

Fuel Economy and Emissions from Five
Medium Duty Vehicles

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Background

The Propulsion Systems Division of the U.S. Army Tank Automotive Command contacted ECTD requesting fuel economy testing on five medium duty trucks. As part of EPA's cooperative effort with the U.S. Army and EPA's continuing interest in the characterization of medium duty vehicle emissions, a test program was scheduled at the Ann Arbor laboratory.

Test Program

The five vehicles had 3/4-ton pick-up bodies and all except one (the Dodge), had front wheel drive. The front drive was disengaged during all testing.

These vehicles, described in the attached Table I, were tested for emissions and fuel economy using the constant volume sampling technique over the LA4 ('75 FTP) driving cycle, the EPA non-metropolitan high speed cycle, and at 50 mph steady state. All tests were conducted using the proposed medium duty dynamometer loading. One set of tests was run on each vehicle. Vehicles were tuned by Army personnel prior to testing. In some cases due to very poor cold start driveability readjustment of the choke was required.

Test Results

Test results are given in Table II. 1972 FTP results were calculated using the bag 1 and bag 2 data from the '75 FTP tests. It should be noted that emissions for the non-metropolitan high speed cycle, and the 50 mph steady state are given for information only. There are no emission standards for these high speed cycles.

Significant fuel economy differences were observed between the five vehicles. The Dodge achieved the best fuel economy on all three cycles used. The Jeep placed second on all three cycles with arithmetic average economy (for all three cycles) that was 8.0% worse than the Dodge. The Chevrolet and Ford were 16.8% and 19.0% worse than the Dodge respectively. The IHC vehicle demonstrated very poor economy on the two higher speed cycles, averaging 38.0% worse than the Dodge.

Summary

1. The Dodge and Jeep vehicles demonstrated significantly better fuel economy than the other three vehicles tested. Additionally, the Jeep and Dodge had lower emissions than the average of the five vehicles.
2. The IHC vehicle demonstrated significantly worse high speed fuel economy than the other vehicles tested.

TABLE I
Vehicle Description

<u>Vehicle</u>	<u>Model/Year</u>	<u>Eng. Disp. CID</u>	<u>Carb.</u>	<u>Curb Wt. Pounds</u>
Jeep/L-46	1974	360	2V	4500
Dodge/D-200	1974	318	1V	4100
Ford/F-250	1973	360	2V	5020
IHC/200	1974	345	2V	4950
Chevrolet/Fleet- side	1973	350	4V	4950

TABLE II
Test Results

<u>Vehicle</u>	<u>Inertia Pounds</u>	<u>Load Hp@ 50 mph</u>	<u>HC gm/mi</u>	<u>'75 FTP Results</u>			<u>'72 FTP Results</u>			
				<u>CO gm/mi</u>	<u>NOx gm/mi</u>	<u>Econ. mph</u>	<u>HC gm/mi</u>	<u>CO gm/mi</u>	<u>NOx gm/mi</u>	<u>Econ. mph</u>
Jeep	6000	27.5	2.01	23.0	3.77	9.7	2.19	31.87	3.41	9.4
Dodge	6000	27.5	4.54	42.2	3.78	10.8	5.25	60.60	3.41	10.3
Ford	6500	32.3	5.56	54.8	6.74	8.1	6.99	100.29	6.41	7.6
IHC	6500	32.3	5.19	103.4	4.07	8.1	6.07	129.00	3.54	7.9
Chevrolet	6500	32.3	3.11	28.0	7.68	8.9	3.74	31.07	7.59	8.6

<u>Vehicle</u>	<u>Inertia Pounds</u>	<u>Load Hp@ 50 mph</u>	<u>High Spd. Non-Metro</u>				<u>Stdy.State 50 mph</u>			
			<u>HC gm/mi</u>	<u>CO gm/mi</u>	<u>NOx gm/mi</u>	<u>Econ. mph</u>	<u>HC gm/mi</u>	<u>CO gm/mi</u>	<u>NOx gm/mi</u>	<u>Econ. mph</u>
Jeep	6000	27.5	0.62	9.31	5.92	13.4	0.60	7.50	5.62	14.7
Dodge	6000	27.5	1.90	10.12	4.64	15.4	1.98	10.59	5.04	14.8
Ford	6500	32.3	2.61	13.53	9.61	12.9	2.90	15.97	6.71	12.3
IHC	6500	32.3	2.08	30.15	9.38	8.2	0.99	12.58	7.94	9.2
Chevrolet	6500	32.3	1.16	9.24	8.79	12.4	0.90	7.25	7.56	13.0