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ANALYSIS OF TIMING AND CARBURETION CALIBRATIONS

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Mobile Source Air Pollution Control
Emission Control Technology Division
Ann Arbor, Michigan 48105

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by

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FOREWORD

This report, prepared by The Aerospace Corporation for the U.S. Environmental Protection Agency (EPA), Emission Control Technology Division, presents the results of a two-part study involving (1) the selection of a suitable digital computer simulation program for EPA use in conducting various analyses of automobile fuel economy and emission effects, and (2) the application of this program to the determination of factors representing the fuel economy influence of ignition timing and carburetor calibration differences in certification test vehicles.

This report is organized as follows. A synopsis of the study results is presented in the "Summary" section. Section 2 of the report identifies and compares the candidate computer simulation programs examined. A summary description of the program selected for EPA use is given in Section 3. The technique used in applying this program to the analysis of timing and carburetion calibration data is described in Section 4. Section 5 presents the numerical results of this analysis, including a list of fuel-weighted calibration factors for the 1976 certification test fleet. A complete description of the program elements adopted or developed for use in this computational effort is provided in Section 6.

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SUMMARY

This was a two-part study effort. In the first part, an evaluation was made of vehicle simulation computer programs to determine and select the best program for EPA use in conducting various analyses of automobile fuel economy and emission effects. The programs considered were: (1) a Department of Transportation (DOT) simulation routine called VEHSIM, (2) a program developed by the University of Wisconsin, and (3) a program developed by The Aerospace Corporation. Comparison of vehicle subsystem modeling details led to the conclusion that the computational differences among programs would not lead to significantly different simulation results. Therefore, other considerations dominated the decision concerning the choice of program for EPA use. The DOT VEHSIM program was picked because it computes in the preferred wheels-to-engine sequence, it provides exceptional flexibility and ease of operation, it is well documented, and it appeared to be readily adaptable to modifications required for the analysis of timing and carburetion calibrations in part two of this study.

Part two of this study entailed the determination and calculation of factors representing the fuel economy influence of ignition timing and carburetor calibration differences in certification test vehicles. Specific calculations were made for distributor and carburetor calibration curves representing equipment in 1976 model year cars. The approach taken in developing these fuel economy factors was as follows:

a. The fuel economy influence of the calibration characteristic was defined as the summation over the driving cycle of the product of the fuel fraction consumed in a given cycle segment and the value of the calibration parameter in that segment. This process produces a fuel-weighted, cycle average value of the calibration variable (spark advance, air-fuel ratio).

b. A set of reference vehicles representative of the current domestic new car fleet was selected. Computer simulation runs using these vehicles were made to develop cycle histories of engine operating conditions and vehicle fuel consumption to be used as a basis for evaluating and fuel-weighting the calibration variables.

c. Correction factors for adjusting these results to vehicles with weight, axle ratio, and/or transmission options different from those of the reference cases were developed by determining the sensitivity of the reference vehicle fuel-weighted factors to changes in these variables.

d. The data base of timing and carburetor calibration curves was sorted with respect to applicable reference vehicles. Applying the engine and vehicle parameters developed in b to these sets of calibration curves and using the appropriate correction factors developed in c, fuel-weighted spark advance and air-fuel ratio factors for the 1976 certification test fleet were determined.

To implement the approach described above, the capabilities of the DOT VEHSIM vehicle simulation program were extended as follows:

a. The VEHSIM program was modified to produce a magnetic tape output.

b. A new program, VSIMI, was developed to add air-flow rate to the VEHSIM output. It also computes fuel-weighted average air-to-fuel ratio and fuel-weighted average spark advance for the reference vehicle carburetion and timing characteristics.

c. A second new program, VSIMII, was developed to use the magnetic tape output from VSIMI and compute configuration-corrected fuel-weighted air-to-fuel ratio and fuel-weighted spark advance, in one computer run, for many distributor-carburetor combinations.

A complete description of the program elements adopted or developed for use in this computation is included in this report along with a listing of the fuel-weighted calibration factors calculated for the 1976 certification test fleet. A sample of the calculated results produced by the program is given in Table S-1, which shows the fuel-weighted calibration factors developed for the reference vehicle set.

Table S-1. Sample Program Results for Reference Vehicle Cases

Reference Vehicle Characteristics						Program Results			
						Weighted Advance		Weighted A/F Ratio	
Manufacturer	CID	IW	Tran.	Axle Ratio	N/V	Urban	Hwy.	Urban	Hwy.
-	400	5000	A	3.08	38.8	24.99	33.00	15.69	15.90
GMC	350	5000	A	3.08	38.8	23.54	31.48	15.56	15.86
Chrysler	318	4500	A	3.21	40.9	34.61	42.40	18.55	16.99
Chrysler	318	4500	M-3	3.21	40.9	33.88	41.84	19.02	17.03
AMC	258	4000	A	3.15	39.0	16.34	24.90	16.74	16.19
AMC	258	4000	M-3	3.15	39.0	15.02	23.75	16.27	16.23
Chrysler	225	3500	A	3.21	44.0	19.37	30.96	16.33	16.06
Chrysler	225	3500	M-3	3.21	44.0	18.99	30.65	16.41	16.11
GMC	140	3000	M-3	2.92	43.0	13.40	18.33	18.67	15.72
-	97.6	2500	M-4	3.70	56.5	17.37	19.90	18.00	15.62

SECTION 1

INTRODUCTION

The objectives of this study were twofold: to provide the Environmental Protection Agency (EPA) with a digital computer simulation capability for analyzing vehicle performance over specified driving cycles, and to conduct studies employing this vehicle simulation program to develop a data base of Federal Test Procedure (FTP) regime-weighted ignition timing and carburetion factors for use in EPA fuel economy regression analyses.

The first objective was to be met by the process of reviewing and evaluating several existing vehicle simulation programs and selecting the best program for general use in EPA analyses of automobile fuel economy and emissions effects. For the purpose of the present work effort, the selected computer program was employed in the determination of factors representing the fuel economy influence of ignition timing and carburetor calibration differences in certification test vehicles. Heretofore, it has not been possible to incorporate these engine timing and carburetion calibration effects into EPA fuel economy analyses because of the unavailability of algorithms to convert calibration maps into analytical variables suitable for regression and sensitivity analysis. The computer simulation was used to perform these conversions and to develop analytical variables data for subsequent EPA use.

SECTION 2

COMPARISON AND EVALUATION OF VEHICLE SIMULATION COMPUTER PROGRAMS FOR EPA USE

2.1 CANDIDATE PROGRAMS

The principal vehicle performance simulation programs considered in this study were developed by the U.S. Department of Transportation (DOT) and the University of Wisconsin (U/W). A third program, developed by The Aerospace Corporation, was also evaluated and was utilized to obtain baseline data for purposes of comparison and to provide background information regarding computational techniques and procedures. These programs are largely similar in that they perform closed-loop dynamic simulation of the overall vehicle drive train system, with engine and driveline components modeled in subroutines that can be accessed or suppressed as desired by the operator. The programs simulate steady-state driving, accelerations, and driving cycles, and their output options include hp, rpm, HC, CO, NO_x, and MPG (instantaneous and cumulative) parameters.

While displaying the above general similarities, the programs differ in a number of aspects, including design logic, use flexibility, subsystem modeling processes, output data, and specific computational features, as discussed in the following paragraphs.

2.2 COMPARISON OF PROGRAM FEATURES

The DOT and Aerospace programs compute in a wheels-to-engine sequence, whereas the U/W program follows the reverse order and utilizes a feedback routine to approximate the driving cycle requirements. Means of computing vary (e.g., data tables versus analytical expressions versus constants) and the rigor of simulation differs. A summary of the program features discussed in this section will be found in Table 2-1.

Table 2-1. Comparison of Simulation Program Features

ITEMS	DOT	U/W	A
Computing Features			
Direction of Solution	Wheels-to-engine	Engine-to-wheels	Wheels-to-engine
Single or Split Program	Single	Split: Vehicle simulation & perform. analysis	Single
Number of Routines		Vehicle Sim. / Perf. Anal. / Total	
Main	1	1 / 1 / 2	1
Primary Subroutines	6 19	14 30 / 2 10 / 16 40	4 12
Auxiliary Subroutines	12	15 / 7 / 22	7
Time per Solution	2-1/2 min. for EPA/Urban	2 min. for EPA/Urban	2.4 min. for EPA/Urban & Highway
Language	Fortran IV	Fortran II	Fortran IV
Computers Used	CDC 6600	Univac 1110, Xerox 9300	CDC 7600
Other Features or Claims	Off-line data conversion	Off-line data conversion	None
Readily Modified	Yes	So claimed	No
Documentation	Good	Good	Poor
Users	DOT	DOT; Shell Development, UCLA	Aerospace
Fuel Consumption			
Computation	Interpolation of fuel rate table	Interpolation of fuel rate table	Interpolation of specific fuel consumption table
Corrections for:			
Cold Operation	None	None	Constant fractional increase
Acceleration	None	None	Increase linear in acceleration to maximum value
Motoring	Specified as part of fuel rate table	None	Increase is function of actual & idle speed

Table 2-1. Comparison of Simulation Program Features (Continued)

ITEMS	DOT	U/W	A
Emissions			
Computation	Interpolation of emission tables substituted for fuel consumption tables	Interpolation of fuel consumption tables, followed by concurrent interpolation of emission tables	Concurrent interpolation of emission and sfc tables
Corrections for:			
Cold Operation	None	None	None
Acceleration	None	None	Empirical constants
Motoring	None	None	Empirical constants
Limitations	Steady-state effects only	Steady-state effects only	Emission constants specific to vehicle
Engine Mechanics	Up to 2 engines; purpose not stated	One engine	Up to two engines, for dual engine or dual displacement vehicles
Computation	Manifold vacuum & throttle opening are input functions of torque & rpm	Torque is input function of rpm & throttle opening; manifold vacuum is input function of torque & rpm	Manifold vacuum is function of power, where power is function of torque & rpm, fixed characteristic internal to program
Motoring Deceleration Treated	Yes	Yes	No
Temperature Effects Treated	No	No	No
Limitations	Tables must list percent throttle settings	--	--
Accessories			
Computation of Losses	Function of rpm	Function of rpm	Function of rpm
Transmission Pump Loss Considered	Not stated	Function of man. vacuum, engine & driveshaft rpm	No
Maximum Number	20	10	5
Inertia Effects Treated	Yes	Not stated	No
Transmission Types	Automatic or manual	Automatic	Automatic or manual

Table 2-1. Comparison of Simulation Program Features (Continued)

ITEMS	DOT	U/W	A
Torque Converter			
Computation	Tables of capacity, torque & speed ratios	Tables of capacity, torque & speed ratios	Tables of capacity, torque & speed ratios
Lockup Capability	Yes	Not stated	No
Motoring Characteristic	Tables differ from drive mode tables	Tables differ from drive mode tables	Tables same as drive mode tables
Losses	Implicit in model	Implicit in model	Implicit in model
Pump Inertia Treated	Yes	Yes	Lumped with engine inertia
Turbine Inertia Treated	Yes	Yes	Lumped with drive train inertia
Temperature Effects Treated	No	No	No
Gear Box			
Number of Gears	20 maximum	10 maximum	3/4 (automatic/manual)
Upshift Criteria	Manual: not stated Auto: function of rpm or mph, vac. or throttle	Function of driveshaft rpm & manifold vacuum	Auto: function of rpm & vacuum Manual: function of mph
Power Downshift Criteria	Function arbitrarily spaced from upshift pattern	Function arbitrarily spaced from upshift pattern	Wide-open throttle (zero vacuum)
Coast Downshift Criteria	Not stated	From present gear to first gear	Same as upshift but with test on acceleration
Shifting Transient	0.5-sec transition; interpolation not stated	0.5-sec linear transition	Instantaneous
Losses	Constant efficiency for each gear	Function of rpm, torque, direction for 3 gears	Constant efficiency for each gear
Inertias	Value for each gear	Value for each gear	One value, lumped with drive train
Temperature Effects Treated	No	No	No
Driveshaft & Universal Joints			
Losses Treated	Not stated	Not stated	No
Inertias Treated	Yes	Not stated	Lumped with drive train

Table 2-1. Comparison of Simulation Program Features (Continued)

ITEMS	DOT	U/W	A
Rear Axle Gears			
Losses	Constant efficiency	Function of rpm & torque	Constant efficiency
Inertias Treated	Yes	Yes	Lumped with drive train
Temperature Effects Treated	No	No	No
Rear Axles & Wheel Bearing			
Losses Treated	Not stated	Not stated	No
Inertia Treated	Not stated	Not stated	Lumped with drive train
Rear Wheels & Tires			
Slippage Treated	No	No	No
Acceleration Effects	Not treated	Tests for spinning ΔCG treated	Not treated
Deceleration Effects	Not treated	Tests for skidding (if braked)	Not treated
Inertias Treated	Yes	Yes	Lumped with drive train
Tire Growth Treated	No	Function of velocity	No
Front Wheel Inertia Treated	Yes	Not stated	No
Rolling Friction	Function of weight & velocity	Function of weight & velocity	Function of weight, tire pressure & velocity squared
Aerodynamic Losses	Function of area, vehicle & wind velocities	Function of area, vehicle & wind velocities	Function of area, vehicle & wind velocities
Grade Variations Treated	Yes: input function of cycle mileage	Yes: presently allows for constant grade only	Yes: presently allows for constant grade only
Output Data	Complete	Complete	Limited
Engine Vacuum	Yes	No	No
Inst. mpg	Yes	Yes	No
Cum. mpg	Yes	Yes	No

Table 2-1. Comparison of Simulation Program Features (Concluded)

ITEMS	DOT	U/W	A
Vehicle Parameter Display	Highly flexible. With limit Print On, gives first order vehicle, engine & fuel information	Complete: vehicle, torque converter, transmission, tire, and drive shaft	Not provided
Summary Calculations			
Schedule Averages	Fuel economy, work per mile, average SFC, average speed	Fuel economy	Fuel economy
Totals	Time, distance, energy, fuel-total and percent cruise, accel., decel., idle, brakes	Energy, % time in each gear	No
Energy Summary	Engine, kinetic, potential rotating	No	No
Energy Distribution	Accessories, torque converter, gear box, etc.	Torque converter, engine to rear wheels, road load, braking	No

All three programs are designed to determine the variation of engine performance (torque, speed, power) required to propel a vehicle through a specified driving cycle and compute the corresponding fuel consumption. The U/W and Aerospace programs also compute exhaust emissions concurrently whereas the DOT program can perform these computations only one at a time in sequence, by substituting emission data for fuel consumption data. Thus, the DOT program, as presently written, must be executed four times with different data inputs in order to determine fuel consumption and HC, CO, and NO_x emissions for a single simulation.

Both the DOT and Aerospace programs perform all computations in a single program. The U/W program provides somewhat greater flexibility by permitting the performance parameters (fuel consumption and exhaust emissions) to be computed separately from the vehicle simulation. The U/W program also utilizes a greater number of routines. The number of primary subroutines indicated in Table 2-1 refers to those program elements which compute vehicle characteristics. Auxiliary subroutines perform program control, input, output, and similar functions. The Aerospace program is apparently faster in that it executes both highway and urban cycles in about the same time the other programs execute only the urban cycle. Finally, the DOT and U/W programs include a capability for off-line data conversion of specific fuel consumption data to fuel flow rate data.

The three programs are similar in that they determine fuel consumption by interpolating input tables rather than by solving analytic expressions. The DOT program can handle motoring fuel consumption only if the required data are furnished as part of the basic engine data. As discussed above, emissions are computed concurrently only in the U/W and Aerospace programs, and additional separate runs with emissions data substituted for fuel rate data are required in the DOT program. All such computations are limited to steady-state effects.

Both the DOT and Aerospace programs permit up to two engines to be treated in a single run. This feature can be used, for example, to evaluate the performance of advanced engine configurations employing

dual-displacement operation to achieve maximum fuel economy at low load conditions. None of the programs develops manifold vacuum data as a function of engine operating conditions. Manifold vacuum (and throttle setting in the DOT program) are input functions. These are expressed in terms of engine torque and speed in the DOT and Aerospace programs because of the wheels-to-engine computation sequence. Torque is input as a function of throttle setting and engine speed in the U/W program. The vacuum data are not an output option in the Aerospace program. The DOT program must have throttle settings provided in the data; however, this information is not used in executing vehicle control logic.

Accessory power losses are computed as functions of speed in all three programs. Only the U/W program includes front transmission pump losses, and only the DOT program accounts for accessory inertia in computing acceleration and deceleration.

Both the DOT and Aerospace programs can treat manual as well as automatic transmissions. With automatic transmissions, the characteristics of the torque converters are related by tables of capacity factor and torque and speed ratios. The DOT program can lock up (impose unity speed and torque ratios) in specified gears to simulate some advanced transmission models currently under study. Both the DOT and U/W programs provide for different torque characteristics in motoring deceleration. The Aerospace program utilizes a special algorithm to simulate fuel consumption effects in motoring deceleration.

The programs also differ substantially in the treatment of gearbox performance. The Aerospace program presently provides only three gears for the automatic transmission and four for the manual while the other programs permit up to 10 or 20 gears. The upshift and downshift criteria also differ, partially to avoid "stuttering" during computation. The Aerospace program assumes an instantaneous shift, which is somewhat unrealistic. However, the net effect on simulation accuracy is probably small. The other

programs provide for a 0.5-second gearshift transition. The U/W program performs a linear interpolation between initial and final gear ratios in this period, but the DOT program algorithm is not stated. Finally, the programs differ in the modeling of gear friction losses and inertias, as indicated in Table 2-1.

Differences exist in modeling the inertias and friction losses in the remainder of the drive train, but this may not be of great consequence to net modeling accuracy. Modeling of the response of the driveshaft, universal joints, rear axles, and wheel bearings are either not mentioned in the reports or are lumped with other drive train components. The U/W program contains the most rigorous modeling of rear axle gear losses; the net effect on program results is probably small, but is unknown. The U/W program also performs the most thorough analysis of tire growth and slippage effects. The DOT program does not discuss tire slippage, but provides for an increase in engine torque due to tire inefficiencies.

Front wheel inertia is known to be treated only in the DOT program, but the net effect is probably minimal. All three programs treat rolling friction, aerodynamic drag losses, and changes of highway grade, but only the DOT program presently provides for the convenient input of grade as a function of cycle mileage.

With regard to output data, the Aerospace program is relatively limited, and only the DOT program provides manifold vacuum in the output. The Aerospace program does not provide instantaneous or cumulative mpg, though it does generate instantaneous emission quantities.

A summary display of simulation parameters is not provided in the Aerospace output. The U/W program generates a rather extensive list of the simulation inputs, while the DOT program provides an adequate summary. It may be noted that a more complete list of the data input to the DOT program is easily obtained by operating in the Limit Print Off mode, thereby displaying the contents of the "parts file."

As indicated in Table 2-1, the DOT program produces a rather extensive set of summary calculations covering performance and schedule parameter averages and totals as well as energy quantities. Neither the U/W nor Aerospace programs are presently programmed to produce these quantities.

2.3 SELECTION OF PROGRAM FOR EPA USE

Comparison and evaluation of the engineering aspects of the several programs under consideration led to the conclusion that the computational differences indicated in Table 2-1 would not result in significantly different simulation results. This was confirmed in a test run of the DOT program, yielding an urban cycle fuel economy only 6 percent different from that given by the Aerospace program.

Of the three programs examined, the Aerospace program was evaluated to be the least desirable for EPA use because of such factors as its lack of documentation, its restricted treatment of transmission effects, and its limited features related to summary calculations and the display of data. Most importantly, the program did not internally compute and store all of the information required to compute the regime weighted air-fuel ratios and spark advance required in this study. Major program modifications would have been required to incorporate the required changes. Additional changes would have been required to include the capability of accommodating manual transmissions with more than one set of gear ratios. These changes were not justified in view of the existing capabilities of the DOT and U/W programs.

With regard to the choice between the DOT and U/W programs, it was established that the DOT program had several significant advantages, namely:

a. The DOT program computes in the preferred wheels-to-engine sequence used in other programs and in much of the literature, whereas the University of Wisconsin program requires a feedback routine from engine to wheels to follow the driving cycle.

b. The DOT program is readily modified to provide the required capability to compute fuel-weighted spark advance over the driving cycle.

c. The DOT program provides exceptional flexibility and ease of operation.

Although the DOT program does not have the capability to compute exhaust emissions and fuel consumption parameters concurrently (as does the Aerospace program), the flexibility noted in item c above readily permits the necessary modification to effect a split-program performance analysis computation similar to the U/W program. This would allow the emission parameters to be generated external to the main program, using either a serial or concurrent computational approach for the individual pollutants.

On the basis of the considerations discussed above, the DOT (VEHSIM) program was selected for EPA use. Following this decision, several modifications were made to implement the analysis of timing and carburetion calibrations, including the addition of an auxiliary program to provide the split program feature mentioned above. These modifications will be discussed in detail in Sections 3 and 6. No other features contained in the Aerospace or U/W programs are recommended for immediate adaptation to the DOT program for EPA use.

SECTION 3

SUMMARY DESCRIPTION OF DOT VEHSIM PROGRAM

3.1 INTRODUCTION

The DOT Vehicle Performance Simulation Computer Model (VEHSIM) is a program that simulates the performance and fuel economy characteristics of a motor vehicle as it executes a given driving schedule. Particular consideration is given to determining where and when, during the schedule, energy is consumed.

VEHSIM also provides the user with a convenient way to evaluate the individual vehicle components (i.e., engine, torque converter, drag coefficient, weight, etc.) and to determine their effects on the fuel consumption of the vehicle. Also, detailed analyses and monitoring, both qualitative and quantitative, of various driving schedules may be made.

VEHSIM was designed for execution on the Control Data Corporation (CDC) 6600 Scope Operating System. However, it is programmed in the FORTRAN IV compiler language and should convert to other systems readily with only minor modifications. The VEHSIM program has been converted to the Aerospace CDC 7600 computer and is currently on tape. This program is generally run by first creating a data tape, then using the program to read selected items (e.g., engine, vehicle, and driving schedule) from the data tape and performing a vehicle simulation over a specified driving cycle.

This program has been used by DOT principally for computations of motor vehicle performance and fuel economy and to measure the effects of vehicle components on fuel consumption.

3.2 SIMULATION TECHNIQUE

The basic analytical technique used is rather straightforward. At any given time step, the acceleration and velocity of the vehicle is specified. From these, the horsepower in terms of torque and rpm, needed at the wheels,

is computed and is then translated to the engine by way of the differential, gear box, and torque converter. After losses to accessories, rotating inertias, tires, etc. are computed, the output state in terms of torque and rpm of the engine is known. At this point an interpolation of the engine map is performed and fuel flow rate, manifold vacuum, and throttle setting are determined.

If it is found that more torque is required of the engine than it can produce at speed, the tractive force at the wheel is adjusted to a limit value. This would correspond to a 100-percent wide-open throttle condition. Should less power than the minimum engine output be required, as in a coast-down condition, the engine would assume a minimum throttle setting.

Most of the computations involved in determining engine operating conditions from road power requirement at the wheels are simple and direct. However, in the case of the accessories, a linear interpolation of a torque versus rpm map is performed for each accessory. An interpolation is also needed for the torque converter, but in this case tables of speed ratio and torque ratio versus output capacity factor are used. (Note: In the coast condition, only speed ratio is computed since the torque ratio is always unity.)

Upon determining the engine output speed and torque, a double linear interpolation of the engine map is performed. First the speed point is determined by interpolating between the two closest given speeds. If this speed is off the map, the highest (or lowest) two speed points are projected linearly to determine the slope for other engine parameters. If the speed is below engine minimum (idle speed), it is set to that minimum. Another interpolation is performed to find the torque setting at each of the two speed points. From these two values the true engine state is computed by using the speed slope already determined.

A number of accumulators are present in the program that keep track of where (accessories, drag, etc.) and when (cruise, idle, acceleration, or deceleration) the energy losses occur during the entire simulation. The totals are printed at the end of the driving cycle as the percent of engine

horsepower-hours to assist the user in determining the relative effects of these parameters on fuel economy and performance.

Additional information and detailed user instructions, source listing, and samples can be obtained from A Computer Program (VEHSIM) for Highway Vehicle Fuel Economy, Performance, and Other Parameters, which was prepared for the National Highway Traffic Administration and Office of the Secretary, U.S. Department of Transportation (Ref. 1).

3.3 GENERAL CAPABILITIES

The VEHSIM program can be used to monitor emissions instead of fuel consumption. In this case, emission levels instead of fuel flow are entered with the engine data. However, only one type of emission can be simulated per run. DOT reports that the results they have obtained from using the program for emissions simulation have shown a substantial range of accuracy for different emissions and no longer employs the program for this use. Relative to EPA certification data, the program simulates NO_x within 10 percent, CO within 50 to 100 percent, and HC within 50 to 100 percent.

The VEHSIM program can accept engine data in any of three units of fuel flow (pounds/hour, brake specific fuel consumption [BSFC], gallons/hour), three units of load point (brake mean effective pressure [BMEP], torque, horsepower) and two units of speed points (rpm, piston speed). All input engine data are converted by the program to rpm, torque, and pounds/hour. The program computes, for each segment of the driving schedule, cumulative time and distance, velocity, acceleration, instantaneous and cumulative mpg, BSFC, rpm, torque, vacuum, and percent of wide-open throttle.

3.4 AEROSPACE MODIFICATIONS

The VEHSIM program has been modified in several ways during its use at Aerospace. First, the original program constraint of a maximum of 200 segments for a driving schedule has been increased to 2000 segments. This change has permitted the program to be run using a second-by-second

specification of the Federal Test Procedure urban driving cycle (1371 segments) or the Highway Fuel Economy Test (HWFET) (758 segments). The primary purpose of this modification was to provide EPA with greater flexibility in the use of this program for the analysis of driving cycle transient effects on emissions.

A second program modification incorporated a statement to ensure that, in the simulation of individual driving segments, the value of the delta time variable (DT) would always be nonnegative and nonzero. Previously, the program would set DT to zero if the value of DT was negative. When this program feature was combined with 1-second duration driving schedule segments, program execution was terminated by the attempt to divide by a zero value of DT.

In another modification, transmission shift time was reduced from 0.5 to 0.05 second because the 0.5 value was found to be incompatible with the 1-second driving cycle segment time. Shift intervals could overrun the segment time by up to 1/2 second per shift. Thus, if a vehicle required 100 shifts over the urban cycle, the total time could be extended by as much as 50 seconds.

A problem was encountered concerning abnormal termination of the VEHSIM program. This problem was associated with an incompatibility, in a constant acceleration segment, between the velocity to be gained in the segment and the acceleration prescribed for the segment by the driving schedule. The previous segment ended (because of an upshift) with a larger velocity than the terminal velocity of the following constant acceleration segment. This resulted in a situation where VEHSIM attempted to achieve a <u>negative</u> velocity increment with a positive acceleration. The problem was corrected by exploiting the feature of a constant velocity segment which provides for an initial acceleration to achieve the desired constant velocity. A test was introduced to determine if the prescribed acceleration and the required velocity increment in a constant acceleration segment have the same sign. If the test fails, the segment is to be treated as if it were a constant velocity segment, conditions and flags are set appropriately, and a transfer is made to the code for a constant velocity segment.

The most important program modification was the addition of a magnetic tape output containing, for the end of each driving segment, the following:

cumulative time (seconds)
cumulative distance traveled (miles)
cumulative fuel consumed (pounds)
engine horsepower
engine rotational speed (rpm)
engine torque (foot-pounds)
manifold vacuum (inches of mercury)
percent throttle
segment identification

This tape includes a complete record of engine operating conditions over the driving cycle, and thus provides a convenient data base for calculating the cycle history of a variety of engine performance parameters (e.g., emissions, air flow, spark advance, etc.) without the necessity of rerunning VEHSIM. To implement this calculation and to add to the output of VEHSIM information on air flow and spark advance required for the analysis of carburetion and timing calibration effects, an auxiliary program, VSIMI, was written. Inputs to VSIMI consist of the output tape from VEHSIM and, as used for the current EPA study, air flow and spark advance maps. The primary output of VSIMI is a magnetic tape giving, for each segment of the driving cycle, quantities such as engine load (BMEP), incremental air flow, fuel flow, instantaneous and fuel-weighted air-to-fuel ratio and spark advance, and other useful parameters. Were emission maps to be entered (instead of air flow and timing data), the VSIMI output would include cumulative pollutants generated. It may be noted that the operating time for VSIMI is about one-fourth that of VEHSIM.

To complete the analysis of carburetion and timing effects, a second auxiliary program, VSIMII, was written. The purpose of VSIMII is to calculate, for many distributor-carburetor combinations, fuel-weighted average values of air-to-fuel ratio and of spark advance. A more detailed description of VSIMI and VSIMII will be found in Section 6.

In addition to the preceding, a minor modification to VEHSIM was made to reduce the number of lines of printed output following each page heading to match the paper size used at Aerospace.

3.5 VERIFICATION TESTS

Program VEHSIM was obtained from DOT and was adapted for running on the Aerospace CDC 7600 computer. After adaptation, the DOT-supplied test case was successfully run, and the results of the test case match the results reported in the DOT program documentation (Ref. 1).

An examination of Reference 1 concluded that VEHSIM is based upon correct engineering concepts and valid computational techniques (see Section 2).

As an additional check, a reference vehicle, used previously in the Aerospace vehicle simulation program, was used for a comparative test case and for program cross-calibration. This reference vehicle was an American Motor's Matador with a 401 CID engine. The driving cycle was the 1371-second 1975 Federal Test Procedure urban driving cycle. The results of this check are shown in Table 3-1. The DOT program produced an average fuel economy value of 10.5 mpg. The EPA certification test results for this vehicle indicate a fuel economy value of 11.0 mpg for the simulated urban driving cycle. It was thereby concluded that VEHSIM produces reasonable and apparently accurate results, as used to perform vehicle simulations over specified driving cycles and to compare different vehicles and cycles.

The program modifications described in Section 3.4 have been tested and verified as to accuracy. It must be noted, however, that the VEHSIM magnetic tape output routine has only been checked when the VEHSIM command *LIMIT PRINT is in effect with the SEGMENT parameter, that is, only when VEHSIM printout occurs at the end of each segment of the driving cycle. The VEHSIM program itself has not been subjected, at Aerospace, to the usual processes of software validation and verification. Thus, it cannot be certified to be in final and complete form or that it is the most

current version of the program. For these reasons, VEHSIM is made available with the understanding that a formal warranty as to the accuracy of the program cannot be provided.

Table 3-1. VEHSIM Program Verification Fuel Economy, Urban Cycle
(Generalized Engine Map: Taylor)

			Fuel Economy		
Vehicle	CID	IW	1975/1976 Certification	VEHSIM	Aerospace
Matador	401	4500	11.0	10.5 (-4.5%)	9.9 (-10%)

Note: VEHSIM and Aerospace simulations include air conditioning.

SECTION 4

APPROACH TO THE ANALYSIS OF TIMING AND CARBURETION CALIBRATION DATA

4.1 OVERVIEW OF COMPUTATIONAL APPROACH

The analysis of carburetion and timing calibration data entails the determination and calculation of factors representing the fuel economy influence of ignition timing and carburetor calibration differences in certification test vehicles. The present effort was specifically concerned with distributor and carburetor calibration curves (approximately 350 each) representing equipment in 1976 model year cars. The general approach taken in the development of fuel economy factors for this calibration data was as follows:

a. The fuel economy influence of the calibration characteristic was defined as the summation over the driving cycle of the product of the fuel fraction consumed in a given cycle segment and the value of the calibration parameter in that segment. This process produces a fuel-weighted, cycle average value of the calibration variable; i.e., spark advance, air-fuel ratio.

b. A set of reference vehicles representative of the 1976 domestic new car fleet was selected. Computer simulation runs using these vehicles were made to develop cycle histories of engine operating conditions and vehicle fuel consumption to be used as a basis for evaluating and fuel-weighting the calibration variables.

c. Correction factors for adjusting these results to vehicles with weight, axle ratio, and/or transmission options different from those of the reference cases were developed by determining the sensitivity of the reference vehicle fuel-weighted factors to changes in these variables.

d. The data base of timing and carburetor calibration curves was sorted with respect to applicable reference vehicles. Applying the engine and vehicle parameters developed in b to these sets of calibration curves and using the appropriate correction factors developed in c, fuel-weighted

spark advance and air-fuel ratio factors for the 1976 certification test fleet were determined.

To implement the approach described above, the capabilities of VEHSIM (the existing DOT vehicle simulation program) were extended in three steps as follows:

a. The VEHSIM program was modified to produce a magnetic tape output.

b. A new program, VSMI, was developed to add air flow rate to the VEHSIM output. It also computes fuel-weighted average air-to-fuel ratio and fuel-weighted average spark advance for the reference vehicle carburetion and timing characteristics.

c. A second new program, VSIMII, was developed to use the magnetic tape output from VSIMI and compute configuration-corrected fuel-weighted air-to-fuel ratio and fuel-weighted spark advance, in one computer run, for many distributor-carburetor combinations.

The three-step approach was motivated by the desire to utilize the DOT simulation program VEHSIM with a minimum of modifications and to exploit repeatedly the VEHSIM simulation outputs (engine, rpm, BMEP, fuel consumption, etc.) without the necessity of multiple VEHSIM runs. The approach has the additional advantage that the computation of emissions can very readily be incorporated into VSIMI.

A schematic of the relationships and functions of the various computational elements used in the timing and carburetion calibration analysis is shown in Figure 4-1. Section 6 provides a detailed description of the program.

4.2 REFERENCE VEHICLES

A set of ten reference vehicle configurations was selected. These reference vehicles were utilized in the VEHSIM program to provide a set of vehicle speed and load characteristics over the urban and highway driving cycles. This set would subsequently be used in the VSIMI and VSIMII programs to develop the fuel-weighted spark advance and air-fuel ratios for both the reference vehicles and the distributor/carburetor calibration data base.

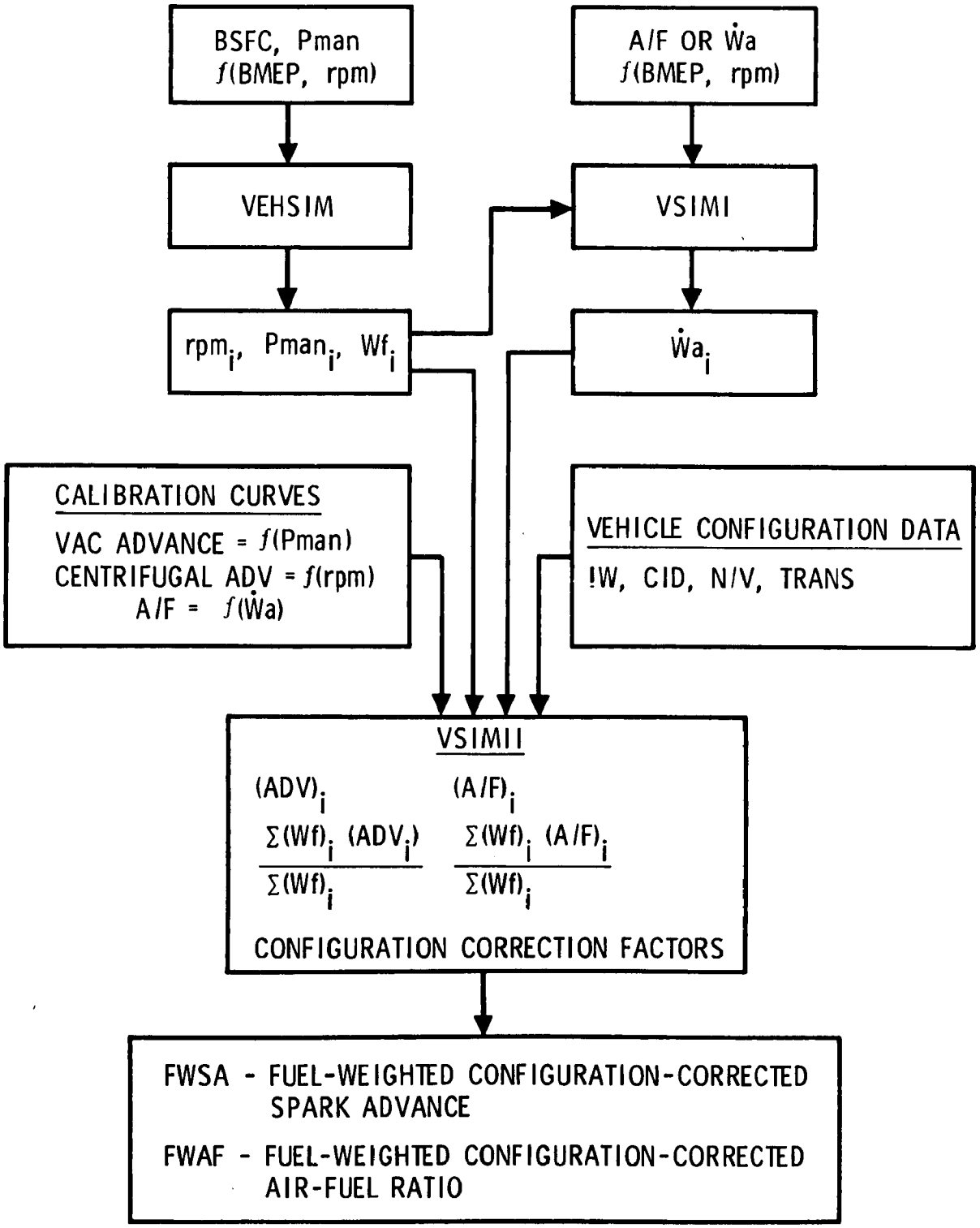

Figure 4-1. Program Functions /Relationships

The specific vehicles in the reference set were selected on the basis of available engine maps representative of a broad spectrum of engine sizes and vehicle weights. Most of the engine maps utilized in this study (140 to 350 cubic inch displacement) were developed by DOT/Transportation Systems Center (TSC), Cambridge, Massachusetts, based on engine mapping tests conducted by the Bartlesville Energy Research Center, Bartlesville, Oklahoma. Additional engine maps were derived by scaling the 140 CID engine map to 97.6 CID (1600 cc) and the 350 CID engine map to 400 CID. Characteristics of the reference vehicles are shown in Table 4-1.

The reference vehicle fuel economy simulations were run over the urban and highway driving cycles utilizing the DOT VEHSIM program. Air flow characteristics and fuel-weighted spark advance and air-fuel ratios for the reference vehicles were calculated using the VSIMI program. Engine performance parameters utilized for this purpose included BSFC, manifold vacuum, spark advance, and air-to-fuel ratio or air flow rate as a function of engine speed (rpm) and load (torque).

Accessory loads included an allowance for power steering and cooling fan, each varying as a function of engine speed. The air conditioning load was not simulated, at the request of the project monitor, so that the simulations would more closely approximate the conditions of certification and fuel economy testing conducted by the EPA.

4.3 DISTRIBUTOR/CARBURETOR CALIBRATION CURVES

Distributor and carburetor calibration curves for 1976 model vehicles were supplied by the EPA for use in this study. These included approximately 350 distributor/carburetor calibration curve sets involving about 500 domestic and import passenger cars and light duty trucks. Of this total, approximately 12 percent were not used in developing the data base. Those data not used and the reasons for deleting it are summarized in Table 4-2.

Table 4-1. Reference Vehicle Characteristics

Manufacturer	Model	CID	Carb. Venturis	Trans.	Inertia Weight, lb	Axle Ratio	N/V
*	*	400	*	A	5000	3.08	38.8
General Motors	Caprice	350	2	A	5000	3.08	38.8
Chrysler	Coronet	318	2	A	4500	3.21	40.9
Chrysler	Coronet	318	2	M-3	4500	3.21	40.9
American Motors	Matador	258	1	A	4000	3.15	39.0
American Motors	Matador	258	1	M-3	4000	3.15	39.0
Chrysler	Aspen	225	1	A	3500	3.21	44.0
Chrysler	Aspen	225	1	M-3	3500	3.21	44.0
General Motors	Monza	140	2	M-3	3000	2.92	43.0
**	**	97.6	**	M-4	2500	3.70	56.5

* Scaled from GM 350-2V engine map.

** Scaled from GM 140-2V engine map.

Table 4-2. Distributor/Carburetor Data Deleted

No. of Calibrations	No. of Vehicles	Manufacturer	Remarks
4	5	Mazda	Rotary engine, deleted at request of project monitor.
14	14	Honda	CVCC engine, deleted at request of project monitor.
21	36	numerous	Pulsed fuel injection system. Fuel flow rate or air-fuel ratio not given. Manufacturers include VW, Jaguar, Porsche, BMW, Volvo, Renault, and General Motors.
1	2	Toyota	Two vacuum advance curves (main and sub) presented. Criteria for use not indicated.
1	1	Ferrari	Two centrifugal advance curves presented. Criteria for use not indicated.

A number of distributor calibrations for import vehicles displayed combined advance and retard or retard-only features, but no operating criteria for the application of these curves were provided. In these cases, the centrifugal advance characteristic only was used in developing the fuel-weighted spark advance factor.

The distributor/carburetion calibration curve sets utilized in developing the data base were sorted into groups most closely associated with the reference vehicle engine displacements for the purpose of obtaining reference or baseline configuration values of fuel-weighted spark advance and air-fuel ratio over the urban and highway driving cycle. The selection of engine displacement as the criterion for sorting the calibration curves was based on the assumption that engines of similar displacement will have comparable air flow requirements. Section 5 identifies the individual distributors/carburetors by part number, the 1976 model year vehicle on which they were certified, and the reference vehicles with which they are associated.

4.4 FUEL-WEIGHTED SPARK ADVANCE AND AIR-FUEL RATIO

Fuel-weighted spark advance and air-fuel ratio factors for the urban and highway driving cycles were determined according to the following computational procedure:

$$\text{weighted spark advance} = \frac{\sum\left[(WF)_i \times (ADV)_i\right]}{\sum (WF)_i}$$

$$\text{weighted air-fuel ratio} = \frac{\sum\left[(WF)_i \times (A/F)_i\right]}{\sum (WF)_i}$$

where

$(WF)_i$ = fuel consumed by the reference vehicle over a 1-second interval of the driving cycle, pounds.

$(ADV)_i$ = total spark advance over the same 1-second interval of the driving cycle, degrees of advance.

$(A/F)_i$ = air-fuel ratio over the same 1-second interval of the driving cycle, nondimensional.

In the case of the reference vehicles, the air-fuel ratio and spark advance over any 1 second of the driving cycle were determined from the VSIMI input engine map data utilizing the engine operating points developed in the VEHSIM program.

For the distributor/carburetor calibration curves, the fuel-weighted spark advance and air-fuel ratio were calculated within the VSIMII program. For the distributor calibration data, the centrifugal advance and vacuum advance values were calculated as a function of engine speed and load, and were summed to obtain the total advance.

4.5 SENSITIVITY FACTORS

In order to permit the determination of fuel-weighted factors for vehicles of weight, engine size, or speed ratio (N/V) different from those of the reference vehicles, sensitivity factors were developed relating the effect of these variables on weighted spark advance and air-fuel ratio. In order to develop these sensitivity factors, weight and axle ratio changes were made to certain of the reference vehicles, and these altered configurations were run on the VEHSIM and VSIMI programs. The vehicle configurations for this evaluation are given in Table 4-3. These vehicle configurations in combination with the reference vehicles permit an evaluation of the effect of engine displacement (350 and 400 CID, 140 and 225 CID) on fuel-weighted spark advance and air-fuel ratio. Weight and speed ratio effects were determined from the 350, 225, and 140 CID vehicles.

Table 4-3. Configurations for Developing Sensitivity Factors

Displ. CID	Trans.	Inertia Weight	Axle Ratio	N/V	Change from Reference Vehicle
350	A	4500	3.08	38.8	Inertia weight reduced 500 pounds
350	A	5000	2.73	34.4	Axle ratio reduced from 3.08 to 2.73
225	A	3000	3.21	44.0	Inertia weight reduced 500 pounds
225	A	3500	2.76	37.6	Axle ratio reduced from 3.21 to 2.76
225	M-3	3000	3.21	44.0	Inertia weight reduced 500 pounds
225	M-3	3500	2.76	37.6	Axle ratio reduced from 3.21 to 2.76
140	M-3	2500	2.92	43.0	Inertia weight reduced 500 pounds
140	M-3	3000	3.21	47.6	Axle ratio increased from 2.92 to 3.21

The sensitivity factors are defined as follows:

Weight Sensitivity Factor for Spark Advance

$$(WTSF)_{ADV} = \frac{(ADV)_1 - (ADV)_0}{(ADV)_0 \times (W_1 - W_0)/W_0} \tag{1}$$

where

$(WTSF)_{ADV}$ = weight sensitivity factor for spark advance, percent change in weighted advance per percent change in inertia weight.

$(ADV)_0$ = fuel-weighted spark advance for reference vehicle (weight W_0).

$(ADV)_1$ = fuel-weighted spark advance for altered configuration (weight W_1).

W_0 = inertia weight of reference vehicle.

W_1 = inertia weight of altered configuration.

Weight Sensitivity Factor for Air-Fuel Ratio

$$(WTSF)_{A/F} = \frac{(A/F)_1 - (A/F)_0}{(A/F)_0 \times (W_1 - W_0)/W_0} \tag{2}$$

where

$(WTSF)_{A/F}$ = weight sensitivity factor for air-fuel ratio, percent change in weighted air-fuel ratio per percent weight change.

$(A/F)_0$ = fuel-weighted air-fuel ratio for reference vehicle (weight W_0).

$(A/F)_1$ = fuel-weighted air-fuel ratio for altered configuration (weight W_1).

Speed Ratio Sensitivity Factor for Spark Advance

$$(SRSF)_{ADV} = \frac{(ADV)_1 - (ADV)_0}{(ADV)_0 \times (SR_1 - SR_0)/SR_0} \tag{3}$$

where

$(SRSF)_{ADV}$ = speed ratio sensitivity factor for spark advance, percent change in weighted advance per percent change in speed ratio.

SR_0 = speed ratio of reference vehicle (N/V).

SR_1 = speed ratio of altered configuration (N/V).

Speed Ratio Sensitivity Factor for Air-Fuel Ratio

$$(SRSF)_{A/F} = \frac{(A/F)_1 - (A/F)_0}{(A/F)_0 \times (SR_1 - SR_0)/SR_0} \tag{4}$$

where

$(SRSF)_{A/F}$ = speed ratio sensitivity factor for air-fuel ratio, percent change in weighted air-fuel ratio per percent change in speed ratio.

Engine Displacement Sensitivity Factor for Spark Advance

$$(DSF)_{ADV} = \frac{(ADV)_1 - (ADV)_0}{(ADV)_0 \times (D_1 - D_0)/D_0} \tag{5}$$

where

$(DSF)_{ADV}$ = engine displacement sensitivity factor for spark advance, percent change in weighted advance per percent change in engine displacement.

D_0 = engine displacement of reference vehicle, cubic inches.

D_1 = engine displacement of altered configuration, cubic inches.

Engine Displacement Sensitivity Factor for Air-Fuel Ratio

$$(DSF)_{A/F} = \frac{(A/F)_1 - (A/F)_0}{(A/F)_0 \times (D_1 - D_0)/D_0} \tag{6}$$

where

$(DSF)_{A/F}$ = engine displacement sensitivity factor for air-fuel ratio, percent change in weighted air-fuel ratio per percent change in engine displacement.

Transmission Type Sensitivity Factor for Spark Advance

$$(TSF)_{ADV} = \frac{(ADV)_1 - (ADV)_0}{(ADV)_0} \tag{7}$$

where

$(TSF)_{ADV}$ = transmission type sensitivity factor for spark advance, fractional change in weighted advance due to change in transmission type. Subscript 0 = automatic, subscript 1 = manual.

Transmission Type Sensitivity Factor for Air-Fuel Ratio

$$(TSF)_{A/F} = \frac{(A/F)_1 - (A/F)_0}{(A/F)_0} \tag{8}$$

where

$(TSF)_{A/F}$ = transmission type sensitivity factor for air-fuel ratio, fractional change in weighted air-fuel ratio due to change in transmission type. Subscript 0 = automatic, subscript 1 = manual.

The use of these factors to adjust the calculated fuel-weighted calibration parameters to vehicle configurations different from the simulated reference vehicles may be illustrated by the following example for fuel-weighted spark advance as corrected for the effects of vehicle weight difference.

$$(ADV)_{4750} = (ADV)_{5000} \left[(WTSF)_{ADV} \frac{(4750 - 5000)}{5000} + 1\right]$$

where

$(ADV)_{4750}$ = fuel-weighted spark advance for vehicle of 4750-pound inertia weight.

$(ADV)_{5000}$ = fuel-weighted spark advance calculated for vehicle of 5000-pound inertia weight.

$(WTSF)_{ADV}$ = weight sensitivity factor for spark advance.

Corrections to the fuel-weighted factors for transmission type take the following form:

$$(ADV)_{man} = (ADV)_{auto} \left[(TSF)_{ADV} + 1\right]$$

where

$(ADV)_{man}$ = fuel-weighted spark advance for vehicle equipped with manual transmission.

$(ADV)_{auto}$ = fuel-weighted spark advance for vehicle equipped with automatic transmission.

$(TSF)_{ADV}$ = transmission-type sensitivity factor for spark advance.

SECTION 5

RESULTS

5.1 REFERENCE VEHICLE DATA

Results of the VEHSIM vehicle simulations over the urban and highway driving cycles for the reference vehicles are summarized in Table 5-1. For purposes of comparison, the certification fuel economy values are also shown. It will be noted that the simulation results are in reasonable agreement with the certification values, with the single exception of the Chrysler 318 CID vehicle with automatic transmission. However, the simulation results for this vehicle do not appear to be out of line with simulation values for similar vehicles in the list. Computer summaries for each reference vehicle simulation are presented in Tables 5-2 through 5-11 showing: schedule averages (fuel economy, work per mile, average specific fuel consumption, and average speed); the total time; distance; energy; and fuel consumption; and a breakdown of the energy consumption in horsepower-hours of various elements of the vehicle over the indicated driving cycle. A complete VEHSIM run for the 350 CID 5000-pound reference vehicle case is given in the Appendix.

VSIMI results for weighted spark advance and air-fuel ratio for the reference vehicles and for the additional configurations used in developing sensitivity factors are shown in Table 5-12.

5.2 SENSITIVITY VALUES

The sensitivity factors discussed in Section 4.5 were calculated based on the results of the reference vehicle runs given in Table 5-12. The results are shown in Tables 5-13 through 5-16. In general, the sensitivity factors for air-fuel ratio are significantly smaller than for spark advance, suggesting a general insensitivity to vehicle configuration effects. In any given configuration category, it will be seen that the

magnitudes of the calculated sensitivity factors vary considerably from vehicle to vehicle, but with no readily identifiable trends. Part of this variability is believed to be due to subtracting calibration variables of like magnitude in the process of developing the sensitivity factors.

Calculated mean values for the sensitivity factors are shown in the tables. These factors were used in VSIMII to correct the fuel-weighted calibration parameters to specific vehicle configurations in the 1976 certification test fleet. Characteristics of the 1976 test fleet were obtained from a data tape supplied by EPA.

5.3 FUEL-WEIGHTED CALIBRATION FACTORS FOR 1976 CERTIFICATION TEST FLEET

Values for fuel-weighted spark advance and air-fuel ratio computed by the VSIMII program for the 1976 certification test fleet are given in Tables 5-17 through 5-26. The data are grouped by the reference vehicle (displacement, transmission type, and inertia weight) on which the data were run. Each distributor and carburetor is identified by part number and the 1976 model year vehicle on which they were certified. Each vehicle is identified by the manufacturer's identification code and the entry number shown in the EPA data tape listing. Results show both the reference value and the configuration-corrected value for the fuel-weighted spark advance, in degrees, and the fuel-weighted air-fuel ratio over both the urban and highway driving cycles.

Table 5-1. Reference Vehicle Fuel Economy — Simulation versus Certification Values

Manufacturer	CID	IW	Tran.	Axle Ratio	VEHSIM		Certification[a]		% Δ MPG		Comments
					Urban	Hwy.	Urban	Hwy.	Urban	Hwy.	
-	400	5000	A	3.08	11.72	14.98	-	-	-	-	Engine map scaled from 350 CID
GMC	350	5000	A	3.08	12.53	16.37	13	18	-3.6	-9.1	
Chrysler	318	4500	A	3.21	13.70	17.75	10	15	+37.0	+18.3	
Chrysler	318	4500	M-3	3.21	14.49	18.55	13	19	+11.5	-2.4	
AMC	258	4000	A	3.15	15.00	19.09	-	-	-	-	
AMC	258	4000	M-3	3.15	15.37	19.92	17[b]	20[b]	-9.6	-0.4	
Chrysler	225	3500	A	3.21	16.88	22.15	-	-	-	-	
Chrysler	225	3500	M-3	3.21	17.32	23.02	18[b]	25[b]	-3.8	-7.9	
GMC	140	3000	M-3	2.92	22.40	26.77	22[b]	31[b]	+1.8	-13.6	
-	97.6	2500	M-4	3.70	21.15	27.71	-	-	-	-	Engine map scaled from 140 CID

[a]1975 Federal

[b]1976 Federal

Table 5-2. Vehicle Performance Simulation
Reference Case 5000/A/3.08, 400 CID

```
VEHICLE PERFORMANCE SIMULATION   09/28/76
*****************************************

RUN TITLE = CASE A5000/A/ 3.08, 400 CID, URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 11.72 MPG
                       WORK PER MILE     =   .62 HP-HR/MI
                       AVG SP FUEL CONS  =   .85 LBS/HP-HR
                       AVG SPEED         = 19.5  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
         VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
         -------- ------- ------ ------ ------ ------ ------  ------
         TIME     (SECS) 1370.9    8.0   39.7   34.5   17.7
         DISTANCE (MILES)   7.4   12.0   46.9   41.1    0.0
         ENERGY   (HP-HR)   4.63    8.0   83.8    7.2    1.0
         FUEL     (LBS)     3.92    8.9   62.6   19.1    9.4      5.6

ENERGY SUPPLY                                HP-HR
                                             -----
                   (1) ENGINE             =  4.63
                   (2) KINETIC ENERGY     =  0.00
                   (3) POTENTIAL ENERGY   =  0.00
                   (4) ROTATING INERTIA   =  0.00

BREAKDOWN                        PERCENT ENGINE HP-HR
                                 --------------------
                   (1) ACCESSORIES        =   8.59
                   (2) TORQUE CONVERTER   =  13.49
                   (3) GEAR BOX           =    .60
                   (4) DIFFERENTIAL       =   3.40
                   (5) TIRE SLIP          =   5.73
                                 3+4+5    =   9.72
                               2+3+4+5    =  23.22
                   (6) AERODYNAMIC DRAG   =  13.80
                   (7) ROLLING RESIST     =  31.60
                       SUBTOTAL 1- 7      =  77.20
                   (8) BRAKES             =  19.38
                   (9) ENGINE MOTORING    =   4.45
                       SUBTOTAL 1- 9      = 101.04
                  (10) OTHER ENERGY       =   0.00
                       TOTAL 1-10         = 101.04

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V5000A        ENGINE NAME             = GM350M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  5000.        STROKE (INCHES)         =   3.75
  DISPLACEMENT (CU IN)  =  400.0        REAR AXLE RATIO         =   3.08
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 24.2, .48

Table 5-2. Vehicle Performance Simulation
Reference Case 5000/A/3.08, 400 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   09/28/76
*****************************************

RUN TITLE = CASE A5000/A/3.08 · 400 CID, HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 14.98 MPG
                       WORK PER MILE     =   .59 HP-HR/MI
                       AVG SP FUEL CONS  =   .70 LBS/HP-HR
                       AVG SPEED         = 48.3  MPH

TOTALS                                   PERCENT OF TOTAL
          VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
          -------- ------- ------------ ------ ------ ------ ------   ------
          TIME     (SECS)   760.4       16.3   44.1   38.8    .8
          DISTANCE (MILES)   10.2       17.9   43.3   38.8   0.0
          ENERGY   (HP-HR)    5.97      17.3   61.0   21.7    .0
          FUEL     (LBS)      4.20      17.9   51.3   30.6    .2        .9

ENERGY SUPPLY                                HP-HR
                                             -----
                 (1) ENGINE              =   5.97
                 (2) KINETIC ENERGY      =   0.00
                 (3) POTENTIAL ENERGY    =   0.00
                 (4) ROTATING INERTIA    =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                 (1) ACCESSORIES         =   7.46
                 (2) TORQUE CONVERTER    =   5.95
                 (3) GEAR BOX            =    .02
                 (4) DIFFERENTIAL        =   3.57
                 (5) TIRE SLIP           =   6.01
                            3+4+5        =   9.60
                          2+3+4+5        =  15.55
                 (6) AERODYNAMIC DRAG    =  34.63
                 (7) ROLLING RESIST      =  37.60
                       SUBTOTAL 1- 7     =  95.23
                 (8) BRAKES              =   3.27
                 (9) ENGINE MOTORING     =   1.60
                       SUBTOTAL 1- 9     = 100.10
                (10) OTHER ENERGY        =   0.00
                           TOTAL 1-10    = 100.10

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDC002        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V5000A        ENGINE NAME             = GM350M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  5000.        STROKE (INCHES)         =   3.75
  DISPLACEMENT (CU IN)  =  400.0        REAR AXLE RATIO         =   3.08
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-3. Vehicle Performance Simulation
Reference Case 5000/A/3.08, 350 CID

```
VEHICLE PERFORMANCE SIMULATION   09/28/76
****************************************

RUN TITLE = CASE IU      GMC 350, AUTO, 5000-LB CLASS, FTP URBAN, 3.08 IN

SCHEDULE AVERAGES        FUEL ECONOMY      = 12.53 MPG
                         WORK PER MILE     =   .62 HP-HR/MI
                         AVG SP FUEL CONS  =   .80 LBS/HP-HR
                         AVG SPEED         = 19.5  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
        VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------ ------ ------ ------ ------  ------
        TIME     (SECS) 1371.4    8.0   39.8   34.5   17.7
        DISTANCE (MILES)   7.4   12.1   46.9   41.0    0.0
        ENERGY   (HP-HR)   4.61   8.0   83.7    7.3    1.0
        FUEL     (LBS)     3.67   8.8   64.3   18.3    8.7      5.0

ENERGY SUPPLY                                HP-HR
                                             -----
                 (1) ENGINE              =   4.61
                 (2) KINETIC ENERGY      =   0.00
                 (3) POTENTIAL ENERGY    =   0.00
                 (4) ROTATING INERTIA    =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                 (1) ACCESSORIES         =   8.65
                 (2) TORQUE CONVERTER    =  12.50
                 (3) GEAR BOX            =    .63
                 (4) DIFFERENTIAL        =   3.36
                 (5) TIRE SLIP           =   5.66
                            3+4+5        =   9.04
                          2+3+4+5        =  22.15
                 (6) AERODYNAMIC DRAG    =  13.87
                 (7) ROLLING RESIST      =  31.76
                     SUBTOTAL 1- 7       =  76.43
                 (8) BRAKES              =  20.87
                 (9) ENGINE MOTORING     =   2.72
                     SUBTOTAL 1- 9       = 100.03
                (10) OTHER ENERGY        =   0.00
                          TOTAL 1-10     = 100.03

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V5[illegible]8  ENGINE NAME           = GM350M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          = 5[illegible]0.  STROKE (INCHES)         =   3.48
  DISPLACEMENT (CU IN)  =  349.8        REAR AXLE RATIO         =   3.28
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 24.2, .48

Table 5-3. Vehicle Performance Simulation
Reference Case 5000/A/3.08, 350 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   09/28/76
****************************************

RUN TITLE = CASE 10      GMC 350, AUTO, 5000-LB CLASS, FTP HIWAY, 3.08 IN

SCHEDULE AVERAGES        FUEL ECONOMY      = 16.37 MPG
                         WORK PER MILE     =   .59 HP-HR/MI
                         AVG SP FUEL CONS  =   .64 LBS/HP-HR
                         AVG SPEED         = 48.2  MPH

TOTALS                                   PERCENT OF TOTAL
          VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL  IDLE ) (BRAKES)
          -------- ------- ------------ ------ ------ ------ ------ --------
          TIME     (SECS)   760.6        16.3   44.1   38.8    .8
          DISTANCE (MILES)   10.2        17.9   43.3   38.8   0.0
          ENERGY   (HP-HR)    5.97       17.4   61.0   21.7    .0
          FUEL     (LBS)      3.85       17.5   52.9   29.4    .2        .9

ENERGY SUPPLY                                  HP-HR
                                               -----
                   (1) ENGINE              =   5.97
                   (2) KINETIC ENERGY      =   0.00
                   (3) POTENTIAL ENERGY    =   0.00
                   (4) ROTATING INERTIA    =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                   (1) ACCESSORIES         =   7.46
                   (2) TORQUE CONVERTER    =   5.84
                   (3) GEAR BOX            =    .04
                   (4) DIFFERENTIAL        =   3.56
                   (5) TIRE SLIP           =   5.98
                                 3+4+5     =   9.58
                               2+3+4+5     =  15.42
                   (6) AERODYNAMIC DRAG    =  34.64
                   (7) ROLLING RESIST      =  37.61
                        SUBTOTAL 1- 7      =  95.12
                   (8) BRAKES              =   3.60
                   (9) ENGINE MOTORING     =   1.30
                        SUBTOTAL 1- 9      = 100.02
                  (10) OTHER ENERGY        =   0.00
                             TOTAL 1-10    = 100.02

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDC002        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V5000B        ENGINE NAME             = GM350M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  5000.        STROKE (INCHES)         =   3.48
  DISPLACEMENT (CU IN)  =  349.8        REAR AXLE RATIO         =   3.08
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-4. Vehicle Performance Simulation
Reference Case 4500/A/3.21/318 CID

```
VEHICLE PERFORMANCE SIMULATION   09/30/76
****************************************

RUN TITLE = CASE 3(A), CHY 318, AUTO, 4500LB, 3.21RAR, FTP URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 13.70 MPG
                       WORK PER MILE     =   .56 HP-HR/MI
                       AVG SP FUEL CONS  =   .81 LBS/HP-HR
                       AVG SPEED         = 19.6  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
         VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
         -------- ------- ------ ------ ------ ------ ------  ------
         TIME     (SECS) 1370.4    8.0   39.7   34.6   17.7
         DISTANCE (MILES)    7.4  12.0   46.8   41.2    0.0
         ENERGY   (HP-HR)    4.14  8.2   32.9    8.0     .9
         FUEL     (LBS)      3.36  8.3   59.2   23.3    9.2       8.9

ENERGY SUPPLY                                HP-HR
                                             -----
                  (1) ENGINE              =  4.14
                  (2) KINETIC ENERGY      =  0.00
                  (3) POTENTIAL ENERGY    =  0.00
                  (4) ROTATING INERTIA    =  0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                  (1) ACCESSORIES         =   9.62
                  (2) TORQUE CONVERTER    =  14.28
                  (3) GEAR BOX            =    .70
                  (4) DIFFERENTIAL        =   3.56
                  (5) TIRE SLIP           =   6.01
                                  3+4+5   =  10.27
                                2+3+4+5   =  24.55
                  (6) AERODYNAMIC DRAG    =  14.49
                  (7) ROLLING RESIST      =  31.83
                      SUBTOTAL 1- 7       =  80.49
                  (8) BRAKES              =  17.93
                  (9) ENGINE MOTORING     =   5.93
                      SUBTOTAL 1- 9       = 104.36
                 (10) OTHER ENERGY        =   0.00
                      TOTAL 1-10          = 104.36

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4500C        ENGINE NAME             = CY318M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  4500.        STROKE (INCHES)         =   3.31
  DISPLACEMENT (CU IN)  =  318.0        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 22.70, .48

Table 5-4. Vehicle Performance Simulation
Reference Case 4500/A/3.21/318 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   09/30/76
****************************************

RUN TITLE = CASE 3(A), CHY 318, AUTO, 4500LB, 3.21 RAR, FTP HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 17.75 MPG
                       WORK PER MILE     =   .54 HP-HR/MI
                       AVG SP FUEL CONS  =   .65 LBS/HP-HR
                       AVG SPEED         = 48.3  MPH

TOTALS                                   PERCENT OF TOTAL
        VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL  IDLE ) (BRAKES)
        -------- ------- ------------ ------ ------ ------ ------  --------
        TIME     (SECS)   760.4        16.3   44.1   38.8    .8
        DISTANCE (MILES)   10.2        17.9   43.3   38.9   0.0
        ENERGY   (HP-HR)    5.49       17.5   60.1   22.4    .0
        FUEL     (LBS)      3.55       17.4   52.6   29.8    .2        1.4

ENERGY SUPPLY                                HP-HR
                                             -----
                 (1) ENGINE            =   5.49
                 (2) KINETIC ENERGY    =   0.00
                 (3) POTENTIAL ENERGY  =   0.00
                 (4) ROTATING INERTIA  =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                 (1) ACCESSORIES       =   9.21
                 (2) TORQUE CONVERTER  =   4.33
                 (3) GEAR BOX          =    .04
                 (4) DIFFERENTIAL      =   3.55
                 (5) TIRE SLIP         =   5.98
                               3+4+5   =   9.58
                             2+3+4+5   =  13.91
                 (6) AERODYNAMIC DRAG  =  35.36
                 (7) ROLLING RESIST    =  36.83
                     SUBTOTAL 1- 7     =  95.30
                 (8) BRAKES            =   3.37
                 (9) ENGINE MOTORING   =   1.38
                     SUBTOTAL 1- 9     = 100.05
                (10) OTHER ENERGY      =   0.00
                          TOTAL 1-10   = 100.05

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDCCC2        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4500C        ENGINE NAME             = CY318M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  4500.        STROKE (INCHES)         =   3.31
  DISPLACEMENT (CU IN)  =  318.0        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-5. Vehicle Performance Simulation
Reference Case 4500/M-3/3.21/318 CID

```
VEHICLE PERFORMANCE SIMULATION   10/01/75
****************************************

RUN TITLE = CASE 3(M), CHY 318, M-3, 4500LB, 3.21RAR, FTP URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 14.49 MPG
                       WORK PER MILE     =   .52 HP-HR/MI
                       AVG SP FUEL CONS  =   .81 LBS/HP-HR
                       AVG SPEED         = 19.6  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
         VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
         -------- ------- ------ ------ ------ ------ ------   ------
         TIME     (SECS) 1363.4    8.0   39.6   34.6   17.3
         DISTANCE (MILES)   7.4   12.0   46.8   41.3    0.0
         ENERGY   (HP-HR)   3.88    8.3   80.6    8.3    2.8
         FUEL     (LBS)     3.16    3.4   57.2   24.7    9.7       7.3

ENERGY SUPPLY                                  HP-HR
                                               -----
                  (1) ENGINE              =   3.88
                  (2) KINETIC ENERGY      =   0.00
                  (3) POTENTIAL ENERGY    =   0.00
                  (4) ROTATING INERTIA    =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                  (1) ACCESSORIES         =  10.10
                  (2) TORQUE CONVERTER    =   3.97
                  (3) GEAR BOX            =    .68
                  (4) DIFFERENTIAL        =   3.81
                  (5) TIRE SLIP           =   6.44
                                  3+4+5   =  10.93
                                2+3+4+5   =  14.90
                  (6) AERODYNAMIC DRAG    =  15.42
                  (7) ROLLING RESIST      =  33.77
                      SUBTOTAL 1- 7       =  74.18
                  (8) BRAKES              =  18.27
                  (9) ENGINE MOTORING     =   6.45
                      SUBTOTAL 1- 9       =  98.91
                 (10) OTHER ENERGY        =   0.00
                      TOTAL 1-10          =  98.91

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL        AERO DRAG = 22.70, .48
  VEHICLE NAME          = V4500C        ENGINE NAME             = CY318M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  4500.        STROKE (INCHES)         =   3.31
  DISPLACEMENT (CU IN)  =  318.0        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-5. Vehicle Performance Simulation
Reference Case 4500/M-3/3.21/318 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/01/75
****************************************

RUN TITLE = CASE 3(M), CHY 318, M-3, 4500LB, 3.21RAR, FTP HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 18.55 MPG
                       WORK PER MILE     =   .51 HP-HR/MI
                       AVG SP FUEL CONS  =   .65 LBS/HP-HR
                       AVG SPEED         = 48.3  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
        VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------ ------ ------ ------ ------  ------
        TIME     (SECS)  760.4   16.3   44.1   38.8    .8
        DISTANCE (MILES)  10.2   17.9   43.3   38.9   0.0
        ENERGY   (HP-HR)   5.24  17.7   59.5   22.8    .1
        FUEL     (LBS)     3.39  17.6   51.8   30.4    .2       1.3

ENERGY SUPPLY                                  HP-HR
                                               -----
                  (1) ENGINE              =    5.24
                  (2) KINETIC ENERGY      =    0.00
                  (3) POTENTIAL ENERGY    =    0.00
                  (4) ROTATING INERTIA    =    0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                  (1) ACCESSORIES         =    9.21
                  (2) TORQUE CONVERTER    =     .11
                  (3) GEAR BOX            =     .03
                  (4) DIFFERENTIAL        =    3.73
                  (5) TIRE SLIP           =    6.27
                                  3+4+5   =   10.03
                                2+3+4+5   =   10.14
                  (6) AERODYNAMIC DRAG    =   37.07
                  (7) ROLLING RESIST      =   38.61
                      SUBTOTAL 1- 7       =   95.03
                  (8) BRAKES              =    3.37
                  (9) ENGINE MOTORING     =    1.54
                      SUBTOTAL 1- 9       =   99.94
                 (10) OTHER ENERGY        =    0.00
                          TOTAL 1-10      =   99.94

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDCC02        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4500C        ENGINE NAME             = CY318M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  4500.        STROKE (INCHES)         =   3.31
  DISPLACEMENT (CU IN)  =  318.0        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-6. Vehicle Performance Simulation
Reference Case 4000/A/3.15/258 CID

```
VEHICLE PERFORMANCE SIMULATION   10/06/76
****************************************

RUN TITLE = CASE D(A), AM258, AUTO, 4000LB, 3.15 RAR, FTP URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 15.00 MPG
                       WORK PER MILE     =   .51 HP-HR/MI
                       AVG SP FUEL CONS  =   .80 LBS/HP-HR
                       AVG SPEED         = 19.5  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
        VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------ ------ ------ ------ ------   ------
        TIME     (SECS) 1358.3    8.2   39.1   34.8   17.9
        DISTANCE (MILES)    7.3   12.3   46.1   41.6    0.0
        ENERGY   (HP-HR)    3.76   9.1   81.3    8.2    1.3
        FUEL     (LBS)      3.02   8.6   60.1   21.2   10.1       7.2

ENERGY SUPPLY                                HP-HR
                                             -----
                 (1) ENGINE            =   3.76
                 (2) KINETIC ENERGY    =   0.00
                 (3) POTENTIAL ENERGY  =   0.00
                 (4) ROTATING INERTIA  =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                 (1) ACCESSORIES       =  11.91
                 (2) TORQUE CONVERTER  =   9.28
                 (3) GEAR BOX          =   1.00
                 (4) DIFFERENTIAL      =   3.52
                 (5) TIRE SLIP         =   5.95
                               3+4+5   =  10.48
                             2+3+4+5   =  19.76
                 (6) AERODYNAMIC DRAG  =  15.50
                 (7) ROLLING RESIST    =  30.72
                     SUBTOTAL 1- 7     =  77.89
                 (8) BRAKES            =  17.70
                 (9) ENGINE MOTORING   =   6.02
                     SUBTOTAL 1- 9     = 101.61
                (10) OTHER ENERGY      =   0.00
                          TOTAL 1-10   = 101.61

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDCC01        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4000D        ENGINE NAME             = AM258M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  4000.        STROKE (INCHES)         =   3.90
  DISPLACEMENT (CU IN)  =  258.0        REAR AXLE RATIO         =   3.15
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 22.30, .48

Table 5-6. Vehicle Performance Simulation
Reference Case 4000/A/3.15/258 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/06/76
****************************************

RUN TITLE = CASE D(A)  AM258, AUTO, 4000LB, 3.15 RAR, FTP HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 19.09 MPG
                       WORK PER MILE     =   .50 HP-HR/MI
                       AVG SP FUEL CONS  =   .64 LBS/HP-HR
                       AVG SPEED         = 48.3  MPH

TOTALS                                   PERCENT OF TOTAL
          VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
          -------- ------- ------------ ------ ------ ------ ------ --------
          TIME     (SECS)   759.6       16.5   43.9   38.8     .9
          DISTANCE (MILES)   10.2       18.0   43.1   38.9    0.0
          ENERGY   (HP-HR)    5.13      17.9   59.0   23.0     .0
          FUEL     (LBS)      3.29      17.7   52.8   29.2     .2       1.1

ENERGY SUPPLY                                HP-HR
                                             -----
                   (1) ENGINE             =   5.13
                   (2) KINETIC ENERGY     =   0.00
                   (3) POTENTIAL ENERGY   =   0.00
                   (4) ROTATING INERTIA   =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                   (1) ACCESSORIES        =   9.93
                   (2) TORQUE CONVERTER   =   3.90
                   (3) GEAR BOX           =    .09
                   (4) DIFFERENTIAL       =   3.53
                   (5) TIRE SLIP          =   5.94
                                 3+4+5    =   9.57
                               2+3+4+5    =  13.47
                   (6) AERODYNAMIC DRAG   =  37.17
                   (7) ROLLING RESIST     =  35.03
                       SUBTOTAL 1- 7      =  95.60
                   (8) BRAKES             =   3.24
                   (9) ENGINE MOTORING    =   1.19
                       SUBTOTAL 1- 9      = 100.03
                  (10) OTHER ENERGY       =   0.00
                            TOTAL 1-10    = 100.03

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDC002        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4000D        ENGINE NAME             = AM258M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  4000.        STROKE (INCHES)         =   3.90
  DISPLACEMENT (CU IN)  =  258.0        REAR AXLE RATIO         =   3.15
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-7. Vehicle Performance Simulation
Reference Case 4000/M-3/3.15/258 CID

```
VEHICLE PERFORMANCE SIMULATION    10/05/76
*************************************

RUN TITLE = CASE D(M-3), AMD 258, M-3, 4000LB, 3.15RAR, FTP URBAN

SCHEDULE AVERAGES        FUEL ECONOMY      = 15.37 MPG
                         WORK PER MILE     =   .49 HP-HR/MI
                         AVG SP FUEL CONS  =   .81 LBS/HP-HR
                         AVG SPEED         = 19.6  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
         VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
         -------- ------- ------ ------ ------ ------ ------  ------
         TIME     (SECS) 1364.7    8.0   39.5   34.6   17.8
         DISTANCE (MILES)   7.4   12.0   46.6   41.4    0.0
         ENERGY   (HP-HR)   3.67    8.2   79.3    9.0    3.4
         FUEL     (LBS)     2.98    7.9   58.1   22.9   11.1       3.4

ENERGY SUPPLY                                  HP-HR
                                               -----
                  (1) ENGINE                =   3.67
                  (2) KINETIC ENERGY        =   0.00
                  (3) POTENTIAL ENERGY      =   0.00
                  (4) ROTATING INERTIA      =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                  (1) ACCESSORIES           =  11.76
                  (2) TORQUE CONVERTER      =   4.89
                  (3) GEAR BOX              =    .76
                  (4) DIFFERENTIAL          =   3.55
                  (5) TIRE SLIP             =   5.99
                                  3+4+5     =  10.30
                                2+3+4+5     =  15.19
                  (6) AERODYNAMIC DRAG      =  16.06
                  (7) ROLLING RESIST        =  31.82
                      SUBTOTAL 1- 7         =  74.63
                  (8) BRAKES                =  19.89
                  (9) ENGINE MOTORING       =   3.65
                      SUBTOTAL 1- 9         =  98.37
                 (10) OTHER ENERGY          =   0.00
                      TOTAL 1-10            =  98.37

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDCCC1        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4000D        ENGINE NAME             = AM258M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  4000.        STROKE (INCHES)         =   3.90
  DISPLACEMENT (CU IN)  =  258.0        REAR AXLE RATIO         =   3.15
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 22.30, .48

Table 5-7. Vehicle Performance Simulation
Reference Case 4000/M-3/3.15/258 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/05/76
****************************************

RUN TITLE = CASE D(M-3), AMC 258, M-3, 4000LB, 3.15RAR, FTP-HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 19.92 MPG
                       WORK PER MILE     =   .48 HP-HR/MI
                       AVG SP FUEL CONS  =   .64 LBS/HP-HR
                       AVG SPEED         = 48.3  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
        VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------ ------ ------ ------ ------  ------
        TIME     (SECS)  760.6   16.3   44.1   38.8    .8
        DISTANCE (MILES)  10.2   17.9   43.3   38.9   0.0
        ENERGY   (HP-HR)   4.91  17.8   58.7   23.4    .1
        FUEL     (LBS)     3.16  17.5   52.6   29.6    .3        .9

ENERGY SUPPLY                                  HP-HR
                                               -----
                 (1) ENGINE                =   4.91
                 (2) KINETIC ENERGY        =   0.00
                 (3) POTENTIAL ENERGY      =   0.00
                 (4) ROTATING INERTIA      =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                 (1) ACCESSORIES           =   9.85
                 (2) TORQUE CONVERTER      =    .14
                 (3) GEAR BOX              =    .03
                 (4) DIFFERENTIAL          =   3.69
                 (5) TIRE SLIP             =   6.20
                               3+4+5       =   9.92
                             2+3+4+5       =  10.06
                 (6) AERODYNAMIC DRAG      =  38.86
                 (7) ROLLING RESIST        =  36.63
                       SUBTOTAL 1- 7       =  85.41
                 (8) BRAKES                =   3.30
                 (9) ENGINE MOTORING       =   1.21
                       SUBTOTAL 1- 9       =  99.92
                (10) OTHER ENERGY          =   0.00
                           TOTAL 1-10      =  99.92

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDCCC2        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V4000         ENGINE NAME             = AM258M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  4000.        STROKE (INCHES)         =   3.90
  DISPLACEMENT (CU IN)  =   258.0       REAR AXLE RATIO         =   3.15
  WIND VELOCITY (MPH)   =     0.0       FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-8. Vehicle Performance Simulation
Reference Case 3500/A/3.21/225 CID

```
VEHICLE PERFORMANCE SIMULATION   10/06/75
****************************************

RUN TITLE = CASE E(A),   CHR 225, AUTO,   3500LB, 3.21 RAR, FTP URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 16.88 MPG
                       WORK PER MILE     =   .45 HP-HP/MI
                       AVG SP FUEL CONS  =   .81 LBS/HP-HR
                       AVG SPEED         = 19.5  MPH

TOTALS                                   PERCENT OF TOTAL
         VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
         -------- ------- ------ ------ ------ ------ ------   ------
         TIME     (SECS) 1369.0    8.2   39.2   34.8   17.8
         DISTANCE (MILES)    7.4   12.3   46.2   41.5    0.0
         ENERGY   (HP-HR)    3.36   9.3   80.4    9.2    1.1
         FUEL     (LBS)      2.72   8.9   57.7   23.8    9.7      9.0

ENERGY SUPPLY                              HP-HR
                                           -----
                  (1) ENGINE            =  3.36
                  (2) KINETIC ENERGY    =  0.00
                  (3) POTENTIAL ENERGY  =  0.00
                  (4) ROTATING INERTIA  =  0.00

BREAKDOWN                         PERCENT ENGINE HP-HR
                                  --------------------
                  (1) ACCESSORIES       =  12.15
                  (2) TORQUE CONVERTER  =  10.64
                  (3) GEAR BOX          =    .77
                  (4) DIFFERENTIAL      =   3.51
                  (5) TIRE SLIP         =   5.94
                              3+4+5     =  10.23
                            2+3+4+5     =  20.87
                  (6) AERODYNAMIC DRAG  =  16.09
                  (7) ROLLING RESIST    =  30.42
                        SUBTOTAL 1- 7   =  79.53
                  (8) BRAKES            =  17.59
                  (9) ENGINE MOTORING   =   5.10
                        SUBTOTAL 1- 9   = 102.22
                 (10) OTHER ENERGY      =   0.00
                            TOTAL 1-10  = 102.22

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V3500E        ENGINE NAME             = CY225M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  3500.        STROKE (INCHES)         =   4.12
  DISPLACEMENT (CU IN)  =  224.4        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 20.50, .48

Table 5-8. Vehicle Performance Simulation
Reference Case 3500/A/3.21/225 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/06/76
****************************************

RUN TITLE = CASE E(A),   CHR 225, AUTO,   3500LB, 3.21 RAR, FTP HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 22.15 MPG
                       WORK PER MILE     =   .46 HP-HR/MI
                       AVG SP FUEL CONS  =   .61 LBS/HP-HR
                       AVG SPEED         = 48.2  MPH

TOTALS                                   PERCENT OF TOTAL
                          TOTAL
VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
-------- ------- ------ ------ ------ ------ ------   ------
TIME     (SECS)  760.5   16.3   44.1   38.8     .8
DISTANCE (MILES)  10.2   17.9   43.3   38.9    0.0
ENERGY   (HP-HR)   4.65  17.8   58.6   23.6     .3
FUEL     (LBS)     2.84  17.7   51.8   30.3     .2       1.4

ENERGY SUPPLY                            HP-HR
                                         -----
                 (1) ENGINE             =  4.65
                 (2) KINETIC ENERGY     =  0.00
                 (3) POTENTIAL ENERGY   =  0.00
                 (4) ROTATING INERTIA   =  0.00

BREAKDOWN                        PERCENT ENGINE HP-HR
                                 --------------------
                 (1) ACCESSORIES        =  11.40
                 (2) TORQUE CONVERTER   =   3.49
                 (3) GEAR BOX           =    .05
                 (4) DIFFERENTIAL       =   3.49
                 (5) TIRE SLIP          =   5.87
                            3+4+5       =   9.41
                          2+3+4+5       =  12.90
                 (6) AERODYNAMIC DRAG   =  37.71
                 (7) ROLLING RESIST     =  33.83
                       SUBTOTAL 1- 7    =  95.85
                 (8) BRAKES             =   3.10
                 (9) ENGINE MOTORING    =   1.09
                       SUBTOTAL 1- 9    = 100.04
                (10) OTHER ENERGY       =   0.00
                           TOTAL 1-10   = 100.04

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDC002        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V3500E        ENGINE NAME             = CY225M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  3500.        STROKE (INCHES)         =   4.12
  DISPLACEMENT (CU IN)  =  224.4        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-9. Vehicle Performance Simulation
Reference Case 3500/M-3/3.21/225 CID

```
VEHICLE PERFORMANCE SIMULATION   10/07/76
****************************************

RUN TITLE = CASE E(M-3)  CHR 225, M-3,    3500LB, 3.21 RAR, FTP URBAN

SCHEDULE AVERAGES        FUEL ECONOMY      = 17.32 MPG
                         WORK PER MILE     =   .43 HP-HR/MI
                         AVG SP FUEL CONS  =   .82 LBS/HP-HR
                         AVG SPEED         = 19.6  MPH

TOTALS                                   PERCENT OF TOTAL
          VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
          -------- ------- ------ ------ ------ ------ ------ ------
          TIME     (SECS) 1364.7    9.0   39.6   34.6   17.8
          DISTANCE (MILES)   7.4   12.0   46.7   41.3    5.0
          ENERGY   (HP-HR)  3.22    9.5   79.6    9.1    2.8
          FUEL     (LBS)    2.64    8.4   57.4   24.2   10.0       6.5

ENERGY SUPPLY                                HP-HR
                                             -----
                   (1) ENGINE            =   3.22
                   (2) KINETIC ENERGY    =   0.00
                   (3) POTENTIAL ENERGY  =   0.00
                   (4) ROTATING INERTIA  =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                   (1) ACCESSORIES       =  12.90
                   (2) TORQUE CONVERTER  =   3.57
                   (3) GEAR BOX          =    .70
                   (4) DIFFERENTIAL      =   3.65
                   (5) TIRE SLIP         =   6.17
                                 3+4+5   =  10.52
                               2+3+4+5   =  14.10
                   (6) AERODYNAMIC DRAG  =  16.81
                   (7) ROLLING RESIST    =  31.70
                       SUBTOTAL 1- 7     =  75.50
                   (8) BRAKES            =  18.25
                   (9) ENGINE MOTORING   =   4.85
                       SUBTOTAL 1- 9     =  98.60
                  (10) OTHER ENERGY      =   0.00
                            TOTAL 1-10   =  98.60

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V3500E        ENGINE NAME             = CY225M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  3500.        STROKE (INCHES)         =   4.12
  DISPLACEMENT (CU IN)  =  224.4        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 20.50, .48

Table 5-9. Vehicle Performance Simulation
Reference Case 3500/M-3/3.21/225 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/07/76
****************************************

RUN TITLE = CASE 6(M-3)  CHR 225, M-3,    3500L3, 3.21 RAR, FTP HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 23.02 MPG
                       WORK PER MILE     =   .44 HP-HR/MI
                       AVG SP FUEL CONS  =   .61 LBS/HP-HR
                       AVG SPEED         = 48.3  MPH

TOTALS                                   PERCENT OF TOTAL
        VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------------ ------ ------ ------ ------   ------
        TIME     (SECS)   760.4       15.3   44.1   38.8    .9
        DISTANCE (MILES)   10.2       17.9   43.3   38.9   0.0
        ENERGY   (HP-HR)    4.47      17.9   58.2   23.9    .1
        FUEL     (LBS)      2.74      17.7   51.5   30.6    .2        1.2

ENERGY SUPPLY                                HP-HR
                                             -----
                 (1) ENGINE              =   4.47
                 (2) KINETIC ENERGY      =   0.00
                 (3) POTENTIAL ENERGY    =   0.00
                 (4) ROTATING INERTIA    =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                 (1) ACCESSORIES         =  11.39
                 (2) TORQUE CONVERTER    =    .10
                 (3) GEAR BOX            =    .03
                 (4) DIFFERENTIAL        =   3.63
                 (5) TIRE SLIP           =   6.11
                            3+4+5        =   9.77
                          2+3+4+5        =   9.87
                 (6) AERODYNAMIC DRAG    =  39.25
                 (7) ROLLING RESIST      =  35.21
                       SUBTOTAL 1- 7     =  95.71
                 (8) BRAKES              =   3.06
                 (9) ENGINE MOTORING     =   1.16
                       SUBTOTAL 1- 9     =  99.94
                (10) OTHER ENERGY        =   0.00
                           TOTAL 1-10    =  99.94

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDCC02        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V3500E        ENGINE NAME             = CY225M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  3500.        STROKE (INCHES)         =   4.12
  DISPLACEMENT (CU IN)  =  224.4        REAR AXLE RATIO         =   3.21
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-10. Vehicle Performance Simulation
Reference Case 3000/M-3/2.92/140 CID

```
VEHICLE PERFORMANCE SIMULATION   10/09/76
****************************************

RUN TITLE = CASE F(M3),     GM140, M-3, 3000LB, 2.92RAR, FTP URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 22.40 MPG
                       WORK PER MILE     =   .39 HP-HR/MI
                       AVG SP FUEL CONS  =   .70 LBS/HP-HR
                       AVG SPEED         = 19.6  MPH

TOTALS                                   PERCENT OF TOTAL
          VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
          -------- ------- ------ ------ ------ ------ ------ ------
          TIME     (SECS) 1367.5    8.0   39.5   34.7   17.8
          DISTANCE (MILES)   7.4   12.0   46.6   41.4    0.0
          ENERGY   (HP-HR)   2.91    8.6   79.1    9.5    2.8
          FUEL     (LBS)     2.05    9.8   66.1   16.2    7.9      1.3

ENERGY SUPPLY                                HP-HR
                                             -----
                   (1) ENGINE              =  2.91
                   (2) KINETIC ENERGY      =  0.00
                   (3) POTENTIAL ENERGY    =  0.00
                   (4) ROTATING INERTIA    =  0.00

BREAKDOWN                        PERCENT ENGINE HP-HR
                                 --------------------
                   (1) ACCESSORIES       =  15.62
                   (2) TORQUE CONVERTER  =   3.36
                   (3) GEAR BOX          =    .80
                   (4) DIFFERENTIAL      =   3.40
                   (5) TIRE SLIP         =   5.74
                              3+4+5      =   9.94
                            2+3+4+5      =  13.30
                   (6) AERODYNAMIC DRAG  =  16.76
                   (7) ROLLING RESIST    =  30.16
                       SUBTOTAL 1- 7     =  75.84
                   (8) BRAKES            =  20.92
                   (9) ENGINE MOTORING   =    .95
                       SUBTOTAL 1- 9     =  97.72
                  (10) OTHER ENERGY      =   0.00
                       TOTAL 1-10        =  97.72

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V3000F        ENGINE NAME             = GM140M
  CONVERTER NAME        = C00Y2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  3000.        STROKE (INCHES)         =   3.63
  DISPLACEMENT (CU IN)  =  139.6        REAR AXLE RATIO         =   2.92
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 18.4, .48

Table 5-10. Vehicle Performance Simulation
Reference Case 3000/M-3/2.92/140 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/09/76
****************************************

RUN TITLE = CASE F(M3),      GM140, M-3, 3000LB, 2.92RAR, FTP HIGHWAY

SCHEDULE AVERAGES      FUEL ECONOMY      = 26.77 MPG
                       WORK PER MILE     =   .39 HP-HR/MI
                       AVG SP FUEL CONS  =   .59 LBS/HP-HR
                       AVG SPEED         = 48.2  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
        VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------ ------ ------ ------ ------   ------
        TIME     (SECS)  763.1   16.3   44.3   38.6    .8
        DISTANCE (MILES)  14.2   17.8   43.4   38.7   0.0
        ENERGY   (HP-HR)   4.00  17.9   58.0   24.1    .1
        FUEL     (LBS)     2.36  17.8   52.2   29.9    .2        .5

ENERGY SUPPLY                                HP-HR
                                             -----
                   (1) ENGINE             =  4.00
                   (2) KINETIC ENERGY     =  0.00
                   (3) POTENTIAL ENERGY   =  0.00
                   (4) ROTATING INERTIA   =  0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                   (1) ACCESSORIES        =  13.02
                   (2) TORQUE CONVERTER   =    .09
                   (3) GEAR BOX           =    .03
                   (4) DIFFERENTIAL       =   3.56
                   (5) TIRE SLIP          =   5.98
                                 3+4+5    =   9.57
                               2+3+4+5    =   9.66
                   (6) AERODYNAMIC DRAG   =  39.42
                   (7) ROLLING RESIST     =  33.80
                       SUBTOTAL 1- 7      =  95.90
                   (8) BRAKES             =   3.19
                   (9) ENGINE MOTORING    =    .81
                       SUBTOTAL 1- 9      =  99.91
                  (10) OTHER ENERGY       =   0.00
                            TOTAL 1-10    =  99.91

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDC002        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V3000F        ENGINE NAME             = GM140M
  CONVERTER NAME        = C00Y2         SHIFT LOGIC NAME        = M3-2
  WEIGHT (LBS)          =  3000.        STROKE (INCHES)         =   3.63
  DISPLACEMENT (CU IN)  =  139.6        REAR AXLE RATIO         =   2.92
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
```

Table 5-11. Vehicle Performance Simulation
Reference Case 2500/M-4/3.70/140 CID

```
VEHICLE PERFORMANCE SIMULATION   10/10/76
****************************************

RUN TITLE = CASE G(M-4), SCALED GM140, M-4, 2500LB, 3.70RAR, FTP URBAN

SCHEDULE AVERAGES      FUEL ECONOMY      = 21.15 MPG
                       WORK PER MILE     =   .41 HP-HR/MI
                       AVG SP FUEL CONS  =   .71 LBS/HP-HR
                       AVG SPEED         = 19.5  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
        VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------ ------ ------ ------ ------ ------
        TIME     (SECS) 1349.4    8.2   38.7   35.0   18.0
        DISTANCE (MILES)    7.3   12.3   45.8   41.9    0.0
        ENERGY   (HP-HR)    3.00   9.2   77.2   11.5    2.0
        FUEL     (LBS)      2.14  10.1   63.1   21.4    5.4      2.4

ENERGY SUPPLY                                HP-HR
                                             -----
                  (1) ENGINE            =   3.00
                  (2) KINETIC ENERGY    =   0.00
                  (3) POTENTIAL ENERGY  =   0.00
                  (4) ROTATING INERTIA  =   0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                  (1) ACCESSORIES       =  28.34
                  (2) TORQUE CONVERTER  =   1.42
                  (3) GEAR BOX          =   1.61
                  (4) DIFFERENTIAL      =   3.15
                  (5) TIRE SLIP         =   5.33
                              2+4+5     =  10.08
                            2+3+4+5     =  11.51
                  (6) AERODYNAMIC DRAG  =  15.77
                  (7) ROLLING RESIST    =  24.06
                      SUBTOTAL 1- 7     =  79.67
                  (8) BRAKES            =  14.78
                  (9) ENGINE MOTORING   =   2.84
                      SUBTOTAL 1- 9     =  97.29
                 (10) OTHER ENERGY      =   0.00
                          TOTAL 1-10    =  97.29

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDCC01        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V2500G        ENGINE NAME             = GM140M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M4-2
  WEIGHT (LBS)          =  2500.        STROKE (INCHES)         =   2.98
  DISPLACEMENT (CU IN)  =    97.6       REAR AXLE RATIO         =   3.70
  WIND VELOCITY (MPH)   =     0.0       FUEL DENSITY (LB/GAL)   =   6.18
```

AERO DRAG = 18.00, .48

Table 5-11. Vehicle Performance Simulation
Reference Case 2500/M-4/3.70/140 CID (Continued)

```
VEHICLE PERFORMANCE SIMULATION   10/10/76
****************************************

RUN TITLE = CASE G(M-4), SCALED GM14.., M-4, 250)LB, 3.7)RAR, FTP HIGHWAY

SCHEDULE AVERAGES        FUEL ECONOMY      = 27.71 MPG
                         WORK PER MILE     =   .39 HP-HR/MI
                         AVG SP FUEL CONS  =   .57 LBS/HP-HR
                         AVG SPEED         = 48.3  MPH

TOTALS                                   PERCENT OF TOTAL
        VARIABLE (UNITS) TOTAL AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
        -------- ------- ------------ ------ ------ ------ ------ --------
        TIME     (SECS)   759.5        16.4   44.1   38.7    .8
        DISTANCE (MILES)   10.2        17.9   43.3   38.8   0.0
        ENERGY   (HP-HR)    4.00       18.1   56.3   25.5    .0
        FUEL     (LBS)      2.27       17.8   51.8   30.2    .1        .5

ENERGY SUPPLY                                HP-HR
                         (1) ENGINE          =  4.00
                         (2) KINETIC ENERGY  =  0.00
                         (3) POTENTIAL ENERGY =  0.00
                         (4) ROTATING INERTIA =  0.00

BREAKDOWN                              PERCENT ENGINE HP-HR
                         (1) ACCESSORIES     =  20.08
                         (2) TORQUE CONVERTER =   .04
                         (3) GEAR BOX        =   1.64
                         (4) DIFFERENTIAL    =   3.22
                         (5) TIRE SLIP       =   5.42
                                   3+4+5     =  10.28
                                 2+3+4+5     =  10.32
                         (6) AERODYNAMIC DRAG =  38.45
                         (7) ROLLING RESIST  =  28.04
                             SUBTOTAL 1- 7   =  96.89
                         (8) BRAKES          =   2.43
                         (9) ENGINE MOTORING =    .60
                             SUBTOTAL 1- 9   =  99.92
                        (10) OTHER ENERGY    =   0.00
                             TOTAL 1-10      =  99.92

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = HDCC22        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V2500G        ENGINE NAME             = GM140M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = M4-2
  WEIGHT (LBS)          =  2500.        STROKE (INCHES)         =   2.98
  DISPLACEMENT (CU IN)  =   97.6        REAR AXLE RATIO         =   3.70
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
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Table 5-12. Reference Vehicle
VSIMI Results for Weighted Calibration Factors

Displ.	Inertia Weight	Trans.	Axle Ratio	Weighted Advance		Weighted Air-Fuel Ratio	
				Urban	Hwy.	Urban	Hwy.
400	5000	A	3.08	24.99	33.00	15.69	15.90
350	5000	A	3.08	23.54	31.48	15.56	15.86
350	4500	A	3.08	23.63	31.72	15.59	15.90
350	5000	A	2.73	22.44	28.98	15.48	15.91
318	4500	A	3.21	34.61	42.40	18.55	16.99
318	4500	M-3	3.21	33.88	41.84	19.02	17.03
258	4000	A	3.15	16.34	24.90	16.74	16.19
258	4000	M-3	3.15	15.02	23.75	16.27	16.23
225	3500	A	3.21	19.37	30.96	16.33	16.06
225	3000	A	3.21	19.75	31.88	16.33	16.08
225	3500	A	2.76	16.78	27.63	16.26	15.93
225	3500	M-3	3.21	18.99	30.65	16.41	16.11
225	3000	M-3	3.21	19.48	31.56	16.48	16.13
225	3500	M-3	2.76	15.36	27.01	16.30	16.00
140	3000	M-3	2.92	13.40	18.33	18.67	15.72
140	2500	M-3	2.92	13.47	18.88	19.13	15.72
140	3000	M-3	3.21	14.46	21.07	18.64	15.56
97.6	2500	M-4	3.70	17.37	19.90	18.00	15.62

Table 5-13. Weight Sensitivity Factor (WTSF)

CID	IW	TRAN	AR	N/V	(WTSF) ADV		(WTSF) A/F	
					URBAN	HWY	URBAN	HWY
350	5000 4500	A A	3.08 3.08	34.8 34.8	-0.038	-0.076	-0.019	-0.025
225	3500 3000	A A	3.21 3.21	44.0 44.0	-0.137	-0.208	0.0	-0.009
225	3500 3000	M3 M3	3.21 3.21	44.0 44.0	-0.181	-0.208	-0.030	-0.009
140	3000 2500	M3 M3	2.92 2.92	43.0 43.0	-0.031	-0.180	-0.148	0.0
				MEAN:	-0.097	-0.168	-0.049	-0.011

Table 5-14. Speed Ratio Sensitivity Factor (SRSF)

CID	IW	TRAN	AR	N/V	(SRSF) ADV		(SRSF) A/F	
					URBAN	HWY	URBAN	HWY
350	5000	A	3.08 2.73	38.8 34.4	0.412	0.700	0.045	-0.028
225	3500	A	3.21 2.76	44.0 37.6	0.919	0.739	0.029	0.056
225	3500	M3	3.21 2.76	44.0 37.6	1.314	0.816	0.046	0.047
140	3000	M3	2.92 3.21	43.0 47.6	0.739	1.397	-0.015	-0.095
				MEAN:	0.846	0.913	0.026	-0.005

Table 5-15. Displacement Sensitivity Factor (DSF)

CID	IW	TRAN	AR	N/V	(DSF) ADV		(DSF) A/F	
					URBAN	HWY	URBAN	HWY
400 350	5000 5000	A A	3.08 3.08	38.8 38.8	0.464	0.368	0.066	0.020
225 140	3000 3000	M3 M3	3.21 3.21	44.0 44.0	0.682	0.880	-0.347	0.094
				MEAN:	0.573	0.624	-0.141	0.057

Table 5-16. Transmission Sensitivity Factor (TSF)

CID	IW	TRAN	AR	N/V	(TSF) ADV		(TSF A/F	
					URBAN	HWY	URBAN	HWY
318	4500	A M3	3.21 3.21	40.9 40.9	-0.021	-0.013	0.054	0.002
258	4000	A M3	3.15 3.15	39.0 39.0	-0.081	-0.046	-0.028	0.002
225	3500	A M3	3.21 3.21	44.0 44.0	-0.020	-0.010	0.005	0.003
225	3500	A M3	2.76 2.76	44.0 44.0	-0.085	-0.022	0.002	0.004
225	3000	A M3	3.21 3.21	44.0 44.0	-0.014	-0.010	0.009	0.003
				MEAN:	-0.044	-0.020	0.008	0.003

Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID

PROGRAM VSIMII * 400CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.13.53 PAGE 1

									FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE												
DISTRIBUTOR 3228266 AND CARBURETOR SF3227439									25.81	14.86	23.81	15.70
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AMC MATADOR	D58-33D(T)	C	401	4V	A	4500	3.54	44.4 464	29.29	14.98	33.21	15.71
REFERENCE VALUE												
DISTRIBUTOR 3228265 AND CARBURETOR SF3227439									19.07	14.86	23.18	15.70
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AMC MATADOR WGN	D58-40R(T)	F	401	4V	A	4500	3.54	44.4 26	21.63	14.98	26.72	15.71
REFERENCE VALUE												
DISTRIBUTOR 3874101-400 AND CARBURETOR 4006621-400									23.93	16.14	33.05	16.31
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL PLYMOUTH	2226	F	400	2V	A	4500	3.23	42.1 27	25.90	16.25	36.22	16.32
CHRYSL CHRYSLER	2228	F	400	2V	A	5000	2.71	33.3 30	21.05	16.08	28.78	16.32
CHRYSL PLY. WGN	2234	F	400	2V	A	5500	2.71	32.5 32	23.44	15.99	27.68	16.31
CHRYSL GRAN FURY	4079	F	400	2V	A	5500	3.21	39.6 33	24.12	16.07	33.11	16.29
CHRYSL GRAN FURY	4089	F	400	2V	A	5000	2.45	29.2 29	18.92	16.03	25.59	16.33
REFERENCE VALUE												
DISTRIBUTOR 3874110-400 AND CARBURETOR 3830569-400									24.91	15.49	33.80	16.19
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL PLYMOUTH	2101	F	400	4V	A	5000	3.21	40.2 75	25.67	15.51	34.91	16.18
CHRYSL PLYMOUTH	2225	F	400	4V	A	4500	3.21	41.8 70	26.80	15.60	36.79	16.20
CHRYSL CORONET	4065	F	400	4V	A	4500	2.45	30.0 69	20.33	15.48	27.25	16.22
REFERENCE VALUE												
DISTRIBUTOR 3874786-400 AND CARBURETOR 4006640-400									.54	16.60	1.65	17.71
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL CHRYS. CL41	4080	F	400	4V	A	5000	2.71	33.6 74	.48	16.54	1.45	17.72
CHRYSL NEW YORKER	4081	F	400	4V	A	5000	3.21	40.9 76	.57	16.62	1.74	17.70
CHRYSL CHRYS. CP46	4082	F	400	4V	A	5500	2.71	32.7 77	.47	16.45	1.39	17.70
CHRYSL NEWPORT	4083	F	400	4V	A	5000	2.45	29.2 73	.43	16.49	1.28	17.73
CHRYSL CHRYS WGN	4106	F	400	4V	A	5500	3.21	38.8 78	.54	16.52	1.63	17.69
REFERENCE VALUE												
DISTRIBUTOR 3874110-400 AND CARBURETOR 4006642-400									25.04	15.64	33.87	16.21
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL PLYMOUTH	4157	C	400	4V	A	5500	2.71	32.3 475	21.29	15.50	28.21	16.21
CHRYSL CHARGER	4166	C	400	4V	A	4500	3.21	41.8 470	25.94	15.75	36.87	16.22
CHRYSL DODGE	4168	C	400	4V	A	5500	3.21	39.6 475	25.23	15.57	33.93	16.19
CHRYSL DODGE	4179	C	400	4V	A	5000	2.71	33.6 471	22.23	15.59	29.73	16.22

Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

PROGRAM VSIMII 400CID, AUTOMATIC, 5000LB, 38.8N/V — RUN ON 10/30/76 AT 11.13.53 PAGE 2

									FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE												
DISTRIBUTOR 3874596-440 AND CARBURETOR 4006631-440									25.10	15.81	33.92	16.07
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL CHRYSLER	4063	F	440	4V	A	5500	2.71	33.4 34	23.13	15.43	33.93	16.15
CHRYSL CHRYSLER	4064	F	440	4V	A	5500	3.21	39.6 35	26.74	15.51	36.10	16.14
CHRYSL CHRYSLER	4066	F	440	4V	A	5501	3.21	35.1 36	24.16	15.47	32.35	16.15
CHRYSL CHRYSLER	4074	F	440	4V	A	5000	3.21	40.9 31	27.75	15.60	37.82	16.16
REFERENCE VALUE												
DISTRIBUTOR 3874173-440 AND CARBURETOR 4006648-440									23.62	15.74	29.31	16.14
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL PLY. FURY	4103	F	440	4V	A	4500	3.21	39.9 28	25.82	15.61	33.03	16.25
REFERENCE VALUE												
DISTRIBUTOR 3874596-440 AND CARBURETOR 4006632-440									25.20	16.08	33.92	16.39
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL CHRYSLER	4169	C	440	4V	A	5500	2.71	33.4 477	23.18	15.72	30.93	16.47
CHRYSL CHRYSLER	4170	C	440	4V	A	5500	3.21	39.9 479	26.91	15.79	36.35	16.46
CHRYSL DODGE	4172	C	440	4V	A	5000	3.21	40.9 472	27.75	15.38	37.82	16.48
CHRYSL PLYMOUTH	4225	C	440	4V	A	5500	2.71	32.3 478	22.53	15.71	30.32	16.48
REFERENCE VALUE												
DISTRIBUTOR 3874173-440 AND CARBURETOR 4006649-440									23.59	15.93	29.79	16.15
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL DODGE MONACO	4188	C	440	4V	A	5000	3.21	39.9 474	25.54	15.72	32.47	16.24
REFERENCE VALUE												
DISTRIBUTOR D5TE12127ZA AND CARBURETOR D5TE-9510BDB									19.66	13.81	26.56	14.91
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
FORD F-100	6F1-390-4-3C	C	390	2V	A	4500	3.25	41.0 913	20.50	13.95	27.96	14.90
REFERENCE VALUE												
DISTRIBUTOR D5TE12127RA AND CARBURETOR D5TE-9510BEB									22.08	14.72	29.23	15.26
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
FORD F-100	6F1-390-4-1F	F	390	2V	A	5000	3.00	35.0 823	19.96	14.73	26.20	15.24
FORD F-100	6F1-390-4-2F	F	390	2V	A	4500	3.00	35.0 818	20.15	14.81	26.64	15.26
REFERENCE VALUE												
DISTRIBUTOR D6AE12127AA AND CARBURETOR D6ME-9510-3A									33.70	16.39	39.90	16.68
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
FORD FORD SW	6A1-400-4-28R	F	400	2V	A	5500	2.75	33.0 133	29.15	16.25	33.87	16.07

Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

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*****************************************************************************************************************
* PROGRAM VSIMII *   400CID, AUTOMATIC, 5000LB, 38.8N/V                  *  RUN ON  10/30/76  AT  11.13.53   PAGE  3 *
*****************************************************************************************************************
*                                                                         *      FTP-URBAN        *     FTP-HIGHWAY      *
*                                                                         *************************************************
*                                                                         *     FUEL WEIGHTED     *    FUEL WEIGHTED     *
*                                                                         *************************************************
*                                                                         *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL  *
*                                                                         * (DEGREE) *   RATIO  * (DEGREE) *   RATIO   *
*************************************************************************************************************************
*                                                                         *                    *                    *
* REFERENCE VALUE                                                         *                    *                    *
* DISTRIBUTOR  D6AE12127AA  AND CARBURETOR  D6AE-9510-HB                  *  33.70     15.52    *  39.90     15.78    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES               *                    *                    *
* FORD   FORD          6A1-400-4-17R  F 400 2V A  5000 2.75 34.0 129      *  30.17     15.47    *  35.39     15.79    *
* FORD                 601-400-4-21R  F 400 2V A  4500 2.75 35.0 126      *  31.21     15.55    *  36.94     15.80    *
*                                                                         *                    *                    *
* REFERENCE VALUE                                                         *                    *                    *
* DISTRIBUTOR  D5AE12127KA  AND CARBURETOR  D5WE-9510-EA                  *  30.20     15.16    *  35.87     15.58    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES               *                    *                    *
* FORD                 5A1-400-4-140R                                     *                    *                    *
* FORD                 5A1-400-4-147R                                     *                    *                    *
* FORD                 501-400-4-159R                                     *                    *                    *
*                                                                         *                    *                    *
* REFERENCE VALUE                                                         *                    *                    *
* DISTRIBUTOR  D6AE12127AA  AND CARBURETOR  D6ME-9510-AA                  *  33.56     14.70    *  39.89     15.11    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES               *                    *                    *
* FORD   FORD          6A1-400-4-1R   C 400 2V A  5000 2.75 33.6 527      *  29.75     14.65    *  35.01     15.12    *
* FORD   FORD SW       6A1-400-4-2R   C 400 2V A  5500 2.75 32.8 532      *  28.88     14.57    *  33.69     15.11    *
* FORD   RANCHERO      601-400-4-3R   C 400 2V A  4500 2.75 34.9 523      *  31.00     14.73    *  35.84     15.14    *
*                                                                         *                    *                    *
* REFERENCE VALUE                                                         *                    *                    *
* DISTRIBUTOR  D6VE12127AA  AND CARBURETOR  D6AE-9510-BA                  *  30.49     14.87    *  38.25     15.36    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES               *                    *                    *
* FORD   FORD          6A1-460-4-2D   C 460 4V A  5000 2.75 34.1 529      *  29.72     14.51    *  37.20     15.50    *
* FORD   TORINO        601-460-4-13D  C 460 4V A  5000 3.00 38.1 531      *  32.61     14.55    *  41.14     15.49    *
* FORD   MARK IV       6L1-460-4-9D   C 460 4V A  5500 2.75 33.2 534      *  28.79     14.43    *  35.71     15.49    *
* FORD   THUNDERBIRD   6S1-460-4-24D  C 460 4V A  5500 3.00 37.1 536      *  31.58     14.47    *  39.48     15.48    *
*                                                                         *                    *                    *
* REFERENCE VALUE                                                         *                    *                    *
* DISTRIBUTOR  D6VE12127BA  AND CARBURETOR  D6AE-9510-EA                  *  34.59     15.93    *  44.58     16.82    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES               *                    *                    *
* FORD   FORD          6A1-460-4-7G   F 460 4V A  5000 2.75 32.8 131      *  32.65     15.53    *  41.87     16.98    *
* FORD   RANCHERO      601-460-4-10G  F 460 4V A  5000 3.00 38.1 132      *  35.99     15.58    *  47.95     16.96    *
* FORD   MARK IV       6L1-460-4-12G  F 460 4V A  5500 3.00 36.2 137      *  35.09     15.49    *  45.06     16.95    *
* FORD   THUNDERBIRD   6S1-460-4-22G  F 460 4V A  5500 2.75 34.0 135      *  33.31     15.46    *  42.52     16.95    *
*                                                                         *                    *                    *
* REFERENCE VALUE                                                         *                    *                    *
* DISTRIBUTOR  D5VE-12127CA AND CARBURETOR  D5AE-9510-RA                  *  26.45     15.29    *  33.25     16.21    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES               *                    *                    *
* FORD                 5A1-460-4-111F                                     *                    *                    *
* FORD                 501-460-4-117F                                     *                    *                    *
* FORD                 501-460-4-119F                                     *                    *                    *
* FORD                 551-460-4-116F                                     *                    *                    *
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Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

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*****************************************************************************************************************
* PROGRAM VSIMII *   400CID, AUTOMATIC, 500CLB, 38.8N/V          *  RUN ON  10/30/76  AT  11.13.53   PAGE  4 *
*****************************************************************************************************************
*                                *                                *      FTP-URBAN       *     FTP-HIGHWAY      *
*                                *                                *******************************************
*                                *                                *    FUEL WEIGHTED     *    FUEL WEIGHTED     *
*                                *                                *******************************************
*                                *                                *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                * (DEGREE) *  RATIO   * (DEGREE) *  RATIO   *
*****************************************************************************************************************
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  D4VE-12127CA AND CARBURETOR  D6VE-9510-CA          *  19.57     15.27   *  27.18     16.21   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* FORD                 5A1-460-4-52F                              *                    *                    *
* FORD                 5M1-460-4-50F                              *                    *                    *
* FORD                 5D1-460-4-88F                              *                    *                    *
* FORD                 5D1-460-4-91F                              *                    *                    *
* FORD                 5S1-460-4-66F                              *                    *                    *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  1103203C9444 AND CARBURETOR  17056228N595          *  18.20     15.84   *  24.77     16.35   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC    CAPRICE       131E          F 400 4V A  5000 2.73 33.9 235 *  16.26     15.79   *  21.92     16.36   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  1112888908546 AND CARBURETOR  17056207N887         *  22.39     16.27   *  31.30     16.94   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC    CORVETTE      135E          F 350 4V A  4500 3.36 42.7 217 *  21.98     16.90   *  31.92     16.90   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  1103203-9454 AND CARBURETOR  17056228N148          *  17.59     15.82   *  23.87     16.38   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC    IMPALA        134F          F 400 4V A  5000 2.56 31.3 234 *  14.71     15.74   *  19.65     16.40   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  1112882C9446 AND CARBURETOR  17056528N599          *  17.03     15.83   *  23.27     16.41   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC    IMPALA        596C          C 400 4V A  5000 2.56 31.3 588 *  14.24     15.75   *  19.16     16.42   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  1112882C9445 AND CARBURETOR  17056528N602          *  16.53     15.79   *  23.17     16.36   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC    CAPRICE WGN   594C          C 400 4V A  5500 2.73 32.5 549 *  14.12     15.64   *  19.40     16.36   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  11^3203C9455 AND CARBURETOR  17056228N654          *  17.30     15.98   *  23.68     16.55   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC    CAPRICE SW    133F          F 400 4V A  5500 3.08 36.9 237 *  16.43     15.88   *  22.24     16.54   *
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Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

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*****************************************************************************************************************
* PROGRAM VSIMEI *   400CID, AUTOMATIC, 5000LB, 3.8N/V          *  RUN ON  10/30/76  AT  11.13.53   PAGE  5 *
*****************************************************************************************************************
*                                *                                *      FTP-URBAN       *     FTP-HIGHWAY      *
*                                *                                *******************************************
*                                *                                *    FUEL WEIGHTED     *    FUEL WEIGHTED     *
*                                *                                *******************************************
*                                *                                *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1112828-9446 AND CARBURETOR  17056528N600          *  16.77     15.80    *  23.55     16.38    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     MALIBU        595C          C 400 4V A  4500 3.08 39.6 586 *  17.22     15.89    *  24.39     16.40    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1112500-9507 AND CARBURETOR  17056160-4            *  25.32     16.26    *  31.93     16.70    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     LE MANS       214F          F 400 2V A  4500 2.41 29.9 270 *  20.61     16.24    *  25.66     16.74    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1112958-9345 AND CARBURETOR  17056264-39           *  25.62     15.99    *  30.30     16.70    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     LE MANS WGN   226E          F 400 4V A  5000 2.56 31.8 276 *  21.71     15.92    *  25.31     16.71    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1112928-9343 AND CARBURETOR  17056264-32           *  25.24     16.07    *  30.76     16.67    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     GRAND PRIX    221E          F 400 4V A  4500 2.41 30.6 271 *  20.93     16.06    *  25.24     16.71    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1112495-9349 AND CARBURETOR  17056263-3            *  27.13     16.24    *  35.06     17.24    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     FORMULA       223F          F 400 4V M4 4000 3.08 40.0 263 *  27.14     16.54    *  36.52     17.33    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1103205C068  AND CARBURETOR  17056564-2            *  20.84     15.84    *  25.98     16.55    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     GRAND LEMANS  283C          C 400 4V A  5000 2.56 31.8 610 *  17.66     15.77    *  21.70     16.56    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1103205C066  AND CARBURETOR  17056564-13           *  20.39     15.80    *  25.26     16.47    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     GRAND PRIX    261C          C 400 4V A  4500 2.41 30.6 608 *  16.91     15.79    *  20.72     16.50    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1103205      AND CARBURETOR  17056564-11           *  20.83     15.86    *  26.16     16.59    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     FORMULA       285C          C 400 4V A  4000 2.41 31.5 505 *  17.83     15.93    *  22.39     16.64    *
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Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

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PROGRAM VSIMII *   400CID, AUTOMATIC, 5000LB, 38.8N/V        *  RUN ON  10/30/76  AT  11.13.53   PAGE  6
                                                              *      FTP-URBAN       *     FTP-HIGHWAY
                                                              *   FUEL WEIGHTED      *   FUEL WEIGHTED
                                                              * ADVANCE * AIR/FUEL   * ADVANCE * AIR/FUEL
                                                              * (DEGREE) *   RATIO    * (DEGREE) *   RATIO

 REFERENCE VALUE
 DISTRIBUTOR  1112500C033  AND CARBURETOR  17056160-23                  *  25.35    16.20  *  32.74    16.66
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    GRANDVILLE    211E1          F 400 2V A  5000 2.41 29.9 274    *  20.43    16.11  *  25.88    16.68

 REFERENCE VALUE
 DISTRIBUTOR  1112896C8805 AND CARBURETOR  17056200N912                 *    .82    13.99  *   3.07    14.51
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    IMPALA SON    541E           F 454 4V A  5000 2.73 33.9 236    *    .79    13.67  *   2.94    14.63

 REFERENCE VALUE
 DISTRIBUTOR  1112886-8794 AND CARBURETOR  17056200N925                 *  17.84    13.85  *  20.43    14.40
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    CAPRICE       544E           F 454 4V A  5500 2.73 32.5 238    *  16.42    13.47  *  18.55    14.50

 REFERENCE VALUE
 DISTRIBUTOR  1112963-43   AND CARBURETOR  17056540-5                   *  20.95    16.54  *  25.41    17.23
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    RIVIERA       471C           C 455 4V A  5000 2.93 35.9 545    *  21.17    16.19  *  25.71    17.38

 REFERENCE VALUE
 DISTRIBUTOR  11129850-4   AND CARBURETOR  17056240-13                  *  25.41    16.61  *  30.23    17.40
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    ELECTRA       461E           F 455 4V A  5500 2.56 31.3 155    *  22.71    16.13  *  26.57    17.53

 REFERENCE VALUE
 DISTRIBUTOR  11129850-2   AND CARBURETOR  17056240-12                  *  26.05    16.49  *  30.77    17.26
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    LESABRE       463E           F 455 4V A  5500 2.55 31.3 155    *  23.50    16.09  *  27.52    17.41

 REFERENCE VALUE
 DISTRIBUTOR  11129850-5   AND CARBURETOR  17056240-24                  *  25.31    16.58  *  30.51    17.54
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    ESTATE WGN    464E           F 455 4V A  5500 2.93 35.1 157    *  24.86    16.14  *  29.74    17.67

 REFERENCE VALUE
 DISTRIBUTOR  1112963-41   AND CARBURETOR  17056540-8                   *  20.52    16.61  *  24.83    17.19
 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
 GMC    ESTATE WGN    474C           C 455 4V A  5500 2.93 35.1 547    *  20.15    16.17  *  24.20    17.32
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Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

PROGRAM VSIMII * 400CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.13.53 PAGE 7

	FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR 1112963-42 AND CARBURETOR 17056540-7 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	21.55	16.34	25.59	17.33
GMC LESABRE 473C C 455 4V A 5000 2.73 33.4 544	20.52	16.16	24.25	17.47
REFERENCE VALUE DISTRIBUTOR 1112937 AND CARBURETOR 17056256-3 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	18.59	16.80	22.76	17.18
GMC CUTLASS WGN 334E F 455 4V A 5000 2.56 31.8 255	16.99	16.40	20.64	17.33
REFERENCE VALUE DISTRIBUTOR 1112937-1 AND CARBURETOR 17056256-2 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	18.49	16.90	22.78	17.31
GMC CUTLASS SPRME 333E F 455 4V A 4500 3.08 39.2 252	20.31	16.66	25.39	17.46
REFERENCE VALUE DISTRIBUTOR 1112930-9528 AND CARBURETOR 17056262-29 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	23.43	16.03	29.35	16.74
GMC LEMANS CPE 224E F 455 4V A 4500 2.41 29.9 272	20.59	15.71	25.62	16.91
REFERENCE VALUE DISTRIBUTOR 1112930-9526 AND CARBURETOR 17056262-25 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	23.76	16.01	29.93	16.74
GMC BONNEVILLE 222E F 455 4V A 5000 2.41 29.9 278	20.65	15.60	25.69	16.89
REFERENCE VALUE DISTRIBUTOR 1112930-9529 AND CARBURETOR 17056262-23 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	23.55	16.06	29.42	16.88
GMC GRAND SAFARI 225E F 455 4V A 5500 2.56 30.7 280	20.72	15.59	25.42	17.01
REFERENCE VALUE DISTRIBUTOR 1112960-9519 AND CARBURETOR 17056562-18 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	19.48	16.28	26.52	17.13
GMC GRAND SAFARI 274C C 455 4V A 5500 2.73 32.5 612	17.95	15.81	24.12	17.26
REFERENCE VALUE DISTRIBUTOR 1112960-9520 AND CARBURETOR 17056566-11 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	20.07	16.87	27.05	17.82
GMC BONNEVILLE BR 271C1 C 455 4V A 5000 2.56 31.8 611	18.35	16.46	24.53	17.97

Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Continued)

PROGRAM VSIMII * 400CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.13.53 PAGE 8

	FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 1112960C201 AND CARBURETOR 17056566-17	20.84	16.85	27.22	17.78
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC LEMANS CPE 273C1 C 455 4V A 4500 2.41 31.3 609	18.99	16.52	24.75	17.96
REFERENCE VALUE				
DISTRIBUTOR 1112494C023 AND CARBURETOR 17056221N835	13.16	14.67	18.36	15.38
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC FLEETSIDE P/U 891E F 454 4V A 5000 3.07 38.6 847	14.12	14.39	19.81	15.49
REFERENCE VALUE				
DISTRIBUTOR 1112494C021 AND CARBURETOR 17056221N017	13.40	14.74	18.78	15.42
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC STEPSIDE P/U 894E1 F 454 4V A 4500 3.73 46.9 844	17.1[illegible]	14.61	24.66	15.54
REFERENCE VALUE				
DISTRIBUTOR 1112494C024 AND CARBURETOR 17056221N833	13.52	14.92	18.73	15.58
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC FLEETSIDE P/U 893E1 F 454 4V A 5000 3.07 34.9 848	13.33	14.60	18.45	15.71
REFERENCE VALUE				
DISTRIBUTOR 1112897-9115 AND CARBURETOR 17056530-4	25.92	14.17	29.59	15.49
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC ELDORADO CPE 63[illegible]C1 C 500 4V A 5500 2.73 32.7 549	25.44	13.54	28.80	15.71
REFERENCE VALUE				
DISTRIBUTOR 1112954-970[illegible] AND CARBURETOR 17056530-6	31.31	14.13	35.64	15.42
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC COUPE DEVILLE 631C C 500 4V A 5500 2.73 32.7 553	30.73	13.51	34.70	15.63
REFERENCE VALUE				
DISTRIBUTOR 1112954-9698 AND CARBURETOR 17056230-1	31.46	15.73	36.14	16.62
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC COUPE DEVILLE 621E F 500 4V A 5500 2.73 32.7 163	30.88	15.04	35.18	16.85
REFERENCE VALUE				
DISTRIBUTOR 1112954-9707 AND CARBURETOR 17056230-5	31.53	15.76	36.01	16.64
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC ELDORADO CPE 623E F 500 4V A 5500 2.73 32.7 162	30.95	15.07	35.06	16.87

Table 5-17. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 400 CID (Concluded)

PROGRAM VSIMII * 400CID, AUTOMATIC, 5000LB, 38.8N/V	RUN ON 10/30/76 AT 11.13.53 PAGE 9			
	FTP-URBAN		FTP-HIGHWAY	
	FUEL WEIGHTED		FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 1112943 AND CARBURETOR 7045221	20.22	14.64	26.02	15.31
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
SS AUT EXCALIBUR 268 F 454 4V A 4500 2.73 34.7 382	20.03	14.40	25.92	15.45
REFERENCE VALUE				
DISTRIBUTOR 3874173 AND CARBURETOR 1	23.59	15.74	29.79	16.26
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
JENSEN INTERCEPTOR 2311-1591 C 440 4V A 4500 3.07 40.4 667	26.06	15.61	33.39	16.37
REFERENCE VALUE				
DISTRIBUTOR 1112882 AND CARBURETOR 17056528	17.10	15.82	23.51	16.37
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
AVANTI AVANTI II 595C				

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID

PROGRAM VSIMII * 350CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.19.07 PAGE 1

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Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMII * 350CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.19.07 PAGE 2

								FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE								26.53	15.16	35.45	15.70
DISTRIBUTOR 3874115-360 AND CARBURETOR 4006624-360											
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES											
CHRYSL CHARGER	4158	C	360	4V	A	4500	2.71 33.9 487	24.32	15.12	32.47	15.76
CHRYSL GRAN FURY	4162	C	360	4V	A	5000	2.71 32.3 489	23.15	15.03	30.58	15.74
CHRYSL PLYMOUTH	4163	C	360	4V	A	5000	3.21 40.9 490	28.20	15.12	37.88	15.72
CHRYSL PLYMOUTH	4173	C	360	4V	A	4500	3.21 40.7 488	28.36	15.19	38.34	15.74
CHRYSL DODGE	4174	C	360	4V	A	4500	2.45 30.0 486	22.01	15.08	29.10	15.76
REFERENCE VALUE								26.56	16.15	35.47	16.14
DISTRIBUTOR 3874115-360 AND CARBURETOR 4006619-360											
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES											
CHRYSL PLYMOUTH	2224	F	360	2V	A	5000	2.71 33.9 71	24.12	16.03	31.95	16.18
CHRYSL PLYMOUTH	2235	F	360	2V	A	5000	3.21 39.2 72	27.24	16.09	36.46	16.17
REFERENCE VALUE								26.53	16.05	35.45	16.01
DISTRIBUTOR 3874115-360 AND CARBURETOR 3870955-360											
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES											
CHRYSL B2 VAN	E202	F	360	2V	A	4500	2.71 35.1 785	25.03	16.02	33.51	16.06
CHRYSL RAMCHARGER	E204	F	360	2V	A	4500	3.55 46.0 787	31.50	16.14	42.92	16.04
CHRYSL D1 CLUB CAB	E206	F	360	2V	A	4500	2.71 31.3 784	22.78	15.98	30.23	16.07
CHRYSL B2 SPORT WGN	E208	F	360	2V	A	4500	3.21 40.1 786	28.00	16.08	37.83	16.05
REFERENCE VALUE								33.90	16.38	39.10	16.67
DISTRIBUTOR D6AE12127CA AND CARBURETOR D6WE-9510-BA											
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES											
FORD FORD	6A1-351M-4-4R	F	351	2V	A	5000	2.75 33.0 128	29.67	16.30	33.83	16.68
FORD RANCHERO	601-351M-4-14R	F	351	2V	A	4500	2.75 42.0 122	36.69	16.48	42.84	16.68
REFERENCE VALUE								27.14	15.13	32.26	15.34
DISTRIBUTOR D50E12127FA AND CARBURETOR D6WE-9510-AA											
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES											
FORD TORINO ELITE	6C1-351M-4-24R	C	351	2V	A	5000	2.75 33.6 525	24.11	15.07	28.37	15.35
REFERENCE VALUE								22.05	15.13	27.05	15.34
DISTRIBUTOR D6AE12127BA AND CARBURETOR D6WE-9510-AA											
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES											
FORD RANCHERO	601-351M-4-5R	C	351	2V	A	4500	3.25 41.3 522	23.53	15.22	29.18	15.36

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMII	350CID, AUTOMATIC, 5000LB, 38.8N/V	RUN ON 10/30/76 AT 11.19.07 PAGE 3			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR D5TE12127FA AND CARBURETOR D5WE-9510-GA		27.59	15.54	32.54	16.13
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD	5D1-351M-4-153				
FORD	5A1-351M-4-160				
REFERENCE VALUE					
DISTRIBUTOR D5TE12127ABA AND CARBURETOR D5UE-9510-LA		.47	14.08	2.82	14.21
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD ECONOLINE	5E2-351W4-85C C 351 2V M3 4500 3.00 36.6 905	.44	14.24	2.57	14.28
FORD NANTUCKET	5E2-351W4-82C C 351 2V M3 4500 3.50 43.8 906	.51	14.31	3.15	14.27
REFERENCE VALUE					
DISTRIBUTOR D5TE12127ABA AND CARBURETOR D5UE-9510-MA		.47	13.66	2.82	13.76
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD ECONOLINE	5E1-351W4-70C C 351 2V A 4500 3.00 37.5 904	.47	13.71	2.78	13.78
FORD NANTUCKET	5E1-351W4-74C C 351 2V A 4500 3.50 43.8 907	.53	13.77	3.21	13.77
REFERENCE VALUE					
DISTRIBUTOR D5UE12127DA AND CARBURETOR D5UE-9510-CA		1.04	14.94	4.27	15.54
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD NANTUCKET	5E1-351W4-68F F 351 2V A 4500 3.00 37.6 807	1.03	14.99	4.23	15.56
FORD NANTUCKET	5E1-351W4-81F F 351 2V A 4500 3.50 43.8 811	1.17	15.06	4.87	15.55
REFERENCE VALUE					
DISTRIBUTOR D5UE12127BA AND CARBURETOR D5UE-9510-AA		.46	15.31	2.75	15.47
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD NANTUCKET	5E2-351W4-76F F 351 2V M3 4500 3.00 36.6 808	.42	15.48	2.60	15.54
FORD NANTUCKET	5E2-351W4-78F F 351 2V M3 4500 3.50 43.8 812	.49	15.55	3.07	15.52
REFERENCE VALUE					
DISTRIBUTOR D5TE12127BA AND CARBURETOR D5TE9510BB		20.75	13.55	28.53	14.12
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD	6E2-350-4-2F				
REFERENCE VALUE					
DISTRIBUTOR D5TE12127FA AND CARBURETOR D5TE9510AUB		19.45	13.43	26.47	14.02
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD F-100	6E1-360-4-1C C 360 2V A 4500 3.00 38.3 908	19.62	13.43	26.89	14.06
FORD F-1[illegible]	6E1-360-4-4C C 360 2V A 5000 3.50 43.0 916	21.59	13.41	29.61	14.04

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMII * 350CID, AUTOMATIC, 5000LB, 38.8N/V	RUN ON 10/30/76 AT 11.19.07 PAGE 4			
	FTP-URBAN		FTP-HIGHWAY	
	FUEL WEIGHTED		FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR D5TE12127PA AND CARBURETOR D5TE9510BCB	20.70	13.34	28.53	13.66
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD F-100 6F2-360-4-3C C 360 2V M3 4500 3.00 35.0 909	18.64	13.42	26.36	13.74
REFERENCE VALUE				
DISTRIBUTOR D5TE12127AFA AND CARBURETOR D5TE-9510-ZB	23.80	14.67	32.55	15.03
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD 5F1-360-4-106F F 360 2V A 4500 3.00 37.6 815	23.79	14.67	32.75	15.07
REFERENCE VALUE				
DISTRIBUTOR D5TE12127RA AND CARBURETOR D5TE9510BGA	21.68	14.75	29.04	15.48
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD 5F1-360-4-60F				
REFERENCE VALUE				
DISTRIBUTOR 1112880O8541 AND CARBURETOR 17056114N104	19.40	14.65	27.51	15.33
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC CAPRICE 573F F 350 2V A 5000 3.08 38.8 233	19.41	14.65	27.52	15.33
REFERENCE VALUE				
DISTRIBUTOR 1112880O8532 AND CARBURETOR 17056114N334	18.92	14.68	27.08	15.37
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MALIBU [illegible]F F 350 2V A 4500 2.56 31.7 224	16.15	14.58	22.94	15.40
REFERENCE VALUE				
DISTRIBUTOR 1112880O8535 AND CARBURETOR 17056114N098	19.59	14.73	27.85	15.27
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONTE CARLO 571E F 350 2V A 4500 2.73 34.7 226	18.01	14.76	25.60	15.30
REFERENCE VALUE				
DISTRIBUTOR 1112880O8537 AND CARBURETOR 17056114N113	20.13	14.98	27.96	15.68
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC IMPALA 574F F 35[illegible] 2V A [illegible] 2.73 33.4 229	17.77	14.92	24.42	15.69
REFERENCE VALUE				
DISTRIBUTOR 1112880544 AND CARBURETOR 17056202N670	22.17	15.80	31.31	16.45
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC CAPRICE 132F F 350 4V A 5000 2.73 33.9 232	19.81	15.75	27.71	16.46

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMII	350CID, AUTOMATIC, 5000LB, 38.8N/V	RUN ON 10/30/76 AT 11.19.07 PAGE 5			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 1112888-8577 AND CARBURETOR 17056202N650					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CAMARO L/T 136E	F 350 4V A 4000 3.08 41.4 214	22.14	15.84	31.17	16.37
		23.86	16.03	34.20	16.41
REFERENCE VALUE					
DISTRIBUTOR 11129050B530 AND CARBURETOR 17056502N785					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CAMARO L/T 593C	C 350 4V A 4000 3.08 41.4 583	16.87	15.83	24.87	16.43
		19.18	16.31	27.28	16.46
REFERENCE VALUE					
DISTRIBUTOR 110320408536 AND CARBURETOR 17056502N655					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC MALIBU 591C	C 350 4V A 4500 2.73 34.7 585	16.75	15.83	25.25	16.38
		15.41	15.83	23.20	16.41
REFERENCE VALUE					
DISTRIBUTOR 110320408539 AND CARBURETOR 17056502N783					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CAPRICE 592C	C 350 4V A 5000 3.08 38.8 587	16.46	15.79	24.85	16.37
		16.46	15.79	24.86	16.37
REFERENCE VALUE					
DISTRIBUTOR 1103200-9252 AND CARBURETOR 17056226N138					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CORVETTE 561E	F 350 4V A 4000 3.36 42.7 216	14.09	15.33	23.53	16.32
		15.59	15.52	26.56	16.35
REFERENCE VALUE					
DISTRIBUTOR 1103200-9248 AND CARBURETOR 17056211N247					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CORVETTE 564E	F 350 4V M4 4000 3.70 47.1 219	16.75	15.66	29.09	16.30
REFERENCE VALUE					
DISTRIBUTOR 1103200.9247 AND CARBURETOR 17056211N249					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CORVETTE 563E	F 350 4V M4 4000 3.55 45.1 218	14.54	15.34	24.36	16.22
		16.13	15.68	28.34	16.29
REFERENCE VALUE					
DISTRIBUTOR 11129910-7 AND CARBURETOR 17056544-1					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC LE SABRE 454C	C 350 4V A 5000 3.08 38.2 543	16.81	16.36	21.23	17.00
		16.59	16.35	23.94	17.00

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMII * 350CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.19.07 PAGE 6

	FTP-URBAN FUEL WEIGHTED		FTP-HIGHWAY FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR 1112991Q-5 AND CARBURETOR 17056544-3 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.36	16.48	21.50	17.43
GMC CENTURY 451C C 350 4V A 4500 2.73 34.7 542	15.96	16.52	19.76	17.46
REFERENCE VALUE DISTRIBUTOR 1112991Q-9 AND CARBURETOR 17056546-2 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.39	16.88	21.70	17.81
GMC SKYLARK 453C-1 C 350 4V A 4000 2.56 34.5 541	16.11	16.99	20.22	17.86
REFERENCE VALUE DISTRIBUTOR 1112991Q-4 AND CARBURETOR 17056246-30 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.77	16.52	22.08	17.49
GMC CENTURY 444E F 350 4V A 4500 2.56 32.6 152	15.52	16.53	19.18	17.53
REFERENCE VALUE DISTRIBUTOR 1112991Q-2 AND CARBURETOR 17056246-2 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	18.02	16.53	22.42	17.72
GMC SKYLARK 443E F 350 4V A 4000 2.56 34.6 149	16.68	16.64	20.89	17.77
REFERENCE VALUE DISTRIBUTOR 1112991Q-6 AND CARBURETOR 17056244-31 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.20	16.54	20.88	17.44
GMC LE SABRE 441E F 350 4V A 5000 3.08 38.2 153	16.99	16.53	20.59	17.44
REFERENCE VALUE DISTRIBUTOR 1112991-965C AND CARBURETOR 17056143-2 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.29	15.69	21.45	16.39
GMC SKYLARK 423E F 350 2V A 4000 2.56 34.6 148	16.02	15.8[illegible]	19.99	16.44
REFERENCE VALUE DISTRIBUTOR 1112991-9652 AND CARBURETOR 17056140-3 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.8[illegible]	15.67	21.96	16.37
GMC CENTURY 421F F 350 2V A 4500 2.56 32.6 151	15.5[illegible]	15.58	19.08	16.40
REFERENCE VALUE DISTRIBUTOR 1112497-9517 AND CARBURETOR 17056101-34 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	23.31	16.31	29.23	16.61
GMC FORMULA 213E F 350 2V A 4000 2.41 31.3 260	19.88	16.39	24.89	16.67

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMII 350CID, AUTOMATIC, 5000LB, 38.8N/V RUN ON 10/30/76 AT 11:19:07 PAGE 7

	FTP-URBAN FUEL WEIGHTED		FTP-HIGHWAY FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR 1112950-9524 AND CARBURETOR 17056162-13 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	19.69	16.18	26.14	16.52
GMC GRAND LEMANS 212F1 F 350 2V A 4500 2.41 30.6 266	16.33	16.17	21.46	16.56
REFERENCE VALUE DISTRIBUTOR 1103200C054 AND CARBURETOR 17056568-6 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	19.62	15.96	25.82	16.72
GMC GRAND LEMANS 2P2C C 350 4V A 4500 2.56 32.6 606	17.14	15.97	22.43	16.76
REFERENCE VALUE DISTRIBUTOR 1103223 AND CARBURETOR 17056266 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	28.31	16.21	33.12	16.85
GMC GRAND PRIX 261E F 350 4V A 4500 2.41 30.6 268	23.48	16.20	27.19	16.89
REFERENCE VALUE DISTRIBUTOR 1103223 AND CARBURETOR 17056266(1) CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	28.15	16.34	33.33	16.95
GMC GRAND PRIX 263E F 350 4V A 4500 2.41 29.9 269	22.87	16.32	26.80	16.99
REFERENCE VALUE DISTRIBUTOR 1103223 AND CARBURETOR 17056266(1) CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	29.23	16.11	34.08	16.81
GMC GRAND PRIX 264E F 350 4V A 4500 2.41 31.3 267	24.69	16.11	28.54	16.84
REFERENCE VALUE DISTRIBUTOR 1112880 AND CARBURETOR 17056116N405 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	18.71	14.77	25.55	15.37
GMC FLEETSIDE P/U 8F1F F 350 2V A 4500 3.40 42.8 837	23.55	14.88	28.43	15.38
REFERENCE VALUE DISTRIBUTOR 1112888 AND CARBURETOR 17056219N673 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	21.97	15.80	30.98	16.40
GMC CHEVY VAN 903F F 350 4V M3 4000 3.42 44.5 831	24.08	16.14	35.60	16.47
REFERENCE VALUE DISTRIBUTOR 1112888-8566 AND CARBURETOR 17056208N067 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	21.57	15.84	30.22	16.46
GMC FLEETSIDE P/U 9C1E1 F 350 4V A 4500 3.07 38.6 834	21.69	15.91	30.59	16.48

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Continued)

PROGRAM VSIMTI * 350CID, AUTOMATIC, 5000LB, 38.8N/V * RUN ON 10/30/76 AT 11.19.07 PAGE 8

	FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR 1112888-8589 AND CARBURETOR 17056208N675 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC FLEETSIDE P/U 904E F 350 4V A 4500 3.07 34.9 835	22.97	15.81	31.75	16.39
	21.23	15.85	29.33	16.42
REFERENCE VALUE DISTRIBUTOR 1112905-8314 AND CARBURETOR 17056518N683 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC BEAUVILLE VAN 865C C 350 4V A 4500 3.42 44.5 923	16.41	15.78	24.66	16.36
	18.64	15.91	28.44	16.37
REFERENCE VALUE DISTRIBUTOR 1112905.8379 AND CARBURETOR 17056508N671 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC FLEETSIDE P/U 864C C 350 4V A 4500 3.07 34.9 921	16.65	15.92	25.07	16.51
	15.39	15.96	23.16	16.53
REFERENCE VALUE DISTRIBUTOR 1112905-8540 AND CARBURETOR 17056518N734 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC SPORT VAN 863C C 350 4V A 5000 3.07 38.6 925	15.61	15.88	23.62	16.45
	15.55	15.88	23.52	16.45
REFERENCE VALUE DISTRIBUTOR 1112905-8327 AND CARBURETOR 17056508N649 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC FLEETSIDE P/U 861C C 350 4V A 4500 3.07 38.6 922	16.58	15.88	24.79	16.39
	16.67	15.95	25.10	16.41
REFERENCE VALUE DISTRIBUTOR 1112880-8324 AND CARBURETOR 17056124N333 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC CHEVY VAN 855E F 350 2V A 4500 3.07 38.6 836	19.03	14.75	27.53	15.39
	19.14	14.82	27.87	15.41
REFERENCE VALUE DISTRIBUTOR 1112880-8324 AND CARBURETOR 17056123N320 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC CHEVY VAN 854E F 350 2V M3 4500 3.42 44.5 839	19.55	14.88	27.73	15.52
	21.34	15.13	31.35	15.57
REFERENCE VALUE DISTRIBUTOR 1112880-8271 AND CARBURETOR 17056116N342 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES GMC FLEETSIDE P/U 853E F 350 2V A 4500 3.73 46.9 840	20.05	14.82	27.93	15.42
	23.83	14.97	33.82	15.42

Table 5-18. Fuel-Weighted Calibration Factors
Reference Vehicle 5000/A/3.08, 350 CID (Concluded)

PROGRAM VSIMII	350CID, AUTOMATIC, 5000LB, 38.8N/V	RUN ON 10/30/76 AT 11.19.07 PAGE 9			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 1112888-8585 AND CARBURETOR 17056208N679		22.72	15.73	31.60	16.27
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC SPORT VAN 906E	F 350 4V A 5000 3.07 38.6 845	22.63	15.73	31.46	16.27
REFERENCE VALUE					
DISTRIBUTOR 1112888-8567 AND CARBURETOR 17056209N786		20.88	16.35	30.17	17.02
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC FLEETSIDE P/U 905E	F 350 4V M4 4500 3.40 42.8 838	21.91	16.60	32.90	17.09
REFERENCE VALUE					
DISTRIBUTOR 1112860 AND CARBURETOR 17056114		19.88	14.54	27.69	15.32
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
CHECKR CHECKER 12	F 350 2V A 4500 3.31 40.8 297	20.95	14.63	29.49	15.34

Table 5-19. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/A/3.21, 318 CID

PROGRAM VSIMII * 318CID, AUTOMATIC, 4500LB, 40.9N/V * RUN ON 10/30/76 AT 11.21.06 PAGE 1

									FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE												
DISTRIBUTOR 3228263		AND CARBURETOR SF3227442							19.07	14.32	25.29	15.20
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AMC	HORNET SW	D50-3201	F 304 2V A	4000	2.87	38.4		20	17.82	14.46	23.65	15.19
AMC	HORNET	D50-35D	F 304 2V A	3500	3.15	43.5		14	20.01	14.59	26.99	15.20
AMC	MATADOR SW	D58-36D	F 304 2V A	4500	3.54	44.4		21	19.94	14.44	26.51	15.16
REFERENCE VALUE												
DISTRIBUTOR 3228264		AND CARBURETOR SF3227442							19.57	14.42	26.46	15.13
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AMC	HORNET SW	D50-33D	C 304 2V A	4000	3.15	42.1		457	19.76	14.60	26.92	15.11
AMC	GREMLIN	D54-18D	C 304 2V A	3500	2.87	38.2		454	18.40	14.65	25.09	15.13
AMC	MATADOR SW	D58-27D	C 304 2V A	4500	3.54	44.4		438	20.46	14.55	27.74	15.09
REFERENCE VALUE												
DISTRIBUTOR 3228263		AND CARBURETOR SF5355513							19.17	14.36	25.37	15.27
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AMC	CJ7 JEEP	D5U-11D	F 304 2V A	3500	3.54	46.3		771	21.22	14.66	28.68	15.26
REFERENCE VALUE												
DISTRIBUTOR 3874298-318		AND CARBURETOR 4006645-318							21.99	16.11	33.98	16.85
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL PLYMOUTH		4094	F 318 2V A	4000	2.45	32.8		41	18.50	16.12	28.27	16.89
CHRYSL PLYMOUTH		4096	F 318 2V A	3500	3.21	44.4		40	24.09	16.32	37.89	16.88
CHRYSL DODGE DART		4097	F 318 2V A	3500	2.45	32.8		37	18.70	16.20	28.79	16.91
REFERENCE VALUE												
DISTRIBUTOR 3874754-318		AND CARBURETOR 4006615-318							27.02	16.42	34.00	17.35
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL DODGE		4058	F 318 2V A	4000	2.45	32.8		42	22.74	16.43	28.37	17.39
CHRYSL DODGE LL29		4069	F 318 2V A	3500	2.76	37.6		38	25.72	16.97	32.67	17.40
CHRYSL DODGE		4092	F 318 2V A	4500	2.45	29.6		44	20.71	16.30	25.43	17.37
REFERENCE VALUE												
DISTRIBUTOR 3874754-318		AND CARBURETOR 4006616-318							27.02	16.07	34.00	17.10
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
CHRYSL CORONET		4156	C 318 2V A	4500	3.21	42.4		484	27.86	16.08	35.14	17.10
CHRYSL CORONET		4159	C 318 2V A	4000	2.71	36.3		482	24.71	16.11	31.08	17.13
CHRYSL CORONET		4176	C 318 2V A	4500	2.71	33.6		483	22.94	15.99	28.46	17.12
CHRYSL PLY. FURY		4177	C 318 2V A	4000	2.45	32.3		481	22.45	16.07	27.99	17.14
CHRYSL PLY. VALIANT		4178	C 318 2V A	3500	3.21	44.4		480	29.60	16.28	38.03	17.14

Table 5-19. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/A/3.21, 318 CID (Continued)

PROGRAM VSIMII * 318CID, AUTOMATIC, 4500LB, 40.9N/V	RUN ON 10/30/76 AT 11.21.06 PAGE 2			
	FTP-URBAN		FTP-HIGHWAY	
	FUEL WEIGHTED		FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 3874090-318 AND CARBURETOR 3870965-318	28.75	16.41	36.56	16.93
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
CHRYSL DODGE TRUCK E158 F 318 2V A 4000 3.21 40.1 777	28.58	16.49	36.57	16.95
CHRYSL DODGE RMCHRGR E182 F 318 2V A 4000 2.71 31.3 776	23.29	16.39	29.26	16.97
CHRYSL DODGE D1 C/C E186 C 318 2V A 4500 2.71 31.3 890	23.04	16.30	28.72	16.95
REFERENCE VALUE				
DISTRIBUTOR D5DE12127AFA AND CARBURETOR D5AE-9510-FA	25.86	14.78	32.18	15.29
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD COMET 5K1-302-4-266G F 302 2V A 3500 3.00 41.7 106	26.08	15.05	32.91	15.29
FORD GRANADA 501-302-4-266G F 302 2V A 4000 2.75 37.8 113	23.76	14.93	29.55	15.27
REFERENCE VALUE				
DISTRIBUTOR D5DE12127AFA AND CARBURETOR D5DE9510-AEA	27.72	14.48	34.21	14.99
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD COMET 5K1-302-4-264D C 302 2V A 3500 3.00 41.7 508	27.99	14.75	34.99	14.98
FORD GRANADA 501-302-4-265D C 302 2V A 4000 2.75 38.4 515	25.80	14.54	31.88	14.97
REFERENCE VALUE				
DISTRIBUTOR D5DE12127AFA AND CARBURETOR D5WE-9510-FA	26.26	14.58	32.53	15.08
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD 571-302-4-274K				
FORD 571-302-4-276K				
REFERENCE VALUE				
DISTRIBUTOR D5DE12127AFA AND CARBURETOR D5DE9510-AEA	26.09	14.08	32.44	14.53
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD MUSTANG 571-302-4-273C C 302 2V A 3500 2.79 42.0 506	26.47	14.34	33.40	14.53
REFERENCE VALUE				
DISTRIBUTOR D6DE12127JA AND CARBURETOR D6ZE-9510-JA	31.72	15.56	40.77	15.73
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD MUSTANG 671-302-4-1F F 302 2V A 3500 3.00 42.0 107	32.22	15.85	41.97	15.72
FORD MUSTANG 671-302-4-3F F 302 2V A 3500 2.79 39.1 104	30.33	15.82	39.31	15.73
REFERENCE VALUE				
DISTRIBUTOR D5TE12127TA AND CARBURETOR D6TE-9510-GA	14.74	13.93	17.92	14.72
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FORD BRONCO 5T1-302-4-22C C 302 2V A 4000 3.00 41.0 395	14.47	14.11	17.72	14.70

Table 5-19. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/A/3.21, 318 CID (Continued)

PROGRAM VSIMII	318CID, AUTOMATIC, 4500LB, 40.9N/V	RUN ON 10/30/76 AT 11.21.06 PAGE 3			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR D5TE12127ALA AND CARBURETOR D5TE-9510-PA		2.92	13.92	8.35	14.52
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD F-100 LWB	6F1-302-4-16F F 302 2V A 4000 3.00 38.0 794	2.69	14.07	7.71	14.51
REFERENCE VALUE					
DISTRIBUTOR D5TE12127TA AND CARBURETOR D5TE-9510-PA		14.71	13.92	17.92	14.52
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD F-100 LWB	6F1-302-4-16F				
REFERENCE VALUE					
DISTRIBUTOR D5TE12127TA AND CARBURETOR D5TE9510-BJA		14.71	13.87	17.92	14.42
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD F-100 LWB	6F1-302-4-16F				
REFERENCE VALUE					
DISTRIBUTOR D2TE12127MA AND CARBURETOR D5TE9510-CBA		14.84	13.52	22.16	14.43
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD F-100 LWB	6F1-300-4-4F F 300 1V A 4500 3.00 35.0 802	12.61	13.58	18.57	14.39
REFERENCE VALUE					
DISTRIBUTOR D6TE12127AA AND CARBURETOR D6TE-9510-DA		20.20	12.45	30.61	13.58
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FORD F-100	6U1-300-4-5C C 300 1V A 4000 3.50 45.0 894	21.51	12.55	32.84	13.55
REFERENCE VALUE					
DISTRIBUTOR 1112983-9222 AND CARBURETOR 17056105N853		16.19	15.13	23.98	15.24
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC	113E				
REFERENCE VALUE					
DISTRIBUTOR 11129830922 1 AND CARBURETOR 17056102N684		15.92	15.25	23.40	15.27
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC MONZA	112F F 262 2V A 3500 2.56 37.5 199	13.65	15.77	19.96	15.16
REFERENCE VALUE					
DISTRIBUTOR 11129770941 6 AND CARBURETOR 17056108N771		20.92	15.03	28.92	15.12
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC MALIBU	111F F 305 2V A 4500 2.73 34.7 223	17.81	15.06	24.28	15.10

Table 5-19. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/A/3.21. 318 CID (Continued)

PROGRAM VSIMII	318CID, AUTOMATIC, 4500LB, 40.9N/V	RUN ON 10/30/76 AT 11.21.06 PAGE 4			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 1112977-9405 AND CARBURETOR 17056104N956		20.56	15.04	28.24	15.23
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC MONZA 114F F 305 2V A 3500 2.29 33.5 201		17.37	15.22	23.83	15.24
REFERENCE VALUE					
DISTRIBUTOR 1112977C155 AND CARBURETOR 17056110N587		22.00	15.03	29.45	15.21
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CONCOURS HB 118F F 305 2V A 4000 3.08 41.4 211		21.94	15.20	29.56	15.19
REFERENCE VALUE					
DISTRIBUTOR 1103209-9267 AND CARBURETOR 17056402N271		11.72	14.83	18.87	14.83
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC MONZA 502C C 262 2V A 3500 2.56 37.5 575		10.01	15.33	16.10	14.73
REFERENCE VALUE					
DISTRIBUTOR 1112992C120 AND CARBURETOR 17056410N396		14.91	15.39	22.30	15.52
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC NOVA 501C C 305 2V A 4500 2.73 36.2 582		13.29	15.51	19.81	15.51
REFERENCE VALUE					
DISTRIBUTOR 1112995-6 AND CARBURETOR 17056156-1		32.87	16.80	42.87	16.92
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC OMEGA 371F F 260 2V A 4000 2.56 34.0 240		25.51	17.20	32.74	16.78
REFERENCE VALUE					
DISTRIBUTOR 1112995-4 AND CARBURETOR 17056158-2		32.98	16.79	42.27	16.72
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CUTLASS 373E F 260 2V A 4500 3.08 40.0 247		28.98	17.21	36.70	16.55
REFERENCE VALUE					
DISTRIBUTOR 1103211-1A AND CARBURETOR 17056455-2		27.49	16.51	28.95	16.56
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CUTLASS 382C C 260 2V A 4500 3.08 40.0 595		18.01	17.02	25.14	16.39
REFERENCE VALUE					
DISTRIBUTOR 1103208-2 AND CARBURETOR 17056455-3		24.00	16.52	32.92	16.74
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC OMEGA 361C C 265 2V A 4500 2.73 36.2 590		19.51	16.99	26.60	16.60

Table 5-19. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/A/3.21, 318 CID (Concluded)

PROGRAM VSIMII	318CID, AUTOMATIC, 4500LB, 40.9N/V	RUN ON 10/30/76 AT 11.21.06 PAGE 5			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 097.07.0102 AND CARBURETOR 097.08.0001		4.39	24.44	11.47	27.55
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
ASTON COUPE	V8/11292LCA F 326 BV A 4500 3.07 35.7 613	3.98	24.27	10.30	27.61

Table 5-20. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/M-3/3.21, 318 CID

PROGRAM VSIMII * 318CID, MANUAL, 4500LB, 4J.9N/V * RUN ON 10/30/76 AT 11.22.55 PAGE 1

| | | |

Table 5-20. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/M-3/3.21, 318 CID (Continued)

PROGRAM VSIMII * 318CID, MANUAL, 4500LB, 4.9N/V * RUN ON 10/30/76 AT 11.22.55 PAGE 2

	FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR D5DE12127AGA AND CARBURETOR D5DE9510-HFA CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	26.18	13.49	34.80	14.56
FORD MONARCH 5K2-302-4-267G F 302 2V M3 4000 2.75 36.8 114	23.52	13.62	31.19	14.54
REFERENCE VALUE DISTRIBUTOR D6TE12127CA AND CARBURETOR D6TE-9510-FA CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.78	13.97	25.75	14.54
FORD F-100 LWB 6F2-302-4-21C C 302 2V M4 4500 3.50 44.0 899	18.57	14.18	27.16	14.51
REFERENCE VALUE DISTRIBUTOR D5TE12127SA AND CARBURETOR D5TE-9510-LA CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.76	14.18	26.04	14.62
FORD BRONCO 6T2-302-4-7F F 302 2V M3 4000 4.11 53.0 800	21.82	14.47	32.63	14.57
REFERENCE VALUE DISTRIBUTOR D5TE12127SA AND CARBURETOR D5TE9510-BMA CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.76	13.94	26.04	14.44
FORD F-100 LWB 6F2-302-4-14F F 302 2V M3 4000 3.50 44.0 798	18.57	14.15	27.47	14.41
REFERENCE VALUE DISTRIBUTOR D5TE12127NA AND CARBURETOR D5TE9510-APA CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	14.39	13.36	23.31	14.54
FORD F-100 LWB 6F2-302-4-1F F 302 1V M3 4000 3.00 34.0 771	13.23	13.51	21.42	14.51
REFERENCE VALUE DISTRIBUTOR D6TE12127AA AND CARBURETOR D6TE-9510-DA CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	16.71	12.37	30.08	13.54
FORD E-100 6U2-300-4-3C C 300 1V M3 4500 3.50 44.0 902	19.27	12.49	31.02	13.49
REFERENCE VALUE DISTRIBUTOR 1112977-9411 AND CARBURETOR 17056111N338 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	19.84	14.53	28.48	15.43
GMC CAMARO L/T 115F F 305 2V M3 4000 3.08 41.4 212	19.79	14.71	28.59	15.41
REFERENCE VALUE DISTRIBUTOR 1112994-2 AND CARBURETOR 17056157-6 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	28.59	16.67	37.57	16.59
GMC OMEGA 374F F 265 2V M3 4000 3.78 41.4 242	26.15	17.17	34.36	16.44

Table 5-20. Fuel-Weighted Calibration Factors
Reference Vehicle 4500/M-3/3.21, 318 CID (Concluded)

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*****************************************************************************************************************
* PROGRAM VSIMIT *   318CID, MANUAL, 4SCOLB, 40.9N/V                  *  RUN ON  10/30/76  AT  11.22.55   PAGE  3 *
*****************************************************************************************************************
*                                *                                    *      FTP-URBAN       *     FTP-HIGHWAY      *
*                                *                                    *************************************************
*                                *                                    *    FUEL WEIGHTED     *    FUEL WEIGHTED     *
*                                *                                    *************************************************
*                                *                                    *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                    * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  1112994-1    AND CARBURETOR  17056157-1                *  29.30     16.41   *  38.10     16.60   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* GMC    CUTLASS        375E1          F 260 2V M5 4500 2.73 34.7 244 *  22.88     16.76   *  29.09     16.44   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  1103204-1    AND CARBURETOR  17056457-1                *  23.22     16.18   *  32.01     16.57   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* GMC    CUTLASS        384C           C 260 2V M5 4500 2.73 34.7 593 *  18.13     16.53   *  24.44     16.41   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  1103204-2    AND CARBURETOR  17056457-3                *  23.41     16.39   *  32.12     16.81   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* GMC    OMEGA          385C           C 260 2V M5 4000 2.73 36.9 591 *  19.44     16.86   *  26.41     16.66   *
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Table 5-21. Fuel-Weighted Calibration Factors
Reference Vehicle 4000/A/3.15, 258 CID

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*****************************************************************************************************************
* PROGRAM VSIMII *    258CID, AUTOMATIC, 4000LB, 39.0N/V          *  RUN ON  10/30/76  AT  11.33.50   PAGE  1 *
*****************************************************************************************************************
*                                *                                *      FTP-URBAN       *     FTP-HIGHWAY      *
*                                *                                *****************************************************
*                                *                                *    FUEL WEIGHTED     *    FUEL. WEIGHTED     *
*                                *                                *****************************************************
*                                *                                *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  DX31                 *  13.08     15.26   *  14.41     15.84   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     PACER          D66-55K        C 258 2V A  3500 3.08 41.0 451 *  13.82     15.38   *  15.41     15.86   *
* AMC                    D56-14K                                  *                    *                    *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3227437            *  13.39     15.54   *  14.74     16.16   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     PACER          D66-11K1       F 258 2V A  3500 3.08 41.0  11 *  14.13     15.66   *  15.76     16.18   *
* AMC     PACER          D66-36K        F 258 2V A  3500 2.53 33.6   8 *  11.96     15.58   *  13.15     16.20   *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3227422            *  13.38     15.20   *  14.74     15.93   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     PACER          D56-16K        F 258 1V A  3500 2.73 36.3   9 *  12.75     15.27   *  14.10     15.96   *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3227424            *  16.14     14.56   *  15.13     15.68   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     PACER          D66-25K        C 258 1V A  3500 3.08 41.0 452 *  17.04     14.67   *  16.17     15.70   *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3227422            *  13.34     15.24   *  14.74     15.94   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     CJ7 JEEP       D5U-7K         F 258 1V A  3500 4.09 53.4 770 *  17.77     15.48   *  20.13     15.93   *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3227424            *  13.34     14.63   *  14.74     15.78   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     CJ7 JEEP       D6U-1K         C 258 1V A  3000 4.09 53.4 882 *  17.96     14.95   *  20.54     15.79   *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF5902377A           *  13.36     14.94   *  14.74     15.47   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     POST OFFICE    P076-3         C 258 1V A  4000 3.73 47.9 885 *  15.96     15.03   *  17.82     15.46   *
*                                                                 *                    *                    *
* REFERENCE VALUE                                                 *                    *                    *
* DISTRIBUTOR  1112863A974   AND CARBURETOR  17056018-349         *  12.43     16.44   *  13.15     16.22   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* GMC     MALIBU         515F1          F 250 1V A  4500 3.08 40.0 221 *  12.33     16.42   *  12.92     18.16   *
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Table 5-21. Fuel-Weighted Calibration Factors
Reference Vehicle 4000/A/3.15, 258 CID (Continued)

PROGRAM VSIMII	258CID, AUTOMATIC, 4000LB, 39.0N/V	RUN ON 10/30/76 AT 11.33.50 PAGE 2			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 1112863E140 AND CARBURETOR 17056012-642		13.59	16.18	14.63	17.80
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC NOVA 513E F 250 1V A 3500 3.08 41.4 198		14.21	16.37	15.47	17.79
REFERENCE VALUE					
DISTRIBUTOR 1112863A978 AND CARBURETOR 17056012-929		13.41	16.24	14.75	17.83
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC NOVA 511F F 250 1V A 4000 2.73 36.2 203		12.37	16.28	13.51	17.80
REFERENCE VALUE					
DISTRIBUTOR 1110662A954 AND CARBURETOR 17056016N885		15.23	14.85	20.22	15.81
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC NOVA 531F F 250 1V A 3500 2.73 36.2 196		14.22	14.98	18.92	15.81
REFERENCE VALUE					
DISTRIBUTOR 1112863E143 AND CARBURETOR 17056314-631		13.45	15.76	14.26	17.27
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC NOVA 521C C 250 1V A 4000 2.73 36.2 579		12.41	15.80	13.06	17.24
REFERENCE VALUE					
DISTRIBUTOR 1112863E149 AND CARBURETOR 17056314-917		12.69	15.66	13.91	17.16
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CAMARO 523C C 250 1V A 4000 3.08 41.4 581		13.11	15.75	14.41	17.12
REFERENCE VALUE					
DISTRIBUTOR 1112863E148 AND CARBURETOR 17056314-629		13.19	15.80	14.35	17.41
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC MALIBU 524C C 250 1V A 4000 2.73 33.9 580		11.52	15.82	12.39	17.39
REFERENCE VALUE					
DISTRIBUTOR 1112863 AND CARBURETOR 17056002N345		12.80	15.36	13.17	16.51
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC CHEVY VAN 91FF1 F 250 1V A 4000 3.73 48.5 828		15.15	15.32	15.79	16.46
REFERENCE VALUE					
DISTRIBUTOR 1112863E029 AND CARBURETOR 17056004N048		13.10	15.14	14.16	16.26
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
GMC FLEETSIDE P/U 914E F 250 1V A 4500 3.40 38.6 832		12.60	15.11	13.47	16.21

Table 5-21. Fuel-Weighted Calibration Factors
Reference Vehicle 4000/A/3.15, 258 CID (Concluded)

PROGRAM VSIMII * 258CID, AUTOMATIC, 4COOLB, 39.3N/V * RUN ON 10/30/76 AT 11.33.50 PAGE 3

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Table 5-22. Fuel-Weighted Calibration Factors
Reference Vehicle 4000/M-3/3.15, 258 CID

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PROGRAM VSIMII *   258CID, MANUAL, 4000LB, 39.0N/V          *  RUN ON  10/30/76  AT  11.45.09   PAGE  1
                                                            *      FTP-URBAN       *     FTP-HIGHWAY
                                                            *    FUEL WEIGHTED     *    FUEL WEIGHTED
                                                            *  ADVANCE * AIR/FUEL  *  ADVANCE * AIR/FUEL
                                                            * (DEGREE) *   RATIO    * (DEGREE) *   RATIO

REFERENCE VALUE
DISTRIBUTOR  3227331        AND CARBURETOR  SF3227425                  *  12.89     14.02   *  14.24     15.63
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
AMC     MATADOR        D51-15K        F 258 1V M3 4000 3.54 47.8  19  *  15.35     14.10   *  17.17     15.61
AMC     MATADOR        D58-34K        F 258 1V M3 4000 3.15 39.0  16  *  12.89     14.02   *  14.24     15.63

REFERENCE VALUE
DISTRIBUTOR  3227331        AND CARBURETOR  SF3228747                  *  12.89     16.14   *  14.24     16.86
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
AMC     GREMLIN        D54-13K        F 258 1V MO 3000 2.73 37.1   4  *  12.66     16.32   *  14.18     16.91

REFERENCE VALUE
DISTRIBUTOR  3227331        AND CARBURETOR  SF3228747                  *  16.01     16.07   *  14.50     16.78
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
AMC     GREMLIN        D54-26K        C 258 1V MO 3500 3.08 41.9 453  *  17.23     16.20   *  15.81     16.80

REFERENCE VALUE
DISTRIBUTOR  3227331        AND CARBURETOR  SF3227425                  *  12.89     14.08   *  14.24     15.73
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
AMC     CJ7 JEEP       D5U-15K        C 258 1V M4 3000 4.09 53.4 883  *  17.33     14.39   *  19.84     15.74

REFERENCE VALUE
DISTRIBUTOR  3227331        AND CARBURETOR  SF5355705                  *  12.89     15.84   *  14.24     16.29
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
AMC     CJ5 JEEP       D5U-3K         F 258 1V M3 3500 4.09 53.4 769  *  17.13     16.09   *  19.44     16.28
AMC     CJ7 JEEP       D5U-5K         F 258 1V M4 3000 4.09 53.4 767  *  16.33     16.42   *  18.59     16.21

REFERENCE VALUE
DISTRIBUTOR  1110666E034    AND CARBURETOR  17056013-326               *  17.07     16.86   *  17.48     17.27
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
GMC     NOVA           514E           F 250 1V M3 4000 3.08 41.4 208  *  17.54     16.96   *  18.11     17.23

REFERENCE VALUE
DISTRIBUTOR  1110666E046    AND CARBURETOR  17056713-713               *  17.14     16.69   *  17.10     17.14
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
GMC     MALIBU         516E           F 250 1V M3 4000 2.73 33.9 206  *  14.97     16.70   *  14.77     17.12

REFERENCE VALUE
DISTRIBUTOR  1112863E030    AND CARBURETOR  7045303N990                *  12.59     15.22   *  13.27     17.15
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES
GMC     FLEETSIDE P/U 913E             F 250 1V M4 4000 4.11 51.7 830  *  15.74     15.42   *  15.89     17.10
```

Table 5-22. Fuel-Weighted Calibration Factors
Reference Vehicle 4000/M-3/3.15, 258 CID (Concluded)

PROGRAM VSIMII * 258CID, MANUAL, 4000LB, 39.0N/V * RUN ON 10/30/76 AT 11.45.09 PAGE 2

	FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR 1110666E35 AND CARBURETOR 17056C03N866 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.31	14.99	17.92	15.90
GMC FLEETSIDE P/U 911E F 250 1V M3 4000 3.40 42.8 825	18.41	15.10	19.14	15.87
REFERENCE VALUE DISTRIBUTOR C43905 AND CARBURETOR C43533,4 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES PANTHE PANTHER J.72 W-224-L	5.01	13.22	13.46	14.15
REFERENCE VALUE DISTRIBUTOR 19100-61020 AND CARBURETOR 21100-61072 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	7.26	13.51	16.12	13.95
TOYOTA LAND CRUISER TE-11 C 258 2V M4 4000 4.11 50.9 948	9.13	13.62	20.61	13.93
REFERENCE VALUE DISTRIBUTOR 19100-61020 AND CARBURETOR 21100-61062 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	7.26	13.45	16.12	13.93
TOYOTA LAND CRUISER TE-12 C 258 2V M4 4500 4.11 50.9 949	9.02	13.47	20.17	13.89
REFERENCE VALUE DISTRIBUTOR 19100-61020 AND CARBURETOR 21100-61031 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	7.26	14.32	16.12	15.31
TOYOTA LAND CRUISER TE-9 F 258 2V M4 4000 4.11 50.9 875	9.13	14.43	20.61	15.29
REFERENCE VALUE DISTRIBUTOR 19100-61020 AND CARBURETOR 21100-61021 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	7.26	14.48	16.12	15.52
TOYOTA LAND CRUISER TE-10 F 258 M4 4500 4.11 50.9 877	9.02	14.51	20.17	15.47

Table 5-23. Fuel-Weighted Calibration Factors
Reference Vehicle 3500/A/3.21, 225 CID

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*****************************************************************************************************************
* PROGRAM VSIMII *   225CID, AUTOMATIC, 3500LB, 44.0N/V          *  RUN ON  10/30/76  AT  11.49.19   PAGE  1 *
*****************************************************************************************************************
*                                *                                *      FTP-URBAN       *     FTP-HIGHWAY      *
*                                *                                *******************************************
*                                *                                *    FUEL WEIGHTED     *    FUEL WEIGHTED     *
*                                *                                *******************************************
*                                *                                *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  3227331      AND CARBURETOR  SF3227424             *  17.74     14.29   *  21.51     15.49   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     PACER         D56-19L        C 232 1V A  3500 3.08 41.0 449 *  17.04     14.19   *  20.60     15.52   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  3227331      AND CARBURETOR  SF3227422             *  15.03     15.03   *  20.98     15.80   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     PACER         D56-17L        F 232 1V A  3000 2.53 33.6   1 *  12.42     14.97   *  17.20     15.87   *
* AMC     MATADOR       D5P-4AK        F 258 1V A  4000 3.54 46.6  14 *  16.89     14.63   *  23.60     15.90   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  322733.      AND CARBURETOR  SF5902377A            *  15.03     14.77   *  20.98     15.38   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC     POST OFFICE   P076-2         C 232 1V A  3000 3.07 41.3 881 *  14.72     14.78   *  20.71     15.44   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  3227331      AND CARBURETOR  1549                  *  14.55     13.66   *  20.73     15.08   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* AMC                   D54-17K                                   *                    *                    *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  3874795E-225 AND CARBURETOR  4006644-225           *  22.05     15.08   *  25.60     16.20   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* CHRYSL PLYMOUTH       4024           F 225 1V A  3000 2.75 37.6  48 *  19.63     15.12   *  22.77     16.24   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  3874598-225  AND CARBURETOR  4006583-225           *  21.52     15.53   *  30.30     16.68   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* CHRYSL DODGE          4055           F 225 1V A  4000 3.21 42.4  58 *  20.12     15.40   *  28.36     16.66   *
* CHRYSL DODGE DART     4060           F 225 1V A  3500 2.75 36.9  52 *  18.14     15.46   *  25.62     16.70   *
* CHRYSL PLYMOUTH       4067           F 225 1V A  3500 2.75 37.6  53 *  18.46     15.46   *  25.36     16.70   *
*                                *                                *                    *                    *
* REFERENCE VALUE                *                                *                    *                    *
* DISTRIBUTOR  3874598-225  AND CARBURETOR  4006509-225           *  20.57     14.53   *  29.66     15.79   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                    *                    *
* CHRYSL VALIANT        4153           C 225 1V A  3500 3.23 44.0 455 *  20.70     14.53   *  29.71     15.80   *
* CHRYSL PLY. FURY      4154           C 225 1V A  4000 3.23 43.1 459 *  20.05     14.32   *  28.45     15.77   *
* CHRYSL PLY. VALIANT   4175           C 225 1V A  3500 2.94 39.3 465 *  18.83     14.59   *  25.32     15.80   *
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Table 5-23. Fuel-Weighted Calibration Factors
Reference Vehicle 3500/A/3.21, 225 CID (Concluded)

PROGRAM VSIMII * 225CID, AUTOMATIC, 3500LB, 44.0N/V	RUN ON 10/30/76 AT 11.49.19 PAGE 2			
	FTP-URBAN FUEL WEIGHTED		FTP-HIGHWAY FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 3874598-225 AND CARBURETOR 3870958-225				
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
CHRYSL DODGE P/U F14E C 225 1V A 4000 3.21 37.1 886	17.01	15.44	23.97	16.55
REFERENCE VALUE				
DISTRIBUTOR 3874598-225 AND CARBURETOR 3870958-225	20.67	15.31	29.66	16.18
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
CHRYSL 81 VAN F143 F 225 1V A 4000 3.55 46.0 774	21.20	15.22	30.20	16.16
CHRYSL DODGE W1 TRCK F144 F 225 1V A 4500 3.21 40.1 783	18.52	15.06	26.00	16.14
REFERENCE VALUE				
DISTRIBUTOR 1110668C-14 AND CARBURETOR 17056448-6	20.10	15.78	27.76	16.63
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC 403C C 231 2V A 4000 2.73 35.1 540	16.72	15.52	22.50	16.65
REFERENCE VALUE				
DISTRIBUTOR 1110668C-12 AND CARBURETOR 17056149-5	19.84	15.34	26.72	16.25
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC SKYHAWK 421F F 231 2V A 3500 2.56 37.5 140	17.65	15.22	23.54	16.29
REFERENCE VALUE				
DISTRIBUTOR 1110668C-11 AND CARBURETOR 17056148-23	18.98	15.13	26.03	16.28
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC CENTURY 416F F 231 2V A 4000 2.73 35.4 145	15.38	14.93	21.25	16.30
REFERENCE VALUE				
DISTRIBUTOR 1110668C-13 AND CARBURETOR 17056148-34	19.21	15.31	26.11	16.42
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC 413F				

Table 5-24. Fuel-Weighted Calibration Factors
Reference Vehicle 3500/M-3/3.21, 225 CID

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*****************************************************************************************************************
* PROGRAM VSIMII *   225CID, MANUAL, 3500LB, 44.0N/V                  *  RUN ON  10/30/76  AT  11.54.09   PAGE  1 *
*****************************************************************************************************************
*                                *                                    *       FTP-URBAN        *     FTP-HIGHWAY      *
*                                *                                    *********************************************
*                                *                                    *    FUEL WEIGHTED       *    FUEL WEIGHTED     *
*                                *                                    *********************************************
*                                *                                    *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                    * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3228747                *  14.88     16.00   *  20.88     16.76   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* AMC     PACER          D56-15L          F 232 1V M3 3000 3.08 42.5   2 *  14.93     16.02   *  21.16     16.83   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3227423                *  14.88     15.51   *  20.88     16.02   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* AMC     HORNET SW      D50-24L          F 232 1V M0 3500 3.08 42.5   7 *  14.73     15.42   *  20.56     16.06   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3228747                *  17.79     15.93   *  21.29     16.69   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* AMC     HORNET SW      D50-37L          C 232 1V M3 3500 3.08 42.5 450 *  17.61     15.84   *  21.07     16.73   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3227331       AND CARBURETOR  SF3355705                *  14.88     15.76   *  20.88     16.29   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* AMC     CJ7 JEEP       D5U-8L           F 258 1V M3 3500 3.54 46.3 768 *  17.10     15.55   *  24.50     16.45   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3874714-225   AND CARBURETOR  4C06602-225              *  19.87     15.98   *  25.46     16.73   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* CHRYSL PLYMOUTH        4C53             F 225 1V M3 3500 3.23 44.6  56 *  20.13     15.98   *  25.82     16.73   *
* CHRYSL PLYMOUTH        4068             F 225 1V M4 4000 2.94 27.2  57 *  13.28     15.70   *  16.22     16.73   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  33747956-225 AND CARBURETOR  4006643 2.2               *  22.13     15.28   *  25.52     16.22   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* CHRYSL VALIANT         4085             F 225 1V M3 3000 2.94 40.6  49 *  21.00     15.35   *  24.33     16.25   *
* CHRYSL VALIANT         4093             F 225 1V M4 3000 2.94 27.9  50 *  15.51     15.23   *  17.43     16.28   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3874714-225   AND CARBURETOR  4C06607-225              *  19.65     15.51   *  25.16     16.55   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* CHRYSL DODGE DART      4155             C 225 1V M3 3500 3.23 44.6 467 *  19.90     15.51   *  25.52     16.55   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  3874598-225   AND CARBURETOR  3870951-225              *  20.19     15.23   *  29.49     16.14   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* CHRYSL B1 VAN          E151             C 225 1V M3 4000 3.55 46.0 887 *  20.70     15.14   *  30.02     16.11   *
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Table 5-24. Fuel-Weighted Calibration Factors
Reference Vehicle 3500/M-3/3.21, 225 CID (Concluded)

PROGRAM VSIMII * 225CID, MANUAL, 35 LB, 44.0N/V	RUN ON 1/30/76 AT 11.54.09 PAGE 2			
	FTP-URBAN		FTP-HIGHWAY	
	FUEL WEIGHTED		FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 3874598-225 AND CARBURETOR 3870957-225	20.19	15.35	29.49	16.28
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
CHRYSL DODGE P/U E141 F 225 1V M3 4000 3.55 44.3 775	20.05	15.23	29.01	16.26
CHRYSL DODGE RMCHRGR E201 F 225 1V M4 4500 3.55 44.3 781	19.77	15.13	28.29	16.23
REFERENCE VALUE				
DISTRIBUTOR 1110668Q-17 AND CARBURETOR 17056447-19	19.27	15.48	25.85	16.41
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC SKYHAWK 404C C 231 2V M5 3500 2.93 43.1 539	19.25	15.41	25.84	16.44
REFERENCE VALUE				
DISTRIBUTOR 1110668X2661 AND CARBURETOR 17056447-17	19.26	15.35	25.81	16.16
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC SKYHAWK 404C1 C 231 2V M4 3500 2.93 43.3 538	19.32	15.28	25.90	16.19
REFERENCE VALUE				
DISTRIBUTOR 1110668Q-1 AND CARBURETOR 17056145-3	19.42	15.39	26.21	16.17
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC SKYHAWK 415E F 231 2V M4 3500 2.56 37.5 141	17.28	14.97	23.09	16.21
REFERENCE VALUE				
DISTRIBUTOR 1110668Q-20 AND CARBURETOR 17056145-22	19.11	15.30	25.35	16.15
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC SKYLARK 414E-1 F 231 2V M3 4000 3.08 41.4 145	18.24	15.11	23.83	16.10

Table 5-25. Fuel-Weighted Calibration Factors
Reference Vehicle 3000/M-3/2.92, 140 CID

PROGRAM VSIMII * 140CID, MANUAL, 3000LB, 44.0N/V * RUN ON 10/30/76 AT 11.58.30 PAGE 1

	FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 1112628942 AND CARBURETOR 366832N466	9.22	15.36	11.78	15.72
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 815F F 140 2V A 3000 3.42 50.4 193	11.05	15.30	13.93	15.66
REFERENCE VALUE				
DISTRIBUTOR 1112628927 AND CARBURETOR 366831N613	9.21	15.35	12.01	15.57
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA PANEL 816F F 140 2V M5 3000 2.93 43.1 192	9.24	15.34	12.06	15.57
REFERENCE VALUE				
DISTRIBUTOR 1112628939 AND CARBURETOR 366831N618	8.52	15.47	10.12	15.65
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 813F F 140 2V M3 3000 3.42 50.4 194	9.78	15.54	11.74	15.63
REFERENCE VALUE				
DISTRIBUTOR 1112628932 AND CARBURETOR 366831-616	8.94	15.23	10.97	15.47
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA KB 814F F 140 2V M4 3000 2.53 37.0 181	7.90	15.17	9.59	15.48
REFERENCE VALUE				
DISTRIBUTOR 1112628923 AND CARBURETOR 366830N455	9.26	15.56	11.90	15.81
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 811F F 140 2V A 3000 2.92 43.0 183	9.68	15.43	12.16	15.76
REFERENCE VALUE				
DISTRIBUTOR 1112628934 AND CARBURETOR 17056027N374	8.98	14.98	11.20	15.66
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 845F F 140 2V M3 3000 2.92 43.0 187	8.89	14.97	11.22	15.66
REFERENCE VALUE				
DISTRIBUTOR 1112628945 AND CARBURETOR 17056027N340	9.17	15.03	11.55	15.62
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA 844F F 140 1V M4 3000 2.53 37.0 180	8.15	14.97	10.10	15.63
REFERENCE VALUE				
DISTRIBUTOR 1112628923 AND CARBURETOR 17056026N359	9.50	15.73	12.53	15.84
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 843F F 140 1V A 3000 2.92 43.0 184	9.94	15.60	12.80	15.80

Table 5-25. Fuel-Weighted Calibration Factors
Reference Vehicle 3000/M-3/2.92, 140 CID (Continued)

PROGRAM VSIMII 140CID, MANUAL, 3000LB, 44.0N/V — RUN ON 10/30/76 AT 11.58.30 PAGE 2

	FTP-URBAN FUEL WEIGHTED		FTP-HIGHWAY FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR 1112862B937 AND CARBURETOR 17056022N400	8.41	15.55	10.43	15.73
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA 841E F 140 1V A 3000 2.92 43.0 135	8.79	15.42	10.66	15.68
REFERENCE VALUE				
DISTRIBUTOR 1112862B924 AND CARBURETOR 365841N550	9.12	15.30	12.03	15.31
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 823C C 140 2V M3 3000 3.42 50.4 573	10.46	15.37	13.94	15.30
REFERENCE VALUE				
DISTRIBUTOR 1112862B936 AND CARBURETOR 366834N563	8.47	14.50	10.53	14.73
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA 821C C 140 2V A 3000 2.92 43.0 569	8.86	14.38	10.76	14.69
REFERENCE VALUE				
DISTRIBUTOR 1112862B938 AND CARBURETOR 365841N509	9.14	14.67	11.25	15.23
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA 824C C 140 2V M4 3000 2.53 37.0 566	8.07	14.61	9.83	15.24
REFERENCE VALUE				
DISTRIBUTOR 1112862B931 AND CARBURETOR 366840N740	9.59	14.76	12.44	14.90
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC MONZA 826C C 140 2V A 3000 2.92 43.0 568	10.03	14.63	12.71	14.86
REFERENCE VALUE				
DISTRIBUTOR 1112862B930 AND CARBURETOR 366841N558	9.37	15.36	11.65	15.41
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
GMC VEGA PANEL 826C C 140 2V M5 3000 2.93 43.1 572	9.40	15.36	11.69	15.41
REFERENCE VALUE				
DISTRIBUTOR TKC1689 AND CARBURETOR RKC 769	6.94	13.71	11.90	14.08
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
TRIUMP TR7 B5E C 122 2V M4 273. 3.70 55.2 713	7.59	14.11	12.94	13.97
REFERENCE VALUE				
DISTRIBUTOR 19100-45062 AND CARBURETOR 21100-45100	6.69	14.38	12.91	14.61
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
TOYOTA MARK II CE-9 C 156 2V A 3000 3.91 55.5 737	9.29	14.13	17.88	14.64
TOYOTA MARK II WGN CE-10 C 156 2V M4 3000 3.91 55.5 738	8.90	14.25	17.53	14.68

Table 5-25. Fuel-Weighted Calibration Factors
Reference Vehicle 3000/M-3/2.92, 140 CID (Continued)

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*****************************************************************************************************************
* PROGRAM VSIMII *   140CID, MANUAL, 3000LB, 44.0N/V                  *  RUN ON  10/30/76  AT  11.58.30   PAGE  3 *
*****************************************************************************************************************
*                                *                                    *      FTP-URBAN       *      FTP-HIGHWAY      *
*                                *                                    *******************************************
*                                *                                    *    FUEL WEIGHTED     *    FUEL WEIGHTED      *
*                                *                                    *******************************************
*                                *                                    *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL  *
*                                *                                    * (DEGREE) *   RATIO  * (DEGREE) *   RATIO   *
*****************************************************************************************************************
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  0231184001   AND CARBURETOR  FI438420004,              *   6.24     15.47   *   14.76    15.59   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* PORSCH 911S          FC1          F 164 FI M5 2750 3.88 43.3 357    *   6.92     15.15   *   16.70    15.76   *
* PORSCH 911S          FC2          C 164 FI M5 2750 3.88 43.3 691    *   6.92     15.15   *   16.70    15.76   *
* PORSCH 911S          FC3          C 164 FI SA 2750 3.38 44.4 690    *   7.37     15.04   *   17.43    15.71   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  0237301001   AND CARBURETOR  FI438120024,              *   2.17     13.28   *    5.33    13.21   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* PORSCH TC CARRERA    FC*          C 183 FI M4 3000 4.22 38.1 693    *   2.31     12.06   *    5.71    13.45   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  TKC 0517     AND CARBURETOR  RKC1797/8/9               *   6.89     13.90   *   13.32    14.15   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* TRIUMP TR7           CF1/504/4    F 152 2V M4 2750 3.70 48.3 387    *   8.06     13.82   *   15.86    14.23   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  TKC 1204     AND CARBURETOR  RKC 0623                  *   4.30     14.81   *    8.50    15.06   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* TRIUMP TR7           R42          F 122 2V M4 2750 3.70 55.9 386    *   5.04     15.25   *   10.11    14.95   *
* TRIUMP TR7           R52          F 122 2V A  2750 3.45 50.3 385    *   4.80     15.08   *    9.35    14.91   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  19100-38011  AND CARBURETOR  21100-38029,              *   12.25    14.34   *   17.91    14.71   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* TOYOTA HILUX PU-2    TE-5         C 133 2V M5 3500 4.36 51.3 945    *   13.87    14.55   *   20.44    14.65   *
* TOYOTA HILUX PU      TE-7         C 133 2V M4 2750 4.11 55.2 942    *   14.90    14.60   *   22.19    14.66   *
* TOYOTA HILUX CAB     TE-8         C 133 2V M4 3500 4.11 53.5 947    *   14.15    14.45   *   20.66    14.62   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  19100-38011  AND CARBURETOR  21100-38100               *   12.25    15.18   *   17.91    15.45   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* TOYOTA HILUX CAB     TE-6         C 133 2V A  3500 4.11 53.5 946    *   14.77    15.13   *   21.07    15.32   *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  19100-38011  AND CARBURETOR  21100-38061               *   12.25    15.73   *   17.91    15.99   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* TOYOTA HILUX CAB     TE-2         F 133 2V A  3500 4.11 53.5 873    *   14.77    15.68   *   21.07    15.85   *
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Table 5-25. Fuel-Weighted Calibration Factors
Reference Vehicle 3000/M-3/2.92, 140 CID (Continued)

PROGRAM VSIMII	140CID, MANUAL, 3000LB, 44.0N/V	RUN ON 10/30/76 AT 11.58.30 PAGE 4			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 19100-38011 AND CARBURETOR 21100-38081					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES		12.25	14.34	17.91	14.71
TOYOTA CELICA LB GT CE-5	C 133 2V M5 3000 3.73 45.1 735	12.41	14.45	18.15	14.66
TOYOTA CORONA HT CE-7	C 133 2V M4 3000 3.73 52.4 733	14.12	14.52	20.35	14.65
TOYOTA CORONA WGN CE-8	C 133 2V M5 3000 3.72 44.7 732	12.32	14.45	18.01	14.66
REFERENCE VALUE					
DISTRIBUTOR 19100-38011 AND CARBURETOR 21100-38021					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES		12.25	15.18	17.91	15.45
TOYOTA CELICA LB ST CE-6	C 133 2V A 3000 3.91 55.0 736	15.34	15.27	22.24	15.34
REFERENCE VALUE					
DISTRIBUTOR 19100-45091 AND CARBURETOR 21[illegible]-45100		13.49	14.34	19.68	14.54
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TOYOTA MARK II FE-10	F 156 2V A 3000 3.91 55.5 414	18.73	14.10	27.26	14.57
TOYOTA MARK II FE-[illegible]	F 156 2V A 3000 4.11 57.6 415	19.35	14.12	28.26	14.57
TOYOTA MARK II FE-11	F 156 2V M4 3000 3.91 55.5 413	17.94	14.21	25.73	14.61
REFERENCE VALUE					
DISTRIBUTOR 19100-38011 AND CARBURETOR 21100-38011		12.25	15.18	17.91	15.45
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TOYOTA CELICA LB GT FE-5	F 133 2V M5 3000 3.73 45.1 411	12.41	15.31	18.15	15.41
TOYOTA CORONA WGN FE-7	F 133 2V M4 3000 3.72 52.8 407	14.22	15.37	21.00	15.39
TOYOTA CORONA ES FE-8	F 133 2V M5 3000 3.73 52.8 409	14.22	15.37	21.00	15.39
REFERENCE VALUE					
DISTRIBUTOR 19100-38011 AND CARBURETOR 21100-38031					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES		7.63	15.73	6.69	15.99
TOYOTA CELICA LB ST FE-6	F 133 2V A 3000 3.91 55.0 412	9.57	15.82	8.34	15.88
REFERENCE VALUE					
DISTRIBUTOR D6F4-03 AND CARBURETOR FI LJ-02					
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES		7.94	15.85	13.31	19.02
NISSAN 280Z F494	C 168 FI A 3000 3.55 49.5 581	10.48	18.25	18.16	19.17
NISSAN 280Z F496	C 168 FI M4 3000 3.55 49.6 582	10.52	18.43	17.75	19.22
REFERENCE VALUE					
DISTRIBUTOR D6F4-01 AND CARBURETOR FI LJ-02		7.95	15.85	13.56	19.02
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN 280Z F497	F 168 FI M4 3000 3.55 49.6 348	10.04	18.40	17.55	19.22

Table 5-25. Fuel-Weighted Calibration Factors
Reference Vehicle 3000/M-3/2.92, 140 CID (Concluded)

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*****************************************************************************************************************
* PROGRAM VSIMII *   140CID, MANUAL, 3000LB, 44.0N/V                  *  RUN ON  10/30/76  AT  12.58.30   PAGE  5 *
*****************************************************************************************************************
*                                *                                    *       FTP-URBAN        *      FTP-HIGHWAY       *
*                                *                                    *******************************************
*                                *                                    *     FUEL WEIGHTED      *     FUEL WEIGHTED      *
*                                *                                    *******************************************
*                                *                                    *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                    * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  06F4-02        AND CARBURETOR  FI LJ-02                *    6.49     18.86  *   12.72     19.02  *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* NISSAN 280Z          F405            F 168 FI A  3000 3.55 49.6 347 *    8.53     18.25  *   16.67     19.17  *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  0011589801     AND CARBURETOR  0011706604              *   11.19     16.87  *   15.99     17.13  *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* MERCED M-B 115       115V607 L40C    C 141 IV A  3500 3.92 55.5 627 *   14.49     16.70  *   21.49     17.03  *
* MERCES M-B 115       115V612         F 141 IV A  3500 3.92 54.3 298 *   14.13     16.69  *   21.32     17.03  *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  0021580401     AND CARBURETOR  DB00107005              *    6.37     12.50  *   13.38     13.48  *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* MERCED M-B 114       114V608         C 168 4V A  4000 3.69 51.9 629 *    8.49     11.91  *   17.26     13.54  *
* MERCED M-B 115       116V609         C 168 4V A  4000 3.69 51.7 628 *    8.42     11.91  *   17.20     13.54  *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  JFU23117C122 AND CARBURETOR  FI                        *    4.80     14.26  *    7.98     14.74  *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* SAAB    SAAB 99      98-836          F 121 FI A  3000 3.89 53.5 370 *    5.58     14.50  *    9.13     14.56  *
* SAAB    SAAB 99      99-840          F 121 FI M4 3000 3.89 52.9 371 *    5.29     14.61  *    8.86     14.61  *
* SAAB    SAAB 99      99-842          F 121 FI M4 3000 3.89 52.9 372 *    5.29     14.61  *    8.86     14.61  *
* SAAB    SAAB 99      99-844          C 121 FI A  3000 3.89 53.5 700 *    5.58     14.50  *    9.13     14.56  *
* SAAB    SAAB 99      99-845          C 121 FI M4 3000 3.89 52.9 701 *    5.29     14.61  *    8.86     14.61  *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  M74            AND CARBURETOR  32,34BICSA              *    3.42     13.54  *    9.98     14.26  *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* PEUGEO 504 SL        262             C 120 2V M4 3500 3.89 53.8 686 *    3.75     13.78  *   10.88     14.10  *
* PEUGEO 504 SL        263             F 120 2V A  3500 3.89 53.8 351 *    3.91     13.67  *   11.10     14.06  *
* PEUGEO 504 SL        264             F 120 2V M4 3500 3.89 53.8 352 *    3.75     13.78  *   10.88     14.10  *
* PEUGEO 504 SL        272             C 120 2V A  3500 3.89 53.8 685 *    3.91     13.67  *   11.10     14.06  *
* PEUGEO 504 WGN       276             C 120 2V A  3500 3.89 53.8 686 *    3.91     13.67  *   11.10     14.06  *
* PEUGEO 504 WGN       279             F 120 2V A  3500 4.11 55.6 353 *    4.03     13.69  *   11.45     14.06  *
*                                                                     *                    *                    *
* REFERENCE VALUE                                                     *                    *                    *
* DISTRIBUTOR  1910X-38031    AND CARBURETOR  21100-38041             *   12.25     15.18  *   17.91     15.45  *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES           *                    *                    *
* TOYOTA HILUX P.U.    TE-1            F 133 2V M4 2759 4.11 55.2 369 *   14.90     15.46  *   22.19     15.40  *
* TOYOTA HILUX P.U.    TE-3            F 133 2V M4 2759 4.38 51.3 871 *   13.98     15.42  *   20.73     15.41  *
* TOYOTA HILUX CAB     TE-4            F 133 2V M4 3500 4.11 53.5 372 *   14.15     15.25  *   20.66     15.36  *
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Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID

PROGRAM VSIMII * 98CID, MANUAL, 2500LB, 56.5N/V * RUN ON 10/30/76 AT 12.01.21 PAGE 1

	FTP-URBAN FUEL WEIGHTED		FTP-HIGHWAY FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE DISTRIBUTOR 1110654G224 AND CARBURETOR 17056330N397 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.73	15.26	18.01	15.50
GMC CHEVETTE 181C C 85 IV A 2250 4.11 62.7 556	18.92	15.53	18.90	15.35
REFERENCE VALUE DISTRIBUTOR 1110655G166 AND CARBURETOR 17056331N356 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	14.64	15.85	14.76	16.01
GMC CHEVETTE 183C C 85 IV M4 2250 4.11 62.7 557	14.96	16.26	15.18	15.90
REFERENCE VALUE DISTRIBUTOR 1110658G154 AND CARBURETOR 17056331N173 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.83	16.17	15.62	16.36
GMC CHEVETTE 124F F 85 IV M4 2250 4.11 62.7 167	18.27	16.60	15.06	16.25
REFERENCE VALUE DISTRIBUTOR 1110654G229 AND CARBURETOR 17056335N809 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	17.74	16.04	18.12	16.37
GMC CHEVETTE 121F F 85 IV A 2250 4.11 62.7 166	18.92	16.33	19.02	16.21
REFERENCE VALUE DISTRIBUTOR 1110657G125 AND CARBURETOR 17056335N285 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	19.47	16.13	17.21	16.44
GMC CHEVETTE 184C C 98 IV M4 2250 4.11 62.7 560	21.53	16.24	19.30	16.45
REFERENCE VALUE DISTRIBUTOR 1110659G102 AND CARBURETOR 17056334N286 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	18.46	15.74	16.21	15.86
GMC CHEVETTE 182C C 98 IV A 2250 4.11 62.7 559	21.32	15.73	18.55	15.82
REFERENCE VALUE DISTRIBUTOR 1110657G123 AND CARBURETOR 17056335N187 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	19.73	16.30	17.24	16.26
GMC CHEVETTE 123F F 98 IV M4 2250 3.73 55.5 169	20.02	16.37	17.07	16.28
REFERENCE VALUE DISTRIBUTOR 1110659G155 AND CARBURETOR 17056334N186 CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES	18.82	16.18	16.17	16.39
GMC CHEVETTE 122F F 98 IV A 2250 4.11 62.7 170	21.74	16.16	18.50	16.36

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

PROGRAM VSIMII 98CID, MANUAL, 2500LB, 56.5N/V RUN ON 10/30/76 AT 12.01.21 PAGE 2

									FTP-URBAN FUEL WEIGHTED ADVANCE (DEGREE)	FTP-URBAN FUEL WEIGHTED AIR/FUEL RATIO	FTP-HIGHWAY FUEL WEIGHTED ADVANCE (DEGREE)	FTP-HIGHWAY FUEL WEIGHTED AIR/FUEL RATIO
REFERENCE VALUE												
DISTRIBUTOR 0231176046 AND CARBURETOR FID438040006									17.46	15.64	20.78	15.64
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AUDI	FOX	8252000015										
VW	DASHER	8252000015										
REFERENCE VALUE												
DISTRIBUTOR 0231176057 AND CARBURETOR FID438040006									16.87	15.64	20.52	15.64
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AUDI	FOX	IN-JM2	C	97	FI	A	2500	3.91	60.0 759	18.47	15.56	22.03	15.58
VW	DASHER	IN-JM2	C	97	FI	A	2500	3.91	60.0 750	18.47	15.56	22.03	15.58
AUDI	FOX WGN	IN-JM49	C	97	FI	M4	2500	4.11	60.0 760	17.69	15.68	21.60	15.63
VW	DASHER WGN	IN-JM49	C	97	FI	M4	2500	4.11	60.0 751	17.69	15.68	21.60	15.63
AUDI	FOX WGN	IN-AA42	F	97	FI	A	2500	3.91	60.0 438	18.47	15.56	22.03	15.58
VW	DASHER WGN	IN-AA42	F	97	FI	A	2500	3.91	60.0 429	18.47	15.56	22.03	15.58
AUDI	FOX	IN-JM35	F	97	FI	M4	2500	4.11	60.0 439	17.69	15.68	21.60	15.63
VW	DASHER	IN-JM35	F	97	FI	M4	2500	4.11	60.0 430	17.69	15.68	21.60	15.63
AUDI	FOX	IN-AA41											
REFERENCE VALUE												
DISTRIBUTOR 0231176032 AND CARBURETOR FID438040005									19.59	15.79	25.56	15.88
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
AUDI	100 LS	IN-JH46	C	114	FI	M4	3000	4.11	58.9 762	21.82	15.28	28.34	15.99
AUDI	100 LS	IN-JF86	C	114	FI	A	3000	3.91	57.0 761	22.17	15.15	28.06	15.95
AUDI	100 LS	IN-JE98	F	114	FI	A	3000	3.91	57.0 440	22.17	15.15	28.06	15.95
AUDI	100 LS	IN-JH24	F	114	FI	M4	3000	4.11	58.9 441	21.82	15.28	28.34	15.99
REFERENCE VALUE												
DISTRIBUTOR 0559052058,F AND CARBURETOR C55129021									16.42	14.63	19.93	14.94
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
VW	RABBIT	WOB-VH18	F	97	2V	M4	2250	3.90	57.6 426	16.79	14.72	20.54	14.95
VW	RABBIT	WOB-VH25	C	97	2V	M4	2250	3.90	57.6 746	16.79	14.72	20.54	14.95
VW	RABBIT	WOB-VX65	C	97	2V	A	2250	3.76	57.1 421	17.40	14.60	20.79	14.91
VW	RABBIT	WOB-VS62	F	97	2V	A	2250	3.76	57.1 742	17.40	14.60	20.79	14.91
REFERENCE VALUE												
DISTRIBUTOR 0003/3,/4 AND CARBURETOR 0003/2									16.19	15.83	14.42	15.38
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES												
HONDA	CIVIC	SRC-335001	F	76	2V	M4	2000	4.93	64.7 320	16.13	16.55	14.54	15.21

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

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PROGRAM VSIMII *    98CID, MANUAL, 2500LB, 56.5N/V          * RUN ON  10/30/76  AT  12.01.21    PAGE  3 *
*                                                           *      FTP-URBAN       *     FTP-HIGHWAY      *
*                                                           *   FUEL WEIGHTED      *   FUEL WEIGHTED      *
*                                                           * ADVANCE * AIR/FUEL   * ADVANCE * AIR/FUEL   *
*                                                           * (DEGREE) *   RATIO   * (DEGREE) *   RATIO   *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  0231176059   AND CARBURETOR  1261105.1       *  28.37    15.16      *  33.35    15.33       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* BMW    2002          2367250        C 121 2V M4 2750 3.64 54.0 621 *  30.70    14.55      *  36.17    15.52       *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  0231170164   AND CARBURETOR  1261105.1       *  34.75    15.16      *  36.40    15.33       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* BMW    2002A         2381550        C 121 2V A  2750 3.64 54.0 620 *  39.34    14.45      *  40.28    15.48       *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  0500B        AND CARBURETOR  0500B           *  10.48    13.99      *  14.00    14.01       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* LOTUS  LOTUS ELITE  0500B        C 120 2V M5 2750 3.73 43.7 668 *   9.49    13.39      *  12.48    14.19       *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  4G5-C        AND CARBURETOR  4G5-C           *    .02    15.45      *    .03    17.04       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* MITSUB COLT WGN      B208          C 122 2V M5 2750 3.89 50.0 719 *    .02    15.75      *    .03    17.28       *
* MITSUB COLT          B215          C 122 2V A  2750 3.54 54.2 708 *    .03    15.66      *    .04    17.22       *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  4G3-C        AND CARBURETOR  4G3-C,4G3-F     *  12.88    16.38      *  15.57    16.89       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* MITSUB COLT          B103          C  98 2V A  2750 3.59 59.4 705 *  13.92    16.18      *  16.39    16.82       *
* MITSUB COLT          B110          C  98 2V M4 2750 3.89 58.4 706 *  13.15    16.30      *  15.82    16.87       *
* MITSUB COLT          B112          C  98 2V M5 2750 4.22 54.1 707 *  12.32    16.27      *  14.75    16.88       *
* MITSUB ARROW         C107          C  98 2V A  2500 3.89 60.3 703 *  14.24    16.27      *  16.90    16.84       *
* MITSUB ARROW         C116          C  98 2V M4 2500 3.89 58.4 702 *  13.27    16.38      *  16.09    16.89       *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  4G3-F(M)     AND CARBURETOR  4G3-F,4G3-C     *  12.88    16.38      *  15.57    16.89       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* MITSUB COLT          B106          F  98 2V M4 2750 3.89 58.4 377 *  13.15    16.30      *  15.82    16.87       *
* MITSUB COLT          B108          F  98 2V M2 2500 4.22 53.3 378 *  12.29    16.35      *  14.80    16.90       *
* MITSUB ARROW         C114          F  98 2V M4 2500 3.89 58.4 373 *  13.27    16.38      *  16.09    16.89       *
*                                                           *                       *                      *
* REFERENCE VALUE                                           *                       *                      *
* DISTRIBUTOR  4G3-F(A)     AND CARBURETOR  4G3-F,4G3-C     *  12.88    16.38      *  15.57    16.89       *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES *                       *                      *
* MITSUB COLT          B101          F  98 2V A  2750 3.89 60.3 376 *  14.10    16.19      *  16.62    16.82       *
* MITSUB ARROW         C105          F  98 2V A  2500 3.89 60.3 374 *  14.24    16.27      *  16.90    16.84       *
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Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

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*****************************************************************************************************************
* PROGRAM VSIMII *    98CID, MANUAL, 2500LB, 56.5N/V                  *  RUN ON  10/30/76  AT  12.01.21   PAGE  4 *
*****************************************************************************************************************
*                                *                                   *       FTP-URBAN        *      FTP-HIGHWAY       *
*                                *                                   *************************************************
*                                *                                   *    FUEL WEIGHTED       *     FUEL WEIGHTED      *
*                                *                                   *************************************************
*                                *                                   *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                   * (DEGREE) *   RATIO  * (DEGREE) *   RATIO  *
*****************************************************************************************************************
*                                *                                   *                     *                     *
* REFERENCE VALUE                *                                   *                     *                     *
* DISTRIBUTOR  465-F             AND CARBURETOR  465-F               *  16.75     16.18    *  13.93     16.68    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES          *                     *                     *
* MITSUB COLT          8211          F 122 2V A  2750 3.54 54.2 380 *  12.22     15.39    *  15.54     16.86    *
* MITSUB COLT          8213          F 122 2V A  2750 3.54 54.9 379 *  12.35     15.40    *  15.73     16.85    *
* MITSUB ARROW         C206          F 122 2V M5 2750 3.89 49.3 381 *  10.81     15.48    *  13.99     16.91    *
*                                *                                   *                     *                     *
* REFERENCE VALUE                *                                   *                     *                     *
* DISTRIBUTOR  329875102         AND CARBURETOR  329978100           *  13.19     16.56    *  17.06     16.66    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES          *                     *                     *
* FUJII  SUBARU        6FE-C         F  83 2V M4 2250 4.13 56.0 443 *  13.91     17.07    *  18.08     16.52    *
* FUJII  SUBARU WGN    6FE-D         F  97 2V A  2500 3.89 62.0 448 *  14.86     16.48    *  18.81     16.59    *
* FUJII  SUBARU WGN    6FE-E         F  83 2V M5 2250 4.13 60.0 442 *  12.82     17.02    *  16.56     16.53    *
* FUJII  SUBARU WGN    6FE-F         F  83 2V M4 2500 4.13 66.0 445 *  13.78     16.98    *  17.78     16.50    *
* FUJII  SUBARU        4CE-G         C  83 2V M4 2250 4.13 66.0 763 *  13.91     17.07    *  18.08     16.52    *
* FUJII  SUBARU WGN    6CE-H         C  97 2V A  2500 3.89 62.0 766 *  14.86     15.48    *  18.81     16.59    *
* FUJII  SUBARU WGN    4CE-J         C  83 2V M4 25[illegible] 4.13 66.0 765 *  13.78     15.98    *  17.78     16.50    *
*                                *                                   *                     *                     *
* REFERENCE VALUE                *                                   *                     *                     *
* DISTRIBUTOR  M402P2,HUS        AND CARBURETOR  32DATRA1/100        *  13.73     16.01    *  17.08     16.30    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES          *                     *                     *
* FIAT   128           1842465       F  79 2V M4 2500 4.42 72.0 305 *  15.07     16.56    *  18.81     16.10    *
* FIAT   128           0193126       F  79 2V M4 2500 4.42 72.0 307 *  15.07     16.56    *  18.81     16.10    *
*                                *                                   *                     *                     *
* REFERENCE VALUE                *                                   *                     *                     *
* DISTRIBUTOR  M402P2P2,HUS AND CARBURETOR  32DATRA1/100             *  13.73     16.01    *  17.08     16.30    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES          *                     *                     *
* FIAT   X1/9          0026569       C  79 2V M4 2500 4.42 66.0 536 *  13.98     16.52    *  17.36     16.11    *
* FIAT   128           1869747       C  79 2V M4 2500 4.42 72.0 637 *  15.07     16.56    *  18.81     16.10    *
*                                *                                   *                     *                     *
* REFERENCE VALUE                *                                   *                     *                     *
* DISTRIBUTOR  SBD-330[illegible]3  AND CARBURETOR  SBD-330[illegible]03  *  18.49     15.93    *  19.14     15.65    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES          *                     *                     *
* HONDA  CIVIC         SBD-330[illegible]3   F  78 2V SA 2[illegible] 4.12 72.5 318 *  21.29     16.53    *  21.89     15.41    *
*                                *                                   *                     *                     *
* REFERENCE VALUE                *                                   *                     *                     *
* DISTRIBUTOR  TKC 1224          AND CARBURETOR  RKC 3725            *  12.[illegible]     15.25    *  13.75     16.21    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES          *                     *                     *
* TRIUMP SPITFIRE      FM4PRBU       C  91 1V M4 2250 3.89 59.9 711 *  12.30     15.49    *  14.13     16.16    *
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Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

PROGRAM VSIMII	98CID, MANUAL, 2500LB, 55.5N/V	RUN ON 10/30/76 AT 12.01.21 PAGE 5			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR TKC 1224	AND CARBURETOR CHA 511	12.46	15.16	13.75	16.29
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TRIUMP MG MIDGET	ADC47-1975-12 C 91 1V M4 2250 3.91 60.8 712	12.46	15.41	14.32	16.24
REFERENCE VALUE					
DISTRIBUTOR TKC 2755	AND CARBURETOR RKC 0771	9.83	16.38	11.96	17.68
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TRIUMP SPITFIRE	FM2953/4 F 91 1V M4 2000 3.89 59.9 383	10.13	16.72	12.49	17.65
REFERENCE VALUE					
DISTRIBUTOR TKC 2755	AND CARBURETOR CHA 327	9.83	15.17	11.96	16.30
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TRIUMP MG MIDGET	187/964/4 F 91 1V M4 2000 3.91 60.8 384	10.26	15.50	12.66	16.27
REFERENCE VALUE					
DISTRIBUTOR LUCAS 45DF4	AND CARBURETOR B/C	14.24	16.53	19.21	17.98
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
AUSTIN MGB	87FC/1 F 110 1V M5 2500 3.91 55.5 287	15.05	16.23	20.40	18.11
REFERENCE VALUE					
DISTRIBUTOR 19100-26121	AND CARBURETOR 21100-26371.	17.47	15.11	19.14	15.40
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TOYOTA COROLLA	CE-1 C 97 2V M4 2500 4.10 60.5 727	18.53	15.16	20.39	15.45
TOYOTA COROLLA	CE-2 C 97 2V A 25[illegible] 4.10 60.8 725	19.34	15.04	20.90	15.41
TOYOTA COROLLA SPO	CE-3 C 97 2V M5 2500 4.30 59.5 730	17.[illegible]	15.12	18.31	15.45
TOYOTA COROLLA WGN	CE-4 C 97 2V A 2500 4.10 60.8 726	19.34	15.34	20.80	15.41
REFERENCE VALUE					
DISTRIBUTOR 19100-26110	AND CARBURETOR 21100-26352	22.34	15.45	24.03	15.93
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
TOYOTA COROLLA	FE-1 F 97 2V M4 2500 4.10 60.8 402	23.73	15.49	25.34	15.92
TOYOTA COROLLA	FE-2 F 97 2V A 2500 4.10 60.8 401	24.74	15.37	25.11	15.87
REFERENCE VALUE					
DISTRIBUTOR D4A4-36	AND CARBURETOR DCH340-44,47	11.35	16.41	12.88	16.30
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN PICK-UP	K420 F 119 2V A 2751 4.11 57.4 954	13.39	15.70	14.39	16.43

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

PROGRAM VSIMII	98CID, MANUAL, 2500L8, 56.5N/V	RUN ON 10/30/76 AT 12.01.21 PAGE 6			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR D4A4-07	AND CARBURETOR DCH340-48,47	15.04	16.41	15.79	16.30
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN PICKUP K501	F 119 2V M4 2750 4.38 58.2 855	17.19	15.84	18.14	16.48
REFERENCE VALUE					
DISTRIBUTOR D4F4-03	AND CARBURETOR DCH340-1	15.01	15.84	16.85	15.75
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN PICK-UP K487	C 119 2V A 2750 4.11 57.4 930	17.70	15.16	19.50	15.88
NISSAN 710 B1392	C 119 2V A 2750 3.70 54.7 677	16.99	15.14	18.66	15.88
NISSAN 710 BW0112	C 119 2V A 3000 3.70 54.7 680	16.83	15.07	18.34	15.86
REFERENCE VALUE					
DISTRIBUTOR D4F4-04	AND CARBURETOR DCH340-45A	11.31	16.41	12.83	16.30
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN PICK-UP K486	C 119 2V M4 2750 4.38 58.2 931	12.92	15.84	14.74	16.48
REFERENCE VALUE					
DISTRIBUTOR D4F4-04	AND CARBURETOR DCH340-1	11.31	15.84	12.83	15.75
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN 710 BKC274	C 119 2V M4 2750 3.70 54.7 678	12.26	15.26	13.92	15.93
NISSAN 710 BW0119	C 119 2V M4 3000 3.70 54.7 679	12.14	15.19	13.69	15.91
REFERENCE VALUE					
DISTRIBUTOR D4F5-01,02	AND CARBURETOR DCH306-17	20.82	16.17	21.40	16.21
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN F-15 AK0404	C 85 2V M4 2250 3.47 53.8 669	18.63	16.53	19.13	16.11
REFERENCE VALUE					
DISTRIBUTOR D4F4-02	AND CARBURETOR DCH306-15A	15.79	16.54	17.84	16.50
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN B-210 AKC314	C 85 2V A 2500 3.39 60.4 675	17.18	16.73	17.79	16.33
NISSAN B-210 A556	C 85 2V A 2250 3.39 60.4 674	17.35	16.81	18.09	16.34
REFERENCE VALUE					
DISTRIBUTOR D4F5-01	AND CARBURETOR DCH306-11A	20.75	16.56	21.27	16.54
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN B-210 AK0295	C 85 2V M4 2250 3.39 60.4 675	20.54	16.98	21.13	16.43
NISSAN B-210 AK0303	C 85 2V M5 2250 3.70 49.1 671	17.25	16.89	17.50	16.44

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

PROGRAM VSIMTI	98CID, MANUAL, 2500LB, 56.5N/V	RUN ON 10/30/76 AT 12.01.21 PAGE 7			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR D4A5-04	AND CARBURETOR DCH306-16	20.66	16.44	21.12	16.45
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN F-10	AK0401 F 85 2V M5 2250 3.47 54.1 338	18.62	16.80	18.98	16.35
REFERENCE VALUE					
DISTRIBUTOR D4A5-04	AND CARBURETOR DCH306-14A-	20.66	16.77	21.12	16.73
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN B-210	AK0296 F 85 2V M4 2250 3.89 60.4 342	20.42	17.19	20.99	16.62
NISSAN B-210	AK0313 F 85 2V M5 2250 3.70 49.1 339	17.18	17.10	17.39	16.63
REFERENCE VALUE					
DISTRIBUTOR D4A5-05	AND CARBURETOR DCH306-14A-	15.43	16.77	16.27	16.73
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN B-210	A589 F 85 2V A 2250 3.89 60.4 341	15.95	17.05	16.50	16.57
REFERENCE VALUE					
DISTRIBUTOR D4A4-04	AND CARBURETOR DCH340-44A-	14.99	16.56	16.33	16.50
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN 710	BWC116 F 119 2V M4 2750 3.70 54.7 344	16.26	15.96	17.72	16.69
NISSAN 610	BWC117 F 119 2V M4 3000 3.70 54.7 346	16.10	15.88	17.42	16.67
REFERENCE VALUE					
DISTRIBUTOR D4A4-06	AND CARBURETOR DCH340-44A-	11.32	16.56	12.84	16.50
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
NISSAN 710	BWC115 F 119 2V A 2750 3.70 54.7 343	12.82	15.83	14.22	16.64
NISSAN 610	BWC118 F 119 2V A 3000 3.70 54.7 345	12.69	15.75	13.97	16.62
REFERENCE VALUE					
DISTRIBUTOR 1399044.2	AND CARBURETOR 1261557.1	33.53	15.68	36.35	16.02
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
BMW 2002M	2360850 F 121 2V M4 2750 3.90 58.0 288	38.61	15.38	41.73	16.21
BMW 2002A	2380798 F 121 2V A 2750 3.91 58.0 289	40.31	14.96	42.57	16.17
REFERENCE VALUE					
DISTRIBUTOR M4C1R1P1	AND CARBURETOR 32ADFA1/100,	23.36	15.33	29.60	15.93
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
FIAT 124 SPT CPE	0268561 F 107 2V M5 2750 4.30 57.0 313	25.14	15.05	31.10	16.00

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

PROGRAM VSIMII * 98CID, MANUAL, 2500LB, 56.5N/V * RUN ON 10/30/76 AT 12.01.21 PAGE 8

	FTP-URBAN FUEL WEIGHTED		FTP-HIGHWAY FUEL WEIGHTED	
	ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE				
DISTRIBUTOR M401R1P1 AND CARBURETOR 32ADFA3/100	23.88	15.86	29.60	16.46
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FIAT 131 WGN 4000036 F 107 2V A 3000 4.44 66.0 317	29.47	15.43	35.68	16.45
REFERENCE VALUE				
DISTRIBUTOR M401R1P1 AND CARBURETOR 32DATRA3/100	23.88	15.01	29.60	15.14
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FIAT 131 0007045				
REFERENCE VALUE				
DISTRIBUTOR M401P1 AND CARBURETOR 32ADFA4/100	23.88	11.50	29.60	11.50
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
FIAT 131 0000552 C 107 2V A 3000 4.44 66.0 645	29.47	11.19	35.68	11.49
FIAT 124 SPT CPE 0271662 C 107 2V M5 2750 4.30 57.1 639	25.19	11.29	31.10	11.55
FIAT 131 WGN 4013657 C 107 2V M5 3000 4.44 58.0 649	25.25	11.24	31.06	11.54
REFERENCE VALUE				
DISTRIBUTOR T3T66073 AND CARBURETOR 215282-66	19.81	15.36	19.56	15.24
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
TOYO K MAZDA 808 ECNAP-1 C 97 2V M4 2500 3.91 63.7 715	20.99	15.41	20.80	15.23
REFERENCE VALUE				
DISTRIBUTOR T3T66075 AND CARBURETOR 215282-66	17.51	15.36	15.75	15.24
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
TOYO K MAZDA M16 PU ECNAT-1 C 97 2V M4 3000 4.38 59.2 337	17.24	15.24	15.36	15.20
TOYO K 808 CPE ECNAP-2 C 97 2V A 2500 4.10 63.7 717	20.23	15.30	19.30	15.18
TOYO K 808 WAGON ECNAP-3 C 97 2V A 2750 4.10 63.7 720	19.98	15.23	18.58	15.16
REFERENCE VALUE				
DISTRIBUTOR D4H3-1 AND CARBURETOR DCG306-34	15.57	17.05	14.12	17.65
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
TOYO K MAZDA 808 ECTCP-1 F 78 2V M4 2500 4.10 63.7 339	15.26	17.59	13.79	17.43
TOYO K MAZDA 808 SW ECTCP-3 F 78 2V M4 2500 4.10 63.7 338	15.26	17.59	13.79	17.43
REFERENCE VALUE				
DISTRIBUTOR T3T66074 AND CARBURETOR DCG306-34	15.35	14.83	13.97	15.40
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES				
TOYO K MAZDA 808 ECTCP-1 C 78 2V M4 2500 4.10 63.7 714	15.03	15.30	13.64	15.21
TOYO K MAZDA 808 SW ECTCP-2 C 78 2V M4 2500 4.10 63.7 715	15.03	15.31	13.64	15.21

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

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* PROGRAM VSIMIT *    98CID, MANUAL, 2500LB, 56.5N/V                          *  RUN ON  10/30/76  AT  12.01.21   PAGE  9 *
*****************************************************************************************************************
*                                *                                          *      FTP-URBAN        *     FTP-HIGHWAY      *
*                                *                                          *******************************************
*                                *                                          *    FUEL WEIGHTED      *    FUEL WEIGHTED     *
*                                *                                          *******************************************
*                                *                                          *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL *
*                                *                                          * (DEGREE) *  RATIO   * (DEGREE) *  RATIO   *
*****************************************************************************************************************
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  T3T05179      AND CARBURETOR  DCJ328-7                       *  20.40     13.32    *  21.76     13.70    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* TOYO K COURIER PU     ECVBT-1        C 110 2V M4 3000 4.11 54.7 939      *  20.88     12.94    *  22.04     13.77    *
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  T3T06071      AND CARBURETOR  DCJ328-2                       *  11.82     12.56    *  14.16     12.64    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* TOYO K B1600 PU       ENAT-1         F  97 2V M4 3000 4.33 58.2 861      *  11.84     12.45    *  13.95     12.60    *
* TOYO K B1600 PU       ENAT-2         F  97 2V M4 3000 4.38 58.2 862      *  11.84     12.45    *  13.95     12.60    *
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  T3T03672      AND CARBURETOR  DCJ328-3                       *  13.48     12.18    *  15.62     12.31    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* TOYO K COURIER PU     EVBT-1         F 110 2V M4 3000 4.11 54.7 863      *  13.80     11.83    *  15.82     12.38    *
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  T3T03673      AND CARBURETOR  DCJ323-4A                      *  12.56     11.79    *  15.35     11.92    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* TOYO K COURIER PU     EVBT-3         F 110 2V A  3000 4.62 61.5 940      *  14.86     11.40    *  17.64     11.94    *
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  8942065420    AND CARBURETOR  8942065359-40                  *  15.21     13.90    *  17.81     14.20    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* ISUZU  LUV P.U.       N5513320C614   C 111 2V M4 2750 4.13 55.6 923      *  16.03     13.55    *  18.73     14.30    *
* ISUZU  LUV P.U.       N5513320C616   C 111 2V A  2750 4.13 55.4 927      *  16.73     13.45    *  19.11     14.26    *
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  8942065420    AND CARBURETOR  8942065351-40                  *  15.21     15.49    *  17.81     15.71    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* ISUZU  LUV P.U.       N5513320C612   F 111 2V M4 2750 4.13 55.6 853      *  16.03     15.11    *  18.73     15.82    *
* ISUZU  LUV P.U.       N5513320C611   F 111 2V A  2750 4.10 55.6 851      *  15.73     14.99    *  19.11     15.77    *
*                                                                           *                    *                    *
* REFERENCE VALUE                                                           *                    *                    *
* DISTRIBUTOR  8942065420    AND CARBURETOR  8942065543-40                  *  15.21     15.17    *  17.81     15.28    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES                 *                    *                    *
* ISUZU  OPEL           N1034717021    C 111 2V M4 2500 3.54 55.8 660      *  16.43     14.87    *  18.46     15.41    *
* ISUZU  OPEL           N1034717023    C 111 2V A  2500 3.54 55.8 659      *  16.74     14.75    *  19.24     15.36    *
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Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Continued)

PROGRAM VSIMII	98CID, MANUAL, 2500LB, 56.5N/V	RUN ON 10/30/76 AT 12.01.21 PAGE 10			
		FTP-URBAN		FTP-HIGHWAY	
		FUEL WEIGHTED		FUEL WEIGHTED	
		ADVANCE (DEGREE)	AIR/FUEL RATIO	ADVANCE (DEGREE)	AIR/FUEL RATIO
REFERENCE VALUE					
DISTRIBUTOR 8942065420 AND CARBURETOR 8942038740		15.42	16.32	17.98	16.48
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
ISUZU OPEL	N1934717017 F 111 2V M4 2500 3.54 55.0 329	16.26	15.99	19.74	16.61
REFERENCE VALUE					
DISTRIBUTOR 8942065420 AND CARBURETOR 8942054570		15.21	16.64	17.81	16.79
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
ISUZU OPEL	N1934717016 F 111 2V A 2500 3.54 55.0 328	15.74	16.18	19.24	16.88
REFERENCE VALUE					
DISTRIBUTOR R.243/D.64 AND CARBURETOR 32DARA		37.79	15.78	41.59	16.11
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
RENAUL	650				
REFERENCE VALUE					
DISTRIBUTOR R.243/D.64 AND CARBURETOR 32DARA1		37.79	15.50	41.69	15.89
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
RENAUL	347				
RENAUL	826				
REFERENCE VALUE					
DISTRIBUTOR R243/D64 AND CARBURETOR 32DARA10		37.79	15.74	41.59	15.91
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
RENAUL 12 WGN	652 F 100 2V M4 2500 3.77 59.6 364	40.10	15.71	44.45	15.93
RENAUL 15TL C/E	665 F 100 2V M4 2500 3.77 59.6 363	40.10	15.71	44.45	15.93
REFERENCE VALUE					
DISTRIBUTOR R243/D64 AND CARBURETOR 32DARA11		37.79	15.97	41.69	16.24
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
RENAUL 12GTL	PS651 F 100 2V A 2500 3.55 56.6 362	40.06	15.79	43.25	16.21
RENAUL 12 SW	PS654 F 100 2V A 2750 3.55 56.6 365	39.68	15.71	42.52	16.20
RENAUL 17TL	PS660 F 100 2V A 2750 3.55 56.6 366	39.63	15.71	42.52	16.20
REFERENCE VALUE					
DISTRIBUTOR 055905205H AND CARBURETOR 055129022		19.87	15.13	21.00	15.52
CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES					
VW RABBIT	459				

Table 5-26. Fuel-Weighted Calibration Factors
Reference Vehicle 2500/M-4/3.07, 97.6 CID (Concluded)

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*****************************************************************************************************************
* PROGRAM VSIMII *    98CID, MANUAL, 2500LB, 56.5N/V          *  RUN ON  10/30/76  AT  12.01.21   PAGE 11 *
*****************************************************************************************************************
*                                *                            *      FTP-URBAN       *      FTP-HIGHWAY      *
*                                *                            *******************************************
*                                *                            *    FUEL WEIGHTED     *    FUEL WEIGHTED      *
*                                *                            *******************************************
*                                *                            *  ADVANCE * AIR/FUEL *  ADVANCE * AIR/FUEL  *
*                                *                            * (DEGREE) *   RATIO  * (DEGREE) *   RATIO   *
*****************************************************************************************************************
*                                                             *                    *                    *
* REFERENCE VALUE                                             *                    *                    *
* DISTRIBUTOR  J5590520SH    AND CARBURETOR  C551290215       *  19.87     15.91   *  21.00     16.38   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES   *                    *                    *
* VW      RABBIT         4057-5081       F  97 1V M4 2250 3.70 54.8 418 *  19.49     15.99   *  20.69     16.39   *
* VW      RABBIT         4057-5776(014)  F  97 1V M4 2250 3.48 51.0 416 *  18.35     15.96   *  19.38     16.40   *
*                                                             *                    *                    *
* REFERENCE VALUE                                             *                    *                    *
* DISTRIBUTOR  R269/C34      AND CARBURETOR  32DIR46          *  27.49     15.74   *  32.87     17.23   *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES   *                    *                    *
* RENAUL 5GTL            TP1             F  79 2V M4 2000 3.63 58.0 361 *  25.52     17.37   *  30.66     17.08   *
* RENAUL 5TL             TP4             F  79 2V M4 2000 3.63 59.8 361 *  26.20     17.39   *  31.53     17.07   *
*****************************************************************************************************************
```

SECTION 6

PROGRAM COMPUTATIONAL FEATURES AND OPERATION

6.1 AIR FLOW COMPUTATIONS (PROGRAM VSIMI)

The primary purpose of Program VSIMI is to add air flow information to the results of the VEHSIM program. Secondary objectives are engine-map scaling and computation of fuel-weighted average values of air-fuel ratio and spark advance.

6.1.1 Inputs

Inputs to VSIMI consist of the output tape (tape 19) from VEHSIM and two engine maps input by punched cards. The carburetor engine map gives air-flow rate or air-fuel ratio as a function of engine rotational speed and engine load (BMEP), and the distributor engine map gives spark advance as a function of rotational speed and load. Normally, engine rotational speed is given in rpm, but the option is provided to input engine speed in the form of piston speed and convert internally to rpm through rpm = 6 × piston speed/stroke, with piston speed given in feet/minute and stroke in inches. Air flow rate is normally input in units of pounds of fuel per minute, but may be input in units of pounds of fuel per hour and converted internally. Additional punched card input identifies the carburetor-distributor-engine combination, the input unit options (rpm or piston speed, and air-flow rate or air-fuel ratio), engine displacement (cubic inches), and stroke (inches). An initial card indicates whether engine scaling is to be done, and gives the displacement and stroke of the desired engine.

The results from the vehicle simulation program are input as a magnetic tape (or permanent disc file) giving, for each segment of the driving cycle:

a. cumulative time (seconds)

b. cumulative distance (miles)

c. cumulative fuel consumption (pounds)

d. engine horsepower (hp)

e. engine torque (lb-ft)

f. engine rotational speed (rpm)

g. manifold vacuum (inches of mercury)

h. percent of wide-open throttle

i. segment identification

6.1.2 Outputs

The primary output from VSIMI is a magnetic tape (or permanent disc file) called tape 29 giving, for each segment of the driving cycle:

a. cumulative time (seconds)

b. cumulative distance (miles)

c. cumulative fuel consumption (pounds)

d. engine horsepower (hp)

e. engine torque (lb-ft)

f. engine rotational speed (rpm)

g. manifold vacuum (inches of mercury)

h. percent of wide-open throttle

i. engine load (BMEP)

j. incremental fuel consumed during segment (pounds)

k. incremental air consumed during segment (pounds)

l. air-fuel ratio

m. spark advance (degrees)

n. fuel-weighted air-fuel ratio, through current segment

o. fuel-weighted spark advance (degrees), through current segment

p. air flow rate (lb/min)

The first eight words on tape 29 are the same as the corresponding words on tape 19. Consequently, a VSIMI output tape 29 could be used as input tape 19 for a subsequent VSIMI run.

Printed VSIMI outputs provide verification of each computer run by reproducing the carburetor and distributor maps and providing samples (one segment in 50) of the tape 19 (VEHSIM) input and of the newly calculated parameters written to tape 29. The final (full driving cycle) fuel-weighted average air-fuel ratio and fuel-weighted average spark advance are also printed out.

6.1.3 Program Structure

The two major stages of Program VEHSIM consist of: the input of engine map data from punched cards and input of driving cycle data from tape 19; and computation of air flow rate, air-fuel ratio, spark advance, and fuel-weighted air-fuel ratio and spark advance for each segment of the driving cycle and writing the resulting values onto tape 29.

6.1.3.1 Data Input

Engine maps are read from punched cards in subroutine CARDCD, and many checks are performed. Program operation is aborted if any check fails.

a. There must not be a premature end of file.

b. Cards must be in the proper order, as indicated by card headings.

c. Values for designating input options must be meaningful.

d. Speed values must increase steadily.

e. Engine displacement must be positive.

f. Load data must increase steadily.

Also, the engine maps are set up in core within CARDCD, with a count of the number of points on each load card so that the tables can have any length from 2 to 10.

In subroutine CYCLE, the data from tape 19 are read and stored in core.

6.1.3.2 Engine Map Scaling

Engine map scaling, if required, is performed by use of the same algorithms as those employed in VEHSIM. For both the carburetor (air flow rate) and distributor (spark advance) maps, rpm is scaled as

$$\text{RPM(OUT)} = \frac{\text{STROKE(IN)}}{\text{STROKE(OUT)}} \text{RPM(IN)}$$

so that piston speed is constant. When air flow rate is given in the carburetor map, air flow rate is scaled to be proportional to rpm and displacement:

$$\text{AIR FLOW RATE(OUT)} = \frac{\text{STROKE(IN)} \cdot \text{CID(OUT)}}{\text{STROKE(OUT)} \cdot \text{CID(IN)}} \cdot \text{AIR FLOW RATE(IN)}$$

6.1.3.3 Computations

In the computation stage, subroutines AIR, SPARK, and TOUT are called for each segment of the driving cycle. Subroutine AIR determines the (incremental) fuel consumed during the segment by subtracting the previous value of cumulative fuel consumption from the current value. The time duration of the segment is similarly determined. The load value for entering the engine maps is determined from BMEP = 150.8 × TORQUE/DISPLACEMENT, and the rpm value is read. Then the value of air flow rate or air-fuel ratio is found by double interpolation with respect to load and rpm within the carburetor engine map. The first two interpolations are with respect to load, for the two constant rpm lines that bracket the rpm value, and the final interpolation is with respect to rpm. In any interpolation, if the independent variable lies beyond the range of tabulated values, the near end-point value is utilized.

If carburetor data are given in terms of air flow rate, incremental (segment) air consumed is then found by multiplying air flow rate by the duration of the segment in minutes, and the total air consumed during the driving cycle is accumulated. The segment air-fuel ratio is computed by dividing incremental air by incremental fuel, and the current value of fuel-weighted air-fuel ratio is computed by dividing the cumulative air by cumulative fuel.

If carburetor data are given in terms of air-fuel ratio, segment air consumption is found by multiplying the air-fuel ratio by segment fuel consumption, and the air flow rate is found by dividing segment air by the duration of the segment.

In subroutine SPARK the value of spark advance is found by double interpolation with respect to load and rpm within the distributor engine map. The product (segment fuel) × (segment spark advance) is computed and accumulated, and the current value of fuel-weighted spark advance is computed from cumulative segment fuel-advance product/cumulative fuel consumption.

Within subroutine TOUT the output data listed in Section 6.1.2 are written onto tape 29.

At the conclusion of the run, the final values of fuel-weighted air-fuel ratio and fuel-weighted spark advance are printed out.

6.1.4 Data Input Formats

Engine-map data are input from punched cards in the formats depicted in Table 6-1. Except for the third identification card, all input cards begin with a designation phrase which must be included, since that phrase is used to check whether the input cards are in the proper order. All numerical data must include a decimal point.

The first card designates whether engine scaling is to be performed. The word SCALE must appear in columns 1-5. Columns 7-9 must contain "YES" and column 10 be blank if scaling is to be performed, while columns 7-8 must contain "NO" and columns 9-10 be blank if no engine scaling is to be performed.

Table 6-1. Input Cards for VSIMI

FORTRAN CODING FORM

PROBLEM NO. _____ PROGRAMMER _____ KEYPUNCHED _____ VERIFIED _____ DATE _____ PAGE ____ OF ____

STATEMENT NO. (1)	(6–7)	(13)	(19)	(25)	(31)	(37)	(43)	(49)	(55)	(61)	(67–72)	(73–80)
SCALE	YES NO	Displace-ment	Stroke									
*CARB			Engine	or	PISTON RPM		BMEP	or	AFR LBS	(HR)		
	Identification Card, up to 80 Digits											
DATA		Displace-ment		Stroke								
SPEED	POINT	(rpm)										
LOAD	POINT	L1	L2	...	10 Values of Load						L10	
CARB	DATA	C1	C2	..	10 Values of Carb. Data (Air-Flow Rate or Air/Fuel Rates)						C2	
	Additional sets of speed, load, carburetor											
*ENGINE TIMING			Engine	or	PISTON RPM		BMEP		DEG			
	Identification Card, up to 80 Digits											
DATA		Displace-ment		Stroke								
SPEED	POINT	(rpm)										
LOAD	POINT	L1	L2	...	10 Values of Load						L10	
ADVANCE		A1	A2		10 Values of Spark Advance						A10	
	Additional sets of speed, load, spark advance											

The second card is used to select three data-type options. The words that select the option must be left-justified within the 6-column fields.

a. If columns 31-36 contain "PISTON", engine speeds are given in terms of piston speed (ft/min). If columns 31-36 contain "RPM", engine speeds are given in rpm.

b. If columns 55-60 contain "AFR", carburetor data are presented as the air-fuel ratio. If they contain "LBS", carburetor data are presented as air flow rate.

c. The air flow rate is presented in units of pounds of air per minute unless columns 61-66 contain "HR".

The third card must be present; its contents are printed to identify the carburetor and vehicle being run. The fourth card contains engine displacement (cubic inches) in columns 13-18 and engine stroke (inches) in columns 25-30.

The remaining carburetor cards consist of 2 to 10 sets of three cards:

a. The SPEED card contains the rpm or piston speed value in columns 13-18.

b. The LOAD card contains 2 to 10 values of engine load (BMEP).

c. The CARB DATA card contains air-fuel ratio or air flow rate corresponding to the engine load values.

The first distributor, "*ENGINE TIMING", card is used to designate whether engine speeds in the distributor engine map are presented as piston speed (in which case, columns 31-36 contain "PISTON") or as rpm (in which case, columns 31-36 contain "RPM" left-justified). The contents of the second distributor card are used for identification. The third distributor card contains, again, engine displacement and stroke. If piston speeds are used in the distributor engine map, the stroke must be given, even if the carburetor engine map also used piston speeds.

The remaining distributor cards consist of 2 to 10 sets of three cards giving, respectively: engine speed; 2 to 10 load values; and the 2 to 10 values of corresponding spark advance.

An example of a full set of VSIMI input cards is given in Table 6-2 on page 6-10.

6.1.5 Implementation

VSIMI is written in FORTRAN IV. It has been run on the CDC 7600 computer under the SCOPE 2.1 operating system. Three system-provided functions are utilized:

a. The EOF(N) function, which tests for an end-of-file condition.

b. The DATE(X) function, which returns the date in the form of a 10-letter alphanumeric word.

c. The TIME(X) function, which returns the time of day in the form of a 10-letter alphanumeric word.

Except for the date and time, which are written by subroutine CARDCD, all alphanumeric words contain 5 or fewer characters. Names of variables, subroutines, and common blocks contain 6 or fewer characters.

6.2 FUEL-WEIGHTED CALIBRATION FACTORS (PROGRAM VSIMII)

The purpose of Program VSIMII is to calculate, for many vehicles, fuel-weighted average values of air-fuel ratio and spark advance and to add those values to an existing data base (which is in the form of a magnetic tape) to create an expanded data base. For each vehicle, two different driving cycle regimes are used that may, for example, be the FTP urban cycle and the FTP highway cycle. Specification of a vehicle requires input of its weight, engine displacement, N/V (speed ratio), and transmission type. It also requires that the distributor and carburetor be identified. In VSIMI, engine maps are used to give air-fuel ratio and spark advance as functions of two engine parameters, load and speed. In contrast, in VSIMII

the distributor and carburetor are described by calibration curves with centrifugal advance presented as a function of engine rpm, vacuum advance presented as a function of manifold vacuum, and air-fuel ratio presented as a function of air flow rate.

Computations of fuel-weighted average values are carried out in two stages. They are first calculated for the input distributor-carburetor combination with the VEHSIM and VSIMI results for the reference vehicle, that is, the vehicle whose performance was simulated. The final, configuration-corrected values are computed by correcting the reference vehicle results by applying the sensitivity coefficients and the differences between the weights, displacements, speed ratios, and (if appropriate) transmission type of the reference vehicle and of each vehicle utilizing the distributor-carburetor combination.

6.2.1 Inputs

Inputs to VSIMII consist of the output tapes from VSIMI runs, on the same engine and vehicle, on two different driving cycles and of punched cards giving vehicle data and identification information as well as the distributor and carburetor calibration curves for all desired vehicles. The results of VSIMI are on magnetic tapes (designated tape 29 and tape 30) in the format shown in Section 6.1.2.

6.2.2 Output

Both tape and printed output are produced by VSIMII. The printed output, in the form shown in Table 6-2, presents fuel-weighted average spark advance and air-fuel ratio for all vehicles for two different driving cycle regimes. For each distributor-carburetor combination, the reference vehicle results are first printed out, followed by the configuration-corrected results for each vehicle which uses that distributor and carburetor. In the tabulation, the distributor and carburetor part designations (limited to no more than 12 characters) are printed. Vehicles are identified by:

a. manufacturer's name (6 characters)

Table 6-2. VSIMII Printed Output

```
*****************************************************************************************************************
* PROGRAM VSIMII *   350CID, AUTOMATIC, 5000LB, 38.8N/V          *  RUN ON  10/28/76  AT  18.51.41   PAGE  1 *
*****************************************************************************************************************
*                                *                                *      FTP-URBAN       *      FTP-HIGHWAY      *
*                                *                                *******************************************
*                                *                                *    FUEL WEIGHTED     *    FUEL WEIGHTED     *
*                                *                                *******************************************
*                                *                                * ADVANCE * AIR/FUEL * ADVANCE * AIR/FUEL *
*                                *                                * (DEGREE) *  RATIO  * (DEGREE) *  RATIO  *
*****************************************************************************************************************
*                                                                 *                   *                   *
* REFERENCE VALUE                                                 *                   *                   *
* DISTRIBUTOR  3228265      AND CARBURETOR  SF3227439             *  18.37    14.81    *  22.67    15.65    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                   *                   *
* AMC     MATADOR        D51-17R        F 360 4V A  4500 2.87 37.8  22 *  18.45    14.81    *  22.92    15.70    *
* AMC     MATADOR WGN    D58-39R        F 360 4V A  4500 3.54 44.4  24 *  21.16    14.87    *  26.56    15.68    *
*                                                                 *                   *                   *
* REFERENCE VALUE                                                 *                   *                   *
* DISTRIBUTOR  3228265      AND CARBURETOR  SF3227441             *  18.37    14.90    *  22.67    15.30    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                   *                   *
* AMC     MATADOR        D51-18R        F 360 2V A  4500 2.87 37.8  23 *  18.45    14.90    *  22.92    15.34    *
* AMC     MATADOR        D58-39D(R)     F 360 2V A  4500 3.54 44.4  25 *  21.16    14.97    *  26.56    15.33    *
*                                                                 *                   *                   *
* REFERENCE VALUE                                                 *                   *                   *
* DISTRIBUTOR  3228265      AND CARBURETOR  SF3227439             *  25.07    14.81    *  28.31    15.65    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                   *                   *
* AMC     MATADOR        D51-22R        C 360 4V A  4500 3.15 41.5 461 *  27.25    14.85    *  31.17    15.69    *
* AMC     MATADOR        D58-39D(R)     C 360 4V A  4500 3.54 44.4 462 *  29.87    14.87    *  33.17    15.68    *
*                                                                 *                   *                   *
* REFERENCE VALUE                                                 *                   *                   *
* DISTRIBUTOR  3228266      AND CARBURETOR  SF3227441             *  21.30    14.96    *  24.41    15.35    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                   *                   *
* AMC     MATADOR        D5A-21R        C 360 2V A  4500 3.15 41.5 460 *  23.15    15.00    *  26.38    15.38    *
* AMC     MATADOR        D58-42R        C 360 2V A  4500 3.54 44.4 463 *  24.53    15.03    *  28.60    15.38    *
*                                                                 *                   *                   *
* REFERENCE VALUE                                                 *                   *                   *
* DISTRIBUTOR  3574225-360  AND CARBURETOR  4036046-360           *  26.42    16.12    *  35.40    16.08    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                   *                   *
* CHRYSL PLYMOUTH        1035           F 360 2V A  4000 3.21 43.7  62 *  30.31    15.26    *  41.55    16.13    *
* CHRYSL PLYMOUTH        4071           F 360 2V A  4500 2.71 34.5  64 *  24.58    16.09    *  32.94    16.14    *
* CHRYSL FURY            4072           F 360 2V A  4500 3.21 42.9  67 *  29.55    16.18    *  40.19    16.12    *
* CHRYSL CORONET         4073           F 360 2V A  4000 2.45 32.3  59 *  23.50    16.14    *  31.56    16.16    *
*                                                                 *                   *                   *
* REFERENCE VALUE                                                 *                   *                   *
* DISTRIBUTOR  3674097-360  AND CARBURETOR  3830029-360           *  26.77    16.28    *  39.26    17.56    *
* CONFIGURATION-CORRECTED VALUES FOR THE FOLLOWING VEHICLES       *                   *                   *
* CHRYSL VALIANT         2069           F 360 4V A  4000 3.21 43.5  51 *  30.59    16.42    *  45.89    17.61    *
* CHRYSL PLYMOUTH        2074           F 360 4V A  4000 2.94 39.9  60 *  28.41    16.38    *  42.39    17.62    *
*****************************************************************************************************************
```

b. model (13 characters)

c. identification number (14 characters)

d. Federal or California emission certification

e. engine displacement (cubic inches)

f. carburetor type

g. transmission type

h. inertia weight class

i. rear axle ratio

j. speed ratio (N/V)

k. data base sequence number

Other printed outputs are: a listing of all input cards; sampled data from tapes 29 and 30; and, if desired, a tabulation of the distributor and carburetor calibration curves. If program execution is terminated because of a card-input error, an error message is printed together with an image of the offending card.

The tape output consists of an expansion of the data base tape provided by EPA. Data for each vehicle occupy two records: the first record consists of a direct copy of the EPA tape record with a sequence number appended, and the second record contains data added by Aerospace.

The contents of the first record are:

a. manufacturer's code

b. vehicle inertia weight

c. engine family

d. displacement

e. transmission type

f. carburetor type

g. rear axle ratio

h. N/V (speed ratio)

i. vehicle model year

j. certification standard

k. projected sales

l. test number

m. urban fuel economy: 1972 Federal Test Procedure

n. urban fuel economy: 1975 Federal Test Procedure

o. highway fuel economy: 1975 Highway Fuel Economy Test

p. compact fuel economy (55% urban, 45% highway)

q. car line

r. sequence number (added by Aerospace)

The contents of the second record are:

a. configuration-corrected fuel-weighted spark advance for urban driving cycle

b. configuration-corrected fuel-weighted air-fuel ratio for urban driving cycle

c. configuration-corrected fuel-weighted spark advance for highway driving cycle

d. configuration-corrected fuel-weighted air-fuel ratio for highway driving cycle

e. manufacturer's name (6 characters)

f. identification number (14 characters)

g. distributor part number (12 characters)

h. carburetor part number (12 characters)

i. reference vehicle weight

j. reference vehicle displacement

k. reference vehicle N/V (speed ratio)

l. reference vehicle transmission type

m. reference vehicle fuel-weighted spark advance for urban driving cycle

n. reference vehicle fuel-weighted air-fuel ratio for urban driving cycle

o. reference vehicle fuel-weighted spark advance for highway driving cycle

p. reference vehicle fuel-weighted air-fuel ratio for highway driving cycle

6.2.3 Program Structure

Execution of Program VSIMII begins with reading driving cycle data from tapes 29 and 30 and storing in core for all segments:

a. cumulative time (seconds)

b. cumulative fuel consumption (pounds)

c. engine rotational speed (rpm)

d. manifold vacuum (inch of mercury)

e. percent of wide-open throttle

f. air flow rate (lb/min)

These are the only items from the VSIMI output tapes that are used subsequently.

The main computations are carried out in turn for each distributor-carburetor combination and the specific vehicle configurations associated with them. These computations consist of:

a. Reading input data and checking it and setting up the tables for calibration curves of centrifugal advance, vacuum advance, and air-fuel ratio.

b. For each segment, in turn, of the first driving cycle, computing the current value of the fuel-weighted spark advance and air-fuel ratio for the reference vehicle. The final pair are the desired reference vehicle results for that cycle.

c. Performing the same computations for the second driving cycle.

d. Utilizing sensitivity coefficients and the card-input values for weight, displacement, N/V, and transmission type for both the reference vehicle and the specific vehicle configurations to obtain configuration-corrected results. (Configuration-corrected values are not computed if any of the specific configuration parameters are missing.) The vehicle identification parameters and reference vehicle values are stored in core.

After computations have been completed for all distributor-carburetor sets and the specific vehicle configurations associated with them,

an updated data base tape is prepared. The "old" data base tape is read one vehicle at a time (two records). A check is then made and, if the sequence number from the tape does not coincide with the card-input sequence number for any specific vehicle configuration, the two records are written unchanged onto the "new" data base tape. If the sequence number from the tape matches the sequence number of some specific vehicle configuration, then the first record is written unchanged onto the new tape, configuration-corrected results are computed anew (this time using specific-vehicle parameters read from the data base tape and reference-vehicle parameters previously read from cards), and an updated second record is written onto the "new" tape.

6.2.3.1 Data Input

Calibration curves and identification information are read by a series of subroutines that read, check, and store data. They verify that data cards are in proper order by checking each card heading, and the run is aborted if an incorrect card heading is found. No checks are made on the calibration curve values themselves, however. Normal program termination occurs if an end-of-file condition (no more data cards) is encountered, when a new distributor would be expected.

6.2.3.2 Computations

Basic computations are performed within subroutine SEGCMP, with one call to SEGCMP for each segment. Values of engine rpm, manifold vacuum, air-flow rate, percent of wide-open throttle, and cumulative fuel consumption are read from values stored in the core. The incremental fuel consumed during the segment is determined by subtracting the previous value of cumulative fuel consumption from the current value. Centrifugal advance, vacuum advance, and (uncorrected) air-fuel ratio are found by linear interpolation in calibration curves with respect, respectively, to engine rpm, manifold vacuum, and air-flow rate.

A correction may then be made to the air-fuel ratio. The correction

$$\frac{\text{percent throttle} - 90\%}{10\%} * (\text{WOT decrement})$$

is subtracted from the air-fuel ratio if the percent of throttle exceeds 90 percent. The "WOT decrement" is a single value for each carburetor, input from the carburetor designation card.

Total spark advance is obtained by adding centrifugal spark advance and vacuum spark advance. The product (segment fuel) × (segment spark advance) is computed and accumulated, and the current value of fuel-weighted spark advance is computed from (accumulated fuel × advance product)/(cumulative fuel consumption).

The product (segment fuel) × (segment air-fuel ratio) is computed and accumulated, and the current value of fuel-weighted air-fuel ratio is computed from (accumulated fuel × advance product)/(cumulative fuel consumption).

At the end of computations for each distributor-carburetor combination, the final values of reference vehicle fuel-weighted air-fuel ratio and fuel-weighted spark advance are printed out for both cycles.

Application of sensitivity coefficients to obtain configuration-corrected values is performed within subroutine SENAP. This subroutine is utilized both in obtaining values for printed output and values for tape output.

The process of obtaining an updated tape is carried out in subroutine MERGE after all other calculations have been completed.

6.2.4 Data Input Formats

Table 6-3 depicts the formats used for data input and case identification. The final seven cards apply to the entire run. The initial card contains the name of the first driving cycle in columns 1-19, the

Table 6-3. Input Cards for VSIMII

FORTRAN CODING FORM

PROBLEM NO. _____ PROGRAMMER _____ KEYPUNCHED _____ VERIFIED _____ DATE _____ PAGE ____ OF ____

STATEMENT NO. (1)	(6)	(7–12)	(13–18)	(19–24)	(25–30)	(31–36)	(37–42)	(43–48)	(49–54)	(55–60)	(61–66)	(67–72)	(73–80)
Digits 1-19: Name of first cycle				Digits 20-39: Name of second cycle				Digits 41-80: Identification of Reference Vehicle					
Weight		Displace-ment	N/V	Rear Axle Ratio	A M	(Weight Displacement, speed (N/V) ratio, rear axle ratio, transmission type of Ref. vehicle)							
SFWT1		SFWT2	SFWT3	SFWT4				Weight		1	Urban spark advance		
SFDSPL1		SFDSPL2	SFDSPL3	SFDSPL4	Sensitivity factors for			Displacement		2	Highway spark advance		
SFNOV1		SFNOV2	SFNOV3	SFNOV4				N/V		3	Urban air/fuel		
SFTTY1		SFTTY2	SFTTY3	SFTTY4				Transmission type		4	Highway air/fuel		
Warn				(Magnitude of configuration correction warning message criterion)									
*DISTR				←12 digit part name→									
	n	sq 1	sq 2	sq 3	...	sq n		(Number of vehicles in set, sequence numbers)					vehicle
		rar 1	rar 2	rar 3		rar n				(rear-axle ratios)			data
		nov 1	nov 2	nov 3		nov 4		(N/V, speed ratios)					cards
←13 digit	manufacturer→		←13 digit model→		←14 digit identification→			C F ← cid →		m V F I	A M - m ← weight →	(Vehicle identification)	
		(a total of	n vehicle	identification cards)									
ADVANCE			CA1	CA2	up to 10 values of centrifugal advance								
ENGINE		RPM	R1	R2	up to 10 values of engine RPM								
ADVANCE			VA1	VA2	up to 10 values of vacuum advance								
VACUUM			V1	V2	up to 10 values of manifold vacuum								
*CARB				←12 digit part name→									
AFR			A/F(1)	A/F(2)	up to 10 values of air/fuel ratio								
LBSAIR			A1	A2	up to 10 values of air flow rate								

name of the second driving cycle in columns 21-39, and identification of the vehicle and engine in columns 41-80. The second card contains reference vehicle parameters. Weight, displacement, speed ratio, and rear axle ratio are contained in 6-character fields and the values must contain a decimal point. Column 25 contains the letter "A" or "M" depending upon whether the reference vehicle has an automatic or a manual transmission. Values for the sensitivity coefficients are contained on cards 3 through 6 with four parameters (in 6-digit fields with a decimal point). As indicated in Table 6-3, card 3 contains weight sensitivity coefficients, in order, for urban spark advance, highway spark advance, urban air-fuel ratio, and highway air-fuel ratio. Similarly, cards 4, 5, and 6 contain, respectively, displacement, N/V, and transmission-type sensitivity coefficients. Card 7, in columns 1-6, contains a fractional value (from 0 up to, but not including, 1) which is used as the criterion for issuance (on an auxiliary output tape called tape 40) of a warning if the product of the four sensitivity coefficients is significantly different from unity. Specifically, if p is that product and w the input criterion, a warning message will be issued if $p < (1 - w)$ or if $p > 1/(1 - w)$.

All other input cards are in sets of from 12 to 23 cards, one set for each distributor-carburetor combination. Except as noted, all data must contain a decimal point.

a. The first card, headed "*DISTR", contains a 12-character part name in columns 19-30.

b. The next three cards contain specific vehicle data. The first of these uses integer (no decimal points, right-justified) format. In the first 6-digit field is the number of specific vehicle configurations followed by their data base sequence numbers, with a blank or negative value indicating that the vehicle does not appear in the data base. The second and third vehicle data cards, starting in column 7, contain rear axle ratios and speed (N/V) ratios for the same vehicles.

c. The next group may contain from 1 to 12 vehicle identification cards, one card per vehicle, in order corresponding to that given in the vehicle data. They contain the manufacturer's name, model, identification, certification, displacement (3-digit integer, left-justified), carburetor type or fuel injection information, transmission type, and weight (4-digit integer).

d. The vacuum advance calibration curve is contained in the next two cards, with the first, headed "ADVANCE", containing two to ten values of advance and the next, headed "VACUUM", containing the corresponding values of manifold vacuum.

e. The next card, headed "*CARB", contains a 12-character part name in columns 19-30 and the value of the wide-open throttle decrement in columns 31-36.

f. The carburetor calibration curve is contained in the next two cards, with the first, headed "AFR", containing two to ten values of air-fuel ratio and the next, headed "LBSAIR", containing corresponding values of air flow in pounds of air per minute.

It is of critical importance that, in all three calibration curves, the first values of the independent variable and the dependent variable should not both be zero. Should they both be zero, all entries in the table will be set to zero. Thus, for example, if the first value of centrifugal advance is 0, then the first value of rpm must not be 0, but a value of .00001 would be entirely acceptable.

An example of a set of VSIMII input cards is given in Table 6-6 on page 6-25.

6.2.5 Implementation

VSIMII is written in FORTRAN IV and has been operated on the CDC 7600 computer under the SCOPE 2.1 operating system. The following three system-provided functions are used:

a. The EOF(N) function, which tests for an end-of-file condition.

b. The DATE(X) function, which returns the date in the form of a 10-character alphanumeric word.

c. The TIME(X) function, which returns the time of day in the form of a 10-character alphanumeric word.

Except for the date and time, which are written by subroutine HEAD, all alphanumeric words contain five or fewer characters. Names of variables, subroutines, and common blocks contain six or fewer characters.

6.3 PROGRAM OPERATION

6.3.1 Introductory Note

This section presents examples of computer deck setups. Computer control statements are given in the SCOPE 2 control language for the CDC 7600. However, the "CATALOG" statement, which preserves a permanent file, has been simplified by omission of the ID = name (creator identification) parameter. In the examples it is assumed that data and output files, denoted by TAPExy, are permanent disc files. Control statement modifications would be required if physical magnetic tapes were to be used.

6.3.2 VEHSIM

In operation, Program VEHSIM requires an input file (TAPE4), a printer output file (TAPE6), two temporary files (TAPE2 and TAPE5), a data output file (TAPE19), and a parts file (TAPE3). Generation of a parts file, and its modification, is one of the capabilities of VEHSIM. Reference 1 describes all of the capabilities and input options for VEHSIM.

Table 6-4 is an example of the control and input cards required to perform a single simulation run using VEHSIM. The parts file (TAPE3) and output data file (TAPE19) are assumed to be permanent disc files. The VEHSIM input cards are instructions for the program to construct a vehicle from options contained in the parts file, define a driving schedule and route, and perform the simulation.

Table 6-4. Deck Setup for Program VEHSIM

```
                 ****      SCOPE 2.1 CONTROL CARDS      ****

REQUEST(TAPE19,*PF)                    RESERVE PERMANENT FILE LOCATION
ATTACH(TAPE3,5TAPE3)                   TAPE 3 CONTAINS VEHSIM PARTS FILE
ATTACH(VEHSIM,5VEHSIM)                 PERMANENT FILE WITH VEHSIM OBJECT CODE
LDSET(PRESET=ZERO)                     INITIALLY SET ALL CORE TO ZERO
VEHSIM.                                LOAD AND EXECUTE PROGRAM VEHSIM
CATALOG(TAPE19,5TAPE191)               PRESERVE TAPE 19 AS PERMANENT FILE

7/8/9 MULTIPLE PUNCH IN COLUMN 1  END OF RECORD CARD

                 ****          VEHSIM INPUT CARDS          ****

*TITLE       CASE 8(A)   GMC 350, AUTO, 5000-LB CLASS, FTP URBAN, 3.08 IN
*PRINT UNITS       ENGINE       PISTON       BMEP          BSFC
*USE  V5000B       VEHICLE
*LIMIT PRINT       SEGMENT
*USE  LEVEL        ROUTE
*USE  UDC001       DRIVING SCHEDULE
*USE  T252Y2       GEAR                      1
*USE  T152Y2       GEAR                      2
*USE  T100Y2       GEAR                      3
*USE  TEST2        SHIFT LOGIC
*USE  COCY2        CONVERTER
*USE  CODY2        CONVERTER
*USE  GM350M       ENGINE          1         1 2 3
*USE  LFANA        ACCESSORY
*USE  LPSA         ACCESSORY
*MODIFY            FUEL         0.740
*SIMULATE
```

Program VEHSIM utilizes the feature, available in the SCOPE 2.1 operating system for the CDC 7600 computer, of having all program variables preset to 0. If those variables are preset to indefinite, the default value in SCOPE 2.1, program execution is aborted. It is not known what results would be obtained on other computers or with other preset values.

6.3.3 VSIMI

In operation, Program VSIMI requires an input file (called TAPE5), a printer output file (TAPE6), a file (TAPE19) which contains the results of a VEHSIM run, and a file (TAPE29) which contains the detailed VSIMI results. With the SCOPE 2 operating system, the input file (TAPE5) for VSIMI must not be identical to the system INPUT file because the BACKSPACE command is utilized. Consequently, the INPUT file is copied to TAPE5, which is then rewound. Provision of an independent input file has the advantage that successive VSIMI runs using the same vehicle may be made in the same job submittal with only one input file.

Table 6-5 is an example of the control and input cards required to perform a single VSIMI run. The VEHSIM result file (TAPE19) and output result file (TAPE29) are again assumed to be permanent disc files. The VSIMI input cards define the selected input data format options, name the reference vehicle and define two of its parameters, and specify the carburetor and distributor engine maps. In Table 6-5, engine rotational speed is in terms of piston speed, carburetor data are expressed in terms of air-fuel ratio, the engine development is 350 cubic inches, and its stroke is 3.48 inches.

6.3.4 VSIMII

In operation, Program VSIMII requires an input file (TAPE4 which may be identical to the system INPUT file), a printer output file (TAPE6), a scratch input file (TAPE5), two VSIMI output tapes (TAPE29 and TAPE30), and a scratch printer output file (TAPE40). TAPE40 is used so

Table 6-5. Deck Setup for Program VSIMI

```
****      DECK SET UP FOR PROGRAM VSIMI      ****

****      SCOPE2.1 CONTROL CARDS      ****

REQUEST(TAPE29,*PF)                  RESERVE PERMANENT FILE LOCATION
ATTACH(TAPE19,5TAPE19U)              PERMANENT FILE WITH VEHSIM OUTPUT TAPE
ATTACH(VSIMI,5VSIMI)                 PERMANENT FILE WITH VSIMI OBJECT CODE
COPYS(INPUT,TAPE5)                   COPY INPUT CARD DECK ONTO SCRATCH FILE
REWIND(TAPE5)                          DESIGNATED AS TAPE5
VSIMI.                               LOAD AND EXECUTE PROGRAM VSIMI
CATALOG(TAPE29,5TAPE29U)             PRESERVE TAPE29 AS PERMANENT FILE

7/8/9 MULTIPLE PUNCH IN COLUMN 1  END OF RECORD CARD

****          VSIMI INPUT CARDS          ****

SCALE NO     349.8 3.480
*CARB              GM350        PISTON       BMEP         AFR
REFERENCE VEHICLE    GMC 350 CID 8 CYL-2BBL
DATA         350.        3.48
SPEED POINT 600.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    97.
CARB DATA    15.   15.    15.50  15.90  15.70  15.25  14.    12.80  12.50  13.
SPEED POINT 700.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    97.
CARB DATA    15.   15.    16.2   16.4   16.    15.2   13.9   12.8   12.6   13.0
SPEED POINT 800.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    104.
CARB DATA    15.4  15.40  16.50  16.50  16.2   15.3   14.1   13.1   12.7   13.2
SPEED POINT 1000.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    113.
CARB DATA    15.9  15.9   16.3   16.3   16.2   15.75  15.1   14.25  13.40  13.3
SPEED POINT 1200.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    114.
CARB DATA    16.25 16.25  15.8   15.8   15.75  15.7   15.3   14.7   13.7   13.3
SPEED POINT 1400.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    112.
CARB DATA    16.   16.    16.    15.7   15.7   15.6   15.25  14.7   13.8   13.5
SPEED POINT 1600.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    109.
CARB DATA    16.   16.    16.    15.8   15.7   15.7   15.4   14.7   13.7   13.7
SPEED POINT 1800.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    103.
CARB DATA    16.   16.    16.    16.0   16.0   16.    15.4   14.5   13.7   13.
SPEED POINT 2000.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    97.
CARB DATA    16.   16.    16.    16.    16.    16.    15.4   14.1   13.6   13.
SPEED POINT 2200.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    92.
CARB DATA    16.   16.    16.    16.    16.    16.    15.    13.8   13.    13.
*ENGINE TIMING     GM350        PISTON       BMEP         DEG
REFERENCE VEHICLE    GMC 350 CID 8 CYL-2BBL
DATA         350.        3.48
SPEED POINT 600.
LOAD POINT   1.    10.    30.    40.    50.    60.    70.    80.    90.    97.
```

Table 6-5. Deck Setup for Program VSIMI (Continued)

```
ADVANCE      21.    21.    20.9   19.4   16.8   13.5   10.    6.6    4.4    4.0
SPEED POINT 700.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    101.
ADVANCE      22.4   22.4   23.    22.    19.3   16.    12.4   9.2    7.4    7.0
SPEED POINT 800.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    105.
ADVANCE      24.2   24.2   25.1   24.1   22.    19.    15.3   12.2   10.    8.7
SPEED POINT 1000.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    112.
ADVANCE      29.0   29.0   29.9   29.6   28.0   25.7   22.3   18.7   15.2   13.0
SPEED POINT 1200.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    114.
ADVANCE      33.2   33.2   34.2   34.1   32.8   30.5   27.2   23.6   20.0   16.6
SPEED POINT 1400.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    112.
ADVANCE      36.    36.    36.4   35.9   34.3   32.    28.9   25.2   21.9   18.5
SPEED POINT 1600.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    108.
ADVANCE      37.    37.    38.2   37.8   36.2   33.8   30.3   26.9   23.6   20.6
SPEED POINT 1800.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    103.
ADVANCE      38.9   38.9   39.5   38.5   35.5   34.    31.    28.    25.    22.
SPEED POINT 2000.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    97.
ADVANCE      40.7   40.7   40.8   39.2   36.8   34.    31.2   28.7   26.    23.5
SPEED POINT 2200.
LOAD POINT   1.     10.    30.    40.    50.    60.    70.    80.    90.    92.
ADVANCE      42.    42.    42.2   40.8   38.    34.9   31.7   28.4   25.4   25.3
```

that a single printed output table can contain all results and be followed by separate tabulations of calibration curves and warning messages.

Table 6-6 is an example of the control and input cards required to perform a single VSIMII run. The VSIMII outputs (TAPE29 and TAPE30) are assumed to be permanent disc files. (Note that TAPE30 was originally created as a TAPE29 and that its logical file name is not preserved.)

Table 6-6. Deck Setup for Program VSIMII

```
                 ****      SCOPE 2.1 CONTROL CARDS      ****

ATTACH(TAPE29,$TAPE29U)              VSIMI OUTPUT (URBAN CYCLE)
ATTACH(TAPE30,$TAPE29H)              VSIMI OUTPUT (HIGHWAY CYCLE)
ATTACH(VSIMII,$VSIMII)               PERMANENT FILE WITH VSIMII OBJECT CODE
VSIMII.                              LOAD AND EXECUTE PROGRAM VSIMII

7/8/9 MULTIPLE PUNCH IN COLUMN 1  END OF RECORD CARD

                 ****          VSIMII INPUT CARDS          ****
                 ****           (TWO SETS ONLY)            ****

     FTP-URBAN              FTP-HIGHWAY      350CID, AUTOMATIC, 5000LB, 38.8N/V
5000. 349.8 38.8  3.08  A
-.097 -.168 -.149 -.011
 .573  .624 -.141  .057
 .846  .913  .026 -.005
-.044 -.020  .028  .003
 .200
*DISTR                3228265
     2     22     24                                                    L-053 B
        2.87  3.34                                                      L-053 B
        37.8  44.4                                                      L-053 B
AMC            MATADOR       D58-17R          F 360 4V A    4500
AMC            MATADOR WGN   D58-39P          F 360 4V A    4500
ADVANCE        0.     6.     17.
ENGINE RPM     900.   1230.  4400.
ADVANCE        0.     15.    15.
VACUUM         5.     12.3   19.
*CARB                 SF3227439     3.8
AFR            13.4   15.6   15.9   16.8   16.5   15.2
LBSAIR         2.     4.     5.     12.    13.    22.
*DISTR                3228265
     2     23     25                                                    L-054
        2.87  3.34                                                      L-054
        37.8  44.4                                                      L-054
AMC            MATADOR       D58-18P          F 360 2V A    4500
AMC            MATADOR       D58-26D(R)       F 360 2V A    4500
ADVANCE        0.     6.     17.
ENGINE RPM     900.   1230.  4400.
ADVANCE        0.     15.    15.
VACUUM         5.     12.3   19.
*CARB                 SF3227441     2.1
AFR            14.2   15.3   15.5   14.
LBSAIR         2.     4.     12.    14.
```

APPENDIX

VEHSIM PRINTOUT FOR 350 CID REFERENCE VEHICLE RUN

APPENDIX

VEHSIM PRINTOUT FOR 350 CID REFERENCE VEHICLE RUN

```
*****************************************************
*                                                   *
*                THE AEROSPACE CORPORATION          *
*          PO BOX 92957, LOS ANGELES, CA  90009     *
*                                                   *
*             INFORMATION PROCESSING DIVISION       *
*        J. M. CLIFFORD / A1-2009 / (213) 648-6046  *
*                                                   *
*                 PERFORMED ON  10/01/76            *
*                 BEGINNING AT  15.47.54            *
*                                                   *
*   VEHSIM, VSIMI                                   *
*                                                   *
*   REF. VEH. B, 350 CID, AUTO, 5000 LB, 3.08 RAR   *
*                                                   *
*****************************************************
```

S C O P E L O A D M A P LOADER VERSION 1.0 10/01/76 15.48.10 PAGE 1

PROGRAM WILL BE ENTERED AT VEHSIM (14545) SCM LENGTH 127234 LCM LENGTH 0

BLOCK	ADDRESS	LENGTH
/CET/	100	53
/ENGMAP/	153	6341
/LDIMEN/	6514	21
/IO/	6535	34
/ENDOF/	6571	2
/OLDMAP/	6573	3151
/CONST/	11744	147
/CNTRL/	12113	10
/MOCON/	12123	22
/ACCESS/	12145	1536
/TORCON/	13703	321
/TMAP/	14224	4
/MISC/	14230	25
/V2MISC/	14255	116
VEHSIM	14373	254
ACCESR	14647	55
/CONSHFT/	14724	3
/RTE/	14727	476
/DSCHED/	15425	56727
/TRORPM/	74354	6
/SHFTL/	74362	2226
/PRNLIM/	76610	6
/VEHICLE/	76616	62
/RUNID/	76700	14
/OUTP/	76714	11
/SEGNO/	76725	1
/FBRAKE/	76726	1
/DEBUG/	76727	10
CONTROL	76737	4230
CONVTR	103167	175
DEBUG	103364	114
/DISK/	103500	25
DSK	103525	666
DSKRD	104333	616
DSKWR	105151	547
ENGINE	105720	655
GOBACK	106575	256
/CURVET/	107053	315
/OLDIO/	107370	4
INPUT	107374	4164
MODSL	113560	144
PRNOUT	113724	522
PRNTPD	114446	2663
READPD	117331	316
REMAP	117647	247
SCALEN	120116	143
SHIFTS	120261	226
ZERO	120507	66
/OP.IO./	120575	120

S C O P E L O A D M A P

FORSYS=	120715	624
BACKSP=	121543	40
/ICCON./	121607	42
COMIO=	121651	55
DECODE=	121726	115
ENDFIL=	122043	45
EOF	122110	15
FLTIN=	122125	153
FLTOUT=	122300	313
FMTAP=	122613	365
GETFIT=	123200	35
INCOM=	123235	247
/IO.BUF./	123504	227
INPB=	123733	312
INPC=	124246	200
KODER=	124446	471
KRAKER=	125137	442
OUTB=	125601	207
OUTC=	126010	173
OUTCOM=	126203	170
REWIND=	126373	35
CLOCK=	126430	50
GOTOER=	126500	14
ALOG	126514	77
ATAN	126613	70
EXP	126703	101
SINCOS=	127004	77
SQRT	127103	46
SYSATO=	127151	1
SYS=AIO	127152	53
XTCY=	127225	7

```
VEHSIM CONTROL CARDS                          VERSION 1231      10/01/76
*******************

 *TITLE       CASE B(A)    GMC 350, AUTO, 5000-LB CLASS, FTP URBAN, 3.08 IN
 *PRINT UNITS        ENGINE       PISTON       BMEP          BSFC
 *USE  V5000B        VEHICLE
 *LIMIT PRINT        SEGMENT
 *USE  LEVEL         ROUTE
 *USE  UDC001        DRIVING SCHEDULE
 *USE  T252Y2        GEAR                      1
 *USE  T152Y2        GEAR                      2
 *USE  T100Y2        GEAR                      3
 *USE  TEST2         SHIFT LOGIC
 *USE  COCY2         CONVERTER
 *USE  CODY2         CONVERTER
 *USE  GM350M        ENGINE            1       1 2 3
 *USE  LFANA         ACCESSORY
 *USE  LPSA          ACCESSORY
 *MODIFY             FUEL          0.742
 *SIMULATE
 *TITLE       CASE B(A)    GMC 350, AUTO, 5000-LB CLASS, FTP HIWAY, 3.08 IN
 *USE  HDC002        DRIVING SCHEDULE
 *SIMULATE
```

DRIVING SCHEDULE (UDCCC1) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
0.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
1.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
2.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
3.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
4.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
5.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
6.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
7.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
8.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
9.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
10.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
11.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
12.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
13.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
14.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
15.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
16.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
17.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
18.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
19.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
20.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
21.02	.000	3.0	4.40	1.71	.69	.1	1	.5	6.6	15.7	973.	85.	15.0	.286	.483	39.
22.02	.002	5.9	4.25	2.89	.62	.3	1	1.1	12.6	20.2	1123.	95.	14.4	.483	.722	45.
23.02	.004	8.6	3.96	3.77	.59	.6	1	1.6	17.3	24.0	1251.	101.	14.0	.639	.841	49.
24.02	.006	11.5	4.25	4.07	.54	1.0	1	2.3	24.7	32.2	1452.	116.	12.4	.736	.886	54.
25.02	.010	14.3	4.11	3.94	.52	1.3	2	3.0	29.7	43.3	1487.	153.	8.3	.539	.769	68.
26.02	.014	16.9	3.81	4.53	.52	1.7	2	3.7	33.0	44.6	1541.	152.	8.2	.615	.825	67.
27.01	.019	17.3	.59	10.93	.85	2.2	2	3.8	9.4	11.0	1095.	53.	18.0	.885	.901	28.
28.02	.024	18.1	1.17	9.17	.70	2.6	2	4.0	13.7	17.4	1237.	74.	16.3	.819	.902	39.
29.07	.030	20.7	3.81	4.50	.54	2.8	2	4.9	47.8	52.9	1687.	163.	7.4	.687	.867	71.
30.07	.036	21.7	1.47	9.00	.60	3.1	2	5.2	19.7	24.9	1424.	92.	15.0	.524	.904	45.
31.05	.042	22.4	1.03	10.45	.63	3.5	3	5.4	15.9	20.5	1222.	88.	15.1	.676	.861	44.
32.03	.048	22.5	.15	16.12	.97	3.9	3	5.5	7.0	8.9	992.	47.	18.3	.836	.903	24.
33.02	.054	22.1	-.59	34.17	46.62	4.3	3	5.4	-.5	.1	900.	0.	21.2	.905	.905	3.
34.02	.060	21.5	-.88	46.34	99.99	4.8	3	5.6	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.
35.02	.066	20.9	-.88	45.65	99.99	5.2	3	5.4	-1.6	-1.3	900.	-7.	21.6	.856	.856	0.
36.03	.072	20.4	-.73	43.97	99.99	5.6	3	5.0	-1.6	-1.3	900.	-7.	21.6	.835	.835	0.
37.03	.077	19.8	-.88	42.69	99.99	6.0	3	5.0	-1.5	-1.3	900.	-7.	21.6	.811	.811	0.
38.04	.082	17.0	-4.11	36.64	99.99	6.3	2	7.4	-1.9	-1.3	900.	-7.	21.6	1.058	.945	0.
39.04	.087	14.9	-3.08	32.12	99.99	6.6	2	5.5	-1.7	-1.3	900.	-7.	21.6	.927	.927	0.
40.04	.091	14.9	0.00	13.72	1.57	6.7	2	3.1	3.1	4.3	900.	25.	19.8	.927	.927	13.
41.04	.095	15.2	.44	11.27	1.01	6.9	2	3.2	6.3	8.2	980.	44.	18.5	.869	.904	23.
42.04	.099	15.5	.44	11.33	1.00	7.0	2	3.3	6.4	8.4	992.	45.	18.5	.875	.903	23.
43.05	.104	16.0	.73	10.12	.86	7.1	2	3.4	8.7	11.3	1074.	55.	17.7	.835	.903	29.
44.06	.108	17.1	1.61	7.98	.64	7.1	2	3.7	16.3	20.8	1270.	86.	15.3	.754	.892	43.
45.08	.114	19.1	2.93	5.91	.52	7.0	2	4.3	29.0	38.4	1525.	132.	10.5	.701	.874	60.

DRIVING SCHEDULE (UDCC01) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
46.08	.119	21.1	2.93	6.04	.51	7.0	2	5.0	33.2	41.9	1502.	137.	9.8	.738	.887	62.
47.08	.125	22.7	2.35	7.10	.53	7.0	2	5.6	29.9	37.3	1569.	123.	11.5	.800	.901	57.
48.03	.131	22.9	.29	14.86	.87	7.2	3	5.6	8.6	10.9	1347.	55.	17.7	.806	.901	28.
49.04	.138	22.7	-.29	22.22	1.77	7.4	3	5.6	2.6	3.0	900.	21.	20.1	.930	.930	11.
50.02	.144	22.6	-.15	19.89	1.35	7.6	3	5.5	4.0	5.2	907.	30.	19.4	.919	.919	15.
51.02	.150	21.3	-1.91	45.91	99.99	7.9	3	6.8	-1.6	-1.3	900.	-7.	21.6	.872	.872	0.
52.02	.155	19.0	-3.37	40.95	99.99	8.1	3	7.6	-1.5	-1.3	900.	-7.	21.6	.778	.778	0.
53.04	.161	17.1	-2.79	36.86	99.99	8.3	2	6.1	-2.0	-1.3	900.	-7.	21.6	1.064	.940	0.
54.04	.165	15.8	-1.91	34.06	99.99	8.5	2	4.7	-1.6	-1.3	900.	-7.	21.9	.983	.983	0.
55.04	.170	15.8	0.00	14.05	1.52	8.6	2	3.4	3.4	4.6	940.	25.	19.9	.941	.941	14.
56.12	.175	17.7	2.79	5.99	.53	8.5	2	3.9	26.4	34.4	1457.	124.	11.6	.680	.864	57.
57.12	.180	19.8	3.08	5.75	.51	8.4	2	4.6	32.3	41.4	1570.	139.	9.7	.706	.876	62.
58.12	.186	21.6	2.64	6.54	.52	8.3	2	5.2	31.1	39.0	1582.	130.	10.7	.765	.894	59.
59.12	.192	23.2	2.35	7.12	.53	8.2	2	5.7	30.6	38.2	1608.	125.	11.4	.803	.901	57.
60.12	.198	24.2	1.47	9.36	.56	8.3	3	6.1	22.3	28.8	1359.	111.	13.0	.656	.851	53.
61.11	.205	24.6	.59	13.11	.72	8.4	3	6.3	12.9	16.1	1173.	72.	16.4	.773	.896	37.
62.11	.212	24.9	.44	14.05	.77	8.5	3	6.4	11.4	14.2	1145.	65.	17.0	.802	.901	34.
63.09	.219	25.0	.15	16.43	.91	8.6	3	6.4	8.1	10.3	1062.	51.	18.1	.868	.904	27.
64.09	.226	24.6	-.59	34.58	11.77	8.8	3	6.3	-.3	.4	900.	2.	21.1	1.007	.993	4.
65.02	.232	24.5	-.15	20.08	1.27	9.0	3	6.2	4.6	5.9	976.	32.	19.5	.925	.925	18.
66.06	.239	24.7	.29	15.13	.84	9.1	3	6.3	9.6	12.0	1096.	58.	17.6	.830	.903	30.
67.04	.246	24.9	.15	16.41	.92	9.2	3	6.3	8.0	10.2	1056.	51.	18.1	.865	.904	27.
68.01	.252	24.7	-.15	20.10	1.27	9.3	3	6.3	4.6	6.0	983.	32.	19.5	.926	.926	18.
68.99	.259	24.6	-.15	20.09	1.27	9.5	3	6.3	4.6	6.0	980.	32.	19.5	.926	.926	18.
69.99	.266	24.6	0.00	18.06	1.04	9.6	3	6.3	6.2	8.1	1007.	42.	18.7	.900	.900	23.
71.03	.273	25.1	.73	12.47	.67	9.6	3	6.5	14.8	18.5	1223.	79.	15.8	.756	.892	41.
72.03	.280	25.5	.73	12.56	.67	9.7	3	6.7	15.2	18.9	1235.	80.	15.8	.764	.894	41.
73.01	.287	25.7	.15	16.51	.90	9.8	3	6.7	8.5	10.7	1081.	52.	18.0	.876	.903	23.
74.01	.294	25.4	-.44	26.64	2.51	9.9	3	6.6	1.5	2.3	965.	13.	20.7	.970	.970	10.
75.02	.301	24.9	-.73	43.27	99.99	10.1	3	6.6	-1.6	-1.0	900.	-6.	21.3	1.020	.981	1.
76.09	.309	25.0	.15	16.43	.91	10.2	3	6.4	8.1	10.3	1062.	51.	18.1	.868	.904	27.
77.10	.316	25.4	.59	13.23	.71	10.3	3	6.6	13.4	16.7	1196.	73.	16.4	.783	.898	38.
78.10	.323	26.0	.88	11.95	.63	10.3	3	6.9	17.2	21.4	1283.	85.	15.2	.747	.889	44.
79.10	.330	26.0	0.00	18.13	1.01	10.4	3	6.8	6.8	8.7	1056.	43.	18.7	.908	.908	24.
80.10	.337	25.7	-.44	26.54	2.46	10.5	3	6.7	1.6	2.4	976.	13.	20.8	.970	.970	10.
81.22	.345	26.1	.59	13.35	.70	10.6	3	6.9	13.9	17.2	1216.	74.	16.3	.791	.899	39.
82.22	.353	26.7	.88	12.03	.62	10.6	3	7.1	17.8	22.1	1301.	89.	15.0	.757	.892	44.
83.22	.360	27.5	1.17	10.87	.57	10.6	3	7.5	22.1	27.5	1386.	104.	13.7	.731	.889	50.
84.22	.368	28.6	1.61	9.28	.53	10.6	3	7.9	28.9	36.1	1500.	127.	11.2	.703	.874	58.
85.22	.376	29.3	1.03	11.67	.57	10.6	3	8.3	22.0	27.0	1401.	101.	14.0	.771	.896	49.
86.23	.384	29.8	.73	13.13	.62	10.6	3	8.5	18.4	22.6	1352.	88.	15.2	.813	.902	44.
87.23	.393	30.1	.44	14.78	.69	10.7	3	8.6	14.7	18.2	1288.	74.	16.3	.851	.904	39.
88.23	.401	30.4	.44	14.83	.69	10.8	3	8.8	14.9	18.4	1298.	75.	16.3	.854	.904	39.
89.23	.410	30.7	.44	14.85	.68	10.8	3	8.9	15.1	18.7	1304.	75.	16.2	.857	.904	39.
90.23	.418	30.7	0.00	18.16	.93	10.9	3	8.9	8.9	11.2	1223.	48.	18.5	.925	.925	29.
91.24	.427	30.5	-.29	22.41	1.34	11.0	3	8.8	4.8	6.3	1173.	28.	20.3	.959	.959	21.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
92.21	.435	30.4	-.15	20.13	1.16	11.1	3	8.8	6.7	8.5	1186.	37.	19.5	.943	.943	24.
93.19	.443	30.3	-.15	20.14	1.16	11.2	3	8.7	6.7	8.4	1185.	37.	19.5	.943	.943	24.
94.17	.451	30.4	.15	16.95	.82	11.3	3	8.8	10.9	13.6	1234.	58.	17.7	.908	.908	33.
95.17	.460	30.8	.59	13.98	.64	11.3	3	9.0	17.2	21.2	1344.	83.	15.6	.844	.904	42.
96.17	.468	30.4	-.59	28.24	4.05	11.5	3	8.8	.6	1.6	1155.	7.	21.6	.970	.970	12.
97.17	.477	29.9	-.73	50.27	99.99	11.6	3	8.7	-1.2	-.3	900.	-2.	21.2	1.224	.817	2.
98.16	.485	29.5	-.59	28.60	4.56	11.7	3	8.4	.4	1.4	1121.	7.	21.5	.970	.970	11.
99.27	.494	29.8	.44	14.76	.70	11.8	3	8.5	14.5	17.9	1279.	74.	16.4	.858	.904	39.
100.27	.502	30.3	.73	13.18	.61	11.8	3	8.7	18.8	23.1	1365.	89.	15.1	.818	.902	44.
101.26	.511	30.7	.59	13.97	.64	11.8	3	8.9	17.2	21.2	1342.	83.	15.6	.843	.904	42.
102.28	.520	30.9	.29	15.85	.73	11.9	3	9.0	13.1	16.5	1271.	68.	16.8	.896	.896	36.
103.25	.528	31.0	.15	16.93	.81	11.9	3	9.1	11.2	14.0	1255.	59.	17.7	.911	.911	33.
104.23	.536	30.9	-.15	20.12	1.09	12.0	3	9.0	6.9	8.7	1207.	38.	19.5	.943	.943	25.
105.24	.545	30.4	-.73	50.93	99.99	12.2	3	8.9	-1.2	-.3	900.	-2.	21.2	1.245	.803	2.
106.24	.553	29.8	-.88	44.23	99.99	12.3	3	8.9	-2.3	-1.3	900.	-7.	21.6	1.220	.819	0.
107.31	.562	29.9	.15	16.78	.83	12.4	3	8.6	10.6	13.3	1216.	57.	17.8	.906	.906	32.
108.31	.571	30.2	.44	14.80	.69	12.4	3	8.7	14.7	18.3	1291.	74.	16.3	.862	.904	39.
109.32	.579	30.7	.73	13.22	.61	12.4	3	8.9	19.1	23.5	1376.	90.	15.1	.822	.903	45.
110.32	.588	31.2	.73	13.27	.61	12.4	3	9.2	19.5	24.0	1389.	91.	15.0	.828	.903	45.
111.32	.596	31.8	.88	12.56	.58	12.4	3	9.5	22.2	27.2	1440.	99.	14.3	.814	.902	48.
112.32	.605	32.2	.59	14.10	.63	12.4	3	9.7	18.3	22.5	1384.	86.	15.4	.858	.904	43.
113.33	.614	32.4	.29	16.00	.71	12.5	3	9.8	14.1	17.5	1324.	70.	16.7	.902	.902	37.
114.34	.623	32.2	-.29	22.35	1.27	12.6	3	9.7	5.4	7.0	1236.	30.	20.2	.960	.960	22.
115.34	.632	31.7	-.73	52.37	99.99	12.7	3	9.6	-1.0	-.1	900.	-1.	21.2	1.298	.770	3.
116.34	.641	28.6	-4.55	61.65	99.99	12.8	3	14.7	-2.2	-1.3	900.	-7.	21.6	1.171	.854	0.
117.34	.648	25.3	-4.84	54.53	99.99	12.9	3	13.0	-1.9	-1.3	900.	-7.	21.6	1.036	.965	0.
118.34	.655	22.0	-4.84	47.42	99.99	13.0	3	11.0	-1.7	-1.3	900.	-7.	21.6	.901	.901	0.
119.34	.660	18.7	-4.84	40.31	99.99	13.1	3	9.1	-1.4	-1.3	900.	-7.	21.6	.766	.766	0.
120.35	.665	15.4	-4.84	33.19	99.99	13.2	2	7.3	-1.8	-1.3	900.	-7.	21.6	.959	.959	0.
121.35	.669	12.1	-4.84	26.08	99.99	13.2	2	5.6	-1.4	-1.3	900.	-7.	21.6	.753	.753	0.
122.35	.672	8.8	-4.84	18.97	99.99	13.2	2	4.0	-1.0	-1.3	900.	-7.	21.6	.548	.548	0.
123.36	.674	5.5	-4.84	11.86	99.99	13.3	1	2.5	-1.0	-1.3	900.	-7.	21.6	.568	.568	0.
124.36	.675	2.2	-4.84	4.74	99.99	13.2	1	1.0	-.4	-1.3	900.	-7.	21.6	.227	.227	0.
125.36	.675	0.0	-3.23	0.00	6.86	13.2	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
126.36	.675	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
127.36	.675	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
128.36	.675	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
129.36	.675	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
130.36	.675	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
131.36	.675	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
132.36	.675	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
133.36	.675	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
134.36	.675	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
135.36	.675	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
136.36	.675	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
137.36	.675	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.

DRIVING SCHEDULE (UDCCC1) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
138.36	.675	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
139.36	.675	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
140.36	.675	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
141.36	.675	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
142.36	.675	0.0	0.00	0.00	6.86	12.3	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
143.36	.675	0.0	0.00	0.00	6.86	12.3	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
144.36	.675	0.0	0.00	0.00	6.86	12.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
145.36	.675	0.0	0.00	0.00	6.86	12.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
146.36	.675	0.0	0.00	0.00	6.86	12.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
147.36	.675	0.0	0.00	0.00	6.86	12.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
148.36	.675	0.0	0.00	0.00	6.86	12.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
149.36	.675	0.0	0.00	0.00	6.86	12.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
150.36	.675	0.0	0.00	0.00	6.86	12.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
151.36	.675	0.0	0.00	0.00	6.86	11.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
152.36	.675	0.0	0.00	0.00	6.86	11.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
153.36	.675	0.0	0.00	0.00	6.86	11.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
154.36	.675	0.0	0.00	0.00	6.86	11.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
155.36	.675	0.0	0.00	0.00	6.86	11.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
156.36	.675	0.0	0.00	0.00	6.86	11.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
157.36	.675	0.0	0.00	0.00	6.86	11.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
158.36	.675	0.0	0.00	0.00	6.86	11.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
159.36	.675	0.0	0.00	0.00	6.86	11.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
160.36	.675	0.0	0.00	0.00	6.86	11.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
161.36	.675	0.0	0.00	0.00	6.86	11.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
162.36	.675	0.0	0.00	0.00	6.86	11.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
163.36	.675	0.0	0.00	0.00	6.86	11.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
164.38	.676	3.3	4.84	1.71	.64	11.3	1	.6	7.9	18.6	1026.	96.	14.1	.299	.500	44.
165.38	.677	6.7	4.84	2.88	.57	11.2	1	1.2	15.9	24.7	1208.	107.	13.3	.507	.741	51.
166.38	.677	9.9	4.84	3.51	.54	11.1	1	1.9	23.9	32.5	1401.	122.	11.8	.656	.851	56.
167.38	.683	13.2	4.84	3.85	.52	11.0	1	2.7	32.0	41.0	1598.	135.	10.1	.767	.895	61.
168.38	.687	16.5	4.84	3.09	.58	10.9	2	3.6	39.9	56.4	1643.	180.	5.8	.563	.788	77.
169.38	.692	19.8	4.84	3.16	.60	10.7	2	4.6	48.2	64.2	1757.	192.	5.1	.631	.836	80.
170.38	.698	22.2	3.52	5.21	.53	10.6	2	5.4	41.0	51.6	1712.	159.	7.5	.726	.883	69.
171.38	.704	24.3	3.08	5.90	.51	10.5	2	6.2	40.2	50.1	1738.	151.	8.5	.783	.898	66.
172.38	.711	25.8	2.20	7.37	.51	10.5	3	6.7	32.5	42.7	1526.	147.	8.8	.623	.831	65.
173.38	.718	26.4	.88	11.90	.62	10.5	3	7.0	17.6	21.9	1293.	89.	15.1	.752	.891	44.
174.38	.726	25.7	-1.03	55.40	99.99	10.6	3	7.4	-2.0	-1.3	900.	-7.	21.6	1.052	.950	0.
175.38	.733	25.1	-.88	54.10	99.99	10.7	3	6.9	-1.9	-1.3	900.	-7.	21.6	1.028	.973	0.
176.37	.739	24.7	-.59	34.59	11.45	10.7	3	6.3	-.3	.4	900.	2.	21.1	1.011	.989	4.
177.48	.747	25.0	.44	14.07	.77	10.8	3	6.4	11.4	14.3	1147.	65.	17.0	.803	.901	34.
178.49	.754	25.2	.39	15.20	.63	10.8	3	6.5	8.8	12.3	1110.	58.	17.5	.837	.903	31.
179.50	.761	25.4	.29	15.23	.63	10.8	3	6.6	9.9	12.5	1115.	59.	17.5	.840	.903	31.
180.50	.768	25.8	.59	13.33	.70	10.8	3	6.7	13.7	17.0	1207.	74.	16.3	.768	.899	33.
181.54	.776	27.2	2.05	7.85	.51	10.8	3	7.3	32.7	42.0	1542.	143.	9.2	.650	.847	64.
182.53	.783	26.5	-1.03	57.12	99.99	10.9	3	7.7	-2.0	-1.3	900.	-7.	21.6	1.085	.922	0.
183.53	.790	24.0	-3.67	51.73	99.99	11.0	3	10.5	-1.8	-1.3	900.	-7.	21.6	.983	.983	0.

DRIVING SCHEDULE (UDDC01) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
184.53	.807	22.7	-1.91	48.93	99.99	11.0	3	7.4	-1.7	-1.3	900.	-7.	21.6	.930	.930	0.
185.53	.803	19.4	-4.44	41.32	99.99	11.1	3	9.5	-1.5	-1.3	900.	-7.	21.6	.794	.794	0.
186.55	.808	17.7	-2.49	38.15	99.99	11.1	2	6.0	-2.0	-1.3	900.	-7.	21.6	1.102	.908	0.
187.56	.813	17.2	-.73	39.90	99.99	11.2	2	4.0	-1.7	-1.0	900.	-6.	21.3	1.071	.934	1.
188.68	.818	18.1	1.32	8.80	.67	11.2	2	4.0	14.9	15.0	1263.	79.	15.9	.803	.901	40.
189.69	.823	18.6	.73	10.58	.61	11.2	2	4.2	10.4	13.4	1174.	60.	17.5	.887	.900	33.
190.71	.829	20.0	2.05	7.51	.56	11.1	2	4.6	23.3	29.4	1443.	107.	13.4	.777	.897	51.
191.72	.835	22.2	3.23	5.64	.51	11.0	2	5.4	38.0	47.9	1679.	150.	8.5	.741	.888	66.
192.72	.841	24.5	3.37	5.21	.53	10.9	2	6.2	42.8	54.6	1776.	162.	7.8	.773	.896	70.
193.72	.848	27.3	4.11	3.88	.60	10.8	2	7.4	58.5	72.5	1963.	194.	5.5	.779	.897	80.
194.72	.857	30.5	4.69	3.49	.59	10.6	2	8.8	74.0	91.1	2146.	223.	3.4	.796	.900	89.
195.72	.865	33.5	4.40	3.68	.59	10.4	2	10.4	77.5	95.1	2230.	224.	3.4	.842	.903	90.
196.72	.875	36.2	3.96	3.05	.60	10.2	2	11.9	77.2	94.9	2290.	218.	3.9	.886	.901	88.
197.69	.885	37.3	1.61	9.45	.50	10.2	3	12.6	39.9	48.3	1732.	146.	9.0	.794	.900	64.
198.73	.896	39.3	2.03	5.39	.56	10.1	2	13.9	66.3	80.3	2383.	177.	7.3	.924	.924	75.
199.69	.907	40.5	1.76	6.37	.53	10.0	3	14.7	47.1	56.7	1845.	161.	6.0	.809	.902	69.
200.69	.918	42.1	2.35	5.93	.60	10.0	3	15.8	55.5	73.1	1981.	194.	5.5	.783	.898	80.
201.69	.930	43.5	2.05	6.77	.58	9.9	3	16.9	57.4	68.6	1975.	183.	6.4	.812	.902	76.
202.69	.942	45.1	2.35	5.72	.61	9.8	3	18.1	66.3	79.4	2064.	202.	4.9	.805	.901	82.
203.69	.955	46.0	1.32	10.14	.50	9.9	3	18.9	40.4	56.0	1917.	153.	8.9	.854	.902	66.
204.69	.968	46.8	1.17	10.68	.50	9.8	3	19.5	44.4	53.5	1921.	147.	9.4	.898	.898	64.
205.69	.981	47.5	1.03	11.20	.51	9.8	3	20.1	42.4	51.1	1932.	139.	10.3	.906	.906	61.
206.69	.994	47.5	0.00	17.83	.49	9.9	3	20.1	20.1	24.0	1835.	69.	16.7	.954	.954	33.
207.70	1.008	47.3	-.29	20.48	.66	10.0	3	19.9	13.7	16.7	1803.	49.	18.2	.967	.967	31.
208.67	1.020	47.2	-.15	19.19	.76	10.1	3	19.9	16.6	20.0	1811.	58.	17.5	.901	.961	34.
209.69	1.034	47.0	-.29	20.54	.86	10.1	3	19.7	13.5	16.4	1791.	48.	18.3	.967	.967	31.
210.69	1.047	47.0	0.00	17.90	.69	10.2	3	19.7	19.7	23.5	1816.	68.	16.7	.954	.954	38.
211.69	1.060	47.0	0.00	17.90	.69	10.2	3	19.7	19.7	23.5	1816.	68.	16.7	.954	.954	38.
212.69	1.073	47.0	0.00	17.90	.69	10.3	3	19.7	19.7	23.5	1816.	68.	16.7	.954	.954	38.
213.69	1.086	47.0	0.00	17.90	.69	10.3	3	19.7	19.7	23.5	1816.	68.	16.7	.954	.954	38.
214.70	1.099	47.2	.29	15.78	.60	10.4	3	19.9	26.1	30.9	1849.	88.	15.1	.941	.941	44.
215.71	1.112	47.4	.29	15.76	.60	10.4	3	20.0	26.3	31.2	1855.	86.	15.1	.942	.942	45.
216.71	1.126	47.9	.73	12.87	.53	10.4	3	20.5	36.4	43.4	1916.	119.	12.2	.922	.922	55.
217.71	1.139	48.5	.88	11.99	.52	10.4	3	21.0	40.4	48.3	1951.	130.	11.2	.916	.916	58.
218.71	1.153	49.1	.88	11.96	.52	10.5	3	21.5	41.2	49.1	1972.	131.	11.1	.918	.918	59.
219.71	1.166	49.5	.59	13.60	.54	10.5	3	21.9	35.2	41.6	1963.	112.	12.9	.929	.929	52.
220.71	1.180	50.0	.73	12.70	.53	10.5	3	22.4	39.0	46.3	1992.	122.	11.9	.925	.925	56.
221.71	1.194	50.6	.88	11.86	.51	10.5	3	22.9	43.2	51.3	2024.	133.	10.9	.921	.921	59.
222.71	1.208	51.0	.59	13.46	.53	10.5	3	23.3	37.0	43.7	2016.	114.	12.7	.932	.932	53.
223.71	1.222	51.5	.73	12.57	.52	10.6	3	23.8	40.9	48.4	2047.	124.	11.8	.927	.927	57.
224.71	1.237	52.2	1.03	11.07	.50	10.5	3	24.5	48.9	55.1	2054.	146.	9.8	.919	.919	64.
225.71	1.251	53.2	1.47	7.99	.56	10.5	3	25.5	61.0	73.2	2169.	177.	7.1	.904	.904	74.
226.71	1.266	54.1	1.32	8.82	.54	10.5	3	26.4	58.9	70.2	2187.	169.	7.9	.912	.912	72.
227.71	1.281	54.6	.73	12.32	.52	10.5	3	27.0	45.1	53.0	2157.	129.	11.4	.933	.933	59.
228.71	1.297	54.9	.44	13.98	.54	10.6	3	27.3	38.3	44.9	2143.	110.	13.1	.944	.944	52.
229.69	1.312	55.0	.15	15.65	.59	10.6	3	27.4	31.1	36.5	2124.	90.	14.8	.954	.954	45.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
230.67	1.326	54.9	-.15	17.45	.70	10.6	3	27.3	23.5	27.8	2099.	76.	16.5	.964	.964	39.
231.67	1.342	54.6	-.44	19.68	.68	10.7	3	27.0	16.0	19.5	2074.	49.	18.1	.970	.970	32.
232.67	1.357	54.6	0.00	16.57	.64	10.7	3	27.0	27.0	31.7	2096.	79.	15.7	.959	.959	42.
233.68	1.372	54.9	.29	14.96	.56	10.8	3	27.2	34.4	40.3	2129.	99.	14.0	.949	.949	49.
234.66	1.387	55.1	.44	13.96	.54	10.8	3	27.5	38.5	45.2	2151.	110.	13.1	.944	.944	52.
235.67	1.403	55.5	.59	13.02	.53	10.8	3	27.9	42.8	50.1	2174.	121.	12.1	.941	.941	56.
236.68	1.418	55.7	.29	14.88	.56	10.9	3	28.2	35.5	41.5	2162.	101.	13.9	.949	.949	49.
237.68	1.434	56.1	.59	12.96	.52	10.9	3	28.6	43.6	51.0	2196.	122.	12.0	.941	.941	56.
238.69	1.450	56.3	.29	14.82	.55	10.9	3	28.8	36.2	42.4	2184.	102.	13.9	.950	.950	50.
239.69	1.465	56.6	.44	13.78	.54	10.9	3	29.2	40.5	47.3	2207.	113.	12.9	.945	.945	53.
240.67	1.481	56.7	.15	15.43	.59	11.0	3	29.3	33.1	38.7	2186.	93.	14.6	.956	.956	47.
241.67	1.496	56.7	0.00	16.15	.63	11.0	3	29.3	29.3	34.3	2176.	83.	15.4	.960	.960	43.
242.68	1.512	56.5	-.29	17.93	.76	11.0	3	29.0	21.6	25.6	2147.	63.	17.1	.970	.970	37.
243.68	1.528	56.5	0.00	16.20	.63	11.1	3	29.0	29.0	34.0	2169.	82.	15.4	.960	.960	43.
244.68	1.544	56.5	0.00	16.20	.63	11.1	3	29.0	29.0	34.0	2169.	82.	15.4	.960	.960	43.
245.68	1.559	56.5	0.00	16.20	.63	11.2	3	29.0	29.0	34.0	2169.	82.	15.4	.960	.960	43.
246.68	1.575	56.5	0.00	16.20	.63	11.2	3	29.0	29.0	34.0	2169.	82.	15.4	.960	.960	43.
247.68	1.591	56.5	0.00	16.20	.63	11.2	3	29.0	29.0	34.0	2169.	82.	15.4	.960	.960	43.
248.66	1.606	56.4	-.15	17.05	.69	11.3	3	28.9	25.1	29.6	2155.	72.	16.3	.965	.965	40.
249.66	1.622	56.1	-.44	19.01	.87	11.3	3	28.6	17.4	21.0	2131.	52.	17.9	.970	.970	33.
250.66	1.637	55.8	-.44	19.13	.87	11.3	3	28.3	17.1	20.7	2120.	51.	18.0	.970	.970	33.
251.65	1.653	55.1	-1.03	26.95	3.16	11.4	3	27.5	1.7	4.0	2093.	10.	21.8	.970	.970	19.
252.66	1.668	54.6	-.73	22.44	1.28	11.5	3	27.0	8.8	11.7	2074.	30.	19.5	.970	.970	26.
253.65	1.683	54.2	-.59	21.19	1.09	11.5	3	26.5	12.0	15.1	2059.	39.	18.9	.970	.970	28.
254.66	1.698	54.0	-.29	18.85	.77	11.5	3	26.3	19.2	22.9	2054.	59.	17.4	.969	.969	35.
255.66	1.713	53.7	-.44	20.14	.88	11.6	3	26.0	15.2	18.6	2040.	48.	18.2	.970	.970	31.
256.64	1.728	53.6	-.15	17.85	.70	11.6	3	25.9	22.2	26.4	2050.	68.	16.5	.964	.964	38.
257.64	1.743	53.9	.44	14.13	.54	11.6	3	26.2	37.0	43.4	2106.	108.	13.2	.943	.943	52.
258.62	1.757	54.0	.15	15.79	.60	11.7	3	26.3	30.0	35.2	2088.	89.	14.9	.953	.953	45.
259.60	1.772	54.1	.15	15.78	.60	11.7	3	26.4	30.1	35.4	2091.	89.	14.9	.953	.953	45.
260.60	1.787	54.1	0.00	16.68	.64	11.7	3	26.4	26.4	31.1	2079.	79.	15.7	.959	.959	42.
261.60	1.802	53.8	-.44	20.09	.88	11.8	3	26.1	15.3	18.7	2044.	48.	18.2	.970	.970	31.
262.59	1.817	53.4	-.59	21.54	1.06	11.8	3	25.7	11.4	14.4	2028.	37.	19.0	.970	.970	28.
263.59	1.832	53.0	-.59	21.71	1.07	11.8	3	25.3	11.1	14.0	2013.	37.	19.0	.970	.970	28.
264.58	1.846	52.6	-.59	21.87	1.08	11.9	3	24.9	10.8	13.7	1998.	36.	19.1	.970	.970	27.
265.59	1.861	52.1	-.73	23.30	1.42	11.9	3	24.4	7.1	9.7	1979.	26.	19.9	.970	.970	24.
266.69	1.877	52.4	.44	14.33	.55	12.0	3	24.7	35.2	41.3	2050.	106.	13.4	.942	.942	51.
267.68	1.891	52.0	-.59	22.04	1.10	12.0	3	24.3	10.3	13.2	1975.	35.	19.2	.970	.970	27.
268.66	1.905	51.9	-.15	18.38	.71	12.0	3	24.2	20.6	24.5	1987.	65.	16.9	.963	.963	37.
269.67	1.920	51.7	-.29	19.66	.79	12.1	3	24.0	17.2	20.6	1967.	55.	17.7	.968	.968	34.
270.68	1.934	51.5	-.29	19.79	.79	12.1	3	23.8	17.0	20.4	1960.	55.	17.7	.968	.968	33.
271.66	1.948	51.6	.15	16.21	.61	12.1	3	23.9	27.4	32.3	2000.	85.	15.2	.951	.951	43.
272.67	1.963	51.8	.29	15.29	.57	12.1	3	24.1	30.9	36.4	2019.	95.	14.4	.945	.945	47.
273.67	1.977	52.1	.44	14.36	.55	12.2	3	24.4	34.8	41.0	2039.	106.	13.9	.942	.942	50.
274.66	1.992	52.5	.59	13.32	.55	12.2	3	24.8	38.9	45.6	2068.	116.	12.5	.936	.936	54.
275.67	2.006	53.0	.73	12.45	.52	12.2	3	25.3	42.9	50.6	2101.	127.	11.6	.930	.930	58.

DRIVING SCHEDULE (UDCC01) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
276.67	2.021	53.5	.73	12.41	.52	12.2	3	25.8	43.6	51.4	2118.	127.	11.5	.931	.931	58.
277.68	2.036	54.0	.73	12.37	.52	12.2	3	26.3	44.2	52.1	2136.	128.	11.5	.932	.932	58.
278.68	2.051	54.9	1.32	8.73	.54	12.1	3	27.3	60.2	71.6	2215.	170.	7.5	.914	.914	72.
279.68	2.067	55.4	.73	12.26	.51	12.1	3	27.8	46.2	54.2	2185.	130.	11.3	.935	.935	59.
280.69	2.082	55.6	.29	14.89	.56	12.2	3	28.0	35.4	41.4	2159.	101.	13.9	.949	.949	49.
281.69	2.098	56.0	.59	12.97	.52	12.2	3	28.2	43.5	50.9	2192.	122.	12.1	.941	.941	56.
282.69	2.113	56.0	0.00	16.29	.64	12.2	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
283.70	2.129	55.8	-.29	18.16	.76	12.2	3	28.3	20.9	24.9	2121.	62.	17.1	.970	.970	36.
284.70	2.144	55.2	-.88	24.24	1.73	12.3	3	27.6	5.5	8.1	2097.	20.	20.5	.970	.970	23.
285.70	2.160	54.5	-1.03	27.20	3.46	12.3	3	26.9	1.3	3.6	2070.	9.	21.9	.970	.970	19.
286.70	2.175	53.6	-1.32	39.60	99.99	12.4	3	26.7	-5.5	-3.6	1848.	-10.	23.4	1.069	.936	11.
287.70	2.189	52.5	-1.61	53.44	99.99	12.4	3	26.5	-11.9	-10.0	1803.	-29.	24.4	1.073	.932	4.
288.70	2.204	51.5	-1.47	52.88	99.99	12.5	3	25.1	-9.3	-7.4	1754.	-22.	24.0	1.082	.924	7.
289.70	2.218	51.5	0.00	17.29	.65	12.5	3	23.6	23.8	28.1	1982.	75.	16.1	.958	.958	40.
290.70	2.232	51.5	0.00	17.29	.65	12.5	3	23.8	23.8	28.1	1982.	75.	16.1	.958	.958	40.
291.69	2.247	51.1	-.59	22.31	1.14	12.6	3	23.4	9.7	12.5	1941.	34.	19.4	.970	.970	26.
292.69	2.261	50.1	-1.47	56.84	99.99	12.6	3	23.9	-9.6	-7.7	1687.	-24.	24.1	1.094	.914	6.
293.39	2.270	50.0	-.15	18.70	.73	12.6	3	22.4	18.9	22.6	1916.	62.	17.1	.962	.962	36.
294.37	2.284	50.1	.15	16.38	.62	12.7	3	22.5	25.9	30.6	1945.	83.	15.4	.949	.949	43.
295.34	2.298	50.0	-.15	18.70	.73	12.7	3	22.4	18.9	22.6	1916.	62.	17.1	.962	.962	36.
296.34	2.311	49.6	-.59	22.90	1.19	12.7	3	22.0	8.7	11.3	1884.	31.	19.6	.970	.970	25.
297.32	2.325	49.5	-.15	18.79	.74	12.7	3	21.9	18.5	22.1	1897.	61.	17.2	.962	.962	35.
298.32	2.338	49.5	0.00	17.56	.67	12.8	3	21.9	21.9	26.0	1908.	72.	16.4	.956	.956	39.
299.32	2.352	49.5	0.00	17.56	.67	12.8	3	21.9	21.9	26.0	1908.	72.	16.4	.956	.956	39.
300.31	2.365	49.1	-.59	22.98	1.21	12.8	3	21.5	8.4	10.9	1865.	31.	19.7	.970	.970	25.
301.32	2.379	48.6	-.73	25.06	1.66	12.9	3	21.1	5.0	7.2	1846.	20.	20.9	.970	.970	22.
302.32	2.393	48.1	-.73	25.33	1.71	12.9	3	20.6	4.7	6.9	1827.	20.	21.0	.970	.970	21.
303.32	2.406	47.2	-1.32	51.66	99.99	12.9	3	20.9	-7.4	-5.6	1554.	-19.	23.7	1.120	.893	6.
304.32	2.419	46.1	-1.61	95.35	99.99	13.0	3	20.8	-12.3	-10.2	1504.	-36.	24.5	1.129	.865	0.
305.32	2.432	45.0	-1.61	93.34	99.99	13.1	3	20.0	-11.6	-9.4	1449.	-34.	24.4	1.144	.874	0.
306.32	2.444	43.8	-1.76	92.11	99.99	13.1	3	19.4	-10.8	-8.6	1391.	-33.	24.3	1.161	.862	0.
307.32	2.456	42.6	-1.76	88.87	99.99	13.2	3	18.5	-10.0	-7.9	1334.	-31.	24.1	1.177	.850	0.
308.33	2.468	41.5	-1.61	86.90	99.99	13.2	3	17.3	-9.4	-7.3	1283.	-30.	23.9	1.192	.839	0.
309.33	2.479	40.3	-1.76	84.52	99.99	13.3	3	16.9	-8.7	-6.7	1229.	-28.	23.8	1.206	.828	0.
310.33	2.490	38.5	-2.64	81.43	99.99	13.3	3	17.7	-6.4	-4.6	1124.	-23.	23.2	1.263	.792	0.
311.33	2.501	37.0	-2.20	78.86	99.99	13.4	3	16.0	-4.6	-3.2	1030.	-16.	22.5	1.324	.755	0.
312.33	2.511	35.2	-2.64	75.69	99.99	13.4	3	15.4	-2.7	-1.6	928.	-9.	21.8	1.398	.715	0.
313.33	2.520	33.8	-2.05	72.85	99.99	13.5	3	13.3	-2.6	-1.3	900.	-7.	21.5	1.384	.722	0.
314.33	2.530	32.5	-1.91	70.05	99.99	13.5	3	12.3	-2.5	-1.3	900.	-7.	21.6	1.331	.751	0.
315.32	2.535	31.5	-1.47	67.90	99.99	13.5	3	10.9	-2.4	-1.3	900.	-7.	21.5	1.290	.775	0.
316.32	2.547	30.6	-1.32	65.96	99.99	13.6	3	10.1	-2.3	-1.3	900.	-7.	21.5	1.253	.798	0.
317.14	2.554	30.5	-.15	20.13	1.10	13.6	3	8.8	6.8	8.5	1192.	35.	19.5	.943	.943	25.
318.14	2.562	30.0	-.73	50.40	99.99	13.6	3	8.5	-1.2	-.3	900.	-2.	21.2	1.223	.814	2.
319.14	2.571	29.0	-1.47	62.51	99.99	13.7	3	9.0	-2.2	-1.3	900.	-7.	21.5	1.183	.842	0.
320.14	2.579	27.5	-2.20	59.28	99.99	13.7	3	10.1	-2.1	-1.3	900.	-7.	21.5	1.126	.888	0.
321.14	2.586	24.8	-2.96	53.46	99.99	13.7	3	11.4	-1.9	-1.3	900.	-7.	21.6	1.016	.985	0.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
322.14	2.592	21.5	-4.84	46.34	99.99	13.7	3	10.7	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.
323.14	2.598	20.1	-2.05	43.32	99.99	13.8	3	6.5	-1.5	-1.3	900.	-7.	21.6	.823	.823	0.
324.14	2.603	19.1	-1.47	41.17	99.99	13.8	3	5.4	-1.5	-1.3	900.	-7.	21.6	.782	.782	0.
325.14	2.609	18.5	-.26	39.48	99.99	13.8	3	4.6	-1.4	-1.3	900.	-7.	21.6	.758	.758	0.
326.12	2.613	17.0	-2.20	36.64	99.99	13.8	2	5.5	-1.9	-1.3	900.	-7.	21.6	1.058	.945	0.
327.12	2.618	15.5	-2.20	33.41	99.99	13.8	2	4.9	-1.8	-1.3	900.	-7.	21.6	.965	.965	0.
328.12	2.622	12.5	-4.40	26.94	99.99	13.8	2	5.5	-1.4	-1.3	900.	-7.	21.6	.778	.778	0.
329.12	2.625	10.8	-2.49	23.28	99.99	13.8	2	3.4	-1.2	-1.3	900.	-7.	21.6	.672	.672	0.
330.12	2.628	8.0	-4.11	17.24	99.99	13.9	2	3.3	-.9	-1.3	900.	-7.	21.6	.498	.498	0.
331.13	2.629	4.7	-4.84	10.13	99.99	13.9	1	2.1	-.9	-1.3	900.	-7.	21.6	.485	.485	0.
332.13	2.630	1.4	-4.84	3.02	99.99	13.8	1	.6	-.3	-1.3	900.	-7.	21.5	.144	.144	0.
333.13	2.630	0.0	-2.05	0.00	6.86	13.8	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
334.13	2.630	0.0	0.00	0.00	6.86	13.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
335.13	2.630	0.0	0.00	0.00	6.86	13.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
336.13	2.630	0.0	0.00	0.00	6.86	13.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
337.13	2.630	0.0	0.00	0.00	6.86	13.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
338.13	2.630	0.0	0.00	0.00	6.86	13.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
339.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
340.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
341.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
342.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
343.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
344.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
345.13	2.630	0.0	0.00	0.00	6.86	13.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
346.13	2.630	0.0	0.00	0.00	6.86	13.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
347.13	2.631	1.0	1.47	.87	1.20	13.6	1	.2	.8	5.5	900.	32.	19.2	.103	.187	16.
348.13	2.632	4.3	4.84	2.12	.62	13.6	1	.8	10.3	20.3	1287.	98.	14.5	.368	.589	46.
349.13	2.633	7.6	4.84	3.11	.56	13.6	1	1.4	18.3	27.1	1266.	112.	12.9	.557	.764	53.
350.13	2.636	10.9	4.84	3.65	.53	13.5	1	2.1	26.4	34.8	1466.	125.	11.4	.693	.870	58.
351.13	2.639	14.2	4.84	3.39	.57	13.5	1	2.9	34.5	44.0	1561.	139.	9.7	.794	.900	62.
352.13	2.643	17.3	4.55	3.43	.57	13.4	2	3.8	39.7	54.5	1639.	175.	6.3	.591	.809	75.
353.13	2.649	20.0	3.96	4.25	.55	13.3	2	4.6	40.7	63.0	1678.	206.	7.1	.668	.857	71.
354.13	2.654	22.5	3.67	4.71	.54	13.3	2	5.5	43.1	64.5	1740.	265.	7.4	.724	.882	71.
355.19	2.661	23.7	1.76	6.38	.53	13.3	3	5.9	24.9	32.7	1397.	123.	11.7	.625	.832	57.
356.19	2.667	25.2	2.20	7.35	.51	13.2	3	6.5	31.7	41.7	1510.	145.	9.0	.615	.826	65.
357.19	2.675	26.6	2.05	7.81	.51	13.2	3	7.1	31.9	41.2	1525.	142.	9.4	.643	.843	63.
358.19	2.683	28.1	2.20	7.32	.52	13.2	3	7.7	35.8	46.0	1590.	152.	8.1	.651	.848	67.
359.20	2.691	30.0	2.79	6.27	.51	13.1	2	8.6	46.7	57.7	1922.	155.	6.5	.874	.903	68.
360.17	2.699	30.8	1.17	11.12	.55	13.1	3	9.0	25.4	31.1	1470.	111.	13.0	.772	.896	52.
361.18	2.708	31.6	1.17	11.14	.55	13.1	3	9.4	26.2	32.1	1493.	113.	12.8	.730	.898	53.
362.18	2.717	32.1	.73	13.35	.60	13.1	3	9.6	20.3	24.9	1413.	85.	14.9	.837	.903	46.
363.18	2.726	32.8	1.03	11.92	.55	13.1	3	10.0	25.4	31.0	1499.	1	3.3	.805	.901	52.
364.18	2.735	33.6	1.17	11.17	.54	13.1	3	10.4	28.3	34.5	1549.	117.	12.3	.799	.900	55.
365.18	2.745	34.5	1.32	10.54	.53	13.1	3	10.9	31.6	38.4	1603.	126.	11.2	.793	.900	58.
366.16	2.754	34.6	.15	17.26	.75	13.1	3	11.0	13.3	16.4	1381.	62.	17.3	.923	.923	35.
367.16	2.764	34.9	.44	15.15	.63	13.1	3	11.2	18.1	22.5	1430.	82.	15.7	.899	.899	42.

DRIVING SCHEDULE (UDCCC1) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
368.14	2.773	34.8	-.15	20.23	.98	13.1	3	11.1	8.7	10.9	1351.	42.	19.1	.949	.949	27.
369.14	2.783	34.5	-.44	24.88	1.55	13.2	3	10.9	4.0	5.5	1310.	22.	20.9	.970	.970	20.
370.19	2.793	34.7	.29	16.18	.69	13.2	3	11.0	15.6	19.3	1404.	72.	16.5	.911	.911	38.
371.22	2.803	35.5	1.17	11.17	.53	13.2	3	11.5	30.4	36.9	1501.	121.	11.3	.817	.902	56.
372.22	2.813	36.0	.73	13.50	.57	13.2	3	11.8	23.7	29.0	1522.	100.	14.3	.872	.903	49.
373.22	2.823	36.0	0.00	18.67	.82	13.2	3	11.6	11.9	14.5	1411.	54.	18.0	.941	.941	32.
374.22	2.833	36.0	0.00	18.67	.82	13.2	3	11.8	11.8	14.5	1411.	54.	18.0	.941	.941	32.
375.22	2.843	36.0	0.00	18.67	.82	13.2	3	11.6	11.8	14.5	1411.	54.	18.0	.941	.941	32.
376.22	2.853	36.0	0.00	18.67	.82	13.2	3	11.8	11.8	14.5	1411.	54.	18.0	.941	.941	32.
377.22	2.863	36.0	0.00	18.67	.82	13.2	3	11.8	11.8	14.5	1411.	54.	18.0	.941	.941	32.
378.20	2.873	36.1	.15	17.34	.73	13.2	3	11.9	14.3	17.6	1436.	64.	17.2	.926	.926	35.
379.20	2.883	36.4	.44	15.20	.62	13.2	3	12.0	19.3	23.8	1482.	84.	15.5	.905	.905	43.
380.16	2.893	36.5	.15	17.35	.73	13.3	3	12.1	14.6	17.9	1451.	65.	17.1	.927	.927	35.
381.16	2.902	36.4	-.15	20.24	.94	13.3	3	12.0	9.6	11.8	1410.	44.	18.8	.951	.951	28.
382.15	2.912	36.0	-.59	27.39	2.29	13.3	3	11.8	2.1	3.5	1367.	14.	21.6	.970	.970	17.
383.15	2.922	35.1	-1.32	75.51	99.99	13.3	3	12.5	-2.6	-1.6	922.	-9.	21.8	1.403	.713	0.
384.15	2.932	34.1	-1.47	73.50	99.99	13.4	3	12.3	-2.6	-1.3	900.	-7.	21.6	1.396	.716	0.
385.15	2.941	33.5	-.88	72.21	99.99	13.4	3	12.8	-2.6	-1.3	900.	-7.	21.6	1.372	.729	0.
386.15	2.950	31.4	-3.08	67.68	99.99	13.4	3	13.9	-2.4	-1.3	900.	-7.	21.6	1.286	.778	0.
387.15	2.959	29.0	-3.52	62.51	99.99	13.5	3	13.2	-2.2	-1.3	900.	-7.	21.6	1.188	.842	0.
388.15	2.966	25.7	-4.84	55.40	99.99	13.5	3	13.3	-2.0	-1.3	900.	-7.	21.6	1.052	.950	0.
389.15	2.973	23.0	-3.96	49.58	99.99	13.5	3	10.4	-1.8	-1.3	900.	-7.	21.6	.942	.942	0.
390.15	2.979	20.3	-3.96	43.76	99.99	13.5	3	8.9	-1.6	-1.3	900.	-7.	21.6	.831	.831	0.
391.16	2.984	17.5	-4.11	37.72	99.99	13.6	2	7.7	-2.0	-1.3	900.	-7.	21.6	1.089	.918	0.
392.16	2.989	14.5	-4.40	31.25	99.99	13.6	2	6.5	-1.7	-1.3	900.	-7.	21.6	.903	.903	0.
393.16	2.992	12.0	-3.67	25.87	99.99	13.6	2	4.7	-1.4	-1.3	900.	-7.	21.6	.747	.747	0.
394.16	2.995	8.7	-4.84	18.75	99.99	13.6	2	4.0	-1.0	-1.3	900.	-7.	21.6	.542	.542	0.
395.17	2.997	5.4	-4.84	11.64	99.99	13.6	1	2.4	-1.0	-1.3	900.	-7.	21.6	.557	.557	0.
396.17	2.998	2.1	-4.84	4.53	99.99	13.6	1	.9	-.4	-1.3	900.	-7.	21.6	.217	.217	0.
397.17	2.999	0.0	-3.08	0.00	6.86	13.6	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
398.17	2.999	0.0	0.00	0.00	6.86	13.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
399.17	2.999	0.0	0.00	0.00	6.86	13.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
400.17	2.999	0.0	0.00	0.00	6.86	13.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
401.17	2.999	0.0	0.00	0.00	6.86	13.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
402.17	2.999	0.0	0.00	0.00	6.86	13.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
403.18	2.999	2.6	3.81	1.67	.75	13.5	1	.5	5.0	12.8	904.	74.	15.8	.267	.456	33.
404.18	3.000	5.9	4.84	2.66	.58	13.5	1	1.1	14.2	23.5	1174.	105.	13.5	.467	.701	50.
405.18	3.002	9.2	4.84	3.41	.54	13.4	1	1.8	22.2	30.9	1356.	120.	12.1	.630	.835	56.
406.18	3.005	12.5	4.84	3.78	.52	13.4	1	2.5	30.3	39.1	1558.	132.	10.5	.745	.889	60.
407.18	3.009	15.8	4.84	3.06	.58	13.3	2	3.4	38.2	54.9	1618.	178.	5.9	.547	.776	75.
408.18	3.014	19.1	4.84	3.15	.60	13.3	2	4.3	46.5	62.5	1727.	190.	5.2	.619	.829	80.
409.18	3.020	22.4	4.84	3.19	.61	13.2	2	5.4	54.8	70.7	1857.	200.	4.7	.676	.861	82.
410.18	3.026	25.0	3.81	4.40	.57	13.1	2	6.4	49.8	62.1	1846.	177.	6.7	.759	.893	74.
411.18	3.033	25.6	.88	11.86	.63	13.1	3	6.7	16.9	21.1	1273.	87.	15.2	.741	.888	44.
412.23	3.041	27.5	2.79	6.42	.50	13.1	2	7.5	42.4	52.5	1826.	151.	8.3	.844	.904	66.
413.23	3.049	29.0	2.20	7.29	.52	13.1	3	8.1	37.1	47.3	1614.	154.	8.0	.662	.854	67.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
414.23	3.057	30.0	1.47	9.84	.53	13.1	3	8.6	28.6	35.4	1512.	123.	11.6	.731	.885	57.
415.20	3.065	30.1	.15	16.81	.82	13.1	3	8.6	10.7	13.4	1223.	58.	17.8	.907	.907	32.
416.18	3.074	30.0	-.15	20.16	1.11	13.1	3	8.6	6.6	8.3	1174.	37.	19.5	.942	.942	24.
417.18	3.082	29.7	-.44	25.46	1.98	13.1	3	8.5	2.5	3.6	1126.	17.	20.9	.970	.970	15.
418.18	3.090	29.3	-.59	28.69	4.69	13.1	3	8.3	.4	1.3	1113.	6.	21.5	.970	.970	11.
419.18	3.098	28.8	-.73	48.79	99.99	13.1	3	8.2	-1.3	-.5	900.	-3.	21.2	1.179	.848	2.
420.18	3.106	28.0	-1.17	60.35	99.99	13.2	3	8.6	-2.1	-1.3	900.	-7.	21.6	1.147	.872	0.
421.18	3.113	25.0	-4.40	53.89	99.99	13.2	3	12.2	-1.9	-1.3	900.	-7.	21.6	1.024	.977	0.
422.18	3.120	21.7	-4.84	46.77	99.99	13.2	3	10.8	-1.7	-1.3	900.	-7.	21.6	.889	.889	0.
423.18	3.125	18.4	-4.84	39.66	99.99	13.2	3	8.9	-1.4	-1.3	900.	-7.	21.6	.753	.753	0.
424.19	3.130	15.1	-4.84	32.55	99.99	13.2	2	7.2	-1.7	-1.3	900.	-7.	21.6	.940	.940	0.
425.19	3.134	11.8	-4.84	25.43	99.99	13.2	2	5.5	-1.3	-1.3	900.	-7.	21.6	.734	.734	0.
426.19	3.137	8.5	-4.84	18.32	99.99	13.2	2	3.9	-1.0	-1.3	900.	-7.	21.6	.529	.529	0.
427.20	3.139	5.2	-4.84	11.21	99.99	13.3	1	2.3	-1.0	-1.3	900.	-7.	21.6	.537	.537	0.
428.20	3.140	1.9	-4.84	4.10	99.99	13.2	1	.8	-.4	-1.3	900.	-7.	21.6	.196	.196	0.
429.20	3.140	0.0	-2.79	0.00	6.86	13.2	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
430.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
431.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
432.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
433.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
434.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
435.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
436.20	3.140	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
437.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
438.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
439.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
440.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
441.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
442.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
443.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
444.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
445.20	3.140	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
446.20	3.140	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
447.20	3.140	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
448.22	3.140	3.3	4.84	1.71	.64	13.0	1	.6	7.9	18.8	1026.	96.	14.1	.299	.500	44.
449.22	3.142	6.6	4.84	2.88	.57	13.0	1	1.2	15.9	24.7	1208.	107.	13.3	.507	.741	51.
450.22	3.144	9.9	4.84	3.51	.54	13.0	1	1.9	23.9	32.5	1401.	122.	11.8	.656	.851	56.
451.22	3.147	13.2	4.84	3.85	.52	12.9	1	2.7	32.0	41.0	1598.	135.	10.1	.767	.895	61.
452.22	3.151	16.5	4.84	3.09	.58	12.9	2	3.6	39.9	56.4	1643.	180.	5.8	.563	.788	77.
453.22	3.156	19.8	4.84	3.16	.60	12.8	2	4.6	48.2	64.2	1757.	192.	5.1	.631	.836	80.
454.22	3.162	23.1	4.84	3.21	.61	12.7	2	5.7	56.6	72.4	1882.	202.	4.6	.688	.867	83.
455.22	3.169	26.4	4.84	3.29	.61	12.7	2	7.0	65.2	81.6	2006.	214.	4.0	.737	.886	86.
456.30	3.177	27.8	2.05	7.88	.51	12.6	3	7.6	33.5	42.8	1558.	144.	9.0	.653	.852	64.
457.29	3.185	29.1	1.91	8.36	.51	12.6	3	8.2	33.4	42.1	1567.	141.	9.4	.684	.866	63.
458.33	3.194	31.5	3.52	4.52	.58	12.6	2	9.3	59.8	73.6	2264.	187.	6.2	.855	.904	77.
459.32	3.203	33.0	2.20	7.08	.54	12.5	3	10.1	43.1	53.4	1718.	163.	7.5	.708	.876	70.

DRIVING SCHEDULE (UDCCC1) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
460.32	3.212	33.6	.68	12.62	.56	12.5	3	10.4	23.9	29.1	1486.	103.	14.0	.832	.903	50.
461.34	3.222	34.8	1.76	8.98	.50	12.5	3	11.1	39.9	47.4	1690.	147.	8.8	.759	.893	65.
462.34	3.231	35.1	.44	15.15	.63	12.5	3	11.3	15.3	22.7	1437.	83.	15.7	.900	.900	42.
463.34	3.241	35.6	.73	13.50	.57	12.5	3	11.6	23.4	28.6	1511.	99.	14.4	.869	.904	48.
464.35	3.251	36.1	.73	13.50	.57	12.5	3	11.9	23.8	29.1	1524.	100.	14.3	.873	.903	49.
465.32	3.261	36.0	-.15	20.24	.95	12.5	3	11.8	9.3	11.6	1396.	44.	18.9	.951	.951	28.
466.30	3.271	36.1	.15	17.34	.73	12.6	3	11.9	14.3	17.6	1436.	64.	17.2	.926	.926	35.
467.28	3.281	36.2	.15	17.34	.73	12.6	3	11.9	14.4	17.6	1440.	64.	17.1	.926	.926	36.
468.29	3.291	36.0	-.29	22.25	1.12	12.6	3	11.8	7.0	8.9	1379.	34.	19.8	.962	.962	24.
469.29	3.301	35.7	-.44	24.79	1.47	12.6	3	11.6	4.5	6.1	1356.	23.	20.8	.970	.970	20.
470.34	3.311	36.0	.44	15.19	.62	12.6	3	11.8	19.0	23.5	1469.	84.	15.6	.903	.903	43.
471.34	3.321	36.0	0.00	18.67	.82	12.6	3	11.8	11.6	14.5	1411.	54.	18.0	.941	.941	32.
472.33	3.331	35.6	-.59	27.46	2.37	12.6	3	11.6	2.0	3.4	1352.	13.	21.5	.970	.970	16.
473.31	3.341	35.5	-.15	20.24	.96	12.7	3	11.5	9.1	11.3	1377.	43.	19.0	.950	.950	23.
474.29	3.350	35.4	-.15	20.24	.96	12.7	3	11.4	9.0	11.2	1374.	43.	19.0	.950	.950	28.
475.30	3.360	35.2	-.29	22.28	1.15	12.7	3	11.3	6.7	8.5	1349.	33.	19.9	.962	.962	24.
476.30	3.370	35.2	0.00	18.62	.84	12.7	3	11.3	11.3	13.9	1382.	53.	18.1	.939	.939	31.
477.30	3.380	35.2	0.00	18.62	.84	12.7	3	11.3	11.3	13.9	1382.	53.	18.1	.939	.939	31.
478.30	3.390	35.2	0.00	18.62	.84	12.7	3	11.3	11.3	13.9	1382.	53.	18.1	.939	.939	31.
479.30	3.399	35.2	0.00	18.62	.84	12.7	3	11.3	11.3	13.9	1382.	53.	18.1	.939	.939	31.
480.30	3.409	35.2	0.00	18.62	.84	12.7	3	11.3	11.3	13.9	1382.	53.	18.1	.939	.939	31.
481.31	3.419	35.0	-.29	22.29	1.15	12.8	3	11.2	6.6	8.4	1342.	33.	19.9	.962	.962	24.
482.29	3.429	35.1	.15	17.29	.75	12.8	3	11.3	13.7	16.8	1400.	63.	17.3	.924	.924	35.
483.27	3.438	35.2	.15	17.30	.74	12.8	3	11.3	13.7	16.9	1403.	63.	17.2	.924	.924	35.
484.27	3.448	35.5	.44	15.17	.63	12.8	3	11.5	18.6	23.0	1451.	83.	15.7	.902	.902	42.
485.27	3.458	35.2	-.44	24.83	1.50	12.8	3	11.3	4.3	5.8	1337.	23.	20.8	.970	.970	20.
486.28	3.468	35.0	-.29	22.29	1.15	12.8	3	11.2	6.6	8.4	1342.	33.	19.9	.962	.962	24.
487.28	3.477	35.0	0.00	18.61	.84	12.8	3	11.2	11.2	13.8	1375.	53.	18.1	.938	.938	31.
488.28	3.487	35.0	0.00	18.61	.84	12.8	3	11.2	11.2	13.6	1375.	53.	18.1	.938	.938	31.
489.29	3.497	34.9	-.29	22.29	1.16	12.9	3	11.1	6.5	8.3	1334.	33.	19.9	.961	.961	24.
490.30	3.507	34.6	-.29	22.30	1.17	12.9	3	11.0	6.4	8.2	1327.	32.	20.0	.961	.961	23.
491.28	3.516	34.5	-.15	20.23	.99	12.9	3	10.9	8.6	10.7	1340.	42.	19.1	.949	.949	27.
492.28	3.525	33.5	-1.47	72.21	99.99	12.9	3	11.9	-2.6	-1.3	900.	-7.	21.6	1.372	.729	0.
493.28	3.534	32.0	-2.20	68.98	99.99	12.9	3	12.5	-2.5	-1.3	900.	-7.	21.6	1.310	.763	0.
494.28	3.543	30.1	-2.79	64.88	99.99	13.0	3	12.5	-2.3	-1.3	900.	-7.	21.6	1.233	.811	0.
495.28	3.551	28.0	-3.08	60.35	99.99	13.0	3	11.8	-2.1	-1.3	900.	-7.	21.6	1.147	.872	0.
496.28	3.559	25.5	-3.67	54.96	99.99	13.0	3	11.4	-2.0	-1.3	900.	-7.	21.6	1.044	.958	0.
497.28	3.565	22.5	-4.40	49.50	99.99	13.0	3	10.7	-1.7	-1.3	900.	-7.	21.6	.921	.921	0.
498.28	3.571	19.8	-3.96	42.68	99.99	13.0	3	8.7	-1.5	-1.3	900.	-7.	21.6	.811	.811	0.
499.29	3.576	16.5	-4.84	35.57	99.99	13.1	2	7.9	-1.9	-1.3	900.	-7.	21.6	1.027	.974	0.
500.29	3.580	13.2	-4.84	28.45	99.99	13.1	2	6.2	-1.5	-1.3	900.	-7.	21.6	.822	.822	0.
501.29	3.584	10.3	-4.25	22.20	99.99	13.1	2	4.4	-1.2	-1.3	900.	-7.	21.6	.641	.641	0.
502.30	3.586	7.2	-4.55	15.50	99.99	13.1	1	3.1	-1.4	-1.3	900.	-7.	21.6	.743	.743	0.
503.30	3.588	4.0	-4.69	8.62	99.99	13.1	1	1.7	-.8	-1.3	900.	-7.	21.6	.413	.413	0.
504.30	3.588	1.0	-4.40	2.16	99.99	13.1	1	.4	-.2	-1.3	900.	-7.	21.6	.103	.103	0.
505.30	3.588	0.0	-1.47	0.00	6.86	13.1	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	0.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	ROLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
506.30	3.588	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
507.30	3.588	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
508.30	3.588	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
509.30	3.588	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
510.30	3.588	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
511.30	3.589	1.2	1.76	1.01	1.16	13.0	1	.2	1.2	6.3	900.	37.	18.9	.124	.222	18.
512.30	3.589	3.5	3.37	2.28	.77	13.0	1	.6	6.0	12.4	914.	71.	16.1	.356	.575	32.
513.30	3.591	5.5	2.93	3.41	.76	13.0	1	1.0	8.4	13.2	975.	71.	16.2	.524	.756	33.
514.30	3.592	6.5	1.47	5.16	1.01	13.0	1	1.2	9.6	7.7	900.	45.	18.2	.671	.842	21.
515.31	3.594	8.5	2.93	4.39	.68	12.9	1	1.6	13.0	17.6	1153.	80.	15.7	.685	.866	40.
516.31	3.597	9.6	1.61	5.97	.84	12.9	1	1.8	8.9	11.6	1078.	57.	17.6	.827	.903	30.
517.31	3.600	10.5	1.32	6.59	.68	12.9	1	2.0	8.4	11.2	1097.	54.	17.9	.889	.899	29.
518.31	3.603	11.9	2.05	5.96	.65	12.9	2	2.4	13.5	19.1	1144.	88.	15.0	.583	.803	43.
519.31	3.606	14.0	3.08	5.10	.54	12.9	2	2.9	22.5	31.7	1358.	123.	11.8	.578	.799	57.
520.31	3.610	16.0	2.93	5.58	.53	12.9	2	3.4	24.8	33.3	1409.	124.	11.6	.636	.839	57.
521.32	3.615	17.7	2.49	6.45	.55	12.8	2	3.9	24.0	31.0	1417.	115.	12.6	.700	.873	54.
522.31	3.620	19.0	1.91	7.71	.58	12.8	2	4.3	20.6	26.4	1385.	100.	14.2	.769	.895	48.
523.32	3.626	20.1	1.61	8.47	.60	12.8	2	4.7	19.4	24.5	1365.	93.	14.8	.813	.902	46.
524.32	3.631	21.0	1.32	9.29	.63	12.8	2	5.0	17.6	22.2	1373.	85.	15.5	.857	.904	43.
525.31	3.637	22.0	1.47	9.04	.60	12.8	2	5.3	20.0	25.2	1436.	92.	14.9	.858	.904	46.
526.30	3.644	23.0	1.47	9.19	.56	12.8	3	5.7	21.0	27.5	1327.	109.	13.2	.639	.841	52.
527.30	3.650	23.8	1.17	10.40	.59	12.8	3	6.0	18.6	23.8	1288.	97.	14.4	.681	.864	47.
528.30	3.657	24.5	1.03	11.06	.61	12.8	3	6.2	17.7	22.4	1276.	92.	14.8	.707	.876	45.
529.29	3.664	24.9	.59	13.16	.72	12.8	3	6.4	13.1	16.3	1181.	72.	16.4	.777	.897	38.
530.27	3.670	25.0	.15	16.43	.91	12.6	3	6.4	8.1	10.2	1062.	51.	18.1	.868	.904	27.
531.27	3.677	25.0	0.00	18.09	1.03	12.8	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
532.27	3.684	25.0	0.00	18.09	1.03	12.8	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
533.27	3.691	25.0	0.00	18.09	1.03	12.8	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
534.27	3.698	25.0	0.00	18.09	1.03	12.8	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
535.27	3.705	25.0	0.00	18.09	1.03	12.8	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
536.31	3.712	25.6	.88	11.86	.63	12.8	3	6.7	16.9	21.1	1273.	87.	15.2	.741	.888	44.
537.32	3.720	25.8	.29	15.27	.82	12.8	3	6.7	10.1	12.7	1126.	59.	17.5	.844	.904	32.
538.34	3.727	26.0	.29	15.30	.82	12.8	3	6.8	10.3	12.9	1132.	60.	17.5	.846	.904	32.
539.33	3.734	25.6	-.59	34.68	9.22	12.9	3	6.7	-.2	.5	900.	3.	21.1	1.048	.954	4.
540.32	3.741	25.2	-.59	34.64	10.08	12.9	3	6.5	-.2	.4	900.	3.	21.1	1.032	.969	4.
541.32	3.748	25.0	-.29	22.46	1.64	12.9	3	6.4	3.1	4.2	969.	23.	20.1	.951	.951	14.
542.32	3.755	25.0	0.00	18.09	1.03	12.9	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
543.32	3.762	25.0	0.00	18.09	1.03	12.9	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
544.32	3.769	24.4	-.88	52.59	99.99	12.9	3	6.6	-1.9	-1.3	900.	-7.	21.6	.999	.999	0.
545.32	3.775	23.1	-1.91	49.79	99.99	12.9	3	7.6	-1.8	-1.3	900.	-7.	21.6	.946	.946	0.
546.32	3.781	19.8	-4.84	42.68	99.99	12.9	3	9.7	-1.5	-1.3	900.	-7.	21.6	.811	.811	0.
547.33	3.786	16.5	-4.84	35.57	99.99	13.0	2	7.9	-1.9	-1.3	900.	-7.	21.6	1.027	.974	0.
548.33	3.791	13.2	-4.84	28.45	99.99	13.0	2	6.2	-1.5	-1.3	900.	-7.	21.6	.822	.822	0.
549.33	3.794	9.9	-4.84	21.34	99.99	13.0	2	4.5	-1.1	-1.3	900.	-7.	21.6	.616	.616	0.
550.34	3.796	6.6	-4.84	14.23	99.99	13.0	1	3.0	-1.3	-1.3	900.	-7.	21.6	.681	.681	0.
551.34	3.797	3.3	-4.84	7.11	99.99	13.0	1	1.5	-.6	-1.3	900.	-7.	21.6	.341	.341	0.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
552.34	3.798	0.0	-4.84	0.00	6.86	13.0	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
553.34	3.798	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
554.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
555.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
556.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
557.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
558.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
559.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
560.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
561.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
562.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
563.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
564.34	3.798	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
565.34	3.798	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
566.34	3.798	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
567.34	3.798	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
568.34	3.798	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
569.36	3.798	3.3	4.84	1.71	.64	12.8	1	.6	7.9	18.8	1026.	96.	14.1	.299	.500	44.
570.36	3.800	6.6	4.84	2.88	.57	12.8	1	1.2	15.9	24.7	1208.	107.	13.3	.507	.741	51.
571.36	3.802	9.9	4.84	3.51	.54	12.8	1	1.9	23.9	32.5	1401.	122.	11.8	.656	.851	55.
572.36	3.805	13.0	4.55	4.02	.52	12.7	1	2.6	29.8	38.1	1562.	128.	11.0	.773	.896	59.
573.39	3.809	14.6	2.35	6.19	.58	12.7	2	3.0	18.7	25.2	1263.	103.	13.8	.637	.840	50.
574.39	3.813	16.0	2.05	6.96	.59	12.7	2	3.4	18.4	23.9	1294.	97.	14.4	.693	.870	47.
575.39	3.818	17.0	1.47	8.25	.66	12.7	2	3.7	15.1	19.3	1243.	81.	15.7	.766	.895	41.
576.39	3.823	17.0	0.00	14.29	1.46	12.7	2	3.7	3.7	5.0	1007.	26.	20.0	.946	.946	16.
577.39	3.827	17.0	0.00	14.29	1.46	12.7	2	3.7	3.7	5.0	1007.	26.	20.0	.946	.946	16.
578.41	3.832	17.5	.73	10.40	.83	12.7	2	3.9	9.7	12.5	1132.	58.	17.6	.860	.904	31.
579.42	3.837	17.7	.29	12.50	1.07	12.7	2	3.9	6.3	8.2	1075.	40.	19.0	.922	.922	23.
580.42	3.842	17.7	0.00	14.43	1.44	12.7	2	3.9	3.9	5.3	1044.	27.	20.0	.949	.949	17.
581.43	3.847	17.5	-.29	17.52	2.47	12.7	2	3.9	1.5	2.5	1010.	13.	20.9	.970	.970	11.
582.44	3.852	17.0	-.73	29.57	99.99	12.7	2	4.0	-1.7	-1.0	900.	-6.	21.3	1.058	.945	1.
583.31	3.856	16.9	-.15	15.80	1.84	12.7	2	3.7	2.5	3.6	984.	19.	20.4	.962	.962	13.
584.31	3.861	16.6	-.44	19.59	5.24	12.7	2	3.6	.3	1.0	958.	5.	21.1	.970	.970	7.
585.34	3.865	17.0	.59	10.89	.90	12.7	2	3.7	8.3	10.8	1083.	52.	18.0	.879	.903	28.
586.32	3.870	17.1	.15	13.28	1.22	12.7	2	3.7	4.9	6.5	1029.	33.	19.5	.931	.931	19.
587.29	3.875	17.0	-.15	15.80	1.84	12.7	2	3.7	2.5	3.6	990.	19.	20.4	.962	.962	13.
588.29	3.879	16.6	-.59	27.49	99.99	12.7	2	3.7	-.8	-.1	900.	-1.	21.2	1.033	.968	3.
589.25	3.884	16.5	-.15	15.77	1.87	12.7	2	3.6	2.4	3.5	962.	19.	20.3	.961	.961	12.
590.25	3.888	16.5	0.00	14.19	1.49	12.7	2	3.6	3.6	4.8	979.	26.	19.9	.944	.944	15.
591.23	3.893	16.6	.15	13.19	1.24	12.7	2	3.6	4.7	6.3	1003.	33.	19.4	.927	.927	19.
592.22	3.897	17.0	.59	10.89	.90	12.7	2	3.7	8.3	10.8	1083.	52.	18.0	.879	.903	23.
593.22	3.902	17.6	.88	9.89	.78	12.7	2	3.9	10.9	14.1	1165.	63.	17.2	.847	.904	34.
594.22	3.907	18.5	1.32	8.87	.66	12.7	2	4.2	15.3	19.4	1278.	80.	15.8	.811	.902	41.
595.22	3.913	19.2	1.03	9.76	.71	12.7	2	4.4	13.4	17.1	1254.	71.	16.3	.857	.904	38.
596.22	3.918	20.2	1.47	8.80	.62	12.7	2	4.7	18.2	23.0	1367.	88.	15.2	.828	.903	44.
597.22	3.924	21.0	1.17	9.69	.65	12.7	2	5.0	16.2	20.5	1348.	80.	15.9	.873	.903	41.

DRIVING SCHEDULE (UDCC01) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
598.05	3.929	21.1	.15	15.90	1.00	12.7	3	5.0	6.4	8.2	954.	45.	18.3	.815	.902	23.
599.03	3.934	21.2	.15	15.91	1.00	12.7	3	5.0	6.5	8.3	956.	45.	18.3	.817	.902	23.
600.04	3.940	21.6	.59	12.52	.76	12.7	3	5.2	11.0	13.9	1096.	67.	16.9	.726	.883	34.
601.03	3.946	22.0	.59	12.60	.76	12.7	3	5.3	11.2	14.2	1106.	67.	16.7	.733	.885	34.
602.03	3.952	22.4	.59	12.68	.75	12.7	3	5.4	11.5	14.5	1117.	68.	16.7	.739	.887	35.
603.01	3.959	22.5	.15	16.12	.97	12.7	3	5.5	7.0	8.9	992.	47.	18.3	.836	.903	24.
604.01	3.965	22.5	0.00	17.91	1.10	12.7	3	5.5	5.5	7.1	939.	40.	18.8	.883	.902	20.
605.01	3.971	22.5	0.00	17.91	1.10	12.7	3	5.5	5.5	7.1	939.	40.	18.8	.883	.902	20.
606.03	3.978	22.7	.29	14.83	.88	12.7	3	5.6	8.5	10.8	1042.	54.	17.7	.803	.901	28.
607.07	3.984	23.7	1.47	9.29	.56	12.7	3	5.9	21.8	28.2	1346.	110.	13.1	.649	.847	52.
608.07	3.991	25.1	2.05	7.72	.51	12.7	3	6.5	29.9	39.2	1483.	139.	9.8	.624	.831	62.
609.07	3.998	26.0	1.32	10.15	.56	12.7	3	6.8	22.4	28.2	1375.	108.	13.4	.697	.872	51.
610.08	4.005	26.5	.73	12.71	.66	12.7	3	7.0	15.8	19.6	1259.	82.	15.6	.776	.897	42.
611.08	4.013	27.0	.73	12.79	.65	12.7	3	7.2	16.2	20.1	1273.	83.	15.6	.782	.898	42.
612.08	4.020	26.1	-1.32	56.26	99.99	12.7	3	8.0	-2.0	-1.3	900.	-7.	21.6	1.069	.936	0.
613.08	4.027	22.3	-5.57	48.07	99.99	12.7	3	12.2	-1.7	-1.3	900.	-7.	21.6	.913	.913	0.
614.08	4.033	19.5	-4.11	42.03	99.99	12.7	3	8.7	-1.5	-1.3	900.	-7.	21.6	.799	.799	0.
615.09	4.038	16.2	-4.84	34.92	99.99	12.8	2	7.7	-1.9	-1.3	900.	-7.	21.6	1.008	.992	0.
616.09	4.042	12.9	-4.84	27.81	99.99	12.8	2	6.0	-1.5	-1.3	900.	-7.	21.6	.803	.803	0.
617.09	4.045	9.6	-4.84	20.69	99.99	12.8	2	4.4	-1.1	-1.3	900.	-7.	21.6	.598	.598	0.
618.10	4.047	6.3	-4.84	13.58	99.99	12.8	1	2.8	-1.2	-1.3	900.	-7.	21.6	.650	.650	0.
619.10	4.049	3.0	-4.84	6.47	99.99	12.8	1	1.3	-.6	-1.3	900.	-7.	21.6	.310	.310	0.
620.10	4.049	0.0	-4.40	0.00	6.86	12.8	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
621.10	4.049	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
622.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
623.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
624.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
625.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
626.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
627.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
628.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
629.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
630.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
631.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
632.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
633.10	4.049	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
634.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
635.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
636.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
637.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
638.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
639.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
640.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
641.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
642.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
643.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
644.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
645.10	4.049	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
646.11	4.049	2.0	2.93	1.46	.87	12.5	1	.3	3.0	9.7	900.	57.	17.3	.206	.359	26.
647.10	4.050	4.5	3.67	2.60	.70	12.5	1	.8	8.4	15.2	993.	81.	15.4	.421	.652	33.
648.11	4.052	7.8	4.84	3.15	.56	12.5	1	1.5	18.8	27.5	1278.	113.	12.8	.567	.791	53.
649.11	4.054	10.2	3.52	4.38	.59	12.5	1	2.0	18.5	24.4	1311.	96.	14.3	.723	.882	48.
650.11	4.057	12.5	3.37	4.52	.53	12.5	2	2.5	21.7	32.3	1337.	127.	11.3	.524	.756	58.
651.11	4.061	14.0	2.20	6.29	.60	12.5	2	2.9	16.9	23.0	1240.	97.	14.3	.633	.837	47.
652.11	4.065	15.3	1.91	7.05	.62	12.5	2	3.2	16.5	21.7	1248.	91.	14.3	.687	.867	45.
653.12	4.070	17.5	3.23	5.36	.51	12.4	2	3.9	29.6	39.2	1503.	137.	10.0	.652	.849	62.
654.12	4.075	19.6	3.08	5.74	.51	12.4	2	4.5	32.0	41.1	1562.	138.	9.8	.703	.874	62.
655.12	4.081	21.0	2.05	7.60	.55	12.4	2	5.0	24.6	30.9	1483.	109.	13.2	.793	.900	52.
656.12	4.087	22.2	1.76	8.35	.56	12.4	2	5.4	23.2	29.1	1487.	103.	14.0	.837	.903	50.
657.11	4.093	23.3	1.61	8.79	.55	12.4	3	5.8	22.8	29.9	1360.	116.	12.5	.631	.836	54.
658.11	4.100	24.5	1.76	8.46	.53	12.4	3	6.2	25.8	33.7	1419.	125.	11.5	.636	.839	57.
659.11	4.106	25.3	1.17	10.63	.58	12.4	3	6.5	20.0	25.2	1327.	100.	14.1	.703	.874	48.
660.11	4.114	25.6	.44	14.19	.76	12.4	3	6.7	11.8	14.6	1164.	66.	17.0	.511	.902	35.
661.11	4.121	26.0	.59	13.33	.70	12.4	3	6.8	13.8	17.2	1213.	74.	16.3	.790	.899	39.
662.08	4.128	26.1	.15	16.55	.89	12.4	3	6.9	8.6	10.9	1092.	53.	18.0	.881	.903	29.
663.06	4.135	26.2	.15	16.55	.89	12.4	3	6.9	8.7	11.0	1095.	53.	18.0	.882	.903	28.
664.06	4.142	26.2	0.00	18.13	1.01	12.4	3	6.9	6.9	8.8	1063.	44.	18.7	.909	.909	24.
665.08	4.150	26.4	.29	15.34	.81	12.4	3	7.0	10.5	13.1	1143.	60.	17.4	.851	.904	32.
666.05	4.157	26.5	.15	16.57	.88	12.4	3	7.0	8.8	11.2	1104.	53.	18.0	.885	.901	29.
667.05	4.164	26.5	0.00	18.14	1.00	12.4	3	7.0	7.0	9.0	1073.	44.	18.7	.910	.910	25.
668.06	4.171	26.0	-.73	44.87	99.99	12.4	3	7.0	-1.6	-.9	900.	-5.	21.3	1.065	.939	1.
669.06	4.179	25.5	-.73	44.14	99.99	12.4	3	6.9	-1.6	-.9	900.	-5.	21.3	1.044	.958	1.
670.06	4.185	23.6	-2.79	50.87	99.99	12.5	3	9.1	-1.8	-1.3	900.	-7.	21.6	.966	.966	0.
671.06	4.192	21.4	-3.23	46.13	99.99	12.5	3	8.6	-1.6	-1.3	900.	-7.	21.6	.876	.876	0.
672.06	4.197	18.5	-4.25	39.88	99.99	12.5	3	8.3	-1.4	-1.3	900.	-7.	21.6	.758	.758	0.
673.08	4.202	16.4	-3.08	35.35	99.99	12.5	2	6.1	-1.9	-1.3	900.	-7.	21.6	1.021	.980	0.
674.08	4.206	14.5	-2.79	31.25	99.99	12.5	2	5.1	-1.7	-1.3	900.	-7.	21.6	.903	.903	0.
675.08	4.210	11.6	-4.25	25.00	99.99	12.5	2	5.0	-1.3	-1.3	900.	-7.	21.6	.722	.722	0.
676.08	4.213	8.7	-4.25	18.75	99.99	12.5	2	3.7	-1.0	-1.3	900.	-7.	21.6	.542	.542	0.
677.09	4.215	5.8	-4.25	12.50	99.99	12.5	1	2.4	-1.1	-1.3	900.	-7.	21.6	.599	.599	0.
678.09	4.216	3.5	-3.37	7.54	99.99	12.5	1	1.2	-.7	-1.3	900.	-7.	21.6	.361	.361	0.
679.09	4.217	2.0	-2.20	4.21	99.99	12.5	1	.6	-.4	-1.3	900.	-7.	21.6	.206	.206	0.
680.09	4.217	0.0	-2.93	0.00	6.86	12.5	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
681.09	4.217	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
682.09	4.217	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
683.09	4.217	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
684.09	4.217	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
685.09	4.217	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
686.09	4.217	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
687.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
688.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
689.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
690.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
691.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
692.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
693.09	4.217	0.0	0.00	0.00	6.86	12.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
694.09	4.217	1.4	2.05	1.14	1.06	12.4	1	.2	1.6	7.1	900.	42.	18.5	.144	.257	20.
695.09	4.218	3.3	2.79	2.37	.86	12.4	1	.6	4.8	10.0	900.	59.	17.1	.341	.548	27.
696.10	4.219	4.4	1.61	3.55	1.05	12.4	1	.8	4.0	7.3	900.	43.	16.4	.454	.650	20.
697.10	4.221	6.5	3.08	3.69	.71	12.4	1	1.2	10.4	15.3	1049.	76.	15.8	.576	.798	37.
698.10	4.223	9.2	3.96	3.90	.58	12.3	1	1.8	18.5	25.1	1288.	102.	13.8	.663	.855	49.
699.09	4.226	11.3	3.08	4.70	.56	12.3	2	2.2	18.1	26.3	1263.	109.	13.1	.501	.735	52.
700.09	4.229	13.5	3.23	4.84	.53	12.3	2	2.8	22.6	32.5	1359.	126.	11.5	.557	.783	53.
701.10	4.233	14.6	1.61	7.42	.67	12.3	2	3.0	13.6	18.0	1176.	81.	15.7	.696	.871	41.
702.11	4.237	16.4	2.64	6.05	.54	12.3	2	3.5	23.3	30.7	1390.	116.	12.5	.661	.853	54.
703.11	4.242	16.7	.44	11.50	.97	12.3	2	3.6	7.0	9.2	1042.	47.	18.4	.898	.898	25.
704.12	4.247	16.5	-.29	17.63	2.58	12.3	2	3.6	1.4	2.2	953.	12.	20.7	.970	.970	9.
705.12	4.251	16.5	0.00	14.19	1.49	12.3	2	3.6	3.6	4.6	979.	26.	19.9	.944	.944	15.
706.20	4.256	18.2	2.49	6.51	.54	12.3	2	4.1	24.7	31.8	1437.	116.	12.4	.709	.877	54.
707.19	4.262	19.2	1.47	8.65	.63	12.3	2	4.4	17.2	21.6	1329.	86.	15.3	.809	.902	43.
708.19	4.267	20.1	1.32	9.15	.64	12.3	2	4.7	16.7	21.2	1338.	83.	15.6	.842	.903	42.
709.20	4.273	21.5	2.05	7.63	.55	12.3	2	5.1	25.2	31.6	1503.	111.	13.1	.801	.901	52.
710.20	4.279	22.5	1.47	9.12	.56	12.3	3	5.5	20.5	27.0	1313.	108.	13.3	.632	.836	51.
711.20	4.285	22.5	0.00	17.91	1.10	12.3	3	5.5	5.5	7.1	939.	40.	16.8	.883	.902	20.
712.19	4.291	22.1	-.59	34.17	46.62	12.3	3	5.4	-.5	.1	900.	0.	21.2	.905	.905	3.
713.33	4.298	22.7	.88	11.32	.66	12.3	3	5.6	14.6	18.6	1194.	82.	15.6	.700	.873	41.
714.33	4.305	23.3	.88	11.44	.66	12.3	3	5.8	15.1	19.1	1211.	83.	15.5	.709	.877	42.
715.34	4.311	23.5	.29	14.95	.86	12.3	3	5.8	8.9	11.3	1064.	56.	17.7	.814	.902	29.
716.34	4.318	22.5	-1.47	48.50	99.99	12.3	3	6.7	-1.7	-1.3	900.	-7.	21.6	.921	.921	0.
717.34	4.324	21.6	-1.32	46.56	99.99	12.3	3	6.2	-1.7	-1.3	900.	-7.	21.6	.885	.885	0.
718.34	4.330	20.5	-1.61	44.19	99.99	12.3	3	6.1	-1.6	-1.3	900.	-7.	21.6	.839	.839	0.
719.34	4.335	18.0	-3.67	38.80	99.99	12.3	3	7.4	-1.4	-1.3	900.	-7.	21.6	.737	.737	0.
720.36	4.340	15.0	-4.40	32.33	99.99	12.3	2	6.7	-1.7	-1.3	900.	-7.	21.6	.934	.934	0.
721.36	4.343	12.0	-4.40	25.87	99.99	12.3	2	5.3	-1.4	-1.3	900.	-7.	21.6	.747	.747	0.
722.36	4.346	9.0	-4.40	19.40	99.99	12.3	2	3.9	-1.0	-1.3	900.	-7.	21.6	.560	.560	0.
723.37	4.349	6.2	-4.11	13.36	99.99	12.3	1	2.5	-1.2	-1.3	900.	-7.	21.6	.640	.640	0.
724.37	4.350	4.5	-2.40	8.70	99.99	12.3	1	1.4	-.8	-1.3	900.	-7.	21.6	.464	.464	0.
725.37	4.351	3.0	-2.20	6.47	99.99	12.3	1	.9	-.6	-1.3	900.	-7.	21.6	.310	.310	0.
726.37	4.352	2.1	-1.32	4.53	99.99	12.3	1	.5	-.4	-1.3	900.	-7.	21.6	.217	.217	0.
727.37	4.352	.5	-2.35	1.08	99.99	12.3	1	.1	-.1	-1.3	900.	-7.	21.6	.052	.052	0.
728.37	4.352	.5	0.00	.59	3.12	12.3	1	.1	.1	1.7	900.	10.	20.7	.092	.093	7.
729.37	4.353	3.2	3.96	1.91	.71	12.3	1	.6	6.4	14.6	949.	81.	15.3	.313	.520	37.
730.37	4.354	6.5	4.84	2.85	.57	12.3	1	1.2	15.6	24.5	1203.	107.	13.3	.502	.736	51.
731.37	4.356	9.6	4.55	3.63	.55	12.3	1	1.8	21.9	29.9	1361.	115.	12.6	.653	.850	54.
732.38	4.359	12.5	4.25	3.63	.51	12.3	2	2.5	26.7	41.5	1444.	151.	8.6	.485	.719	67.
733.38	4.363	14.0	2.20	6.29	.60	12.3	2	2.9	16.9	23.0	1240.	97.	14.3	.633	.837	47.
734.38	4.367	16.0	2.93	5.58	.53	12.2	2	3.4	24.8	33.3	1409.	124.	11.6	.636	.839	57.
735.38	4.372	18.0	2.93	5.81	.52	12.2	2	4.0	28.0	36.5	1486.	129.	10.9	.679	.863	59.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
736.38	4.377	19.6	2.35	6.90	.54	12.2	2	4.5	25.5	32.3	1471.	115.	12.5	.746	.889	54.
737.38	4.383	21.5	2.70	6.28	.52	12.2	2	5.1	32.5	40.8	1596.	134.	10.2	.754	.891	61.
738.38	4.389	23.1	2.35	7.11	.53	12.2	2	5.7	30.4	38.0	1604.	124.	11.4	.807	.901	57.
739.37	4.396	24.5	2.05	7.68	.51	12.2	3	6.2	29.1	38.3	1466.	137.	10.0	.616	.826	62.
740.37	4.403	25.5	1.47	9.51	.55	12.2	3	6.6	23.7	30.2	1393.	114.	12.7	.674	.861	53.
741.37	4.410	26.5	1.47	9.61	.54	12.2	3	7.0	24.7	31.3	1419.	116.	12.5	.688	.868	54.
742.37	4.417	27.1	.88	12.09	.62	12.2	3	7.3	18.1	22.5	1311.	90.	15.0	.762	.894	45.
743.37	4.425	27.6	.73	12.87	.64	12.2	3	7.5	16.7	20.6	1290.	84.	15.5	.788	.899	42.
744.37	4.433	27.9	.44	14.50	.72	12.2	3	7.6	13.2	16.4	1226.	70.	16.6	.839	.903	37.
745.37	4.440	28.3	.59	13.69	.67	12.2	3	7.8	15.4	19.0	1277.	78.	16.0	.817	.902	40.
746.37	4.448	28.6	.44	14.63	.72	12.2	3	7.9	13.7	16.9	1246.	71.	16.6	.846	.904	38.
747.37	4.456	28.6	0.00	18.15	.97	12.2	3	7.9	7.9	10.0	1146.	46.	18.7	.920	.920	27.
748.37	4.464	28.3	-.44	25.78	2.13	12.2	3	7.8	2.1	3.2	1075.	16.	20.9	.970	.970	14.
749.35	4.472	28.2	-.15	20.23	1.16	12.2	3	7.8	5.8	7.4	1108.	35.	19.5	.938	.938	22.
750.36	4.480	28.0	-.29	22.47	1.47	12.2	3	7.7	4.0	5.2	1080.	26.	20.2	.956	.956	18.
751.36	4.487	27.5	-.73	46.99	99.99	12.2	3	7.7	-1.5	-.7	900.	-4.	21.2	1.126	.888	1.
752.36	4.495	26.8	-1.03	57.77	99.99	12.2	3	7.9	-2.1	-1.3	900.	-7.	21.6	1.097	.911	0.
753.36	4.502	25.5	-1.91	54.96	99.99	12.3	3	8.7	-2.0	-1.3	900.	-7.	21.6	1.044	.958	0.
754.36	4.509	23.5	-2.93	50.65	99.99	12.3	3	9.2	-1.8	-1.3	900.	-7.	21.6	.962	.962	0.
755.36	4.515	21.5	-2.93	46.34	99.99	12.3	3	8.2	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.
756.36	4.521	19.0	-3.67	40.95	99.99	12.3	3	7.9	-1.5	-1.3	900.	-7.	21.6	.778	.778	0.
757.37	4.526	16.5	-3.67	35.57	99.99	12.3	2	6.7	-1.9	-1.3	900.	-7.	21.6	1.027	.974	0.
758.37	4.530	14.9	-2.35	32.12	99.99	12.3	2	4.8	-1.7	-1.3	900.	-7.	21.6	.927	.927	0.
759.37	4.534	12.5	-3.52	26.94	99.99	12.3	2	4.8	-1.4	-1.3	900.	-7.	21.6	.778	.778	0.
760.37	4.537	9.4	-4.55	20.26	99.99	12.3	2	4.1	-1.1	-1.3	900.	-7.	21.6	.585	.585	0.
761.38	4.539	6.2	-4.69	13.36	99.99	12.3	1	2.7	-1.2	-1.3	900.	-7.	21.6	.640	.640	0.
762.38	4.541	3.0	-4.69	6.47	99.99	12.3	1	1.3	-.6	-1.3	900.	-7.	21.6	.310	.310	0.
763.38	4.541	1.5	-2.20	3.23	99.99	12.3	1	.4	-.3	-1.3	900.	-7.	21.6	.155	.155	0.
764.38	4.542	1.5	0.00	1.73	2.86	12.3	1	.3	.3	1.9	900.	11.	20.7	.155	.235	7.
765.38	4.542	.5	-1.47	1.08	99.99	12.3	1	.1	-.1	-1.3	900.	-7.	21.6	.052	.052	0.
766.38	4.542	0.0	-.73	0.00	6.86	12.3	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
767.40	4.542	3.0	4.40	1.71	.69	12.3	1	.5	6.6	15.7	973.	85.	15.0	.286	.483	39.
768.40	4.544	6.3	4.84	2.79	.58	12.3	1	1.2	15.2	24.2	1194.	106.	13.4	.490	.724	51.
769.40	4.546	9.6	4.84	3.47	.54	12.3	1	1.8	23.2	31.8	1382.	121.	12.0	.645	.844	56.
770.40	4.549	12.9	4.84	3.83	.52	12.2	1	2.6	31.3	40.2	1561.	133.	10.3	.758	.893	60.
771.40	4.553	15.8	4.25	3.78	.54	12.2	2	3.4	34.0	47.8	1556.	161.	7.4	.569	.793	70.
772.40	4.558	17.5	2.49	6.44	.55	12.2	2	3.9	23.7	30.7	1410.	114.	12.6	.695	.871	54.
773.40	4.563	18.4	1.32	8.86	.67	12.2	2	4.1	15.2	19.3	1274.	79.	15.9	.809	.902	41.
774.40	4.568	19.5	1.61	8.39	.61	12.2	2	4.5	18.8	23.7	1362.	91.	14.9	.802	.901	45.
775.40	4.574	20.7	1.76	8.22	.58	12.2	2	4.9	21.5	27.0	1431.	99.	14.3	.810	.902	48.
776.40	4.579	22.0	1.91	7.99	.56	12.2	2	5.3	24.4	30.6	1502.	107.	13.5	.820	.902	51.
777.40	4.586	23.2	1.76	8.41	.56	12.2	2	5.7	24.3	30.5	1526.	105.	13.7	.852	.904	50.
778.41	4.592	25.0	2.64	6.66	.51	12.2	2	6.4	36.5	45.3	1714.	139.	9.8	.817	.902	62.
779.40	4.600	26.5	2.20	7.41	.51	12.1	3	7.0	33.5	43.6	1546.	148.	8.5	.632	.836	66.
780.40	4.607	27.5	1.47	9.70	.54	12.1	3	7.5	25.6	32.4	1444.	118.	12.2	.702	.874	55.
781.41	4.615	28.0	.73	12.92	.64	12.1	3	7.7	17.0	21.0	1302.	85.	15.4	.793	.900	43.

DRIVING SCHEDULE (UDCC01) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
782.41	4.623	28.3	.44	14.56	.72	12.1	3	7.8	13.5	16.7	1237.	71.	16.6	.843	.904	37.
783.41	4.631	28.9	.88	12.32	.60	12.1	3	8.1	19.6	24.2	1359.	94.	14.7	.784	.898	46.
784.41	4.639	28.9	0.00	18.13	.97	12.1	3	8.1	8.1	10.2	1157.	46.	18.7	.921	.921	27.
785.41	4.647	28.9	0.00	18.13	.97	12.2	3	8.1	8.1	10.2	1157.	46.	18.7	.921	.921	27.
786.39	4.654	28.8	-.15	20.23	1.14	12.2	3	8.0	6.1	7.7	1129.	36.	19.5	.940	.940	23.
787.39	4.662	28.5	-.44	25.73	2.10	12.2	3	7.9	2.2	3.3	1083.	16.	20.9	.970	.970	14.
788.40	4.670	28.3	-.29	22.48	1.45	12.2	3	7.8	4.1	5.4	1091.	26.	20.2	.956	.956	18.
789.40	4.678	28.3	0.00	18.15	.98	12.2	3	7.8	7.8	9.9	1135.	46.	18.7	.919	.919	27.
790.40	4.686	28.3	0.00	18.15	.98	12.2	3	7.8	7.8	9.9	1135.	46.	18.7	.919	.919	27.
791.38	4.694	28.2	-.15	20.23	1.16	12.2	3	7.8	5.8	7.4	1108.	35.	19.5	.938	.938	22.
792.38	4.702	27.6	-.88	59.49	99.99	12.2	3	8.0	-2.1	-1.3	900.	-7.	21.6	1.130	.885	0.
793.21	4.708	27.5	-.15	20.22	1.18	12.2	3	7.5	5.6	7.1	1083.	35.	19.5	.936	.936	21.
794.21	4.716	27.5	0.00	18.15	.99	12.2	3	7.5	7.5	9.5	1108.	45.	18.7	.915	.915	26.
795.21	4.723	27.5	0.00	18.15	.99	12.2	3	7.5	7.5	9.5	1108.	45.	18.7	.915	.915	26.
796.21	4.731	27.5	0.00	18.15	.99	12.2	3	7.5	7.5	9.5	1108.	45.	18.7	.915	.915	26.
797.21	4.738	27.5	0.00	18.15	.99	12.3	3	7.5	7.5	9.5	1108.	45.	18.7	.915	.915	26.
798.21	4.746	27.5	0.00	18.15	.99	12.3	3	7.5	7.5	9.5	1108.	45.	18.7	.915	.915	26.
799.19	4.754	27.6	.15	16.62	.86	12.3	3	7.5	9.4	11.9	1136.	55.	17.9	.895	.895	30.
800.19	4.761	28.0	.59	13.64	.67	12.3	3	7.7	15.2	18.8	1269.	78.	16.0	.813	.902	40.
801.20	4.769	28.5	.73	12.98	.63	12.3	3	7.9	17.4	21.4	1316.	85.	15.4	.798	.900	43.
802.23	4.778	30.0	2.20	7.25	.52	12.3	3	8.6	38.6	48.7	1640.	156.	7.9	.674	.860	68.
803.23	4.786	31.0	1.47	9.88	.53	12.2	3	9.1	29.8	36.7	1538.	125.	11.3	.743	.888	58.
804.23	4.795	32.0	1.47	9.92	.52	12.2	3	9.6	31.0	38.0	1563.	128.	11.0	.754	.892	58.
805.23	4.804	33.0	1.47	9.94	.52	12.2	3	10.1	32.2	39.3	1588.	130.	10.7	.766	.895	59.
806.23	4.813	33.0	0.00	18.43	.88	12.2	3	10.1	10.1	12.5	1305.	50.	18.3	.932	.932	30.
807.25	4.823	33.6	.88	12.62	.56	12.2	3	10.4	23.9	29.1	1466.	103.	14.0	.832	.903	50.
808.25	4.832	34.0	.59	14.23	.61	12.2	3	10.7	19.8	24.3	1433.	89.	15.2	.874	.903	44.
809.25	4.841	34.3	.44	15.10	.64	12.3	3	10.8	17.7	22.0	1409.	82.	15.7	.897	.897	42.
810.23	4.851	34.2	-.15	20.23	.99	12.3	3	10.8	8.4	10.5	1329.	42.	19.1	.948	.948	27.
811.24	4.860	34.0	-.29	22.32	1.19	12.3	3	10.7	6.2	7.9	1304.	32.	20.0	.961	.961	23.
812.24	4.870	34.0	0.00	18.52	.86	12.3	3	10.7	10.7	13.2	1340.	52.	18.2	.935	.935	31.
813.21	4.879	33.9	-.15	20.22	1.00	12.3	3	10.6	8.3	10.3	1318.	41.	19.2	.948	.943	27.
814.21	4.888	33.6	-.44	24.95	1.62	12.3	3	10.4	3.7	5.1	1276.	21.	20.9	.970	.970	19.
815.22	4.898	33.1	-.73	50.56	33.92	12.3	3	10.2	-.7	.1	900.	1.	21.2	1.355	.738	3.
816.02	4.905	33.0	-.15	20.20	1.03	12.3	3	10.1	7.9	9.8	1285.	40.	19.3	.946	.946	26.
817.03	4.914	32.5	-.73	51.32	134.02	12.3	3	9.9	-.8	.0	900.	0.	21.2	1.331	.751	3.
818.03	4.923	32.0	-.73	51.97	99.99	12.4	3	9.7	-.9	-.0	900.	-0.	21.2	1.310	.763	3.
818.84	4.930	31.9	-.15	20.16	1.06	12.4	3	9.5	7.4	9.3	1244.	39.	19.4	.945	.945	25.
819.84	4.939	31.6	-.44	25.10	1.80	12.4	3	9.4	3.1	4.3	1200.	19.	21.0	.970	.970	18.
820.82	4.948	31.5	-.15	20.14	1.07	12.4	3	9.3	7.2	9.0	1230.	39.	19.4	.944	.944	25.
821.82	4.956	30.6	-1.32	65.96	99.99	12.4	3	10.1	-2.3	-1.3	900.	-7.	21.6	1.253	.798	0.
822.82	4.965	30.0	-.88	64.66	99.99	12.4	3	9.0	-2.3	-1.3	900.	-7.	21.6	1.228	.814	0.
823.64	4.971	29.9	-.15	20.17	1.11	12.4	3	8.6	6.5	8.2	1170.	37.	19.5	.942	.942	24.
824.64	4.980	29.9	0.00	18.08	.95	12.4	3	8.6	8.5	10.7	1193.	47.	18.7	.923	.923	28.
825.64	4.988	29.9	0.00	18.08	.95	12.4	3	8.6	8.5	10.7	1193.	47.	18.7	.923	.923	28.
826.64	4.996	29.9	0.00	18.08	.95	12.4	3	8.6	8.5	10.7	1193.	47.	18.7	.923	.923	28.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
827.64	5.005	29.6	-.44	25.48	1.99	12.5	3	8.4	2.5	3.6	1124.	17.	20.9	.970	.970	15.
828.61	5.013	29.5	-.15	20.20	1.12	12.5	3	8.4	6.3	8.0	1155.	37.	19.5	.941	.941	23.
829.61	5.021	29.5	0.00	18.10	.96	12.5	3	8.4	8.4	10.5	1179.	47.	18.7	.922	.922	28.
830.62	5.029	29.3	-.29	22.47	1.40	12.5	3	8.3	4.4	5.6	1128.	27.	20.2	.958	.958	19.
831.62	5.037	28.9	-.59	28.88	4.97	12.5	3	8.1	.3	1.2	1098.	6.	21.5	.970	.970	10.
832.62	5.045	28.2	-1.03	60.78	99.99	12.5	3	8.5	-2.2	-1.3	900.	-7.	21.6	1.155	.866	0.
833.62	5.053	27.7	-.73	47.27	99.99	12.5	3	7.7	-1.4	-.6	900.	-4.	21.2	1.134	.882	1.
834.62	5.060	27.0	-1.03	58.20	99.99	12.5	3	7.9	-2.1	-1.3	900.	-7.	21.6	1.106	.904	0.
835.62	5.068	25.5	-2.20	54.96	99.99	12.5	3	9.1	-2.0	-1.3	900.	-7.	21.6	1.044	.958	0.
836.62	5.075	23.7	-2.64	51.08	99.99	12.6	3	8.9	-1.8	-1.3	900.	-7.	21.6	.971	.971	0.
837.62	5.081	22.0	-2.49	47.42	99.99	12.6	3	7.9	-1.7	-1.3	900.	-7.	21.6	.901	.901	0.
838.62	5.087	20.5	-2.20	44.19	99.99	12.6	3	6.9	-1.6	-1.3	900.	-7.	21.6	.839	.839	0.
839.62	5.092	19.2	-1.91	41.39	99.99	12.6	3	6.0	-1.5	-1.3	900.	-7.	21.6	.786	.786	0.
840.62	5.098	19.2	0.00	16.34	1.20	12.6	3	4.4	4.4	6.0	900.	35.	19.0	.786	.850	17.
841.69	5.103	20.0	1.17	9.52	.67	12.6	2	4.6	15.3	19.4	1310.	78.	16.0	.855	.904	40.
842.69	5.109	20.9	1.32	9.26	.63	12.6	2	4.9	17.5	22.1	1369.	85.	15.5	.855	.904	43.
843.65	5.115	21.4	.73	45.24	99.99	12.6	3	5.1	12.2	-4.8	1124.	-23.	23.2	.701	.874	0.
844.69	5.121	22.0	.88	11.17	.67	12.6	3	5.3	14.1	18.1	1176.	81.	15.7	.659	.868	41.
845.69	5.127	22.6	.88	11.30	.67	12.6	3	5.5	14.6	18.6	1192.	82.	15.6	.699	.873	41.
846.69	5.134	23.2	.88	11.42	.66	12.6	3	5.7	15.0	19.1	1208.	83.	15.5	.708	.876	42.
847.70	5.140	24.0	1.17	10.44	.59	12.6	3	6.0	18.8	24.0	1293.	97.	14.3	.684	.865	47.
848.69	5.147	25.0	1.47	9.45	.55	12.6	3	6.4	23.1	29.6	1380.	113.	12.8	.667	.857	53.
849.69	5.154	26.0	1.47	9.56	.55	12.6	3	6.8	24.2	30.7	1406.	115.	12.6	.682	.864	54.
850.69	5.161	26.6	.88	12.02	.62	12.6	3	7.1	17.7	22.0	1298.	89.	15.0	.755	.892	44.
851.69	5.168	26.6	0.00	18.14	1.00	12.6	3	7.1	7.1	9.0	1077.	44.	18.7	.911	.911	25.
852.70	5.176	26.8	.29	15.39	.80	12.6	3	7.2	10.7	13.4	1155.	61.	17.4	.855	.904	33.
853.72	5.184	27.0	.29	15.41	.80	12.6	3	7.2	10.8	13.5	1160.	61.	17.4	.858	.904	33.
854.73	5.191	27.2	.29	15.43	.80	12.6	3	7.3	10.9	13.7	1166.	62.	17.4	.860	.904	33.
855.74	5.199	27.8	.88	12.20	.61	12.6	3	7.6	18.7	23.1	1328.	91.	14.9	.772	.896	45.
856.74	5.207	28.1	.44	14.52	.72	12.6	3	7.7	13.3	16.6	1231.	71.	16.6	.841	.903	37.
857.75	5.215	28.8	1.03	11.63	.58	12.6	3	8.0	21.5	26.5	1389.	100.	14.1	.764	.894	49.
858.73	5.223	28.9	.15	16.69	.84	12.6	3	8.1	10.1	12.7	1182.	56.	17.8	.901	.901	32.
859.71	5.231	29.0	.15	16.69	.84	12.6	3	8.1	10.1	12.6	1185.	57.	17.8	.902	.902	32.
860.69	5.239	29.1	.15	16.70	.84	12.6	3	8.2	10.2	12.6	1189.	57.	17.8	.902	.902	32.
861.66	5.246	29.0	-.15	20.22	1.13	12.6	3	8.1	6.2	7.6	1136.	36.	19.5	.941	.941	23.
862.66	5.254	28.1	-1.32	60.57	99.99	12.6	3	8.9	-2.2	-1.3	900.	-7.	21.6	1.151	.869	0.
863.66	5.262	27.5	-.88	59.28	99.99	12.6	3	7.9	-2.1	-1.3	900.	-7.	21.6	1.126	.888	0.
864.67	5.270	27.0	-.73	46.29	99.99	12.6	3	7.5	-1.5	-.7	900.	-4.	21.2	1.106	.904	1.
865.67	5.277	25.8	-1.76	55.61	99.99	12.7	3	8.6	-2.0	-1.3	900.	-7.	21.6	1.057	.947	0.
866.67	5.284	25.0	-1.17	53.89	99.99	12.7	3	7.3	-1.9	-1.3	900.	-7.	21.6	1.024	.977	0.
867.68	5.291	24.5	-.73	42.68	99.99	12.7	3	6.5	-1.7	-1.0	900.	-6.	21.3	1.003	.997	1.
868.78	5.299	24.8	.44	14.04	.77	12.7	3	6.3	11.3	14.1	1142.	65.	17.5	.900	.901	34.
869.78	5.306	25.1	.44	14.11	.77	12.7	3	6.5	11.5	14.3	1150.	65.	17.0	.804	.901	34.
870.78	5.313	25.5	.59	13.25	.71	12.7	3	6.6	13.5	16.8	1199.	73.	16.4	.784	.898	38.
871.79	5.320	25.7	.29	15.26	.82	12.7	3	6.7	10.1	12.7	1123.	59.	17.5	.843	.904	31.
872.81	5.327	26.2	.73	12.67	.66	12.7	3	6.9	15.6	19.4	1250.	81.	15.7	.772	.896	41.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPF	RPM	TORQ	VAC	SR	ETA	PCT.WOT
873.80	5.334	26.9	1.03	11.42	.59	12.7	3	7.2	19.8	24.6	1341.	97.	14.5	.740	.887	47.
874.80	5.342	27.5	.88	12.15	.61	12.7	3	7.5	18.5	22.9	1321.	91.	14.9	.767	.895	45.
875.80	5.350	27.8	.44	14.49	.73	12.7	3	7.6	13.1	16.3	1223.	70.	16.7	.838	.903	37.
876.81	5.357	28.4	.88	12.27	.60	12.7	3	7.9	19.2	23.7	1345.	93.	14.8	.778	.897	46.
877.81	5.365	29.0	.88	12.33	.60	12.7	3	8.1	19.7	24.3	1362.	94.	14.7	.785	.898	46.
878.82	5.374	29.2	.29	15.68	.76	12.7	3	8.2	12.1	15.1	1221.	65.	17.1	.881	.903	35.
879.80	5.382	29.1	-.15	20.22	1.13	12.7	3	8.2	6.2	7.9	1140.	36.	19.5	.941	.941	23.
880.78	5.389	29.0	-.15	20.22	1.13	12.7	3	8.1	6.2	7.8	1136.	36.	19.5	.941	.941	23.
881.75	5.397	28.9	-.15	20.23	1.14	12.7	3	8.1	6.1	7.8	1132.	36.	19.5	.941	.941	23.
882.75	5.405	28.5	-.59	29.07	5.28	12.7	3	7.9	.3	1.1	1083.	6.	21.5	.970	.970	10.
883.74	5.413	28.1	-.59	29.28	5.64	12.7	3	7.7	.2	1.1	1067.	5.	21.4	.970	.970	9.
884.72	5.421	28.0	-.15	20.23	1.16	12.7	3	7.7	5.8	7.4	1101.	35.	19.5	.938	.938	22.
885.72	5.428	28.0	0.00	18.15	.98	12.7	3	7.7	7.7	9.7	1125.	45.	18.7	.917	.917	26.
886.71	5.436	27.6	-.59	29.57	6.15	12.8	3	7.5	.1	.9	1048.	5.	21.4	.970	.970	9.
887.71	5.444	27.2	-.59	29.81	6.64	12.8	3	7.3	.0	.8	1033.	4.	21.4	.970	.970	8.
888.71	5.451	26.6	-.88	57.34	99.99	12.8	3	7.5	-2.0	-1.3	900.	-7.	21.6	1.089	.918	0.
889.81	5.459	27.0	.59	13.50	.69	12.8	3	7.2	14.5	18.0	1241.	76.	16.1	.802	.901	39.
890.81	5.467	27.5	.73	12.85	.64	12.8	3	7.5	16.6	20.5	1288.	84.	15.5	.787	.899	42.
891.81	5.475	27.9	.44	14.49	.73	12.8	3	7.6	13.1	16.3	1223.	70.	16.7	.838	.903	37.
892.83	5.482	28.0	.29	15.52	.78	12.8	3	7.7	11.4	14.2	1186.	63.	17.3	.869	.904	34.
893.84	5.490	27.8	-.29	22.47	1.48	12.8	3	7.6	3.9	5.2	1072.	25.	20.2	.956	.956	17.
894.89	5.498	28.0	.29	15.52	.78	12.8	3	7.7	11.4	14.2	1188.	63.	17.3	.869	.904	34.
895.89	5.506	28.0	0.00	18.15	.98	12.8	3	7.7	7.7	9.7	1125.	45.	18.7	.917	.917	26.
896.89	5.514	28.0	0.00	18.15	.98	12.8	3	7.7	7.7	9.7	1125.	45.	18.7	.917	.917	26.
897.89	5.522	27.7	-.44	25.93	2.20	12.8	3	7.5	2.0	3.0	1052.	15.	20.9	.970	.970	13.
898.89	5.529	27.4	-.44	26.01	2.23	12.8	3	7.4	1.9	2.9	1041.	15.	20.8	.970	.970	12.
899.89	5.537	26.9	-.73	46.15	99.99	12.8	3	7.4	1.5	-.7	900.	-4.	21.2	1.102	.908	1.
900.88	5.544	26.6	-.44	26.24	2.33	12.8	3	7.1	1.8	2.7	1010.	14.	20.8	.970	.970	11.
901.85	5.551	26.5	-.15	20.19	1.21	12.9	3	7.0	5.2	6.7	1048.	34.	19.5	.932	.932	20.
902.85	5.559	26.5	0.00	18.14	1.00	12.9	3	7.0	7.0	9.0	1073.	44.	18.7	.910	.910	25.
903.85	5.566	26.5	0.00	18.14	1.00	12.9	3	7.0	7.0	9.0	1073.	44.	18.7	.910	.910	25.
904.87	5.574	26.3	-.29	22.44	1.56	12.9	3	7.0	3.5	4.6	1017.	24.	20.2	.953	.953	16.
905.84	5.581	26.2	-.15	20.18	1.21	12.9	3	6.9	5.1	6.6	1037.	33.	19.5	.931	.931	20.
906.84	5.588	26.2	0.00	18.13	1.01	12.9	3	6.9	6.9	8.8	1065.	44.	18.7	.909	.909	24.
907.84	5.595	25.9	-.44	26.47	2.43	12.9	3	6.8	1.6	2.5	984.	13.	20.8	.970	.970	11.
908.84	5.602	25.6	-.44	26.57	2.47	12.9	3	6.7	1.5	2.4	972.	13.	20.7	.970	.970	10.
909.84	5.610	25.6	0.00	18.11	1.02	12.9	3	6.7	6.7	8.6	1042.	43.	18.7	.906	.906	24.
910.86	5.617	25.9	.44	14.20	.76	12.9	3	6.8	12.0	14.9	1172.	67.	16.9	.814	.902	35.
911.84	5.624	25.8	-.15	20.15	1.23	12.9	3	6.7	5.0	6.4	1023.	33.	19.5	.929	.929	19.
912.84	5.631	25.5	-.44	26.61	2.49	12.9	3	6.6	1.5	2.4	969.	13.	20.7	.970	.970	10.
913.84	5.638	24.6	-1.32	53.02	99.99	12.9	3	7.4	-1.9	-1.3	900.	-7.	21.6	1.007	.993	0.
914.84	5.645	23.5	-1.61	50.65	99.99	12.9	3	7.3	-1.8	-1.3	900.	-7.	21.6	.962	.962	0.
915.84	5.651	22.2	-1.91	47.95	99.99	13.0	3	7.2	-1.7	-1.3	900.	-7.	21.6	.909	.909	0.
916.84	5.657	21.6	-.88	46.56	99.99	13.0	3	5.6	-1.7	-1.3	900.	-7.	21.6	.885	.885	0.
917.84	5.663	21.6	0.00	17.75	1.13	13.0	3	5.2	5.2	6.7	914.	38.	18.8	.871	.903	19.
918.82	5.669	21.7	.15	16.00	.98	13.0	3	5.2	6.7	8.5	970.	46.	18.3	.824	.903	23.

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
919.87	5.675	22.6	1.32	9.64	.58	13.0	3	5.5	19.1	24.9	1287.	101.	13.9	.647	.845	49.
920.87	5.682	23.4	1.17	10.33	.60	13.0	3	5.8	18.3	23.4	1278.	96.	14.4	.675	.861	47.
921.87	5.688	24.0	.68	11.57	.65	13.0	3	6.0	15.6	19.7	1230.	84.	15.4	.719	.880	42.
922.88	5.695	24.2	.29	15.06	.85	13.0	3	6.1	9.3	11.7	1163.	57.	17.6	.824	.903	30.
923.90	5.702	24.4	.29	15.09	.84	13.0	3	6.2	9.4	11.8	1088.	57.	17.6	.826	.903	30.
924.91	5.709	24.9	.73	12.43	.68	13.0	3	6.4	14.6	18.3	1218.	79.	15.9	.754	.891	40.
925.92	5.716	25.1	.29	15.19	.83	13.0	3	6.5	9.8	12.3	1107.	58.	17.5	.836	.903	31.
926.93	5.723	25.2	.15	16.45	.91	13.0	3	6.5	8.2	10.4	1067.	51.	18.1	.870	.903	27.
927.88	5.730	25.3	.15	16.46	.91	13.0	3	6.5	8.3	10.5	1070.	51.	18.1	.871	.903	27.
928.89	5.737	25.5	.29	15.24	.83	13.0	3	6.6	10.0	12.5	1118.	59.	17.5	.841	.903	31.
929.89	5.744	25.2	-.44	26.70	2.54	13.0	3	6.5	1.5	2.3	957.	13.	20.7	.970	.970	10.
930.90	5.751	25.0	-.29	22.48	1.64	13.0	3	6.4	3.1	4.2	969.	23.	20.1	.951	.951	14.
931.90	5.758	25.0	0.00	18.09	1.03	13.0	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
932.90	5.765	25.0	0.00	18.09	1.03	13.0	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
933.90	5.772	24.7	-.44	26.88	2.62	13.0	3	6.3	1.4	2.2	936.	12.	20.7	.970	.970	9.
934.91	5.779	24.5	-.29	22.50	1.67	13.0	3	6.2	3.0	4.0	951.	22.	20.1	.950	.950	13.
935.92	5.785	24.3	-.29	22.51	1.68	13.0	3	6.2	2.9	4.0	943.	22.	20.1	.949	.949	13.
936.92	5.792	24.3	0.00	18.05	1.04	13.0	3	6.2	6.2	8.0	996.	42.	18.7	.899	.899	22.
937.94	5.799	24.5	.29	15.10	.84	13.0	3	6.2	9.5	11.9	1091.	57.	17.6	.828	.903	30.
938.96	5.806	25.0	.73	12.45	.67	13.0	3	6.4	14.7	18.4	1220.	79.	15.9	.755	.892	40.
939.96	5.813	25.0	0.00	18.09	1.03	13.0	3	6.4	6.4	8.3	1021.	43.	18.7	.903	.903	23.
940.95	5.820	24.6	-.59	34.58	11.77	13.0	3	6.3	-.3	.4	900.	2.	21.1	1.007	.993	4.
941.95	5.827	24.6	0.00	18.06	1.04	13.0	3	6.3	6.3	8.1	1007.	42.	18.7	.900	.900	23.
942.96	5.833	24.1	-.73	42.08	99.99	13.1	3	6.3	-1.7	-1.1	900.	-6.	21.3	.987	.987	0.
944.07	5.841	24.5	.59	13.10	.72	13.1	3	6.2	12.8	16.0	1170.	72.	16.5	.772	.896	37.
945.07	5.848	25.1	.88	11.80	.64	13.1	3	6.5	16.5	20.6	1260.	86.	15.3	.734	.886	43.
946.08	5.855	25.6	.73	12.56	.67	13.1	3	6.7	15.2	18.9	1235.	80.	15.8	.764	.894	41.
947.08	5.862	25.1	-.73	43.56	99.99	13.1	3	6.7	-1.6	-1.0	900.	-6.	21.3	1.028	.973	1.
948.08	5.869	24.0	-1.61	51.73	99.99	13.1	3	7.5	-1.8	-1.3	900.	-7.	21.6	.983	.983	0.
949.08	5.875	22.0	-2.93	47.42	99.99	13.1	3	8.5	-1.7	-1.3	900.	-7.	21.6	.901	.901	0.
950.08	5.881	20.1	-2.79	43.32	99.99	13.1	3	7.4	-1.5	-1.3	900.	-7.	21.6	.823	.823	0.
951.09	5.886	16.9	-4.69	36.43	99.99	13.1	2	8.0	-1.9	-1.3	900.	-7.	21.6	1.052	.951	0.
952.09	5.891	13.6	-4.84	29.31	99.99	13.1	2	6.4	-1.6	-1.3	900.	-7.	21.6	.847	.847	0.
953.09	5.894	10.3	-4.84	22.20	99.99	13.1	2	4.7	-1.2	-1.3	900.	-7.	21.6	.641	.641	0.
954.10	5.896	7.0	-4.84	15.09	99.99	13.1	1	3.2	-1.3	-1.3	900.	-7.	21.6	.722	.722	0.
955.10	5.898	3.7	-4.84	7.98	99.99	13.1	1	1.6	-.7	-1.3	900.	-7.	21.6	.382	.382	0.
956.10	5.898	.4	-4.84	.86	99.99	13.1	1	.2	-.1	-1.3	900.	-7.	21.6	.041	.041	0.
957.10	5.898	0.0	-.59	0.00	6.86	13.1	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
958.10	5.898	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
959.10	5.898	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
960.10	5.899	2.0	2.93	1.46	.87	13.1	1	.3	3.0	9.7	900.	57.	17.3	.206	.359	26.
961.10	5.900	5.3	4.84	2.46	.59	13.1	1	1.0	12.7	22.4	1139.	103.	13.6	.432	.664	49.
962.10	5.902	8.6	4.84	3.33	.55	13.1	1	1.6	20.7	29.1	1320.	116.	12.5	.605	.819	54.
963.10	5.904	11.9	4.84	3.74	.52	13.0	1	2.4	28.8	37.6	1523.	130.	10.8	.726	.883	59.
964.10	5.908	15.2	4.84	3.04	.58	13.0	2	3.2	36.7	53.6	1595.	176.	6.0	.534	.765	75.
965.10	5.913	17.5	3.37	5.19	.51	13.0	2	3.9	30.7	40.8	1519.	141.	9.5	.646	.845	63.

DRIVING SCHEDULE (UDCC01) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPF	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
966.10	5.918	18.6	1.61	8.25	.62	13.0	2	4.2	17.8	22.6	1327.	90.	15.0	.785	.898	45.	
967.10	5.923	20.0	2.05	7.51	.56	13.0	2	4.6	23.3	29.4	1443.	107.	13.4	.777	.897	51.	
968.11	5.929	21.1	1.61	8.61	.59	13.0	2	5.0	20.5	25.8	1423.	95.	14.7	.831	.903	47.	
969.11	5.935	22.0	1.32	9.41	.62	13.0	2	5.3	18.5	23.4	1411.	87.	15.3	.873	.903	44.	
970.09	5.941	23.0	1.47	9.19	.56	13.0	3	5.7	21.0	27.5	1327.	109.	13.2	.639	.841	52.	
971.10	5.948	24.5	2.20	7.27	.51	13.0	3	6.2	30.7	40.9	1495.	144.	9.2	.604	.818	64.	
972.10	5.955	26.3	2.64	6.69	.51	12.9	2	7.0	38.6	47.8	1762.	142.	9.5	.836	.903	63.	
973.09	5.962	27.5	1.76	8.72	.52	12.9	3	7.5	29.5	37.4	1499.	131.	10.7	.676	.861	60.	
974.09	5.970	28.1	.88	12.23	.61	12.9	3	7.7	19.0	23.4	1336.	92.	14.8	.775	.897	46.	
975.09	5.978	28.4	.44	14.58	.72	12.9	3	7.9	13.5	16.8	1240.	71.	16.6	.844	.904	38.	
976.07	5.985	28.5	.15	16.67	.85	12.9	3	7.9	9.8	12.5	1168.	56.	17.8	.900	.900	31.	
977.07	5.993	28.5	0.00	18.15	.97	12.9	3	7.9	7.9	10.0	1142.	46.	18.7	.920	.920	27.	
978.07	6.001	28.5	0.00	18.15	.97	13.0	3	7.9	7.9	10.0	1142.	46.	18.7	.920	.920	27.	
979.07	6.009	27.7	-1.17	59.71	99.99	13.0	3	8.5	-2.1	-1.3	900.	-7.	21.6	1.134	.882	0.	
980.03	6.016	27.5	-.29	22.46	1.49	13.0	3	7.5	3.6	5.1	1061.	25.	20.2	.955	.955	17.	
981.03	6.024	27.2	-.44	26.06	2.26	13.0	3	7.3	1.9	2.9	1033.	15.	20.8	.970	.970	12.	
982.03	6.032	26.8	-.59	35.17	7.13	13.0	3	7.2	-.0	.7	900.	4.	21.1	1.097	.911	5.	
983.01	6.039	26.5	-.44	26.27	2.34	13.0	3	7.0	1.7	2.7	1007.	14.	20.8	.970	.970	11.	
984.02	6.046	26.0	-.73	44.87	98.89	13.0	3	7.0	-1.6	-.9	900.	-5.	21.3	1.065	.939	1.	
985.00	6.053	25.7	-.44	26.54	2.46	13.0	3	6.7	1.6	2.4	976.	13.	20.8	.970	.970	10.	
986.00	6.060	25.2	-.73	43.71	99.99	13.0	3	6.7	-1.6	-1.0	900.	-6.	21.3	1.032	.969	1.	
987.00	6.067	24.0	-1.76	51.73	99.99	13.0	3	7.8	-1.8	-1.3	900.	-7.	21.6	.983	.983	0.	
988.01	6.074	22.0	-2.93	47.42	99.99	13.0	3	8.5	-1.7	-1.3	900.	-7.	21.6	.901	.901	0.	
989.01	6.080	21.5	-.73	46.34	99.99	13.1	3	5.4	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.	
990.01	6.086	21.5	0.00	17.73	1.13	13.1	3	5.1	5.1	6.6	912.	38.	18.8	.869	.904	19.	
991.03	6.092	21.8	.44	13.52	.82	13.1	3	5.2	9.6	12.1	1159.	60.	17.3	.759	.893	31.	
992.05	6.098	22.5	1.03	10.68	.63	13.1	3	5.5	16.0	20.6	1224.	88.	15.1	.677	.862	44.	
993.05	6.104	23.0	.73	12.06	.70	13.1	3	5.7	13.3	16.8	1168.	76.	16.1	.726	.883	39.	
994.06	6.111	22.8	-.29	22.29	1.77	13.1	3	5.6	2.6	3.6	900.	21.	20.1	.934	.934	12.	
995.06	6.117	22.8	0.00	17.94	1.09	13.1	3	5.6	5.6	7.2	948.	40.	18.7	.886	.900	20.	
996.08	6.124	23.0	.29	14.87	.87	13.1	3	5.7	8.7	11.0	1050.	55.	17.7	.807	.901	28.	
997.08	6.130	22.7	-.44	26.36	2.91	13.1	3	5.6	1.0	1.8	900.	11.	20.7	.930	.930	7.	
998.08	6.136	22.7	0.00	17.93	1.09	13.1	3	5.6	5.6	7.2	945.	40.	18.7	.885	.901	20.	
999.08	6.143	22.7	0.00	17.93	1.09	13.1	3	5.6	5.6	7.2	945.	40.	18.7	.885	.901	20.	
1000.15	6.149	23.5	1.17	10.35	.66	13.1	3	5.8	18.3	23.5	1281.	96.	14.4	.676	.862	47.	1
1001.15	6.156	24.0	.73	12.25	.69	13.1	3	6.0	14.0	17.6	1195.	77.	16.0	.740	.888	40.	1
1002.15	6.163	24.6	.88	11.68	.64	13.1	3	6.3	16.1	20.3	1246.	85.	15.3	.727	.883	43.	1
1003.16	6.170	24.8	.29	15.14	.84	13.1	3	6.3	9.6	12.1	1099.	58.	17.6	.832	.903	30.	1
1004.16	6.177	25.1	.44	14.11	.77	13.1	3	6.5	11.5	14.3	1150.	65.	17.0	.804	.901	34.	1
1005.16	6.184	25.5	.59	13.25	.71	13.1	3	6.6	13.5	16.8	1199.	73.	16.4	.784	.898	38.	1
1006.14	6.191	25.6	.15	16.50	.90	13.1	3	6.7	8.4	10.6	1078.	52.	18.0	.875	.903	28.	1
1007.11	6.197	25.5	-.15	20.14	1.24	13.1	3	6.6	4.9	6.3	1013.	33.	19.5	.925	.928	19.	1
1008.12	6.205	25.0	-.73	43.41	99.99	13.1	3	6.7	-1.6	-1.0	900.	-6.	21.3	1.024	.977	1.	1
1009.12	6.211	24.1	-1.32	51.95	99.99	13.1	3	7.2	-1.8	-1.3	900.	-7.	21.6	.987	.987	0.	1
1010.11	6.218	23.7	-.59	34.45	15.91	13.1	3	6.0	-.4	.3	900.	2.	21.2	.971	.971	4.	1
1011.12	6.224	23.2	-.73	40.73	99.99	13.1	3	6.0	-1.7	-1.2	900.	-7.	21.3	.950	.950	0.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1012.12	6.231	22.9	-.44	26.52	2.88	13.1	3	5.6	1.0	1.9	900.	11.	20.7	.938	.938	7.	1
1013.11	6.237	22.5	-.59	34.24	31.20	13.1	3	5.5	-.5	.1	900.	1.	21.2	.921	.921	3.	1
1014.12	6.243	22.0	-.73	47.42	99.99	13.2	3	5.6	-1.7	-1.3	900.	-7.	21.6	.901	.901	0.	1
1015.11	6.249	21.6	-.59	34.08	126.45	13.2	3	5.2	-.6	.0	900.	0.	21.2	.885	.885	3.	1
1016.11	6.255	20.5	-1.61	44.19	99.99	13.2	3	6.1	-1.6	-1.3	900.	-7.	21.6	.839	.839	0.	1
1017.12	6.261	17.5	-4.40	37.72	99.99	13.2	2	8.0	-2.0	-1.3	900.	-7.	21.6	1.089	.918	0.	1
1018.12	6.265	14.2	-4.84	30.61	99.99	13.2	2	6.7	-1.6	-1.3	900.	-7.	21.6	.884	.884	0.	1
1019.12	6.268	10.9	-4.84	23.49	99.99	13.2	2	5.0	-1.2	-1.3	900.	-7.	21.6	.678	.678	0.	1
1020.13	6.271	7.6	-4.84	16.38	99.99	13.2	1	3.4	-1.4	-1.3	900.	-7.	21.6	.784	.784	0.	1
1021.13	6.273	4.3	-4.84	9.27	99.99	13.2	1	1.9	-.8	-1.3	900.	-7.	21.6	.444	.444	0.	1
1022.13	6.273	1.0	-4.84	2.16	99.99	13.2	1	.4	-.2	-1.3	900.	-7.	21.6	.103	.103	0.	1
1023.13	6.274	0.0	-1.47	0.00	6.86	13.2	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.	1
1024.13	6.274	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1025.13	6.274	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1026.13	6.274	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1027.13	6.274	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1028.13	6.274	0.0	0.00	0.00	6.86	13.2	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1029.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1030.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1031.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1032.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1033.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1034.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1035.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1036.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1037.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1038.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1039.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1040.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1041.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1042.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1043.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1044.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1045.13	6.274	0.0	0.00	0.00	6.86	13.1	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1046.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1047.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1048.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1049.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1050.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1051.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1052.13	6.274	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1053.13	6.274	1.2	1.76	1.01	1.16	13.0	1	.2	1.2	6.3	900.	37.	18.9	.124	.222	18.	1
1054.13	6.274	4.0	4.11	2.22	.68	13.0	1	.7	8.3	16.3	1008.	65.	15.0	.368	.590	40.	1
1055.13	6.276	7.3	4.84	3.04	.56	13.0	1	1.4	17.6	26.5	1249.	111.	13.0	.543	.772	53.	1
1056.13	6.279	10.6	4.84	3.61	.53	13.0	1	2.1	25.6	34.1	1443.	124.	11.5	.682	.865	57.	1
1057.13	6.282	13.9	4.84	3.87	.51	12.9	1	2.9	33.8	43.2	1642.	138.	9.7	.786	.899	62.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1058.13	6.286	17.0	4.55	3.42	.57	12.9	2	3.7	38.9	53.9	1629.	174.	6.3	.585	.804	74.	1
1059.13	6.291	18.5	2.20	7.05	.56	12.9	2	4.2	22.7	29.0	1410.	108.	13.3	.735	.886	51.	1
1060.13	6.296	20.0	2.20	7.22	.55	12.9	2	4.6	24.7	31.1	1464.	112.	12.9	.765	.895	53.	1
1061.13	6.302	21.8	2.64	6.55	.52	12.9	2	5.2	31.5	39.4	1588.	130.	10.6	.769	.895	59.	1
1062.13	6.309	23.0	1.76	8.31	.54	12.9	3	5.7	24.1	31.8	1377.	121.	11.9	.616	.826	56.	1
1063.13	6.315	24.0	1.47	9.33	.56	12.9	3	6.0	22.1	28.6	1354.	111.	13.0	.653	.849	52.	1
1064.13	6.322	24.8	1.17	10.57	.59	12.9	3	6.3	19.5	24.7	1313.	99.	14.2	.696	.871	48.	1
1065.14	6.329	25.6	1.17	10.67	.58	12.9	3	6.7	20.3	25.5	1335.	100.	14.1	.707	.876	49.	1
1066.14	6.336	26.5	1.32	10.19	.56	12.9	3	7.0	22.9	28.6	1389.	109.	13.2	.703	.874	52.	1
1067.14	6.344	26.8	.44	14.33	.74	12.9	3	7.2	12.5	15.6	1197.	68.	16.8	.825	.903	36.	1
1068.14	6.351	27.4	.88	12.14	.61	12.9	3	7.4	18.4	22.7	1318.	91.	14.9	.766	.895	45.	1
1069.15	6.359	27.9	.73	12.91	.64	12.9	3	7.6	16.9	20.9	1299.	84.	15.5	.792	.899	43.	1
1070.14	6.367	28.3	.59	13.69	.67	12.9	3	7.8	15.4	19.0	1277.	78.	16.0	.817	.902	40.	1
1071.14	6.374	28.0	-.44	25.85	2.16	12.9	3	7.7	2.1	3.1	1064.	15.	20.9	.970	.970	13.	1
1072.15	6.382	27.5	-.73	46.99	99.99	12.9	3	7.7	-1.5	-.7	900.	-4.	21.2	1.126	.888	1.	1
1073.15	6.390	27.0	-.73	46.29	99.99	12.9	3	7.5	-1.5	-.7	900.	-4.	21.2	1.106	.904	1.	1
1074.15	6.397	27.0	0.00	18.15	1.00	12.9	3	7.2	7.2	9.2	1050.	44.	18.7	.913	.913	25.	1
1075.15	6.405	26.3	-1.03	56.69	99.99	12.9	3	7.6	-2.0	-1.3	900.	-7.	21.6	1.077	.929	0.	1
1076.15	6.412	24.5	-2.64	52.91	99.99	12.9	3	9.3	-1.9	-1.3	900.	-7.	21.6	1.003	.997	0.	1
1077.15	6.418	22.5	-2.93	48.50	99.99	12.9	3	8.7	-1.7	-1.3	900.	-7.	21.6	.921	.921	0.	1
1078.15	6.424	21.5	-1.47	46.34	99.99	13.0	3	6.3	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.	1
1079.15	6.430	20.6	-1.32	44.40	99.99	13.0	3	5.8	-1.6	-1.3	900.	-7.	21.6	.844	.844	0.	1
1080.15	6.435	18.0	-3.81	38.80	99.99	13.0	3	7.6	-1.4	-1.3	900.	-7.	21.6	.737	.737	0.	1
1081.16	6.440	15.0	-4.40	32.33	99.99	13.0	2	6.7	-1.7	-1.3	900.	-7.	21.6	.934	.934	0.	1
1082.16	6.444	12.3	-3.96	26.51	99.99	13.0	2	5.1	-1.4	-1.3	900.	-7.	21.6	.766	.766	0.	1
1083.16	6.447	11.1	-1.76	23.93	99.99	13.0	2	3.1	-1.3	-1.3	900.	-7.	21.6	.691	.691	0.	1
1084.16	6.450	10.6	-.73	22.85	99.99	13.0	2	2.3	-1.2	-1.3	900.	-7.	21.6	.660	.660	0.	1
1085.16	6.453	10.0	-.88	21.55	99.99	13.0	2	2.2	-1.1	-1.3	900.	-7.	21.6	.622	.622	0.	1
1086.17	6.456	9.5	-.73	20.48	99.99	13.0	2	2.0	-1.1	-1.3	900.	-7.	21.6	.591	.591	0.	1
1087.16	6.458	9.1	-.59	15.40	99.99	13.0	2	1.8	-.6	-.5	900.	-3.	21.2	.566	.566	2.	1
1088.16	6.461	8.7	-.59	14.74	99.99	13.0	2	1.7	-.6	-.5	900.	-3.	21.2	.542	.542	2.	1
1089.13	6.463	8.6	-.15	9.13	2.14	13.0	2	1.6	1.0	2.7	900.	16.	20.4	.535	.545	9.	1
1090.14	6.466	8.8	.29	7.80	1.36	13.0	2	1.7	2.8	5.1	900.	30.	19.4	.548	.679	15.	1
1091.16	6.468	9.0	.29	7.06	1.35	13.0	2	1.7	2.9	5.2	900.	30.	19.4	.560	.689	15.	1
1092.16	6.471	8.7	-.44	11.70	8.86	13.0	2	1.7	-.1	.5	900.	3.	21.1	.542	.542	4.	1
1093.13	6.473	8.6	-.15	9.13	2.14	13.0	2	1.6	1.0	2.7	900.	16.	20.4	.535	.545	9.	1
1094.13	6.475	8.0	-.88	17.24	99.99	13.0	2	1.7	-.9	-1.3	900.	-7.	21.6	.498	.498	0.	1
1095.15	6.477	7.0	-1.47	15.09	99.99	13.0	1	1.7	-1.3	-1.3	900.	-7.	21.6	.722	.722	0.	1
1096.15	6.479	5.0	-2.93	10.78	99.99	13.0	1	1.7	-.9	-1.3	900.	-7.	21.6	.516	.516	0.	1
1097.15	6.480	4.2	-1.17	9.05	99.99	13.0	1	.9	-.8	-1.3	900.	-7.	21.6	.433	.433	0.	1
1098.15	6.481	2.6	-2.35	5.60	99.99	13.0	1	.6	-.5	-1.3	900.	-7.	21.6	.268	.268	0.	1
1099.15	6.482	1.0	-2.35	2.16	99.99	13.0	1	.3	-.2	-1.3	900.	-7.	21.6	.103	.103	0.	1
1100.15	6.482	0.0	-1.47	0.00	6.86	13.0	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.	1
1101.13	6.482	.1	.15	.11	2.73	13.0	1	.0	.0	2.0	900.	12.	20.6	.010	.020	3.	1
1102.13	6.482	.6	.73	.59	1.76	13.0	1	.1	.3	3.5	900.	21.	20.1	.062	.114	11.	1
1103.13	6.482	1.6	1.47	1.38	1.24	13.0	1	.3	1.4	5.8	900.	34.	19.1	.165	.285	17.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1104.13	6.483	3.6	2.93	2.53	.83	12.9	1	.6	5.5	10.6	900.	62.	16.5	.371	.550	28.	1
1105.14	6.484	6.9	4.84	2.94	.57	12.9	1	1.3	16.6	25.6	1223.	110.	13.1	.524	.756	52.	1
1106.14	6.487	10.0	4.55	3.69	.54	12.9	1	1.9	22.8	30.7	1385.	117.	12.4	.671	.859	54.	1
1107.14	6.490	12.8	4.11	3.85	.51	12.9	2	2.6	26.6	40.4	1436.	148.	8.9	.499	.733	66.	1
1108.14	6.494	14.0	1.76	6.98	.66	12.9	2	2.9	14.1	18.8	1178.	84.	15.4	.666	.856	42.	1
1109.14	6.498	14.5	.73	9.79	.90	12.9	2	3.0	7.8	10.2	1017.	53.	17.8	.799	.900	27.	1
1110.17	6.502	16.0	2.20	6.69	.58	12.9	2	3.4	19.5	25.5	1316.	102.	13.9	.681	.864	49.	1
1111.18	6.507	18.1	3.08	5.61	.52	12.9	2	4.0	29.4	38.4	1508.	134.	10.4	.672	.860	61.	1
1112.16	6.512	20.0	2.79	6.18	.52	12.9	2	4.6	30.0	38.3	1544.	130.	10.7	.726	.883	59.	1
1113.17	6.518	21.0	1.47	8.91	.61	12.9	2	5.0	19.0	24.0	1397.	90.	15.1	.942	.903	45.	1
1114.14	6.523	21.2	.29	14.58	.90	12.9	3	5.0	7.8	9.9	999.	52.	17.8	.782	.898	26.	1
1115.12	6.529	21.3	.15	15.93	.99	12.9	3	5.1	6.5	8.3	959.	46.	18.3	.818	.902	23.	1
1116.09	6.535	21.4	.15	15.95	.99	12.9	3	5.1	6.6	8.4	962.	46.	18.3	.820	.902	23.	1
1117.10	6.541	21.7	.44	13.50	.82	12.9	3	5.2	9.5	12.1	1057.	60.	17.3	.757	.892	31.	1
1118.12	6.547	22.5	1.17	10.16	.61	12.9	3	5.5	17.4	22.6	1255.	95.	14.5	.661	.853	46.	1
1119.12	6.554	23.0	.73	12.06	.70	12.9	3	5.7	13.3	16.8	1168.	76.	16.1	.726	.883	39.	1
1120.13	6.560	23.8	1.17	10.40	.59	12.9	3	6.0	18.6	23.8	1288.	97.	14.4	.681	.864	47.	1
1121.13	6.567	24.5	1.03	11.06	.61	12.9	3	6.2	17.7	22.4	1276.	92.	14.8	.707	.876	45.	1
1122.13	6.574	25.0	.73	12.45	.67	12.9	3	6.4	14.7	18.4	1220.	79.	15.9	.755	.892	40.	1
1123.11	6.581	24.9	-.15	20.11	1.26	12.9	3	6.4	4.7	6.1	991.	32.	19.5	.926	.926	18.	1
1124.09	6.587	24.8	-.15	20.10	1.26	12.9	3	6.3	4.7	6.0	987.	32.	19.5	.926	.926	18.	1
1125.13	6.594	25.0	.29	15.17	.83	12.9	3	6.4	9.7	12.2	1104.	58.	17.5	.834	.903	31.	1
1126.12	6.601	25.4	.59	13.23	.71	12.9	3	6.6	13.4	16.7	1196.	73.	16.4	.783	.898	38.	1
1127.12	6.609	25.8	.59	13.30	.70	12.9	3	6.7	13.7	17.0	1207.	74.	16.3	.788	.899	33.	1
1128.13	6.616	26.0	.29	15.30	.82	12.9	3	6.8	10.3	12.9	1132.	60.	17.5	.845	.904	32.	1
1129.12	6.623	26.4	.59	13.40	.70	12.9	3	7.0	14.1	17.5	1224.	75.	16.2	.795	.900	39.	1
1130.13	6.630	26.6	.29	15.37	.81	12.9	3	7.1	10.6	13.3	1149.	61.	17.4	.853	.904	32.	1
1131.13	6.638	26.9	.44	14.34	.74	12.9	3	7.2	12.6	15.7	1199.	69.	16.8	.827	.903	36.	1
1132.11	6.645	27.0	.15	16.60	.87	12.9	3	7.2	9.1	11.5	1116.	54.	17.9	.890	.898	29.	1
1133.11	6.653	27.0	0.00	18.15	1.00	12.9	3	7.2	7.2	9.2	1090.	44.	16.7	.913	.913	25.	1
1134.11	6.660	27.0	0.00	18.15	1.00	12.9	3	7.2	7.2	9.2	1090.	44.	18.7	.913	.913	25.	1
1135.09	6.668	26.9	-.15	20.21	1.19	12.9	3	7.2	5.4	6.9	1062.	34.	19.5	.933	.933	21.	1
1136.07	6.675	26.8	-.15	20.20	1.20	12.9	3	7.2	5.3	6.8	1059.	34.	19.5	.933	.933	20.	1
1137.07	6.682	26.8	0.00	18.14	1.00	12.9	3	7.2	7.2	9.1	1084.	44.	18.7	.912	.912	25.	1
1138.07	6.690	26.5	-.44	26.27	2.34	12.9	3	7.0	1.7	2.7	1007.	14.	20.8	.970	.970	11.	1
1139.05	6.697	26.4	-.15	20.19	1.21	12.9	3	7.0	5.2	6.7	1045.	34.	19.5	.931	.931	20.	1
1140.04	6.704	26.0	-.59	34.70	8.50	12.9	3	6.8	-.1	.5	900.	3.	21.1	1.065	.939	4.	1
1141.04	6.711	25.5	-.73	44.14	99.99	12.9	3	6.9	-1.6	-.9	900.	-5.	21.3	1.044	.958	1.	1
1142.04	6.718	24.6	-1.32	53.02	99.99	12.9	3	7.4	-1.9	-1.3	900.	-7.	21.6	1.007	.993	0.	1
1143.05	6.725	23.5	-1.61	50.65	99.99	12.9	3	7.3	-1.8	-1.3	900.	-7.	21.6	.962	.962	0.	1
1144.05	6.731	21.5	-2.93	46.34	99.99	13.0	3	8.2	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.	1
1145.05	6.737	20.0	-2.20	43.11	99.99	13.0	3	6.7	-1.5	-1.3	900.	-7.	21.6	.819	.819	0.	1
1146.03	6.742	17.5	-3.67	37.72	99.99	13.0	2	7.2	-2.0	-1.3	900.	-7.	21.6	1.089	.918	0.	1
1147.03	6.747	16.0	-2.20	34.49	99.99	13.0	2	5.1	-1.8	-1.3	900.	-7.	21.6	.996	.996	0.	1
1148.03	6.751	14.0	-2.93	30.18	99.99	13.0	2	5.0	-1.6	-1.3	900.	-7.	21.6	.871	.871	0.	1
1149.03	6.754	10.7	-4.84	23.06	99.99	13.0	2	4.9	-1.2	-1.3	900.	-7.	21.6	.666	.666	0.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1150.04	6.757	7.4	-4.84	15.95	99.99	13.0	1	3.3	-1.4	-1.3	900.	-7.	21.6	.764	.764	0.	1
1151.04	6.758	4.1	-4.84	8.84	99.99	13.0	1	1.8	-.8	-1.3	900.	-7.	21.6	.423	.423	0.	1
1152.04	6.759	.8	-4.84	1.72	99.99	13.0	1	.4	-.2	-1.3	900.	-7.	21.6	.083	.083	0.	1
1153.05	6.759	0.0	-1.17	0.00	6.86	13.0	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.	1
1154.05	6.759	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1155.05	6.759	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1156.05	6.759	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1157.05	6.759	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1158.05	6.759	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1159.05	6.759	0.0	0.00	0.00	6.86	13.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1160.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1161.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1162.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1163.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1164.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1165.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1166.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1167.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1168.05	6.759	0.0	0.00	0.00	6.86	12.9	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1169.05	6.760	2.1	3.08	1.50	.85	12.9	1	.4	3.3	10.1	900.	59.	17.1	.217	.376	27.	1
1170.05	6.761	5.4	4.84	2.50	.59	12.9	1	1.0	13.0	22.6	1145.	104.	13.6	.438	.671	49.	1
1171.05	6.763	8.7	4.84	3.35	.55	12.9	1	1.6	21.0	29.3	1325.	116.	12.5	.610	.822	54.	1
1172.05	6.765	12.0	4.84	3.75	.52	12.9	1	2.4	29.1	37.8	1529.	130.	10.8	.729	.884	59.	1
1173.05	6.769	15.3	4.84	3.04	.56	12.8	2	3.2	37.0	53.8	1599.	177.	6.0	.536	.766	76.	1
1174.05	6.774	18.6	4.84	3.16	.59	12.8	2	4.2	45.2	61.0	1711.	187.	5.4	.609	.822	79.	1
1175.05	6.779	21.1	3.67	4.74	.53	12.8	2	5.0	40.3	51.5	1686.	161.	7.6	.701	.874	70.	1
1176.05	6.786	23.0	2.79	6.35	.51	12.8	2	5.7	34.9	43.6	1653.	139.	9.7	.779	.897	62.	1
1177.05	6.792	23.5	.73	12.16	.69	12.8	3	5.8	13.6	17.2	1182.	76.	16.1	.733	.865	39.	1
1178.05	6.799	23.0	-.73	40.43	99.99	12.8	3	5.9	-1.7	-1.2	900.	-7.	21.3	.942	.942	0.	1
1179.06	6.805	22.5	-.73	48.50	99.99	12.8	3	5.7	-1.7	-1.3	900.	-7.	21.6	.921	.921	0.	1
1180.06	6.811	20.0	-3.67	43.11	99.99	12.8	3	8.4	-1.5	-1.3	900.	-7.	21.6	.819	.819	0.	1
1181.07	6.816	16.7	-4.84	36.00	99.99	12.8	2	6.0	-1.9	-1.3	900.	-7.	21.6	1.039	.962	0.	1
1182.07	6.820	13.4	-4.84	28.88	99.99	12.8	2	6.3	-1.5	-1.3	900.	-7.	21.6	.834	.834	0.	1
1183.07	6.823	10.1	-4.84	21.77	99.99	12.8	2	4.6	-1.2	-1.3	900.	-7.	21.6	.629	.629	0.	1
1184.08	6.826	6.8	-4.84	14.66	99.99	12.8	1	3.1	-1.3	-1.3	900.	-7.	21.6	.702	.702	0.	1
1185.08	6.827	3.5	-4.84	7.54	99.99	12.8	1	1.6	-.7	-1.3	900.	-7.	21.6	.361	.361	0.	1
1186.08	6.828	.2	-4.84	.43	99.99	12.8	1	.1	-.0	-1.3	900.	-7.	21.6	.021	.021	0.	1
1187.09	6.828	0.0	-.29	0.00	6.86	12.8	1	0.0	-.0	.7	900.	4.	21.1	-.000	-.000	5.	1
1188.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1189.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1190.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1191.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1192.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1193.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1194.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1195.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1196.09	6.828	0.0	0.00	0.00	6.86	12.8	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1197.10	6.828	.2	.29	.22	2.39	12.8	1	.0	.1	2.3	900.	14.	20.5	.021	.039	9.	1
1198.10	6.828	1.5	1.91	1.24	1.10	12.8	1	.3	1.6	6.8	900.	40.	18.6	.155	.273	19.	1
1199.10	6.829	3.5	2.93	2.47	.63	12.7	1	.6	5.3	10.5	900.	61.	16.9	.361	.577	28.	1
1200.11	6.830	6.5	4.40	3.03	.60	12.7	1	1.2	14.3	22.0	1164.	99.	14.0	.519	.751	47.	1
1201.11	6.832	9.8	4.84	3.50	.54	12.7	1	1.9	23.7	32.3	1395.	121.	11.9	.652	.849	56.	1
1202.11	6.835	12.0	3.23	4.58	.54	12.7	2	2.4	20.1	30.0	1303.	121.	12.0	.516	.749	56.	1
1203.11	6.839	12.9	1.32	7.58	.76	12.7	2	2.6	10.4	13.9	1066.	68.	16.6	.678	.862	34.	1
1204.08	6.842	13.0	.15	11.45	1.33	12.7	2	2.6	3.5	5.3	900.	31.	19.4	.809	.819	16.	1
1205.08	6.846	12.6	-.59	21.15	99.99	12.7	2	2.6	-.7	-.3	900.	-2.	21.2	.784	.784	2.	1
1206.09	6.849	12.8	.29	10.91	1.20	12.7	2	2.6	4.3	6.0	900.	35.	19.0	.797	.853	17.	1
1207.09	6.853	13.1	.44	10.75	1.09	12.7	2	2.7	5.3	6.9	900.	40.	18.6	.815	.902	19.	1
1208.09	6.857	13.1	0.00	12.15	1.60	12.7	2	2.7	2.7	4.2	900.	24.	19.9	.815	.815	13.	1
1209.12	6.861	14.0	1.32	7.88	.74	12.7	2	2.9	11.3	14.9	1107.	71.	16.5	.708	.876	36.	1
1210.13	6.865	15.5	2.20	6.60	.58	12.7	2	3.3	18.8	24.9	1298.	101.	14.0	.669	.858	49.	1
1211.13	6.869	17.0	2.20	6.85	.57	12.7	2	3.7	20.7	26.9	1353.	104.	13.7	.704	.875	50.	1
1212.12	6.874	18.6	2.35	6.79	.55	12.7	2	4.2	24.1	30.8	1435.	113.	12.8	.726	.883	53.	1
1213.13	6.879	19.7	1.61	8.42	.60	12.7	2	4.5	19.0	24.0	1370.	92.	14.9	.805	.901	45.	1
1214.13	6.885	21.0	1.91	7.90	.56	12.7	2	5.0	23.2	29.2	1464.	105.	13.7	.804	.901	50.	1
1215.13	6.891	21.5	.73	11.75	.72	12.7	3	5.1	12.3	15.7	1127.	73.	16.3	.703	.874	37.	1
1216.13	6.897	21.8	.44	13.52	.82	12.7	3	5.2	9.6	12.1	1059.	60.	17.3	.759	.893	31.	1
1217.13	6.903	21.8	0.00	17.70	1.12	12.7	3	5.2	5.2	6.8	920.	39.	18.8	.873	.903	19.	1
1218.13	6.909	21.5	-.44	25.35	3.13	12.7	3	5.1	.8	1.7	900.	10.	20.7	.860	.860	7.	1
1219.13	6.915	21.2	-.44	25.09	3.19	12.7	3	5.0	.8	1.6	900.	10.	20.7	.868	.868	7.	1
1220.17	6.921	21.5	.44	13.46	.82	12.7	3	5.1	9.4	12.0	1052.	60.	17.3	.753	.891	30.	1
1221.17	6.927	21.8	.44	13.52	.82	12.7	3	5.2	9.6	12.1	1059.	60.	17.3	.759	.893	31.	1
1222.19	6.933	22.0	.20	14.71	.89	12.7	3	5.3	8.2	10.4	1022.	53.	17.8	.793	.900	27.	1
1223.16	6.939	21.9	-.15	19.46	1.37	12.7	3	5.3	3.8	5.1	900.	30.	19.4	.897	.897	15.	1
1224.17	6.945	21.7	-.29	21.50	1.62	12.7	3	5.2	2.3	3.4	900.	20.	20.1	.889	.889	11.	1
1225.18	6.952	21.5	-.29	21.35	1.63	12.7	3	5.1	2.3	3.4	900.	20.	20.1	.880	.880	11.	1
1226.19	6.958	21.5	0.00	17.73	1.13	12.7	3	5.1	5.1	6.6	912.	38.	18.8	.869	.904	19.	1
1227.16	6.963	21.4	-.15	19.07	1.38	12.7	3	5.1	3.6	5.0	900.	29.	19.5	.876	.876	15.	1
1228.16	6.969	20.1	-1.91	43.32	99.99	12.7	3	6.3	-1.5	-1.3	900.	-7.	21.6	.823	.823	0.	1
1229.16	6.975	19.5	-.88	42.03	99.99	12.7	3	4.9	-1.5	-1.3	900.	-7.	21.6	.799	.799	0.	1
1230.16	6.980	19.2	-.44	23.28	3.65	12.7	3	4.4	.5	1.4	900.	8.	20.8	.786	.786	6.	1
1231.19	6.986	19.6	.59	12.07	.79	12.7	3	4.5	9.8	12.6	1041.	64.	16.9	.694	.870	32.	1
1232.20	6.991	19.8	.29	14.31	.93	12.7	3	4.6	7.2	9.2	962.	50.	18.0	.759	.893	25.	1
1233.22	6.997	20.0	.29	14.35	.93	12.7	3	4.6	7.3	9.3	967.	50.	17.9	.763	.894	25.	1
1234.22	7.002	19.5	-.73	42.03	99.99	12.7	3	4.7	-1.5	-1.3	900.	-7.	21.6	.799	.799	0.	1
1235.24	7.007	17.5	-2.03	37.72	99.99	12.7	2	6.4	-2.0	-1.3	900.	-7.	21.6	1.089	.918	0.	1
1236.24	7.012	15.5	-2.03	33.41	99.99	12.7	2	5.6	-1.8	-1.3	900.	-7.	21.6	.965	.965	0.	1
1237.24	7.016	13.0	-3.67	28.02	99.99	12.8	2	5.2	-1.5	-1.3	900.	-7.	21.6	.809	.809	0.	1
1238.24	7.019	10.0	-4.40	21.55	99.99	12.8	2	4.3	-1.1	-1.3	900.	-7.	21.6	.622	.622	0.	1
1239.24	7.022	8.0	-2.03	17.24	99.99	12.8	2	2.7	-.9	-1.3	900.	-7.	21.6	.498	.498	0.	1
1240.26	7.024	6.0	-2.03	12.93	99.99	12.8	1	2.0	-1.1	-1.3	900.	-7.	21.6	.619	.619	0.	1
1241.26	7.025	4.0	-2.03	8.62	99.99	12.8	1	1.3	-.8	-1.3	900.	-7.	21.6	.413	.413	0.	1

DRIVING SCHEDULE (UDCCC1) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1242.26	7.026	2.5	-2.20	5.39	99.99	12.8	1	.7	-.5	-1.3	900.	-7.	21.6	.258	.258	0.	1
1243.26	7.026	.7	-2.64	1.51	99.99	12.8	1	.2	-.1	-1.3	900.	-7.	21.6	.072	.072	0.	1
1244.26	7.026	0.0	-1.03	0.00	6.86	12.7	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.	1
1245.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1246.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1247.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1248.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1249.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1250.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1251.26	7.026	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1252.25	7.027	1.0	1.47	.87	1.29	12.7	1	.2	.8	5.5	900.	32.	19.2	.103	.187	16.	1
1253.25	7.027	1.0	0.00	1.17	2.98	12.7	1	.2	.2	1.8	900.	10.	20.7	.103	.170	7.	1
1254.25	7.027	1.0	0.00	1.17	2.98	12.7	1	.2	.2	1.8	900.	10.	20.7	.103	.170	7.	1
1255.25	7.027	1.0	0.00	1.17	2.98	12.7	1	.2	.2	1.8	900.	10.	20.7	.103	.170	7.	1
1256.25	7.028	1.0	0.00	1.17	2.98	12.7	1	.2	.2	1.8	900.	10.	20.7	.103	.170	7.	1
1257.25	7.028	1.6	.88	1.48	1.58	12.7	1	.3	.9	4.2	900.	25.	19.8	.165	.277	13.	1
1258.26	7.029	3.0	2.05	2.37	.99	12.7	1	.5	3.4	7.9	900.	46.	18.2	.310	.494	22.	1
1259.25	7.030	4.0	1.47	3.31	1.11	12.7	1	.7	3.4	6.7	900.	39.	18.7	.413	.600	19.	1
1260.25	7.031	5.0	1.47	4.06	1.06	12.7	1	.9	4.3	7.1	900.	42.	18.5	.516	.704	20.	1
1261.25	7.032	6.3	1.91	4.61	.89	12.7	1	1.2	6.7	9.5	912.	55.	17.5	.641	.842	25.	1
1262.25	7.034	8.0	2.49	4.60	.74	12.7	1	1.5	10.7	14.4	1078.	70.	16.4	.689	.868	35.	1
1263.25	7.037	10.0	2.93	4.76	.64	12.6	1	1.9	15.4	20.2	1244.	85.	15.3	.747	.889	43.	1
1264.26	7.040	10.5	.73	7.72	1.12	12.6	1	2.0	5.0	7.5	1053.	37.	19.2	.926	.926	22.	1
1265.25	7.043	9.5	-1.47	20.48	99.99	12.6	1	2.4	-1.8	-1.3	900.	-7.	21.6	.980	.980	0.	1
1266.25	7.045	8.5	-1.47	18.33	99.99	12.6	1	2.1	-1.6	-1.3	900.	-7.	21.6	.877	.877	0.	1
1267.25	7.047	7.6	-1.32	16.33	99.99	12.6	1	1.8	-1.4	-1.3	900.	-7.	21.5	.784	.784	0.	1
1268.27	7.050	8.8	1.76	5.59	.94	12.6	1	1.7	8.8	11.7	1045.	59.	17.4	.782	.898	30.	1
1269.28	7.052	11.0	3.23	4.75	.60	12.5	1	2.2	18.5	23.9	1330.	94.	14.6	.768	.895	46.	1
1270.28	7.056	14.0	4.40	3.52	.53	12.6	2	2.9	31.0	46.0	1505.	160.	7.6	.521	.754	70.	1
1271.29	7.060	17.0	4.40	3.60	.56	12.6	2	3.7	37.8	52.0	1613.	169.	6.7	.591	.809	73.	1
1272.29	7.065	19.5	3.67	4.76	.52	12.6	2	4.5	37.1	48.2	1628.	156.	7.9	.671	.859	68.	1
1273.29	7.071	21.0	2.20	7.23	.54	12.6	2	5.0	26.0	32.7	1502.	114.	12.6	.783	.898	54.	1
1274.30	7.077	21.8	1.17	10.02	.61	12.6	3	5.2	16.8	22.0	1236.	93.	14.5	.650	.847	46.	1
1275.30	7.083	22.2	.59	12.64	.76	12.6	3	5.4	11.3	14.3	1112.	68.	16.7	.736	.886	35.	1
1276.31	7.089	23.0	1.17	10.24	.60	12.6	3	5.7	17.9	23.0	1268.	95.	14.5	.669	.858	47.	1
1277.31	7.096	23.6	.88	11.50	.65	12.6	3	5.9	15.3	19.4	1219.	84.	15.5	.713	.878	42.	1
1278.32	7.103	24.1	.73	12.27	.69	12.6	3	6.1	14.1	17.7	1197.	77.	16.0	.742	.888	40.	1
1279.31	7.109	24.5	.59	13.10	.72	12.6	3	6.2	12.8	16.0	1170.	72.	16.5	.772	.896	37.	1
1280.31	7.116	24.5	0.00	18.06	1.04	12.6	3	6.2	6.2	8.1	1003.	42.	18.7	.900	.900	22.	1
1281.32	7.123	24.0	-.73	41.94	99.99	12.6	3	6.3	-1.7	-1.1	900.	-6.	21.3	.983	.983	0.	1
1282.32	7.129	23.5	-.73	41.19	99.99	12.6	3	6.1	-1.7	-1.2	900.	-7.	21.3	.962	.962	0.	1
1283.32	7.136	23.5	0.00	18.00	1.06	12.6	3	5.6	5.8	7.6	969.	41.	18.7	.894	.896	21.	1
1284.32	7.143	23.5	0.00	18.00	1.06	12.6	3	5.8	5.8	7.6	969.	41.	18.7	.894	.896	21.	1
1285.32	7.149	23.5	0.00	18.00	1.06	12.6	3	5.8	5.8	7.6	969.	41.	18.7	.894	.896	21.	1
1286.32	7.156	23.5	0.00	18.00	1.06	12.6	3	5.8	5.8	7.6	969.	41.	18.7	.894	.896	21.	1
1287.32	7.162	23.5	0.00	18.00	1.06	12.6	3	5.8	5.8	7.6	969.	41.	18.7	.894	.896	21.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1288.36	7.169	24.0	.73	12.25	.69	12.6	3	6.0	14.0	17.6	1195.	77.	16.0	.740	.889	40.	1
1289.34	7.175	24.1	.15	16.33	.93	12.6	3	6.1	7.7	9.8	1037.	50.	18.1	.857	.904	26.	1
1290.35	7.182	24.5	.59	13.10	.72	12.6	3	6.2	12.8	16.0	1170.	72.	16.5	.772	.896	37.	1
1291.36	7.189	24.7	.29	15.13	.84	12.6	3	6.3	9.6	12.0	1096.	58.	17.6	.830	.903	30.	1
1292.36	7.196	25.0	.44	14.07	.77	12.6	3	6.4	11.4	14.3	1147.	65.	17.0	.803	.901	34.	1
1293.36	7.203	25.4	.59	13.23	.71	12.6	3	6.6	13.4	16.7	1196.	73.	16.4	.783	.898	38.	1
1294.37	7.210	25.6	.29	15.25	.82	12.6	3	6.7	10.0	12.6	1121.	59.	17.5	.842	.903	31.	1
1295.34	7.217	25.7	.15	16.51	.90	12.6	3	6.7	8.5	10.7	1081.	52.	18.0	.876	.903	28.	1
1296.35	7.224	26.0	.44	14.21	.75	12.6	3	6.8	12.0	15.0	1175.	67.	16.9	.816	.902	35.	1
1297.36	7.232	26.2	.29	15.32	.81	12.6	3	6.9	10.4	13.0	1138.	60.	17.4	.849	.904	32.	1
1298.39	7.239	27.0	1.17	10.82	.57	12.6	3	7.2	21.6	27.0	1372.	103.	13.8	.725	.882	50.	1
1299.39	7.247	27.8	1.17	10.90	.57	12.6	3	7.6	22.4	27.8	1394.	105.	13.7	.735	.886	50.	1
1300.39	7.255	28.3	.73	12.96	.64	12.6	3	7.8	17.2	21.2	1310.	85.	15.4	.796	.900	43.	1
1301.39	7.263	29.0	1.03	11.65	.58	12.6	3	8.1	21.7	26.7	1394.	101.	14.1	.767	.895	49.	1
1302.37	7.271	29.1	.15	16.70	.84	12.6	3	8.2	10.2	12.8	1189.	57.	17.8	.902	.902	32.	1
1303.35	7.279	29.0	-.15	20.22	1.13	12.6	3	8.1	6.2	7.6	1136.	36.	19.5	.941	.941	23.	1
1304.34	7.286	28.0	-1.47	60.35	99.99	12.6	3	9.1	-2.1	-1.3	900.	-7.	21.6	1.147	.872	0.	1
1305.34	7.294	24.7	-4.84	53.24	99.99	12.6	3	12.7	-1.9	-1.3	900.	-7.	21.6	1.011	.989	0.	1
1306.34	7.300	21.4	-4.84	46.13	99.99	12.7	3	10.6	-1.6	-1.3	900.	-7.	21.6	.876	.876	0.	1
1307.34	7.306	18.1	-4.84	39.01	99.99	12.7	3	8.8	-1.4	-1.3	900.	-7.	21.6	.741	.741	0.	1
1308.36	7.310	14.8	-4.84	31.90	99.99	12.7	2	7.0	-1.7	-1.3	900.	-7.	21.6	.921	.921	0.	1
1309.36	7.314	11.5	-4.84	24.79	99.99	12.7	2	5.3	-1.3	-1.3	900.	-7.	21.6	.716	.716	0.	1
1310.36	7.317	8.2	-4.84	17.67	99.99	12.7	2	3.7	-.9	-1.3	900.	-7.	21.6	.510	.510	0.	1
1311.37	7.318	4.9	-4.84	10.56	99.99	12.7	1	2.2	-.9	-1.3	900.	-7.	21.6	.506	.506	0.	1
1312.37	7.319	1.6	-4.84	3.45	99.99	12.7	1	.7	-.3	-1.3	900.	-7.	21.6	.165	.165	0.	1
1313.36	7.320	0.0	-2.35	0.00	6.86	12.7	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.	1
1314.36	7.320	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1315.36	7.320	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1316.36	7.320	0.0	0.00	0.00	6.86	12.7	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1317.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1318.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1319.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1320.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1321.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1322.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1323.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1324.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1325.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1326.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1327.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1328.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1329.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1330.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1331.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1332.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1333.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1

DRIVING SCHEDULE (UDC001) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT	
1334.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1335.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1336.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1337.36	7.320	0.0	0.00	0.00	6.86	12.6	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1338.36	7.320	1.5	2.20	1.20	1.02	12.5	1	.3	1.8	7.6	900.	44.	18.3	.155	.275	21.	1
1339.37	7.321	4.8	4.84	2.31	.61	12.5	1	.9	11.5	21.1	1109.	100.	13.8	.402	.630	47.	1
1340.37	7.322	8.1	4.84	3.22	.55	12.5	1	1.5	19.5	28.1	1294.	114.	12.7	.581	.802	54.	1
1341.37	7.325	11.4	4.84	3.69	.53	12.5	1	2.3	27.6	36.3	1491.	128.	11.1	.710	.877	59.	1
1342.41	7.329	13.2	2.64	5.50	.57	12.5	2	2.7	16.6	26.1	1273.	108.	13.3	.561	.802	51.	1
1343.40	7.333	15.1	2.79	5.65	.54	12.5	2	3.2	22.4	30.4	1356.	118.	12.3	.624	.831	55.	1
1344.41	7.337	16.8	2.49	6.34	.55	12.5	2	3.7	22.7	29.7	1365.	113.	12.8	.679	.863	53.	1
1345.41	7.342	18.3	2.20	7.03	.56	12.5	2	4.1	22.4	28.7	1403.	107.	13.4	.731	.884	51.	1
1346.41	7.347	19.5	1.76	8.08	.59	12.5	2	4.5	20.1	25.4	1364.	96.	14.5	.789	.899	47.	1
1347.41	7.353	20.3	1.17	9.57	.66	12.5	2	4.7	15.5	19.7	1321.	78.	16.0	.861	.904	40.	1
1348.41	7.359	21.3	1.47	8.95	.60	12.5	2	5.1	19.3	24.4	1408.	91.	15.0	.847	.904	45.	1
1349.40	7.364	21.9	.88	11.15	.67	12.5	3	5.3	14.0	18.0	1174.	80.	15.7	.688	.667	41.	1
1350.41	7.371	22.1	.29	14.73	.89	12.5	3	5.3	8.3	10.5	1025.	54.	17.8	.795	.900	27.	1
1351.41	7.377	22.4	.44	13.65	.81	12.5	3	5.4	9.9	12.5	1074.	61.	17.2	.769	.895	31.	1
1352.40	7.383	22.0	-.59	34.16	53.29	12.5	3	5.4	-.5	.1	900.	0.	21.2	.901	.901	3.	1
1353.40	7.389	21.6	-.59	34.08	136.45	12.5	3	5.2	-.6	.0	900.	0.	21.2	.885	.885	3.	1
1354.40	7.395	21.1	-.73	45.48	99.99	12.5	3	5.2	-1.6	-1.3	900.	-7.	21.6	.864	.864	0.	1
1355.40	7.401	20.5	-.88	44.19	99.99	12.5	3	5.2	-1.6	-1.3	900.	-7.	21.6	.839	.839	0.	1
1356.41	7.406	20.0	-.73	43.11	99.99	12.5	3	4.9	-1.5	-1.3	900.	-7.	21.6	.819	.819	0.	1
1357.40	7.412	19.6	-.59	32.68	99.99	12.5	3	4.6	-.7	-.2	900.	-1.	21.2	.803	.803	3.	1
1358.40	7.417	18.5	-1.61	39.88	99.99	12.5	3	5.4	-1.4	-1.3	900.	-7.	21.6	.758	.758	0.	1
1359.42	7.422	17.5	-1.47	37.72	99.99	12.5	2	4.9	-2.0	-1.3	900.	-7.	21.6	1.089	.918	0.	1
1360.42	7.427	16.5	-1.47	35.57	99.99	12.5	2	4.5	-1.9	-1.3	900.	-7.	21.6	1.027	.974	0.	1
1361.42	7.431	15.5	-1.47	33.41	99.99	12.5	2	4.2	-1.8	-1.3	900.	-7.	21.6	.965	.965	0.	1
1362.42	7.435	14.0	-2.20	30.18	99.99	12.5	2	4.4	-1.6	-1.3	900.	-7.	21.6	.871	.871	0.	1
1363.42	7.439	11.0	-4.40	23.71	99.99	12.5	2	4.8	-1.3	-1.3	900.	-7.	21.6	.685	.685	0.	1
1364.42	7.442	8.0	-4.40	17.24	99.99	12.5	2	3.4	-.9	-1.3	900.	-7.	21.6	.498	.498	0.	1
1365.43	7.443	5.2	-4.11	11.21	99.99	12.5	1	2.1	-1.0	-1.3	900.	-7.	21.6	.537	.537	0.	1
1366.43	7.445	2.5	-3.96	5.39	99.99	12.5	1	1.0	-.5	-1.3	900.	-7.	21.6	.258	.258	0.	1
1367.43	7.445	0.0	-3.67	0.00	6.86	12.5	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	2.	1
1368.43	7.445	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1369.43	7.445	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1370.43	7.445	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1
1371.43	7.445	0.0	0.00	0.00	6.86	12.5	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.	1

SHIFT FREQLENCY DATA 10/C1/75

TOTAL SHIFTS = 94 SHIFTS PER MILE = 12.6 NUMB GEARS = 3

GEAR INTO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
UPSHIFTS	0	18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOWNSHIFTS	18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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VEHICLE PERFORMANCE SIMULATION    10/01/76
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RUN TITLE = CASE 8(A)   GMC 350, AUTO, 5000-LB CLASS, FTP URBAN, 3.08 IN

SCHEDULE AVERAGES      FUEL ECONOMY      = 12.53 MPG
                       WORK PER MILE     =   .62 HP-HR/MI
                       AVG SP FUEL CONS  =   .80 LBS/HP-HR
                       AVG SPEED         = 19.5  MPH

TOTALS                          TOTAL          PERCENT OF TOTAL
          VARIABLE (UNITS) AMOUNT (CRUISE ACCEL  DECEL   IDLE ) (BRAKES)
          -------- ------- ------ ------ ------ ------ ------  ------
          TIME     (SECS) 1371.4    8.0   39.8   34.5   17.7
          DISTANCE (MILES)   7.4   12.1   46.9   41.0    0.0
          ENERGY   (HP-HR)   4.61    8.0   83.7    7.3    1.0
          FUEL     (LBS)     3.67    6.8   64.3   18.3    8.7      6.0

ENERGY SUPPLY                                HP-HR
                                             -----
                   (1) ENGINE              =  4.61
                   (2) KINETIC ENERGY      =  0.00
                   (3) POTENTIAL ENERGY    =  0.00
                   (4) ROTATING INERTIA    =  0.00

BREAKDOWN                          PERCENT ENGINE HP-HR
                                   --------------------
                   (1) ACCESSORIES         =   8.65
                   (2) TORQUE CONVERTER    =  12.50
                   (3) GEAR BOX            =    .63
                   (4) DIFFERENTIAL        =   3.36
                   (5) TIRE SLIP           =   5.66
                                 3+4+5     =   9.64
                               2+3+4+5     =  22.15
                   (6) AERODYNAMIC DRAG    =  13.87
                   (7) ROLLING RESIST      =  31.76
                       SUBTOTAL 1- 7       =  76.43
                   (8) BRAKES              =  20.87
                   (9) ENGINE MOTORING     =   2.72
                       SUBTOTAL 1- 9       = 100.03
                  (10) OTHER ENERGY        =   0.00
                            TOTAL 1-10     = 100.03

ADDITIONAL RUN DATA

  DRIVING SCHEDULE NAME = UDC001        ROUTE NAME              = LEVEL
  VEHICLE NAME          = V5000B        ENGINE NAME             = GM350M
  CONVERTER NAME        = CODY2         SHIFT LOGIC NAME        = TEST2
  WEIGHT (LBS)          =  5000.        STROKE (INCHES)         =   3.48
  DISPLACEMENT (CU IN)  =  349.8        REAR AXLE RATIO         =   3.08
  WIND VELOCITY (MPH)   =    0.0        FUEL DENSITY (LB/GAL)   =   6.18
  AERO DRAG  = 24.20 ,  .48             TIRES  =  12.00 ,  .09 ,  .93
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DRIVING SCHEDULE (HDCCC2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
0.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
1.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
2.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
3.00	0.000	0.0	0.00	0.00	6.86	0.0	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
4.04	.001	4.7	6.89	1.73	.52	.5	1	.8	15.7	32.4	1263.	135.	10.7	.346	.562	61.
5.04	.003	9.6	7.19	2.27	.54	1.2	1	1.8	33.5	48.1	1550.	163.	7.2	.575	.797	71.
6.04	.006	14.5	7.19	2.32	.59	1.6	1	3.0	50.9	65.6	1843.	187.	5.3	.731	.884	78.
7.08	.011	17.4	4.25	3.91	.55	2.2	2	3.8	37.5	50.9	1608.	166.	6.9	.606	.820	72.
8.08	.016	19.8	3.52	5.06	.51	2.7	2	4.6	36.3	46.9	1621.	152.	8.2	.684	.865	67.
9.08	.022	21.8	2.93	6.09	.51	3.1	2	5.2	34.3	43.2	1627.	139.	9.6	.751	.891	62.
10.06	.028	24.0	3.23	5.58	.52	3.5	2	6.0	41.3	51.5	1742.	155.	8.2	.772	.896	68.
11.08	.035	25.8	2.64	5.74	.55	3.8	3	6.7	37.7	50.4	1601.	165.	7.0	.594	.811	72.
12.08	.042	27.1	1.91	8.24	.52	4.2	3	7.3	30.8	39.4	1516.	137.	10.0	.659	.852	62.
13.08	.050	28.0	1.32	10.29	.55	4.6	3	7.7	24.5	30.5	1430.	112.	12.9	.722	.881	53.
14.08	.058	29.0	1.47	9.79	.53	5.0	3	8.1	27.5	34.2	1485.	121.	11.9	.720	.881	56.
15.08	.066	30.0	1.47	9.84	.53	5.3	3	8.6	28.6	35.4	1512.	123.	11.6	.731	.885	57.
16.07	.074	30.7	1.03	11.75	.56	5.6	3	8.9	23.3	28.6	1441.	104.	13.8	.785	.898	50.
17.08	.083	31.5	1.17	11.13	.55	6.0	3	9.3	26.1	31.9	1490.	113.	12.8	.779	.897	53.
18.07	.092	32.2	1.03	11.80	.56	6.3	3	9.7	24.8	30.3	1483.	107.	13.5	.800	.901	51.
19.07	.101	32.9	1.03	11.82	.55	6.5	3	10.1	25.5	31.1	1502.	109.	13.3	.807	.901	52.
20.07	.110	33.5	.88	12.61	.56	6.8	3	10.4	23.8	29.0	1486.	103.	14.0	.831	.903	49.
21.07	.119	34.1	.88	12.62	.56	7.1	3	10.7	24.3	29.7	1502.	104.	13.8	.837	.903	50.
22.07	.129	34.6	.73	13.50	.58	7.3	3	11.0	22.5	27.5	1483.	97.	14.6	.860	.904	48.
23.07	.139	34.9	.44	15.15	.63	7.6	3	11.2	18.1	22.5	1430.	82.	15.7	.899	.899	42.
24.09	.148	35.1	.29	16.20	.68	7.9	3	11.3	15.9	19.6	1417.	73.	16.5	.913	.913	39.
25.10	.158	35.7	.88	12.62	.55	8.1	3	11.6	25.9	31.6	1546.	107.	13.5	.851	.904	51.
26.11	.168	35.9	.29	16.25	.67	8.3	3	11.7	16.5	20.2	1445.	74.	16.4	.916	.916	39.
27.09	.178	35.8	-.15	20.24	.95	8.6	3	11.7	9.2	11.5	1388.	43.	18.9	.950	.950	23.
28.09	.188	35.3	-.73	46.92	11.82	9.0	3	11.4	-.3	.4	933.	2.	21.2	1.394	.717	5.
29.08	.198	34.9	-.59	27.55	2.52	9.3	3	11.2	1.8	3.1	1326.	12.	21.5	.970	.970	16.
30.07	.207	34.5	-.59	27.58	2.61	9.6	3	10.9	1.7	3.0	1310.	12.	21.6	.970	.970	16.
31.15	.218	34.6	.15	17.26	.75	9.8	3	11.0	13.3	16.4	1381.	62.	17.3	.923	.923	35.
32.16	.227	34.8	.29	16.19	.69	9.9	3	11.1	15.7	19.4	1407.	72.	16.5	.911	.911	38.
33.16	.237	35.1	.44	15.15	.63	10.1	3	11.3	18.3	22.7	1437.	83.	15.7	.900	.900	42.
34.16	.247	35.7	.88	12.62	.55	10.2	3	11.6	25.9	31.6	1546.	107.	13.5	.851	.904	51.
35.16	.257	36.1	.59	14.29	.59	10.3	3	11.9	21.5	26.6	1493.	94.	14.9	.891	.897	46.
36.13	.267	36.2	.15	17.34	.73	10.4	3	11.9	14.4	17.6	1440.	64.	17.1	.926	.926	36.
37.13	.277	36.5	.44	15.22	.62	10.5	3	12.1	19.4	23.9	1486.	84.	15.6	.905	.905	43.
38.15	.287	36.7	.29	16.29	.67	10.7	3	12.2	17.1	20.9	1473.	74.	16.4	.919	.919	39.
39.16	.297	36.9	.29	16.30	.66	10.8	3	12.3	17.2	21.0	1479.	75.	16.3	.919	.919	39.
40.14	.307	37.0	.15	17.37	.72	10.9	3	12.4	14.9	18.3	1469.	65.	17.1	.928	.928	36.
41.14	.318	37.0	0.00	18.70	.81	11.1	3	12.4	12.4	15.2	1448.	55.	17.9	.942	.942	32.
42.14	.328	37.0	0.00	18.70	.81	11.2	3	12.4	12.4	15.2	1448.	55.	17.9	.942	.942	32.
43.14	.338	37.0	0.00	18.70	.81	11.4	3	12.4	12.4	15.2	1448.	55.	17.9	.942	.942	32.
44.14	.349	37.0	0.00	18.70	.81	11.5	3	12.4	12.4	15.2	1448.	55.	17.9	.942	.942	32.
45.14	.359	37.0	0.00	18.70	.81	11.6	3	12.4	12.4	15.2	1448.	55.	17.9	.942	.942	32.

DRIVING SCHEDULE (HDCOO2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
46.11	.369	37.1	.15	17.37	.72	11.7	3	12.5	15.0	18.3	1473.	65.	17.1	.928	.928	36.
47.12	.379	37.3	.29	16.31	.66	11.8	3	12.6	17.5	21.4	1493.	75.	16.3	.921	.921	40.
48.13	.390	37.8	.73	13.44	.56	11.9	3	12.9	25.4	31.2	1572.	104.	13.9	.886	.900	50.
49.13	.400	38.6	1.17	11.11	.52	11.8	3	13.4	33.9	41.1	1685.	128.	11.0	.844	.904	58.
50.13	.411	39.3	1.03	11.73	.53	11.8	3	13.9	32.3	39.1	1677.	122.	11.7	.864	.904	56.
51.13	.422	40.0	1.03	11.70	.53	11.8	3	14.3	33.1	40.1	1696.	124.	11.5	.869	.904	57.
52.13	.433	40.7	1.03	11.67	.52	11.8	3	14.8	33.9	41.0	1715.	126.	11.3	.874	.903	57.
53.12	.445	41.4	1.03	11.64	.52	11.8	3	15.3	34.7	42.0	1734.	127.	11.2	.880	.903	58.
54.12	.456	42.2	1.17	10.97	.51	11.8	3	15.9	38.3	46.3	1785.	136.	10.2	.871	.903	61.
55.12	.468	42.9	1.03	11.52	.52	11.8	3	16.4	36.5	44.4	1777.	131.	10.8	.890	.898	59.
56.12	.480	43.5	.88	12.24	.53	11.8	3	16.9	34.3	41.7	1778.	123.	11.7	.901	.901	56.
57.13	.492	44.0	.73	13.11	.54	11.9	3	17.3	31.8	38.5	1780.	114.	12.7	.911	.911	53.
58.13	.505	44.3	.44	15.01	.58	11.9	3	17.5	26.3	31.7	1762.	94.	14.7	.927	.927	47.
59.14	.517	44.5	.29	16.01	.61	12.0	3	17.6	23.5	28.1	1752.	84.	15.5	.936	.936	43.
60.14	.530	44.8	.44	14.97	.57	12.0	3	17.9	26.8	32.2	1780.	95.	14.7	.927	.927	47.
61.12	.542	44.9	.15	16.98	.65	12.1	3	18.0	21.0	25.1	1753.	75.	16.2	.944	.944	40.
62.09	.554	45.0	.15	16.97	.65	12.2	3	18.0	21.1	25.2	1757.	75.	16.2	.944	.944	40.
63.07	.566	45.1	.15	16.95	.65	12.3	3	18.1	21.2	25.3	1761.	75.	16.2	.944	.944	40.
64.07	.579	45.4	.44	14.95	.57	12.3	3	18.4	27.4	32.8	1802.	96.	14.6	.928	.928	47.
65.07	.591	45.7	.44	14.94	.57	12.4	3	18.6	27.7	33.1	1813.	96.	14.5	.929	.929	47.
66.07	.604	46.0	.44	14.92	.57	12.4	3	18.9	28.0	33.4	1823.	96.	14.5	.930	.930	47.
67.07	.617	46.3	.44	14.90	.57	12.4	3	19.1	28.4	33.8	1834.	97.	14.4	.930	.930	47.
68.08	.630	46.5	.29	15.85	.60	12.5	3	19.3	25.4	30.2	1822.	87.	15.2	.941	.941	44.
69.08	.643	46.8	.44	14.87	.57	12.5	3	19.5	28.9	34.3	1851.	97.	14.4	.932	.932	48.
70.06	.656	46.9	.15	16.74	.64	12.6	3	19.6	22.8	27.1	1828.	78.	15.9	.946	.946	41.
71.04	.668	47.0	.15	16.73	.64	12.7	3	19.7	22.9	27.2	1831.	78.	15.9	.946	.946	41.
72.02	.681	47.1	.15	16.72	.64	12.7	3	19.8	23.0	27.3	1835.	78.	15.9	.946	.946	41.
72.99	.694	47.2	.15	16.71	.64	12.8	3	19.9	23.1	27.5	1839.	78.	15.9	.946	.946	41.
73.97	.707	47.3	.15	16.70	.63	12.8	3	19.9	23.2	27.6	1842.	79.	15.9	.946	.946	41.
74.95	.720	47.2	-.15	19.18	.76	12.9	3	19.9	16.6	20.0	1811.	58.	17.5	.961	.961	34.
75.93	.733	47.1	-.15	19.20	.76	13.0	3	19.8	16.6	19.9	1807.	58.	17.5	.961	.961	34.
76.90	.745	47.0	-.15	19.22	.76	13.1	3	19.7	16.5	19.8	1803.	58.	17.5	.961	.961	34.
77.88	.758	46.9	-.15	19.24	.76	13.1	3	19.6	16.4	19.7	1799.	58.	17.5	.961	.961	34.
78.86	.771	46.9	0.00	17.92	.69	13.2	3	19.6	19.6	23.4	1813.	68.	16.7	.953	.953	38.
79.88	.784	46.9	0.00	17.92	.69	13.2	3	19.6	19.6	23.4	1813.	68.	16.7	.953	.953	38.
80.86	.797	47.0	.15	16.73	.64	13.3	3	19.7	22.9	27.2	1831.	78.	15.9	.946	.946	41.
81.84	.810	47.1	.15	16.72	.64	13.3	3	19.8	23.0	27.3	1835.	78.	15.9	.946	.946	41.
82.84	.823	47.1	0.00	17.89	.69	13.4	3	19.8	19.8	23.6	1820.	68.	16.7	.954	.954	38.
83.82	.836	47.2	.15	16.71	.64	13.4	3	19.9	23.1	27.5	1839.	78.	15.9	.946	.946	41.
84.79	.848	47.1	-.15	19.20	.76	13.5	3	19.8	16.6	19.9	1807.	58.	17.5	.961	.961	34.
85.77	.861	47.0	-.15	19.22	.76	13.5	3	19.7	16.5	19.8	1803.	58.	17.5	.961	.961	34.
86.75	.874	46.9	-.15	19.24	.76	13.6	3	19.6	16.4	19.7	1799.	58.	17.5	.961	.961	34.
87.74	.887	46.5	-.59	24.05	1.31	13.7	3	19.3	6.8	9.1	1766.	27.	20.3	.970	.970	23.
88.75	.900	46.3	-.29	20.69	.87	13.8	3	19.1	13.0	15.8	1765.	47.	18.3	.967	.967	30.
89.73	.912	46.2	-.15	19.36	.77	13.8	3	19.0	15.9	19.1	1773.	57.	17.6	.960	.960	34.
90.71	.925	46.3	.15	16.81	.64	13.8	3	19.1	22.3	26.5	1805.	77.	16.0	.945	.945	41.

DRIVING SCHEDULE (HDCC02) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
91.72	.938	46.5	.29	15.85	.60	13.9	3	19.3	25.4	30.2	1822.	87.	15.2	.941	.941	44.
92.72	.951	46.9	.59	13.83	.54	13.9	3	19.6	32.2	38.4	1869.	108.	13.3	.925	.925	51.
93.73	.964	47.1	.29	15.79	.60	13.9	3	19.8	26.0	30.8	1844.	88.	15.1	.941	.941	44.
94.73	.977	47.4	.44	14.77	.56	13.9	3	20.0	29.5	35.2	1872.	99.	14.2	.933	.933	48.
95.73	.990	47.7	.44	14.76	.56	13.9	3	20.3	29.8	35.5	1883.	99.	14.2	.934	.934	48.
96.73	1.004	48.0	.44	14.78	.56	13.9	3	20.6	30.1	35.7	1893.	99.	14.1	.934	.934	48.
97.74	1.017	48.2	.29	15.67	.59	13.9	3	20.7	27.1	32.1	1885.	89.	15.0	.942	.942	45.
98.74	1.031	48.5	.44	14.70	.56	14.0	3	21.0	30.7	36.5	1911.	100.	14.0	.936	.936	49.
99.74	1.044	48.8	.44	14.72	.56	14.0	3	21.3	31.0	36.7	1921.	100.	14.0	.936	.936	49.
100.74	1.058	49.1	.44	14.70	.56	14.0	3	21.5	31.4	37.0	1932.	101.	14.0	.937	.937	49.
101.72	1.071	49.2	.15	16.48	.62	14.0	3	21.6	25.0	29.6	1912.	81.	15.6	.948	.948	42.
102.69	1.084	49.1	-.15	18.95	.74	14.0	3	21.5	18.2	21.8	1862.	61.	17.3	.962	.962	35.
103.69	1.098	49.1	0.00	17.62	.67	14.1	3	21.5	21.5	25.6	1893.	71.	16.4	.956	.956	39.
104.67	1.111	49.0	-.15	18.87	.74	14.1	3	21.4	18.1	21.7	1878.	61.	17.3	.962	.962	35.
105.67	1.125	49.0	0.00	17.63	.67	14.2	3	21.4	21.4	25.5	1890.	71.	16.4	.956	.956	39.
106.65	1.138	49.1	.15	16.49	.62	14.2	3	21.5	24.9	29.5	1908.	81.	15.6	.948	.948	42.
107.63	1.152	49.2	.15	16.48	.62	14.2	3	21.6	25.0	29.6	1912.	81.	15.6	.948	.948	42.
108.61	1.165	49.3	.15	16.47	.62	14.2	3	21.7	25.1	29.7	1916.	81.	15.6	.948	.948	42.
109.58	1.178	49.4	.15	16.46	.62	14.3	3	21.8	25.2	29.8	1919.	82.	15.5	.949	.949	42.
110.56	1.192	49.5	.15	16.45	.62	14.3	3	21.9	25.3	29.9	1923.	82.	15.5	.949	.949	42.
111.56	1.206	49.5	0.00	17.56	.67	14.3	3	21.9	21.9	26.0	1908.	72.	16.4	.956	.956	39.
112.56	1.219	49.5	0.00	17.56	.67	14.3	3	21.9	21.9	26.0	1908.	72.	16.4	.956	.956	39.
113.54	1.233	49.4	-.15	18.80	.74	14.4	3	21.8	18.4	22.0	1893.	61.	17.2	.962	.962	35.
114.54	1.246	49.1	-.44	21.49	.97	14.4	3	21.5	11.7	14.5	1865.	41.	18.9	.970	.970	29.
115.55	1.260	48.9	-.29	20.18	.83	14.5	3	21.4	14.9	18.0	1882.	51.	18.0	.968	.968	32.
116.55	1.274	48.6	-.44	21.63	.98	14.5	3	21.1	11.4	14.1	1846.	40.	18.9	.970	.970	28.
117.56	1.287	48.4	-.29	20.27	.84	14.6	3	20.9	14.5	17.6	1844.	50.	18.1	.967	.967	32.
118.56	1.301	48.1	-.44	21.77	.99	14.6	3	20.6	11.0	13.7	1827.	39.	19.0	.970	.970	28.
119.56	1.314	47.7	-.59	23.53	1.26	14.7	3	20.3	7.5	9.9	1812.	29.	20.0	.970	.970	24.
120.56	1.327	47.4	-.44	21.98	1.01	14.7	3	20.0	10.5	13.2	1801.	38.	19.1	.970	.970	28.
121.53	1.340	47.3	-.15	19.17	.76	14.7	3	19.9	16.7	20.1	1814.	58.	17.5	.961	.961	34.
122.55	1.353	47.5	.29	15.75	.60	14.8	3	20.1	26.4	31.3	1859.	88.	15.1	.942	.942	45.
123.55	1.367	47.8	.44	14.79	.56	14.8	3	20.4	29.9	35.5	1886.	99.	14.2	.934	.934	49.
124.52	1.380	47.9	.15	16.63	.63	14.8	3	20.5	23.7	28.2	1864.	79.	15.8	.947	.947	42.
125.50	1.393	48.0	.15	16.62	.63	14.8	3	20.6	23.8	28.3	1868.	80.	15.8	.947	.947	42.
126.48	1.406	47.9	-.15	19.06	.75	14.8	3	20.5	17.2	20.6	1837.	59.	17.4	.961	.961	35.
127.48	1.419	47.9	0.00	17.78	.68	14.8	3	20.5	20.5	24.4	1849.	69.	16.6	.955	.955	38.
128.48	1.432	47.9	0.00	17.78	.68	14.9	3	20.5	20.5	24.4	1849.	69.	16.6	.955	.955	38.
129.46	1.445	48.0	.15	16.62	.63	14.9	3	20.6	23.8	28.3	1868.	80.	15.8	.947	.947	42.
130.46	1.458	46.0	-2.93	95.17	99.99	15.0	3	24.4	-11.9	-10.1	1499.	-35.	24.6	1.131	.884	0.
131.61	1.473	48.0	2.93	5.09	.58	14.7	3	20.6	84.5	101.0	2225.	238.	2.4	.795	.900	95.
132.59	1.487	47.9	-.15	19.06	.75	14.8	3	20.5	17.2	20.6	1837.	59.	17.4	.961	.961	35.
133.59	1.500	47.3	-.88	28.21	3.61	14.8	3	19.9	1.0	2.9	1797.	8.	22.2	.970	.970	17.
134.59	1.513	46.0	-1.91	95.17	99.99	14.9	3	21.6	-12.2	-10.1	1499.	-35.	24.6	1.131	.884	0.
135.59	1.525	43.3	-3.06	90.19	99.99	15.0	3	24.8	-10.0	-8.3	1367.	-32.	24.2	1.168	.856	0.
136.59	1.537	41.2	-3.08	86.23	99.99	15.1	3	20.8	-9.0	-7.1	1269.	-29.	23.9	1.196	.836	0.

DRIVING SCHEDULE (HDCGO2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
137.59	1.548	39.5	-2.49	83.03	99.99	15.2	3	10.0	-7.8	-6.2	1191.	-27.	23.6	1.222	.818	0.
138.55	1.559	39.2	-.44	24.40	1.27	15.3	3	13.8	6.0	7.8	1489.	28.	20.5	.970	.970	23.
139.56	1.570	39.0	-.29	22.08	1.02	15.3	3	13.7	8.5	10.7	1492.	38.	19.5	.964	.964	26.
140.56	1.580	39.0	0.00	18.73	.77	15.3	3	13.7	13.7	16.6	1522.	57.	17.7	.944	.944	33.
141.54	1.591	39.1	.15	17.43	.70	15.3	3	13.7	16.4	19.9	1543.	68.	16.9	.934	.934	37.
142.54	1.602	39.5	.59	14.33	.57	15.3	3	14.0	24.6	30.1	1608.	98.	14.6	.905	.905	48.
143.54	1.613	40.1	.88	12.45	.54	15.3	3	14.4	30.4	37.1	1668.	117.	12.3	.886	.901	54.
144.54	1.624	41.0	1.32	10.41	.51	15.2	3	15.0	39.6	47.8	1780.	141.	9.7	.849	.904	63.
145.53	1.636	42.0	1.47	9.76	.50	15.2	3	15.7	43.8	52.7	1834.	151.	8.8	.844	.904	66.
146.54	1.647	43.1	1.61	8.80	.52	15.1	3	16.6	46.1	57.8	1888.	161.	8.1	.841	.903	69.
147.54	1.660	43.7	.88	12.25	.53	15.1	3	17.0	34.5	41.8	1785.	123.	11.7	.922	.902	56.
148.53	1.672	44.1	.59	14.07	.55	15.1	3	17.3	29.1	35.0	1767.	104.	13.8	.920	.920	50.
149.54	1.684	44.3	.29	16.02	.61	15.1	3	17.5	23.3	27.9	1745.	84.	15.5	.936	.936	43.
150.52	1.696	44.4	.15	17.04	.65	15.1	3	17.6	20.6	24.6	1735.	75.	16.3	.943	.943	40.
151.53	1.709	44.6	.29	16.00	.61	15.1	3	17.7	23.6	28.2	1755.	84.	15.5	.936	.936	43.
152.51	1.721	44.7	.15	17.00	.65	15.1	3	17.8	20.8	24.9	1746.	75.	16.2	.944	.944	40.
153.52	1.733	44.9	.29	15.98	.61	15.1	3	18.0	23.9	28.5	1766.	85.	15.5	.937	.937	43.
154.52	1.746	45.2	.44	14.97	.57	15.1	3	18.2	27.2	32.5	1795.	95.	14.6	.928	.928	47.
155.53	1.759	45.7	.73	13.02	.53	15.1	3	18.6	33.8	40.5	1838.	116.	12.5	.916	.916	54.
156.54	1.771	45.9	.29	15.90	.60	15.1	3	18.8	24.8	29.5	1800.	86.	15.3	.940	.940	44.
157.53	1.784	46.3	.59	13.88	.55	15.1	3	19.1	31.5	37.7	1847.	107.	13.4	.924	.924	51.
158.54	1.797	46.8	.73	12.96	.53	15.1	3	19.5	35.0	41.9	1876.	117.	12.3	.919	.919	54.
159.51	1.810	46.9	.15	16.74	.64	15.1	3	19.6	22.8	27.1	1828.	78.	15.9	.946	.946	41.
160.49	1.823	47.0	.15	16.73	.64	15.1	3	19.7	22.9	27.2	1831.	78.	15.9	.946	.946	41.
161.47	1.835	47.1	.15	16.72	.64	15.1	3	19.8	23.0	27.3	1835.	78.	15.9	.946	.946	41.
162.48	1.849	47.6	.73	12.90	.53	15.1	3	20.2	36.0	43.0	1905.	119.	12.2	.921	.921	55.
163.48	1.862	47.9	.44	14.74	.56	15.1	3	20.5	30.0	35.6	1890.	100.	14.1	.934	.934	48.
164.45	1.875	48.0	.15	16.62	.63	15.1	3	20.6	23.8	28.3	1868.	80.	15.8	.947	.947	42.
165.45	1.888	48.0	0.00	17.77	.68	15.1	3	20.6	20.5	24.5	1853.	69.	16.6	.955	.955	38.
166.43	1.901	47.9	-.15	19.06	.75	15.1	3	20.5	17.2	20.6	1837.	59.	17.4	.961	.961	35.
167.41	1.914	47.8	-.15	19.08	.75	15.2	3	20.4	17.1	20.5	1833.	59.	17.4	.961	.961	35.
168.41	1.928	47.3	-.73	25.76	1.78	15.2	3	19.9	4.2	6.4	1797.	19.	21.2	.970	.970	21.
169.41	1.941	46.7	-.88	28.49	3.97	15.2	3	19.4	.7	2.5	1774.	8.	22.2	.970	.970	17.
170.42	1.954	46.2	-.73	26.37	1.90	15.3	3	19.0	3.7	5.7	1755.	17.	21.4	.970	.970	20.
171.42	1.966	45.9	-.44	22.47	1.04	15.3	3	18.8	9.6	12.1	1744.	36.	19.4	.970	.970	27.
172.43	1.979	45.7	-.29	20.83	.88	15.3	3	18.6	12.6	15.4	1743.	46.	18.4	.967	.967	30.
173.44	1.992	45.5	-.29	20.87	.88	15.4	3	18.4	12.4	15.2	1735.	46.	18.5	.966	.966	30.
174.42	2.004	45.4	-.15	19.50	.78	15.4	3	18.4	15.3	18.4	1743.	55.	17.7	.960	.960	33.
175.40	2.017	45.3	-.15	19.52	.78	15.4	3	18.3	15.2	18.3	1740.	55.	17.7	.960	.960	33.
176.40	2.029	45.0	-.44	22.79	1.07	15.4	3	18.0	9.0	11.4	1709.	35.	19.6	.970	.970	26.
177.39	2.042	44.0	-1.47	79.00	99.99	15.5	3	18.8	-10.6	-8.4	1400.	-32.	24.1	1.158	.864	0.
178.39	2.054	43.1	-1.32	55.17	99.99	15.6	3	17.8	-8.1	-6.2	1357.	-24.	23.7	1.170	.854	3.
179.39	2.066	42.2	-1.32	62.12	99.99	15.7	3	17.1	-8.2	-6.2	1315.	-25.	23.7	1.183	.846	2.
180.39	2.077	41.5	-1.03	44.37	99.99	15.7	3	16.9	-3.6	-2.1	1283.	-8.	22.7	1.192	.839	8.
181.39	2.089	41.5	0.00	18.66	.74	15.7	3	15.4	15.4	18.6	1615.	61.	17.4	.947	.947	39.
182.41	2.100	42.1	.88	12.29	.53	15.7	3	15.8	32.7	39.9	1730.	121.	11.8	.897	.897	56.

DRIVING SCHEDULE (HDCCO2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
183.42	2.112	42.9	1.17	10.94	.51	15.7	3	16.4	39.2	47.4	1804.	138.	10.1	.877	.903	61.
184.42	2.124	43.5	.88	12.24	.53	15.6	3	16.9	34.3	41.7	1778.	123.	11.7	.901	.901	56.
185.41	2.136	43.0	.59	14.09	.55	15.6	3	17.2	28.9	34.8	1760.	104.	13.8	.919	.919	50.
186.41	2.149	43.6	-.44	23.35	1.10	15.7	3	16.9	8.2	10.5	1656.	33.	19.8	.970	.970	25.
187.41	2.161	43.3	-.44	23.48	1.11	15.7	3	16.7	8.0	10.3	1645.	33.	19.9	.970	.970	25.
188.41	2.173	43.0	-.44	23.61	1.11	15.7	3	16.5	7.9	10.1	1633.	32.	19.9	.970	.970	25.
189.41	2.185	43.1	.15	17.19	.66	15.7	3	16.6	19.5	23.4	1686.	73.	16.4	.942	.942	39.
190.41	2.197	43.4	.44	15.09	.58	15.7	3	16.8	25.5	30.6	1729.	93.	14.9	.925	.925	46.
191.41	2.209	43.9	.73	13.12	.54	15.7	3	17.2	31.7	38.4	1776.	113.	12.7	.911	.911	53.
192.41	2.221	44.3	.59	14.06	.55	15.7	3	17.5	29.4	35.3	1774.	104.	13.7	.920	.920	50.
193.41	2.233	44.6	.44	14.99	.57	15.7	3	17.7	26.6	32.0	1773.	95.	14.7	.927	.927	47.
194.41	2.246	44.9	.44	14.98	.57	15.7	3	18.0	26.9	32.2	1784.	95.	14.7	.923	.928	47.
195.38	2.258	44.8	-.15	19.61	.79	15.7	3	17.9	14.8	17.9	1721.	55.	17.8	.959	.959	33.
196.38	2.270	44.4	-.59	25.13	1.41	15.7	3	17.6	5.6	7.7	1687.	24.	20.7	.970	.970	22.
197.38	2.283	43.9	-.73	27.68	2.22	15.8	3	17.2	2.6	4.4	1668.	14.	21.8	.970	.970	19.
198.39	2.295	43.4	-.73	27.97	2.30	15.8	3	16.8	2.4	4.2	1649.	13.	21.8	.970	.970	18.
199.40	2.307	43.2	-.29	21.47	.92	15.8	3	16.6	10.9	13.5	1649.	43.	18.8	.966	.966	29.
200.40	2.319	43.2	0.00	18.42	.72	15.8	3	16.6	16.0	20.0	1677.	63.	17.2	.949	.949	36.
201.38	2.331	43.1	-.15	19.91	.81	15.9	3	16.6	13.6	16.5	1657.	52.	18.0	.959	.959	32.
202.35	2.342	43.0	-.15	19.93	.81	15.9	3	16.5	13.5	16.4	1653.	52.	18.0	.958	.958	32.
203.35	2.354	43.0	0.00	18.45	.72	15.9	3	16.5	16.5	19.9	1670.	62.	17.2	.949	.949	35.
204.33	2.366	43.1	.15	17.19	.66	15.9	3	16.6	19.5	23.4	1686.	73.	16.4	.942	.942	39.
205.33	2.378	43.4	.44	15.09	.58	15.9	3	16.8	25.5	30.6	1729.	93.	14.9	.925	.925	46.
206.34	2.390	43.9	.73	13.12	.54	15.9	3	17.2	31.7	38.4	1776.	113.	12.7	.911	.911	53.
207.31	2.402	44.0	.15	17.08	.66	15.9	3	17.3	20.2	24.2	1720.	74.	16.3	.943	.943	40.
208.32	2.414	43.5	-.73	27.91	2.29	15.9	3	16.9	2.4	4.2	1652.	13.	21.8	.970	.970	18.
209.32	2.426	42.6	-1.32	47.31	99.99	16.0	3	17.4	-8.2	-6.2	1334.	-24.	23.7	1.177	.850	2.
210.32	2.438	41.5	-1.61	86.80	99.99	16.0	3	17.3	-9.4	-7.3	1263.	-30.	23.9	1.192	.839	0.
211.32	2.449	40.7	-1.17	56.95	99.99	16.1	3	15.7	-6.0	-4.2	1247.	-18.	23.2	1.203	.831	4.
212.32	2.461	40.0	-1.03	47.27	99.99	16.1	3	14.9	-3.8	-2.4	1216.	-10.	22.7	1.212	.825	7.
213.32	2.472	40.0	0.00	18.73	.76	16.1	3	14.3	14.3	17.4	1560.	59.	17.6	.945	.945	34.
214.32	2.483	40.3	.44	15.29	.59	16.1	3	14.5	22.6	27.4	1617.	89.	15.3	.918	.918	45.
215.32	2.494	41.0	1.03	11.66	.52	16.1	3	15.0	34.2	41.5	1724.	120.	11.3	.877	.903	58.
216.32	2.506	42.0	1.47	9.76	.50	16.1	3	15.7	43.8	52.7	1834.	151.	8.8	.844	.904	66.
217.32	2.517	42.7	1.03	11.54	.52	16.0	3	16.3	36.3	44.1	1772.	131.	10.8	.888	.899	59.
218.31	2.529	43.1	.59	14.13	.55	16.0	3	16.6	28.1	33.9	1733.	103.	13.9	.917	.917	49.
219.29	2.541	43.2	.15	17.18	.66	16.0	3	16.6	19.6	23.5	1690.	73.	16.4	.942	.942	39.
220.30	2.553	43.4	.29	16.09	.62	16.0	3	16.8	22.5	27.0	1713.	83.	15.7	.934	.934	43.
221.31	2.565	43.9	.73	13.12	.54	16.0	3	17.2	31.7	38.4	1776.	113.	12.7	.911	.911	53.
222.30	2.577	44.3	.59	14.06	.55	16.0	3	17.5	29.4	35.3	1774.	104.	13.7	.920	.920	50.
223.30	2.590	44.7	.59	14.02	.55	16.0	3	17.8	29.8	35.7	1786.	105.	13.7	.921	.921	50.
224.29	2.602	45.1	.59	13.99	.55	16.0	3	18.1	30.2	36.2	1803.	105.	13.6	.922	.922	50.
225.29	2.615	45.4	.44	14.95	.57	16.0	3	18.4	27.4	32.8	1802.	96.	14.6	.928	.928	47.
226.28	2.627	45.8	.59	13.03	.55	16.0	3	18.7	31.0	37.1	1829.	106.	13.5	.923	.923	51.
227.28	2.640	46.5	1.03	11.33	.51	15.9	3	19.3	41.0	49.6	1857.	137.	10.3	.903	.903	61.
228.28	2.653	46.9	.59	13.83	.54	15.9	3	19.6	32.2	38.4	1869.	108.	13.3	.925	.925	51.

DRIVING SCHEDULE (HDC002) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
229.28	2.666	47.2	.44	14.80	.56	15.9	3	19.9	29.3	35.0	1965.	98.	14.2	.933	.933	48.
230.29	2.679	47.4	.29	15.76	.60	15.9	3	20.0	26.3	31.2	1855.	88.	15.1	.942	.942	45.
231.26	2.692	47.3	-.15	19.17	.76	15.9	3	19.9	16.7	20.1	1814.	58.	17.5	.961	.961	34.
232.26	2.705	47.3	0.00	17.86	.69	15.9	3	19.9	19.9	23.8	1827.	68.	16.7	.954	.954	38.
233.24	2.718	47.2	-.15	19.18	.76	15.9	3	19.9	16.6	20.0	1811.	58.	17.5	.961	.961	34.
234.24	2.731	47.2	0.00	17.88	.69	16.0	3	19.9	19.9	23.7	1824.	68.	16.7	.954	.954	38.
235.24	2.744	47.2	0.00	17.88	.69	16.0	3	19.9	19.9	23.7	1824.	68.	16.7	.954	.954	38.
236.22	2.757	47.1	-.15	19.20	.76	16.0	3	19.8	16.6	19.9	1807.	58.	17.5	.961	.961	34.
237.20	2.770	47.0	-.15	19.22	.76	16.0	3	19.7	16.5	19.8	1803.	58.	17.5	.961	.961	34.
238.20	2.783	47.0	0.00	17.90	.69	16.0	3	19.7	19.7	23.5	1816.	68.	16.7	.954	.954	38.
239.18	2.796	46.9	-.15	19.24	.76	16.0	3	19.6	16.4	19.7	1799.	58.	17.5	.961	.961	34.
240.15	2.809	46.8	-.15	19.25	.76	16.0	3	19.5	16.3	19.6	1796.	57.	17.6	.960	.960	34.
241.13	2.821	46.9	.15	16.74	.64	16.0	3	19.6	22.8	27.1	1828.	78.	15.9	.946	.946	41.
242.11	2.834	47.0	.15	16.73	.64	16.0	3	19.7	22.9	27.2	1831.	78.	15.9	.946	.946	41.
243.12	2.847	47.2	.29	15.78	.60	16.0	3	19.9	26.1	30.9	1848.	88.	15.1	.941	.941	44.
244.12	2.860	47.5	.44	14.81	.56	16.0	3	20.1	29.6	35.1	1876.	98.	14.2	.933	.933	48.
245.11	2.874	47.9	.59	13.74	.54	16.0	3	20.5	33.3	39.7	1905.	109.	13.1	.926	.926	52.
246.09	2.887	48.0	.15	16.62	.63	16.0	3	20.6	23.8	28.3	1866.	80.	15.8	.947	.947	42.
247.09	2.900	48.0	0.00	17.77	.68	16.0	3	20.6	20.5	24.5	1853.	69.	16.6	.955	.955	38.
248.09	2.913	48.0	0.00	17.77	.68	16.0	3	20.6	20.5	24.5	1853.	69.	16.6	.955	.955	38.
249.09	2.927	48.0	0.00	17.77	.68	16.0	3	20.6	20.5	24.5	1853.	69.	16.6	.955	.955	38.
250.09	2.940	48.0	0.00	17.77	.68	16.0	3	20.6	20.5	24.5	1853.	69.	16.6	.955	.955	38.
251.07	2.953	48.1	.15	16.61	.63	16.0	3	20.8	23.9	28.4	1872.	80.	15.7	.947	.947	42.
252.05	2.966	48.2	.15	16.59	.63	16.0	3	20.7	24.0	26.5	1875.	80.	15.7	.947	.947	42.
253.05	2.979	48.2	0.00	17.74	.66	16.1	3	20.7	20.7	24.7	1860.	70.	16.6	.955	.955	38.
254.03	2.992	48.1	-.15	19.03	.75	16.1	3	20.6	17.4	20.8	1844.	59.	17.4	.961	.961	35.
255.05	3.006	48.6	.73	12.82	.53	16.0	3	21.1	37.2	44.3	1941.	120.	12.1	.923	.923	55.
256.05	3.020	48.9	.44	14.71	.56	16.0	3	21.4	31.1	36.8	1925.	100.	14.0	.936	.936	49.
257.06	3.034	49.1	.29	15.58	.59	16.0	3	21.5	28.0	33.1	1919.	91.	14.8	.943	.943	45.
258.06	3.047	49.1	0.00	17.62	.67	16.0	3	21.5	21.5	25.6	1893.	71.	16.4	.956	.956	39.
259.06	3.061	49.1	0.00	17.62	.67	16.0	3	21.5	21.5	25.6	1893.	71.	16.4	.956	.956	39.
260.06	3.075	49.1	0.00	17.62	.67	16.1	3	21.5	21.5	25.6	1893.	71.	16.4	.956	.956	39.
261.06	3.088	49.1	0.00	17.62	.67	16.1	3	21.5	21.5	25.6	1893.	71.	16.4	.956	.956	39.
262.04	3.101	49.0	-.15	18.87	.74	16.1	3	21.4	18.1	21.7	1878.	61.	17.3	.962	.962	35.
263.02	3.115	48.9	-.15	18.89	.74	16.1	3	21.4	18.0	21.6	1874.	60.	17.3	.962	.962	35.
264.02	3.128	48.2	-1.03	35.38	99.99	16.1	3	20.9	-1.7	-.1	1599.	-0.	22.8	1.111	.900	13.
265.01	3.141	47.7	-.73	25.55	1.74	16.1	3	20.3	4.5	6.6	1812.	19.	21.1	.970	.970	21.
266.02	3.155	47.5	-.29	20.44	.85	16.2	3	20.1	13.9	16.6	1810.	49.	18.2	.967	.967	31.
267.02	3.168	47.2	-.44	22.04	1.01	16.2	3	19.9	10.4	13.0	1793.	38.	19.2	.970	.970	27.
268.02	3.181	46.7	-.73	26.10	1.84	16.2	3	19.4	3.9	6.0	1774.	18.	21.3	.970	.970	20.
269.03	3.194	46.2	-.73	26.37	1.90	16.2	3	19.0	3.7	5.7	1755.	17.	21.4	.970	.970	20.
270.04	3.207	46.0	-.29	20.76	.88	16.2	3	18.9	12.8	15.6	1754.	47.	18.4	.967	.967	30.
271.05	3.220	45.8	-.29	20.80	.88	16.3	3	18.7	12.6	15.4	1746.	46.	18.4	.967	.967	30.
272.06	3.233	45.6	-.29	20.85	.88	16.3	3	18.5	12.5	15.3	1739.	46.	18.4	.966	.966	30.
273.07	3.245	45.4	-.29	20.90	.89	16.3	3	18.4	12.4	15.1	1731.	46.	18.5	.966	.966	30.
274.08	3.258	45.2	-.29	20.95	.89	16.3	3	18.2	12.2	15.0	1724.	46.	18.5	.966	.966	30.

DRIVING SCHEDULE (HDCLC2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	ROLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
275.10	3.271	45.0	-.29	20.99	.89	16.3	3	18.0	12.1	14.8	1716.	45.	18.5	.966	.966	30.
276.10	3.283	44.7	-.44	22.90	1.07	16.3	3	17.8	8.9	11.2	1698.	35.	19.6	.970	.970	26.
277.11	3.296	44.5	-.29	21.12	.90	16.3	3	17.6	11.8	14.4	1696.	45.	18.6	.966	.966	29.
278.11	3.308	44.2	-.44	23.10	1.09	16.4	3	17.4	8.6	10.9	1679.	34.	19.7	.970	.970	26.
279.10	3.320	43.5	-1.03	40.95	99.99	16.4	3	17.3	-3.1	-1.6	1376.	-6.	22.7	1.165	.858	10.
280.10	3.332	42.9	-1.03	42.09	99.99	16.4	3	16.8	-3.3	-1.8	1343.	-7.	22.7	1.174	.852	9.
281.10	3.344	42.0	-1.17	53.22	99.99	16.5	3	16.6	-5.8	-4.0	1306.	-16.	23.2	1.185	.844	5.
282.10	3.355	40.1	-2.79	84.14	99.99	16.5	3	19.2	-8.4	-6.6	1220.	-28.	23.3	1.211	.826	0.
283.10	3.366	38.6	-2.20	81.56	99.99	16.6	3	16.7	-6.6	-4.9	1130.	-23.	23.2	1.259	.794	0.
284.11	3.377	37.5	-1.61	79.72	99.99	16.6	3	14.6	-5.4	-3.7	1060.	-18.	22.7	1.304	.767	0.
285.11	3.387	35.8	-2.49	76.76	99.99	16.6	3	15.5	-3.3	-2.1	960.	-11.	22.0	1.374	.728	0.
286.11	3.397	34.7	-1.61	74.79	99.99	16.7	3	12.9	-2.7	-1.3	900.	-7.	21.6	1.421	.704	0.
287.11	3.406	34.0	-1.03	73.29	99.99	16.7	3	11.3	-2.6	-1.3	900.	-7.	21.6	1.392	.718	0.
288.10	3.416	33.3	-1.03	71.78	99.99	16.7	3	11.0	-2.6	-1.3	900.	-7.	21.6	1.364	.733	0.
289.10	3.425	32.5	-1.17	70.05	99.99	16.8	3	10.8	-2.5	-1.3	900.	-7.	21.6	1.331	.751	0.
290.11	3.434	31.7	-1.17	68.33	99.99	16.8	3	10.4	-2.4	-1.3	900.	-7.	21.6	1.298	.770	0.
291.11	3.443	30.6	-1.61	65.96	99.99	16.8	3	10.7	-2.3	-1.3	900.	-7.	21.6	1.253	.798	0.
292.11	3.451	29.6	-1.47	63.80	99.99	16.9	3	9.9	-2.3	-1.3	900.	-7.	21.6	1.212	.825	0.
293.11	3.459	28.8	-1.17	62.08	99.99	16.9	3	9.2	-2.2	-1.3	900.	-7.	21.6	1.179	.848	0.
294.10	3.467	28.4	-.59	39.12	5.36	16.9	3	7.9	.2	1.1	1079.	5.	21.5	.970	.970	10.
295.21	3.476	28.6	.29	15.59	.77	16.9	3	7.9	11.7	14.6	1205.	64.	17.2	.875	.903	35.
296.25	3.484	29.5	1.32	10.40	.54	16.9	3	8.4	26.1	32.2	1469.	115.	12.5	.740	.887	54.
297.27	3.493	31.4	2.79	6.07	.52	16.3	2	9.3	49.2	61.1	1977.	162.	8.2	.890	.898	69.
298.27	3.502	33.4	2.93	5.51	.55	16.7	2	10.3	54.9	68.2	2081.	172.	7.5	.899	.899	73.
299.27	3.511	35.6	3.23	4.76	.58	16.6	2	11.6	63.9	79.0	2210.	188.	6.2	.902	.902	78.
300.25	3.521	37.5	2.79	5.10	.61	16.5	3	12.7	60.3	74.0	1927.	202.	4.7	.717	.880	82.
301.25	3.532	39.1	2.35	6.15	.56	16.4	3	13.7	55.5	67.2	1901.	186.	6.0	.758	.893	77.
302.25	3.543	40.2	1.61	9.27	.51	16.4	3	14.5	43.0	52.5	1811.	153.	8.6	.818	.902	67.
303.25	3.554	41.1	1.32	10.41	.51	16.4	3	15.1	39.8	48.0	1782.	141.	9.7	.850	.904	63.
304.25	3.566	41.8	1.03	11.61	.52	16.3	3	15.6	35.2	42.6	1745.	128.	11.1	.883	.902	58.
305.25	3.577	42.4	.88	12.29	.53	16.3	3	16.0	33.0	40.3	1740.	122.	11.8	.898	.898	56.
306.25	3.589	42.8	.59	14.15	.56	16.3	3	16.3	27.8	33.6	1722.	102.	14.0	.916	.916	49.
307.25	3.601	43.3	.73	13.15	.54	16.3	3	16.7	31.1	37.6	1756.	113.	12.8	.909	.909	53.
308.25	3.613	43.8	.73	13.13	.54	16.3	3	17.1	31.6	38.2	1773.	113.	12.8	.910	.910	53.
309.26	3.626	44.3	.73	13.10	.54	16.3	3	17.5	32.2	38.8	1790.	114.	12.7	.912	.912	53.
310.25	3.638	44.7	.59	14.02	.55	16.3	3	17.6	29.8	35.7	1788.	105.	13.7	.921	.921	50.
311.25	3.650	45.0	.44	14.08	.57	16.3	3	18.0	27.0	32.3	1788.	95.	14.6	.928	.928	47.
312.27	3.663	45.2	.29	15.96	.61	16.3	3	18.2	24.2	28.8	1776.	85.	15.4	.938	.938	43.
313.26	3.676	45.4	.29	15.94	.61	16.3	3	18.4	24.3	29.0	1783.	85.	15.4	.938	.938	44.
314.25	3.688	45.5	.15	16.91	.65	16.3	3	18.4	21.5	25.7	1776.	76.	16.1	.944	.944	40.
315.25	3.701	45.8	.44	14.89	.57	16.3	3	18.7	27.8	33.4	1816.	96.	14.5	.929	.929	47.
316.27	3.714	46.0	.29	15.89	.60	16.3	3	18.9	24.9	29.6	1804.	86.	15.3	.940	.940	44.
317.24	3.726	46.1	.15	16.84	.64	16.3	3	18.9	22.1	26.3	1798.	77.	16.0	.945	.945	41.
318.24	3.739	46.5	.59	13.87	.55	16.3	3	19.3	31.7	37.5	1854.	107.	13.4	.924	.924	51.
319.24	3.752	46.8	.44	14.87	.57	16.2	3	19.5	28.9	34.3	1851.	97.	14.4	.932	.932	48.
320.24	3.765	47.1	.44	14.80	.56	16.2	3	19.8	29.2	34.6	1862.	96.	14.3	.932	.932	48.

DRIVING SCHEDULE (HDCC02) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
321.24	3.778	47.7	.88	12.03	.52	16.2	3	20.3	39.4	47.2	1924.	129.	11.2	.914	.914	58.
322.24	3.792	48.3	.88	12.00	.52	16.2	3	20.8	40.1	45.0	1944.	130.	11.2	.916	.916	58.
323.23	3.805	49.0	1.03	11.22	.51	16.2	3	21.4	44.4	53.2	1964.	141.	10.2	.910	.910	62.
324.23	3.819	49.7	1.03	11.19	.51	16.2	3	22.1	45.4	54.3	2008.	142.	10.1	.912	.912	62.
325.23	3.833	50.3	.88	11.89	.51	16.1	3	22.6	42.8	50.9	2013.	133.	11.0	.921	.921	59.
326.23	3.847	51.0	1.03	11.13	.50	16.1	3	23.3	47.2	56.2	2053.	144.	10.0	.916	.916	63.
327.23	3.861	51.7	1.03	11.09	.50	16.1	3	24.0	48.2	57.3	2077.	145.	9.9	.917	.917	64.
328.22	3.875	52.4	1.03	11.06	.50	16.1	3	24.7	49.2	58.4	2101.	146.	9.8	.919	.919	64.
329.22	3.890	53.1	1.03	11.02	.50	16.0	3	25.4	50.3	59.6	2125.	147.	9.7	.921	.921	64.
330.22	3.905	53.8	1.03	10.98	.50	16.0	3	26.1	51.3	60.7	2151.	148.	9.7	.922	.922	65.
331.21	3.920	54.5	1.03	10.93	.50	16.0	3	26.9	52.4	61.9	2177.	149.	9.6	.923	.923	65.
332.21	3.935	55.2	1.03	10.89	.50	15.9	3	27.6	53.4	63.1	2202.	151.	9.5	.924	.924	66.
333.21	3.950	55.8	.88	11.49	.50	15.9	3	28.3	50.6	59.5	2214.	141.	10.3	.929	.929	63.
334.21	3.966	56.4	.88	11.46	.50	15.9	3	28.9	51.5	60.4	2235.	142.	10.3	.930	.930	63.
335.21	3.982	56.9	.73	12.14	.51	15.9	3	29.5	48.4	56.6	2237.	133.	11.1	.938	.938	60.
336.19	3.997	57.0	.15	15.40	.58	15.9	3	29.6	33.5	39.1	2197.	94.	14.5	.956	.956	47.
337.17	4.013	57.1	.15	15.39	.58	15.9	3	29.7	33.6	39.3	2201.	94.	14.5	.956	.956	47.
338.18	4.029	57.3	.29	14.68	.55	15.9	3	30.0	37.5	43.8	2221.	104.	13.7	.951	.951	50.
339.18	4.045	57.6	.44	13.66	.53	15.9	3	30.3	41.8	48.8	2243.	114.	12.8	.946	.946	54.
340.19	4.061	57.8	.29	14.61	.55	15.8	3	30.5	38.1	44.5	2239.	104.	13.7	.951	.951	51.
341.20	4.077	58.0	.29	14.58	.55	15.8	3	30.8	38.4	44.8	2246.	105.	13.6	.952	.952	51.
342.18	4.093	58.1	.15	15.28	.58	15.8	3	30.9	34.8	40.6	2237.	95.	14.4	.957	.957	48.
343.18	4.109	58.4	.44	13.55	.53	15.8	3	31.2	42.9	50.0	2273.	116.	12.7	.947	.947	54.
344.18	4.125	58.7	.44	13.52	.53	15.8	3	31.6	43.3	50.4	2284.	116.	12.6	.947	.947	55.
345.16	4.141	58.8	.15	15.22	.57	15.8	3	31.7	35.7	41.6	2263.	97.	14.3	.958	.958	48.
346.14	4.157	58.9	.15	15.21	.57	15.8	3	31.8	35.8	41.7	2267.	97.	14.3	.958	.958	48.
347.11	4.173	59.0	.15	15.20	.57	15.8	3	32.0	36.0	41.9	2271.	97.	14.3	.958	.958	48.
348.11	4.190	59.0	0.00	15.80	.62	15.8	3	32.0	31.9	37.3	2262.	87.	15.1	.961	.961	45.
349.09	4.206	58.9	-.15	16.50	.66	15.8	3	31.8	27.8	32.7	2248.	76.	16.0	.965	.965	42.
350.07	4.222	58.8	-.15	16.52	.68	15.8	3	31.7	27.7	32.5	2245.	76.	16.0	.965	.965	41.
351.08	4.238	58.6	-.29	17.31	.74	15.8	3	31.5	23.7	28.1	2226.	66.	16.8	.970	.970	38.
352.09	4.255	58.4	-.29	17.37	.75	15.8	3	31.2	23.5	27.8	2218.	66.	16.8	.970	.970	39.
353.10	4.271	58.2	-.29	17.42	.75	15.8	3	31.0	23.3	27.6	2211.	66.	16.8	.970	.970	38.
354.08	4.287	58.1	-.15	16.66	.68	15.8	3	30.9	26.9	31.6	2219.	75.	16.1	.965	.965	41.
355.06	4.302	58.0	-.15	16.69	.68	15.8	3	30.8	26.8	31.5	2215.	75.	16.1	.965	.965	41.
356.04	4.318	57.9	-.15	16.71	.68	15.8	3	30.7	26.7	31.4	2211.	75.	16.1	.965	.965	41.
357.04	4.334	57.6	-.44	18.41	.85	15.8	3	30.3	18.8	22.6	2188.	54.	17.7	.970	.970	34.
358.05	4.350	57.4	-.29	17.65	.75	15.9	3	30.1	22.5	26.7	2181.	64.	16.9	.970	.970	37.
359.06	4.367	57.2	-.29	17.71	.75	15.9	3	29.8	22.3	26.4	2173.	64.	17.0	.970	.970	37.
360.04	4.382	57.1	-.15	16.89	.69	15.9	3	29.7	25.8	30.4	2181.	73.	16.2	.965	.965	40.
361.02	4.398	57.0	-.15	16.91	.69	15.9	3	29.6	25.7	30.3	2177.	73.	16.2	.965	.965	40.
362.02	4.413	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
362.99	4.429	56.9	-.15	16.93	.69	15.9	3	29.5	25.6	30.2	2174.	73.	16.2	.965	.965	40.
363.99	4.445	56.9	0.00	16.13	.63	15.9	3	29.5	29.5	34.6	2184.	83.	15.4	.960	.960	44.
364.99	4.460	56.9	0.00	16.13	.63	15.9	3	29.5	29.5	34.6	2184.	83.	15.4	.960	.960	44.
365.97	4.476	57.0	.15	15.40	.58	15.9	3	29.6	33.5	39.2	2197.	94.	14.5	.956	.956	47.

DRIVING SCHEDULE (HDCC02) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
366.97	4.492	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
367.97	4.508	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
368.97	4.523	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
369.97	4.539	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
370.97	4.555	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
371.97	4.571	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
372.97	4.587	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
373.97	4.603	57.0	0.00	16.11	.63	15.9	3	29.6	29.6	34.7	2187.	83.	15.4	.960	.960	44.
374.95	4.618	56.9	-.15	16.93	.69	15.9	3	29.5	25.6	30.2	2174.	73.	16.2	.965	.965	40.
375.93	4.633	56.8	-.15	16.96	.69	15.9	3	29.4	25.5	30.1	2170.	73.	16.2	.965	.965	40.
376.93	4.649	56.5	-.44	18.85	.86	15.9	3	29.0	17.7	21.4	2146.	52.	17.9	.970	.970	33.
377.93	4.665	56.2	-.44	18.97	.87	15.9	3	28.7	17.5	21.1	2135.	52.	17.9	.970	.970	33.
378.94	4.681	56.0	-.29	18.09	.76	15.9	3	28.5	21.1	25.1	2128.	62.	17.1	.970	.970	36.
379.94	4.696	56.0	0.00	16.29	.64	15.9	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
380.94	4.712	56.0	0.00	16.29	.64	15.9	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
381.92	4.727	56.1	.15	15.51	.59	15.9	3	28.6	32.4	37.9	2164.	92.	14.7	.955	.955	46.
382.92	4.743	56.4	.44	13.80	.54	15.9	3	28.9	40.2	47.0	2199.	112.	12.9	.945	.945	53.
383.93	4.758	56.7	.44	13.75	.54	15.9	3	29.3	40.6	47.5	2210.	113.	12.9	.945	.945	53.
384.93	4.774	56.9	.29	14.74	.55	15.9	3	29.5	37.0	43.2	2206.	103.	13.8	.951	.951	50.
385.94	4.790	57.1	.29	14.71	.55	15.9	3	29.7	37.2	43.5	2213.	103.	13.7	.951	.951	50.
386.95	4.806	57.3	.29	14.68	.55	15.9	3	30.0	37.5	43.8	2221.	104.	13.7	.951	.951	50.
387.93	4.822	57.4	.15	15.36	.58	15.9	3	30.1	34.0	39.7	2212.	94.	14.5	.956	.956	47.
388.93	4.838	57.4	0.00	16.04	.63	15.9	3	30.1	30.1	35.2	2202.	84.	15.3	.961	.961	44.
389.94	4.854	57.2	-.29	17.71	.75	15.9	3	29.8	22.3	26.4	2173.	64.	17.0	.970	.970	37.
390.95	4.870	57.0	-.29	17.77	.76	15.9	3	29.6	22.1	26.2	2166.	64.	17.0	.970	.970	37.
391.93	4.885	56.9	-.15	16.93	.69	15.9	3	29.5	25.6	30.2	2174.	73.	16.2	.965	.965	40.
392.93	4.901	56.6	-.44	18.81	.86	15.9	3	29.2	17.8	21.6	2150.	53.	17.9	.970	.970	33.
393.93	4.917	56.3	-.44	18.93	.87	15.9	3	28.8	17.6	21.2	2139.	52.	17.9	.970	.970	33.
394.94	4.933	56.1	-.29	18.06	.76	15.9	3	28.6	21.2	25.2	2132.	62.	17.1	.970	.970	36.
395.96	4.949	56.4	.44	13.80	.54	15.9	3	28.9	40.2	47.0	2199.	112.	12.9	.945	.945	53.
396.96	4.964	56.7	.44	13.75	.54	15.9	3	29.3	40.6	47.5	2210.	113.	12.9	.945	.945	53.
397.95	4.980	57.1	.59	12.85	.52	15.9	3	29.7	45.0	52.6	2233.	124.	11.9	.942	.942	57.
398.95	4.996	57.5	.59	12.80	.52	15.9	3	30.2	45.6	53.2	2248.	124.	11.9	.943	.943	57.
399.95	5.012	57.8	.44	13.61	.53	15.9	3	30.5	42.1	49.2	2251.	115.	12.7	.946	.946	54.
400.96	5.028	58.0	.29	14.53	.55	15.9	3	30.8	38.4	44.8	2246.	105.	13.6	.952	.952	51.
401.96	5.044	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
402.96	5.060	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
403.96	5.076	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
404.96	5.093	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
405.96	5.109	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
406.94	5.124	57.9	-.15	16.71	.66	15.9	3	30.7	26.7	31.4	2211.	75.	16.1	.965	.965	41.
407.91	5.140	57.8	-.15	16.73	.68	15.9	3	30.5	26.6	31.3	2207.	74.	16.1	.965	.965	41.
408.89	5.156	57.7	-.15	16.75	.68	15.9	3	30.4	26.5	31.1	2204.	74.	16.1	.965	.965	41.
409.89	5.172	57.7	0.00	15.99	.63	15.9	3	30.4	30.4	35.6	2214.	84.	15.3	.961	.961	44.
410.87	5.188	57.8	.15	15.31	.58	15.9	3	30.5	34.5	40.2	2226.	95.	14.4	.957	.957	48.
411.85	5.203	57.9	.15	15.30	.58	15.9	3	30.7	34.6	40.3	2230.	95.	14.4	.957	.957	48.

DRIVING SCHEDULE (HDCOO2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
412.83	5.219	58.0	.15	15.29	.58	15.9	3	30.8	34.7	40.5	2234.	95.	14.4	.957	.957	48.
413.80	5.235	58.1	.15	15.28	.58	15.9	3	30.9	34.8	40.6	2237.	95.	14.4	.957	.957	48.
414.80	5.251	58.4	.44	13.55	.53	15.9	3	31.2	42.9	50.0	2273.	116.	12.7	.947	.947	54.
415.81	5.267	58.9	.73	11.97	.51	15.8	3	31.8	51.4	59.9	2307.	136.	10.8	.941	.941	61.
416.82	5.284	59.1	.29	14.41	.55	15.8	3	32.1	39.9	46.4	2286.	107.	13.5	.953	.953	52.
417.82	5.300	59.4	.44	13.43	.53	15.8	3	32.4	44.3	51.6	2309.	117.	12.5	.948	.948	55.
418.81	5.317	59.8	.59	12.56	.52	15.8	3	32.9	49.0	57.0	2334.	128.	11.6	.944	.944	59.
419.79	5.333	59.9	.15	15.11	.57	15.8	3	33.1	37.1	43.2	2304.	98.	14.2	.958	.958	49.
420.79	5.350	59.9	0.00	15.68	.61	15.8	3	33.1	33.0	38.6	2286.	88.	15.0	.962	.962	46.
421.77	5.366	59.8	-.15	16.33	.67	15.8	3	32.9	28.8	33.8	2282.	78.	15.3	.966	.966	42.
422.78	5.383	59.6	-.29	17.06	.74	15.8	3	32.7	24.8	29.3	2264.	68.	16.6	.970	.970	39.
423.79	5.399	59.4	-.29	17.11	.74	15.8	3	32.4	24.6	29.0	2256.	68.	16.7	.970	.970	39.
424.80	5.416	59.2	-.29	17.16	.74	15.8	3	32.2	24.4	28.8	2249.	67.	16.7	.970	.970	39.
425.78	5.432	59.1	-.15	16.46	.67	15.8	3	32.1	28.0	32.9	2256.	77.	15.9	.966	.966	42.
426.76	5.448	59.0	-.15	16.48	.67	15.8	3	32.0	27.9	32.8	2252.	76.	15.9	.965	.965	42.
427.74	5.464	58.9	-.15	16.50	.68	15.8	3	31.8	27.8	32.7	2248.	76.	16.0	.965	.965	42.
428.75	5.481	58.7	-.29	17.29	.74	15.8	3	31.6	23.9	28.2	2230.	66.	16.8	.970	.970	38.
429.73	5.497	58.6	-.15	16.56	.68	15.9	3	31.5	27.5	32.3	2237.	76.	16.0	.965	.965	41.
430.70	5.513	58.5	-.15	16.58	.68	15.8	3	31.4	27.4	32.1	2233.	76.	16.0	.965	.965	41.
431.68	5.528	58.4	-.15	16.60	.68	15.8	3	31.2	27.2	32.0	2230.	75.	16.0	.965	.965	41.
432.68	5.545	58.4	0.00	15.89	.62	15.8	3	31.2	31.2	36.5	2240.	86.	15.2	.961	.961	45.
433.66	5.561	58.3	-.15	16.62	.68	15.8	3	31.1	27.1	31.9	2226.	75.	16.0	.965	.965	41.
434.64	5.576	58.2	-.15	16.64	.68	15.8	3	31.0	27.0	31.8	2222.	75.	16.1	.965	.965	41.
435.62	5.592	58.1	-.15	16.66	.68	15.8	3	30.9	26.9	31.6	2219.	75.	16.1	.965	.965	41.
436.59	5.608	58.0	-.15	16.69	.68	15.8	3	30.8	26.8	31.5	2215.	75.	16.1	.965	.965	41.
437.57	5.624	57.9	-.15	16.71	.68	15.9	3	30.7	26.7	31.4	2211.	75.	16.1	.965	.965	41.
438.57	5.640	57.9	0.00	15.96	.62	15.9	3	30.7	30.6	35.9	2221.	85.	15.3	.961	.961	44.
439.57	5.656	57.9	0.00	15.96	.62	15.9	3	30.7	30.6	35.9	2221.	85.	15.3	.961	.961	44.
440.57	5.672	57.9	0.00	15.96	.62	15.9	3	30.7	30.6	35.9	2221.	85.	15.3	.961	.961	44.
441.57	5.688	57.9	0.00	15.96	.62	15.9	3	30.7	30.6	35.9	2221.	85.	15.3	.961	.961	44.
442.55	5.704	58.0	.15	15.29	.58	15.9	3	30.8	34.7	40.5	2234.	95.	14.4	.957	.957	43.
443.53	5.719	58.1	.15	15.28	.58	15.8	3	30.9	34.8	40.6	2237.	95.	14.4	.957	.957	48.
444.53	5.736	58.1	0.00	15.93	.62	15.8	3	30.9	30.9	36.1	2229.	85.	15.2	.961	.961	44.
445.50	5.751	58.2	.15	15.27	.58	15.8	3	31.0	35.0	40.6	2241.	96.	14.4	.957	.957	48.
446.50	5.768	58.2	0.00	15.92	.62	15.8	3	31.0	31.0	36.3	2232.	85.	15.2	.961	.961	44.
447.50	5.784	58.2	0.00	15.92	.62	15.8	3	31.0	31.0	36.3	2232.	85.	15.2	.961	.961	44.
448.48	5.800	58.1	-.15	16.66	.68	15.8	3	30.9	26.9	31.6	2219.	75.	16.1	.965	.965	41.
449.46	5.815	58.0	-.15	16.69	.68	15.9	3	30.8	26.8	31.5	2215.	75.	16.1	.965	.965	41.
450.46	5.831	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
451.46	5.848	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
452.46	5.864	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
453.46	5.880	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
454.46	5.896	58.0	0.00	15.95	.62	15.9	3	30.8	30.8	36.0	2225.	85.	15.2	.961	.961	44.
455.44	5.912	57.9	-.15	16.71	.68	15.9	3	30.7	26.7	31.4	2211.	75.	16.1	.965	.965	41.
456.44	5.928	57.9	0.00	15.96	.62	15.9	3	30.7	30.6	35.9	2221.	85.	15.3	.961	.961	44.
457.42	5.943	58.0	.15	15.29	.58	15.9	3	30.8	34.7	40.5	2234.	95.	14.4	.957	.957	48.

DRIVING SCHEDULE (HDCC02) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
458.39	5.959	58.1	.15	15.28	.58	15.9	3	30.9	34.8	40.6	2237.	95.	14.4	.957	.957	48.
459.39	5.975	58.1	0.00	15.93	.62	15.9	3	30.9	30.9	36.1	2229.	85.	15.2	.961	.961	44.
460.37	5.991	58.2	.15	15.27	.58	15.9	3	31.0	35.0	40.8	2241.	96.	14.4	.957	.957	48.
461.35	6.007	58.3	.15	15.26	.58	15.8	3	31.1	35.1	40.9	2245.	96.	14.4	.957	.957	48.
462.35	6.023	58.3	0.00	15.90	.62	15.8	3	31.1	31.1	36.4	2236.	85.	15.2	.961	.961	45.
463.35	6.039	58.3	0.00	15.90	.62	15.8	3	31.1	31.1	36.4	2236.	85.	15.2	.961	.961	45.
464.33	6.055	58.2	-.15	16.64	.68	15.9	3	31.0	27.0	31.8	2222.	75.	16.1	.965	.965	41.
465.30	6.071	58.1	-.15	16.66	.68	15.9	3	30.9	26.9	31.6	2219.	75.	16.1	.965	.965	41.
466.28	6.087	58.0	-.15	16.69	.68	15.9	3	30.8	26.8	31.5	2215.	75.	16.1	.965	.965	41.
467.29	6.103	57.8	-.29	17.53	.75	15.9	3	30.5	22.9	27.1	2196.	65.	16.9	.970	.970	38.
468.29	6.119	57.5	-.44	18.45	.85	15.9	3	30.2	18.7	22.5	2184.	54.	17.8	.970	.970	34.
469.29	6.135	57.1	-.59	19.85	.99	15.9	3	29.7	14.4	17.9	2169.	43.	18.5	.970	.970	30.
470.27	6.150	57.0	-.15	16.91	.69	15.9	3	29.6	25.7	30.3	2177.	73.	16.2	.965	.965	40.
471.26	6.166	56.6	-.59	20.08	1.00	15.9	3	29.2	14.0	17.4	2150.	42.	18.6	.970	.970	30.
472.26	6.182	56.1	-.73	21.84	1.22	15.9	3	28.6	10.0	13.0	2131.	32.	19.3	.970	.970	27.
473.24	6.197	56.0	-.15	17.15	.69	15.9	3	28.5	24.7	29.1	2140.	71.	16.3	.964	.964	40.
474.25	6.213	55.8	-.29	18.16	.76	15.9	3	28.3	20.9	24.9	2121.	62.	17.1	.970	.970	36.
475.25	6.228	55.5	-.44	19.24	.87	15.9	3	27.9	16.8	20.4	2108.	51.	18.0	.970	.970	33.
476.25	6.243	55.2	-.44	19.39	.87	15.9	3	27.6	16.6	20.1	2097.	50.	18.0	.970	.970	32.
477.23	6.258	55.1	-.15	17.40	.70	15.9	3	27.5	23.7	28.1	2106.	70.	16.5	.964	.964	39.
478.21	6.273	55.0	-.15	17.43	.70	15.9	3	27.4	23.6	27.9	2103.	70.	16.5	.964	.964	39.
479.19	6.288	54.9	-.15	17.45	.70	15.9	3	27.3	23.5	27.8	2099.	70.	16.5	.964	.964	39.
480.19	6.304	54.9	0.00	16.51	.64	15.9	3	27.3	27.3	32.1	2109.	80.	15.6	.959	.959	42.
481.19	6.319	54.9	0.00	16.51	.64	15.9	3	27.3	27.3	32.1	2109.	80.	15.6	.959	.959	42.
482.19	6.334	54.9	0.00	16.51	.64	15.9	3	27.3	27.3	32.1	2109.	80.	15.6	.959	.959	42.
483.19	6.349	54.9	0.00	16.51	.64	15.9	3	27.3	27.3	32.1	2109.	80.	15.6	.959	.959	42.
484.19	6.365	54.9	0.00	16.51	.64	15.9	3	27.3	27.3	32.1	2109.	80.	15.6	.959	.959	42.
485.16	6.380	55.0	.15	15.65	.59	15.9	3	27.4	31.1	36.5	2124.	90.	14.8	.954	.954	46.
486.16	6.395	55.0	0.00	16.49	.64	15.9	3	27.4	27.4	32.2	2113.	80.	15.6	.959	.959	42.
487.16	6.410	55.0	0.00	16.49	.64	15.9	3	27.4	27.4	32.2	2113.	80.	15.6	.959	.959	42.
488.16	6.425	55.0	0.00	16.49	.64	15.9	3	27.4	27.4	32.2	2113.	80.	15.6	.959	.959	42.
489.16	6.441	55.0	0.00	16.49	.64	15.9	3	27.4	27.4	32.2	2113.	80.	15.6	.959	.959	42.
490.16	6.456	55.0	0.00	16.49	.64	15.9	3	27.4	27.4	32.2	2113.	80.	15.6	.959	.959	42.
491.14	6.471	55.1	.15	15.63	.59	15.9	3	27.5	31.2	36.6	2128.	90.	14.8	.954	.954	45.
492.14	6.486	55.1	0.00	16.47	.64	15.9	3	27.5	27.5	32.3	2116.	80.	15.6	.960	.960	42.
493.12	6.501	55.0	-.15	17.43	.70	15.9	3	27.4	23.6	27.9	2103.	70.	16.5	.964	.964	39.
494.10	6.516	54.9	-.15	17.45	.70	15.9	3	27.3	23.5	27.8	2099.	70.	16.5	.964	.964	39.
495.10	6.531	54.9	0.00	16.51	.64	15.9	3	27.3	27.3	32.1	2109.	80.	15.6	.959	.959	42.
496.08	6.546	54.8	-.15	17.48	.70	15.9	3	27.2	23.4	27.7	2095.	69.	16.5	.964	.964	39.
497.05	6.561	54.7	-.15	17.51	.70	16.0	3	27.1	23.3	27.6	2091.	69.	16.5	.964	.964	39.
498.03	6.576	54.6	-.15	17.54	.70	16.0	3	27.0	23.2	27.5	2088.	69.	16.5	.964	.964	39.
499.04	6.591	54.4	-.29	18.68	.77	16.0	3	26.8	19.6	23.3	2069.	59.	17.3	.969	.969	35.
500.02	6.606	54.3	-.15	17.63	.70	16.0	3	26.6	22.9	27.1	2076.	69.	16.6	.964	.964	38.
501.02	6.621	54.3	0.00	16.64	.64	16.0	3	26.6	26.6	31.3	2086.	79.	15.7	.959	.959	42.
502.00	6.636	54.2	-.15	17.66	.70	16.0	3	26.5	22.8	27.0	2073.	69.	16.6	.964	.964	38.
502.98	6.651	54.1	-.15	17.69	.70	16.0	3	26.4	22.7	26.9	2069.	68.	16.6	.964	.964	38.

DRIVING SCHEDULE (HDCGO2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
503.98	6.666	54.1	0.00	16.68	.64	16.0	3	26.4	26.4	31.1	2079.	79.	15.7	.959	.959	42.
504.98	6.681	54.1	0.00	16.68	.64	16.0	3	26.4	26.4	31.1	2079.	79.	15.7	.959	.959	42.
505.95	6.695	54.0	-.15	17.72	.70	16.0	3	26.3	22.6	26.8	2065.	68.	16.6	.964	.964	38.
506.95	6.710	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
507.95	6.725	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
508.95	6.740	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
509.95	6.755	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
510.95	6.770	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
511.95	6.785	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
512.95	6.800	54.0	0.00	16.71	.64	16.0	3	26.3	26.3	31.0	2075.	78.	15.7	.959	.959	42.
513.93	6.815	54.1	.15	15.78	.60	16.0	3	26.4	30.1	35.4	2091.	89.	14.9	.953	.953	45.
514.91	6.830	54.2	.15	15.76	.60	16.0	3	26.5	30.2	35.5	2095.	89.	14.9	.954	.954	45.
515.91	6.845	54.5	.44	14.06	.54	16.0	3	26.9	37.7	44.2	2129.	109.	13.2	.944	.944	52.
516.91	6.860	54.8	.44	14.02	.54	16.0	3	27.2	38.1	44.6	2140.	110.	13.1	.944	.944	52.
517.89	6.875	54.9	.15	15.66	.60	16.0	3	27.3	31.0	36.4	2120.	90.	14.8	.954	.954	46.
518.86	6.890	55.0	.15	15.65	.59	16.0	3	27.4	31.1	36.5	2124.	90.	14.8	.954	.954	46.
519.84	6.905	55.1	.15	15.63	.59	16.0	3	27.5	31.2	36.6	2128.	90.	14.8	.954	.954	46.
520.82	6.920	55.2	.15	15.62	.59	16.0	3	27.6	31.4	36.7	2131.	91.	14.8	.954	.954	46.
521.82	6.935	55.2	0.00	16.45	.64	16.0	3	27.6	27.6	32.4	2120.	80.	15.6	.960	.960	42.
522.80	6.950	55.3	.15	15.61	.59	16.0	3	27.7	31.5	36.9	2135.	91.	14.7	.955	.955	46.
523.78	6.965	55.4	.15	15.59	.59	16.0	3	27.8	31.6	37.0	2139.	91.	14.7	.955	.955	46.
524.75	6.980	55.5	.15	15.58	.59	16.0	3	27.9	31.7	37.1	2142.	91.	14.7	.955	.955	46.
525.73	6.995	55.6	.15	15.57	.59	16.0	3	28.0	31.8	37.3	2146.	91.	14.7	.955	.955	46.
526.71	7.010	55.7	.15	15.56	.59	16.0	3	28.2	31.9	37.4	2150.	91.	14.7	.955	.955	46.
527.69	7.025	55.8	.15	15.54	.59	16.0	3	28.3	32.1	37.5	2153.	92.	14.7	.955	.955	46.
528.66	7.041	55.9	.15	15.53	.59	16.0	3	28.4	32.2	37.7	2157.	92.	14.7	.955	.955	46.
529.64	7.056	56.0	.15	15.52	.59	16.0	3	28.5	32.3	37.8	2161.	92.	14.7	.955	.955	46.
530.64	7.071	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
531.64	7.087	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
532.64	7.102	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
533.64	7.118	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
534.64	7.134	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
535.64	7.149	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
536.64	7.165	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
537.64	7.180	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
538.64	7.196	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
539.64	7.211	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
540.64	7.227	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
541.64	7.242	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
542.64	7.258	56.0	0.00	16.29	.64	16.0	3	28.5	28.5	33.4	2150.	82.	15.5	.960	.960	43.
543.62	7.273	55.9	-.15	17.18	.69	16.0	3	28.4	24.6	29.0	2136.	71.	16.3	.964	.964	39.
544.62	7.288	55.9	0.00	16.31	.64	16.0	3	28.4	28.4	33.3	2146.	81.	15.5	.960	.960	43.
545.62	7.304	55.9	0.00	16.31	.64	16.0	3	28.4	28.4	33.3	2146.	81.	15.5	.960	.960	43.
546.60	7.319	55.8	-.15	17.21	.69	16.0	3	28.3	24.5	28.9	2132.	71.	16.4	.964	.964	39.
547.61	7.335	55.6	-.29	18.23	.76	16.0	3	28.0	20.7	24.6	2113.	61.	17.2	.970	.970	36.
548.62	7.351	55.4	-.29	18.30	.77	16.0	3	27.8	20.5	24.4	2106.	61.	17.2	.970	.970	36.

DRIVING SCHEDULE (HDCCC2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
549.63	7.366	55.2	-.29	18.38	.77	16.0	3	27.6	20.3	24.2	2098.	61.	17.2	.969	.969	36.
550.61	7.381	55.1	-.15	17.40	.70	16.0	3	27.5	23.7	28.1	2106.	70.	16.5	.964	.964	39.
551.59	7.396	55.0	-.15	17.43	.70	16.0	3	27.4	23.6	27.9	2103.	70.	16.5	.964	.964	39.
552.57	7.411	54.9	-.15	17.45	.70	16.0	3	27.3	23.5	27.8	2099.	70.	16.5	.964	.964	39.
553.57	7.426	54.6	-.44	19.69	.88	16.0	3	27.0	16.0	19.5	2074.	49.	18.1	.970	.970	32.
554.58	7.442	54.4	-.29	18.68	.77	16.0	3	26.8	19.6	23.3	2069.	59.	17.3	.969	.969	35.
555.59	7.457	54.2	-.29	18.76	.77	16.0	3	26.5	19.4	23.1	2061.	59.	17.4	.969	.969	35.
556.57	7.472	54.1	-.15	17.69	.70	16.0	3	26.4	22.7	26.9	2069.	68.	16.6	.964	.964	38.
557.57	7.487	53.8	-.44	20.09	.88	16.0	3	26.1	15.3	18.7	2044.	48.	18.2	.970	.970	31.
558.56	7.501	53.4	-.59	21.54	1.06	16.0	3	25.7	11.4	14.4	2028.	37.	19.0	.970	.970	28.
559.54	7.516	53.3	-.15	17.95	.70	16.0	3	25.6	22.0	26.0	2039.	67.	16.7	.963	.963	38.
560.55	7.531	53.1	-.29	19.24	.77	16.0	3	25.4	18.4	22.0	2020.	57.	17.5	.969	.969	34.
561.56	7.546	52.9	-.29	19.33	.78	16.1	3	25.2	18.2	21.8	2012.	57.	17.5	.969	.969	34.
562.56	7.560	52.6	-.44	20.68	.89	16.1	3	24.9	14.4	17.6	1998.	46.	18.3	.970	.970	31.
563.57	7.575	52.4	-.29	19.52	.78	16.1	3	24.7	17.8	21.3	1994.	56.	17.6	.969	.969	34.
564.59	7.590	52.2	-.29	19.56	.78	16.1	3	24.5	17.6	21.1	1986.	56.	17.6	.969	.969	34.
565.56	7.604	52.1	-.15	18.35	.71	16.1	3	24.4	20.8	24.6	1994.	65.	16.8	.963	.963	37.
566.54	7.618	52.0	-.15	18.36	.71	16.1	3	24.3	20.7	24.7	1990.	65.	16.8	.963	.963	37.
567.54	7.633	52.0	0.00	17.21	.65	16.1	3	24.3	24.3	28.7	2000.	75.	16.0	.958	.958	40.
568.54	7.647	52.0	0.00	17.21	.65	16.1	3	24.3	24.3	28.7	2000.	75.	16.0	.958	.958	40.
569.54	7.661	52.0	0.00	17.21	.65	16.1	3	24.3	24.3	28.7	2000.	75.	16.0	.958	.958	40.
570.52	7.676	52.1	.15	16.11	.61	16.1	3	24.4	27.9	32.9	2018.	86.	15.1	.951	.951	44.
571.50	7.690	52.0	-.15	18.36	.71	16.1	3	24.3	20.7	24.7	1990.	65.	16.8	.963	.963	37.
572.50	7.704	52.0	0.00	17.21	.65	16.1	3	24.3	24.3	28.7	2000.	75.	16.0	.958	.958	40.
573.47	7.718	51.9	-.15	18.38	.71	16.1	3	24.2	20.6	24.5	1987.	65.	16.9	.963	.963	37.
574.47	7.733	51.6	-.44	20.89	.91	16.1	3	23.9	13.6	16.7	1960.	45.	18.5	.970	.970	30.
575.49	7.747	51.4	-.29	19.72	.79	16.1	3	23.7	16.9	20.3	1956.	55.	17.7	.968	.968	33.
576.49	7.761	51.1	-.44	21.00	.93	16.1	3	23.4	13.2	16.2	1941.	44.	18.6	.970	.970	30.
577.48	7.775	50.7	-.59	22.43	1.15	16.1	3	23.0	9.4	12.1	1926.	33.	19.4	.970	.970	26.
578.47	7.789	50.3	-.59	22.56	1.16	16.1	3	22.6	9.1	11.8	1911.	33.	19.5	.970	.970	26.
579.48	7.803	49.8	-.73	24.42	1.57	16.1	3	22.2	5.6	8.0	1892.	22.	20.5	.970	.970	22.
580.48	7.817	49.3	-.73	24.68	1.61	16.1	3	21.7	5.4	7.7	1873.	21.	20.7	.970	.970	22.
581.48	7.831	48.7	-.88	27.54	2.98	16.2	3	21.2	1.7	3.7	1850.	10.	22.0	.970	.970	18.
582.49	7.844	48.2	-.73	25.27	1.70	16.2	3	20.7	4.7	6.9	1831.	20.	21.0	.970	.970	21.
583.47	7.857	48.1	-.15	19.03	.75	16.2	3	20.6	17.4	20.8	1844.	59.	17.4	.961	.961	35.
584.44	7.870	48.0	-.15	19.04	.75	16.2	3	20.6	17.3	20.7	1841.	59.	17.4	.961	.961	35.
585.44	7.884	48.0	0.00	17.77	.68	16.2	3	20.6	20.5	24.5	1853.	69.	16.6	.955	.955	38.
586.42	7.897	48.1	.15	16.61	.63	16.2	3	20.6	23.9	28.4	1872.	80.	15.7	.947	.947	42.
587.42	7.910	48.4	.44	14.74	.56	16.2	3	20.9	30.6	36.2	1907.	100.	14.1	.935	.935	48.
588.43	7.924	48.9	.73	12.79	.53	16.2	3	21.4	37.6	44.7	1952.	120.	12.1	.923	.923	55.
589.40	7.937	49.0	.15	16.50	.62	16.2	3	21.4	24.8	29.4	1965.	81.	15.6	.948	.948	42.
590.38	7.950	49.1	.15	16.49	.62	16.2	3	21.5	24.9	29.5	1968.	81.	15.6	.948	.948	42.
591.38	7.964	49.1	0.00	17.62	.67	16.2	3	21.5	21.5	25.6	1893.	71.	16.4	.956	.956	39.
592.36	7.977	49.0	-.15	18.87	.74	16.2	3	21.4	18.1	21.7	1878.	61.	17.3	.962	.962	35.
593.36	7.991	49.0	0.00	17.63	.67	16.2	3	21.4	21.4	25.5	1890.	71.	16.4	.956	.956	39.
594.34	8.004	48.9	-.15	18.89	.74	16.2	3	21.4	18.0	21.6	1874.	60.	17.3	.962	.962	35.

DRIVING SCHEDULE (HDCCC2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
595.34	8.018	48.6	-.44	21.63	.98	16.2	3	21.1	11.4	14.1	1846.	40.	18.9	.970	.970	23.
596.34	8.031	48.3	-.44	21.71	.99	16.2	3	20.8	11.2	13.9	1835.	40.	19.0	.970	.970	23.
597.34	8.045	48.0	-.44	21.80	1.00	16.2	3	20.6	10.9	13.7	1823.	39.	19.0	.970	.970	23.
598.31	8.058	47.9	-.15	19.06	.75	16.2	3	20.5	17.2	20.6	1837.	59.	17.4	.961	.961	35.
599.29	8.071	47.8	-.15	19.08	.75	16.2	3	20.4	17.1	20.5	1833.	59.	17.4	.961	.961	35.
600.27	8.084	47.7	-.15	19.10	.75	16.2	3	20.3	17.0	20.4	1829.	59.	17.4	.961	.961	34.
601.28	8.097	47.9	.29	15.70	.59	16.2	3	20.5	26.8	31.7	1874.	89.	15.0	.942	.942	45.
602.28	8.110	48.3	.59	13.70	.54	16.2	3	20.8	33.8	40.2	1920.	110.	13.1	.927	.927	52.
603.27	8.124	49.0	1.03	11.22	.51	16.2	3	21.4	44.4	53.2	1984.	141.	10.2	.910	.910	62.
604.25	8.137	49.1	.15	16.49	.62	16.2	3	21.5	24.9	29.5	1908.	61.	15.6	.948	.948	42.
605.23	8.150	49.0	-.15	18.87	.74	16.2	3	21.4	18.1	21.7	1878.	61.	17.3	.962	.962	35.
606.21	8.164	48.9	-.15	18.89	.74	16.2	3	21.4	18.0	21.6	1874.	60.	17.3	.962	.962	35.
607.21	8.177	48.0	-1.32	49.82	99.99	16.2	3	21.6	-7.2	-5.4	1590.	-18.	23.7	1.113	.899	7.
608.21	8.190	47.1	-1.32	51.90	99.99	16.2	3	20.8	-7.4	-5.6	1549.	-19.	23.7	1.121	.892	6.
609.21	8.203	46.2	-1.32	54.15	99.99	16.3	3	20.1	-7.6	-5.7	1509.	-20.	23.7	1.128	.886	6.
609.93	8.213	46.1	-.15	19.38	.77	16.3	3	18.9	15.8	19.0	1770.	56.	17.6	.960	.960	34.
610.93	8.225	46.1	0.00	18.03	.70	16.3	3	18.9	18.9	22.6	1784.	67.	16.8	.953	.953	37.
611.91	8.238	46.2	.15	16.82	.64	16.3	3	19.0	22.2	26.4	1802.	77.	16.0	.945	.945	41.
612.92	8.251	46.9	1.03	11.31	.51	16.3	3	19.6	41.6	50.2	1911.	138.	10.3	.904	.904	61.
613.92	8.264	47.8	1.32	9.71	.51	16.2	3	20.4	49.1	59.4	1969.	158.	8.6	.895	.895	69.
614.92	8.278	49.0	1.76	7.22	.58	16.2	3	21.4	60.6	72.7	2077.	184.	6.5	.869	.904	76.
615.92	8.291	49.7	1.03	11.19	.51	16.2	3	22.1	45.4	54.3	2008.	142.	10.1	.912	.912	62.
616.92	8.305	50.6	1.32	9.31	.52	16.2	3	22.9	53.3	64.1	2066.	163.	8.3	.902	.902	69.
617.92	8.319	51.5	1.32	9.14	.53	16.2	3	23.6	54.7	65.6	2097.	165.	8.2	.905	.905	70.
618.92	8.334	52.2	1.03	11.07	.50	16.1	3	24.5	48.9	58.1	2094.	146.	9.8	.919	.919	64.
619.92	8.348	52.7	.73	12.47	.52	16.1	3	25.0	42.5	50.2	2090.	126.	11.6	.929	.929	57.
620.92	8.363	53.0	.44	14.26	.55	16.1	3	25.3	35.9	42.1	2073.	107.	13.4	.942	.942	51.
621.92	8.378	53.6	.88	11.65	.51	16.1	3	25.9	47.3	56.0	2134.	138.	10.6	.926	.926	61.
622.92	8.393	54.0	.59	13.18	.53	16.1	3	26.3	40.6	47.9	2120.	119.	12.3	.939	.939	55.
623.89	8.407	54.1	.15	15.78	.60	16.1	3	26.4	30.1	35.4	2091.	89.	14.9	.953	.953	45.
624.89	8.423	54.4	.44	14.04	.54	16.1	3	26.8	37.6	44.2	2125.	109.	13.2	.944	.944	52.
625.89	8.438	54.7	.44	14.01	.54	16.1	3	27.1	38.0	44.6	2136.	110.	13.1	.944	.944	52.
626.89	8.453	55.1	.59	13.07	.53	16.1	3	27.5	42.3	49.5	2159.	120.	12.2	.941	.941	56.
627.89	8.468	55.4	.44	13.93	.54	16.1	3	27.8	38.9	45.5	2162.	111.	13.1	.944	.944	52.
628.89	8.484	55.4	0.00	16.41	.64	16.1	3	27.8	27.8	32.7	2128.	81.	15.6	.960	.960	43.
629.88	8.499	55.0	-.59	20.83	1.03	16.1	3	27.4	12.6	15.8	2089.	40.	18.8	.970	.970	29.
630.89	8.514	54.5	-.73	22.47	1.29	16.1	3	26.9	8.8	11.6	2070.	29.	19.5	.970	.970	25.
631.89	8.529	53.6	-1.32	39.60	99.99	16.1	3	26.7	-5.5	-3.6	1848.	-10.	23.4	1.069	.936	11.
632.89	8.544	52.5	-1.61	63.44	99.99	16.1	3	26.5	-11.9	-10.0	1803.	-29.	24.4	1.073	.932	4.
633.89	8.558	50.2	-3.37	104.13	99.99	16.2	3	29.7	-14.6	-12.9	1692.	-40.	25.0	1.093	.915	0.
634.89	8.572	48.2	-2.93	99.22	99.99	16.2	3	26.4	-13.4	-11.6	1599.	-38.	24.9	1.111	.900	0.
635.89	8.585	46.5	-2.49	96.09	99.99	16.2	3	23.6	-12.4	-10.4	1522.	-36.	24.6	1.126	.888	0.
636.84	8.597	46.2	-.44	22.36	1.04	16.2	3	19.0	9.8	12.3	1755.	37.	19.3	.970	.970	27.
637.85	8.610	46.0	-.29	20.76	.86	16.2	3	18.9	12.8	15.6	1754.	47.	18.4	.967	.967	30.
638.85	8.623	46.0	0.00	18.04	.70	16.2	3	18.9	18.8	22.5	1780.	67.	16.9	.952	.952	37.
639.85	8.636	46.3	.44	14.90	.57	16.2	3	19.1	28.4	33.8	1834.	97.	14.4	.930	.930	47.

DRIVING SCHEDULE (HDCCC2) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
640.86	8.649	46.8	.73	12.96	.53	16.2	3	19.5	35.0	41.9	1870.	117.	12.3	.919	.919	54.
641.85	8.662	47.5	1.03	11.29	.51	16.2	3	20.1	42.4	51.1	1932.	139.	10.3	.906	.906	61.
642.85	8.675	48.2	1.03	11.26	.51	16.2	3	20.7	43.3	52.1	1956.	140.	10.2	.908	.908	62.
643.85	8.689	48.8	.88	11.98	.52	16.2	3	21.3	40.8	48.7	1961.	130.	11.1	.917	.917	59.
644.85	8.702	49.5	1.03	11.20	.51	16.2	3	21.9	45.1	54.0	2001.	142.	10.2	.912	.912	62.
645.84	8.716	50.2	1.03	11.16	.50	16.2	3	22.6	46.1	55.0	2025.	143.	10.1	.914	.914	63.
646.85	8.730	50.7	.73	12.64	.52	16.2	3	23.0	39.8	47.3	2018.	123.	11.9	.926	.926	56.
647.84	8.744	51.1	.59	13.45	.53	16.1	3	23.4	37.1	43.9	2019.	114.	12.7	.933	.933	53.
648.84	8.758	51.7	.88	11.79	.51	16.1	3	24.0	44.7	53.0	2065.	135.	10.8	.923	.923	60.
649.85	8.773	52.2	.73	12.51	.52	16.1	3	24.5	41.8	49.5	2072.	125.	11.7	.928	.928	57.
650.85	8.787	52.5	.44	14.32	.55	16.1	3	24.8	35.3	41.4	2054.	106.	13.4	.942	.942	51.
651.84	8.802	52.1	-.59	22.01	1.10	16.1	3	24.4	10.4	13.3	1979.	35.	19.2	.970	.970	27.
652.84	8.816	51.6	-.73	23.49	1.46	16.1	3	23.9	6.8	9.3	1960.	25.	20.0	.970	.970	24.
653.85	8.831	51.1	-.73	23.73	1.49	16.2	3	23.4	6.4	8.9	1941.	24.	20.2	.970	.970	23.
654.83	8.845	51.0	-.15	18.53	.72	16.2	3	23.3	19.8	23.6	1953.	64.	17.0	.962	.962	36.
655.83	8.859	51.0	0.00	17.36	.66	16.2	3	23.3	23.3	27.6	1963.	74.	16.1	.958	.958	40.
656.80	8.873	51.1	.15	16.26	.61	16.2	3	23.4	26.9	31.7	1982.	84.	15.3	.950	.950	43.
657.80	8.887	51.4	.44	14.47	.55	16.2	3	23.7	34.0	40.0	2013.	104.	13.6	.941	.941	50.
658.80	8.901	51.7	.44	14.43	.55	16.2	3	24.0	34.3	40.4	2024.	105.	13.5	.941	.941	50.
659.80	8.916	52.0	.44	14.39	.55	16.1	3	24.3	34.7	40.8	2035.	105.	13.5	.942	.942	50.
660.82	8.930	52.2	.29	15.24	.57	16.1	3	24.5	31.4	36.9	2034.	95.	14.3	.946	.946	47.
661.82	8.945	52.5	.44	14.32	.55	16.1	3	24.8	35.3	41.4	2054.	106.	13.4	.942	.942	51.
662.82	8.959	52.8	.44	14.26	.55	16.1	3	25.1	35.6	41.9	2065.	107.	13.4	.942	.942	51.
663.79	8.974	52.7	-.15	18.16	.71	16.1	3	25.0	21.4	25.4	2017.	66.	16.8	.963	.963	37.
664.77	8.988	52.6	-.15	18.20	.71	16.1	3	24.9	21.3	25.3	2013.	66.	16.8	.963	.963	37.
665.77	9.003	52.3	-.44	20.74	.90	16.2	3	24.6	14.1	17.3	1987.	46.	18.4	.970	.970	30.
666.77	9.017	52.3	0.00	17.13	.65	16.2	3	24.6	24.6	29.0	2012.	76.	16.0	.958	.958	40.
667.75	9.031	52.4	.15	16.06	.61	16.2	3	24.7	28.3	33.3	2029.	86.	15.1	.952	.952	44.
668.73	9.046	52.5	.15	16.04	.61	16.2	3	24.8	28.4	33.4	2033.	86.	15.1	.952	.952	44.
669.74	9.060	52.7	.29	15.18	.57	16.2	3	25.0	31.9	37.6	2052.	96.	14.3	.946	.946	47.
670.74	9.075	52.7	0.00	17.09	.65	16.2	3	25.0	25.0	29.5	2026.	76.	15.9	.958	.958	41.
671.74	9.090	52.4	-.44	20.72	.90	16.2	3	24.7	14.2	17.4	1990.	46.	18.4	.970	.970	31.
672.74	9.104	52.1	-.44	20.78	.90	16.2	3	24.4	14.0	17.1	1979.	45.	18.4	.970	.970	30.
673.73	9.118	51.7	-.59	22.13	1.11	16.2	3	24.0	10.1	12.9	1964.	35.	19.3	.970	.970	27.
674.73	9.133	51.1	-.88	26.31	2.32	16.2	3	23.4	3.0	5.2	1941.	14.	21.7	.970	.970	20.
675.73	9.147	50.5	-.88	26.66	2.45	16.2	3	22.8	2.6	4.6	1918.	13.	21.6	.970	.970	19.
676.73	9.161	50.1	-.59	22.43	1.27	16.2	3	22.5	9.0	11.7	1903.	32.	19.5	.970	.970	26.
677.73	9.175	49.8	-.44	21.31	.95	16.2	3	22.2	12.2	15.1	1892.	42.	18.7	.970	.970	29.
678.71	9.188	49.7	-.15	18.75	.73	16.2	3	22.1	18.7	22.3	1904.	62.	17.2	.962	.962	36.
679.68	9.202	49.6	-.15	18.77	.73	16.2	3	22.0	18.6	22.2	1901.	61.	17.2	.962	.962	36.
680.66	9.215	49.5	-.15	18.79	.74	16.2	3	21.9	18.5	22.1	1897.	61.	17.2	.962	.962	35.
681.66	9.229	49.5	0.00	17.56	.67	16.2	3	21.9	21.9	26.0	1908.	72.	16.4	.956	.956	39.
682.67	9.243	49.7	.29	15.52	.58	16.2	3	22.1	29.6	33.8	1941.	92.	14.7	.944	.944	46.
683.67	9.257	50.0	.44	14.65	.55	16.2	3	22.4	32.4	38.3	1963.	102.	13.8	.939	.939	49.
684.68	9.271	50.2	.29	15.47	.58	16.2	3	22.6	29.2	34.4	1960.	92.	14.6	.944	.944	46.
685.68	9.285	50.6	.59	13.50	.54	16.2	3	22.9	36.5	43.2	2002.	113.	12.7	.932	.932	53.

DRIVING SCHEDULE (HDCC02) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
686.68	9.299	51.1	.73	12.61	.52	16.2	3	23.4	40.4	47.9	2032.	124.	11.8	.927	.927	56.
687.69	9.313	51.6	.73	12.56	.52	16.2	3	23.9	41.0	48.6	2051.	124.	11.8	.927	.927	57.
688.69	9.327	51.9	.44	14.40	.55	16.2	3	24.2	34.6	40.6	2032.	105.	13.5	.941	.941	50.
689.67	9.342	52.0	.15	16.13	.61	16.2	3	24.3	27.8	32.8	2015.	86.	15.1	.951	.951	44.
690.64	9.356	52.1	.15	16.11	.61	16.2	3	24.4	27.9	32.9	2018.	86.	15.1	.951	.951	44.
691.64	9.370	52.4	.44	14.33	.55	16.2	3	24.7	35.2	41.3	2050.	106.	13.4	.942	.942	51.
692.65	9.385	52.9	.73	12.45	.52	16.2	3	25.2	42.7	50.5	2097.	126.	11.6	.930	.930	57.
693.64	9.400	53.3	.59	13.24	.53	16.2	3	25.6	39.9	46.9	2096.	117.	12.4	.937	.937	55.
694.64	9.414	53.7	.59	13.21	.53	16.2	3	26.0	40.4	47.4	2110.	118.	12.4	.938	.938	55.
695.64	9.429	54.2	.73	12.35	.52	16.2	3	26.5	44.5	52.4	2143.	128.	11.4	.932	.932	53.
696.64	9.444	54.5	.44	14.06	.54	16.2	3	26.9	37.7	44.2	2129.	109.	13.2	.944	.944	52.
697.64	9.460	54.8	.44	14.02	.54	16.1	3	27.2	38.1	44.6	2140.	110.	13.1	.944	.944	52.
698.65	9.475	55.0	.29	14.94	.56	16.1	3	27.4	34.6	40.6	2137.	100.	14.0	.949	.949	49.
699.66	9.490	55.5	.73	12.25	.51	16.1	3	27.9	46.3	54.4	2168.	131.	11.3	.935	.935	59.
700.65	9.506	55.9	.59	12.98	.52	16.1	3	28.4	43.4	50.7	2169.	122.	12.1	.941	.941	56.
701.66	9.522	56.1	.29	14.85	.55	16.1	3	28.6	36.0	42.1	2177.	102.	13.9	.950	.950	50.
702.67	9.537	56.3	.29	14.82	.55	16.1	3	28.8	36.2	42.4	2184.	102.	13.9	.950	.950	50.
703.65	9.553	56.4	.15	15.47	.59	16.1	3	28.9	32.8	38.3	2175.	93.	14.6	.956	.956	47.
704.63	9.568	56.5	.15	15.46	.59	16.1	3	29.0	32.9	38.4	2179.	93.	14.6	.956	.956	47.
705.64	9.584	56.7	.29	14.77	.55	16.1	3	29.3	36.7	42.9	2199.	103.	13.8	.950	.950	50.
706.65	9.600	56.9	.29	14.74	.55	16.1	3	29.5	37.0	43.2	2206.	103.	13.8	.951	.951	50.
707.63	9.615	57.0	.15	15.40	.58	16.1	3	29.6	33.5	39.1	2197.	94.	14.5	.956	.956	47.
708.63	9.631	57.3	.44	13.67	.53	16.1	3	30.0	41.4	48.4	2232.	114.	12.8	.946	.946	54.
709.62	9.647	57.7	.59	12.78	.52	16.1	3	30.4	45.9	53.5	2256.	125.	11.8	.943	.943	57.
710.63	9.663	58.2	.73	12.03	.51	16.1	3	31.0	50.3	59.7	2282.	135.	10.9	.940	.940	61.
711.63	9.680	58.8	.88	11.29	.50	16.1	3	31.7	55.2	64.6	2319.	146.	10.0	.935	.935	65.
712.63	9.696	59.1	.44	13.45	.53	16.1	3	32.1	43.9	51.2	2296.	117.	12.6	.948	.948	55.
713.61	9.712	59.2	.15	15.18	.57	16.1	3	32.2	36.2	42.2	2278.	97.	14.3	.958	.958	49.
714.59	9.728	59.1	-.15	16.46	.67	16.1	3	32.1	28.0	32.9	2256.	77.	15.9	.966	.966	42.
715.59	9.744	58.8	-.44	17.99	.84	16.1	3	31.7	19.9	24.0	2234.	56.	17.6	.970	.970	35.
716.59	9.761	58.5	-.44	18.09	.85	16.1	3	31.4	19.6	23.6	2222.	56.	17.6	.970	.970	35.
717.58	9.777	58.1	-.59	19.36	.98	16.1	3	30.9	15.3	18.9	2207.	45.	18.4	.970	.970	31.
718.57	9.793	57.7	-.59	19.56	.99	16.1	3	30.4	14.9	18.5	2192.	44.	18.5	.970	.970	31.
719.57	9.809	57.3	-.59	19.75	.99	16.1	3	30.0	14.6	18.1	2177.	44.	18.5	.970	.970	31.
720.58	9.825	57.1	-.29	17.74	.76	16.1	3	29.7	22.2	26.3	2170.	64.	17.0	.970	.970	37.
721.58	9.841	56.9	-.44	18.73	.86	16.1	3	29.4	18.0	21.8	2158.	53.	17.8	.970	.970	34.
722.58	9.856	56.5	-.44	18.85	.86	16.1	3	29.0	17.7	21.4	2146.	52.	17.9	.970	.970	33.
723.58	9.872	56.2	-.44	18.97	.87	16.1	3	28.7	17.5	21.1	2135.	52.	17.9	.970	.970	33.
724.58	9.887	55.5	-1.03	26.78	2.99	16.1	3	27.9	1.9	4.3	2108.	11.	21.7	.970	.970	19.
725.58	9.903	54.6	-1.32	38.36	99.99	16.1	3	27.7	-5.1	-3.2	1889.	-9.	23.3	1.065	.939	12.
726.56	9.918	54.1	-.73	22.62	1.31	16.1	3	26.4	8.5	11.3	2055.	29.	19.6	.970	.970	25.
727.55	9.932	53.7	-.59	21.41	1.06	16.2	3	26.0	11.6	14.7	2040.	35.	19.0	.970	.970	28.
728.56	9.947	53.2	-.73	22.93	1.36	16.2	3	25.5	7.8	10.6	2021.	27.	19.7	.970	.970	25.
729.56	9.962	52.9	-.44	20.54	.89	16.2	3	25.2	14.6	17.9	2009.	47.	18.3	.970	.970	31.
730.55	9.977	52.5	-.59	21.90	1.09	16.2	3	24.8	10.7	13.6	1994.	36.	19.1	.970	.970	27.
731.55	9.991	52.0	-.73	23.33	1.43	16.2	3	24.3	7.0	9.6	1975.	26.	19.9	.970	.970	24.

DRIVING SCHEDULE (HDC002) USING ROUTE (LEVEL)

SEC.	MILES	MPH	ACC	INST MPG	BSFC	CUM MPG	GEAR	RDLD	HPW	HPE	RPM	TORQ	VAC	SR	ETA	PCT.WOT
732.55	10.005	51.3	-1.03	32.93	7.92	16.2	3	23.6	-.4	1.2	1744.	4.	22.5	1.084	.923	15.
733.55	10.020	50.5	-1.17	37.35	99.99	16.2	3	23.3	-3.6	-1.9	1706.	-6.	23.1	1.091	.917	12.
734.55	10.034	49.5	-1.47	58.71	99.99	16.2	3	23.3	-9.8	-7.8	1659.	-25.	24.1	1.100	.909	5.
735.55	10.047	48.5	-1.47	62.09	99.99	16.2	3	22.5	-10.0	-8.0	1613.	-26.	24.2	1.108	.902	4.
736.55	10.060	47.6	-1.32	50.73	99.99	16.2	3	21.3	-7.3	-5.5	1572.	-18.	23.7	1.116	.896	7.
737.55	10.074	46.8	-1.17	42.65	99.99	16.3	3	20.2	-4.7	-3.0	1536.	-10.	23.2	1.123	.890	9.
738.55	10.086	45.6	-1.76	94.44	99.99	16.3	3	20.9	-11.9	-9.8	1479.	-35.	24.5	1.136	.880	0.
739.55	10.099	44.2	-2.05	91.86	99.99	16.3	3	20.5	-10.9	-8.9	1410.	-33.	24.3	1.155	.866	0.
740.56	10.111	42.5	-2.49	88.69	99.99	16.3	3	20.3	-9.8	-7.9	1329.	-31.	24.1	1.178	.849	0.
741.56	10.122	40.2	-3.37	94.33	99.99	16.3	3	20.7	-8.4	-6.6	1225.	-26.	23.8	1.210	.827	0.
742.56	10.133	36.7	-5.13	78.34	99.99	16.3	3	21.9	-3.6	-2.9	1012.	-15.	22.4	1.337	.748	0.
743.56	10.143	32.0	-6.89	68.99	99.99	16.4	3	21.6	-2.5	-1.3	900.	-7.	21.6	1.310	.763	0.
744.56	10.151	28.0	-5.87	60.35	99.99	16.4	3	16.5	-2.1	-1.3	900.	-7.	21.6	1.147	.872	0.
745.56	10.158	24.5	-5.13	52.91	99.99	16.4	3	13.0	-1.9	-1.3	900.	-7.	21.6	1.003	.997	0.
746.56	10.165	21.5	-4.40	46.34	99.99	16.4	3	10.1	-1.7	-1.3	900.	-7.	21.6	.880	.880	0.
747.56	10.170	19.5	-2.93	42.03	99.99	16.4	3	7.3	-1.5	-1.3	900.	-7.	21.6	.799	.799	0.
748.57	10.176	17.4	-3.08	37.51	99.99	16.4	2	6.5	-2.0	-1.3	900.	-7.	21.6	1.083	.923	0.
749.58	10.180	15.1	-3.37	32.55	99.99	16.4	2	5.8	-1.7	-1.3	900.	-7.	21.6	.940	.940	0.
750.58	10.184	12.4	-3.96	26.73	99.99	16.4	2	5.1	-1.4	-1.3	900.	-7.	21.6	.772	.772	0.
751.58	10.187	9.7	-3.96	20.91	99.99	16.4	2	3.9	-1.1	-1.3	900.	-7.	21.6	.604	.604	0.
752.59	10.189	7.0	-3.96	15.09	99.99	16.4	1	2.8	-1.3	-1.3	900.	-7.	21.6	.722	.722	0.
753.59	10.191	5.0	-2.93	10.78	99.99	16.4	1	1.7	-.9	-1.3	900.	-7.	21.6	.516	.516	0.
754.59	10.192	3.3	-2.49	7.11	99.99	16.4	1	1.0	-.6	-1.3	900.	-7.	21.6	.341	.341	0.
755.59	10.193	2.0	-1.91	4.31	99.99	16.4	1	.5	-.4	-1.3	900.	-7.	21.6	.206	.206	0.
756.59	10.193	.7	-1.91	1.51	99.99	16.4	1	.2	-.1	-1.3	900.	-7.	21.6	.072	.072	0.
757.58	10.193	0.0	-1.03	0.00	6.86	16.4	1	0.0	.0	.7	900.	4.	21.1	-.000	-.000	5.
758.58	10.193	0.0	0.00	0.00	6.86	16.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
759.58	10.193	0.0	0.00	0.00	6.86	16.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.
760.58	10.193	0.0	0.00	0.00	6.86	16.4	1	0.0	0.0	.7	900.	4.	21.1	0.000	0.000	5.

SHIFT FREQUENCY DATA 10/01/76

TOTAL SHIFTS = 6 SHIFTS PER MILE = .6 NUMB GEARS = 3

GEAR INTO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
UPSHIFTS	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOWNSHIFTS	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICLE PERFORMANCE SIMULATION 10/01/76
****

RUN TITLE = CASE B(A) GMC 350, AUTO, 5000-LB CLASS, FTP HIWAY, 3.08 IN

SCHEDULE AVERAGES

FUEL ECONOMY	=	16.37 MPG
WORK PER MILE	=	.59 HP-HR/MI
AVG SP FUEL CONS	=	.64 LBS/HP-HR
AVG SPEED	=	48.2 MPH

TOTALS

VARIABLE	(UNITS)	TOTAL AMOUNT	PERCENT OF TOTAL (CRUISE	ACCEL	DECEL	IDLE)	(BRAKES)
TIME	(SECS)	760.6	16.3	44.1	38.8	.8	
DISTANCE	(MILES)	10.2	17.9	43.3	38.8	0.0	
ENERGY	(HP-HR)	5.97	17.4	61.2	21.7	.6	
FUEL	(LBS)	3.85	17.5	52.9	29.4	.2	.9

ENERGY SUPPLY

		HP-HR
(1)	ENGINE =	5.97
(2)	KINETIC ENERGY =	0.00
(3)	POTENTIAL ENERGY =	0.00
(4)	ROTATING INERTIA =	0.00

BREAKDOWN

		PERCENT ENGINE HP-HR
(1)	ACCESSORIES =	7.46
(2)	TORQUE CONVERTER =	5.84
(3)	GEAR BOX =	.94
(4)	DIFFERENTIAL =	3.56
(5)	TIRE SLIP =	5.98
	3+4+5 =	9.58
	2+3+4+5 =	15.42
(6)	AERODYNAMIC DRAG =	34.64
(7)	ROLLING RESIST =	37.61
	SUBTOTAL 1- 7 =	95.12
(8)	BRAKES =	3.60
(9)	ENGINE MOTORING =	1.30
	SUBTOTAL 1- 9 =	100.02
(10)	OTHER ENERGY =	0.00
	TOTAL 1-10 =	100.02

ADDITIONAL RUN DATA

DRIVING SCHEDULE NAME	= HD0002	ROUTE NAME	= LEVEL
VEHICLE NAME	= V5000B	ENGINE NAME	= GM350M
CONVERTER NAME	= CODY2	SHIFT LOGIC NAME	= TEST2
WEIGHT (LBS)	= 5000.	STROKE (INCHES)	= 3.48
DISPLACEMENT (CU IN)	= 349.8	REAR AXLE RATIO	= 3.08
WIND VELOCITY (MPH)	= 0.0	FUEL DENSITY (LB/GAL)	= 6.18
AERO DRAG = 24.20 , .48		TIRES = 12.00 , .09 , .93	

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          S C O P E   L O A D   M A P                          LOADER VERSION 1.0   10/01/76  15.49.01   PAGE   1
PROGRAM   WILL BE ENTERED AT  VSIMI       ( 37412)             SCM LENGTH     51334          LCM LENGTH        0

          BLOCK          ADDRESS     LENGTH

           /SCDATA/        100        37201
           /PARM/        37301            2
          VSIMI          37303          130
           /RESULT/      37433           13
           /CDCDATA/     37446          675
          AIR            40343          155
          CYCLE          40520          107
          CYHEAD         40627           53
          FIND           40702           31
          ICARB          40733           54
          IDIST          41007           54
          PCISUM         41063           36
          SPARK          41121           67
          TOUT           41210           60
           /SKALE/       41270            5
          CARDCD         41275         1217
          SCALC          42514           65
          SCALE          42601          331
          ABORT          43132           74
          ABORT1         43226           21
          ABORT2         43247           25
          ABORT3         43274           26
          ABORT4         43322           26
          ABORT5         43350           27
          ABORT6         43377           27
          ABORT7         43426           23
          ABORTB         43451           25
          ABORT9         43476           26
          ABORTA         43524           26
          HTOMIN         43552           14
           /OB.IO./      43566          120
          FORSYS=        43706          624
          BACKSP=        44532           46
           /IOCON./      44600           42
          COMIO=         44642           58
          ENDFIL=        44717           45
          EOF            44764           15
          FLTIN=         45001          153
          FLTOUT=        45154          313
          FMTAP=         45467          365
          GETFIT=        46054           35
          INCOM=         46111          247
           /IO.BUF./     46360          227
          INFR=          46607          313
          INPC=          47122          200
          KODER=         47322          471
          KPAKER=        50013          442
          OUTB=          50455          207
          OUTC=          50664          173
          OUTCOM=        51057          170
          CLOCK=         51247           50
          GOTOER=        51317           14
          SYSAID=        51333            1
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PROGRAM VSIMI, TO ADD AIR FLOW INFORMATION TO OUTPUT FROM DOT PROGRAM VEHSIM
RUN ON 10/01/76 AT 15.49.07

THE CARBURETOR PART NAME IS GM350
ENGINE DISPLACEMENT IS 350.00000 CUBIC INCHES
CARBURETOR COMMENTS ARE REFERENCE VEHICLE GMC 350 CID 8 CYL-2BBL

CARBURETOR DATA ARE

SPEED POINT	RPM	1034.483									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
CARB DATA	AFR	15.000	15.000	15.500	15.900	15.700	15.250	14.000	12.800	12.500	13.000
SPEED POINT	RPM	1206.897									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
CARB DATA	AFR	15.000	15.000	16.200	16.400	16.000	15.200	13.900	12.800	12.600	13.000
SPEED POINT	RPM	1379.310									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	104.000
CARB DATA	AFR	15.400	15.400	16.500	16.500	16.200	15.300	14.100	13.100	12.700	13.200
SPEED POINT	RPM	1724.138									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	113.000
CARB DATA	AFR	15.900	15.900	16.300	16.300	16.200	15.750	15.100	14.250	13.400	13.300
SPEED POINT	RPM	2068.966									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	114.000
CARB DATA	AFR	16.250	16.250	15.800	15.800	15.750	15.700	15.300	14.700	13.700	13.300
SPEED POINT	RPM	2413.793									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	112.000
CARB DATA	AFR	16.000	16.000	16.000	15.700	15.700	15.600	15.250	14.700	13.800	13.500
SPEED POINT	RPM	2758.621									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	109.000
CARB DATA	AFR	16.000	16.000	16.000	15.900	15.700	15.700	15.400	14.700	13.700	13.700
SPEED POINT	RPM	3103.448									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	103.000
CARB DATA	AFR	16.000	16.000	16.000	16.000	16.000	16.000	15.400	14.500	13.700	13.000
SPEED POINT	RPM	3448.276									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
CARB DATA	AFR	16.000	16.000	16.000	16.000	16.000	16.000	15.400	14.100	13.600	13.000
SPEED POINT	RPM	3793.103									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	92.000
CARB DATA	AFR	16.000	16.000	16.000	16.000	16.000	16.000	15.000	13.800	13.000	13.000

THE DISTRIBUTOR PART NAME IS GM350
DISTRIBUTOR COMMENTS ARE REFERENCE VEHICLE GMC 350 CID 8 CYL-2BBL

DISTRIBUTOR DATA ARE

SPEED POINT	RPM	1034.483									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
DIST DATA	DEG	21.000	21.000	20.900	19.400	16.800	13.500	10.000	6.600	4.400	4.000
SPEED POINT	RPM	1206.897									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	101.000
DIST DATA	DEG	22.400	22.400	23.000	22.000	19.300	16.000	12.400	9.200	7.400	7.000
SPEED POINT	RPM	1379.310									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	105.000
DIST DATA	DEG	24.200	24.200	25.100	24.100	22.000	19.000	15.300	12.200	10.000	8.700
SPEED POINT	RPM	1724.138									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	112.000
DIST DATA	DEG	29.000	29.000	29.900	29.600	28.000	25.700	22.300	18.700	15.200	13.000
SPEED POINT	RPM	2068.966									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	114.000
DIST DATA	DEG	33.200	33.200	34.200	34.100	32.800	30.500	27.200	23.600	20.000	16.600
SPEED POINT	RPM	2413.793									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	112.000
DIST DATA	DEG	36.000	36.000	36.400	35.900	34.300	32.000	28.900	25.200	21.900	18.500
SPEED POINT	RPM	2758.621									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	108.000
DIST DATA	DEG	37.000	37.000	38.200	37.800	36.200	33.800	30.300	26.900	23.600	20.600
SPEED POINT	RPM	3103.448									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	103.000
DIST DATA	DEG	38.900	38.900	39.500	38.500	36.500	34.000	31.000	28.000	25.000	22.000
SPEED POINT	RPM	3448.276									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
DIST DATA	DEG	40.700	40.700	40.800	39.200	36.500	34.000	31.200	28.700	26.000	23.500
SPEED POINT	RPM	3793.103									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	92.000
DIST DATA	DEG	42.000	42.000	42.200	40.300	38.000	34.900	31.700	28.400	25.400	25.300

THE ABOVE ENGINE MAPS HAVE BEEN USED AS INPUT, WITHOUT SCALING

SAMPLED DATA FROM DRIVING CYCLE (TAPE19)

CUMT	CUMD	CUMFU	HPE	RPME	TURQE	VAC	PCT THR	SEG
1.0000	0.0000	.0013	.6885	900.0000	4.0175	21.0982	4.6429	1
50.1315	.4113	.2145	39.1159	1677.1554	122.4912	11.6649	56.3512	50
99.7392	1.0441	.4616	36.6573	1921.1213	100.2144	14.0056	48.5392	100
149.5422	1.6841	.6898	27.8667	1744.7378	83.9444	15.5473	42.9955	150
199.3989	2.3068	.9002	13.4849	1648.9250	42.9508	18.8179	26.6273	200
249.0926	2.9266	1.1273	24.4614	1853.0516	69.3297	16.5880	36.1186	250
299.2720	3.5113	1.3052	70.0003	2209.9793	137.7436	6.2322	78.0068	300
349.0926	4.2056	1.6424	32.6544	2246.4375	76.2756	15.9598	41.5278	350
398.9471	4.9958	1.9433	53.2237	2243.2667	124.3317	11.8693	57.2982	400
448.4817	5.7995	2.2597	31.6446	2218.5186	74.9136	16.0643	40.9702	450
498.0313	6.5759	2.5450	27.4837	2087.6074	69.1433	16.5142	38.5817	500
547.6098	7.3351	2.8329	24.6346	2113.4660	61.2175	17.1706	36.0685	550
597.3368	8.0446	3.0656	13.6586	1823.3026	39.3434	19.0280	27.8955	600
646.8469	8.7300	3.3374	47.2761	2017.8647	123.0531	11.8597	56.1240	650
696.6409	9.4445	3.6107	44.2105	2128.5781	109.0638	13.1810	51.8881	700
746.5575	10.1647	3.8331	-1.2634	950.0000	-7.3750	21.6000	0.0000	750

SAMPLED RESULTS FROM VSIMI COMPUTATIONS

BMEP	FUINC (LB)	AIRINC (LB)	AFRAT	ADV (DEG)	FWAFR	FWADV (DEG)	CUMAIR (LB)	CUMFU (LB)	FLOW (LB/MIN)	SEG
1.7316	.0013	.0197	15.0000	21.0000	15.0000	21.0000	.0197	.0013	1.1802	1
52.7762	.0057	.0909	16.0580	26.5175	15.8674	23.9666	3.4031	.2145	5.4691	50
43.1781	.0057	.0907	15.9917	31.7166	15.9947	27.3277	7.3836	.4616	5.4425	100
36.1680	.0048	.0778	16.2701	29.9792	15.9353	27.9584	10.9925	.6898	4.6162	150
18.5056	.0035	.0559	16.0260	28.3358	15.9674	28.3269	14.3733	.9002	3.3157	200
29.8712	.0046	.0747	16.1125	31.6015	15.9913	28.5973	18.0266	1.1273	4.4803	250
80.8907	.0124	.1909	14.6146	23.9446	15.9601	28.5926	20.8306	1.3052	10.8676	300
32.8639	.0060	.0951	15.8594	35.2568	15.9064	28.9447	26.1255	1.6424	5.8361	350
53.5692	.0076	.1196	15.6969	32.7590	15.8942	29.8102	30.8873	1.9433	7.2181	400
32.2771	.0059	.0929	15.8571	35.0919	15.8811	30.5076	35.8864	2.2597	5.7303	450
29.7969	.0052	.0827	15.8153	34.3088	15.8758	30.9701	40.4046	2.5450	5.0756	500
26.3760	.0053	.0844	15.8968	34.3167	15.8634	31.3172	44.9536	2.8329	5.0085	550
16.9514	.0038	.0610	16.0547	30.5306	15.8767	31.4162	48.6713	3.0656	3.6572	600
53.0163	.0069	.1083	15.7837	31.3945	15.8664	31.3231	52.9522	3.3374	6.4708	650
46.0995	.0066	.1045	15.7538	33.4649	15.8675	31.4187	57.2928	3.6107	6.2678	700
-3.1776	.0008	.0119	15.0000	21.0000	15.8647	31.5101	60.8111	3.8331	.7162	750

AT THE END OF THE CYCLE, AFTER 765 SEGMENTS

THE FINAL FUEL-WEIGHTED AIR-TO-FUEL RATIO IS 15.86
THE FINAL FUEL-WEIGHTED SPARK ADVANCE IS 31.48 DEGREES

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S C O P E   L O A D   M A P                    LOADER VERSION 1.0   10/01/76  15.49.06   PAGE   1
PROGRAM  WILL BE ENTERED AT  VSIMI      ( 37412)     SCM LENGTH     51334          LCM LENGTH        0

BLOCK          ADDRESS     LENGTH

 /SGDATA/        100        37201
 /PARM/        37301            2
VSIMI          37303          130
 /RESULT/      37433           13
 /CODATA/      37446          675
AIR            40343          155
CYCLE          40520          107
CYHEAD         40627           53
FIND           40702           31
ICARB          40733           54
IDIST          41007           54
PCISUM         41063           36
SPARK          41121           67
TOLT           41210           60
 /SKALE/       41270            5
CARDCD         41275         1217
SCALC          42514           65
SCALE          42601          331
ABORT          43132           74
ABORT1         43226           21
ABORT2         43247           25
ABORT3         43274           26
ABORT4         43322           26
ABORT5         43350           27
ABORT6         43377           27
ABORT7         43426           23
ABORT8         43451           25
ABORT9         43476           26
ABORTA         43524           26
HTOMIN         43552           14
 /GB.IO./      43566          120
FORSYS=        43706          624
BACKSP=        44532           46
 /IOCON./      44600           42
COMIO=         44642           55
ENDFIL=        44717           45
EOF            44764           15
FLTIN=         45001          153
FLTOUT=        45154          313
FMTAP=         45467          365
GETFIT=        46054           35
INCOM=         46111          247
 /IO.BUF./     46360          227
INPB=          46607          313
INPC=          47122          200
KODER=         47322          471
KRAKER=        50013          442
OUTB=          50455          207
OUTC=          50664          173
OUTCOM=        51057          170
CLOCK=         51247           50
GOTOER=        51317           14
SYSAID=        51333            1
```

PROGRAM VSIMI, TO ADD AIR FLOW INFORMATION TO OUTPUT FROM DOT PROGRAM VEHSIM
RUN ON 10/01/76 AT 15.49.01

THE CARBURETOR PART NAME IS GM350
ENGINE DISPLACEMENT IS 350.00000 CUBIC INCHES
CARBURETOR COMMENTS ARE REFERENCE VEHICLE GMC 350 CID 8 CYL-2BBL

CARBURETOR DATA ARE

SPEED POINT	RPM	1034.483									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
CARB DATA	AFR	15.000	15.000	15.500	15.900	15.700	15.250	14.000	12.800	12.500	13.000
SPEED POINT	RPM	1206.897									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
CARB DATA	AFR	15.000	15.000	16.200	16.400	16.000	15.200	13.900	12.800	12.600	13.000
SPEED POINT	RPM	1379.310									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	104.000
CARB DATA	AFR	15.400	15.400	16.500	16.500	16.200	15.300	14.100	13.100	12.700	13.200
SPEED POINT	RPM	1724.138									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	113.000
CARB DATA	AFR	15.900	15.900	16.300	16.300	16.200	15.750	15.100	14.250	13.400	13.300
SPEED POINT	RPM	2068.966									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	114.000
CARB DATA	AFR	16.250	16.250	15.800	15.300	15.750	15.700	15.300	14.700	13.700	13.300
SPEED POINT	RPM	2413.793									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	112.000
CARB DATA	AFR	16.000	16.000	16.000	15.700	15.700	15.600	15.250	14.700	13.800	13.500
SPEED POINT	RPM	2758.621									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	109.000
CARB DATA	AFR	16.000	16.000	16.000	15.800	15.700	15.700	15.400	14.700	13.700	13.700
SPEED POINT	RPM	3103.448									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	103.000
CARB DATA	AFR	16.000	16.000	16.000	16.000	16.000	16.000	15.400	14.500	13.700	13.000
SPEED POINT	RPM	3448.276									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
CARB DATA	AFR	16.000	16.000	16.000	16.000	16.000	16.000	15.400	14.100	13.000	13.000
SPEED POINT	RPM	3793.103									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	92.000
CARB DATA	AFR	16.000	16.000	16.000	16.000	16.000	16.000	15.000	13.900	13.000	13.000

THE DISTRIBUTOR PART NAME IS GM350
DISTRIBUTOR COMMENTS ARE REFERENCE VEHICLE GMC 350 CID 8 CYL-2BBL

DISTRIBUTOR DATA ARE

SPEED POINT	RPM	1034.493									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
DIST DATA	DEG	21.000	21.000	20.900	19.400	15.800	13.500	10.000	6.600	4.400	4.000
SPEED POINT	RPM	1206.897									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	101.000
DIST DATA	DEG	22.400	22.400	23.000	22.000	19.300	16.000	12.400	9.200	7.400	7.000
SPEED POINT	RPM	1379.310									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	105.000
DIST DATA	DEG	24.200	24.200	25.100	24.100	22.000	19.000	15.300	12.200	10.000	8.700
SPEED POINT	RPM	1724.138									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	112.000
DIST DATA	DEG	29.000	29.000	29.900	29.600	28.000	25.700	22.300	18.700	15.200	13.000
SPEED POINT	RPM	2068.966									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	114.000
DIST DATA	DEG	33.200	33.200	34.200	34.100	32.800	30.500	27.200	23.600	20.000	16.600
SPEED POINT	RPM	2413.793									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	112.000
DIST DATA	DEG	36.000	36.000	36.400	35.900	34.300	32.000	28.900	25.200	21.900	18.500
SPEED POINT	RPM	2759.621									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	108.000
DIST DATA	DEG	37.000	37.000	38.200	37.800	36.200	33.600	30.300	26.900	23.600	20.600
SPEED POINT	RPM	3103.448									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	103.000
DIST DATA	DEG	38.900	38.900	39.500	38.500	36.500	34.000	31.000	28.000	25.000	22.000
SPEED POINT	RPM	3448.276									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	97.000
DIST DATA	DEG	40.700	40.700	40.800	39.200	36.800	34.000	31.200	28.700	26.000	23.500
SPEED POINT	RPM	3793.103									
LOAD POINT	BMEP	1.000	10.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	92.000
DIST DATA	DEG	42.000	42.000	42.200	40.300	38.000	34.900	31.700	28.400	25.400	25.300

THE ABOVE ENGINE MAPS HAVE BEEN USED AS INPUT, WITHOUT SCALING

SAMPLED DATA FROM DRIVING CYCLE (TAPE19)

CUMT	CUMD	CUMFU	HPE	RPME	TORQE	VAC	PCT THR	SEG
1.0000	0.0000	.0013	.6885	900.0000	4.0175	21.0882	4.6429	1
50.0210	.1439	.1168	5.1944	906.6864	30.0884	19.4167	15.4261	50
100.2701	.5024	.2631	23.1043	1365.1857	88.8845	15.1313	44.3509	100
150.3638	.6753	.3484	.6885	900.0000	4.0175	21.0882	4.6429	150
200.6858	.9182	.5692	73.1340	1980.7269	193.9187	5.5176	79.5803	200
250.6566	1.6373	.8910	20.7154	2119.5892	51.3294	17.9755	32.8353	250
300.3108	2.3659	1.1398	10.9129	1865.0866	30.7301	19.7273	25.1117	300
350.1303	2.6355	1.2045	34.8387	1460.1325	125.3127	11.4000	57.6144	350
400.1689	2.9987	1.3686	.6885	900.0000	4.0175	21.0882	4.6429	400
450.2210	3.1440	1.4989	32.5031	1401.2848	121.8212	11.8369	56.4070	450
500.2866	3.5803	1.6924	-1.2638	900.0000	-7.3750	21.6000	0.0000	500
550.3432	3.7960	1.8075	-1.2638	900.0000	-7.3750	21.6000	0.0000	550
600.0398	3.9403	1.9154	13.9399	1095.8285	56.8099	16.7573	33.9405	600
650.1086	4.0575	2.0091	32.3439	1337.1780	127.0362	11.3484	58.3890	650
700.0936	4.2291	2.1214	32.4980	1358.9353	125.5981	11.4734	57.8330	700
750.3573	4.4797	2.2662	5.2484	1079.5360	25.5339	20.2220	17.5625	750
800.1948	4.7614	2.3974	18.7892	1268.6323	77.7854	16.0317	40.0748	800
849.6915	5.1541	2.5330	30.7093	1406.0474	114.7081	12.6042	53.8115	850
899.8937	5.5370	2.6631	-.7466	900.0000	-4.3567	21.2470	1.2301	900
950.0825	5.8811	2.7733	-1.2638	900.0000	-7.3750	21.6000	0.0000	950
1000.1480	6.1493	2.9039	23.5010	1280.6081	96.3816	14.4967	47.0332	1000
1050.1322	6.2736	2.9748	.6885	900.0000	4.0175	21.0882	4.6429	1050
1100.1478	6.4819	3.0958	.6885	900.0000	4.0175	21.0882	4.6429	1100
1150.0446	6.7569	3.2126	-1.2638	900.0000	-7.3750	21.6000	0.0000	1150
1200.1073	6.8301	3.3115	21.9775	1164.0864	99.1556	13.9981	47.4992	1200
1250.2564	7.0269	3.4112	.6885	900.0000	4.0175	21.0882	4.6429	1250
1300.3947	7.2548	3.5509	21.2359	1310.1581	85.1277	15.3989	42.3855	1300
1350.4079	7.3706	3.6485	10.4512	1024.6973	53.5564	17.7812	27.4051	1350

SAMPLED RESULTS FROM VSIMI COMPUTATIONS

BMEP	FUINC (LB)	AIRINC (LB)	AFRAT	ADV (DEG)	FWAFR	FWADV (DEG)	CUMAIR (LB)	CUMFU (LB)	FLOW (LB/MIN)	SEG
1.7310	.0013	.0197	15.0000	21.0000	15.0000	21.0000	.0197	.0013	1.1802	1
12.9638	.0019	.0288	15.0741	20.9852	15.4508	21.6496	1.8053	.1168	1.7643	50
38.2965	.0040	.0653	16.4890	24.0983	15.6741	22.2280	4.1235	.2631	3.9027	100
1.7310	.0013	.0197	15.0000	21.0000	15.6547	22.2709	5.4547	.3484	1.1802	150
83.5513	.0119	.1692	14.2434	21.0768	15.3407	22.0368	8.7323	.5692	10.1486	200
22.1157	.0050	.0804	15.9807	34.1635	15.4565	25.2954	13.7714	.8910	4.8261	250
13.2403	.0037	.0591	16.0516	30.8692	15.5499	26.8828	17.7241	1.1398	3.5647	300
53.9919	.0046	.0738	15.8828	22.2742	15.5386	26.6428	18.7163	1.2045	4.4253	350
1.7310	.0013	.0197	15.0000	21.0000	15.5566	26.2653	21.2904	1.3686	1.1802	400
52.4876	.0044	.0698	15.9833	21.6472	15.5165	25.8077	23.2577	1.4989	4.1890	450
-3.1776	.0009	.0119	15.0000	21.0000	15.4957	25.4726	26.2255	1.6924	.7162	500
-3.1776	.0009	.0121	15.0000	21.0000	15.5107	25.2445	28.0359	1.8075	.7162	550
28.7855	.0030	.0479	15.7036	21.6381	15.5143	25.0465	29.7153	1.9154	2.7921	600
54.7344	.0043	.0682	15.7366	19.8852	15.5132	24.8731	31.1676	2.0091	4.0859	650
54.1148	.0046	.0724	15.8109	20.4319	15.5209	24.7098	32.9254	2.1214	4.3513	700
11.0015	.0022	.0325	15.0342	21.3700	15.5433	24.5328	35.2244	2.2662	1.9297	750
33.5144	.0036	.0581	16.3525	23.4005	15.5513	24.4337	37.2829	2.3974	3.4589	800
49.4228	.0046	.0744	16.2164	22.5842	15.5621	24.3539	39.4196	2.5330	4.4758	850
-1.8771	.0010	.0152	15.0000	21.0000	15.5758	24.2635	41.4803	2.6631	.9101	900
-3.1776	.0009	.0119	15.0000	21.0000	15.5738	24.1569	43.1914	2.7733	.7162	950
41.5267	.0041	.0672	16.3882	22.5248	15.5757	24.0578	45.2299	2.9039	3.7894	1000
1.7310	.0013	.0197	15.0000	21.0000	15.5682	23.9728	46.3128	2.9748	1.1802	1050
1.7310	.0008	.0121	15.0000	21.0000	15.5714	23.9186	48.0501	3.0858	.7273	1100
-3.1776	.0008	.0121	15.0000	21.0000	15.5764	23.8345	50.0411	3.2126	.7162	1150
42.7219	.0034	.0556	16.1805	20.6263	15.5632	23.7461	51.5368	3.3115	3.3175	1200
1.7310	.0013	.0197	15.0000	21.0000	15.5621	23.6819	53.0854	3.4112	1.1802	1250
36.6779	.0037	.0610	16.4332	23.5899	15.5640	23.6023	55.2665	3.5509	3.6433	1300
23.0752	.0025	.0387	15.3269	20.9346	15.5663	23.5544	56.7933	3.6495	2.2974	1350

AT THE END OF THE CYCLE, AFTER 1372 SEGMENTS

THE FINAL FUEL-WEIGHTED AIR-TO-FUEL RATIO IS 15.56
THE FINAL FUEL-WEIGHTED SPARK ADVANCE IS 23.54 DEGREES

REFERENCE

1. A Computer Program (VEHSIM) for Highway Vehicle Fuel Economy, Performance, and Other Parameters, Power and Propulsion Branch, Mechanical Engineering Division, Transportation Systems Center, U. S. Department of Transportation, draft dated January 1975.

GLOSSARY

BMEP	(engine load) brake mean effective pressure
BSFC	brake specific fuel consumption
CDC	Control Data Corporation
CID	cubic inch displacement
DOT	U.S. Department of Transportation
DSF	displacement sensitivity factor
DT	(delta time variable)
EPA	Environmental Protection Agency
HWFET	Highway Fuel Economy Test
mpg	miles per gallon
N/V	(speed ratio)
sfc	specific fuel consumption
SRSF	speed ratio sensitivity factor
TSC	Transportation Systems Center
TSF	transmission sensitivity factor
U/W	University of Wisconsin
VEHSIM	(Vehicle Performance Simulation Computer Model)
WTSF	weight sensitivity factor

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-460/3-76-028	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Timing and Carburetion Calibrations		5. REPORT DATE October 1976
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) L. Forrest, W. Smalley, J. Clifford		8. PERFORMING ORGANIZATION REPORT NO. ATR-77(7358-01)-1
9. PERFORMING ORGANIZATION NAME AND ADDRESS The Mobile Systems Group, Environment and Energy Conservation Division, The Aerospace Corporation, El Segundo, California 90245		10. PROGRAM ELEMENT NO.
		11. CONTRACT/GRANT NO. 68-01-0417
12. SPONSORING AGENCY NAME AND ADDRESS EPA Office of Air and Waste Management, Office of Mobile Source Air Pollution Control, Emission Control Technology Division, Ann Arbor, Michigan 48105		13. TYPE OF REPORT AND PERIOD COVERED Final
		14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

This was a two-part study effort. In the first part, an evaluation was made of vehicle simulation computer programs to determine and select the best program for EPA use in conducting various analyses of automobile fuel economy and emissions effects. The programs considered were (1) a DOT simulation routine called VEHSIM, (2) a program developed by the University of Wisconsin, and (3) a program developed by The Aerospace Corporation. The DOT VEHSIM program was picked primarily because it provides exceptional flexibility and ease of operation, and because it appeared to be readily adaptable to modifications required for the analysis of timing and carburetion calibrations in part two of this study. The latter effort entailed the determination and calculation of factors representing the fuel economy influence of ignition timing and carburetor calibration differences in certification test vehicles. Using the VEHSIM program with auxiliary programs VSIMI and VSIMII, specific calculations were made for distributor and carburetor calibration curves representing equipment in 1976 model year cars.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
• Vehicle Simulation Computer Programs • Fuel Economy Effects of Ignition Timing and Carburetion Calibrations	Fuel Economy Regression Analysis	13F

18. DISTRIBUTION STATEMENT Unlimited	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

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