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EXHAUST EMISSIONS FROM VEHICLES IN DEMAND-RESPONSIVE SERVICE

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

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by
John A. Gunderson
Olson Laboratories, Inc.
421 East Cerritos Ave.
Anaheim, California 92805

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EPA Task Officer: Charles J. Domke

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Office of Air and Waste Management
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FOREWORD

Demand-responsive service is a term applied to a class of transportation service provided to the public. Demand-responsive transportation service is intended to attract riders from those portions of the population that customarily use a personal automobile, or have none. This project relates to the fulfillment of the Emission Control Technology Division (ECTD) responsibilities in characterization of emissions from presently unexplored emissions sources as well as in basic emission factor efforts.

ABSTRACT

This report describes a study performed by Olson Laboratories, Inc. in which 11 1976 and 1977 demand-responsive service vehicles were tested to measure exhaust emissions. Each vehicle was exhaust emission tested using the Federal Test Procedure for Light-Duty Vehicles; the Surveillance Driving Sequence, including steady-state modes; and the AA-1 Urban Bus Cycle. Each vehicle was run at "typical" inertia loads for all test procedures and "fully loaded" for the AA-1 cycle. Emission data collected and reported will be used by the emission factors group of ECTD to estimate emissions inventories for this class of vehicles.

C O N T E N T S

C O N T E N T S (C O N T ' D)

F I G U R E S

T A B L E S

Section 1

INTRODUCTION AND SUMMARY

This final report is submitted by Olson Laboratories, Inc., to the Environmental Protection Agency (EPA), to document the conduct and findings of Task Order 3 of Contract No. 68-03-2411.

A total of 11 demand-reponsive vehicles were tested using the FTP followed by the Ann Arbor (AA-1) Bus Test Procedure and the EPA modal exhaust emission test procedure. Each vehicle was checked with respect to its engine condition and, in general, was not at manufacturer's specification.

FTP emission results were from three to six times higher than the standards for light-duty passenger vehicles. The AA-1 emission results closely approximated the bag 2 (cold stabilized) results of the FTP. This was to be expected as both are basically hot-start tests with nearly equal average speeds and cycle times.

Section 2

BACKGROUND AND PROJECT DESCRIPTION

2.1 BACKGROUND

Demand-responsive service is a term applied to a class of service provided to the public. Several different types of passenger vehicles are used depending upon the type of service. These services are usually provided by, but not confined to, municipalities for the benefit of those served. The vehicles range in size from small passenger vans to buses carrying 25 passengers. The operations of these vehicles deviate to a greater or lesser degree, depending upon the circumstances, from those of larger (40 passenger and greater) buses that operate on fixed routes with fixed headways and pre-determined time schedules.

Demand-responsive systems are still in a developmental state and, hence, are not easily characterized by a single generic term to describe their operations. There are four widely-accepted terms now in use to describe types of demand-responsive service. These terms are "route deviation," "many-to-one," "many-to-few," and "many-to-many." These terms will be dealt with in greater detail later in this report. In addition to the four accepted types of service, there are hybrid types of service that evolve to accomodate a given set of circumstances. There are about 80 to 100 demand-responsive systems operated by municipalities or transportation authorities in the United States, and about 20 of them are in the State of Michigan.

Demand-responsive transportation service is intended to attract riders from that portion of the population that customarily uses a personal automobile to go to and from work, shopping, etc. These systems are frequently characterized by door-to-door service, although such service is not usually on an exclusive basis. The obvious intent of the service is to reduce congestion on the streets, to reduce the emission of noxious exhaust pollutants to the atmosphere, and to conserve energy in the form of reduced motor fuel use. An equally important goal is to provide persons of families of limited economic resources, or very elderly people, with a transportation service which approaches that of taxi service at a fraction of the price. Specially-equipped vehicles are used to provide service to handicapped persons.

With the increasing emphasis on mass transit systems to reduce the consumption of gasoline, the number and impact of demand-responsive systems should increase within metropolitan areas. The number of operative systems is expected to grow substantially from the approximately 100 presently in use. In addition to the conventional demand-responsive service offered by municipalities, the same kinds of vehicles are used as shuttle buses by rental car companies, airport parking lots, hotels, etc. These services can be loosely classified as demand-responsive (there being no fixed time schedule) and also occur in congested urban areas. The EPA felt that it would be beneficial to collect data that could be used to determine the reduction of emissions realized from a shift from personally-owned vehicles to the demand-responsive type of mass transit.

This project relates to the fulfillment of the Emission Control Technology Division (ECTD) responsibilities in characterization of emissions from presently unexplored emissions sources as well as in basic emission factor efforts. Informal requests for this work have been submitted to the Office of Transportation and Land Use Planning by regional EPA offices, and OPA has expressed a need for improved bus emission factors of all kinds in order to proceed with strategy option papers.

Because of socioeconomic or demographic circumstances, a demand-responsive plan for one city might be completely inadequate for another municipality. This gives rise to plans that are characterized by departure from conventional routing on a geographical basis (Figure 1), or a philosophical basis (Figure 2). A careful study of previous investigations of communities in similar circumstances would be required to select the type of system best suited for a particular area; or, peradventure, after inauguration of a system in such an area, the service experience might indicate that no one known system would suffice, but that several must be combined to meet the local needs. This diversity of system operation quickly implies that there can be no single typical or average driving cycle. A consideration of these factors indicated that design parameters should be built into this program to enable the EPA to meet any reasonable needs as they are encountered.

Demand-responsive systems have been the object of considerable investigation, but on a small scale. This is not as ambiguous as it seems, for it just means that a number of communities have instituted programs of limited scope. The literature is replete with references to, or data on, "wait time," "ride time," methods for dispatching, fares, usage by hour of day, usage by day of week, etc.; but there is little published on trip length, average speed, number of trips, average load, number of idles per mile or idles per trip, nor anything at all on exhaust emissions.

By far the most comprehensive information available is that from a pilot program (known as Dial-A-Ride) conducted in Ann Arbor, Michigan for a 1 year period starting September 1971. This program was so successful that the program was greatly expanded and is running yet, although not in the same method of operation as it was initiated. The present Ann Arbor fleet numbers 64 vehicles, of which 13 are especially equipped for the service of handicapped persons.

In the original program a total of 8,505.2 vehicle hours were recorded and the average speed (total vehicle miles divided by total vehicle hours) was 12 mph. This average speed includes standby and break time, during which periods the vehicles were idle. Actual average speed of an instrumented Ann Arbor Dial-A-Ride vehicle, while in service, has been recorded at 14 to 16 mph. During typical tours, maximum speeds of 35 to 40 mph were reached. Average passenger riding time was 12.6 minutes and the average passenger trip length was 2 miles.

The Ann Arbor pilot system started as a trip-making pattern best characterized as "many-to-few" service during off-peak hours. (1)* The Ann Arbor

*Numbers in parenthesis denote references listed at end of report.

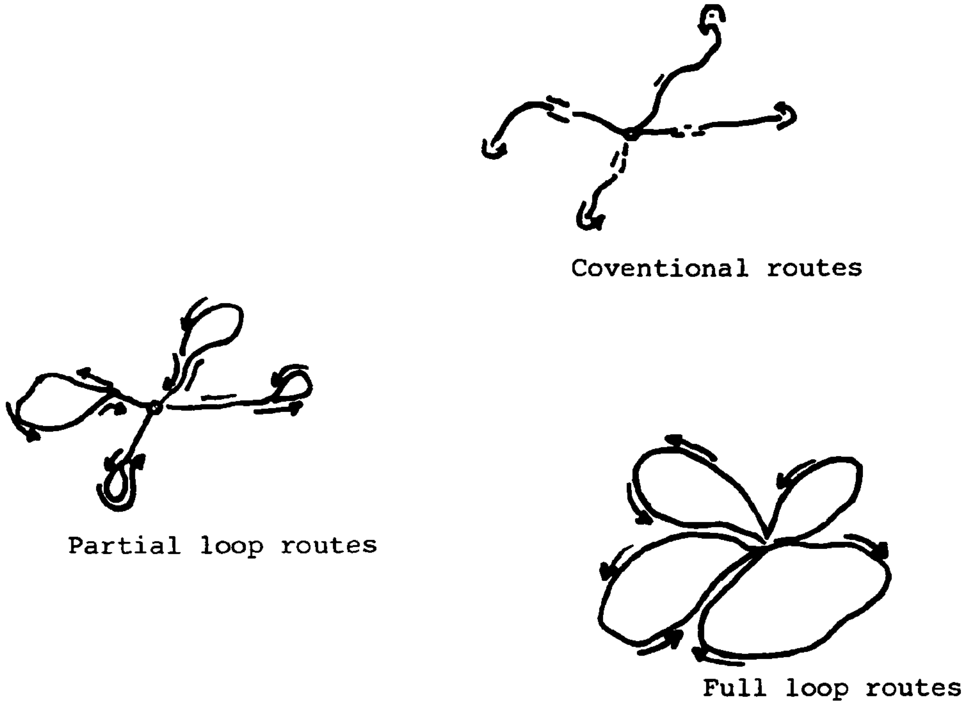


Figure 1. CONVENTIONAL VERSUS LOOP ROUTING.

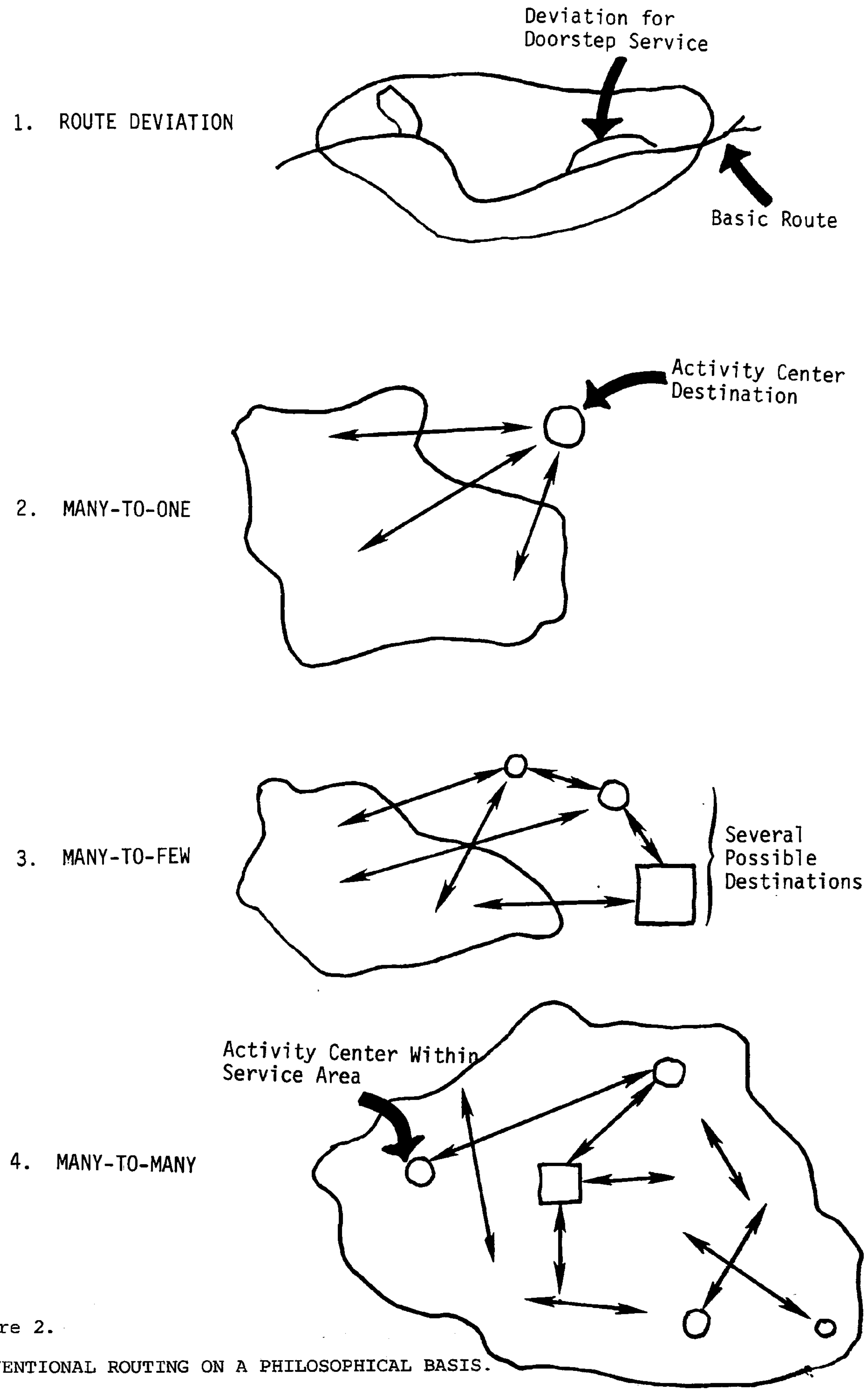


Figure 2.

CONVENTIONAL ROUTING ON A PHILOSOPHICAL BASIS.

small van fleet now largely operates on a "feeder" basis for the main bus system. In a summary profile(2) of 57 demand-responsive transportation services in North America as of May 1, 1974, the service patterns of services operated were characterized and appear below.

Many-to-many only	35
Many-to-one only	3
Many-to-few only	5
Many-to-many and many-to-one	7
Many-to-many and many-to-few	1
Other	6
	57

This shows that most operators offer many-to-many services, although a few offer either many-to-many or many-to-few service only. Some operators employ a combination of service patterns, depending on the characteristics of the market being served. The service patterns shown above can be expressed in terms more descriptive of their operation.

The following discussion details typical operating profiles and indicates performance requirements for the service uses of small bus operation in demand-responsive service. It should be stressed that because of the diverse nature of small bus operations, considerable variation from the profiles shown may exist within any one service mode. In particular, services of a fixed route nature tend to form a continuum rather than the discrete grouping outlined herein. The identified service uses of small urban buses and basic operational profiles are(3):

Source	Stops/Mile	Ratio of Running: Stopped Time	Avg. Speed* (MPH)
A. Urban Fixed Route	10	2.5:1	10
B. Core Shuttle	12	2.1:1	9
C. Line Haul Feeder	5	3.5:1	16
D. Route Deviation/ Subscription	2	6.0:1	25
E. Demand-Responsive	1	3.5:1	20 - 25
F. Special Elderly/ Handicapped	1	1.5 - 2.0:1	20 - 25

* Includes stopped time

Service characteristics and profile duty cycles for each of these classes of service are shown in Appendix A. While the EPA believes that the data presented on the service characteristics of the various routes are reliable, the typical duty cycles leave a great deal to be desired. In none of them is there a variation in the acceleration, deceleration, and cruise modes on a mode-to-mode basis. The appearance presented by these cycles is most unrealistic.

Several years ago the EPA Technology Assessment and Evaluation Branch (TAEB) developed the Ann Arbor-1 (AA-1) Urban Bus Cycle to enable evaluation of exhaust emissions from buses. The AA-1 cycle is based on a speed-versus-time trace generated, in the summer of 1971, by the TAEB by attaching a fifth wheel to one of the buses of the Ann Arbor Transportation Authority (AATA) and recording the route traversed. The cycle is not an "official" test cycle, but rather is used as an experimental tool by TAEB for comparing emissions from buses. The cycle consists of 25 trip segments and the 5.6-mile route requires 29.5 minutes to complete, for an average speed of 11 mph. The maximum speed on the cycle is 38 mph.(4)

The AA-1 cycle is quite similar to the Federal Test Procedure (FTP) in that the acceleration, deceleration, cruise, and idle modes are random in occurrence and length as contrasted to the cycles illustrated in Appendix A. Typical portions of the AA-1 cycle are shown in Figure 3.

2.2 PROJECT DESCRIPTION

The program was structured on the FTP and on the AA-1 Bus Cycle. Table B-5 of Appendix B shows that salient portions of the AA-1 cycle compare favorably with data from the Department of Transportation (DOT) Small Bus Report, No. 3. The AA-1 cycle also compares favorably with data that have been developed by Johnson et al, to characterize typical vehicle usage(5).

The Johnson paper made some generalizations on characteristic modes of vehicle operation. Among the generalizations made was an analysis of stops per mile versus average speed per trip. This enables one to compare the stops per mile in the AA-1 cycle to those indicated in the Johnson paper.

The Dial-A-Ride data indicated that the average riding time per passenger is 12.6 minutes and that an average of six passengers were carried per vehicle hour at an average speed of 12 miles per hour. Obviously stops were associated with the pickup and discharge of those passengers. The Johnson data indicated that 4.5 stops per mile were made when the average trip speed was 12 miles per hour. Taking into consideration the fact that more than one passenger might get on or off a vehicle at the same time these data were not difficult to reconcile.

The AATA operates approximately 66 passenger vans converted to transit use. These vans accomodate about 12 passengers each and have an unladen weight of about 7,000 pounds. The Southeastern Michigan Transportation Authority (SEMTA) operates a fleet of about 85 converted passenger vans. Both AATA and SEMTA expressed a desire to cooperate with the EPA by offering to provide test vehicles as needed, contigent only on operating schedules and unforeseen problems associated with the movement of buses into the custody of the contractor. Both of these agencies were cooperative at all times, but the demands for their service by the public were such that they could make vehicles available on weekends only. In some instances the vehicles they provided were not in condition conducive to testing. Worn tires, marginal brakes, substandard driveability, etc; although not widely encountered, were among the problems experienced and vehicles with these defects had to be rejected, with no suitable substitute vehicles readily available from the same sources. Because of the foregoing, ultimately, only one vehicle from each of these organizations was tested.

Early in the planning stages of the program it became evident that the quota of vehicles to be tested would be difficult to meet if we depended upon

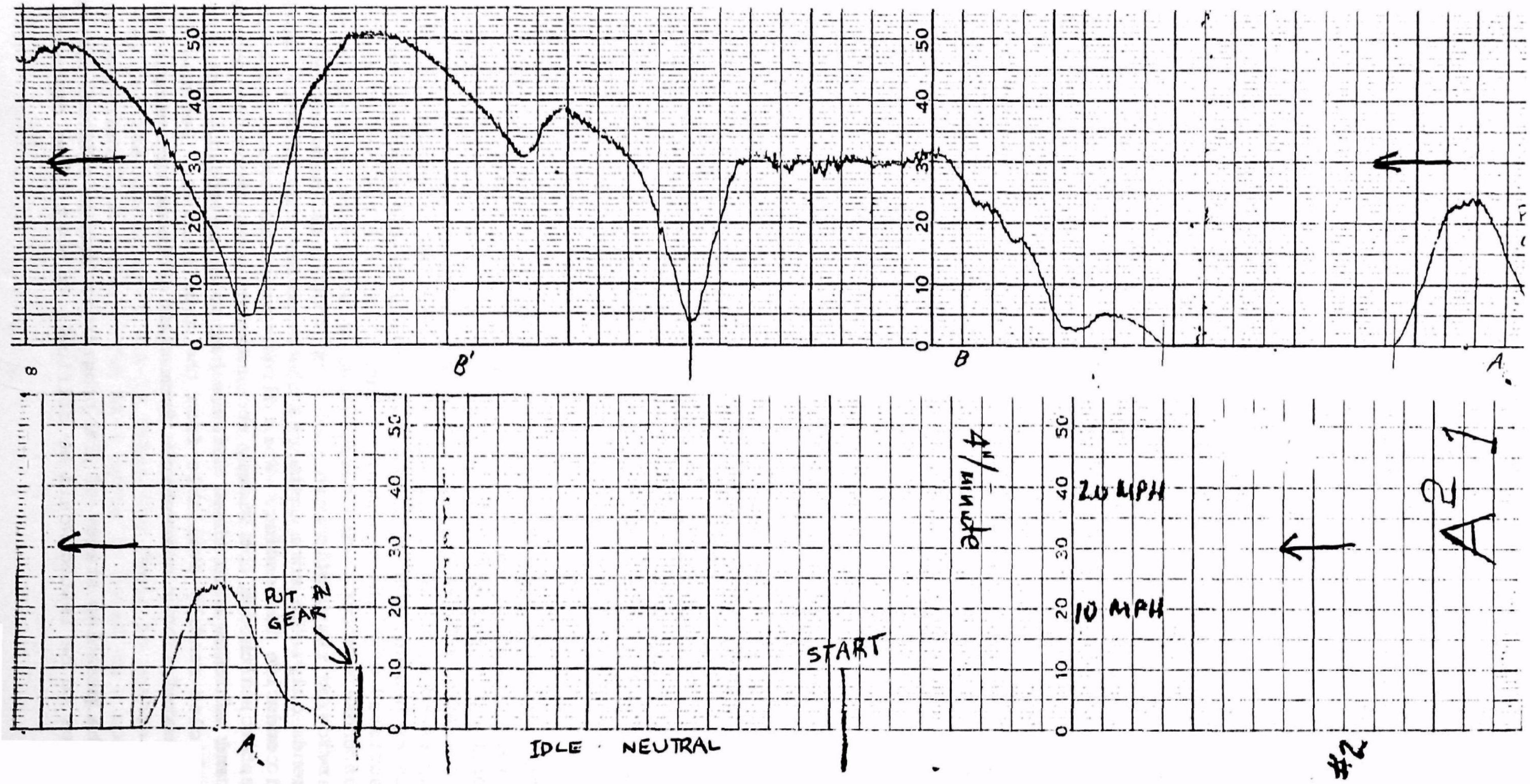


Figure 3. TYPICAL PORTIONS OF AA-1 CYCLE.

AATA and SEMTA only. There are perhaps 20 demand-responsive systems in Michigan besides AATA and SEMTA, but their operations are several orders of magnitude smaller than AATA and SEMTA and their distances from the test facility augered extreme difficulty in vehicle procurement from them. A common practice used in emission factor programs, furnishing a loan vehicle during the time of testing, was impossible because of the nature of the vehicles and the operations involved. Airport parking lot and motel operators usually provide airport shuttle service and use the same types and makes of vehicles as the transportation authorities. These services are, in effect, a form of demand-responsive transportation in their own right and so it was decided to fill out the sample with vehicles from these sources. The wisdom of this policy became quite clear as the program got under way and the magnitude of the problem of procurement of vehicles from AATA and SEMTA became increasingly evident.

The program called for the testing of each vehicle by the FTP for Light-Duty Vehicles, the Surveillance Driving Sequence, including steady-state modes, and the AA-1 Urban Bus Cycle. The AA-1 cycle has no official standing but after exhaustive study of the demand-responsive transportation literature, and particularly that published by the DOT, the EPA concluded that the AA-1 cycle had more merit than anything else that was available. Moreover, the AA-1 cycle has been used by the TAEB to test various vehicles which they have been called upon to evaluate and, hence, provides a convenient tie-in with other comparable projects. CAB personnel procured the AA-1 Bus trace used by TAEB, transcribed it on a second-by-second basis for computer applications, and had the Data Branch generate strip charts for Government-Furnished Equipment to the Contractor.

Inertia weights were determined by weighing the vehicles. The vehicles were run at "typical" inertia loads for all test procedures and "fully loaded" for the AA-1 cycle. The typical load, for this study, is considered to be the vehicle weight plus driver and 3 passengers (600 pounds) for a 9-passenger bus, and driver plus 4 passengers (750 pounds) for a 12-passenger bus. The AA-1 cycle was repeated for all vehicles in the fully loaded condition, driver plus all seats filled; that is, vehicle weight plus 1,500 and 1,950 pounds, respectively. Inertia loading was rounded up or down to give even inertia weight increments for testing in accordance with FTP procedures. Road load was determined from vehicle frontal area. Because all the vehicles were air conditioned, 10 percent was added to the road load at which the vehicles were tested.

Because the weight of some of these vehicles tested exceeded the capacity of the dynamometer in Olson's laboratory, the EPA loaned Olson a dynamometer capable of testing vehicles up to 10,000 pounds inertia weight.

Section 3

TECHNICAL DISCUSSION

3.1 PROGRAM OBJECTIVES

The objectives of the overall program were to:

1. Determine the exhaust emissions from a representative sample of demand-responsive vehicles by the cold-start 1975 FTP. Most of the vehicles used in demand-responsive systems are certified by the EPA truck exhaust emissions procedure, and the emissions determined by that schedule should not be used to compute an exhaust emission inventory because the emissions are not representative of those in street service.

2. Determine the exhaust emission from these same demand-responsive vehicles with the AA-1 cycle.

3. Determine modal emissions using the Surveillance Driving Sequence including the steady-state modes of 5, 15, 30, 45 and 60 mph.

4. Run each of the above schedules at a dynamometer load representing the average passenger load. Also run the AA-1 cycle (Item 2) at a dynamometer inertia load representing the maximum passenger load.

3.2 PROGRAM DESIGN

The testing program was performed to determine the emissions from a representative sample of types of vehicles used in demand-responsive fleets. The vehicles were procured from, but not limited to, van-type vehicles operated by the Ann Arbor Transportation Authority (AATA), the Southeastern Michigan Transportation Authority (SEMTA), Satellite Parking Company, Airways Rental Company, and All Amerian Rent-A-Car. The EPA was responsible for the initial contacts with these organizations and similar organizations as required, as well as determining the mix of vehicles to be tested. Because the EPA anticipated that the vehicles to be tested would exceed the capacity of Olson's dynamometer, the EPA furnished a medium-duty, 10,000-pound inertia weight dynamometer to Olson for the duration of the project.

The exhaust emission tests performed were:

1. The Federal Test Procedure, 40 CFR 85.075-1 to 85.075-26, inclusive. The portion of the test pertaining to evaporative emission was omitted.

2. The AA-1 Bus Test Procedure with a running hot start. The AA-1 procedure is tabulated in Appendix B.

3. Modal exhaust emissions by the Surveillance Driving Sequence (SDS) and steady-state modes of 5, 15, 30, 45, and 60 mph. The SDS procedure is tabulated in Appendix C.

The curb weight of each vehicle tested was determined by weighing the vehicle. The AA-1 Bus Test was run at two different inertia weight loadings, representing typical passenger loadings. The Federal Test Procedure and Surveillance Driving Sequence were run at one dynamometer loading representing the average passenger loading as performed in Item 2. The inertia weight loadings were furnished to Olson by the Project Officer. Road load horsepower was determined by the frontal area of each test vehicle. The calculation of the value of these dynamometer settings are prescribed in 41 CFR 86.129-79. The frontal area was measured by photographing the front of the vehicle and determining the area enclosed by the geometric projection of the basic vehicle along the longitudinal axis, which includes tires but excludes mirrors and air deflectors, onto a plane perpendicular to the longitudinal axis of the vehicle. The actual measurement was used to calculate road load horsepower setting.

Eleven vehicles identified by the Project Officer were tested. Tail pipe idle CO and HC exhaust emissions were measured from each vehicle using portable garage-type instruments. Idle rpm and basic ignition timing were also measured and reported.

3.3 TEST VEHICLE PROCUREMENT

Eleven vehicles were identified by the EPA which were typical of vehicles used in demand-responsive service. However, only two were procured from municipal demand-responsive systems because of the difficulty in procuring vehicles from these sources. These vehicles were only available from 7:00 p.m. Friday to 6:00 a.m. Monday. Hence, the other vehicles were drawn from other sources.

Table 1 identifies the vehicles tested and the corresponding inertia and road loads used.

A file containing the owner and vehicle information was established and utilized to schedule vehicles for testing. Owners were contacted by telephone. At this time, information submitted on the data card was confirmed and any missing information was obtained. Vehicles which met with program design requirements, were then scheduled for testing.

3.4 FACILITIES AND EQUIPMENT

3.4.1 Test Location

Olson Laboratories, Inc., operates a permanent facility in the Detroit metropolitan area. Testing for this contract was performed in this facility. The location of the facility is 11665 Levan Road, Livonia, Michigan 48150.

This facility contains approximately 26,000 square feet of laboratory/ office space and provides two emission test cells. However, only one was equipped with the specified equipment.

Table 1. VEHICLES TESTED

VEHICLES Number	Year	Make	DISPLACE-MENT (CID)	ODOMETER (Miles)	WEIGHT (Pounds)	ROAD LOAD[a] (HP)	INTERIA LOAD (Pounds) Low	High
1	1976	Ford	351	5,500	5,435	21.5	6,000	7,500
2	1976	Chevrolet	400	9,683	5,370	21.0	6,000	7,500
4	1976	Ford	460	10,176	5,500	23.2	6,000	7,500
5	1977	Ford	351	18,455	5,000	21.2	5,500	6,500
6	1977	Chevrolet	400	12,426	5,390	21.0	6,000	7,500
10	1976	Chevrolet	350	54,280	5,140	25.3	6,000	7,000
11	1977	Dodge	318	5,484	4,395	20.1	5,000	5,500
13	1976	Dodge	360	47,314	5,020	19.7	6,000	7,000
15	1977	Dodge	360	25,264	4,460	18.3	5,000	6,000
16	1977	Dodge	318	11,405	6,640	25.9	7,500	8,500
17	1976	Dodge	360	37,932	6,020	25.1	7,000	8,000

[a]Includes 10 percent for air conditioning.

3.4.2 Constant Volume Samplers

One Olson six-bag CVS system with gas-to-water heat exchanger was used. Sample and background bag selection was automatically controlled by computer to select the proper bag set for each phase of the 1975 FTP.

3.4.3 Emission Analysis Console

One complete emission analysis console was previously designed and built by Olson. The console had push-button selection of zero, span and sample for each range of each instrument. The console had a built-in CL converter efficiency test unit and automatic sample line purge as required by the contract. The console contained the following instrument types:

Analyzer	Ranges
Bendix Model 8501-5C (CO)	0-100, 0-500ppm
Beckman 315B NDIR (CO)	0-.3%, 0-3%, 0-5%
Beckman 315B NDIR (CO_2)	0-4%, 0-8%
Teco 10A Chemiluminescent (NO_x)	0-100, 0-250, 0-1,000, 0-2,500ppm
Two Beckman 400 FID (HC)	0-50, 0-100 0-300, 0-1,000 0-3,000, 0-10,000ppm
Horiba GSM 300 (Raw HC)	0-400, 0-2,000ppm Hexane Equivalent
(Raw CO)	0-2%, 0-10%
Horiba MEXA 300A (Raw HC)	0-200, 0-1,000ppm Hexane Equivalent
(Raw CO)	0-0.5%, 0-5%

3.4.4 Laboratory Standard Calibration Gases

Laboratory standard calibration gases had been previously sent to the EPA Ann Arbor laboratory for analysis where concentrations were assigned to them. This standard set of gases was used for defining instrument calibration curves and assigning concentration values for the working gases. Each cylinder of standard gas and each working gas was equipped with a dedicated pressure regulator as specified by the contract. All gases were permanently plumbed to a quick-disconnect panel for ease in selecting the gas desired during calibration and testing.

3.4.5 Chassis Dynamometer

An EPA-supplied split roll CT-50 direct-drive dynamometer was installed in the test cell and was completely checked out by Clayton. The unit had a capacity of 10,000 pound inertia weight.

3.4.6 Miscellaneous Equipment

Miscellaneous equipment used in conjunction with the major items of equipment included the following:

- Two Texas Instrument Servowriter II Recorders were used with the analytical console.
- One Hewlett-Packard 2114A Mini-Computer was used to generate FTP driver traces and control bag filling.
- A second Hewlett-Packard 2114A Mini-Computer was used to calculate mass emission data.
- One Hewlett-Packard Model 7128-A-02-04-08-24-105-141-144 Driver's Aid for FTP.
- One Varian Driver's Aid for SDS and AA-1.
- One Teco Model 100 NO_x Generator.
- One Sargeant Welch Continuous Flow Psychrometer, Model No. 542610 with continuous recording of wet/dry bulb temperatures by a dual-channel Rustrak Recorder Model No. 2163E.
- Hartzell Model No. N-24-DUW cooling fan placed in front of the vehicle for cooling during test.
- One Taylor Instrument Company Model No. 2314, 7-day continuous recording barometer.
- One Autoscan Model No. 4000 Engine Analyzer.
- One Rustrak Model No. 2163B continuous temperature recorder for soak area temperature.
- One Nova Mercurial Barometer.
- One Meriam 50 MC2-4(F) Laminar Flow Element for CVS calibration.
- One Mettler Model 1200 Balance used for weighing the propane cylinders for propane recovery tests.
- One Strobotach for dynamometer coast down calibrations.
- Wet/dry Bulb Recording Systems - Periodic checks using a sling psychrometer as a reference were made to verify calibration and accuracy.

- Miscellaneous Recorders - Other recorders were periodically checked for mechanical zero, Rustrak Recorders were checked against precision thermometers.

- Other auxiliary equipment was calibrated in accordance with manufacturer's procedures.

3.5 EQUIPMENT QUALIFICATION, CALIBRATION, AND CROSS-CHECK

This section describes the qualification, calibration, and cross-check procedures utilized by Olson and verified by EPA technical personnel to ensure that valid test data were generated throughout the test program. Initial qualification included complete demonstration of individual instrument calibration, stability, response time, modal transport time, zero air and nitrogen purity, CVS calibration, dynamometer calibration, and inspection of all daily, weekly and monthly log records.

Prior to the initial EPA inspection, Olson performed a qualification checkout which was defined in an eight-page Emission Laboratory Evaluation Criteria Document. The completed document and all related data were submitted to the EPA Project Officer. After review of the Olson qualification documentation, the Project Officer witnessed a verification of the qualification procedures prior to initiation of testing.

3.5.1 Constant Volume Sampler (CVS)

The CVS was calibrated with the laminar flow element using the basic procedures specified in the Federal Register. A copy of the calibration data was provided to the EPA Project Officer as a part of the qualification data package. Propane recovery tests were made after the calibration to confirm the accuracy of the calibration. Propane recovery tests were also made each day of testing to confirm continued calibration of the CVS system. The measured propane mass recovered by the CVS had to be within ±2.0 percent of the injected mass as determined gravimetrically.

3.5.2 Emission Analysis Console

Calibration and qualification of the emission analysis console was performed as stipulated in the Federal Register and the Emission Laboratory Evaluation Criteria. The daily qualification checks were:

- Leak check of each instrument as well as the system.

- Zero, gain, tune as applicable to each instrument.

- Hang-up and leak checks for background and sample bags and sample line.

- Dilution air HC/CO concentration.

- Chemiluminescence vacuum and converter efficiency.

- FID fuel, air, sample pressures.

- o Propane recovery test result.

- o Working gas log, cylinder number, concentration, deflections, cylinder pressure.

In addition to the above daily checks, weekly checks were made for the following:

- o Calibration curve of each range of each instrument.
- o CO instrument response to wet CO_2.

Appropriate calibrations, leak checks, etc., were also made whenever maintenance was performed which could change instrument or system operation.

3.5.3 Chassis Dynamometer

The Clayton dynamometer was initially calibrated by the Clayton representative using manufacturer's equipment and procedures to calibrate the speed and horsepower meters. Coast down techniques specified in the Federal Register were used to develop actual versus indicated horsepower curves for each inertia weight setting.

3.6 TEST PROCEDURES

3.6.1 Vehicle Preparation

All vehicles tested in this program were inspected upon receipt from the owner for the following:

- o A physical inspection of the vehicle's interior and exterior for damage when received.

- o An inspection to verify that the vehicle was safe for operation on the dynamometer and that the exhaust system was not leaking or could not be readily repaired.

Fuel was drained and the tank was filled to 40 percent volume with Indolene 30 test fuel. After the vehicle was filled with test fuel, it was operated for a 10-minute preconditioning drive over a street route prior to being placed into pretest soak. The soak period was a minimum of 12 hours and a maximum of 20 hours from key-off to key-on between $68^{o}F$ and $86^{o}F$. A continuous record of the soak area temperature was maintained 24 hours per day to verify that the soak temperature limits applicable to each vehicle were met. Vehicles for which the soak temperature limits were violated were given another 10-minute preconditioning drive and placed back into soak.

3.6.2 Equipment Preparation

Emission test equipment was checked daily prior to the performance of emission tests. The emission analysis system was checked for leaks, zero and gain settings where appropriate for each instrument, CVS inlet and outlet pressures as well as Delta P. Additional checks included background and sample bag leak checks and hydrocarbon hang-up, converter efficiency, and CVS calibration by propane recovery tests. In addition, the driver's aid and computer-generated driving trace were calibrated prior to and after each test. The dynamometer was warmed up using a nontest vehicle if the dynamometer had not been used in the previous 2-hour period. During this warm-up period, the dynamometer speed indicator was checked against the driver's trace to ensure that both speed indications were identical.

The continuous wet/dry bulb system was checked on a periodic basis against a sling psychrometer to verify proper calibration.

The emission analysis console was left in the operating mode. All instruments were placed in the sample mode position with continuous purge of filtered background air. Thus, the instrument console was at all times warmed up and ready for calibration and test. In the event that instrument maintenance required instrument shut off, a warm-up time of a minimum of 1 hour was used. In practice, the warm-up time was in excess of 1 hour since calibration checks were routinely performed after maintenance.

The CVS was normally not turned off during nontest hours. The blower was left in speed #1 and the temperature controller was normally left on. Prior to the propane recovery test, the CVS was used to exhaust the nontest vehicle used for dynamometer warm-up, and was thus at operating temperature for the propane recovery test and subsequent emission tests.

3.6.3 Federal Exhaust Emission Test Procedure

All vehicles received one 1975 FTP, without evaporative emission determinations, performed in accordance with the requirements and procedures specified in 40 CFR 85.075-1 through 85.075-26, inclusive. The sample collection for each set of bags was controlled by the computer. At the completion of the test, the computer printed out crank time and total test time for the cold-start and hot-start portion of the test.

3.6.4 AA-1 Bus Test Procedure

The Ann Arbor-1 Bus dynamometer driving schedule consists of a 1,760-second transient cycle as shown in Appendix A. A preprinted driver's trace was supplied by the EPA for use on the Varian Single Pen Recorder. Shift points, particularly for manual transmission vehicles were jointly determined by Olson and the Project Officer. Vehicle operation and the CVS bag continued to the end of the schedule.

3.6.5 Modal Exhaust Emission Test Procedure

The modal exhaust emission tests consisted of two separate tests; steady-state modes and the Surveillance Driving Sequence. The modal tests were performed in accordance with Appendix C.

Each test was preceded by a soak period no longer than 20 minutes from the last sustained vehicle operation. At the end of the soak period, the vehicle was operated on a chassis dynamometer at 50 mph for a period of 3 minutes. During this time, the dynamometer speed and horsepower settings were checked and adjusted if necessary. Within 1 minute after the end of the 50-mph cruise period, the vehicle was returned to idle and the test begun.

Steady-state exhaust emissions were measured using the CVS dilute bag collection technique in the same manner as in the FTP. Emission measurements were taken at each speed successively from idle (0 mph) through 5, 10, 15, 30, 45, and 60 mph. The exhaust emissions were continuously monitored and recorded on a strip chart recorder. For continuous sampling, the analytical system was equipped with a sample bypass to decrease delay time. Delay time from engine to all analyzer outputs was less than 10 seconds. At each speed, equilibrium of speed and all analyzer traces was maintained for at least 30 seconds before sampling was started. A minimum sample volume of 2 cubic feet and a minimum sample time of 3 minutes were required. Recorder chart speed was 3 inches per minute.

The Surveillance Driving Sequence portion of the modal test was started within 20 minutes after the end of the steady-state tests.

After the soak and 3-minute 50-mph cruise, the vehicle was operated at idle for 1 minute before the Surveillance Driving Sequence began. No sampling was done during the first 30 seconds. For the remainder of the minute, dilute exhaust was directed through the sampling and analytical system. This dilute sample from the CVS was continuously recorded on strip chart recorders while the vehicle was driven through the driving sequence on the chassis dynamometer. At the start of the Surveillance Driving Sequence, CVS dilute bag sampling was begun.

The Surveillance Driving Sequence consisted of 32 acceleration and deceleration modes and 33 constant-speed modes. These modes were combined into a 1,054-second driving sequence. Vehicle operation and CVS bag and continuous sampling continued to the end of the schedule, at which point bag sampling was terminated. Continuous sampling was maintained with the engine at idle for an additional 10 seconds.

Immediately upon completion of the test, with the sample pumps and recorders running, the sample line from the probe was purged with air to establish the hydrocarbon "hang-up" levels. The allowable hang-up level for a valid test was 5 percent of full scale within 10 seconds and 3 percent of full scale within 3 minutes after completion of sampling. An additional requirement for a valid test was that the span and zero points on all emission analyzers be within ±2 percent of full scale from test pre-calibration to test post-calibration. The bag samples were compared to the integrated continuous traces.

3.6.6 Vehicle Loading Practices

The following vehicle loading practices were followed:

1. Road load was determined by the Frontal Area method and 10 percent added to simulate air conditioning.

2. Low Inertia Weight - Scale weight of vehicle plus driver and one-third passenger occupancy at 150 pounds per person. Thus:

8 and 9-passenger vehicles

Scale Weight -		---
Driver @ 150 lbs		150 lbs
3 passengers @ 150 lbs		450 lbs
	Scale weight plus	600 lbs

12-passenger vehicles

Scale Weight -		---
Driver @ 150 lbs		150 lbs
4 passengers @ 150 lbs		600 lbs
	Scale weight plus	750 lbs

3. High Inertia Weight - Scale weight of vehicle plus driver and full passenger occupancy at 150 pounds per person. Thus:

8-passenger vehicles

Scale Weight -		---
Driver @ 150 lbs		150 lbs
8 passengers @ 150 lbs		1,200 lbs
	Scale weight plus	1,350 lbs

9-passenger vehicles

Scale Weight -		---
Driver @ 150 lbs		150 lbs
9 passengers @ 150 lbs		1,350 lbs
	Scale weight plus	1,500 lbs

Inertia weights were rounded up or down in accordance with EPA practices. Refer to Table 1 for actual weights used for each vehicle.

4. Federal Test Procedure - Vehicles were tested at "low inertia weight" for the FTP in this program.

5. AA-1 Cycle - Vehicles were tested at both "low inertia weight" and "high inertia weight."

6. Surveillance Driving Sequence - Vehicles were tested at "low inertia weight."

7. Steady-State Speed Modes - 0, 15, 30, 45, and 60 mph. Vehicles were tested at "low inertia weight."

3.6.7 Daily Test Schedule

The daily test schedule provided for multiple shifts. In general, the night shift performed weekly and monthly calibrations on Sunday nights, and also performed the daily start-up checks including propane recovery tests on a daily basis. Vehicle preparation and preparation for return to the owner was performed on both shifts. Again, in general, the fuel draining and addition of test fuel was done on the day shift, but preconditioning was accomplished by both shifts in order to meet the 12- to 20-hour soak limit requirements. A flowchart which shows the test sequence is given in Figure 4.

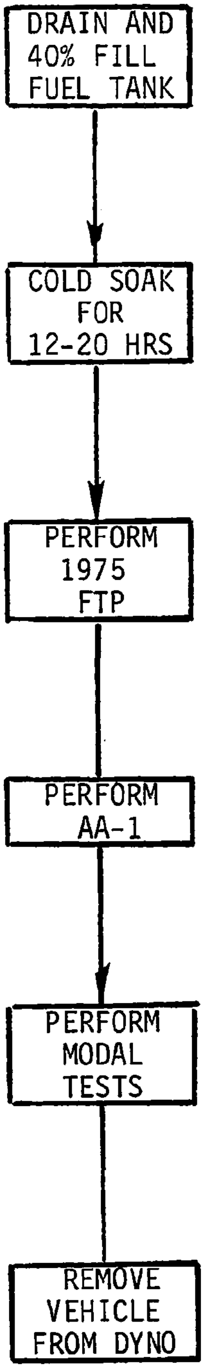


Figure 4. EMISSION TEST SEQUENCE

3.7 DATA HANDLING

3.7.1 Data Collection

Olson developed keypunch-compatible forms for each test procedure required for this contract. Numerous other forms were developed and used for system quality control, working gas inventory control, etc. These forms included daily start-up checks and tests, working gas pressure log, weekly instrument calibration data forms, propane recovery data forms, NO_x converter efficiency checks, dynamometer coast down data forms, and equipment maintenance logs.

Olson used a packet of file folders for each vehicle tested. This system placed all data pertaining to any one test on each vehicle in a single filing source to provide for rapid review of pertinent data, particularly for those vehicles which were subjected to multiple types of tests. Copies of pertinent data were retained at the test site with the original copy sent to Anaheim for processing. Each test packet contained the following:

1. Vehicle information sheet
2. Bond application card (or incentive)
3. Loan vehicle and test agreement forms
4. Owner questionnaire
5. Test data sheets for each type of test required
6. All raw test data such as analyzer recorder strip charts, temperature strip charts, driver's aid charts, and all other raw test data applicable to each specific vehicle
7. Maintenance data sheets.

3.7.2 Data Processing

Vehicle information, results of vehicle inspection, and emission test data were turned over to the Quality Assurance section in Anaheim. The data required to be transmitted to the Project Officer or included in this final report were verified prior to keypunch for processing on a CDC 6600 computer. All exhaust emission and fuel economy calculations were made on either the IBM 360 computer or the CDC 6660 computer.

Mass emission data for the FTP was also computed in Livonia using the Hewlett-Packard 2114A Mini-Computer. These calculations were performed to expedite disposition of the vehicles after each test. These data were provided with the data packets, however, the final data was processed off-line using the CDC computer described above.

3.7.3 Quality Control

Review of test data indicated that the errors found were those generally associated with mass emission testing. Predominant errors included driver trace violations, incorrect span points, and operating vehicles at incorrect dynamometer settings (i.e.; inertia weight, horsepower, or shift points). Clerical errors and omissions were also detected in the maintenance data sheets and were corrected prior to keypunch.

Since Olson processed data off-line, keypunch errors also occurred, due in part to poor handwriting by the test personnel. A two-step audit procedure was implemented which consisted of listing the punched cards and reviewing the listed data for completeness and accuracy. After required corrections were made, the punched cards were computer processed to obtain mass emission data and correctly formatted output cards.

3.7.4 Calculation of Results

Mass emission test results were calculated off-line in accordance with procedures specified in the Federal Register and the contract.

3.7.4.1 Exhaust Emissions (Federal Test Procedure)

Emission results were calculated for the 1975 FTP in accordance with the Federal Register including provisions for the dilution factor, humidity correction factor for NO_x, and separate barometer, wet bulb and dry bulb data for each phase of the 1975 FTP. Fuel economy was calculated from the composite HC, CO, and CO_2 mass emission data using the carbon balance method.

3.7.4.2 AA-1 Bus Test

Emission results for the AA-1 Bus Test were calculated using the carbon balance method and mass emission measured during the 1,760-second driving schedule. Mass emissions were computed from the following general equation:

$$M = V \frac{dc}{a}$$

where:

M = mass in grams per mile
V = volume of exhaust sample in standard cubic feet ($528^{\circ}R$ and 760mm Hg)
d = density of pollutant in grams per cubic feet
c = concentration of pollutant in ppm or percent
a = cycle length in miles

3.7.4.3 Modal Emissions

The steady-state emission results were calculated in accordance with Federal Register basic procedures used for mass flow rate, sample bag concentration and distance traveled during bag sample collection. Emissions were calculated in grams per mile (grams per minute for idle mode conditions), and fuel economy was calculated in miles per gallon (gallon per minute) for idle mode conditions.

The Surveillance Driving Sequence (SDS) emissions were calculated two ways. The CVS bag results were calculated in accordance with standard CVS procedures using a distance traveled of 9.080 miles for the cycle. In addition, each mode of the surveillance driving cycle was calculated using integrated diluted concentration levels per individual mode and the miles traveled for each mode. These data were derived from the continuous strip chart recording of each pollutant during the SDS cycle.

3.7.5 Certification Emissions

A discussion of the certification emissions for the engine families represented in this program appears in Appendix D.

Section 4

TEST RESULTS

4.1 MEASURED VERSUS SPECIFICATION ENGINE PARAMETERS

Table 2 presents the measured versus specification engine parameters for timing, idle rpm, and idle HC and CO emissions. As seen in Table 2, basic timing ranged from 5 degrees retard to 14 degrees advance from basic timing specification. Most vehicles were either at specification or advanced.

Measured idle rpm, for the most part, was either at or near specification. Finally, idle emissions in HC and CO varied considerably due to engine settings, different vehicle make and engine size, and that no idle emission specifications are used for this parameter.

4.2 EXHAUST EMISSION RESULTS

As stated in the previous section, all FTP tests were "cold-start" and all other tests were "hot-start." Tables 3 and 4 summarize the individual vehicle results of the emissions by FTP and test method. Table 5 summarizes the fleet averages by test method.

As can be seen in Table 5, FTP emissions of HC are about four times higher on the average than comparable light-duty standards. CO emissions on the average are six times higher, and NO_x emissions are about three times higher.

Modal emissions using the composite bag and calculated method agreed quite well for each of the pollutants. As would be expected, AA-1 low inertia weight versus AA-1 high inertia weight emissions were less for each pollutant. In addition, fuel economy for AA-1 low inertia weight was better than AA-1 high inertia weight.

The cold transient portion of the FTP compared to AA-1 was considerably higher in emissions due to the cold-start effect. However, the cold stabilized portion of the FTP was much closer to the AA-1 as would be expected as the average speed of the driving cycles of both tests are nearly equal and both are essentially hot-starts.

Appendix E, presents individual vehicle test results.

Table 2. ENGINE PARAMETERS, MEASURED VERSUS SPECIFICATION

VEHICLE			TIMING, DEGREES		IDLE RPM		IDLE	
No.	Year	Make	Spec.	Meas.	Spec.	Meas.	HC ppm	CO Percent
1	1976	Ford	-6	+8	550	550	75	0.24
2	1976	Chev	+4	+4	700	700	15	0.12
4	1976	Ford	+12	+14	650	620	150	2.35
5	1977	Ford	+4	+4	550	520	300	4.1
6	1977	Chev	+4	+4	700	680	15	0.07
10	1976	Chev	+8	+8	700	710	110	5.0
11	1977	Dodge	-2	-6	750	680	60	0.65
13	1976	Dodge	0	+10	750	820	220	5.0+
15	1977	Dodge	0	-1	750	780	600	2.4
16	1977	Dodge	+2	+10	750	850	620	0.19
17	1976	Dodge	0	-5	750	650	170	5.0

Table 3. COMPARISON OF EXHAUST EMISSIONS BY TEST METHOD

VEHICLE			HC gm/Mile			CO gm/Mile			NO_x C gm/Mile			FUEL ECONOMY mpg		
No.	Year	Make	FTP[a]	AA-1[a]	AA-1[b]	FTP[a]	AA-1[a]	AA-1[b]	FTP[a]	AA-1[a]	AA-1[b]	FTP[a]	AA-1[a]	AA-1[b]
1	1976	Ford	5.08	4.44	4.74	43.13	17.94	19.24	7.93	6.23	7.84	9.56	8.93	8.42
2	1976	Chev	2.20	2.01	2.31	19.61	5.82	6.63	7.09	6.49	8.32	9.98	8.04	7.53
4	1976	Ford	4.06	3.92	4.26	58.21	55.25	58.13	8.27	6.25	8.16	9.24	8.07	7.66
5	1977	Ford	5.43	5.61	6.15	61.79	55.59	59.58	6.01	4.14	5.43	11.15	10.50	9.78
6	1976	Chev	4.76	4.96	5.38	34.26	7.11	7.68	4.19	4.74	6.39	9.84	9.69	9.09
10	1976	Chev	4.98	5.31	5.12	243.96	260.34	259.94	2.87	2.31	2.47	8.11	7.08	6.97
11	1977	Dodge	4.65	3.41	3.57	55.61	23.77	25.61	3.94	3.69	4.27	10.64	9.92	9.45
13	1976	Dodge	7.68	7.17	7.73	153.64	145.98	154.57	5.42	2.74	3.42	8.95	8.85	8.34
15	1977	Dodge	4.97	5.24	5.98	67.69	80.71	93.16	6.72	7.96	6.50	10.78	9.27	8.51
16	1977	Dodge	30.78	44.94	46.52	76.79	27.10	30.87	12.32	13.91	15.04	8.49	7.76	7.28
17	1976	Dodge	8.46	8.12	9.07	178.53	233.77	262.44	5.41	3.63	3.79	7.48	6.80	6.44

[a]Tested at "low inertia weight"

[b]Tested at "high inertia weight"

1977 Federal Standards

Passenger cars HC - - - - 1.5 gm/mi
CO - - - - 15.0 gm/mi
NO_x - - - - 2.0 gm/mi
Heavy-Duty engine HC + NO_x 16 gm/bhp-hr
CO 40 gm/bhp-hr

Table 4. COMPARISON OF EMISSIONS BY FEDERAL TEST PROCEDURE MODE IN GRAMS PER MILE

VEH. NO.	TRANS. COLD				STAB. COLD				TRANS. HOT				COMPOSITE			
	HC	CO	CO_2	NO_xC	HC	CO	CO_2	NO_xC	HC	CO	CO_2	NO_xC	HC	CO	CO_2	NO_xC
1	7.62	112.9	899	8.1	4.61	26.0	841	7.32	4.06	23.1	809	8.97	5.08	43.13	844.0	7.93
2	3.29	64.2	867	7.7	1.95	7.16	886	5.97	1.86	9.67	774	8.73	2.20	19.61	851.1	7.09
4	5.72	98.9	908	9.7	3.73	55.9	859	6.55	3.43	31.9	812	10.5	4.06	58.21	856.3	8.27
5	7.61	105.0	758	6.9	4.95	56.4	661	4.79	4.70	39.5	663	7.62	5.43	61.79	681.6	6.01
6	7.04	119.7	893	0.86	4.10	10.3	832	7.16	4.29	15.3	792	1.06	4.76	34.26	833.4	4.19
10	6.54	268	759	4.4	4.70	241	692	2.15	4.34	232	651	3.10	4.98	243.96	694.8	2.87
11	11.55	169	728	3.17	2.78	23.3	750	3.8	2.98	31.2	701	4.79	4.65	55.61	732.1	3.94
13	12.86	206	771	6.3	6.51	153	728	4.10	5.99	115	687	7.28	7.68	153.64	725.7	5.42
15	6.26	87.3	752	6.85	4.95	64.5	709	6.21	4.04	58.9	897	7.61	4.97	67.69	700.9	6.72
16	31.07	255	816	7.38	34.2	22.8	828	13.0	24.1	45.3	833	14.8	30.78	76.77	827.0	12.32
17	13.00	227	1024	5.83	6.96	175	827	4.26	7.88	149	871	7.26	8.46	178.53	879.5	5.41

Table 5. FLEET AVERAGES BY TEST METHOD

TEST TYPE	NUMBER	EXHAUST EMISSIONS GMS/MILE HC	CO	CO_2	NO_xC	FUEL ECONOMY MPG
FTP composite	11	7.55	90.30	784.205	6.379	9.475
Modal bag	10	5.445	81.79	751.75	8.861	10.086
Modal calculated	10	5.611	81.878	750.60	9.55	10.091
AA-1[a]	11	8.648	83.035	889.086	5.645	8.628
AA-1[b]	11	9.166	88.895	939.694	6.512	8.134
Trans. cold	11	10.23	156	834	6.11	7.97
Stab. cold	11	7.22	75.9	783	5.94	9.54
Trans. hot	11	6.15	68.3	772	7.42	10.79

[a]Tested at "low inertia weight"
[b]Tested at "high inertia weight"

REFERENCES

1. "Dial-A-Ride, Pilot Project, Final Report, April 1973" page 33; Ann Arbor Transportation Authority.

2. "Demand-Responsive Transportation - State of the Art Overview, August 1974" U.S. Department of Transportation, Office of the Secretary and Urban Mass Transportation Administration.

3. "Small Bus, Operating Profile and Performance Requirements for Small Buses" DOT-UT-40015, Report 3, December 3, 1976.

4. "Exhaust Emissions from a 25-Passenger Organic Rankine Cycle Bus" June 1973, ECTD, OAWP, EPA.

5. "Measurement of Motor Vehicle Operation Pertinent to Fuel Economy" Johnson, T.M.; Formenti, D.L.; Gray, Richard; and Peterson, W.C.

Appendix A

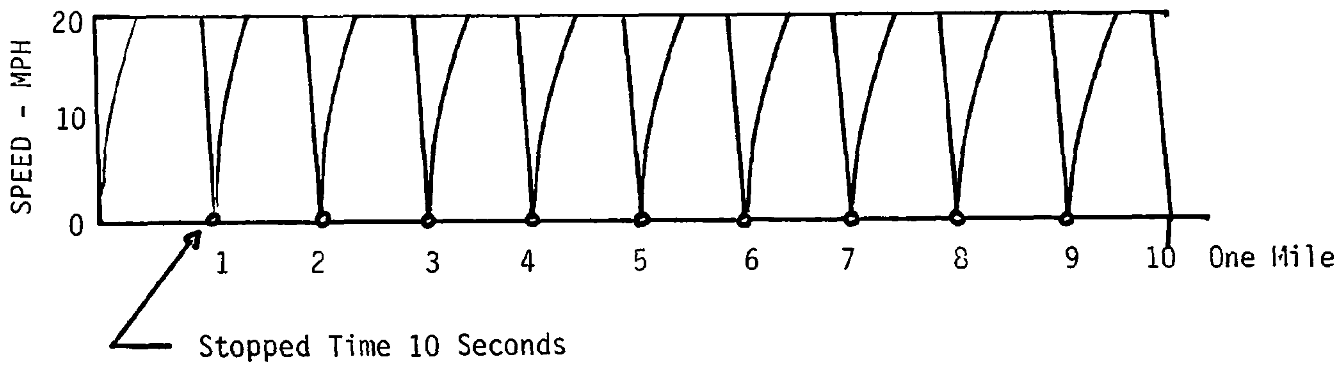
SERVICE CHARACTERISTICS AND PROFILE DUTY CYCLES

A. URBAN FIXED ROUTE

Service Characteristics

Stops/mile	10
Maximum speed	20 mph
Initial acceleration	3 mph/sec.
Average deceleration	6 ft/sec^2
Stopped time	10 secs. per block
Running time	24.6 secs. per block
Block speed	10.4 mph
Running speed	14.6 mph
Mileage	83 per 8-hour shift

A typical duty cycle for this service is shown below:



B. CORE SHUTTLE

Service Characteristics

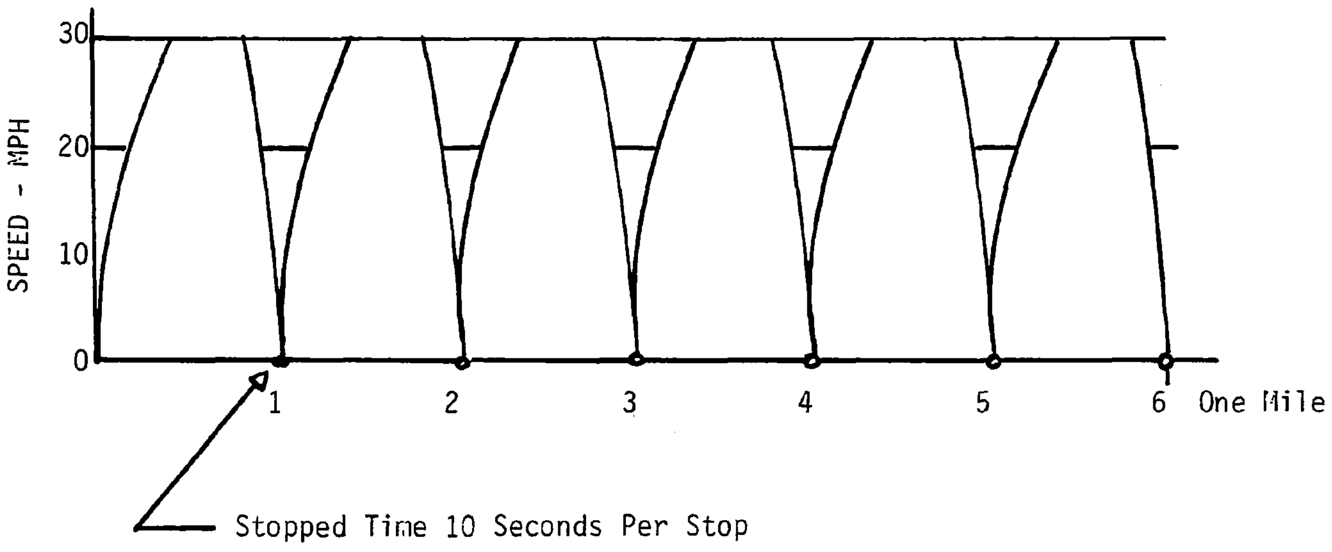
Stops/mile	12
Maximum speed	20 mph
Initial acceleration	3 mph/sec.
Average deceleration	6 ft/sec.^{2}
Stopped time	10 secs. per block
Running time	21.6 secs. per block
Block speed	9.5 mph
Running speed	13.9 mph
Mileage	74 miles per 8-hour shift

C. LINE HAUL FEEDER

Service Characteristics

Stops/mile	6
Maximum speed	30 mph
Initial acceleration	3 mph/sec.
Average deceleration	6 ft/sec.^{2}
Stopped time	10 secs. per block
Running time	34.5 secs. per block
Block speed	16.2 mph
Running speed	20.9 mph
Mileage	103 miles per 8-hour shift

A typical profile for this type of service would be as follows:

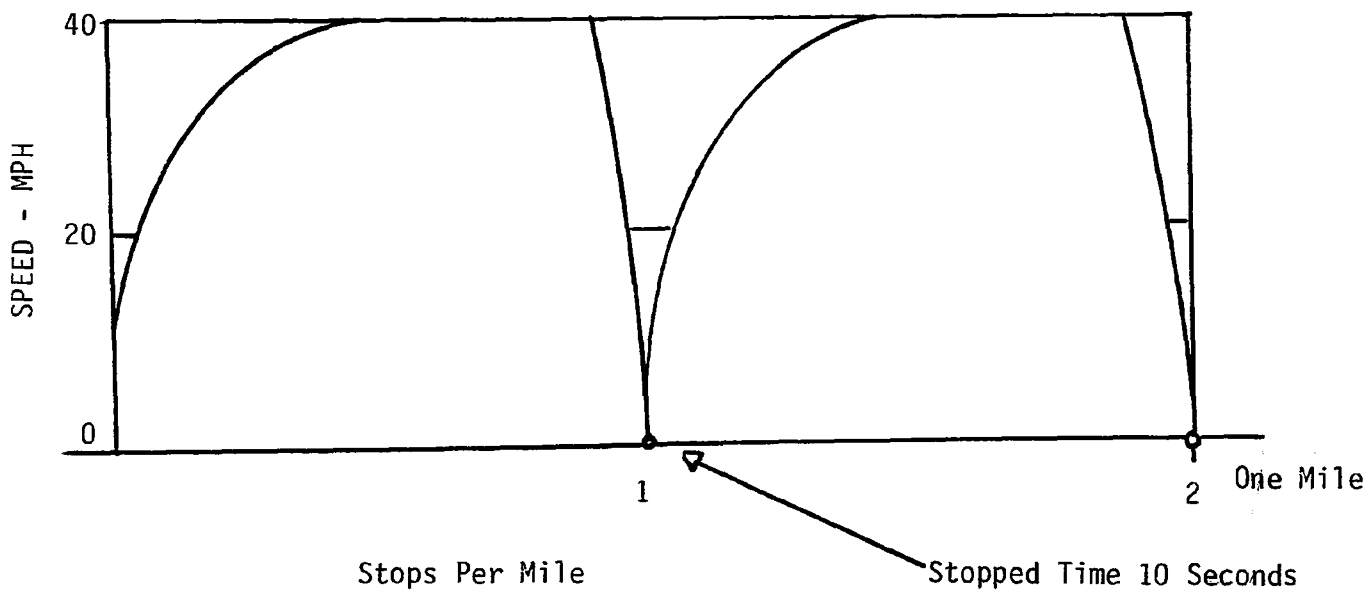


D. ROUTE DEVIATION/SUBSCRIPTION

Service Characteristics

Stops/mile	2
Maximum speed	40 mph
Average deceleration	6 ft/sec.^{2}
Stopped time	10 secs. per stop
Running time	60.7 sec.
Block speed	25.5 mph
Running speed	29.6 mph
Mileage	204 miles per 8-hour shift

The operating profile for this service will vary greatly with the local situation. At either extreme, it will approach the feeder or demand-responsive service profiles. The one indicated and depicted below is, therefore, a compromise between them in terms of stops/mile.

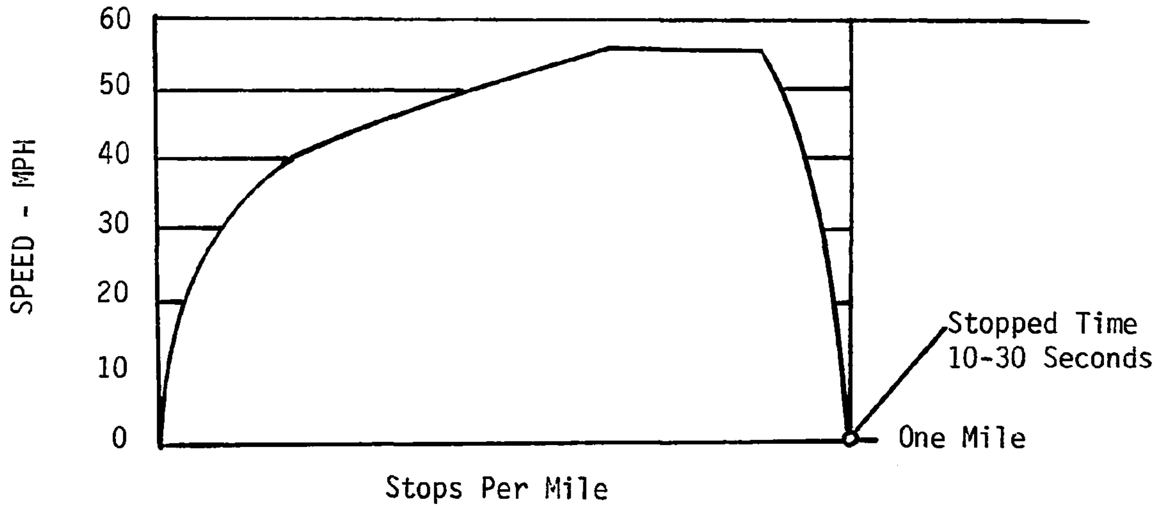


E. DEMAND RESPONSIVE

Service Characteristics

Stops/mile	Variable depending on traffic and loading
Service stops/hour	10 30
Service stopped time	10 30 seconds per stop
Maximum service speed	55 mph or local legal limit
Average service speed	20 - 25 mph

The demand-type services are primarily suited to moderate density and suburban-type locations. Under these conditions, road performance is high as indicated. This is necessarily so in order to obtain adequate productivity from the vehicles. As indicated, under these circumstances, road stops may be as frequent as passenger stops. While single passenger boardings will predominate, average stopped time will generally increase due to no-shows and to persons waiting within building, etc., due to the degree of uncertainty of bus arrival time.



F. SPECIAL ELDERLY/HANDICAPPED SERVICE

Service Characteristics

Stops/mile	Variable depending on traffic and loading
Service stops/hour	10 30
Service stopped time	10 secs. to 3 minutes (wheelchair)
Maximum service speed	55 mph or local legal limit
Average service speed	20 - 25 mph

Appendix B

ANN ARBOR-I DYNAMOMETER SCHEDULE

Appendix B
Ann Arbor-1 Dynamometer Schedule

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
1	0.0	177	6.0	353	24.5	529	5.5	705	0.0	881	0.0	1057	28.2	1233	12.0	1409	20.5	1585	0.0
2	0.0	178	8.0	354	23.5	530	6.0	706	0.0	882	0.0	1058	28.1	1234	14.0	1410	22.0	1586	0.0
3	0.0	179	10.0	355	22.5	531	6.2	707	0.0	883	0.0	1059	28.0	1235	15.5	1411	23.5	1587	0.5
4	0.0	180	12.0	356	22.0	532	6.5	708	0.0	884	0.0	1060	28.0	1236	18.0	1412	25.0	1588	1.5
5	0.0	181	13.5	357	21.0	533	7.3	709	0.0	885	0.0	1061	28.0	1237	19.0	1413	25.7	1589	2.0
6	0.0	182	15.0	358	20.2	534	7.5	710	0.0	886	0.0	1062	28.0	1238	20.0	1414	26.0	1590	2.5
7	0.0	183	15.5	359	19.5	535	7.5	711	0.0	887	0.0	1063	28.0	1239	21.0	1415	25.7	1591	2.2
8	0.0	184	16.0	360	19.0	536	8.5	712	0.0	888	0.0	1064	28.1	1240	22.0	1416	25.5	1592	2.0
9	0.0	185	16.5	361	18.7	537	10.0	713	0.0	889	0.0	1065	28.2	1241	22.0	1417	25.0	1593	4.0
10	0.0	186	17.0	362	18.2	538	11.0	714	0.0	890	0.0	1066	28.5	1242	22.0	1418	23.0	1594	6.0
11	0.0	187	17.5	363	17.0	539	12.0	715	0.3	891	0.0	1067	29.0	1243	22.5	1419	21.0	1595	8.0
12	0.0	188	17.7	364	16.2	540	13.0	716	1.5	892	0.0	1068	29.5	1244	23.0	1420	19.5	1596	9.0
13	0.0	189	18.7	365	15.5	541	13.5	717	4.0	893	0.2	1069	30.0	1245	23.7	1421	17.0	1597	11.5
14	0.0	190	19.0	366	13.5	542	13.7	718	6.0	894	3.0	1070	30.5	1246	24.0	1422	14.5	1598	13.0
15	0.0	191	19.2	367	10.0	543	14.0	719	7.0	895	6.5	1071	30.7	1247	24.5	1423	11.7	1599	14.5
16	0.0	192	19.0	368	8.0	544	15.0	720	8.0	896	8.5	1072	30.7	1248	25.0	1424	10.0	1600	16.0
17	0.0	193	18.0	369	5.5	545	15.5	721	7.5	897	10.5	1073	30.5	1249	25.5	1425	8.0	1601	16.5
18	0.0	194	17.0	370	3.0	546	16.0	722	8.0	898	12.0	1074	30.5	1250	26.0	1426	5.0	1602	16.0
19	0.0	195	16.0	371	1.0	547	16.5	723	8.0	899	13.5	1075	30.5	1251	26.0	1427	3.0	1603	15.0
20	0.0	196	15.5	372	0.3	548	16.0	724	8.0	900	15.0	1076	31.0	1252	26.2	1428	3.5	1604	14.0
21	0.0	197	16.0	373	0.0	549	16.0	725	7.0	901	16.5	1077	31.0	1253	26.2	1429	4.0	1605	13.5
22	0.0	198	17.0	374	0.0	550	15.5	726	5.5	902	17.5	1078	31.5	1254	26.0	1430	5.0	1606	12.0
23	0.0	199	17.5	375	0.0	551	15.2	727	4.0	903	19.0	1079	31.5	1255	25.0	1431	5.5	1607	10.0
24	0.0	200	19.0	376	0.0	552	15.0	728	3.0	904	20.0	1080	31.7	1256	24.0	1432	8.5	1608	7.5
25	0.0	201	19.5	377	0.0	553	15.0	729	1.0	905	20.5	1081	31.8	1257	23.5	1433	11.5	1609	6.0
26	0.0	202	20.0	378	0.0	554	14.7	730	0.2	906	20.5	1082	31.8	1258	23.0	1434	14.5	1610	5.5
27	0.0	203	20.5	379	0.0	555	14.5	731	0.0	907	20.7	1083	31.7	1259	22.5	1435	17.5	1611	5.5
28	0.0	204	21.5	380	0.0	556	14.5	732	0.0	908	20.7	1084	30.1	1260	22.0	1436	19.5	1612	6.5
29	0.0	205	22.0	381	0.0	557	14.3	733	0.0	909	20.7	1085	28.5	1261	21.0	1437	21.0	1613	8.5
30	0.0	206	22.5	382	0.0	558	13.5	734	1.0	910	21.0	1086	27.5	1262	21.0	1438	23.0	1614	10.0
31	0.0	207	23.0	383	0.0	559	12.0	735	4.5	911	21.2	1087	26.0	1263	20.7	1439	23.7	1615	11.0
32	0.0	208	23.5	384	0.0	560	10.5	736	6.5	912	21.5	1088	23.5	1264	20.5	1440	24.0	1616	12.5
33	0.0	209	24.0	385	0.0	561	7.5	737	8.8	913	21.0	1089	21.0	1265	20.0	1441	24.5	1617	13.5
34	0.0	210	24.5	386	0.0	562	5.0	738	10.0	914	20.5	1090	17.5	1266	20.5	1442	25.0	1618	12.7
35	0.0	211	24.7	387	0.0	563	2.0	739	11.3	915	20.5	1091	13.5	1267	21.0	1443	25.0	1619	12.3
36	0.0	212	25.0	388	0.0	564	0.2	740	12.5	916	20.2	1092	8.0	1268	21.5	1444	24.0	1620	11.5
37	0.0	213	25.2	389	0.0	565	0.0	741	14.0	917	20.5	1093	4.5	1269	22.0	1445	23.5	1621	10.0
38	0.0	214	25.5	390	0.0	566	0.0	742	15.0	918	20.7	1094	1.0	1270	22.5	1446	23.0	1622	8.0
39	0.0	215	25.5	391	0.0	567	0.0	743	16.0	919	20.8	1095	0.3	1271	23.0	1447	22.5	1623	5.0
40	0.0	216	25.2	392	0.0	568	0.0	744	17.0	920	21.0	1096	0.0	1272	23.0	1448	22.0	1624	4.0
41	0.0	217	25.2	393	0.0	569	0.2	745	18.0	921	21.2	1097	0.0	1273	22.5	1449	21.7	1625	3.4
42	0.0	218	25.0	394	0.0	570	1.0	746	18.0	922	21.8	1098	0.0	1274	22.0	1450	21.5	1626	3.2
43	0.0	219	24.0	395	0.0	571	1.3	747	18.5	923	22.0	1099	0.0	1275	21.5	1451	20.0	1627	2.5
44	0.0	220	23.0	396	0.0	572	1.8	748	17.0	924	22.7	1100	0.0	1276	20.0	1452	18.0	1628	1.0
45	0.0	221	22.0	397	0.0	573	1.8	749	16.0	925	23.0	1101	1.0	1277	17.0	1453	16.0	1629	0.0
46	0.0	222	21.5	398	0.0	574	1.5	750	15.3	926	23.5	1102	3.0	1278	12.5	1454	13.5	1630	0.0
47	0.0	223	20.0	399	0.0	575	1.0	751	15.0	927	23.0	1103	7.0	1279	9.5	1455	11.5	1631	0.0
48	0.0	224	19.0	400	0.0	576	0.7	752	14.0	928	22.0	1104	9.5	1280	7.5	1456	8.5	1632	0.0
49	0.0	225	17.5	401	0.0	577	0.6	753	12.5	929	21.5	1105	11.5	1281	3.5	1457	5.0	1633	0.0
50	0.0	226	15.0	402	0.0	578	0.5	754	11.5	930	21.0	1106	13.0	1282	1.0	1458	3.5	1634	0.5
51	0.0	227	11.0	403	0.0	579	1.0	755	9.0	931	20.3	1107	15.0	1283	0.2	1459	5.5	1635	0.7
52	0.0	228	8.0	404	0.0	580	2.5	756	7.5	932	20.0	1108	17.0	1284	0.0	1460	7.5	1636	1.0
53	0.0	229	6.5	405	0.0	581	4.0	757	5.5	933	18.0	1109	18.5	1285	0.0	1461	10.0	1637	2.0
54	0.0	230	4.0	406	0.0	582	5.5	758	5.0	934	16.5	1110	20.0	1286	1.0	1462	12.0	1638	5.0
55	0.0	231	2.5	407	0.0	583	7.0	759	5.0	935	16.0	1111	21.0	1287	4.0	1463	13.0	1639	7.5
56	0.0	232	2.5	408	0.0	584	7.5	760	6.0	936	15.0	1112	22.5	1288	6.5	1464	15.0	1640	9.7
57	0.0	233	3.5	409	0.0	585	9.0	761	7.0	937	13.0	1113	23.5	1289	8.5	1465	17.0	1641	10.5
58	0.0	234	5.5	410	0.0	586	10.0	762	8.5	938	11.0	1114	24.5	1290	8.7	1466	18.0	1642	12.5
59	0.0	235	8.0	411	0.0	587	11.0	763	10.0	939	9.0	1115	25.5	1291	8.8	1467	20.0	1643	14.0
60	0.0	236	9.5	412	0.0	588	11.5	764	11.5	940	5.0	1116	26.3	1292	8.5	1468	20.3	1644	14.5

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
61	0.0	237	11.0	413	0.0	589	11.0	765	13.0	941	3.0	1117	27.0	1293	6.5	1469	20.5	1645	14.0
62	0.0	238	12.5	414	0.0	590	10.5	766	14.0	942	0.5	1118	28.0	1294	6.0	1470	20.5	1646	13.5
63	0.0	239	14.0	415	0.0	591	10.0	767	15.0	943	0.0	1119	29.0	1295	8.0	1471	20.7	1647	12.5
64	0.5	240	15.0	416	0.0	592	9.7	768	16.0	944	0.0	1120	30.0	1296	10.0	1472	20.7	1648	12.0
65	1.0	241	15.5	417	0.0	593	9.0	769	16.0	945	0.0	1121	29.8	1297	11.0	1473	21.0	1649	11.0
66	1.5	242	17.0	418	0.0	594	9.0	770	16.0	946	0.0	1122	29.8	1298	13.0	1474	21.5	1650	9.0
67	1.7	243	18.0	419	0.5	595	8.0	771	15.5	947	0.0	1123	29.7	1299	15.0	1475	22.0	1651	6.5
68	2.0	244	18.5	420	2.0	596	7.0	772	15.0	948	0.5	1124	29.7	1300	15.5	1476	22.0	1652	4.5
69	2.5	245	19.0	421	4.0	597	6.5	773	14.5	949	2.5	1125	30.0	1301	17.0	1477	22.0	1653	2.0
70	3.0	246	20.0	422	5.0	598	6.0	774	13.5	950	5.0	1126	30.0	1302	17.5	1478	21.7	1654	1.0
71	4.5	247	21.0	423	6.0	599	5.7	775	12.5	951	7.0	1127	30.0	1303	18.0	1479	21.5	1655	0.7
72	6.0	248	21.5	424	6.5	600	5.5	776	12.0	952	9.0	1128	30.0	1304	18.5	1480	21.2	1656	1.0
73	7.0	249	22.0	425	6.0	601	5.0	777	10.0	953	11.0	1129	29.7	1305	18.5	1481	20.0	1657	2.0
74	9.0	250	23.0	426	6.0	602	4.0	778	9.0	954	13.5	1130	29.5	1306	19.0	1482	19.0	1658	4.0
75	10.0	251	23.5	427	6.5	603	3.0	779	7.5	955	15.0	1131	29.4	1307	19.5	1483	16.0	1659	6.0
76	11.5	252	24.0	428	7.5	604	2.0	780	5.5	956	17.0	1132	28.5	1308	20.0	1484	13.0	1660	7.5
77	11.7	253	24.2	429	9.0	605	1.5	781	4.0	957	18.0	1133	27.0	1309	20.5	1485	11.0	1661	10.0
78	11.8	254	24.5	430	10.5	606	1.0	782	1.5	958	19.0	1134	24.5	1310	21.5	1486	9.0	1662	11.5
79	11.5	255	24.2	431	12.0	607	0.4	783	0.5	959	20.0	1135	23.0	1311	22.5	1487	6.0	1663	12.0
80	11.2	256	24.0	432	13.5	608	0.0	784	0.0	960	20.5	1136	20.0	1312	23.5	1488	3.0	1664	13.0
81	10.5	257	24.2	433	15.5	609	0.0	785	0.0	961	21.2	1137	17.5	1313	24.0	1489	2.0	1665	12.5
82	9.0	258	23.2	434	16.5	610	0.0	786	0.0	962	21.7	1138	14.5	1314	25.0	1490	0.7	1666	12.5
83	6.5	259	23.2	435	18.5	611	0.0	787	0.0	963	21.5	1139	10.0	1315	26.5	1491	0.0	1667	12.5
84	5.0	260	23.5	436	19.5	612	0.0	788	0.0	964	21.0	1140	7.0	1316	27.0	1492	0.0	1668	12.0
85	3.5	261	23.5	437	20.5	613	0.0	789	0.0	965	20.5	1141	5.0	1317	27.5	1493	0.0	1669	11.5
86	2.0	262	23.0	438	21.5	614	0.0	790	0.0	966	19.5	1142	3.0	1318	27.5	1494	0.0	1670	11.5
87	0.0	263	22.0	439	22.5	615	0.0	791	0.0	967	17.5	1143	4.0	1319	27.7	1495	0.0	1671	11.0
88	0.0	264	21.0	440	23.5	616	0.0	792	0.0	968	15.0	1144	6.0	1320	27.7	1496	0.0	1672	10.5
89	0.0	265	20.5	441	24.0	617	0.0	793	0.0	969	12.5	1145	7.0	1321	28.0	1497	0.0	1673	9.5
90	0.0	266	20.0	442	24.5	618	0.0	794	0.0	970	7.5	1146	8.0	1322	28.5	1498	2.0	1674	8.0
91	0.0	267	19.0	443	25.5	619	0.0	795	0.5	971	3.5	1147	9.0	1323	29.5	1499	4.5	1675	6.5
92	0.0	268	18.7	444	26.0	620	0.0	796	3.0	972	1.5	1148	10.0	1324	29.7	1500	7.0	1676	5.5
93	0.0	269	18.5	445	26.5	621	0.0	797	4.5	973	0.0	1149	12.0	1325	29.7	1501	8.0	1677	5.3
94	0.0	270	18.0	446	27.2	622	0.0	798	4.5	974	0.0	1150	12.5	1326	30.0	1502	10.5	1678	7.0
95	0.0	271	18.2	447	27.0	623	0.0	799	5.0	975	0.0	1151	13.0	1327	30.0	1503	12.5	1679	8.3
96	0.0	272	18.5	448	27.3	624	0.0	800	6.0	976	0.0	1152	14.0	1328	31.0	1504	14.5	1680	7.5
97	0.0	273	18.7	450	27.0	625	0.0	801	8.0	977	0.0	1153	14.7	1329	31.5	1505	15.5	1681	7.0
98	0.0	274	19.0	449	27.1	626	0.0	802	10.0	978	0.0	1154	15.5	1330	32.0	1506	15.5	1682	5.5
99	0.0	275	19.0	451	27.0	627	0.0	803	11.0	979	0.0	1155	15.7	1331	33.0	1507	15.0	1683	4.0
100	0.0	276	19.5	452	27.0	628	0.0	804	12.5	980	0.0	1156	16.0	1332	33.0	1508	15.0	1684	2.0
101	0.0	277	19.7	453	27.2	629	0.0	805	13.5	981	0.0	1157	15.7	1333	33.2	1509	14.0	1685	0.5
102	0.0	278	20.0	454	27.3	630	0.0	806	15.0	982	0.0	1158	15.7	1334	33.2	1510	11.5	1686	0.0
103	0.0	279	20.1	455	27.5	631	0.0	807	16.5	983	1.5	1159	15.5	1335	33.0	1511	9.0	1687	0.0
104	0.0	280	20.2	456	27.5	632	0.0	808	17.5	984	4.0	1160	15.5	1336	33.0	1512	6.5	1688	0.0
105	0.0	281	20.5	457	27.5	633	0.0	809	17.5	985	6.0	1161	15.5	1337	30.5	1513	3.5	1689	0.0
106	0.0	282	20.5	458	27.5	634	0.0	810	17.0	986	8.0	1162	15.5	1338	25.0	1514	1.5	1690	0.0
107	0.0	283	21.0	459	27.5	635	0.0	811	16.7	987	10.0	1163	16.0	1339	22.0	1515	0.0	1691	0.0
108	0.0	284	21.0	460	27.5	636	0.0	812	16.5	988	11.5	1164	16.5	1340	18.0	1516	0.0	1692	0.0
109	0.0	285	20.7	461	27.0	637	0.0	813	16.0	989	13.0	1165	17.5	1341	14.5	1517	0.0	1693	0.0
110	0.0	286	20.5	462	26.5	638	0.0	814	15.5	990	14.0	1166	18.5	1342	10.0	1518	0.0	1694	0.0
111	0.0	287	19.0	463	26.0	639	0.0	815	15.0	991	16.0	1167	20.0	1343	5.0	1519	0.0	1695	0.0
112	0.0	288	18.5	464	25.0	640	0.0	816	13.7	992	17.5	1168	21.5	1344	2.0	1520	0.0	1696	0.0
113	0.0	289	18.5	465	24.0	641	0.0	817	12.5	993	18.5	1169	22.5	1345	0.5	1521	0.0	1697	0.1
114	0.0	290	18.5	466	22.5	642	0.0	818	11.5	994	19.2	1170	23.5	1346	0.0	1522	0.0	1698	0.3
115	0.0	291	19.0	467	20.0	643	0.0	819	11.0	995	20.0	1171	24.5	1347	0.0	1523	0.0	1699	0.5
116	0.0	292	19.0	468	18.0	644	0.0	820	11.0	996	21.0	1172	25.5	1348	0.0	1524	0.0	1700	1.0
117	0.5	293	18.5	469	16.0	645	0.0	821	10.0	997	21.5	1173	26.0	1349	0.5	1525	0.0	1701	2.5
118	1.2	294	18.0	470	14.5	646	0.0	822	9.0	998	22.5	1174	27.5	1350	3.5	1526	0.0	1702	4.0
119	1.5	295	18.0	471	12.5	647	0.0	823	8.0	999	23.0	1175	28.5	1351	5.0	1527	0.5	1703	6.0
120	2.0	296	18.0	472	11.0	648	0.0	824	5.5	1000	24.0	1176	29.0	1352	8.0	1528	1.0	1704	8.0

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
121	2.2	297	18.0	473	8.0	649	0.0	825	3.0	1001	25.0	1177	28.9	1353	10.5	1529	3.0	1705	10.0
122	2.5	298	18.2	474	5.0	650	0.0	826	2.5	1002	26.0	1178	28.5	1354	13.0	1530	5.0	1706	10.0
123	2.6	299	18.7	475	3.0	651	0.0	827	1.0	1003	26.5	1179	27.5	1355	15.5	1531	7.0	1707	9.5
124	2.5	300	19.0	476	2.7	652	0.0	828	0.2	1004	27.0	1180	26.5	1356	17.0	1532	9.5	1708	9.3
125	2.0	301	19.5	477	3.5	653	0.0	829	0.0	1005	27.0	1181	25.5	1357	19.0	1533	11.0	1709	8.5
126	1.5	302	20.0	478	6.5	654	0.0	830	0.0	1006	26.5	1182	24.5	1358	20.0	1534	12.0	1710	7.0
127	1.2	303	20.5	479	8.5	655	0.0	831	0.0	1007	26.0	1183	24.3	1359	20.2	1535	13.0	1711	6.0
128	1.5	304	20.5	480	10.0	656	0.0	832	0.0	1008	25.0	1184	23.6	1360	20.0	1536	14.5	1712	4.7
129	2.0	305	20.5	481	11.5	657	0.0	833	0.0	1009	24.5	1185	23.0	1361	20.0	1537	15.5	1713	4.0
130	3.0	306	20.5	482	12.5	658	0.0	834	0.0	1010	23.0	1186	22.5	1362	20.0	1538	16.5	1714	3.2
131	4.5	307	20.5	483	13.5	659	0.0	835	0.0	1011	21.0	1187	21.5	1363	19.5	1539	16.7	1715	2.5
132	6.5	308	20.5	484	15.0	660	0.0	836	0.0	1012	19.0	1188	21.0	1364	18.0	1540	17.0	1716	0.7
133	8.0	309	20.5	485	15.3	661	0.2	837	0.0	1013	16.0	1189	20.5	1365	17.0	1541	17.0	1717	0.2
134	8.5	310	20.5	486	16.0	662	0.5	838	1.0	1014	12.0	1190	20.0	1366	14.0	1542	17.0	1718	0.0
135	9.0	311	20.5	487	16.2	663	1.0	839	1.5	1015	9.0	1191	20.0	1367	12.0	1543	17.0	1719	0.0
136	10.0	312	20.7	488	16.7	664	2.0	840	2.0	1016	7.0	1192	19.5	1368	11.7	1544	17.0	1720	0.0
137	11.0	313	21.0	489	17.0	665	3.7	841	2.7	1017	5.5	1193	19.5	1369	12.0	1545	17.0	1721	0.0
138	11.3	314	21.2	490	17.0	666	5.5	842	2.0	1018	5.0	1194	19.5	1370	12.5	1546	17.0	1722	0.3
139	11.5	315	21.2	491	16.5	667	8.0	843	2.3	1019	4.7	1195	20.0	1371	13.5	1547	17.0	1723	1.0
140	12.0	316	21.2	492	16.0	668	9.5	844	2.5	1020	5.0	1196	20.5	1372	15.0	1548	17.0	1724	3.5
141	13.5	317	21.0	493	15.5	669	10.0	845	2.7	1021	6.0	1197	21.5	1373	17.5	1549	18.0	1725	4.5
142	14.0	318	21.0	494	14.7	670	10.0	846	2.8	1022	6.4	1198	23.0	1374	19.0	1550	17.5	1726	5.0
143	15.0	319	20.7	495	14.0	671	10.0	847	2.8	1023	6.3	1199	23.5	1375	20.0	1551	17.0	1727	5.0
144	16.0	320	20.5	496	13.5	672	10.0	848	2.5	1024	5.5	1200	24.0	1376	22.0	1552	16.0	1728	5.0
145	15.7	321	20.0	497	13.0	673	10.0	849	1.5	1025	4.0	1201	24.5	1377	23.5	1553	15.0	1729	7.5
146	15.5	322	19.5	498	12.5	674	10.5	850	1.0	1026	2.5	1202	24.7	1378	25.0	1554	13.0	1730	9.5
147	15.2	323	19.2	499	11.0	675	11.5	851	0.0	1027	0.7	1203	25.0	1379	25.0	1555	11.0	1731	11.0
148	15.1	324	19.0	500	10.0	676	12.5	852	0.0	1028	0.0	1204	25.5	1380	24.5	1556	9.0	1732	10.5
149	15.0	325	18.5	501	7.5	677	14.0	853	0.0	1029	0.0	1205	24.5	1381	23.5	1557	7.0	1733	8.5
150	15.0	326	18.5	502	4.5	678	15.5	854	0.0	1030	0.0	1206	23.5	1382	22.0	1558	4.0	1734	7.0
151	14.9	327	18.5	503	2.5	679	17.5	855	0.0	1031	0.0	1207	23.2	1383	19.0	1559	2.0	1735	9.0
152	14.8	328	18.7	504	0.5	680	18.5	856	0.2	1032	1.5	1208	23.3	1384	15.0	1560	0.5	1736	10.0
153	14.8	329	18.7	505	0.0	681	20.0	857	2.0	1033	5.0	1209	23.5	1385	11.0	1561	0.0	1737	12.0
154	15.1	330	19.0	506	0.0	682	22.0	858	5.0	1034	7.0	1210	23.5	1386	7.0	1562	0.0	1738	13.5
155	15.2	331	19.2	507	0.0	683	22.7	859	6.5	1035	9.0	1211	23.7	1387	3.0	1563	0.0	1739	15.0
156	15.3	332	19.5	508	0.0	684	23.0	860	7.5	1036	10.0	1212	24.0	1388	1.0	1564	0.0	1740	15.5
157	15.0	333	19.5	509	0.0	685	23.5	861	8.0	1037	13.0	1213	23.0	1389	0.0	1565	0.0	1741	15.0
158	14.5	334	20.2	510	0.0	686	23.8	862	9.0	1038	15.0	1214	22.5	1390	0.0	1566	0.0	1742	13.5
159	14.5	335	20.7	511	0.0	687	24.0	863	10.0	1039	16.5	1215	22.0	1391	0.0	1567	0.0	1743	12.0
160	15.0	336	21.0	512	0.0	688	24.2	864	10.5	1040	17.5	1216	21.5	1392	0.0	1568	0.0	1744	12.0
161	15.2	337	22.0	513	0.0	689	24.3	865	11.5	1041	18.5	1217	20.5	1393	0.0	1569	0.0	1745	11.0
162	15.0	338	22.7	514	0.0	690	24.0	866	12.0	1042	20.0	1218	19.5	1394	0.0	1570	0.0	1746	10.0
163	14.5	339	23.5	515	0.0	691	24.0	867	11.0	1043	21.5	1219	19.0	1395	0.0	1571	0.0	1747	8.0
164	14.7	340	24.0	516	0.0	692	23.0	868	10.5	1044	22.0	1220	18.0	1396	0.0	1572	0.0	1748	5.5
165	15.0	341	24.5	517	0.0	693	22.0	869	10.0	1045	22.5	1221	17.5	1397	0.0	1573	0.0	1749	3.0
166	15.2	342	25.0	518	0.0	694	20.0	870	8.0	1046	23.5	1222	15.0	1398	0.5	1574	0.0	1750	1.0
167	15.2	343	25.2	519	0.0	695	17.5	871	6.0	1047	24.5	1223	12.5	1399	3.0	1575	0.0	1751	0.2
168	15.0	344	25.3	520	0.0	696	15.0	872	3.0	1048	25.0	1224	11.5	1400	6.0	1576	0.0	1752	0.0
169	14.5	345	25.3	521	0.0	697	13.5	873	1.5	1049	26.0	1225	9.0	1401	7.0	1577	0.0	1753	0.0
170	12.5	346	25.3	522	0.0	698	10.5	874	0.3	1050	26.5	1226	5.0	1402	9.0	1578	0.0	1754	0.0
171	10.7	347	25.2	523	0.0	699	8.5	875	0.0	1051	27.0	1227	4.0	1403	11.0	1579	0.0	1755	0.0
172	8.5	348	25.0	524	0.0	700	5.0	876	0.0	1052	27.5	1228	5.5	1404	13.0	1580	0.0	1756	0.0
173	5.0	349	25.0	525	0.0	701	3.0	877	0.0	1053	27.7	1229	6.5	1405	15.0	1581	0.0	1757	0.0
174	2.5	350	25.0	526	0.0	702	1.0	878	0.0	1054	28.0	1230	7.5	1406	16.0	1582	0.0	1758	0.0
175	2.0	351	24.8	527	1.0	703	0.5	879	0.0	1055	28.2	1231	8.0	1407	18.0	1583	0.0	1759	0.0
176	3.0	352	24.7	528	3.5	704	0.0	880	0.0	1056	28.2	1232	10.0	1408	19.5	1584	0.0	1760	0.0

Table B-1.
SPEED DISTRIBUTION
FOR
ANN ARBOR ONE DRIVING SCHEDULE

SPEED RANGE	FREQUENCY	FREQUENCY,%	CUMULATIVE FREQUENCY,%
ZERO	387	21.99	21.99
0.0 - 2.5	120	6.82	28.81
2.5 - 7.5	206	11.70	40.51
7.5 - 12.5	231	13.13	53.64
12.5 - 17.5	255	14.49	68.12
17.5 - 22.5	285	16.19	84.32
22.5 - 27.5	192	10.91	95.23
27.5 - 32.5	78	4.43	99.66
32.5 - 37.5	6	0.34	100.00
37.5 - 42.5	0	0.0	100.00
42.5 - 47.5	0	0.0	100.00
47.5 - 52.5	0	0.0	100.00
52.5 - 57.5	0	0.0	100.00
57.5 - 62.5	0	0.0	100.00
62.5 -100.0	0	0.0	100.00

Table B-2.

ACCEL/DECEL DISTRIBUTION
FOR
ANN ARBOR ONE DRIVING SCHEDULE

ACCEL/DECEL RANGE	FREQUENCY	FREQUENCY,%	CUMULATIVE FREQUENCY,%
-20.0 - -9.5	0	0.0	0.0
-9.5 - -8.5	0	0.0	0.0
-8.5 - -7.5	0	0.0	0.0
-7.5 - -6.5	1	0.06	0.06
-6.5 - -5.5	0	0.0	0.06
-5.5 - -4.5	3	0.17	0.23
-4.5 - -3.5	15	0.85	1.08
-3.5 - -2.5	37	2.10	3.18
-2.5 - -1.5	105	5.97	9.15
-1.5 - -0.5	180	10.23	19.39
-0.5 - 0.5	863	49.06	68.45
0.5 - 1.5	331	18.82	87.27
1.5 - 2.5	179	10.18	97.44
2.5 - 3.5	40	2.27	99.72
3.5 - 4.5	5	0.28	100.00
4.5 - 5.5	0	0.0	100.00
5.5 - 6.5	0	0.0	100.00
6.5 - 7.5	0	0.0	100.00
7.5 - 8.5	0	0.0	100.00
8.5 - 9.5	0	0.0	100.00
9.5 - 20.0	0	0.0	100.00

Table B-3.
OPERATIONAL MODE SUMMARY
FOR
ANN ARBOR ONE DRIVING SCHEDULE

OPERATIONAL MODE	FREQUENCY	FREQUENCY,%
IDLE	362	20.58
CRUISE	501	28.48
ACCELERATION	555	31.55
DECELERATION	341	19.39

Table B-4.

TRIP STATISTICS
FOR
ANN ARBOR ONE DRIVING SCHEDULE

TRIP LENGTH	5.57
TRIP DURATION	29.33
AVERAGE SPEED	11.39
STOPS/MILE	4.49

Table B-5. COMPARISON OF OPERATING CHARACTERISTICS

	AA-I	FROM "SMALL BUS" REPORT[a] A	B	C	D
Stops/Mile	4.17	10	12	6	2
Max. Speed, mph	33.6	20	20	30	40
Init. Acc. mph/sec	1.123	3	3	3	--
Avg. Dec. ft/sec^2	2.023	6	6	6	6
Stopped Time, secs/block	6.03	10	10	10	10
Running time, secs/block	31.51	24.6	21.6	34.5	60.7
Block Speed, mph	9.6	10.4	9.5	16.2	25.5
Running Speed, mph	11.42	14.6	13.9	20.9	29.6
Mileage/8-Hr. shift	91.39	83	74	103	204
Ratio Running to Stopped	4.23:1	25:1	2.1:1	3.5:1	6.0:1

[a] "Small Bus, Operating Profile and Performance Requirements for Small Buses: DOT-UT-40015, Report 3, December 3, 1976.

Appendix C

SURVEILLANCE ACCELERATION-DECELERATION DRIVING SEQUENCE

Appendix C

SURVEILLANCE ACCELERATION-DECELERATION DRIVING SEQUENCE

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
1.	0.0	48.	9.4	95.	28.8	142.	44.1	189.	60.0	236.	56.4
2.	0.0	49.	6.4	96.	29.8	143.	43.4	190.	60.0	237.	57.5
3.	0.0	50.	3.7	97.	30.0	144.	42.2	191.	60.0	238.	58.5
4.	0.0	51.	1.6	98.	30.0	145.	40.7	192.	60.0	239.	59.3
5.	0.0	52.	0.3	99.	30.0	146.	38.9	193.	60.0	240.	60.0
6.	0.0	53.	0.0	100.	30.0	147.	36.8	194.	60.0	241.	60.0
7.	0.0	54.	0.0	101.	30.0	148.	34.6	195.	60.0	242.	60.0
8.	0.0	55.	0.0	102.	30.0	149.	32.6	196.	60.0	243.	60.0
9.	0.0	56.	0.0	103.	30.0	150.	31.0	197.	60.0	244.	60.0
10.	0.0	57.	0.0	104.	30.0	151.	30.1	198.	60.0	245.	60.0
11.	1.8	58.	0.0	105.	30.0	152.	30.0	199.	60.0	246.	60.0
12.	5.1	59.	0.0	106.	30.0	153.	30.0	200.	59.7	247.	60.0
13.	9.1	60.	0.0	107.	30.0	154.	30.0	201.	59.1	248.	60.0
14.	13.2	61.	0.0	108.	30.0	155.	30.0	202.	58.3	249.	60.0
15.	17.1	62.	0.0	109.	30.0	156.	30.0	203.	57.2	250.	60.0
16.	20.6	63.	0.0	110.	30.0	157.	30.0	204.	55.7	251.	60.0
17.	23.4	64.	1.7	111.	30.0	158.	30.0	205.	53.8	252.	60.0
18.	25.7	65.	4.6	112.	30.0	159.	30.0	206.	51.7	253.	60.0
19.	27.3	66.	7.6	113.	30.7	160.	30.0	207.	49.6	254.	60.0
20.	28.6	67.	10.3	114.	31.7	161.	30.0	208.	47.5	255.	60.0
21.	29.6	68.	12.3	115.	32.9	162.	30.0	208.	45.9	256.	60.0
22.	30.0	69.	13.7	116.	34.2	163.	30.0	210.	45.1	257.	59.7
23.	30.0	70.	14.6	117.	35.6	164.	30.0	211.	45.0	258.	59.3
24.	30.0	71.	15.0	118.	37.0	165.	30.0	212.	45.0	259.	58.8
25.	30.0	72.	15.0	119.	38.5	166.	30.0	213.	45.0	260.	58.3
26.	30.0	73.	15.0	120.	39.9	167.	30.0	214.	45.0	261.	57.6
27.	30.0	74.	15.0	121.	41.2	168.	31.0	215.	45.0	262.	56.9
28.	30.0	75.	15.0	122.	42.4	169.	32.5	216.	45.0	263.	56.0
29.	30.0	76.	15.0	123.	43.5	170.	34.3	217.	45.0	264.	54.9
30.	30.0	77.	15.0	124.	44.4	171.	36.2	218.	45.0	265.	53.8
31.	30.0	78.	15.0	125.	45.0	172.	38.3	219.	45.0	266.	52.4
32.	30.0	79.	15.0	126.	45.0	173.	40.5	220.	45.0	267.	50.9
33.	30.0	80.	15.0	127.	45.0	174.	42.7	221.	45.0	268.	49.2
34.	30.0	81.	15.0	128.	45.0	175.	45.0	222.	45.0	269.	47.4
35.	30.0	82.	15.0	129.	45.0	176.	47.3	223.	45.0	260.	45.5
36.	30.0	83.	15.0	130.	45.0	177.	49.5	224.	45.0	271.	43.4
37.	30.0	84.	15.0	131.	45.0	178.	51.6	225.	45.0	272.	41.1
38.	29.6	85.	15.0	123.	45.0	179.	53.6	226.	45.0	273.	38.8
39.	28.9	86.	15.0	133.	45.0	180.	55.5	227.	45.6	274.	36.4
40.	28.1	87.	15.9	134.	45.0	181.	57.2	228.	46.5	275.	34.0
41.	26.9	88.	17.3	135.	45.0	182.	58.6	229.	47.6	276.	31.5
42.	25.4	89.	18.9	136.	45.0	183.	59.8	230.	48.7	277.	29.0
43.	23.5	90.	20.6	137.	45.0	184.	60.0	231.	50.0	278.	26.6
44.	21.2	91.	22.4	138.	45.0	185.	60.0	232.	51.3	279.	24.3
45.	18.5	92.	24.2	139.	45.0	186.	60.0	233.	52.6	280.	22.1
46.	15.6	93.	25.9	140.	45.0	187.	60.0	234.	53.9	281.	20.2
47.	12.5	94.	27.5	141.	44.7	188.	60.0	235.	55.2	282.	18.4

Appendix C

SURVEILLANCE ACCELERATION-DECELERATION DRIVING SEQUENCE

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
283.	17.0	331.	60.0	379.	18.4	427.	55.7	475.	15.0	523.	45.0
284.	15.9	332.	60.0	380.	21.4	428.	54.5	476.	15.0	524.	45.0
285.	15.2	333.	60.0	381.	24.2	429.	53.1	477.	15.0	525.	45.0
286.	15.0	334.	60.0	382.	27.0	430.	51.5	478.	15.0	526.	45.0
287.	15.0	335.	60.0	383.	29.6	431.	49.6	479.	15.0	527.	45.0
288.	15.0	336.	60.0	384.	32.1	432.	47.8	480.	15.0	528.	45.0
289.	15.0	337.	60.0	385.	34.5	433.	45.8	481.	15.0	529.	45.0
290.	15.0	338.	60.0	386.	36.8	434.	43.7	482.	15.0	530.	45.0
291.	15.0	339.	60.0	387.	39.0	435.	41.6	483.	14.4	531.	45.0
292.	15.0	340.	60.0	388.	41.0	436.	39.4	484.	13.3	532.	45.0
293.	15.0	341.	60.0	389.	43.0	437.	37.3	485.	11.3	533.	45.0
294.	15.0	342.	60.0	390.	44.8	438.	35.4	486.	8.5	534.	45.0
295.	15.0	343.	59.4	391.	46.5	439.	33.6	487.	5.2	535.	45.0
296.	15.0	344.	58.5	392.	48.1	440.	32.1	488.	2.1	536.	45.0
297.	15.0	345.	57.4	393.	49.6	441.	30.9	489.	0.2	537.	45.0
298.	15.0	346.	56.1	394.	51.0	442.	30.2	490.	0.0	538.	44.5
299.	15.0	347.	54.4	395.	52.3	443.	30.0	491.	0.0	539.	43.9
300.	15.0	348.	52.4	396.	53.5	444.	30.0	492.	0.0	540.	43.0
301.	15.0	349.	49.9	397.	54.5	445.	30.0	493.	0.0	541.	41.8
302.	16.7	350.	46.9	398.	55.5	446.	30.0	494.	0.0	542.	40.2
303.	20.0	351.	43.6	399.	56.4	447.	30.0	495.	0.0	543.	38.2
304.	23.1	352.	39.8	400.	57.2	448.	30.0	496.	0.0	544.	35.8
305.	26.1	353.	35.7	401.	57.9	449.	30.0	497.	0.0	545.	33.1
306.	28.9	354.	31.2	402.	58.5	450.	30.0	498.	0.0	546.	30.1
307.	31.6	355.	26.6	403.	58.9	451.	30.0	490.	0.0	547.	26.9
308.	34.2	356.	21.9	404.	59.3	452.	30.0	500.	0.0	548.	23.7
309.	36.6	357.	17.3	405.	60.0	453.	30.0	501.	2.4	549.	20.7
310.	38.9	358.	12.8	406.	60.0	454.	30.0	502.	6.3	550.	18.1
311.	41.1	359.	8.7	407.	60.0	455.	30.0	503.	10.0	551.	16.1
312.	43.1	360.	5.1	408.	60.0	456.	30.0	504.	13.5	552.	15.1
313.	45.0	361.	2.3	409.	60.0	457.	30.0	505.	16.8	553.	15.0
314.	46.8	362.	0.5	410.	60.0	458.	30.0	506.	19.9	554.	15.0
315.	48.5	363.	0.0	411.	60.0	459.	29.5	507.	22.8	555.	15.0
316.	50.1	364.	0.0	412.	60.0	460.	28.7	508.	25.5	556.	15.0
317.	51.5	365.	0.0	413.	60.0	461.	27.3	509.	28.0	557.	15.0
318.	52.8	366.	0.0	414.	60.0	462.	25.3	510.	30.3	558.	15.0
319.	54.0	367.	0.0	415.	60.0	463.	22.7	511.	32.4	559.	15.0
320.	55.1	368.	0.0	416.	60.0	464.	19.9	512.	34.4	560.	15.0
321.	56.1	369.	0.0	417.	60.0	465.	17.3	513.	36.2	561.	15.0
322.	56.9	370.	0.0	418.	60.0	466.	15.4	514.	37.8	562.	15.0
323.	57.7	371.	0.0	419.	60.0	467.	15.0	515.	39.2	563.	15.0
324.	58.3	372.	0.0	420.	60.0	468.	15.0	516.	40.5	564.	15.0
325.	58.9	373.	0.0	421.	59.7	469.	15.0	517.	41.6	565.	15.0
326.	59.3	374.	1.5	422.	59.3	470.	15.0	518.	42.6	566.	15.0
327.	60.0	375.	5.2	423.	58.9	471.	15.0	519.	43.4	567.	15.0
328.	60.0	376.	8.6	424.	58.3	472.	15.0	520.	44.0	568.	15.0
329.	60.0	377.	12.0	425.	57.6	473.	15.0	521.	44.5	569.	15.9
330.	60.0	378.	15.3	426.	56.7	474.	15.0	522.	45.0	570.	17.3

Appendix C

SURVEILLANCE ACCELERATION-DECELERATION DRIVING SEQUENCE

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
571.	18.9	621.	0.0	671.	59.6	721.	28.7	771.	60.0	821.	2.9
572.	20.7	622.	0.0	672.	59.0	722.	29.6	772.	60.0	822.	0.3
573.	22.6	623.	0.0	673.	58.3	723.	30.0	773.	60.0	823.	0.0
574.	24.5	624.	0.0	674.	57.4	724.	30.0	774.	60.0	824.	0.0
575.	26.6	625.	0.0	675.	56.5	725.	30.0	775.	60.0	825.	0.0
576.	28.7	626.	0.0	676.	55.3	726.	30.0	776.	60.0	826.	0.0
577.	30.8	627.	0.0	677.	54.0	727.	30.0	777.	60.0	827.	0.0
578.	32.9	628.	0.0	678.	52.4	728.	30.0	778.	60.0	828.	0.0
579.	34.9	629.	0.0	679.	50.6	729.	30.0	779.	60.0	829.	0.0
580.	36.9	630.	0.0	680.	48.5	730.	30.0	780.	59.6	830.	0.0
581.	38.8	631.	2.6	681.	46.2	731.	30.0	781.	59.1	831.	0.0
582.	40.5	632.	7.1	682.	43.6	732.	30.0	782.	58.4	832.	0.0
583.	42.0	633.	11.5	683.	40.8	733.	30.0	783.	57.6	833.	0.0
584.	43.4	634.	15.7	684.	37.8	734.	30.0	784.	56.5	834.	0.9
585.	44.5	635.	19.6	685.	34.6	735.	30.0	785.	55.1	835.	4.0
586.	45.0	636.	23.4	686.	31.3	736.	30.0	786.	53.4	836.	6.9
587.	45.0	637.	26.9	687.	27.9	737.	30.0	787.	51.5	837.	9.8
588.	45.0	638.	30.3	688.	24.3	738.	30.0	788.	49.3	838.	12.6
589.	45.0	639.	33.4	689.	20.8	739.	30.5	789.	46.8	839.	15.3
590.	45.0	640.	36.4	690.	17.3	740.	31.4	790.	44.3	840.	17.9
591.	45.0	641.	39.2	691.	14.0	741.	32.4	791.	41.6	841.	20.4
592.	45.0	642.	41.8	692.	10.7	742.	33.6	792.	38.9	842.	22.8
593.	45.0	643.	44.2	693.	7.8	743.	34.8	793.	36.3	843.	25.2
594.	45.0	644.	46.4	694.	5.2	744.	36.0	794.	34.0	844.	27.4
595.	45.0	645.	48.5	695.	3.0	745.	37.4	795.	32.1	845.	29.6
596.	45.0	646.	50.3	696.	1.3	746.	38.7	796.	30.7	846.	31.7
597.	45.0	647.	52.0	697.	0.3	747.	40.2	797.	30.0	847.	33.7
598.	45.0	648.	53.5	698.	0.0	748.	41.6	798.	30.0	848.	35.7
599.	45.0	649.	54.9	699.	0.0	749.	43.1	799.	30.0	849.	37.5
600.	45.0	650.	56.1	700.	0.0	750.	44.6	800.	30.0	850.	39.3
601.	45.0	651.	57.1	701.	0.0	751.	46.0	801.	30.0	851.	41.0
602.	44.5	652.	58.0	702.	0.0	752.	47.5	802.	30.0	852.	42.6
603.	43.7	653.	58.7	703.	0.0	753.	48.9	803.	30.0	853.	44.2
604.	42.7	654.	59.3	704.	0.0	754.	50.4	804.	30.0	854.	45.6
605.	41.4	655.	60.0	705.	0.0	755.	51.7	805.	30.0	855.	47.0
606.	39.8	656.	60.0	706.	0.0	756.	53.0	806.	30.0	856.	48.4
607.	37.8	657.	60.0	707.	0.0	757.	54.3	807.	30.0	857.	49.6
608.	35.3	658.	60.0	708.	0.0	758.	55.5	808.	30.0	858.	50.8
609.	32.5	659.	60.0	709.	1.2	759.	56.6	809.	30.0	859.	51.9
610.	29.2	660.	60.0	710.	3.5	760.	57.6	810.	30.0	860.	52.9
611.	25.6	661.	60.0	711.	6.4	761.	58.5	811.	30.0	861.	53.8
612.	21.8	662.	60.0	712.	9.6	762.	59.3	812.	30.0	862.	54.7
613.	17.8	663.	60.0	713.	12.8	763.	60.0	813.	30.0	863.	55.5
614.	13.8	664.	60.0	714.	15.9	764.	60.0	814.	29.1	864.	56.3
615.	9.9	665.	60.0	715.	18.8	765.	60.0	815.	27.7	865.	56.9
616.	6.4	666.	60.0	716.	21.3	766.	60.0	816.	25.4	866.	57.5
617.	3.5	667.	60.0	717.	23.5	767.	60.0	817.	22.0	867.	58.1
618.	1.3	668.	60.0	718.	25.2	768.	60.0	818.	17.6	868.	58.5
619.	0.1	669.	60.0	719.	26.7	769.	60.0	819.	12.5	869.	58.9
620.	0.0	670.	60.0	720.	27.8	770.	60.0	820.	7.4	870.	59.3

Appendix C

SURVEILLANCE ACCELERATION-DECELERATION DRIVING SEQUENCE

Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)	Time (sec)	Speed (mph)
871.	60.0	917.	3.4	963.	30.0	1009.	41.6
872.	60.0	918.	1.9	964.	30.0	1010.	38.0
873.	60.0	919.	0.8	965.	30.7	1011.	34.7
874.	60.0	920.	0.2	966.	31.8	1012.	32.1
875.	60.0	921.	0.0	967.	33.1	1013.	30.4
876.	60.0	922.	0.0	968.	34.5	1014.	30.0
877.	60.0	923.	0.0	969.	36.0	1015.	30.0
878.	60.0	924.	0.0	970.	37.6	1016.	30.0
879.	60.0	925.	0.0	971.	39.3	1017.	30.0
880.	60.0	926.	0.0	972.	41.0	1018.	30.0
881.	60.0	927.	0.0	973.	42.8	1019.	30.0
882.	60.0	928.	0.0	974.	44.6	1020.	30.0
883.	60.0	929.	0.0	975.	46.3	1021	30.0
884.	60.0	930.	0.0	976.	48.1	1022.	30.0
885.	60.0	931.	0.0	977.	49.8	1023.	30.0
886.	60.0	932.	0.8	978.	51.5	1024.	30.0
887.	59.7	933.	2.7	979.	53.0	1025.	30.0
888.	59.2	934.	4.9	980.	54.6	1026.	30.0
889.	58.7	935.	7.5	981.	56.0	1027.	30.0
890.	58.1	936.	10.1	982.	57.2	1028.	30.0
891.	57.4	937.	12.8	983.	58.4	1029.	30.0
892.	56.7	938.	15.4	984.	59.3	1030.	29.4
893.	55.8	939.	17.8	985.	60.0	1031.	28.5
894.	54.8	940.	20.1	986.	60.0	1032.	27.2
895.	53.7	941.	22.1	987.	60.0	1033.	25.4
896.	52.4	942.	23.8	988.	60.0	1034.	22.9
897.	50.9	943.	25.2	989.	60.0	1035.	19.9
898.	49.3	944.	26.5	990.	60.0	1036.	16.4
899.	47.6	945.	27.4	991.	60.0	1037.	12.5
900.	45.7	946.	28.3	992.	60.0	1038.	8.6
901.	43.6	947.	29.0	993.	60.0	1039.	5.0
902.	41.4	948.	29.8	994.	60.0	1040.	2.1
903.	39.0	949.	30.0	995.	60.0	1041.	0.3
904.	36.6	950.	30.0	996.	60.0	1042.	0.0
905.	34.0	951.	30.0	997.	60.0	1043.	0.0
906.	31.3	952.	30.0	998.	60.0	1044.	0.0
907.	28.6	953.	30.0	999.	60.0	1045.	0.0
908.	25.8	954.	30.0	1000.	60.0	1046.	0.0
909.	22.9	955.	30.0	1001.	59.5	1047.	0.0
910.	20.1	956.	30.0	1002.	58.7	1048.	0.0
911.	17.3	957.	30.0	1003.	57.6	1049.	0.0
912.	14.6	958.	30.0	1004.	56.1	1050.	0.0
913.	12.0	959.	30.0	1005.	54.0	1051.	0.0
914.	9.5	960.	30.0	1006.	51.5	1052.	0.0
915.	7.2	961.	30.0	1007.	48.5	1053.	0.0
916.	5.2	962.	30.0	1008.	45.1	1054.	0.0

Appendix D

CERTIFICATION EMISSIONS FOR THE ENGINE FAMILIES REPRESENTED IN THE PROGRAM

Appendix D

CERTIFICATION EMISSIONS FOR THE ENGINE FAMILIES REPRESENTED IN THE PROGRAM

As explained in the text, the engines in the demand-responsive vehicles tested in this program were certified using an engine dynamometer test. The engines in the vehicles used in the program could not be removed for testing. Therefore, the certification test results for the engine families represented in this program are shown in Table D-1. The reader should bear in mind that the table is included for reference purposes since no well defined relationship exists between the engine dynamometer procedure and the Federal Light-Duty Test Procedure, or similar chassis dynamometer procedures.

The calibration year is the year that the calibration was originally certified. Note that some 1976 vehicles have engines with 1977 calibrations. The 125-hour emission results are taken from the emission data engine at the 125-hour engine operation point. When added to the deterioration factor (the deterioration factor is obtained from a 1,500-hour durability data engine), the result is the official certification value. This certification value is what is compared to the Federal emission standards to see if the engine passes or fails the standards. Note that there is no deterioration factor or official certification value for HC or NO_x by themselves. This is because, for the years for which the engines were certified there were no standards for HC or NO_x separately.

Table D-1. CERTIFICATION ENGINE EMISSIONS

VEHICLE No.	VEHICLE Year	MAKE	FAMILY	CONTROL SYSTEM	CALIBRATION YEAR	EMISSION RESULTS[a] CERT. REQMTS.	HC + NO_x	CO	HC	NO_x
1	1976	Ford	351 W	IMCO	1977	125 Hr DF Cert	12.71 0.00 12.71	18.13 0.00 18.13	2.33 - -	10.38 - -
5	1977	Ford	351 W	IMCO	1977	125 Hr DF Cert	14.92 0.00 14.92	30.67 0.00 30.67	2.68 - -	12.24 - -
4	1976	Ford	460	IMCO	1977	125 Hr DF Cert	14.15 0.00 14.15	23.71 0.00 23.71	2.84 - -	11.31 - -
10	1976	Chevy	GM 113 350 CID	CCS	1977	125 Hr DF Cert	9.20 2.49 11.69	19.17 7.67 26.84	2.68 - -	6.52 - -
2	1976	Chevy	GM 113 400 CID	CCS	1977	125 Hr DF	10.13 2.49	27.34 7.67	2.55 -	7.58 -
6	1977	Chevy	GM 113 400 CID	CCS	1977	Cert	12.62	35.01	-	-
15	1977	Dodge	LA-1 360-1	EM	1977	125 Hr DF Cert	15.40 0.296 15.70	14.95 0.00 14.95	3.32 - -	12.08 - -
13	1976	Dodge	LA-1 360-1	EM	1976	125 Hr DF	15.40 0.296	14.95 0.00	3.32 -	1.08 -
17	1976	Dodge	LA-1 360-1	EM	1976	Cert	15.70	14.95	-	-
11	1977	Dodge	LA 318-1	EM	1977	125 Hr DF	14.51 0.00	20.81 3.30	4.95 -	9.56 -
16	1977	Dodge	LA 318-1	EM	1977	Cert	14.51	24.11	-	-

DF - Deterioration Factor
IMCO - Improved Combustion
CCS - Controlled Combustion System
EM - Engine Modification

[a]All emission results are on a gram/brake horsepower - Hr (gm/bhp-hr) basis.

Appendix E

INDIVIDUAL VEHICLE TEST RESULTS

DIAL A RIDE LIVONIA * TESTED THIS MONTH

VEHICLE NUMBER	MODEL YEAR	MAKE	CID	TEST TYPE	HC	CO	CO2	NOXC	FUEL ECON (MPG)	TEST NO.
					---- EMISSION RESULTS (GMS/MI) ----					
0001 *	1976	FORD	351	1975 FTP	5.08	43.13	844.0	7.93	9.56	1
				MOD(BAG)	3.90	26.62	818.5	10.21	10.17	1
				MOD(CLC)	4.15	27.72	823.9	11.03	10.08	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.31	1.29	106.6	0.10	80.95	1
				5 MPH	2.38	9.35	1334.3	1.00	6.54	1
				10 MPH	1.38	9.78	885.1	1.10	9.61	1
				15 MPH	1.20	7.34	678.0	1.07	12.80	1
				30 MPH	2.39	3.95	467.9	2.97	18.42	1
				45 MPH	2.35	9.65	538.6	0.56	15.80	1
				60 MPH	2.12	6.69	605.5	0.98	14.25	1
				AA 1a	4.44	17.94	951.2	6.23	8.93	1
				AA 1b	4.74	19.24	1009.0	7.84	8.42	1
				(10% ADDITIONAL LOAD)						
0002 *	1976	CHEV	400	1975 FTP	2.20	19.61	851.1	7.09	9.98	1
				MOD(BAG)	1.79	29.75	788.8	10.52	10.55	1
				MOD(CLC)	1.93	31.05	812.6	11.51	10.23	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.30	0.60	149.0	0.36	58.84	1
				5 MPH	2.38	8.30	1840.3	2.57	4.77	1
				10 MPH	1.37	4.14	900.7	1.20	9.74	1
				15 MPH	0.93	3.23	646.1	0.82	13.57	1
				30 MPH	0.66	2.97	520.4	2.31	16.84	1
				45 MPH	0.54	3.50	578.2	6.51	15.16	1
				60 MPH	0.89	5.98	683.8	12.58	12.75	1
				AA 1a	2.01	5.82	1088.9	6.49	8.04	1
				AA 1b	2.31	6.63	1160.7	8.32	7.53	1
				(10% ADDITIONAL LOAD)						

DIAL A RIDE LIVONIA * TESTED THIS MONTH

VEHICLE NUMBER	MODEL YEAR	MAKE	CID	TEST TYPE	---- EMISSION RESULTS (GMS/MI) ---- HC	CO	CO2	NOXC	FUEL ECON (MPG)	TEST NO.
0004 *	1976	FORD	460	1975 FTP	4.06	58.21	856.3	8.27	9.24	1
				MOD(BAG)	3.61	25.59	796.3	11.56	10.47	1
				MOD(CLC)	3.63	27.19	778.3	12.41	10.66	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.58	15.63	100.6	0.07	69.86	1
				5 MPH	6.10	166.11	1261.6	0.50	5.76	1
				10 MPH	2.43	32.73	757.9	0.42	10.86	1
				15 MPH	1.57	21.02	661.0	0.56	12.70	1
				30 MPH	1.31	6.23	522.7	2.47	16.54	1
				45 MPH	1.05	5.11	583.4	6.07	14.92	1
				60 MPH	1.75	8.19	694.4	13.04	12.45	1
				AA 1 a	3.92	55.25	1001.0	6.25	8.07	1
				AA 1 b	4.26	58.13	1054.1	8.16	7.66	1
				(10% ADDITIONAL LOAD)						
0005 *	1977	FORD	351	1975 FTP	5.43	61.79	681.6	6.01	11.15	1
				MOD(BAG)	3.76	32.69	709.4	8.53	11.49	1
				MOD(CLC)	3.90	34.36	709.4	9.15	11.44	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.70	11.31	57.9	0.03	113.92	1
				5 MPH	7.10	100.27	730.7	0.32	9.75	1
				10 MPH	2.48	4.02	693.4	0.57	12.54	1
				15 MPH	2.09	2.75	416.1	0.49	20.78	1
				30 MPH	1.72	3.17	413.4	1.71	20.94	1
				45 MPH	2.17	7.65	451.4	4.37	18.87	1
				60 MPH	2.22	6.99	564.1	9.38	15.25	1
				AA 1a	5.61	55.59	739.9	4.14	10.50	1
				AA 1b	6.15	59.58	794.5	5.43	9.78	1
				(10% ADDITIONAL LOAD)						

VEHICLE NUMBER	MODEL YEAR	MAKE	CID	TEST TYPE	---- EMISSION RESULTS (GMS/MI) ---- HC	CO	CO2	NOXC	FUEL ECON (MPG)	TEST NO.
0006 *	1977	CHEV	400	1975 FTP	4.76	34.26	833.4	4.19	9.84	1
				MOD(BAG)	3.73	30.64	748.9	9.97	10.97	1
				MOD(CLC)	3.94	31.71	720.9	10.70	11.33	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.46	0.48	90.7	0.07	95.55	1
				5 MPH	3.65	7.78	1313.4	0.69	6.64	1
				10 MPH	1.77	5.03	793.6	0.75	11.00	1
				15 MPH	1.87	4.46	788.7	0.96	11.07	1
				30 MPH	1.46	4.71	512.2	1.77	16.93	1
				45 MPH	0.89	5.65	571.4	6.08	15.22	1
				60 MPH	0.89	7.50	743.0	15.24	11.72	1
				AA 1a	4.96	7.11	889.3	4.74	9.69	1
				AA 1b	5.38	7.68	947.0	6.39	9.09	1
				(10% ADDITIONAL LOAD)						
0010 *	1976	CHEV	350	1975 FTP	4.98	243.96	694.7	2.87	8.11	1
				MOD(BAG)	4.78	282.91	593.5	2.38	8.43	1
				MOD(CLC)	4.97	275.00	601.5	2.43	8.46	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.72	35.09	108.1	0.11	53.63	1
				5 MPH	8.99	438.52	1316.0	1.06	4.36	1
				10 MPH	5.91	234.22	648.1	0.46	8.58	1
				15 MPH	4.02	168.48	455.3	0.41	12.11	1
				30 MPH	2.32	126.24	399.1	1.16	14.67	1
				45 MPH	2.32	144.44	456.2	2.70	12.85	1
				60 MPH	2.67	192.46	615.4	4.93	9.58	1
				AA 1a	5.31	260.34	827.4	2.31	7.08	1
				AA 1b	5.12	259.94	848.9	2.47	6.97	1
				(10% ADDITIONAL LOAD)						

DIAL A RIDE LIVONIA * TESTED THIS MONTH

VEHICLE NUMBER	MODEL YEAR	MAKE	CID	TEST TYPE	---- EMISSION RESULTS (GMS/MI) ---- HC	CO	CO2	NOXC	FUEL ECON (MPG)	TEST NO.
0011 *	1977	DODG	318	1975 FTP	4.65	55.61	732.1	3.94	10.64	1
				MOD(BAG)	2.84	42.46	679.7	5.13	11.75	1
				MOD(CLC)	2.83	42.25	679.7	5.48	11.75	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.42	5.43	90.6	0.12	88.37	1
				5 MPH	3.20	44.19	1156.3	0.93	7.18	1
				10 MPH	1.16	12.99	664.5	0.54	12.89	1
				15 MPH	1.32	6.90	466.8	0.52	18.42	1
				30 MPH	1.43	5.98	399.9	1.29	21.45	1
				45 MPH	1.11	4.37	460.5	3.67	18.85	1
				60 MPH	0.73	4.78	538.1	6.48	16.20	1
				AA 1a	3.41	23.77	846.7	3.69	9.92	1
				AA 1b	3.57	25.61	887.4	4.27	9.45	1
				(10% ADDITIONAL LOAD)						
0015 *	1977	DODG	360	1975 FTP	4.97	67.69	700.9	6.72	10.78	1
				MOD(BAG)	4.13	85.31	662.3	9.62	10.96	1
				MOD(CLC)	4.39	89.68	665.0	10.58	10.83	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	0.68	19.39	94.1	0.10	70.06	1
				5 MPH	7.87	220.12	1130.1	1.24	5.91	1
				10 MPH	3.55	64.65	780.8	0.99	9.93	1
				15 MPH	2.65	42.59	574.0	0.88	13.67	1
				30 MPH	2.28	7.78	387.5	3.32	21.81	1
				45 MPH	2.39	20.36	426.4	7.17	19.05	1
				60 MPH	2.75	30.86	526.1	13.64	15.22	1
				AA 1a	5.24	80.71	813.5	7.96	9.27	1
				AA 1b	5.98	93.16	877.4	6.50	8.51	1
				(10% ADDITIONAL LOAD)						

DIAL A RIDE LIVONIA * TESTED THIS MONTH

VEHICLE NUMBER	MODEL YEAR	MAKE	CID	TEST TYPE	---- EMISSION RESULTS (GMS/MI) ---- HC	CO	CO2	NOXC	FUEL ECON(MPG)	TEST NO.
0013*	1976	DODGE	360	1975 FTP	7.68	153.64	725.66	5.42	8.95	1
				MOD(BAG)	-	-	-	-	-	1
				MOD(CLS)	-	-	-	-	-	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	1.42	29.09	59.02	0.03	81.26	1
				5 MPH	17.65	373.86	829.55	0.31	6.03	1
				10 MPH	6.76	175.68	456.86	0.31	11.77	1
				15 MPH	4.10	118.23	385.47	0.21	15.19	1
				30 MPH	1.62	9.63	453.51	1.30	18.73	1
				45 MPH	2.68	61.52	455.61	2.01	15.83	1
				60 MPH	2.64	84.06	594.46	5.22	12.08	1
				AA 1 a	7.17	145.98	750.45	2.74	8.85	1
				AA 1 b	7.73	154.57	797.03	3.42	8.34	1
				(10% ADDITIONAL LOAD)						

DIAL A RIDE LIVONIA * TESTED THIS MONTH

VEHICLE NUMBER	MODEL YEAR	MAKE	CID	TEST TYPE	---- EMISSION RESULTS (GMS/MI) ---- HC	CO	CO2	NOXC	FUEL ECON (MPG)	TEST NO.
0016 *	1977	DODG	318	1975 FTP	30.78	76.79	827.0	12.32	8.49	1
				MOD(BAG)	19.67	80.76	866.8	13.60	8.40	1
				MOD(CLC)	19.78	79.72	856.0	14.69	8.50	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	3.25	6.64	94.8	0.19	76.82	1
				5 MPH	47.32	29.09	1138.0	2.23	6.65	1
				10 MPH	38.71	14.63	516.4	1.46	13.40	1
				15 MPH	63.44	7.88	549.1	6.25	11.64	1
				30 MPH	43.66	2.98	475.6	9.46	14.34	1
				45 MPH	40.98	6.52	574.2	14.53	12.42	1
				60 MPH	12.05	20.20	728.5	18.39	11.12	1
				AA 1a	44.94	27.10	959.1	13.91	7.76	1
				AA 1b	46.52	30.87	1023.9	15.04	7.28	1
				(10% ADDITIONAL LOAD)						
0017 *	1976	DODG	360	1975 FTP	8.46	178.53	879.5	5.41	7.48	1
				MOD(BAG)	6.24	181.17	853.3	7.09	7.67	1
				MOD(CLC)	6.59	180.10	858.7	7.52	7.63	1
				STEADY STATES (GMS/MIN AND MIN/GAL AT 0 MPH)						
				0 MPH	1.18	38.84	72.8	0.04	64.50	1
				5 MPH	10.64	494.24	1151.4	0.66	4.52	1
				10 MPH	4.94	219.22	645.1	0.42	8.83	1
				15 MPH	3.64	136.98	592.7	0.44	10.83	1
				30 MPH	3.50	48.32	495.8	3.27	13.23	1
				45 MPH	3.51	51.95	618.1	7.95	12.49	1
				60 MPH	2.72	50.38	807.1	12.38	9.92	1
				AA 1a	8.12	233.77	912.5	3.63	6.80	1
				AA 1b	9.07	262.44	936.7	3.79	6.44	1
				(10% ADDITIONAL LOAD)						

DIAL A RIDE   0 0 1 C A R D L I S T I N G   LIVONIA

CAR NO.	CAR MCH	FY 74	FY74 NO.	TEST VP	TEST FE	TEST MDL	TEST KM	RUN NO.	DATE	MAKE CODE	VIN	YR	MAKE	MODL	MOD SIZ	CID	TR	CV	NO. CYL	AC	INRT WT	ROAD HP	A/C SIM	ODOM
0001								0001	77/09/22	C6	E23HHY66977	76	FORD	CLUB	5	351	1	2	8	1	6000	21.[illegible]	1	5500
0002								0001	77/09/26	C3	CGR367U112635	76	CHEV	G30V	5	400	1	2	8	1	6000	21.0	1	9683
0004								0001	77/09/27	C6	E23AF044236	76	FORD	CLUB	5	400	1	4	8	1	6000	.	1	10176
0005								0001	77/09/29	C6	E12HF069116	77	FORD	CLUB	5	351	1	2	8	1	5500	.	1	18455
0006								0001	77/09/30	C3	CGR367V126472	77	CHEV	G30V	5	400	1	4	8	1	6000	.	1	12426
0010	9	9	9999	9	9	9	9	0013	77/10/06	C3	CGL3574105248	76	CHEV	BUDG	5	350	1	2	8	1	6000	25.3	1	54280
0011	9	9	9999	9	9	9	9	0015	77/10/07	10	B22BE7X128393	77	DODG	SPCR	5	318	A	2	8	1	5000	20.1	1	5484
0015	9	9	9999	9	9	9	9	0027	77/10/20	10	B22BF7X058725	77	DODG	SPCR	5	360	1	2	8	1	5000	16.3	1	25264
0016	9	9	9999	9	9	9	9	0023	77/10/22	10	B35BE7X047820	77	DODG	TRAD	5	318	1	2	8	1	7500	25.[illegible]	1	11405
0017	9	9	9999	9	9	9	9	0030	77/10/29	10	B35BF6X131461	76	DODG	B300	5	360	1	2	8	1	7000	25.1	1	57732

DIAL A RIDE — 0 0 2 CARD LISTING — LIVONIA

CAR NO.	C S	C R	E M	AI R	EG R	F I	CA T	T R	PC V	FT C	ENG FAM	IDLE	IDLE (S)	DW	DW (S)	TIM	TIM (S)	IDLE CO	IDLE CO(S)	IDLE HC	S S	LEAD CONT	NADA WT.	SCAL WT.	TA M	F D	TEST NO.
0001	2	2	1	2	2	2	2	2	1	23	351WIMCC	550	550	99	99	+08	-06	0.24	99.99	75	1	.		5435	2	3	1
0002	2	2	1	2	2	2	2	2	1	30	113	700	700	99	99	+04	+04	0.12	99.99	15	1	9.999		5370	2	3	1
0004	2	2	1	2	2	2	2	2	1		460IMCO	620	650	99	99	+14	+12	2.35	99.99	150	1	.		5500	2	3	1
0005	2	2	1	2	2	2	2	2	1		351-IMCO	520	550	99	99	+04	+04	4.10	99.99	300	1	.		5000	2	3	1
0006	2	2	1	2	2	2	2	2	1		113	680	700	99	99	+04	+04	0.07	99.99	15	1	.		5590	2	3	1
0010	2	2	1	2	2	2	2	2	1		113	710	700	99	99	+08	+08	5.00	99.99	110	1	.		5140	2	3	1
0011	2	2	1	2	2	2	2	2	1		EC1	680	750	99	99	-06	+02	0.65	99.99	50	1	9.999		4395	2	3	1
0015	2	2	1	2	2	2	2	2	3		LA1	700	750	99	99	-01	000	2.40	99.99	600	1	.		4400	2	3	1
0016	1	2	1	2	1	2	2	2	1	36	LA	850	750	99	99	+10	+02	0.19	99.99	620	1	.		6040	2	3	1
0017	2	2	1	2	2	2	2	2	1	36	LA1	650	750	99	99	-05	000	5.00	99.99	170	1	.		6020	2	3	1

SITE - LIVONIA
VEHICLE - 0001 RUN NO. - 1 DATE - 77/ 9/22 AHP - 21.5 INERTIA - 6000.

	HC	CO	CO2	NOX	NOXC	MPG
1975 FTP						
CLD TRAN						
BARO - 29.40 WB - 59. DB - 70. PIN - 38.80 V/REV - .2823 TEMP - 109. REVS - 10511.						
BACKGROUND(CONC)	14.	8.	0.06	0.		
SAMPLE(CONC)	698.	5051.	2.60	239.		
MASS EMISSIONS(GMS)	27.42	406.32	3235.25	31.62	29.20	
CLD STAB						
BARO - 29.40 WB - 59. DB - 70. PIN - 39.00 V/REV - .2822 TEMP - 109. REVS - 18066.						
BACKGROUND(CONC)	11.	9.	0.06	0.		
SAMPLE(CONC)	272.	741.	1.56	136.		
MASS EMISSIONS(GMS)	17.97	101.39	3278.76	30.90	28.53	
HOT TRAN						
BARO - 29.40 WB - 59. DB - 70. PIN - 38.90 V/REV - .2822 TEMP - 109. REVS - 10612.						
BACKGROUND(CONC)	9.	4.	0.05	0.		
SAMPLE(CONC)	370.	1026.	2.32	262.		
MASS EMISSIONS(GMS)	14.60	83.11	2912.78	34.98	32.30	
COMPOSIT						
MASS EMISSIONS(GM/MI)	5.08	43.13	844.03	8.59	7.93	9.56
0 MPH						
BARO - 29.36 WB - 59. DB - 72. PIN - 38.80 V/REV - .2823 TEMP - 108. REVS - 3745.						
BACKGROUND(CONC)	5.	2.	0.04	0.		
SAMPLE(CONC)	72.	141.	0.77	7.		
MASS EMISSIONS(GMS)	0.96	3.99	330.59	0.33	0.30	
MASS EMISSIONS(GM/MI)	0.31	1.29	106.64	0.11	0.10	80.95
5 MPH						
BARO - 29.36 WB - 59. DB - 72. PIN - 38.80 V/REV - .2823 TEMP - 108. REVS - 3746.						
BACKGROUND(CONC)	4.	1.	0.04	0.		
SAMPLE(CONC)	47.	85.	0.80	6.		
MASS EMISSIONS(GMS)	0.61	2.41	344.26	0.28	0.26	
MASS EMISSIONS(GM/MI)	2.38	9.35	1334.33	1.10	1.0[illegible]	6.54

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     VEHICLE - 0001      RUN NO. -     1      DATE - 77/ 9/22    SITE -       LIVONIA

10 MPH
     BARO - 29.36    WB - 60.  DB - 72.  PIN - 38.80    V/REV - .2823   TEMP - 108.  REVS -  3747.
          BACKGROUND(CONC)                 4.        1.      0.04      0.
          SAMPLE(CONC)                    54.      177.      1.05     13.

          MASS EMISSIONS(GMS)            0.72      5.06    457.61     0.61      0.57
          MASS EMISSIONS(GM/MI)          1.38      9.78    885.12     1.19      1.10      9.81
15 MPH
     BARO - 29.36    WB - 60.  DB - 72.  PIN - 38.80    V/REV - .2823   TEMP - 108.  REVS -  3743.
          BACKGROUND(CONC)                 5.        2.      0.05      0.
          SAMPLE(CONC)                    70.      200.      1.21     19.

          MASS EMISSIONS(GMS)            0.93      5.69    525.43     0.90      0.83
          MASS EMISSIONS(GM/MI)          1.20      7.34    677.98     1.16      1.07     12.80
30 MPH
     BARO - 29.36    WB - 60.  DB - 72.  PIN - 38.80    V/REV - .2823   TEMP - 108.  REVS -  3746.
          BACKGROUND(CONC)                 7.        1.      0.05      0.
          SAMPLE(CONC)                   267.      214.      1.65    105.

          MASS EMISSIONS(GMS)            3.71      6.12    725.30     4.95      4.60
          MASS EMISSIONS(GM/MI)          2.39      3.95    467.94     3.19      2.97     18.42
45 MPH
     BARO - 29.36    WB - 61.  DB - 72.  PIN - 38.80    V/REV - .2823   TEMP - 108.  REVS -  3748.
          BACKGROUND(CONC)                12.        7.      0.05      0.
          SAMPLE(CONC)                   394.      802.      2.81     29.

          MASS EMISSIONS(GMS)            5.47     22.88   1251.81     1.37      1.30
          MASS EMISSIONS(GM/MI)          2.35      9.85    538.65     0.59      0.56     13.30
60 MPH
     BARO - 29.36    WB - 61.  DB - 72.  PIN - 38.80    V/REV - .2823   TEMP - 108.  REVS -  3747.
          BACKGROUND(CONC)                12.        7.      0.05      0.
          SAMPLE(CONC)                   471.      727.      4.19     68.

          MASS EMISSIONS(GMS)            6.58     20.74   1877.08     3.21      3.04
          MASS EMISSIONS(GM/MI)          2.12      6.69    605.51     1.03      0.98     14.25
MOD(BAG)
     BARO - 29.36    WB - 62.  DB - 75.  PIN - 38.80    V/REV - .2823   TEMP - 108.  REVS - 21921.
          BACKGROUND(CONC)                12.        0.      0.05      0.
          SAMPLE(CONC)                   468.     1551.      3.07    383.

          MASS EMISSIONS(GMS)           38.19    260.59   8011.86   105.71     99.93
          MASS EMISSIONS(GM/MI)          3.90     26.62    818.46    10.80     10.21     10.17
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VEHICLE - 0001 RUN NO. - 1 DATE - 77/ 9/21 SITE - LIVONIA

AA 1 a

BARO - 29.35 WB - 61. DB - 74. PIN - 39.05 V/REV - .2820 TEMP - 109. REVS - 36590.

BACKGROUND(CONC)	4.	4.	0.05	0.		
SAMPLE(CONC)	182.	361.	1.25	81.		
MASS EMISSIONS(GMS)	24.68	99.84	5293.28	37.17	34.69	
MASS EMISSIONS(GM/MI)	4.44	17.94	951.17	6.68	6.23	8.93

AA 1 b

Inertia - 7500

BARO - 29.36 WB - 61. DB - 75. PIN - 38.95 V/REV - .2822 TEMP - 109. REVS - 36057.

BACKGROUND(CONC)	10.	4.	0.05	0.		
SAMPLE(CONC)	202.	392.	1.34	104.		
MASS EMISSIONS(GMS)	26.36	107.07	5615.00	47.09	43.62	
MASS EMISSIONS(GM/MI)	4.74	19.24	1008.98	8.46	7.84	8.42

VEHICLE - 0001 RUN NO. - 1 DATE - 77/ 9/21 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.36 WB - 62. DB - 75. PIN - 38.80 V/REV - .2823 TEMP - 108. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	58.	108.	0.70	8.		
	MASS (GMS)	0.0455	0.1722	17.62	0.0209	0.0198	
	MASS (GM/MI)	0.27	1.03	105.70	0.13	0.12	82.04
MODE 2	SAMPLE(CONC)	473.	1987.	3.21	425.		
	MASS (GMS)	0.4483	3.8009	96.66	1.3355	1.2625	
	MASS (GM/MI)	7.45	63.14	1605.60	22.18	20.97	5.13
MODE 3	SAMPLE(CONC)	339.	559.	2.02	188.		
	MASS (GMS)	0.4014	1.3366	75.88	0.7384	0.6981	
	MASS (GM/MI)	3.21	10.69	607.07	5.91	5.58	14.00
MODE 4	SAMPLE(CONC)	171.	598.	1.10	74.		
	MASS (GMS)	0.2161	1.5252	44.30	0.3100	0.2931	
	MASS (GM/MI)	2.92	20.58	597.91	4.18	3.96	13.88
MODE 5	SAMPLE(CONC)	110.	634.	0.79	20.		
	MASS (GMS)	0.0867	1.0106	19.89	0.0524	0.0495	
	MASS (GM/MI)	0.52	6.06	119.32	0.31	0.30	68.01
MODE 6	SAMPLE(CONC)	170.	308.	1.40	95.		
	MASS (GMS)	0.1076	0.3928	27.99	0.1990	0.1881	
	MASS (GM/MI)	5.35	19.54	1392.44	9.90	9.36	6.16
MODE 7	SAMPLE(CONC)	229.	930.	1.23	83.		
	MASS (GMS)	0.2715	2.2237	46.07	0.3260	0.3082	
	MASS (GM/MI)	4.34	35.58	737.13	5.22	4.93	11.00
MODE 8	SAMPLE(CONC)	372.	698.	2.54	427.		
	MASS (GMS)	0.3234	1.2239	70.04	1.2299	1.1627	
	MASS (GM/MI)	4.59	17.36	993.52	17.45	16.49	8.57
MODE 9	SAMPLE(CONC)	349.	576.	2.04	193.		
	MASS (GMS)	0.4133	1.3820	76.64	0.7581	0.7166	
	MASS (GM/MI)	3.31	11.06	613.12	6.06	5.73	13.85
MODE 10	SAMPLE(CONC)	589.	942.	3.22	632.		
	MASS (GMS)	0.6046	1.9521	109.03	2.3216	2.1947	
	MASS (GM/MI)	4.45	14.35	772.26	17.07	16.14	10.97
MODE 11	SAMPLE(CONC)	422.	1047.	4.23	456.		
	MASS (GMS)	0.4997	2.5035	158.93	1.7911	1.6932	
	MASS (GM/MI)	2.67	13.35	847.62	9.55	9.03	10.12
MODE 12	SAMPLE(CONC)	332.	658.	2.16	209.		
	MASS (GMS)	0.3146	1.2537	64.94	0.6567	0.6208	
	MASS (GM/MI)	2.48	9.93	512.11	5.18	4.90	16.57
MODE 13	SAMPLE(CONC)	686.	903.	1.25	69.		
	MASS (GMS)	0.8128	2.1592	46.83	0.2710	0.2562	
	MASS (GM/MI)	6.50	17.27	374.65	2.17	2.05	21.01
MODE 14	SAMPLE(CONC)	942.	4678.	6.40	1043.		
	MASS (GMS)	1.2648	12.6769	275.15	4.6430	4.3891	
	MASS (GM/MI)	5.85	58.61	1272.07	21.47	20.29	6.42

VEHICLE - 0001 RUN NO. - 1 DATE - 77/ 9/21 SITE - LIVCNIA

MODE 15	SAMPLE(CONC)	795.	4063.	5.30	919.		
	MASS (GMS)	0.9418	9.7150	199.36	3.6097	3.4123	
	MASS (GM/MI)	3.77	38.86	797.45	14.44	13.65	10.20
MODE 16	SAMPLE(CONC)	402.	699.	3.43	443.		
	MASS (GMS)	0.3811	1.3371	103.28	1.3920	1.3159	
	MASS (GM/MI)	2.22	7.79	601.89	8.11	7.67	14.29
MODE 17	SAMPLE(CONC)	1018.	1717.	2.36	266.		
	MASS (GMS)	1.2061	4.1055	88.74	1.0448	0.9877	
	MASS (GM/MI)	6.43	21.90	473.30	5.57	5.27	16.81
MODE 18	SAMPLE(CONC)	682.	2638.	5.74	875.		
	MASS (GMS)	0.7544	5.8872	201.55	3.2078	3.0324	
	MASS (GM/MI)	3.69	28.82	986.54	15.70	14.84	8.51
MODE 19	SAMPLE(CONC)	657.	2018.	4.77	933.		
	MASS (GMS)	0.8294	5.1469	191.28	3.9090	3.6953	
	MASS (GM/MI)	3.11	19.30	717.22	14.66	13.86	11.72
MODE 20	SAMPLE(CONC)	569.	770.	2.20	221.		
	MASS (GMS)	1.3480	3.6823	165.37	1.7361	1.6412	
	MASS (GM/MI)	4.00	10.94	491.15	5.16	4.87	17.03
MODE 21	SAMPLE(CONC)	295.	565.	0.86	29.		
	MASS (GMS)	0.3492	1.3510	32.48	0.1139	0.1077	
	MASS (GM/MI)	5.59	21.62	519.66	1.82	1.72	15.53
MODE 22	SAMPLE(CONC)	686.	5077.	6.44	929.		
	MASS (GMS)	1.4088	21.0419	419.51	6.3249	5.9791	
	MASS (GM/MI)	4.49	67.10	1337.72	20.17	19.07	6.09
MODE 23	SAMPLE(CONC)	618.	1602.	4.74	777.		
	MASS (GMS)	0.7325	3.8305	178.19	3.0519	2.8651	
	MASS (GM/MI)	2.93	15.32	712.75	12.21	11.54	11.90
MODE 24	SAMPLE(CONC)	521.	1173.	2.06	241.		
	MASS (GMS)	0.8639	3.9267	108.37	1.3253	1.2528	
	MASS (GM/MI)	4.38	19.90	549.25	6.72	6.35	14.93
MODE 25	SAMPLE(CONC)	630.	945.	0.66	20.		
	MASS (GMS)	0.4972	1.5064	16.63	0.0524	0.0495	
	MASS (GM/MI)	2.98	9.04	99.74	0.31	0.30	71.92
MODE 26	SAMPLE(CONC)	599.	4176.	5.54	810.		
	MASS (GMS)	1.5144	21.3017	444.63	6.7873	6.4162	
	MASS (GM/MI)	4.57	64.30	1342.07	20.49	19.37	6.09
MODE 27	SAMPLE(CONC)	548.	1697.	4.89	842.		
	MASS (GMS)	0.6485	4.0577	183.85	3.3073	3.1264	
	MASS (GM/MI)	2.59	16.23	735.40	13.23	12.51	11.54
MODE 28	SAMPLE(CONC)	464.	887.	2.65	316.		
	MASS (GMS)	0.8417	3.2520	152.83	1.9032	1.7991	
	MASS (GM/MI)	2.81	10.86	510.44	6.36	6.01	16.55

VEHICLE - 0001 RUN NO. - 1 DATE - 77/ 9/21 SITE - LIVCNIA

MODE 29	SAMPLE(CONC)	990.	1228.	1.19	50.		
	MASS (GMS)	1.1728	2.9363	44.58	0.1964	0.1857	
	MASS (GM/MI)	9.38	23.49	356.61	1.57	1.49	20.97
MODE 30	SAMPLE(CONC)	206.	788.	1.12	66.		
	MASS (GMS)	0.1465	1.1305	25.38	0.1555	0.1470	
	MASS (GM/MI)	2.53	19.53	438.28	2.69	2.54	18.61
MODE 31	SAMPLE(CONC)	150.	500.	0.85	23.		
	MASS (GMS)	0.1775	1.1955	32.10	0.0903	0.0854	
	MASS (GM/MI)	2.84	19.13	513.57	1.45	1.37	16.06
MODE 32	SAMPLE(CONC)	77.	490.	1.06	0.		
	MASS (GMS)	0.0487	0.6249	21.35	0.0	0.0	
	MASS (GM/MI)	2.81	36.12	1233.86	0.0	0.0	6.83
MODE 33	SAMPLE(CONC)	84.	542.	0.84	16.		
	MASS (GMS)	0.0662	0.8640	21.15	0.0419	0.0396	
	MASS (GM/MI)	0.40	5.18	126.86	0.25	0.24	65.14
MODE 34	SAMPLE(CONC)	432.	1528.	4.12	631.		
	MASS (GMS)	0.7502	5.3586	227.02	3.6351	3.4363	
	MASS (GM/MI)	4.26	30.46	1290.60	20.67	19.54	6.56
MODE 35	SAMPLE(CONC)	439.	903.	3.84	454.		
	MASS (GMS)	0.5194	2.1592	144.58	1.7832	1.6857	
	MASS (GM/MI)	2.77	11.52	771.11	9.51	8.99	11.12
MODE 36	SAMPLE(CONC)	345.	883.	1.76	148.		
	MASS (GMS)	0.4355	2.2521	70.48	0.6201	0.5862	
	MASS (GM/MI)	3.13	16.16	506.33	4.45	4.21	16.39
MODE 37	SAMPLE(CONC)	361.	679.	0.77	19.		
	MASS (GMS)	0.4273	1.6236	29.08	0.0746	0.0705	
	MASS (GM/MI)	6.84	25.98	465.35	1.19	1.13	16.31
MODE 38	SAMPLE(CONC)	462.	1187.	3.75	654.		
	MASS (GMS)	0.6559	3.4059	169.43	3.0826	2.9140	
	MASS (GM/MI)	4.29	22.29	1106.83	20.17	19.07	7.67
MODE 39	SAMPLE(CONC)	540.	1954.	4.29	508.		
	MASS (GMS)	0.6396	4.6722	161.21	1.9954	1.8862	
	MASS (GM/MI)	3.41	24.92	859.77	10.64	10.06	9.76
MODE 40	SAMPLE(CONC)	347.	647.	1.47	67.		
	MASS (GMS)	0.5212	2.5653	69.83	0.4328	0.4092	
	MASS (GM/MI)	4.00	19.67	535.51	3.32	3.14	15.33
MODE 41	SAMPLE(CONC)	372.	934.	0.76	20.		
	MASS (GMS)	0.2936	0.8512	19.14	0.0524	0.0495	
	MASS (GM/MI)	1.76	5.11	114.80	0.31	0.30	69.12
MODE 42	SAMPLE(CONC)	789.	5601.	5.76	937.		
	MASS (GMS)	1.5569	22.3208	361.24	6.1340	5.7986	
	MASS (GM/MI)	5.87	84.10	1361.12	23.11	21.85	5.87

MODE 43	SAMPLE(CONC)	654.	3265.	4.91	897.		
	MASS (GMS)	0.7743	7.8069	184.63	3.5233	3.3306	
	MASS (GM/MI)	3.10	31.23	738.51	14.09	13.32	11.13
MODE 44	SAMPLE(CONC)	592.	908.	2.42	242.		
	MASS (GMS)	1.3095	4.0527	169.85	1.7743	1.6773	
	MASS (GM/MI)	4.97	15.39	644.83	6.74	6.37	12.96
MODE 45	SAMPLE(CONC)	346.	753.	0.35	15.		
	MASS (GMS)	0.2735	1.2003	8.82	0.0393	0.0371	
	MASS (GM/MI)	1.64	7.20	52.92	0.24	0.22	127.81
MODE 46	SAMPLE(CONC)	358.	1301.	2.86	383.		
	MASS (GMS)	0.4237	3.1108	107.60	1.5044	1.4221	
	MASS (GM/MI)	5.75	42.21	1459.97	20.41	19.30	5.75
MODE 47	SAMPLE(CONC)	337.	573.	2.08	254.		
	MASS (GMS)	0.3991	1.3701	78.15	0.9977	0.9431	
	MASS (GM/MI)	3.19	10.96	625.19	7.98	7.54	13.60
MODE 48	SAMPLE(CONC)	526.	2000.	4.43	755.		
	MASS (GMS)	1.0387	7.9703	277.49	4.9426	4.6723	
	MASS (GM/MI)	3.21	25.43	885.41	15.77	14.91	9.48
MODE 49	SAMPLE(CONC)	590.	3501.	6.05	939.		
	MASS (GMS)	0.7451	8.9293	242.84	3.9341	3.7190	
	MASS (GM/MI)	2.79	33.48	910.52	14.75	13.94	9.13
MODE 50	SAMPLE(CONC)	443.	719.	3.05	358.		
	MASS (GMS)	0.6294	2.0630	137.72	1.6874	1.5951	
	MASS (GM/MI)	2.66	8.73	583.05	7.14	6.75	14.66
MODE 51	SAMPLE(CONC)	1001.	1307.	0.94	45.		
	MASS (GMS)	1.2646	3.3335	37.89	0.1885	0.1782	
	MASS (GM/MI)	9.49	25.01	284.22	1.41	1.34	25.10
MODE 52	SAMPLE(CONC)	349.	541.	1.49	84.		
	MASS (GMS)	0.2759	0.8624	37.25	0.2200	0.2079	
	MASS (GM/MI)	6.21	19.42	839.04	4.95	4.68	9.98
MODE 53	SAMPLE(CONC)	148.	455.	0.83	22.		
	MASS (GMS)	0.1167	0.7253	20.90	0.0576	0.0545	
	MASS (GM/MI)	0.70	4.35	125.35	0.35	0.33	66.04
MODE 54	SAMPLE(CONC)	374.	1992.	4.93	651.		
	MASS (GMS)	1.1211	12.0664	469.58	6.4778	6.1236	
	MASS (GM/MI)	2.80	30.10	1171.32	16.16	15.27	7.23
MODE 55	SAMPLE(CONC)	464.	1657.	4.87	794.		
	MASS (GMS)	0.5490	3.9620	183.09	3.1187	2.9482	
	MASS (GM/MI)	2.20	15.85	732.37	12.47	11.79	11.61
MODE 56	SAMPLE(CONC)	533.	905.	2.44	270.		
	MASS (GMS)	1.4738	5.0492	214.07	2.5479	2.4086	
	MASS (GM/MI)	4.48	15.33	650.08	7.74	7.31	12.69

VEHICLE - 0001 RUN NO. - 1 DATE - 77/ 9/21 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	213.	743.	0.59	13.		
	MASS (GMS)	0.1679	1.1844	14.86	0.0340	0.0322	
	MASS (GM/MI)	1.01	7.10	89.14	0.20	0.19	85.75
MODE 58	SAMPLE(CONC)	277.	511.	1.96	351.		
	MASS (GMS)	0.3935	1.4662	88.34	1.6544	1.5640	
	MASS (GM/MI)	4.44	16.55	997.09	18.67	17.65	8.56
MODE 59	SAMPLE(CONC)	398.	781.	2.43	241.		
	MASS (GMS)	0.4717	1.8674	91.36	0.9466	0.8949	
	MASS (GM/MI)	3.77	14.94	730.91	7.57	7.16	11.58
MODE 60	SAMPLE(CONC)	502.	2676.	4.74	734.		
	MASS (GMS)	0.8316	8.9580	249.48	4.0363	3.8156	
	MASS (GM/MI)	3.20	34.47	959.92	15.53	14.68	8.67
MODE 61	SAMPLE(CONC)	774.	5090.	5.77	816.		
	MASS (GMS)	0.9163	12.1707	217.12	3.2051	3.0299	
	MASS (GM/MI)	3.67	48.68	868.46	12.82	12.12	9.28
MODE 62	SAMPLE(CONC)	458.	1015.	3.71	556.		
	MASS (GMS)	0.5068	2.2652	130.37	2.0383	1.9268	
	MASS (GM/MI)	2.80	12.49	719.07	11.24	10.63	11.67
MODE 63	SAMPLE(CONC)	800.	1075.	1.04	62.		
	MASS (GMS)	0.9476	2.5704	39.29	0.2435	0.2302	
	MASS (GM/MI)	7.58	20.56	314.29	1.95	1.84	23.95
MODE 64	SAMPLE(CONC)	294.	638.	1.34	74.		
	MASS (GMS)	0.3021	1.3221	43.52	0.2519	0.2381	
	MASS (GM/MI)	5.10	22.33	735.19	4.26	4.02	11.29
MODE 65	SAMPLE(CONC)	107.	691.	0.77	15.		
	MASS (GMS)	0.1012	1.3218	23.26	0.0471	0.0446	
	MASS (GM/MI)	0.51	6.61	116.32	0.24	0.22	69.17
CALC TOTAL	SAMPLE(CONC)	488.	1615.	3.05	414.		
	MASS (GMS)	40.6063	271.3423	8065.00	114.2623	108.0151	
	MASS (GM/MI)	4.15	27.72	823.88	11.67	11.03	10.08

SITE - LIVONIA
VEHICLE - 0002 RUN NO. - 1 DATE - 77/ 9/26 AHP - 21.0 INERTIA - 6000.

	HC	CO	CO2	NOX	NOXC	MPG
1975 FTP						
CLD TRAN						
BARO - 28.85 WB - 63. CB - 71. PIN - 38.50 V/REV - .2824 TEMP - 108. REVS - 10532.						
BACKGROUND(CONC)	11.	7.	0.06	0.		
SAMPLE(CONC)	310.	2919.	2.55	213.		
MASS EMISSIONS(GMS)	11.83	230.94	3119.95	27.73	27.83	
CLD STAB						
BARO - 28.85 WB - 63. CB - 73. PIN - 38.70 V/REV - .2823 TEMP - 109. REVS - 18220.						
BACKGROUND(CONC)	12.	2.	0.05	0.		
SAMPLE(CONC)	123.	206.	1.65	105.		
MASS EMISSIONS(GMS)	7.62	27.93	3454.66	23.59	23.30	
HOT TRAN						
BARO - 28.85 WB - 63. CB - 74. PIN - 38.40 V/REV - .2825 TEMP - 109. REVS - 10512.						
BACKGROUND(CONC)	21.	2.	0.06	0.		
SAMPLE(CONC)	188.	442.	2.29	247.		
MASS EMISSIONS(GMS)	6.68	34.80	2784.51	32.06	31.42	
COMPOSIT						
MASS EMISSIONS(GM/MI)	2.20	19.61	851.12	7.17	7.09	9.98
0 MPH						
BARO - 28.88 WB - 65. CB - 80. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3749.						
BACKGROUND(CONC)	26.	3.	0.06	0.		
SAMPLE(CONC)	90.	69.	1.10	25.		
MASS EMISSIONS(GMS)	0.92	1.86	461.75	1.15	1.13	
MASS EMISSIONS(GM/MI)	0.30	0.60	148.95	0.37	0.36	58.84
5 MPH						
BARO - 28.88 WB - 64. CB - 80. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3747.						
BACKGROUND(CONC)	26.	3.	0.06	0.		
SAMPLE(CONC)	68.	79.	1.13	15.		
MASS EMISSIONS(GMS)	0.62	2.14	474.81	0.69	0.66	
MASS EMISSIONS(GM/MI)	2.38	8.30	1840.34	2.68	2.57	4.77

VEHICLE - 0002 RUN NO. - 1 DATE - 77/ 9/26 SITE - LIVONIA

10 MPH

BARO - 28.88 WB - 64. DB - 80. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3751.

BACKGROUND(CONC)	9.	1.	0.04	0.		
SAMPLE(CONC)	59.	77.	1.09	14.		
MASS EMISSIONS(GMS)	0.71	2.14	465.66	0.65	0.62	
MASS EMISSIONS(GM/MI)	1.37	4.14	900.70	1.25	1.20	9.74

15 MPH

BARO - 28.88 WB - 62. DB - 80. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3748.

BACKGROUND(CONC)	6.	1.	0.04	0.		
SAMPLE(CONC)	57.	90.	1.17	15.		
MASS EMISSIONS(GMS)	0.72	2.50	500.74	0.69	0.63	
MASS EMISSIONS(GM/MI)	0.93	3.23	646.11	0.89	0.82	13.57

30 MPH

BARO - 28.88 WB - 62. DB - 79. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3746.

BACKGROUND(CONC)	8.	1.	0.05	0.		
SAMPLE(CONC)	80.	165.	1.87	84.		
MASS EMISSIONS(GMS)	1.02	4.61	306.67	3.87	3.58	
MASS EMISSIONS(GM/MI)	0.66	2.97	520.43	2.50	2.31	16.84

45 MPH

BARO - 28.88 WB - 62. DB - 81. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3748.

BACKGROUND(CONC)	6.	1.	0.05	0.		
SAMPLE(CONC)	95.	290.	3.08	360.		
MASS EMISSIONS(GMS)	1.26	8.12	1343.64	16.61	15.12	
MASS EMISSIONS(GM/MI)	0.54	3.50	576.16	7.15	6.51	15.16

60 MPH

BARO - 28.88 WB - 62. DB - 82. PIN - 38.90 V/REV - .2822 TEMP - 110. REVS - 3748.

BACKGROUND(CONC)	8.	4.	0.05	0.		
SAMPLE(CONC)	203.	662.	4.83	935.		
MASS EMISSIONS(GMS)	2.75	18.52	2119.66	43.14	39.00	
MASS EMISSIONS(GM/MI)	0.89	5.98	683.76	13.92	12.58	12.75

MOD(BAG)

BARO - 28.90 WB - 60. DB - 80. PIN - 39.15 V/REV - .2821 TEMP - 111. REVS - 21940.

BACKGROUND(CONC)	12.	0.	0.05	0.		
SAMPLE(CONC)	225.	1775.	3.03	433.		
MASS EMISSIONS(GMS)	17.55	291.27	7721.34	116.72	102.93	
MASS EMISSIONS(GM/MI)	1.79	29.75	788.78	11.92	10.52	10.55

VEHICLE - 0002 RUN NO. - 1 CATE - 77/ 9/26 SITE - LIVCNIA

AA 1a

BARO - 28.90 WB - 60. CB - 80. PIN - 39.05 V/REV - .2821 TEMP - 110. REVS - 36582.

BACKGROUND(CONC)	13.	2.	0.05	0.		
SAMPLE(CONC)	94.	120.	1.45	91.		
MASS EMISSIONS(GMS)	11.19	32.41	6059.91	40.98	36.14	
MASS EMISSIONS(GM/MI)	2.01	5.82	1088.93	7.36	6.49	8.04

AA 1b

Inertia - 7500

BARO - 28.90 WB - 58. CB - 78. PIN - 38.70 V/REV - .2823 TEMP - 110. REVS - 36605.

BACKGROUND(CONC)	4.	2.	0.04	0.		
SAMPLE(CONC)	98.	136.	1.53	119.		
MASS EMISSIONS(GMS)	12.86	36.89	6459.27	53.72	46.32	
MASS EMISSIONS(GM/MI)	2.31	6.63	1160.70	9.65	8.32	7.53

VEHICLE - 0002 RUN NO. - 1 DATE - 77/ 9/26 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 28.90 WB - 60. DB - 80. PIN - 39.15 V/REV - .2821 TEMP - 111. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	13.	120.	0.98	38.		
	MASS (GMS)	0.0100	0.1868	24.09	0.0972	0.0857	
	MASS (GM/MI)	0.06	1.12	144.51	0.58	0.51	60.60
MODE 2	SAMPLE(CONC)	196.	1708.	2.96	410.		
	MASS (GMS)	0.1812	3.1910	87.02	1.2583	1.1097	
	MASS (GM/MI)	3.01	53.01	1445.57	20.90	18.43	5.77
MODE 3	SAMPLE(CONC)	179.	1074.	2.29	246.		
	MASS (GMS)	0.2073	2.5081	84.07	0.9437	0.8323	
	MASS (GM/MI)	1.66	20.06	672.57	7.55	6.66	12.51
MODE 4	SAMPLE(CONC)	41.	236.	1.35	58.		
	MASS (GMS)	0.0509	0.5879	52.70	0.2373	0.2093	
	MASS (GM/MI)	0.69	7.93	711.22	3.20	2.82	12.23
MODE 5	SAMPLE(CONC)	25.	134.	0.97	12.		
	MASS (GMS)	0.0192	0.2066	23.84	0.0307	0.0271	
	MASS (GM/MI)	0.12	1.25	143.04	0.18	0.16	61.05
MODE 6	SAMPLE(CONC)	69.	294.	1.72	61.		
	MASS (GMS)	0.0423	0.3662	33.63	0.1248	0.1101	
	MASS (GM/MI)	2.11	18.22	1672.91	6.21	5.48	5.20
MODE 7	SAMPLE(CONC)	64.	243.	1.41	100.		
	MASS (GMS)	0.0744	0.5675	51.62	0.3836	0.3383	
	MASS (GM/MI)	1.19	9.08	825.91	6.14	5.41	10.52
MODE 8	SAMPLE(CONC)	107.	528.	2.45	373.		
	MASS (GMS)	0.0910	0.9042	65.97	1.0493	0.9254	
	MASS (GM/MI)	1.29	12.83	935.77	14.88	13.13	9.25
MODE 9	SAMPLE(CONC)	145.	335.	2.27	263.		
	MASS (GMS)	0.1678	0.7823	83.22	1.0089	0.8898	
	MASS (GM/MI)	1.34	6.26	666.59	8.07	7.12	13.04
MODE 10	SAMPLE(CONC)	155.	416.	3.69	696.		
	MASS (GMS)	0.1558	0.8420	117.58	2.3140	2.0407	
	MASS (GM/MI)	1.15	6.19	864.57	17.01	15.01	10.11
MODE 11	SAMPLE(CONC)	192.	505.	3.77	567.		
	MASS (GMS)	0.2226	1.1793	138.62	2.1751	1.9183	
	MASS (GM/MI)	1.19	6.29	739.31	11.60	10.23	11.79
MODE 12	SAMPLE(CONC)	107.	369.	2.14	136.		
	MASS (GMS)	0.0990	0.6894	62.83	0.5708	0.5034	
	MASS (GM/MI)	0.76	5.44	495.47	4.50	3.97	17.52
MODE 13	SAMPLE(CONC)	28.	210.	1.36	37.		
	MASS (GMS)	0.0327	0.4904	49.78	0.1419	0.1252	
	MASS (GM/MI)	0.26	3.92	398.20	1.14	1.00	21.90
MODE 14	SAMPLE(CONC)	485.	10223.	5.66	693.		

VEHICLE - 0002 RUN NO. - 1 DATE - 77/ 9/26 SITE - LIVONIA

MODE 15	SAMPLE(CONC)	752.	6961.	5.35	1166.		
	MASS (GMS)	0.8693	16.2561	196.59	4.4730	3.9448	
	MASS (GM/MI)	3.48	65.02	786.37	17.89	15.78	9.87
MODE 16	SAMPLE(CONC)	180.	496.	3.61	531.		
	MASS (GMS)	0.1669	0.9267	106.18	1.6296	1.4372	
	MASS (GM/MI)	0.97	5.40	618.76	9.50	8.38	14.08
MODE 17	SAMPLE(CONC)	415.	619.	2.32	217.		
	MASS (GMS)	0.4803	1.4456	85.17	0.8325	0.7341	
	MASS (GM/MI)	2.56	7.71	454.27	4.44	3.92	18.70
MODE 18	SAMPLE(CONC)	246.	1601.	5.40	1188.		
	MASS (GMS)	0.2656	3.4896	185.13	4.2536	3.7513	
	MASS (GM/MI)	1.30	17.08	906.18	20.82	18.36	9.47
MODE 19	SAMPLE(CONC)	476.	2684.	5.75	1318.		
	MASS (GMS)	0.5879	6.6858	225.36	5.3932	4.7563	
	MASS (GM/MI)	2.20	25.07	845.00	20.22	17.83	9.96
MODE 20	SAMPLE(CONC)	178.	330.	2.15	266.		
	MASS (GMS)	0.4118	1.5413	157.80	2.0562	1.8134	
	MASS (GM/MI)	1.22	4.58	468.67	6.11	5.39	18.50
MODE 21	SAMPLE(CONC)	40.	132.	1.06	17.		
	MASS (GMS)	0.0463	0.3083	39.08	0.0652	0.0575	
	MASS (GM/MI)	0.74	4.93	625.35	1.04	0.92	13.97
MODE 22	SAMPLE(CONC)	624.	10144.	5.65	835.		
	MASS (GMS)	1.2511	41.0616	359.36	5.5523	4.8966	
	MASS (GM/MI)	3.99	130.94	1145.93	17.71	15.61	6.51
MODE 23	SAMPLE(CONC)	384.	1365.	5.50	1234.		
	MASS (GMS)	0.4443	3.1877	202.04	4.7339	4.1748	
	MASS (GM/MI)	1.78	12.75	808.16	18.94	16.70	10.64
MODE 24	SAMPLE(CONC)	212.	435.	2.21	280.		
	MASS (GMS)	0.3434	1.4222	113.56	1.5038	1.3262	
	MASS (GM/MI)	1.74	7.21	575.57	7.62	6.72	14.98
MODE 25	SAMPLE(CONC)	151.	147.	1.05	13.		
	MASS (GMS)	0.1164	0.2289	25.81	0.0332	0.0293	
	MASS (GM/MI)	0.70	1.37	154.84	0.20	0.18	55.75
MODE 26	SAMPLE(CONC)	529.	7438.	5.00	769.		
	MASS (GMS)	1.3059	37.0560	391.88	6.2935	5.5502	
	MASS (GM/MI)	3.94	111.85	1182.86	19.00	16.75	6.47
MODE 27	SAMPLE(CONC)	343.	1625.	5.66	1309.		
	MASS (GMS)	0.3971	3.7949	207.94	5.0216	4.4286	
	MASS (GM/MI)	1.59	15.16	831.77	20.09	17.71	10.31
MODE 28	SAMPLE(CONC)	140.	354.	2.93	417.		
	MASS (GMS)	0.2478	1.2076	165.07	2.4529	2.1632	
	MASS (GM/MI)	0.83	4.23	551.33	8.19	7.23	15.83

VEHICLE - 0002 RUN NO. - 1 DATE - 77/ 9/26 SITE - LIVONIA

MODE 29	SAMPLE(CONC)	118.	179.	1.48	36.		
	MASS (GMS)	0.1369	0.4180	54.20	0.1381	0.1218	
	MASS (GM/MI)	1.10	3.34	433.60	1.10	0.97	20.07
MODE 30	SAMPLE(CONC)	30.	196.	1.42	82.		
	MASS (GMS)	0.0210	0.2746	31.19	0.1887	0.1665	
	MASS (GM/MI)	0.36	4.74	538.72	3.26	2.87	16.22
MODE 31	SAMPLE(CONC)	20.	148.	1.07	23.		
	MASS (GMS)	0.0232	0.3456	39.45	0.0882	0.0778	
	MASS (GM/MI)	0.37	5.53	631.24	1.41	1.25	13.84
MODE 32	SAMPLE(CONC)	26.	92.	1.15	14.		
	MASS (GMS)	0.0161	0.1146	22.61	0.0286	0.0253	
	MASS (GM/MI)	0.93	6.62	1307.16	1.66	1.46	6.72
MODE 33	SAMPLE(CONC)	22.	71.	1.02	10.		
	MASS (GMS)	0.0169	0.1105	25.07	0.0256	0.0226	
	MASS (GM/MI)	0.10	0.66	150.40	0.15	0.14	58.48
MODE 34	SAMPLE(CONC)	217.	817.	3.76	693.		
	MASS (GMS)	0.3690	2.7983	202.78	3.8991	3.4387	
	MASS (GM/MI)	2.10	15.91	1152.80	22.17	19.55	7.49
MODE 35	SAMPLE(CONC)	202.	628.	3.62	613.		
	MASS (GMS)	0.2341	1.4666	133.09	2.3516	2.0739	
	MASS (GM/MI)	1.25	7.82	709.83	12.54	11.06	12.22
MODE 36	SAMPLE(CONC)	70.	229.	2.00	196.		
	MASS (GMS)	0.0862	0.5704	78.26	0.8020	0.7073	
	MASS (GM/MI)	0.62	4.10	562.21	5.76	5.08	15.55
MODE 37	SAMPLE(CONC)	11.	99.	1.06	16.		
	MASS (GMS)	0.0127	0.2312	39.08	0.0614	0.0541	
	MASS (GM/MI)	0.20	3.70	625.33	0.98	0.87	14.05
MODE 38	SAMPLE(CONC)	110.	299.	2.91	573.		
	MASS (GMS)	0.1522	0.8379	128.30	2.6378	2.3263	
	MASS (GM/MI)	1.00	5.48	839.65	17.26	15.22	10.42
MODE 39	SAMPLE(CONC)	346.	2729.	4.33	659.		
	MASS (GMS)	0.4004	6.3731	158.93	2.5281	2.2295	
	MASS (GM/MI)	2.14	33.99	847.62	13.48	11.89	9.78
MODE 40	SAMPLE(CONC)	69.	214.	1.85	173.		
	MASS (GMS)	0.1007	0.6330	85.93	0.8406	0.7414	
	MASS (GM/MI)	0.77	4.85	658.97	6.45	5.69	13.27
MODE 41	SAMPLE(CONC)	24.	81.	1.09	15.		
	MASS (GMS)	0.0185	0.1261	26.79	0.0384	0.0338	
	MASS (GM/MI)	0.11	0.76	160.72	0.23	0.20	54.70
MODE 42	SAMPLE(CONC)	651.	12624.	4.83	590.		
	MASS (GMS)	1.2541	49.1349	295.83	3.7723	3.3268	
	MASS (GM/MI)	4.73	185.14	1114.67	14.21	12.53	6.25

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MODE 43	SAMPLE(CONC)	648.	5053.	5.76	1149.		
	MASS (GMS)	0.7492	11.8003	211.68	4.4078	3.8873	
	MASS (GM/MI)	3.00	47.20	846.72	17.63	15.55	9.54
MODE 44	SAMPLE(CONC)	179.	422.	2.55	356.		
	MASS (GMS)	0.3873	1.8396	174.81	2.5493	2.2482	
	MASS (GM/MI)	1.47	6.98	663.66	9.68	8.54	13.07
MODE 45	SAMPLE(CONC)	86.	130.	1.19	15.		
	MASS (GMS)	0.0664	0.2024	29.25	0.0384	0.0338	
	MASS (GM/MI)	0.40	1.21	175.47	0.23	0.20	49.68
MODE 46	SAMPLE(CONC)	117.	197.	2.18	436.		
	MASS (GMS)	0.1354	0.4601	80.00	1.6726	1.4751	
	MASS (GM/MI)	1.64	6.24	1085.54	22.69	20.01	8.06
MODE 47	SAMPLE(CONC)	156.	238.	2.50	340.		
	MASS (GMS)	0.1808	0.5558	91.80	1.3043	1.1503	
	MASS (GM/MI)	1.45	4.45	734.41	10.43	9.20	11.90
MODE 48	SAMPLE(CONC)	216.	1578.	4.00	744.		
	MASS (GMS)	0.4160	6.1419	244.58	4.7569	4.1951	
	MASS (GM/MI)	1.33	19.60	780.40	15.18	13.39	10.38
MODE 49	SAMPLE(CONC)	399.	2565.	6.47	1325.		
	MASS (GMS)	0.4924	6.3894	253.28	5.4219	4.7815	
	MASS (GM/MI)	1.85	23.96	949.66	20.33	17.93	8.94
MODE 50	SAMPLE(CONC)	185.	451.	3.29	590.		
	MASS (GMS)	0.2568	1.2639	145.11	2.7160	2.3953	
	MASS (GM/MI)	1.09	5.35	614.36	11.50	10.14	14.17
MODE 51	SAMPLE(CONC)	271.	191.	1.26	34.		
	MASS (GMS)	0.3346	0.4758	49.16	0.1391	0.1227	
	MASS (GM/MI)	2.51	3.57	368.83	1.04	0.92	23.21
MODE 52	SAMPLE(CONC)	54.	157.	1.35	61.		
	MASS (GMS)	0.0418	0.2444	32.94	0.1560	0.1376	
	MASS (GM/MI)	0.94	5.51	741.84	3.51	3.10	11.78
MODE 53	SAMPLE(CONC)	19.	110.	1.19	51.		
	MASS (GMS)	0.0147	0.1713	29.25	0.1304	0.1150	
	MASS (GM/MI)	0.09	1.03	175.47	0.78	0.69	50.04
MODE 54	SAMPLE(CONC)	285.	2002.	4.19	790.		
	MASS (GMS)	0.8351	11.8441	389.52	7.6776	6.7709	
	MASS (GM/MI)	2.08	29.54	971.61	19.15	16.89	8.66
MODE 55	SAMPLE(CONC)	376.	1650.	5.48	1267.		
	MASS (GMS)	0.4350	3.8533	201.31	4.8605	4.2865	
	MASS (GM/MI)	1.74	15.41	805.23	19.44	17.15	10.63
MODE 56	SAMPLE(CONC)	188.	340.	2.50	398.		
	MASS (GMS)	0.5083	1.8527	214.21	3.5626	3.1418	
	MASS (GM/MI)	1.54	5.63	650.49	10.82	9.54	13.36

VEHICLE - 0002 RUN NO. - 1 DATE - 77/ 9/26 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	36.	116.	1.15	21.		
	MASS (GMS)	0.0278	0.1806	28.27	0.0537	0.0474	
	MASS (GM/MI)	0.17	1.08	169.57	0.32	0.28	51.66
MODE 58	SAMPLE(CONC)	88.	207.	1.91	268.		
	MASS (GMS)	0.1218	0.5801	84.06	1.2337	1.0880	
	MASS (GM/MI)	1.38	6.55	948.77	13.92	12.28	9.21
MODE 59	SAMPLE(CONC)	166.	296.	2.39	389.		
	MASS (GMS)	0.1923	0.6913	87.75	1.4923	1.3161	
	MASS (GM/MI)	1.54	5.53	701.98	11.94	10.53	12.40
MODE 60	SAMPLE(CONC)	243.	2123.	3.99	620.		
	MASS (GMS)	0.3932	6.9410	204.94	3.3298	2.9366	
	MASS (GM/MI)	1.51	26.71	788.53	12.81	11.30	10.63
MODE 61	SAMPLE(CONC)	780.	10481.	6.32	1125.		
	MASS (GMS)	0.9018	24.4763	232.03	4.3157	3.8061	
	MASS (GM/MI)	3.61	97.91	928.12	17.26	15.22	8.12
MODE 62	SAMPLE(CONC)	166.	465.	3.94	704.		
	MASS (GMS)	0.1788	1.0135	134.88	2.5207	2.2230	
	MASS (GM/MI)	0.99	5.59	743.98	13.90	12.26	11.74
MODE 63	SAMPLE(CONC)	317.	264.	1.26	48.		
	MASS (GMS)	0.3669	0.6165	46.09	0.1841	0.1624	
	MASS (GM/MI)	2.94	4.93	368.75	1.47	1.30	23.00
MODE 64	SAMPLE(CONC)	50.	183.	1.40	78.		
	MASS (GMS)	0.0504	0.3704	44.42	0.2593	0.2287	
	MASS (GM/MI)	0.85	6.26	750.28	4.38	3.86	11.64
MODE 65	SAMPLE(CONC)	40.	149.	1.12	29.		
	MASS (GMS)	0.0371	0.2784	33.04	0.0890	0.0785	
	MASS (GM/MI)	0.19	1.39	165.18	0.45	0.39	52.84
CALC TOTAL	SAMPLE(CONC)	232.	1852.	3.08	474.		
	MASS (GMS)	18.8544	303.9023	7954.54	127.7707	112.6812	
	MASS (GM/MI)	1.93	31.05	812.60	13.05	11.51	10.23

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SITE -       LIVCNIA
VEHICLE - 0004     RUN NO. -    1     DATE - 77/ 9/27      AHP - 23.2     INERTIA - 6000.

                                        HC        CO       CO2       NOX     NOXC       MPG

1975 FTP
    CLD TRAN
    BARO - 29.03   WB - 60.  DB - 74.  PIN - 38.70   V/REV - .2823   TEMP - 110.  REVS - 10534.
        BACKGROUND(CONC)                12.        0.      0.06        0.
        SAMPLE(CONC)                   532.     4482.      2.66      291.

        MASS EMISSIONS(GMS)          20.58    356.21   3267.34     37.99     34.90
    CLD STAB
    BARO - 29.03   WB - 61.  DB - 75.  PIN - 38.80   V/REV - .2822   TEMP - 111.  REVS - 18071.
        BACKGROUND(CONC)                 7.        4.      0.05        0.
        SAMPLE(CONC)                   222.     1605.      1.61      123.

        MASS EMISSIONS(GMS)          14.55    217.83   3351.18     27.48     25.56
    HOT TRAN
    BARO - 29.03   WB - 61.  DB - 75.  PIN - 38.60   V/REV - .2822   TEMP - 110.  REVS - 10532.
        BACKGROUND(CONC)                 9.        7.      0.05        0.
        SAMPLE(CONC)                   321.     1453.      2.38      310.

        MASS EMISSIONS(GMS)          12.35    115.03   2923.34     40.46     37.63
    COMPOSIT
        MASS EMISSIONS(GM/MI)         4.06     56.21    856.32      8.92      8.27      9.24
  0 MPH
    BARO - 29.21   WB - 62.  DB - 76.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS -  3747.
        BACKGROUND(CONC)                11.        4.      0.06        0.
        SAMPLE(CONC)                   139.     1724.      0.76        5.

        MASS EMISSIONS(GMS)           1.80     48.46    312.00      0.23      0.22
        MASS EMISSIONS(GM/MI)         0.58     15.63    100.65      0.07      0.07     65.86
  5 MPH
    BARO - 29.21   WB - 51.  DB - 76.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS -  3749.
        BACKGROUND(CONC)                11.        7.      0.06        0.
        SAMPLE(CONC)                   123.     1527.      0.79        3.

        MASS EMISSIONS(GMS)           1.57     42.86    325.48      0.14      0.13
        MASS EMISSIONS(GM/MI)         6.10    166.11   1261.57      0.54      0.50      5.76
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VEHICLE - 0004     RUN NO. -    1     DATE - 77/ 9/27    SITE -      LIVONIA

10 MPH
    BARO - 29.21   WB - 62.   DB - 76.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS -  3750.
        BACKGROUND(CONC)             12.      2.     0.05      0.
        SAMPLE(CONC)                101.    602.     0.93      5.

        MASS EMISSIONS(GMS)          1.26    16.92   391.84     0.23      0.22
        MASS EMISSIONS(GM/MI)        2.43    32.73   757.91     0.45      0.42     10.86
15 MPH
    BARO - 29.21   WB - 62.   DB - 76.  PIN - 40.50   V/REV - .2812   TEMP - 111.  REVS -  3749.
        BACKGROUND(CONC)             12.      0.     0.06      0.
        SAMPLE(CONC)                 98.    578.     1.21     10.

        MASS EMISSIONS(GMS)          1.22    16.29   512.30     0.46      0.44
        MASS EMISSIONS(GM/MI)        1.57    21.02   661.03     0.60      0.56     12.70
30 MPH
    BARO - 29.21   WB - 62.   DB - 76.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS -  3750.
        BACKGROUND(CONC)             13.      2.     0.05      0.
        SAMPLE(CONC)                156.    344.     1.87     88.

        MASS EMISSIONS(GMS)          2.02     9.65   810.15     4.08      3.83
        MASS EMISSIONS(GM/MI)        1.31     6.23   522.66     2.63      2.47     16.54
45 MPH
    BARO - 29.21   WB - 63.   DB - 77.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS -  3745.
        BACKGROUND(CONC)             13.      7.     0.05      0.
        SAMPLE(CONC)                185.    427.     3.10    320.

        MASS EMISSIONS(GMS)          2.44    11.87  1355.76    14.60     14.11
        MASS EMISSIONS(GM/MI)        1.05     5.11   583.38     6.37      6.07     14.92
60 MPH
    BARO - 29.21   WB - 63.   DB - 79.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS -  3747.
        BACKGROUND(CONC)             15.      4.     0.05      0.
        SAMPLE(CONC)                398.    904.     4.89    930.

        MASS EMISSIONS(GMS)          5.42    25.40  2152.60    43.04     40.41
        MASS EMISSIONS(GM/MI)        1.75     8.19   694.39    13.88     13.04     12.45
MOD(BAG)
    BARO - 29.21   WB - 61.   DB - 78.  PIN - 40.50   V/REV - .2813   TEMP - 111.  REVS - 21146.
        BACKGROUND(CONC)             11.     22.     0.07      1.
        SAMPLE(CONC)                457.   1592.     3.17    478.

        MASS EMISSIONS(GMS)         35.34   250.49  7794.67   124.64    113.20
        MASS EMISSIONS(GM/MI)        3.61    25.59   796.29    12.73     11.56     10.47
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VEHICLE - 0004 RUN NO. - 1 DATE - 77/ 9/28 SITE - LIVONIA

AA 1 a

BARO - 29.21 WB - 61. DB - 77. PIN - 40.50 V/REV - .2813 TEMP - 111. REVS - 36652.

BACKGROUND(CONC)	6.	7.	0.05	0.		
SAMPLE(CONC)	165.	1122.	1.33	84.		
MASS EMISSIONS(GMS)	21.79	307.46	5570.65	38.02	34.78	
MASS EMISSIONS(GM/MI)	3.92	55.25	1001.02	6.83	6.25	8.07

Inertia - 7500

AA 1 b

BARO - 29.21 WB - 62. DB - 80. PIN - 40.50 V/REV - .2813 TEMP - 111. REVS - 36595.

BACKGROUND(CONC)	7.	7.	0.05	0.		
SAMPLE(CONC)	180.	1182.	1.40	110.		
MASS EMISSIONS(GMS)	23.68	323.51	5866.13	49.72	45.40	
MASS EMISSIONS(GM/MI)	4.26	58.13	1054.11	8.93	8.16	7.66

VEHICLE - 0004 RUN NO. - 1 DATE - 77/ 9/26 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.21 WB - 61. DB - 78. PIN - 40.50 V/REV - .2813 TEMP - 111. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	120.	1895.	0.68	1.		
	MASS (GMS)	0.0895	2.8577	16.25	0.0027	0.0024	
	MASS (GM/MI)	0.54	17.14	97.47	0.02	0.01	70.38
MODE 2	SAMPLE(CONC)	354.	3489.	3.36	468.		
	MASS (GMS)	0.3175	6.3158	95.64	1.3924	1.2646	
	MASS (GM/MI)	5.27	104.91	1588.71	23.13	21.01	5.01
MODE 3	SAMPLE(CONC)	299.	769.	1.95	202.		
	MASS (GMS)	0.3348	1.7410	69.42	0.7514	0.6824	
	MASS (GM/MI)	2.68	13.93	555.39	6.01	5.46	15.15
MODE 4	SAMPLE(CONC)	93.	640.	0.91	43.		
	MASS (GMS)	0.1110	1.5439	34.37	0.1708	0.1551	
	MASS (GM/MI)	1.50	20.84	463.79	2.30	2.09	17.71
MODE 5	SAMPLE(CONC)	87.	1709.	0.88	6.		
	MASS (GMS)	0.0649	2.5776	20.78	0.0151	0.0137	
	MASS (GM/MI)	0.39	15.46	124.64	0.09	0.08	59.10
MODE 6	SAMPLE(CONC)	194.	3502.	1.58	39.		
	MASS (GMS)	0.1157	4.2263	29.99	0.0776	0.0705	
	MASS (GM/MI)	5.76	210.26	1492.23	3.86	3.51	4.82
MODE 7	SAMPLE(CONC)	195.	737.	1.28	86.		
	MASS (GMS)	0.2187	1.6683	45.46	0.3200	0.2907	
	MASS (GM/MI)	3.50	26.69	727.30	5.12	4.65	11.37
MODE 8	SAMPLE(CONC)	239.	1468.	3.19	397.		
	MASS (GMS)	0.1963	2.4351	83.18	1.0828	0.9834	
	MASS (GM/MI)	2.78	34.54	1179.89	15.36	13.95	7.14
MODE 9	SAMPLE(CONC)	262.	705.	1.99	177.		
	MASS (GMS)	0.2933	1.5941	70.85	0.6585	0.5980	
	MASS (GM/MI)	2.35	12.75	566.82	5.27	4.78	14.93
MODE 10	SAMPLE(CONC)	357.	1038.	4.72	920.		
	MASS (GMS)	0.3468	2.0355	145.42	2.9647	2.6925	
	MASS (GM/MI)	2.55	14.97	1069.26	21.80	19.80	8.06
MODE 11	SAMPLE(CONC)	323.	523.	3.15	427.		
	MASS (GMS)	0.3616	1.1842	111.98	1.5830	1.4422	
	MASS (GM/MI)	1.93	6.32	597.25	8.47	7.69	14.47
MODE 12	SAMPLE(CONC)	124.	373.	1.11	90.		
	MASS (GMS)	0.1112	0.6752	31.49	0.2679	0.2433	
	MASS (GM/MI)	0.68	5.32	248.38	2.11	1.92	34.20
MODE 13	SAMPLE(CONC)	665.	1450.	1.35	43.		
	MASS (GMS)	0.7456	3.2800	47.98	0.1603	0.1456	
	MASS (GM/MI)	5.96	26.24	383.86	1.28	1.16	19.99
MODE 14	SAMPLE(CONC)	538.	3555.	7.85	1265.		
	MASS (GMS)	0.6831	9.1150	316.70	5.3270	4.8380	
	MASS (GM/MI)	3.16	42.14	1464.16	24.63	22.37	5.76

VEHICLE - 0004 RUN NO. - 1 DATE - 77/ 9/28 SITE - LIVONIA

MODE 15	SAMPLE(CONC)	659.	2011.	5.10	1075.		
	MASS (GMS)	0.7390	4.5498	181.41	3.9970	3.6301	
	MASS (GM/MI)	2.96	18.20	725.63	15.99	14.52	11.62
MODE 16	SAMPLE(CONC)	364.	853.	1.72	233.		
	MASS (GMS)	0.3259	1.5442	48.96	0.6932	0.6296	
	MASS (GM/MI)	1.90	9.00	285.31	4.04	3.67	29.05
MODE 17	SAMPLE(CONC)	1113.	1554.	2.32	250.		
	MASS (GMS)	1.2475	3.5168	82.69	0.9299	0.8446	
	MASS (GM/MI)	6.65	18.76	441.00	4.96	4.50	18.05
MODE 18	SAMPLE(CONC)	529.	1436.	5.62	1490.		
	MASS (GMS)	0.5531	3.0317	186.06	5.1703	4.6957	
	MASS (GM/MI)	2.71	14.84	913.66	25.31	22.98	9.39
MODE 19	SAMPLE(CONC)	486.	1621.	5.51	1023.		
	MASS (GMS)	0.5806	3.9133	209.13	4.0574	3.6850	
	MASS (GM/MI)	2.18	14.67	784.15	15.21	13.82	10.90
MODE 20	SAMPLE(CONC)	592.	905.	1.58	112.		
	MASS (GMS)	1.3279	4.0950	112.39	0.8335	0.7570	
	MASS (GM/MI)	3.94	12.16	333.81	2.48	2.25	24.29
MODE 21	SAMPLE(CONC)	377.	2208.	6.62	31.		
	MASS (GMS)	0.4224	4.9955	29.03	0.1155	0.1049	
	MASS (GM/MI)	6.76	79.93	464.54	1.85	1.68	14.51
MODE 22	SAMPLE(CONC)	544.	3661.	6.29	1319.		
	MASS (GMS)	1.0558	14.3580	387.65	8.4943	7.7146	
	MASS (GM/MI)	3.37	45.78	1236.12	27.09	24.60	6.73
MODE 23	SAMPLE(CONC)	530.	1341.	5.78	1005.		
	MASS (GMS)	0.5939	3.0338	205.72	3.7370	3.3940	
	MASS (GM/MI)	2.38	12.14	822.86	14.95	13.58	10.45
MODE 24	SAMPLE(CONC)	548.	1160.	1.14	72.		
	MASS (GMS)	0.8600	3.6752	56.65	0.3752	0.3407	
	MASS (GM/MI)	4.36	18.63	287.12	1.90	1.73	26.88
MODE 25	SAMPLE(CONC)	705.	2181.	0.51	19.		
	MASS (GMS)	0.5265	3.2905	12.21	0.0472	0.0429	
	MASS (GM/MI)	3.16	19.74	73.22	0.28	0.26	77.68
MODE 26	SAMPLE(CONC)	476.	3409.	5.75	1271.		
	MASS (GMS)	1.1382	16.4554	436.65	10.0815	9.1561	
	MASS (GM/MI)	3.44	49.67	1317.99	30.43	27.64	6.51
MODE 27	SAMPLE(CONC)	631.	1308.	5.59	1114.		
	MASS (GMS)	0.7069	2.9585	198.92	4.1421	3.7619	
	MASS (GM/MI)	2.83	11.63	795.66	16.57	15.05	10.78
MODE 28	SAMPLE(CONC)	381.	904.	1.67	114.		
	MASS (GMS)	0.6539	3.1364	91.10	0.6505	0.5908	
	MASS (GM/MI)	2.18	10.48	304.27	2.17	1.97	27.09

VEHICLE - 0004   RUN NO. - 1   DATE - 77/ 9/28   SITE - LIVONIA

MODE 29	SAMPLE(CONC)	1320.	3111.	1.33	73.		
	MASS (GMS)	1.4787	7.0389	47.31	0.2718	0.2469	
	MASS (GM/MI)	11.83	56.31	378.48	2.17	1.98	17.59
MODE 30	SAMPLE(CONC)	326.	534.	1.04	38.		
	MASS (GMS)	0.2192	0.7249	22.12	0.0849	0.0771	
	MASS (GM/MI)	3.79	12.52	382.08	1.47	1.33	21.45
MODE 31	SAMPLE(CONC)	164.	1622.	0.91	17.		
	MASS (GMS)	0.1837	3.6697	32.24	0.0635	0.0577	
	MASS (GM/MI)	2.94	58.71	515.81	1.02	0.92	14.38
MODE 32	SAMPLE(CONC)	154.	1630.	0.77	11.		
	MASS (GMS)	0.0919	1.9665	14.52	0.0220	0.0199	
	MASS (GM/MI)	5.31	113.67	839.48	1.27	1.15	8.56
MODE 33	SAMPLE(CONC)	123.	1460.	0.77	16.		
	MASS (GMS)	0.0918	2.2017	18.15	0.0398	0.0362	
	MASS (GM/MI)	0.55	13.21	108.89	0.24	0.22	67.55
MODE 34	SAMPLE(CONC)	385.	3191.	4.28	841.		
	MASS (GMS)	0.6325	10.5882	223.60	4.5864	4.1654	
	MASS (GM/MI)	3.60	60.19	1271.16	26.07	23.68	6.44
MODE 35	SAMPLE(CONC)	476.	857.	3.38	427.		
	MASS (GMS)	0.5334	1.9387	120.22	1.5880	1.4423	
	MASS (GM/MI)	2.84	10.34	641.17	8.47	7.69	13.32
MODE 36	SAMPLE(CONC)	199.	833.	1.11	69.		
	MASS (GMS)	0.2379	2.0106	42.00	0.2739	0.2488	
	MASS (GM/MI)	1.71	14.44	301.75	1.97	1.79	26.91
MODE 37	SAMPLE(CONC)	543.	2048.	1.05	8.		
	MASS (GMS)	0.6067	4.6343	37.26	0.0301	0.0274	
	MASS (GM/MI)	9.74	74.15	596.17	0.48	0.44	11.94
MODE 38	SAMPLE(CONC)	399.	2491.	4.88	787.		
	MASS (GMS)	0.5369	6.7621	208.25	3.5118	3.1895	
	MASS (GM/MI)	3.51	44.25	1362.90	22.98	20.87	6.15
MODE 39	SAMPLE(CONC)	489.	892.	3.36	555.		
	MASS (GMS)	0.5479	2.0178	119.51	2.0638	1.8743	
	MASS (GM/MI)	2.92	10.76	637.36	11.01	10.00	13.38
MODE 40	SAMPLE(CONC)	299.	883.	0.78	87.		
	MASS (GMS)	0.4241	2.5294	34.93	0.4099	0.3723	
	MASS (GM/MI)	3.25	19.40	267.88	3.14	2.86	28.75
MODE 41	SAMPLE(CONC)	642.	1787.	0.90	19.		
	MASS (GMS)	0.4796	2.6955	21.26	0.0473	0.0430	
	MASS (GM/MI)	2.88	16.17	127.54	0.28	0.26	54.76
MODE 42	SAMPLE(CONC)	514.	4499.	7.16	1288.		
	MASS (GMS)	0.9606	16.9642	424.63	7.9760	7.2439	
	MASS (GM/MI)	3.62	63.92	1599.95	30.05	27.29	5.18

VEHICLE - 0004 RUN NO. - 1 DATE - 77/ 9/28 SITE - LIVONIA

MODE 43	SAMPLE(CONC)	606.	1038.	5.18	1168.		
	MASS (GMS)	0.6796	2.3482	184.25	4.3427	3.9440	
	MASS (GM/MI)	2.72	9.39	737.00	17.37	15.78	11.67
MODE 44	SAMPLE(CONC)	447.	1117.	1.56	233.		
	MASS (GMS)	0.9360	4.7173	103.57	1.6175	1.4690	
	MASS (GM/MI)	3.55	17.91	393.20	6.14	5.58	20.52
MODE 45	SAMPLE(CONC)	1036.	1864.	0.86	7.		
	MASS (GMS)	0.7740	2.8116	20.31	0.0176	0.0160	
	MASS (GM/MI)	4.64	16.87	121.86	0.11	0.10	54.42
MODE 46	SAMPLE(CONC)	324.	2698.	3.17	463.		
	MASS (GMS)	0.3630	6.1040	112.74	1.7218	1.5638	
	MASS (GM/MI)	4.93	82.82	1529.71	23.36	21.22	5.30
MODE 47	SAMPLE(CONC)	344.	884.	1.81	209.		
	MASS (GMS)	0.3851	2.0007	64.42	0.7774	0.7060	
	MASS (GM/MI)	3.08	16.01	515.35	6.22	5.65	16.13
MODE 48	SAMPLE(CONC)	340.	1396.	5.38	1092.		
	MASS (GMS)	0.6343	5.2650	319.01	6.7671	6.1459	
	MASS (GM/MI)	2.02	16.80	1017.90	21.59	19.61	8.45
MODE 49	SAMPLE(CONC)	525.	1182.	5.40	1318.		
	MASS (GMS)	0.6271	2.8532	204.93	5.2269	4.7471	
	MASS (GM/MI)	2.35	10.70	768.39	19.60	17.80	11.20
MODE 50	SAMPLE(CONC)	429.	819.	2.50	455.		
	MASS (GMS)	0.5772	2.2248	106.92	2.0302	1.8439	
	MASS (GM/MI)	2.44	9.42	452.66	8.60	7.81	18.08
MODE 51	SAMPLE(CONC)	1095.	2157.	1.15	36.		
	MASS (GMS)	1.3092	5.2046	43.57	0.1432	0.1300	
	MASS (GM/MI)	9.82	39.04	326.68	1.07	0.98	21.16
MODE 52	SAMPLE(CONC)	517.	589.	1.26	76.		
	MASS (GMS)	0.3864	0.8890	29.83	0.1886	0.1713	
	MASS (GM/MI)	8.70	20.02	671.84	4.25	3.86	12.14
MODE 53	SAMPLE(CONC)	171.	1649.	0.75	19.		
	MASS (GMS)	0.1276	2.4868	17.68	0.0473	0.0429	
	MASS (GM/MI)	0.77	14.92	106.04	0.28	0.26	67.28
MODE 54	SAMPLE(CONC)	396.	2070.	5.08	1006.		
	MASS (GMS)	1.1254	11.8639	457.74	9.4761	8.6062	
	MASS (GM/MI)	2.81	29.59	1141.79	23.64	21.47	7.41
MODE 55	SAMPLE(CONC)	460.	992.	5.80	1298.		
	MASS (GMS)	0.5154	2.2441	206.42	4.8260	4.3830	
	MASS (GM/MI)	2.06	8.98	825.69	19.30	17.53	10.49
MODE 56	SAMPLE(CONC)	418.	1088.	1.85	256.		
	MASS (GMS)	1.0922	5.7460	153.66	2.2215	2.0176	
	MASS (GM/MI)	3.32	17.45	466.63	6.75	6.13	17.59

VEHICLE - 0004 RUN NO. - 1 DATE - 77/ 9/28 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	642.	2206.	0.67	7.		
	MASS (GMS)	0.4795	3.3270	15.78	0.0175	0.0159	
	MASS (GM/MI)	2.88	19.96	94.68	0.11	0.10	65.66
MODE 58	SAMPLE(CONC)	312.	2357.	2.53	331.		
	MASS (GMS)	0.4200	6.3987	108.24	1.4772	1.3416	
	MASS (GM/MI)	4.74	72.22	1221.66	16.67	15.14	6.57
MODE 59	SAMPLE(CONC)	296.	654.	1.89	227.		
	MASS (GMS)	0.3314	1.4805	67.28	0.8443	0.7668	
	MASS (GM/MI)	2.65	11.84	538.20	6.75	6.13	15.70
MODE 60	SAMPLE(CONC)	322.	1767.	5.71	1064.		
	MASS (GMS)	0.5050	5.5965	284.50	5.5388	5.0304	
	MASS (GM/MI)	1.94	21.53	1094.66	21.31	19.36	7.82
MODE 61	SAMPLE(CONC)	532.	1321.	6.08	1338.		
	MASS (GMS)	0.5964	2.9897	216.45	4.9748	4.5181	
	MASS (GM/MI)	2.39	11.96	865.78	19.90	18.07	9.95
MODE 62	SAMPLE(CONC)	363.	764.	2.64	571.		
	MASS (GMS)	0.3800	1.6126	87.83	1.9815	1.7996	
	MASS (GM/MI)	2.10	8.89	484.45	10.93	9.93	17.57
MODE 63	SAMPLE(CONC)	651.	1890.	0.95	46.		
	MASS (GMS)	0.7296	4.2765	33.68	0.1713	0.1556	
	MASS (GM/MI)	5.84	34.21	269.46	1.37	1.24	25.97
MODE 64	SAMPLE(CONC)	619.	620.	1.35	64.		
	MASS (GMS)	0.6014	1.2148	41.57	0.2065	0.1876	
	MASS (GM/MI)	10.16	20.52	702.20	3.49	3.17	11.56
MODE 65	SAMPLE(CONC)	164.	1695.	0.65	20.		
	MASS (GMS)	0.1468	3.0690	18.64	0.0597	0.0542	
	MASS (GM/MI)	0.73	15.34	93.19	0.30	0.27	74.19
CALC TOTAL	SAMPLE(CONC)	451.	1674.	3.05	512.		
	MASS (GMS)	35.4919	266.2097	7619.05	133.7806	121.5007	
	MASS (GM/MI)	3.63	27.19	778.33	13.67	12.41	10.66

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SITE -        LIVONIA
VEHICLE - 0005      RUN NO. -    1     DATE - 77/ 9/29       AHP - 21.2     INERTIA - 5500.

                                         HC        CO        CO2        NOX     NOXC       MPG

1975 FTP
    CLD TRAN
    BARO - 29.29    WB - 57.  DB - 70.  PIN - 39.30    V/REV - .2820   TEMP - 110.  REVS - 10494.
         BACKGROUND(CONC)                 9.        0.      0.07      0.
         SAMPLE(CONC)                   701.     4740.      2.23    214.

         MASS EMISSIONS(GMS)            27.40    377.97  2726.92    28.03     24.98
    CLD STAB
    BARO - 29.29    WB - 57.  DB - 70.  PIN - 39.40    V/REV - .2819   TEMP - 110.  REVS - 18066.
         BACKGROUND(CONC)                 9.        7.      0.05      0.
         SAMPLE(CONC)                   292.     1603.      1.24     93.

         MASS EMISSIONS(GMS)            19.30    219.75  2578.99    20.96     18.68
    HOT TRAN
    BARO - 29.29    WB - 58.  DB - 73.  PIN - 39.30    V/REV - .2820   TEMP - 110.  REVS - 10520.
         BACKGROUND(CONC)                 8.        9.      0.05      0.
         SAMPLE(CONC)                   434.     1788.      1.94    235.

         MASS EMISSIONS(GMS)            16.92    142.33  2386.17    30.86     27.42
    COMPOSIT
         MASS EMISSIONS(GM/MI)           5.43     61.79   681.56     6.75      6.01     11.15
  0 MPH
    BARO - 29.29    WB - 61.  DB - 79.  PIN - 39.90    V/REV - .2817   TEMP - 110.  REVS -  3751.
         BACKGROUND(CONC)                 7.        4.      0.04      0.
         SAMPLE(CONC)                   160.     1237.      0.44      2.

         MASS EMISSIONS(GMS)             2.16     35.05   179.58     0.09      0.08
         MASS EMISSIONS(GM/MI)           0.70     11.31    57.93     0.03      0.03    113.92
  5 MPH
    BARO - 29.29    WB - 60.  DB - 78.  PIN - 39.90    V/REV - .2817   TEMP - 110.  REVS -  3747.
         BACKGROUND(CONC)                 6.        2.      0.05      0.
         SAMPLE(CONC)                   136.      913.      0.47      2.

         MASS EMISSIONS(GMS)             1.83     25.87   188.51     0.09      0.08
         MASS EMISSIONS(GM/MI)           7.10    100.27   730.65     0.36      0.32      9.75
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VEHICLE - 0005     RUN NO. -    1     DATE - 77/ 9/29    SITE -       LIVONIA

10 MPH
   BARO - 29.29   WB - 60.  DB - 77.  PIN - 39.90   V/REV - .2817   TEMP - 110.  REVS -  3745.
        BACKGROUND(CONC)                   6.       4.      0.05       0.
        SAMPLE(CONC)                      97.      77.      0.85       7.

        MASS EMISSIONS(GMS)             1.28     2.08    358.49      0.33      0.29
        MASS EMISSIONS(GM/MI)           2.48     4.02    693.41      0.63      0.57     12.54
15 MPH
   BARO - 29.29   WB - 60.  DB - 77.  PIN - 39.90   V/REV - .2817   TEMP - 110.  REVS -  3749.
        BACKGROUND(CONC)                   5.       2.      0.03       0.
        SAMPLE(CONC)                     120.      77.      0.75       9.

        MASS EMISSIONS(GMS)             1.62     2.13    322.46      0.42      0.38
        MASS EMISSIONS(GM/MI)           2.09     2.75    416.07      0.54      0.49     20.78
30 MPH
   BARO - 29.29   WB - 60.  DB - 76.  PIN - 39.90   V/REV - .2817   TEMP - 110.  REVS -  3748.
        BACKGROUND(CONC)                   6.       0.      0.04       0.
        SAMPLE(CONC)                     195.     173.      1.47      63.

        MASS EMISSIONS(GMS)             2.67     4.91    640.74      2.94      2.65
        MASS EMISSIONS(GM/MI)           1.72     3.17    413.38      1.90      1.71     20.94
45 MPH
   BARO - 29.29   WB - 61.  DB - 78.  PIN - 39.90   V/REV - .2817   TEMP - 110.  REVS -  3747.
        BACKGROUND(CONC)                  11.       7.      0.05       0.
        SAMPLE(CONC)                     367.     632.      2.39     240.

        MASS EMISSIONS(GMS)             5.04    17.78   1049.07     11.19     10.16
        MASS EMISSIONS(GM/MI)           2.17     7.65    451.41      4.32      4.37     18.87
60 MPH
   BARO - 29.29   WB - 62.  DB - 79.  PIN - 39.90   V/REV - .2817   TEMP - 110.  REVS -  3748.
        BACKGROUND(CONC)                  13.       9.      0.05       0.
        SAMPLE(CONC)                     499.     769.      3.95     678.

        MASS EMISSIONS(GMS)             6.89    21.66   1748.80     31.63     29.07
        MASS EMISSIONS(GM/MI)           2.22     6.99    564.13     10.20      9.38     15.25
MOD(BAG)
   BARO - 29.26   WB - 61.  DB - 79.  PIN - 39.90   V/REV - .2816   TEMP - 110.  REVS - 21912.
        BACKGROUND(CONC)                  12.      13.      0.06       0.
        SAMPLE(CONC)                     457.    1940.      2.71     340.

        MASS EMISSIONS(GMS)            36.76   319.97   6944.21     92.60     83.46
        MASS EMISSIONS(GM/MI)           3.76    32.69    709.39      9.46      8.53     11.49
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VEHICLE - 0005 RUN NO. - 1 DATE - 77/ 9/29 SITE - LIVONIA.

AA 1 a

BARO - 29.24 WB - 60. DB - 76. PIN - 39.90 V/REV - .2817 TEMP - 110. REVS - 36660.

BACKGROUND(CONC)	5.	7.	0.05	0.		
SAMPLE(CONC)	232.	1122.	0.99	56.		
MASS EMISSIONS(GMS)	31.23	309.33	4117.33	25.51	23.04	
MASS EMISSIONS(GM/MI)	5.61	55.59	739.86	4.58	4.14	10.50

Inertia - 6500

AA 1 b

BARO - 29.22 WB - 60. DB - 77. PIN - 39.60 V/REV - .2818 TEMP - 110. REVS - 36623.

BACKGROUND(CONC)	5.	4.	0.05	0.		
SAMPLE(CONC)	254.	1200.	1.06	74.		
MASS EMISSIONS(GMS)	34.24	331.54	4421.32	33.69	30.22	
MASS EMISSIONS(GM/MI)	6.15	59.58	794.49	6.05	5.43	9.78

VEHICLE - 0005 RUN NO. - 1 DATE - 77/ 9/29 SITE - LIVCNIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.26 WB - 61. DB - 79. PIN - 39.90 V/REV - .2816 TEMP - 110. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	115.	1052.	0.34	0.		
	MASS (GMS)	0.0900	1.6541	8.47	0.0	0.0	
	MASS (GM/MI)	0.54	9.92	50.80	0.0	0.0	130.32
MODE 2	SAMPLE(CONC)	623.	4024.	2.61	314.		
	MASS (GMS)	0.5823	7.5961	77.60	0.9737	0.8775	
	MASS (GM/MI)	9.67	126.18	1289.04	16.17	14.58	5.85
MODE 3	SAMPLE(CONC)	338.	1540.	1.84	146.		
	MASS (GMS)	0.3949	3.6338	68.25	0.5659	0.5100	
	MASS (GM/MI)	3.16	29.07	546.03	4.53	4.08	14.75
MODE 4	SAMPLE(CONC)	132.	222.	0.70	26.		
	MASS (GMS)	0.1642	0.5582	27.85	0.1075	0.0969	
	MASS (GM/MI)	2.22	7.53	375.83	1.45	1.31	22.49
MODE 5	SAMPLE(CONC)	131.	237.	0.55	8.		
	MASS (GMS)	0.1017	0.3722	13.68	0.0207	0.0186	
	MASS (GM/MI)	0.61	2.23	82.05	0.12	0.11	101.44
MODE 6	SAMPLE(CONC)	374.	2685.	1.11	36.		
	MASS (GMS)	0.2333	3.3795	21.90	0.0744	0.0671	
	MASS (GM/MI)	11.61	168.13	1089.56	3.70	3.34	6.36
MODE 7	SAMPLE(CONC)	211.	1414.	0.88	43.		
	MASS (GMS)	0.2466	3.3366	32.84	0.1667	0.1502	
	MASS (GM/MI)	3.95	53.39	525.42	2.67	2.40	14.27
MODE 8	SAMPLE(CONC)	425.	843.	2.50	343.		
	MASS (GMS)	0.3646	1.4580	68.09	0.9750	0.8787	
	MASS (GM/MI)	5.17	20.68	965.76	13.83	12.46	8.75
MODE 9	SAMPLE(CONC)	278.	550.	1.53	132.		
	MASS (GMS)	0.3244	1.2970	58.54	0.5116	0.4611	
	MASS (GM/MI)	2.59	10.36	468.36	4.09	3.69	18.01
MODE 10	SAMPLE(CONC)	474.	880.	3.55	668.		
	MASS (GMS)	0.4804	1.7968	114.06	2.2440	2.0225	
	MASS (GM/MI)	3.53	13.23	838.70	16.50	14.87	10.19
MODE 11	SAMPLE(CONC)	442.	737.	2.86	354.		
	MASS (GMS)	0.5163	1.7389	107.01	1.3722	1.2367	
	MASS (GM/MI)	2.75	9.27	570.70	7.32	6.60	14.94
MODE 12	SAMPLE(CONC)	280.	511.	1.43	81.		
	MASS (GMS)	0.2622	0.9637	42.36	0.2512	0.2264	
	MASS (GM/MI)	2.07	7.60	334.09	1.98	1.79	25.17
MODE 13	SAMPLE(CONC)	520.	1949.	0.92	38.		
	MASS (GMS)	0.6078	4.5993	33.97	0.1473	0.1327	
	MASS (GM/MI)	4.86	36.79	271.77	1.13	1.06	25.73
MODE 14	SAMPLE(CONC)	803.	5800.	6.07	896.		
	MASS (GMS)	1.0637	15.5093	255.29	3.9361	3.5474	
	MASS (GM/MI)	4.92	71.70	1180.26	18.20	16.40	6.78

VEHICLE - 0005 RUN NO. - 1 DATE - 77/ 9/29 SITE - LIVONIA

MODE 15	SAMPLE(CONC)	680.	3610.	5.72	1074.		
	MASS (GMS)	0.7942	8.5182	212.17	4.1630	3.7519	
	MASS (GM/MI)	3.18	34.07	848.69	16.65	15.01	9.73
MODE 16	SAMPLE(CONC)	347.	486.	2.82	197.		
	MASS (GMS)	0.3241	0.9172	83.81	0.6109	0.5506	
	MASS (GM/MI)	1.89	5.34	488.41	3.56	3.21	17.65
MODE 17	SAMPLE(CONC)	902.	2340.	1.89	227.		
	MASS (GMS)	1.0542	5.5219	70.14	0.8799	0.7930	
	MASS (GM/MI)	5.62	29.45	374.08	4.69	4.23	20.25
MODE 18	SAMPLE(CONC)	584.	1800.	4.74	906.		
	MASS (GMS)	0.6376	3.9638	164.25	3.2849	2.9606	
	MASS (GM/MI)	3.12	19.40	803.97	16.08	14.49	10.51
MODE 19	SAMPLE(CONC)	741.	4308.	5.78	951.		
	MASS (GMS)	0.9233	10.8432	228.72	3.9319	3.5437	
	MASS (GM/MI)	3.46	40.66	857.58	14.74	13.29	9.52
MODE 20	SAMPLE(CONC)	372.	889.	1.33	97.		
	MASS (GMS)	0.8703	4.1976	98.47	0.7520	0.6777	
	MASS (GM/MI)	2.58	12.47	292.45	2.23	2.01	27.72
MODE 21	SAMPLE(CONC)	639.	2309.	0.50	13.		
	MASS (GMS)	0.7465	5.4479	18.70	0.0504	0.0454	
	MASS (GM/MI)	11.94	87.17	299.14	0.81	0.73	18.72
MODE 22	SAMPLE(CONC)	668.	4871.	5.75	868.		
	MASS (GMS)	1.3525	19.9228	368.45	5.8318	5.2560	
	MASS (GM/MI)	4.31	63.53	1174.89	18.60	16.76	6.89
MODE 23	SAMPLE(CONC)	454.	1219.	5.46	805.		
	MASS (GMS)	0.5307	2.8775	202.44	3.1203	2.8122	
	MASS (GM/MI)	2.12	11.51	809.75	12.48	11.25	10.63
MODE 24	SAMPLE(CONC)	287.	755.	1.26	84.		
	MASS (GMS)	0.4700	2.4953	65.27	0.4558	0.4108	
	MASS (GM/MI)	2.38	12.65	330.81	2.31	2.08	24.78
MODE 25	SAMPLE(CONC)	772.	1389.	0.54	7.		
	MASS (GMS)	0.6013	2.1847	13.45	0.0181	0.0163	
	MASS (GM/MI)	3.61	13.11	80.68	0.11	0.10	78.74
MODE 26	SAMPLE(CONC)	602.	3650.	5.03	704.		
	MASS (GMS)	1.5007	18.3751	398.56	6.3176	5.6938	
	MASS (GM/MI)	4.53	55.46	1203.02	19.07	17.19	6.80
MODE 27	SAMPLE(CONC)	434.	1496.	5.48	892.		
	MASS (GMS)	0.5073	3.5289	203.19	3.4575	3.1161	
	MASS (GM/MI)	2.03	14.12	812.75	13.83	12.46	10.55
MODE 28	SAMPLE(CONC)	311.	1077.	1.83	149.		
	MASS (GMS)	0.5570	3.8965	104.07	0.8856	0.7981	
	MASS (GM/MI)	1.86	13.01	347.50	2.96	2.67	23.73

VEHICLE - 0005 RUN NO. - 1 DATE - 77/ 9/29 SITE - LIVONIA

MODE 29	SAMPLE(CONC)	902.	2298.	0.82	20.		
	MASS (GMS)	1.0543	5.4227	30.26	0.0775	0.0699	
	MASS (GM/MI)	8.43	43.38	242.05	0.62	0.56	26.34
MODE 30	SAMPLE(CONC)	253.	528.	1.22	32.		
	MASS (GMS)	0.1776	0.7480	27.08	0.0744	0.0671	
	MASS (GM/MI)	3.07	12.92	467.62	1.29	1.16	17.83
MODE 31	SAMPLE(CONC)	201.	1094.	0.62	16.		
	MASS (GMS)	0.2346	2.5809	23.14	0.0620	0.0559	
	MASS (GM/MI)	3.75	41.29	370.27	0.99	0.89	19.85
MODE 32	SAMPLE(CONC)	225.	2495.	0.57	8.		
	MASS (GMS)	0.1401	3.1397	11.36	0.0165	0.0149	
	MASS (GM/MI)	8.10	181.49	656.70	0.96	0.86	9.17
MODE 33	SAMPLE(CONC)	178.	1505.	0.41	5.		
	MASS (GMS)	0.1384	2.3669	10.21	0.0129	0.0116	
	MASS (GM/MI)	0.83	14.20	61.27	0.08	0.07	102.95
MODE 34	SAMPLE(CONC)	579.	3902.	3.71	586.		
	MASS (GMS)	0.9921	13.5041	201.85	3.3314	3.0025	
	MASS (GM/MI)	5.64	76.77	1147.54	18.94	17.07	5.90
MODE 35	SAMPLE(CONC)	505.	969.	2.76	360.		
	MASS (GMS)	0.5898	2.2862	103.28	1.3954	1.2576	
	MASS (GM/MI)	3.15	12.19	550.65	7.44	6.71	15.30
MODE 36	SAMPLE(CONC)	258.	707.	1.38	87.		
	MASS (GMS)	0.3221	1.7807	54.50	0.3597	0.3242	
	MASS (GM/MI)	2.31	12.79	391.51	2.58	2.33	21.18
MODE 37	SAMPLE(CONC)	348.	1268.	0.48	11.		
	MASS (GMS)	0.4063	2.9912	17.93	0.0426	0.0384	
	MASS (GM/MI)	6.50	47.86	286.86	0.68	0.61	23.19
MODE 38	SAMPLE(CONC)	525.	2050.	3.23	614.		
	MASS (GMS)	0.7365	5.8058	143.64	2.8559	2.5739	
	MASS (GM/MI)	4.82	38.00	940.08	18.69	16.85	8.74
MODE 39	SAMPLE(CONC)	483.	1612.	3.34	364.		
	MASS (GMS)	0.5647	3.8048	123.80	1.4109	1.2716	
	MASS (GM/MI)	3.01	20.29	660.24	7.52	6.78	12.65
MODE 40	SAMPLE(CONC)	220.	568.	1.23	87.		
	MASS (GMS)	0.3260	1.6986	57.63	0.4271	0.3850	
	MASS (GM/MI)	2.50	13.03	441.95	3.28	2.95	18.67
MODE 41	SAMPLE(CONC)	280.	945.	0.38	8.		
	MASS (GMS)	0.2178	1.4858	9.46	0.0207	0.0186	
	MASS (GM/MI)	1.31	8.91	56.77	0.12	0.11	118.47
MODE 42	SAMPLE(CONC)	801.	6982.	5.52	709.		
	MASS (GMS)	1.5596	27.4585	341.29	4.5803	4.1280	
	MASS (GM/MI)	5.88	103.46	1285.95	17.28	15.55	6.05

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MODE 43	SAMPLE(CONC)	606.	3726.	5.89	967.		
	MASS (GMS)	0.7079	8.7923	218.51	3.7482	3.3781	
	MASS (GM/MI)	2.83	35.17	874.04	14.99	13.51	9.46
MODE 44	SAMPLE(CONC)	262.	859.	1.47	123.		
	MASS (GMS)	0.6162	3.7817	101.64	0.8900	0.8021	
	MASS (GM/MI)	2.34	14.36	385.67	3.38	3.05	21.34
MODE 45	SAMPLE(CONC)	715.	1360.	0.37	6.		
	MASS (GMS)	0.5568	2.1388	9.22	0.0155	0.0140	
	MASS (GM/MI)	3.34	12.83	55.33	0.09	0.08	103.09
MODE 46	SAMPLE(CONC)	552.	4296.	2.03	295.		
	MASS (GMS)	0.6455	10.1380	75.38	1.1435	1.0306	
	MASS (GM/MI)	8.76	137.56	1022.86	15.52	13.98	7.01
MODE 47	SAMPLE(CONC)	392.	1279.	1.91	199.		
	MASS (GMS)	0.4580	3.0181	70.86	0.7714	0.6952	
	MASS (GM/MI)	3.66	24.14	566.87	6.17	5.56	14.40
MODE 48	SAMPLE(CONC)	500.	1158.	3.77	674.		
	MASS (GMS)	0.9731	4.5535	233.03	4.3542	3.9243	
	MASS (GM/MI)	3.10	14.53	743.54	13.89	12.52	11.43
MODE 49	SAMPLE(CONC)	637.	5014.	5.57	912.		
	MASS (GMS)	0.7939	12.6207	236.28	3.7707	3.3984	
	MASS (GM/MI)	2.98	47.32	885.94	14.14	12.74	9.15
MODE 50	SAMPLE(CONC)	324.	1000.	2.39	236.		
	MASS (GMS)	0.4548	2.8329	136.49	1.0977	0.9893	
	MASS (GM/MI)	1.93	11.99	450.86	4.65	4.19	18.65
MODE 51	SAMPLE(CONC)	849.	1704.	0.71	30.		
	MASS (GMS)	1.0583	4.2888	28.29	0.1240	0.1118	
	MASS (GM/MI)	7.94	32.17	212.19	0.93	0.84	30.82
MODE 52	SAMPLE(CONC)	336.	2109.	1.01	38.		
	MASS (GMS)	0.2619	3.3180	24.88	0.0982	0.0885	
	MASS (GM/MI)	5.90	74.73	560.44	2.21	1.99	12.74
MODE 53	SAMPLE(CONC)	91.	355.	0.50	20.		
	MASS (GMS)	0.0705	0.5578	12.44	0.0517	0.0466	
	MASS (GM/MI)	0.42	3.35	74.60	0.31	0.28	109.30
MODE 54	SAMPLE(CONC)	520.	2347.	4.12	707.		
	MASS (GMS)	1.5395	14.0315	387.30	6.9424	6.2569	
	MASS (GM/MI)	3.84	35.00	966.08	17.32	15.61	8.59
MODE 55	SAMPLE(CONC)	276.	964.	5.63	1046.		
	MASS (GMS)	0.3228	2.2737	208.77	4.0544	3.6541	
	MASS (GM/MI)	1.29	9.09	835.07	16.22	14.62	10.40
MODE 56	SAMPLE(CONC)	388.	722.	1.88	214.		
	MASS (GMS)	1.0576	3.9750	162.71	1.9355	1.7444	
	MASS (GM/MI)	3.21	12.07	494.10	5.88	5.30	16.96

VEHICLE - 0005   RUN NO. - 1   DATE - 77/ 9/29   SITE - LIVONIA

MODE 57	SAMPLE(CONC)	641.	1997.	0.20	8.		
	MASS (GMS)	0.4998	3.1406	5.01	0.0207	0.0186	
	MASS (GM/MI)	3.00	18.84	30.03	0.12	0.11	128.36
MODE 58	SAMPLE(CONC)	467.	2938.	1.48	154.		
	MASS (GMS)	0.6545	8.3185	65.83	0.7163	0.6456	
	MASS (GM/MI)	7.39	93.89	743.03	8.08	7.29	9.71
MODE 59	SAMPLE(CONC)	347.	1045.	2.03	197.		
	MASS (GMS)	0.4055	2.4661	75.33	0.7636	0.6882	
	MASS (GM/MI)	3.24	19.73	602.62	6.11	5.51	13.78
MODE 60	SAMPLE(CONC)	477.	1765.	3.32	620.		
	MASS (GMS)	0.7808	5.8322	172.27	3.3645	3.0323	
	MASS (GM/MI)	3.00	22.44	662.85	12.95	11.67	12.54
MODE 61	SAMPLE(CONC)	779.	6539.	7.18	1011.		
	MASS (GMS)	0.9105	15.4267	266.27	3.9188	3.5318	
	MASS (GM/MI)	3.64	61.71	1065.08	15.68	14.13	7.56
MODE 62	SAMPLE(CONC)	389.	733.	3.08	396.		
	MASS (GMS)	0.4242	1.7247	106.83	1.4326	1.2912	
	MASS (GM/MI)	2.34	9.51	589.25	7.90	7.12	14.51
MODE 63	SAMPLE(CONC)	682.	1498.	0.68	30.		
	MASS (GMS)	0.7969	3.5345	25.39	0.1163	0.1048	
	MASS (GM/MI)	6.38	28.28	203.14	0.93	0.84	33.14
MODE 64	SAMPLE(CONC)	283.	1406.	0.94	46.		
	MASS (GMS)	0.2867	2.8755	30.08	0.1545	0.1393	
	MASS (GM/MI)	4.84	48.57	508.05	2.61	2.35	14.80
MODE 65	SAMPLE(CONC)	122.	582.	0.53	19.		
	MASS (GMS)	0.1137	1.0980	15.82	0.0589	0.0531	
	MASS (GM/MI)	0.57	5.49	79.11	0.29	0.27	99.12
CALC TOTAL	SAMPLE(CONC)	465.	2029.	2.66	365.		
	MASS (GMS)	38.1578	336.3896	6944.34	99.4124	89.5967	
	MASS (GM/MI)	3.90	34.36	709.40	10.16	9.15	11.44

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SITE -        LIVONIA
VEHICLE - 0006      RUN NO. -    1      DATE - 77/ 9/30        AHP - 21.0     INERTIA - 6000.

                                            HC         CO        CO2       NOX     NOXC       MPG

1975 FTP
    CLD TRAN
    BARO - 29.16    WB - 62.  DB - 75.  PIN - 39.20    V/REV - .2821    TEMP - 110.  REVS - 10511.
         BACKGROUND(CONC)                    6.        0.      0.05      0.
         SAMPLE(CONC)                      648.     5416.      2.61     25.

         MASS EMISSIONS(GMS)             25.35    430.72   3216.77     3.27      3.10
    CLD STAB
    BARO - 29.16    WB - 62.  DB - 77.  PIN - 34.40    V/REV - .2820    TEMP - 110.  REVS - 18102.
         BACKGROUND(CONC)                    6.        3.      0.05      1.
         SAMPLE(CONC)                      238.      293.      1.53    132.

         MASS EMISSIONS(GMS)             15.99     40.29   3242.39    29.89     27.91
    HOT TRAN
    BARO - 29.16    WB - 62.  DB - 76.  PIN - 39.30    V/REV - .2820    TEMP - 110.  REVS - 10518.
         BACKGROUND(CONC)                   10.        4.      0.05      0.
         SAMPLE(CONC)                      400.      697.      2.32     31.

         MASS EMISSIONS(GMS)             15.43     55.17   2850.49     4.05      3.81
    COMPOSIT
         MASS EMISSIONS(GM/MI)            4.76     34.26    833.38     4.48      4.19      9.84
  0 MPH
    BARO - 29.13    WB - 63.  DB - 77.  PIN - 39.60    V/REV - .2819    TEMP - 110.  REVS -  3746.
         BACKGROUND(CONC)                    7.        3.      0.05      0.
         SAMPLE(CONC)                      108.       55.      0.68      5.

         MASS EMISSIONS(GMS)              1.42      1.47    281.13     0.23      0.22
         MASS EMISSIONS(GM/MI)            0.46      0.48     90.69     0.07      0.07     95.55
  5 MPH
    BARO - 29.13    WB - 63.  DB - 77.  PIN - 39.60    V/REV - .2819    TEMP - 110.  REVS -  3743.
         BACKGROUND(CONC)                    6.        2.      0.05      0.
         SAMPLE(CONC)                       73.       73.      0.81      4.

         MASS EMISSIONS(GMS)              0.94      2.01    338.85     0.19      0.18
         MASS EMISSIONS(GM/MI)            3.65      7.78   1313.36     0.72      0.69      6.54
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VEHICLE - 0006 RUN NO. - 1 DATE - 77/ 9/30 SITE - LIVONIA

10 MPH

BARO - 29.13 WB - 62. DB - 78. PIN - 39.60 V/REV - .2819 TEMP - 110. REVS - 3744.

BACKGROUND(CONC)	6.	2.	0.05	0.		
SAMPLE(CONC)	71.	94.	0.97	9.		
MASS EMISSIONS(GMS)	0.92	2.60	410.27	0.42	0.39	
MASS EMISSIONS(GM/MI)	1.77	5.03	793.56	0.81	0.75	11.00

15 MPH

BARO - 29.13 WB - 63. DB - 78. PIN - 39.60 V/REV - .2819 TEMP - 110. REVS - 3746.

BACKGROUND(CONC)	6.	2.	0.05	0.		
SAMPLE(CONC)	109.	124.	1.42	17.		
MASS EMISSIONS(GMS)	1.45	3.45	611.23	0.79	0.75	
MASS EMISSIONS(GM/MI)	1.87	4.46	788.69	1.02	0.96	11.07

30 MPH

BARO - 29.13 WB - 63. DB - 79. PIN - 39.60 V/REV - .2819 TEMP - 110. REVS - 3745.

BACKGROUND(CONC)	6.	2.	0.05	0.		
SAMPLE(CONC)	167.	260.	1.83	63.		
MASS EMISSIONS(GMS)	2.26	7.30	793.94	2.92	2.75	
MASS EMISSIONS(GM/MI)	1.46	4.71	512.22	1.89	1.77	16.93

45 MPH

BARO - 29.13 WB - 63. DB - 79. PIN - 39.60 V/REV - .2819 TEMP - 110. REVS - 3754.

BACKGROUND(CONC)	7.	9.	0.05	0.		
SAMPLE(CONC)	153.	471.	3.02	323.		
MASS EMISSIONS(GMS)	2.07	13.14	1327.83	15.03	14.12	
MASS EMISSIONS(GM/MI)	0.89	5.65	571.36	6.47	6.08	15.22

60 MPH

BARO - 29.13 WB - 63. DB - 80. PIN - 39.60 V/REV - .2819 TEMP - 110. REVS - 3748.

BACKGROUND(CONC)	7.	4.	0.05	0.		
SAMPLE(CONC)	202.	825.	5.21	1090.		
MASS EMISSIONS(GMS)	2.77	23.26	2303.18	50.63	47.24	
MASS EMISSIONS(GM/MI)	0.89	7.50	742.96	16.33	15.24	11.72

MOD(BAG)

BARO - 29.12 WB - 63. DB - 81. PIN - 39.90 V/REV - .2817 TEMP - 110. REVS - 20973.

BACKGROUND(CONC)	12.	11.	0.05	0.		
SAMPLE(CONC)	476.	1908.	2.99	406.		
MASS EMISSIONS(GMS)	36.52	299.97	7330.91	105.32	97.57	
MASS EMISSIONS(GM/MI)	3.73	30.64	748.89	10.76	9.97	10.97

VEHICLE - 0006 RUN NO. - 1 DATE - 77/ 9/30 SITE - LIVONIA

AA 1 a

BARO - 29.11 WB - 65. DB - 79. PIN - 39.45 V/REV - .2819 TEMP - 111. REVS - 36175.

BACKGROUND(CONC)	7.	4.	0.06	0.		
SAMPLE(CONC)	211.	149.	1.21	60.		
MASS EMISSIONS(GMS)	27.60	39.59	4948.93	26.84	26.38	
MASS EMISSIONS(GM/MI)	4.96	7.11	889.30	4.82	4.74	9.69

Inertia - 7500

AA 1 b

BARO - 29.11 WB - 64. DB - 78. PIN - 39.55 V/REV - .2818 TEMP - 111. REVS - 36668.

BACKGROUND(CONC)	12.	10.	0.05	0.		
SAMPLE(CONC)	230.	164.	1.26	81.		
MASS EMISSIONS(GMS)	29.94	42.75	5270.32	36.71	35.54	
MASS EMISSIONS(GM/MI)	5.38	7.68	947.05	6.60	6.39	9.09

VEHICLE - 0006 RUN NO. - 1 DATE - 77/ 9/30 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.12 WB - 63. CB - 81. PIN - 39.90 V/REV - .2817 TEMP - 110. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	75.	89.	0.60	7.		
	MASS (GMS)	0.0554	0.1327	14.20	0.0172	0.0160	
	MASS (GM/MI)	0.33	0.80	85.16	0.10	0.10	101.48
MODE 2	SAMPLE(CONC)	418.	1099.	3.24	471.		
	MASS (GMS)	0.3723	1.9755	91.68	1.3910	1.2886	
	MASS (GM/MI)	6.18	32.82	1523.00	23.11	21.41	5.57
MODE 3	SAMPLE(CONC)	259.	682.	1.80	124.		
	MASS (GMS)	0.2860	1.5317	63.52	0.4578	0.4241	
	MASS (GM/MI)	2.30	12.25	508.13	3.66	3.39	16.60
MODE 4	SAMPLE(CONC)	221.	239.	0.81	39.		
	MASS (GMS)	0.2622	0.5723	30.66	0.1536	0.1423	
	MASS (GM/MI)	3.54	7.72	413.80	2.07	1.92	20.30
MODE 5	SAMPLE(CONC)	294.	151.	0.49	16.		
	MASS (GMS)	0.2176	0.2269	11.60	0.0394	0.0365	
	MASS (GM/MI)	1.31	1.36	69.56	0.24	0.22	117.01
MODE 6	SAMPLE(CONC)	245.	219.	1.60	62.		
	MASS (GMS)	0.1452	0.2629	30.09	0.1221	0.1131	
	MASS (GM/MI)	7.22	13.08	1496.93	6.07	5.63	5.76
MODE 7	SAMPLE(CONC)	163.	144.	1.22	68.		
	MASS (GMS)	0.1816	0.3238	43.29	0.3249	0.3010	
	MASS (GM/MI)	2.91	5.18	692.61	5.20	4.82	12.50
MODE 8	SAMPLE(CONC)	361.	437.	2.91	375.		
	MASS (GMS)	0.2944	0.7210	75.45	1.0152	0.9405	
	MASS (GM/MI)	4.18	10.23	1070.25	14.40	13.34	8.07
MODE 9	SAMPLE(CONC)	187.	284.	1.71	144.		
	MASS (GMS)	0.2077	0.6393	60.32	0.5316	0.4925	
	MASS (GM/MI)	1.66	5.11	482.54	4.25	3.94	17.90
MODE 10	SAMPLE(CONC)	427.	622.	3.44	691.		
	MASS (GMS)	0.4121	1.2113	105.47	2.2108	2.0481	
	MASS (GM/MI)	3.03	8.91	775.50	16.26	15.06	11.11
MODE 11	SAMPLE(CONC)	286.	642.	3.66	367.		
	MASS (GMS)	0.3188	1.4430	129.50	1.3548	1.2551	
	MASS (GM/MI)	1.70	7.70	690.65	7.23	6.69	12.53
MODE 12	SAMPLE(CONC)	80.	305.	1.31	68.		
	MASS (GMS)	0.0715	0.5486	36.90	0.2008	0.1860	
	MASS (GM/MI)	0.56	4.33	291.02	1.58	1.47	29.62
MODE 13	SAMPLE(CONC)	1026.	314.	1.14	52.		
	MASS (GMS)	1.1422	0.7058	40.46	0.1920	0.1778	
	MASS (GM/MI)	9.14	5.65	323.71	1.54	1.42	24.55
MODE 14	SAMPLE(CONC)	1063.	13440.	5.57	646.		
	MASS (GMS)	1.3413	34.2299	222.95	2.7027	2.5039	

VEHICLE - 0006 RUN NO. - 1 DATE - 77/ 9/30 SITE - LIVONIA.

MODE 15	SAMPLE(CONC)	1070.	6159.	5.06	928.		
	MASS (GMS)	1.1912	13.8404	178.89	3.4258	3.1737	
	MASS (GM/MI)	4.76	55.36	715.55	13.70	12.69	10.85
MODE 16	SAMPLE(CONC)	241.	1352.	1.84	171.		
	MASS (GMS)	0.2144	2.4301	51.96	0.5050	0.4679	
	MASS (GM/MI)	1.25	14.16	302.77	2.94	2.73	26.98
MODE 17	SAMPLE(CONC)	677.	1107.	2.11	203.		
	MASS (GMS)	0.7536	2.4875	74.52	0.7494	0.6943	
	MASS (GM/MI)	4.02	13.27	397.46	4.00	3.70	20.59
MODE 18	SAMPLE(CONC)	444.	1361.	4.74	1357.		
	MASS (GMS)	0.4617	2.8548	156.30	4.6755	4.3315	
	MASS (GM/MI)	2.26	13.97	765.05	22.89	21.20	11.18
MODE 19	SAMPLE(CONC)	588.	1141.	5.97	1188.		
	MASS (GMS)	0.6976	2.7352	225.17	4.6780	4.3338	
	MASS (GM/MI)	2.62	10.26	844.28	17.54	16.25	10.22
MODE 20	SAMPLE(CONC)	340.	472.	1.51	146.		
	MASS (GMS)	0.7579	2.1230	106.46	1.0779	0.9986	
	MASS (GM/MI)	2.25	6.31	316.17	3.20	2.97	26.64
MODE 21	SAMPLE(CONC)	653.	359.	0.98	21.		
	MASS (GMS)	0.7269	0.8066	34.78	0.0775	0.0718	
	MASS (GM/MI)	11.63	12.91	556.55	1.24	1.15	14.46
MODE 22	SAMPLE(CONC)	1004.	10492.	5.63	936.		
	MASS (GMS)	1.9372	40.8676	344.60	5.9893	5.5485	
	MASS (GM/MI)	6.18	130.32	1098.86	19.10	17.69	6.71
MODE 23	SAMPLE(CONC)	584.	1303.	4.98	1016.		
	MASS (GMS)	0.6497	2.9288	175.98	3.7507	3.4747	
	MASS (GM/MI)	2.60	11.72	703.92	15.00	13.90	12.15
MODE 24	SAMPLE(CONC)	152.	844.	1.47	81.		
	MASS (GMS)	0.2376	2.6564	72.54	0.4186	0.3878	
	MASS (GM/MI)	1.20	13.46	367.64	2.12	1.97	22.61
MODE 25	SAMPLE(CONC)	426.	232.	0.47	10.		
	MASS (GMS)	0.3158	0.3483	11.13	0.0246	0.0228	
	MASS (GM/MI)	1.89	2.09	66.74	0.15	0.14	116.74
MODE 26	SAMPLE(CONC)	972.	6575.	4.77	960.		
	MASS (GMS)	2.3080	31.5196	359.69	7.5604	7.0041	
	MASS (GM/MI)	6.97	95.14	1085.69	22.82	21.14	7.06
MODE 27	SAMPLE(CONC)	563.	1219.	6.17	1089.		
	MASS (GMS)	0.6263	2.7400	216.19	4.0202	3.7243	
	MASS (GM/MI)	2.51	10.96	872.77	16.08	14.90	9.88
MODE 28	SAMPLE(CONC)	172.	630.	1.69	117.		
	MASS (GMS)	0.2929	2.1725	91.41	0.6623	0.6135	
	MASS (GM/MI)	0.98	7.26	305.30	2.21	2.05	27.75

VEHICLE - 0006 RUN NO. - 1 DATE - 77/ 9/30 SITE - LIVONIA

MODE 29	SAMPLE(CONC)	617.	583.	1.13	41.		
	MASS (GMS)	0.6869	1.3103	40.11	0.1514	0.1402	
	MASS (GM/MI)	5.50	10.48	320.86	1.21	1.12	25.02
MODE 30	SAMPLE(CONC)	941.	435.	1.33	36.		
	MASS (GMS)	0.6287	0.5869	28.11	0.0797	0.0739	
	MASS (GM/MI)	10.86	10.14	485.49	1.38	1.28	16.56
MODE 31	SAMPLE(CONC)	261.	304.	0.80	20.		
	MASS (GMS)	0.2903	0.6826	28.39	0.0738	0.0684	
	MASS (GM/MI)	4.64	10.92	454.29	1.18	1.09	16.26
MODE 32	SAMPLE(CONC)	236.	459.	0.77	29.		
	MASS (GMS)	0.1400	0.5498	14.58	0.0571	0.0529	
	MASS (GM/MI)	8.09	31.78	842.56	3.30	3.06	9.67
MODE 33	SAMPLE(CONC)	166.	297.	0.74	21.		
	MASS (GMS)	0.1230	0.4445	17.51	0.0517	0.0479	
	MASS (GM/MI)	0.74	2.67	105.03	0.31	0.29	79.56
MODE 34	SAMPLE(CONC)	511.	2184.	4.77	848.		
	MASS (GMS)	0.8335	7.1990	247.19	4.5914	4.2535	
	MASS (GM/MI)	4.74	40.93	1405.31	26.10	24.18	5.98
MODE 35	SAMPLE(CONC)	321.	782.	2.68	274.		
	MASS (GMS)	0.3568	1.7581	94.74	1.0115	0.9371	
	MASS (GM/MI)	1.90	9.38	505.25	5.39	5.00	16.87
MODE 36	SAMPLE(CONC)	151.	499.	0.96	37.		
	MASS (GMS)	0.1792	1.1959	36.54	0.1457	0.1350	
	MASS (GM/MI)	1.29	8.59	261.07	1.05	0.97	31.35
MODE 37	SAMPLE(CONC)	714.	394.	1.06	22.		
	MASS (GMS)	0.7949	0.6855	38.33	0.0812	0.0752	
	MASS (GM/MI)	12.72	14.17	613.32	1.30	1.20	13.13
MODE 38	SAMPLE(CONC)	469.	1814.	4.24	781.		
	MASS (GMS)	0.6265	4.8910	179.68	3.4593	3.2052	
	MASS (GM/MI)	4.10	32.01	1175.93	22.64	20.98	7.16
MODE 39	SAMPLE(CONC)	445.	1027.	3.60	45[illegible].		
	MASS (GMS)	0.4958	2.3082	127.36	1.6612	1.5390	
	MASS (GM/MI)	2.64	12.31	679.34	8.86	8.21	12.55
MODE 40	SAMPLE(CONC)	202.	352.	0.95	56.		
	MASS (GMS)	0.2847	1.0016	42.70	0.2619	0.2426	
	MASS (GM/MI)	2.18	7.68	327.49	2.01	1.86	25.62
MODE 41	SAMPLE(CONC)	819.	399.	0.72	23.		
	MASS (GMS)	0.6076	0.5974	17.04	0.0566	0.0524	
	MASS (GM/MI)	3.64	3.58	102.23	0.34	0.31	74.32
MODE 42	SAMPLE(CONC)	1298.	15439.	5.70	769.		
	MASS (GMS)	2.4072	57.8263	335.60	4.7314	4.3833	
	MASS (GM/MI)	9.07	217.86	1264.52	17.83	16.52	5.43

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MODE 43	SAMPLE(CONC)	702.	2461.	5.27	1159.		
	MASS (GMS)	0.7814	5.5297	186.28	4.2786	3.9637	
	MASS (GM/MI)	3.13	22.12	745.13	17.11	15.85	11.24
MODE 44	SAMPLE(CONC)	282.	699.	1.54	63.		
	MASS (GMS)	0.5849	2.9338	101.35	0.4341	0.4022	
	MASS (GM/MI)	2.22	11.14	384.77	1.65	1.53	21.68
MODE 45	SAMPLE(CONC)	735.	708.	0.69	14.		
	MASS (GMS)	0.5453	1.0603	16.34	0.0345	0.0319	
	MASS (GM/MI)	3.27	6.36	97.99	0.21	0.19	74.99
MODE 46	SAMPLE(CONC)	310.	656.	3.00	486.		
	MASS (GMS)	0.3448	1.4733	106.08	1.7941	1.6621	
	MASS (GM/MI)	4.68	19.99	1439.42	24.34	22.55	5.97
MODE 47	SAMPLE(CONC)	301.	671.	1.85	137.		
	MASS (GMS)	0.3348	1.5071	65.29	0.5057	0.4685	
	MASS (GM/MI)	2.68	12.06	522.32	4.05	3.75	16.14
MODE 48	SAMPLE(CONC)	405.	1096.	5.34	1178.		
	MASS (GMS)	0.7512	4.1033	314.57	7.2479	6.7145	
	MASS (GM/MI)	2.40	13.09	1003.75	23.13	21.42	3.60
MODE 49	SAMPLE(CONC)	611.	1331.	5.27	1228.		
	MASS (GMS)	0.7253	3.1894	198.69	4.8355	4.4797	
	MASS (GM/MI)	2.72	11.96	744.98	18.13	16.80	11.49
MODE 50	SAMPLE(CONC)	194.	533.	2.12	189.		
	MASS (GMS)	0.2591	1.4369	89.84	0.8373	0.7756	
	MASS (GM/MI)	1.10	6.08	380.35	3.54	3.28	22.56
MODE 51	SAMPLE(CONC)	912.	477.	1.35	55.		
	MASS (GMS)	1.0832	1.1440	50.73	0.2166	0.2006	
	MASS (GM/MI)	8.13	8.58	380.57	1.62	1.51	21.14
MODE 52	SAMPLE(CONC)	396.	479.	0.77	30.		
	MASS (GMS)	0.2937	0.7172	18.22	0.0738	0.0684	
	MASS (GM/MI)	6.62	16.15	410.40	1.66	1.54	19.43
MODE 53	SAMPLE(CONC)	241.	328.	0.64	20.		
	MASS (GMS)	0.1786	0.4908	15.14	0.0492	0.0456	
	MASS (GM/MI)	1.07	2.94	90.85	0.30	0.27	89.76
MODE 54	SAMPLE(CONC)	566.	2197.	4.99	1073.		
	MASS (GMS)	1.5953	12.5097	446.74	10.0348	9.2964	
	MASS (GM/MI)	3.98	31.20	1114.35	25.03	23.19	7.55
MODE 55	SAMPLE(CONC)	454.	1325.	6.04	1267.		
	MASS (GMS)	0.5049	2.9779	213.58	4.6773	4.3331	
	MASS (GM/MI)	2.02	11.91	854.32	18.71	17.33	10.09
MODE 56	SAMPLE(CONC)	307.	465.	1.37	77.		
	MASS (GMS)	0.7982	2.4395	112.61	0.6633	0.6145	
	MASS (GM/MI)	2.42	7.41	341.96	2.01	1.87	24.57

VEHICLE - 0006 RUN NO. - 1 DATE - 77/ 9/30 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	767.	511.	0.58	19.		
	MASS (GMS)	0.5689	0.7650	13.73	0.0468	0.0433	
	MASS (GM/MI)	3.41	4.59	82.38	0.28	0.26	88.39
MODE 58	SAMPLE(CONC)	291.	831.	2.65	365.		
	MASS (GMS)	0.3880	2.2418	112.41	1.6169	1.4979	
	MASS (GM/MI)	4.38	25.30	1268.69	18.25	16.91	6.71
MODE 59	SAMPLE(CONC)	254.	493.	1.82	119.		
	MASS (GMS)	0.2824	1.1070	64.22	0.4393	0.4070	
	MASS (GM/MI)	2.26	8.86	513.79	3.51	3.26	16.59
MODE 60	SAMPLE(CONC)	549.	5905.	4.97	975.		
	MASS (GMS)	0.8556	18.5770	245.96	5.0390	4.6682	
	MASS (GM/MI)	3.29	71.48	946.36	19.39	17.96	8.30
MODE 61	SAMPLE(CONC)	946.	2039.	5.56	1215.		
	MASS (GMS)	1.0533	4.5818	196.57	4.4853	4.1553	
	MASS (GM/MI)	4.21	18.33	786.27	17.94	16.62	10.71
MODE 62	SAMPLE(CONC)	257.	789.	2.69	182.		
	MASS (GMS)	0.2665	1.6556	88.75	0.6271	0.5809	
	MASS (GM/MI)	1.47	9.13	489.52	3.46	3.20	17.45
MODE 63	SAMPLE(CONC)	774.	785.	1.21	51.		
	MASS (GMS)	0.8618	1.7645	42.60	0.1883	0.1744	
	MASS (GM/MI)	6.89	14.12	340.76	1.51	1.40	23.06
MODE 64	SAMPLE(CONC)	496.	445.	0.84	41.		
	MASS (GMS)	0.4784	0.8663	25.84	0.1312	0.1215	
	MASS (GM/MI)	8.08	14.63	436.51	2.22	2.05	18.29
MODE 65	SAMPLE(CONC)	115.	551.	0.61	25.		
	MASS (GMS)	0.1021	0.9899	17.32	0.0738	0.0684	
	MASS (GM/MI)	0.51	4.95	86.62	0.37	0.34	92.44
CALC TOTAL	SAMPLE(CONC)	493.	1966.	2.84	436.		
	MASS (GMS)	38.5428	310.3789	7056.80	113.0969	104.7747	
	MASS (GM/MI)	3.94	31.71	720.89	11.55	10.70	11.33

SITE - LIVONIA
VEHICLE - 0010 RUN NO. - 13 DATE - 77/10/ 6 AHP - 25.3 INERTIA - 6000.

	HC	CO	CO2	NOX	NOXC	MPG
1975 FTP						
CLD TRAN						
BARO - 29.50 WB - 56. DB - 77. PIN - 39.60 V/REV - .2818 TEMP - 110. REVS - 10549.						
BACKGROUND(CONC)	3.	0.	0.05	0.		
SAMPLE(CONC)	591.	11959.	2.19	143.		
MASS EMISSIONS(GMS)	23.53	564.77	2731.32	18.95	15.82	
CLD STAB						
BARO - 29.50 WB - 56. DB - 79. PIN - 39.90 V/REV - .2816 TEMP - 110. REVS - 18045.						
BACKGROUND(CONC)	5.	0.	0.04	0.		
SAMPLE(CONC)	273.	6820.	1.28	45.		
MASS EMISSIONS(GMS)	18.34	939.70	2699.79	10.19	8.39	
HOT TRAN						
BARO - 29.50 WB - 56. DB - 80. PIN - 39.70 V/REV - .2818 TEMP - 110. REVS - 10534.						
BACKGROUND(CONC)	6.	0.	0.05	0.		
SAMPLE(CONC)	396.	10350.	1.89	103.		
MASS EMISSIONS(GMS)	15.61	833.55	2344.45	13.63	11.16	
COMPOSIT						
MASS EMISSIONS(GM/MI)	4.98	243.96	694.75	3.48	2.87	8.11
0 MPH						
BARO - 29.51 WB - 57. DB - 82. PIN - 40.00 V/REV - .2816 TEMP - 110. REVS - 3747.						
BACKGROUND(CONC)	5.	0.	0.05	0.		
SAMPLE(CONC)	163.	3802.	0.79	9.		
MASS EMISSIONS(GMS)	2.25	108.79	334.99	0.42	0.35	
MASS EMISSIONS(GM/MI)	0.72	35.09	108.06	0.14	0.11	53.65
5 MPH						
BARO - 29.51 WB - 58. DB - 82. PIN - 40.00 V/REV - .2816 TEMP - 110. REVS - 3747.						
BACKGROUND(CONC)	7.	0.	0.05	0.		
SAMPLE(CONC)	170.	3954.	0.80	7.		
MASS EMISSIONS(GMS)	2.32	113.14	339.53	0.33	0.27	
MASS EMISSIONS(GM/MI)	8.99	438.52	1316.01	1.28	1.06	4.36

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     VEHICLE - 0010    RUN NO. -   13    DATE - 77/10/ 6    SITE -      LIVONIA

  10 MPH
     BARO - 29.51   WB - 58.  CB - 82.  PIN - 40.00   V/REV - .2816   TEMP - 110.  REVS -  3747.
          BACKGROUND(CONC)               6.      0.      0.05     0.
          SAMPLE(CONC)                 221.   4232.      0.79     6.

          MASS EMISSIONS(GMS)          3.05   121.09   335.07     0.28     0.24
          MASS EMISSIONS(GM/MI)        5.91   234.22   648.10     0.55     0.46     8.58
  15 MPH
     BARO - 29.51   WB - 58.  CB - 82.  PIN - 40.00   V/REV - .2816   TEMP - 110.  REVS -  3748.
          BACKGROUND(CONC)               6.      0.      0.04     0.
          SAMPLE(CONC)                 225.   4562.      0.82     8.

          MASS EMISSIONS(GMS)          3.11   130.57   352.83     0.38     0.31
          MASS EMISSIONS(GM/MI)        4.02   168.48   455.27     0.49     0.41    12.11
  30 MPH
     BARO - 29.51   WB - 58.  CB - 83.  PIN - 40.00   V/REV - .2816   TEMP - 111.  REVS -  3749.
          BACKGROUND(CONC)               7.      0.      0.04     0.
          SAMPLE(CONC)                 260.   6847.      1.41    46.

          MASS EMISSIONS(GMS)          3.60   195.68   618.58     2.16     1.79
          MASS EMISSIONS(GM/MI)        2.32   126.24   399.09     1.39     1.16    14.67
  45 MPH
     BARO - 29.51   WB - 60.  CB - 86.  PIN - 40.00   V/REV - .2816   TEMP - 111.  REVS -  3746.
          BACKGROUND(CONC)               7.      0.      0.04     0.
          SAMPLE(CONC)                 386.  11755.      2.39   159.

          MASS EMISSIONS(GMS)          5.39   335.66  1060.18     7.46     6.28
          MASS EMISSIONS(GM/MI)        2.32   144.44   456.19     3.21     2.70    12.85
  60 MPH
     BARO - 29.51   WB - 59.  CB - 86.  PIN - 40.00   V/REV - .2816   TEMP - 110.  REVS -  3746.
          BACKGROUND(CONC)               9.      0.      0.06     0.
          SAMPLE(CONC)                 589.  20845.      4.27   393.

          MASS EMISSIONS(GMS)          8.28   596.61  1907.90    18.48    15.29
          MASS EMISSIONS(GM/MI)        2.67   192.46   615.45     5.96     4.93     9.58
 MOD(BAG)
     BARO - 29.55   WB - 57.  CB - 80.  PIN - 40.20   V/REV - .2815   TEMP - 111.  REVS - 21937.
          BACKGROUND(CONC)              10.      0.      0.06     0.
          SAMPLE(CONC)                 572.  16551.      2.25   102.

          MASS EMISSIONS(GMS)         46.82  2769.43  5809.55    28.04    23.31
          MASS EMISSIONS(GM/MI)        4.78   282.91   593.48     2.86     2.38     8.43
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VEHICLE - 0010 RUN NO. - 21 DATE - 77/10/13 SITE - LIVCNIA

AA 1 a

BARO - 29.57 WB - 56. CB - 79. PIN - 40.00 V/REV - .2816 TEMP - 111. REVS - 36635.

BACKGROUND(CONC)	8.	C.	0.05	0.		
SAMPLE(CONC)	220.	5176.	1.09	34.		
MASS EMISSIONS(GMS)	29.53	1448.77	4604.68	15.63	12.87	
MASS EMISSICNS(GM/MI)	5.31	260.34	827.44	2.81	2.31	7.08

Inertia - 7000

AA 1 b

BARO - 29.57 WB - 54. CB - 77. PIN - 40.30 V/REV - .2814 TEMP - 111. REVS - 36635.

BACKGROUND(CONC)	6.	0.	0.04	0.		
SAMPLE(CONC)	211.	5176.	1.11	37.		
MASS EMISSIONS(GMS)	28.48	1446.54	4724.36	16.99	13.74	
MASS EMISSIONS(GM/MI)	5.12	259.94	848.94	3.05	2.47	6.97

VEHICLE - 0010 RUN NO. - 21 DATE - 77/10/13 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.55 WB - 57. DB - 80. PIN - 40.20 V/REV - .2815 TEMP - 111. REVS - MOD(BAG) VAL

MODE 1	SAMPLE(CONC)	95.	3467.	0.50	3.		
	MASS (GMS)	0.0745	5.5040	12.59	0.0078	0.0065	
	MASS (GM/MI)	0.45	33.02	75.50	0.05	0.04	68.91
MODE 2	SAMPLE(CONC)	559.	16703.	2.58	107.		
	MASS (GMS)	0.5277	31.8200	77.28	0.3348	0.2784	
	MASS (GM/MI)	8.77	528.57	1283.72	5.56	4.63	4.14
MODE 3	SAMPLE(CONC)	287.	7231.	1.54	61.		
	MASS (GMS)	0.3382	17.2193	57.69	0.2386	0.1984	
	MASS (GM/MI)	2.71	137.75	461.52	1.91	1.59	12.93
MODE 4	SAMPLE(CONC)	198.	4482.	0.73	25.		
	MASS (GMS)	0.2490	11.3846	28.98	0.1043	0.0867	
	MASS (GM/MI)	3.36	153.64	391.16	1.41	1.17	13.80
MODE 5	SAMPLE(CONC)	174.	4310.	0.74	8.		
	MASS (GMS)	0.1368	6.8423	18.36	0.0209	0.0173	
	MASS (GM/MI)	0.82	41.05	110.16	0.13	0.10	50.07
MODE 6	SAMPLE(CONC)	309.	8563.	1.49	24.		
	MASS (GMS)	0.1943	10.8753	29.78	0.0501	0.0416	
	MASS (GM/MI)	9.66	541.06	1481.46	2.49	2.07	3.76
MODE 7	SAMPLE(CONC)	178.	4758.	0.81	29.		
	MASS (GMS)	0.2100	11.3303	30.19	0.1134	0.0943	
	MASS (GM/MI)	3.36	181.26	482.99	1.82	1.51	11.40
MODE 8	SAMPLE(CONC)	531.	12433.	2.32	85.		
	MASS (GMS)	0.4590	21.7117	63.61	0.2436	0.2028	
	MASS (GM/MI)	6.51	307.97	902.33	3.46	2.88	6.31
MODE 9	SAMPLE(CONC)	277.	6302.	1.32	67.		
	MASS (GMS)	0.3261	15.0070	49.40	0.2621	0.2179	
	MASS (GM/MI)	2.61	120.06	395.19	2.10	1.74	14.99
MODE 10	SAMPLE(CONC)	561.	18511.	3.23	174.		
	MASS (GMS)	0.5733	38.2030	104.94	0.5899	0.4905	
	MASS (GM/MI)	4.22	280.90	771.59	4.34	3.61	7.24
MODE 11	SAMPLE(CONC)	396.	12156.	2.57	173.		
	MASS (GMS)	0.4669	28.9472	96.14	0.6767	0.5627	
	MASS (GM/MI)	2.49	154.39	512.77	3.61	3.00	11.63
MODE 12	SAMPLE(CONC)	316.	5386.	1.17	57.		
	MASS (GMS)	0.2985	10.2606	34.99	0.1784	0.1483	
	MASS (GM/MI)	2.35	80.92	275.97	1.41	1.17	21.62
MODE 13	SAMPLE(CONC)	498.	6860.	1.14	25.		
	MASS (GMS)	0.5879	16.3356	42.64	0.0978	0.0813	
	MASS (GM/MI)	4.70	130.69	341.13	0.78	0.65	15.81
MODE 14	SAMPLE(CONC)	1682.	53218.	4.31	93.		
	MASS (GMS)	2.2488	143.6258	183.10	0.4123	0.3428	
	MASS (GM/MI)	10.40	664.01	846.49	1.91	1.59	4.62

VEHICLE - 0010 RUN NO. - 21 DATE - 77/10/13 SITE - LIVCNIA

MODE 15	SAMPLE(CONC)	1028.	37661.	3.84	194.		
	MASS (GMS)	1.2122	89.6825	143.98	0.7589	0.6310	
	MASS (GM/MI)	4.85	358.73	575.92	3.04	2.52	7.68
MODE 16	SAMPLE(CONC)	326.	8873.	1.87	117.		
	MASS (GMS)	0.3077	16.9035	56.11	0.3661	0.3045	
	MASS (GM/MI)	1.79	98.51	326.96	2.13	1.77	18.21
MODE 17	SAMPLE(CONC)	974.	11325.	2.00	91.		
	MASS (GMS)	1.1493	26.9683	75.07	0.3560	0.2960	
	MASS (GM/MI)	6.13	143.83	400.40	1.90	1.58	13.74
MODE 18	SAMPLE(CONC)	936.	39237.	4.49	203.		
	MASS (GMS)	1.0308	87.2064	156.87	0.7412	0.6163	
	MASS (GM/MI)	5.05	426.85	767.86	3.63	3.02	6.10
MODE 19	SAMPLE(CONC)	712.	28443.	3.91	233.		
	MASS (GMS)	0.8959	72.2471	156.22	0.9722	0.8084	
	MASS (GM/MI)	3.36	270.89	585.74	3.65	3.03	8.68
MODE 20	SAMPLE(CONC)	558.	8180.	1.44	93.		
	MASS (GMS)	1.3157	38.9582	107.90	0.7276	0.6050	
	MASS (GM/MI)	3.91	115.71	320.46	2.16	1.80	17.24
MODE 21	SAMPLE(CONC)	266.	5079.	0.87	8.		
	MASS (GMS)	0.3138	12.0947	32.45	0.0313	0.0260	
	MASS (GM/MI)	5.02	193.51	519.21	0.50	0.42	10.58
MODE 22	SAMPLE(CONC)	1122.	47018.	4.09	108.		
	MASS (GMS)	2.2931	194.0716	265.49	0.7323	0.6089	
	MASS (GM/MI)	7.31	618.85	846.58	2.34	1.94	4.62
MODE 23	SAMPLE(CONC)	624.	20374.	4.14	286.		
	MASS (GMS)	0.7356	48.5168	154.37	1.1188	0.9303	
	MASS (GM/MI)	2.94	194.07	619.87	4.48	3.72	9.50
MODE 24	SAMPLE(CONC)	629.	7325.	1.26	75.		
	MASS (GMS)	1.0379	24.4203	66.03	0.4107	0.3415	
	MASS (GM/MI)	5.26	123.77	334.67	2.08	1.73	16.26
MODE 25	SAMPLE(CONC)	284.	4298.	0.70	4.		
	MASS (GMS)	0.2232	6.8232	17.36	0.0104	0.0087	
	MASS (GM/MI)	1.34	40.93	104.15	0.06	0.05	51.39
MODE 26	SAMPLE(CONC)	937.	36186.	3.55	121.		
	MASS (GMS)	2.3588	183.8294	283.83	1.0098	0.8397	
	MASS (GM/MI)	7.12	554.87	856.71	3.05	2.53	5.07
MODE 27	SAMPLE(CONC)	608.	22280.	4.37	290.		
	MASS (GMS)	0.7171	53.0556	163.65	1.1344	0.9433	
	MASS (GM/MI)	2.87	212.22	654.61	4.54	3.77	8.90
MODE 28	SAMPLE(CONC)	493.	10374.	1.89	131.		
	MASS (GMS)	0.8921	37.8790	108.73	0.7857	0.6534	
	MASS (GM/MI)	2.98	126.52	363.17	2.62	2.18	15.53

VEHICLE - 0010 RUN NO. - 21 DATE - 77/10/13 SITE - LIVONIA

MODE 29	SAMPLE(CONC)	685.	5720.	1.01	25.		
	MASS (GMS)	0.8082	13.6211	37.73	0.0978	0.0813	
	MASS (GM/MI)	6.47	108.97	301.88	0.78	0.65	17.98
MODE 30	SAMPLE(CONC)	304.	4509.	0.97	27.		
	MASS (GMS)	0.2152	6.4424	21.72	0.0634	0.0527	
	MASS (GM/MI)	3.72	111.27	375.16	1.09	0.91	15.80
MODE 31	SAMPLE(CONC)	214.	4320.	0.72	13.		
	MASS (GMS)	0.2523	10.2873	26.79	0.0509	0.0423	
	MASS (GM/MI)	4.04	164.60	428.71	0.81	0.68	12.68
MODE 32	SAMPLE(CONC)	242.	4972.	0.88	8.		
	MASS (GMS)	0.1523	6.3146	17.51	0.0167	0.0139	
	MASS (GM/MI)	8.80	365.01	1011.93	0.96	0.80	5.50
MODE 33	SAMPLE(CONC)	155.	3676.	0.73	5.		
	MASS (GMS)	0.1218	5.8358	18.11	0.0130	0.0108	
	MASS (GM/MI)	0.73	35.01	108.61	0.08	0.07	53.48
MODE 34	SAMPLE(CONC)	555.	17776.	3.30	173.		
	MASS (GMS)	0.9598	62.0843	181.43	0.9926	0.8253	
	MASS (GM/MI)	5.46	352.95	1031.43	5.64	4.69	5.54
MODE 35	SAMPLE(CONC)	416.	12310.	2.65	183.		
	MASS (GMS)	0.4906	29.3139	99.16	0.7159	0.5953	
	MASS (GM/MI)	2.62	156.34	528.84	3.82	3.17	11.34
MODE 36	SAMPLE(CONC)	324.	5839.	1.13	57.		
	MASS (GMS)	0.4081	14.8314	45.06	0.2378	0.1978	
	MASS (GM/MI)	2.93	106.55	323.71	1.71	1.42	17.74
MODE 37	SAMPLE(CONC)	290.	3708.	0.65	7.		
	MASS (GMS)	0.3418	6.8299	24.55	0.0274	0.0228	
	MASS (GM/MI)	5.47	141.28	392.45	0.44	0.36	14.05
MODE 38	SAMPLE(CONC)	604.	20395.	2.98	106.		
	MASS (GMS)	0.8546	58.2802	134.05	0.4976	0.4138	
	MASS (GM/MI)	5.59	381.41	877.30	3.26	2.71	5.94
MODE 39	SAMPLE(CONC)	463.	15069.	2.62	171.		
	MASS (GMS)	0.5463	35.8840	98.06	0.6689	0.5562	
	MASS (GM/MI)	2.91	191.38	523.07	3.57	2.97	10.65
MODE 40	SAMPLE(CONC)	380.	5288.	1.06	40.		
	MASS (GMS)	0.5681	15.9503	50.16	0.1982	0.1646	
	MASS (GM/MI)	4.36	122.32	384.69	1.52	1.26	15.02
MODE 41	SAMPLE(CONC)	183.	4341.	0.72	10.		
	MASS (GMS)	0.1438	6.8915	17.86	0.0261	0.0217	
	MASS (GM/MI)	0.86	41.34	107.16	0.16	0.13	50.76
MODE 42	SAMPLE(CONC)	1359.	46560.	3.61	58.		
	MASS (GMS)	2.6720	184.7896	225.18	0.3781	0.3144	
	MASS (GM/MI)	10.07	696.27	848.45	1.42	1.18	4.49

VEHICLE - 0010 RUN NO. - 21 DATE - 77/10/13 SITE - LIVONIA.

MODE 43	SAMPLE(CONC)	829.	42085.	3.85	193.		
	MASS (GMS)	0.9779	100.2175	144.05	0.7550	0.6278	
	MASS (GM/MI)	3.91	400.87	576.20	3.02	2.51	7.28
MODE 44	SAMPLE(CONC)	573.	8691.	1.41	84.		
	MASS (GMS)	1.2611	38.6325	98.62	0.6134	0.5100	
	MASS (GM/MI)	4.79	146.67	374.39	2.33	1.94	14.31
MODE 45	SAMPLE(CONC)	621.	3900.	0.81	7.		
	MASS (GMS)	0.4883	6.1914	20.12	0.0183	0.0152	
	MASS (GM/MI)	2.93	37.14	120.69	0.11	0.09	47.12
MODE 46	SAMPLE(CONC)	479.	10850.	2.06	113.		
	MASS (GMS)	0.5655	25.8372	77.32	0.4420	0.3676	
	MASS (GM/MI)	7.67	350.57	1049.06	6.00	4.99	5.46
MODE 47	SAMPLE(CONC)	322.	8973.	1.64	74.		
	MASS (GMS)	0.3797	21.3675	61.48	0.2895	0.2407	
	MASS (GM/MI)	3.04	170.94	491.86	2.32	1.93	11.52
MODE 48	SAMPLE(CONC)	684.	23635.	3.58	177.		
	MASS (GMS)	1.3436	93.8038	223.26	1.1540	0.9596	
	MASS (GM/MI)	4.29	299.31	712.40	3.68	3.06	7.42
MODE 49	SAMPLE(CONC)	777.	31694.	4.18	242.		
	MASS (GMS)	0.9770	80.5048	167.11	1.0098	0.8397	
	MASS (GM/MI)	3.66	301.86	626.58	3.79	3.15	7.98
MODE 50	SAMPLE(CONC)	459.	10764.	2.20	144.		
	MASS (GMS)	0.6490	30.7589	98.64	0.6760	0.5621	
	MASS (GM/MI)	2.75	130.22	417.63	2.86	2.38	14.07
MODE 51	SAMPLE(CONC)	844.	6704.	0.86	13.		
	MASS (GMS)	1.0621	17.0286	34.25	0.0542	0.0451	
	MASS (GM/MI)	7.97	127.75	256.96	0.41	0.34	18.38
MODE 52	SAMPLE(CONC)	277.	4482.	0.93	32.		
	MASS (GMS)	0.2179	7.1154	23.13	0.0835	0.0694	
	MASS (GM/MI)	4.91	160.26	520.99	1.88	1.56	11.26
MODE 53	SAMPLE(CONC)	595.	3794.	0.67	14.		
	MASS (GMS)	0.4677	6.0231	16.61	0.0365	0.0304	
	MASS (GM/MI)	2.81	36.13	99.62	0.22	0.18	53.69
MODE 54	SAMPLE(CONC)	679.	23738.	3.46	175.		
	MASS (GMS)	2.0301	143.2031	327.93	1.7342	1.4421	
	MASS (GM/MI)	5.06	357.20	817.99	4.33	3.60	6.36
MODE 55	SAMPLE(CONC)	637.	21762.	4.17	294.		
	MASS (GMS)	0.7511	51.8221	156.12	1.1501	0.9563	
	MASS (GM/MI)	3.00	207.29	624.48	4.60	3.83	9.25
MODE 56	SAMPLE(CONC)	582.	9283.	1.68	90.		
	MASS (GMS)	1.6018	51.5800	146.99	0.8215	0.6831	
	MASS (GM/MI)	4.86	156.64	446.38	2.49	2.07	12.54

VEHICLE - 0010 RUN NO. - 21 DATE - 77/10/13 SITE - LIVCNIA

MODE 57	SAMPLE(CONC)	499.	3830.	C.68	15.		
	MASS (GMS)	0.3923	6.0803	16.86	0.0391	0.0325	
	MASS (GM/MI)	2.35	36.47	101.12	0.23	0.20	53.50
MODE 58	SAMPLE(CONC)	457.	9567.	1.80	77.		
	MASS (GMS)	0.6470	27.3384	81.02	0.3614	0.3006	
	MASS (GM/MI)	7.30	308.56	914.40	4.08	3.39	6.24
MODE 59	SAMPLE(CONC)	293.	6490.	1.63	97.		
	MASS (GMS)	0.3453	15.4547	61.06	0.3794	0.3155	
	MASS (GM/MI)	2.76	123.64	488.51	3.04	2.52	12.83
MODE 60	SAMPLE(CONC)	786.	29583.	3.29	133.		
	MASS (GMS)	1.2975	98.6248	172.41	0.7284	0.6057	
	MASS (GM/MI)	4.99	379.47	663.38	2.80	2.33	6.96
MODE 61	SAMPLE(CONC)	971.	36727.	4.45	194.		
	MASS (GMS)	1.1454	87.4584	166.53	0.7589	0.6310	
	MASS (GM/MI)	4.58	349.83	666.14	3.04	2.52	7.21
MODE 62	SAMPLE(CONC)	383.	13165.	2.46	171.		
	MASS (GMS)	0.4215	29.2599	85.89	0.6243	0.5191	
	MASS (GM/MI)	2.32	161.39	473.74	3.44	2.86	12.08
MODE 63	SAMPLE(CONC)	905.	5938.	C.95	18.		
	MASS (GMS)	1.0677	14.1402	35.49	0.0704	0.0586	
	MASS (GM/MI)	8.54	113.12	283.88	0.56	0.47	18.16
MODE 64	SAMPLE(CONC)	430.	5260.	0.85	35.		
	MASS (GMS)	0.4396	10.8556	27.48	0.1187	0.0987	
	MASS (GM/MI)	7.43	183.37	464.14	2.00	1.67	11.44
MODE 65	SAMPLE(CONC)	404.	4C09.	C.80	18.		
	MASS (GMS)	0.3812	7.6373	23.84	0.0563	0.0468	
	MASS (GM/MI)	1.91	38.19	119.21	0.28	0.23	47.91
CALC TOTAL	SAMPLE(CONC)	587.	16088.	2.24	104.		
	MASS (GMS)	48.6441	2691.9517	5868.34	28.5863	23.7707	
	MASS (GM/MI)	4.97	275.00	601.53	2.92	2.43	8.46

SITE - LIVONIA
VEHICLE - 0011 RUN NO. - 15 DATE - 77/10/ 7 AHP - 20.1 INERTIA - 5000.

1975 FTP

CLD TRAN

BARO - 29.58 WB - 57. DB - 79. PIN - 40.30 V/REV - .2815 TEMP - 110. REVS - 10538.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	3.	0.	0.08	0.		
SAMPLE(CONC)	1044.	7567.	2.13	103.		
MASS EMISSIONS(GMS)	41.58	609.82	2620.76	13.64	11.41	

CLD STAB

BARO - 29.58 WB - 57. DB - 79. PIN - 40.50 V/REV - .2813 TEMP - 110. REVS - 18091.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	6.	7.	0.06	0.		
SAMPLE(CONC)	164.	663.	1.40	78.		
MASS EMISSIONS(GMS)	10.86	90.75	2926.26	17.70	14.81	

HOT TRAN

BARO - 29.58 WB - 58. DB - 81. PIN - 40.40 V/REV - .2814 TEMP - 110. REVS - 10546.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	6.	4.	0.06	0.		
SAMPLE(CONC)	274.	1399.	2.04	155.		
MASS EMISSIONS(GMS)	10.74	112.49	2522.26	20.52	17.23	

COMPOSIT

	HC	CO	CO2	NOX	NOXC	MPG
MASS EMISSIONS(GM/MI)	4.65	55.61	732.12	4.70	3.94	10.64

0 MPH

BARO - 29.54 WB - 59. DB - 82. PIN - 40.05 V/REV - .2815 TEMP - 111. REVS - 3747.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	6.	2.	0.08	0.		
SAMPLE(CONC)	98.	591.	0.70	9.		
MASS EMISSIONS(GMS)	1.31	16.84	260.75	0.42	0.36	
MASS EMISSIONS(GM/MI)	0.42	5.43	90.56	0.14	0.12	88.37

5 MPH

BARO - 29.54 WB - 59. DB - 81. PIN - 40.05 V/REV - .2815 TEMP - 111. REVS - 3745.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	7.	2.	0.07	0.		
SAMPLE(CONC)	65.	401.	0.73	6.		
MASS EMISSIONS(GMS)	0.83	11.40	298.33	0.28	0.24	
MASS EMISSIONS(GM/MI)	3.20	44.19	1156.30	1.09	0.93	7.18

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VEHICLE - 0011     RUN NO. -   15     DATE - 77/10/ 7    SITE -       LIVONIA.

10 MPH
    BARO - 29.54   WB - 59.  DB - 81.  PIN - 40.05   V/REV - .2815   TEMP - 111.  REVS -  3746.
         BACKGROUND(CONC)              6.      0.     0.07      0.
         SAMPLE(CONC)                 48.    235.     0.83      7.

         MASS EMISSIONS(GMS)         0.60    6.71   343.54     0.33     0.28
         MASS EMISSIONS(GM/MI)       1.16   12.99   664.48     0.64     0.54    12.89
15 MPH
    BARO - 29.54   WB - 59.  DB - 81.  PIN - 40.05   V/REV - .2815   TEMP - 111.  REVS -  3748.
         BACKGROUND(CONC)              7.      2.     0.07      0.
         SAMPLE(CONC)                 79.    189.     0.87     10.

         MASS EMISSIONS(GMS)         1.03    5.35   361.79     0.47     0.40
         MASS EMISSIONS(GM/MI)       1.32    6.90   466.83     0.61     0.52    18.42
30 MPH
    BARO - 29.54   WB - 59.  DB - 81.  PIN - 40.05   V/REV - .2815   TEMP - 111.  REVS -  3747.
         BACKGROUND(CONC)              7.      4.     0.08      0.
         SAMPLE(CONC)                163.    328.     1.45     50.

         MASS EMISSIONS(GMS)         2.22    9.27   619.82     2.35     2.01
         MASS EMISSIONS(GM/MI)       1.43    5.98   399.89     1.51     1.29    21.45
45 MPH
    BARO - 29.54   WB - 59.  DB - 81.  PIN - 40.05   V/REV - .2815   TEMP - 111.  REVS -  3744.
         BACKGROUND(CONC)              9.      7.     0.07      0.
         SAMPLE(CONC)                189.    361.     2.44    213.

         MASS EMISSIONS(GMS)         2.57   10.15  1070.29     9.99     8.54
         MASS EMISSIONS(GM/MI)       1.11    4.37   460.54     4.30     3.67    16.85
60 MPH
    BARO - 29.54   WB - 59.  DB - 80.  PIN - 40.05   V/REV - .2815   TEMP - 111.  REVS -  3745.
         BACKGROUND(CONC)              9.      4.     0.08      0.
         SAMPLE(CONC)                166.    522.     3.77    498.

         MASS EMISSIONS(GMS)         2.26   14.33  1668.02    23.37    20.10
         MASS EMISSIONS(GM/MI)       0.73    4.78   538.07     7.54     6.48    16.20
MOD(BAG)
    BARO - 29.56   WB - 58.  DB - 81.  PIN - 40.20   V/REV - .2814   TEMP - 111.  REVS - 21688.
         BACKGROUND(CONC)             10.     24.     0.08      0.
         SAMPLE(CONC)                347.   2531.     2.62    220.

         MASS EMISSIONS(GMS)        27.79  415.60  6653.32    59.79    50.21
         MASS EMISSIONS(GM/MI)       2.84   42.46   679.67     6.11     5.13    11.75
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VEHICLE - 0011 RUN NO. - 15 DATE - 77/10/ 6 SITE - LIVONIA.

AA 1 a

BARO - 29.53 WB - 58. CB - 80. PIN - 40.50 V/REV - .2813 TEMP - 111. REVS - 36643.

BACKGROUND(CONC)	5.	3.	0.05	0.		
SAMPLE(CONC)	142.	477.	1.12	53.		
MASS EMISSIONS(GMS)	18.98	132.25	4711.75	24.28	20.53	
MASS EMISSIONS(GM/MI)	3.41	23.77	846.68	4.36	3.69	9.92

Inertia - 5500

AA 1 b

BARO - 29.50 WB - 57. CB - 77. PIN - 40.40 V/REV - .2813 TEMP - 110. REVS - 36660.

BACKGROUND(CONC)	5.	4.	0.05	0.		
SAMPLE(CONC)	148.	514.	1.17	61.		
MASS EMISSIONS(GMS)	19.84	142.51	4938.64	27.98	23.74	
MASS EMISSIONS(GM/MI)	3.57	25.61	887.45	5.03	4.27	9.45

VEHICLE - 0011 RUN NO. - 15 DATE - 77/10/ 7 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.56 WB - 58. CB - 81. PIN - 40.20 V/REV - .2814 TEMP - 111. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	53.	369.	0.63	4.		
	MASS (GMS)	0.0409	0.5797	15.66	0.0103	0.0087	
	MASS (GM/MI)	0.25	3.48	93.95	0.06	0.05	88.58
MODE 2	SAMPLE(CONC)	403.	3882.	2.93	207.		
	MASS (GMS)	0.3755	7.3119	86.80	0.6405	0.5379	
	MASS (GM/MI)	6.24	121.46	1441.85	10.64	8.93	5.37
MODE 3	SAMPLE(CONC)	150.	703.	1.42	119.		
	MASS (GMS)	0.1751	1.6547	52.55	0.4602	0.3865	
	MASS (GM/MI)	1.40	13.24	420.43	3.68	3.09	19.91
MODE 4	SAMPLE(CONC)	82.	286.	0.77	28.		
	MASS (GMS)	0.1016	0.7172	30.22	0.1155	0.0970	
	MASS (GM/MI)	1.37	9.68	407.86	1.56	1.31	20.77
MODE 5	SAMPLE(CONC)	55.	456.	0.88	13.		
	MASS (GMS)	0.0426	0.7154	21.62	0.0335	0.0281	
	MASS (GM/MI)	0.26	4.29	129.71	0.20	0.17	64.66
MODE 6	SAMPLE(CONC)	115.	618.	1.58	82.		
	MASS (GMS)	0.0717	0.7761	31.21	0.1691	0.1420	
	MASS (GM/MI)	3.57	38.61	1552.53	8.41	7.07	5.46
MODE 7	SAMPLE(CONC)	148.	710.	1.49	84.		
	MASS (GMS)	0.1729	1.6715	55.16	0.3249	0.2728	
	MASS (GM/MI)	2.77	26.74	882.59	5.20	4.37	9.51
MODE 8	SAMPLE(CONC)	202.	945.	2.28	222.		
	MASS (GMS)	0.1726	1.6323	62.03	0.6296	0.5288	
	MASS (GM/MI)	2.45	23.15	879.92	8.93	7.50	9.60
MODE 9	SAMPLE(CONC)	201.	664.	2.14	139.		
	MASS (GMS)	0.2341	1.5636	79.37	0.7310	0.6139	
	MASS (GM/MI)	1.87	12.51	634.97	5.85	4.91	13.44
MODE 10	SAMPLE(CONC)	279.	1424.	4.15	440.		
	MASS (GMS)	0.2822	2.9052	133.04	1.4748	1.2385	
	MASS (GM/MI)	2.08	21.36	978.25	10.84	9.11	8.72
MODE 11	SAMPLE(CONC)	115.	153.	2.12	198.		
	MASS (GMS)	0.1337	0.3602	78.61	0.7658	0.6431	
	MASS (GM/MI)	0.71	1.92	419.27	4.08	3.43	20.91
MODE 12	SAMPLE(CONC)	399.	502.	0.76	24.		
	MASS (GMS)	0.3719	0.9448	22.38	0.0743	0.0624	
	MASS (GM/MI)	2.93	7.45	176.49	0.59	0.49	44.94
MODE 13	SAMPLE(CONC)	507.	4017.	3.17	293.		
	MASS (GMS)	0.5909	9.4564	117.44	1.1332	0.9516	
	MASS (GM/MI)	4.73	75.65	939.55	9.07	7.61	8.27
MODE 14	SAMPLE(CONC)	900.	12335.	6.26	560.		
	MASS (GMS)	1.1890	32.9118	262.49	2.4546	2.0613	
	MASS (GM/MI)	5.50	152.16	1213.55	11.35	9.53	6.04

VEHICLE - 0011 RUN NO. - 15 DATE - 77/10/ 7 SITE - LIVONIA

MODE 15	SAMPLE(CONC)	131.	378.	3.15	344.		
	MASS (GMS)	0.1533	0.8896	116.61	1.3304	1.1173	
	MASS (GM/MI)	0.61	3.56	466.44	5.32	4.47	18.73
MODE 16	SAMPLE(CONC)	1088.	1003.	1.39	98.		
	MASS (GMS)	1.0152	1.8891	41.17	0.3032	0.2546	
	MASS (GM/MI)	5.92	11.01	239.93	1.77	1.48	32.16
MODE 17	SAMPLE(CONC)	408.	2207.	4.10	422.		
	MASS (GMS)	0.4761	5.1956	151.67	1.6321	1.3706	
	MASS (GM/MI)	2.54	27.71	808.90	8.70	7.31	10.31
MODE 18	SAMPLE(CONC)	417.	3824.	5.54	649.		
	MASS (GMS)	0.4544	8.4022	191.30	2.3427	1.9674	
	MASS (GM/MI)	2.22	41.13	936.38	11.47	9.63	8.60
MODE 19	SAMPLE(CONC)	152.	367.	3.52	419.		
	MASS (GMS)	0.1887	0.9204	139.08	1.7285	1.4516	
	MASS (GM/MI)	0.71	3.45	521.50	6.48	5.44	16.77
MODE 20	SAMPLE(CONC)	452.	342.	0.79	29.		
	MASS (GMS)	1.0535	1.6089	58.18	0.2243	0.1884	
	MASS (GM/MI)	3.13	4.78	172.78	0.67	0.56	46.66
MODE 21	SAMPLE(CONC)	554.	8143.	3.09	153.		
	MASS (GMS)	0.6460	19.1718	114.56	0.5917	0.4969	
	MASS (GM/MI)	10.34	306.75	1832.90	9.47	7.95	3.78
MODE 22	SAMPLE(CONC)	668.	8490.	5.55	510.		
	MASS (GMS)	1.3499	34.6449	356.11	3.4168	2.8711	
	MASS (GM/MI)	4.30	110.47	1135.55	10.90	9.16	6.71
MODE 23	SAMPLE(CONC)	128.	469.	2.61	396.		
	MASS (GMS)	0.1495	1.1048	103.95	1.5315	1.2862	
	MASS (GM/MI)	0.60	4.42	415.79	6.13	5.14	20.90
MODE 24	SAMPLE(CONC)	428.	344.	0.58	15.		
	MASS (GMS)	0.6980	1.1349	30.29	0.0812	0.0682	
	MASS (GM/MI)	3.54	5.75	153.54	0.41	0.35	51.07
MODE 25	SAMPLE(CONC)	318.	3368.	1.81	136.		
	MASS (GMS)	0.2470	5.2863	44.76	0.3507	0.2945	
	MASS (GM/MI)	1.48	31.71	268.52	2.10	1.77	27.47
MODE 26	SAMPLE(CONC)	642.	7638.	5.64	546.		
	MASS (GMS)	1.5967	38.3607	445.40	4.5046	3.7832	
	MASS (GM/MI)	4.82	115.79	1344.39	13.60	11.42	5.76
MODE 27	SAMPLE(CONC)	142.	618.	3.70	445.		
	MASS (GMS)	0.1654	1.4547	137.10	1.7210	1.4453	
	MASS (GM/MI)	0.66	5.82	548.40	6.88	5.78	15.86
MODE 28	SAMPLE(CONC)	417.	399.	0.88	47.		
	MASS (GMS)	0.7452	1.4398	49.74	0.2787	0.2341	
	MASS (GM/MI)	2.49	4.81	166.14	0.93	0.78	48.88

VEHICLE - 0011 RUN NO. - 15 DATE - 77/10/ 7 SITE - LIVONIA

MODE 29	SAMPLE(CONC)	175.	626.	1.09	37.		
	MASS (GMS)	0.2040	1.4743	40.26	0.1431	0.1202	
	MASS (GM/MI)	1.63	11.79	322.10	1.14	0.96	25.67
MODE 30	SAMPLE(CONC)	72.	539.	0.63	16.		
	MASS (GMS)	0.0501	0.7619	14.10	0.0371	0.0312	
	MASS (GM/MI)	0.86	13.16	243.49	0.64	0.54	33.25
MODE 31	SAMPLE(CONC)	48.	369.	0.70	10.		
	MASS (GMS)	0.0555	0.8699	26.10	0.0387	0.0325	
	MASS (GM/MI)	0.89	13.92	417.60	0.62	0.52	20.07
MODE 32	SAMPLE(CONC)	54.	564.	0.46	6.		
	MASS (GMS)	0.0339	0.7083	9.15	0.0124	0.0104	
	MASS (GM/MI)	1.96	40.94	529.18	0.72	0.60	14.80
MODE 33	SAMPLE(CONC)	206.	2293.	2.26	179.		
	MASS (GMS)	0.1601	3.5984	55.67	0.4615	0.3876	
	MASS (GM/MI)	0.96	21.59	333.95	2.77	2.33	23.93
MODE 34	SAMPLE(CONC)	419.	3059.	4.07	408.		
	MASS (GMS)	0.7172	10.5628	220.84	2.3143	1.9435	
	MASS (GM/MI)	4.08	60.05	1255.46	13.16	11.05	6.51
MODE 35	SAMPLE(CONC)	145.	212.	1.83	200.		
	MASS (GMS)	0.1696	0.5002	67.81	0.7735	0.6496	
	MASS (GM/MI)	0.90	2.67	361.68	4.13	3.46	24.07
MODE 36	SAMPLE(CONC)	186.	296.	0.55	19.		
	MASS (GMS)	0.2307	0.7439	21.88	0.0784	0.0658	
	MASS (GM/MI)	1.66	5.34	157.20	0.56	0.47	51.95
MODE 37	SAMPLE(CONC)	161.	1375.	1.82	133.		
	MASS (GMS)	0.1872	3.2364	67.47	0.5144	0.4320	
	MASS (GM/MI)	3.00	51.78	1079.49	8.23	6.91	7.58
MODE 38	SAMPLE(CONC)	517.	4887.	3.95	360.		
	MASS (GMS)	0.7240	13.8071	175.37	1.6707	1.4031	
	MASS (GM/MI)	4.74	90.36	1147.72	10.93	9.18	6.80
MODE 39	SAMPLE(CONC)	139.	303.	1.87	225.		
	MASS (GMS)	0.1627	0.7123	69.31	0.8702	0.7308	
	MASS (GM/MI)	0.87	3.80	369.63	4.64	3.90	23.46
MODE 40	SAMPLE(CONC)	211.	280.	0.55	21.		
	MASS (GMS)	0.3109	0.8357	25.99	0.1029	0.0864	
	MASS (GM/MI)	2.38	6.41	199.27	0.79	0.66	40.92
MODE 41	SAMPLE(CONC)	338.	5429.	2.80	139.		
	MASS (GMS)	0.2624	8.5214	69.13	0.3584	0.3010	
	MASS (GM/MI)	1.57	51.12	414.68	2.15	1.81	17.75
MODE 42	SAMPLE(CONC)	930.	14648.	5.89	507.		
	MASS (GMS)	1.8067	57.4786	363.75	3.2680	2.7445	
	MASS (GM/MI)	6.81	216.57	1370.59	12.31	10.34	5.12

VEHICLE - 0011 RUN NO. - 15 . DATE - 77/10/ 7 SITE - LIVONIA

MODE 43	SAMPLE(CONC)	142.	384.	3.34	463.		
	MASS (GMS)	0.1651	0.9045	123.69	1.7966	1.5038	
	MASS (GM/MI)	0.66	3.62	494.75	7.16	6.02	17.66
MODE 44	SAMPLE(CONC)	373.	395.	0.64	29.		
	MASS (GMS)	0.8110	1.7378	44.56	0.2094	0.1758	
	MASS (GM/MI)	3.08	6.60	169.18	0.79	0.67	46.88
MODE 45	SAMPLE(CONC)	202.	2053.	2.00	117.		
	MASS (GMS)	0.1568	3.2225	49.46	0.3017	0.2533	
	MASS (GM/MI)	0.94	19.33	296.69	1.81	1.52	26.89
MODE 46	SAMPLE(CONC)	190.	1031.	2.36	226.		
	MASS (GMS)	0.2214	2.4263	87.20	0.8740	0.7340	
	MASS (GM/MI)	3.00	32.92	1183.19	11.86	9.96	7.13
MODE 47	SAMPLE(CONC)	215.	863.	2.14	155.		
	MASS (GMS)	0.2504	2.0322	79.38	0.5995	0.5034	
	MASS (GM/MI)	2.00	16.26	635.01	4.80	4.03	13.31
MODE 48	SAMPLE(CONC)	582.	4999.	5.35	616.		
	MASS (GMS)	1.1320	19.6141	329.86	3.9706	3.3345	
	MASS (GM/MI)	3.61	62.58	1052.54	12.67	10.64	7.64
MODE 49	SAMPLE(CONC)	129.	405.	3.75	479.		
	MASS (GMS)	0.1603	1.0169	148.22	1.9760	1.6595	
	MASS (GM/MI)	0.60	3.81	555.76	7.41	6.22	15.75
MODE 50	SAMPLE(CONC)	550.	402.	0.73	60.		
	MASS (GMS)	0.7692	1.1349	34.91	0.2785	0.2338	
	MASS (GM/MI)	3.26	4.80	147.80	1.18	0.99	53.57
MODE 51	SAMPLE(CONC)	191.	482.	1.04	36.		
	MASS (GMS)	0.2374	1.2107	40.96	0.1568	0.1316	
	MASS (GM/MI)	1.78	9.08	307.25	1.18	0.99	27.13
MODE 52	SAMPLE(CONC)	97.	419.	0.61	15.		
	MASS (GMS)	0.0751	0.6582	15.17	0.0387	0.0325	
	MASS (GM/MI)	1.69	14.82	341.59	0.87	0.73	23.97
MODE 53	SAMPLE(CONC)	150.	1072.	1.44	54.		
	MASS (GMS)	0.1168	1.6825	35.54	0.1392	0.1169	
	MASS (GM/MI)	0.70	10.09	213.19	0.84	0.70	38.38
MODE 54	SAMPLE(CONC)	468.	4603.	5.38	549.		
	MASS (GMS)	1.3838	27.4514	504.20	5.3789	4.5172	
	MASS (GM/MI)	3.45	68.47	1257.66	13.42	11.27	6.45
MODE 55	SAMPLE(CONC)	132.	408.	3.39	490.		
	MASS (GMS)	0.1535	0.9612	125.55	1.8951	1.5915	
	MASS (GM/MI)	0.61	3.84	502.20	7.58	6.37	17.40
MODE 56	SAMPLE(CONC)	294.	261.	0.89	45.		
	MASS (GMS)	0.7993	1.4328	76.55	0.4061	0.3410	
	MASS (GM/MI)	2.43	4.35	232.46	1.23	1.04	35.93

VEHICLE - 0011 RUN NO. - 15 DATE - 77/10/ 7 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	113.	687.	0.96	23.		
	MASS (GMS)	0.0877	1.0783	23.61	0.0593	0.0498	
	MASS (GM/MI)	0.53	6.47	141.65	0.36	0.30	57.83
MODE 58	SAMPLE(CONC)	208.	1012.	2.37	226.		
	MASS (GMS)	0.2909	2.8579	105.09	1.0489	0.8808	
	MASS (GM/MI)	3.28	32.26	1186.10	11.84	9.94	7.12
MODE 59	SAMPLE(CONC)	241.	1004.	1.91	170.		
	MASS (GMS)	0.2805	2.3632	70.81	0.6575	0.5521	
	MASS (GM/MI)	2.24	18.91	566.51	5.26	4.42	14.71
MODE 60	SAMPLE(CONC)	951.	14888.	5.51	425.		
	MASS (GMS)	1.5531	49.0711	285.75	2.3011	1.9325	
	MASS (GM/MI)	5.98	188.81	1099.45	8.85	7.44	6.27
MODE 61	SAMPLE(CONC)	147.	418.	3.44	448.		
	MASS (GMS)	0.1710	0.9850	127.41	1.7326	1.4551	
	MASS (GM/MI)	0.68	3.94	509.65	6.93	5.82	17.13
MODE 62	SAMPLE(CONC)	439.	299.	0.71	45.		
	MASS (GMS)	0.4774	0.6560	24.37	0.1624	0.1364	
	MASS (GM/MI)	2.63	3.62	134.40	0.90	0.75	59.79
MODE 63	SAMPLE(CONC)	314.	631.	1.00	41.		
	MASS (GMS)	0.3660	1.4858	36.91	0.1586	0.1332	
	MASS (GM/MI)	2.93	11.89	295.30	1.27	1.07	27.46
MODE 64	SAMPLE(CONC)	67.	290.	0.62	18.		
	MASS (GMS)	0.0673	0.5924	20.04	0.0603	0.0507	
	MASS (GM/MI)	1.14	10.01	338.45	1.02	0.86	24.81
MODE 65	SAMPLE(CONC)	42.	325.	0.73	10.		
	MASS (GMS)	0.0388	0.6112	21.48	0.0309	0.0260	
	MASS (GM/MI)	0.19	3.06	107.38	0.15	0.13	78.69
CALC TOTAL	SAMPLE(CONC)	338.	2500.	2.56	235.		
	MASS (GMS)	27.7088	413.6111	6653.30	63.8622	53.6315	
	MASS (GM/MI)	2.83	42.25	679.67	6.52	5.48	11.75

SITE - ST. LOUIS
VEHICLE - 0013 RUN NO. - 19 DATE - 77/10/12 AHP - 19.7 INERTIA - 6000.

1975 FTP

CLD TRAN

BARO - 29.25 WB - 56. DB - 77. PIN - 39.70 V/REV - .2818 TEMP - 111. REVS - 10519.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	9.	0.	0.04	0.		
SAMPLE(CONC)	1182.	9341.	2.25	208.		
MASS EMISSIONS(GMS)	46.29	742.85	2776.26	27.17	22.73	

CLD STAB

BARO - 29.25 WB - 56. DB - 80. PIN - 39.80 V/REV - .2817 TEMP - 111. REVS - 18029.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	9.	0.	0.04	0.		
SAMPLE(CONC)	384.	4384.	1.36	87.		
MASS EMISSIONS(GMS)	25.38	597.17	2839.43	19.47	15.98	

HOT TRAN

BARO - 29.25 WB - 56. DB - 79. PIN - 39.70 V/REV - .2818 TEMP - 110. REVS - 10496.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	8.	0.	0.04	0.		
SAMPLE(CONC)	554.	5202.	2.01	243.		
MASS EMISSIONS(GMS)	21.56	413.51	2472.35	31.73	26.20	

COMPOSIT

	HC	CO	CO2	NOX	NOXC	MPG
MASS EMISSIONS(GM/MI)	7.68	153.64	725.66	6.57	5.42	8.95

0 MPH

BARO - 29.08 WB - 59. DB - 76. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3750.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	8.	0.	0.05	0.		
SAMPLE(CONC)	322.	3201.	0.46	2.		
MASS EMISSIONS(GMS)	4.39	90.17	182.97	0.09	0.08	
MASS EMISSIONS(GM/MI)	1.42	29.09	59.02	0.03	0.03	81.26

5 MPH

BARO - 29.08 WB - 58. DB - 75. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3748.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	7.	0.	0.05	0.		
SAMPLE(CONC)	333.	3426.	0.53	2.		
MASS EMISSIONS(GMS)	4.55	96.46	214.02	0.09	0.08	
MASS EMISSIONS(GM/MI)	17.65	373.86	829.55	0.36	0.31	6.03

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10 MPH
BARO - 29.08 WB - 58. DB - 75. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3746.
BACKGROUND(CONC) 8. 0. 0.05 0.
SAMPLE(CONC) 258. 3226. 0.58 4.

MASS EMISSIONS(GMS) 3.49 90.83 236.20 0.18 0.16
MASS EMISSIONS(GM/MI) 6.76 175.68 456.86 0.36 0.31 11.77

15 MPH
BARO - 29.08 WB - 58. DB - 75. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3752.
BACKGROUND(CONC) 7. 0. 0.05 0.
SAMPLE(CONC) 234. 3251. 0.72 4.

MASS EMISSIONS(GMS) 3.18 91.63 298.74 0.19 0.16
MASS EMISSIONS(GM/MI) 4.10 118.23 385.47 0.24 0.21 15.19

30 MPH
BARO - 29.08 WB - 59. DB - 76. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3751.
BACKGROUND(CONC) 7. 0. 0.05 0.
SAMPLE(CONC) 186. 530. 1.63 49.

MASS EMISSIONS(GMS) 2.51 14.93 702.94 2.27 2.01
MASS EMISSIONS(GM/MI) 1.62 9.63 453.51 1.46 1.30 18.73

45 MPH
BARO - 29.08 WB - 60. DB - 78. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3752.
BACKGROUND(CONC) 8. 0. 0.04 0.
SAMPLE(CONC) 452. 5073. 2.42 113.

MASS EMISSIONS(GMS) 6.22 142.98 1058.84 5.23 4.67
MASS EMISSIONS(GM/MI) 2.68 61.52 455.61 2.25 2.01 15.83

60 MPH
BARO - 29.08 WB - 59. DB - 81. PIN - 39.30 V/REV - .2815 TEMP - 111. REVS - 3747.
BACKGROUND(CONC) 8. 0. 0.06 0.
SAMPLE(CONC) 592. 5258. 4.20 408.

MASS EMISSIONS(GMS) 8.18 260.58 1842.83 18.86 16.20
MASS EMISSIONS(GM/MI) 2.64 84.06 594.46 6.09 5.22 12.06

60 MPH
BARO - 0.0 WB - 0. DB - 0. PIN - 0.0 V/REV - .0 TEMP - 0. REVS - 0.
BACKGROUND(CONC) 0. 0. 0.0 0.
SAMPLE(CONC) 0. 0. 0.0 0.

MASS EMISSIONS(GMS) 0.0 0.0 0.0 0.0 0.0
MASS EMISSIONS(GM/MI) 0.0 0.0 0.0 0.0 0.0 99.99

AA 1 a
BARO - 29.07 WB - 59. DB - 76. PIN - 39.70 V/REV - .2818 TEMP - 111. REVS - 36651.
BACKGROUND(CONC) 7. 0. 0.05 0.
SAMPLE(CONC) 299. 2952. 1.01 38.

MASS EMISSIONS(GMS) 39.90 812.37 4176.24 17.18 15.26
MASS EMISSIONS(GM/MI) 7.17 145.98 750.45 3.09 2.74 8.85

AA 1 b Inertia - 7000
BARO - 29.07 WB - 58. DB - 75. PIN - 39.70 V/REV - .2818 TEMP - 111. REVS - 36637.
BACKGROUND(CONC) 6. 0. 0.05 0.
SAMPLE(CONC) 321. 3127. 1.07 48.

MASS EMISSIONS(GMS) 43.01 860.20 4435.50 21.69 19.05
MASS EMISSIONS(GM/MI) 7.73 154.57 797.03 3.90 3.42 8.34

SITE - LIVONIA
VEHICLE - 0015 RUN NO. - 27 DATE - 77/10/20 AHP - 20.1 INERTIA - 5000.

1975 FTP

CLD TRAN

BARO - 29.42 WB - 65. DB - 79. PIN - 39.40 V/REV - .2820 TEMP - 111. REVS - 10709.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	16.	0.	0.05	0.		
SAMPLE(CONC)	570.	3853.	2.15	188.		
MASS EMISSIONS(GMS)	22.52	314.44	2707.63	25.20	24.65	

CLD STAB

BARO - 29.42 WB - 65. DB - 80. PIN - 39.60 V/REV - .2818 TEMP - 110. REVS - 18096.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	3.	7.	0.04	0.		
SAMPLE(CONC)	285.	1830.	1.31	110.		
MASS EMISSIONS(GMS)	19.29	251.63	2765.50	24.93	24.20	

HOT TRAN

BARO - 29.42 WB - 66. DB - 81. PIN - 39.50 V/REV - .2819 TEMP - 111. REVS - 10535.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	6.	2.	0.03	0.		
SAMPLE(CONC)	371.	2643.	1.87	211.		
MASS EMISSIONS(GMS)	14.54	211.92	2327.82	27.81	27.41	

COMPOSIT

	HC	CO	CO2	NOX	NOXC	MPG
MASS EMISSIONS(GM/MI)	4.97	67.69	700.88	6.88	6.72	10.78

0 MPH

BARO - 29.19 WB - 76. DB - 80. PIN - 39.10 V/REV - .2821 TEMP - 110. REVS - 3749.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	4.	4.	0.04	0.		
SAMPLE(CONC)	153.	2120.	0.69	5.		
MASS EMISSIONS(GMS)	2.10	60.11	291.59	0.23	0.32	
MASS EMISSIONS(GM/MI)	0.68	19.39	94.06	0.08	0.10	70.06

5 MPH

BARO - 29.19 WB - 76. DB - 80. PIN - 39.10 V/REV - .2821 TEMP - 110. REVS - 3749.

	HC	CO	CO2	NOX	NOXC	MPG
BACKGROUND(CONC)	4.	4.	0.04	0.		
SAMPLE(CONC)	148.	2003.	0.69	5.		
MASS EMISSIONS(GMS)	2.03	56.79	291.58	0.23	0.32	
MASS EMISSIONS(GM/MI)	7.87	220.12	1130.14	0.90	1.24	5.91

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VEHICLE - 0015      RUN NO. -    26      DATE - 77/10/19     SITE -       LIVONIA

 10 MPH
    BARO - 29.19   WB - 76.  DB - 80.  PIN - 39.10   V/REV - .2821   TEMP - 110.  REVS -  3751.
          BACKGROUND(CONC)                 4.       0.      0.04      0.
          SAMPLE(CONC)                   134.    1176.      0.94      8.

          MASS EMISSIONS(GMS)             1.83    33.42    403.69     0.37      0.51
          MASS EMISSIONS(GM/MI)           3.55    64.65    780.84     0.72      0.99      9.93
 15 MPH
    BARO - 29.19   WB - 75.  DB - 79.  PIN - 39.10   V/REV - .2821   TEMP - 110.  REVS -  3758.
          BACKGROUND(CONC)                 5.       2.      0.04      0.
          SAMPLE(CONC)                   150.    1161.      1.03     11.

          MASS EMISSIONS(GMS)             2.05    33.01    444.87     0.51      0.68
          MASS EMISSIONS(GM/MI)           2.65    42.59    574.02     0.66      0.88     13.67
 30 MPH
    BARO - 29.19   WB - 75.  DB - 79.  PIN - 39.10   V/REV - .2821   TEMP - 110.  REVS -  3750.
          BACKGROUND(CONC)                 6.       2.      0.04      0.
          SAMPLE(CONC)                   256.     426.      1.38     83.

          MASS EMISSIONS(GMS)             3.53    12.05    600.70     3.87      5.14
          MASS EMISSIONS(GM/MI)           2.28     7.78    387.55     2.50      3.32     21.81
 45 MPH
    BARO - 29.19   WB - 75.  DB - 80.  PIN - 39.10   V/REV - .2821   TEMP - 110.  REVS -  3751.
          BACKGROUND(CONC)                10.       4.      0.04      0.
          SAMPLE(CONC)                   402.    1668.      2.25    272.

          MASS EMISSIONS(GMS)             5.54    47.31    991.06    12.70     16.67
          MASS EMISSIONS(GM/MI)           2.39    20.36    426.45     5.46      7.17     19.05
 60 MPH
    BARO - 29.19   WB - 76.  DB - 81.  PIN - 39.10   V/REV - .2821   TEMP - 111.  REVS -  3747.
          BACKGROUND(CONC)                10.       0.      0.03      0.
          SAMPLE(CONC)                   615.    3376.      3.68    672.

          MASS EMISSIONS(GMS)             8.54    95.68   1630.88    31.29     42.28
          MASS EMISSIONS(GM/MI)           2.75    30.86    526.09    10.09     13.64     15.22
MOD(BAG)
    BARO - 29.22   WB - 75.  DB - 80.  PIN - 39.10   V/REV - .2821   TEMP - 111.  REVS - 21961.
          BACKGROUND(CONC)                 7.       0.      0.04      0.
          SAMPLE(CONC)                   496.    5022.      2.51    263.

          MASS EMISSIONS(GMS)            40.41   835.13   6483.48    71.84     94.21
          MASS EMISSIONS(GM/MI)           4.13    85.31    662.32     7.34      9.62     10.96
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VEHICLE - 0015 RUN NO. - 26 DATE - 77/10/19 SITE - LIVONIA

AA 1 a

BARO - 29.24 WB - 75. DB - 80. PIN - 39.10 V/REV - .2821 TEMP - 110. REVS - 36648.

BACKGROUND(CONC)	5.	4.	0.05	0.		
SAMPLE(CONC)	216.	1618.	1.08	74.		
MASS EMISSIONS(GMS)	29.14	449.13	4527.07	33.82	44.32	
MASS EMISSIONS(GM/MI)	5.24	80.71	813.49	6.08	7.96	9.27

Inertia - 6000

AA 1 b

BARO - 28.90 WB - 59. DB - 80. PIN - 39.60 V/REV - .2818 TEMP - 111. REVS - 36652.

BACKGROUND(CONC)	7.	7.	0.05	0.		
SAMPLE(CONC)	252.	1902.	1.18	93.		
MASS EMISSIONS(GMS)	33.29	518.46	4882.52	41.78	36.18	
MASS EMISSIONS(GM/MI)	5.98	93.16	877.36	7.51	6.50	8.51

VEHICLE - 0015 RUN NO. - 27 DATE - 77/10/18 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.22 WB - 75. DB - 80. PIN - 39.10 V/REV - .2821 TEMP - 111. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	96.	1685.	0.60	4.		
	MASS (GMS)	0.0754	2.6585	14.95	0.0104	0.0136	
	MASS (GM/MI)	0.45	15.95	89.67	0.06	0.08	76.40
MODE 2	SAMPLE(CONC)	561.	5017.	2.70	299.		
	MASS (GMS)	0.5258	9.4987	80.39	0.9299	1.2195	
	MASS (GM/MI)	8.73	157.79	1335.32	15.45	20.26	5.51
MODE 3	SAMPLE(CONC)	362.	2517.	1.69	161.		
	MASS (GMS)	0.4244	5.9568	62.75	0.6259	0.8208	
	MASS (GM/MI)	3.40	47.65	502.00	5.01	6.57	15.10
MODE 4	SAMPLE(CONC)	174.	972.	0.98	68.		
	MASS (GMS)	0.2170	2.4537	39.04	0.2820	0.3698	
	MASS (GM/MI)	2.93	33.11	526.86	3.81	4.99	15.09
MODE 5	SAMPLE(CONC)	127.	1767.	0.60	10.		
	MASS (GMS)	0.0996	2.7879	14.95	0.0259	0.0340	
	MASS (GM/MI)	0.60	16.72	89.68	0.16	0.20	75.31
MODE 6	SAMPLE(CONC)	263.	2891.	1.36	67.		
	MASS (GMS)	0.1644	3.6490	26.90	0.1389	0.1822	
	MASS (GM/MI)	8.18	181.54	1338.23	6.91	9.06	5.38
MODE 7	SAMPLE(CONC)	216.	1414.	1.09	82.		
	MASS (GMS)	0.2528	3.3464	40.71	0.3188	0.4180	
	MASS (GM/MI)	4.04	53.54	651.39	5.10	6.69	11.66
MODE 8	SAMPLE(CONC)	459.	2714.	2.42	263.		
	MASS (GMS)	0.3949	4.7102	66.00	0.7498	0.9833	
	MASS (GM/MI)	5.60	66.81	936.21	10.64	13.95	8.38
MODE 9	SAMPLE(CONC)	340.	2529.	1.53	131.		
	MASS (GMS)	0.3985	5.9852	56.78	0.5093	0.6679	
	MASS (GM/MI)	3.19	47.88	454.22	4.07	5.34	16.45
MODE 10	SAMPLE(CONC)	610.	2621.	2.83	520.		
	MASS (GMS)	0.6194	5.3759	91.27	1.7520	2.2976	
	MASS (GM/MI)	4.55	39.53	671.09	12.88	16.89	11.87
MODE 11	SAMPLE(CONC)	529.	3572.	3.27	357.		
	MASS (GMS)	0.6200	8.4536	121.74	1.3879	1.8200	
	MASS (GM/MI)	3.31	45.09	649.30	7.40	9.71	12.15
MODE 12	SAMPLE(CONC)	293.	1709.	1.61	171.		
	MASS (GMS)	0.2747	3.2356	47.80	0.5318	0.6974	
	MASS (GM/MI)	2.17	25.52	377.00	4.19	5.50	20.93
MODE 13	SAMPLE(CONC)	219.	2031.	1.05	71.		
	MASS (GMS)	0.2563	4.8066	39.23	0.2760	0.3620	
	MASS (GM/MI)	2.05	38.45	313.80	2.21	2.90	23.31
MODE 14	SAMPLE(CONC)	1039.	13204.	4.21	417.		
	MASS (GMS)	1.3802	35.4154	177.45	1.8373	2.4094	
	MASS (GM/MI)	6.38	163.73	820.39	8.49	11.14	8.08

VEHICLE - 0015 RUN NO. - 27 DATE - 77/10/18 SITE - LIVONIA

MODE 15	SAMPLE(CONC)	1416.	18145.	4.47	570.		
	MASS (GMS)	1.6602	42.9423	166.34	2.2160	2.9059	
	MASS (GM/MI)	6.64	171.77	665.35	8.86	11.62	9.28
MODE 16	SAMPLE(CONC)	466.	3537.	3.22	338.		
	MASS (GMS)	0.4369	6.6966	95.90	1.0512	1.3785	
	MASS (GM/MI)	2.55	39.02	558.87	6.13	8.03	14.13
MODE 17	SAMPLE(CONC)	441.	3948.	1.81	243.		
	MASS (GMS)	0.5172	9.3434	67.25	0.9447	1.2388	
	MASS (GM/MI)	2.76	49.83	358.65	5.04	6.61	19.91
MODE 18	SAMPLE(CONC)	700.	5878.	4.68	767.		
	MASS (GMS)	0.7656	12.9836	162.43	2.7830	3.6496	
	MASS (GM/MI)	3.75	63.55	795.06	13.62	17.86	9.79
MODE 19	SAMPLE(CONC)	691.	6019.	3.98	717.		
	MASS (GMS)	0.8645	15.1943	158.16	2.9733	3.8991	
	MASS (GM/MI)	3.24	56.97	593.04	11.15	14.62	12.81
MODE 20	SAMPLE(CONC)	319.	2311.	2.08	177.		
	MASS (GMS)	0.7484	10.9385	154.61	1.3762	1.8047	
	MASS (GM/MI)	2.22	32.49	459.20	4.09	5.36	17.16
MODE 21	SAMPLE(CONC)	138.	2615.	0.65	11.		
	MASS (GMS)	0.1612	6.1867	24.30	0.0428	0.0561	
	MASS (GM/MI)	2.58	99.02	388.79	0.68	0.90	16.06
MODE 22	SAMPLE(CONC)	1174.	16126.	4.75	491.		
	MASS (GMS)	2.3861	66.1510	306.39	3.3087	4.3389	
	MASS (GM/MI)	7.61	210.94	977.02	10.55	13.84	6.66
MODE 23	SAMPLE(CONC)	690.	6926.	4.42	703.		
	MASS (GMS)	0.8085	16.3912	164.34	2.7330	3.5840	
	MASS (GM/MI)	3.23	65.56	657.36	10.93	14.34	11.52
MODE 24	SAMPLE(CONC)	373.	3265.	1.80	145.		
	MASS (GMS)	0.6124	10.8178	93.61	0.7892	1.0349	
	MASS (GM/MI)	3.10	54.83	474.46	4.00	5.25	15.56
MODE 25	SAMPLE(CONC)	525.	2599.	0.69	13.		
	MASS (GMS)	0.4099	4.1006	17.20	0.0337	0.0442	
	MASS (GM/MI)	2.46	24.60	103.17	0.20	0.27	59.32
MODE 26	SAMPLE(CONC)	1080.	11243.	4.02	445.		
	MASS (GMS)	2.7001	56.7636	318.85	3.6907	4.8398	
	MASS (GM/MI)	8.15	171.34	962.41	11.14	14.61	7.06
MODE 27	SAMPLE(CONC)	798.	7924.	5.05	710.		
	MASS (GMS)	0.9355	18.7531	187.87	2.7602	3.6197	
	MASS (GM/MI)	3.74	75.01	751.48	11.04	14.48	10.07
MODE 28	SAMPLE(CONC)	412.	3488.	2.09	336.		
	MASS (GMS)	0.7411	12.6573	119.13	2.0029	2.6266	
	MASS (GM/MI)	2.48	42.28	397.89	6.69	8.77	18.80

MODE 29	SAMPLE(CONC)	237.	3026.	1.01	22.		
	MASS (GMS)	0.2775	7.1614	37.74	0.0855	0.1122	
	MASS (GM/MI)	2.22	57.29	301.95	0.68	0.90	22.24
MODE 30	SAMPLE(CONC)	222.	1402.	1.16	64.		
	MASS (GMS)	0.1559	1.9908	25.99	0.1493	0.1958	
	MASS (GM/MI)	2.69	34.38	448.96	2.58	3.38	17.35
MODE 31	SAMPLE(CONC)	161.	1714.	0.74	23.		
	MASS (GMS)	0.1881	4.0564	27.65	0.0894	0.1173	
	MASS (GM/MI)	3.01	64.90	442.39	1.43	1.88	16.02
MODE 32	SAMPLE(CONC)	131.	1418.	0.75	11.		
	MASS (GMS)	0.0822	1.7898	14.94	0.0228	0.0299	
	MASS (GM/MI)	4.75	103.46	863.78	1.32	1.73	8.52
MODE 33	SAMPLE(CONC)	121.	2446.	0.51	5.		
	MASS (GMS)	0.0949	3.8592	12.71	0.0130	0.0170	
	MASS (GM/MI)	0.57	23.15	76.27	0.08	0.10	77.55
MODE 34	SAMPLE(CONC)	588.	5410.	3.30	438.		
	MASS (GMS)	1.0110	18.7784	180.23	2.4974	3.2750	
	MASS (GM/MI)	5.75	106.76	1024.63	14.20	18.62	7.33
MODE 35	SAMPLE(CONC)	566.	3964.	2.93	370.		
	MASS (GMS)	0.6632	9.3813	109.06	1.4384	1.8863	
	MASS (GM/MI)	3.54	50.03	581.64	7.67	10.06	13.22
MODE 36	SAMPLE(CONC)	322.	2064.	1.44	175.		
	MASS (GMS)	0.4025	5.2104	56.97	0.7257	0.9517	
	MASS (GM/MI)	2.89	37.43	409.29	5.21	6.84	18.60
MODE 37	SAMPLE(CONC)	425.	2230.	0.75	14.		
	MASS (GMS)	0.4977	5.2776	28.03	0.0544	0.0714	
	MASS (GM/MI)	7.96	84.44	448.50	0.87	1.14	14.64
MODE 38	SAMPLE(CONC)	982.	5749.	2.85	315.		
	MASS (GMS)	1.3811	16.3268	127.31	1.4695	1.9271	
	MASS (GM/MI)	9.04	106.85	833.21	9.62	12.61	8.62
MODE 39	SAMPLE(CONC)	639.	4820.	3.22	407.		
	MASS (GMS)	0.7490	11.4071	119.89	1.5823	2.0749	
	MASS (GM/MI)	3.99	60.84	639.43	8.44	11.07	11.87
MODE 40	SAMPLE(CONC)	303.	2083.	1.33	167.		
	MASS (GMS)	0.4496	6.2443	62.93	0.8224	1.0784	
	MASS (GM/MI)	3.45	47.89	482.57	6.31	8.27	15.61
MODE 41	SAMPLE(CONC)	143.	1619.	0.62	12.		
	MASS (GMS)	0.1121	2.5544	15.45	0.0311	0.0408	
	MASS (GM/MI)	0.67	15.32	92.66	0.19	0.24	74.67
MODE 42	SAMPLE(CONC)	1071.	18787.	4.44	286.		
	MASS (GMS)	2.0931	74.1028	275.37	1.8531	2.4301	
	MASS (GM/MI)	7.89	279.21	1037.56	6.98	9.16	5.91

MODE 43	SAMPLE(CONC)	1211.	13883.	4.62	636.		
	MASS (GMS)	1.4198	32.8558	171.89	2.4726	3.2424	
	MASS (GM/MI)	5.68	131.42	687.55	9.89	12.97	9.73
MODE 44	SAMPLE(CONC)	369.	3794.	1.78	236.		
	MASS (GMS)	0.8078	16.7607	123.43	1.7126	2.2459	
	MASS (GM/MI)	3.07	63.63	468.61	6.50	8.53	15.35
MODE 45	SAMPLE(CONC)	170.	2672.	0.64	8.		
	MASS (GMS)	0.1325	4.2157	15.95	0.0207	0.0272	
	MASS (GM/MI)	0.79	25.29	95.69	0.12	0.16	64.34
MODE 46	SAMPLE(CONC)	357.	4360.	2.09	211.		
	MASS (GMS)	0.4189	10.3185	77.70	0.8203	1.0757	
	MASS (GM/MI)	5.68	140.01	1054.31	11.13	14.60	6.87
MODE 47	SAMPLE(CONC)	391.	4342.	2.00	184.		
	MASS (GMS)	0.4587	10.2759	74.34	0.7153	0.9381	
	MASS (GM/MI)	3.67	82.21	594.74	5.72	7.50	12.07
MODE 48	SAMPLE(CONC)	612.	4899.	3.78	518.		
	MASS (GMS)	1.1962	19.3234	234.66	3.3563	4.4014	
	MASS (GM/MI)	3.82	61.66	748.77	10.71	14.04	10.35
MODE 49	SAMPLE(CONC)	866.	9145.	4.83	696.		
	MASS (GMS)	1.0829	23.0856	191.65	2.8862	3.7849	
	MASS (GM/MI)	4.06	86.56	718.59	10.82	14.19	10.23
MODE 50	SAMPLE(CONC)	477.	3661.	2.63	394.		
	MASS (GMS)	0.6704	10.3970	117.42	1.8381	2.4104	
	MASS (GM/MI)	2.84	44.02	497.14	7.78	10.20	15.43
MODE 51	SAMPLE(CONC)	247.	2417.	0.84	38.		
	MASS (GMS)	0.3083	6.1015	33.48	0.1576	0.2066	
	MASS (GM/MI)	2.31	45.77	251.19	1.18	1.55	26.86
MODE 52	SAMPLE(CONC)	177.	1631.	1.42	106.		
	MASS (GMS)	0.1382	2.5733	35.36	0.2747	0.3603	
	MASS (GM/MI)	3.11	57.96	796.28	6.19	8.11	9.89
MODE 53	SAMPLE(CONC)	164.	1598.	0.85	35.		
	MASS (GMS)	0.1278	2.5212	21.17	0.0907	0.1190	
	MASS (GM/MI)	0.77	15.12	126.99	0.54	0.71	57.94
MODE 54	SAMPLE(CONC)	622.	6267.	3.61	493.		
	MASS (GMS)	1.8478	37.5734	340.65	4.8554	6.3672	
	MASS (GM/MI)	4.61	93.72	849.71	12.11	15.88	8.77
MODE 55	SAMPLE(CONC)	728.	7169.	4.90	716.		
	MASS (GMS)	0.8533	16.9663	182.26	2.7836	3.6503	
	MASS (GM/MI)	3.41	67.87	729.04	11.13	14.60	10.48
MODE 56	SAMPLE(CONC)	350.	2550.	1.82	251.		
	MASS (GMS)	0.9576	14.0814	157.74	2.2769	2.9858	
	MASS (GM/MI)	2.91	42.76	479.02	6.91	9.07	15.98

VEHICLE - 0015 RUN NO. - 27 DATE - 77/10/18 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	122.	2155.	0.79	9.		
	MASS (GMS)	0.0950	3.4000	19.68	0.0233	0.0306	
	MASS (GM/MI)	0.57	20.40	118.06	0.14	0.18	58.42
MODE 58	SAMPLE(CONC)	321.	3106.	1.75	180.		
	MASS (GMS)	0.4517	8.8209	78.00	0.8397	1.1012	
	MASS (GM/MI)	5.10	99.56	880.31	9.48	12.43	8.43
MODE 59	SAMPLE(CONC)	428.	3764.	1.79	176.		
	MASS (GMS)	0.5019	8.9080	66.50	0.6842	0.8973	
	MASS (GM/MI)	4.02	71.26	531.98	5.47	7.18	13.52
MODE 60	SAMPLE(CONC)	693.	6501.	3.53	388.		
	MASS (GMS)	1.1376	21.5396	184.08	2.1118	2.7693	
	MASS (GM/MI)	4.38	82.88	708.27	8.13	10.66	10.41
MODE 61	SAMPLE(CONC)	1291.	19197.	4.61	525.		
	MASS (GMS)	1.5139	45.4320	171.57	2.0410	2.6765	
	MASS (GM/MI)	6.06	181.73	686.30	8.16	10.71	8.96
MODE 62	SAMPLE(CONC)	530.	5241.	2.94	425.		
	MASS (GMS)	0.5797	11.5766	102.15	1.5421	2.0223	
	MASS (GM/MI)	3.20	63.85	563.42	8.51	11.15	13.17
MODE 63	SAMPLE(CONC)	258.	2567.	0.95	44.		
	MASS (GMS)	0.3020	6.0751	35.50	0.1711	0.2243	
	MASS (GM/MI)	2.42	48.60	283.99	1.37	1.79	24.12
MODE 64	SAMPLE(CONC)	198.	2243.	1.01	62.		
	MASS (GMS)	0.2008	4.6005	32.70	0.2089	0.2739	
	MASS (GM/MI)	3.39	77.71	552.42	3.53	4.63	12.95
MODE 65	SAMPLE(CONC)	150.	2030.	0.70	22.		
	MASS (GMS)	0.1402	3.8434	20.93	0.0684	0.0897	
	MASS (GM/MI)	0.70	19.22	104.64	0.34	0.45	64.76
CALC TOTAL	SAMPLE(CONC)	522.	5279.	2.49	289.		
	MASS (GMS)	42.9634	877.8684	6509.94	78.9469	103.5282	
	MASS (GM/MI)	4.39	89.68	665.03	8.06	10.58	10.83

SITE - LIVONIA
VEHICLE - 0016 RUN NO. - 28 DATE - 77/10/22 AHP - 25.9 INERTIA - 7500.

	HC	CO	CO2	NOX	NCXC	MPG
1975 FTP						
CLD TRAN						
BARO - 29.52 WB - 63. DB - 78. PIN - 39.20 V/REV - .2821 TEMP - 110. REVS - 10692.						
BACKGROUND(CONC)	5.	1.	0.06	1.		
SAMPLE(CONC)	2757.	11177.	2.32	210.		
MASS EMISSIONS(GMS)	111.84	916.52	2936.06	28.19	26.56	
CLD STAB						
BARO - 29.52 WB - 63. DB - 79. PIN - 39.40 V/REV - .2819 TEMP - 110. REVS - 18040.						
BACKGROUND(CONC)	15.	0.	0.05	0.		
SAMPLE(CONC)	1959.	644.	1.53	238.		
MASS EMISSIONS(GMS)	133.19	88.99	3230.88	54.03	50.52	
HOT TRAN						
BARO - 29.52 WB - 63. DB - 79. PIN - 39.30 V/REV - .2820 TEMP - 110. REVS - 10546.						
BACKGROUND(CONC)	9.	2.	0.04	0.		
SAMPLE(CONC)	2178.	2017.	2.39	430.		
MASS EMISSIONS(GMS)	86.92	162.92	2998.08	57.10	53.39	
COMPOSIT						
MASS EMISSIONS(GM/MI)	30.78	76.79	826.97	13.16	12.32	8.49
0 MPH						
BARO - 29.54 WB - 63. DB - 78. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3752.						
BACKGROUND(CONC)	0.	0.	0.03	0.		
SAMPLE(CONC)	710.	718.	0.68	13.		
MASS EMISSIONS(GMS)	10.08	20.58	293.86	0.61	0.58	
MASS EMISSIONS(GM/MI)	3.25	6.64	94.79	0.20	0.19	76.82
5 MPH						
BARO - 29.54 WB - 63. DB - 78. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3749.						
BACKGROUND(CONC)	10.	0.	0.03	0.		
SAMPLE(CONC)	870.	262.	0.68	13.		
MASS EMISSIONS(GMS)	12.21	7.50	293.60	0.61	0.58	
MASS EMISSIONS(GM/MI)	47.32	29.09	1137.97	2.37	2.23	6.65

VEHICLE - 0016 RUN NO. - 28 DATE - 77/10/22 SITE - LIVONIA

10 MPH

BARO - 29.54 WB - 63. DB - 78. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3751.

BACKGROUND(CONC)	0.	0.	0.04	0.		
SAMPLE(CONC)	1410.	264.	0.63	17.		
MASS EMISSIONS(GMS)	20.01	7.57	266.98	0.80	0.75	
MASS EMISSIONS(GM/MI)	38.71	14.63	516.41	1.55	1.46	13.40

15 MPH

BARO - 29.54 WB - 63. DB - 79. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3752.

BACKGROUND(CONC)	30.	0.	0.04	0.		
SAMPLE(CONC)	3490.	213.	0.98	110.		
MASS EMISSIONS(GMS)	49.17	6.11	425.58	5.18	4.84	
MASS EMISSIONS(GM/MI)	63.44	7.88	549.14	6.68	6.25	11.64

30 MPH

BARO - 29.54 WB - 63. DB - 79. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3753.

BACKGROUND(CONC)	30.	0.	0.03	0.		
SAMPLE(CONC)	4790.	161.	1.66	333.		
MASS EMISSIONS(GMS)	67.67	4.62	737.20	15.69	14.66	
MASS EMISSIONS(GM/MI)	43.66	2.98	475.61	10.12	9.46	14.34

45 MPH

BARO - 29.54 WB - 62. DB - 79. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3751.

BACKGROUND(CONC)	70.	4.	0.04	0.		
SAMPLE(CONC)	6760.	532.	2.99	783.		
MASS EMISSIONS(GMS)	95.24	15.16	1334.56	36.86	33.77	
MASS EMISSIONS(GM/MI)	40.98	6.52	574.25	15.86	14.53	12.42

60 MPH

BARO - 29.54 WB - 62. DB - 78. PIN - 40.10 V/REV - .2815 TEMP - 110. REVS - 3750.

BACKGROUND(CONC)	30.	0.	0.03	0.		
SAMPLE(CONC)	2650.	2166.	5.03	1313.		
MASS EMISSIONS(GMS)	37.35	62.63	2258.44	61.80	57.02	
MASS EMISSIONS(GM/MI)	12.05	20.20	728.53	19.93	18.39	11.12

MOD(BAG)

BARO - 29.55 WB - 62. DB - 77. PIN - 40.10 V/REV - .2816 TEMP - 111. REVS - 21852.

BACKGROUND(CONC)	21.	0.	0.05	0.		
SAMPLE(CONC)	2346.	4740.	3.27	523.		
MASS EMISSIONS(GMS)	192.58	790.56	8484.71	143.29	133.15	
MASS EMISSIONS(GM/MI)	19.67	80.76	866.76	14.64	13.60	8.40

VEHICLE - 0016   RUN NO. - 28   DATE - 77/10/22   SITE - LIVONIA

AA 1 a

BARO - 29.58 WB - 67. DB - 80. PIN - 40.70 V/REV - .2813 TEMP - 110. REVS - 36625.

BACKGROUND(CONC)	27.	13.	0.12	0.		
SAMPLE(CONC)	1830.	551.	1.32	166.		
MASS EMISSIONS(GMS)	250.11	150.84	5337.51	76.24	77.40	
MASS EMISSIONS(GM/MI)	44.94	27.10	959.12	13.70	13.91	7.76

AA 1 b   Inertia - 8500

BARO - 29.58 WB - 67. DB - 80. PIN - 40.30 V/REV - .2814 TEMP - 110. REVS - 36641.

BACKGROUND(CONC)	24.	11.	0.11	1.		
SAMPLE(CONC)	1887.	623.	1.39	180.		
MASS EMISSIONS(GMS)	258.88	171.81	5697.94	82.42	83.68	
MASS EMISSIONS(GM/MI)	46.52	30.87	1022.89	14.81	15.04	7.28

VEHICLE - 0016   RUN NO. - 28   DATE - 77/10/24   SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.55 WB - 62. DB - 77. PIN - 40.10 V/REV - .2816 TEMP - 111. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	883.	554.	0.55	6.		
	MASS (GMS)	0.6922	0.8766	13.76	0.0208	0.0193	
	MASS (GM/MI)	4.15	5.26	82.52	0.12	0.12	85.38
MODE 2	SAMPLE(CONC)	2024.	8435.	3.33	350.		
	MASS (GMS)	1.9035	16.0169	99.34	1.0917	1.0145	
	MASS (GM/MI)	31.62	266.06	1650.09	18.14	16.85	4.09
MODE 3	SAMPLE(CONC)	3158.	2109.	2.04	350.		
	MASS (GMS)	3.7127	5.0059	76.14	1.3647	1.2681	
	MASS (GM/MI)	29.70	40.05	609.11	10.92	10.15	11.56
MODE 4	SAMPLE(CONC)	1981.	858.	0.48	61.		
	MASS (GMS)	2.4845	2.1723	19.23	0.2537	0.2358	
	MASS (GM/MI)	33.53	29.32	259.56	3.42	3.18	21.54
MODE 5	SAMPLE(CONC)	1296.	513.	0.77	20.		
	MASS (GMS)	1.0154	0.3118	19.25	0.0520	0.0483	
	MASS (GM/MI)	6.09	4.87	115.51	0.31	0.29	62.29
MODE 6	SAMPLE(CONC)	1799.	1286.	1.77	27?.		
	MASS (GMS)	1.1282	1.6305	35.20	0.5615	0.5217	
	MASS (GM/MI)	56.13	81.12	1751.04	27.93	25.96	4.52
MODE 7	SAMPLE(CONC)	2704.	771.	1.05	165.		
	MASS (GMS)	3.1792	1.3300	39.02	0.6434	0.5978	
	MASS (GM/MI)	59.87	29.28	624.34	10.29	9.57	15.67
MODE 8	SAMPLE(CONC)	1942.	1190.	3.08	544.		
	MASS (GMS)	1.6746	2.0713	84.39	1.8414	1.7111	
	MASS (GM/MI)	23.75	29.36	1197.00	26.12	24.27	6.73
MODE 9	SAMPLE(CONC)	4152.	514.	2.24	441.		
	MASS (GMS)	4.8816	1.2200	83.62	1.7195	1.5978	
	MASS (GM/MI)	39.05	9.76	668.99	13.76	12.78	10.98
MODE 10	SAMPLE(CONC)	1686.	2196.	4.80	1014.		
	MASS (GMS)	1.9218	4.5215	155.27	3.4265	3.1841	
	MASS (GM/MI)	14.13	33.25	1141.69	25.20	23.41	7.16
MODE 11	SAMPLE(CONC)	4781.	955.	3.55	865.		
	MASS (GMS)	5.6201	2.2666	132.35	3.3727	3.1341	
	MASS (GM/MI)	29.97	12.09	705.85	17.99	16.72	10.82
MODE 12	SAMPLE(CONC)	2738.	511.	0.61	136.		
	MASS (GMS)	2.5750	0.9703	24.32	0.3306	0.3073	
	MASS (GM/MI)	20.31	7.65	191.80	2.61	2.42	33.09
MODE 13	SAMPLE(CONC)	4727.	811.	1.73	356.		
	MASS (GMS)	5.5568	1.9250	64.53	1.3831	1.2899	
	MASS (GM/MI)	44.45	15.40	516.22	11.10	10.32	13.02
MODE 14	SAMPLE(CONC)	2619.	22312.	8.03	1192.		
	MASS (GMS)	3.4889	60.0206	339.68	5.2674	4.8948	
	MASS (GM/MI)	16.13	277.49	1570.41	24.35	22.63	4.31

VEHICLE - 0016 RUN NO. - 28 DATE - 77/10/24 SITE - LIVONIA

MODE 15	SAMPLE(CONC)	2245.	7341.	5.92	1429.		
	MASS (GMS)	2.6391	17.4245	220.82	5.5718	5.1776	
	MASS (GM/MI)	10.56	69.70	883.29	22.29	20.71	8.65
MODE 16	SAMPLE(CONC)	3261.	3154.	2.17	212.		
	MASS (GMS)	3.0674	5.9890	64.82	0.6613	0.6145	
	MASS (GM/MI)	17.88	34.90	377.74	3.85	3.58	18.14
MODE 17	SAMPLE(CONC)	7048.	1901.	3.27	840.		
	MASS (GMS)	8.2854	4.5122	121.90	3.2752	3.0435	
	MASS (GM/MI)	44.19	24.06	650.13	17.47	16.23	10.72
MODE 18	SAMPLE(CONC)	2062.	7990.	6.87	1381.		
	MASS (GMS)	2.2630	17.7006	239.33	5.0257	4.6701	
	MASS (GM/MI)	11.08	86.64	1171.45	24.60	22.86	6.61
MODE 19	SAMPLE(CONC)	1809.	4897.	6.33	1498.		
	MASS (GMS)	2.2685	12.3983	251.89	6.2302	5.7895	
	MASS (GM/MI)	8.51	46.49	944.46	23.36	21.71	8.50
MODE 20	SAMPLE(CONC)	2509.	1481.	1.46	186.		
	MASS (GMS)	5.8993	7.0305	108.78	1.4505	1.3478	
	MASS (GM/MI)	17.52	20.88	323.08	4.31	4.00	21.57
MODE 21	SAMPLE(CONC)	2133.	1390.	0.91	69.		
	MASS (GMS)	2.5077	3.2993	34.15	0.2690	0.2500	
	MASS (GM/MI)	40.12	52.79	546.42	4.30	4.00	11.73
MODE 22	SAMPLE(CONC)	1690.	18080.	7.12	974.		
	MASS (GMS)	3.4444	74.3849	460.94	6.5827	6.1170	
	MASS (GM/MI)	10.98	237.20	1469.82	20.99	19.51	4.73
MODE 23	SAMPLE(CONC)	1587.	4818.	5.78	1473.		
	MASS (GMS)	1.8659	11.4359	215.91	5.7434	5.3370	
	MASS (GM/MI)	7.46	45.74	863.63	22.97	21.35	9.25
MODE 24	SAMPLE(CONC)	1720.	1854.	1.24	91.		
	MASS (GMS)	2.8302	6.1609	64.60	0.4967	0.4616	
	MASS (GM/MI)	14.34	31.23	327.41	2.52	2.34	21.03
MODE 25	SAMPLE(CONC)	1253.	1664.	0.62	12.		
	MASS (GMS)	0.9817	2.6321	15.52	0.0312	0.0290	
	MASS (GM/MI)	5.89	15.80	93.09	0.19	0.17	64.98
MODE 26	SAMPLE(CONC)	1402.	14141.	6.25	914.		
	MASS (GMS)	3.5169	71.6049	497.64	7.6027	7.0648	
	MASS (GM/MI)	10.62	216.13	1502.09	22.95	21.32	4.73
MODE 27	SAMPLE(CONC)	1945.	4987.	5.75	1442.		
	MASS (GMS)	2.2868	11.8371	214.79	5.6225	5.2247	
	MASS (GM/MI)	9.15	47.35	859.16	22.49	20.90	9.22
MODE 28	SAMPLE(CONC)	2781.	2078.	2.05	345.		
	MASS (GMS)	5.0132	7.5629	117.31	2.0626	1.9167	
	MASS (GM/MI)	16.74	25.26	391.82	6.89	6.40	18.31

VEHICLE - 0016 RUN NO. - 28 DATE - 77/10/24 SITE - LIVONIA

MODE 29	SAMPLE(CONC)	3690.	1195.	1.40	200.		
	MASS (GMS)	4.3381	2.8364	52.15	0.7798	0.7246	
	MASS (GM/MI)	34.70	22.69	417.24	6.24	5.80	15.77
MODE 30	SAMPLE(CONC)	2554.	729.	0.82	122.		
	MASS (GMS)	1.8015	1.0382	18.47	0.2854	0.2652	
	MASS (GM/MI)	31.11	17.93	318.92	4.93	4.58	19.91
MODE 31	SAMPLE(CONC)	1882.	756.	0.77	52.		
	MASS (GMS)	2.2122	1.7944	28.89	0.2028	0.1884	
	MASS (GM/MI)	35.40	28.71	462.30	3.24	3.01	14.32
MODE 32	SAMPLE(CONC)	1708.	373.	0.51	82.		
	MASS (GMS)	1.0711	0.4722	10.21	0.1705	0.1585	
	MASS (GM/MI)	61.91	27.29	590.20	9.86	9.16	10.70
MODE 33	SAMPLE(CONC)	1104.	650.	0.69	28.		
	MASS (GMS)	0.8656	1.0286	17.26	0.0728	0.0676	
	MASS (GM/MI)	5.19	6.17	103.52	0.44	0.41	68.44
MODE 34	SAMPLE(CONC)	1331.	9338.	4.31	669.		
	MASS (GMS)	2.2958	32.5080	235.97	3.8258	3.5551	
	MASS (GM/MI)	13.05	184.81	1341.51	21.75	20.21	5.30
MODE 35	SAMPLE(CONC)	4167.	1551.	3.78	910.		
	MASS (GMS)	4.8987	3.6814	140.96	3.5462	3.2972	
	MASS (GM/MI)	26.13	19.63	751.80	18.92	17.58	10.25
MODE 36	SAMPLE(CONC)	3181.	1031.	1.31	135.		
	MASS (GMS)	3.9887	2.6103	52.02	0.5615	0.5217	
	MASS (GM/MI)	28.65	18.75	373.74	4.03	3.75	17.96
MODE 37	SAMPLE(CONC)	1690.	753.	0.75	39.		
	MASS (GMS)	1.9864	1.7873	28.14	0.1521	0.1413	
	MASS (GM/MI)	31.78	28.60	450.27	2.43	2.26	14.89
MODE 38	SAMPLE(CONC)	1700.	9162.	4.54	579.		
	MASS (GMS)	2.3981	26.0961	203.41	2.7091	2.5174	
	MASS (GM/MI)	15.69	170.79	1331.23	17.73	16.48	5.38
MODE 39	SAMPLE(CONC)	3974.	2481.	3.62	862.		
	MASS (GMS)	4.6716	5.8889	134.98	3.3610	3.1232	
	MASS (GM/MI)	24.92	31.41	719.89	17.93	16.66	10.46
MODE 40	SAMPLE(CONC)	2917.	1082.	0.82	113.		
	MASS (GMS)	4.3438	3.2531	39.00	0.5581	0.5186	
	MASS (GM/MI)	33.31	24.95	299.05	4.28	3.96	19.99
MODE 41	SAMPLE(CONC)	1287.	774.	0.56	30.		
	MASS (GMS)	1.0090	1.2243	16.51	0.0780	0.0725	
	MASS (GM/MI)	6.05	7.35	99.04	0.47	0.43	68.39
MODE 42	SAMPLE(CONC)	1830.	20156.	7.37	1107.		
	MASS (GMS)	3.5857	79.7365	456.25	7.1938	6.6849	
	MASS (GM/MI)	13.51	300.44	1726.63	27.11	25.19	3.96

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MODE 43	SAMPLE(CONC)	2336.	6299.	6.50	1554.		
	MASS (GMS)	2.7458	14.9512	242.54	6.0592	5.6305	
	MASS (GM/MI)	10.98	59.80	970.16	24.24	22.52	8.06
MODE 44	SAMPLE(CONC)	2522.	1860.	1.42	182.		
	MASS (GMS)	5.5345	8.2411	98.74	1.3247	1.2309	
	MASS (GM/MI)	21.01	31.29	374.87	5.03	4.67	18.09
MODE 45	SAMPLE(CONC)	1314.	1411.	0.70	16.		
	MASS (GMS)	1.0295	2.2328	17.51	0.0416	0.0386	
	MASS (GM/MI)	6.18	13.39	105.07	0.25	0.23	60.91
MODE 46	SAMPLE(CONC)	1409.	2841.	3.02	515.		
	MASS (GMS)	1.6570	6.7433	112.84	2.0080	1.8660	
	MASS (GM/MI)	22.48	91.50	1531.11	27.25	25.32	5.08
MODE 47	SAMPLE(CONC)	2824.	1224.	2.16	412.		
	MASS (GMS)	3.3201	2.9053	80.62	1.6064	1.4928	
	MASS (GM/MI)	26.56	23.24	644.94	12.85	11.94	11.59
MODE 48	SAMPLE(CONC)	2467.	8914.	5.03	860.		
	MASS (GMS)	4.8332	35.2635	313.13	5.5887	5.1933	
	MASS (GM/MI)	15.42	112.52	999.13	17.83	16.57	7.25
MODE 49	SAMPLE(CONC)	1718.	5023.	6.90	1554.		
	MASS (GMS)	2.1543	12.7173	274.67	6.4631	6.0059	
	MASS (GM/MI)	8.08	47.68	1029.87	24.23	22.52	7.85
MODE 50	SAMPLE(CONC)	2210.	2124.	2.48	437.		
	MASS (GMS)	3.1173	6.0498	111.13	2.0447	1.9000	
	MASS (GM/MI)	13.20	25.61	470.51	8.66	8.04	16.06
MODE 51	SAMPLE(CONC)	3396.	1347.	1.29	150.		
	MASS (GMS)	4.2584	3.4104	51.23	0.6239	0.5797	
	MASS (GM/MI)	31.95	25.58	384.35	4.68	4.35	16.88
MODE 52	SAMPLE(CONC)	2651.	675.	0.84	107.		
	MASS (GMS)	2.0777	1.0681	21.02	0.2781	0.2585	
	MASS (GM/MI)	46.79	24.06	473.36	6.26	5.82	13.46
MODE 53	SAMPLE(CONC)	1678.	686.	0.62	35.		
	MASS (GMS)	1.3155	1.0855	15.51	0.0910	0.0845	
	MASS (GM/MI)	7.89	6.51	93.06	0.55	0.51	69.16
MODE 54	SAMPLE(CONC)	1294.	9497.	5.13	624.		
	MASS (GMS)	3.8532	57.1061	485.42	8.1392	7.5634	
	MASS (GM/MI)	9.61	142.44	1210.84	20.30	18.87	6.06
MODE 55	SAMPLE(CONC)	1315.	4141.	6.22	1541.		
	MASS (GMS)	1.5455	9.3290	232.01	6.0085	5.5834	
	MASS (GM/MI)	6.18	39.32	928.02	24.03	22.33	8.79
MODE 56	SAMPLE(CONC)	2670.	1351.	1.88	339.		
	MASS (GMS)	7.3232	7.4823	163.63	3.0842	2.8660	
	MASS (GM/MI)	22.24	22.72	496.90	9.37	8.70	14.72

VEHICLE - 0016 RUN NO. - 28 DATE - 77/10/24 SITE - LIVONIA

MODE 57	SAMPLE(CONC)	1147.	504.	0.63	13.		
	MASS (GMS)	0.8992	0.7975	15.76	0.0338	0.0314	
	MASS (GM/MI)	5.39	4.78	94.52	0.20	0.19	74.49
MODE 58	SAMPLE(CONC)	1387.	1872.	2.34	421.		
	MASS (GMS)	1.9571	5.3320	104.82	1.9698	1.8305	
	MASS (GM/MI)	22.09	60.18	1183.09	22.23	20.66	6.59
MODE 59	SAMPLE(CONC)	2502.	814.	1.99	416.		
	MASS (GMS)	2.9411	1.9321	74.24	1.6220	1.5073	
	MASS (GM/MI)	23.53	15.46	593.91	12.98	12.06	12.81
MODE 60	SAMPLE(CONC)	3094.	14798.	5.30	722.		
	MASS (GMS)	5.0926	49.1740	276.79	3.9412	3.6624	
	MASS (GM/MI)	19.59	189.20	1064.99	15.16	14.09	6.23
MODE 61	SAMPLE(CONC)	1641.	10028.	6.62	1394.		
	MASS (GMS)	1.9295	23.8023	247.06	5.4353	5.0508	
	MASS (GM/MI)	7.72	95.21	988.31	21.74	20.20	7.64
MODE 62	SAMPLE(CONC)	2112.	2208.	2.80	522.		
	MASS (GMS)	2.3175	4.8915	97.63	1.8996	1.7652	
	MASS (GM/MI)	12.78	26.98	538.49	10.48	9.74	14.26
MODE 63	SAMPLE(CONC)	2903.	1269.	1.10	115.		
	MASS (GMS)	3.4134	3.0121	40.90	0.4484	0.4167	
	MASS (GM/MI)	27.31	24.10	327.24	3.59	3.33	19.65
MODE 64	SAMPLE(CONC)	2855.	675.	0.77	126.		
	MASS (GMS)	2.9087	1.3865	25.05	0.4258	0.3957	
	MASS (GM/MI)	49.13	23.46	423.18	7.19	6.68	14.41
MODE 65	SAMPLE(CONC)	1367.	863.	0.67	26.		
	MASS (GMS)	1.2861	1.6387	20.11	0.0811	0.0754	
	MASS (GM/MI)	6.43	8.19	100.57	0.41	0.38	66.31
CALC TOTAL	SAMPLE(CONC)	2344.	4679.	3.19	565.		
	MASS (GMS)	193.6460	780.3801	8379.35	154.7966	143.8451	
	MASS (GM/MI)	19.78	79.72	856.00	15.81	14.69	8.50

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SITE -        LIVONIA
VEHICLE - 0017     RUN NO. -   30     DATE - 77/10/29      AHP - 25.1     INERTIA - 7000.

                                            HC        CO       CO2       NOX     NOXC       MPG

1975 FTP
    CLD TRAN
    BARO - 29.56   WB - 64.  DB - 79.  PIN - 41.05   V/REV - .2811   TEMP - 110.  REVS - 10652.
         BACKGROUND(CONC)                  12.       24.      0.15       3.
         SAMPLE(CONC)                    1152.     9899.      2.94     154.

         MASS EMISSIONS(GMS)            46.81    816.66   3684.76    21.98    20.98
    CLD STAB
    BARO - 29.56   WB - 64.  DB - 80.  PIN - 41.70   V/REV - .2808   TEMP - 111.  REVS - 18038.
         BACKGROUND(CONC)                  12.        0.      0.12       1.
         SAMPLE(CONC)                     411.     4996.      1.60      79.

         MASS EMISSIONS(GMS)            27.15    683.09   3223.55    17.55    16.63
    HOT TRAN
    BARO - 29.56   WB - 65.  DB - 80.  PIN - 41.70   V/REV - .2808   TEMP - 111.  REVS - 10505.
         BACKGROUND(CONC)                  12.        0.      0.10       1.
         SAMPLE(CONC)                     728.     6714.      2.58     207.

         MASS EMISSIONS(GMS)            28.36    534.62   3136.65    26.98    26.13
    COMPOSIT
         MASS EMISSIONS(GM/MI)           8.46    176.53    879.45     5.65     5.41      7.48
  0 MPH
    BARO - 29.55   WB - 61.  DB - 76.  PIN - 41.10   V/REV - .2811   TEMP - 111.  REVS -  3745.
         BACKGROUND(CONC)                  10.        0.      0.06       0.
         SAMPLE(CONC)                     269.     4232.      0.56       3.

         MASS EMISSIONS(GMS)             3.66    120.42    225.76     0.14     0.13
         MASS EMISSIONS(GM/MI)           1.18     38.84     72.83     0.05     0.04     64.50
  5 MPH
    BARO - 29.55   WB - 61.  DB - 76.  PIN - 41.10   V/REV - .2811   TEMP - 111.  REVS -  3742.
         BACKGROUND(CONC)                  10.        0.      0.05       0.
         SAMPLE(CONC)                     284.     4485.      0.71       4.

         MASS EMISSIONS(GMS)             2.74    127.51    297.06     0.19     0.17
         MASS EMISSIONS(GM/MI)          10.64    494.24   1151.41     0.72     0.66      4.52
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    VEHICLE - 0017     RUN NO. -   30      DATE - 77/10/29     SITE -        LIVONIA

 10 MPH
    BARO - 29.55   WB - 61.  CB - 76.  PIN - 41.10   V/REV - .2811   TEMP - 111.  REVS -  3749.
          BACKGROUND(CONC)              10.       0.      0.05      0.
          SAMPLE(CONC)                 190.    3979.      0.79      5.

          MASS EMISSIONS(GMS)          2.55   113.34   333.50     0.23      0.21
          MASS EMISSIONS(GM/MI)        4.94   219.22   645.07     0.45      0.42      8.83
 15 MPH
    BARO - 29.55   WB - 60.  CB - 75.  PIN - 41.10   V/REV - .2811   TEMP - 111.  REVS -  3749.
          BACKGROUND(CONC)              10.       0.      0.05      0.
          SAMPLE(CONC)                 209.    3727.      1.07      8.

          MASS EMISSIONS(GMS)          2.82   106.16   459.36     0.37      0.34
          MASS EMISSIONS(GM/MI)        3.64   136.98   592.72     0.48      0.44     10.83
 30 MPH
    BARO - 29.55   WB - 61.  CB - 76.  PIN - 41.10   V/REV - .2811   TEMP - 111.  REVS -  3748.
          BACKGROUND(CONC)              10.       0.      0.04      0.
          SAMPLE(CONC)                 393.    2630.      1.75    118.

          MASS EMISSIONS(GMS)          5.42    74.89   768.54     5.52      5.06
          MASS EMISSIONS(GM/MI)        3.50    48.32   495.83     3.56      3.27     15.23
 45 MPH
    BARO - 29.55   WB - 62.  CB - 77.  PIN - 41.10   V/REV - .2811   TEMP - 110.  REVS -  3749.
          BACKGROUND(CONC)              10.       0.      0.04      1.
          SAMPLE(CONC)                 585.    4231.      3.23    425.

          MASS EMISSIONS(GMS)          8.17   120.73  1436.45    19.89     18.48
          MASS EMISSIONS(GM/MI)        3.51    51.95   618.09     8.56      7.95     12.49
 60 MPH
    BARO - 29.53   WB - 63.  CB - 78.  PIN - 41.10   V/REV - .2811   TEMP - 111.  REVS -  3750.
          BACKGROUND(CONC)              17.      48.      0.06      1.
          SAMPLE(CONC)                 607.    5511.      5.62    872.

          MASS EMISSIONS(GMS)          8.43   156.17  2501.91    40.76     38.39
          MASS EMISSIONS(GM/MI)        2.72    50.38   807.07    13.15     12.38      9.92
MOD(BAG)
    BARO - 29.51   WB - 62.  CB - 79.  PIN - 42.10   V/REV - .2605   TEMP - 110.  REVS - 21904.
          BACKGROUND(CONC)              27.     276.      0.11      7.
          SAMPLE(CONC)                 762.   10891.      3.28    283.

          MASS EMISSIONS(GMS)         61.04  1773.50  8352.98    75.73     69.40
          MASS EMISSIONS(GM/MI)        6.24   181.17   853.30     7.74      7.09      7.67
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VEHICLE - 0017   RUN NO. - 30   DATE - 77/10/29   SITE - LIVONIA

AA 1 a

BARO - 29.51 WB - 61. DB - 78. PIN - 41.80 V/REV - .2807 TEMP - 111. REVS - 36656.

BACKGROUND(CONC)	10.	24.	0.04	0.		
SAMPLE(CONC)	338.	4715.	1.20	49.		
MASS EMISSIONS(GMS)	45.20	1300.96	5078.13	22.31	20.19	
MASS EMISSIONS(GM/MI)	8.12	233.77	912.51	4.01	3.63	6.80

AA 1 b   Inertia - 8000

BARO - 29.50 WB - 64. DB - 80. PIN - 42.00 V/REV - .2806 TEMP - 111. REVS - 36638.

BACKGROUND(CONC)	10.	0.	0.06	0.		
SAMPLE(CONC)	377.	5279.	1.25	49.		
MASS EMISSIONS(GMS)	50.47	1460.47	5212.83	22.27	21.12	
MASS EMISSIONS(GM/MI)	9.07	262.44	936.72	4.00	3.79	6.44

VEHICLE - 0017 RUN NO. - 30 DATE - 77/10/29 SITE - LIVONIA

SURVEILLANCE DRIVING SEQUENCE - ACCEL/DECEL MODES (EVEN NO.) AND STEADY STATE MODES (ODD NO.)
BARO - 29.51 WB - 62. DB - 79. PIN - 42.10 V/REV - .2805 TEMP - 110. REVS - MOD(BAG) VALUE

MODE 1	SAMPLE(CONC)	149.	3328.	0.30	0.		
	MASS (GMS)	0.1156	5.2303	7.33	0.0	0.0	
	MASS (GM/MI)	0.69	31.38	43.94	0.0	0.0	92.99
MODE 2	SAMPLE(CONC)	844.	15398.	2.81	236.		
	MASS (GMS)	0.7885	29.0397	83.26	0.7323	0.6710	
	MASS (GM/MI)	13.10	482.39	1382.99	12.16	11.15	4.07
MODE 3	SAMPLE(CONC)	410.	5267.	2.36	111.		
	MASS (GMS)	0.4789	12.4155	87.68	0.4283	0.3924	
	MASS (GM/MI)	3.83	99.32	701.42	3.43	3.14	10.21
MODE 4	SAMPLE(CONC)	284.	2300.	0.85	37.		
	MASS (GMS)	0.3543	5.7846	33.62	0.1514	0.1387	
	MASS (GM/MI)	4.78	78.07	453.70	2.04	1.87	15.00
MODE 5	SAMPLE(CONC)	292.	4627.	0.32	1.		
	MASS (GMS)	0.2275	7.2725	12.84	0.0015	0.0014	
	MASS (GM/MI)	1.36	43.63	77.00	0.01	0.01	59.21
MODE 6	SAMPLE(CONC)	368.	6328.	1.09	23.		
	MASS (GMS)	0.2290	7.9556	21.46	0.0475	0.0435	
	MASS (GM/MI)	11.39	393.80	1067.71	2.36	2.16	5.14
MODE 7	SAMPLE(CONC)	266.	4390.	1.23	36.		
	MASS (GMS)	0.3102	10.3478	45.78	0.1392	0.1276	
	MASS (GM/MI)	4.96	165.57	732.54	2.23	2.04	8.80
MODE 8	SAMPLE(CONC)	564.	7313.	2.26	240.		
	MASS (GMS)	0.4832	12.6422	61.33	0.6806	0.6236	
	MASS (GM/MI)	6.85	179.32	869.94	9.65	8.85	7.56
MODE 9	SAMPLE(CONC)	415.	4499.	2.43	138.		
	MASS (GMS)	0.4847	10.6048	90.27	0.5328	0.4882	
	MASS (GM/MI)	3.88	84.84	722.16	4.26	3.91	10.23
MODE 10	SAMPLE(CONC)	745.	9039.	4.14	527.		
	MASS (GMS)	0.7544	18.4678	133.11	1.7678	1.6199	
	MASS (GM/MI)	5.55	135.79	978.73	13.00	11.91	7.34
MODE 11	SAMPLE(CONC)	638.	6480.	4.12	486.		
	MASS (GMS)	0.7446	15.2768	152.76	1.8804	1.7231	
	MASS (GM/MI)	3.97	81.48	814.70	10.03	9.19	9.29
MODE 12	SAMPLE(CONC)	359.	2176.	2.05	179.		
	MASS (GMS)	0.3352	4.1034	60.80	0.5554	0.5089	
	MASS (GM/MI)	2.64	32.36	479.46	4.38	4.01	16.48
MODE 13	SAMPLE(CONC)	1170.	4942.	1.15	90.		
	MASS (GMS)	1.3659	11.6495	42.46	0.3435	0.3193	
	MASS (GM/MI)	10.93	93.20	339.71	2.79	2.55	17.04
MODE 14	SAMPLE(CONC)	1567.	22205.	5.22	468.		
	MASS (GMS)	2.0742	59.3249	219.45	2.1418	1.9626	
	MASS (GM/MI)	9.59	274.27	1014.55	9.90	9.07	6.01

MODE 15	SAMPLE(CONC)	1370.	35075.	8.07	661.		
	MASS (GMS)	1.5992	82.6846	299.04	2.5602	2.3461	
	MASS (GM/MI)	6.40	330.74	1196.18	10.24	9.38	5.11
MODE 16	SAMPLE(CONC)	428.	6550.	3.45	221.		
	MASS (GMS)	0.3994	12.3518	102.47	0.6853	0.6280	
	MASS (GM/MI)	2.33	71.98	597.13	3.99	3.66	12.37
MODE 17	SAMPLE(CONC)	1364.	4914.	2.62	396.		
	MASS (GMS)	1.5923	11.5843	97.04	1.5325	1.4043	
	MASS (GM/MI)	8.49	61.78	517.54	8.17	7.49	13.83
MODE 18	SAMPLE(CONC)	951.	11322.	5.85	933.		
	MASS (GMS)	1.0368	24.9113	202.37	3.3712	3.0892	
	MASS (GM/MI)	5.07	121.93	990.57	16.50	15.12	7.41
MODE 19	SAMPLE(CONC)	765.	11592.	7.83	828.		
	MASS (GMS)	0.9532	29.1481	309.83	3.4192	3.1332	
	MASS (GM/MI)	3.57	109.29	1161.71	12.82	11.75	6.60
MODE 20	SAMPLE(CONC)	668.	2778.	2.18	213.		
	MASS (GMS)	1.5607	13.0994	161.76	1.6526	1.5144	
	MASS (GM/MI)	4.64	38.91	480.44	4.91	4.50	15.96
MODE 21	SAMPLE(CONC)	387.	4896.	0.71	3.		
	MASS (GMS)	0.4516	11.5421	26.37	0.0105	0.0096	
	MASS (GM/MI)	7.23	184.67	421.67	0.17	0.15	12.08
MODE 22	SAMPLE(CONC)	1681.	35272.	5.57	404.		
	MASS (GMS)	3.4016	144.1253	357.70	2.7108	2.4841	
	MASS (GM/MI)	10.85	459.58	1140.62	8.64	7.92	4.68
MODE 23	SAMPLE(CONC)	782.	13596.	7.44	893.		
	MASS (GMS)	0.9131	32.0509	275.95	3.4568	3.1677	
	MASS (GM/MI)	3.65	128.20	1103.79	13.83	12.67	6.74
MODE 24	SAMPLE(CONC)	845.	4359.	2.13	137.		
	MASS (GMS)	1.3806	14.3860	110.69	0.7452	0.6828	
	MASS (GM/MI)	7.00	72.91	561.04	3.78	3.46	12.72
MODE 25	SAMPLE(CONC)	939.	3527.	0.29	4.		
	MASS (GMS)	0.7307	5.5427	7.10	0.0115	0.0105	
	MASS (GM/MI)	4.38	33.25	42.57	0.07	0.06	81.64
MODE 26	SAMPLE(CONC)	1369.	28254.	4.51	337.		
	MASS (GMS)	3.4105	142.0936	356.64	2.7835	2.5507	
	MASS (GM/MI)	10.29	428.90	1077.10	8.40	7.70	4.98
MODE 27	SAMPLE(CONC)	930.	14694.	7.45	731.		
	MASS (GMS)	1.0862	34.6367	276.36	3.0621	2.8060	
	MASS (GM/MI)	4.34	138.55	1105.44	12.25	11.22	6.64
MODE 28	SAMPLE(CONC)	450.	4045.	3.22	379.		
	MASS (GMS)	0.8049	14.6202	183.10	2.2503	2.0620	
	MASS (GM/MI)	2.69	48.83	611.55	7.52	6.89	12.74

MODE 29	SAMPLE(CONC)	1153.	4606.	1.00	53.		
	MASS (GMS)	1.3468	10.8583	37.22	0.2048	0.1877	
	MASS (GM/MI)	10.77	86.87	297.77	1.64	1.50	18.95
MODE 30	SAMPLE(CONC)	393.	1811.	1.24	102.		
	MASS (GMS)	0.2755	2.5611	27.65	0.2366	0.2168	
	MASS (GM/MI)	4.76	44.23	477.55	4.09	3.74	15.79
MODE 31	SAMPLE(CONC)	302.	3518.	0.79	10.		
	MASS (GMS)	0.3522	8.2928	29.31	0.0375	0.0343	
	MASS (GM/MI)	5.63	132.68	469.00	0.60	0.55	12.76
MODE 32	SAMPLE(CONC)	194.	3583.	0.67	5.		
	MASS (GMS)	0.1210	4.5051	13.24	0.0095	0.0087	
	MASS (GM/MI)	7.00	260.41	765.35	0.55	0.50	7.42
MODE 33	SAMPLE(CONC)	156.	3025.	0.54	3.		
	MASS (GMS)	0.1214	4.7546	13.30	0.0065	0.0060	
	MASS (GM/MI)	0.73	28.52	79.78	0.04	0.04	69.93
MODE 34	SAMPLE(CONC)	1082.	20472.	3.27	219.		
	MASS (GMS)	1.8531	70.7834	177.54	1.2431	1.1391	
	MASS (GM/MI)	10.53	402.41	1009.33	7.07	6.48	5.30
MODE 35	SAMPLE(CONC)	744.	10085.	4.05	475.		
	MASS (GMS)	0.8681	23.7733	150.25	1.8384	1.6846	
	MASS (GM/MI)	4.63	126.79	801.35	9.80	8.98	8.74
MODE 36	SAMPLE(CONC)	408.	2890.	2.21	212.		
	MASS (GMS)	0.5086	7.2662	87.47	0.8773	0.8039	
	MASS (GM/MI)	3.65	52.20	628.34	6.30	5.78	12.29
MODE 37	SAMPLE(CONC)	637.	4020.	0.72	6.		
	MASS (GMS)	0.7434	9.4768	26.72	0.0220	0.0202	
	MASS (GM/MI)	11.89	151.63	427.55	0.35	0.32	12.62
MODE 38	SAMPLE(CONC)	683.	9664.	2.95	244.		
	MASS (GMS)	0.9573	27.3387	131.40	1.1345	1.0396	
	MASS (GM/MI)	6.27	178.92	859.93	7.42	6.80	7.64
MODE 39	SAMPLE(CONC)	1172.	25621.	4.36	316.		
	MASS (GMS)	1.3688	60.3996	161.58	1.2226	1.1203	
	MASS (GM/MI)	7.30	322.13	861.75	6.52	5.98	6.38
MODE 40	SAMPLE(CONC)	451.	2647.	1.62	152.		
	MASS (GMS)	0.6672	7.9044	75.92	0.7459	0.6835	
	MASS (GM/MI)	5.12	60.62	582.24	5.72	5.24	12.79
MODE 41	SAMPLE(CONC)	620.	3792.	0.47	5.		
	MASS (GMS)	0.4827	5.9601	11.53	0.0117	0.0107	
	MASS (GM/MI)	2.90	35.75	69.47	0.07	0.06	65.82
MODE 42	SAMPLE(CONC)	1389.	30337.	4.78	344.		
	MASS (GMS)	2.7033	119.1934	295.09	2.2214	2.0356	
	MASS (GM/MI)	10.19	449.11	1111.65	8.37	7.67	4.80

VEHICLE - 0017   RUN NO. - 30   DATE - 77/10/29   SITE - LIVONIA

MODE 43	SAMPLE(CONC)	1562.	27712.	7.52	735.		
	MASS (GMS)	1.8239	65.3275	278.64	2.8481	2.6099	
	MASS (GM/MI)	7.30	261.31	1114.57	11.39	10.44	5.73
MODE 44	SAMPLE(CONC)	774.	5297.	2.44	216.		
	MASS (GMS)	1.6877	23.3086	168.57	1.5583	1.4284	
	MASS (GM/MI)	6.41	88.49	639.98	5.92	5.42	11.10
MODE 45	SAMPLE(CONC)	561.	2250.	0.26	1.		
	MASS (GMS)	0.4370	3.5358	6.31	0.0035	0.0032	
	MASS (GM/MI)	2.62	21.21	37.88	0.02	0.02	111.60
MODE 46	SAMPLE(CONC)	560.	9526.	2.10	209.		
	MASS (GMS)	0.6544	22.4569	77.72	0.8081	0.7405	
	MASS (GM/MI)	8.88	304.71	1054.54	10.96	10.05	5.68
MODE 47	SAMPLE(CONC)	490.	5333.	2.64	149.		
	MASS (GMS)	0.5718	12.5731	97.77	0.5760	0.5278	
	MASS (GM/MI)	4.57	100.59	782.19	4.61	4.22	9.30
MODE 48	SAMPLE(CONC)	851.	9289.	4.18	596.		
	MASS (GMS)	1.6554	36.4956	258.49	3.8451	3.5235	
	MASS (GM/MI)	5.28	116.45	824.78	12.27	11.24	8.66
MODE 49	SAMPLE(CONC)	892.	15560.	7.26	857.		
	MASS (GMS)	1.1110	39.1276	287.24	3.5387	3.2426	
	MASS (GM/MI)	4.17	146.71	1077.00	13.27	12.16	6.72
MODE 50	SAMPLE(CONC)	497.	7652.	4.75	392.		
	MASS (GMS)	0.6969	21.6472	211.15	1.8214	1.6690	
	MASS (GM/MI)	2.95	91.65	893.96	7.71	7.07	8.47
MODE 51	SAMPLE(CONC)	1357.	3891.	0.74	55.		
	MASS (GMS)	1.6898	9.5591	29.32	0.2260	0.2071	
	MASS (GM/MI)	12.68	71.71	219.93	1.70	1.55	23.81
MODE 52	SAMPLE(CONC)	367.	2007.	1.72	90.		
	MASS (GMS)	0.2856	3.1537	42.44	0.2326	0.2131	
	MASS (GM/MI)	6.44	71.03	955.79	5.24	4.80	8.16
MODE 53	SAMPLE(CONC)	248.	2315.	0.65	16.		
	MASS (GMS)	0.1931	3.6387	16.03	0.0453	0.0415	
	MASS (GM/MI)	1.16	21.83	96.15	0.27	0.25	66.17
MODE 54	SAMPLE(CONC)	1181.	20481.	4.13	362.		
	MASS (GMS)	3.4929	122.3154	388.10	3.5546	3.2572	
	MASS (GM/MI)	8.71	305.10	966.08	8.87	8.12	6.02
MODE 55	SAMPLE(CONC)	518.	9035.	8.01	906.		
	MASS (GMS)	0.6050	21.2983	297.11	3.8559	3.5333	
	MASS (GM/MI)	2.42	85.19	1188.42	15.42	14.13	6.67
MODE 56	SAMPLE(CONC)	688.	5694.	3.04	227.		
	MASS (GMS)	1.8724	31.3195	263.06	2.0509	1.8793	
	MASS (GM/MI)	5.69	95.11	796.85	6.23	5.71	9.18

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MODE 57	SAMPLE(CONC)	284.	2990.	0.39	3.		
	MASS (GMS)	0.2208	4.6997	9.56	0.0089	0.0081	
	MASS (GM/MI)	1.32	28.19	57.37	0.05	0.05	83.83
MODE 58	SAMPLE(CONC)	446.	5958.	1.75	171.		
	MASS (GMS)	0.6250	16.8533	77.88	0.7961	0.7295	
	MASS (GM/MI)	7.05	190.22	879.00	8.99	8.23	7.39
MODE 59	SAMPLE(CONC)	470.	6509.	2.51	127.		
	MASS (GMS)	0.5484	15.3447	92.95	0.4908	0.4497	
	MASS (GM/MI)	4.39	122.76	743.60	3.93	3.60	9.34
MODE 60	SAMPLE(CONC)	1024.	12879.	3.11	353.		
	MASS (GMS)	1.6743	42.5038	161.30	1.9159	1.7557	
	MASS (GM/MI)	6.44	163.54	620.61	7.37	6.76	9.38
MODE 61	SAMPLE(CONC)	1413.	35184.	8.37	756.		
	MASS (GMS)	1.6501	82.9427	310.26	2.9287	2.6838	
	MASS (GM/MI)	6.60	331.77	1241.05	11.71	10.74	4.98
MODE 62	SAMPLE(CONC)	469.	8496.	5.47	369.		
	MASS (GMS)	0.5111	18.6925	189.37	1.3350	1.2233	
	MASS (GM/MI)	2.82	103.10	1044.52	7.36	6.75	7.30
MODE 63	SAMPLE(CONC)	1226.	3765.	0.74	31.		
	MASS (GMS)	1.4312	8.8759	27.48	0.1189	0.1090	
	MASS (GM/MI)	11.45	71.01	219.83	0.95	0.87	24.14
MODE 64	SAMPLE(CONC)	359.	2837.	1.50	93.		
	MASS (GMS)	0.3632	5.7959	48.06	0.3122	0.2860	
	MASS (GM/MI)	6.13	97.90	611.88	5.27	4.83	9.01
MODE 65	SAMPLE(CONC)	250.	2957.	0.43	9.		
	MASS (GMS)	0.2333	5.5769	12.67	0.0293	0.0269	
	MASS (GM/MI)	1.17	27.88	63.35	0.15	0.13	80.05
CALC TOTAL	SAMPLE(CONC)	786.	10643.	3.23	295.		
	MASS (GMS)	64.4863	1762.9607	8405.46	80.3620	73.6397	
	MASS (GM/MI)	6.59	180.10	858.66	8.21	7.52	7.63

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO. 460/3-78-004	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Exhaust Emissions From Vehicles in Demand-Responsive Service		5. REPORT DATE March 1978 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) John A. Gunderson		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Olson Laboratories, Inc. 421 East Cerritos Avenue Anaheim, California 92805		10. PROGRAM ELEMENT NO. 11. CONTRACT/GRANT NO. 68-03-2411 Task Order No. 3
12. SPONSORING AGENCY NAME AND ADDRESS Environmental Protection Agency 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 14. SPONSORING AGENCY CODE EPA-ORD
15. SUPPLEMENTARY NOTES		

16. ABSTRACT

This report describes a study performed by Olson Laboratories, Inc. in which 11 1976 and 1977 demand-responsive service vehicles were tested to measure exhaust emissions. Each vehicle was exhaust emission tested using the FTP for Light-Duty Vehicles; the Surveillance Driving Sequence, including steady-state modes; and the AA-1 Urban Bus Cycle. Each vehicle was run at "typical" inertia loads for all test procedures and "fully loaded" for the AA-1 cycle. Emission data collected and reported will be used by the emission factors group of ECTD to estimate emissions inventories for this class of vehicles.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group

18. DISTRIBUTION STATEMENT RELEASE TO PUBLIC	19. SECURITY CLASS *(This Report)* UNCLASSIFIED	21. NO. OF PAGES
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