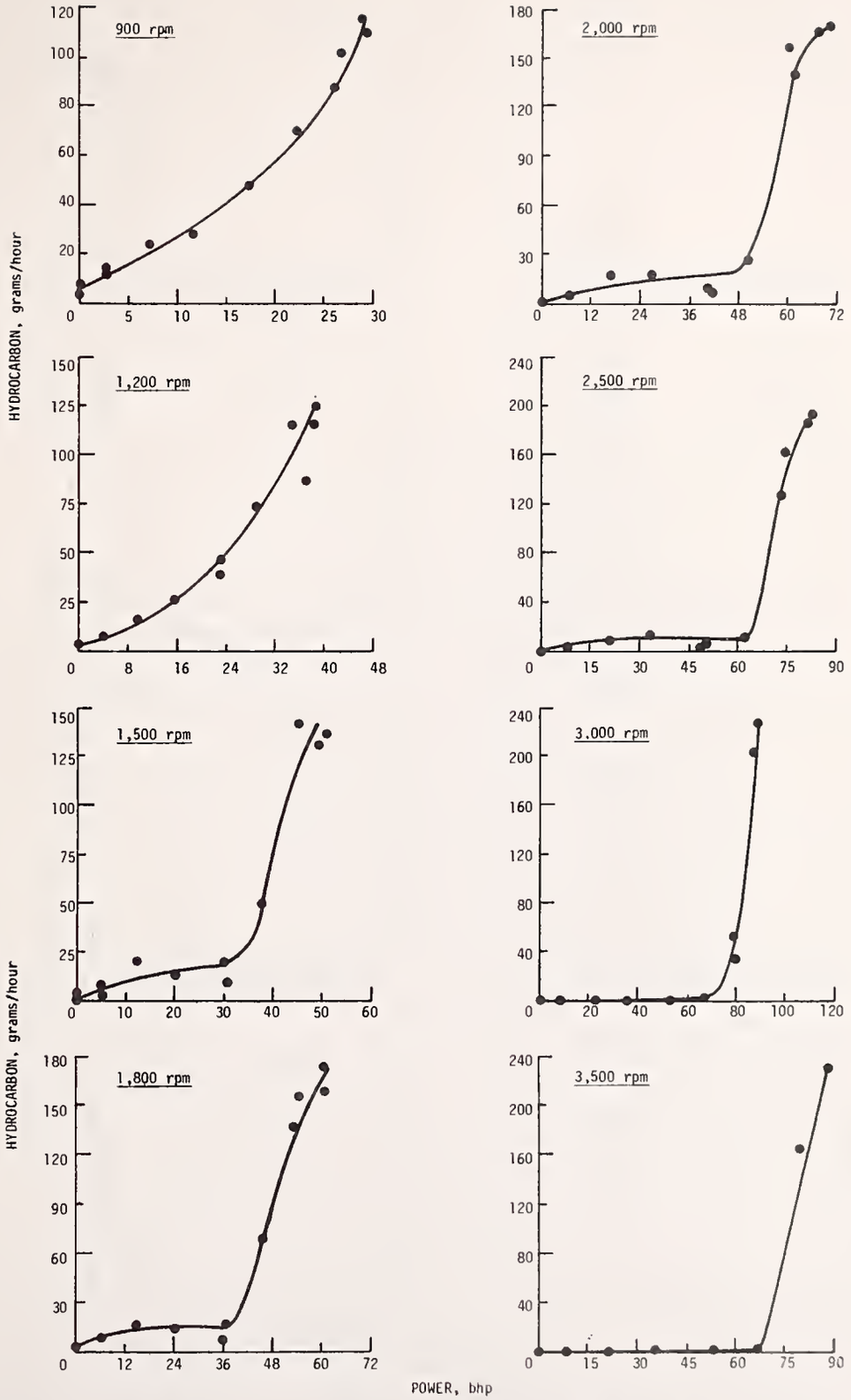


FIGURE 3. Hydrocarbon Emissions versus Power at Various Speed and Load Conditions-- AMC 258-CID Engine

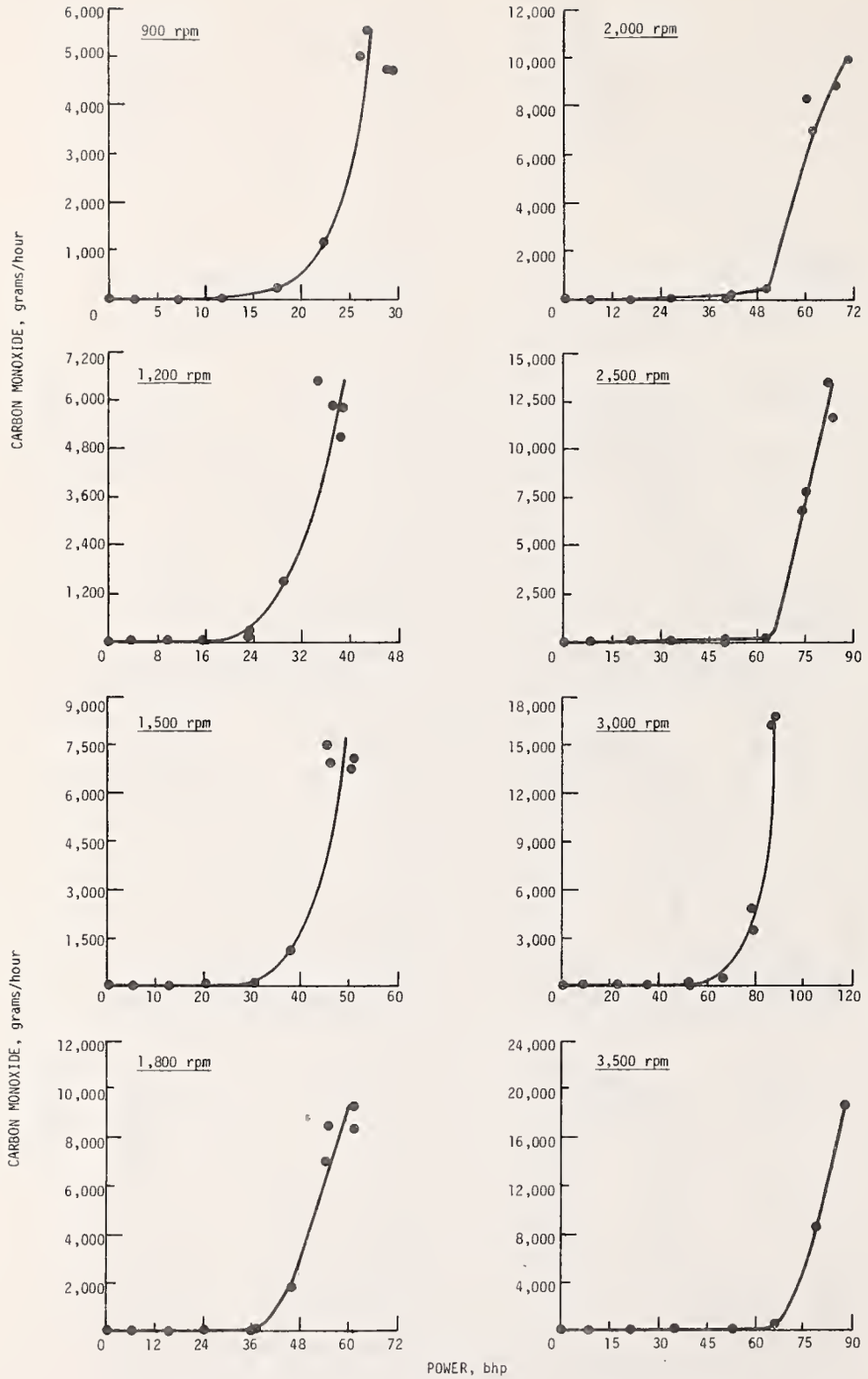


FIGURE 4. Carbon Monoxide Emissions versus Power at Various Speed and Load Conditions--AMC 258-CID Engine

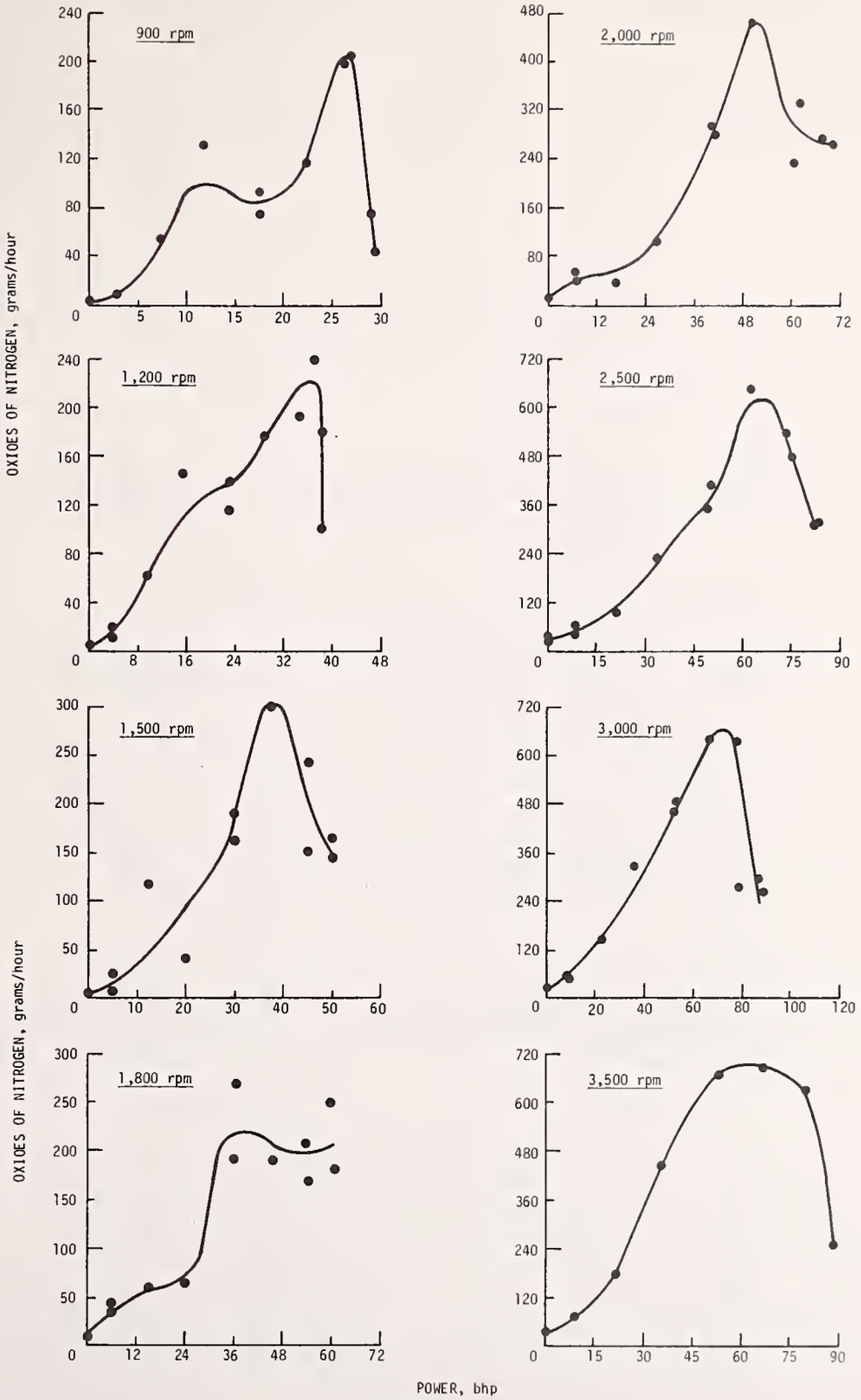


FIGURE 5. Oxides of Nitrogen Emissions versus Power at Various Speed and Load Conditions--AMC 258-CID Engine

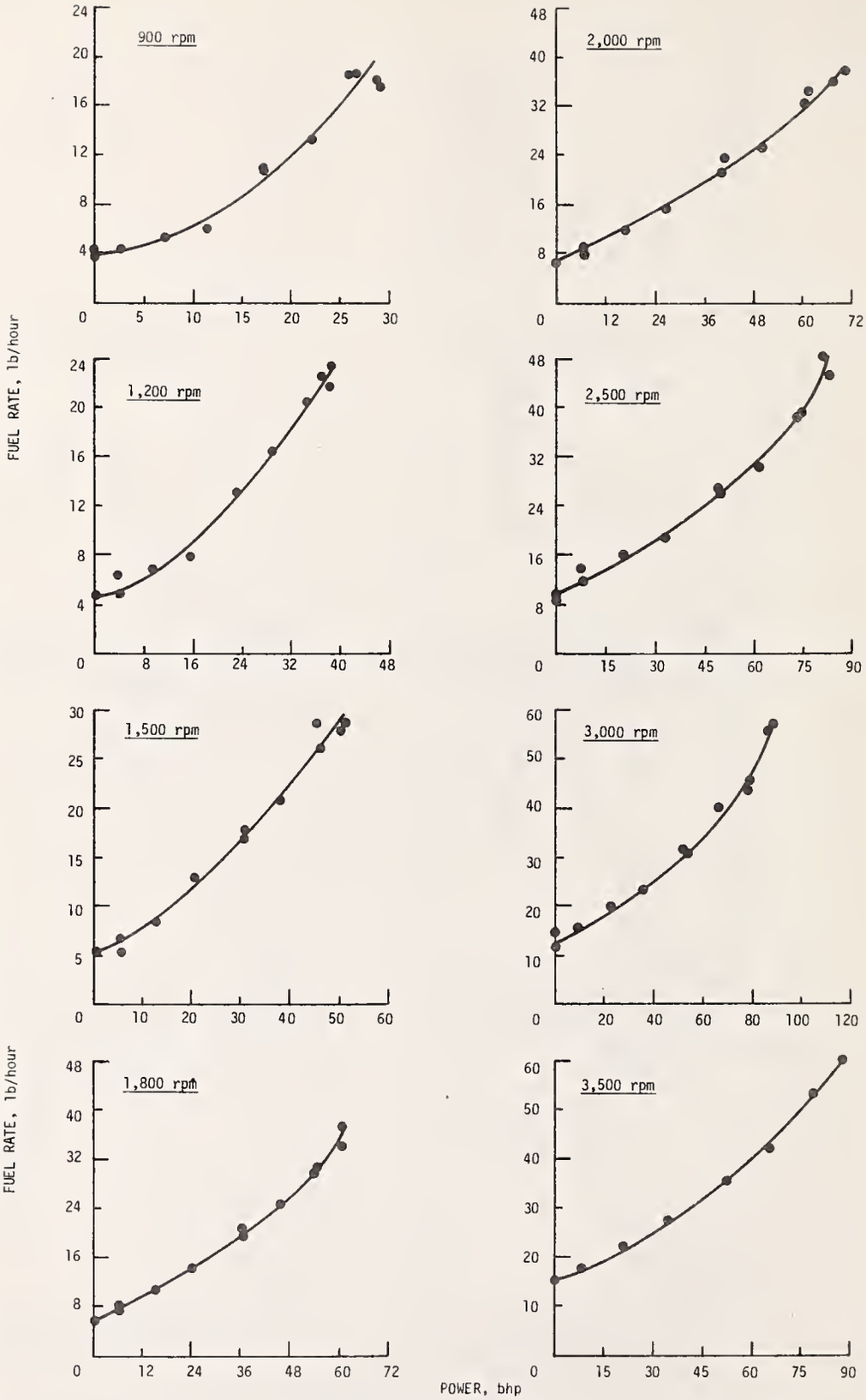


FIGURE 6. Fuel Rate Versus Power at Various Speed and Load Conditions--AMC 258-CID Engine.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	1	2	3	4	5	6
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 4/75	10/ 4/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	50	50	44
Temperature, F.....	59	60	57	70	71	56
Engine speed, rpm.....	700	600	900	900	900	900
Torque, lb-ft.....	0.0	20.0	178.0	160.0	133.0	106.0
Power, bhp*.....	0.0	2.2	29.4	26.8	22.3	17.5
Fuel rate, lb/hr.....	3.3	3.2	17.6	18.7	13.4	11.1
Ignition timing, deg BTC...	3.0	5.0	4.0	1.0	2.0	8.0
Manifold vacuum, in Hg.....	17.4	15.8	.5	1.0	1.2	2.3
Throttle angle, deg.....	0.0	0.0	74.0	39.0	20.0	14.0
Concentrations, dry basis:						
CO, %.....	.5800	.5200	5.1000	5.6700	1.5200	.3750
CO2, %.....	13.95	14.05	11.55	11.25	13.75	13.70
O2, %.....	.65	.75	.35	.55	.30	.70
HC, ppmC.....	1984	2388	2362	2074	1790	1399
NOx, ppm.....	105	220	340	1425	1025	770
Air-fuel ratio.....	14.90	14.96	12.80	12.75	14.32	15.12
Emission rates, g/hr:						
CO.....	114.7	102.2	4719.1	5536.4	1180.8	255.2
HC.....	19.8	23.7	110.2	102.0	70.1	48.0
NOx**.....	3.0	6.2	45.1	204.9	117.3	75.1
Oil temperature, F.....	165	177	192	214	224	210
Oil pressure, psi.....	20	15	20	20	17	16
Coolant temperature, F.....	186	183	188	183	183	182
Exhaust temperature, F.....	624	560	998	1081	1090	974
Exhaust pressure, in H20...	.5	.6	4.5	15.0	11.7	2.8

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	7	8	9	10	11	12
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	57	57	57	59	57	58
Engine speed, rpm.....	900	900	900	900	1200	1200
Torque, lb-ft.....	71.0	44.0	17.0	0.0	175.0	157.0
Power, bhp*.....	11.7	7.3	2.8	0.0	38.5	34.6
Fuel rate, lb/hr.....	6.1	5.4	4.4	3.8	23.2	20.4
Ignition timing, deg BTC...	18.5	18.0	9.0	3.0	2.0	2.0
Manifold vacuum, in Hg.....	11.2	14.2	16.4	17.2	.5	1.0
Throttle angle, deg.....	6.9	4.5	2.9	1.5	74.0	27.8
Concentrations, dry basis:						
CO, %.....	.0560	.0705	.1750	.3570	4.7500	6.2700
CO2, %.....	13.10	13.95	13.50	14.25	12.10	11.00
O2, %.....	2.05	1.99	.95	.68	.18	.16
HC, ppmC.....	1365	1353	1040	691	2024	2218
NOx, ppm.....	2250	1075	240	120	1025	1300
Air-fuel ratio.....	16.34	16.17	15.42	15.15	12.93	12.30
Emission rates, g/hr:						
CO.....	22.8	24.9	48.8	82.5	5814.9	6464.0
HC.....	28.1	24.1	14.6	8.0	124.8	115.2
NOx**.....	131.6	54.5	9.6	4.0	179.9	192.2
Oil temperature, F.....	214	213	215	174	193	213
Oil pressure, psi.....	16	16	16	21	26	20
Coolant temperature, F.....	172	183	183	177	188	184
Exhaust temperature, F.....	820	708	693	661	1104	1108
Exhaust pressure, in H20...	1.5	1.2	.9	.7	6.1	6.1

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	13	14	15	16	17	18
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	56	57	58	58	56	60
Engine speed, rpm.....	1200	1200	1200	1200	1200	1200
Torque, lb-ft.....	131.0	105.0	70.0	43.0	17.0	0.0
Power, bhp*.....	28.8	23.1	15.4	9.5	3.7	0.0
Fuel rate, lb/hr.....	16.3	13.1	7.8	6.8	4.8	4.5
Ignition timing, deg BTC...	4.0	3.5	15.0	16.0	15.5	9.0
Manifold vacuum, in Hg.....	1.4	2.1	11.6	14.4	17.0	17.5
Throttle angle, deg.....	21.8	17.9	8.2	7.5	4.5	3.5
Concentrations, dry basis:						
CO, %.....	1.6000	.3570	.0740	.0950	.1040	.0940
CO2, %.....	13.60	14.25	13.45	13.60	13.95	14.05
O2, %.....	.35	.75	2.25	2.20	1.70	1.45
HC, ppmC.....	1528	1152	1010	709	493	241
NOx, ppm.....	1300	1200	1938	940	260	135
Air-fuel ratio.....	14.34	15.19	16.47	16.40	16.02	15.87
Emission rates, g/hr:						
CO.....	1518.1	288.8	38.7	43.3	32.2	27.5
HC.....	73.1	47.0	26.6	16.3	7.7	3.6
NOx**.....	176.9	139.2	145.2	61.5	11.5	5.7
Oil temperature, F.....	220	225	230	227	227	225
Oil pressure, psi.....	20	19	17	20	21	21
Coolant temperature, F.....	184	185	183	183	182	183
Exhaust temperature, F.....	1127	1094	900	858	796	754
Exhaust pressure, in H20...	5.9	4.5	2.6	2.0	1.4	1.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	19	20	21	22	23	24
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	69	72	72	71	71	70
Engine speed, rpm.....	1500	1500	1500	1500	1500	1500
Torque, lb-ft.....	180.0	162.0	135.0	108.0	72.0	45.0
Power, bhp*.....	50.1	45.2	37.7	30.1	20.1	12.5
Fuel rate, lb/hr.....	27.9	28.4	20.7	16.8	12.8	8.4
Ignition timing, deg BTC...	7.0	7.5	6.5	10.5	15.0	20.0
Manifold vacuum, in Hg.....	.5	1.0	1.3	2.1	3.4	14.1
Throttle angle, deg.....	74.0	45.5	27.0	22.0	17.0	10.0
Concentrations, dry basis:						
CO, %.....	4.5700	5.0000	.8800	.1030	.1145	.1090
CO2, %.....	12.25	11.95	14.05	13.95	13.15	13.75
O2, %.....	.16	.18	.55	1.50	2.75	1.80
HC, ppmC.....	1822	1879	784	367	296	721
NOx, ppm.....	780	1138	1675	1225	335	1500
Air-fuel ratio.....	13.01	12.85	14.87	15.93	16.88	16.12
Emission rates, g/hr:						
CO.....	6752.0	7457.9	1100.2	111.6	100.6	59.9
HC.....	135.7	141.2	49.4	20.0	13.1	20.0
NOx**.....	165.2	243.3	300.3	190.3	42.2	118.3
Oil temperature, F.....	229	240	246	247	245	240
Oil pressure, psi.....	26	24	24	22	22	24
Coolant temperature, F.....	185	184	184	183	182	183
Exhaust temperature, F.....	1197	1227	1263	1213	1114	957
Exhaust pressure, in H20...	20.5	30.0	23.0	18.2	12.2	2.9

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	25	26	27	28	29	30
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	70	70	73	73	72	71
Engine speed, rpm.....	1500	1500	1800	1800	1800	1800
Torque, lb-ft.....	18.0	0.0	182.0	163.0	136.0	109.0
Power, bhp*.....	5.0	0.0	61.0	54.7	45.6	36.5
Fuel rate, lb/hr.....	6.7	5.3	34.0	30.6	24.6	19.6
Ignition timing, deg BTC...	21.5	21.0	8.0	9.5	9.5	12.5
Manifold vacuum, in Hg.....	16.4	17.8	.5	1.0	1.2	2.0
Throttle angle, deg.....	7.5	5.5	74.0	35.9	30.5	25.7
Concentrations, dry basis:						
CO, %.....	.1060	.0990	4.6500	5.3500	1.2700	.0980
CO2, %.....	13.45	13.60	12.25	11.80	13.95	13.95
O2, %.....	2.25	2.15	.16	.15	.45	1.55
HC, ppmC.....	365	177	1736	1937	924	252
NOx, ppm.....	390	153	700	740	910	1475
Air-fuel ratio.....	16.47	16.40	12.98	12.69	14.60	15.99
Emission rates, g/hr:						
CO.....	47.3	35.3	8375.6	8483.5	1848.1	124.5
HC.....	8.2	3.2	157.6	154.8	67.8	16.2
NOx**.....	24.9	7.8	180.8	168.3	189.9	268.7
Oil temperature, F.....	234	232	240	252	257	257
Oil pressure, psi.....	25	26	27	26	26	25
Coolant temperature, F.....	181	181	184	186	185	184
Exhaust temperature, F.....	866	837	1218	1238	1300	1264
Exhaust pressure, in H2O...	1.4	.9	36.0	33.0	26.0	20.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	31	32	33	34	35	36
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	70	69	68	69	70	71
Engine speed, rpm.....	1800	1800	1800	1800	2000	2000
Torque, lb-ft.....	72.0	45.0	18.0	0.0	182.0	163.0
Power, bhp*.....	24.1	15.0	6.0	0.0	67.6	60.6
Fuel rate, lb/hr.....	14.5	10.9	7.5	5.9	35.8	32.4
Ignition timing, deg BTC...	20.5	25.0	24.0	25.0	17.5	14.0
Manifold vacuum, in Hg.....	3.8	12.5	16.4	17.9	.5	1.0
Throttle angle, deg.....	19.0	13.2	8.9	7.0	74.0	39.8
Concentrations, dry basis:						
CO, %.....	.1200	.1210	.1125	.1000	4.6500	4.8700
CO2, %.....	13.00	13.45	13.30	13.30	12.10	11.80
O2, %.....	2.80	1.90	2.05	2.05	.16	.15
HC, ppmC.....	262	445	314	120	1734	1817
NOx, ppm.....	450	570	490	188	1000	950
Air-fuel ratio.....	16.94	16.21	16.35	16.37	12.97	12.85
Emission rates, g/hr:						
CO.....	120.1	87.0	56.0	39.3	8818.6	8304.9
HC.....	13.2	16.1	7.9	2.4	165.7	156.2
NOx**.....	64.6	58.8	35.0	10.6	271.9	232.3
Oil temperature, F.....	254	250	244	241	242	260
Oil pressure, psi.....	26	27	27	29	30	27
Coolant temperature, F.....	182	182	183	183	184	183
Exhaust temperature, F.....	1156	1068	929	894	1250	1274
Exhaust pressure, in H20...	15.0	6.5	2.2	1.5	43.0	43.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	37	38	39	40	41	42
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	68	69	69	66	65	64
Engine speed, rpm.....	2000	2000	2000	2000	2000	2000
Torque, lb-ft.....	136.0	109.0	72.0	45.0	18.0	0.0
Power, bhp*.....	50.4	40.5	26.7	16.7	6.7	0.0
Fuel rate, lb/hr.....	25.3	21.1	15.4	11.9	8.0	6.5
Ignition timing, deg BTC...	14.5	16.0	27.0	25.0	27.5	27.0
Manifold vacuum, in Hg.....	1.2	2.0	4.8	10.4	17.0	17.9
Throttle angle, deg.....	33.5	28.5	20.0	15.0	10.0	8.0
Concentrations, dry basis:						
CO, %.....	.2950	.0820	.1220	.1295	.1080	.0930
CO2, %.....	13.95	13.30	12.85	13.30	13.60	13.45
O2, %.....	1.00	2.05	2.80	2.15	1.75	2.10
HC, ppmC.....	327	131	341	445	206	97
NOx, ppm.....	2025	1450	680	330	570	205
Air-fuel ratio.....	15.51	16.42	16.96	16.39	16.12	16.40
Emission rates, g/hr:						
CO.....	470.4	115.7	129.8	102.5	56.8	40.5
HC.....	26.3	9.3	18.3	17.7	5.5	2.1
NOx**.....	463.0	293.3	103.7	37.5	43.0	12.8
Oil temperature, F.....	261	260	257	248	246	242
Oil pressure, psi.....	27	27	28	29	30	30
Coolant temperature, F.....	183	182	183	182	183	183
Exhaust temperature, F.....	1331	1281	1165	1064	994	936
Exhaust pressure, in H20...	35.0	26.0	16.0	8.5	2.2	1.5

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	43	44	45	46	47	48
Test Date.....	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75	10/ 1/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	44	44	44	44	44	44
Temperature, F.....	69	70	67	67	65	63
Engine speed, rpm.....	2500	2500	2500	2500	2500	2500
Torque, lb-ft.....	180.0	162.0	135.0	108.0	72.0	45.0
Power, bhp*.....	83.5	75.2	62.5	50.0	33.3	20.8
Fuel rate, lb/hr.....	45.1	39.1	30.3	26.6	19.0	16.2
Ignition timing, deg BTC...	13.5	15.0	17.0	23.0	29.0	33.0
Manifold vacuum, in Hg.....	.5	1.0	1.3	2.2	9.0	11.8
Throttle angle, deg.....	74.0	45.0	36.0	32.0	23.0	14.0
Concentrations, dry basis:						
CO, %.....	4.8700	3.6000	.1160	.0690	.1190	.1220
CO2, %.....	11.95	13.00	13.95	13.30	13.00	13.15
O2, %.....	.13	.18	1.30	2.30	2.60	2.35
HC, ppmC.....	1618	1507	115	51	216	171
NOx, ppm.....	925	1550	2300	1575	1225	620
Air-fuel ratio.....	12.88	13.46	15.85	16.63	16.83	16.60
Emission rates, g/hr:						
CO.....	11540.4	7685.1	226.2	124.5	155.6	133.6
HC.....	193.2	162.2	11.3	4.7	14.2	9.4
NOx**.....	314.3	474.4	643.2	407.4	229.7	97.3
Oil temperature, F.....	247	276	277	274	273	267
Oil pressure, psi.....	36	31	30	33	33	36
Coolant temperature, F.....	183	185	184	184	183	182
Exhaust temperature, F.....	1307	1374	1413	1352	1240	1180
Exhaust pressure, in H20...	66.0	65.0	56.0	45.0	25.0	17.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	49	50	51	52	53	54
Test Date.....	10/ 1/75	10/ 1/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75
Barometer, mm Hg.....	752.1	752.1	754.5	754.5	754.5	754.5
Humidity, grains/lb.....	44	44	47	47	47	47
Temperature, F.....	62	61	83	79	82	81
Engine speed, rpm.....	2500	2500	3000	3000	3000	3000
Torque, lb-ft.....	18.0	0.0	158.0	142.0	119.0	95.0
Power, bhp*.....	8.3	0.0	88.9	79.6	66.9	53.3
Fuel rate, lb/hr.....	12.0	9.4	56.5	45.4	39.9	30.8
Ignition timing, deg BTC...	34.0	32.5	21.0	20.0	20.0	21.0
Manifold vacuum, in Hg.....	15.2	18.0	.5	1.0	1.2	2.4
Throttle angle, deg.....	12.0	10.0	71.0	47.5	41.9	33.0
Concentrations, dry basis:						
CO, %.....	.1190	.0790	5.7500	1.2700	.1620	.0395
CO2, %.....	13.75	13.95	11.40	13.75	13.95	13.30
O2, %.....	1.90	1.37	.10	.27	.85	2.00
HC, ppmC.....	106	37	1558	254	26	19
NOx, ppm.....	575	415	620	700	1750	1625
Air-fuel ratio.....	16.22	15.86	12.51	14.54	15.50	16.43
Emission rates, g/hr:						
CO.....	93.7	47.6	16660.8	3406.5	407.4	81.5
HC.....	4.2	1.1	227.5	34.3	3.3	1.9
NOx**.....	64.9	35.9	260.3	272.0	637.7	485.6
Oil temperature, F.....	263	257	265	273	283	286
Oil pressure, psi.....	37	39	38	38	36	35
Coolant temperature, F.....	182	183	186	186	186	185
Exhaust temperature, F.....	1156	1086	1442	1525	1561	1454
Exhaust pressure, in H2O...	8.0	5.0	138.0	96.0	88.0	65.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	55	56	57	58	59	60
Test Date.....	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 4/75	10/ 4/75
Barometer, mm Hg.....	754.5	754.5	754.5	754.5	752.1	752.1
Humidity, grains/lb.....	47	47	47	47	50	50
Temperature, F.....	73	74	74	75	76	81
Engine speed, rpm.....	3000	3000	3000	3000	3500	3500
Torque, lb-ft.....	63.0	40.0	16.0	0.0	135.0	121.0
Power, bhp*.....	35.1	22.3	8.9	0.0	88.4	79.6
Fuel rate, lb/hr.....	23.8	20.0	15.5	14.6	59.9	53.2
Ignition timing, deg BTC...	30.5	30.1	30.0	30.0	17.0	18.0
Manifold vacuum, in Hg.....	9.0	11.8	14.4	16.0	.5	1.0
Throttle angle, deg.....	27.0	23.0	18.1	14.5	74.0	58.0
Concentrations, dry basis:						
CO, %.....	.0820	.0840	.0770	.0750	6.0700	2.8500
CO2, %.....	12.85	12.85	13.15	13.45	11.25	13.15
O2, %.....	2.55	2.55	2.20	1.75	.10	.14
HC, ppmC.....	57	43	37	29	1500	1099
NOx, ppm.....	1375	720	320	171	560	1450
Air-fuel ratio.....	16.86	16.84	16.53	16.16	12.39	13.75
Emission rates, g/hr:						
CO.....	134.6	115.8	80.4	71.9	18475.2	8473.1
HC.....	4.7	3.0	1.9	1.4	230.1	164.6
NOx**.....	327.0	143.8	48.4	23.8	251.0	634.8
Oil temperature, F.....	283	277	272	269	274	296
Oil pressure, psi.....	35	36	38	40	45	37
Coolant temperature, F.....	183	181	181	180	187	187
Exhaust temperature, F.....	1321	1264	1233	1215	1467	1525
Exhaust pressure, in H20...	38.0	27.0	16.0	11.0	152.0	144.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	61	62	63	64	65	66
Test Date.....	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75
Barometer, mm Hg.....	752.1	752.1	752.1	754.5	752.1	752.1
Humidity, grains/lb.....	50	50	50	50	50	50
Temperature, F.....	80	78	69	69	68	76
Engine speed, rpm.....	3500	3500	3500	3500	3500	3500
Torque, lb-ft.....	101.0	81.0	54.0	33.0	13.0	0.0
Power, bhp*.....	66.4	53.1	35.1	21.4	8.4	0.0
Fuel rate, lb/hr.....	42.0	35.4	27.3	22.2	17.7	15.1
Ignition timing, deg BTC...	20.5	26.0	39.0	36.0	37.0	38.0
Manifold vacuum, in Hg.....	1.4	2.8	8.8	11.6	14.0	15.5
Throttle angle, deg.....	45.0	38.0	29.0	24.0	19.0	10.0
Concentrations, dry basis:						
CO, %.....	.1370	.0465	.0635	.0670	.0700	.0705
CO2, %.....	14.25	13.60	13.15	13.00	13.15	13.30
O2, %.....	.85	1.75	2.45	2.60	2.40	2.13
HC, ppmC.....	15	21	32	24	22	20
NOx, ppm.....	1775	1950	1625	780	390	245
Air-fuel ratio.....	15.50	16.23	16.77	16.87	16.68	16.46
Emission rates, g/hr:						
CO.....	361.8	108.8	118.4	102.6	84.3	71.3
HC.....	2.0	2.5	3.0	1.9	1.3	1.0
NOx**.....	690.3	671.9	446.0	175.8	69.2	36.5
Oil temperature, F.....	300	294	292	288	283	280
Oil pressure, psi.....	35	35	37	37	40	40
Coolant temperature, F.....	185	184	184	183	183	183
Exhaust temperature, F.....	1583	1458	1350	1308	1272	1256
Exhaust pressure, in H20...	96.0	78.0	48.0	30.0	20.0	13.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	67	68	69	70	71	72
Test Date.....	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75
Barometer, mm Hg.....	754.5	754.5	754.5	754.5	754.5	754.5
Humidity, grains/lb.....	47	47	47	47	47	47
Temperature, F.....	59	73	73	73	73	73
Engine speed, rpm.....	700	600	900	900	900	900
Torque, lb-ft.....	0.0	3.0	173.0	156.0	104.0	17.0
Power, bhp*.....	0.0	.3	28.9	26.1	17.4	2.8
Fuel rate, lb/hr.....	3.7	3.0	18.2	18.6	10.8	4.5
Ignition timing, deg BTC...	1.0	1.0	1.0	2.0	2.5	9.0
Manifold vacuum, in Hg.....	17.6	16.2	.5	.5	2.4	16.6
Throttle angle, deg.....	0.0	0.0	70.0	47.5	13.4	2.0
Concentrations, dry basis:						
CO, %.....	.1050	.1030	5.0000	5.0500	.3800	.1135
CO2, %.....	13.00	13.00	11.55	11.25	13.75	13.30
O2, %.....	2.25	2.25	.17	.60	.70	1.75
HC, ppmC.....	967	1137	2419	1752	1434	844
NOx, ppm.....	95	100	550	1375	970	200
Air-fuel ratio.....	16.44	16.42	12.73	13.01	15.12	16.06
Emission rates, g/hr:						
CO.....	26.2	20.6	4742.6	5019.1	253.2	33.4
HC.....	12.1	11.4	115.6	87.7	48.1	12.5
NOx**.....	3.4	2.9	75.6	198.0	93.6	8.5
Oil temperature, F.....	192	241	229	230	228	225
Oil pressure, psi.....	10	10	15	15	15	16
Coolant temperature, F.....	180	179	181	180	183	181
Exhaust temperature, F.....	584	602	1050	1116	1012	838
Exhaust pressure, in H2O...	.5	.5	18.0	16.0	11.4	1.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	73	74	75	76	77	78
Test Date.....	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75
Barometer, mm Hg.....	754.5	754.5	754.5	754.5	754.5	754.5
Humidity, grains/lb.....	47	47	47	47	47	47
Temperature, F.....	78	71	78	70	68	67
Engine speed, rpm.....	900	1200	1200	1200	1200	1200
Torque, lb-ft.....	0.0	172.0	165.0	103.0	17.0	0.0
Power, bhp*.....	0.0	38.3	37.0	22.9	3.8	0.0
Fuel rate, lb/hr.....	4.4	21.7	22.4	13.1	6.3	4.6
Ignition timing, deg BTC...	3.5	1.0	1.0	2.5	19.0	13.0
Manifold vacuum, in Hg.....	16.8	.5	1.0	2.2	16.4	17.5
Throttle angle, deg.....	2.5	73.0	53.0	18.0	6.0	3.5
Concentrations, dry basis:						
CO, %.....	.0805	4.4000	4.9000	.2000	.1105	.0905
CO2, %.....	13.15	11.70	11.55	13.95	13.15	13.30
O2, %.....	2.15	.18	.42	.87	2.40	2.25
HC, ppmC.....	262	1984	1439	947	381	251
NOx, ppm.....	108	600	1375	970	325	106
Air-fuel ratio.....	16.45	12.99	13.01	15.37	16.61	16.50
Emission rates, g/hr:						
CO.....	23.6	5081.0	5857.7	163.3	46.8	28.0
HC.....	3.9	115.5	86.7	39.0	8.1	3.9
NOx**.....	4.6	100.4	238.1	114.7	19.9	4.8
Oil temperature, F.....	220	224	231	233	229	229
Oil pressure, psi.....	16	20	20	17	25	21
Coolant temperature, F.....	183	188	183	182	183	183
Exhaust temperature, F.....	721	1121	1170	1120	870	812
Exhaust pressure, in H20...	1.0	22.0	21.0	14.1	1.0	.5

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	79	80	81	82	83	84
Test Date.....	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75	10/ 2/75
Barometer, mm Hg.....	754.5	754.5	754.5	754.5	754.5	754.5
Humidity, grains/lb.....	47	47	47	47	47	47
Temperature, F.....	69	70	68	65	64	67
Engine speed, rpm.....	1500	1500	1500	1500	1500	1800
Torque, lb-ft.....	180.0	162.0	108.0	18.0	0.0	180.0
Power, bhp*.....	50.0	45.0	30.0	5.0	0.0	59.9
Fuel rate, lb/hr.....	28.6	26.0	17.7	5.3	5.1	37.1
Ignition timing, deg BTC...	7.5	5.0	10.0	20.5	20.0	15.0
Manifold vacuum, in Hg.....	.5	1.0	2.0	17.6	17.8	.5
Throttle angle, deg.....	73.0	34.0	25.5	5.0	4.0	73.0
Concentrations, dry basis:						
CO, %.....	4.6500	5.1000	.0840	.1030	.1070	4.7500
CO2, %.....	11.95	11.70	13.75	13.00	13.15	11.80
O2, %.....	.15	.16	1.50	2.55	2.50	.14
HC, ppmC.....	1789	1904	166	171	194	1759
NOx, ppm.....	665	770	975	138	125	880
Air-fuel ratio.....	12.94	12.76	15.97	16.77	16.70	12.89
Emission rates, g/hr:						
CO.....	7034.9	6934.2	96.7	37.1	37.2	9285.2
HC.....	136.4	130.5	9.6	3.1	3.4	173.2
NOx**.....	145.8	151.7	162.5	7.2	6.3	249.2
Oil temperature, F.....	230	242	245	242	235	251
Oil pressure, psi.....	26	24	18	25	25	27
Coolant temperature, F.....	184	184	183	180	183	183
Exhaust temperature, F.....	1195	1209	1239	939	842	1248
Exhaust pressure, in H2O...	26.0	26.0	20.0	1.5	1.0	40.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	85	86	87	88	89	90
Test Date.....	10/ 2/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75
Barometer, mm Hg.....	754.5	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	47	50	50	50	50	50
Temperature, F.....	67	63	60	58	69	72
Engine speed, rpm.....	1800	1800	1800	1800	2000	2000
Torque, lb-ft.....	162.0	108.0	18.0	0.0	190.0	166.0
Power, bhp*.....	53.9	35.9	6.0	0.0	70.6	61.9
Fuel rate, lb/hr.....	29.7	20.6	8.2	5.9	37.6	34.5
Ignition timing, deg BTC...	11.5	13.0	24.0	25.5	12.5	15.0
Manifold vacuum, in Hg.....	1.0	2.0	16.3	17.8	.5	1.0
Throttle angle, deg.....	34.0	24.5	5.5	3.0	74.0	35.8
Concentrations, dry basis:						
CO, %.....	4.4000	.0750	.1135	.1010	5.0000	3.7000
CO2, %.....	12.10	13.50	13.50	13.40	11.90	12.35
O2, %.....	.14	1.95	1.90	2.00	.14	.15
HC, ppmC.....	1703	94	297	143	1704	1470
NOx, ppm.....	900	950	550	173	900	1188
Air-fuel ratio.....	13.04	16.32	16.22	16.32	12.83	13.34
Emission rates, g/hr:						
CO.....	6966.1	102.8	61.1	39.6	9842.2	6950.8
HC.....	135.9	6.5	8.1	2.8	169.1	139.2
NOx**.....	206.4	191.8	43.6	10.0	260.9	328.5
Oil temperature, F.....	254	212	225	227	247	263
Oil pressure, psi.....	25	35	30	31	31	27
Coolant temperature, F.....	183	186	182	182	184	185
Exhaust temperature, F.....	1263	1246	1000	922	1305	1291
Exhaust pressure, in H20...	33.0	25.0	5.0	2.1	54.0	44.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	91	92	93	94	95	96
Test Date.....	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	50	50	50	50	50	50
Temperature, F.....	67	67	67	77	80	78
Engine speed, rpm.....	2000	2000	2000	2500	2500	2500
Torque, lb-ft.....	111.0	18.0	0.0	175.0	157.0	105.0
Power, bhp*.....	41.2	6.7	0.0	81.9	73.7	49.2
Fuel rate, lb/hr.....	23.4	9.2	6.6	48.3	38.4	26.9
Ignition timing, deg BTC...	18.5	30.0	28.0	18.0	17.5	20.5
Manifold vacuum, in Hg.....	2.2	17.0	18.0	.5	1.0	2.2
Throttle angle, deg.....	26.5	7.5	5.0	74.0	39.0	29.0
Concentrations, dry basis:						
CO, %.....	.0910	.1105	.0990	5.3000	3.1500	.0670
CO2, %.....	12.85	13.50	13.40	11.45	12.65	13.03
O2, %.....	2.54	1.68	2.00	.09	.20	2.30
HC, ppmC.....	88	163	100	1469	1182	40
NOx, ppm.....	1175	625	220	830	1700	1300
Air-fuel ratio.....	16.84	16.09	16.33	12.66	13.63	16.66
Emission rates, g/hr:						
CO.....	146.4	66.3	43.6	13301.7	6724.3	122.4
HC.....	7.1	4.9	2.2	185.8	127.1	3.7
NOx**.....	278.4	55.2	14.3	306.8	534.4	349.6
Oil temperature, F.....	258	255	248	254	277	275
Oil pressure, psi.....	30	32	30	36	30	30
Coolant temperature, F.....	183	182	181	185	185	183
Exhaust temperature, F.....	1259	1056	961	1366	1391	1352
Exhaust pressure, in H2O...	30.5	4.3	2.5	84.0	65.0	46.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	97	98	99	100	101	102
Test Date.....	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	50	50	50	50	50	50
Temperature, F.....	64	68	76	85	80	60
Engine speed, rpm.....	2500	2500	3000	3000	3000	3000
Torque, lb-ft.....	17.0	0.0	155.0	139.0	93.0	15.0
Power, bhp*.....	7.9	0.0	87.0	78.7	52.4	8.3
Fuel rate, lb/hr.....	13.9	8.7	55.3	43.4	31.2	15.7
Ignition timing, deg BTC...	32.0	30.5	19.0	16.0	21.5	29.0
Manifold vacuum, in Hg.....	14.2	18.0	.5	1.0	2.4	14.4
Throttle angle, deg.....	28.0	26.0	74.0	28.0	22.0	15.0
Concentrations, dry basis:						
CO, %.....	.1115	.0805	5.5500	1.9000	.0465	.0740
CO2, %.....	13.40	13.65	11.30	13.65	13.40	13.20
O2, %.....	1.95	1.63	.60	.20	2.00	2.00
HC, ppmC.....	88	42	1382	416	21	30
NOx, ppm.....	315	350	680	1713	1500	335
Air-fuel ratio.....	16.29	16.06	12.86	14.24	16.41	16.38
Emission rates, g/hr:						
CO.....	102.8	46.0	16183.0	4766.1	97.0	77.4
HC.....	4.1	1.2	203.1	52.6	2.2	1.6
NOx**.....	42.8	29.4	292.0	632.6	460.6	51.6
Oil temperature, F.....	267	261	266	286	286	278
Oil pressure, psi.....	35	35	40	33	34	36
Coolant temperature, F.....	183	182	186	186	184	184
Exhaust temperature, F.....	1195	1075	1417	1519	1426	1256
Exhaust pressure, in H20...	11.7	4.6	133.0	93.0	62.0	16.0

* Corrected - SAE J816b.
** Corrected for humidity.

Engine..... AMC 258-CID
Fuel..... 7516

Test Number.....	103	104	105	106	107	108
Test Date.....	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75	10/ 4/75
Barometer, mm Hg.....	752.1	752.1	752.1	752.1	752.1	752.1
Humidity, grains/lb.....	50	50	50	50	50	50
Temperature, F.....	63	63	64	61	60	58
Engine speed, rpm.....	3000	700	700	700	600	600
Torque, lb-ft.....	0.0	10.0	20.0	30.0	10.0	20.0
Power, bhp*.....	0.0	1.3	2.6	3.9	1.1	2.2
Fuel rate, lb/hr.....	11.6	3.2	3.6	4.1	2.9	4.0
Ignition timing, deg BTC...	30.0	2.0	1.0	1.0	1.0	1.5
Manifold vacuum, in Hg.....	16.4	15.0	14.4	14.0	16.2	15.2
Throttle angle, deg.....	12.0	4.0	7.0	2.0	1.5	2.0
Concentrations, dry basis:						
CO, %.....	.0665	.1050	.0950	.0950	.3570	.1500
CO2, %.....	13.65	13.20	13.50	13.60	14.05	13.95
O2, %.....	1.55	2.15	1.65	1.62	.85	1.25
HC, ppmC.....	24	1196	1371	1572	2127	1463
NOx, ppm.....	223	163	220	355	135	230
Air-fuel ratio.....	16.01	16.32	15.92	15.87	15.12	15.57
Emission rates, g/hr:						
CO.....	50.2	22.2	22.3	25.2	64.5	37.8
HC.....	.9	12.7	16.2	21.0	19.4	18.6
NOx**.....	24.8	5.1	7.6	13.9	3.6	8.5
Oil temperature, F.....	272	257	238	180	190	193
Oil pressure, psi.....	37	10	10	15	15	17
Coolant temperature, F.....	182	182	185	185	183	184
Exhaust temperature, F.....	1198	724	651	682	585	624
Exhaust pressure, in H2O...	8.9	.7	1.0	1.5	.5	.8

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** Corrected for humidity.

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Engine	AMC 258-CID
Fuel	7516
Test Number	109
Test Date	10/ 4/75
Barometer, mm Hg	752.1
Humidity, grains/lb	50
Temperature, F	61
Engine speed, rpm	600
Torque, lb-ft	30.0
Power, bhp*	3.3
Fuel rate, lb/hr	4.2
Ignition timing, deg BTC	4.0
Manifold vacuum, in Hg	14.6
Throttle angle, deg	3.0
Concentrations, dry basis:	
CO, %	.1030
CO2, %	13.75
O2, %	1.45
HC, ppmC	1517
NOx, ppm	340
Air-fuel ratio	15.74
Emission rates, g/hr:	
CO	27.5
HC	20.4
NOx**	13.4
Oil temperature, F	198
Oil pressure, psi	17
Coolant temperature, F	184
Exhaust temperature, F	651
Exhaust pressure, in H20	1.0

* Corrected - SAE J816b.
** Corrected for humidity.

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