



Automotive Testing Laboratories, Inc.

A Study of the Effects
of
Fuel Switching
on
Catalyst Equipped Vehicles

Contract No. 68-03-2693
Work Effort No. 4
Including Modification No. 1

for the
Environmental Protection Agency
2565 Plymouth Road
Ann Arbor, Michigan 48105

A Study of the Effects
of
Fuel Switching
on
Catalyst Equipped Vehicles

Contract No. 68-03-2693
Work Effort No. 4
Including Modification No. 1

for the
Environmental Protection Agency
2565 Plymouth Road
Ann Arbor, Michigan 48105

submitted by:

Automotive Testing Laboratories, Inc.
651 Chambers Road, Suite 200
Aurora, Colorado 80011
(303) 343-8939

ABSTRACT

This work effort consisted of a series of emission and fuel economy tests on seven (7) 1979 vehicles designated by the Scope of Work. The objectives of this effort were 1) to assess the effect of operating a catalyst equipped vehicle on commercially available leaded fuel, 2) to evaluate the emission characteristics of the vehicle at a point where gross catalytic poisoning and stabilization had occurred, 3) to examine catalyst rejuvenation efforts, and 4) to examine misfueling and rejuvenation effects on the oxygen sensor for vehicles equipped with a three-way catalyst.

This work effort consisted of a series of engine status, driveability, emission and fuel economy tests on seven (7) 1979 vehicles from the loan vehicle fleet utilized in the Emission Factor program.

Testing was performed in St. Louis, Missouri during the period of May through December, 1979 and, after transport, in East Liberty, Ohio through June, 1980.

The testing program at the St. Louis location consisted of a 1975 Federal Test Procedure, a Federal Short Cycle Test, a Federal Three-Mode Test, a Two-Speed Idle Test and an undiluted exhaust measurement before and after the catalyst at idle and at 50 mph. Testing performed at the East Liberty location was modified to eliminate the Federal Short Cycle Test, to obtain before and after catalyst readings during the Federal Three-Mode Test and the Two-Speed Idle Test and to record temperatures before and after the catalyst for the steady state conditions during idle and 50 mph cruise.

Each of the seven vehicles received a series of baseline tests, mileage accumulation tests using unleaded fuel, catalyst evaluation tests, mileage accumulation tests using leaded fuel and a final series of tests utilizing various combinations of fuel, catalyst status and oxygen sensor status.

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	
1. INTRODUCTION	1-1
2. TECHNICAL DISCUSSION	2-1
2.1 PROGRAM OBJECTIVE	2-1
2.2 PROGRAM DESIGN	2-1
2.3 TEST VEHICLE PROCUREMENT	2-5
2.3.1 Test Vehicle Selection	2-5
2.3.2 Test Vehicle Screening	2-5
2.3.3 Test Vehicle Preconditioning Procedure	2-5
2.4 VEHICLE TEST PLAN	2-6
2.5 VEHICLE TEST FACILITIES AND EQUIPMENT	2-8
2.6 LABORATORY TEST PROCEDURES	2-8
2.6.1 Test Vehicle Preparation Procedures	2-9
2.6.2 Vehicle Preconditioning Procedure	2-9
2.6.3 Federal Test Procedure (Mass Exhaust Emission Test)	2-10
2.6.4 Federal Short Cycle Test	2-11
2.6.5 Federal 3-Mode Test	2-12
2.6.6 Two Speed Idle Test	2-12
2.6.7 Catalyst Test (Steady State)	2-13
2.6.8 Catalyst Skin Temperature Test	2-13
2.6.9 After Test Procedure	2-14
2.6.10 Maladjustment and Disablement Inspection	2-14
2.6.11 Catalyst Bypass Fabrication Procedures	2-14
2.6.12 Special Test Consideration and Procedures	2-15
2.7 DATA PROCESSING PROCEDURES	2-15
2.7.1 Data Collection	2-15

2.7.2	Data Review and Editing	2-16
2.7.3	Calculation of Test Results	2-17
2.7.3.1	Federal Test Procedure Emission Data	2-17
2.7.3.2	Federal Short Cycle	2-17
2.7.3.3	Two Speed Idle Test	2-17
2.7.3.4	Federal 3-Mode Test	2-17
2.7.3.5	Catalyst Test	2-18
3.	LISTINGS OF INDIVIDUAL VEHICLE PARAMETERS	3-1

LIST OF TABLES

Table 1, Summary of Test Vehicles

2-1

LIST OF APPENDICES

Appendix A - Listing of Vehicle Preparatory Driveability Evaluation	A-i
Appendix B - Listing of Vehicle Dynamometer Driveability Evaluation	B-i
Appendix C - Listing of Federal Test Procedure Results by Individual Vehicle	C-i
Appendix D - Listing of Federal Short Cycle Emission Results by Individual Vehicle	D-i
Appendix E - Listing of Federal Three Mode Emission Results by Individual Vehicle	E-i
Appendix F - Listing of Two Speed Idle Emission Results by Individual Vehicle	F-i
Appendix G - Listing of Catalyst Test Emission Results by Individual Vehicle	G-i
Appendix H - Listing of Catalyst Test Temperatures by Individual Vehicle	H-i
Appendix I - Listing of Propane Enrichment Results by Individual Vehicle	I-i
Appendix J - Listing of Leaded Fuel Analyses	J-i
Appendix K - Vehicle Flow Diagrams	K-i

1. INTRODUCTION

The United States Environmental Protection Agency (EPA) is designated under the provisions of the Clean Air Act as having responsibility for the control and prevention of air pollution. In order to fulfill these responsibilities the EPA designs, conducts and promotes surveys and studies of air pollution sources.

National programs to characterize and reduce air pollution from mobile sources are developed and implemented through EPA's Emission Control Technology Division (ECTD). Mobile emission control strategies developed by the ECTD are based, in part, on projections of nationwide motor vehicle emissions. These projections are derived from surveys designed to obtain emission data from representative samples of in-use vehicles. Included in the ECTD's responsibilities is the assessment of various in-use emission control devices.

In March of 1979, the EPA contracted with Automotive Testing Laboratories, Inc. (ATL) to perform a series of emission and fuel economy tests on seven catalyst equipped 1979 vehicles. This series of tests was designed to measure the effects of leaded fuel on emission levels, and to, subsequently, determine the effectiveness of catalyst and oxygen sensor rejuvenation through a return to unleaded fuel.

In addition to emission measurements, the contract also included requirements for measurement of catalyst skin temperatures, driveability evaluations, and engine performance comparisons.

The report describes the design and conduct of the project and presents the results of the test sequences performed.

2. TECHNICAL DISCUSSION

2.1 PROGRAM OBJECTIVES

This work effort was performed to provide information on the various levels of emissions produced through progressive poisoning of catalyst equipped vehicles through the use of commercially available leaded fuel.

Task objectives also included an evaluation of rejuvenation efforts after return to unleaded fuel and an examination of misfueling and rejuvenation effects on the oxygen sensor for vehicles equipped with three-way catalysts.

2.2 PROGRAM DESIGN

Testing was performed on a sample of seven 1979 catalyst equipped vehicles identified in the work effort. These vehicles were selected from the loan vehicle fleet utilized in an ongoing Emission Factor Program in St. Louis, Missouri and each vehicle was to have accumulated between 4,000 and 10,000 miles at the beginning of the project.

Vehicles selected for testing were as follows:

<u>Veh. #</u>	<u>Make</u>	<u>Model</u>	<u>CID</u>	<u>Catalyst</u>	<u>Odometer</u>
9401	Ford	Thunderbird	302	Oxidation	8316
9402	Ford	Thunderbird	302	Oxidation	9287
9403	Oldsmobile	Cutlass	260	Oxidation	6818
9404	Oldsmobile	Cutlass	260	Oxidation	7283
9405	Mercury	Marquis	351	Three-way	4179
9406	Volvo	245DL	130	Three-way	5795
9407	Chevrolet	Monza	151	Three-way	5182

Table 1, Summary of Test Vehicles

Upon arrival at the St. Louis laboratory, each vehicle was examined to insure that no extensive modifications had been performed and that the vehicle was safe to operate. The vehicles were prepared for testing and following a brief driveability evaluation, were placed in soak for a period between 12 and 24 hours.

A Maladjustment/Disablement inspection was performed prior to the initial as-received tests. During this examination each vehicle was inspected for modifications to

the emission control system and maladjustments to basic engine parameters. Disabled and maladjusted components were identified and repaired at this time. Additionally, routine tune-up actions were performed, which included spark plug replacement, oil change, oil and air filter and PVC valve replacement. All vehicles were tuned to manufacturer and emission sticker specifications.

All vehicles received an Emission Component Function Check. During this examination, the performance of each component within the emission control system was evaluated according to procedures specified by the manufacturer. Those components found to be malfunctioning were immediately corrected or replaced.

Each vehicle then received three test sequences conducted to determine the as-received level of emissions and three test sequences with the catalyst replaced with a bypass pipe that simulated the backpressure of the catalyst. This latter series of tests determined the emission levels of the vehicle with a totally ineffective catalyst.

A specific test sequence was performed without modification at designated intervals during the St. Louis phase of the program. The test sequence consisted of a driveability evaluation, engine status and propane enrichment measurements, a 12 to 24 hour soak, a Federal Test Procedure (without evaporative test), a Federal Short Cycle Test, a Federal Three-Mode Test, and a Two Speed Idle Test. In addition to these standard tests, the undiluted exhausts were measured before and after the catalyst at idle and at 50 mph.

For the second series of three baseline tests designed to determine the emission levels of the vehicle with an ineffective catalyst, catalytic converters were removed from each vehicle and replaced with a bypass unit. These units were constructed with baffles to simulate the average backpressure created by a catalyst.

Following the six baseline test sequences, the vehicles were fueled with commercially available leaded fuel. The standard gas caps were replaced with locking gas caps to ensure control of the type of fuel used.

A series of test sequences were then performed on the seven vehicles at approximately one tankful intervals. This progression of testing continued until the catalyst had been "deactivated" as determined jointly by the contractor and a representative of the EPA.

The original work effort included provisions for a final bypass test sequence and for replacement of the catalyst with a test sequence with the new catalyst. The modification to the work effort specifying rejuvenation efforts included a series of bypass and replacement test sequences. Accordingly, as directed by the EPA, those vehicles not having completed the catalyst deterioration phase of the project at the time of the work effort modification did not require these final deterioration test sequences.

During January, 1980, all seven vehicles were transported to the East Liberty, Ohio test facility. In some instances, the deterioration phase of testing was completed prior to transporting, and for those vehicles not having completed this phase, deterioration was concluded at the Ohio location.

After completion of the deterioration phase, and as specified in the modified work effort, several baseline test sequences were conducted.

The test sequence at the Ohio location was modified to include additional catalyst diagnostic type testing. The Federal Short Cycle Test was eliminated and the raw exhausts were measured before and after the catalyst during the Federal Three Mode Test and the Two-Speed Idle Test. Additionally, a pair of thermocouples were installed 1 1/2 inches upstream of each catalyst on both sides of the pipe and another pair of thermocouples were installed 1 1/2 inches downstream of each catalyst on both sides of the pipe. Catalyst skin temperatures were recorded for the steady state conditions during the idle and 50 mph cruise portion of the test sequence.

The testing program was designed to include misfueling and rejuvenation effects on the oxygen sensor for the three-way catalyst equipped vehicles. For these three

vehicles, a series of baseline test sequences were performed immediately following the final deterioration sequence.

The baseline series for three-way catalyst equipped vehicles was:

1. Two (2) test sequences using leaded gasoline, catalyst bypassed, and original O₂ sensor.
2. Two (2) test sequences using unleaded gasoline, catalyst bypassed, and original O₂ sensor.
3. Two (2) test sequences using unleaded gasoline, catalyst bypassed, and new O₂ sensor.
4. One (1) test sequence using unleaded gasoline, original catalyst on, and new O₂ sensor.
5. One (1) test sequence using unleaded gasoline, original catalyst on, and original O₂ sensor.

Four vehicles were equipped with oxidation catalysts only. For these vehicles, the baseline series consisted of a single test sequence using unleaded fuel with the original catalyst in place.

Following the baseline tests, all seven vehicles were subjected to mileage accumulation using unleaded gasoline with test sequences run at approximately one tankful intervals. For the three-way catalyst equipped vehicles, two test sequences were performed at each interval; one sequence with the original poisoned oxygen sensor installed and one with a new oxygen sensor installed. Mileage accumulation was done using the poisoned oxygen sensor.

For the oxidation catalyst equipped vehicles, a single test sequence, using unleaded gasoline with the original catalyst in place, was performed.

Mileage accumulation and test sequences for all seven vehicles continued until at least four full tanks of unleaded gasoline had been consumed, and through consultation with the EPA, it had been determined that no appreciable rejuvenation was occurring.

After completion of the mileage accumulation sequences, the four oxidation catalyst equipped vehicles received a final test sequence using unleaded gasoline with a

new catalyst in place. The three vehicles equipped with three-way catalysts received a final series of test sequences consisting of:

1. One (1) test sequence using unleaded gasoline, catalyst bypassed, and original O₂ sensor.
2. One (1) test sequence using unleaded gasoline, catalyst bypassed, and new O₂ sensor.
3. One (1) test sequence using unleaded gasoline, new catalyst in place, and original O₂ sensor.
4. One (1) test sequence using unleaded gasoline, new catalyst in place, and new O₂ sensor.

2.3 TEST VEHICLE PROCUREMENT

2.3.1 Test Vehicle Selection

The seven vehicles selected for this work effort were procured from the loan vehicle fleet utilized in the FY78 Passenger Car Emission Factor Program which was being conducted in St. Louis, Missouri. This method was selected as being representative of true mileage accumulation for in-use vehicles.

The seven vehicles were designated by year (1979), make and type of catalyst system in the work effort. Selection of actual vehicles to be tested was approved by the EPA.

2.3.2 Test Vehicle Screening

Each selected test vehicle was given a thorough examination for test suitability. This examination was conducted at the St. Louis laboratory. Additionally, a sample of fuel was drawn and tested for lead content.

Final qualification of the seven vehicles for testing was determined by ATL representatives and approved by the EPA.

Table 1 summarizes the test vehicles selected.

2.3.3 Test Vehicle Preconditioning Procedure

Following acceptance into the program, the test vehicles' fuel tanks were drained and then refilled to 40% capacity with Indolene test fuel. As necessary, tire pressures

were adjusted to manufacturers specifications and tire positions were altered to prevent the use of badly worn or snow tires on the dynamometer.

Vehicle performance characteristics were evaluated during a 10 minute driveability sequence conducted immediately after the test preparation procedures. This brief evaluation was used to purge any remaining as-received gasoline from the vehicles' system and to determine any operating problems which might affect subsequent dynamometer tests.

2.4 VEHICLE TEST PLAN

Testing was conducted in accordance with the Test Flow Diagrams included as Appendix K. Specific actions are designated on the charts by rectangles and decision points are designated by diamond symbols.

Three Flow Diagrams are presented.

- 1) Catalyst Deterioration - All Vehicles
- 2) Catalyst Rejuvenation - 3-way
- 3) Catalyst Rejuvenation - Oxidation

The test sequence performed at the St. Louis facility was:

- o A Federal Test Procedure (without evaporative test),
- o A Federal Short Cycle Test,
- o A Federal 3-Mode Test,
- o A Two-Speed Idle Test, and
- o A Catalyst Test.

The Catalyst Test was defined as a measurement of the undiluted exhausts before and after the catalyst at idle and at 50 mph using FTP dynamometer loadings.

The test sequence performed at the East Liberty, Ohio facility was:

- o A Federal Test Procedure (without evaporative test),
- o A Federal 3-Mode Test, with the undiluted exhaust measured before and after the catalyst during each mode,

- o A Two Speed Idle Test with the undiluted exhaust measured before and after the catalyst during each speed,
- o A Catalyst Test, and
- o A Catalyst Skin Temperature Test.

The Catalyst Skin Temperature Test was defined as a measurement of the skin temperatures using two permanently secured thermocouples located 1 1/2 inches before and after the catalyst cones. Temperatures were to be recorded in degrees Fahrenheit at idle and at 50 mph.

Prior to each test sequence at both facility locations, vehicles were given a 10 minute driveability evaluation and soaked for 12 to 24 hours.

Following each test sequence, a procedural review was conducted to assure that exhaust emission tests had been performed as prescribed by the EPA. This review included an examination of dynamometer settings (inertia weight and horsepower), temperature readings and driver's trace tolerances. Other test parameters were also reviewed for mechanical or operational errors. If any problems were determined, the vehicle was again soaked and tested.

After test measurements were performed on the vehicles, including the basic engine status relative to manufacturers settings for idle CO and HC, timing, dwell (if applicable), idle rpm, and propane enrichment rpm gain.

In conjunction with the as-received test sequence, an inspection for engine maladjustments and disablements was conducted to identify vehicle engine parameters and components that were malfunctioning as a result of misadjustments or intentional disabling actions, with particular emphasis on the emission control system. Procedures and specifications for the inspection were conducted in accordance with the appropriate service manual or as specified by the manufacturers representative. Engine settings that were found to be maladjusted were corrected at this time. Disabled vehicle components such as disconnected hoses, lines or wires or loose fittings were also repaired.

All vehicles received a tune-up which included spark plug replacement (if required), oil change, oil and air filter replacement, and a new PCV valve.

Following the as-received test sequences and after resolution of any maladjustment and disablement problems, each vehicles' catalyst was removed and replaced with a bypass unit. The bypass units were equipped with a baffle large enough to simulate normal catalyst backpressure. Three test sequences were performed on each vehicle with the bypass units in place. After completion of these test sequences, the original catalyst was reinstalled and the deterioration phase of the project was initiated.

2.5 VEHICLE TEST FACILITIES AND EQUIPMENT

The ATL test facilities and associated equipment utilized in this work effort were located at 10862 Metro Court, Maryland Heights, Missouri, and at Route 33, Building 40 at TRC, East Liberty, Ohio. Concurrent with the transfer of the seven vehicles to the Ohio facility, the Missouri laboratory was closed.

This work effort was conducted during a period of other ongoing EPA contracts. Accordingly, facility and equipment check procedures were performed prior to the beginning of this effort and periodically rechecked by representatives of the EPA.

2.6 LABORATORY TEST PROCEDURES

Each vehicle received a prescribed sequence of test and inspection procedures during the course of the work effort. These procedures and others associated with the conduct of the program include the following:

- Vehicle Preparation

- Vehicle Preconditioning

- Federal Test Procedure

- Federal Short Cycle

- Federal 3-Mode Test

- Two Speed Idle Test

- Catalyst Test (Steady State)

Catalyst Skin Temperature Test

Maladjustment and Disablement Inspection

Catalyst Bypass Fabrication Procedures

Details on these tests and procedures are presented in the following sections.

2.6.1 Test Vehicle Preparation Procedures

All seven vehicles selected for testing received a uniform series of preparation procedures to maintain standard testing conditions and to avoid possible vehicle malfunctions. Transmission fluid levels were checked and filled if found to be low. Radiators and exhaust systems were also examined for leaks prior to final acceptance into the program. A fuel lead test was performed to establish the amount of lead in the as-received fuel and to provide additional data when evaluating catalyst performance.

Test preparation procedures were performed in the laboratory at a location separate from the soak and emission test areas. Upon acceptance into the program, as-received fuel was drained from the vehicle's tank through a pump system connected to the tank filler neck or to the supply line to the engine. The tank was then refilled to 40% capacity with Indolene clear fuel.

Snow tires and tires found to be severely worn were rotated to prevent their use on the drivewheels. If the front and rear tires could not be exchanged, substitutes were acquired. Tire pressure on the drivewheels was also adjusted to 35 psi for all test vehicles.

2.6.2 Vehicle Preconditioning Procedure

An EPA driveability evaluation was performed prior to each soak period. This evaluation was conducted to purge remaining as-received gasoline in the fuel system and to provide test personnel with adequate advance knowledge of vehicle operating characteristics. The driveability test consisted of a five point rating (excellent, good, fair, poor, fail) for vehicle performance during three operating phases: constant speed,

acceleration from idle and restart after shut-down. Each of the five ratings used during the evaluations are defined as follows:

- Excellent - indicating no trace of undesirable elements (smooth, even responsive).
- Good - indicating a slight trace of an undesirable element (initial unevenness, roughness, hesitation).
- Fair - indicating an undesirable element exists yet reliability is maintained (only intermittent misfire, surging, hesitation).
- Poor - indicating an undesirable element exists which affects reliability or driver confidence (steady misfire, roughness, lack of power, response).
- Fail - indicating extremely unreliable, possible unsafe conditions exist (frequent stalling, die-outs on acceleration, lack of throttle response).

General acceleration, cruise and idle quality were evaluated according to the rating system during the constant speed phase. During the acceleration from idle stage, the quality of acceleration during quarter, half, two-thirds and three-quarter throttle was rated. The restart phase was conducted after a ten minute engine-off period and included an assessment of idle quality and the duration of crank time.

2.6.3 Federal Test Procedure (Mass Exhaust Emission Test)

The Federal Test Procedure was performed in accordance with procedures specified in 40 Federal Register 126. Preconditioning requirements for this test include a 12 to 24 hour soak period in an area with an ambient temperature between 20 and 30 degrees Centigrade (68 to 86 Fahrenheit). Each vehicle remained stationary while soaking with the ignition in the unlock position and the transmission in neutral. Doors were unlocked and the window on the driver's side was rolled down.

None of the seven vehicles acquired for this work effort received those segments of the FTP which deal with evaporative loss measurements. Consequently, following the soak period, test vehicles were moved to the dynamometer for the mass exhaust emission segment of the FTP.

Before the test vehicle was placed on the dynamometer and secured, the proper inertia weight and load adjustments were set. During testing, the vehicle hood remained open and a cooling fan was placed in front of the engine approximately six to twelve inches from the vehicle grille.

The Federal Test Procedure consists of three segments: the cold transient stage, the cold stabilized stage and the hot transient stage. Sampling during the initial cold transient portion was begun simultaneously with engine crank. This phase continued for 505 seconds at an average speed of 25.6 miles per hour over a cumulative distance of 3.59 miles. At the 505 second point, the exhaust sample was diverted from the first sample bag of the Constant Volume Sampler (CVS) to the second. This marked the beginning of the cold stabilized portion of the test. This segment covers 3.91 miles at an average speed of 16.0 miles per hour. Its duration is 869 seconds. At the end of this phase the engine was stopped, sampling was terminated and the vehicle was soaked on the dynamometer for ten minutes. After soaking, the vehicle was restarted and sampling was switched to the third CVS bag for 505 seconds at an average speed of 25.6 miles per hour. CVS sample and background bags were analyzed within ten minutes after completion of each phase of the test.

2.6.4 Federal Short Cycle Test

The Federal Short Cycle Test is a nine-mode CVS test consisting of vehicle operation over a 125 second driving schedule. Cumulative roll distance is 0.7536 miles. Each mode and its duration are described below.

	<u>MODE</u>	<u>DURATION OF MODE (secs)</u>
1.	0-16 mph acceleration	6
2.	16-29 mph acceleration	23
3.	29 mph cruise	10
4.	29-37 mph acceleration	18
5.	37-42 acceleration	4.5
6.	42-37 deceleration	2.5

7.	37-20 deceleration	32
8.	20-0 mph deceleration	7.5
9.	Idle	<u>21.5</u>
	Total seconds	125.0

Inertia weight, horsepower loads and manual transmission shift speeds are the same as those used during the Federal Test Procedure.

The Federal Short Cycle was preceded by a six minute preconditioning period comprised of a three minute soak with the engine off and a three minute idle (in neutral) period. During preconditioning the engine compartment remained open with the auxiliary cooling fan on. Total emissions over the full driving schedule were collected in one sample bag and analyzed within five minutes after the end of sampling.

2.6.5 Federal 3-Mode Test

This test is comprised of three steady state modes performed with the dynamometer loads set to simulate the average power (for each light duty vehicle) occurring at each of the three speeds during an FTP. The 3-Mode Test was preceded by a six minute (3 + 1 minute engine-off, 3 + 1 minute idle) preconditioning period performed with the hood open and the cooling fan on. Following preconditioning, the vehicle was operated for a maximum of three minutes at high cruise (52 mph) with the inertia weight set at the minimum level. The specified dynamometer horsepower was set for each speed during the stabilization period. Equilibrium of vehicle speed and the CO, HC and NO_x readings were maintained for 30 seconds before emissions were recorded. This procedure was repeated for the low cruise (25 mph) and idle modes. Since actual horsepower was used for this test, additional dynamometer coastdown calibrations at 25 and 52 mph were performed.

2.6.6 Two Speed Idle Test

Raw tailpipe samples from vehicles operated at high and curb idle rates were analyzed during the Two Speed Idle Test. This brief evaluation was preceded by a six

minute engine-off and a three minute idle period. At the end of the six minutes, the vehicle was operated in neutral for a maximum of three minutes at 2500 rpm and then at curb idle. Exhaust emissions were analyzed at each speed after rpm and analyzer outputs for CO, HC and NO_x had stabilized for a minimum of 30 seconds. Tests were conducted with the vehicle hood open and the auxiliary fan on.

2.6.7 Catalyst Test (Steady State)

This test is comprised of two steady state operating modes and is preceded by a 6 minute soak, with engine off for 3 minutes followed by engine idling in the neutral position for 3 minutes. FTP dynamometer settings were used with the hood open and the cooling fan on. Inertia weights were set identical to the FTP.

At the end of the soak (idle) period, the vehicle was placed in the drive position with the engine at idle. Equilibrium of the vehicle speed and the CO, HC and NO_x readings were maintained for 30 seconds prior to recording emissions. The second mode immediately followed the Idle-Drive measurement, with the vehicle operated at 50 miles per hour. Undiluted emissions were measured by the volumetric procedure for each mode, before and after the catalytic converter(s).

2.6.8 Catalyst Skin Temperature Test

This test consists of catalyst skin temperature measurements, recorded 1 1/2 inches upstream and downstream of the catalytic converter(s). Thermocouples were installed on top and bottom of pipes before and after the catalyst. Readings were recorded in degrees Fahrenheit using digital thermometers which were plugged into each thermocouple device. This test followed the Catalyst Test and was preceded by a 6 minute soak identical to that used for the Catalyst Test. At the end of the soak period, the vehicle was operated at idle in the drive position for 3 minutes. At this point, temperature readings were recorded for the idle mode. The vehicle was then operated at 50 miles per hour for 3 minutes, followed by recording of temperatures in that mode.

2.6.9 After Test Procedure

Basic engine parameters were measured after each test sequence to further document test conditions. These parameters consisted of: basic ignition timing, dwell (if applicable), idle speed, and undiluted idle CO and HC. These measurements were performed according to procedures outlined on the emission data sticker.

2.6.10 Maladjustment and Disablement Inspection

This inspection consisted of a step-by-step evaluation of separate engine systems and their components to determine if each was functionally intact and complete. During the course of the examination the induction, carburetor and fuel, ignition, EGR, air injection, PCV, exhaust and evaporative control systems were inspected for proper settings and system alignment. Disconnected hoses, lines and wires, missing or poorly fitted components were noted and repaired as part of the procedure. Maladjusted engine parameters such as timing, choke and idle rpm settings were also examined and corrected.

2.6.11 Catalyst Bypass Fabrication Procedures

Following the three as-received test sequences, each vehicle received a series of three test sequences designed to provide data on catalyst efficiency and for subsequent correlation. These sequences were performed after the as-received catalyst had been removed and replaced with a catalyst bypass. This bypass unit was constructed to create a level of exhaust system backpressure comparable to that generated by the catalyst. Actual catalyst backpressure was initially determined by gauging stabilized pressure levels generated upstream of the as-received catalyst at a 60 mph cruise speed. After finding this pressure level the catalyst was removed and replaced with a stock tailpipe repair section (sizes ranged from approximately 16 to 24 inches in length) fitted with a circular plate or baffle at one end. The backpressure created by this unit was then adjusted by drilling a series of half inch diameter holes in the baffle until the pressure created by the bypass unit at 60 mph was within two inches H_2O of the actual catalyst

backpressure. Because exhaust system configurations and pressures vary from vehicle to vehicle, a separate bypass unit was constructed for each vehicle tested.

Following the full sequence of tests, all vehicles were equipped with a new catalyst. All as-received catalysts were tagged and delivered to the EPA for further inspection.

2.6.12 Special Test Considerations and Procedures

For those tests requiring both before and after catalytic converter readings, minor data discrepancies were observed. These disparities were caused by the inability to measure before and after readings concurrently due to the unavailability of dual test facilities. As a result, after converter emission readings may have been recorded as less than a simultaneous reading would have permitted.

For dual exhaust vehicles, emission readings were recorded from the combined exhausts from both sides. This was accomplished through utilization of "Y" connectors fitted to the analyzer equipment. Combined readings were recorded for both the before and after converter status.

2.7 DATA PROCESSING PROCEDURES

Accumulated raw test data and associated materials received a systematic review of each test point in the work effort from initial generation to final processing. These data accumulation and review procedures are described below.

2.7.1 Data Collection

Emission test procedures and laboratory conditions were monitored and controlled through the use of strip chart recorders. These units provided a constant read-out of data and also served to document test activities for later review. Test parameters registered on the recorders included emission analyzer outputs, wet and dry bulb measurements of air directed to the front of test vehicles and dilute exhaust stream temperatures. Driver/vehicle performance traces were also documented on a strip chart

recorder and included speed calibrations and subsequent calibration checks performed before and after each test.

A NOVA 2 minicomputer was utilized to collect and integrate CVS sample and background bag emission data. Speed/time profiles were also generated for each test schedule by the computer and produced on the driver/vehicle performance trace. In addition to these functions, the computer totaled and recorded CVS mass pump revolutions during each exhaust emission test segment.

Movement of each test vehicle through segments of the work effort was controlled and documented through various raw data sheets. All data forms were collected in test packets which were assigned to each vehicle prior to testing. As testing progressed, relevant sheets were completed, signed and returned to the packet by the appropriate technician. Included in the packet were: all raw data sheets used to identify the vehicle, raw data sheets used during tests, analyzer strip chart recordings, computer system sheets and magnetic tapes and all appropriate temperature strip chart recordings.

Laboratory personnel were also furnished a form indicating the daily test schedule including the order each vehicle was to be tested and the estimated duration of each test segment. Preconditioning personnel were also furnished with a similar schedule indicating the time each vehicle was to be placed in soak.

2.7.2 Data Review and Editing

Vehicle packets were reviewed for completeness, accuracy and compliance with temperature and speed tolerances on a test by test basis. This review was performed as soon as possible after each test to allow an appropriate solution to any problems that might arise. The test packet was reviewed a second time after all tests had been completed. After solving any remaining discrepancies, the completed packet was forwarded to the data processing department.

Data processing procedures included an additional review of packet contents by personnel not directly involved in the original tests. Following this, data from the on-

site NOVA 2 minicomputer and raw data sheets were combined into a single magnetic tape which was input to an offsite, time-share computer. The combined information was subsequently listed back out and manually proof-read against the original input to detect errors introduced through keypunch operations or transmission difficulties. When obvious data entry errors had been resolved and corrected, a computerized edit program was applied to the data. The program subjects each entry to a test of reasonableness. If recorded information fails to fall within a predetermined range, the computer indicated the presence of a possible error and identified the area requiring additional investigation. Any discrepancies found to exist at this stage were resolved either through further clarifying information from test personnel, reference to test records or through a complete retest of the vehicle.

As soon as all problems were resolved, the data were reduced and printed out for a final review before the test was declared valid. When this process was completed, the data were delivered to the EPA in the form of interpreted 80 column punch cards along with the completed data packet.

2.7.3 Calculation of Test Results

2.7.3.1 Federal Test Procedure Emission Data - Mass emission test results were calculated using equations specified in 40 Federal Register 126 and reported in grams per mile for CO, CO₂, HC and NO_x. Fuel economy data for this test were calculated using the carbon balance equation.

2.7.3.2 Federal Short Cycle - Results of the Federal Short Cycle Test were calculated using Federal Register equations and a distance constant of 0.7536 miles per test.

2.7.3.3 Two Speed Idle Test - Emission results for this test are comprised of tailpipe and, if specified, before converter concentrations and are reported as measured.

2.7.3.4 Federal 3-Mode Test - Emission results from this test are also comprised of undiluted tailpipe and, if specified, before converter concentrations and are reported as measured.

2.7.3.5 Catalyst Test - Emission results from this test are also comprised of undiluted tailpipe and, if specified, before converter concentrations and reported as measured.

3. LISTINGS OF INDIVIDUAL VEHICLE PARAMETERS

LISTING OF MALADJUSTMENT & DISABLEMENT
CODES AND EXPLANATIONS

Carburetor and Fuel System, Choke (Subsystem 1)

- 114 - Choke Notches, Primary Vacuum, and Secondary Vacuum properly adjusted
- 413 - Choke Notches, Primary Vacuum properly adjusted; Secondary Vacuum is lean
- 423 - Choke set rich, Primary and Secondary Vacuum properly adjusted

Ignition System, Timing (Subsystem 2)

- 401 - Timing advance more than 2 degrees from specification

Internal Engine, Engine & Oil Filter (Subsystem 2)

- 702 - More than 2 quarts low

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9401 TUE JUL 29, 1980 12:36 TEST SITE: ST. LOUIS

DATE: 05/09/79 VIN: 9G87F18797 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR :	1979	MAKE :	FORD	MODEL :	THND
MODEL SIZE :	M	CYLINDERS :	8	DISPLACEMENT:	302
CARBURETOR :	2	TRANSMISSION:	AUTO.	FUEL TANK :	21
TRUE MILEAGE:	8,277	NADA WT. :	3893	INERTIA WT. :	4500
10% A/C LOAD:	MS	ACTUAL HP :	11.9		
MPG CITY :	14.0	MPG HIGHWAY :	20.0	MPG COMB. :	16.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	28	27	26	27	LEAD CONT.: 0.037
SPECIFIED PRESSURE:	30	30	30	30	TIRE SIZE: GR78-15
TIRE WEAR:	1	1			TIRE BRAND: GENE
					VEH. COLOR : 1

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	YES	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	OXIDATION	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	D9ZE-CA
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	D9DE-RA
ENGINE FAMILY	5.0C2X124/LA	EGR VALVE NO.	D9OE-638
ENGINE CAL. (C)	11J	BUILD DATE	09/78
ENGINE CAL. (R)	0	EM STICKER NO.	D9OE-AA
CERTIFICATION	FEDERAL	AXLE RATIO	1:2.40

ENGINE
PARAMETERSPECMEAS

MECH ADV BEG (RPM)	99	1100
MECH ADV MPT (RPM)	99	2400
MECH ADV MPT (DEG)	99	12.00
VAC ADV BEG ("HG)	99	5.00
RPM DIFF @ MAX ADV		+160
MAX VAC ADV ("HG)	99	17.00
MAX VAC ADV (DEG)	99	22.00
FAST IDLE RPM	2100	2000
CHOKE NOTCHES	+03	+03
PRIMARY VAC BREAK	99	0.100
SEC. VAC BREAK	99	99

	IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE DRIVE W/OUT	W/OUT	ENRICHMENT NEUTRAL W/OUT	W/OUT
SPEC.:	600	99	+ 8	99.99					
MEAS.:	620	99	+10	0.02	59	620	600	880	960

AUTOMOTIVE TESTING LABORATORIES, INC.
19900 E. COLFAX, AURORA, COLO. 80011

VEHICLE NO. 9401 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	P	P	P	-	P	P	-	-		PASS
CARBURETOR	P	P	P	P	-	-	P	P	P	P	PASS
CHOKE	114	P	P	P	-	-	-	-	-	-	PASS
INDUCTION	P	P	P	P	P	P	-	-	-	-	PASS
E.G.R.	P	-	-	-	-	-	P	P	-		PASS
AIR PUMP	P	P	P	-	-	-	P	P	P	-	PASS
P.C.V.	P	P	P	-							PASS
EXHAUST	P	P	-								PASS
EVAPORATIVE	P	-	P	-							PASS
INT. ENGINE	?	P	P	-	P	P	P	?			PASS

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9402 TUE JUL 29, 1980 12:38 TEST SITE: ST. LOUIS

DATE: 07/27/79 VIN: 9G87F118796 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR : 1979	MAKE : FORD	MODEL : THND
MODEL SIZE : M	CYLINDERS : 8	DISPLACEMENT: 302
CARBURETOR : 2	TRANSMISSION: AUTO.	FUEL TANK : 21
TRUE MILEAGE: 9,287	NADA WT. : 3893	INERTIA WT. : 4500
10% A/C LOAD: MS	ACTUAL HP : 11.9	
MPG CITY : 14.0	MPG HIGHWAY : 20.0	MPG COMB. : 16.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	25	18	29	29	LEAD CONT.: 0.037
SPECIFIED PRESSURE:	29	29	29	29	TIRE SIZE: GR78-15
TIRE WEAR:	1	1			TIRE BRAND: GENE
					VEH. COLOR : 7

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	YES	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	OXIDATION	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	D9ZE-CA
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	D9DE-RA
ENGINE FAMILY	5.0C2X124/LA	EGR VALVE NO.	D9OE-A2B
ENGINE CAL. (C)	11J	BUILD DATE	09/78
ENGINE CAL. (R)	0	EM STICKER NO.	D9OE-AA
CERTIFICATION	FEDERAL	AXLE RATIO	1:2.75

ENGINE PARAMETER	SPEC	MEAS
MECH ADV BEG (RPM)	99	1000
MECH ADV MPT (RPM)	99	2400
MECH ADV MPT (DEG)	99	15.00
VAC ADV BEG ("HG)	99	5.00
RPM DIFF @ MAX ADV		+220
MAX VAC ADV ("HG)	99	14.50
MAX VAC ADV (DEG)	99	37.00
FAST IDLE RPM	2100	2000
CHOKE NOTCHES	+03	+03
PRIMARY VAC BREAK	99	0.120
SEC. VAC BREAK	99	99

IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE		ENRICHMENT	
					DRIVE W/OUT	WITH	NEUTRAL W/OUT	WITH
SPEC.: 600	99	+ 8	99.99					
MEAS.: 600	99	+11	0.00	56	600	680	760	1060

AUTOMOTIVE TESTING LABORATORIES, INC.
19900 E. COLFAX, AURORA, COLO. 80011

VEHICLE NO. 9402 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	401	P	P	P	P	P	-	-		FAIL
CARBURETOR	P	P	P	P	-	P	-	P	P	-	PASS
CHOKE	114	P	P	P	P	-	P	-	P	-	PASS
INDUCTION	P	P	P	P	P	P	-	-	-		PASS
E.G.R.	P	P	-	P	P	P	P	P	-		PASS
AIR PUMP	P	P	P	-	-	-	P	P	P	P	PASS
P.C.V.	P	P	P	-							PASS
EXHAUST	P	P	-								PASS
EVAPORATIVE	P	P	P	-							PASS
INT. ENGINE	?	702	P	-	P	P	P	?			FAIL

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9403 TUE JUL 29, 1980 12:41 TEST SITE: ST. LOUIS

DATE: 05/17/79 VIN: 3R47F9M417985 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR :	1979	MAKE :	OLDS	MODEL :	CUTL
MODEL SIZE :	M	CYLINDERS :	8	DISPLACEMENT:	260
CARBURETOR :	2	TRANSMISSION:	AUTO.	FUEL TANK :	18
TRUE MILEAGE:	6,488	NADA WT. :	3206	INERTIA WT. :	3500
10% A/C LOAD:	MS	ACTUAL HP :	11.3		
MPG CITY :	19.0	MPG HIGHWAY :	25.0	MPG COMB. :	21.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	40	41	39	39	LEAD CONT.: 0.067
SPECIFIED PRESSURE:	30	30	32	32	TIRE SIZE: 75-R14
TIRE WEAR:	1	1			TIRE BRAND: UNIR
					VEH. COLOR : 9

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	NO	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	OXIDATION	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	1103320
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	17059150
ENGINE FAMILY	930H2U / 9B3-3	EGR VALVE NO.	17061576
ENGINE CAL. (C)	N/A	BUILD DATE	09/78
ENGINE CAL. (R)	N/A	EM STICKER NO.	22500525
CERTIFICATION	FEDERAL	AXLE RATIO	1:2.29

ENGINE
PARAMETER

SPEC

MEAS

MECH ADV BEG (RPM)	910	650
MECH ADV MPT (RPM)	2375	2375
MECH ADV MPT (DEG)	17.00	15.00
VAC ADV BEG ("HG)	4.00	4.00
RPM DIFF @ MAX ADV		+120
MAX VAC ADV ("HG)	11.00	11.00
MAX VAC ADV (DEG)	30.00	17.00
FAST IDLE RPM	800	900
CHOKE NOTCHES	+02	+02
PRIMARY VAC BREAK	0.129	0.110
SEC. VAC BREAK	0.195	0.060

IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE		ENRICHMENT	
					DRIVE W/OUT	WITH	NEUTRAL W/OUT	WITH
SPEC.: 500	99	+20	99.99					
MEAS.: 500	99	+21	0.00	62	500	560	600	700

VEHICLE NO. 9403 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	P	P	P	-	P	P	-	-	-	PASS
CARBURETOR	P	-	P	P	-	-	P	P	P	-	PASS
CHOKE	413	P	-	P	-	-	-	-	-	-	FAIL
INDUCTION	P	P	P	-	P	P	-	-	-	-	PASS
E.G.R.	P	-	-	-	-	-	P	P	P	-	PASS
AIR PUMP	-	-	-	-	-	-	-	-	-	-	N/A
P.C.V.	P	P	P	-	-	-	-	-	-	-	PASS
EXHAUST	P	P	-	-	-	-	-	-	-	-	PASS
EVAPORATIVE	P	P	P	-	-	-	-	-	-	-	PASS
INT. ENGINE	?	P	P	-	P	P	P	?	-	-	PASS

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9404 TUE JUL 29, 1980 12:44 TEST SITE: ST. LOUIS

DATE: 05/15/79 VIN: 3R47F9M417984 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR : 1979	MAKE : OLDS	MODEL : CUTL
MODEL SIZE : M	CYLINDERS : 8	DISPLACEMENT: 260
CARBURETOR : 2	TRANSMISSION: AUTO.	FUEL TANK : 18
TRUE MILEAGE: 7,231	NADA WT. : 3206	INERTIA WT. : 3500
10% A/C LOAD: MS	ACTUAL HP : 11.3	
MPG CITY : 19.0	MPG HIGHWAY : 25.0	MPG COMB. : 21.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	29	29	27	31	LEAD CONT.: 0.030
SPECIFIED PRESSURE:	32	32	32	32	TIRE SIZE: P75R14
TIRE WEAR:	1	1			TIRE BRAND: UNIR
					VEH. COLOR : 5

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	NO	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	OXIDATION	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	1103320
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	17059150
ENGINE FAMILY	930H2U / 9B3-3	EGR VALVE NO.	17061576
ENGINE CAL. (C)	N/A	BUILD DATE	09/78
ENGINE CAL. (R)	N/A	EM STICKER NO.	22500525
CERTIFICATION	FEDERAL	AXLE RATIO	1:2.56

ENGINE PARAMETER	SPEC	MEAS
MECH ADV BEG (RPM)	910	850
MECH ADV MPT (RPM)	2380	2380
MECH ADV MPT (DEG)	17.00	11.00
VAC ADV BEG ("HG)	4.00	4.00
RPM DIFF @ MAX ADV		+100
MAX VAC ADV ("HG)	11.00	11.00
MAX VAC ADV (DEG)	30.00	27.00
FAST IDLE RPM	800	800
CHOKE NOTCHES	+02	+02
PRIMARY VAC BREAK	0.129	0.130
SEC. VAC BREAK	0.195	0.190

	IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE		ENRICHMENT	
						DRIVE W/OUT	WITH	NEUTRAL W/OUT	WITH
SPEC.:	500	99	+20	99.99					
MEAS.:	480	99	+20	0.00	43	480	520	580	620

AUTOMOTIVE TESTING LABORATORIES, INC.
19900 E. COLFAX, AURORA, COLO. 80011

VEHICLE NO. 9404 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	P	P	P	P	P	P	-	-	-	PASS
CARBURETOR	P	-	?	P	-	-	P	P	P	-	PASS
CHOKE	114	P	-	P	-	-	-	-	-	-	PASS
INDUCTION	P	P	P	-	P	P	-	-	-	-	PASS
E.G.R.	P	-	P	-	-	-	-	P	-	-	PASS
AIR PUMP	-	-	-	-	-	-	-	-	-	-	N/A
P.C.V.	P	P	P	-	-	-	-	-	-	-	PASS
EXHAUST	P	P	-	-	-	-	-	-	-	-	PASS
EVAPORATIVE	P	P	P	-	-	-	-	-	-	-	PASS
INT. ENGINE	?	P	P	-	P	P	P	?	-	-	PASS

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9405 WED JUL 30, 1980 11:02 TEST SITE: ST. LOUIS

DATE: 05/16/79 VIN: 9Z62H658748 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR : 1979	MAKE : MERC	MODEL : MARQ
MODEL SIZE : L	CYLINDERS : 8	DISPLACEMENT: 351
CARBURETOR : 2	TRANSMISSION: AUTO.	FUEL TANK : 19
TRUE MILEAGE: 4,044	NADA WT. : 3557	INERTIA WT. : 4000
10% A/C LOAD: MS	ACTUAL HP : 12.0	
MPG CITY : 15.0	MPG HIGHWAY : 21.0	MPG COMB. : 17.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	39	39	20	37	LEAD CONT.: 0.037
SPECIFIED PRESSURE:	32	32	32	32	TIRE SIZE: FR78-15
TIRE WEAR:	1	1			TIRE BRAND: FIRE
					VEH. COLOR : 7

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	YES	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	THREE-WAY	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	D9AE-BA
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	D9ME-AA
ENGINE FAMILY	5.8WBV2TT95X95	EGR VALVE NO.	D9OE-A3A
ENGINE CAL. (C)	N/A	BUILD DATE	12/78
ENGINE CAL. (R)	N/A	EM STICKER NO.	D9ME-AC
CERTIFICATION	FEDERAL	AXLE RATIO	1:2.50

ENGINE PARAMETER

SPEC

MEAS

MECH ADV BEG (RPM)	99	99
MECH ADV MPT (RPM)	99	99
MECH ADV MPT (DEG)	99	99
VAC ADV BEG ("HG)	99	99
RPM DIFF @ MAX ADV		+099
MAX VAC ADV ("HG)	99	99
MAX VAC ADV (DEG)	99	99
FAST IDLE RPM	2000	1800
CHOKE NOTCHES	+00	+00
PRIMARY VAC BREAK	99	0.120
SEC. VAC BREAK	99	99

	IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE DRIVE		ENRICHMENT NEUTRAL	
						W/OUT	WITH	W/OUT	WITH
SPEC.:	640	99	+99	99.99					
MEAS.:	650	99	+99	0.03	13	650	630	900	980

VEHICLE NO. 9405 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	?	P	-	-	-	P	-	P		PASS
CARBURETOR	P	-	?	P	-	-	P	P	P	P	PASS
CHOKE	114	P	P	P	-	-	-	-	-	-	PASS
INDUCTION	P	P	P	P	P	P	-	-	-	-	PASS
E.G.R.	P	?	P	-	?	P	-	P	P		PASS
AIR PUMP	P	P	P	-	-	-	P	P	P	-	PASS
P.C.V.	P	P	P	-							PASS
EXHAUST	P	P	-								PASS
EVAPORATIVE	P	-	P	-							PASS
INT. ENGINE	?	P	P	-	P	P	P	?			PASS

AUTOMOTIVE TESTING LABORATORIES, INC.
 19900 E. COLFAX, AURORA, COLO. 80011

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9406 TUE JUL 29, 1980 12:49 TEST SITE: ST. LOUIS

DATE: 05/10/79 VIN: 24545L1198065 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR : 1979 MAKE : VOLV MODEL : 245

MODEL SIZE : C CYLINDERS : 4 DISPLACEMENT: 130

CARBURETOR : 0 TRANSMISSION: AUTO. FUEL TANK : 16

TRUE MILEAGE: 5,795 NADA WT. : 3069 INERTIA WT. : 3500

10% A/C LOAD: MS ACTUAL HP : 12.8

MPG CITY : 0.0 MPG HIGHWAY : 0.0 MPG COMB. : 0.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	26	26	27	27	LEAD CONT.: 0.037
SPECIFIED PRESSURE:	26	26	27	27	TIRE SIZE: 175-R14
TIRE WEAR:	1	1			TIRE BRAND: UNIR
					VEH. COLOR : 9

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	NO	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	THREE-WAY	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	0237003006
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	N/A
ENGINE FAMILY	4CL / E1	EGR VALVE NO.	N/A
ENGINE CAL. (C)	N/A	BUILD DATE	04/78
ENGINE CAL. (R)	N/A	EM STICKER NO.	1254881P03
CERTIFICATION	CALIFORNIA	AXLE RATIO	1:3.91

ENGINE PARAMETER	SPEC	MEAS
MECH ADV BEG (RPM)	99	600
MECH ADV MPT (RPM)	99	2400
MECH ADV MPT (DEG)	99	11.00
VAC ADV BEG ("HG)	99	4.00
RPM DIFF @ MAX ADV		+180
MAX VAC ADV ("HG)	99	17.00
MAX VAC ADV (DEG)	99	14.00
FAST IDLE RPM	99	99
CHOKE NOTCHES	+97	+97
PRIMARY VAC BREAK	99	99
SEC. VAC BREAK	99	99

IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE		ENRICHMENT	
					DRIVE W/OUT	WITH	NEUTRAL W/OUT	WITH
SPEC.: 900	99	+12	2.00					
MEAS.: 820	99	+12	0.01	50	650	670	820	840

AUTOMOTIVE TESTING LABORATORIES, INC.
19900 E. COLFAX, AURORA, COLO. 80011

VEHICLE NO. 9406 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	P	P	P	P	-	P	?	-		PASS
CARBURETOR	-	-	?	P	-	-	-	?	P	P	PASS
CHOKE	-	-	-	-	-	-	-	-	-	-	N/A
INDUCTION	-	-	-	-	-	-	-	-	-	-	N/A
E.G.R.	-	-	-	-	-	-	-	-	-	-	N/A
AIR PUMP	-	-	-	-	-	-	-	-	-	-	N/A
P.C.V.	?	?	?	-							PASS
EXHAUST	P	P	-								PASS
EVAPORATIVE	P	P	P	-							PASS
INT. ENGINE	?	P	P	-	P	P	P	?			PASS

CATALYST DETERIORATION PROGRAM

VEHICLE NO. 9407 TUE JUL 29, 1980 13:23 TEST SITE: ST. LOUIS

DATE: 07/27/79 VIN: 1M27197188077 SUB CODE: 1 METH. OF PROC.: 5

MODEL YEAR : 1979	MAKE : CHEV	MODEL : MONZ
MODEL SIZE : S	CYLINDERS : 4	DISPLACEMENT: 151
CARBURETOR : 2	TRANSMISSION: AUTO.	FUEL TANK : 19
TRUE MILEAGE: 5,182	NADA WT. : 2577	INERTIA WT. : 3000
10% A/C LOAD: MS	ACTUAL HP : 9.9	
MPG CITY : 22.0	MPG HIGHWAY : 30.0	MPG COMB. : 25.0

VEHICLE PRECONDITIONING

	LF	RF	LR	RR	
MEASURED PRESSURE:	26	26	30	30	LEAD CONT.: 0.037
SPECIFIED PRESSURE:	26	26	30	30	TIRE SIZE: A78-13
TIRE WEAR:	1	1			TIRE BRAND: GENE
					VEH. COLOR : 5

ENGINE STATUS

VEHICLE EQPD AIR COND?	YES	FILLER NECK STATUS	5
VEHICLE EQPD AIR PUMP?	NO	OBVIOUS MALADJ/DISABL?	NO
VEHICLE EQPD CAT CONV?	THREE-WAY	SOURCE MFRS. SPECS.	EM. STICKER
VEHICLE EQPD THML REA?	NO	DISTRIBUTOR PART NO.	1103365
VEHICLE EQPD TRBOCHGR?	NO	CARBURETOR PART NO.	N/A
ENGINE FAMILY	920X2CEU/9B5-2	EGR VALVE NO.	61701
ENGINE CAL. (C)	N/A	BUILD DATE	02/79
ENGINE CAL. (R)	N/A	EM STICKER NO.	10008844
CERTIFICATION	CALIFORNIA	AXLE RATIO	1:2.93

ENGINE PARAMETER	SPEC	MEAS
MECH ADV BEG (RPM)	99	1140
MECH ADV MPT (RPM)	2500	2500
MECH ADV MPT (DEG)	8.00	8.00
VAC ADV BEG ("HG)	99	6.00
RPM DIFF @ MAX ADV		+160
MAX VAC ADV ("HG)	99	12.00
MAX VAC ADV (DEG)	99	17.00
FAST IDLE RPM	2400	2100
CHOKE NOTCHES	+01	+02
PRIMARY VAC BREAK	99	0.190
SEC. VAC BREAK	99	99

	IDLE RPM	DWELL	TIMING	IDLE CO(%)	IDLE HC(ppm)	PROPANE		ENRICHMENT	
						DRIVE W/OUT	WITH	NEUTRAL W/OUT	WITH
SPEC.:	850	99	+14	99.99					
MEAS.:	830	99	+13	0.01	49	830	840	1100	1200

AUTOMOTIVE TESTING LABORATORIES, INC.
19900 E. COLFAX, AURORA, COLO. 80011

VEHICLE NO. 9407 (CONT'D.)

MALADJUSTMENT AND DISABLEMENT INSPECTION

SYSTEM	SUBSYSTEM PERFORMANCE										SYS. PERF
	1	2	3	4	5	6	7	8	9	10	
IGNITION	P	P	P	P	-	P	P	-	-	-	PASS
CARBURETOR	P	P	P	P	-	P	-	P	P	-	PASS
CHOKE	423	P	P	P	P	P	P	-	P	-	FAIL
INDUCTION	P	-	P	-	P	P	-	-	-	-	PASS
E.G.R.	P	P	-	-	P	-	P	P	-	-	PASS
AIR PUMP	-	-	-	-	-	-	-	-	-	-	N/A
P.C.V.	P	P	P	-	-	-	-	-	-	-	PASS
EXHAUST	P	P	-	-	-	-	-	-	-	-	PASS
EVAPORATIVE	P	P	P	-	-	-	-	-	-	-	PASS
INT. ENGINE	?	P	P	P	P	P	P	?	-	-	PASS

AUTOMOTIVE TESTING LABORATORIES, INC.
 19900 E. COLFAX, AURORA, COLO. 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX A - LISTING OF VEHICLE PREPARATORY
DRIVEABILITY EVALUATION

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

CONSTANT SPEED PHASE

NS - Number of stalls or pass outs upon slight acceleration to
road speed

AQ - Acceleration quality (E: excellent; G: good; F: fair;
P: poor; U: fail)

CQ - Cruise quality (E: excellent; G: good; F: fair; P: poor;
U: fail)

SA - Slight acceleration response or passing quality (E: excellent;
G: good; F: fair; P: poor; U: fail)

IO - Idle quality at stop with air conditioner on (E: excellent;
G: good; F: fair; P: poor; U: fail)

IF - Idle quality at stop with air conditioner off (E: excellent;
G: good; F: fair; P: poor; U: fail)

ACCELERATION FROM STOP PHASE

1/4 - Quality of acceleration under 1/4 throttle (E: excellent;
G: good; F: fair; P: poor; U: fail)

1/2 - Quality of acceleration under 1/2 throttle (E: excellent;
G: good; F: fair; P: poor; U: fail)

2/3 - Quality of acceleration under 2/3 throttle (E: excellent;
G: good; F: fair; P: poor; U: fail)

3/4 - Quality of acceleration under 3/4 throttle (E: excellent;
G: good; F: fair; P: poor; U: fail)

RESTART PHASE

CT - Cranking time to start after ten minutes in seconds

IQ - Idle quality after restart (E: excellent; G: good;
F: fair; P: poor; U: fail)

The codes for idle, acceleration and cruise quality are defined as follows:

E - Excellent - No trace of undesirable elements (smooth, even, responsive)

G - Good - Slight trace, small indication of an undesirable element
(initial unevenness, roughness, hesitation, quickly overcome)

F - Fair - Undesirable element exists yet reliability is retained (only
intermittent misfire, surging, hesitation)

P - Poor - Undesirable element exists which affects reliability or
driver confidence (steady misfire, roughness, lack of power,
response)

U - Fail - Extremely unreliable, possible unsafe conditions exist
(frequent stalling, die-outs on acceleration, lack of
throttle response)

Pass-outs are defined as restart from "off idle" stall.
The Constant Speed Phase, Acceleration from Stop Phase, and the Restart
Phase are performed during the ten minute preconditioning drive.

APPENDIX A

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
D0001	UNL	OR	NA	8,316	0	0	G	G	G	G	G	G	G	G	G	2	G
D0003	UNL	OR	NA	8,394	0	0	G	G	G	F	G	F	F	F	F	3	F
D0005	UNL	OR	NA	8,442	8	0	G	G	G	G	G	G	F	G	G	2	G
D0008	UNL	BP	NA	8,694	5	0	G	G	F	G	G	F	G	G	G	2	G
D0010	UNL	BP	NA	8,733	0	0	F	F	F	P	F	F	F	F	F	2	F
D0013	UNL	BP	NA	8,760	6	0	F	F	F	F	F	F	F	F	F	3	F
D0034	LEAD	OR	NA	9,046	40	0	F	F	F	F	F	F	F	F	F	1	F
D0038	LEAD	OR	NA	9,307	15	0	F	G	G	G	G	G	G	G	G	3	G
D0072	LEAD	OR	NA	9,770	41	0	F	F	F	F	F	F	F	F	F	1	F
D0093	LEAD	OR	NA	10,069	20	0	G	G	G	F	F	F	F	G	G	2	F
D0109	UNL	BP	NA	10,446	72	0	E	E	E	E	E	E	E	E	E	2	E
D0118	UNL	RE	NA	10,532	0	0	G	E	G	G	E	G	G	G	E	1	E
R0154	LEAD	OR	NA	11,750	91	1	P	F	F	E	E	G	G	G	G	1	E
R0157	LEAD	OR	NA	11,795	3	0	E	G	G	G	G	G	E	G	G	1	E
R0165	LEAD	OR	NA	11,831	6	0	F	G	F	G	E	E	G	F	G	3	E
R0173	UNL	BP	NA	11,877	22	0	E	E	E	G	G	E	E	E	E	2	E
R0178	UNL	OR	NA	11,909	0	0	G	E	G	G	G	G	E	G	E	1	G
R0184	UNL	OR	NA	12,118	17	0	G	E	G	G	G	G	E	E	E	1	G
R0189	UNL	OR	NA	12,331	18	0	E	E	E	G	G	E	E	E	E	2	G
R0216	UNL	OR	NA	12,612	19	0	G	G	G	G	G	G	G	G	G	1	G
R0222	UNL	OR	NA	12,823	20	0	G	G	G	G	G	G	G	G	G	1	G
R0232	UNL	OR	NA	13,860	61	0	G	F	F	G	G	G	G	G	F	1	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
R0244	UNL	OR	NA	14,894	65	0	G	G	G	G	G	G	G	G	G	1	G
R0247	UNL	RE	NA	14,934	0	0	G	G	G	G	G	G	E	G	E	1	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
D0057	UNL	OR	NA	9,287	0	0	F	F	F	F	F	F	F	F	F	1	F
D0059	UNL	OR	NA	9,319	0	0	G	G	G	E	E	G	G	G	G	1	G
D0077	UNL	OR	NA	9,462	0	0	F	F	F	F	F	P	F	F	G	1	F
D0083	UNL	BP	NA	9,486	0	0	G	G	G	G	G	G	G	G	F	1	G
D0092	UNL	BP	NA	9,567	0	0	F	F	F	F	G	F	F	F	F	1	F
D0095	UNL	BP	NA	9,591	0	0	F	G	G	G	G	F	F	G	G	2	F
D0100	LEAD	OR	NA	9,814	39	0	F	F	F	F	F	F	F	F	F	3	F
D0119	LEAD	OR	NA	10,174	21	0	E	E	E	G	E	E	E	E	E	1	E
D0126	LEAD	OR	NA	10,407	20	0	G	G	G	G	E	G	G	G	G	1	E
D0136	LEAD	OR	NA	10,678	19	0	E	E	E	E	E	E	E	E	E	1	E
D0142	LEAD	OR	NA	10,922	18	0	E	E	E	E	E	E	E	E	E	1	E
D0148	LEAD	OR	NA	11,186	17	0	G	E	G	E	E	F	G	G	G	2	G
D0151	LEAD	OR	NA	11,223	0	0	G	E	G	E	E	E	G	E	G	2	G
D0163	LEAD	OR	NA	11,256	0	0	G	G	F	G	G	F	G	G	G	2	G
D0169	LEAD	OR	NA	11,593	37	0	E	E	E	E	E	G	E	E	E	2	F
D0174	LEAD	OR	NA	11,841	4	0	E	E	G	G	G	E	G	G	G	4	F
D0190	UNL	BP	NA	11,876	21	0	E	E	E	E	E	E	E	E	E	2	G
R0200	UNL	OR	NA	11,946	0	0	E	E	E	E	E	E	E	E	E	1	G
R0212	UNL	OR	NA	12,133	19	0	G	G	E	G	G	G	F	G	G	1	G
R0219	UNL	OR	NA	12,347	19	0	G	G	G	G	G	G	G	G	G	2	G
R0224	UNL	OR	NA	12,621	20	0	G	E	E	G	G	G	E	G	G	1	G
R0230	UNL	OR	NA	12,902	41	0	G	G	G	G	G	G	G	G	G	1	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL																	
NO.		YEAR	MAKE	MODL	CID	CONV.											
9402		1979	FORD	THND	302	OXID.											
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
R0243	UNL	OR	NA	13,930	69	0	E	E	E	E	E	E	E	E	E	1	E
R0246	UNL	OR	NA	14,940	71	0	E	E	E	E	E	E	E	E	E	1	E
R0252	UNL	RE	NA	14,990	0	0	G	G	G	G	G	E	E	G	E	1	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
D0004	UNL	OR	NA	6,818	7	0	E	E	E	G	G	E	E	E	E	1	G
D0006	UNL	OR	NA	6,857	2	0	G	G	G	G	G	F	G	G	G	1	G
D0007	UNL	OR	NA	6,886	0	0	F	F	F	F	F	F	F	G	G	4	F
D0009	UNL	BP	NA	6,950	0	1	F	F	F	F	G	F	F	F	F	3	F
D0011	UNL	BP	NA	7,014	6	0	G	F	F	F	F	F	F	F	F	3	F
D0014	UNL	BP	NA	7,069	0	0	F	F	F	F	F	F	F	F	F	3	F
D0049	LEAD	OR	NA	7,449	28	0	F	F	F	F	F	F	F	F	F	1	F
D0073	LEAD	OR	NA	7,767	27	0	F	F	F	F	F	F	F	F	F	1	F
D0088	LEAD	OR	NA	7,956	12	0	P	F	P	P	F	P	P	P	F	2	F
D0098	LEAD	OR	NA	8,161	13	0	F	F	F	F	F	F	F	F	F	1	F
D0103	LEAD	OR	NA	8,429	14	0	E	E	E	E	E	E	E	E	E	1	E
D0111	LEAD	OR	NA	8,618	12	0	E	E	E	G	E	G	E	E	E	1	E
D0121	LEAD	OR	NA	8,837	13	0	E	E	E	G	E	E	E	E	E	1	E
D0127	LEAD	OR	NA	9,017	13	0	E	E	E	E	E	E	E	E	E	1	E
D0135	LEAD	OR	NA	9,244	14	0	F	G	G	F	G	F	F	G	G	2	G
D0141	LEAD	OR	NA	9,430	12	0	E	E	E	E	E	E	E	E	E	3	E
D0155	LEAD	OR	NA	9,856	19	0	G	E	F	G	G	G	G	G	G	2	G
D0158	LEAD	OR	NA	9,889	0	0	E	E	G	E	E	E	G	G	G	1	U
D0160	LEAD	OR	NA	9,922	0	0	E	E	G	G	G	E	G	G	G	2	G
D0164	UNL	BP	NA	9,961	19	0	F	E	F	G	G	G	G	F	F	3	F
R0168	UNL	OR	NA	9,993	0	0	E	E	G	G	G	E	G	G	G	2	G
R0176	UNL	OR	NA	10,220	16	0	G	E	G	G	G	E	E	E	E	2	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
R0182	UNL	OR	NA	10,490	16	0	E	E	E	E	E	E	E	E	E	1	G
R0187	UNL	OR	NA	10,739	15	0	E	E	E	G	G	E	E	G	E	2	G
R0206	UNL	OR	NA	10,931	16	2	G	G	G	G	G	G	E	E	E	1	G
R0231	UNL	OR	NA	12,015	62	0	G	G	F	G	G	E	E	G	G	1	G
R0245	UNL	OR	NA	13,046	61	0	G	G	G	G	G	G	E	G	E	1	G
R0251	UNL	RE	NA	13,114	0	0	G	E	G	E	E	E	E	E	E	1	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
D0018	UNL	OR	NA	7,283	0	0	G	G	G	F	F	F	G	G	G	3	F
D0020	UNL	OR	NA	7,315	5	0	F	F	F	F	F	G	G	G	G	3	F
D0022	UNL	OR	NA	7,349	2	0	F	G	F	F	F	F	F	F	F	2	F
D0027	UNL	BP	NA	7,380	0	0	F	F	F	P	F	F	F	F	F	2	F
D0031	UNL	BP	NA	7,437	6	0	F	F	F	F	F	F	F	F	F	1	F
D0033	UNL	BP	NA	7,492	0	0	F	F	F	F	F	F	F	F	F	1	F
D0054	LEAD	OR	NA	7,955	40	0	F	F	F	F	F	F	F	F	F	1	F
D0082	LEAD	OR	NA	8,266	24	0	G	G	F	F	G	G	G	G	G	1	G
D0094	LEAD	OR	NA	8,358	12	0	P	F	P	F	F	P	P	P	F	1	F
D0101	LEAD	OR	NA	8,528	10	0	G	G	F	F	G	F	G	G	G	3	F
D0107	LEAD	OR	NA	8,727	15	0	E	E	G	E	E	E	E	E	G	1	E
D0113	LEAD	OR	NA	8,897	11	0	G	G	G	G	G	G	G	G	G	2	G
D0122	LEAD	OR	NA	9,213	16	0	G	E	E	G	E	G	G	G	G	1	G
D0124	LEAD	OR	NA	9,363	14	0	G	E	G	E	E	G	G	G	G	1	E
D0140	LEAD	OR	NA	9,627	14	0	G	G	G	G	G	G	G	G	G	1	G
D0146	LEAD	OR	NA	9,842	12	0	E	E	E	E	E	E	E	E	E	2	E
D0156	LEAD	OR	NA	10,098	9	0	G	G	G	G	G	E	E	G	G	1	G
D0159	LEAD	OR	NA	10,134	0	0	G	G	G	G	G	G	E	G	G	1	G
D0172	UNL	BP	NA	10,165	18	0	G	G	G	G	G	G	G	F	F	2	G
R0177	UNL	OR	NA	10,199	0	0	G	E	G	G	G	G	E	E	E	2	G
R0180	UNL	OR	NA	10,385	16	0	G	G	G	G	G	E	G	E	G	1	G
R0186	UNL	OR	NA	10,633	16	0	G	E	E	G	G	E	E	G	G	1	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
R0205	UNL	OR	NA	10,864	15	0	G	G	G	G	G	G	E	G	G	1	G
R0211	UNL	OR	NA	11,082	16	0	G	G	F	G	G	G	G	G	G	1	G
R0233	UNL	OR	NA	12,119	67	0	F	G	F	E	G	G	P	F	G	2	G
R0248	UNL	OR	NA	13,149	61	0	G	G	G	G	G	G	G	G	F	1	G
R0253	UNL	RE	NA	13,179	0	0	E	E	E	G	G	E	E	E	E	1	F

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL NO. YEAR MAKE MODL CID CONV.																	
9405 1979 MERC MARQ 351 3 WAY																	
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
D0021	UNL	OR	OR	4,179	5	0	G	G	G	G	G	G	G	G	G	1	G
D0023	UNL	OR	OR	4,210	0	0	G	G	G	G	G	G	G	G	G	1	G
D0026	UNL	OR	OR	4,282	0	0	E	E	E	E	E	E	E	E	E	1	E
D0028	UNL	BP	OR	4,319	8	0	E	E	E	E	E	E	E	E	E	1	E
D0030	UNL	BP	OR	4,345	0	0	G	G	G	G	G	G	G	G	G	1	G
D0032	UNL	BP	OR	4,373	0	0	E	G	G	G	G	G	G	G	G	5	G
D0065	LEAD	OR	OR	4,731	58	0	G	G	G	G	G	G	G	G	G	2	G
D0081	LEAD	OR	OR	4,902	14	0	G	G	G	F	F	F	G	G	G	2	F
D0090	LEAD	OR	OR	5,034	13	0	G	F	G	G	G	P	F	G	G	2	F
D0104	LEAD	OR	OR	5,250	16	0	E	E	E	E	E	E	E	E	E	1	E
D0108	LEAD	OR	OR	5,466	15	0	E	E	E	G	E	E	E	E	E	1	E
D0110	LEAD	OR	OR	5,719	17	0	E	E	E	E	E	E	E	E	E	1	E
D0123	LEAD	OR	OR	5,954	13	0	E	E	E	E	E	E	E	E	E	1	E
D0133	LEAD	OR	OR	6,050	13	0	E	E	E	E	E	E	E	E	E	1	E
D0139	LEAD	OR	OR	6,242	28	0	E	E	E	E	E	E	E	E	E	2	E
D0144	LEAD	OR	OR	6,637	16	0	E	E	E	E	E	E	E	E	E	1	E
D0161	LEAD	OR	OR	6,875	7	0	E	G	E	G	G	E	E	G	G	1	G
D0166	LEAD	OR	OR	6,944	4	0	G	E	G	E	E	E	E	G	G	2	E
D0196	LEAD	OR	OR	7,057	17	0	G	G	E	G	G	G	G	G	G	1	G
D0228	LEAD	OR	OR	7,152	5	0	E	E	E	E	E	E	E	E	E	1	E
R0235	LEAD	BP	OR	7,184	10	0	E	E	E	G	G	G	G	E	E	3	G
R0237	LEAD	BP	OR	7,213	0	0	E	E	E	E	E	E	E	E	E	1	E

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
R0240	UNL	BP	OR	7,241	18	0	G	G	E	E	E	E	E	G	G	1	G
R0241	UNL	BP	OR	7,269	0	0	E	E	E	E	E	E	E	E	E	1	E
R0249	UNL	BP	NW	7,302	0	0	G	E	G	G	G	G	E	G	E	1	G
R0254	UNL	BP	NW	7,329	0	0	E	E	G	G	G	E	E	E	E	1	E
R0260	UNL	OR	NW	7,358	0	0	G	G	G	G	G	G	G	G	E	2	E
R0261	UNL	OR	OR	7,390	16	0	E	E	E	G	G	E	E	E	E	1	E
R0264	UNL	OR	OR	7,629	13	0	E	E	E	G	G	E	E	E	E	1	E
R0266	UNL	OR	NW	7,666	0	0	E	E	G	G	G	E	E	G	G	1	G
R0269	UNL	OR	OR	7,910	20	0	E	E	E	G	G	E	G	G	E	1	G
R0272	UNL	OR	NW	7,941	0	0	E	E	E	E	E	E	E	E	E	1	E
R0280	UNL	OR	OR	8,144	15	0	E	E	E	G	G	E	E	E	E	1	G
R0282	UNL	OR	NW	8,174	0	0	E	G	G	G	G	E	G	G	G	1	G
R0285	UNL	OR	OR	8,473	23	0	G	E	E	G	G	G	G	G	G	1	G
R0286	UNL	OR	NW	8,504	9	0	G	E	G	G	G	G	G	G	G	1	G
R0293	UNL	OR	NW	9,369	52	0	G	E	G	G	G	E	G	G	G	1	G
R0297	UNL	OR	OR	9,543	4	0	G	G	G	G	G	G	G	G	G	1	G
R0299	UNL	BP	OR	9,600	0	0	G	G	G	E	E	G	G	G	G	1	E
R0300	UNL	BP	NW	9,634	0	0	E	E	E	G	G	E	E	E	E	1	G
R0303	UNL	RE	OR	9,735	16	0	E	E	E	G	G	E	E	E	E	1	G
R0306	UNL	RE	NW	9,846	0	0	E	E	E	E	E	E	E	E	E	1	E

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

		VEH. MODL		NO. YEAR		MAKE MODL		CID CONV.															
		9406		1979		VOLV		245		130		3 WAY											
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE- START PHASE							
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ						
D0039	UNL	OR	OR	5,795	0	0	G	G	G	G	G	G	G	G	G	3	G						
D0044	UNL	OR	OR	5,831	0	0	G	E	G	G	G	F	F	F	F	1	G						
D0055	UNL	OR	OR	5,907	0	0	F	F	F	F	F	F	F	F	F	1	F						
D0067	UNL	BP	OR	6,002	5	0	F	G	F	F	F	F	F	F	F	1	G						
D0078	UNL	BP	OR	6,075	0	0	P	F	P	F	F	P	P	P	F	1	F						
D0080	UNL	BP	OR	6,101	0	0	G	F	F	F	F	P	F	F	G	2	F						
D0091	LEAD	OR	OR	6,371	26	0	F	G	G	G	G	P	F	G	G	1	G						
D0096	LEAD	OR	OR	6,597	13	0	G	G	F	F	F	G	G	G	G	1	F						
D0099	LEAD	OR	OR	6,853	12	0	G	G	G	G	G	G	G	G	G	1	G						
D0106	LEAD	OR	OR	7,036	13	0	E	E	E	G	E	E	E	E	E	1	E						
D0120	LEAD	OR	OR	7,275	14	0	E	E	E	G	E	E	E	E	E	1	E						
D0134	LEAD	OR	OR	7,516	12	0	E	E	E	G	G	G	E	E	E	1	G						
D0138	LEAD	OR	OR	7,641	13	0	E	E	E	G	E	E	E	E	E	1	E						
D0143	LEAD	OR	OR	7,934	17	0	G	E	G	G	G	E	E	G	G	2	G						
D0150	LEAD	OR	OR	8,144	3	0	E	E	E	G	G	E	E	E	E	1	E						
D0153	LEAD	OR	OR	8,174	4	0	E	E	E	E	E	E	G	E	G	1	G						
R0175	LEAD	BP	OR	8,220	4	0	G	E	G	F	F	E	E	G	E	2	F						
R0179	LEAD	BP	OR	8,250	0	0	G	G	G	G	G	G	G	G	G	1	G						
R0183	UNL	BP	OR	8,280	14	0	E	E	E	G	G	E	E	E	E	1	E						
R0185	UNL	BP	OR	8,309	0	0	E	E	E	F	F	E	E	E	E	1	F						
R0193	UNL	BP	NW	8,339	0	0	G	E	G	G	G	G	E	G	G	1	G						
R0198	UNL	BP	NW	8,380	0	0	G	G	G	G	G	E	G	E	E	1	G						

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. NO.		MODL YEAR		MAKE MODL		CID CONV.															
9406		1979		VOLV 245		130 3 WAY															
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE-START PHASE					
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ				
R0202	UNL	OR	NW	8,406	0	0	E	E	E	G	G	E	E	E	E	1	G				
R0207	UNL	OR	OR	8,445	0	0	G	E	G	F	F	E	G	G	G	1	G				
R0213	UNL	OR	OR	8,730	30	0	G	G	G	G	G	G	G	G	G	1	G				
R0215	UNL	OR	NW	8,760	0	0	G	E	E	G	G	G	E	G	E	1	G				
R0218	UNL	OR	OR	8,927	15	0	G	E	E	G	G	G	E	G	E	1	G				
R0221	UNL	OR	NW	8,958	0	0	G	E	G	G	G	G	E	G	E	2	G				
R0225	UNL	OR	OR	9,164	30	0	E	E	E	E	E	E	E	E	E	1	E				
R0227	UNL	OR	NW	9,212	0	0	E	E	E	E	E	E	E	E	E	1	E				
R0236	UNL	OR	OR	9,503	20	0	G	G	G	G	G	G	E	G	G	1	G				
R0238	UNL	OR	NW	9,532	0	0	E	E	E	E	E	E	E	E	E	1	E				
R0255	UNL	OR	OR	10,562	65	0	G	G	G	G	G	G	G	G	G	1	E				
R0259	UNL	OR	NW	10,610	5	0	G	G	G	G	G	G	G	G	G	1	G				
R0265	UNL	OR	OR	11,642	56	0	E	E	G	F	F	E	G	G	E	1	F				
R0268	UNL	OR	NW	11,672	0	0	E	E	E	E	E	E	E	E	E	1	E				
R0271	UNL	BP	OR	11,701	0	0	G	G	G	G	G	G	G	G	G	1	G				
R0273	UNL	BP	NW	11,728	0	0	G	G	G	G	G	G	G	G	G	1	G				
R0275	UNL	RE	OR	11,753	0	0	G	E	G	F	F	G	G	G	G	1	F				
R0279	UNL	RE	NW	11,847	14	0	G	G	G	G	G	G	G	G	G	1	G				

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

VEH. NO.		MODL YEAR		MAKE	MODL	CID	CONV.										
9407		1979		CHEV	MONZ	151	3 WAY										
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE-START PHASE	
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ
D0043	UNL	OR	OR	5,182	0	1	P	F	P	P	F	P	P	P	P	2	F
D0056	UNL	OR	OR	5,271	0	0	P	F	F	F	F	F	F	F	F	1	F
D0060	UNL	OR	OR	5,299	0	0	P	F	P	F	F	P	P	F	F	1	F
D0064	UNL	BP	OR	5,330	0	0	F	F	F	F	F	F	F	F	F	1	F
D0075	UNL	BP	OR	5,384	0	0	P	F	P	F	F	P	P	F	F	1	F
D0076	UNL	BP	OR	5,408	0	0	P	F	P	F	F	P	P	P	F	1	F
D0097	LEAD	OR	OR	5,646	14	0	F	F	P	F	F	P	P	F	F	1	F
D0105	LEAD	OR	OR	5,870	26	2	G	E	G	G	E	G	G	G	G	1	E
D0112	LEAD	OR	OR	6,121	12	0	F	G	F	E	E	P	F	G	G	1	G
D0131	LEAD	OR	OR	6,341	15	1	G	E	G	G	E	F	G	G	G	1	E
D0137	LEAD	OR	OR	6,606	13	0	G	E	G	G	E	G	G	G	F	1	E
D0145	LEAD	OR	OR	6,831	14	0	G	E	G	G	G	G	G	G	G	1	G
D0147	LEAD	OR	OR	7,004	0	0	F	G	F	G	E	G	F	F	G	2	G
D0149	LEAD	OR	OR	7,024	0	1	P	G	P	G	G	P	F	F	F	1	G
D0152	LEAD	OR	OR	7,057	3	0	G	G	G	G	F	G	E	G	G	1	E
D0167	LEAD	OR	OR	7,369	28	0	P	F	F	F	F	G	G	F	F	3	F
D0170	LEAD	OR	OR	7,589	4	0	P	E	G	F	F	E	F	P	G	2	F
D0188	LEAD	OR	OR	7,959	31	0	G	F	G	G	G	G	G	F	F	2	G
R0195	LEAD	BP	OR	8,006	0	0	F	E	G	G	G	G	G	F	G	1	G
R0197	LEAD	BP	OR	8,034	0	0	G	G	G	G	G	F	G	G	G	1	G
R0201	UNL	BP	OR	8,062	17	0	G	G	G	G	G	G	G	G	G	1	G
R0203	UNL	BP	OR	8,090	0	0	E	E	E	G	G	E	E	E	E	1	E

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX A (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE PREPARATORY DRIVEABILITY EVALUATIONS

		VEH. NO.		MODL YEAR		MAKE	MODL	CID	CONV.																		
		9407		1979		CHEV	MONZ	151	3 WAY																		
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	CONSTANT SPEED PHASE						ACCELERATION FROM STOP PHASE				RE-START PHASE											
						NS	AQ	CQ	SA	IO	IF	1/4	1/2	2/3	3/4	CT	IQ										
R0214	UNL	BP	NW	8,125	0	0	F	G	G	G	G	G	G	G	G	1	G										
R0217	UNL	BP	NW	8,155	0	0	G	G	G	G	G	G	G	G	G	1	G										
R0220	UNL	OR	NW	8,183	0	0	G	G	G	G	G	G	G	G	G	1	G										
R0223	UNL	OR	OR	8,215	12	0	G	E	G	G	G	G	E	G	E	1	G										
R0229	UNL	OR	OR	8,513	15	0	P	F	P	F	G	P	P	F	F	2	F										
R0234	UNL	OR	NW	8,550	0	0	G	E	E	E	E	G	E	E	E	1	E										
R0239	UNL	OR	OR	8,763	14	0	E	E	E	E	E	G	G	G	G	1	G										
R0242	UNL	OR	NW	8,794	0	0	G	G	G	G	G	G	G	G	G	1	G										
R0250	UNL	OR	OR	9,002	14	1	F	G	G	G	G	P	P	P	P	1	G										
R0258	UNL	OR	NW	9,039	0	0	F	G	G	G	G	F	F	F	F	1	G										
R0262	UNL	OR	OR	9,240	14	0	F	G	G	G	G	F	F	F	F	1	G										
R0263	UNL	OR	NW	9,277	0	0	F	G	F	G	G	G	G	G	G	1	G										
R0267	UNL	OR	OR	10,305	52	0	F	F	F	G	G	F	G	F	F	1	G										
R0270	UNL	OR	NW	10,335	0	0	F	G	F	G	G	F	G	F	G	1	G										
R0274	UNL	OR	OR	11,365	57	0	G	G	F	F	F	F	F	F	F	1	G										
R0276	UNL	OR	NW	11,392	0	0	P	F	G	F	G	F	G	F	F	1	G										
R0281	UNL	BP	OR	11,422	0	0	G	E	G	E	E	G	G	G	G	1	E										
R0283	UNL	BP	NW	11,450	0	0	P	F	F	G	G	F	F	F	F	1	G										
R0287	UNL	RE	OR	11,482	10	0	G	G	F	G	G	F	G	G	G	1	E										
R0288	UNL	RE	NW	11,514	0	0	P	F	F	G	G	F	F	F	G	1	G										

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX B - LISTING OF VEHICLE DYNAMOMETER
DRIVEABILITY EVALUATION

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

COLD START & IDLE PHASE

CT - Initial cranking time in seconds

ND - Number of engine die-outs after start

NS - Number of engine stalls after gear selection

HL - Hesitation, lag upon slight acceleration (Y: yes; N: no)

IQ - Idle quality (E: excellent; G: good; F: fair; P: poor;
U: fail)

DRIVE-AWAY PHASE

N1 - Number of stalls or pass-outs upon slight acceleration to road speed

A1 - Acceleration quality (E: excellent; G: good; F: fair; P: poor; U: fail)

I1 - Idle quality after 0.2 mile @ stop (E: excellent; G: good; F: fair; P: poor; U: fail)

N2 - Number of stalls or pass-outs upon slight acceleration to speed

A2 - Acceleration quality after 0.2 mile @ stop (E: excellent; G: good; F: fair; P: poor; U: fail)

I2 - Idle quality after 2.6 mile @ stop (E: excellent; G: good; F: fair; P: poor; U: fail)

Pass-outs are defined as restart from "off idle" stall

Die-outs are defined as restart from stall at idle

The codes for idle, acceleration and cruise quality are defined as follows:

- E - Excellent - No trace of undesirable elements (smooth, even, responsive)
- G - Good - Slight trace, small indication of an undesirable element (initial unevenness, roughness, hesitation, quickly overcome)
- F - Fair - Undesirable element exists yet reliability is retained (only intermittent misfire, surging, hesitation)
- P - Poor - Undesirable element exists which affects reliability or driver confidence (steady misfire, roughness, lack of power, response)
- U - Fail - Extremely unreliable, possible unsafe conditions exist (frequent stalling, die-outs on acceleration, lack of throttle response)

The Cold Start and Idle Phase and the Drive-Away Phase are performed on the dynamometer during the Cold Transient portion of the Federal Testing Procedure.

APPENDIX B

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -						DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ		N1	A1	I1	N2	A2	I2
D0001	UNL	OR	NA	8,316	0	1	0	0	Y	G		1	G	G	0	G	G
D0003	UNL	OR	NA	8,394	0	2	0	0	Y	F		0	F	F	0	G	G
D0005	UNL	OR	NA	8,442	8	1	0	0	Y	G		0	G	G	0	E	G
D0008	UNL	BP	NA	8,694	5	1	0	0	Y	G		0	F	G	0	G	E
D0010	UNL	BP	NA	8,733	0	2	0	1	Y	P		0	F	F	0	F	G
D0013	UNL	BP	NA	8,760	6	2	0	1	Y	F		0	F	F	0	G	F
D0034	LEAD	OR	NA	9,046	40	1	1	0	Y	P		0	P	F	0	G	G
D0038	LEAD	OR	NA	9,307	15	2	0	1	N	G		0	F	G	0	G	G
D0072	LEAD	OR	NA	9,770	41	2	0	0	Y	F		0	F	F	0	G	G
D0093	LEAD	OR	NA	10,069	20	1	0	1	Y	F		0	G	G	0	G	G
D0109	UNL	BP	NA	10,446	72	1	0	1	N	P		0	F	F	0	G	G
D0118	UNL	RE	NA	10,532	0	1	0	1	Y	F		0	G	G	0	G	G
R0154	LEAD	OR	NA	11,750	91	3	0	1	Y	G		1	F	G	0	F	G
R0157	LEAD	OR	NA	11,795	3	1	1	1	Y	G		0	G	G	0	G	G
R0165	LEAD	OR	NA	11,831	6	0	0	0	N	G		0	G	G	0	G	G
R0173	UNL	BP	NA	11,877	22	1	0	0	Y	F		1	F	G	0	F	G
R0178	UNL	OR	NA	11,909	0	1	0	0	Y	G		0	G	G	0	G	G
R0184	UNL	OR	NA	12,118	17	2	0	0	N	F		0	F	F	0	F	F
R0189	UNL	OR	NA	12,331	18	1	0	1	Y	F		0	G	F	0	G	G
R0216	UNL	OR	NA	12,612	19	1	0	0	Y	G		0	F	G	0	F	G
R0222	UNL	OR	NA	12,823	20	1	0	0	Y	G		0	G	G	0	G	G
R0232	UNL	OR	NA	13,860	61	1	0	0	N	G		0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.
9401	1979	FORD	THND	302	OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
R0244	UNL	OR	NA	14,894	65	10	0	1	N	G	1	G	G	0	G	G
R0247	UNL	RE	NA	14,934	0	4	0	1	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -						DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2	
D0057	UNL	OR	NA	9,287	0	5	1	0	Y	F	0	G	G	0	G	G	
D0059	UNL	OR	NA	9,319	0	2	0	1	N	P	0	F	F	0	F	F	
D0077	UNL	OR	NA	9,462	0	2	0	0	N	P	0	F	F	0	G	G	
D0083	UNL	BP	NA	9,486	0	1	0	0	Y	F	0	G	G	0	G	G	
D0092	UNL	BP	NA	9,567	0	1	0	0	N	G	0	G	G	0	G	G	
D0095	UNL	BP	NA	9,591	0	2	0	0	N	P	0	F	F	0	G	F	
D0100	LEAD	OR	NA	9,814	39	1	0	0	N	P	0	F	F	0	G	G	
D0119	LEAD	OR	NA	10,174	21	1	0	0	Y	G	0	G	G	0	G	G	
D0126	LEAD	OR	NA	10,407	20	1	0	0	N	F	0	G	F	0	E	F	
D0136	LEAD	OR	NA	10,678	19	2	0	1	N	F	0	G	G	0	E	G	
D0142	LEAD	OR	NA	10,922	18	2	0	1	Y	F	0	G	G	0	G	E	
D0148	LEAD	OR	NA	11,186	17	1	0	1	N	F	0	G	G	0	G	G	
D0151	LEAD	OR	NA	11,223	0	3	0	0	N	G	0	G	G	0	G	G	
D0163	LEAD	OR	NA	11,256	0	1	2	0	Y	G	0	G	G	0	G	G	
D0169	LEAD	OR	NA	11,593	37	1	0	0	N	G	0	G	G	0	G	G	
D0174	LEAD	OR	NA	11,841	4	1	0	0	N	G	0	G	G	0	G	G	
D0190	UNL	BP	NA	11,876	21	1	0	0	N	G	0	G	G	0	G	G	
R0200	UNL	OR	NA	11,946	0	1	0	0	N	G	0	E	G	0	G	G	
R0212	UNL	OR	NA	12,133	19	1	0	0	N	G	0	G	G	0	G	G	
R0219	UNL	OR	NA	12,347	19	1	0	0	N	G	0	G	G	0	G	G	
R0224	UNL	OR	NA	12,621	20	1	0	0	Y	G	0	G	G	0	G	G	
R0230	UNL	OR	NA	12,902	41	1	0	0	N	G	0	G	G	0	G	G	

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.
9402	1979	FORD	THND	302	OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & IDLE PHASE						DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2	
R0243	UNL	OR	NA	13,930	69	1	0	0	N	G	0	G	G	0	G	G	
R0246	UNL	OR	NA	14,940	71	1	0	0	N	G	0	G	G	0	G	G	
R0252	UNL	RE	NA	14,990	0	1	0	0	N	G	0	G	G	0	G	G	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011.

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.
9403	1979	OLDS	CUTL	260	OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & IDLE PHASE					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
D0004	UNL	OR	NA	6,818	7	2	0	0	Y	F	0	F	F	0	F	F
D0006	UNL	OR	NA	6,857	2	6	1	0	Y	G	0	G	G	0	E	G
D0007	UNL	OR	NA	6,886	0	7	0	0	Y	G	0	G	G	0	G	G
D0009	UNL	BP	NA	6,950	0	8	0	0	Y	G	0	F	G	0	G	G
D0011	UNL	BP	NA	7,014	6	2	0	0	N	G	0	F	G	0	G	G
D0014	UNL	BP	NA	7,069	0	10	0	0	Y	G	0	G	G	0	G	G
D0049	LEAD	OR	NA	7,449	28	8	0	0	N	G	0	G	G	0	E	E
D0073	LEAD	OR	NA	7,767	27	2	1	0	Y	F	0	F	G	0	G	E
D0088	LEAD	OR	NA	7,956	12	7	0	0	N	P	0	G	F	0	G	G
D0098	LEAD	OR	NA	8,161	13	6	0	0	N	P	0	F	F	0	G	G
D0103	LEAD	OR	NA	8,429	14	5	1	0	N	F	0	G	G	0	G	G
D0111	LEAD	OR	NA	8,618	12	1	1	0	N	P	0	F	G	0	G	G
D0121	LEAD	OR	NA	8,837	13	1	0	0	Y	F	0	G	G	0	G	G
D0127	LEAD	OR	NA	9,017	13	7	0	0	N	F	0	G	G	0	E	G
D0135	LEAD	OR	NA	9,244	14	2	0	0	N	P	0	F	G	0	G	G
D0141	LEAD	OR	NA	9,430	12	1	0	0	N	F	0	G	G	0	E	G
D0155	LEAD	OR	NA	9,856	19	10	0	0	N	G	0	G	G	0	G	G
D0158	LEAD	OR	NA	9,889	0	10	1	1	N	G	0	G	G	0	G	G
D0160	LEAD	OR	NA	9,922	0	1	0	0	N	G	0	G	G	0	G	G
D0164	UNL	BP	NA	9,961	19	1	0	0	N	G	0	G	G	0	G	G
R0168	UNL	OR	NA	9,993	0	1	0	0	N	G	0	G	G	0	G	G
R0176	UNL	OR	NA	10,220	16	1	0	0	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.
9403	1979	OLDS	CUTL	260	OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & IDLE PHASE						DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2	
R0182	UNL	OR	NA	10,490	16	1	0	0	N	G	0	G	G	0	G	G	
R0187	UNL	OR	NA	10,739	15	1	0	0	N	G	0	G	G	0	G	G	
R0206	UNL	OR	NA	10,931	16	8	0	0	Y	F	0	G	G	0	G	G	
R0231	UNL	OR	NA	12,015	62	1	0	0	N	G	0	G	G	0	G	G	
R0245	UNL	OR	NA	13,046	61	1	0	0	N	G	0	G	G	0	G	U	
R0251	UNL	RE	NA	13,114	0	2	0	0	N	G	0	G	G	0	G	G	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. NO.		MODL YEAR	MAKE	MODL	CID	CONV.										
9404		1979	OLDS	CUTL	260	OXID.										
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & IDLE PHASE					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
D0018	UNL	OR	NA	7,283	0	1	0	0	Y	F	0	G	G	0	G	G
D0020	UNL	OR	NA	7,315	5	2	0	1	Y	F	0	F	G	0	G	G
D0022	UNL	OR	NA	7,349	2	3	0	0	Y	F	0	F	F	0	G	G
D0027	UNL	BP	NA	7,380	0	2	1	0	N	G	0	G	G	0	G	G
D0031	UNL	BP	NA	7,437	6	2	0	0	N	F	0	F	F	0	F	F
D0033	UNL	BP	NA	7,492	0	1	0	0	Y	F	0	P	F	0	F	G
D0054	LEAD	OR	NA	7,955	40	2	0	0	N	P	0	F	F	0	G	G
D0082	LEAD	OR	NA	8,266	24	1	0	0	N	F	0	F	F	0	G	G
D0094	LEAD	OR	NA	8,358	12	1	0	1	Y	F	0	G	F	0	G	G
D0101	LEAD	OR	NA	8,528	10	1	0	0	Y	F	0	F	F	0	G	G
D0107	LEAD	OR	NA	8,727	15	1	0	0	N	G	0	E	E	0	E	E
D0113	LEAD	OR	NA	8,897	11	1	0	0	Y	P	0	F	F	0	G	G
D0122	LEAD	OR	NA	9,213	16	3	0	0	N	P	0	G	G	0	G	G
D0124	LEAD	OR	NA	9,363	14	3	0	0	Y	F	0	F	G	0	G	E
D0140	LEAD	OR	NA	9,627	14	1	0	0	N	G	0	G	G	0	E	G
D0146	LEAD	OR	NA	9,842	12	2	0	0	N	G	0	E	G	0	E	E
D0156	LEAD	OR	NA	10,098	9	5	0	0	N	G	0	G	G	0	G	G
D0159	LEAD	OR	NA	10,134	0	3	0	0	N	G	0	G	G	0	G	G
D0172	UNL	BP	NA	10,165	18	1	0	0	N	F	0	F	G	0	G	G
R0177	UNL	OR	NA	10,199	0	3	0	0	N	G	0	G	G	0	G	G
R0180	UNL	OR	NA	10,385	16	1	0	0	Y	F	0	F	F	0	F	F
R0186	UNL	OR	NA	10,633	16	1	0	0	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -					DRIVE-AWAY - PHASE -					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
R0205	UNL	OR	NA	10,864	15	1	0	0	N	G	0	G	G	0	G	G
R0211	UNL	OR	NA	11,082	16	1	0	0	Y	G	0	F	G	0	F	G
R0233	UNL	OR	NA	12,119	67	3	0	0	N	G	0	G	G	0	G	G
R0248	UNL	OR	NA	13,149	61	3	0	0	N	F	0	F	F	0	F	F
R0253	UNL	RE	NA	13,179	0	1	0	0	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.
9405	1979	MERC	MARQ	351	3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & IDLE PHASE					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
D0021	UNL	OR	OR	4,179	5	2	0	0	N	G	0	G	G	0	G	G
D0023	UNL	OR	OR	4,210	0	2	0	0	N	G	0	G	E	0	G	G
D0026	UNL	OR	OR	4,282	0	2	1	0	N	F	0	G	G	0	G	G
D0028	UNL	BP	OR	4,319	8	8	1	0	N	F	0	G	G	0	G	G
D0030	UNL	BP	OR	4,345	0	1	0	0	N	G	0	E	G	0	E	G
D0032	UNL	BP	OR	4,373	0	3	0	0	N	F	0	F	F	0	F	F
D0065	LEAD	OR	OR	4,731	58	1	0	0	N	F	0	F	F	0	G	G
D0081	LEAD	OR	OR	4,902	14	2	0	0	N	F	0	F	F	0	G	G
D0090	LEAD	OR	OR	5,034	13	4	0	0	N	F	0	G	G	0	G	G
D0104	LEAD	OR	OR	5,250	16	3	0	0	N	F	0	G	G	0	G	G
D0108	LEAD	OR	OR	5,466	15	1	0	0	N	P	0	F	F	0	G	G
D0110	LEAD	OR	OR	5,719	17	1	0	0	N	F	0	G	G	0	G	G
D0123	LEAD	OR	OR	5,954	13	1	0	0	N	F	0	G	G	0	G	E
D0133	LEAD	OR	OR	6,050	13	3	0	0	N	F	0	G	G	0	E	G
D0139	LEAD	OR	OR	6,242	28	1	0	0	N	G	0	G	G	0	G	G
D0144	LEAD	OR	OR	6,637	16	3	0	0	N	G	0	E	E	0	E	E
D0161	LEAD	OR	OR	6,875	7	1	0	0	N	G	0	G	G	0	G	G
D0166	LEAD	OR	OR	6,944	4	1	1	0	N	G	0	G	G	0	G	G
D0196	LEAD	OR	OR	7,057	17	3	1	0	N	G	0	G	G	0	G	G
D0228	LEAD	OR	OR	7,152	5	1	0	0	N	G	0	G	G	0	G	G
R0235	LEAD	BP	OR	7,184	10	4	4	0	N	G	0	G	G	0	G	G
R0237	LEAD	BP	OR	7,213	0	1	3	0	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
R0240	UNL	BP	OR	7,241	18	1	0	0	N	G	0	G	G	0	G	G
R0241	UNL	BP	OR	7,269	0	1	1	0	N	G	0	G	G	0	G	G
R0249	UNL	BP	NW	7,302	0	1	0	0	N	G	0	G	G	0	G	G
R0254	UNL	BP	NW	7,329	0	1	0	0	N	G	0	G	G	0	G	G
R0260	UNL	OR	NW	7,358	0	1	0	0	N	G	0	G	G	0	G	G
R0261	UNL	OR	OR	7,390	16	1	0	0	N	G	0	G	G	0	G	G
R0264	UNL	OR	OR	7,629	13	1	0	0	N	G	0	G	G	0	G	G
R0266	UNL	OR	NW	7,666	0	1	0	0	N	G	0	G	G	0	G	G
R0269	UNL	OR	OR	7,910	20	1	0	0	N	G	0	G	G	0	G	G
R0272	UNL	OR	NW	7,941	0	1	1	0	N	G	0	G	G	0	G	G
R0280	UNL	OR	OR	8,144	15	1	1	0	N	G	0	G	G	0	G	G
R0282	UNL	OR	NW	8,174	0	1	0	0	N	G	0	G	G	0	G	G
R0285	UNL	OR	OR	8,473	23	1	0	0	N	G	0	G	G	0	G	G
R0286	UNL	OR	NW	8,504	9	1	0	0	N	G	0	G	G	0	G	G
R0293	UNL	OR	NW	9,369	52	1	0	0	N	G	0	G	G	0	G	G
R0297	UNL	OR	OR	9,543	4	1	0	0	N	G	0	G	G	0	G	G
R0299	UNL	BP	OR	9,600	0	1	0	0	N	G	0	G	G	0	G	G
R0300	UNL	BP	NW	9,634	0	1	0	0	N	G	0	G	G	0	G	G
R0303	UNL	RE	OR	9,735	16	2	0	0	N	G	0	G	G	0	G	G
R0306	UNL	RE	NW	9,846	0	1	0	0	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH.		MODL		YEAR		MAKE		MODL		CID		CONV.					
NO.		NO.		YEAR		MAKE		MODL		CID		CONV.					
9406		1979		VOLV		245		130		3		WAY					
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -						DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2	
D0039	UNL	OR	OR	5,795	0	3	0	0	Y	F	0	F	F	0	G	G	
D0044	UNL	OR	OR	5,831	0	2	0	0	N	F	0	F	G	0	G	G	
D0055	UNL	OR	OR	5,907	0	2	0	0	N	F	0	F	G	0	G	G	
D0067	UNL	BP	OR	6,002	5	2	0	0	N	F	0	G	F	0	G	G	
D0078	UNL	BP	OR	6,075	0	2	0	0	N	F	0	F	F	0	G	G	
D0080	UNL	BP	OR	6,101	0	2	0	0	N	F	0	G	G	0	G	G	
D0091	LEAD	OR	OR	6,371	26	3	0	0	N	F	0	F	F	0	G	F	
D0096	LEAD	OR	OR	6,597	13	3	0	0	N	F	0	G	G	0	G	G	
D0099	LEAD	OR	OR	6,853	12	3	0	0	N	F	0	G	G	0	E	E	
D0106	LEAD	OR	OR	7,036	13	3	0	0	N	F	0	G	G	0	G	E	
D0120	LEAD	OR	OR	7,275	14	3	0	0	N	F	0	G	E	0	E	E	
D0134	LEAD	OR	OR	7,516	12	3	0	0	N	G	0	E	E	0	E	E	
D0138	LEAD	OR	OR	7,641	13	2	0	0	N	F	0	G	G	0	G	G	
D0143	LEAD	OR	OR	7,934	17	2	0	0	N	F	0	G	G	0	G	G	
D0150	LEAD	OR	OR	8,144	3	2	0	0	N	G	0	G	G	0	G	G	
D0153	LEAD	OR	OR	8,174	4	3	0	0	Y	G	0	G	G	0	G	G	
R0175	LEAD	BP	OR	8,220	4	2	0	0	Y	G	0	G	G	0	G	G	
R0179	LEAD	BP	OR	8,250	0	2	0	0	N	G	0	G	G	0	G	G	
R0183	UNL	BP	OR	8,280	14	2	0	0	N	G	0	G	G	0	G	G	
R0185	UNL	BP	OR	8,309	0	1	0	0	N	G	0	G	G	0	G	G	
R0193	UNL	BP	NW	8,339	0	2	0	1	N	G	0	G	G	0	G	G	
R0198	UNL	BP	NW	8,380	0	6	0	0	N	G	0	G	G	0	G	G	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL		YEAR		MAKE		MODL		CID		CONV.						
9406		1979		VOLV		245		130		3 WAY						
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
R0202	UNL	OR	NW	8,406	0	1	0	0	N	G	0	G	G	0	G	G
R0207	UNL	OR	OR	8,445	0	1	0	0	N	G	0	G	G	0	G	G
R0213	UNL	OR	OR	8,730	30	3	0	0	Y	G	0	G	G	0	G	G
R0215	UNL	OR	NW	8,760	0	2	0	0	N	G	0	G	G	0	G	G
R0218	UNL	OR	OR	8,927	15	1	0	0	N	G	0	G	G	0	G	G
R0221	UNL	OR	NW	8,958	0	2	0	0	Y	G	0	G	G	0	G	G
R0225	UNL	OR	OR	9,164	30	1	0	0	N	G	0	G	G	0	G	G
R0227	UNL	OR	NW	9,212	0	1	0	0	N	G	0	G	G	0	G	G
R0236	UNL	OR	OR	9,503	20	2	0	0	N	G	0	G	G	0	G	G
R0238	UNL	OR	NW	9,532	0	1	0	0	N	G	0	G	G	0	G	G
R0255	UNL	OR	OR	10,562	65	3	0	0	Y	G	0	G	G	0	G	G
R0259	UNL	OR	NW	10,610	5	1	0	0	N	G	0	G	G	0	G	G
R0265	UNL	OR	OR	11,642	56	2	0	0	Y	G	0	G	G	0	G	G
R0268	UNL	OR	NW	11,672	0	1	0	0	N	G	0	G	G	0	G	G
R0271	UNL	BP	OR	11,701	0	1	0	0	N	G	0	G	G	0	G	G
R0273	UNL	BP	NW	11,728	0	1	0	0	N	G	0	G	G	0	G	G
R0275	UNL	RE	OR	11,753	0	1	0	0	N	G	0	G	G	0	G	G
R0279	UNL	RE	NW	11,847	14	1	0	0	N	G	0	G	G	0	G	G

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & - IDLE PHASE -						DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ		N1	A1	I1	N2	A2	I2
D0043	UNL	OR	OR	5,182	0	1	0	0	Y	F		1	F	F	0	F	G
D0056	UNL	OR	OR	5,271	0	4	1	0	Y	F		0	F	F	0	G	G
D0060	UNL	OR	OR	5,299	0	2	0	1	N	P		0	P	F	0	F	F
D0064	UNL	BP	OR	5,330	0	8	0	1	Y	P		0	F	F	0	G	F
D0075	UNL	BP	OR	5,384	0	1	0	0	Y	P		0	P	F	0	F	E
D0076	UNL	BP	OR	5,408	0	1	0	0	Y	P		0	F	F	0	F	F
D0097	LEAD	OR	OR	5,646	14	8	0	0	Y	P		0	F	F	0	F	F
D0105	LEAD	OR	OR	5,870	26	1	0	0	Y	F		0	F	F	0	G	G
D0112	LEAD	OR	OR	6,121	12	1	1	0	Y	P		0	P	F	0	F	F
D0131	LEAD	OR	OR	6,341	15	2	0	0	Y	F		0	G	G	0	G	G
D0137	LEAD	OR	OR	6,606	13	1	0	0	Y	F		0	F	F	0	G	G
D0145	LEAD	OR	OR	6,831	14	2	0	0	Y	F		0	E	G	0	E	E
D0147	LEAD	OR	OR	7,004	0	1	0	0	Y	F		0	F	F	0	G	G
D0149	LEAD	OR	OR	7,024	0	1	0	0	Y	F		0	P	F	0	P	F
D0152	LEAD	OR	OR	7,057	3	3	1	0	Y	G		0	G	G	1	F	G
D0167	LEAD	OR	OR	7,369	28	1	0	0	Y	G		0	G	G	0	F	G
D0170	LEAD	OR	OR	7,589	4	1	0	0	Y	F		0	F	F	0	F	F
D0188	LEAD	OR	OR	7,959	31	7	0	0	Y	F		3	F	F	0	F	F
R0195	LEAD	BP	OR	8,006	0	1	0	0	Y	P		1	P	F	0	P	F
R0197	LEAD	BP	OR	8,034	0	1	1	0	Y	P		0	P	F	0	F	F
R0201	UNL	BP	OR	8,062	17	9	0	0	Y	G		0	P	F	0	P	F
R0203	UNL	BP	OR	8,090	0	2	0	0	Y	F		0	P	F	0	F	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX B (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF VEHICLE DYNAMOMETER DRIVEABILITY EVALUATIONS

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	COLD START & IDLE PHASE					DRIVE-AWAY PHASE					
						CT	ND	NS	HL	IQ	N1	A1	I1	N2	A2	I2
R0214	UNL	BP	NW	8,125	0	3	0	0	Y	G	0	F	G	0	F	G
R0217	UNL	BP	NW	8,155	0	4	0	0	Y	G	0	F	G	0	F	G
R0220	UNL	OR	NW	8,183	0	4	0	0	Y	G	0	F	G	0	F	G
R0223	UNL	OR	OR	8,215	12	3	0	0	Y	G	0	G	G	0	G	G
R0229	UNL	OR	OR	8,513	15	6	0	0	Y	G	0	F	G	0	G	G
R0234	UNL	OR	NW	8,550	0	5	0	0	Y	F	0	G	G	0	G	G
R0239	UNL	OR	OR	8,763	14	3	0	0	Y	G	0	G	G	0	G	G
R0242	UNL	OR	NW	8,794	0	6	0	0	Y	G	0	G	G	0	G	G
R0250	UNL	OR	OR	9,002	14	2	0	0	Y	G	0	G	G	0	G	G
R0258	UNL	OR	NW	9,039	0	3	0	0	Y	G	0	G	G	0	G	G
R0262	UNL	OR	OR	9,240	14	4	0	0	Y	G	0	F	G	0	G	G
R0263	UNL	OR	NW	9,277	0	2	0	0	Y	G	0	F	G	0	G	G
R0267	UNL	OR	OR	10,305	52	3	0	0	Y	G	0	G	G	0	G	G
R0270	UNL	OR	NW	10,335	0	3	0	0	Y	G	4	P	G	0	F	G
R0274	UNL	OR	OR	11,365	57	1	0	2	N	G	0	F	G	0	G	G
R0276	UNL	OR	NW	11,392	0	2	0	0	Y	G	0	G	G	0	G	G
R0281	UNL	BP	OR	11,422	0	1	0	0	Y	G	0	G	G	0	G	G
R0283	UNL	BP	NW	11,450	0	1	0	1	Y	G	0	F	G	0	G	G
R0287	UNL	RE	OR	11,482	10	1	0	0	Y	G	2	F	G	0	G	G
R0288	UNL	RE	NW	11,514	0	1	0	0	Y	G	0	F	G	0	F	G

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX C - LISTING OF FEDERAL TEST PROCEDURE
RESULTS BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

TEST - Test type (indicates the portion of the test or composite)

CT - Cold transient portion of test

CS - Cold stabilized portion of test

HT - Hot transient portion of test

75 - 1975 Federal Test Procedure composite

EMISSION RESULTS

(gr/mi) - Emission results in grams per mile

- HC - Hydrocarbon emissions in grams per mile
- CO - Carbon monoxide emissions in grams per mile
- CO₂ - Carbon dioxide emissions in grams per mile
- NOx_c - Oxides of nitrogen emissions corrected for humidity
in grams per mile

FUEL ECON. MPG - Fuel economy in miles per gallon, calculated by the
carbon balance method

APPENDIX C

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0001	UNL	OR	NA	8,316	0	05/16/79	CT	2.09	21.3	635.9	1.86	13.13
							CS	0.27	2.5	625.7	1.39	14.08
							HT	0.49	5.6	565.2	2.23	15.42
							75	0.71	7.2	611.3	1.72	14.20
D0003	UNL	OR	NA	8,394	0	05/21/79	CT	1.68	18.7	613.9	1.67	13.68
							CS	0.24	1.7	599.1	1.20	14.73
							HT	0.57	5.2	519.2	1.87	16.77
							75	0.62	6.1	580.4	1.48	14.99
D0005	UNL	OR	NA	8,442	8	05/23/79	CT	1.85	21.7	618.8	1.86	13.47
							CS	0.29	1.5	595.5	1.29	14.82
							HT	0.56	6.6	522.1	1.89	16.61
							75	0.68	7.0	580.3	1.57	14.95
D0008	UNL	BP	NA	8,694	5	06/05/79	CT	4.68	57.1	567.2	2.03	13.21
							CS	3.09	29.2	550.1	1.95	14.65
							HT	2.96	21.1	508.1	2.52	16.12
							75	3.38	32.7	542.2	2.12	14.69
D0010	UNL	BP	NA	8,733	0	06/12/79	CT	5.89	54.9	577.3	2.10	13.01
							CS	3.07	23.1	565.0	1.98	14.52
							HT	3.13	17.0	515.3	2.47	16.08
							75	3.67	28.0	554.0	2.14	14.56
D0013	UNL	BP	NA	8,760	6	06/14/79	CT	4.43	54.0	528.2	1.91	14.15
							CS	2.94	23.4	522.2	1.86	15.62
							HT	2.98	16.3	473.9	2.39	17.44
							75	3.26	27.7	510.3	2.01	15.73
D0034	LEAD	OR	NA	9,046	40	07/11/79	CT	3.78	40.7	589.1	1.98	13.34
							CS	1.96	13.6	604.0	1.50	14.05
							HT	2.73	15.2	532.7	2.33	15.70
							75	2.55	19.6	581.5	1.83	14.31
D0038	LEAD	OR	NA	9,307	15	07/24/79	CT	4.76	38.0	600.5	1.88	13.14
							CS	2.00	11.8	587.5	1.30	14.49
							HT	2.25	12.6	519.2	2.17	16.25
							75	2.63	17.4	571.5	1.66	14.62
D0072	LEAD	OR	NA	9,770	41	08/25/79	CT	4.51	32.5	595.1	1.64	13.44
							CS	2.36	12.2	577.5	1.17	14.69
							HT	2.86	19.3	507.3	2.08	16.24
							75	2.94	18.3	562.0	1.52	14.79

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0093	LEAD	OR	NA	10,069	20	09/13/79	CT	4.73	42.4	579.2	1.95	13.43
							CS	2.76	16.3	563.1	1.39	14.86
							HT	2.90	16.4	510.1	2.28	16.28
							75	3.20	21.7	551.9	1.75	14.89
D0109	UNL	BP	NA	10,446	72	10/10/79	CT	5.23	60.5	541.6	2.12	13.59
							CS	3.04	33.2	533.0	1.87	14.92
							HT	3.04	21.4	492.3	2.49	16.58
							75	3.49	35.6	523.7	2.09	15.03
D0118	UNL	RE	NA	10,532	0	10/24/79	CT	2.09	24.6	641.6	1.67	12.92
							CS	0.19	1.7	607.4	1.19	14.53
							HT	0.49	6.8	540.3	2.04	16.06
							75	0.66	7.8	596.2	1.52	14.54
R0154	LEAD	OR	NA	11,750	91	01/16/80	CT	4.63	47.4	627.7	1.79	12.38
							CS	2.95	23.1	612.5	1.15	13.48
							HT	2.55	25.0	531.4	1.89	15.34
							75	3.18	28.6	593.5	1.48	13.68
R0157	LEAD	OR	NA	11,795	3	01/17/80	CT	4.70	38.9	566.6	1.56	13.81
							CS	2.60	10.1	538.9	1.09	15.77
							HT	2.64	14.6	476.8	1.70	17.46
							75	3.04	17.3	527.7	1.35	15.72
R0165	LEAD	OR	NA	11,831	6	01/22/80	CT	4.48	44.2	557.7	1.52	13.84
							CS	2.43	15.1	526.0	1.02	15.92
							HT	2.45	20.3	466.3	1.61	17.54
							75	2.85	22.5	516.3	1.28	15.83
R0173	UNL	BP	NA	11,877	22	01/25/80	CT	4.66	56.2	548.4	1.43	13.62
							CS	3.40	39.1	499.6	1.38	15.52
							HT	3.23	24.1	469.5	1.75	17.15
							75	3.61	38.5	501.4	1.49	15.48
R0178	UNL	OR	NA	11,909	0	01/28/80	CT	3.60	22.4	575.2	1.50	14.27
							CS	2.72	4.8	570.6	1.03	15.12
							HT	2.82	8.2	499.1	1.63	17.04
							75	2.93	9.3	552.1	1.29	15.41
R0184	UNL	OR	NA	12,118	17	01/30/80	CT	3.69	25.8	576.1	1.51	14.12
							CS	2.59	5.2	560.3	0.99	15.39
							HT	2.69	8.6	495.0	1.58	17.16
							75	2.84	10.4	545.8	1.26	15.54

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0189	UNL	OR	NA	12,331	18	02/01/80	CT	3.78	28.4	574.9	1.49	14.05
							CS	2.51	4.7	561.7	0.99	15.38
							HT	2.57	7.3	497.4	1.59	17.17
							75	2.79	10.3	546.9	1.26	15.52
R0216	UNL	OR	NA	12,612	19	02/15/80	CT	3.69	26.6	582.4	1.53	13.96
							CS	2.66	4.6	566.0	0.94	15.26
							HT	2.80	8.2	502.4	1.63	16.93
							75	2.91	10.1	552.0	1.25	15.38
R0222	UNL	OR	NA	12,823	20	02/19/80	CT	3.72	25.2	581.1	1.47	14.03
							CS	2.66	4.2	560.4	0.96	15.42
							HT	2.79	8.2	497.0	1.58	17.11
							75	2.91	9.6	547.3	1.23	15.53
R0232	UNL	OR	NA	13,860	61	02/25/80	CT	3.86	29.9	575.9	1.53	13.97
							CS	2.64	4.4	564.8	1.01	15.30
							HT	2.80	9.4	504.2	1.63	16.81
							75	2.93	11.0	550.5	1.29	15.38
R0244	UNL	OR	NA	14,894	65	03/04/80	CT	3.84	29.9	585.8	1.53	13.76
							CS	2.28	5.3	553.2	0.83	15.60
							HT	2.34	7.6	490.7	1.49	17.40
							75	2.62	11.0	542.9	1.15	15.61
R0247	UNL	RE	NA	14,934	0	03/05/80	CT	1.44	16.9	601.2	1.14	14.04
							CS	0.26	1.3	568.2	0.80	15.54
							HT	0.51	4.3	508.3	1.24	17.18
							75	0.57	5.3	558.6	0.99	15.60

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0057	UNL	OR	NA	9,287	0	08/09/79	CT	1.85	11.6	695.5	2.30	12.33
							CS	0.45	0.3	637.5	1.64	13.88
							HT	0.73	2.4	592.3	2.43	14.84
							75	0.81	3.2	637.1	1.99	13.77
D0059	UNL	OR	NA	9,319	0	08/13/79	CT	2.48	11.7	668.8	2.29	12.77
							CS	0.40	0.0	618.3	1.71	14.32
							HT	0.78	4.5	554.2	2.34	15.74
							75	0.93	3.6	611.2	2.00	14.32
D0077	UNL	OR	NA	9,462	0	08/29/79	CT	2.18	11.0	709.2	2.57	12.10
							CS	0.55	0.2	630.7	1.75	14.03
							HT	0.92	6.9	571.4	2.57	15.17
							75	0.99	4.2	630.7	2.14	13.86
D0083	UNL	BP	NA	9,486	0	09/04/79	CT	4.16	33.1	594.6	2.51	13.45
							CS	3.25	9.7	557.5	2.10	15.22
							HT	3.54	9.4	512.6	2.51	16.48
							75	3.52	14.4	552.8	2.30	15.13
D0092	UNL	BP	NA	9,567	0	09/13/79	CT	4.11	25.2	610.1	2.98	13.39
							CS	3.12	8.8	537.2	2.38	15.82
							HT	3.41	9.7	514.9	2.93	16.40
							75	3.40	12.4	546.1	2.65	15.40
D0095	UNL	BP	NA	9,591	0	09/14/79	CT	3.93	22.2	612.4	3.12	13.45
							CS	3.11	9.6	569.1	2.44	14.94
							HT	3.78	9.0	514.1	2.91	16.43
							75	3.46	12.0	563.0	2.71	14.97
D0100	LEAD	OR	NA	9,814	39	09/25/79	CT	3.14	10.7	615.0	2.48	13.83
							CS	1.69	1.6	579.2	1.74	15.12
							HT	2.00	5.4	523.9	2.57	16.48
							75	2.07	4.5	571.5	2.12	15.17
D0119	LEAD	OR	NA	10,174	21	10/26/79	CT	2.94	14.3	639.5	2.67	13.22
							CS	1.77	2.2	601.5	1.94	14.54
							HT	2.12	6.6	533.8	2.88	16.11
							75	2.11	5.9	590.8	2.34	14.63
D0126	LEAD	OR	NA	10,407	20	11/12/79	CT	3.03	12.5	672.6	2.71	12.65
							CS	1.69	0.9	599.4	1.72	14.64
							HT	1.97	6.1	530.2	2.69	16.25
							75	2.04	4.7	595.6	2.19	14.56

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0136	LEAD	OR	NA	10,678	19	12/01/79	CT	3.90	25.3	633.1	2.44	12.95
							CS	1.83	3.2	588.3	1.67	14.82
							HT	2.91	9.5	525.3	2.46	16.15
							75	2.55	9.5	580.3	2.05	14.71
D0142	LEAD	OR	NA	10,922	18	12/10/79	CT	3.80	27.0	632.5	2.29	12.92
							CS	2.06	4.9	591.9	1.68	14.64
							HT	2.59	12.8	529.8	2.42	15.90
							75	2.56	11.6	583.3	2.01	14.56
D0148	LEAD	OR	NA	11,186	17	01/14/80	CT	4.27	30.7	591.3	1.75	13.59
							CS	2.41	4.3	582.9	1.19	14.86
							HT	2.65	7.7	510.4	1.90	16.72
							75	2.86	10.7	564.9	1.50	15.02
D0151	LEAD	OR	NA	11,223	0	01/15/80	CT	3.79	18.7	605.0	2.00	13.73
							CS	2.83	1.9	569.1	1.27	15.28
							HT	3.01	5.4	513.2	2.01	16.71
							75	3.08	6.3	561.3	1.62	15.28
D0163	LEAD	OR	NA	11,256	0	01/21/80	CT	4.11	29.3	597.2	1.95	13.52
							CS	2.55	3.6	573.4	1.36	15.12
							HT	2.65	8.2	503.4	2.03	16.91
							75	2.90	10.1	559.2	1.66	15.19
D0169	LEAD	OR	NA	11,593	37	01/24/80	CT	4.46	37.7	557.4	1.88	14.07
							CS	2.49	2.9	545.0	1.33	15.92
							HT	3.23	14.7	484.5	2.06	17.14
							75	3.10	13.3	531.1	1.64	15.80
D0174	LEAD	OR	NA	11,841	4	01/26/80	CT	4.29	32.9	556.9	1.97	14.27
							CS	2.54	3.2	542.2	1.41	15.99
							HT	3.05	16.7	478.7	1.97	17.24
							75	3.04	13.0	527.9	1.68	15.91
D0190	UNL	BP	NA	11,876	21	02/01/80	CT	4.56	29.7	566.2	2.40	14.15
							CS	3.52	10.1	548.1	1.74	15.43
							HT	3.69	8.3	497.6	2.24	16.99
							75	3.78	13.6	538.0	2.01	15.53
R0200	UNL	OR	NA	11,946	0	02/07/80	CT	3.68	19.5	593.4	1.96	13.96
							CS	3.04	1.4	569.2	1.23	15.27
							HT	3.29	5.5	512.8	1.95	16.69
							75	3.24	6.3	558.8	1.57	15.33

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0212	UNL	OR	NA	12,133	19	02/14/80	CT	3.91	13.7	597.5	1.96	14.06
							CS	3.55	1.7	572.8	1.24	15.13
							HT	3.39	4.4	505.7	1.91	16.96
							75	3.58	4.9	559.6	1.57	15.34
R0219	UNL	OR	NA	12,347	19	02/18/80	CT	4.03	18.5	620.3	2.01	13.40
							CS	3.27	1.9	584.8	1.30	14.84
							HT	3.53	4.1	518.4	1.99	16.56
							75	3.50	5.9	574.0	1.63	14.93
R0224	UNL	OR	NA	12,621	20	02/20/80	CT	3.54	16.8	613.8	1.88	13.62
							CS	2.97	1.5	568.7	1.27	15.29
							HT	3.15	4.7	504.6	1.95	17.00
							75	3.14	5.5	560.5	1.58	15.33
R0230	UNL	OR	NA	12,902	41	02/23/80	CT	3.83	17.6	600.8	1.93	13.86
							CS	2.96	1.7	569.3	1.25	15.27
							HT	3.17	4.9	509.8	1.96	16.82
							75	3.19	5.9	559.5	1.59	15.33
R0243	UNL	OR	NA	13,930	69	02/29/80	CT	3.60	15.6	627.8	2.16	13.37
							CS	2.71	0.8	579.3	1.28	15.06
							HT	2.81	3.8	518.8	2.01	16.63
							75	2.92	4.7	572.8	1.66	15.06
R0246	UNL	OR	NA	14,940	71	03/05/80	CT	3.27	14.7	598.5	1.82	14.04
							CS	2.37	0.9	570.9	1.18	15.31
							HT	2.54	4.2	507.3	1.89	17.00
							75	2.60	4.6	559.3	1.50	15.44
R0252	UNL	RE	NA	14,990	0	03/07/80	CT	0.73	3.6	627.1	1.74	13.98
							CS	0.13	0.0	577.0	1.19	15.37
							HT	0.20	1.0	513.1	1.77	17.23
							75	0.27	1.0	569.9	1.46	15.51

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9403 1979 OLDS CUTL 260 OXID.												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0004	UNL	OR	NA	6,818	7	05/22/79	CT	1.99	13.6	490.3	2.50	17.13
							CS	0.15	0.7	503.4	1.25	17.58
							HT	0.35	2.6	465.6	2.07	18.85
							75	0.59	3.9	490.4	1.73	17.81
D0006	UNL	OR	NA	6,857	2	05/23/79	CT	1.63	11.5	503.7	2.32	16.84
							CS	0.16	0.3	499.9	1.15	17.72
							HT	0.27	2.2	442.1	1.90	19.88
							75	0.49	3.1	484.9	1.59	18.06
D0007	UNL	OR	NA	6,886	0	05/25/79	CT	1.83	13.1	499.3	2.53	16.88
							CS	0.14	0.3	489.7	1.33	18.09
							HT	0.30	3.1	435.4	1.90	20.12
							75	0.53	3.7	476.8	1.73	18.32
D0009	UNL	BP	NA	6,950	0	06/08/79	CT	2.87	14.4	510.8	2.59	16.36
							CS	1.93	2.4	482.7	1.83	18.02
							HT	1.74	5.8	436.2	2.58	19.69
							75	2.07	5.8	475.8	2.19	18.06
D0011	UNL	BP	NA	7,014	6	06/13/79	CT	2.78	16.8	488.4	2.68	16.95
							CS	1.84	2.8	478.9	2.13	18.14
							HT	1.63	5.5	436.0	2.70	19.73
							75	1.97	6.4	469.2	2.40	18.28
D0014	UNL	BP	NA	7,069	0	06/23/79	CT	3.09	19.3	481.9	2.52	17.00
							CS	1.77	3.4	486.2	2.14	17.85
							HT	1.60	5.9	442.3	2.74	19.44
							75	2.00	7.3	473.4	2.38	18.07
D0049	LEAD	OR	NA	7,449	28	08/03/79	CT	3.00	15.5	481.0	2.46	17.24
							CS	1.04	1.0	482.7	1.20	18.20
							HT	1.17	5.1	447.3	2.13	19.34
							75	1.48	5.1	472.7	1.71	18.28
D0073	LEAD	OR	NA	7,767	27	08/25/79	CT	2.33	15.2	487.9	2.71	17.09
							CS	1.06	1.1	476.7	1.28	18.42
							HT	1.25	5.0	432.5	2.40	19.97
							75	1.38	5.1	467.0	1.88	18.52
D0088	LEAD	OR	NA	7,956	12	09/11/79	CT	2.66	16.9	484.5	2.40	17.08
							CS	1.19	1.7	479.4	1.11	18.27
							HT	1.17	3.9	440.3	2.13	19.72
							75	1.49	5.5	469.8	1.65	18.37

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0098	LEAD	OR	NA	8,161	13	09/19/79	CT	2.31	15.2	489.4	2.50	17.05
							CS	0.99	1.0	483.7	1.05	18.17
							HT	1.16	6.0	434.9	2.02	19.81
							75	1.31	5.3	471.6	1.61	18.34
D0103	LEAD	OR	NA	8,429	14	09/28/79	CT	2.48	14.7	492.2	2.41	16.97
							CS	1.09	1.1	477.3	1.00	18.39
							HT	1.12	4.2	442.0	2.04	19.63
							75	1.38	4.8	470.7	1.57	18.39
D0111	LEAD	OR	NA	8,618	12	10/11/79	CT	2.49	17.8	482.9	2.37	17.11
							CS	1.25	2.9	476.1	1.10	18.31
							HT	1.21	4.5	445.2	2.07	19.46
							75	1.50	6.4	469.1	1.63	18.34
D0121	LEAD	OR	NA	8,837	13	10/29/79	CT	2.71	19.2	476.0	2.77	17.24
							CS	1.60	6.5	474.2	1.51	18.13
							HT	1.43	5.2	438.3	2.52	19.68
							75	1.78	8.8	464.8	2.05	18.33
D0127	LEAD	OR	NA	9,017	13	11/12/79	CT	2.34	17.4	488.1	2.69	16.97
							CS	1.29	2.8	469.3	1.29	18.58
							HT	1.22	4.1	428.7	2.33	20.22
							75	1.48	6.2	462.1	1.86	18.63
D0135	LEAD	OR	NA	9,244	14	11/26/79	CT	2.35	19.7	475.0	2.89	17.29
							CS	1.21	2.1	471.1	1.35	18.56
							HT	1.13	3.6	426.1	2.51	20.38
							75	1.43	6.1	459.6	1.98	18.73
D0141	LEAD	OR	NA	9,430	12	12/10/79	CT	2.26	18.7	464.7	2.31	17.71
							CS	1.42	3.8	460.7	1.16	18.84
							HT	1.23	4.6	424.1	2.02	20.40
							75	1.54	7.1	451.5	1.63	18.98
D0155	LEAD	OR	NA	9,856	19	01/16/80	CT	3.74	32.2	471.1	2.24	16.63
							CS	1.54	2.6	458.7	1.26	18.98
							HT	1.40	4.9	412.9	2.13	20.88
							75	1.96	9.3	448.8	1.70	18.90
D0158	LEAD	OR	NA	9,889	0	01/17/80	CT	2.80	23.8	454.8	2.15	17.71
							CS	1.28	1.2	441.7	1.21	19.83
							HT	1.31	4.9	402.7	1.99	21.41
							75	1.60	6.8	433.7	1.61	19.74

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxe	
D0160	LEAD	OR	NA	9,922	0	01/18/80	CT	2.84	25.8	464.6	2.20	17.26
							CS	1.28	1.0	447.4	1.13	19.59
							HT	1.31	4.0	406.9	2.01	21.27
							75	1.61	6.9	439.9	1.59	19.47
D0164	UNL	BP	NA	9,961	19	01/21/80	CT	2.38	26.3	474.6	2.21	16.95
							CS	1.88	4.8	448.4	1.94	19.21
							HT	1.65	5.0	410.0	2.38	20.98
							75	1.92	9.3	443.3	2.11	19.13
R0168	UNL	OR	NA	9,993	0	01/24/80	CT	2.29	25.1	455.0	1.91	17.69
							CS	1.57	4.1	455.0	1.05	19.03
							HT	1.43	5.4	408.8	1.83	21.05
							75	1.68	8.8	442.4	1.44	19.23
R0176	UNL	OR	NA	10,220	16	01/26/80	CT	2.12	21.4	460.6	1.98	17.72
							CS	1.32	2.4	457.3	0.96	19.08
							HT	1.19	3.6	417.2	1.75	20.80
							75	1.45	6.6	447.1	1.39	19.21
R0182	UNL	OR	NA	10,490	16	01/29/80	CT	2.22	24.1	456.5	1.94	17.70
							CS	1.31	3.5	457.9	1.07	18.98
							HT	1.19	4.1	413.8	1.80	20.93
							75	1.47	7.9	445.6	1.45	19.18
R0187	UNL	OR	NA	10,739	15	01/31/80	CT	2.26	24.2	459.1	1.97	17.60
							CS	1.23	3.0	454.5	0.98	19.17
							HT	1.12	5.0	415.6	1.72	20.79
							75	1.41	7.9	444.8	1.38	19.22
R0206	UNL	OR	NA	10,931	16	02/09/80	CT	2.22	24.9	463.9	1.82	17.40
							CS	1.19	3.5	462.4	0.97	18.82
							HT	1.09	4.0	425.3	1.72	20.40
							75	1.37	8.0	452.6	1.35	18.90
R0231	UNL	OR	NA	12,015	62	02/25/80	CT	2.19	26.1	475.4	1.93	16.96
							CS	1.28	2.9	471.4	0.90	18.49
							HT	1.16	4.9	423.6	1.69	20.40
							75	1.44	8.2	459.2	1.33	18.62
R0245	UNL	OR	NA	13,046	61	03/05/80	CT	2.44	26.9	460.4	1.82	17.38
							CS	1.28	5.0	458.9	0.90	18.85
							HT	1.13	5.2	418.5	1.65	20.62
							75	1.48	9.6	448.2	1.29	18.97

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0251	UNL	RE	NA	13,114	0	03/07/80	CT	1.88	29.6	473.3	1.64	16.88
							CS	0.52	1.6	458.4	0.76	19.19
							HT	0.47	3.2	420.4	1.33	20.79
							75	0.79	7.8	451.1	1.10	19.05

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9404 1979 OLDS CUTL 260 OXID.												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0018	UNL	OR	NA	7,283	0	06/27/79	CT	2.08	30.1	527.8	1.87	15.26
							CS	0.29	2.3	545.5	0.73	16.13
							HT	0.62	10.8	479.7	1.33	17.80
							75	0.75	10.4	523.9	1.13	16.36
D0020	UNL	OR	NA	7,315	5	06/28/79	CT	3.17	40.4	523.6	1.69	14.86
							CS	0.33	3.6	555.0	4.46	15.80
							HT	0.60	12.9	480.7	1.26	17.65
							75	0.99	13.7	528.3	3.02	16.05
D0022	UNL	OR	NA	7,349	2	06/29/79	CT	2.56	37.4	521.9	1.63	15.07
							CS	0.33	3.6	540.1	0.61	16.23
							HT	0.60	13.7	479.1	1.24	17.66
							75	0.86	13.3	519.7	0.99	16.33
D0027	UNL	BP	NA	7,380	0	07/07/79	CT	2.93	30.8	504.8	1.84	15.78
							CS	2.43	4.8	514.6	1.35	16.75
							HT	2.18	12.9	466.9	1.80	17.96
							75	2.46	12.4	499.6	1.57	16.85
D0031	UNL	BP	NA	7,437	6	07/10/79	CT	2.88	33.1	519.1	1.91	15.29
							CS	2.70	5.8	511.1	1.15	16.78
							HT	2.29	14.5	460.3	1.69	18.10
							75	2.62	13.8	498.9	1.46	16.78
D0033	UNL	BP	NA	7,492	0	07/11/79	CT	2.90	32.5	511.2	2.00	15.53
							CS	2.55	4.8	529.6	1.37	16.28
							HT	2.25	14.5	476.6	1.81	17.52
							75	2.54	13.2	511.4	1.62	16.43
D0054	LEAD	OR	NA	7,955	40	08/08/79	CT	2.92	39.3	497.7	1.75	15.61
							CS	1.46	4.0	516.1	0.73	16.84
							HT	1.54	14.6	469.1	1.41	17.86
							75	1.78	14.1	499.5	1.12	16.83
D0082	LEAD	OR	NA	8,266	24	08/31/79	CT	2.52	29.1	503.4	1.88	15.93
							CS	1.38	2.2	503.4	0.73	17.36
							HT	1.50	12.0	457.6	1.44	18.44
							75	1.65	10.4	490.9	1.16	17.32
D0094	LEAD	OR	NA	8,358	12	09/13/79	CT	3.27	39.9	495.4	1.72	15.61
							CS	1.63	3.5	518.5	0.72	16.77
							HT	1.61	11.4	466.4	1.42	18.13
							75	1.96	13.2	499.6	1.12	16.86

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.	EMISSION RESULTS (gr/mi)	FUEL ECON. MPG
								9404	1979	OLDS	CUTL	260	OXID.		
D0101	LEAD	OR	NA	8,528	10	09/25/79	CT							2.50	16.02
							CS							1.61	17.31
							HT							1.59	18.75
							75							1.79	17.39
D0107	LEAD	OR	NA	8,727	15	10/05/79	CT							2.52	15.81
							CS							1.60	17.08
							HT							1.58	18.57
							75							1.79	17.17
D0113	LEAD	OR	NA	8,897	11	10/12/79	CT							2.82	15.81
							CS							1.61	17.03
							HT							1.63	18.68
							75							1.87	17.17
D0122	LEAD	OR	NA	9,213	16	10/30/79	CT							3.34	15.76
							CS							1.73	16.95
							HT							1.72	18.57
							75							2.06	17.09
D0124	LEAD	OR	NA	9,363	14	11/07/79	CT							2.70	15.59
							CS							1.47	17.08
							HT							1.50	18.56
							75							1.73	17.12
D0140	LEAD	OR	NA	9,627	14	12/07/79	CT							3.12	16.08
							CS							2.00	17.20
							HT							1.79	18.39
							75							2.18	17.26
D0146	LEAD	OR	NA	9,842	12	12/15/79	CT							2.55	16.55
							CS							1.52	17.82
							HT							1.51	19.08
							75							1.73	17.86
D0156	LEAD	OR	NA	10,098	9	01/16/80	CT							3.34	15.53
							CS							2.26	17.59
							HT							1.86	19.47
							75							2.37	17.57
D0159	LEAD	OR	NA	10,134	0	01/17/80	CT							3.05	15.89
							CS							1.83	18.11
							HT							1.73	19.59
							75							2.06	17.96

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS.	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0172	UNL	BP	NA	10,165	18	01/25/80	CT	3.41	53.7	454.7	1.32	16.14
							CS	2.44	5.6	468.1	1.06	18.31
							HT	2.22	14.8	421.9	1.41	19.63
							75	2.58	18.0	452.8	1.21	18.14
R0177	UNL	OR	NA	10,199	0	01/26/80	CT	2.93	39.4	463.8	1.31	16.59
							CS	1.89	3.7	478.9	0.55	18.09
							HT	1.86	12.3	429.6	1.12	19.51
							75	2.09	13.4	462.3	0.86	18.11
R0180	UNL	OR	NA	10,385	16	01/28/80	CT	2.93	43.6	470.6	1.30	16.19
							CS	1.60	3.2	491.2	0.55	17.70
							HT	1.57	10.6	434.6	1.14	19.45
							75	1.86	13.5	471.5	0.87	17.80
R0186	UNL	OR	NA	10,633	16	01/31/80	CT	3.01	45.7	460.9	1.26	16.37
							CS	1.68	5.4	489.6	0.52	17.63
							HT	1.50	11.1	436.1	1.17	19.36
							75	1.90	15.3	469.1	0.85	17.78
R0205	UNL	OR	NA	10,864	15	02/09/80	CT	3.05	46.8	464.7	1.23	16.20
							CS	1.52	4.2	488.8	0.54	17.74
							HT	1.55	12.9	434.7	1.12	19.30
							75	1.85	15.4	469.1	0.84	17.78
R0211	UNL	OR	NA	11,082	16	02/14/80	CT	2.76	40.8	464.1	1.31	16.53
							CS	1.51	3.5	488.5	0.53	17.79
							HT	1.51	11.2	430.9	1.14	19.58
							75	1.77	13.3	467.7	0.86	17.96
R0233	UNL	OR	NA	12,119	67	02/25/80	CT	3.49	59.2	461.9	1.24	15.68
							CS	1.66	5.1	486.7	0.56	17.75
							HT	1.53	12.2	434.4	1.15	19.36
							75	2.00	18.2	467.3	0.86	17.67
R0248	UNL	OR	NA	13,149	61	03/06/80	CT	4.95	60.7	485.4	1.43	14.88
							CS	1.24	2.8	488.3	0.68	17.87
							HT	1.24	10.3	425.0	1.24	19.94
							75	2.00	16.8	470.4	0.99	17.64
R0253	UNL	RE	NA	13,179	0	03/07/80	CT	2.12	42.6	468.9	1.04	16.36
							CS	0.43	1.1	481.0	0.55	18.33
							HT	0.62	8.7	429.5	0.82	19.94
							75	0.83	11.7	464.5	0.72	18.28

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0021	UNL	OR	OR	4,179	5	06/28/79	CT	0.70	11.2	706.3	1.73	12.22
							CS	0.17	0.2	660.2	0.68	13.43
							HT	0.23	0.6	596.6	0.82	14.83
							75	0.30	2.6	652.3	0.94	13.50
D0023	UNL	OR	OR	4,210	0	06/29/79	CT	0.66	8.0	673.4	2.31	12.90
							CS	0.18	0.1	664.2	0.72	13.35
							HT	0.33	0.7	607.0	0.88	14.57
							75	0.32	1.9	650.5	1.09	13.56
D0026	UNL	OR	OR	4,282	0	07/05/79	CT	0.73	7.5	692.5	2.03	12.56
							CS	0.16	0.0	667.2	0.72	13.29
							HT	0.19	1.0	633.5	0.96	13.96
							75	0.28	1.8	663.2	1.05	13.31
D0028	UNL	BP	OR	4,319	8	07/07/79	CT	4.01	50.4	611.5	2.74	12.62
							CS	2.66	15.3	629.8	1.51	13.40
							HT	2.23	19.1	554.6	2.01	15.00
							75	2.82	23.6	605.5	1.90	13.62
D0030	UNL	BP	OR	4,345	0	07/09/79	CT	3.05	37.6	607.9	2.95	13.12
							CS	2.57	15.0	618.5	1.41	13.65
							HT	2.23	19.9	548.9	1.91	15.12
							75	2.57	21.0	597.3	1.87	13.90
D0032	UNL	BP	OR	4,373	0	07/10/79	CT	3.80	52.3	616.8	2.97	12.48
							CS	2.63	14.6	627.8	1.55	13.47
							HT	2.18	14.5	555.9	2.24	15.16
							75	2.75	22.3	605.9	2.03	13.66
D0065	LEAD	OR	OR	4,731	58	08/15/79	CT	1.49	13.6	660.0	2.15	12.94
							CS	0.82	1.3	638.9	0.97	13.79
							HT	1.17	4.7	563.5	1.30	15.44
							75	1.06	4.8	622.7	1.30	14.01
D0081	LEAD	OR	OR	4,902	14	08/31/79	CT	6.25	25.9	691.8	2.36	11.80
							CS	1.05	3.0	635.4	1.00	13.79
							HT	1.68	14.4	577.3	1.32	14.66
							75	2.29	10.8	631.1	1.37	13.54
D0090	LEAD	OR	OR	5,034	13	09/12/79	CT	2.94	25.0	641.0	2.26	12.87
							CS	1.24	3.5	622.0	1.18	14.06
							HT	1.32	8.8	552.7	1.55	15.55
							75	1.61	9.3	607.0	1.51	14.16

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0104	LEAD	OR	OR	5,250	16	09/28/79	CT	2.59	19.1	666.8	2.54	12.59
							CS	0.98	1.4	624.9	1.45	14.09
							HT	1.50	5.1	552.3	1.80	15.71
							75	1.45	6.0	613.7	1.77	14.14
D0108	LEAD	OR	OR	5,466	15	10/05/79	CT	2.95	16.7	641.3	2.70	13.11
							CS	1.04	0.4	627.8	1.37	14.05
							HT	1.43	2.9	553.0	1.77	15.79
							75	1.54	4.4	610.2	1.76	14.27
D0110	LEAD	OR	OR	5,719	17	10/11/79	CT	2.64	19.9	650.3	2.59	12.86
							CS	1.35	2.5	617.6	1.56	14.18
							HT	1.30	4.0	560.4	1.98	15.55
							75	1.60	6.5	608.7	1.89	14.22
D0123	LEAD	OR	OR	5,954	13	10/30/79	CT	2.56	18.3	647.2	2.55	12.97
							CS	1.57	0.9	627.9	1.48	13.99
							HT	1.70	1.9	562.2	1.92	15.56
							75	1.81	4.7	614.0	1.82	14.15
D0133	LEAD	OR	OR	6,050	13	11/17/79	CT	4.41	32.3	656.5	2.65	12.31
							CS	1.87	2.8	625.9	1.72	13.95
							HT	2.52	5.6	567.8	2.23	15.18
							75	2.57	9.7	616.3	2.05	13.88
D0139	LEAD	OR	OR	6,242	28	12/06/79	CT	2.86	30.7	617.1	2.39	13.16
							CS	1.65	6.2	604.2	1.57	14.34
							HT	1.68	10.6	540.0	1.95	15.79
							75	1.91	12.4	589.3	1.84	14.43
D0144	LEAD	OR	OR	6,637	16	12/15/79	CT	3.21	20.3	653.0	2.56	12.77
							CS	1.92	0.8	620.7	1.74	14.13
							HT	1.52	2.2	563.3	2.23	15.53
							75	2.07	5.2	611.7	2.04	14.17
D0161	LEAD	OR	OR	6,875	7	01/18/80	CT	3.26	40.1	624.1	1.89	12.73
							CS	1.94	5.9	599.4	1.12	14.44
							HT	1.73	10.7	532.8	1.41	15.99
							75	2.15	14.2	586.3	1.36	14.42
D0166	LEAD	OR	OR	6,944	4	01/22/80	CT	4.45	48.6	599.0	2.03	12.87
							CS	1.89	8.0	595.4	1.22	14.46
							HT	1.84	14.1	524.6	1.56	16.06
							75	2.40	18.0	576.8	1.48	14.48

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

		VEH. MODL											
		NO.	YEAR	MAKE	MODL	CID	CONV.						
		9405	1979	MERC	MARQ	351	3 WAY						
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG	
								HC	CO	CO2	NOxc		
D0196	LEAD	OR	OR	7,057	17	02/05/80	CT	2.78	19.8	577.1	2.56	14.38	
							CS	1.99	5.5	572.1	1.33	15.12	
							HT	1.63	9.1	514.8	1.76	16.61	
							75	2.05	9.4	557.5	1.70	15.33	
D0228	LEAD	OR	OR	7,152	5	02/23/80	CT	2.82	26.2	560.3	2.84	14.54	
							CS	2.10	7.8	570.6	1.41	15.05	
							HT	1.76	13.6	502.8	1.74	16.75	
							75	2.16	13.2	550.0	1.79	15.37	
R0235	LEAD	BP	OR	7,184	10	02/26/80	CT	4.57	70.9	560.7	2.76	12.93	
							CS	2.73	26.6	551.0	1.48	14.76	
							HT	2.30	29.2	485.2	1.95	16.48	
							75	2.99	36.4	535.0	1.87	14.75	
R0237	LEAD	BP	OR	7,213	0	02/27/80	CT	4.05	68.4	541.1	2.61	13.42	
							CS	2.65	22.1	544.8	1.51	15.09	
							HT	2.22	26.9	480.9	2.00	16.74	
							75	2.82	33.0	526.6	1.87	15.11	
R0240	UNL	BP	OR	7,241	18	02/28/80	CT	3.60	60.5	537.3	2.28	13.79	
							CS	2.82	30.7	546.0	1.32	14.71	
							HT	2.26	24.2	494.2	1.85	16.45	
							75	2.83	35.1	530.1	1.66	14.94	
R0241	UNL	BP	OR	7,269	0	02/29/80	CT	3.96	58.9	556.8	2.69	13.41	
							CS	2.72	27.2	553.1	1.43	14.68	
							HT	2.17	21.4	497.7	1.96	16.49	
							75	2.82	32.2	538.8	1.83	14.84	
R0249	UNL	BP	NW	7,302	0	03/06/80	CT	3.13	44.4	560.6	2.90	13.86	
							CS	2.51	17.3	564.4	1.67	14.80	
							HT	2.10	18.3	492.6	2.23	16.81	
							75	2.53	23.1	544.0	2.07	15.08	
R0254	UNL	BP	NW	7,329	0	03/10/80	CT	3.44	53.5	550.7	2.69	13.75	
							CS	2.47	16.7	550.5	1.65	15.18	
							HT	2.17	13.4	489.8	2.23	17.14	
							75	2.59	23.4	534.0	2.02	15.33	
R0260	UNL	OR	NW	7,358	0	03/11/80	CT	2.48	23.3	596.5	2.48	13.85	
							CS	2.06	2.4	578.8	1.51	15.07	
							HT	1.67	4.6	516.6	1.87	16.78	
							75	2.04	7.3	565.5	1.81	15.21	

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0261	UNL	OR	OR	7,390	16	03/12/80	CT	2.77	28.0	604.6	2.48	13.50
							CS	2.17	6.6	572.7	1.46	15.05
							HT	1.71	6.1	517.4	1.88	16.67
							75	2.17	10.8	564.2	1.78	15.09
R0264	UNL	OR	OR	7,629	13	03/14/80	CT	2.55	23.1	604.9	2.38	13.67
							CS	1.85	4.0	588.4	1.38	14.78
							HT	1.45	5.3	525.1	1.67	16.50
							75	1.88	8.3	574.5	1.66	14.95
R0266	UNL	OR	NW	7,666	0	03/17/80	CT	2.62	23.7	605.4	2.39	13.64
							CS	1.77	2.0	578.7	1.50	15.11
							HT	1.41	2.3	520.4	1.70	16.79
							75	1.85	6.6	568.3	1.73	15.19
R0269	UNL	OR	OR	7,910	20	03/19/80	CT	2.41	21.0	641.3	2.55	13.01
							CS	1.51	1.7	603.6	1.16	14.52
							HT	1.28	3.4	539.0	1.53	16.18
							75	1.63	6.2	593.7	1.55	14.58
R0272	UNL	OR	NW	7,941	0	03/21/80	CT	3.08	31.3	628.8	2.45	12.90
							CS	1.62	0.9	582.5	1.29	15.07
							HT	1.41	1.6	527.3	1.79	16.61
							75	1.86	7.4	577.0	1.66	14.93
R0280	UNL	OR	OR	8,144	15	03/28/80	CT	2.98	25.4	613.2	2.32	13.39
							CS	1.75	1.1	589.9	1.14	14.86
							HT	1.52	2.3	526.0	1.56	16.61
							75	1.94	6.4	577.3	1.50	14.95
R0282	UNL	OR	NW	8,174	0	03/31/80	CT	2.43	16.7	622.6	2.63	13.52
							CS	1.67	1.2	586.2	1.16	14.96
							HT	1.33	3.8	521.9	1.64	16.68
							75	1.73	5.1	576.2	1.59	15.05
R0285	UNL	OR	OR	8,473	23	04/03/80	CT	2.60	21.6	620.5	2.16	13.39
							CS	1.87	1.3	583.3	0.93	15.01
							HT	1.52	2.3	519.8	1.42	16.80
							75	1.92	5.8	573.6	1.32	15.07
R0286	UNL	OR	NW	8,504	9	04/07/80	CT	2.43	20.0	624.9	2.27	13.37
							CS	1.63	1.2	588.4	1.06	14.91
							HT	1.41	3.0	527.2	1.45	16.54
							75	1.74	5.6	579.2	1.42	14.96

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0293	UNL	OR	NW	9,369	52	04/30/80	CT	2.36	21.6	633.0	2.07	13.16
							CS	1.18	0.7	597.0	0.91	14.75
							HT	1.04	2.9	533.2	1.35	16.41
							75	1.39	5.6	587.0	1.27	14.79
R0297	UNL	OR	OR	9,543	4	05/13/80	CT	1.85	26.6	611.3	1.75	13.47
							CS	0.70	0.4	598.0	0.80	14.77
							HT	0.64	1.6	528.3	1.16	16.66
							75	0.92	6.1	581.7	1.09	14.94
R0299	UNL	BP	OR	9,600	0	05/19/80	CT	3.30	53.5	547.1	2.53	13.83
							CS	2.51	25.5	557.5	1.19	14.66
							HT	1.93	14.9	492.6	1.99	17.00
							75	2.51	28.4	537.6	1.68	15.04
R0300	UNL	BP	NW	9,634	0	05/20/80	CT	3.49	57.6	541.2	2.42	13.81
							CS	2.39	22.1	552.3	1.15	14.93
							HT	1.94	21.5	491.2	1.80	16.71
							75	2.50	29.2	533.3	1.59	15.11
R0303	UNL	RE	OR	9,735	16	05/28/80	CT	1.18	19.0	619.8	1.12	13.58
							CS	0.16	0.0	600.0	0.37	14.78
							HT	0.16	0.7	530.5	0.47	16.68
							75	0.37	4.1	585.1	0.55	14.97
R0306	UNL	RE	NW	9,846	0	06/02/80	CT	1.31	16.2	614.7	1.18	13.77
							CS	0.22	0.7	595.9	0.48	14.85
							HT	0.22	1.3	526.1	0.55	16.78
							75	0.45	4.1	580.7	0.64	15.08

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9406 1979 VOLV 245 130 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0039	UNL	OR	OR	5,795	0	07/25/79	CT	0.69	9.6	562.7	1.90	15.30
							CS	0.03	0.1	518.4	0.18	17.11
							HT	0.08	0.5	484.4	1.04	18.28
							75	0.18	2.2	518.2	0.77	17.00
D0044	UNL	OR	OR	5,831	0	07/27/79	CT	0.89	9.2	527.9	4.11	16.28
							CS	0.10	0.0	480.2	2.77	18.47
							HT	0.11	0.1	456.1	3.77	19.44
							75	0.26	1.9	483.5	3.32	18.21
D0055	UNL	OR	OR	5,907	0	08/09/79	CT	0.68	11.1	544.2	1.78	15.74
							CS	0.03	0.1	506.6	0.11	17.51
							HT	0.09	0.6	471.0	1.16	18.80
							75	0.18	2.5	504.6	0.74	17.43
D0067	UNL	BP	OR	6,002	5	08/16/79	CT	1.80	22.2	504.4	6.38	16.29
							CS	1.16	14.8	482.1	3.49	17.43
							HT	1.24	12.8	443.6	5.87	18.98
							75	1.32	15.8	476.2	4.73	17.57
D0078	UNL	BP	OR	6,075	0	08/30/79	CT	1.86	22.1	530.2	6.94	15.55
							CS	1.23	14.2	479.6	3.52	17.55
							HT	1.25	13.6	445.1	5.96	18.87
							75	1.36	15.7	480.6	4.89	17.42
D0080	UNL	BP	OR	6,101	0	08/31/79	CT	1.81	22.6	506.2	6.60	16.21
							CS	1.23	14.8	472.4	3.66	17.77
							HT	1.28	13.1	442.9	6.14	18.99
							75	1.36	15.9	471.3	4.94	17.73
D0091	LEAD	OR	OR	6,371	26	09/12/79	CT	0.70	8.9	531.5	1.67	16.20
							CS	0.20	1.7	496.4	0.09	17.76
							HT	0.25	1.2	451.6	0.92	19.54
							75	0.32	3.1	491.4	0.64	17.85
D0096	LEAD	OR	OR	6,597	13	09/17/79	CT	1.06	10.8	546.0	1.85	15.67
							CS	0.27	2.6	502.3	0.19	17.50
							HT	0.34	1.9	459.0	1.03	19.17
							75	0.45	4.1	499.5	0.76	17.49
D0099	LEAD	OR	OR	6,853	12	09/24/79	CT	1.02	11.2	524.1	2.26	16.29
							CS	0.36	2.7	488.8	0.26	17.96
							HT	0.51	2.9	455.3	1.42	19.23
							75	0.54	4.5	486.9	0.99	17.90

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9406 1979 VOLV 245 130 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION HC	RESULTS CO	(gr/mi) CO2	NOxc	FUEL ECON. MPG
D0106	LEAD	OR	OR	7,036	13	10/04/79	CT	1.42	14.8	532.7	2.43	15.84
							CS	0.62	3.2	488.3	0.43	17.92
							HT	0.69	3.1	453.1	1.62	19.29
							75	0.80	5.5	487.8	1.17	17.78
D0120	LEAD	OR	OR	7,275	14	10/27/79	CT	1.66	12.1	537.7	3.71	15.79
							CS	0.96	2.4	493.2	0.89	17.75
							HT	0.97	2.9	457.6	2.71	19.07
							75	1.11	4.5	492.6	1.97	17.63
D0134	LEAD	OR	OR	7,516	12	11/21/79	CT	1.51	14.4	548.6	2.65	15.41
							CS	0.83	2.6	524.2	0.79	16.72
							HT	0.88	3.7	486.4	2.29	17.93
							75	0.99	5.3	518.9	1.58	16.74
D0138	LEAD	OR	OR	7,641	13	12/04/79	CT	1.58	12.6	500.7	3.00	16.89
							CS	0.98	2.0	487.1	0.83	17.99
							HT	1.01	3.4	435.2	2.38	20.00
							75	1.11	4.5	475.7	1.70	18.25
D0143	LEAD	OR	OR	7,934	17	12/11/79	CT	1.59	13.2	503.1	3.29	16.78
							CS	1.00	2.5	482.6	1.04	18.12
							HT	1.03	4.2	444.2	2.88	19.55
							75	1.13	5.2	476.4	2.00	18.18
D0150	LEAD	OR	OR	8,144	3	01/14/80	CT	1.95	14.2	502.8	3.76	16.71
							CS	1.26	4.5	471.1	1.31	18.41
							HT	1.34	5.6	430.0	3.26	20.03
							75	1.42	6.8	466.4	2.35	18.43
D0153	LEAD	OR	OR	8,174	4	01/15/80	CT	1.78	14.4	480.0	3.81	17.47
							CS	1.13	4.1	473.2	1.64	18.37
							HT	1.23	4.8	429.4	3.40	20.13
							75	1.29	6.4	462.6	2.57	18.62
R0175	LEAD	BP	OR	8,220	4	01/26/80	CT	2.02	26.3	452.8	5.21	17.73
							CS	1.38	17.2	432.6	2.75	19.13
							HT	1.47	17.6	400.1	4.94	20.52
							75	1.54	19.2	427.9	3.85	19.17
R0179	LEAD	BP	OR	8,250	0	01/28/80	CT	2.10	29.8	457.7	5.07	17.36
							CS	1.31	18.1	442.9	2.67	18.66
							HT	1.44	18.7	406.2	4.83	20.16
							75	1.51	20.7	435.9	3.75	18.76

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9406 1979 VOLV 245 130 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0183	UNL	BP	OR	8,280	14	01/29/80	CT	2.17	30.8	456.9	4.97	17.33
							CS	1.33	16.5	440.7	2.68	18.85
							HT	1.50	18.6	404.3	4.69	20.25
							75	1.55	20.0	434.1	3.70	18.86
R0185	UNL	BP	OR	8,309	0	01/30/80	CT	2.11	30.5	456.8	5.02	17.35
							CS	1.34	17.0	439.4	2.66	18.87
							HT	1.41	18.6	403.8	4.75	20.29
							75	1.52	20.2	433.3	3.71	18.89
R0193	UNL	BP	NW	8,339	0	02/04/80	CT	2.02	25.0	464.6	5.27	17.39
							CS	1.30	15.4	437.0	2.74	19.08
							HT	1.40	15.5	409.8	4.99	20.24
							75	1.48	17.4	435.3	3.87	19.00
R0198	UNL	BP	NW	8,380	0	02/06/80	CT	2.18	31.7	459.8	4.95	17.18
							CS	1.37	18.9	435.0	2.64	18.92
							HT	1.69	23.5	422.8	4.67	19.08
							75	1.63	22.8	436.8	3.67	18.58
R0202	UNL	OR	NW	8,406	0	02/08/80	CT	1.78	19.7	482.7	3.80	17.09
							CS	1.24	9.1	466.1	1.74	18.32
							HT	1.25	9.4	434.9	3.57	19.56
							75	1.36	11.4	461.0	2.66	18.37
R0207	UNL	OR	OR	8,445	0	02/09/80	CT	1.90	17.8	476.4	3.69	17.39
							CS	1.11	2.8	450.3	1.51	19.37
							HT	1.15	4.9	426.1	3.17	20.28
							75	1.28	6.5	449.1	2.41	19.16
R0213	UNL	OR	OR	8,730	30	02/14/80	CT	1.84	17.2	484.7	3.51	17.15
							CS	1.08	1.4	474.6	1.36	18.48
							HT	1.13	3.9	435.0	2.84	19.96
							75	1.25	5.4	465.9	2.20	18.56
R0215	UNL	OR	NW	8,760	0	02/15/80	CT	1.89	19.6	475.5	3.67	17.33
							CS	1.12	5.7	461.4	1.58	18.73
							HT	1.25	7.0	426.5	3.24	20.10
							75	1.31	9.0	454.8	2.47	18.76
R0218	UNL	OR	OR	8,927	15	02/18/80	CT	2.03	19.5	490.8	3.95	16.81
							CS	1.19	3.2	464.1	1.70	18.77
							HT	1.22	5.5	432.5	3.30	19.94
							75	1.37	7.2	461.0	2.60	18.62

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9406 1979 VOLV 245 130 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0221	UNL	OR	NW	8,958	0	02/19/80	CT	1.90	20.2	482.2	4.09	17.07
							CS	1.20	7.0	455.2	1.89	18.88
							HT	1.25	7.2	424.2	3.51	20.19
							75	1.36	9.8	452.3	2.78	18.80
R0225	UNL	OR	OR	9,164	30	02/21/80	CT	1.90	17.6	493.5	3.77	16.83
							CS	1.12	2.5	464.3	1.57	18.82
							HT	1.16	4.8	429.2	3.10	20.15
							75	1.29	6.2	460.7	2.44	18.70
R0227	UNL	OR	NW	9,212	0	02/23/80	CT	1.89	17.5	492.6	4.23	16.87
							CS	1.18	5.7	466.2	1.91	18.53
							HT	1.20	6.9	427.3	3.47	20.08
							75	1.33	8.5	461.0	2.82	18.55
R0236	UNL	OR	OR	9,503	20	02/26/80	CT	2.17	21.2	509.1	4.33	16.16
							CS	1.16	3.7	468.7	1.70	18.56
							HT	1.22	6.0	430.0	3.36	20.02
							75	1.38	7.9	466.5	2.70	18.36
R0238	UNL	OR	NW	9,532	0	02/27/80	CT	1.93	17.6	493.4	4.12	16.84
							CS	1.13	3.6	461.1	1.50	18.87
							HT	1.19	5.8	429.1	3.02	20.08
							75	1.31	7.1	459.0	2.45	18.71
R0255	UNL	OR	OR	10,562	65	03/10/80	CT	1.94	19.5	520.9	4.03	15.91
							CS	1.08	2.7	468.4	1.49	18.64
							HT	1.11	5.0	430.4	2.95	20.09
							75	1.26	6.8	468.9	2.41	18.36
R0259	UNL	OR	NW	10,610	5	03/11/80	CT	1.82	20.7	504.5	3.99	16.35
							CS	1.09	6.5	458.1	1.74	18.81
							HT	1.11	6.9	431.0	3.12	19.93
							75	1.24	9.5	460.3	2.58	18.52
R0265	UNL	OR	OR	11,642	56	03/17/80	CT	1.92	16.6	517.7	4.05	16.14
							CS	1.04	1.1	468.2	1.48	18.76
							HT	1.02	2.8	432.0	2.99	20.19
							75	1.22	4.7	468.5	2.42	18.50
R0268	UNL	OR	NW	11,672	0	03/18/80	CT	1.72	17.2	493.0	3.96	16.89
							CS	1.04	4.3	463.7	1.55	18.73
							HT	1.05	5.9	430.9	3.09	20.01
							75	1.18	7.4	460.8	2.47	18.64

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9406 1979 VOLV 245 130 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0271	UNL	BP	OR	11,701	0	03/20/80	CT	2.07	30.2	467.1	4.94	17.03
							CS	1.24	16.8	436.1	2.54	19.03
							HT	1.39	17.5	405.1	4.68	20.31
							75	1.45	19.7	434.0	3.62	18.90
R0273	UNL	BP	NW	11,728	0	03/21/80	CT	2.07	31.4	481.4	5.09	16.52
							CS	1.27	18.2	442.6	2.49	18.68
							HT	1.34	18.2	407.5	4.42	20.15
							75	1.45	20.9	441.0	3.55	18.55
R0275	UNL	RE	OR	11,753	0	03/25/80	CT	0.77	13.4	516.8	0.08	16.43
							CS	0.08	0.8	477.6	0.02	18.53
							HT	0.20	2.2	440.7	0.01	19.96
							75	0.25	3.8	475.6	0.03	18.40
R0279	UNL	RE	NW	11,847	14	03/27/80	CT	0.85	13.2	514.7	0.17	16.49
							CS	0.36	6.2	468.7	0.00	18.51
							HT	0.44	5.8	436.2	0.02	19.87
							75	0.48	7.5	469.3	0.04	18.39

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
D0043	UNL	OR	OR	5,182	0	07/27/79	CT	1.05	18.4	498.4	0.92	16.73
							CS	0.06	2.3	460.1	0.48	19.13
							HT	0.14	4.6	421.6	0.83	20.68
							75	0.29	6.3	457.5	0.66	18.96
D0056	UNL	OR	OR	5,271	0	08/09/79	CT	1.04	17.3	486.3	0.84	17.17
							CS	0.06	1.8	439.0	0.54	20.08
							HT	0.14	2.7	408.5	0.83	21.48
							75	0.28	5.2	440.4	0.68	19.74
D0060	UNL	OR	OR	5,299	0	08/13/79	CT	2.21	26.8	472.2	0.93	17.03
							CS	0.06	2.7	430.6	0.67	20.40
							HT	0.25	4.8	397.2	0.92	21.89
							75	0.55	8.2	430.1	0.79	19.96
D0064	UNL	BP	OR	5,330	0	08/14/79	CT	2.37	30.1	457.5	2.58	17.32
							CS	1.47	11.7	408.9	3.30	20.55
							HT	1.21	11.7	383.7	3.17	21.87
							75	1.58	15.5	412.0	3.12	20.11
D0075	UNL	BP	OR	5,384	0	08/27/79	CT	2.15	31.7	446.3	2.42	17.65
							CS	1.56	12.1	392.9	3.06	21.29
							HT	1.48	12.9	375.8	3.00	22.15
							75	1.66	16.4	399.2	2.91	20.63
D0076	UNL	BP	OR	5,408	0	08/29/79	CT	1.93	31.1	473.1	1.84	16.81
							CS	1.31	13.6	434.2	1.61	19.30
							HT	1.20	13.3	404.9	1.86	20.66
							75	1.40	17.1	434.2	1.73	19.06
D0097	LEAD	OR	OR	5,646	14	09/18/79	CT	1.45	20.5	467.4	1.11	17.60
							CS	0.15	3.3	430.8	0.72	20.34
							HT	0.25	5.4	398.0	1.01	21.79
							75	0.44	7.4	429.4	0.88	20.06
D0105	LEAD	OR	OR	5,870	26	10/03/79	CT	0.90	17.5	456.1	1.40	18.25
							CS	0.23	3.7	420.2	0.89	20.80
							HT	0.38	4.2	380.5	1.22	22.86
							75	0.41	6.6	416.8	1.08	20.71
D0112	LEAD	OR	OR	6,121	12	10/12/79	CT	1.49	22.7	451.2	1.27	18.06
							CS	0.34	4.1	411.2	0.86	21.20
							HT	0.54	6.8	385.5	1.21	22.30
							75	0.63	8.7	412.4	1.04	20.74

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

		VEH. MODL											
		NO.	YEAR	MAKE	MODL	CID	CONV.						
		9407	1979	CHEV	MONZ	151	3 WAY						
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON.	MPG
								HC	CO	CO2	NOxc		
D0131	LEAD	OR	OR	6,341	15	11/13/79	CT	1.58	21.0	445.7	1.40	18.35	
							CS	0.46	4.5	415.9	1.10	20.91	
							HT	0.68	6.8	379.3	1.58	22.63	
							75	0.75	8.5	412.1	1.29	20.74	
D0137	LEAD	OR	OR	6,606	13	12/03/79	CT	1.22	19.0	436.2	1.39	18.89	
							CS	0.56	5.2	408.3	0.91	21.22	
							HT	0.73	6.4	376.3	1.44	22.84	
							75	0.74	8.4	405.3	1.15	21.09	
D0145	LEAD	OR	OR	6,831	14	12/15/79	CT	1.62	20.7	449.3	1.66	18.22	
							CS	0.65	5.5	409.1	1.14	21.15	
							HT	0.79	7.3	383.5	1.71	22.33	
							75	0.89	9.1	410.4	1.40	20.76	
D0147	LEAD	OR	OR	7,004	0	12/27/79	CT	1.17	16.0	510.1	1.80	16.47	
							CS	0.70	3.8	413.3	1.09	21.06	
							HT	0.90	5.1	381.5	1.82	22.62	
							75	0.85	6.6	424.6	1.43	20.28	
D0149	LEAD	OR	OR	7,024	0	01/14/80	CT	1.72	25.2	439.2	1.27	18.33	
							CS	0.82	4.7	400.5	0.76	21.63	
							HT	0.90	6.5	369.8	1.43	23.18	
							75	1.02	9.4	400.1	1.04	21.23	
D0152	LEAD	OR	OR	7,057	3	01/15/80	CT	1.61	20.2	444.4	1.40	18.44	
							CS	0.73	4.1	397.7	0.86	21.84	
							HT	0.81	5.5	369.0	1.59	23.35	
							75	0.93	7.8	399.5	1.17	21.40	
D0167	LEAD	OR	OR	7,369	28	01/22/80	CT	1.55	21.1	426.0	1.42	19.13	
							CS	0.76	3.8	394.5	0.90	22.03	
							HT	0.95	9.5	360.2	1.55	23.47	
							75	0.97	8.9	391.6	1.19	21.71	
D0170	LEAD	OR	OR	7,589	4	01/24/80	CT	1.50	19.5	433.4	1.35	18.93	
							CS	0.83	3.5	388.9	0.84	22.36	
							HT	1.22	11.8	359.4	1.38	23.24	
							75	1.07	9.0	390.0	1.09	21.77	
D0188	LEAD	OR	OR	7,959	31	01/31/80	CT	1.44	17.0	427.9	1.55	19.33	
							CS	0.79	3.6	386.7	1.16	22.48	
							HT	0.99	8.7	360.2	1.80	23.54	
							75	0.98	7.7	387.9	1.41	22.01	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0195	LEAD	BP	OR	8,006	0	02/05/80	CT	1.68	24.2	401.0	2.24	19.97
							CS	1.54	10.8	360.1	3.10	23.24
							HT	1.46	14.2	338.0	2.98	24.32
							75	1.55	14.5	362.5	2.89	22.75
R0197	LEAD	BP	OR	8,034	0	02/06/80	CT	1.72	25.9	402.7	2.30	19.77
							CS	1.54	10.5	364.0	3.03	23.03
							HT	1.34	13.0	341.7	2.94	24.22
							75	1.52	14.4	365.9	2.85	22.57
R0201	UNL	BP	OR	8,062	17	02/07/80	CT	2.27	33.1	402.5	2.09	19.22
							CS	1.75	14.6	365.4	2.84	22.53
							HT	1.49	14.0	344.7	2.71	23.89
							75	1.79	18.3	367.4	2.65	22.09
R0203	UNL	BP	OR	8,090	0	02/08/80	CT	2.40	29.6	412.5	2.12	19.02
							CS	1.69	13.2	365.2	2.85	22.68
							HT	1.40	12.9	352.9	2.72	23.50
							75	1.76	16.5	371.6	2.67	22.02
R0214	UNL	BP	NW	8,125	0	02/15/80	CT	1.85	27.6	407.4	2.00	19.43
							CS	1.64	10.9	358.8	2.77	23.28
							HT	1.42	11.8	340.2	2.62	24.43
							75	1.62	14.6	363.7	2.57	22.65
R0217	UNL	BP	NW	8,155	0	02/18/80	CT	2.11	29.4	417.5	2.15	18.87
							CS	1.70	12.2	357.7	2.82	23.22
							HT	1.45	11.9	343.2	2.71	24.21
							75	1.72	15.7	366.0	2.65	22.41
R0220	UNL	OR	NW	8,183	0	02/19/80	CT	1.68	20.6	430.2	1.28	18.97
							CS	0.90	3.3	392.5	0.85	22.15
							HT	0.91	4.5	362.8	1.32	23.81
							75	1.06	7.2	392.2	1.07	21.81
R0223	UNL	OR	OR	8,215	12	02/20/80	CT	1.62	23.1	430.3	1.29	18.82
							CS	0.98	6.4	379.2	0.79	22.61
							HT	0.96	6.0	357.3	1.27	24.00
							75	1.11	9.7	383.8	1.03	22.05
R0229	UNL	OR	OR	8,513	15	02/23/80	CT	1.86	29.9	433.3	1.20	18.26
							CS	1.12	8.4	394.5	0.74	21.58
							HT	1.11	8.9	374.2	1.20	22.66
							75	1.27	13.0	397.0	0.96	21.06

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0234	UNL	OR	NW	8,550	0	02/26/80	CT	1.82	23.9	465.8	1.47	17.43
							CS	0.87	2.8	408.1	0.85	21.37
							HT	0.93	5.1	379.1	1.32	22.75
							75	1.08	7.8	412.1	1.10	20.75
R0239	UNL	OR	OR	8,763	14	02/28/80	CT	1.90	28.7	449.7	1.47	17.72
							CS	1.11	7.0	403.4	0.76	21.24
							HT	1.09	7.8	375.2	1.30	22.71
							75	1.27	11.7	405.2	1.05	20.76
R0242	UNL	OR	NW	8,794	0	02/29/80	CT	1.76	23.9	469.3	1.56	17.32
							CS	0.88	2.6	410.8	0.83	21.25
							HT	0.94	4.8	381.3	1.37	22.65
							75	1.08	7.6	414.8	1.13	20.63
R0250	UNL	OR	OR	9,002	14	03/06/80	CT	1.71	25.9	454.7	1.47	17.72
							CS	1.07	8.2	407.4	0.78	20.95
							HT	1.06	8.6	376.8	1.45	22.55
							75	1.20	12.0	408.8	1.10	20.57
R0258	UNL	OR	NW	9,039	0	03/11/80	CT	1.55	23.1	436.3	1.46	18.59
							CS	0.88	3.7	398.2	0.88	21.82
							HT	0.86	3.9	375.4	1.48	23.09
							75	1.01	7.8	399.8	1.16	21.38
R0262	UNL	OR	OR	9,240	14	03/13/80	CT	1.76	28.7	454.8	1.51	17.56
							CS	1.07	8.8	396.9	0.73	21.43
							HT	0.99	8.5	371.8	1.22	22.85
							75	1.19	12.8	402.0	1.02	20.84
R0263	UNL	OR	NW	9,277	0	03/14/80	CT	1.61	25.7	467.2	1.53	17.31
							CS	0.89	3.5	407.3	0.74	21.36
							HT	0.86	5.6	381.7	1.19	22.57
							75	1.03	8.6	412.6	1.03	20.67
R0267	UNL	OR	OR	10,305	52	03/18/80	CT	1.60	22.9	441.9	1.29	18.37
							CS	0.95	5.7	392.5	0.65	21.94
							HT	0.87	5.4	362.9	1.16	23.72
							75	1.06	9.1	394.6	0.92	21.52
R0270	UNL	OR	NW	10,335	0	03/19/80	CT	1.71	23.1	464.9	1.41	17.52
							CS	0.83	2.7	398.0	0.70	21.92
							HT	0.82	4.6	369.2	1.26	23.42
							75	1.01	7.4	403.9	1.00	21.19

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX C (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL TEST PROCEDURE RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	TEST	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
								HC	CO	CO2	NOxc	
R0274	UNL	OR	OR	11,365	57	03/24/80	CT	1.94	29.7	433.3	1.38	18.26
							CS	0.82	4.4	395.0	0.71	21.94
							HT	0.81	5.2	370.8	1.19	23.26
							75	1.05	9.8	396.3	0.98	21.39
R0276	UNL	OR	NW	11,392	0	03/25/80	CT	1.58	23.1	446.3	1.52	18.20
							CS	0.75	2.7	391.5	0.76	22.29
							HT	0.77	3.8	367.6	1.36	23.60
							75	0.93	7.2	396.2	1.08	21.62
R0281	UNL	BP	OR	11,422	0	03/31/80	CT	1.99	33.1	425.3	2.32	18.35
							CS	1.59	12.7	366.6	2.64	22.66
							HT	1.37	14.1	348.3	2.55	23.68
							75	1.61	17.3	373.7	2.55	21.86
R0283	UNL	BP	NW	11,450	0	04/01/80	CT	2.16	33.0	411.6	2.06	18.87
							CS	1.56	11.5	363.8	2.53	22.95
							HT	1.38	12.6	340.7	2.40	24.33
							75	1.63	16.2	367.3	2.40	22.30
R0287	UNL	RE	OR	11,482	10	04/15/80	CT	1.24	23.5	456.4	0.59	17.85
							CS	0.04	1.8	409.8	0.37	21.50
							HT	0.14	3.7	362.3	0.54	24.08
							75	0.32	6.8	406.4	0.46	21.23
R0288	UNL	RE	NW	11,514	0	04/16/80	CT	1.74	24.1	429.3	0.58	18.77
							CS	0.03	1.0	396.7	0.36	22.28
							HT	0.11	2.5	372.5	0.80	23.56
							75	0.41	6.2	396.8	0.53	21.77

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX D - LISTING OF FEDERAL SHORT CYCLE EMISSION
RESULTS BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

EMISSION RESULTS

(gr/mi) - Emission results in grams per mile

HC - Hydrocarbon emissions in grams per mile

CO - Carbon monoxide emissions in grams per mile

CO₂ - Carbon dioxide emissions in grams per mile

NO_xc - Oxides of nitrogen emissions corrected for humidity
in grams per mile

NOTE: Emission readings indicated by dash (-) reflect invalid
or discarded test results.

FUEL ECON. MPG - Fuel economy in miles per gallon, calculated by the
carbon balance method

APPENDIX D

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION HC	RESULTS CO	(gr/mi) CO2	NOxc	FUEL ECON. MPG
D0001	UNL	OR	NA	8,316	0	05/16/79	1.80	3.8	506.9	1.39	17.11
D0003	UNL	OR	NA	8,394	0	05/21/79	0.44	4.3	464.9	1.16	18.76
D0005	UNL	OR	NA	8,442	8	05/23/79	0.44	5.4	456.6	1.13	19.02
D0008	UNL	BP	NA	8,694	5	06/05/79	3.66	9.1	437.0	1.70	19.17
D0010	UNL	BP	NA	8,733	0	06/12/79	2.88	7.7	416.5	1.75	20.28
D0013	UNL	BP	NA	8,760	6	06/14/79	3.35	8.4	417.8	1.64	20.10
D0034	LEAD	OR	NA	9,046	40	07/11/79	2.31	7.2	456.1	1.52	18.70
D0038	LEAD	OR	NA	9,307	15	07/24/79	2.15	2.6	450.5	1.66	19.24
D0072	LEAD	OR	NA	9,770	41	08/25/79	2.75	12.5	438.5	1.37	19.01
D0093	LEAD	OR	NA	10,069	20	09/13/79	3.13	6.1	439.8	1.56	19.33
D0109	UNL	BP	NA	10,446	72	10/10/79	3.26	12.1	431.4	1.70	19.26
D0118	UNL	RE	NA	10,532	0	10/24/79	0.55	13.0	461.2	1.09	18.37

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX D (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
							HC	CO	CO2	NOxc	
D0057	UNL	OR	NA	9,287	0	08/09/79	0.51	3.2	506.6	1.33	17.29
D0059	UNL	OR	NA	9,319	0	08/13/79	1.13	9.9	467.7	1.29	18.23
D0077	UNL	OR	NA	9,462	0	08/29/79	0.50	4.4	487.4	1.35	17.90
D0083	UNL	BP	NA	9,486	0	09/04/79	4.24	6.5	440.4	1.83	19.13
D0092	UNL	BP	NA	9,567	0	09/13/79	4.43	5.4	447.8	2.23	18.87
D0095	UNL	BP	NA	9,591	0	09/14/79	3.54	6.9	434.8	2.08	19.43
D0100	LEAD	OR	NA	9,814	39	09/25/79	1.87	0.7	459.3	1.52	19.03
D0119	LEAD	OR	NA	10,174	21	10/26/79	1.93	3.1	472.6	1.70	18.36
D0126	LEAD	OR	NA	10,407	20	11/12/79	1.96	2.5	458.6	1.68	18.94
D0136	LEAD	OR	NA	10,678	19	12/01/79	2.00	3.1	466.1	1.52	18.59
D0142	LEAD	OR	NA	10,922	18	12/10/79	2.33	5.1	461.2	1.50	18.62

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX D (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION HC	RESULTS CO	CO2	(gr/mi) NOxc	FUEL ECON. MPG
D0004	UNL	OR	NA	6,818	7	05/22/79	0.11	0.1	407.5	1.25	21.75
D0006	UNL	OR	NA	6,857	2	05/23/79	0.08	0.0	378.2	1.06	23.45
D0007	UNL	OR	NA	6,886	0	05/25/79	0.09	0.0	384.0	1.35	23.09
D0009	UNL	BP	NA	6,950	0	06/08/79	2.01	2.2	390.0	2.71	22.20
D0011	UNL	BP	NA	7,014	6	06/13/79	1.81	2.3	372.8	2.56	23.23
D0014	UNL	BP	NA	7,069	0	06/23/79	1.64	1.8	361.1	2.55	24.05
D0049	LEAD	OR	NA	7,449	28	08/03/79	1.02	0.8	377.7	0.99	23.22
D0073	LEAD	OR	NA	7,767	27	08/25/79	1.13	0.7	374.2	1.16	23.42
D0088	LEAD	OR	NA	7,956	12	09/11/79	1.12	0.7	378.9	0.94	23.14
D0098	LEAD	OR	NA	8,161	13	09/19/79	1.17	0.9	377.0	0.83	23.23
D0103	LEAD	OR	NA	8,429	14	09/28/79	1.11	0.5	382.6	0.82	22.94
D0111	LEAD	OR	NA	8,618	12	10/11/79	1.04	0.6	385.9	0.88	22.75
D0121	LEAD	OR	NA	8,837	13	10/29/79	1.37	1.0	382.1	1.18	22.88
D0127	LEAD	OR	NA	9,017	13	11/12/79	0.94	0.7	375.7	1.10	23.37
D0135	LEAD	OR	NA	9,244	14	11/26/79	1.01	0.7	377.8	1.09	23.23
D0141	LEAD	OR	NA	9,430	12	12/10/79	0.98	0.7	363.5	0.95	24.14

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX D (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
							HC	CO	CO2	NOxc	
D0018	UNL	OR	NA	7,283	0	06/27/79	0.27	1.4	419.6	0.70	21.00
D0020	UNL	OR	NA	7,315	5	06/28/79	0.27	0.7	392.5	0.48	22.50
D0022	UNL	OR	NA	7,349	2	06/29/79	0.37	3.3	413.7	0.62	21.13
D0027	UNL	BP	NA	7,380	0	07/07/79	2.49	3.1	399.2	1.39	21.55
D0031	UNL	BP	NA	7,437	6	07/10/79	2.87	4.8	393.8	1.10	21.63
D0033	UNL	BP	NA	7,492	0	07/11/79	2.60	3.0	396.2	1.31	21.69
D0054	LEAD	OR	NA	7,955	40	08/08/79	1.49	2.6	420.7	0.64	20.66
D0082	LEAD	OR	NA	8,266	24	08/31/79	1.66	3.6	399.1	0.69	21.65
D0094	LEAD	OR	NA	8,358	12	09/13/79	1.89	2.7	407.5	0.66	21.25
D0101	LEAD	OR	NA	8,528	10	09/25/79	1.90	1.1	396.1	0.60	21.98
D0107	LEAD	OR	NA	8,727	15	10/05/79	1.85	1.4	399.2	0.64	21.79
D0113	LEAD	OR	NA	8,897	11	10/12/79	1.81	2.6	399.0	0.62	21.71
D0122	LEAD	OR	NA	9,213	16	10/30/79	1.75	1.5	404.1	0.62	21.54
D0124	LEAD	OR	NA	9,363	14	11/07/79	1.64	2.0	405.7	0.62	21.44
D0140	LEAD	OR	NA	9,627	14	12/07/79	1.59	2.1	400.5	0.68	21.71
D0146	LEAD	OR	NA	9,842	12	12/15/79	-	-	-	-	-

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX D (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
							HC	CO	CO2	NOxc	
D0021	UNL	OR	OR	4,179	5	06/28/79	0.11	0.2	534.8	0.48	16.57
D0023	UNL	OR	OR	4,210	0	06/29/79	0.24	0.7	539.3	0.49	16.40
D0026	UNL	OR	OR	4,282	0	07/05/79	0.17	0.5	531.5	0.40	16.66
D0028	UNL	BP	OR	4,319	8	07/07/79	2.15	19.1	493.6	1.07	16.73
D0030	UNL	BP	OR	4,345	0	07/09/79	2.18	16.8	497.4	1.10	16.72
D0032	UNL	BP	OR	4,373	0	07/10/79	2.15	17.8	491.2	1.07	16.87
D0065	LEAD	OR	OR	4,731	58	08/15/79	0.61	1.3	512.6	0.69	17.18
D0081	LEAD	OR	OR	4,902	14	08/31/79	1.77	25.1	483.8	0.68	16.78
D0090	LEAD	OR	OR	5,034	13	09/12/79	1.24	5.5	503.4	0.85	17.20
D0104	LEAD	OR	OR	5,250	16	09/28/79	0.97	4.4	504.2	0.92	17.26
D0108	LEAD	OR	OR	5,466	15	10/05/79	0.99	3.0	500.8	0.88	17.45
D0110	LEAD	OR	OR	5,719	17	10/11/79	1.36	4.6	500.3	1.09	17.34
D0123	LEAD	OR	OR	5,954	13	10/30/79	1.41	2.2	503.4	1.00	17.35
D0133	LEAD	OR	OR	6,050	13	11/17/79	1.65	6.7	501.0	1.08	17.17
D0139	LEAD	OR	OR	6,242	28	12/06/79	1.90	13.0	477.5	1.08	17.61
D0144	LEAD	OR	OR	6,637	16	12/15/79	1.65	1.6	506.1	1.21	17.28

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX D (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. NO.	MODL YEAR	MAKE	MODL	CID	CONV.
9406	1979	VOLV	245	130	3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION RESULTS (gr/mi)				FUEL ECON. MPG
							HC	CO	CO2	NOxc	
D0039	UNL	OR	OR	5,795	0	07/25/79	0.05	0.2	434.3	0.43	20.41
D0044	UNL	OR	OR	5,831	0	07/27/79	0.09	0.0	392.6	2.44	22.59
D0055	UNL	OR	OR	5,907	0	08/09/79	0.05	0.9	410.4	0.24	21.55
D0067	UNL	BP	OR	6,002	5	08/16/79	1.09	11.5	383.7	3.22	21.90
D0078	UNL	BP	OR	6,075	0	08/30/79	1.05	11.5	382.9	3.16	21.95
D0080	UNL	BP	OR	6,101	0	08/31/79	1.13	11.3	386.0	3.43	21.79
D0091	LEAD	OR	OR	6,371	26	09/12/79	0.22	1.8	402.5	0.06	21.86
D0096	LEAD	OR	OR	6,597	13	09/17/79	0.28	2.1	398.5	0.20	22.04
D0099	LEAD	OR	OR	6,853	12	09/24/79	0.36	2.1	404.1	0.28	21.72
D0106	LEAD	OR	OR	7,036	13	10/04/79	0.58	2.0	403.4	0.40	21.73
D0120	LEAD	OR	OR	7,275	14	10/27/79	0.77	2.0	370.1	0.88	23.63
D0134	LEAD	OR	OR	7,516	12	11/21/79	0.72	2.3	424.1	0.87	20.64
D0138	LEAD	OR	OR	7,641	13	12/04/79	0.82	1.9	390.3	0.99	22.42
D0143	LEAD	OR	OR	7,934	17	12/11/79	0.86	2.4	391.0	1.29	22.33

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX D (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL SHORT CYCLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	EMISSION HC	RESULTS CO	CO2	(gr/mi) NOxc	FUEL ECON. MPG
D0043	UNL	OR	OR	5,182	0	07/27/79	0.07	2.8	368.4	0.35	23.79
D0056	UNL	OR	OR	5,271	0	08/09/79	0.07	1.7	355.8	0.31	24.74
D0060	UNL	OR	OR	5,299	0	08/13/79	0.07	2.6	357.5	0.41	24.53
D0064	UNL	BP	OR	5,330	0	08/14/79	1.11	9.2	336.5	2.72	25.04
D0075	UNL	BP	OR	5,384	0	08/27/79	1.19	9.4	324.6	2.71	25.87
D0076	UNL	BP	OR	5,408	0	08/29/79	0.99	10.0	350.4	1.36	24.04
D0097	LEAD	OR	OR	5,646	14	09/18/79	0.12	1.8	352.1	0.44	24.98
D0105	LEAD	OR	OR	5,870	26	10/03/79	0.19	1.3	341.3	0.68	25.81
D0112	LEAD	OR	OR	6,121	12	10/12/79	0.31	3.1	341.9	0.63	25.52
D0131	LEAD	OR	OR	6,341	15	11/13/79	0.33	2.3	331.3	0.93	26.42
D0137	LEAD	OR	OR	6,606	13	12/03/79	0.46	2.3	336.1	0.74	26.01
D0145	LEAD	OR	OR	6,831	14	12/15/79	0.46	2.5	330.2	0.97	26.44
D0147	LEAD	OR	OR	7,004	0	12/27/79	0.52	3.0	333.2	0.86	26.14

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX E - LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

MODE - Identifies the mode of the Three Mode Test

BEFORE - Emission readings taken before the catalytic converter

AFTER - Emission readings taken after the catalytic converter

HC - Unburned hydrocarbon emissions in ppm hexane

CO - Carbon monoxide emissions in mole percent

NO - Oxides of nitrogen emissions in ppm

NOTE: Emission readings indicated by dash (-) reflect invalid
or discarded test results.

THREE MODE HORSE POWER CHART

NADA WEIGHT RANGE	FTP ROAD LOAD ACT. H.P. RRG	25 MPH ACT HP	52 MPH ACT HP	NADA WEIGHT RANGE	FTP ROAD LOAD ACT. H.P. RRG	25 MPH ACT HP	52 MPH ACT HP
1476 - 1725	4.51 - 5.50	4.0	7.5	3851 - 4350	6.51 - 7.50	9.5	13.5
1476 - 1725	5.51 - 6.50	4.5	8.5	3851 - 4350	7.51 - 8.50	9.5	14.5
1476 - 1725	6.51 - 7.50	4.5	9.5	3851 - 4350	8.51 - 9.50	9.5	15.5
1476 - 1725	7.51 - 8.50	4.5	10.5	3851 - 4350	9.51 - 10.50	9.5	16.5
				3851 - 4350	10.51 - 11.50	9.5	17.0
1726 - 1975	4.51 - 5.50	5.0	8.0	3851 - 4350	11.51 - 12.50	9.5	18.0
1726 - 1975	5.51 - 6.50	5.0	9.0	3851 - 4350	12.51 - 13.50	9.5	19.0
1726 - 1975	6.51 - 7.50	5.0	10.0	3851 - 4350	13.51 - 14.50	9.5	19.5
1726 - 1975	7.51 - 8.50	5.0	10.5	3851 - 4350	14.51 - 15.50	9.5	20.5
1726 - 1975	8.51 - 9.50	5.0	12.0	3851 - 4350	15.51 - 16.50	9.5	21.5
1726 - 1975	9.51 - 10.50	5.0	12.5				
1726 - 1975	10.51 - 11.50	5.0	14.0	4351 - 4850	6.51 - 7.50	10.5	15.0
				4351 - 4850	7.51 - 8.50	10.5	15.5
1976 - 2225	5.51 - 6.50	5.5	9.5	4351 - 4850	8.51 - 9.50	10.5	16.5
1976 - 2225	6.51 - 7.50	5.5	10.5	4351 - 4850	9.51 - 10.50	10.5	17.0
1976 - 2225	7.51 - 8.50	5.5	11.0	4351 - 4850	10.51 - 11.50	10.5	18.0
1976 - 2225	8.51 - 9.50	5.5	12.0	4351 - 4850	11.51 - 12.50	10.5	19.0
1976 - 2225	9.51 - 10.50	5.5	13.0	4351 - 4850	12.51 - 13.50	10.5	19.5
1976 - 2225	10.51 - 11.50	5.5	14.0	4351 - 4850	13.51 - 14.50	10.5	21.0
1976 - 2225	11.51 - 12.50	5.5	15.0	4351 - 4850	14.51 - 15.50	10.5	21.5
				4351 - 4850	15.51 - 16.50	10.5	22.5
2226 - 2475	6.51 - 7.50	6.0	10.5				
2226 - 2475	7.51 - 8.50	6.0	11.5	4851 - 5350	6.51 - 7.50	11.5	16.0
2226 - 2475	8.51 - 9.50	6.0	12.5	4851 - 5350	7.51 - 8.50	11.5	16.5
2226 - 2475	9.51 - 10.50	6.0	13.5	4851 - 5350	8.51 - 9.50	11.5	17.0
2226 - 2475	10.51 - 11.50	6.0	14.5	4851 - 5350	9.51 - 10.50	11.5	18.0
2226 - 2475	11.51 - 12.50	6.0	15.5	4851 - 5350	10.51 - 11.50	11.5	19.0
2226 - 2475	12.51 - 13.50	6.0	16.5	4851 - 5350	11.51 - 12.50	11.5	19.5
				4851 - 5350	12.51 - 13.50	11.5	20.5
2476 - 2850	5.51 - 6.50	6.5	10.5	4851 - 5350	13.51 - 14.50	11.5	21.5
2476 - 2850	6.51 - 7.50	6.5	11.0	4851 - 5350	14.51 - 15.50	11.5	22.5
2476 - 2850	7.51 - 8.50	6.5	12.0	4851 - 5350	15.51 - 16.50	11.5	23.0
2476 - 2850	8.51 - 9.50	6.5	13.0	4851 - 5350	16.51 - 17.50	11.5	24.0
2476 - 2850	9.51 - 10.50	6.5	13.5				
2476 - 2850	10.51 - 11.50	6.5	14.5	5351 - 5850	7.51 - 8.50	12.5	17.5
2476 - 2850	11.51 - 12.50	6.5	16.0	5351 - 5850	8.51 - 9.50	12.5	18.5
2476 - 2850	12.51 - 13.50	6.5	16.5	5351 - 5850	9.51 - 10.50	12.5	19.0
				5351 - 5850	10.51 - 11.50	12.5	20.0
2851 - 3350	5.51 - 6.50	7.5	11.0	5351 - 5850	11.51 - 12.50	12.5	20.5
2851 - 3350	6.51 - 7.50	7.5	12.0	5351 - 5850	12.51 - 13.50	12.5	21.5
2851 - 3350	7.51 - 8.50	7.5	13.0	5351 - 5850	13.51 - 14.50	12.5	22.0
2851 - 3350	8.51 - 9.50	7.5	13.5	5351 - 5850	14.51 - 15.50	12.5	23.0
2851 - 3350	9.51 - 10.50	7.5	14.5	5351 - 5850	15.51 - 16.50	12.5	24.0
2851 - 3350	10.51 - 11.50	7.5	15.5	5351 - 5850	16.51 - 17.50	13.0	26.0
2851 - 3350	11.51 - 12.50	7.5	16.0	5351 - 5850	17.51 - 18.50	13.0	25.5
2851 - 3350	12.51 - 13.50	7.5	17.5				
2851 - 3350	13.51 - 14.50	7.5	18.5				
3351 - 3850	6.51 - 7.50	8.5	13.0				
3351 - 3850	7.51 - 8.50	8.5	14.0				
3351 - 3850	8.51 - 9.50	8.5	14.5				
3351 - 3850	9.51 - 10.50	8.5	15.5				
3351 - 3850	10.51 - 11.50	8.5	16.5				
3351 - 3850	11.51 - 12.50	8.5	17.0				
3351 - 3850	12.51 - 13.50	8.5	18.0				
3351 - 3850	13.51 - 14.50	8.5	19.0				
3351 - 3850	14.51 - 15.50	8.5	20.0				

APPENDIX E

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0001	UNL	OR	NA	8,316	0	05/16/79	52 MPH				75	.01	544
							25 MPH				71	.01	365
							IDLE (D)				60	.01	181
							IDLE (N)				73	.01	85
D0003	UNL	OR	NA	8,394	0	05/21/79	52 MPH				29	.02	553
							25 MPH				27	.02	385
							IDLE (D)				15	.02	194
							IDLE (N)				28	.02	86
D0005	UNL	OR	NA	8,442	8	05/23/79	52 MPH				76	.00	556
							25 MPH				72	.00	391
							IDLE (D)				60	.01	170
							IDLE (N)				70	.01	74
D0008	UNL	BP	NA	8,694	5	06/05/79	52 MPH				190	.17	595
							25 MPH				217	.09	478
							IDLE (D)				249	.74	122
							IDLE (N)				637	.41	47
D0010	UNL	BP	NA	8,733	0	06/12/79	52 MPH				169	.12	717
							25 MPH				194	.07	523
							IDLE (D)				222	.97	146
							IDLE (N)				478	.62	48
D0013	UNL	BP	NA	8,760	6	06/14/79	52 MPH				170	.17	761
							25 MPH				203	.08	531
							IDLE (D)				234	.88	131
							IDLE (N)				629	.46	48
D0034	LEAD	OR	NA	9,046	40	07/11/79	52 MPH				189	.23	600
							25 MPH				218	.07	409
							IDLE (D)				224	.15	139
							IDLE (N)				392	.10	60
D0038	LEAD	OR	NA	9,307	15	07/24/79	52 MPH				191	.28	611
							25 MPH				214	.12	410
							IDLE (D)				206	.27	166
							IDLE (N)				446	.17	69
D0072	LEAD	OR	NA	9,770	41	08/25/79	52 MPH				217	.17	504
							25 MPH				252	.09	330
							IDLE (D)				250	.34	119
							IDLE (N)				538	.17	55

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0093	LEAD	OR	NA	10,069	20	09/13/79	52 MPH				197	.16	455
							25 MPH				227	.08	271
							IDLE (D)				223	.39	75
							IDLE (N)				470	.37	41
D0109	UNL	BP	NA	10,446	72	10/10/79	52 MPH				230	.16	815
							25 MPH				244	.11	645
							IDLE (D)				267	.79	177
							IDLE (N)				497	.53	52
D0118	UNL	RE	NA	10,532	0	10/24/79	52 MPH				0	.05	490
							25 MPH				0	.05	282
							IDLE (D)				0	.05	156
							IDLE (N)				0	.06	71
R0154	LEAD	OR	NA	11,750	91	01/16/80	52 MPH	169	.21	482	155	.24	507
							25 MPH	210	.24	301	195	.16	346
							IDLE (D)	272	1.28	98	273	1.14	100
							IDLE (N)	434	.94	54	474	.87	57
R0157	LEAD	OR	NA	11,795	3	01/17/80	52 MPH	158	.24	442	137	.24	477
							25 MPH	201	.24	281	183	.18	326
							IDLE (D)	244	.69	108	263	.65	100
							IDLE (N)	516	.54	48	546	.43	57
R0165	LEAD	OR	NA	11,831	6	01/22/80	52 MPH	175	.24	572	131	.26	602
							25 MPH	189	.19	422	165	.17	457
							IDLE (D)	232	1.06	141	251	.87	144
							IDLE (N)	516	.67	53	557	.58	61
R0173	UNL	BP	NA	11,877	22	01/25/80	52 MPH				143	.27	597
							25 MPH				175	.15	497
							IDLE (D)				251	1.52	86
							IDLE (N)				598	1.01	48
R0178	UNL	OR	NA	11,909	0	01/28/80	52 MPH	157	.23	512	119	.09	562
							25 MPH	207	.12	362	186	.05	392
							IDLE (D)	286	1.17	107	293	.52	106
							IDLE (N)	578	.82	42	598	.25	53
R0184	UNL	OR	NA	12,118	17	01/30/80	52 MPH	140	.18	512	107	.09	562
							25 MPH	206	.13	336	180	.06	372
							IDLE (D)	260	1.09	95	254	.62	102
							IDLE (N)	485	.92	41	516	.43	55

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0189	UNL	OR	NA	12,331	18	02/01/80	52 MPH	152	.17	452	113	.07	522
							25 MPH	218	.12	341	186	.05	392
							IDLE (D)	266	1.09	91	249	.60	102
							IDLE (N)	423	1.01	41	464	.58	48
R0216	UNL	OR	NA	12,612	19	02/15/80	52 MPH	182	.19	392	131	.06	447
							25 MPH	207	.13	271	190	.03	321
							IDLE (D)	247	1.52	84	261	.66	91
							IDLE (N)	608	.86	44	689	.09	55
R0222	UNL	OR	NA	12,823	20	02/19/80	52 MPH	182	.18	392	105	.04	331
							25 MPH	223	.14	266	151	.02	220
							IDLE (D)	253	1.21	76	210	.37	55
							IDLE (N)	619	.84	40	535	.08	42
R0232	UNL	OR	NA	13,860	61	02/25/80	52 MPH	185	.18	382	141	.05	412
							25 MPH	223	.13	261	191	.03	291
							IDLE (D)	261	1.87	72	268	1.39	74
							IDLE (N)	427	1.58	41	471	.66	47
R0244	UNL	OR	NA	14,894	65	03/04/80	52 MPH	141	.15	452	114	.04	492
							25 MPH	176	.14	321	157	.02	362
							IDLE (D)	219	1.83	66	250	1.39	75
							IDLE (N)	556	1.33	43	577	.43	50
R0247	UNL	RE	NA	14,934	0	03/05/80	52 MPH	157	.20	402	21	.01	432
							25 MPH	207	.15	271	30	.01	281
							IDLE (D)	233	1.80	63	225	1.04	29
							IDLE (N)	659	1.15	38	95	.27	10

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0057	UNL	OR	NA	9,287	0	08/09/79	52 MPH				72	.01	612
							25 MPH				76	.00	295
							IDLE (D)				62	.00	257
							IDLE (N)				121	.00	93
D0059	UNL	OR	NA	9,319	0	08/13/79	52 MPH				-	-	-
							25 MPH				81	.01	278
							IDLE (D)				61	.01	243
							IDLE (N)				112	.01	95
D0077	UNL	OR	NA	9,462	0	08/29/79	52 MPH				-	-	-
							25 MPH				82	.03	265
							IDLE (D)				65	.03	230
							IDLE (N)				128	.03	83
D0083	UNL	BP	NA	9,486	0	09/04/79	52 MPH				207	.12	610
							25 MPH				246	.07	444
							IDLE (D)				242	.25	257
							IDLE (N)				668	.24	63
D0092	UNL	BP	NA	9,567	0	09/13/79	52 MPH				-	-	-
							25 MPH				215	.07	431
							IDLE (D)				217	.17	230
							IDLE (N)				556	.20	54
D0095	UNL	BP	NA	9,591	0	09/14/79	52 MPH				237	.12	678
							25 MPH				243	.09	545
							IDLE (D)				218	.21	300
							IDLE (N)				629	.24	71
D0100	LEAD	OR	NA	9,814	39	09/25/79	52 MPH				155	.07	546
							25 MPH				216	.04	281
							IDLE (D)				152	.03	273
							IDLE (N)				471	.03	82
D0119	LEAD	OR	NA	10,174	21	10/26/79	52 MPH				136	.11	555
							25 MPH				187	.07	352
							IDLE (D)				137	.06	310
							IDLE (N)				364	.04	87
D0126	LEAD	OR	NA	10,407	20	11/12/79	52 MPH				113	.10	479
							25 MPH				170	.08	315
							IDLE (D)				128	.07	308
							IDLE (N)				395	.06	103

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0136	LEAD	OR	NA	10,678	19	12/01/79	52 MPH				114	.11	587
							25 MPH				159	.08	352
							IDLE (D)				118	.07	246
							IDLE (N)				397	.05	67
D0142	LEAD	OR	NA	10,922	18	12/10/79	52 MPH				136	.10	518
							25 MPH				175	.08	377
							IDLE (D)				125	.07	322
							IDLE (N)				390	.04	102
D0148	LEAD	OR	NA	11,186	17	01/14/80	52 MPH						
							25 MPH	272	.08	224	226	.06	238
							IDLE (D)	313	.19	139	253	.07	151
							IDLE (N)	1071	.25	50	972	.13	66
D0151	LEAD	OR	NA	11,223	0	01/15/80	52 MPH	189	.10	447	134	.09	547
							25 MPH	251	.07	271	195	.05	331
							IDLE (D)	241	.27	137	241	.06	149
							IDLE (N)	788	.34	53	682	.16	65
D0163	LEAD	OR	NA	11,256	0	01/21/80	52 MPH	181	.14	582	127	.14	692
							25 MPH	230	.11	417	198	.08	427
							IDLE (D)	246	.24	198	247	.07	210
							IDLE (N)	885	.30	61	767	.17	79
D0169	LEAD	OR	NA	11,593	37	01/24/80	52 MPH	157	.14	652	112	.18	736
							25 MPH	218	.10	382	169	.09	417
							IDLE (D)	221	.31	187	183	.19	210
							IDLE (N)	788	.27	64	767	.18	80
D0174	LEAD	OR	NA	11,841	4	01/26/80	52 MPH	168	.14	562	112	.15	687
							25 MPH	204	.11	392	165	.08	412
							IDLE (D)	241	.24	187	184	.13	199
							IDLE (N)	672	.30	66	661	.18	78
D0190	UNL	BP	NA	11,876	21	02/01/80	52 MPH				149	.13	552
							25 MPH				198	.10	452
							IDLE (D)				353	.33	149
							IDLE (N)				1004	.37	45
R0200	UNL	OR	NA	11,946	0	02/07/80	52 MPH	149	.14	562	110	.07	617
							25 MPH	269	.11	215	217	.05	321
							IDLE (D)	393	.36	123	313	.07	155
							IDLE (N)	1071	.45	43	896	.08	65

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0212	UNL	OR	NA	12,133	19	02/14/80	52 MPH	203	.11	412	132	.04	487
							25 MPH	277	.09	215	239	.03	240
							IDLE (D)	294	.27	155	272	.02	163
							IDLE (N)	1057	.32	48	943	.03	77
R0219	UNL	OR	NA	12,347	19	02/18/80	52 MPH	200	.12	422	129	.06	477
							25 MPH	261	.09	220	216	.04	231
							IDLE (D)	233	.37	190	216	.03	203
							IDLE (N)	860	.34	52	785	.04	87
R0224	UNL	OR	NA	12,621	20	02/20/80	52 MPH	182	.12	437	120	.04	532
							25 MPH	328	.10	149	272	.03	189
							IDLE (D)	225	.21	208	230	.02	218
							IDLE (N)	1057	.26	58	1018	.02	94
R0230	UNL	OR	NA	12,902	41	02/23/80	52 MPH	160	.13	472	114	.05	552
							25 MPH	273	.09	224	263	.03	241
							IDLE (D)	207	.48	174	182	.03	185
							IDLE (N)	869	.41	59	756	.03	81
R0243	UNL	OR	NA	13,930	69	02/29/80	52 MPH	205	.12	412	117	.03	472
							25 MPH	294	.10	215	247	.02	234
							IDLE (D)	194	.28	182	191	.01	187
							IDLE (N)	869	.34	57	775	.02	84
R0246	UNL	OR	NA	14,940	71	03/05/80	52 MPH	205	.11	422	105	.03	512
							25 MPH	316	.09	190	236	.02	213
							IDLE (D)	207	.29	210	182	.01	218
							IDLE (N)	869	.32	66	794	.02	97
R0252	UNL	RE	NA	14,990	0	03/07/80	52 MPH	163	.11	522	9	.01	567
							25 MPH	263	.09	241	9	.01	215
							IDLE (D)	188	.24	372	8	.01	218
							IDLE (N)	514	.33	104	6	.01	94

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0004	UNL	OR	NA	6,818	7	05/22/79	52 MPH						
							25 MPH				79	0.00	246
							IDLE (D)				70	.00	146
							IDLE (N)				70	.00	45
D0006	UNL	OR	NA	6,857	2	05/23/79	52 MPH						
							25 MPH				69	0.00	223
							IDLE (D)				60	.00	199
							IDLE (N)				61	.00	54
D0007	UNL	OR	NA	6,886	0	05/25/79	52 MPH						
							25 MPH				66	.00	420
							IDLE (D)				59	.01	237
							IDLE (N)				60	.00	55
D0009	UNL	BP	NA	6,950	0	06/08/79	52 MPH				141	.08	708
							25 MPH						
							IDLE (D)				218	.08	229
							IDLE (N)				256	.14	54
D0011	UNL	BP	NA	7,014	6	06/13/79	52 MPH				137	.06	925
							25 MPH						
							IDLE (D)				198	.06	250
							IDLE (N)				240	.11	59
D0014	UNL	BP	NA	7,069	0	06/23/79	52 MPH				-	-	-
							25 MPH						
							IDLE (D)				214	.07	253
							IDLE (N)				211	.12	71
D0049	LEAD	OR	NA	7,449	28	08/03/79	52 MPH				118	.06	525
							25 MPH						
							IDLE (D)				137	.03	161
							IDLE (N)				232	.03	39
D0073	LEAD	OR	NA	7,767	27	08/25/79	52 MPH				142	.06	818
							25 MPH						
							IDLE (D)				174	.03	116
							IDLE (N)				259	.03	42
D0088	LEAD	OR	NA	7,956	12	09/11/79	52 MPH				137	.06	601
							25 MPH						
							IDLE (D)				168	.03	135
							IDLE (N)				197	.03	52

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0098	LEAD	OR	NA	8,161	13	09/19/79	52 MPH				148	.06	763
							25 MPH						
							IDLE (D)				179	.04	168
D0103	LEAD	OR	NA	8,429	14	09/28/79	IDLE (N)				234	.04	53
							52 MPH				131	.08	716
							25 MPH						
D0111	LEAD	OR	NA	8,618	12	10/11/79	IDLE (D)				157	.06	141
							IDLE (N)				211	.06	47
							52 MPH				143	.08	844
D0121	LEAD	OR	NA	8,837	13	10/29/79	25 MPH				174	.06	164
							IDLE (D)				211	.06	58
							IDLE (N)						
D0127	LEAD	OR	NA	9,017	13	11/12/79	52 MPH				136	.07	868
							25 MPH				175	.05	358
							IDLE (D)				180	.05	153
D0135	LEAD	OR	NA	9,244	14	11/26/79	IDLE (N)				221	.05	57
							52 MPH				65	.09	798
							25 MPH				90	.07	390
D0141	LEAD	OR	NA	9,430	12	12/10/79	IDLE (D)				101	.07	163
							IDLE (N)				123	.07	59
							52 MPH				75	.07	848
D0155	LEAD	OR	NA	9,856	19	01/16/80	25 MPH				104	.05	320
							IDLE (D)				109	.04	149
							IDLE (N)				119	.04	52
D0158	LEAD	OR	NA	9,889	0	01/17/80	52 MPH	101	.10	997	79	.09	950
							25 MPH	122	.09	637	109	.07	592
							IDLE (D)	235	.11	158	165	.05	108
D0158	LEAD	OR	NA	9,889	0	01/17/80	IDLE (N)	495	.17	45	393	.09	44
							52 MPH	101	.10	915	79	.09	927
							25 MPH	145	.10	592	104	.07	552
D0158	LEAD	OR	NA	9,889	0	01/17/80	IDLE (D)	220	.11	136	155	.05	91
							IDLE (N)	526	.18	40	474	.07	40

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9403 1979 OLDS CUTL 260 OXID.													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0160	LEAD	OR	NA	9,922	0	01/18/80	52 MPH	98	.10	974	73	.09	997
							25 MPH	143	.10	677	104	.07	637
							IDLE (D)	223	.11	109	151	.05	95
							IDLE (N)	588	.18	42	536	.07	40
D0164	UNL	BP	NA	9,961	19	01/21/80	52 MPH				88	.10	1289
							25 MPH				115	.09	837
							IDLE (D)				186	.13	158
							IDLE (N)				495	.20	44
R0168	UNL	OR	NA	9,993	0	01/24/80	52 MPH	88	.10	1145	62	.09	1020
							25 MPH	134	.10	422	101	.07	432
							IDLE (D)	191	.13	173	128	.06	136
							IDLE (N)	516	.20	40	423	.09	42
R0176	UNL	OR	NA	10,220	16	01/26/80	52 MPH	89	.10	1008	64	.08	985
							25 MPH	137	.11	382	98	.06	407
							IDLE (D)	183	.13	140	110	.05	104
							IDLE (N)	495	.21	41	373	.06	40
R0182	UNL	OR	NA	10,490	16	01/29/80	52 MPH	91	.11	1133	61	.08	1066
							25 MPH	136	.10	402	95	.06	487
							IDLE (D)	183	.14	220	109	.05	115
							IDLE (N)	546	.23	41	403	.09	36
R0187	UNL	OR	NA	10,739	15	01/31/80	52 MPH	92	.10	948	60	.07	935
							25 MPH	137	.10	392	94	.05	412
							IDLE (D)	178	.13	128	98	.05	107
							IDLE (N)	373	.21	42	237	.06	40
R0206	UNL	OR	NA	10,931	16	02/09/80	52 MPH	88	.10	931	59	.06	864
							25 MPH	134	.10	367	92	.05	382
							IDLE (D)	181	.13	123	92	.05	88
							IDLE (N)	434	.22	40	363	.09	38
R0231	UNL	OR	NA	12,015	62	02/25/80	52 MPH	95	.08	789	65	.04	770
							25 MPH	163	.08	251	114	.03	261
							IDLE (D)	207	.11	115	98	.02	102
							IDLE (N)	556	.19	38	255	.02	41
R0245	UNL	OR	NA	13,046	61	03/05/80	52 MPH	101	.08	931	65	.04	918
							25 MPH	148	.08	311	101	.03	341
							IDLE (D)	200	.11	141	95	.02	131
							IDLE (N)	449	.19	48	213	.02	49

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0251	UNL	RE	NA	13,114	0	03/07/80	52 MPH	101	.08	952	36	.01	864
							25 MPH	157	.08	341	54	.01	311
							IDLE (D)	203	.11	133	54	.01	104
							IDLE (N)	514	.19	41	191	.01	47

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. NO.		MODL. YEAR		MAKE	MODL	CID	CONV.						
9404		1979		OLDS	CUTL	260	OXID.						
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	HC ppmh	BEFORE CO %	NO ppm	HC ppmh	AFTER CO %	NO ppm
D0018	UNL	OR	NA	7,283	0	06/27/79	52 MPH 25 MPH IDLE (D) IDLE (N)				55 43 46	0.00 0.00 0.00	510 119 52
D0020	UNL	OR	NA	7,315	5	06/28/79	52 MPH 25 MPH IDLE (D) IDLE (N)				64 52 55	.00 .00 .00	426 95 32
D0022	UNL	OR	NA	7,349	2	06/29/79	52 MPH 25 MPH IDLE (D) IDLE (N)				72 60 65	.02 .03 .03	425 93 48
D0027	UNL	BP	NA	7,380	0	07/07/79	52 MPH 25 MPH IDLE (D) IDLE (N)				136 213 333	.09 .11 .18	632 132 42
D0031	UNL	BP	NA	7,437	6	07/10/79	52 MPH 25 MPH IDLE (D) IDLE (N)				136 227 330	.08 .10 .17	538 126 42
D0033	UNL	BP	NA	7,492	0	07/11/79	52 MPH 25 MPH IDLE (D) IDLE (N)				167 235 345	.08 .09 .16	645 149 44
D0054	LEAD	OR	NA	7,955	40	08/08/79	52 MPH 25 MPH IDLE (D) IDLE (N)				72 130 261	.06 .02 .03	490 102 45
D0082	LEAD	OR	NA	8,266	24	08/31/79	52 MPH 25 MPH IDLE (D) IDLE (N)				121 179 309	.05 .02 .02	493 81 37
D0094	LEAD	OR	NA	8,358	12	09/13/79	52 MPH 25 MPH IDLE (D) IDLE (N)				- - 164 278	- - .02 .02	- - 85 38

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0101	LEAD	OR	NA	8,528	10	09/25/79	52 MPH				144	.07	467
							25 MPH						
							IDLE (D)				189	.05	109
							IDLE (N)				348	.06	51
D0107	LEAD	OR	NA	8,727	15	10/05/79	52 MPH				-	-	-
							25 MPH						
							IDLE (D)				208	.04	113
							IDLE (N)				350	.04	48
D0113	LEAD	OR	NA	8,897	11	10/12/79	52 MPH				133	.09	514
							25 MPH						
							IDLE (D)				191	.06	113
							IDLE (N)				319	.07	52
D0122	LEAD	OR	NA	9,213	16	10/30/79	52 MPH				109	.05	573
							25 MPH				160	.04	169
							IDLE (D)				159	.02	128
							IDLE (N)				266	.03	55
D0124	LEAD	OR	NA	9,363	14	11/07/79	52 MPH				75	.11	551
							25 MPH				137	.10	165
							IDLE (D)				151	.07	119
							IDLE (N)				286	.07	52
D0140	LEAD	OR	NA	9,627	14	12/07/79	52 MPH				90	.07	647
							25 MPH				139	.06	186
							IDLE (D)				188	.05	144
							IDLE (N)				179	.05	57
D0146	LEAD	OR	NA	9,842	12	12/15/79	52 MPH				-	-	-
							25 MPH						
							IDLE (D)				149	.02	139
							IDLE (N)				220	.02	53
D0156	LEAD	OR	NA	10,098	9	01/16/80	52 MPH	112	.12	677	83	.10	582
							25 MPH	160	.10	202	130	.07	210
							IDLE (D)	273	.12	115	207	.06	86
							IDLE (N)	444	.20	52	434	.10	42
D0159	LEAD	OR	NA	10,134	0	01/17/80	52 MPH	122	.12	572	83	.09	492
							25 MPH	166	.10	174	127	.07	178
							IDLE (D)	323	.13	86	253	.06	70
							IDLE (N)	661	.22	45	536	.08	39

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0172	UNL	BP	NA	10,165	18	01/25/80	52 MPH				89	.12	617
							25 MPH				146	.11	225
							IDLE (D)				265	.14	104
							IDLE (N)				454	.22	117
R0177	UNL	OR	NA	10,199	0	01/26/80	52 MPH	98	.12	627	68	.09	562
							25 MPH	160	.11	170	112	.08	181
							IDLE (D)	260	.14	66	175	.05	64
							IDLE (N)	619	.23	34	546	.08	40
R0180	UNL	OR	NA	10,385	16	01/28/80	52 MPH	89	.11	562	64	.08	552
							25 MPH	146	.11	164	107	.07	175
							IDLE (D)	218	.14	83	142	.05	83
							IDLE (N)	640	.23	34	546	.06	39
R0186	UNL	OR	NA	10,633	16	01/31/80	52 MPH	89	.11	547	62	.08	532
							25 MPH	134	.11	174	104	.06	179
							IDLE (D)	241	.14	67	146	.04	68
							IDLE (N)	507	.24	39	444	.07	37
R0205	UNL	OR	NA	10,864	15	02/09/80	52 MPH	98	.12	622	62	.08	567
							25 MPH	149	.11	156	104	.06	182
							IDLE (D)	243	.14	64	155	.04	63
							IDLE (N)	788	.23	24	557	.06	34
R0211	UNL	OR	NA	11,082	16	02/14/80	52 MPH	100	.09	532	70	.05	522
							25 MPH	185	.08	144	132	.03	170
							IDLE (D)	250	.11	77	169	.02	76
							IDLE (N)	756	.21	28	514	.02	44
R0233	UNL	OR	NA	12,119	67	02/25/80	52 MPH	117	.09	522	74	.05	507
							25 MPH	200	.09	152	129	.03	155
							IDLE (D)	316	.12	63	148	.01	70
							IDLE (N)	887	.22	27	503	.02	47
R0248	UNL	OR	NA	13,149	61	03/06/80	52 MPH	95	.08	692	63	.04	672
							25 MPH	216	.08	215	141	.03	231
							IDLE (D)	255	.11	84	135	.01	89
							IDLE (N)	598	.20	32	339	.02	53
R0253	UNL	RE	NA	13,179	0	03/07/80	52 MPH	117	.08	672	27	.01	562
							25 MPH	216	.09	205	48	.01	213
							IDLE (D)	230	.11	91	27	.01	81
							IDLE (N)	756	.22	30	117	.01	51

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	VEH. MODL NO. YEAR MAKE MODL CID CONV.			BEFORE			AFTER		
								9405	1979	MERC MARQ	351	3	WAY	HC ppmh	CO %	NO ppm
D0021	UNL	OR	OR	4,179	5	06/28/79	52 MPH							57	.01	74
							25 MPH							50	.00	51
							IDLE (D)							47	.01	38
							IDLE (N)							48	.02	13
D0023	UNL	OR	OR	4,210	0	06/29/79	52 MPH							116	.77	106
							25 MPH							138	.68	75
							IDLE (D)							185	.36	36
							IDLE (N)							81	.05	1
D0026	UNL	OR	OR	4,282	0	07/05/79	52 MPH							51	.02	115
							25 MPH							49	.01	117
							IDLE (D)							47	.02	42
							IDLE (N)							51	.06	20
D0028	UNL	BP	OR	4,319	8	07/07/79	52 MPH							144	.40	650
							25 MPH							165	.28	431
							IDLE (D)							191	.26	338
							IDLE (N)							154	.40	74
D0030	UNL	BP	OR	4,345	0	07/09/79	52 MPH							150	.76	621
							25 MPH							176	.63	396
							IDLE (D)							198	.35	329
							IDLE (N)							151	.24	78
D0032	UNL	BP	OR	4,373	0	07/10/79	52 MPH							146	.61	694
							25 MPH							166	.27	444
							IDLE (D)							196	.24	378
							IDLE (N)							172	.38	76
D0065	LEAD	OR	OR	4,731	58	08/15/79	52 MPH							95	.04	271
							25 MPH							116	.09	210
							IDLE (D)							206	.35	204
							IDLE (N)							161	.31	31
D0081	LEAD	OR	OR	4,902	14	08/31/79	52 MPH							153	.56	370
							25 MPH							150	.41	293
							IDLE (D)							161	.12	93
							IDLE (N)							118	.07	20
D0090	LEAD	OR	OR	5,034	13	09/12/79	52 MPH							-	-	-
							25 MPH							184	1.00	323
							IDLE (D)							192	.59	300
							IDLE (N)							132	.12	32

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

													VEH. MODL NO. YEAR MAKE MODL CID CONV.		
													9405 1979 MERC MARQ 351 3 WAY		
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER				
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm		
D0104	LEAD	OR	OR	5,250	16	09/28/79	52 MPH				126	.16	378		
							25 MPH				134	.16	269		
							IDLE (D)				170	.19	323		
							IDLE (N)				145	.15	47		
D0108	LEAD	OR	OR	5,466	15	10/05/79	52 MPH				-	-	-		
							25 MPH				132	.04	402		
							IDLE (D)				166	.11	331		
							IDLE (N)				150	.19	34		
D0110	LEAD	OR	OR	5,719	17	10/11/79	52 MPH				-	-	-		
							25 MPH				165	.11	405		
							IDLE (D)				198	.16	381		
							IDLE (N)				169	.26	54		
D0123	LEAD	OR	OR	5,954	13	10/30/79	52 MPH				-	-	-		
							25 MPH				-	-	-		
							IDLE (D)				142	.12	379		
							IDLE (N)				113	.11	57		
D0133	LEAD	OR	OR	6,050	13	11/17/79	52 MPH				80	.09	432		
							25 MPH				84	.05	348		
							IDLE (D)				101	.08	373		
							IDLE (N)				120	.14	62		
D0139	LEAD	OR	OR	6,242	28	12/06/79	52 MPH				-	-	-		
							25 MPH				-	-	-		
							IDLE (D)				171	.52	387		
							IDLE (N)				160	.15	71		
D0144	LEAD	OR	OR	6,637	16	12/15/79	52 MPH				-	-	-		
							25 MPH				-	-	-		
							IDLE (D)				107	.02	420		
							IDLE (N)				124	.13	75		
D0161	LEAD	OR	OR	6,875	7	01/18/80	52 MPH	149	1.01	985	119	.85	602		
							25 MPH	171	.94	462	107	.12	566		
							IDLE (D)	186	.58	527	171	.26	412		
							IDLE (N)	146	.09	90	143	.28	54		
D0166	LEAD	OR	OR	6,944	4	01/22/80	52 MPH	151	.92	918	134	.82	672		
							25 MPH	158	.54	572	104	.11	377		
							IDLE (D)	192	.62	602	174	.31	527		
							IDLE (N)	146	.78	78	160	.34	54		

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0196	LEAD	OR	OR	7,057	17	02/05/80	52 MPH	131	1.12	780	133	1.59	672
							25 MPH	158	.89	432	101	.24	203
							IDLE (D)	171	.47	622	161	.18	592
							IDLE (N)	158	.69	76	180	.18	73
D0228	LEAD	OR	OR	7,152	5	02/23/80	52 MPH	154	1.15	702	145	1.18	677
							25 MPH	175	.79	462	111	.11	286
							IDLE (D)	191	.52	522	176	.14	472
							IDLE (N)	171	.66	79	166	.21	71
R0235	LEAD	BP	OR	7,184	10	02/26/80	52 MPH				151	1.33	682
							25 MPH				155	.47	412
							IDLE (D)				185	.54	452
							IDLE (N)				160	.70	77
R0237	LEAD	BP	OR	7,213	0	02/27/80	52 MPH				146	.94	789
							25 MPH				160	.58	442
							IDLE (D)				185	.47	482
							IDLE (N)				160	.62	80
R0240	UNL	BP	OR	7,241	18	02/28/80	52 MPH				120	.41	761
							25 MPH				145	.54	402
							IDLE (D)				185	.66	422
							IDLE (N)				166	.79	72
R0241	UNL	BP	OR	7,269	0	02/29/80	52 MPH				117	.36	731
							25 MPH				141	.50	382
							IDLE (D)				182	.62	412
							IDLE (N)				163	.84	70
R0249	UNL	BP	NW	7,302	0	03/06/80	52 MPH				111	.25	1043
							25 MPH				129	.29	612
							IDLE (D)				163	.34	652
							IDLE (N)				132	.47	89
R0254	UNL	BP	NW	7,329	0	03/10/80	52 MPH				109	.36	968
							25 MPH				126	.30	557
							IDLE (D)				163	.36	592
							IDLE (N)				141	.50	88
R0260	UNL	OR	NW	7,358	0	03/11/80	52 MPH	114	.27	1031	71	.02	672
							25 MPH	132	.32	642	86	.02	351
							IDLE (D)	166	.40	722	145	.06	572
							IDLE (N)	120	.47	90	117	.08	84

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

		VEH. MODL											
		NO.	YEAR	MAKE	MODL	CID	CONV.						
		9405	1979	MERC	MARQ	351	3 WAY						
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0261	UNL	OR	OR	7,390	16	03/12/80	52 MPH	126	.37	1043	77	.02	682
							25 MPH	148	.50	672	89	.04	372
							IDLE (D)	176	.62	692	157	.24	592
							IDLE (N)	145	.66	91	129	.23	79
R0264	UNL	OR	OR	7,629	13	03/14/80	52 MPH	117	.35	682	63	.02	432
							25 MPH	129	.50	462	80	.03	261
							IDLE (D)	179	.66	512	145	.27	442
							IDLE (N)	114	.70	81	120	.21	70
R0266	UNL	OR	NW	7,666	0	03/17/80	52 MPH	114	.27	818	60	.02	472
							25 MPH	129	.34	542	77	.02	291
							IDLE (D)	166	.43	632	138	.05	492
							IDLE (N)	126	.47	86	114	.07	75
R0269	UNL	OR	OR	7,910	20	03/19/80	52 MPH	114	.36	702	57	.02	432
							25 MPH	126	.47	502	71	.02	261
							IDLE (D)	179	.58	382	163	.24	271
							IDLE (N)	151	.75	78	151	.32	67
R0272	UNL	OR	NW	7,941	0	03/21/80	52 MPH	112	.28	722	60	.02	482
							25 MPH	135	.33	492	71	.01	257
							IDLE (D)	176	.36	341	145	.04	261
							IDLE (N)	138	.50	78	120	.08	68
R0280	UNL	OR	OR	8,144	15	03/28/80	52 MPH	101	.28	682	60	.02	442
							25 MPH	129	.33	462	68	.02	240
							IDLE (D)	183	.38	331	148	.04	241
							IDLE (N)	141	.50	77	101	.03	63
R0282	UNL	OR	NW	8,174	0	03/31/80	52 MPH	101	.29	702	57	.02	437
							25 MPH	123	.34	442	68	.01	233
							IDLE (D)	176	.34	331	145	.04	203
							IDLE (N)	163	.50	79	111	.08	60
R0285	UNL	OR	OR	8,473	23	04/03/80	52 MPH	98	.33	682	65	.05	141
							25 MPH	123	.39	482	68	.02	185
							IDLE (D)	179	.47	362	157	.06	128
							IDLE (N)	145	.54	78	105	.10	37
R0286	UNL	OR	NW	8,504	9	04/07/80	52 MPH	98	.29	712	54	.01	382
							25 MPH	123	.30	532	63	.01	251
							IDLE (D)	179	.33	422	135	.04	230
							IDLE (N)	129	.47	78	83	.06	53

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0293	UNL	OR	NW	9,369	52	04/30/80	52 MPH	89	.33	602	39	.01	351
							25 MPH	101	.33	341	48	.01	169
							IDLE (D)	166	.94	226	163	.47	131
							IDLE (N)	176	.58	70	154	.07	42
R0297	UNL	OR	OR	9,543	4	05/13/80	52 MPH	92	.33	592	30	.02	213
							25 MPH	111	.40	321	30	.01	117
							IDLE (D)	173	.46	241	141	.13	64
							IDLE (N)	154	.70	66	111	.19	23
R0299	UNL	BP	OR	9,600	0	05/19/80	52 MPH				89	.34	689
							25 MPH				114	.43	362
							IDLE (D)				166	.50	251
							IDLE (N)				225	.99	66
R0300	UNL	BP	NW	9,634	0	05/20/80	52 MPH				89	.31	689
							25 MPH				111	.34	341
							IDLE (D)				176	.89	224
							IDLE (N)				173	.70	71
R0303	UNL	RE	OR	9,735	16	05/28/80	52 MPH	80	.36	652	2	.01	58
							25 MPH	114	.43	341	0	.01	50
							IDLE (D)	160	.54	261	36	.10	6
							IDLE (N)	163	.70	68	21	.14	1
R0306	UNL	RE	NW	9,846	0	06/02/80	52 MPH	86	.30	632	3	.01	70
							25 MPH	111	.34	382	0	.01	20
							IDLE (D)	160	.36	281	3	.02	10
							IDLE (N)	151	.50	69	0	.02	4

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9406 1979 VOLV 245 130 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0039	UNL	OR	OR	5,795	0	07/25/79	52 MPH				61	.02	386
							25 MPH				59	.01	281
							IDLE (D)				57	.01	16
							IDLE (N)				56	.01	0
D0044	UNL	OR	OR	5,831	0	07/27/79	52 MPH				54	.01	1453
							25 MPH				53	.01	1065
							IDLE (D)				52	.00	54
							IDLE (N)				51	.01	42
D0055	UNL	OR	OR	5,907	0	08/09/79	52 MPH				-	-	-
							25 MPH				47	.01	219
							IDLE (D)				47	.01	15
							IDLE (N)				46	.01	1
D0067	UNL	BP	OR	6,002	5	08/16/79	52 MPH				102	.77	2329
							25 MPH				112	.73	1325
							IDLE (D)				77	.51	70
							IDLE (N)				96	.59	60
D0078	UNL	BP	OR	6,075	0	08/30/79	52 MPH				-	-	-
							25 MPH				113	.67	1174
							IDLE (D)				83	.51	60
							IDLE (N)				89	.57	50
D0080	UNL	BP	OR	6,101	0	08/31/79	52 MPH				-	-	-
							25 MPH				113	.63	498
							IDLE (D)				80	.46	24
							IDLE (N)				99	.60	21
D0091	LEAD	OR	OR	6,371	26	09/12/79	52 MPH				-	-	-
							25 MPH				77	.08	23
							IDLE (D)				70	.07	0
							IDLE (N)				75	.11	0
D0096	LEAD	OR	OR	6,597	13	09/17/79	52 MPH				-	-	-
							25 MPH				113	.10	49
							IDLE (D)				99	.08	5
							IDLE (N)				99	.17	4
D0099	LEAD	OR	OR	6,853	12	09/24/79	52 MPH				78	.05	699
							25 MPH				96	.13	70
							IDLE (D)				71	.10	1
							IDLE (N)				71	.27	1

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9406 1979 VOLV 245 130 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0106	LEAD	OR	OR	7,036	13	10/04/79	52 MPH				98	.06	764
							25 MPH				124	.14	106
							IDLE (D)				96	.17	3
							IDLE (N)				88	.23	1
D0120	LEAD	OR	OR	7,275	14	10/27/79	52 MPH				59	.06	1083
							25 MPH				81	.09	153
							IDLE (D)				46	.13	9
							IDLE (N)				42	.15	6
D0134	LEAD	OR	OR	7,516	12	11/21/79	52 MPH				33	.12	610
							25 MPH				37	.11	126
							IDLE (D)				36	.15	10
							IDLE (N)				62	.13	7
D0138	LEAD	OR	OR	7,641	13	12/04/79	52 MPH				-	-	-
							25 MPH				-	-	-
							IDLE (D)				34	.21	19
							IDLE (N)				40	.16	12
D0143	LEAD	OR	OR	7,934	17	12/11/79	52 MPH				-	-	-
							25 MPH				-	-	-
							IDLE (D)				20	.16	18
							IDLE (N)				21	.17	14
D0150	LEAD	OR	OR	8,144	3	01/14/80	52 MPH	79	.80	2382	80	.17	1365
							25 MPH	110	.87	1245	107	.33	542
							IDLE (D)	53	.67	83	52	.29	37
							IDLE (N)	59	.67	67	56	.21	18
D0153	LEAD	OR	OR	8,174	4	01/15/80	52 MPH	67	.82	2253	61	.18	1343
							25 MPH	91	.89	1200	86	.29	702
							IDLE (D)	35	.67	77	35	.25	44
							IDLE (N)	38	.65	64	29	.18	25
R0175	LEAD	BP	OR	8,220	4	01/26/80	52 MPH				80	.99	2382
							25 MPH				100	1.06	1397
							IDLE (D)				40	.82	80
							IDLE (N)				35	.80	67
R0179	LEAD	BP	OR	8,250	0	01/28/80	52 MPH				76	1.04	2382
							25 MPH				97	1.01	1430
							IDLE (D)				41	.82	77
							IDLE (N)				44	.82	63

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9406 1979 VOLV 245 130 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0183	UNL	BP	OR	8,280	14	01/29/80	52 MPH				70	.99	2382
							25 MPH				83	1.04	1365
							IDLE (D)				38	.80	74
							IDLE (N)				37	.82	58
R0185	UNL	BP	OR	8,309	0	01/30/80	52 MPH				74	.99	2382
							25 MPH				89	1.02	1343
							IDLE (D)				38	.80	74
							IDLE (N)				46	.82	62
R0193	UNL	BP	NW	8,339	0	02/04/80	52 MPH				70	1.04	2382
							25 MPH				88	1.04	547
							IDLE (D)				41	.74	70
							IDLE (N)				74	.87	60
R0198	UNL	BP	NW	8,380	0	02/06/80	52 MPH				76	1.14	2382
							25 MPH				89	1.14	1245
							IDLE (D)				41	.96	69
							IDLE (N)				74	1.06	60
R0202	UNL	OR	NW	8,406	0	02/08/80	52 MPH	65	1.06	2382	64	.54	1658
							25 MPH	85	1.14	1289	85	.63	1077
							IDLE (D)	46	.92	72	47	.34	54
							IDLE (N)	80	1.01	60	68	.26	29
R0207	UNL	OR	OR	8,445	0	02/09/80	52 MPH	64	.89	2382	59	.15	1669
							25 MPH	88	.99	1321	83	.33	770
							IDLE (D)	41	.87	72	40	.27	38
							IDLE (N)	50	.87	60	46	.15	20
R0213	UNL	OR	OR	8,730	30	02/14/80	52 MPH	80	.86	2104	64	.12	1419
							25 MPH	86	.96	1100	79	.15	562
							IDLE (D)	52	.75	70	46	.02	44
							IDLE (N)	95	.84	56	123	.02	48
R0215	UNL	OR	NW	8,760	0	02/15/80	52 MPH	73	.99	2040	70	.50	1397
							25 MPH	83	1.07	1020	83	.54	808
							IDLE (D)	49	.77	70	49	.04	29
							IDLE (N)	86	.89	56	89	.06	23
R0218	UNL	OR	OR	8,927	15	02/18/80	52 MPH	73	.94	2170	64	.17	1484
							25 MPH	86	.96	1222	83	.24	833
							IDLE (D)	54	.84	75	51	.30	43
							IDLE (N)	51	.84	58	54	.22	30

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

		VEH. MODL											
		NO.	YEAR	MAKE	MODL	CID	CONV.						
		9406	1979	VOLV	245	130	3 WAY						
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0221	UNL	OR	NW	8,958	0	02/19/80	52 MPH	74	1.07	2028	65	.45	1419
							25 MPH	89	1.09	1088	79	.45	773
							IDLE (D)	51	.77	73	42	.16	41
							IDLE (N)	60	.89	57	49	.16	30
R0225	UNL	OR	OR	9,164	30	02/21/80	52 MPH	70	.91	2197	58	.10	1419
							25 MPH	83	.99	1100	77	.22	632
							IDLE (D)	45	.82	69	45	.26	39
							IDLE (N)	40	.84	57	45	.18	25
R0227	UNL	OR	NW	9,212	0	02/23/80	52 MPH	77	1.04	2078	71	.41	1549
							25 MPH	92	1.09	1122	89	.47	873
							IDLE (D)	51	.73	69	48	.06	36
							IDLE (N)	83	.82	56	77	.06	19
R0236	UNL	OR	OR	9,503	20	02/26/80	52 MPH	76	.94	2267	68	.19	1441
							25 MPH	85	.96	1043	86	.27	712
							IDLE (D)	57	.79	69	57	.16	36
							IDLE (N)	123	.89	55	132	.03	25
R0238	UNL	OR	NW	9,532	0	02/27/80	52 MPH	74	.99	2130	71	.39	1343
							25 MPH	89	.99	1088	83	.30	692
							IDLE (D)	51	.66	70	45	.01	62
							IDLE (N)	74	.77	56	63	.01	50
R0255	UNL	OR	OR	10,562	65	03/10/80	52 MPH	68	.86	2382	63	.13	1549
							25 MPH	86	.94	1267	80	.24	770
							IDLE (D)	42	.75	81	40	.20	41
							IDLE (N)	68	.84	65	63	.11	24
R0259	UNL	OR	NW	10,610	5	03/11/80	52 MPH	63	1.01	2382	61	.48	1735
							25 MPH	80	1.04	1289	79	.43	974
							IDLE (D)	39	.77	83	39	.11	47
							IDLE (N)	68	.84	66	65	.04	30
R0265	UNL	OR	OR	11,642	56	03/17/80	52 MPH	64	.84	2211	54	.07	1441
							25 MPH	83	.89	1156	77	.12	542
							IDLE (D)	51	.70	73	49	.03	24
							IDLE (N)	63	.82	57	57	.02	43
R0268	UNL	OR	NW	11,672	0	03/18/80	52 MPH	65	.94	2239	63	.39	1419
							25 MPH	85	.94	1133	80	.33	722
							IDLE (D)	51	.68	74	45	.01	48
							IDLE (N)	54	.75	63	51	.01	43

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
<u>9406 1979 VOLV 245 130 3 WAY</u>													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0271	UNL	BP	OR	11,701	0	03/20/80	52 MPH				71	.89	2211
							25 MPH				83	.89	1043
							IDLE (D)				54	.75	70
							IDLE (N)				57	.79	57
R0273	UNL	BP	NW	11,728	0	03/21/80	52 MPH				74	.99	2157
							25 MPH				85	.94	1133
							IDLE (D)				48	.70	69
							IDLE (N)				71	.79	57
R0275	UNL	RE	OR	11,753	0	03/25/80	52 MPH	63	.84	2184	2	.06	14
							25 MPH	83	.84	1178	12	.12	6
							IDLE (D)	45	.66	67	15	.12	0
							IDLE (N)	54	.79	56	18	.18	0
R0279	UNL	RE	NW	11,847	14	03/27/80	52 MPH	65	.96	2296	21	.31	17
							25 MPH	86	1.04	1200	39	.44	7
							IDLE (D)	45	.75	68	27	.21	1
							IDLE (N)	45	.79	57	24	.26	0

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. NO.		MODL. YEAR		MAKE		MODL		CID		CONV.			
9407		1979		CHEV		MONZ		151		3 WAY			
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0043	UNL	OR	OR	5,182	0	07/27/79	52 MPH				51	.01	287
							25 MPH				49	.02	13
							IDLE (D)				47	.03	8
							IDLE (N)				45	.00	2
D0056	UNL	OR	OR	5,271	0	08/09/79	52 MPH				55	.02	150
							25 MPH				54	.03	18
							IDLE (D)				51	.04	5
							IDLE (N)				50	.01	3
D0060	UNL	OR	OR	5,299	0	08/13/79	52 MPH				55	.02	253
							25 MPH				54	.02	57
							IDLE (D)				53	.02	8
							IDLE (N)				52	.01	19
D0064	UNL	BP	OR	5,330	0	08/14/79	52 MPH				-	-	-
							25 MPH				145	.43	2217
							IDLE (D)				157	.52	337
							IDLE (N)				121	.60	106
D0075	UNL	BP	OR	5,384	0	08/27/79	52 MPH				-	-	-
							25 MPH				149	.44	1918
							IDLE (D)				166	.48	304
							IDLE (N)				131	.58	95
D0076	UNL	BP	OR	5,408	0	08/29/79	52 MPH				-	-	-
							25 MPH				103	.45	899
							IDLE (D)				150	.50	284
							IDLE (N)				118	.56	91
D0097	LEAD	OR	OR	5,646	14	09/18/79	52 MPH				-	-	-
							25 MPH				94	.15	35
							IDLE (D)				83	.08	16
							IDLE (N)				78	.04	19
D0105	LEAD	OR	OR	5,870	26	10/03/79	52 MPH				86	.06	672
							25 MPH				90	.19	106
							IDLE (D)				79	.19	20
							IDLE (N)				65	.06	26
D0112	LEAD	OR	OR	6,121	12	10/12/79	52 MPH				107	.09	412
							25 MPH				105	.19	120
							IDLE (D)				101	.19	22
							IDLE (N)				77	.06	2

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9407 1979 CHEV MONZ 151 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0131	LEAD	OR	OR	6,341	15	11/13/79	52 MPH				58	.10	469
							25 MPH				61	.19	131
							IDLE (D)				54	.18	24
							IDLE (N)				24	.09	33
D0137	LEAD	OR	OR	6,606	13	12/03/79	52 MPH				41	.07	940
							25 MPH				47	.18	216
							IDLE (D)				28	.18	49
							IDLE (N)				6	.06	49
D0145	LEAD	OR	OR	6,831	14	12/15/79	52 MPH				-	-	-
							25 MPH				-	-	-
							IDLE (D)				47	.16	47
							IDLE (N)				5	.03	55
D0147	LEAD	OR	OR	7,004	0	12/27/79	52 MPH				-	-	-
							25 MPH				-	-	-
							IDLE (D)				40	.05	63
							IDLE (N)				10	.03	55
D0149	LEAD	OR	OR	7,024	0	01/14/80	52 MPH	103	.58	1178	82	.09	242
							25 MPH	142	.58	1020	82	.13	241
							IDLE (D)	171	.49	286	59	.03	75
							IDLE (N)	109	.50	94	44	.03	53
D0152	LEAD	OR	OR	7,057	3	01/15/80	52 MPH	83	.56	1156	62	.07	286
							25 MPH	125	.58	1020	65	.12	261
							IDLE (D)	160	.50	200	47	.04	117
							IDLE (N)	85	.50	93	34	.03	48
D0167	LEAD	OR	OR	7,369	28	01/22/80	52 MPH	85	.67	1527	52	.07	622
							25 MPH	134	.65	1430	71	.16	452
							IDLE (D)	172	.89	397	67	.05	104
							IDLE (N)	94	.52	95	41	.04	46
D0170	LEAD	OR	OR	7,589	4	01/24/80	52 MPH	94	.65	1658	64	.08	562
							25 MPH	142	.72	1495	85	.18	492
							IDLE (D)	178	.92	387	180	.82	94
							IDLE (N)	94	.62	116	46	.04	8
D0188	LEAD	OR	OR	7,959	31	01/31/80	52 MPH	79	.50	1570	58	.08	974
							25 MPH	128	.74	2211	71	.20	761
							IDLE (D)	154	.69	362	56	.04	136
							IDLE (N)	77	.52	108	29	.04	51

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.								BEFORE			AFTER		
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0195	LEAD	BP	OR	8,006	0	02/05/80	52 MPH				83	.50	1222
							25 MPH				130	.65	2091
							IDLE (D)				134	.50	316
							IDLE (N)				73	.58	91
R0197	LEAD	BP	OR	8,034	0	02/06/80	52 MPH				83	.50	1178
							25 MPH				134	.65	2028
							IDLE (D)				143	.50	301
							IDLE (N)				74	.52	89
R0201	UNL	BP	OR	8,062	17	02/07/80	52 MPH				86	.58	1156
							25 MPH				131	.78	1978
							IDLE (D)				83	.87	492
							IDLE (N)				83	.87	81
R0203	UNL	BP	OR	8,090	0	02/08/80	52 MPH				71	.54	1111
							25 MPH				119	.69	1942
							IDLE (D)				134	.80	291
							IDLE (N)				73	.85	85
R0214	UNL	BP	NW	8,125	0	02/15/80	52 MPH				92	.62	909
							25 MPH				131	.58	1746
							IDLE (D)				148	.54	223
							IDLE (N)				88	.66	86
R0217	UNL	BP	NW	8,155	0	02/18/80	52 MPH				91	.62	974
							25 MPH				129	.62	1769
							IDLE (D)				148	.58	230
							IDLE (N)				88	.73	87
R0220	UNL	OR	NW	8,183	0	02/19/80	52 MPH	88	.58	1267	57	.04	532
							25 MPH	135	.66	1310	80	.07	341
							IDLE (D)	149	.62	311	80	.03	25
							IDLE (N)	86	.70	94	36	.04	16
R0223	UNL	OR	OR	8,215	12	02/20/80	52 MPH	83	.47	1267	55	.05	837
							25 MPH	138	.73	1200	92	.19	261
							IDLE (D)	157	.84	251	80	.19	49
							IDLE (N)	94	.79	89	30	.04	21
R0229	UNL	OR	OR	8,513	15	02/23/80	52 MPH	92	.56	1222	54	.03	351
							25 MPH	141	.75	1031	92	.24	261
							IDLE (D)	169	.94	241	98	.36	34
							IDLE (N)	105	1.09	85	48	.28	20

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9407 1979 CHEV MONZ 151 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0234	UNL	OR	NW	8,550	0	02/26/80	52 MPH	89	.54	1200	57	.04	722
							25 MPH	137	.66	1066	77	.06	241
							IDLE (D)	157	.62	261	74	.02	21
							IDLE (N)	97	.75	85	30	.01	18
R0239	UNL	OR	OR	8,763	14	02/28/80	52 MPH	86	.54	1222	51	.03	452
							25 MPH	146	.75	1020	105	.24	261
							IDLE (D)	173	.94	230	98	.28	37
							IDLE (N)	105	.94	82	48	.18	17
R0242	UNL	OR	NW	8,794	0	02/29/80	52 MPH	80	.47	1133	45	.03	522
							25 MPH	128	.62	1043	74	.05	251
							IDLE (D)	141	.54	241	77	.02	23
							IDLE (N)	89	.64	84	28	.01	18
R0250	UNL	OR	OR	9,002	14	03/06/80	52 MPH	79	.35	1549	48	.04	1419
							25 MPH	135	.70	1376	89	.21	281
							IDLE (D)	160	1.04	316	83	.43	52
							IDLE (N)	105	1.04	97	48	.36	21
R0258	UNL	OR	NW	9,039	0	03/11/80	52 MPH	74	.39	1506	45	.04	1289
							25 MPH	126	.62	1354	68	.05	261
							IDLE (D)	151	.70	326	74	.08	32
							IDLE (N)	89	.75	102	23	.02	21
R0262	UNL	OR	OR	9,240	14	03/13/80	52 MPH	77	.43	1484	45	.04	1245
							25 MPH	126	.75	1245	89	.25	271
							IDLE (D)	163	1.04	291	98	.43	41
							IDLE (N)	105	1.04	94	54	.33	18
R0263	UNL	OR	NW	9,277	0	03/14/80	52 MPH	77	.58	1222	45	.03	392
							25 MPH	128	.62	1043	77	.08	193
							IDLE (D)	157	.62	251	80	.05	24
							IDLE (N)	94	.70	84	33	.02	15
R0267	UNL	OR	OR	10,305	52	03/18/80	52 MPH	70	.37	1077	40	.04	974
							25 MPH	135	.70	1066	105	.21	182
							IDLE (D)	160	.84	226	95	.24	34
							IDLE (N)	101	.84	87	45	.12	15
R0270	UNL	OR	NW	10,335	0	03/19/80	52 MPH	80	.43	1200	45	.03	785
							25 MPH	135	.62	997	80	.10	174
							IDLE (D)	151	.62	230	86	.03	17
							IDLE (N)	98	.70	87	33	.02	13

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX E (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF FEDERAL THREE MODE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	MODE	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0274	UNL	OR	OR	11,365	57	03/24/80	52 MPH	74	.50	1245	39	.03	780
							25 MPH	134	.70	1111	89	.21	220
							IDLE (D)	148	.66	236	68	.07	27
							IDLE (N)	95	.73	87	33	.05	13
R0276	UNL	OR	NW	11,392	0	03/25/80	52 MPH	71	.36	1245	42	.03	1066
							25 MPH	129	.62	1133	68	.06	185
							IDLE (D)	148	.62	241	77	.04	16
							IDLE (N)	94	.70	83	18	.01	20
R0281	UNL	BP	OR	11,422	0	03/31/80	52 MPH				74	.50	927
							25 MPH				121	.70	1814
							IDLE (D)				151	.75	210
							IDLE (N)				89	.79	86
R0283	UNL	BP	NW	11,450	0	04/01/80	52 MPH				80	.54	761
							25 MPH				129	.62	1724
							IDLE (D)				146	.58	230
							IDLE (N)				89	.70	83
R0287	UNL	RE	OR	11,482	10	04/15/80	52 MPH	71	.54	1066	1	.12	10
							25 MPH	123	.70	1088	0	.13	5
							IDLE (D)	148	.62	222	0	.09	1
							IDLE (N)	98	.75	80	0	.04	0
R0288	UNL	RE	NW	11,514	0	04/16/80	52 MPH	68	.50	1043	2	.01	251
							25 MPH	126	.62	1066	3	.10	8
							IDLE (D)	148	.54	251	12	.11	2
							IDLE (N)	95	.66	84	2	.03	1

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX F - LISTING OF TWO SPEED IDLE EMISSION
RESULTS BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

SPEED - Engine speed

2500RPM - Reading taken with engine at 2500 RPM, transmission
in neutral

IDLE(N) - Readings taken with engine at normal idle, transmission
in neutral

BEFORE - Emission readings taken before the catalytic converter

AFTER - Emission readings taken after the catalytic converter

HC - Unburned hydrocarbon emissions in ppm hexane

CO - Carbon monoxide emissions in mole percent

NO - Oxides of nitrogen emissions in ppm

APPENDIX F

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0001	UNL	OR	NA	8,316	0	05/16/79	2500 RPM IDLE (N)				99 59	.02 .02	138 90
D0003	UNL	OR	NA	8,394	0	05/21/79	2500 RPM IDLE (N)				42 11	.01 .01	140 100
D0005	UNL	OR	NA	8,442	8	05/23/79	2500 RPM IDLE (N)				93 60	.01 .01	139 93
D0008	UNL	BP	NA	8,694	5	06/05/79	2500 RPM IDLE (N)				684 417	.20 .40	80 46
D0010	UNL	BP	NA	8,733	0	06/12/79	2500 RPM IDLE (N)				505 332	.21 .50	88 53
D0013	UNL	BP	NA	8,760	6	06/14/79	2500 RPM IDLE (N)				488 338	.23 .42	81 44
D0034	LEAD	OR	NA	9,046	40	07/11/79	2500 RPM IDLE (N)				475 343	.14 .04	114 61
D0038	LEAD	OR	NA	9,307	15	07/24/79	2500 RPM IDLE (N)				479 294	.19 .10	107 53
D0072	LEAD	OR	NA	9,770	41	08/25/79	2500 RPM IDLE (N)				624 395	.17 .11	104 55
D0093	LEAD	OR	NA	10,069	20	09/13/79	2500 RPM IDLE (N)				705 374	.19 .21	96 37
D0109	UNL	BP	NA	10,446	72	10/10/79	2500 RPM IDLE (N)				736 425	.23 .32	97 52
D0118	UNL	RE	NA	10,532	0	10/24/79	2500 RPM IDLE (N)				23 11	.03 .03	145 86
R0154	LEAD	OR	NA	11,750	91	01/16/80	2500 RPM IDLE (N)	619 434	.27 .82	104 51	598 505	.23 .82	121 56
R0157	LEAD	OR	NA	11,795	3	01/17/80	2500 RPM IDLE (N)	682 434	.26 .52	97 47	724 598	.19 .49	121 61
R0165	LEAD	OR	NA	11,831	6	01/22/80	2500 RPM IDLE (N)	546 474	.26 .42	111 48	598 651	.21 .32	139 61

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0173	UNL	BP	NA	11,877	22	01/25/80	2500 RPM IDLE (N)				703 474	.27 1.28	121 51
R0178	UNL	OR	NA	11,909	0	01/28/80	2500 RPM IDLE (N)	661 672	.27 .78	85 47	640 703	.09 .11	128 58
R0184	UNL	OR	NA	12,118	17	01/30/80	2500 RPM IDLE (N)	788 526	.25 1.06	76 46	735 505	.09 .38	131 58
R0189	UNL	OR	NA	12,331	18	02/01/80	2500 RPM IDLE (N)	735 495	.26 .78	74 39	661 630	.08 .17	123 58
R0216	UNL	OR	NA	12,612	19	02/15/80	2500 RPM IDLE (N)	794 383	.23 .68	83 28	785 577	.07 .31	120 54
R0222	UNL	OR	NA	12,823	20	02/19/80	2500 RPM IDLE (N)	813 361	.24 .70	84 29	679 383	.05 .23	97 37
R0232	UNL	OR	NA	13,860	61	02/25/80	2500 RPM IDLE (N)	961 225	.23 .84	90 25	869 449	.06 1.09	123 47
R0244	UNL	OR	NA	14,894	65	03/04/80	2500 RPM IDLE (N)	679 383	.23 1.09	91 36	619 449	.05 .43	124 51
R0247	UNL	RE	NA	14,934	0	03/05/80	2500 RPM IDLE (N)	850 361	.24 .94	83 26	48 207	.01 .54	139 13

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0057	UNL	OR	NA	9,287	0	08/09/79	2500 RPM IDLE (N)				95 54	.01 .00	134 110
D0059	UNL	OR	NA	9,319	0	08/13/79	2500 RPM IDLE (N)				102 51	.01 .01	131 125
D0077	UNL	OR	NA	9,462	0	08/29/79	2500 RPM IDLE (N)				119 64	.04 .03	130 104
D0083	UNL	BP	NA	9,486	0	09/04/79	2500 RPM IDLE (N)				855 598	.20 .19	81 70
D0092	UNL	BP	NA	9,567	0	09/13/79	2500 RPM IDLE (N)				727 452	.17 .19	67 62
D0095	UNL	BP	NA	9,591	0	09/14/79	2500 RPM IDLE (N)				851 598	.21 .21	79 97
D0100	LEAD	OR	NA	9,814	39	09/25/79	2500 RPM IDLE (N)				734 265	.07 .02	89 88
D0119	LEAD	OR	NA	10,174	21	10/26/79	2500 RPM IDLE (N)				692 289	.16 .07	99 95
D0126	LEAD	OR	NA	10,407	20	11/12/79	2500 RPM IDLE (N)				742 341	.12 .08	148 95
D0136	LEAD	OR	NA	10,678	19	12/01/79	2500 RPM IDLE (N)				648 284	.15 .07	132 67
D0142	LEAD	OR	NA	10,922	18	12/10/79	2500 RPM IDLE (N)				782 388	.14 .09	136 84
D0148	LEAD	OR	NA	11,186	17	01/14/80	2500 RPM IDLE (N)	863 598	.45 .26	98 60	961 703	.41 .30	125 72
D0151	LEAD	OR	NA	11,223	0	01/15/80	2500 RPM IDLE (N)	852 703	.19 .34	94 51	874 874	.14 .14	123 72
D0163	LEAD	OR	NA	11,256	0	01/21/80	2500 RPM IDLE (N)	896 672	.20 .26	65 80	1004 746	.16 .12	144 98
D0169	LEAD	OR	NA	11,593	37	01/24/80	2500 RPM IDLE (N)	906 464	.20 .22	131 73	831 516	.21 .10	140 85

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0174	LEAD	OR	NA	11,841	4	01/26/80	2500 RPM IDLE (N)	928 598	.20 .18	121 68	885 842	.20 .12	131 98
D0190	UNL	BP	NA	11,876	21	02/01/80	2500 RPM IDLE (N)				1026 1004	.21 .39	109 53
R0200	UNL	OR	NA	11,946	0	02/07/80	2500 RPM IDLE (N)	1093 703	.21 .35	89 55	1148 809	.08 .06	139 84
R0212	UNL	OR	NA	12,133	19	02/14/80	2500 RPM IDLE (N)	1205 737	.18 .26	90 44	1205 887	.07 .03	137 78
R0219	UNL	OR	NA	12,347	19	02/18/80	2500 RPM IDLE (N)	1117 619	.19 .32	97 50	1037 598	.08 .04	144 72
R0224	UNL	OR	NA	12,621	20	02/20/80	2500 RPM IDLE (N)	1117 577	.19 .25	94 62	1149 608	.06 .02	136 90
R0230	UNL	OR	NA	12,902	41	02/23/80	2500 RPM IDLE (N)	1117 556	.18 .29	90 52	1077 577	.08 .03	131 85
R0243	UNL	OR	NA	13,930	69	02/29/80	2500 RPM IDLE (N)	1117 577	.20 .26	88 64	1037 598	.05 .02	125 91
R0246	UNL	OR	NA	14,940	71	03/05/80	2500 RPM IDLE (N)	1077 577	.19 .26	91 72	1077 577	.04 .01	139 102
R0252	UNL	RE	NA	14,990	0	03/07/80	2500 RPM IDLE (N)	869 383	.18 .24	117 102	15 9	.01 .01	152 104

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0004	UNL	OR	NA	6,818	7	05/22/79	2500 RPM IDLE (N)				71 63	.00 .00	194 80
D0006	UNL	OR	NA	6,857	2	05/23/79	2500 RPM IDLE (N)				67 57	.00 .00	172 81
D0007	UNL	OR	NA	6,886	0	05/25/79	2500 RPM IDLE (N)				67 58	.02 .02	190 86
D0009	UNL	BP	NA	6,950	0	06/08/79	2500 RPM IDLE (N)				186 198	.22 .13	146 59
D0011	UNL	BP	NA	7,014	6	06/13/79	2500 RPM IDLE (N)				93 164	.23 .19	231 93
D0014	UNL	BP	NA	7,069	0	06/23/79	2500 RPM IDLE (N)				159 198	.20 .13	161 74
D0049	LEAD	OR	NA	7,449	28	08/03/79	2500 RPM IDLE (N)				183 168	.10 .03	127 50
D0073	LEAD	OR	NA	7,767	27	08/25/79	2500 RPM IDLE (N)				193 265	.12 .03	132 45
D0088	LEAD	OR	NA	7,956	12	09/11/79	2500 RPM IDLE (N)				195 166	.13 .05	160 57
D0098	LEAD	OR	NA	8,161	13	09/19/79	2500 RPM IDLE (N)				224 191	.14 .05	154 60
D0103	LEAD	OR	NA	8,429	14	09/28/79	2500 RPM IDLE (N)				207 170	.12 .05	150 54
D0111	LEAD	OR	NA	8,618	12	10/11/79	2500 RPM IDLE (N)				235 195	.14 .06	163 64
D0121	LEAD	OR	NA	8,837	13	10/29/79	2500 RPM IDLE (N)				235 187	.13 .07	160 55
D0127	LEAD	OR	NA	9,017	13	11/12/79	2500 RPM IDLE (N)				140 101	.16 .09	162 59
D0135	LEAD	OR	NA	9,244	14	11/26/79	2500 RPM IDLE (N)				192 96	.13 .04	156 56

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0141	LEAD	OR	NA	9,430	12	12/10/79	2500 RPM IDLE (N)				182 116	.14 .05	162 61
D0155	LEAD	OR	NA	9,856	19	01/16/80	2500 RPM IDLE (N)	112 353	.22 .17	185 53	65 273	.16 .07	187 55
D0158	LEAD	OR	NA	9,889	0	01/17/80	2500 RPM IDLE (N)	107 343	.24 .18	179 50	82 273	.14 .07	179 52
D0160	LEAD	OR	NA	9,922	0	01/18/80	2500 RPM IDLE (N)	125 454	.24 .18	173 44	83 353	.14 .06	179 48
D0164	UNL	BP	NA	9,961	19	01/21/80	2500 RPM IDLE (N)				76 293	.24 .19	218 55
R0168	UNL	OR	NA	9,993	0	01/24/80	2500 RPM IDLE (N)	100 303	.26 .19	195 49	83 253	.18 .08	187 51
R0176	UNL	OR	NA	10,220	16	01/26/80	2500 RPM IDLE (N)	116 343	.26 .20	178 49	86 254	.14 .06	190 54
R0182	UNL	OR	NA	10,490	16	01/29/80	2500 RPM IDLE (N)	97 363	.27 .20	183 44	74 313	.14 .05	195 45
R0187	UNL	OR	NA	10,739	15	01/31/80	2500 RPM IDLE (N)	106 413	.28 .20	171 48	67 240	.13 .05	187 50
R0206	UNL	OR	NA	10,931	16	02/09/80	2500 RPM IDLE (N)	113 313	.28 .20	179 44	77 189	.12 .04	190 52
R0231	UNL	OR	NA	12,015	62	02/25/80	2500 RPM IDLE (N)	182 316	.27 .21	133 51	108 182	.11 .02	160 56
R0245	UNL	OR	NA	13,046	61	03/05/80	2500 RPM IDLE (N)	141 339	.25 .19	147 57	89 154	.10 .02	179 65
R0251	UNL	RE	NA	13,114	0	03/07/80	2500 RPM IDLE (N)	132 316	.25 .18	152 51	36 60	.01 .01	169 57

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9404 1979 OLDS CUTL 260 OXID.													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0018	UNL	OR	NA	7,283	0	06/27/79	2500 RPM IDLE (N)				69 41	.00 .00	150 61
D0020	UNL	OR	NA	7,315	5	06/28/79	2500 RPM IDLE (N)				75 49	.01 .01	120 44
D0022	UNL	OR	NA	7,349	2	06/29/79	2500 RPM IDLE (N)				84 56	.03 .02	119 57
D0027	UNL	BP	NA	7,380	0	07/07/79	2500 RPM IDLE (N)				251 277	.27 .17	128 46
D0031	UNL	BP	NA	7,437	6	07/10/79	2500 RPM IDLE (N)				264 278	.25 .14	110 41
D0033	UNL	BP	NA	7,492	0	07/11/79	2500 RPM IDLE (N)				281 250	.27 .15	123 49
D0054	LEAD	OR	NA	7,955	40	08/08/79	2500 RPM IDLE (N)				207 103	.16 .04	134 65
D0082	LEAD	OR	NA	8,266	24	08/31/79	2500 RPM IDLE (N)				252 267	.11 .03	84 43
D0094	LEAD	OR	NA	8,358	12	09/13/79	2500 RPM IDLE (N)				298 259	.13 .04	71 40
D0101	LEAD	OR	NA	8,528	10	09/25/79	2500 RPM IDLE (N)				305 245	.17 .06	101 53
D0107	LEAD	OR	NA	8,727	15	10/05/79	2500 RPM IDLE (N)				294 269	.14 .05	105 54
D0113	LEAD	OR	NA	8,897	11	10/12/79	2500 RPM IDLE (N)				286 234	.17 .06	105 55
D0122	LEAD	OR	NA	9,213	16	10/30/79	2500 RPM IDLE (N)				233 178	.15 .04	108 58
D0124	LEAD	OR	NA	9,363	14	11/07/79	2500 RPM IDLE (N)				227 203	.16 .06	108 57
D0140	LEAD	OR	NA	9,627	14	12/07/79	2500 RPM IDLE (N)				215 167	.20 .07	122 57

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. NO.		MODL. YEAR		MAKE MODL		CID CONV.							
9404		1979		OLDS CUTL		260 OXID.							
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0146	LEAD	OR	NA	9,842	12	12/15/79	2500 RPM IDLE (N)				236 158	.16 .04	108 53
D0156	LEAD	OR	NA	10,098	9	01/16/80	2500 RPM IDLE (N)	221 313	.31 .19	121 57	174 243	.20 .07	127 60
D0159	LEAD	OR	NA	10,134	0	01/17/80	2500 RPM IDLE (N)	253 536	.30 .20	106 44	201 363	.18 .07	111 49
D0172	UNL	BP	NA	10,165	18	01/25/80	2500 RPM IDLE (N)				203 353	.30 .21	131 56
R0177	UNL	OR	NA	10,199	0	01/26/80	2500 RPM IDLE (N)	243 557	.32 .23	96 39	201 333	.19 .07	124 53
R0180	UNL	OR	NA	10,385	16	01/28/80	2500 RPM IDLE (N)	241 630	.31 .23	109 34	218 373	.16 .05	120 49
R0186	UNL	OR	NA	10,633	16	01/31/80	2500 RPM IDLE (N)	265 578	.32 .23	112 46	210 333	.15 .05	125 55
R0205	UNL	OR	NA	10,864	15	02/09/80	2500 RPM IDLE (N)	273 598	.31 .22	97 43	220 313	.14 .04	133 53
R0211	UNL	OR	NA	11,082	16	02/14/80	2500 RPM IDLE (N)	272 577	.28 .19	94 39	222 361	.12 .02	113 54
R0233	UNL	OR	NA	12,119	67	02/25/80	2500 RPM IDLE (N)	316 577	.28 .21	88 41	235 316	.10 .02	109 58
R0248	UNL	OR	NA	13,149	61	03/06/80	2500 RPM IDLE (N)	230 493	.26 .19	96 47	163 225	.08 .01	128 64
R0253	UNL	RE	NA	13,179	0	03/07/80	2500 RPM IDLE (N)	236 659	.27 .20	95 40	45 30	.01 .01	123 58

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9405 1979 MERC MARQ 351 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0021	UNL	OR	OR	4,179	5	06/28/79	2500 RPM IDLE (N)				51 49	.02 .02	106 9
D0023	UNL	OR	OR	4,210	0	06/29/79	2500 RPM IDLE (N)				59 84	.01 .14	49 11
D0026	UNL	OR	OR	4,282	0	07/05/79	2500 RPM IDLE (N)				55 54	.02 .02	123 21
D0028	UNL	BP	OR	4,319	8	07/07/79	2500 RPM IDLE (N)				74 142	.51 .41	414 79
D0030	UNL	BP	OR	4,345	0	07/09/79	2500 RPM IDLE (N)				76 163	.69 .38	387 77
D0032	UNL	BP	OR	4,373	0	07/10/79	2500 RPM IDLE (N)				76 156	.37 .38	378 80
D0065	LEAD	OR	OR	4,731	58	08/15/79	2500 RPM IDLE (N)				54 172	.13 .60	181 55
D0081	LEAD	OR	OR	4,902	14	08/31/79	2500 RPM IDLE (N)				93 178	1.36 1.02	246 29
D0090	LEAD	OR	OR	5,034	13	09/12/79	2500 RPM IDLE (N)				87 138	.73 .10	283 25
D0104	LEAD	OR	OR	5,250	16	09/28/79	2500 RPM IDLE (N)				73 143	.09 .11	270 48
D0108	LEAD	OR	OR	5,466	15	10/05/79	2500 RPM IDLE (N)				72 85	.02 .02	246 24
D0110	LEAD	OR	OR	5,719	17	10/11/79	2500 RPM IDLE (N)				87 165	.07 .20	270 53
D0123	LEAD	OR	OR	5,954	13	10/30/79	2500 RPM IDLE (N)				50 111	.02 .03	252 48
D0133	LEAD	OR	OR	6,050	13	11/17/79	2500 RPM IDLE (N)				18 91	.03 .05	278 48
D0139	LEAD	OR	OR	6,242	28	12/06/79	2500 RPM IDLE (N)				30 95	.43 .06	245 52

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0144	LEAD	OR	OR	6,637	16	12/15/79	2500 RPM IDLE (N)				50 95	.03 .02	323 51
D0161	LEAD	OR	OR	6,875	7	01/18/80	2500 RPM IDLE (N)	62 168	.72 .76	462 80	24 155	.12 .26	187 48
D0166	LEAD	OR	OR	6,944	4	01/22/80	2500 RPM IDLE (N)	61 184	.99 .87	567 84	59 158	1.46 .35	512 55
D0196	LEAD	OR	OR	7,057	17	02/05/80	2500 RPM IDLE (N)	32 171	.54 .96	442 81	47 140	1.06 .21	392 75
D0228	LEAD	OR	OR	7,152	5	02/23/80	2500 RPM IDLE (N)	42 176	.70 .73	382 82	18 174	.14 .33	238 74
R0235	LEAD	BP	OR	7,184	10	02/26/80	2500 RPM IDLE (N)				54 173	.86 .68	382 78
R0237	LEAD	BP	OR	7,213	0	02/27/80	2500 RPM IDLE (N)				46 163	.84 .66	422 77
R0240	UNL	BP	OR	7,241	18	02/28/80	2500 RPM IDLE (N)				40 179	.75 .89	412 75
R0241	UNL	BP	OR	7,269	0	02/29/80	2500 RPM IDLE (N)				34 160	.50 .79	382 74
R0249	UNL	BP	NW	7,302	0	03/06/80	2500 RPM IDLE (N)				30 151	.38 .47	512 92
R0254	UNL	BP	NW	7,329	0	03/10/80	2500 RPM IDLE (N)				30 145	.43 .50	452 89
R0260	UNL	OR	NW	7,358	0	03/11/80	2500 RPM IDLE (N)	27 148	.39 .47	502 97	9 117	.02 .05	291 90
R0261	UNL	OR	OR	7,390	16	03/12/80	2500 RPM IDLE (N)	36 169	.47 .70	462 93	14 132	.03 .23	286 84
R0264	UNL	OR	OR	7,629	13	03/14/80	2500 RPM IDLE (N)	30 163	.47 .70	402 82	12 123	.02 .19	222 74
R0266	UNL	OR	NW	7,666	0	03/17/80	2500 RPM IDLE (N)	30 163	.37 .47	432 89	8 117	.02 .06	234 84

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0269	UNL	OR	OR	7,910	20	03/19/80	2500 RPM IDLE (N)	27 154	.40 .66	392 85	9 126	.01 .26	210 72
R0272	UNL	OR	NW	7,941	0	03/21/80	2500 RPM IDLE (N)	24 148	.39 .47	402 85	6 98	.01 .06	231 81
R0280	UNL	OR	OR	8,144	15	03/28/80	2500 RPM IDLE (N)	24 151	.36 .52	402 85	6 89	.02 .02	218 70
R0282	UNL	OR	NW	8,174	0	03/31/80	2500 RPM IDLE (N)	24 141	.38 .50	382 89	6 117	.01 .04	213 70
R0285	UNL	OR	OR	8,473	23	04/03/80	2500 RPM IDLE (N)	28 145	.43 .58	362 84	6 111	.02 .10	177 29
R0286	UNL	OR	NW	8,504	9	04/07/80	2500 RPM IDLE (N)	21 129	.38 .43	382 89	6 74	.01 .03	200 62
R0293	UNL	OR	NW	9,369	52	04/30/80	2500 RPM IDLE (N)	21 141	.43 .70	341 77	6 108	.01 .13	179 46
R0297	UNL	OR	OR	9,543	4	05/13/80	2500 RPM IDLE (N)	24 145	.43 .75	321 72	2 105	.01 .16	123 24
R0299	UNL	BP	OR	9,600	0	05/19/80	2500 RPM IDLE (N)				24 162	.54 .70	341 76
R0300	UNL	BP	NW	9,634	0	05/20/80	2500 RPM IDLE (N)				24 148	.41 .58	331 74
R0303	UNL	RE	OR	9,735	16	05/28/80	2500 RPM IDLE (N)	27 138	.45 .62	351 76	0 24	.00 .13	68 2
R0306	UNL	RE	NW	9,846	0	06/02/80	2500 RPM IDLE (N)	30 151	.43 .58	321 79	0 3	.01 .05	96 2

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9406 1979 VOLV 245 130 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0039	UNL	OR	OR	5,795	0	07/25/79	2500 RPM IDLE (N)				58 51	.01 .01	23 6
D0044	UNL	OR	OR	5,831	0	07/27/79	2500 RPM IDLE (N)				54 52	.01 .01	94 37
D0055	UNL	OR	OR	5,907	0	08/09/79	2500 RPM IDLE (N)				46 46	.01 .01	34 8
D0067	UNL	BP	OR	6,002	5	08/16/79	2500 RPM IDLE (N)				70 91	.50 .51	152 55
D0078	UNL	BP	OR	6,075	0	08/30/79	2500 RPM IDLE (N)				69 90	.49 .56	121 49
D0080	UNL	BP	OR	6,101	0	08/31/79	2500 RPM IDLE (N)				61 93	.50 .58	44 19
D0091	LEAD	OR	OR	6,371	26	09/12/79	2500 RPM IDLE (N)				67 73	.03 .13	0 0
D0096	LEAD	OR	OR	6,597	13	09/17/79	2500 RPM IDLE (N)				91 118	.02 .14	10 5
D0099	LEAD	OR	OR	6,853	12	09/24/79	2500 RPM IDLE (N)				62 77	.08 .13	4 0
D0106	LEAD	OR	OR	7,036	13	10/04/79	2500 RPM IDLE (N)				70 87	.11 .17	5 0
D0120	LEAD	OR	OR	7,275	14	10/27/79	2500 RPM IDLE (N)				18 34	.04 .14	43 5
D0134	LEAD	OR	OR	7,516	12	11/21/79	2500 RPM IDLE (N)				13 36	.12 .14	26 5
D0138	LEAD	OR	OR	7,641	13	12/04/79	2500 RPM IDLE (N)				28 44	.05 .13	39 8
D0143	LEAD	OR	OR	7,934	17	12/11/79	2500 RPM IDLE (N)				3 22	.05 .14	74 11
D0150	LEAD	OR	OR	8,144	3	01/14/80	2500 RPM IDLE (N)	27 44	.63 .66	155 67	24 52	.16 .21	48 12

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.															
9406 1979 VOLV 245 130 3 WAY															
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER				
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm		
D0153	LEAD	OR	OR	8,174	4	01/15/80	2500 RPM IDLE (N)	16 52	.69 .74	164 64	15 67	.18 .19	67 19		
R0175	LEAD	BP	OR	8,220	4	01/26/80	2500 RPM IDLE (N)				15 46	.72 .87	162 63		
R0179	LEAD	BP	OR	8,250	0	01/28/80	2500 RPM IDLE (N)				19 70	.74 .89	151 63		
R0183	UNL	BP	OR	8,280	14	01/29/80	2500 RPM IDLE (N)				18 122	.74 .89	177 58		
R0185	UNL	BP	OR	8,309	0	01/30/80	2500 RPM IDLE (N)				18 86	.72 .87	148 63		
R0193	UNL	BP	NW	8,339	0	02/04/80	2500 RPM IDLE (N)				21 89	.69 .87	152 58		
R0198	UNL	BP	NW	8,380	0	02/06/80	2500 RPM IDLE (N)				21 44	.78 .96	144 58		
R0202	UNL	OR	NW	8,406	0	02/08/80	2500 RPM IDLE (N)	24 155	.82 1.06	152 59	15 119	.32 .28	92 24		
R0207	UNL	OR	OR	8,445	0	02/09/80	2500 RPM IDLE (N)	22 186	.78 .99	155 58	24 204	.16 .06	88 35		
R0213	UNL	OR	OR	8,730	30	02/14/80	2500 RPM IDLE (N)	45 141	.70 .82	117 56	30 203	.12 .01	60 47		
R0215	UNL	OR	NW	8,760	0	02/15/80	2500 RPM IDLE (N)	27 57	.70 .79	131 57	21 48	.24 .09	77 21		
R0218	UNL	OR	OR	8,927	15	02/18/80	2500 RPM IDLE (N)	24 60	.79 .82	140 57	30 45	.17 .17	88 27		
R0221	UNL	OR	NW	8,958	0	02/19/80	2500 RPM IDLE (N)	42 77	.79 .91	135 56	33 68	.25 .20	87 27		
R0225	UNL	OR	OR	9,164	30	02/21/80	2500 RPM IDLE (N)	39 60	.79 .84	140 56	37 74	.16 .10	82 23		
R0227	UNL	OR	NW	9,212	0	02/23/80	2500 RPM IDLE (N)	33 54	.79 .84	131 55	21 54	.25 .16	89 25		

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. NO.		MODL YEAR		MAKE	MODL	CID	CONV.									
9406		1979		VOLV	245	130	3 WAY									
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm			
R0236	UNL	OR	OR	9,503	20	02/26/80	2500 RPM IDLE (N)	45 101	.84 .84	261 57	77 135	.13 .02	158 34			
R0238	UNL	OR	NW	9,532	0	02/27/80	2500 RPM IDLE (N)	36 68	.75 .79	141 53	36 89	.13 .01	61 48			
R0255	UNL	OR	OR	10,562	65	03/10/80	2500 RPM IDLE (N)	27 83	.75 .79	151 64	30 63	.14 .08	82 23			
R0259	UNL	OR	NW	10,610	5	03/11/80	2500 RPM IDLE (N)	24 60	.77 .84	155 65	21 51	.23 .11	94 26			
R0265	UNL	OR	OR	11,642	56	03/17/80	2500 RPM IDLE (N)	24 48	.70 .79	139 58	21 71	.08 .02	60 39			
R0268	UNL	OR	NW	11,672	0	03/18/80	2500 RPM IDLE (N)	23 48	.70 .75	141 57	18 48	.22 .03	69 21			
R0271	UNL	BP	OR	11,701	0	03/20/80	2500 RPM IDLE (N)				33 57	.70 .84	139 57			
R0273	UNL	BP	NW	11,728	0	03/21/80	2500 RPM IDLE (N)				21 54	.70 .79	141 55			
R0275	UNL	RE	OR	11,753	0	03/25/80	2500 RPM IDLE (N)	24 48	.66 .70	133 57	2 9	.03 .05	1 1			
R0279	UNL	RE	NW	11,847	14	03/27/80	2500 RPM IDLE (N)	27 57	.70 .84	141 57	6 27	.24 .25	1 1			

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0043	UNL	OR	OR	5,182	0	07/27/79	2500 RPM IDLE (N)				50 48	.01 .01	52 10
D0056	UNL	OR	OR	5,271	0	08/09/79	2500 RPM IDLE (N)				51 49	.01 .01	31 6
D0060	UNL	OR	OR	5,299	0	08/13/79	2500 RPM IDLE (N)				46 44	.01 .03	56 7
D0064	UNL	BP	OR	5,330	0	08/14/79	2500 RPM IDLE (N)				74 100	.59 .58	412 100
D0075	UNL	BP	OR	5,384	0	08/27/79	2500 RPM IDLE (N)				94 123	.60 .59	343 92
D0076	UNL	BP	OR	5,408	0	08/29/79	2500 RPM IDLE (N)				69 113	.46 .57	98 91
D0097	LEAD	OR	OR	5,646	14	09/18/79	2500 RPM IDLE (N)				92 84	.04 .05	42 17
D0105	LEAD	OR	OR	5,870	26	10/03/79	2500 RPM IDLE (N)				71 65	.05 .05	69 23
D0112	LEAD	OR	OR	6,121	12	10/12/79	2500 RPM IDLE (N)				81 79	.06 .06	119 37
D0131	LEAD	OR	OR	6,341	15	11/13/79	2500 RPM IDLE (N)				30 29	.08 .07	132 29
D0137	LEAD	OR	OR	6,606	13	12/03/79	2500 RPM IDLE (N)				24 22	.09 .06	119 43
D0145	LEAD	OR	OR	6,831	14	12/15/79	2500 RPM IDLE (N)				23 14	.05 .08	152 35
D0147	LEAD	OR	OR	7,004	0	12/27/79	2500 RPM IDLE (N)				13 11	.06 .04	169 37
D0149	LEAD	OR	OR	7,024	0	01/14/80	2500 RPM IDLE (N)	80 104	.62 .54	362 94	43 47	.94 .03	80 42
D0152	LEAD	OR	OR	7,057	3	01/15/80	2500 RPM IDLE (N)	44 89	.58 .65	372 94	22 29	.07 .05	79 41

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9407 1979 CHEV MONZ 151 3 WAY														
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER			
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm	
D0167	LEAD	OR	OR	7,369	28	01/22/80	2500 RPM IDLE (N)	47 95	.74 .62	512 117	24 35	.12 .04	117 34	
D0170	LEAD	OR	OR	7,589	4	01/24/80	2500 RPM IDLE (N)	67 94	.82 .62	472 120	32 35	.14 .04	117 17	
D0188	LEAD	OR	OR	7,959	31	01/31/80	2500 RPM IDLE (N)	50 77	.82 .62	442 115	24 25	.17 .04	109 51	
R0195	LEAD	BP	OR	8,006	0	02/05/80	2500 RPM IDLE (N)				47 74	.80 .62	442 87	
R0197	LEAD	BP	OR	8,034	0	02/06/80	2500 RPM IDLE (N)				43 74	.78 .60	412 84	
R0201	UNL	BP	OR	8,062	17	02/07/80	2500 RPM IDLE (N)				50 86	.89 .87	392 81	
R0203	UNL	BP	OR	8,090	0	02/08/80	2500 RPM IDLE (N)				38 73	.80 .92	392 81	
R0214	UNL	BP	NW	8,125	0	02/15/80	2500 RPM IDLE (N)				45 79	.75 .66	316 82	
R0217	UNL	BP	NW	8,155	0	02/18/80	2500 RPM IDLE (N)				49 82	.75 .70	346 83	
R0220	UNL	OR	NW	8,183	0	02/19/80	2500 RPM IDLE (N)	54 82	.73 .82	357 95	24 39	.03 .05	91 13	
R0223	UNL	OR	OR	8,215	12	02/20/80	2500 RPM IDLE (N)	49 86	.75 .94	321 88	30 36	.08 .14	61 25	
R0229	UNL	OR	OR	8,513	15	02/23/80	2500 RPM IDLE (N)	80 108	.94 1.15	316 81	55 64	.29 .56	57 16	
R0234	UNL	OR	NW	8,550	0	02/26/80	2500 RPM IDLE (N)	65 92	.70 .75	316 88	30 37	.02 .02	60 13	
R0239	UNL	OR	OR	8,763	14	02/28/80	2500 RPM IDLE (N)	64 105	.86 1.09	311 84	45 54	.21 .35	53 15	
R0242	UNL	OR	NW	8,794	0	02/29/80	2500 RPM IDLE (N)	48 88	.70 .79	301 90	20 30	.02 .03	64 14	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX F (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF TWO SPEED IDLE EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0250	UNL	OR	OR	9,002	14	03/06/80	2500 RPM IDLE (N)	74 92	.94 1.15	382 102	42 51	.19 .48	64 18
R0258	UNL	OR	NW	9,039	0	03/11/80	2500 RPM IDLE (N)	55 83	.70 .77	392 104	21 24	.02 .02	71 17
R0262	UNL	OR	OR	9,240	14	03/13/80	2500 RPM IDLE (N)	61 95	.94 1.15	341 99	39 54	.28 .38	58 15
R0263	UNL	OR	NW	9,277	0	03/14/80	2500 RPM IDLE (N)	48 89	.73 .75	321 89	18 33	.02 .04	63 10
R0267	UNL	OR	OR	10,305	52	03/18/80	2500 RPM IDLE (N)	54 89	.79 .94	301 89	39 51	.17 .22	40 12
R0270	UNL	OR	NW	10,335	0	03/19/80	2500 RPM IDLE (N)	57 89	.70 .75	311 89	21 36	.02 .03	56 9
R0274	UNL	OR	OR	11,365	57	03/24/80	2500 RPM IDLE (N)	54 89	.79 .84	301 90	27 48	.11 .08	41 8
R0276	UNL	OR	NW	11,392	0	03/25/80	2500 RPM IDLE (N)	48 80	.66 .70	306 88	18 30	.02 .03	53 10
R0281	UNL	BP	OR	11,422	0	03/31/80	2500 RPM IDLE (N)				48 86	.79 .89	311 84
R0283	UNL	BP	NW	11,450	0	04/01/80	2500 RPM IDLE (N)				48 86	.70 .75	301 83
R0287	UNL	RE	OR	11,482	10	04/15/80	2500 RPM IDLE (N)	51 95	.79 .79	291 85	2 2	.04 .07	1 1
R0288	UNL	RE	NW	11,514	0	04/16/80	2500 RPM IDLE (N)	48 86	.66 .70	291 86	2 2	.02 .02	4 1

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX G - LISTING OF CATALYST TEST EMISSION
RESULTS BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

SPEED - Vehicle speed

IDLE(D) - Vehicle at idle, transmission in drive

50 MPH - Vehicle at 50 miles per hour

BEFORE - Emission readings taken before the catalytic converter

AFTER - Emission readings taken after the catalytic converter

HC - Unburned hydrocarbon emissions in ppm hexane

CO - Carbon monoxide emissions in mole percent

NO - Oxides of nitrogen emissions in ppm

APPENDIX G

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0001	UNL	OR	NA	8,316	0	05/16/79	IDLE (D) 50 MPH	358 184	.35 .12	93 430	116 99	.03 .02	70 403
D0003	UNL	OR	NA	8,394	0	05/21/79	IDLE (D) 50 MPH	235 127	.66 .13	183 448	38 37	.03 .02	118 426
D0005	UNL	OR	NA	8,442	8	05/23/79	IDLE (D) 50 MPH	387 196	.25 .12	190 424	107 83	.00 .01	124 407
D0008	UNL	BP	NA	8,694	5	06/05/79	IDLE (D) 50 MPH				618 219	.37 .11	47 478
D0010	UNL	BP	NA	8,733	0	06/12/79	IDLE (D) 50 MPH				453 169	.51 .08	39 361
D0013	UNL	BP	NA	8,760	6	06/14/79	IDLE (D) 50 MPH				258 167	.22 .08	88 359
D0034	LEAD	OR	NA	9,046	40	07/11/79	IDLE (D) 50 MPH	675 168	.22 .15	44 329	492 154	.05 .13	50 367
D0038	LEAD	OR	NA	9,307	15	07/24/79	IDLE (D) 50 MPH	250 168	.15 .13	85 308	232 157	.16 .13	85 302
D0072	LEAD	OR	NA	9,770	41	08/25/79	IDLE (D) 50 MPH	272 218	.37 .11	71 257	267 193	.42 .09	66 280
D0093	LEAD	OR	NA	10,069	20	09/13/79	IDLE (D) 50 MPH	232 203	.44 .08	46 200	229 179	.43 .09	52 223
D0109	UNL	BP	NA	10,446	72	10/10/79	IDLE (D) 50 MPH				330 239	.62 .14	131 548
D0118	UNL	RE	NA	10,532	0	10/24/79	IDLE (D) 50 MPH	216 122	.45 .12	173 386	16 8	.02 .01	105 388
R0154	LEAD	OR	NA	11,750	91	01/16/80	IDLE (D) 50 MPH	283 180	1.12 .14	84 362	283 155	1.14 .14	81 402
R0157	LEAD	OR	NA	11,795	3	01/17/80	IDLE (D) 50 MPH	293 174	.49 .15	94 331	273 160	.56 .14	94 351
R0165	LEAD	OR	NA	11,831	6	01/22/80	IDLE (D) 50 MPH	273 161	.42 .16	121 482	243 140	.52 .16	124 502

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0173	UNL	BP	NA	11,877	22	01/25/80	IDLE (D) 50 MPH				273 148	1.40 .18	77 462
R0178	UNL	OR	NA	11,909	0	01/28/80	IDLE (D) 50 MPH	263 165	1.12 .16	77 412	253 134	.76 .07	80 457
R0184	UNL	OR	NA	12,118	17	01/30/80	IDLE (D) 50 MPH	247 171	1.09 .15	84 392	241 131	.87 .07	89 437
R0189	UNL	OR	NA	12,331	18	02/01/80	IDLE (D) 50 MPH	263 177	1.65 .15	66 367	263 133	1.40 .06	68 422
R0216	UNL	OR	NA	12,612	19	02/15/80	IDLE (D) 50 MPH	261 185	1.09 .17	75 301	272 160	.58 .05	76 341
R0222	UNL	OR	NA	12,823	20	02/19/80	IDLE (D) 50 MPH	283 200	1.04 .14	65 296	272 173	.45 .04	69 331
R0232	UNL	OR	NA	13,860	61	02/25/80	IDLE (D) 50 MPH	283 213	1.58 .14	63 301	294 182	1.04 .04	65 331
R0244	UNL	OR	NA	14,894	65	03/04/80	IDLE (D) 50 MPH	305 169	1.62 .13	68 351	294 132	1.21 .03	68 382
R0247	UNL	RE	NA	14,934	0	03/05/80	IDLE (D) 50 MPH	316 182	2.03 .14	56 311	294 30	1.80 .01	31 336

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9402 1979 FORD THND 302 OXID.													
TEST NO.	FUEL	CONV.	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0057	UNL	OR	NA	9,287	0	08/09/79	IDLE (D) 50 MPH	198	.14	155	95	.01	121
								191	.09	229	82	.01	257
D0059	UNL	OR	NA	9,319	0	08/13/79	IDLE (D) 50 MPH	178	.13	171	77	.01	138
								173	.09	237	73	.01	246
D0077	UNL	OR	NA	9,462	0	08/29/79	IDLE (D) 50 MPH	204	.16	139	88	.03	121
								164	.11	224	79	.02	241
D0083	UNL	BP	NA	9,486	0	09/04/80	IDLE (D) 50 MPH				243	.15	143
											180	.09	324
D0092	UNL	BP	NA	9,567	0	09/13/79	IDLE (D) 50 MPH				477	.16	37
											170	.08	291
D0095	UNL	BP	NA	9,591	0	09/14/79	IDLE (D) 50 MPH				220	.15	182
											195	.09	308
D0100	LEAD	OR	NA	9,814	39	09/25/79	IDLE (D) 50 MPH	225	.16	177	164	.04	171
								220	.10	254	169	.06	274
D0119	LEAD	OR	NA	10,174	21	10/26/79	IDLE (D) 50 MPH	216	.27	244	190	.07	259
								236	.16	433	134	.13	455
D0126	LEAD	OR	NA	10,407	20	11/12/79	IDLE (D) 50 MPH	210	.24	246	139	.06	251
								160	.14	374	116	.10	396
D0136	LEAD	OR	NA	10,678	19	12/01/79	IDLE (D) 50 MPH	199	.20	210	146	.03	227
								176	.10	424	146	.10	434
D0142	LEAD	OR	NA	10,922	18	12/10/79	IDLE (D) 50 MPH	200	.19	292	144	.06	284
								168	.11	395	141	.09	385
D0148	LEAD	OR	NA	11,186	17	01/14/80	IDLE (D) 50 MPH	393	.24	111	313	.18	123
								214	.10	336	168	.09	367
D0151	LEAD	OR	NA	11,223	0	01/15/80	IDLE (D) 50 MPH	293	.29	112	249	.25	120
								210	.11	336	161	.10	387
D0163	LEAD	OR	NA	11,256	0	01/21/80	IDLE (D) 50 MPH	353	.22	163	243	.18	177
								198	.12	452	149	.11	497
D0169	LEAD	OR	NA	11,593	37	01/24/80	IDLE (D) 50 MPH	423	.14	155	263	.16	185
								187	.13	462	142	.13	507

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0174	LEAD	OR	NA	11,841	4	01/26/80	IDLE (D) 50 MPH	293 175	.26 .13	166 412	213 140	.22 .13	191 457
D0190	UNL	BP	NA	11,876	21	02/01/80	IDLE (D) 50 MPH				323 177	.29 .13	136 422
R0200	UNL	OR	NA	11,946	0	02/07/80	IDLE (D) 50 MPH	253 204	.50 .13	131 357	204 143	.18 .06	139 402
R0212	UNL	OR	NA	12,133	19	02/14/80	IDLE (D) 50 MPH	350 216	.37 .11	139 281	250 200	.05 .05	155 341
R0219	UNL	OR	NA	12,347	19	02/18/80	IDLE (D) 50 MPH	272 230	.33 .11	147 256	219 179	.04 .05	166 301
R0224	UNL	OR	NA	12,621	20	02/20/80	IDLE (D) 50 MPH	394 223	.21 .11	148 286	272 173	.02 .04	166 341
R0230	UNL	OR	NA	12,902	41	02/23/80	IDLE (D) 50 MPH	294 227	.37 .11	125 271	188 182	.04 .04	144 311
R0243	UNL	OR	NA	13,930	69	02/29/80	IDLE (D) 50 MPH	294 270	.30 .12	160 251	185 188	.02 .03	163 301
R0246	UNL	OR	NA	14,940	71	03/05/80	IDLE (D) 50 MPH	316 227	.31 .11	205 261	173 138	.02 .02	215 321
R0252	UNL	RE	NA	14,990	0	03/07/80	IDLE (D) 50 MPH	222 203	.25 .10	331 331	12 12	.01 .01	179 331

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0004	UNL	OR	NA	6,818	7	05/22/79	IDLE (D) 50 MPH	201 111	.07 .06	240 844	76 45	.00 0.00	169 712
D0006	UNL	OR	NA	6,857	2	05/23/79	IDLE (D) 50 MPH	202 138	.08 .07	199 757	78 77	.01 .00	114 575
D0007	UNL	OR	NA	6,886	0	05/25/79	IDLE (D) 50 MPH	194 136	.10 .08	179 890	75 75	.02 .01	112 700
D0009	UNL	BP	NA	6,950	0	06/08/79	IDLE (D) 50 MPH				348 157	.16 .07	47 675
D0011	UNL	BP	NA	7,014	6	06/13/79	IDLE (D) 50 MPH				178 120	.08 .06	119 580
D0014	UNL	BP	NA	7,069	0	06/23/79	IDLE (D) 50 MPH				250 143	.12 .02	41 626
D0049	LEAD	OR	NA	7,449	28	08/03/79	IDLE (D) 50 MPH	198 134	.07 .05	65 467	113 83	.01 .01	31 236
D0073	LEAD	OR	NA	7,767	27	08/25/79	IDLE (D) 50 MPH	227 150	.07 .06	60 518	190 129	.03 .04	54 469
D0088	LEAD	OR	NA	7,956	12	09/11/79	IDLE (D) 50 MPH	202 132	.08 .07	75 540	167 114	.04 .05	62 492
D0098	LEAD	OR	NA	8,161	13	09/19/79	IDLE (D) 50 MPH	221 166	.09 .08	88 487	187 146	.04 .05	76 437
D0103	LEAD	OR	NA	8,429	14	09/28/79	IDLE (D) 50 MPH	212 140	.10 .09	96 503	178 118	.05 .06	82 469
D0111	LEAD	OR	NA	8,618	12	10/11/79	IDLE (D) 50 MPH	267 180	.12 .10	154 790	215 154	.05 .06	131 742
D0121	LEAD	OR	NA	8,837	13	10/29/79	IDLE (D) 50 MPH	261 164	.11 .09	168 758	210 136	.05 .06	136 740
D0127	LEAD	OR	NA	9,017	13	11/12/79	IDLE (D) 50 MPH	189 91	.14 .12	161 774	133 65	.07 .09	141 752
D0135	LEAD	OR	NA	9,244	14	11/26/79	IDLE (D) 50 MPH	214 103	.11 .09	150 786	153 76	.04 .05	123 701

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9403 1979 OLDS CUTL 260 OXID.													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	HC ppmh	BEFORE CO %	NO ppm	HC ppmh	AFTER CO %	NO ppm
D0141	LEAD	OR	NA	9,430	12	12/10/79	IDLE (D) 50 MPH	198 100	.12 .10	164 725	151 72	.06 .07	135 687
D0155	LEAD	OR	NA	9,856	19	01/16/80	IDLE (D) 50 MPH	257 115	.12 .10	117 864	223 89	.08 .09	109 789
D0158	LEAD	OR	NA	9,889	0	01/17/80	IDLE (D) 50 MPH	253 124	.12 .11	98 873	217 92	.08 .09	91 827
D0160	LEAD	OR	NA	9,922	0	01/18/80	IDLE (D) 50 MPH	253 115	.12 .10	95 880	218 82	.10 .09	97 832
D0164	UNL	BP	NA	9,961	19	01/21/80	IDLE (D) 50 MPH				197 92	.13 .10	127 1200
R0168	UNL	OR	NA	9,993	0	01/24/80	IDLE (D) 50 MPH	203 97	.14 .11	158 1122	187 71	.11 .08	140 1066
R0176	UNL	OR	NA	10,220	16	01/26/80	IDLE (D) 50 MPH	203 92	.13 .11	131 873	161 68	.09 .08	109 799
R0182	UNL	OR	NA	10,490	16	01/29/80	IDLE (D) 50 MPH	203 95	.15 .11	119 918	184 70	.11 .08	132 851
R0187	UNL	OR	NA	10,739	15	01/31/80	IDLE (D) 50 MPH	194 98	.14 .11	128 823	145 71	.08 .07	115 799
R0206	UNL	OR	NA	10,931	16	02/09/80	IDLE (D) 50 MPH	195 94	.14 .11	117 789	124 64	.07 .07	86 770
R0231	UNL	OR	NA	12,015	62	02/25/80	IDLE (D) 50 MPH	236 108	.13 .08	102 682	132 71	.04 .04	91 687
R0245	UNL	OR	NA	13,046	61	03/05/80	IDLE (D) 50 MPH	222 108	.11 .08	120 799	117 68	.03 .04	99 808
R0251	UNL	RE	NA	13,114	0	03/07/80	IDLE (D) 50 MPH	227 105	.11 .08	115 799	92 39	.02 .01	76 741

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0018	UNL	OR	NA	7,283	0	06/27/79	IDLE (D) 50 MPH	187 125	.04 .02	69 335	64 64	.00 .00	61 363
D0020	UNL	OR	NA	7,315	5	06/28/79	IDLE (D) 50 MPH	204 131	.08 .07	33 355	73 65	.01 .00	24 311
D0022	UNL	OR	NA	7,349	2	06/29/79	IDLE (D) 50 MPH	194 136	.10 .09	67 400	77 76	.03 .02	50 318
D0027	UNL	BP	NA	7,380	0	07/07/79	IDLE (D) 50 MPH				300 132	.13 .07	30 359
D0031	UNL	BP	NA	7,437	6	07/10/79	IDLE (D) 50 MPH				210 140	.08 .05	51 373
D0033	UNL	BP	NA	7,492	0	07/11/79	IDLE (D) 50 MPH				367 149	.14 .08	24 410
D0054	LEAD	OR	NA	7,955	40	08/08/79	IDLE (D) 50 MPH	211 114	.08 .07	40 287	152 90	.03 .05	36 305
D0082	LEAD	OR	NA	8,266	24	08/31/79	IDLE (D) 50 MPH	246 150	.08 .06	39 275	189 123	.03 .04	36 257
D0094	LEAD	OR	NA	8,358	12	09/13/79	IDLE (D) 50 MPH	269 147	.09 .08	40 283	224 123	.04 .06	36 263
D0101	LEAD	OR	NA	8,528	10	09/25/79	IDLE (D) 50 MPH	305 169	.11 .09	59 335	237 136	.05 .06	55 322
D0107	LEAD	OR	NA	8,727	15	10/05/79	IDLE (D) 50 MPH	269 162	.11 .08	62 413	275 158	.05 .07	72 454
D0113	LEAD	OR	NA	8,897	11	10/12/79	IDLE (D) 50 MPH	352 199	.13 .11	82 524	275 164	.06 .08	79 461
D0122	LEAD	OR	NA	9,213	16	10/30/79	IDLE (D) 50 MPH	351 160	.09 .08	103 517	288 132	.01 .05	84 421
D0124	LEAD	OR	NA	9,363	14	11/07/79	IDLE (D) 50 MPH	332 128	.16 .14	86 564	225 97	.06 .10	69 499
D0140	LEAD	OR	NA	9,627	14	12/07/79	IDLE (D) 50 MPH	276 119	.12 .10	137 593	249 95	.07 .07	126 560

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0146	LEAD	OR	NA	9,842	12	12/15/79	IDLE (D) 50 MPH	274 113	.11 .07	70 653	227 84	.03 .04	71 506
D0156	LEAD	OR	NA	10,098	9	01/16/80	IDLE (D) 50 MPH	313 130	.12 .11	75 592	266 106	.07 .09	72 562
D0159	LEAD	OR	NA	10,134	0	01/17/80	IDLE (D) 50 MPH	389 134	.13 .11	60 552	269 100	.07 .09	54 477
D0172	UNL	BP	NA	10,165	18	01/25/80	IDLE (D) 50 MPH				303 103	.14 .11	58 662
R0177	UNL	OR	NA	10,199	0	01/26/80	IDLE (D) 50 MPH	293 106	.14 .11	44 587	257 80	.08 .09	48 562
R0180	UNL	OR	NA	10,385	16	01/28/80	IDLE (D) 50 MPH	333 101	.15 .11	49 587	266 76	.07 .08	55 552
R0186	UNL	OR	NA	10,633	16	01/31/80	IDLE (D) 50 MPH	303 107	.14 .11	53 592	251 74	.07 .08	52 562
R0205	UNL	OR	NA	10,864	15	02/09/80	IDLE (D) 50 MPH	343 113	.15 .11	43 572	214 80	.06 .07	49 567
R0211	UNL	OR	NA	11,082	16	02/14/80	IDLE (D) 50 MPH	328 117	.12 .09	50 492	227 76	.03 .05	51 482
R0233	UNL	OR	NA	12,119	67	02/25/80	IDLE (D) 50 MPH	503 120	.13 .09	39 482	261 82	.02 .05	50 472
R0248	UNL	OR	NA	13,149	61	03/06/80	IDLE (D) 50 MPH	361 117	.12 .08	63 592	169 74	.02 .04	74 602
R0253	UNL	RE	NA	13,179	0	03/07/80	IDLE (D) 50 MPH	361 114	.12 .08	66 592	78 31	.01 .01	62 512

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0021	UNL	OR	OR	4,179	5	06/28/79	IDLE (D) 50 MPH	156 111	.26 .22	236 385	56 97	.02 .82	25 91
D0023	UNL	OR	OR	4,210	0	06/29/79	IDLE (D) 50 MPH	157 127	.22 .64	79 432	60 127	.01 .90	38 164
D0026	UNL	OR	OR	4,282	0	07/05/79	IDLE (D) 50 MPH	165 128	.26 .35	219 601	75 111	.03 .37	30 132
D0028	UNL	BP	OR	4,319	8	07/07/79	IDLE (D) 50 MPH				150 136	.36 .46	51 519
D0030	UNL	BP	OR	4,345	0	07/09/79	IDLE (D) 50 MPH				173 148	.23 .73	207 471
D0032	UNL	BP	OR	4,373	0	07/10/79	IDLE (D) 50 MPH				166 125	.25 .23	94 453
D0065	LEAD	OR	OR	4,731	58	08/15/79	IDLE (D) 50 MPH	175 129	1.13 .25	174 473	178 94	1.04 .05	150 165
D0081	LEAD	OR	OR	4,902	14	08/31/79	IDLE (D) 50 MPH	221 160	2.99 .95	70 370	225 161	2.90 1.20	68 325
D0090	LEAD	OR	OR	5,034	13	09/12/79	IDLE (D) 50 MPH	193 154	1.30 .59	150 684	191 158	1.10 .55	163 320
D0104	LEAD	OR	OR	5,250	16	09/28/79	IDLE (D) 50 MPH	237 142	4.43 .35	71 782	240 147	4.34 .52	78 424
D0108	LEAD	OR	OR	5,466	15	10/05/79	IDLE (D) 50 MPH	250 143	4.27 .34	76 1013	248 115	4.43 .10	81 284
D0110	LEAD	OR	OR	5,719	17	10/11/79	IDLE (D) 50 MPH	306 172	5.79 .43	131 1743	309 154	5.17 .11	159 506
D0123	LEAD	OR	OR	5,954	13	10/30/79	IDLE (D) 50 MPH	270 110	5.63 .40	107 1324	253 82	5.45 .04	112 358
D0133	LEAD	OR	OR	6,050	13	11/17/79	IDLE (D) 50 MPH	255 102	6.22 .50	99 1314	248 73	6.39 .07	101 462
D0139	LEAD	OR	OR	6,242	28	12/06/79	IDLE (D) 50 MPH	253 126	3.88 1.07	255 1790	232 122	3.65 1.04	259 900

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0144	LEAD	OR	OR	6,637	16	12/15/79	IDLE (D) 50 MPH	241 120	4.98 .40	188 1526	239 79	4.84 .03	173 729
D0161	LEAD	OR	OR	6,875	7	01/18/80	IDLE (D) 50 MPH	195 121	.62 .47	502 1310	174 86	.32 .08	442 497
D0166	LEAD	OR	OR	6,944	4	01/22/80	IDLE (D) 50 MPH	181 142	.89 1.01	582 927	172 92	.31 .50	642 382
D0196	LEAD	OR	OR	7,057	17	02/05/80	IDLE (D) 50 MPH	177 149	.43 2.13	682 562	168 148	.21 1.79	622 552
D0228	LEAD	OR	OR	7,152	5	02/23/80	IDLE (D) 50 MPH	197 141	.47 .79	552 647	187 106	.22 .54	522 432
R0235	LEAD	BP	OR	7,184	10	02/26/80	IDLE (D) 50 MPH				188 148	.50 1.04	442 602
R0237	LEAD	BP	OR	7,213	0	02/27/80	IDLE (D) 50 MPH				197 151	.47 1.15	482 622
R0240	UNL	BP	OR	7,241	18	02/28/80	IDLE (D) 50 MPH				191 114	.66 .41	321 602
R0241	UNL	BP	OR	7,269	0	02/29/80	IDLE (D) 50 MPH				207 117	.70 .43	271 592
R0249	UNL	BP	NW	7,302	0	03/06/80	IDLE (D) 50 MPH				166 111	.34 .28	662 857
R0254	UNL	BP	NW	7,329	0	03/10/80	IDLE (D) 50 MPH				179 112	.43 .47	432 789
R0260	UNL	OR	NW	7,358	0	03/11/80	IDLE (D) 50 MPH	185 109	.40 .31	552 857	152 65	.06 .02	562 542
R0261	UNL	OR	OR	7,390	16	03/12/80	IDLE (D) 50 MPH	182 114	.66 .43	702 1419	166 77	.27 .04	572 542
R0264	UNL	OR	OR	7,629	13	03/14/80	IDLE (D) 50 MPH	169 89	.75 .47	482 997	157 65	.36 .02	372 351
R0266	UNL	OR	NW	7,666	0	03/17/80	IDLE (D) 50 MPH	176 105	.43 .35	522 833	145 63	.07 .02	452 402

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0269	UNL	OR	OR	7,910	20	03/19/80	IDLE (D) 50 MPH	179 105	.78 .39	362 622	163 57	.30 .02	241 351
R0272	UNL	OR	NW	7,941	0	03/21/80	IDLE (D) 50 MPH	176 105	.47 .36	331 612	151 54	.08 .02	241 392
R0280	UNL	OR	OR	8,144	15	03/28/80	IDLE (D) 50 MPH	179 97	.50 .36	382 622	148 57	.09 .02	208 362
R0282	UNL	OR	NW	8,174	0	03/31/80	IDLE (D) 50 MPH	179 97	.47 .31	331 602	148 51	.09 .02	190 351
R0285	UNL	OR	OR	8,473	23	04/03/80	IDLE (D) 50 MPH	176 95	.50 .41	412 622	154 54	.11 .02	171 301
R0286	UNL	OR	NW	8,504	9	04/07/80	IDLE (D) 50 MPH	182 98	.43 .33	372 642	141 51	.07 .01	195 331
R0293	UNL	OR	NW	9,369	52	04/30/80	IDLE (D) 50 MPH	163 83	.47 .37	241 502	129 39	.07 .01	102 271
R0297	UNL	OR	OR	9,543	4	05/13/80	IDLE (D) 50 MPH	176 89	.54 .41	203 492	138 27	.18 .01	58 193
R0299	UNL	BP	OR	9,600	0	05/19/80	IDLE (D) 50 MPH				169 89	.58 .42	241 552
R0300	UNL	BP	NW	9,634	0	05/20/80	IDLE (D) 50 MPH				176 92	.79 .38	230 532
R0303	UNL	RE	OR	9,735	16	05/28/80	IDLE (D) 50 MPH	169 86	.54 .42	231 472	39 0	.07 .01	2 38
R0306	UNL	RE	NW	9,846	0	06/02/80	IDLE (D) 50 MPH	169 89	.43 .36	281 492	3 0	.02 .01	16 57

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.													
9406 1979 VOLV 245 130 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0039	UNL	OR	OR	5,795	0	07/25/79	IDLE (D) 50 MPH	70 78	.36 .45	42 1099	49 49	.01 .02	8 23
D0044	UNL	OR	OR	5,831	0	07/28/79	IDLE (D) 50 MPH	74 87	.37 .55	43 1360	52 49	.02 .01	4 1
D0055	UNL	OR	OR	5,907	0	08/09/79	IDLE (D) 50 MPH	77 86	.41 .55	45 1169	55 51	.00 .00	5 43
D0067	UNL	BP	OR	6,002	5	08/16/79	IDLE (D) 50 MPH				86 106	.46 .74	61 1848
D0078	UNL	BP	OR	6,075	0	08/30/79	IDLE (D) 50 MPH				78 92	.40 .50	41 1167
D0080	UNL	BP	OR	6,101	0	08/31/79	IDLE (D) 50 MPH				84 100	.45 .66	51 1683
D0091	LEAD	OR	OR	6,371	26	09/12/79	IDLE (D) 50 MPH	85 99	.43 .50	38 1060	72 75	.05 .03	0 31
D0096	LEAD	OR	OR	6,597	13	09/17/79	IDLE (D) 50 MPH	100 113	.42 .52	46 1081	89 90	.04 .02	3 73
D0099	LEAD	OR	OR	6,853	12	09/24/79	IDLE (D) 50 MPH	82 103	.50 .60	54 1478	74 77	.09 .05	1 200
D0106	LEAD	OR	OR	7,036	13	10/04/79	IDLE (D) 50 MPH	90 116	.65 .64	53 1581	84 100	.17 .07	0 350
D0120	LEAD	OR	OR	7,275	14	10/27/79	IDLE (D) 50 MPH	47 74	.76 .82	74 1990	45 59	.05 .05	6 837
D0134	LEAD	OR	OR	7,516	12	11/21/79	IDLE (D) 50 MPH	51 47	.77 .85	68 1147	48 39	.05 .08	12 469
D0138	LEAD	OR	OR	7,641	13	12/04/79	IDLE (D) 50 MPH	39 70	.79 .94	82 2067	39 58	.13 .07	7 944
D0143	LEAD	OR	OR	7,934	17	12/11/79	IDLE (D) 50 MPH	30 59	.77 .91	75 1970	26 52	.17 .10	9 900
D0150	LEAD	OR	OR	8,144	3	01/14/80	IDLE (D) 50 MPH	49 91	.60 .80	80 1930	49 83	.17 .19	22 1031

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

		VEH. MODL		NO. YEAR MAKE MODL CID CONV.									
				9406 1979 VOLV 245 130 3 WAY									
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0153	LEAD	OR	OR	8,174	4	01/15/80	IDLE (D) 50 MPH	35 70	.72 .85	72 2003	35 62	.16 .22	24 1222
R0175	LEAD	BP	OR	8,220	4	01/26/80	IDLE (D) 50 MPH				37 71	.76 1.01	77 2382
R0179	LEAD	BP	OR	8,250	0	01/28/80	IDLE (D) 50 MPH				37 70	.85 1.04	73 2170
R0183	UNL	BP	OR	8,280	14	01/29/80	IDLE (D) 50 MPH				34 67	.82 1.01	69 2143
R0185	UNL	BP	OR	8,309	0	01/30/80	IDLE (D) 50 MPH				37 67	.82 .96	71 2130
R0193	UNL	BP	NW	8,339	0	02/04/80	IDLE (D) 50 MPH				35 65	.74 1.06	67 1906
R0198	UNL	BP	NW	8,380	0	02/06/80	IDLE (D) 50 MPH				46 70	.94 1.22	67 1906
R0202	UNL	OR	NW	8,406	0	02/08/80	IDLE (D) 50 MPH	44 73	.94 1.12	65 1978	44 65	.29 .65	35 1527
R0207	UNL	OR	OR	8,445	0	02/09/80	IDLE (D) 50 MPH	44 64	.89 .96	67 2003	50 58	.12 .17	17 1343
R0213	UNL	OR	OR	8,730	30	02/14/80	IDLE (D) 50 MPH	58 70	.77 .91	61 1769	48 60	.02 .13	48 1054
R0215	UNL	OR	NW	8,760	0	02/15/80	IDLE (D) 50 MPH	48 74	.70 1.04	63 1780	43 68	.02 .56	50 1245
R0218	UNL	OR	OR	8,927	15	02/18/80	IDLE (D) 50 MPH	51 70	.82 .94	64 1837	46 60	.11 .15	22 1200
R0221	UNL	OR	NW	8,958	0	02/19/80	IDLE (D) 50 MPH	51 73	.77 1.09	63 1769	39 57	.08 .45	15 1043
R0225	UNL	OR	OR	9,164	30	02/21/80	IDLE (D) 50 MPH	48 67	.75 .94	61 1769	45 57	.08 .10	14 1088
R0227	UNL	OR	NW	9,212	0	02/23/80	IDLE (D) 50 MPH	58 73	.77 1.09	60 1791	54 64	.03 .54	12 1310

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9406 1979 VOLV 245 130 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0236	UNL	OR	OR	9,503	20	02/26/80	IDLE (D) 50 MPH	65 71	.89 .94	58 1814	63 63	.02 .20	14 1200
R0238	UNL	OR	NW	9,532	0	02/27/80	IDLE (D) 50 MPH	60 74	.75 1.04	61 1769	54 67	.02 .50	52 1156
R0255	UNL	OR	OR	10,562	65	03/10/80	IDLE (D) 50 MPH	48 65	.75 .91	74 2157	43 57	.04 .16	17 1310
R0259	UNL	OR	NW	10,610	5	03/11/80	IDLE (D) 50 MPH	45 65	.77 1.04	75 2130	42 63	.02 .54	15 1506
R0265	UNL	OR	OR	11,642	56	03/17/80	IDLE (D) 50 MPH	55 65	.70 .84	65 1860	51 57	.02 .07	46 1133
R0268	UNL	OR	NW	11,672	0	03/18/80	IDLE (D) 50 MPH	42 68	.66 .94	65 1860	36 65	.02 .45	50 1200
R0271	UNL	BP	OR	11,701	0	03/20/80	IDLE (D) 50 MPH				55 71	.79 .89	63 1837
R0273	UNL	BP	NW	11,728	0	03/21/80	IDLE (D) 50 MPH				40 74	.66 1.04	62 1791
R0275	UNL	RE	OR	11,753	0	03/25/80	IDLE (D) 50 MPH	51 65	.66 .86	58 1860	33 3	.07 .08	0 11
R0279	UNL	RE	NW	11,847	14	03/27/80	IDLE (D) 50 MPH	45 65	.68 1.04	62 1906	31 27	.14 .46	0 13

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0043	UNL	OR	OR	5,182	0	07/27/79	IDLE (D) 50 MPH	115 91	.35 .43	207 658	55 53	.01 .02	29 6
D0056	UNL	OR	OR	5,271	0	08/09/79	IDLE (D) 50 MPH	128 102	.40 .38	194 622	59 57	.02 .02	25 13
D0060	UNL	OR	OR	5,299	0	08/13/79	IDLE (D) 50 MPH	125 98	.35 .40	223 728	56 59	.01 .00	11 13
D0064	UNL	BP	OR	5,330	0	08/14/79	IDLE (D) 50 MPH				129 98	.38 .43	207 665
D0075	UNL	BP	OR	5,384	0	08/27/79	IDLE (D) 50 MPH				138 108	.41 .39	190 464
D0076	UNL	BP	OR	5,408	0	08/29/79	IDLE (D) 50 MPH				135 76	.42 .41	186 217
D0097	LEAD	OR	OR	5,646	14	09/18/79	IDLE (D) 50 MPH	133 111	.36 .40	186 596	83 86	.04 .13	64 21
D0105	LEAD	OR	OR	5,870	26	10/03/79	IDLE (D) 50 MPH	150 112	.40 .42	295 769	74 77	.04 .09	96 50
D0112	LEAD	OR	OR	6,121	12	10/12/79	IDLE (D) 50 MPH	194 148	.56 .57	330 1092	102 101	.07 .15	100 115
D0131	LEAD	OR	OR	6,341	15	11/13/79	IDLE (D) 50 MPH	151 95	.44 .63	335 1009	59 54	.05 .17	132 119
D0137	LEAD	OR	OR	6,606	13	12/03/79	IDLE (D) 50 MPH	141 79	.50 .54	393 1112	48 39	.05 .06	148 505
D0145	LEAD	OR	OR	6,831	14	12/15/79	IDLE (D) 50 MPH	130 79	.38 .50	394 1105	43 43	.00 .00	185 503
D0147	LEAD	OR	OR	7,004	0	12/27/79	IDLE (D) 50 MPH	140 82	.41 .61	373 1073	54 49	.03 .10	156 254
D0149	LEAD	OR	OR	7,024	0	01/14/80	IDLE (D) 50 MPH	177 97	.30 .60	222 818	86 74	.04 .11	131 177
D0152	LEAD	OR	OR	7,057	3	01/15/80	IDLE (D) 50 MPH	161 97	.31 .54	218 944	83 71	.05 .08	117 148

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
D0167	LEAD	OR	OR	7,369	28	01/22/80	IDLE (D) 50 MPH	177 95	.35 .65	242 1289	80 61	.06 .07	135 387
D0170	LEAD	OR	OR	7,589	4	01/24/80	IDLE (D) 50 MPH	165 98	.35 .63	367 1332	79 64	.06 .08	164 397
D0188	LEAD	OR	OR	7,959	31	01/31/80	IDLE (D) 50 MPH	151 95	.40 .62	301 1310	77 62	.06 .09	124 402
R0195	LEAD	BP	OR	8,006	0	02/05/80	IDLE (D) 50 MPH				145 98	.40 .62	210 900
R0197	LEAD	BP	OR	8,034	0	02/06/80	IDLE (D) 50 MPH				145 97	.37 .63	205 900
R0201	UNL	BP	OR	8,062	17	02/07/80	IDLE (D) 50 MPH				148 92	.62 .74	182 813
R0203	UNL	BP	OR	8,090	0	02/08/80	IDLE (D) 50 MPH				142 79	.58 .50	187 799
R0214	UNL	BP	NW	8,125	0	02/15/80	IDLE (D) 50 MPH				162 95	.54 .56	191 632
R0217	UNL	BP	NW	8,155	0	02/18/80	IDLE (D) 50 MPH				157 100	.58 .64	177 702
R0220	UNL	OR	NW	8,183	0	02/19/80	IDLE (D) 50 MPH	160 100	.62 .64	222 956	68 73	.03 .06	61 205
R0223	UNL	OR	OR	8,215	12	02/20/80	IDLE (D) 50 MPH	168 98	.62 .70	213 887	65 80	.02 .08	58 171
R0229	UNL	OR	OR	8,513	15	02/23/80	IDLE (D) 50 MPH	180 98	.79 .66	179 927	101 86	.09 .12	20 210
R0234	UNL	OR	NW	8,550	0	02/26/80	IDLE (D) 50 MPH	169 92	.58 .62	195 882	51 68	.02 .04	60 207
R0239	UNL	OR	OR	8,763	14	02/28/80	IDLE (D) 50 MPH	185 101	.70 .62	166 900	101 83	.04 .11	22 195
R0242	UNL	OR	NW	8,794	0	02/29/80	IDLE (D) 50 MPH	169 89	.58 .58	170 927	57 60	.02 .03	42 230

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX G (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST EMISSION RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	BEFORE			AFTER		
								HC ppmh	CO %	NO ppm	HC ppmh	CO %	NO ppm
R0250	UNL	OR	OR	9,002	14	03/06/80	IDLE (D) 50 MPH	173 92	.89 .52	251 1178	95 48	.23 .03	40 462
R0258	UNL	OR	NW	9,039	0	03/11/80	IDLE (D) 50 MPH	173 89	.62 .50	241 1156	68 45	.02 .03	46 351
R0262	UNL	OR	OR	9,240	14	03/13/80	IDLE (D) 50 MPH	176 89	.84 .58	218 1088	108 60	.15 .06	26 230
R0263	UNL	OR	NW	9,277	0	03/14/80	IDLE (D) 50 MPH	169 89	.58 .62	190 904	57 65	.02 .05	41 185
R0267	UNL	OR	OR	10,305	52	03/18/80	IDLE (D) 50 MPH	176 86	.75 .54	195 789	114 42	.10 .02	14 251
R0270	UNL	OR	NW	10,335	0	03/19/80	IDLE (D) 50 MPH	163 98	.54 .58	193 873	54 65	.02 .04	48 166
R0274	UNL	OR	OR	11,365	57	03/24/80	IDLE (D) 50 MPH	157 83	.58 .62	187 900	65 63	.02 .09	25 136
R0276	UNL	OR	NW	11,392	0	03/25/80	IDLE (D) 50 MPH	160 89	.54 .54	185 882	51 42	.01 .02	50 321
R0281	UNL	BP	OR	11,422	0	03/31/80	IDLE (D) 50 MPH				166 89	.62 .66	182 662
R0283	UNL	BP	NW	11,450	0	04/01/80	IDLE (D) 50 MPH				151 94	.50 .62	182 582
R0287	UNL	RE	OR	11,482	10	04/15/80	IDLE (D) 50 MPH	166 85	.58 .62	187 770	6 1	.04 .11	1 4
R0288	UNL	RE	NW	11,514	0	04/16/80	IDLE (D) 50 MPH	160 80	.50 .58	198 808	2 2	.02 .05	1 4

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX H - LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

SPEED - Vehicle speed

IDLE(D) - Vehicle at idle, transmission in drive

50 MPH - Vehicle at 50 miles per hour

CONV POS - Converter position

LEFT - Left converter on dual exhaust vehicle

RIGHT - Right converter on dual exhaust vehicle

(blank) - Single exhaust vehicle

BEFORE - Emission readings taken before the catalytic converter

AFTER - Emission readings taken after the catalytic converter

TOP TEMP - Temperature readings in Fahrenheit taken at the top of the pipe

BOT TEMP - Temperature readings in Fahrenheit taken at the bottom of the pipe

APPENDIX H

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -	
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP
R0154	LEAD	OR	NA	11,750	91	01/16/80	IDLE (D) 50 MPH	LEFT	370	361	297	293
								RIGHT	470	481	280	242
								LEFT	666	650	455	440
								RIGHT	699	705	431	404
R0157	LEAD	OR	NA	11,795	3	01/17/80	IDLE (D) 50 MPH	LEFT	379	346	284	277
								RIGHT	488	492	299	263
								LEFT	691	656	460	463
								RIGHT	704	710	467	405
R0165	LEAD	OR	NA	11,831	6	01/22/80	IDLE (D) 50 MPH	LEFT	390	374	306	303
								RIGHT	484	483	290	253
								LEFT	661	642	463	467
								RIGHT	693	715	455	395
R0173	UNL	BP	NA	11,877	22	01/25/80	IDLE (D) 50 MPH	LEFT			303	290
								RIGHT			328	333
								LEFT			598	561
								RIGHT			600	560
R0178	UNL	OR	NA	11,909	0	01/28/80	IDLE (D) 50 MPH	LEFT	398	333	328	314
								RIGHT	467	445	345	347
								LEFT	702	662	476	446
								RIGHT	715	628	450	454
R0184	UNL	OR	NA	12,118	17	01/30/80	IDLE (D) 50 MPH	LEFT	425	382	331	330
								RIGHT	474	461	389	373
								LEFT	666	641	441	431
								RIGHT	699	613	455	448
R0189	UNL	OR	NA	12,331	18	02/01/80	IDLE (D) 50 MPH	LEFT	409	348	341	317
								RIGHT	455	422	347	387
								LEFT	682	651	447	443
								RIGHT	691	630	452	436
R0216	UNL	OR	NA	12,612	19	02/15/80	IDLE (D) 50 MPH	LEFT	412	343	323	316
								RIGHT	452	447	380	376
								LEFT	705	674	438	421
								RIGHT	714	636	485	468
R0222	UNL	OR	NA	12,823	20	02/19/80	IDLE (D) 50 MPH	LEFT	387	347	320	315
								RIGHT	467	448	369	364
								LEFT	688	649	445	425
								RIGHT	693	652	465	456

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR		MAKE MODL		CID CONV.									
9401 1979		FORD THND		302 OXID.									
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -		
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP	
R0232	UNL	OR	NA	13,860	61	02/25/80	IDLE (D) 50 MPH	LEFT	384	310	294	287	
								RIGHT	455	429	378	371	
								LEFT	673	622	409	407	
								RIGHT	694	626	456	452	
R0244	UNL	OR	NA	14,894	65	03/04/80	IDLE (D) 50 MPH	LEFT	407	407	315	315	
								RIGHT	420	430	392	383	
								LEFT	686	663	410	440	
								RIGHT	709	650	466	460	
R0247	UNL	RE	NA	14,934	0	03/05/80	IDLE (D) 50 MPH	LEFT	432	444	363	333	
								RIGHT	488	500	377	360	
								LEFT	694	702	465	430	
								RIGHT	726	683	475	442	

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -	
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP
D0148	LEAD	OR	NA	11,186	17	01/14/80	IDLE (D) 50 MPH	LEFT	457	427	322	321
								RIGHT	500	530	350	310
								LEFT	716	664	436	444
								RIGHT	719	734	457	394
D0151	LEAD	OR	NA	11,223	0	01/15/80	IDLE (D) 50 MPH	LEFT	436	389	287	304
								RIGHT	457	502	299	267
								LEFT	668	575	388	425
								RIGHT	690	720	413	345
D0163	LEAD	OR	NA	11,256	0	01/21/80	IDLE (D) 50 MPH	LEFT	428	423	307	297
								RIGHT	531	530	322	290
								LEFT	685	684	476	485
								RIGHT	730	740	464	412
D0169	LEAD	OR	NA	11,593	37	01/24/80	IDLE (D) 50 MPH	LEFT	430	437	300	290
								RIGHT	508	520	311	281
								LEFT	688	674	469	466
								RIGHT	715	699	452	409
D0174	LEAD	OR	NA	11,841	4	01/26/80	IDLE (D) 50 MPH	LEFT	418	417	305	299
								RIGHT	507	516	316	291
								LEFT	681	670	459	466
								RIGHT	710	727	449	403
D0190	UNL	BP	NA	11,876	21	02/01/80	IDLE (D) 50 MPH	LEFT			420	384
								RIGHT			369	360
								LEFT			702	663
								RIGHT			681	661
R0200	UNL	OR	NA	11,946	0	02/07/80	IDLE (D) 50 MPH	LEFT	411	365	338	322
								RIGHT	527	560	355	320
								LEFT	614	620	450	415
								RIGHT	700	641	447	387
R0212	UNL	OR	NA	12,133	19	02/14/80	IDLE (D) 50 MPH	LEFT	413	387	316	310
								RIGHT	368	510	491	329
								LEFT	657	696	494	444
								RIGHT	475	663	720	435
R0219	UNL	OR	NA	12,347	19	02/18/80	IDLE (D) 50 MPH	LEFT	381	372	323	310
								RIGHT	360	473	474	326
								LEFT	644	695	511	470
								RIGHT	482	700	743	441

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -		
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP	
R0224	UNL	OR	NA	12,621	20	02/20/80	IDLE (D)	LEFT	395	378	317	305	
								RIGHT	356	496	478	328	
								50 MPH	LEFT	651	689	502	447
								RIGHT	484	658	726	451	
R0230	UNL	OR	NA	12,902	41	02/23/80	IDLE (D)	LEFT	334	340	280	269	
								RIGHT	445	431	313	283	
								50 MPH	LEFT	601	662	462	429
								RIGHT	650	730	453	417	
R0243	UNL	OR	NA	13,930	69	02/29/80	IDLE (D)	LEFT	420	392	346	357	
								RIGHT	497	460	368	331	
								50 MPH	LEFT	627	670	444	497
								RIGHT	721	670	463	412	
R0246	UNL	OR	NA	14,940	71	03/05/80	IDLE (D)	LEFT	405	455	353	365	
								RIGHT	479	497	399	382	
								50 MPH	LEFT	590	659	426	462
								RIGHT	706	655	480	457	
R0252	UNL	RE	NA	14,990	0	03/07/80	IDLE (D)	LEFT	482	504	397	408	
								RIGHT	519	537	422	413	
								50 MPH	LEFT	676	731	499	547
								RIGHT	730	714	516	499	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV. 9403 1979 OLDS CUTL 260 OXID.													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE - TOP BOT	TEMP TEMP	- AFTER - TOP BOT	TEMP TEMP	
D0155	LEAD	OR	NA	9,856	19	01/16/80	IDLE (D) 50 MPH		302 535	294 538	320 450	330 476	
D0158	LEAD	OR	NA	9,889	0	01/17/80	IDLE (D) 50 MPH		282 532	284 536	318 447	327 472	
D0160	LEAD	OR	NA	9,922	0	01/18/80	IDLE (D) 50 MPH		298 513	293 512	315 435	327 459	
D0164	UNL	BP	NA	9,961	19	01/21/80	IDLE (D) 50 MPH				251 515	251 524	
R0168	UNL	OR	NA	9,993	0	01/24/80	IDLE (D) 50 MPH		315 603	310 608	378 532	383 544	
R0176	UNL	OR	NA	10,220	16	01/26/80	IDLE (D) 50 MPH		343 523	356 543	370 471	386 485	
R0182	UNL	OR	NA	10,490	16	01/29/80	IDLE (D) 50 MPH		317 527	309 536	326 452	341 477	
R0187	UNL	OR	NA	10,739	15	01/31/80	IDLE (D) 50 MPH		354 549	353 571	369 470	381 491	
R0206	UNL	OR	NA	10,931	16	02/09/80	IDLE (D) 50 MPH		350 560	332 563	319 456	328 472	
R0231	UNL	OR	NA	12,015	62	02/25/80	IDLE (D) 50 MPH		314 540	306 546	321 458	325 471	
R0245	UNL	OR	NA	13,046	61	03/05/80	IDLE (D) 50 MPH		388 568	383 582	395 504	402 515	
R0251	UNL	RE	NA	13,114	0	03/07/80	IDLE (D) 50 MPH		364 537	364 562	395 500	407 516	

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9404 1979 OLDS CUTL 260 OXID.												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS.	-BEFORE - TOP BOT TEMP TEMP	- AFTER - TOP BOT TEMP TEMP		
D0156	LEAD	OR	NA	10,098	9	01/16/80	IDLE (D) 50 MPH		289 520	260 476	333 486	321 465
D0159	LEAD	OR	NA	10,134	0	01/17/80	IDLE (D) 50 MPH		325 515	305 476	359 504	347 483
D0172	UNL	BP	NA	10,165	18	01/25/80	IDLE (D) 50 MPH				290 583	278 569
R0177	UNL	OR	NA	10,199	0	01/26/80	IDLE (D) 50 MPH		343 529	344 500	345 456	382 498
R0180	UNL	OR	NA	10,385	16	01/28/80	IDLE (D) 50 MPH		351 538	354 520	371 476	401 514
R0186	UNL	OR	NA	10,633	16	01/31/80	IDLE (D) 50 MPH		375 479	372 452	388 477	411 494
R0205	UNL	OR	NA	10,864	15	02/09/80	IDLE (D) 50 MPH		325 509	306 474	325 439	333 452
R0211	UNL	OR	NA	11,082	16	02/14/80	IDLE (D) 50 MPH		340 523	335 501	365 480	372 496
R0233	UNL	OR	NA	12,119	67	02/25/80	IDLE (D) 50 MPH		333 530	320 503	323 474	315 488
R0248	UNL	OR	NA	13,149	61	03/06/80	IDLE (D) 50 MPH		356 532	360 527	372 480	384 514
R0253	UNL	RE	NA	13,179	0	03/07/80	IDLE (D) 50 MPH		357 510	387 592	431 562	433 565

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. NO.		MODL YEAR		MAKE MODL		CID CONV.							
9405		1979		MERC MARQ		351 3 WAY							
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS.	-BEFORE -		- AFTER -		
									TOP	BOT	TEMP	TEMP	
D0161	LEAD	OR	OR	6,875	7	01/18/80	IDLE (D)	LEFT	351	381	350	341	
								RIGHT	400	389	391	358	
							50 MPH	LEFT	568	571	455	447	
								RIGHT	592	547	502	485	
D0166	LEAD	OR	OR	6,944	4	01/22/80	IDLE (D)	LEFT	397	420	372	364	
								RIGHT	331	324	332	313	
							50 MPH	LEFT	588	591	449	455	
								RIGHT	522	501	450	411	
D0196	LEAD	OR	OR	7,057	17	02/05/80	IDLE (D)	LEFT	366	368	378	357	
								RIGHT	415	403	405	378	
							50 MPH	LEFT	584	594	508	490	
								RIGHT	600	556	529	477	
D0228	LEAD	OR	OR	7,152	5	02/23/80	IDLE (D)	LEFT	363	404	366	311	
								RIGHT	402	345	391	370	
							50 MPH	LEFT	560	597	489	390	
								RIGHT	616	518	518	490	
R0235	LEAD	BP	OR	7,184	10	02/26/80	IDLE (D)	LEFT			267	318	
								RIGHT			300	291	
							50 MPH	LEFT			447	543	
								RIGHT			511	490	
R0237	LEAD	BP	OR	7,213	0	02/27/80	IDLE (D)	LEFT			283	321	
								RIGHT			298	286	
							50 MPH	LEFT			467	556	
								RIGHT			518	501	
R0240	UNL	BP	OR	7,241	18	02/28/80	IDLE (D)	LEFT			271	306	
								RIGHT			291	282	
							50 MPH	LEFT			473	561	
								RIGHT			518	505	
R0241	UNL	BP	OR	7,269	0	02/29/80	IDLE (D)	LEFT			285	325	
								RIGHT			298	290	
							50 MPH	LEFT			469	555	
								RIGHT			510	495	
R0249	UNL	BP	NW	7,302	0	03/06/80	IDLE (D)	LEFT			313	353	
								RIGHT			378	371	
							50 MPH	LEFT			478	562	
								RIGHT			562	557	

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9405 1979 MERC MARQ 351 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE - TOP BOT TEMP TEMP	- AFTER - TOP BOT TEMP TEMP		
R0254	UNL	BP	NW	7,329	0	03/10/80	IDLE (D)	LEFT			392	332
							50 MPH	RIGHT			359	352
								LEFT			479	560
								RIGHT			557	550
R0260	UNL	OR	NW	7,358	0	03/11/80	IDLE (D)	LEFT	428	344	373	369
							50 MPH	RIGHT	459	450	428	408
								LEFT	625	531	488	458
								RIGHT	670	618	523	488
R0261	UNL	OR	OR	7,390	16	03/12/80	IDLE (D)	LEFT	445	371	400	390
							50 MPH	RIGHT	437	410	441	415
								LEFT	660	567	522	491
								RIGHT	669	609	569	539
R0264	UNL	OR	OR	7,629	13	03/14/80	IDLE (D)	LEFT	471	396	401	397
							50 MPH	RIGHT	475	446	477	440
								LEFT	652	550	516	489
								RIGHT	689	630	569	526
R0266	UNL	OR	NW	7,666	0	03/17/80	IDLE (D)	LEFT	459	377	398	393
							50 MPH	RIGHT	472	445	452	427
								LEFT	645	546	512	486
								RIGHT	680	622	554	520
R0269	UNL	OR	OR	7,910	20	03/19/80	IDLE (D)	LEFT	450	369	399	395
							50 MPH	RIGHT	463	451	473	445
								LEFT	658	542	521	493
								RIGHT	692	657	571	537
R0272	UNL	OR	NW	7,941	0	03/21/80	IDLE (D)	LEFT	451	377	404	403
							50 MPH	RIGHT	434	425	446	432
								LEFT	632	539	506	480
								RIGHT	647	607	524	506
R0280	UNL	OR	OR	8,144	15	03/28/80	IDLE (D)	LEFT	468	400	412	406
							50 MPH	RIGHT	463	445	468	451
								LEFT	657	543	520	490
								RIGHT	668	623	551	535
R0282	UNL	OR	NW	8,174	0	03/31/80	IDLE (D)	LEFT	451	359	395	388
							50 MPH	RIGHT	459	438	447	423
								LEFT	654	520	515	481
								RIGHT	677	625	545	512

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -	
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP
R0285	UNL	OR	OR	8,473	23	04/03/80	IDLE (D) 50 MPH	LEFT	460	363	412	400
								RIGHT	470	439	475	449
								LEFT	657	533	525	488
								RIGHT	693	613	554	525
R0286	UNL	OR	NW	8,504	9	04/07/80	IDLE (D) 50 MPH	LEFT	420	321	405	382
								RIGHT	463	414	438	402
								LEFT	642	512	523	478
								RIGHT	667	582	528	480
R0293	UNL	OR	NW	9,369	52	04/30/80	IDLE (D) 50 MPH	LEFT	435	380	423	402
								RIGHT	456	408	442	441
								LEFT	614	543	510	474
								RIGHT	664	593	539	529
R0297	UNL	OR	OR	9,543	4	05/13/80	IDLE (D) 50 MPH	LEFT	398	345	391	372
								RIGHT	305	363	368	372
								LEFT	640	548	517	477
								RIGHT	617	522	507	493
R0299	UNL	BP	OR	9,600	0	05/19/80	IDLE (D) 50 MPH	LEFT			280	302
								RIGHT			302	322
								LEFT			488	549
								RIGHT			509	560
R0300	UNL	BP	NW	9,634	0	05/20/80	IDLE (D) 50 MPH	LEFT			277	311
								RIGHT			291	306
								LEFT			495	555
								RIGHT			497	542
R0303	UNL	RE	OR	9,735	16	05/28/80	IDLE (D) 50 MPH	LEFT	416	356	357	353
								RIGHT	437	447	436	427
								LEFT	650	552	464	456
								RIGHT	644	686	564	543
R0306	UNL	RE	NW	9,846	0	06/02/80	IDLE (D) 50 MPH	LEFT	475	422	423	415
								RIGHT	434	413	475	462
								LEFT	665	590	504	498
								RIGHT	614	629	571	553

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -	
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP
D0150	LEAD	OR	OR	8,144	3	01/14/80	IDLE (D) 50 MPH		372 592	370 609	353 453	338 450
D0153	LEAD	OR	OR	8,174	4	01/15/80	IDLE (D) 50 MPH		411 639	410 674	400 488	377 429
R0175	LEAD	BP	OR	8,220	4	01/26/80	IDLE (D) 50 MPH				365 660	364 649
R0179	LEAD	BP	OR	8,250	0	01/28/80	IDLE (D) 50 MPH				350 653	348 644
R0183	UNL	BP	OR	8,280	14	01/29/80	IDLE (D) 50 MPH				346 639	345 625
R0185	UNL	BP	OR	8,309	0	01/30/80	IDLE (D) 50 MPH				408 694	409 684
R0193	UNL	BP	NW	8,339	0	02/04/80	IDLE (D) 50 MPH				383 672	386 661
R0198	UNL	BP	NW	8,380	0	02/06/80	IDLE (D) 50 MPH				321 612	321 615
R0202	UNL	OR	NW	8,406	0	02/08/80	IDLE (D) 50 MPH		330 559	327 572	350 514	323 496
R0207	UNL	OR	OR	8,445	0	02/09/80	IDLE (D) 50 MPH		360 550	350 566	380 517	356 498
R0213	UNL	OR	OR	8,730	30	02/14/80	IDLE (D) 50 MPH		333 547	325 553	364 510	345 490
R0215	UNL	OR	NW	8,760	0	02/15/80	IDLE (D) 50 MPH		333 537	323 552	356 489	329 468
R0218	UNL	OR	OR	8,927	15	02/18/80	IDLE (D) 50 MPH		350 622	345 639	363 544	346 526
R0221	UNL	OR	NW	8,958	0	02/19/80	IDLE (D) 50 MPH		415 638	417 654	390 535	381 521

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. NO. MODL YEAR MAKE MODL CID CONV. 9406 1979 VOLV 245 130 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE- TOP TEMP	-BEFORE- BOT TEMP	-AFTER- TOP TEMP	-AFTER- BOT TEMP
R0225	UNL	OR	OR	9,164	30	02/21/80	IDLE (D) 50 MPH		390 621	393 654	387 540	367 526
R0227	UNL	OR	NW	9,212	0	02/23/80	IDLE (D) 50 MPH		337 556	341 596	346 489	320 463
R0236	UNL	OR	OR	9,503	20	02/26/80	IDLE (D) 50 MPH		347 584	344 613	373 531	340 500
R0238	UNL	OR	NW	9,532	0	02/27/80	IDLE (D) 50 MPH		362 587	361 619	382 518	362 504
R0255	UNL	OR	OR	10,562	65	03/10/80	IDLE (D) 50 MPH		418 626	417 657	417 538	408 542
R0259	UNL	OR	NW	10,610	5	03/11/80	IDLE (D) 50 MPH		446 642	446 671	429 527	430 537
R0265	UNL	OR	OR	11,642	56	03/17/80	IDLE (D) 50 MPH		372 612	372 644	377 534	366 534
R0268	UNL	OR	NW	11,672	0	03/18/80	IDLE (D) 50 MPH		393 603	396 632	388 503	379 501
R0271	UNL	BP	OR	11,701	0	03/20/80	IDLE (D) 50 MPH				380 624	388 643
R0273	UNL	BP	NW	11,728	0	03/21/80	IDLE (D) 50 MPH				377 612	376 609
R0275	UNL	RE	OR	11,753	0	03/25/80	IDLE (D) 50 MPH		406 589	390 579	430 564	410 540
R0279	UNL	RE	NW	11,847	14	03/27/80	IDLE (D) 50 MPH		422 593	397 568	446 559	422 531

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. MODL NO. YEAR MAKE MODL CID CONV.												
9407 1979 CHEV MONZ 151 3 WAY												
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE - TOP BOT TEMP TEMP	- AFTER - TOP BOT TEMP TEMP		
D0149	LEAD	OR	OR	7,024	0	01/14/80	IDLE (D) 50 MPH		362 544	319 468	431 555	386 495
D0152	LEAD	OR	OR	7,057	3	01/15/80	IDLE (D) 50 MPH		428 576	394 486	465 565	408 484
D0167	LEAD	OR	OR	7,369	28	01/22/80	IDLE (D) 50 MPH		411 586	376 534	462 566	435 533
D0170	LEAD	OR	OR	7,589	4	01/24/80	IDLE (D) 50 MPH		447 595	406 532	477 593	446 549
D0188	LEAD	OR	OR	7,959	31	01/31/80	IDLE (D) 50 MPH		430 581	405 514	465 569	427 520
R0195	LEAD	BP	OR	8,006	0	02/05/80	IDLE (D) 50 MPH				315 549	309 522
R0197	LEAD	BP	OR	8,034	0	02/06/80	IDLE (D) 50 MPH				294 563	286 529
R0201	UNL	BP	OR	8,062	17	02/07/80	IDLE (D) 50 MPH				276 573	261 531
R0203	UNL	BP	OR	8,090	0	02/08/80	IDLE (D) 50 MPH				296 583	280 541
R0214	UNL	BP	NW	8,125	0	02/15/80	IDLE (D) 50 MPH				304 594	294 563
R0217	UNL	BP	NW	8,155	0	02/18/80	IDLE (D) 50 MPH				306 582	299 557
R0220	UNL	OR	NW	8,183	0	02/19/80	IDLE (D) 50 MPH		393 608	358 534	447 552	411 516
R0223	UNL	OR	OR	8,215	12	02/20/80	IDLE (D) 50 MPH		355 581	323 511	418 533	390 497
R0229	UNL	OR	OR	8,513	15	02/23/80	IDLE (D) 50 MPH		391 562	338 482	412 537	375 498

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

VEH. NO. MODL YEAR MAKE MODL CID CONV.													
9407 1979 CHEV MONZ 151 3 WAY													
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -		
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP	
R0234	UNL	OR	NW	8,550	0	02/26/80	IDLE (D) 50 MPH		454 634	400 556	476 609	445 574	
R0239	UNL	OR	OR	8,763	14	02/28/80	IDLE (D) 50 MPH		428 604	390 541	460 582	420 542	
R0242	UNL	OR	NW	8,794	0	02/29/80	IDLE (D) 50 MPH		398 596	365 520	426 555	391 518	
R0250	UNL	OR	OR	9,002	14	03/06/80	IDLE (D) 50 MPH		427 591	397 527	474 580	444 547	
R0258	UNL	OR	NW	9,039	0	03/11/80	IDLE (D) 50 MPH		416 603	381 528	490 590	460 557	
R0262	UNL	OR	OR	9,240	14	03/13/80	IDLE (D) 50 MPH		427 599	388 528	470 582	440 553	
R0263	UNL	OR	NW	9,277	0	03/14/80	IDLE (D) 50 MPH		421 583	393 538	462 606	436 575	
R0267	UNL	OR	OR	10,305	52	03/18/80	IDLE (D) 50 MPH		400 550	376 507	455 566	425 534	
R0270	UNL	OR	NW	10,335	0	03/19/80	IDLE (D) 50 MPH		407 559	382 518	461 586	433 551	
R0274	UNL	OR	OR	11,365	57	03/24/80	IDLE (D) 50 MPH		592 570	374 539	473 597	439 562	
R0276	UNL	OR	NW	11,392	0	03/25/80	IDLE (D) 50 MPH		380 550	365 523	453 579	425 550	
R0281	UNL	BP	OR	11,422	0	03/31/80	IDLE (D) 50 MPH				333 554	327 551	
R0283	UNL	BP	NW	11,450	0	04/01/80	IDLE (D) 50 MPH				324 549	324 558	
R0287	UNL	RE	OR	11,482	10	04/15/80	IDLE (D) 50 MPH		347 464	380 543	433 545	404 522	

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX H (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF CATALYST TEST TEMPERATURES BY INDIVIDUAL VEHICLE

										VEH. NO.		MODL YEAR		MAKE MODL		CID CONV.	
										9407	1979	CHEV	MONZ	151	3	WAY	
TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	SPEED	CONV. POS	-BEFORE -		- AFTER -						
									TOP TEMP	BOT TEMP	TOP TEMP	BOT TEMP					
R0288	UNL	RE	NW	11,514	0	04/16/80	IDLE (D) 50 MPH		381 540	365 522	416 535	401 522					

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

CATALYST DETERIORATION/REJUVENATION

APPENDIX I - LISTING OF PROPANE ENRICHMENT
RESULTS BY INDIVIDUAL VEHICLE

Legend

VEH. NO. - Vehicle number

MODL YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CONV. - Type of catalytic converter

TEST NO. - Test number; or INSP for as-received status

FUEL - Fuel type

UNL - Unleaded

LEAD - Leaded

CONV - Converter status

OR - Original

BP - Bypass

RE - Replaced

O₂ SENSOR - Oxygen Sensor

NA - Not Applicable (Oxidation Catalyst)

NW - Replacement 3-way

OR - Original 3-way

ODOM - Odometer reading at beginning of test sequence

GAL. - Gallons of fuel used since prior test sequence

DATE - Date of test (month/day/year)

SPEC - Manufacturer specification

MEAS - Measured readings

IDLE RPM - Idle RPM in specified transmission position

TIMING - Timing measure

+99 - No timing measure, not adjustable

PROPANE ENRICHMENT - Propane injection procedure

DRIVE - Readings taken with vehicle in drive

NEUTRAL - Readings taken with vehicle in neutral

W/OUT - Without propane enrichment

WITH - With propane enrichment

APPENDIX I

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
INSP				8,277		05/09/79	SPEC MEAS 600 620	+08 +10	620 600 880 960
D0001	UNL	OR	NA	8,316	0	05/16/79	MEAS 600	+08	600 600 840 880
D0003	UNL	OR	NA	8,394	0	05/21/79	MEAS 600	+08	600 580 800 850
D0005	UNL	OR	NA	8,442	8	05/23/79	MEAS 600	+08	600 650 800 870
D0008	UNL	BP	NA	8,694	5	06/05/79	MEAS 600	+08	600 580 800 840
D0010	UNL	BP	NA	8,733	0	06/12/79	MEAS 570	+08	570 590 750 840
D0013	UNL	BP	NA	8,760	6	06/14/79	MEAS 590	+08	590 590 790 840
D0034	LEAD	OR	NA	9,046	40	07/11/79	MEAS 600	+08	600 600 800 850
D0038	LEAD	OR	NA	9,307	15	07/24/79	MEAS 590	+02	540 580 660 730
D0072	LEAD	OR	NA	9,770	41	08/25/79	MEAS 570	+10	570 600 750 880
D0093	LEAD	OR	NA	10,069	20	09/13/79	MEAS 580	+10	580 600 790 860
D0109	UNL	BP	NA	10,446	72	10/10/79	MEAS 600	+09	600 600 820 860
D0118	UNL	RE	NA	10,532	0	10/24/79	MEAS 600	+10	600 600 780 880
R0154	LEAD	OR	NA	11,750	91	01/16/80	MEAS 600	+09	600 600 860 920
R0157	LEAD	OR	NA	11,795	3	01/17/80	MEAS 590	+09	590 600 830 920
R0165	LEAD	OR	NA	11,831	6	01/22/80	MEAS 590	+08	590 590 810 900
R0173	UNL	BP	NA	11,877	22	01/25/80	MEAS 550	+08	580 580 740 860
R0178	UNL	OR	NA	11,909	0	01/28/80	MEAS 590	+09	590 590 870 920
R0184	UNL	OR	NA	12,118	17	01/30/80	MEAS 600	+08	600 600 810 880
R0189	UNL	OR	NA	12,331	18	02/01/80	MEAS 560	+04	600 610 760 890
R0216	UNL	OR	NA	12,612	19	02/15/80	MEAS 600	+08	600 600 750 820
R0222	UNL	OR	NA	12,823	20	02/19/80	MEAS 550	+08	550 550 730 800

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9401 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT -			
									- DRIVE - W/OUT WITH	- NEUTRAL - W/OUT WITH		
R0232	UNL	OR	NA	13,860	61	02/25/80 MEAS	600	+12	600	600	800	900
R0244	UNL	OR	NA	14,894	65	03/04/80 MEAS	550	+08	550	560	770	820
R0247	UNL	RE	NA	14,934	0	03/05/80 MEAS	550	+08	550	550	750	800

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
INSP				9,287		07/27/79	SPEC MEAS	600 +08 600 +11	600 680 760 1060
D0057	UNL	OR	NA	9,287	0	08/09/79	MEAS	630 +08	630 660 880 1040
D0059	UNL	OR	NA	9,319	0	08/13/79	MEAS	600 +09	600 650 700 820
D0077	UNL	OR	NA	9,462	0	08/29/79	MEAS	620 +07	620 670 840 1100
D0083	UNL	BP	NA	9,486	0	09/04/80	MEAS	620 +10	620 660 820 1070
D0092	UNL	BP	NA	9,567	0	09/13/79	MEAS	600 +09	600 680 800 1060
D0095	UNL	BP	NA	9,591	0	09/14/79	MEAS	620 +10	620 660 800 1100
D0100	LEAD	OR	NA	9,814	39	09/25/79	MEAS	680 +10	680 680 980 1080
D0119	LEAD	OR	NA	10,174	21	10/26/79	MEAS	620 +10	620 680 900 1100
D0126	LEAD	OR	NA	10,407	20	11/12/79	MEAS	660 +09	660 680 940 1050
D0136	LEAD	OR	NA	10,678	19	12/01/79	MEAS	670 +09	670 690 1000 1200
D0142	LEAD	OR	NA	10,922	18	12/10/79	MEAS	650 +08	650 670 900 1085
D0148	LEAD	OR	NA	11,186	17	01/14/80	MEAS	620 +09	620 660 890 1060
D0151	LEAD	OR	NA	11,223	0	01/15/80	MEAS	640 +11	640 670 930 1090
D0163	LEAD	OR	NA	11,256	0	01/21/80	MEAS	630 +08	630 660 920 1090
D0169	LEAD	OR	NA	11,593	37	01/24/80	MEAS	640 +08	640 660 950 1180
D0174	LEAD	OR	NA	11,841	4	01/26/80	MEAS	630 +10	630 670 960 1200
D0190	UNL	BP	NA	11,876	21	02/01/80	MEAS	620 +08	640 660 840 1040
R0200	UNL	OR	NA	11,946	0	02/07/80	MEAS	660 +10	660 680 900 1060
R0212	UNL	OR	NA	12,133	19	02/14/80	MEAS	600 +10	600 650 800 980
R0219	UNL	OR	NA	12,347	19	02/18/80	MEAS	600 +08	600 650 800 1080
R0224	UNL	OR	NA	12,621	20	02/20/80	MEAS	620 +08	620 650 850 1050

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9402 1979 FORD THND 302 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT -				
									- DRIVE -	- NEUTRAL -	- DRIVE -	- NEUTRAL -	
									W/OUT	WITH	W/OUT	WITH	
R0230	UNL	OR	NA	12,902	41	02/23/80	MEAS	600	+08	600	650	800	1100
R0243	UNL	OR	NA	13,930	69	02/29/80	MEAS	650	+08	650	650	900	1100
R0246	UNL	OR	NA	14,940	71	03/05/80	MEAS	600	+08	600	640	880	1050
R0252	UNL	RE	NA	14,990	0	03/07/80	MEAS	640	+08	640	650	880	1050

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH			
INSP				6,488		05/17/79	SPEC MEAS 500	+20 +21	500	560	600	700
D0004	UNL	OR	NA	6,818	7	05/22/79	MEAS 500	+20	500	580	660	780
D0006	UNL	OR	NA	6,857	2	05/23/79	MEAS 500	+20	500	540	620	700
D0007	UNL	OR	NA	6,886	0	05/25/79	MEAS 500	+20	500	550	630	710
D0009	UNL	BP	NA	6,950	0	06/08/79	MEAS 530	+20	530	540	650	710
D0011	UNL	BP	NA	7,014	6	06/13/79	MEAS 520	+20	520	540	640	700
D0014	UNL	BP	NA	7,069	0	06/23/79	MEAS 460	+21	460	520	500	630
D0049	LEAD	OR	NA	7,449	28	08/03/79	MEAS 520	+18	520	560	610	700
D0073	LEAD	OR	NA	7,767	27	08/25/79	MEAS 510	+17	510	550	650	740
D0088	LEAD	OR	NA	7,956	12	09/11/79	MEAS 560	+20	560	630	690	750
D0098	LEAD	OR	NA	8,161	13	09/19/79	MEAS 500	+21	500	560	600	740
D0103	LEAD	OR	NA	8,429	14	09/28/79	MEAS 500	+22	500	560	640	750
D0111	LEAD	OR	NA	8,618	12	10/11/79	MEAS 550	+21	550	550	700	750
D0121	LEAD	OR	NA	8,837	13	10/29/79	MEAS 500	+21	620	630	800	900
D0127	LEAD	OR	NA	9,017	13	11/12/79	MEAS 540	+22	540	570	670	760
D0135	LEAD	OR	NA	9,244	14	11/26/79	MEAS 525	+22	540	560	680	750
D0141	LEAD	OR	NA	9,430	12	12/10/79	MEAS 540	+21	540	560	680	750
D0155	LEAD	OR	NA	9,856	19	01/16/80	MEAS 510	+20	510	550	620	760
D0158	LEAD	OR	NA	9,889	0	01/17/80	MEAS 520	+20	520	540	630	740
D0160	LEAD	OR	NA	9,922	0	01/18/80	MEAS 480	+20	480	500	550	650
D0164	UNL	BP	NA	9,961	19	01/21/80	MEAS 520	+20	530	540	670	750
R0168	UNL	OR	NA	9,993	0	01/24/80	MEAS 530	+19	530	540	680	750

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9403 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
R0176	UNL	OR	NA	10,220	16	01/26/80 MEAS	540	+18	540 550 680 760
R0182	UNL	OR	NA	10,490	16	01/29/80 MEAS	530	+19	530 550 670 750
R0187	UNL	OR	NA	10,739	15	01/31/80 MEAS	550	+20	540 550 700 760
R0206	UNL	OR	NA	10,931	16	02/09/80 MEAS	530	+20	530 550 680 750
R0231	UNL	OR	NA	12,015	62	02/25/80 MEAS	550	+20	550 550 650 750
R0245	UNL	OR	NA	13,046	61	03/05/80 MEAS	550	+20	550 580 650 700
R0251	UNL	RE	NA	13,114	0	03/07/80 MEAS	550	+20	550 550 650 760

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
INSP				7,231		05/15/79	SPEC MEAS 500 480	+20 +20	480 520 580 620
D0018	UNL	OR	NA	7,283	0	06/27/79	MEAS 580	+20	580 520 700 824
D0020	UNL	OR	NA	7,315	5	06/28/79	MEAS 560	+21	560 620 680 840
D0022	UNL	OR	NA	7,349	2	06/29/79	MEAS 540	+21	540 640 700 860
D0027	UNL	BP	NA	7,380	0	07/07/79	MEAS 520	+21	520 580 700 810
D0031	UNL	BP	NA	7,437	6	07/10/79	MEAS 570	+21	580 610 740 840
D0033	UNL	BP	NA	7,492	0	07/11/79	MEAS 525	+18	530 530 650 750
D0054	LEAD	OR	NA	7,955	40	08/08/79	MEAS 550	+21	550 580 690 770
D0082	LEAD	OR	NA	8,266	24	08/31/79	MEAS 530	+18	530 590 640 810
D0094	LEAD	OR	NA	8,358	12	09/13/79	MEAS 550	+21	550 580 690 775
D0101	LEAD	OR	NA	8,528	10	09/25/79	MEAS 560	+20	560 580 720 780
D0107	LEAD	OR	NA	8,727	15	10/05/79	MEAS 520	+21	520 540 680 780
D0113	LEAD	OR	NA	8,897	11	10/12/79	MEAS 580	+20	580 620 740 860
D0122	LEAD	OR	NA	9,213	16	10/30/79	MEAS 520	+22	520 570 680 780
D0124	LEAD	OR	NA	9,363	14	11/07/79	MEAS 520	+20	520 580 650 800
D0140	LEAD	OR	NA	9,627	14	12/07/79	MEAS 600	+20	600 620 740 840
D0146	LEAD	OR	NA	9,842	12	12/15/79	MEAS 550	+20	560 590 730 830
D0156	LEAD	OR	NA	10,098	9	01/16/80	MEAS 530	+19	530 560 650 780
D0159	LEAD	OR	NA	10,134	0	01/17/80	MEAS 530	+18	530 560 650 800
D0172	UNL	BP	NA	10,165	18	01/25/80	MEAS 530	+18	530 550 660 790
R0177	UNL	OR	NA	10,199	0	01/26/80	MEAS 510	+19	510 570 670 820
R0180	UNL	OR	NA	10,385	16	01/28/80	MEAS 540	+17	540 570 720 800

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9404 1979 OLDS CUTL 260 OXID.

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - W/OUT WITH	-NEUTRAL - W/OUT WITH
R0186	UNL	OR	NA	10,633	16	01/31/80 MEAS	550	+20	540	550 650 750
R0205	UNL	OR	NA	10,864	15	02/09/80 MEAS	520	+20	520	550 650 750
R0211	UNL	OR	NA	11,082	16	02/14/80 MEAS	530	+20	530	550 650 760
R0233	UNL	OR	NA	12,119	67	02/25/80 MEAS	550	+20	550	620 650 780
R0248	UNL	OR	NA	13,149	61	03/06/80 MEAS	550	+20	550	580 700 750
R0253	UNL	RE	NA	13,179	0	03/07/80 MEAS	550	+20	550	600 700 850

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
INSP				4,044		05/16/79	SPEC MEAS	640 +99 650 +99	650 630 900 980
D0021	UNL	OR	OR	4,179	5	06/28/79	MEAS	700 +99	700 700 1040 1040
D0023	UNL	OR	OR	4,210	0	06/29/79	MEAS	720 +99	720 720 1020 1020
D0026	UNL	OR	OR	4,282	0	07/05/79	MEAS	650 +99	650 650 1000 1000
D0028	UNL	BP	OR	4,319	8	07/07/79	MEAS	650 +99	650 650 950 950
D0030	UNL	BP	OR	4,345	0	07/09/79	MEAS	650 +99	650 650 1020 1020
D0032	UNL	BP	OR	4,373	0	07/10/79	MEAS	650 +99	690 690 1040 1040
D0065	LEAD	OR	OR	4,731	58	08/15/79	MEAS	680 +99	680 680 1020 1110
D0081	LEAD	OR	OR	4,902	14	08/31/79	MEAS	670 +99	670 670 1000 1080
D0090	LEAD	OR	OR	5,034	13	09/12/79	MEAS	670 +99	670 670 1050 1050
D0104	LEAD	OR	OR	5,250	16	09/28/79	MEAS	670 +99	670 680 960 1080
D0108	LEAD	OR	OR	5,466	15	10/05/79	MEAS	680 +99	660 660 1080 1080
D0110	LEAD	OR	OR	5,719	17	10/11/79	MEAS	680 +99	680 680 1000 1060
D0123	LEAD	OR	OR	5,954	13	10/30/79	MEAS	660 +99	660 660 1020 1040
D0133	LEAD	OR	OR	6,050	13	11/17/79	MEAS	660 +99	660 660 1120 1120
D0139	LEAD	OR	OR	6,242	28	12/06/79	MEAS	700 +99	700 700 980 1080
D0144	LEAD	OR	OR	6,637	16	12/15/79	MEAS	660 +99	660 660 1050 1060
D0161	LEAD	OR	OR	6,875	7	01/18/80	MEAS	640 +99	640 640 990 1050
D0166	LEAD	OR	OR	6,944	4	01/22/80	MEAS	660 +99	650 650 1000 1060
D0196	LEAD	OR	OR	7,057	17	02/05/80	MEAS	680 +99	680 720 1150 1300
D0228	LEAD	OR	OR	7,152	5	02/23/80	MEAS	670 +99	670 670 1050 1100
R0235	LEAD	BP	OR	7,184	10	02/26/80	MEAS	650 +99	650 650 1050 1200

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
 NO. YEAR MAKE MODL CID CONV.
 9405 1979 MERC MARQ 351 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE		IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH			
R0237	LEAD	BP	OR	7,213	0	02/27/80	MEAS	650	+99	650	650	1020	1100
R0240	UNL	BP	OR	7,241	18	02/28/80	MEAS	680	+99	680	700	1050	1100
R0241	UNL	BP	OR	7,269	0	02/29/80	MEAS	650	+99	650	650	1050	1100
R0249	UNL	BP	NW	7,302	0	03/06/80	MEAS	700	+99	700	700	1100	1140
R0254	UNL	BP	NW	7,329	0	03/10/80	MEAS	660	+99	660	660	1050	1100
R0260	UNL	OR	NW	7,358	0	03/11/80	MEAS	650	+99	650	650	1000	1100
R0261	UNL	OR	OR	7,390	16	03/12/80	MEAS	680	+99	680	680	1050	1150
R0264	UNL	OR	OR	7,629	13	03/14/80	MEAS	650	+99	650	650	1050	1150
R0266	UNL	OR	NW	7,666	0	03/17/80	MEAS	700	+99	700	760	1100	1300
R0269	UNL	OR	OR	7,910	20	03/19/80	MEAS	660	+99	660	720	1060	1100
R0272	UNL	OR	NW	7,941	0	03/21/80	MEAS	650	+99	650	680	1000	1100
R0280	UNL	OR	OR	8,144	15	03/28/80	MEAS	650	+99	650	650	1000	1100
R0282	UNL	OR	NW	8,174	0	03/31/80	MEAS	660	+99	660	660	1000	1080
R0285	UNL	OR	OR	8,473	23	04/03/80	MEAS	650	+99	650	650	980	1100
R0286	UNL	OR	NW	8,504	9	04/07/80	MEAS	660	+99	660	680	1000	1100
R0293	UNL	OR	NW	9,369	52	04/30/80	MEAS	650	+99	650	650	1050	1100
R0297	UNL	OR	OR	9,543	4	05/13/80	MEAS	700	+99	700	700	1050	1150
R0299	UNL	BP	OR	9,600	0	05/19/80	MEAS	700	+99	700	700	1050	1100
R0300	UNL	BP	NW	9,634	0	05/20/80	MEAS	700	+99	700	700	1050	1100
R0303	UNL	RE	OR	9,735	16	05/28/80	MEAS	680	+99	680	700	1050	1100
R0306	UNL	RE	NW	9,846	0	06/02/80	MEAS	680	+99	680	680	1050	1100

AUTOMOTIVE TESTING LABORATORIES, INC.
 651 CHAMBERS ROAD, SUITE # 200
 AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9406 1979 VOLV 245 130 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
INSP				5,795		05/10/79	SPEC MEAS 900 820	+12 +12	650 670 820 840
D0039	UNL	OR	OR	5,795	0	07/25/79	MEAS 850	+14	780 780 920 1170
D0044	UNL	OR	OR	5,831	0	07/28/79	MEAS 900	+12	780 860 900 1170
D0055	UNL	OR	OR	5,907	0	08/09/79	MEAS 880	+12	750 860 880 1200
D0067	UNL	BP	OR	6,002	5	08/16/79	MEAS 890	+11	770 840 890 1180
D0078	UNL	BP	OR	6,075	0	08/30/79	MEAS 920	+12	770 850 920 1200
D0080	UNL	BP	OR	6,101	0	08/31/79	MEAS 860	+11	760 850 860 1170
D0091	LEAD	OR	OR	6,371	26	09/12/79	MEAS 860	+12	800 880 1060 1300
D0096	LEAD	OR	OR	6,597	13	09/17/79	MEAS 900	+12	750 830 900 1100
D0099	LEAD	OR	OR	6,853	12	09/24/79	MEAS 880	+13	780 850 880 1140
D0106	LEAD	OR	OR	7,036	13	10/04/79	MEAS 860	+10	760 840 860 1100
D0120	LEAD	OR	OR	7,275	14	10/27/79	MEAS 900	+12	760 840 900 1140
D0134	LEAD	OR	OR	7,516	12	11/21/79	MEAS 900	+11	780 850 900 1160
D0138	LEAD	OR	OR	7,641	13	12/04/79	MEAS 840	+12	820 880 1000 1220
D0143	LEAD	OR	OR	7,934	17	12/11/79	MEAS 950	+11	800 860 950 1200
D0150	LEAD	OR	OR	8,144	3	01/14/80	MEAS 810	+11	840 910 1010 1500
D0153	LEAD	OR	OR	8,174	4	01/15/80	MEAS 1000	+12	810 880 1000 1300
R0175	LEAD	BP	OR	8,220	4	01/26/80	MEAS 900	+12	830 890 1100 1490
R0179	LEAD	BP	OR	8,250	0	01/28/80	MEAS 990	+12	820 880 990 1220
R0183	UNL	BP	OR	8,280	14	01/29/80	MEAS 850	+12	830 900 1070 1310
R0185	UNL	BP	OR	8,309	0	01/30/80	MEAS 980	+12	800 880 980 1200
R0193	UNL	BP	NW	8,339	0	02/04/80	MEAS 850	+15	820 880 1050 1650

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9406 1979 VOLV 245 130 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE		IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH			
R0198	UNL	BP	NW	8,380	0	02/06/80	MEAS	850	+12	850	1000	1100	2000
R0202	UNL	OR	NW	8,406	0	02/08/80	MEAS	830	+12	900	980	1000	1080
R0207	UNL	OR	OR	8,445	0	02/09/80	MEAS	900	+13	760	820	900	1200
R0213	UNL	OR	OR	8,730	30	02/14/80	MEAS	850	+12	800	830	1050	1300
R0215	UNL	OR	NW	8,760	0	02/15/80	MEAS	850	+12	800	850	1050	1300
R0218	UNL	OR	OR	8,927	15	02/18/80	MEAS	830	+12	800	900	1000	1300
R0221	UNL	OR	NW	8,958	0	02/19/80	MEAS	930	+12	750	900	930	1300
R0225	UNL	OR	OR	9,164	30	02/21/80	MEAS	850	+12	800	850	1050	1250
R0227	UNL	OR	NW	9,212	0	02/23/80	MEAS	850	+12	800	900	1050	1300
R0236	UNL	OR	OR	9,503	20	02/26/80	MEAS	850	+12	800	900	1050	1300
R0238	UNL	OR	NW	9,532	0	02/27/80	MEAS	820	+12	800	880	1000	1300
R0255	UNL	OR	OR	10,562	65	03/10/80	MEAS	850	+12	820	900	1050	1150
R0259	UNL	OR	NW	10,610	5	03/11/80	MEAS	850	+12	800	880	1050	1300
R0265	UNL	OR	OR	11,642	56	03/17/80	MEAS	840	+12	800	870	1010	1300
R0268	UNL	OR	NW	11,672	0	03/18/80	MEAS	880	+12	800	900	1080	1400
R0271	UNL	BP	OR	11,701	0	03/20/80	MEAS	820	+11	780	820	1000	1120
R0273	UNL	BP	NW	11,728	0	03/21/80	MEAS	850	+12	800	900	1050	1250
R0275	UNL	RE	OR	11,753	0	03/25/80	MEAS	850	+11	800	850	1050	1250
R0279	UNL	RE	NW	11,847	14	03/27/80	MEAS	880	+11	820	840	1080	1210

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE	IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - -NEUTRAL - W/OUT WITH W/OUT WITH
INSP				5,182		07/27/79	SPEC MEAS	850 +14 830 +13	830 840 1100 1200
D0043	UNL	OR	OR	5,182	0	07/27/79	MEAS	800 +13	810 830 1000 1060
D0056	UNL	OR	OR	5,271	0	08/09/79	MEAS	850 +15	850 850 1100 1200
D0060	UNL	OR	OR	5,299	0	08/13/79	MEAS	820 +14	820 820 1050 1150
D0064	UNL	BP	OR	5,330	0	08/14/79	MEAS	820 +14	820 840 1080 1180
D0075	UNL	BP	OR	5,384	0	08/27/79	MEAS	840 +14	840 850 1130 1240
D0076	UNL	BP	OR	5,408	0	08/29/79	MEAS	850 +13	830 850 1110 1220
D0097	LEAD	OR	OR	5,646	14	09/18/79	MEAS	800 +13	800 840 1100 1200
D0105	LEAD	OR	OR	5,870	26	10/03/79	MEAS	800 +14	800 820 1040 1160
D0112	LEAD	OR	OR	6,121	12	10/12/79	MEAS	800 +14	800 820 1050 1140
D0131	LEAD	OR	OR	6,341	15	11/13/79	MEAS	840 +14	840 850 1100 1200
D0137	LEAD	OR	OR	6,606	13	12/03/79	MEAS	810 +14	810 830 1120 1220
D0145	LEAD	OR	OR	6,831	14	12/15/79	MEAS	810 +14	810 830 1050 1150
D0147	LEAD	OR	OR	7,004	0	12/27/79	MEAS	850 +13	850 860 1120 1240
D0149	LEAD	OR	OR	7,024	0	01/14/80	MEAS	820 +12	820 830 1200 1350
D0152	LEAD	OR	OR	7,057	3	01/15/80	MEAS	820 +13	820 850 1100 1200
D0167	LEAD	OR	OR	7,369	28	01/22/80	MEAS	820 +14	820 840 1100 1200
D0170	LEAD	OR	OR	7,589	4	01/24/80	MEAS	840 +12	870 890 1140 1300
D0188	LEAD	OR	OR	7,959	31	01/31/80	MEAS	850 +13	830 840 1200 1250
R0195	LEAD	BP	OR	8,006	0	02/05/80	MEAS	900 +13	900 920 1300 1350
R0197	LEAD	BP	OR	8,034	0	02/06/80	MEAS	900 +13	900 950 1200 1400
R0201	UNL	BP	OR	8,062	17	02/07/80	MEAS	900 +13	900 910 1300 1380

AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX I (CONT'D)

CATALYST DETERIORATION / REJUVENATION

LISTING OF PROPANE ENRICHMENT RESULTS BY INDIVIDUAL VEHICLE

VEH. MODL
NO. YEAR MAKE MODL CID CONV.
9407 1979 CHEV MONZ 151 3 WAY

TEST NO.	FUEL	CONV	O2 SENS	ODOM	GAL.	DATE		IDLE RPM	TIMING	-PROPANE ENRICHMENT - - DRIVE - W/OUT WITH	-NEUTRAL - W/OUT WITH
R0203	UNL	BP	OR	8,090	0	02/08/80	MEAS	840	+12	840	860 1300 1380
R0214	UNL	BP	NW	8,125	0	02/15/80	MEAS	850	+16	850	900 1150 1400
R0217	UNL	BP	NW	8,155	0	02/18/80	MEAS	880	+14	880	910 1250 1400
R0220	UNL	OR	NW	8,183	0	02/19/80	MEAS	850	+14	850	900 1150 1300
R0223	UNL	OR	OR	8,215	12	02/20/80	MEAS	850	+14	850	850 1150 1250
R0229	UNL	OR	OR	8,513	15	02/23/80	MEAS	850	+14	850	850 1150 1250
R0234	UNL	OR	NW	8,550	0	02/26/80	MEAS	850	+14	850	850 1150 1250
R0239	UNL	OR	OR	8,763	14	02/28/80	MEAS	850	+14	850	850 1150 1200
R0242	UNL	OR	NW	8,794	0	02/29/80	MEAS	850	+14	850	850 1050 1150
R0250	UNL	OR	OR	9,002	14	03/06/80	MEAS	850	+14	850	860 1200 1250
R0258	UNL	OR	NW	9,039	0	03/11/80	MEAS	850	+14	850	860 1150 1300
R0262	UNL	OR	OR	9,240	14	03/13/80	MEAS	850	+14	850	900 1150 1300
R0263	UNL	OR	NW	9,277	0	03/14/80	MEAS	850	+14	850	850 1150 1220
R0267	UNL	OR	OR	10,305	52	03/18/80	MEAS	840	+12	840	860 1120 1300
R0270	UNL	OR	NW	10,335	0	03/19/80	MEAS	840	+13	840	860 1060 1180
R0274	UNL	OR	OR	11,365	57	03/24/80	MEAS	830	+14	830	850 1150 1250
R0276	UNL	OR	NW	11,392	0	03/25/80	MEAS	840	+14	840	850 1120 1250
R0281	UNL	BP	OR	11,422	0	03/31/80	MEAS	850	+14	850	880 1100 1250
R0283	UNL	BP	NW	11,450	0	04/01/80	MEAS	840	+14	840	840 1150 1250
R0287	UNL	RE	OR	11,482	10	04/15/80	MEAS	840	+14	840	850 1100 1160
R0288	UNL	RE	NW	11,514	0	04/16/80	MEAS	850	+14	850	850 1150 1260

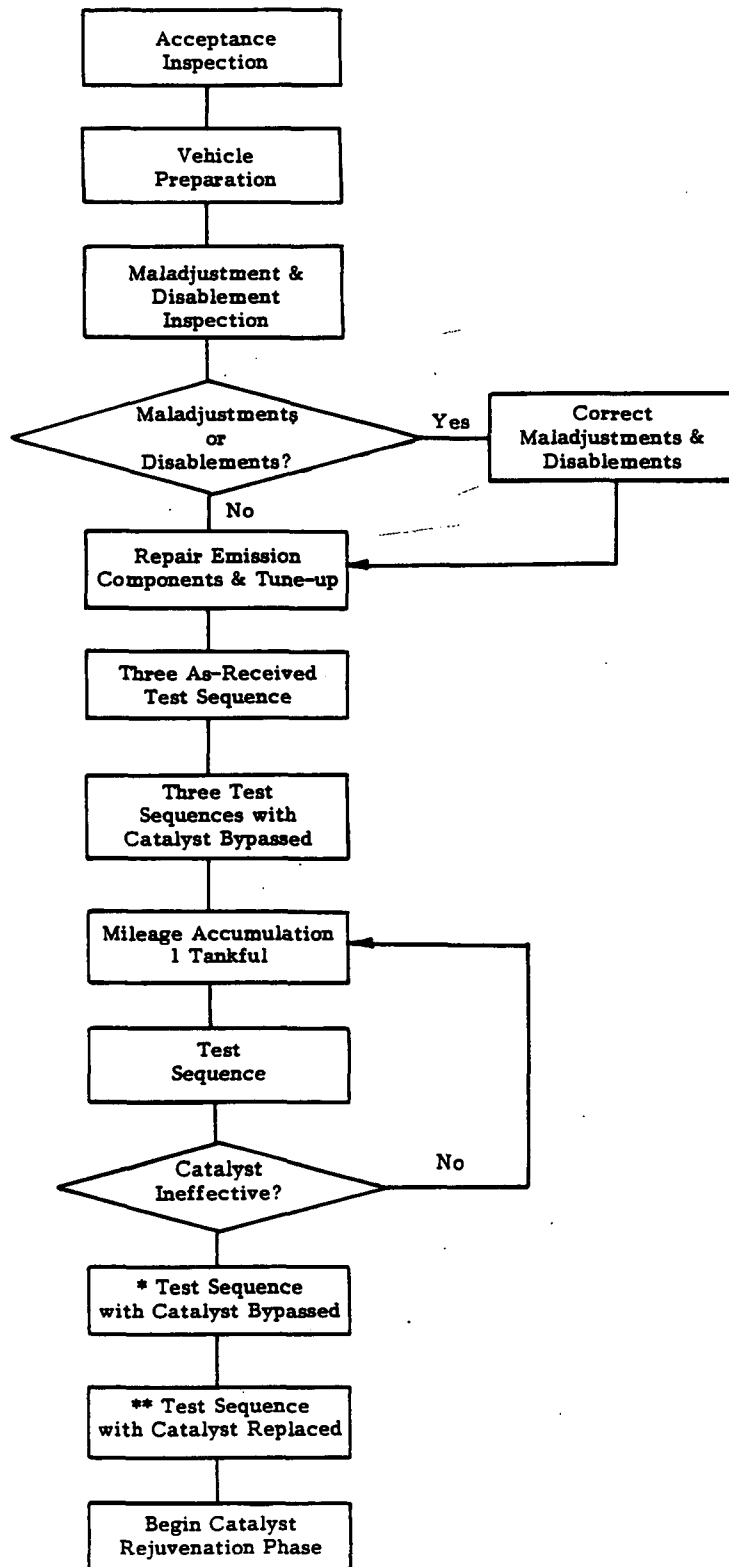
AUTOMOTIVE TESTING LABORATORIES, INC.
651 CHAMBERS ROAD, SUITE # 200
AURORA, COLORADO 80011

APPENDIX J
LISTING OF LEADED FUEL ANALYSES

<u>Sample Date</u>	<u>Reid Vapor Pressure</u>	<u>Lead Content (Grams/Gallon)</u>
6 Sep 1979	9.4	.84
10 Sep 1979	9.8	.75
17 Sep 1979	9.9	1.22
24 Sep 1979		.90
1 Oct 1979	8.5	1.49
2 Oct 1979	9.3	1.32
10 Oct 1979	9.6	1.32
15 Oct 1979	10.7	1.14
23 Oct 1979	9.9	1.16
8 Nov 1979	10.3	.54
12 Nov 1979	10.0	.43
19 Nov 1979		.45
26 Nov 1979		.50
3 Dec 1979		1.30
10 Dec 1979		1.25

APPENDIX K - VEHICLE FLOW DIAGRAMS

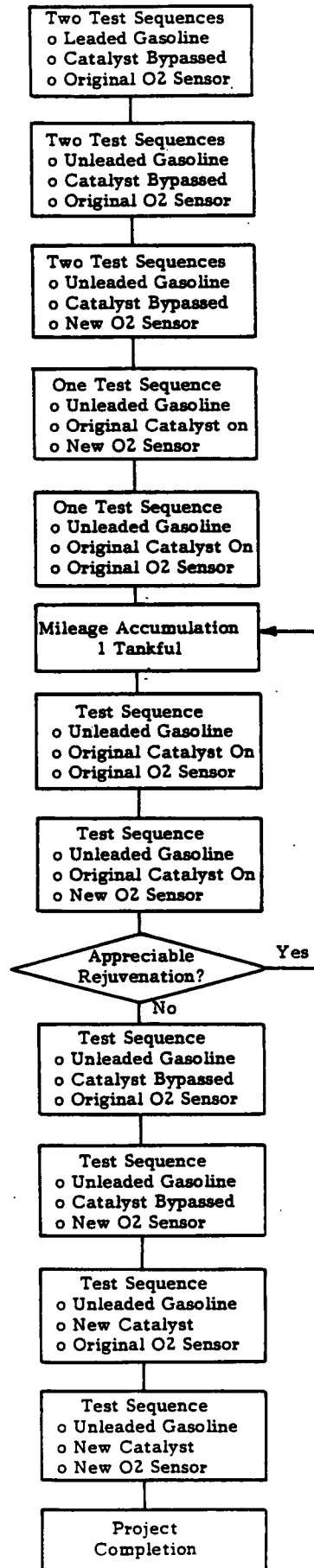
VEHICLE FLOW DIAGRAM
CATALYST DETERIORATION - ALL VEHICLES



*Work effort modification precluded this sequence for 3-way catalyst vehicles

**Work effort modification precluded this sequence if not already complete

VEHICLE FLOW DIAGRAM
CATALYST REJUVENATION - 3 WAY



VEHICLE FLOW DIAGRAM
CATALYST REJUVENATION - OXIDATION

