National Law Enforcement and Corrections Technology Center
P. O. Box 1160
Rockville, MD 20849–1160

1999 Model Year Patrol Vehicle Testing

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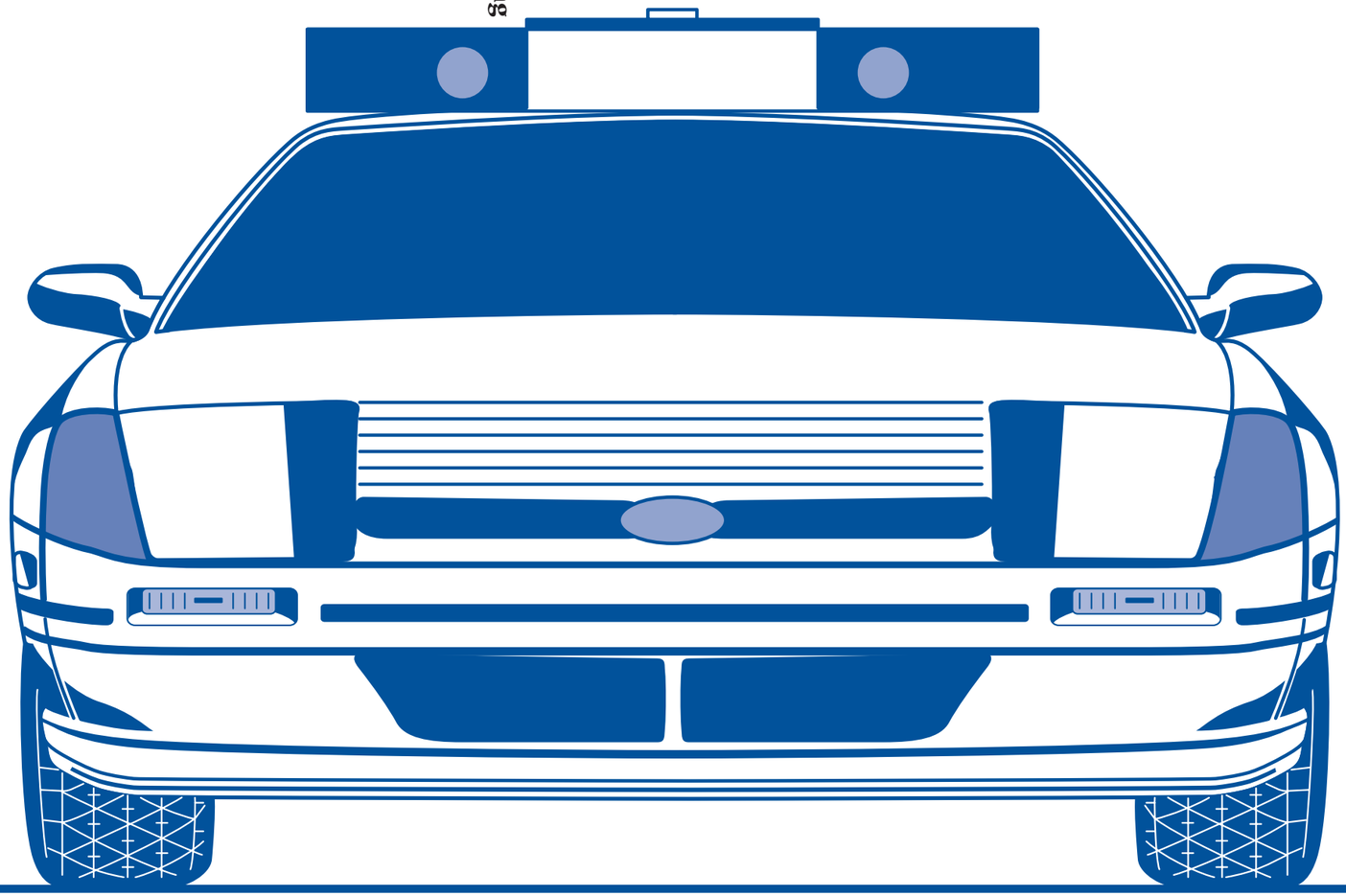

A Program of the National Institute of Justice

National Law Enforcement and Corrections Technology Center

U.S. Department of Justice
Office of Justice Programs
National Institute of Justice

1999 Model Year Patrol Vehicle Testing

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Prepared by:

Michigan State Police
Training Division

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Eaton Rapids, Michigan

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National Law Enforcement and Corrections Technology Center
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The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and Office for Victims of Crime.

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PREFACE

We are pleased to announce the results of the 1999 model year police vehicle evaluation. This is our 23rd year of conducting the tests. A large number of people representing agencies from around the United States and Canada came to Michigan to view the testing first hand, and we very much appreciate their interest and participation. We are grateful for the opportunity to provide the law enforcement community with the information needed to make informed vehicle selection decisions.

The 13 vehicles evaluated this year were:

Ford Police Interceptor	4.6L SPFI
Ford Police Interceptor	4.6L SPFI (CNG)
Chevrolet Lumina	3.8L SPFI
Volvo S–70T5 Sedan	2.3L MPFI (Turbocharged)
Volvo V–70T5 Wagon	2.3L MPFI (Turbocharged)
Chevrolet Camaro	5.7L SPFI (Automatic)
Chevrolet Camaro	5.7L SPFI (6-Speed Manual)
Chevrolet Tahoe	5.7L SPFI (2-Wheel Drive)
Chrysler Jeep Cherokee	4.0L MPFI (2-Wheel Drive)
Chrysler Jeep Cherokee	4.0L MPFI (4-Wheel Drive)
Chevrolet Tahoe*	5.7L SPFI (4-Wheel Drive)
Ford Expedition*	5.4L SPFI (4-Wheel Drive)
Ford Explorer*	4.0L MPFI (2-Wheel Drive)

* The test information on these vehicles can be found only in Appendix II—Performance of 1999 Model "Special-Service-Package" vehicles. "Special-Service-Package" vehicles are *not engineered for high-speed or pursuit applications.* Consequently, they were evaluated in all test categories *except* Vehicle Dynamics, (high-speed handling), because that test is designed to simulate pursuit situations. Please refer to the Vehicle Dynamics section and to Appendix II for further explanation.

All of the vehicles were tested with a clean roof (no overhead light or lightbar) and without A-Pillar mounted spotlights. We believe this is the best way to ensure all of the cars are tested on an equal basis. Remember that once overhead lights, spotlights, radios, sirens, and other emergency equipment are installed, overall performance may be somewhat lower than we report.

Chrysler Proving Grounds—Acceleration, Top Speed, and Braking—Note the following:

- Since the braking systems on the two Chevrolet Camaros are identical, and the test weight of the two vehicles is nearly identical, only the automatic transmission-equipped car was submitted for brake testing.
- All vehicles were tested with the transmission selector in "overdrive" except the Jeeps, which were driven in "3," and the Chevrolet Camaro equipped with the 6-speed manual transmission, which was driven in fifth gear during the top-speed run.
- Vehicles equipped with electronic speed limiters are noted in the Acceleration and Top Speed portion of the report.

Chrysler Proving Grounds—Acceleration, Top Speed and Braking—(Continued):

- Each vehicle was tested with the tires that are available as original equipment on the production model. Specific tire information for each vehicle can be found in the Vehicle Descriptions portion of this report.
- The Volvos are equipped with three transmission select buttons that are located on the console and marked “S” for Sport, “E” for Economy, and “W” for Winter. These buttons electronically control the transmission shift points. We tested the cars in Sport (“S”). It should be noted that the manufacturer felt the Volvo S–70 Sedan was not running correctly and the test driver and observer concurred. The vehicle was retested at the manufacturer’s request, and the second test results (which were not as good as the first test) were used for the score.
- The Ford Explorer and Ford Expedition brakes had not been burnished by the manufacturer prior to the brake tests. Consequently, the data for Phase 2 of the brake test procedure are probably more indicative of what can actually be expected from these vehicles.

Michigan Speedway—Vehicle Dynamics (High-Speed Handling)—Note the following:

- The Ford Explorer, Ford Expedition, and Chevrolet Tahoe 4WD were not run through the vehicle dynamics test for the reasons noted elsewhere in the Preface and in the body of the report.
- The Volvo Sedan and Wagon are equipped with a traction control system. They were tested with the system turned “off.”
- The Ford Police Interceptor (CNG) required refueling after three test drivers had completed their practice and test runs with the car.
- The brake pads and rotors on the Chevrolet Camaro automatic required replacement after two test drivers had completed their practice and test runs with the car.

We recommend you review the information contained in this report and then apply it to the needs of your agency. This report is not an endorsement of products but a means of learning what is available to your officers so they can do their jobs more effectively and safely. If anything in this report requires further explanation or clarification, please call or write:

Sgt. David Halliday
Michigan State Police
Precision Driving Unit
7426 North Canal Road
Lansing, MI 48913
Phone: 517–322–1787 Fax: 517–322–0725

ACKNOWLEDGMENTS

We wish to thank Col. Michael D. Robinson, Director of the *Michigan Department of State Police*, and the other department administrators who support and encourage the program. The program benefits our department and the law enforcement community nationwide and beyond.

We would like to thank the *Michigan Department of Management and Budget* for their continued support and assistance. Mr. Don Smith and other personnel from Vehicle and Travel Services provide the initial checks of test vehicles, support vehicles at the test sites, and provide onsite mechanical assistance during the testing. They play an important role in the success of the program.

Thanks go to the *National Institute of Justice*, Mr. Lance Miller, and the *National Law Enforcement and Corrections Technology Center* for their continued support of the program and for ensuring law enforcement officials continue to receive this valuable information.

We wish to thank the manufacturers of *Chevrolet, Chrysler, Ford,* and *Volvo* police vehicles for their hard work in building and preparing the test cars. We are grateful for their dedication to law enforcement and for their continued assistance and support for this program.

Special thanks to *Chrysler Motors Corporation,* Mr. Roy Margenau, Jr., and the Chrysler Proving Grounds staff; the *Penske Corporation;* and Mr. Barry Gibson and other staff of Michigan Speedway for their support and the use of their excellent facilities. The cooperation of these people and the use of these great test facilities have been critical components to the success of this program.

We are also thankful to the many people within the *Michigan Department of State Police* who make significant contributions to the program. Ms. Betsy DeFeyter of the Precision Driving Unit is responsible for scoring, timing, and maintaining all of the records of the program. The knowledge and skills of the test drivers, Sgt. Rick Stevens, Sgt. Richard Rothermel, Sgt. Leo Clark, and Sgt. Tom Pokora, are obviously critical to the success of the program. Others who deserve special recognition are Sgt. William McFall of the Executive Division, and Capt. Gene Hoekwater, 1st/Lt. Howard Powers, Lt. Edward Hay, Marcy Best, and Kimberly Wilmore, all from the Training Division.

We would also like to extend our sincere appreciation to the following ergonomics evaluators: Tpr. Dana McKee, Tpr. Seth Reed, Tpr. David Fast, Motor Carrier Officer Niki Brehm, Tpr. Mark Tinney, Tpr. Kathleen Boyer, Tpr. Craig Whittemore, Tpr. Doug Schutter, Tpr. Jennifer Wickham, and Tpr. Kevin Beasley.

Thanks go to retired Sgt. Bob Ring, retired Sgt. David Storer, and retired 1st /Lt. Curt VanDenBerg for their support and assistance for this year's program.

Finally, thanks to all in the United States and Canada who represent law enforcement and purchasing agencies for your constant encouragement and support. We are proud to make a contribution to the law enforcement community.

MICHIGAN STATE POLICE VEHICLE TEST TEAM

Software Helps Select Vehicles

Staff of the Office of Law Enforcement Standards (OLES) have created a computer program for the National Institute of Justice to help police fleet managers select vehicles that are best suited to their needs. The program, called AutoBid, is based on the Michigan State Police vehicle performance test data.

The program ranks vehicles in two ways: (1) by their test scores alone and (2) by their bid price adjusted for their test scores.

AutoBid runs on MS-DOS™ microcomputers with at least 512K of RAM. It can run directly from a floppy drive or be installed on a hard drive.

The National Institute of Justice is making limited copies of AutoBid available free to law enforcement agencies. Obtain copies of the program and documentation by writing on your letterhead to the National Law Enforcement and Corrections Technology Center at P.O. Box 1160, Rockville, MD 20849–1160. AutoBid can also be downloaded from the NLECTC World Wide Web site at www.nlectc.org.

ABOUT THE NATIONAL INSTITUTE OF JUSTICE

The National Institute of Justice (NIJ), a component of the Office of Justice Programs, is the research agency of the U.S. Department of Justice. Created by the Omnibus Crime Control and Safe Streets Act of 1968, as amended, NIJ is authorized to support research, evaluation, and demonstration programs, development of technology, and both national and international information dissemination. Specific mandates of the Act direct NIJ to:

- Sponsor special projects and research and development programs that will improve and strengthen the criminal justice system and reduce or prevent crime.
- Conduct national demonstration projects that employ innovative or promising approaches for improving criminal justice.
- Develop new technologies to fight crime and improve criminal justice.
- Evaluate the effectiveness of criminal justice programs and identify programs that promise to be successful if continued or repeated.
- Recommend actions that can be taken by Federal, State, and local governments as well as by private organizations to improve criminal justice.
- Carry out research on criminal behavior.
- Develop new methods of crime prevention and reduction of crime and delinquency.

In recent years, NIJ has greatly expanded its initiatives, the result of the Violent Crime Control and Law Enforcement Act of 1994 (the Crime Act), partnerships with other Federal agencies and private foundations, advances in technology, and a new international focus. Some examples of these new initiatives:

- New research and evaluation are exploring key issues in community policing, violence against women, sentencing reforms, and specialized courts such as drug courts.
- Dual-use technologies are being developed to support national defense and local law enforcement needs.
- Four regional National Law Enforcement and Corrections Technology Centers (NLECTC), a Border Research and Technology Center, and three special offices have joined the National Center in Rockville, Maryland, to form the NLECTC system.
- The causes, treatment, and prevention of violence against women and violence within the family are being investigated in cooperation with several agencies of the U.S. Department of Health and Human Services.
- NIJ's links with the international community are being strengthened through membership in the United Nations network of criminological institutes; participation in developing the U.N. Criminal Justice Information Network; initiation of UNOJUST (U.N. Online Justice Clearinghouse), which electronically links the institutes to the U.N. network; and establishment of an NIJ International Center.
- The NIJ-administered criminal justice information clearinghouse, the world's largest, has improved its online capability.
- The Institute's Drug Use Forecasting (DUF) program has been expanded and enhanced. Renamed ADAM (Arrestee Drug Abuse Monitoring), the program will increase the number of drug-testing sites, and its role as a "platform" for studying drug-related crime will grow.
- NIJ's new Crime Mapping Research Center will provide training in computer mapping technology, collect and archive geocoded crime data, and develop analytic software.
- The Institute's program of intramural research has been expanded and enhanced.

The Institute Director, who is appointed by the President and confirmed by the Senate, establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the Department of Justice, and the needs of the criminal justice field. The Institute actively solicits the views of criminal justice professionals and researchers in the continuing search for answers that inform public policymaking in crime and justice.

ABOUT THE LAW ENFORCEMENT AND CORRECTIONS STANDARDS AND TESTING PROGRAM

The Law Enforcement and Corrections Standards and Testing Program is sponsored by the Office of Science and Technology of the National Institute of Justice (NIJ), U.S. Department of Justice. The program responds to the mandate of the Justice System Improvement Act of 1979, which created NIJ and directed it to encourage research and development to improve the criminal justice system and to disseminate the results to Federal, State, and local agencies.

The Law Enforcement and Corrections Standards and Testing Program is an applied research effort that determines the technological needs of justice system agencies, sets minimum performance standards for specific devices, tests commercially available equipment against those standards, and disseminates the standards and the test results to criminal justice agencies nationwide and internationally.

The program operates through the following:

- The **Law Enforcement and Corrections Technology Advisory Council** (LECTAC), consisting of nationally recognized criminal justice practitioners from Federal, State, and local agencies, assesses technological needs and sets priorities for research programs and items to be evaluated and tested.

- The **Office of Law Enforcement Standards** (OLES) at the National Institute of Standards and Technology develops voluntary national performance standards for compliance testing to ensure that individual items of equipment are suitable for use by criminal justice agencies. The equipment standards developed by OLES are based upon laboratory evaluation of commercially available products in order to devise precise test methods that can be universally applied by any qualified testing laboratory and to establish minimum performance requirements for each attribute of a piece of equipment that is essential to how it functions. OLES-developed standards can serve as design criteria for manufacturers or as the basis for equipment evaluation. The application of the standards, which are highly technical in nature, is augmented through the publication of technical reports and user guides. Individual jurisdictions may use the standards in their own laboratories to test equipment, have equipment tested on their behalf using the standards, or cite the standards in procurement specifications.

- The **National Law Enforcement and Corrections Technology Center** (NLECTC), operated by a grantee, supervises a national compliance testing program conducted by independent laboratories. The standards developed by OLES serve as performance benchmarks against which commercial equipment is measured. The facilities, personnel, and testing capabilities of the independent laboratories are evaluated by OLES prior to testing each item of equipment. In addition, OLES helps NLECTC staff review and analyze data. Test results are published in consumer product reports designed to help justice system procurement officials make informed purchasing decisions.

Publications are available at no charge through the National Law Enforcement and Corrections Technology Center. Some documents are also available online through the Internet/World Wide Web. To request a document or additional information, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center
P.O. Box 1160
Rockville, MD 20849–1160

E-mail: *asknlectc@nlectc.org*
World Wide Web address: *http://www.nlectc.org*

ABOUT THE NATIONAL LAW ENFORCEMENT AND CORRECTIONS TECHNOLOGY CENTER SYSTEM

The National Institute of Justice (NIJ), responding to recommendations by the law enforcement and corrections community, converted its Technology Assessment Program Information Center (TAPIC) into the National Law Enforcement and Corrections Technology Center (NLECTC), which is composed of the national center, four regional centers, the Border Research and Technology Center, the Office of Law Enforcement Standards (OLES), and the Office of Law Enforcement Technology Commercialization (OLETC). The National Center for Forensic Science (NCFS), the newest addition to the NLECTC system, initially will focus on arson and explosives research.

These facilities are part of a law enforcement and corrections information network that will make it easier for agencies and departments to locate new products and for industry to identify law enforcement and corrections requirements.

NLECTC's major responsibilities and goals are:

- To work with OLES to establish voluntary standards for selected law enforcement equipment and manage voluntary compliance testing programs.
- To develop critical product databases for law enforcement and corrections that include information such as who manufactures what, what the points of contact are, what testing or evaluation information is available, and what other law enforcement agencies use the product and can discuss its effectiveness.
- To assist law enforcement in understanding what technologies are available, how they can be used, and what advantages they offer.
- To evaluate products, such as body armor, firearms, vehicle tires, and handcuffs.
- To conduct field demonstrations of new law enforcement and corrections technologies.
- To collect law enforcement and corrections needs and requirements information for use by industry to develop affordable technologies for law enforcement and corrections.
- To disseminate information about its resources and services through newsletters, product bulletins, consumer product lists, articles in criminal justice periodicals, exhibits and presentations at criminal justice conferences, and online access.
- To coordinate the Law Enforcement and Corrections Technology Advisory Council (LECTAC), which is composed of nationally recognized professionals from Federal, State, and local criminal justice and corrections agencies. LECTAC helps NIJ set priorities for developing new equipment standards, for testing available products, and for establishing future program initiatives for NLECTC.

To receive more information or to add your name to the NLECTC mailing list, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center
P.O. Box 1160
Rockville, MD 20849–1160
E-mail: *asknlectc@nlectc.org*
World Wide Web address: *http://www.nlectc.org*

The following is a list of NLECTC regional and affiliated facilities that assist NIJ in fulfilling its mission.

NLECTC–Northeast
26 Electronic Parkway
Rome, NY 13441–4514
(p) 888–338–0584
(f) 315–330–4315
E-mail: *nlectc_ne@rl.af.mil*

NLECTC–Southeast
5300 International Boulevard
North Charleston, SC 29418
(p) 800–292–4385
(f) 843–760–4611
E-mail: *nlectc-se@nlectc-se.org*

NLECTC–Rocky Mountain
2050 East Iliff Avenue
Denver, CO 80208
(p) 800–416–8086
(f) 303–871–2500
E-mail: *nlectc@du.edu*

NLECTC–West
c/o The Aerospace Corporation
2350 East El Segundo Boulevard
El Segundo, CA 90245–4691
(p) 888–548–1618
(f) 310–336–2227
E-mail: *nlectc@law-west.org*

Border Research and Technology Center
225 Broadway
Suite 740
San Diego, CA 92101
(p) 619–232–1726 or 888–656–2782
(f) 619–232–1451 or 888–660–2782
E-mail: *brtcchrisa@aol.com*

Office of Law Enforcement Standards
National Institute of Standards and Technology
Building 225, Room A323
Gaithersburg, MD 20899
(p) 301–975–2757
(f) 301–948–0978
E-mail: *oles@nist.gov*

Office of Law Enforcement Technology Commercialization
Wheeling Jesuit University
316 Washington Avenue
Wheeling, WV 26003
(p) 888–306–5382
(f) 304–243–2131
E-mail: *oletc@nttc.edu*

National Center for Forensic Science
University of Central Florida
P.O. Box 162367
Orlando, FL 32816–2367
(p) 407–823–6469
(f) 407–823–3162
E-mail: *natlctr@pegasus.cc.ucf.edu*

ABOUT THE OFFICE OF LAW ENFORCEMENT STANDARDS

The Office of Law Enforcement Standards (OLES) was established as a matrix management organization in 1971 through a Memorandum of Understanding between the U.S. Departments of Justice and Commerce based upon the recommendations of the President's Commission on Crime. OLES' mission is to apply science and technology to the needs of the criminal justice community, including law enforcement, corrections, forensic science, and the fire service. While its major objective is to develop minimum performance standards, which are promulgated as voluntary national standards, OLES also undertakes studies leading to the publication of technical reports and user guides.

The areas of research investigated by OLES include clothing, communication systems, emergency equipment, investigative aids, protective equipment, security systems, vehicles, weapons, and analytical techniques and standard reference materials used by the forensic science community. The composition of OLES' projects varies depending upon priorities of the criminal justice community at any given time and, as necessary, draws upon the resources of the National Institute of Standards and Technology.

OLES assists law enforcement and criminal justice agencies in acquiring, on a cost-effective basis, the high-quality resources they need to do their jobs. To accomplish this, OLES:

- Develops methods for testing equipment performance and examining evidentiary materials.
- Develops standards for equipment and operating procedures.
- Develops standard reference materials.
- Performs other scientific and engineering research as required.

Since the program began in 1971, OLES has coordinated the development of nearly 200 standards, user guides, and advisory reports. Topics range from performance parameters of police patrol vehicles, to performance reports on various speed-measuring devices, to soft body armor testing, to analytical procedures for developing DNA profiles.

The application of technology to enhance the efficiency and effectiveness of the criminal justice community continues to increase. The proper adoption of the products resulting from emerging technologies and the assessment of performance of equipment, systems, methodologies, etc., used by criminal justice practitioners constitute critical issues having safety and legal ramifications. The consequences of inadequate equipment performance or inadequate test methods can range from inconvenient to catastrophic. In addition, these deficiencies can adversely affect the general population when they increase public safety costs, preclude arrest, or result in evidence found to be inadmissible in court.

TEST EQUIPMENT

The following test equipment is utilized during the acceleration, top speed, braking, and vehicle dynamics portions of the evaluation program.

DATRON TECHNOLOGY, INC., 33533 West Twelve Mile Road, Suite 180, Farmington Hills, Michigan 48331

DLS Smart Sensor—Optical Noncontact Speed and Distance Sensor

CHRONOMIX CORPORATION, 650F Vaqueros Avenue, Sunnyvale, California 94086–1920

Compusport 737—Select Printing Timer

LABORATORY EQUIPMENT CORPORATION (Labeco), Box 158, Mooresville, Indiana 46158

Tracktest Fifth Wheel

DD1.1 Digital Velocity Meter

DD2.1 Digital Distance Meter

Transmitter Assembly for DD1.1 and DD2.1

MICRO SWITCH, Division of Honeywell, Freeport, Illinois 61032

Modulated L.E.D. Control (Photoelectric micro-switch) Model FE–MLS–3A

BELL HELMETS, Box 927, Rantol, Illinois 61866

Nascar Helmet—Model MC–400

AMMCO TOOLS, INC., Wacker Park, North Chicago, Illinois 60064

Decelerometer, Model 7350

ALGE-TELESIGNAL TX/RX, Phoenix Sports Technology, 1344 Route 100 S., P.O. Box 774, Trexlertown, Pennsylvania 18087

Alge Sports Timing Telesignal Transmitter—Model TX

Alge Sports Timing Telesignal Receiver—Model RX

TEST VEHICLE DESCRIPTIONS AND PHOTOGRAPHS

FORD POLICE INTERCEPTOR

4.6L SPFI

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Police Interceptor		**SALES CODE NO.** P71		
ENGINE DISPLACEMENT	**CUBIC INCHES** 281		**LITERS** 4.6		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Dual		
HORSEPOWER (SAE NET)	215 @ 4500 RPM		**ALTERNATOR** 130 amp.		
TORQUE	285 ft. lbs. @ 3000 RPM		**BATTERY** 750 cca.		
COMPRESSION RATIO	9.0:1				
TRANSMISSION	**MODEL** 4R70W	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.55:1				
STEERING	Recirculating ball & nut w/int. pwr. (constant ratio), speed sensitive variable assist				
TURNING CIRCLE (CURB TO CURB)	40.9 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P225/60R16 97V Goodyear Eagle RS–A				
SUSPENSION TYPE (FRONT)	Independent SLA with Ball Joint and Coil Spring				
SUSPENSION TYPE (REAR)	4 Bar Link with Watts linkage				
GROUND CLEARANCE, MINIMUM	6.0 in.	**LOCATION** Transmission			
BRAKE SYSTEM	Power, Dual Piston Front, Single Piston Rear, 4 Circuit Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 314.1 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 174.8 sq. in.		
FUEL CAPACITY	**GALLONS** 19.0		**LITERS** 71.9		
GENERAL MEASUREMENTS	**WHEELBASE** 114.7 in.		**LENGTH** 212.0 in.		
	TEST WEIGHT 4043 lbs.		**HEIGHT** 56.8 in.		
HEADROOM	**FRONT** 39.4 in.		**REAR** 38.0 in.		
LEG ROOM	**FRONT** 42.5 in.		**REAR** 39.6 in.		
SHOULDER ROOM	**FRONT** 60.8 in.		**REAR** 60.3 in.		
HIP ROOM	**FRONT** 57.1 in.		**REAR** 59.0 in.		
INTERIOR VOLUME	**FRONT** 58.2 cu. ft.		**REAR** 51.1 cu. ft.		
	COMB. 109.3 cu. ft.		**TRUNK** 20.6 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 16	**HIGHWAY** 22	**COMBINED** 18		

FORD POLICE INTERCEPTOR

4.6L SPFI (CNG)

SEE PHOTOS ON PAGE 2.

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Police Interceptor		**SALES CODE NO.** P71		
ENGINE DISPLACEMENT	**CUBIC INCHES** 281		**LITERS** 4.6		
FUEL SYSTEM	Sequential Port Fuel Injection (CNG)		**EXHAUST** Single		
HORSEPOWER (SAE NET)	178 @ 4500 RPM		**ALTERNATOR** 130 amp.		
TORQUE	237 ft. lbs. @ 3250 RPM		**BATTERY** 750 cca.		
COMPRESSION RATIO	10.0:1				
TRANSMISSION	**MODEL** 4R70W	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.73:1				
STEERING	Recirculating ball & nut w/int. pwr. (constant ratio), speed sensitive variable assist				
TURNING CIRCLE (CURB TO CURB)	40.9 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P225/60R16 97V Goodyear Eagle RS–A				
SUSPENSION TYPE (FRONT)	Independent SLA with Ball Joint and Coil Spring				
SUSPENSION TYPE (REAR)	4 Bar Link with Watts linkage				
GROUND CLEARANCE, MINIMUM	6.0 in.	**LOCATION** Transmission			
BRAKE SYSTEM	Power, Dual Piston Front, Single Piston Rear, 4 Circuit Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 314.1 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 174.8 sq. in.		
FUEL CAPACITY (4 CNG Tanks)	**GALLONS** 10.0*		**LITERS** 37.9*		
GENERAL MEASUREMENTS	**WHEELBASE** 114.7 in.		**LENGTH** 212.0 in.		
	TEST WEIGHT 4334 lbs.		**HEIGHT** 56.8 in.		
HEADROOM	**FRONT** 39.4 in.		**REAR** 38.0 in.		
LEG ROOM	**FRONT** 42.5 in.		**REAR** 39.6 in.		
SHOULDER ROOM	**FRONT** 60.8 in.		**REAR** 60.3 in.		
HIP ROOM	**FRONT** 57.1 in.		**REAR** 59.0 in.		
INTERIOR VOLUME	**FRONT** 58.2 cu. ft.		**REAR** 51.1 cu. ft.		
	COMB. 109.3 cu. ft.		**TRUNK** 14.0 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 14*	**HIGHWAY** 20*	**COMBINED** 17*		

* Vehicle equipped with four CNG tanks. Total fuel capacity and EPA mileage estimates are stated in gasoline equivalent.

CHEVROLET LUMINA

3.8L SPFI

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Lumina		**SALES CODE NO.** 1WL69		
ENGINE DISPLACEMENT	**CUBIC INCHES** 231		**LITERS** 3.8		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	200 @ 5200 RPM		**ALTERNATOR** 140 amp.		
TORQUE	220 ft. lbs. @ 4000 RPM		**BATTERY** 690 cca.		
COMPRESSION RATIO	9.4:1				
TRANSMISSION	**MODEL** 4T65-E	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.29:1				
STEERING	Power Rack and Pinion				
TURNING CIRCLE (CURB TO CURB)	39.0 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P215/65R15 95H Goodyear Eagle GT+4				
SUSPENSION TYPE (FRONT)	Independent McPherson Strut, Coil Springs, and Stabilizer Bar				
SUSPENSION TYPE (REAR)	Independent Tri-Link Coil Spring over Strut and Stabilizer Bar				
GROUND CLEARANCE, MINIMUM	6.2 in.	**LOCATION** Rear Exhaust Pipe			
BRAKE SYSTEM	Power, Dual Hydraulic, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 169.1 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 161.6 sq. in.		
FUEL CAPACITY	**GALLONS** 16.6		**LITERS** 62.8		
GENERAL MEASUREMENTS	**WHEELBASE** 107.5 in.		**LENGTH** 200.9 in.		
	TEST WEIGHT 3522 lbs.		**HEIGHT** 55.2 in.		
HEADROOM	**FRONT** 38.4 in.		**REAR** 37.4 in.		
LEG ROOM	**FRONT** 42.4 in.		**REAR** 36.6 in.		
SHOULDER ROOM	**FRONT** 58.4 in.		**REAR** 57.4 in.		
HIP ROOM	**FRONT** 55.4 in.		**REAR** 55.3 in.		
INTERIOR VOLUME	**FRONT** 55.0 cu. ft.		**REAR** 45.5 cu. ft.		
	COMB. 100.5 cu. ft.		**TRUNK** 15.5 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 18	**HIGHWAY** 27	**COMBINED** 21		

VOLVO S–70T5 SEDAN

2.3L MPFI (TURBOCHARGED)

TEST VEHICLE DESCRIPTION

MAKE Volvo	**MODEL** S–70T5 Sedan		**SALES CODE NO.** 874–8582		
ENGINE DISPLACEMENT	**CUBIC INCHES** 142		**LITERS** 2.3		
FUEL SYSTEM	Multiport Fuel Injection (Turbo)		**EXHAUST** Single		
HORSEPOWER (SAE NET)	236 @ 5100 RPM		**ALTERNATOR** 100 amp.		
TORQUE	243 ft. lbs. @ 2700 RPM		**BATTERY** 600 cca.		
COMPRESSION RATIO	8.5:1				
TRANSMISSION	**MODEL** AW	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.56:1				
STEERING	Rack and Pinion with Power Assist				
TURNING CIRCLE (CURB TO CURB)	34.5 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P205/55R16 89V Michelin XGT V4				
SUSPENSION TYPE (FRONT)	Independent McPherson Struts				
SUSPENSION TYPE (REAR)	Semi-Independent Delta-Link with Coil Springs				
GROUND CLEARANCE, MINIMUM	6.2 in.	**LOCATION** Center			
BRAKE SYSTEM	Power, 3 Channel, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 241.8 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 202.7 sq. in.		
FUEL CAPACITY	**GALLONS** 19.3		**LITERS** 73.0		
GENERAL MEASUREMENTS	**WHEELBASE** 104.9 in.		**LENGTH** 183.5 in.		
	TEST WEIGHT 3390 lbs.		**HEIGHT** 55.7 in.		
HEADROOM	**FRONT** 39.1 in.		**REAR** 37.8 in.		
LEG ROOM	**FRONT** 41.4 in.		**REAR** 35.2 in.		
SHOULDER ROOM	**FRONT** 57.1 in.		**REAR** 56.3 in.		
HIP ROOM	**FRONT** 55.2 in.		**REAR** 55.2 in.		
INTERIOR VOLUME	**FRONT** Not Available		**REAR** Not Available		
	COMB. 100.8 cu. ft.		**TRUNK** 14.7 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 18	**HIGHWAY** 25	**COMBINED** 21		

* With rear seat down–33.2 cu. ft.

VOLVO V–70T5 WAGON

2.3L MPFI (TURBOCHARGED)

TEST VEHICLE DESCRIPTION

MAKE Volvo	**MODEL** V–70T5 Wagon		**SALES CODE NO.** 875–8583		
ENGINE DISPLACEMENT	**CUBIC INCHES** 142		**LITERS** 2.3		
FUEL SYSTEM	Multiport Fuel Injection (Turbo)		**EXHAUST** Single		
HORSEPOWER (SAE NET)	236 @ 5100 RPM		**ALTERNATOR** 100 amp.		
TORQUE	243 ft. lbs. @ 2700 RPM		**BATTERY** 600 cca.		
COMPRESSION RATIO	8.5:1				
TRANSMISSION	**MODEL** AW	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.56:1				
STEERING	Rack and Pinion with Power Assist				
TURNING CIRCLE (CURB TO CURB)	34.5 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P205/55R16 89V Michelin XGT V4				
SUSPENSION TYPE (FRONT)	Independent McPherson Struts				
SUSPENSION TYPE (REAR)	Semi-Independent Delta-Link with Coil Springs				
GROUND CLEARANCE, MINIMUM	6.2 in.	**LOCATION** Center			
BRAKE SYSTEM	Power, 3 Channel, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 241.8 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 202.7 sq. in.		
FUEL CAPACITY	**GALLONS** 19.3		**LITERS** 73.0		
GENERAL MEASUREMENTS	**WHEELBASE** 104.9 in.		**LENGTH** 183.5 in.		
	TEST WEIGHT 3478 lbs.		**HEIGHT** 55.7 in.		
HEADROOM	**FRONT** 39.1 in.		**REAR** 37.8 in.		
LEG ROOM	**FRONT** 41.4 in.		**REAR** 35.2 in.		
SHOULDER ROOM	**FRONT** 57.1 in.		**REAR** 56.3 in.		
HIP ROOM	**FRONT** 55.2 in.		**REAR** 55.2 in.		
INTERIOR VOLUME	**FRONT** Not Available		**REAR** Not Available		
	COMB. 93.6 cu. ft.		**TRUNK** 37.1 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 18	**HIGHWAY** 25	**COMBINED** 21		

* Behind second seat/With second seat down–67.0 cu. ft.

CHEVROLET CAMARO

5.7L SPFI (AUTOMATIC)

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Camaro		**SALES CODE NO.** 1FP87		
ENGINE DISPLACEMENT	**CUBIC INCHES** 350		**LITERS** 5.7		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Dual		
HORSEPOWER (SAE NET)	305 @ 5200 RPM		**ALTERNATOR** 105 amp.		
TORQUE	335 ft. lbs. @ 4000 RPM		**BATTERY** 525 cca.		
COMPRESSION RATIO	10.1:1				
TRANSMISSION	**MODEL** 4L60-E	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.23:1				
STEERING	Power, Rack and Pinion, Hydraulic				
TURNING CIRCLE (CURB TO CURB)	39.0 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P245/50ZR16 Goodyear Eagle RS–A				
SUSPENSION TYPE (FRONT)	Independent SLA type, Coil over Monotube Gas-Charged Shocks and Stabilizer Bar				
SUSPENSION TYPE (REAR)	Salisbury Axle, Torque Arm, Trailing Arm, Track Bar, Coil Springs, Monotube Gas-Charged Shocks, & Stabilizer Bar				
GROUND CLEARANCE, MINIMUM	4.4 in.	**LOCATION** Catalytic Converter Shield			
BRAKE SYSTEM	Power, Single Caliper, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 238.6 sq. in.		
BRAKES, REAR	**TYPE** Vented Disc		**SWEPT AREA** 169.0 sq. in.		
FUEL CAPACITY	**GALLONS** 15.5		**LITERS** 58.7		
GENERAL MEASUREMENTS	**WHEELBASE** 101.1 in.		**LENGTH** 193.2 in.		
	TEST WEIGHT 3483 lbs.		**HEIGHT** 51.3 in.		
HEADROOM	**FRONT** 37.2 in.		**REAR** 35.3 in.		
LEG ROOM	**FRONT** 43.0 in.		**REAR** 26.8 in.		
SHOULDER ROOM	**FRONT** 57.4 in.		**REAR** 55.8 in.		
HIP ROOM	**FRONT** 52.8 in.		**REAR** 44.4 in.		
INTERIOR VOLUME	**FRONT** 53.1 cu. ft.		**REAR** 28.8 cu. ft.		
	COMB. 81.9 cu. ft.		**TRUNK** 12.9 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 17	**HIGHWAY** 24	**COMBINED** 20		

* With second seat down–32.8 cu. ft.

CHEVROLET CAMARO

5.7L SPFI (6-SPEED MANUAL)

SEE PHOTOS ON PAGE 12.

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Camaro		**SALES CODE NO.** 1FP87		
ENGINE DISPLACEMENT	**CUBIC INCHES** 350		**LITERS** 5.7		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Dual		
HORSEPOWER (SAE NET)	305 @ 5200 RPM		**ALTERNATOR** 105 amp.		
TORQUE	335 ft. lbs. @ 4000 RPM		**BATTERY** 525 cca.		
COMPRESSION RATIO	10.1:1				
TRANSMISSION	**MODEL** MM6	**TYPE** 6-Speed Manual			
	LOCKUP TORQUE CONVERTER? N/A				
	OVERDRIVE? Yes				
AXLE RATIO	3.42:1				
STEERING	Power, Rack and Pinion, Hydraulic				
TURNING CIRCLE (CURB TO CURB)	39.0 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P245/50ZR16 Goodyear Eagle RS–A				
SUSPENSION TYPE (FRONT)	Independent SLA type, Coil over Monotube Gas-Charged Shocks and Stabilizer Bar				
SUSPENSION TYPE (REAR)	Salisbury Axle, Torque Arm, Trailing Arm, Track Bar, Coil Springs, Monotube Gas-Charged Shocks, and Stabilizer Bar				
GROUND CLEARANCE, MINIMUM	4.4 in.	**LOCATION** Catalytic Converter Shield			
BRAKE SYSTEM	Power, Single Caliper, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 238.6 sq. in.		
BRAKES, REAR	**TYPE** Vented Disc		**SWEPT AREA** 169.0 sq. in.		
FUEL CAPACITY	**GALLONS** 15.5		**LITERS** 58.7		
GENERAL MEASUREMENTS	**WHEELBASE** 101.1 in.		**LENGTH** 193.2 in.		
	TEST WEIGHT 3462 lbs.		**HEIGHT** 51.3 in.		
HEADROOM	**FRONT** 37.2 in.		**REAR** 35.3 in.		
LEG ROOM	**FRONT** 43.0 in.		**REAR** 26.8 in.		
SHOULDER ROOM	**FRONT** 57.4 in.		**REAR** 55.8 in.		
HIP ROOM	**FRONT** 52.8 in.		**REAR** 44.4 in.		
INTERIOR VOLUME	**FRONT** 53.1 cu. ft.		**REAR** 28.8 cu. ft.		
	COMB. 81.9 cu. ft.		**TRUNK** 12.9 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 19	**HIGHWAY** 28	**COMBINED** 22		

* With second seat down–32.8 cu. ft.

CHEVROLET TAHOE

5.7L SPFI (2-WHEEL DRIVE)

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Tahoe (2WD)		**SALES CODE NO.**	CC10706
ENGINE DISPLACEMENT	**CUBIC INCHES** 350		**LITERS**	5.7
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST**	Single
HORSEPOWER (SAE NET)	255 @ 4600 RPM		**ALTERNATOR**	140 amp.
TORQUE	330 ft. lbs. @ 2800 RPM		**BATTERY**	770 cca.
COMPRESSION RATIO	9.4:1			
TRANSMISSION	**MODEL** 4L60E	**TYPE** 4-Speed Electronic Automatic		
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.08:1			
STEERING	Integral Power, Variable Ratio			
TURNING CIRCLE (CURB TO CURB)	39.8 Feet			
TIRE SIZE, LOAD, & SPEED RATING	P235/70R15 102V Goodyear Eagle RS–A			
SUSPENSION TYPE (FRONT)	Independent Coil Springs with Stabilizer Bar			
SUSPENSION TYPE (REAR)	Multi-Leaf Springs with Stabilizer Bar			
GROUND CLEARANCE, MINIMUM	6.7 in.	**LOCATION** Rear Axle		
BRAKE SYSTEM	Power Assisted Hydraulic, Antilock			
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA**	203.0 sq. in.
BRAKES, REAR	**TYPE** Drum		**SWEPT AREA**	192.7 sq. in.
FUEL CAPACITY	**GALLONS** 30.0		**LITERS**	113.6
GENERAL MEASUREMENTS	**WHEELBASE** 117.5 in.		**LENGTH**	199.6 in.
	TEST WEIGHT 4924 lbs.		**HEIGHT**	69.6 in.
HEADROOM	**FRONT** 39.9 in.		**REAR**	38.9 in.
LEG ROOM	**FRONT** 41.7 in.		**REAR**	36.7 in.
SHOULDER ROOM	**FRONT** 65.0 in.		**REAR**	65.0 in.
HIP ROOM	**FRONT** 59.6 in.		**REAR**	59.6 in.
INTERIOR VOLUME	**FRONT** 62.4 cu. ft.		**REAR**	53.5 cu. ft.
	COMB. 115.9 cu. ft.		**TRUNK**	70.3 cu. ft.*
EPA MILEAGE EST. (MPG)	**CITY** 13	**HIGHWAY** 17	**COMBINED**	14

* Behind second seat.

CHRYSLER JEEP CHEROKEE

4.0L MPFI (2-WHEEL DRIVE)

TEST VEHICLE DESCRIPTION

MAKE Chrysler Jeep	**MODEL** Cherokee (2WD)		**SALES CODE NO.** AHB		
ENGINE DISPLACEMENT	**CUBIC INCHES** 242		**LITERS** 4.0		
FUEL SYSTEM	Multiport Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	190 @ 4600 RPM		**ALTERNATOR** 119 amp.		
TORQUE	225 ft. lbs. @ 3000 RPM		**BATTERY** 500 cca.		
COMPRESSION RATIO	8.8:1				
TRANSMISSION	**MODEL** AW3043LE	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.55:1				
STEERING	Power Recirculating Ball, 14.0:1				
TURNING CIRCLE (CURB TO CURB)	35.7 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P225/70R15 100H Goodyear Eagle GA Touring				
SUSPENSION TYPE (FRONT)	Link Coil Springs, Gas-Charged Shocks, Stabilizer Bar				
SUSPENSION TYPE (REAR)	Multi-Leaf Springs, Gas-Charged Shocks, Stabilizer Bar				
GROUND CLEARANCE, MINIMUM	8.6 in.	**LOCATION** Rear Axle Housing			
BRAKE SYSTEM	Power, Single Caliper Front, Duo Servo Rear, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 192.6 sq. in.		
BRAKES, REAR	**TYPE** Drum		**SWEPT AREA** 110.0 sq. in.		
FUEL CAPACITY	**GALLONS** 20.2		**LITERS** 76.5		
GENERAL MEASUREMENTS	**WHEELBASE** 101.4 in.		**LENGTH** 165.3 in.		
	TEST WEIGHT 3383 lbs.		**HEIGHT** 63.2 in.		
HEADROOM	**FRONT** 38.0 in.		**REAR** 38.0 in.		
LEG ROOM	**FRONT** 41.0 in.		**REAR** 35.3 in.		
SHOULDER ROOM	**FRONT** 55.3 in.		**REAR** 55.3 in.		
HIP ROOM	**FRONT** 55.3 in.		**REAR** 44.5 in.		
INTERIOR VOLUME	**FRONT** 50.3 cu. ft.		**REAR** 42.8 cu. ft.		
	COMB. 93.1 cu. ft.		**TRUNK** 35.7 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 16	**HIGHWAY** 22	**COMBINED** 18		

* Behind second seat/With second seat down–71.5 cu. ft.

CHRYSLER JEEP CHEROKEE

4.0L MPFI (4-WHEEL DRIVE)

SEE PHOTOS ON PAGE 18.

TEST VEHICLE DESCRIPTION

MAKE Chrysler Jeep	**MODEL** Cherokee (4WD)		**SALES CODE NO.** AHB		
ENGINE DISPLACEMENT	**CUBIC INCHES** 242		**LITERS** 4.0		
FUEL SYSTEM	Multiport Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	190 @ 4600 RPM		**ALTERNATOR** 119 amp.		
TORQUE	225 ft. lbs. @ 3000 RPM		**BATTERY** 500 cca.		
COMPRESSION RATIO	8.8:1				
TRANSMISSION	**MODEL** AW3043LE	**TYPE** 4-Speed Electronic Automatic–4-Wheel Drive			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.55:1				
STEERING	Power Recirculating Ball, 14.0:1				
TURNING CIRCLE (CURB TO CURB)	35.7 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P225/70R15 100H Goodyear Eagle GA (Opt: P225/75R15 All Terrain"T"rated)				
SUSPENSION TYPE (FRONT)	Link Coil Springs, Gas-Charged Shocks, Stabilizer Bar				
SUSPENSION TYPE (REAR)	Multi-Leaf Springs, Gas-Charged Shocks, Stabilizer Bar				
GROUND CLEARANCE, MINIMUM	8.5 in.	**LOCATION** Front Axle Housing			
BRAKE SYSTEM	Power, Single Caliper Front, Duo Servo Rear, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 192.6 sq. in.		
BRAKES, REAR	**TYPE** Drum		**SWEPT AREA** 110.0 sq. in.		
FUEL CAPACITY	**GALLONS** 20.2		**LITERS** 76.5		
GENERAL MEASUREMENTS	**WHEELBASE** 101.4 in.		**LENGTH** 165.3 in.		
	TEST WEIGHT 3631 lbs.		**HEIGHT** 63.2 in.		
HEADROOM	**FRONT** 38.0 in.		**REAR** 38.0 in.		
LEG ROOM	**FRONT** 41.0 in.		**REAR** 35.3 in.		
SHOULDER ROOM	**FRONT** 55.3 in.		**REAR** 55.3 in.		
HIP ROOM	**FRONT** 55.3 in.		**REAR** 44.5 in.		
INTERIOR VOLUME	**FRONT** 50.3 cu. ft.		**REAR** 42.8 cu. ft.		
	COMB. 93.1 cu. ft.		**TRUNK** 35.7 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 16	**HIGHWAY** 21	**COMBINED** 18		

* Behind second seat / With second seat down–71.5 cu. ft.

TEST VEHICLE DESCRIPTIONS SUMMARY

	Ford Police Interceptor	Ford Police Interceptor (CNG)	Chevrolet Lumina	Volvo S–70T5 Sedan
ENGINE DISPLACEMENT—CU. IN.	281	281	231	142
ENGINE DISPLACEMENT—LITERS	4.6	4.6	3.8	2.3
ENGINE FUEL SYSTEM	SPFI	SPFI-CNG	SPFI	MPFI-Turbo
HORSEPOWER (SAE NET)	215	178	200	236
TORQUE (FT. LBS.)	285	237	220	243
COMPRESSION RATIO	9.0:1	10.0:1	9.4:1	8.5:1
AXLE RATIO	3.55:1	2.73:1	3.29:1	2.56:1
TURNING CIRCLE—FT. CURB to CURB	40.9	40.9	39.0	34.5
TRANSMISSION	Elec. Automatic	Elec. Automatic	Elec. Automatic	Elec. Automatic
TRANSMISSION MODEL NUMBER	4R70W	4R70W	4T65E	AW
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes	Yes
TIRE SIZE	P225/60R	P225/60R	P215/65R	P205/55R
WHEEL RIM SIZE—INCHES	16	16	15	16
GROUND CLEARANCE—INCHES	6.0	6.0	6.2	6.2
BRAKE SYSTEM	Power - ABS	Power - ABS	Power - ABS	Power - ABS
BRAKES—FRONT TYPE	Vented Disc	Vented Disc	Vented Disc	Vented Disc
BRAKES—REAR TYPE	Solid Disc	Solid Disc	Solid Disc	Solid Disc
FUEL CAPACITY—GALLONS	19.0	10.0*	16.6	19.3
FUEL CAPACITY—LITERS	71.9	37.9*	62.8	73.0
OVERALL LENGTH—INCHES	212.0	212.0	200.9	183.5
OVERALL HEIGHT—INCHES	56.8	56.8	55.2	55.7
TEST WEIGHT—LBS.	4043	4334	3522	3390
WHEELBASE—INCHES	114.7	114.7	107.5	104.9
HEADROOM FRONT—INCHES	39.4	39.4	38.4	39.1
HEADROOM REAR—INCHES	38.0	38.0	37.4	37.8
LEG ROOM FRONT—INCHES MAX.	42.5	42.5	42.4	41.4
LEG ROOM REAR—INCHES MIN.	39.6	39.6	36.6	35.2
SHOULDER ROOM FRONT—INCHES	60.8	60.8	58.4	57.1
SHOULDER ROOM REAR—INCHES	60.3	60.3	57.4	56.3
HIP ROOM FRONT—INCHES	57.1	57.1	55.4	55.2
HIP ROOM REAR—INCHES	59.0	59.0	55.3	55.2
INTERIOR VOLUME FRONT—CU. FT.	58.2	58.2	55.0	NA
INTERIOR VOLUME REAR—CU. FT.	51.1	51.1	45.5	NA
INTERIOR VOLUME COMB.—CU. FT.	109.3	109.3	100.5	100.8
TRUNK VOLUME—CU. FT.	20.6	14.0	15.5	14.7***
EPA MILEAGE—CITY—MPG	16	14**	18	18
EPA MILEAGE—HIGHWAY—MPG	22	20**	27	25
EPA MILEAGE—COMBINED—MPG	18	17**	21	21

* Fuel Capacity: Total for four Compressed Natural Gas (CNG) tanks is equivalent to 10 gal./37.9 liters of gasoline.

** EPA mileage estimates are in gasoline equivalent.

*** With rear seat down–33.2 cu. ft.

TEST VEHICLE DESCRIPTIONS SUMMARY

	Volvo V–70T5 Wagon	Chevrolet Camaro (Automatic)	Chevrolet Camaro (6-Speed Manual)
ENGINE DISPLACEMENT—CU. IN.	142	350	350
ENGINE DISPLACEMENT—LITERS	2.3	5.7	5.7
ENGINE FUEL SYSTEM	MPFI - Turbo	SPFI	SPFI
HORSEPOWER (SAE NET)	236	305	305
TORQUE (FT. LBS.)	243	335	335
COMPRESSION RATIO	8.5:1	10.1:1	10.1:1
AXLE RATIO	2.56:1	3.23:1	3.42:1
TURNING CIRCLE—FT. CURB to CURB	34.5	39.0	39.0
TRANSMISSION	Elec. Automatic	Elec. Automatic	6-Speed Manual
TRANSMISSION MODEL NUMBER	AW	4L60E	MM-6
LOCKUP TORQUE CONVERTER	Yes	Yes	NA
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P205/55R	P245/50R	P245/50R
WHEEL RIM SIZE—INCHES	16	16	16
GROUND CLEARANCE—INCHES	6.2	4.4	4.4
BRAKE SYSTEM	Power - ABS	Power - ABS	Power - ABS
BRAKES—FRONT TYPE	Vented Disc	Vented Disc	Vented Disc
BRAKES—REAR TYPE	Solid Disc	Vented Disc	Vented Disc
FUEL CAPACITY—GALLONS	19.3	15.5	15.5
FUEL CAPACITY—LITERS	73.0	58.7	58.7
OVERALL LENGTH—INCHES	183.5	193.2	193.2
OVERALL HEIGHT—INCHES	55.7	51.3	51.3
TEST WEIGHT—LBS.	3478	3483	3462
WHEELBASE—INCHES	104.9	101.1	101.1
HEADROOM FRONT—INCHES	39.1	37.2	37.2
HEADROOM REAR—INCHES	37.8	35.3	35.3
LEG ROOM FRONT—INCHES MAX.	41.4	43.0	43.0
LEG ROOM REAR—INCHES MIN.	35.2	26.8	26.8
SHOULDER ROOM FRONT—INCHES	57.1	57.4	57.4
SHOULDER ROOM REAR—INCHES	56.3	55.8	55.8
HIP ROOM FRONT—INCHES	55.2	52.8	52.8
HIP ROOM REAR—INCHES	55.2	44.4	44.4
INTERIOR VOLUME FRONT—CU. FT.	NA	53.1	53.1
INTERIOR VOLUME REAR—CU. FT.	NA	28.8	28.8
INTERIOR VOLUME COMB.—CU. FT.	93.6	81.9	81.9
TRUNK VOLUME—CU. FT.	37.1*	12.9**	12.9**
EPA MILEAGE—CITY—MPG	18	17	19
EPA MILEAGE—HIGHWAY—MPG	25	24	28
EPA MILEAGE—COMBINED—MPG	21	20	22

* Behind second seat/Second seat down–67.0 cu. ft.

** Behind second seat/Second seat down–32.8 cu. ft.

TEST VEHICLE DESCRIPTIONS SUMMARY

	Chevrolet Tahoe (2WD)	Chrysler Jeep Cherokee (2WD)	Chrysler Jeep Cherokee (4WD)
ENGINE DISPLACEMENT—CU. IN.	350	242	242
ENGINE DISPLACEMENT—LITERS	5.7	4.0	4.0
ENGINE FUEL SYSTEM	SPFI	MPFI	MPFI
HORSEPOWER (SAE NET)	255	190	190
TORQUE (FT. LBS.)	330	225	225
COMPRESSION RATIO	9.4:1	8.8:1	8.8:1
AXLE RATIO	3.08:1	3.55:1	3.55:1
TURNING CIRCLE—FT. CURB to CURB	39.8	35.7	35.7
TRANSMISSION	Elec. Automatic	Elec. Automatic	Elec. Automatic - 4WD
TRANSMISSION MODEL NUMBER	4L60E	AW3043LE	AW3043LE
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P235/70R	P225/70R	P225/70R
WHEEL RIM SIZE—INCHES	15	15	15
GROUND CLEARANCE—INCHES	6.7	8.6	8.5
BRAKE SYSTEM	Power - ABS	Power - ABS	Power - ABS
BRAKES—FRONT TYPE	Vented Disc	Vented Disc	Vented Disc
BRAKES—REAR TYPE	Drum	Drum	Drum
FUEL CAPACITY—GALLONS	30.0	20.2	20.2
FUEL CAPACITY—LITERS	113.6	76.5	76.5
OVERALL LENGTH—INCHES	199.6	165.3	165.3
OVERALL HEIGHT—INCHES	69.6	63.2	63.2
TEST WEIGHT—LBS.	4924	3383	3631
WHEELBASE—INCHES	117.5	101.4	101.4
HEADROOM FRONT—INCHES	39.9	38.0	38.0
HEADROOM REAR—INCHES	38.9	38.0	38.0
LEG ROOM FRONT—INCHES MAX.	41.7	41.0	41.0
LEG ROOM REAR—INCHES MIN.	36.7	35.3	35.3
SHOULDER ROOM FRONT—INCHES	65.0	55.3	55.3
SHOULDER ROOM REAR—INCHES	65.0	55.3	55.3
HIP ROOM FRONT—INCHES	59.6	55.3	55.3
HIP ROOM REAR—INCHES	59.6	44.5	44.5
INTERIOR VOLUME FRONT—CU. FT.	62.4	50.3	50.3
INTERIOR VOLUME REAR—CU. FT.	53.5	42.8	42.8
INTERIOR VOLUME COMB.—CU. FT.	115.9	93.1	93.1
TRUNK VOLUME—CU. FT.	70.3*	35.7**	35.7**
EPA MILEAGE—CITY—MPG	13	16	16
EPA MILEAGE—HIGHWAY—MPG	17	22	21
EPA MILEAGE—COMBINED—MPG	14	18	18

* Behind second seat.

** Behind second seat/Second seat down–71.5 cu. ft.

COMPETITIVE EVALUATION

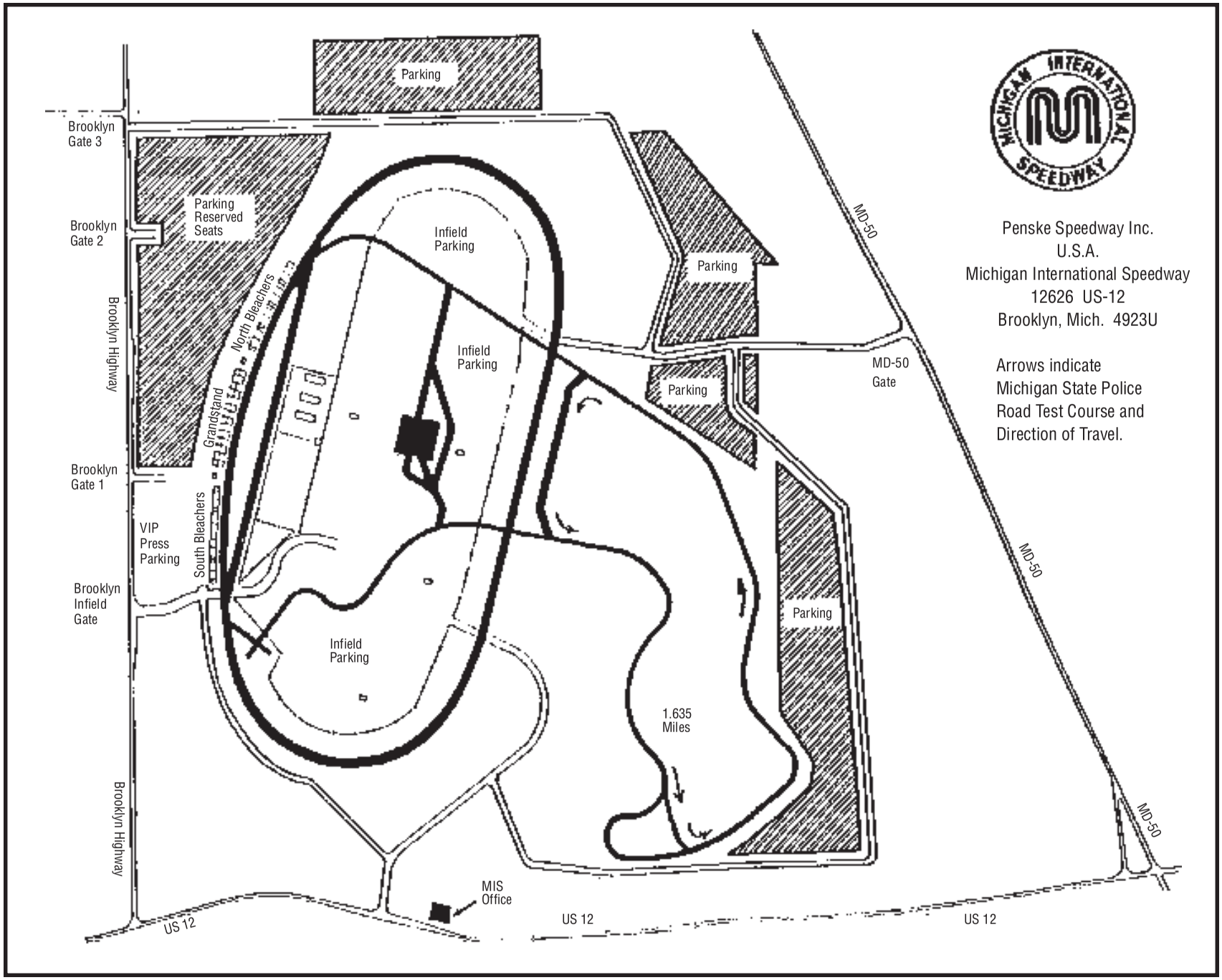
VEHICLE DYNAMICS TESTING

TEST OBJECTIVE

Determine each vehicle's high-speed pursuit or emergency handling characteristics and performance in comparison to the other vehicles in the test group. The course used is a 1.635-mile road-racing type configuration, containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation will be a true test of the success or failure of the vehicle manufacturers to offer vehicles that provide the optimum balance between handling (suspension components), acceleration (usable horsepower), and braking characteristics.

TEST METHODOLOGY

Each vehicle will be driven over the course for at least 12 timed laps, using a minimum of three separate drivers. The final score for each vehicle will be the average of the fastest of at least 9 timed laps.


Parking
Brooklyn Gate 3
Parking Reserved Seats
Brooklyn Gate 2
Brooklyn Highway
North Bleachers
Grandstand
Infield Parking
Infield Parking
Parking
MD-50
MD-50 Gate
Parking
Brooklyn Gate 1
VIP Press Parking
South Bleachers
Brooklyn Infield Gate
Infield Parking
Parking
1.635 Miles
MD-50
Brooklyn Highway
MIS Office
US 12
US 12
US 12
MD-50
MICHIGAN INTERNATIONAL SPEEDWAY
Penske Speedway Inc.
U.S.A.
Michigan International Speedway
12626 US-12
Brooklyn, Mich. 4923U
Arrows indicate
Michigan State Police
Road Test Course and
Direction of Travel.

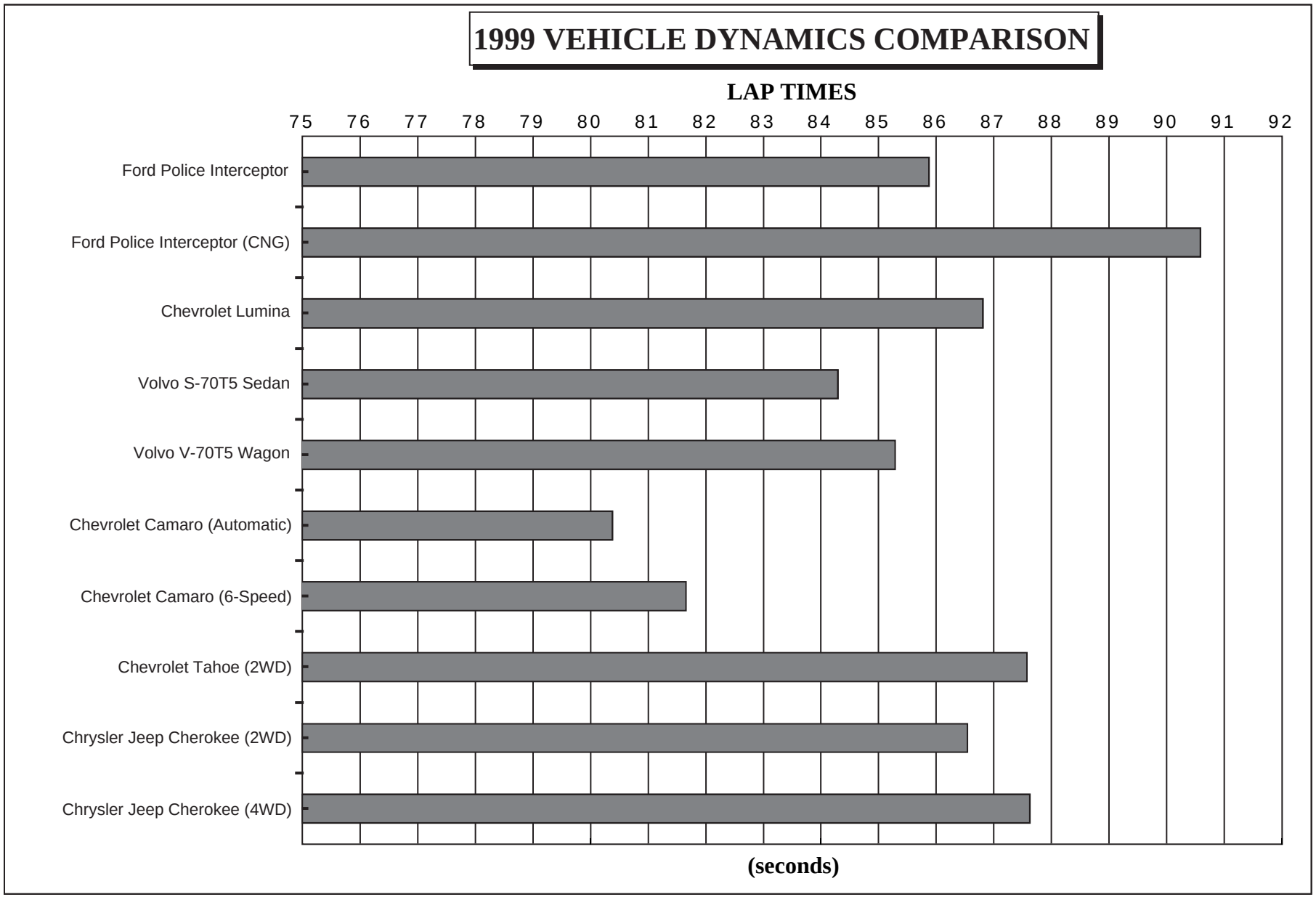
VEHICLE DYNAMICS TESTING

VEHICLES	DRIVERS	LAP 1	LAP 2	LAP 3	LAP 4	AVERAGE
Ford	Stevens	1:26.91	1:26.56	1:26.71	1:26.56	
Police Interceptor	Clark	1:25.22	1:25.36	1:25.48	1:25.32	
4.6L SPFI	Rothermel	1:25.19	1:25.51	1:25.85	1:25.76	
ABS Brakes	Pokora	1:27.24	1:27.71	1:28.14	1:27.51	
OVERALL AVERAGE						**1:25.87**
Ford	Stevens	1:32.38	1:32.80	1:32.01	1:32.25	
Police Interceptor	Clark	1:29.98	1:29.62	1:30.47	1:30.28	
4.6L SPFI CNG	Rothermel	1:30.33	1:30.02	1:30.36	1:30.13	
ABS Brakes	Pokora	1:31.18	1:32.81	1:31.27	1:31.34	
OVERALL AVERAGE						**1:30.58**
Chevrolet	Stevens	1:27.70	1:26.93	1:27.70	1:27.23	
Lumina	Clark	1:26.39	1:26.55	1:26.79	1:26.56	
3.8L SPFI	Rothermel	1:26.11	1:26.34	1:26.87	1:26.38	
ABS Brakes	Pokora	1:27.84	1:28.60	1:28.38	1:27.95	
OVERALL AVERAGE						**1:26.80**
Volvo	Stevens	1:24.96	1:24.11	1:24.69	1:24.74	
S–70T5 Sedan	Clark	1:24.43	1:24.34	1:23.96	1:24.44	
2.3L MPFI Turbo	Rothermel	1:24.36	1:24.00	1:23.92	1:23.53	
ABS Brakes	Pokora	1:25.96	1:26.10	1:25.68	1:25.44	
OVERALL AVERAGE						**1:24.29**

VEHICLES	DRIVERS	LAP 1	LAP 2	LAP 3	LAP 4	AVERAGE
Chevrolet	Stevens	1:20.57	1:21.49	1:21.75	1:21.39	
Camaro (Automatic)	Clark	1:20.58	1:20.26	1:19.99	1:19.99	
5.7L SPFI	Rothermel	1:19.96	1:19.60	1:20.74	1:19.84	
ABS Brakes	Pokora	1:20.77	1:20.94	1:21.21	1:22.10	
OVERALL AVERAGE						**1:20.37**
Chevrolet	Stevens	1:22.20	1:22.70	1:21.48	1:22.81	
Camaro (6-Speed Manual)	Clark	1:20.60	1:21.76	1:21.19	1:21.27	
5.7L SPFI	Rothermel	1:21.11	1:22.22	1:21.54	1:21.91	
ABS Brakes	Pokora	1:22.32	1:22.25	1:23.61	1:23.85	
OVERALL AVERAGE						**1:21.65**

VEHICLE DYNAMICS TESTING

VEHICLES	DRIVERS	LAP 1	LAP 2	LAP 3	LAP 4	AVERAGE
Volvo	Stevens	1:25.10	1:25.57	1:26.15	1:26.15	
V–70T5 Wagon	Clark	1:25.43	1:24.65	1:24.96	1:25.51	
2.3L MPFI Turbo	Rothermel	1:24.35	1:25.79	1:25.31	1:26.19	
ABS Brakes	Pokora	1:25.39	1:25.51	1:26.09	1:25.79	
OVERALL AVERAGE						**1:25.28**
Chevrolet	Stevens	1:27.95	1:27.75	1:27.42	1:28.23	
Tahoe (2WD)	Clark	1:27.41	1:27.78	1:27.45	1:27.77	
5.7L SPFI	Rothermel	1:27.45	1:27.30	1:27.06	1:27.26	
ABS Brakes	Pokora	1:30.20	1:29.37	1:29.98	1:30.35	
OVERALL AVERAGE						**1:27.57**
Chrysler Jeep	Stevens	1:27.27	1:27.21	1:27.09	1:26.69	
Cherokee (2WD)	Clark	1:26.69	1:26.26	1:26.67	1:26.48	
4.0L MPFI	Rothermel	1:25.59	1:25.95	1:26.48	1:26.30	
ABS Brakes	Pokora	1:27.43	1:28.25	1:27.08	1:27.92	
OVERALL AVERAGE						**1:26.54**
Chrysler Jeep	Stevens	1:28.11	1:28.73	1:28.27	1:28.03	
Cherokee (4WD)	Clark	1:27.19	1:27.72	1:27.12	1:26.73	
4.0L MPFI	Rothermel	1:27.60	1:26.73	1:27.62	1:27.59	
ABS Brakes	Pokora	1:29.22	1:28.97	1:29.99	1:29.30	
OVERALL AVERAGE						**1:27.62**


1999 VEHICLE DYNAMICS COMPARISON
LAP TIMES
75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(seconds)

ACCELERATION AND TOP SPEED TESTING

ACCELERATION TEST OBJECTIVE

Determine the ability of each test vehicle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph, and determine the distance to reach 110 mph and 120 mph.

ACCELERATION TEST METHODOLOGY

Using a DLS Smart Sensor—Optical Noncontact Speed and Distance Sensor in conjunction with a laptop computer, each vehicle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged, and the average times used to derive scores on the competitive test for acceleration.

TOP SPEED TEST OBJECTIVE

Determine the actual top speed attainable by each test vehicle within a distance of 14 miles from a standing start.

TOP SPEED TEST METHODOLOGY

Following the fourth acceleration run, each test vehicle will continue to accelerate to the top speed attainable within 14 miles from the start of the run. The highest speed attained within the 14-mile distance will be the vehicle’s score on the competitive test for top speed.

BRAKE TESTING

BRAKE TEST OBJECTIVE

Determine the deceleration rate attained by each test vehicle on 12, 60–0 mph impending skid (threshold) stops, with ABS in operation if the vehicle is so equipped. Each vehicle will be scored on the average deceleration rate it attains.

BRAKE TEST METHODOLOGY

Each vehicle will make two decelerations at specific predetermined points on the test road from 90–0 mph at 22 ft/s^2, with the driver using a decelerometer to maintain the deceleration rate. Immediately after these "heat-up" stops are completed, the vehicle will be turned around and will make six measured 60–0 mph impending skid (threshold) stops with ABS in operation, if so equipped, at specific predetermined points. Following a 4-minute heat soak, the entire sequence will be repeated. The exact initial velocity at the beginning of each of the 60–0 mph decelerations, and the exact distance required to make each stop will be recorded by means of a fifth wheel in conjunction with electronic speed and distance meters. The data resulting from the 12 total stops will be used to calculate the average deceleration rate, which is the vehicle's score for this test.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity*(IV) squared}}{\text{2 times Stopping Distance (SD)}} = \frac{(IV)^2}{2\,(SD)}$$

EXAMPLE:

Initial Velocity = 89.175 ft/s (60.8 mph x 1.4667*)

Stopping Distance = 171.4 ft.

$$DR = \frac{(IV)^2}{2(SD)} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

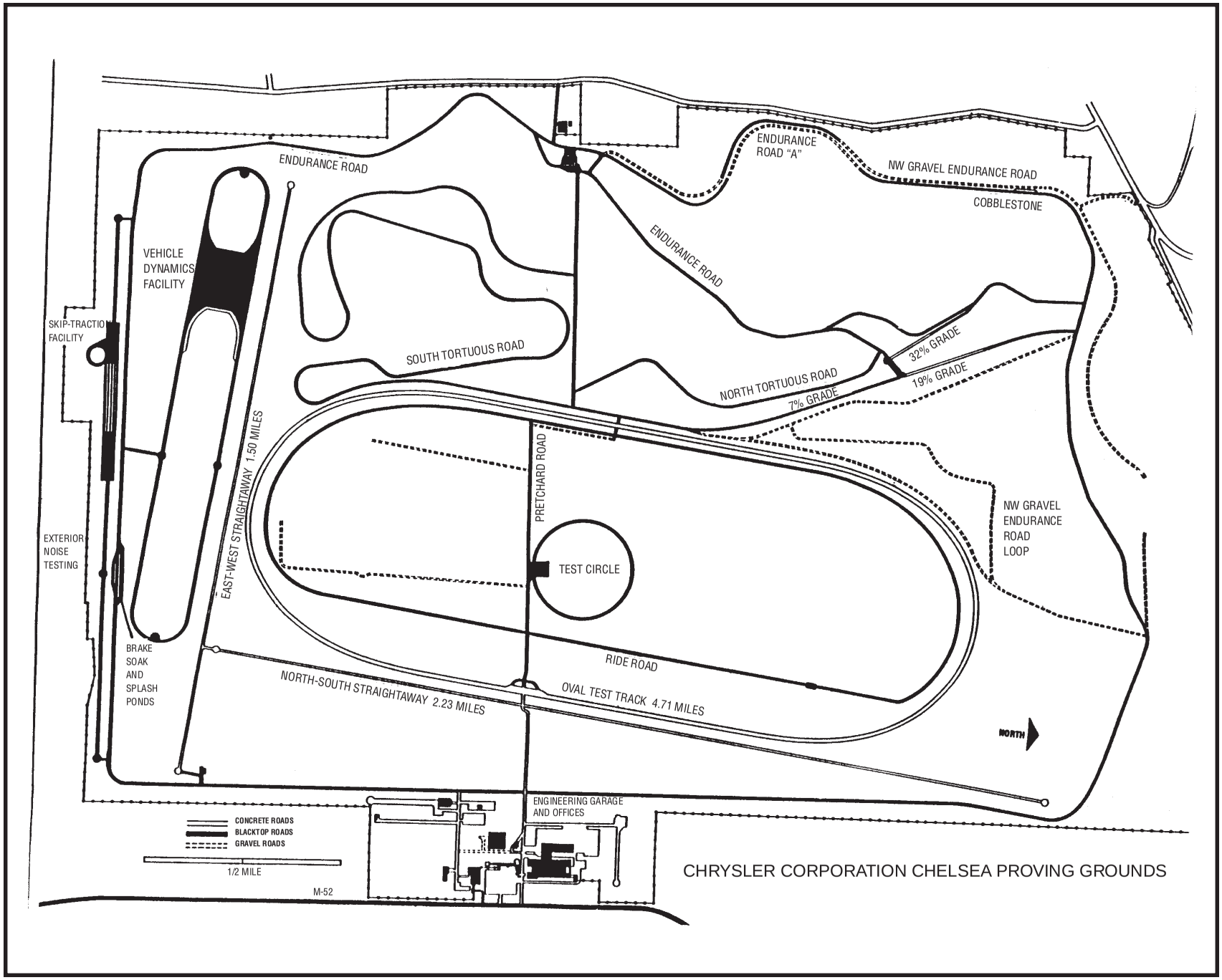
Once a vehicle's average deceleration rate has been determined, it is possible to calculate the stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the vehicle in question.

EXAMPLE:

60 mph = 88.002 ft/s x 88.002 = 7744.352 / 2 = 3872.176 / 23.198 ft/s^2 = 166.9 ft.

* Initial velocity must be expressed in terms of feet per second, with 1 mile per hour being equal to 1.4667 feet per second.


ENDURANCE ROAD
ENDURANCE ROAD "A"
NW GRAVEL ENDURANCE ROAD
COBBLESTONE
ENDURANCE ROAD
VEHICLE DYNAMICS FACILITY
SKIP-TRACTION FACILITY
SOUTH TORTUOUS ROAD
NORTH TORTUOUS ROAD
32% GRADE
19% GRADE
7% GRADE
EAST-WEST STRAIGHTAWAY 1.50 MILES
PRETCHARD ROAD
NW GRAVEL ENDURANCE ROAD LOOP
EXTERIOR NOISE TESTING
TEST CIRCLE
BRAKE SOAK AND SPLASH PONDS
RIDE ROAD
NORTH-SOUTH STRAIGHTAWAY 2.23 MILES
OVAL TEST TRACK 4.71 MILES
NORTH
ENGINEERING GARAGE AND OFFICES
CONCRETE ROADS
BLACKTOP ROADS
GRAVEL ROADS
1/2 MILE
M-52
CHRYSLER CORPORATION CHELSEA PROVING GROUNDS

SUMMARY OF ACCELERATION, TOP SPEED, AND BRAKE TESTING

ACCELERATION*		Ford Police Interceptor 4.6L SPFI	Ford Police Interceptor 4.6L SPFI (CNG)	Chevrolet Lumina 3.8L SPFI	Volvo S–70T5 Sedan 2.3L MPFI Turbo
0–20 mph	(sec.)	1.73	2.59	2.15	2.56
0–30 mph	(sec.)	2.93	4.48	3.38	3.86
0–40 mph	(sec.)	4.56	6.44	4.85	5.23
0–50 mph	(sec.)	6.34	8.85	6.87	6.83
0–60 mph	(sec.)	8.55	12.40	9.32	8.86
0–70 mph	(sec.)	11.39	16.17	12.10	11.13
0–80 mph	(sec.)	14.96	20.85	15.69	13.67
0–90 mph	(sec.)	19.27	27.41	20.55	17.27
0–100 mph	(sec.)	25.33	38.21	26.71	21.30
TOP SPEED	(mph)	129**	106**	124**	146
DISTANCE TO REACH					
110 mph	(miles)	0.80	--	0.73	0.51
120 mph	(miles)	1.44	--	2.09	0.72
QUARTER MILE					
Time	(sec.)	16.63	18.97	17.14	16.89
Speed	(mph)	84.13	76.23	83.23	89.00
		ABS	**ABS**	**ABS**	**ABS**
BRAKING—PHASE I					
Average Deceleration Rate	(ft/s^2)	27.73	26.85	23.62	24.75
BRAKING—PHASE II					
Average Deceleration Rate	(ft/s^2)	27.94	26.43	23.43	24.25
BRAKING—FINAL SCORE					
Average Deceleration Rate	**(ft/s^2)**	**27.83**	**26.64**	**23.53**	**24.50**
Projected Stopping Distance from 60 mph	(feet)	139.1	145.4	164.6	158.0

*Four-run average.
**Vehicle equipped with an electronic speed limiter.

SUMMARY OF ACCELERATION, TOP SPEED, AND BRAKE TESTING

ACCELERATION*		Volvo V–70T5 Wagon 2.3L MPFI Turbo	Chevrolet Camaro (Auto) 5.7L SPFI	Chevrolet Camaro (6-Spd) 5.7L SPFI
0–20 mph	(sec.)	2.65	1.64	1.72
0–30 mph	(sec.)	4.03	2.58	2.60
0–40 mph	(sec.)	5.47	3.57	3.54
0–50 mph	(sec.)	7.19	4.81	4.80
0–60 mph	(sec.)	9.24	6.32	6.12
0–70 mph	(sec.)	11.55	7.93	7.81
0–80 mph	(sec.)	14.30	9.80	9.65
0–90 mph	(sec.)	17.96	12.36	11.75
0–100 mph	(sec.)	22.37	15.18	14.46
TOP SPEED	(mph)	140	159	159
DISTANCE TO REACH				
110 mph	(miles)	0.56	0.36	0.34
120 mph	(miles)	0.82	0.48	0.49
QUARTER MILE				
Time	(sec.)	17.18	14.71	14.60
Speed	(mph)	87.88	98.40	100.50
		ABS	**ABS**	**ABS**
BRAKING—PHASE I				
Average Deceleration Rate	(ft/s^2)	24.47	27.43	**
BRAKING—PHASE II				
Average Deceleration Rate	(ft/s^2)	24.50	28.13	**
BRAKING—FINAL SCORE				
Average Deceleration Rate	**(ft/s^2)**	**24.49**	**27.78**	**
Projected Stopping Distance from 60 mph	(feet)	158.1	139.4	**

* Four-run average.

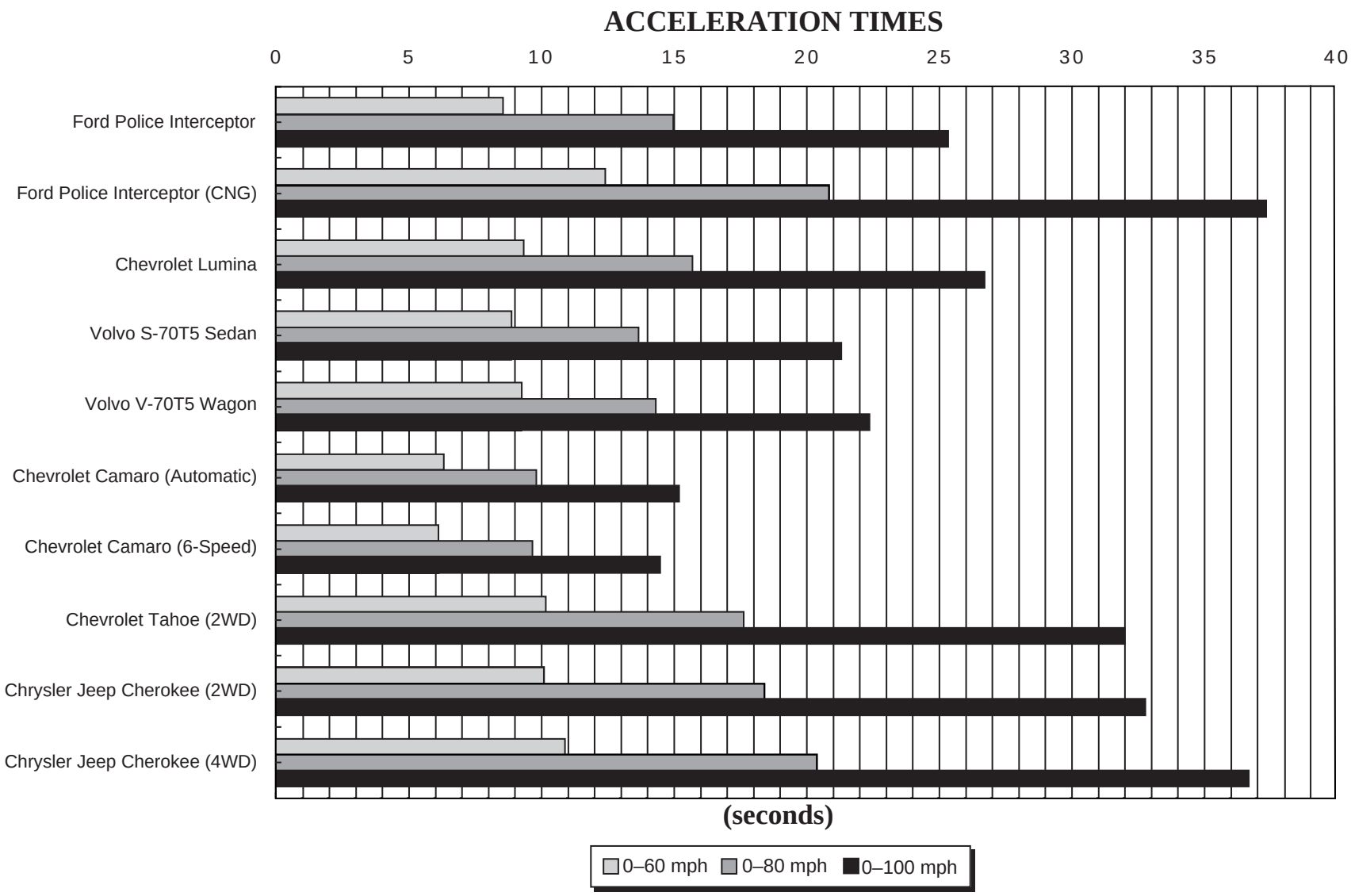
** Because the two Chevrolet Camaros have identical braking systems and are nearly identical in weight, only the automatic transmission-equipped car was subjected to the brake tests.

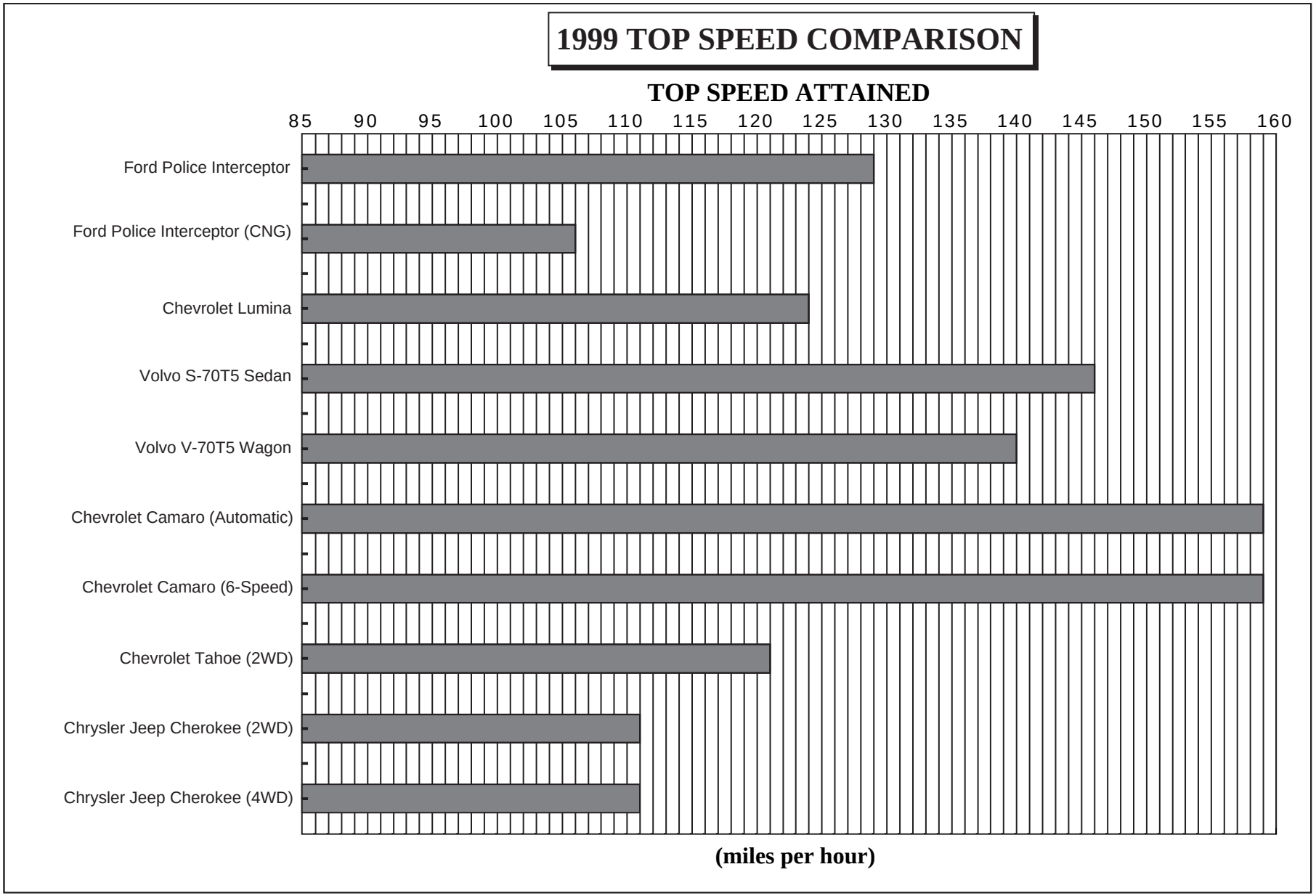
SUMMARY OF ACCELERATION, TOP SPEED, AND BRAKE TESTING

ACCELERATION*		Chevrolet Tahoe (2WD) 5.7L SPFI	Chrysler Jeep Cherokee (2WD) 4.0L MPFI	Chrysler Jeep Cherokee (4WD) 4.0L MPFI
0–20 mph	(sec.)	2.10	2.06	2.19
0–30 mph	(sec.)	3.50	3.47	3.71
0–40 mph	(sec.)	5.17	5.03	5.38
0–50 mph	(sec.)	7.47	7.42	8.04
0–60 mph	(sec.)	10.16	10.09	10.88
0–70 mph	(sec.)	13.32	13.26	14.53
0–80 mph	(sec.)	17.62	18.40	20.38
0–90 mph	(sec.)	23.95	24.58	27.31
0–100 mph	(sec.)	32.00	32.77	36.66
TOP SPEED	(mph)	121	111**	111**
DISTANCE TO REACH				
110 mph	(miles)	0.98	1.09	1.36
120 mph	(miles)	4.51	--	--
QUARTER MILE				
Time	(sec.)	17.63	17.64	18.14
Speed	(mph)	80.00	78.58	76.33
		ABS	**ABS**	**ABS**
BRAKING—PHASE I				
Average Deceleration Rate	(ft/s^2)	23.25	24.39	23.16
BRAKING—PHASE II				
Average Deceleration Rate	(ft/s^2)	23.15	23.94	21.52
BRAKING—FINAL SCORE				
Average Deceleration Rate	**(ft/s^2)**	**23.20**	**24.17**	**22.34**
Projected Stopping Distance from 60 mph	(feet)	166.9	160.2	173.3

* Four-run average.
** Vehicle equipped with an electronic speed limiter.

1999 ACCELERATION COMPARISON




1999 TOP SPEED COMPARISON
TOP SPEED ATTAINED
85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(miles per hour)

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

MAKE & MODEL: Ford Police Interceptor 4.6L SPFI **BEGINNING TIME:** 8:24 a.m.

WIND VELOCITY: 1.6 mph **WIND DIRECTION:** 299° **TEMPERATURE:** 54.9°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	**10.0 sec.**	8.60	8.42	8.50	8.69	**8.55**
0–80	**17.2 sec.**	15.03	14.84	14.88	15.10	**14.96**
0–100	**28.2 sec.**	25.46	24.99	25.10	25.77	**25.33**

DISTANCE TO REACH: **110 MPH** 0.80 mile **120 MPH** 1.44 miles

TOP SPEED ATTAINED: 129 mph

MAKE & MODEL: Ford Police Interceptor 4.6L SPFI (CNG) **BEGINNING TIME:** 1:27 p.m.

WIND VELOCITY: 3.8 mph **WIND DIRECTION:** 244° **TEMPERATURE:** 82.1°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	**10.0 sec.**	12.52	12.52	12.37	12.20	**12.40**
0–80	**17.2 sec.**	20.85	20.90	20.85	20.79	**20.85**
0–100	**28.2 sec.**	38.24	38.39	37.79	38.42	**38.21**

DISTANCE TO REACH: **110 MPH** -- **120 MPH** --

TOP SPEED ATTAINED: 106 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

MAKE & MODEL: Chevrolet Lumina 3.8L SPFI **BEGINNING TIME:** 9:06 a.m.

WIND VELOCITY: 0.4 mph **WIND DIRECTION:** 174° **TEMPERATURE:** 60.1°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	10.0 sec.	9.42	9.18	9.30	9.39	9.32
0–80	17.2 sec.	15.83	15.58	15.64	15.69	15.69
0–100	28.2 sec.	27.19	26.34	26.77	26.53	26.71

DISTANCE TO REACH: **110 MPH** 73 mile **120 MPH** 2.09 miles

TOP SPEED ATTAINED: 124 mph

MAKE & MODEL: Volvo S–70 Sedan 2.3L MPFI Turbo **BEGINNING TIME:** 4:50 p.m.

WIND VELOCITY: 4.7 mph **WIND DIRECTION:** 300° **TEMPERATURE:** 83.5°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	10.0 sec.	8.92	8.96	8.81	8.75	8.86
0–80	17.2 sec.	13.83	13.81	13.61	13.41	13.67
0–100	28.2 sec.	21.46	21.46	21.07	21.19	21.30

DISTANCE TO REACH: **110 MPH** 0.51 mile **120 MPH** 0.72 mile

TOP SPEED ATTAINED: 146 mph

*** Michigan State Police minimum requirement.**

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

MAKE & MODEL: Volvo V–70T5 Wagon 2.3L MPFI Turbo **BEGINNING TIME:** 1:57 p.m.

WIND VELOCITY: 4.1 mph **WIND DIRECTION:** 248° **TEMPERATURE:** 82.8°

ACCELERATION

SPEEDS	TIME REQUIREMENTS	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	NA	9.02	9.29	9.31	9.33	9.24
0–80	NA	14.05	14.21	14.32	14.63	14.30
0–100	NA	21.83	22.46	22.47	22.73	22.37

DISTANCE TO REACH: **110 MPH** 0.56 mile **120 MPH** 0.82 mile

TOP SPEED ATTAINED: 140 mph

MAKE & MODEL: Chev. Camaro 5.7L SPFI (Automatic) **BEGINNING TIME:** 12:25 p.m.

WIND VELOCITY: 4.4 mph **WIND DIRECTION:** 324° **TEMPERATURE:** 80.3°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	7.8 sec.	6.35	6.30	6.22	6.39	6.32
0–80	12.8 sec.	9.82	9.84	9.66	9.88	9.80
0–100	21.0 sec.	15.27	15.17	15.04	15.25	15.18

DISTANCE TO REACH: **110 MPH** 0.36 mile **120 MPH** 0.48 mile

TOP SPEED ATTAINED: 159 mph

*** Michigan State Police minimum requirement.**

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

MAKE & MODEL: Chevrolet Camaro 5.7L SPFI (6-Spd) **BEGINNING TIME:** 2:26 p.m.

WIND VELOCITY: 3.2 mph **WIND DIRECTION:** 225° **TEMPERATURE:** 83.6°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	7.8 sec.	6.17	6.02	6.17	6.13	6.12
0–80	12.8 sec.	9.67	9.55	9.69	9.68	9.65
0–100	21.0 sec.	14.47	14.36	14.47	14.54	14.46

DISTANCE TO REACH: **110 MPH** 0.34 mile **120 MPH** 0.49 mile

TOP SPEED ATTAINED: 159 mph

MAKE & MODEL: Chevrolet Tahoe 5.7L SPFI (2WD) **BEGINNING TIME:** 10:24 a.m.

WIND VELOCITY: 1.5 mph **WIND DIRECTION:** 243° **TEMPERATURE:** 69.8°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	11.0 sec.	10.18	10.16	10.14	10.14	10.16
0–80	18.5 sec.	17.58	17.46	17.91	17.52	17.62
0–100	32.0 sec.	32.18	31.36	32.67	31.77	32.00

DISTANCE TO REACH: **110 MPH** 0.98 mile **120 MPH** 4.51 miles

TOP SPEED ATTAINED: 121 mph

*** Michigan State Police minimum requirement.**

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

MAKE & MODEL: Chrysler Jeep Cherokee 4.0L MPFI (2WD) **BEGINNING TIME:** 12:53 p.m.

WIND VELOCITY: 6.3 mph **WIND DIRECTION:** 297° **TEMPERATURE:** 81.1°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	11.0 sec.	10.06	10.04	10.07	10.17	10.09
0–80	21.0 sec.	18.22	18.25	18.40	18.71	18.40
0–100	35.0 sec.	32.83	32.62	32.24	33.38	32.77

DISTANCE TO REACH: **110 MPH** 1.09 mile **120 MPH** --

TOP SPEED ATTAINED: 111 mph

MAKE & MODEL: Chrysler Jeep Cherokee 4.0L MPFI (4WD) **BEGINNING TIME:** 11:19 a.m.

WIND VELOCITY: 1.0 mph **WIND DIRECTION:** 29° **TEMPERATURE:** 76.4°

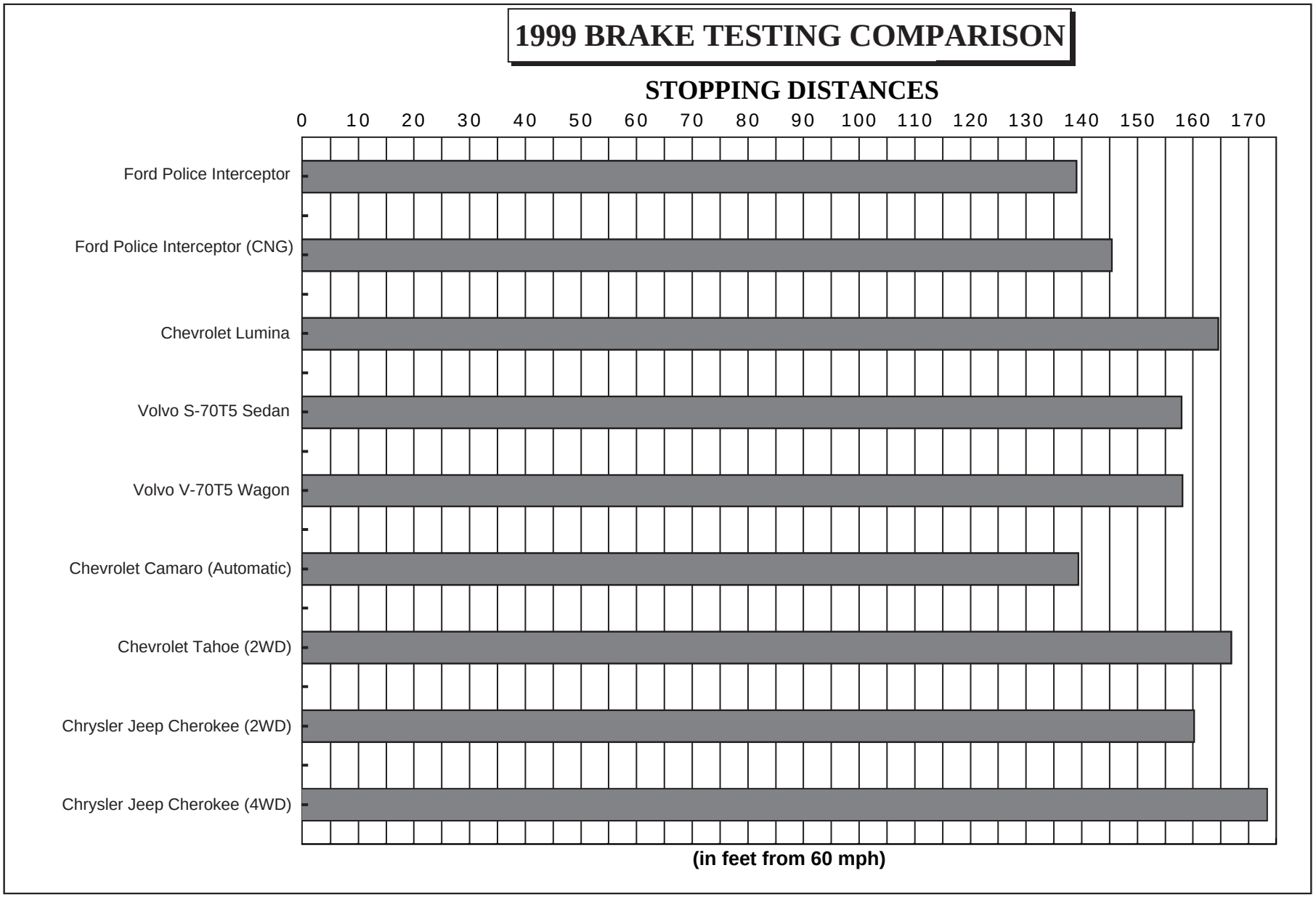
ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0–60	11.0 sec.	11.22	10.82	10.67	10.79	10.88
0–80	21.0 sec.	20.95	20.38	19.90	20.29	20.38
0–100	35.0 sec.	37.81	36.78	35.50	36.54	36.66

DISTANCE TO REACH: **110 MPH** 1.36 mile **120 MPH** --

TOP SPEED ATTAINED: 111 mph

***Michigan State Police minimum requirement.**


1999 BRAKE TESTING COMPARISON
STOPPING DISTANCES
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(in feet from 60 mph)

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 9:10 a.m. **TEMPERATURE:** 60.8°F

MAKE and MODEL: Ford Police Interceptor 4.6L **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s^2)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	61.7 mph	144.8 feet	28.28 ft/s^2
Stop #2	60.5 mph	144.3 feet	27.28 ft/s^2
Stop #3	60.6 mph	143.8 feet	27.47 ft/s^2
Stop #4	60.9 mph	142.5 feet	27.99 ft/s^2
Stop #5	60.6 mph	140.8 feet	28.05 ft/s^2
Stop #6	60.6 mph	140.8 feet	28.05 ft/s^2

AVERAGE DECELERATION RATE (Phase I): 27.72 **ft/s^2**

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s^2)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.2 mph	140.8 feet	27.68 ft/s^2
Stop #2	60.9 mph	142.9 feet	27.92 ft/s^2
Stop #3	60.0 mph	139.7 feet	27.72 ft/s^2
Stop #4	60.5 mph	139.8 feet	28.16 ft/s^2
Stop #5	60.3 mph	137.5 feet	28.44 ft/s^2
Stop #6	59.8 mph	138.8 feet	27.71 ft/s^2

AVERAGE DECELERATION RATE (Phase II): 27.94 **ft/s^2**

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 27.83 **ft/s^2**

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 1:56 p.m. **TEMPERATURE:** 82.8°F

MAKE and MODEL: Ford Police Interceptor 4.6L (CNG) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.4 mph	155.7 feet	25.20 ft/s²
Stop #2	60.7 mph	146.4 feet	27.07 ft/s²
Stop #3	60.9 mph	147.3 feet	27.08 ft/s²
Stop #4	61.1 mph	149.2 feet	26.91 ft/s²
Stop #5	60.7 mph	144.7 feet	27.39 ft/s²
Stop #6	59.8 mph	140.2 feet	27.44 ft/s²

AVERAGE DECELERATION RATE (Phase I): 26.85 **ft/s²**

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.9 mph	145.4 feet	27.44 ft/s²
Stop #2	60.3 mph	149.1 feet	26.23 ft/s²
Stop #3	60.5 mph	149.1 feet	26.40 ft/s²
Stop #4	60.3 mph	148.7 feet	26.30 ft/s²
Stop #5	60.5 mph	148.4 feet	26.53 ft/s²
Stop #6	60.8 mph	155.0 feet	25.65 ft/s²

AVERAGE DECELERATION RATE (Phase II): 26.43 **ft/s²**

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 26.64 **ft/s²**

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 10:03 a.m. **TEMPERATURE:** 66.3°F

MAKE and MODEL: Chevrolet Lumina 3.8L **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.9 mph	166.6 feet	23.94 ft/s²
Stop #2	59.7 mph	158.7 feet	24.16 ft/s²
Stop #3	60.9 mph	173.6 feet	22.98 ft/s²
Stop #4	59.7 mph	162.4 feet	23.61 ft/s²
Stop #5	59.6 mph	161.6 feet	23.64 ft/s²
Stop #6	60.0 mph	165.6 feet	23.38 ft/s²

AVERAGE DECELERATION RATE (Phase I): 23.62 **ft/s²**

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	61.0 mph	165.4 feet	24.20 ft/s²
Stop #2	60.9 mph	170.5 feet	22.71 ft/s²
Stop #3	61.1 mph	171.4 feet	23.43 ft/s²
Stop #4	59.8 mph	165.8 feet	23.20 ft/s²
Stop #5	60.8 mph	170.0 feet	23.39 ft/s²
Stop #6	59.9 mph	163.0 feet	23.68 ft/s²

AVERAGE DECELERATION RATE (Phase II): 23.43 **ft/s²**

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 23.53 **ft/s²**

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 10:35 a.m. **TEMPERATURE:** 70.6°F

MAKE and MODEL: Volvo S–70T5 Sedan 2.3L Turbo **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.8 mph	156.2 feet	25.46 ft/s²
Stop #2	60.4 mph	161.4 feet	24.31 ft/s²
Stop #3	61.0 mph	166.1 feet	24.10 ft/s²
Stop #4	60.0 mph	154.4 feet	25.08 ft/s²
Stop #5	60.8 mph	159.0 feet	25.01 ft/s²
Stop #6	60.4 mph	159.7 feet	24.57 ft/s²

AVERAGE DECELERATION RATE (Phase I): 24.75 **ft/s²**

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	61.5 mph	166.5 feet	24.43 ft/s²
Stop #2	60.3 mph	154.3 feet	25.35 ft/s²
Stop #3	60.5 mph	161.0 feet	24.45 ft/s²
Stop #4	60.9 mph	167.0 feet	23.89 ft/s²
Stop #5	59.8 mph	160.6 feet	23.95 ft/s²
Stop #6	60.5 mph	168.0 feet	23.43 ft/s²

AVERAGE DECELERATION RATE (Phase II): 24.25 **ft/s²**

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 24.50 **ft/s²**

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 2:24 p.m. **TEMPERATURE:** 83.6°F

MAKE and MODEL: Volvo V–70T5 Wagon 2.3L Turbo **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.6 mph	158.4 feet	24.94 ft/s²
Stop #2	60.3 mph	157.9 feet	24.77 ft/s²
Stop #3	60.9 mph	163.2 feet	24.44 ft/s²
Stop #4	60.6 mph	162.8 feet	24.26 ft/s²
Stop #5	61.0 mph	161.8 feet	24.74 ft/s²
Stop #6	60.7 mph	167.3 feet	23.69 ft/s²

AVERAGE DECELERATION RATE (Phase I): 24.47 ft/s²

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.5 mph	160.3 feet	24.56 ft/s²
Stop #2	60.0 mph	157.8 feet	24.54 ft/s²
Stop #3	60.1 mph	161.1 feet	24.12 ft/s²
Stop #4	60.5 mph	163.5 feet	24.08 ft/s²
Stop #5	60.5 mph	156.5 feet	25.16 ft/s²
Stop #6	60.8 mph	161.8 feet	24.57 ft/s²

AVERAGE DECELERATION RATE (Phase II): 24.50 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 24.49 ft/s²

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 12:55 p.m. **TEMPERATURE:** 81.1°F

MAKE and MODEL: Chevrolet Camaro 5.7L Automatic **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.6 mph	147.1 feet	26.85 ft/s²
Stop #2	60.0 mph	141.4 feet	27.38 ft/s²
Stop #3	60.3 mph	146.3 feet	26.73 ft/s²
Stop #4	60.4 mph	140.7 feet	27.89 ft/s²
Stop #5	60.4 mph	141.1 feet	27.81 ft/s²
Stop #6	60.4 mph	140.5 feet	27.93 ft/s²

AVERAGE DECELERATION RATE (Phase I): 27.43 ft/s²

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.3 mph	140.0 feet	27.94 ft/s²
Stop #2	60.8 mph	140.0 feet	28.40 ft/s²
Stop #3	60.2 mph	139.7 feet	27.90 ft/s²
Stop #4	60.9 mph	142.0 feet	28.09 ft/s²
Stop #5	60.4 mph	137.9 feet	28.46 ft/s²
Stop #6	60.6 mph	141.1 feet	27.99 ft/s²

AVERAGE DECELERATION RATE (Phase II): 28.13 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 27.78 ft/s²

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 10:55 a.m. **TEMPERATURE:** 74.1°F

MAKE and MODEL: Chevrolet Tahoe 5.7L (2WD) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.8 mph	169.1 feet	23.51 ft/s²
Stop #2	61.6 mph	175.2 feet	23.30 ft/s²
Stop #3	61.1 mph	174.3 feet	23.04 ft/s²
Stop #4	60.8 mph	171.2 feet	23.23 ft/s²
Stop #5	60.2 mph	165.9 feet	23.50 ft/s²
Stop #6	60.8 mph	173.6 feet	22.90 ft/s²

AVERAGE DECELERATION RATE (Phase I): 23.25 **ft/s²**

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	61.2 mph	172.4 feet	23.37 ft/s²
Stop #2	60.9 mph	175.2 feet	22.77 ft/s²
Stop #3	60.3 mph	168.4 feet	23.22 ft/s²
Stop #4	60.4 mph	170.8 feet	22.97 ft/s²
Stop #5	60.4 mph	169.0 feet	23.22 ft/s²
Stop #6	60.8 mph	170.2 feet	23.36 ft/s²

AVERAGE DECELERATION RATE (Phase II): 23.15 **ft/s²**

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 23.20 **ft/s²**

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 1:32 p.m. **TEMPERATURE:** 82.1°F

MAKE and MODEL: Chrysler Jeep Cherokee 4.0L (2WD) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.3 mph	151.1 feet	25.88 ft/s²
Stop #2	60.1 mph	154.2 feet	25.20 ft/s²
Stop #3	60.3 mph	164.0 feet	23.85 ft/s²
Stop #4	60.7 mph	164.1 feet	24.15 ft/s²
Stop #5	60.7 mph	163.8 feet	24.19 ft/s²
Stop #6	60.3 mph	169.6 feet	23.06 ft/s²

AVERAGE DECELERATION RATE (Phase I): 24.39 ft/s²

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	61.5 mph	155.9 feet	26.09 ft/s²
Stop #2	60.4 mph	154.6 feet	25.38 ft/s²
Stop #3	60.0 mph	161.1 feet	24.04 ft/s²
Stop #4	60.6 mph	170.6 feet	23.15 ft/s²
Stop #5	60.9 mph	175.9 feet	22.68 ft/s²
Stop #6	60.7 mph	177.6 feet	22.31 ft/s²

AVERAGE DECELERATION RATE (Phase II): 23.94 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 24.17 ft/s²

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 12:23 p.m. **TEMPERATURE:** 80.3°F

MAKE and MODEL: Chrysler Jeep Cherokee 4.0L (4WD) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.6 mph	163.4 feet	24.17 ft/s²
Stop #2	60.3 mph	172.4 feet	22.69 ft/s²
Stop #3	60.6 mph	163.5 feet	24.16 ft/s²
Stop #4	60.5 mph	170.6 feet	23.08 ft/s²
Stop #5	60.6 mph	182.2 feet	21.68 ft/s²
Stop #6	60.5 mph	169.6 feet	23.21 ft/s²

AVERAGE DECELERATION RATE (Phase I): 23.16 **ft/s²**

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.8 mph	175.8 feet	22.62 ft/s²
Stop #2	60.2 mph	176.0 feet	22.15 ft/s²
Stop #3	60.2 mph	184.0 feet	21.18 ft/s²
Stop #4	61.1 mph	191.6 feet	20.96 ft/s²
Stop #5	61.2 mph	190.7 feet	21.13 ft/s²
Stop #6	60.5 mph	186.7 feet	21.09 ft/s²

AVERAGE DECELERATION RATE (Phase II): 21.52 **ft/s²**

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 22.34 **ft/s²**

ERGONOMICS AND COMMUNICATIONS

TEST OBJECTIVE

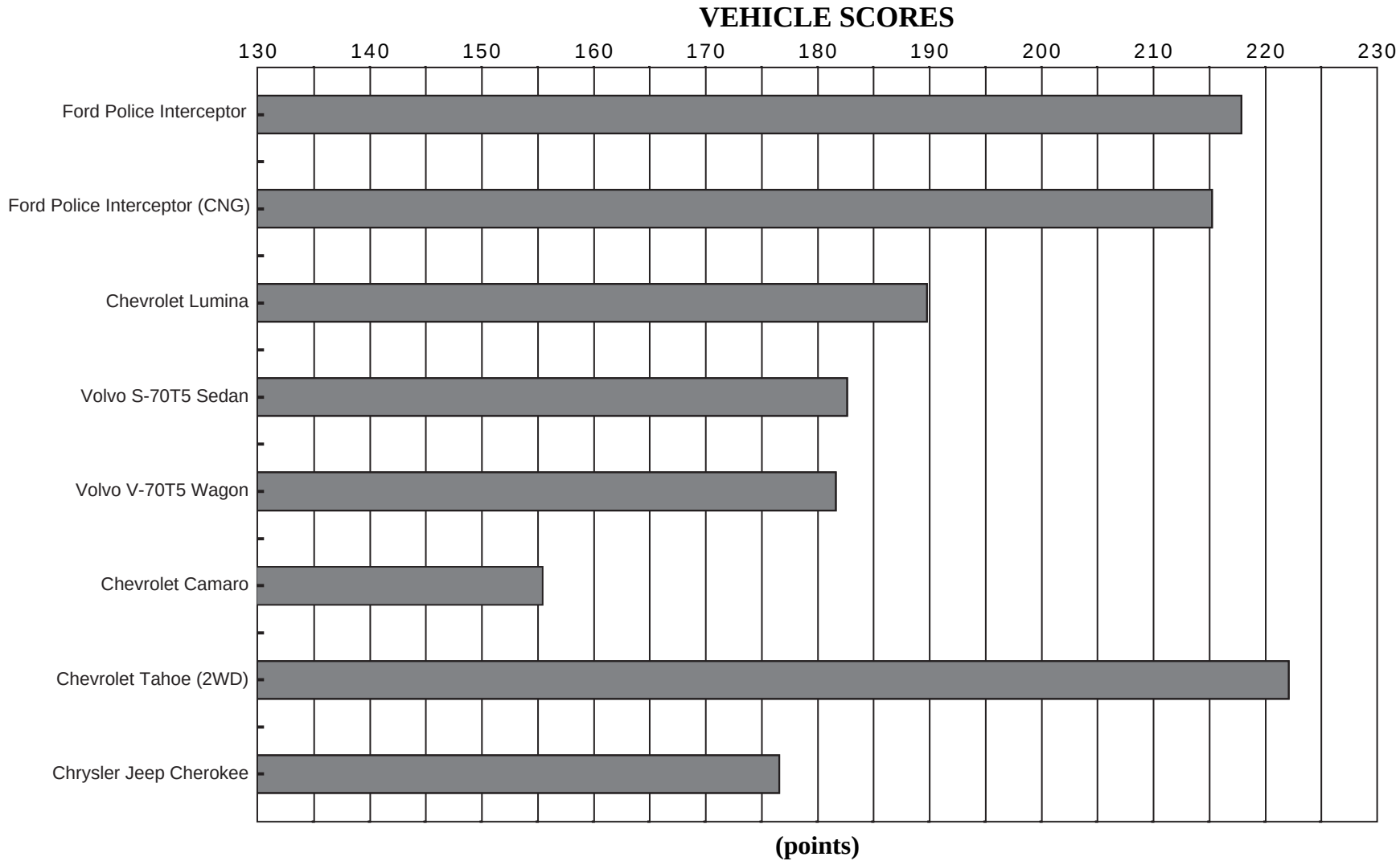
Rate each test vehicle's ability to:

1. Provide a suitable environment for the patrol officer in the performance of his/her assigned tasks.
2. Accommodate the required communications and emergency warning equipment and assess the relative difficulty of such installations.

TEST METHODOLOGY

Utilizing the ergonomics portion of the form, a minimum of four officers will individually and independently compare and score each test vehicle on the various comfort, instrumentation, and visibility items. The installation and communications portion of the evaluation will be conducted by personnel from the Michigan State Police Communications Division and Vehicle and Travel Services, based upon the relative difficulty of the necessary installations. Each factor will be graded on a scale of 1 to 10, with 1 representing "totally unacceptable," 5 representing "average," and 10 representing "superior." The scores will be averaged to minimize personal prejudice for or against any given vehicle.

1999 ERGONOMICS/COMMUNICATIONS COMPARISON



ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Ford Police Interceptor	Ford Police Interceptor (CNG)	Chevrolet Lumina	Volvo S–70T5 Sedan
FRONT SEAT				
Padding	7.30	7.30	5.30	7.10
Depth of Bucket Seat	6.90	6.90	5.20	7.00
Adjustability—Front to Rear	8.30	8.30	6.60	6.90
Upholstery	7.70	7.70	7.60	5.70
Bucket Seat Design	6.80	6.80	4.90	7.00
Headroom	8.20	8.20	7.50	8.00
Seatbelts	8.10	8.10	6.40	6.40
Ease of Entry and Exit	7.80	7.80	6.10	6.50
Overall Comfort Rating	7.50	7.50	5.20	7.00
REAR SEAT				
Legroom—Front Seat Back	7.40	7.40	6.30	6.60
Ease of Entry and Exit	7.30	7.30	6.50	6.60
INSTRUMENTATION				
Clarity	8.50	8.50	7.60	7.10
Placement	7.90	7.90	7.40	6.90
VEHICLE CONTROLS				
Pedals, Size and Position	7.80	7.80	7.70	7.50
Power Window Switch	8.20	8.20	8.50	5.40
Inside Door Release	7.50	7.50	8.00	6.40
Automatic Door Lock Switch	8.40	8.40	6.40	5.40
Outside Mirror Controls	8.20	8.20	6.10	6.40
Steering Wheel, Size, Tilt Release, and Surface	8.10	8.10	7.60	5.70
Heat/AC Vent Placement and Adjustability	7.78	7.78	8.00	7.89
VISIBILITY				
Front (Windshield)	7.70	7.70	7.60	7.80
Rear (Back Window)	7.60	7.60	6.50	6.50
Left Rear Quarter	7.30	7.30	6.30	6.10
Right Rear Quarter	7.50	7.50	6.70	6.50
Outside Rearview Mirrors	7.70	7.70	5.50	7.00
COMMUNICATIONS				
Dashboard Accessibility	8.04	8.00	7.17	4.08
Trunk Accessibility	8.10	5.50	7.45	6.17
Engine Compartment	8.25	8.25	7.67	5.00
TOTAL SCORES	217.87	215.23	189.79	182.64

ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Volvo V–70T5 Wagon	Chevrolet Camaro	Chevrolet Tahoe 2WD	Chrysler Jeep Cherokee
FRONT SEAT				
Padding	7.10	6.60	7.90	7.70
Depth of Bucket Seat	6.80	5.90	7.90	7.20
Adjustability—Front to Rear	6.80	7.90	7.90	6.40
Upholstery	5.90	7.20	7.00	7.60
Bucket Seat Design	6.70	5.30	7.40	7.60
Headroom	8.10	4.30	9.30	7.00
Seatbelts	6.00	5.30	7.80	6.60
Ease of Entry and Exit	6.60	3.70	8.60	6.50
Overall Comfort Rating	6.80	5.44	8.00	6.90
REAR SEAT				
Legroom—Front Seat Back	6.70	1.60	8.40	5.30
Ease of Entry and Exit	6.50	1.80	8.10	4.80
INSTRUMENTATION				
Clarity	7.10	7.40	7.80	6.78
Placement	6.70	6.30	8.30	6.89
VEHICLE CONTROLS				
Pedals, Size and Position	7.40	7.20	7.20	6.67
Power Window Switch	5.90	7.50	7.30	0.50
Inside Door Release	6.40	7.60	8.60	7.10
Automatic Door Lock Switch	5.30	7.60	7.80	0.89
Outside Mirror Controls	6.20	7.30	7.80	6.20
Steering Wheel, Size, Tilt Release, and Surface	5.30	7.60	8.40	7.00
Heat/AC Vent Placement and Adjustability	7.80	7.50	8.20	7.20
VISIBILITY				
Front (Windshield)	7.80	5.80	8.80	7.50
Rear (Back Window)	5.90	4.20	6.60	7.00
Left Rear Quarter	6.50	2.80	7.30	7.20
Right Rear Quarter	7.00	3.20	7.50	7.70
Outside Rearview Mirrors	6.00	4.60	8.50	7.30
COMMUNICATIONS				
Dashboard Accessibility	4.63	4.67	8.00	5.17
Trunk Accessibility	6.60	3.70	7.75	6.15
Engine Compartment	5.08	5.42	7.92	5.75
TOTAL SCORES	181.61	155.43	222.07	176.59

FUEL ECONOMY

TEST OBJECTIVE

Determine the fuel economy potential of all vehicles being evaluated. The data used for scoring are both valid and reliable in a comparison sense, but are not necessarily an accurate predictor of actual fuel economy in police patrol service.

TEST METHODOLOGY

The vehicles will be scored based on estimates for city fuel economy to the nearest 1/10th mile per gallon (mpg) developed from data supplied by the vehicle manufacturer and certified by the Environmental Protection Agency.

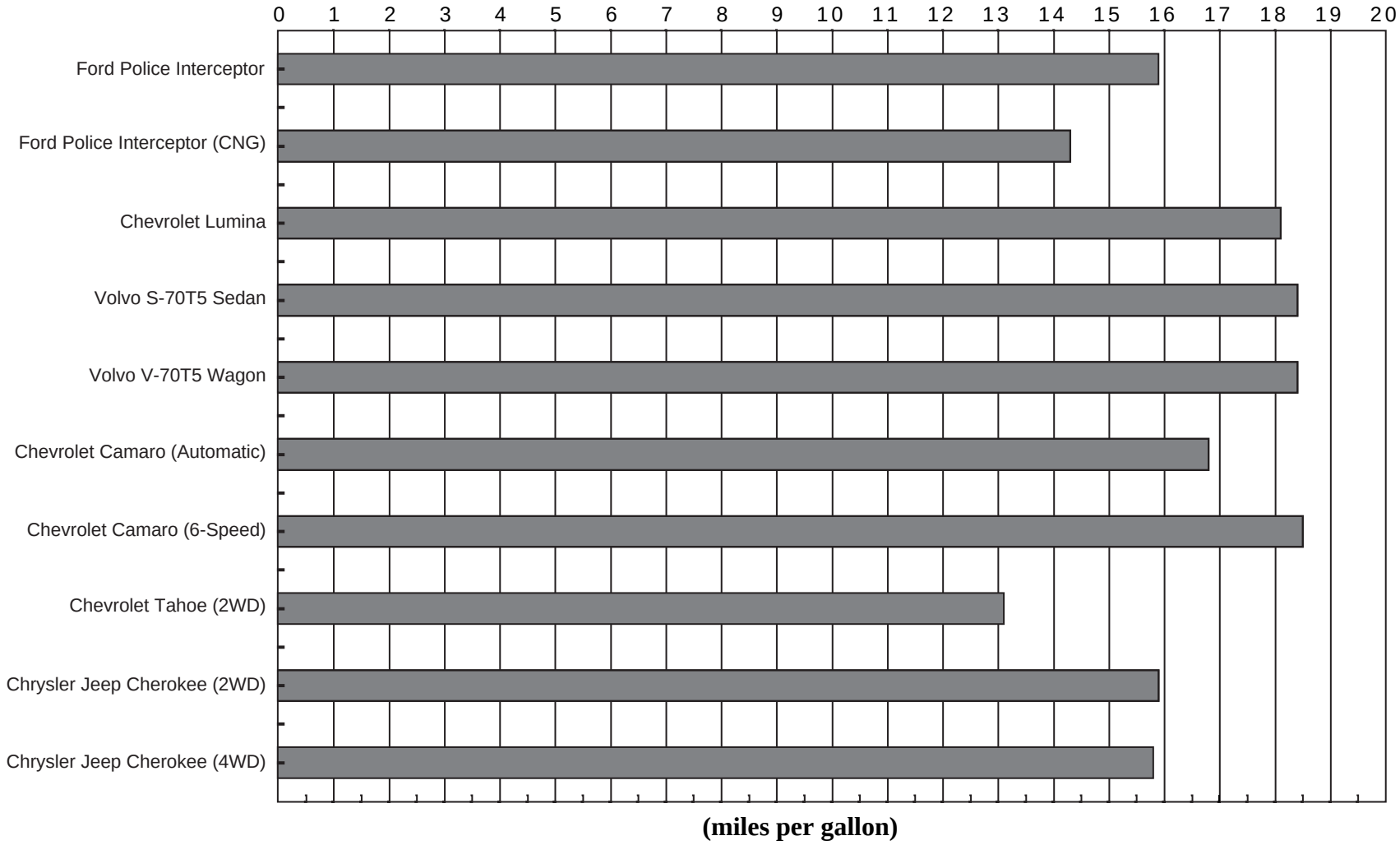
TEST DATA

Vehicles Make/Model/Engine		EPA Miles Per Gallon		
		City*	Highway	Combined
Ford Police Interceptor	4.6L SPFI	16 (15.9)	22	18
Ford Police Interceptor	4.6L SPFI (CNG)	14 (14.3)**	20**	17**
Chevrolet Lumina	3.8L SPFI	18 (18.1)	27	21
Volvo S-70T5 Sedan	2.3L MPFI Turbo	18 (18.4)	25	21
Volvo V-70T5 Wagon	2.3L MPFI Turbo	18 (18.4)	25	21
Chevrolet Camaro	5.7L SPFI (Automatic)	17 (16.8)	24	20
Chevrolet Camaro	5.7L SPFI (6-Speed Manual)	19 (18.5)	28	22
Chevrolet Tahoe	5.7L SPFI (2-Wheel Drive)	13 (13.1)	17	14
Chrysler Jeep Cherokee	4.0L MPFI (2-Wheel Drive)	16 (15.9)	22	18
Chrysler Jeep Cherokee	4.0L MPFI (4-Wheel Drive)	16 (15.8)	21	18

* Scored on city mileage only to the nearest 1/10 mpg.
** EPA mileage estimates are in gasoline equivalent.

1999 FUEL ECONOMY COMPARISON

"CITY" EPA ESTIMATES



MICHIGAN STATE POLICE
SCORING AND BID ADJUSTMENT METHODOLOGY*

STEP I: RAW SCORES

Raw scores are developed, through testing, for each vehicle in each of six evaluation categories. The raw scores are expressed in terms of seconds, feet per second^2, miles per hour, points, and miles per gallon.

VEHICLE DYNAM. (seconds)	ACCEL. (seconds)	BRAKING RATE (ft/sec^2)	TOP SPEED (mph)	ERGONOMICS & COMMUN. (points)	FUEL ECONOMY (mpg)
92.210	45.790	26.380	115.000	173.900	14.300

STEP II: DEVIATION FACTOR

In each evaluation category, the score of the best scoring vehicle is used as the benchmark against which the scores of all other vehicles are compared. (In the Vehicle Dynamics and Acceleration categories the lowest score is best, whereas in the remainder of the categories the highest score is best.) The best scoring vehicle in a given category received a deviation factor of "0." The "deviation factor" is then calculated by determining the absolute difference between each vehicle's raw score and the best score in that category. The absolute difference is then divided by the best score, with the result being the "deviation factor."

CAR MAKE MODEL	TOP SPEED
CAR "A"	115.000 0.042
CAR "B"	118.800 0.010
CAR "C"	117.900 0.018
CAR "D"	120.000 0

EXAMPLE:

Best Score (Car"D")		Other Vehicle Score (Car "A")		Absolute Difference		Best Score		Deviation Factor (Car"A")
120.000	–	115.000	=	5	/	120.000	=	0.042

STEP III: WEIGHTED CATEGORY SCORE

Each vehicle's weighted category score is determined by multiplying the deviation factor (as determined in Step II) by the category weight.

	15 points TOP SPEED (mph)
RAW SCORE	115.000
DEVIATION FACTOR	0.042
WEIGHTED CATEGORY SCORE	**0.630**

(category weight)

.042 X 15 = **0.630**

***All mathematical computations are rounded to the third decimal place.**

STEP IV: TOTAL WEIGHTED SCORE

The total weighted score for each vehicle is derived by adding together the six weighted category scores for that vehicle.

EXAMPLE:

CAR	30 pts. VEH. DYN. (seconds)	20 pts. ACCEL. (seconds)	20 pts. BRAKE DECEL. (ft/sec^2)	15 pts. TOP SPEED (mph)	10 pts. ERGO/ COMM. (points)	5 pts. FUEL ECON. (mpg)	TOTAL WEIGHTED SCORE
Car "A"	92.210	45.790	26.380	115.000	173.900	14.300	
	0.018	0.163	0	0.042	0.184	0	
	0.540	3.260	0	0.630	1.840	0	**6.270**

STEP V: BID ADJUSTMENT FIGURE

The bid adjustment figure that we have chosen to use is 1 percent of the lowest bid price received. For example, in this and the next two steps, the lowest bid price received was $15,238.00, which results in a bid adjustment figure of **$152.38**.

STEP VI: ACTUAL DOLLAR ADJUSTMENT

The actual dollar adjustment for a vehicle is determined by multiplying that vehicle's total weighted score by the bid adjustment figure as shown at right.

TOTAL WTD. SCORE	BID ADJ. FIGURE	ACTUAL DOLLAR ADJ.
	X	=
6.270	**$152.38**	**$955.42**

STEP VII: ADJUSTED BID PRICE

The actual dollar adjustment amount arrived at for each vehicle is added to that vehicle's bid price. Provided other necessary approvals are received, the vehicle with the lowest adjusted bid price will be the vehicle purchased. (The amount paid for the purchased vehicles will be the actual bid price.)

ACTUAL DOLLAR ADJ.	ACTUAL BID PRICE	ADJ. BID PRICE
	+	=
$955.42	**$15,473.00**	**$16,428.42**

APPENDIX I:

PERFORMANCE COMPARISONS OF 1998 AND 1999 TEST VEHICLES

The following charts graphically illustrate the scores achieved by each make and model of vehicle tested for model years 1998 and 1999. The charts presented are for the following performance categories:

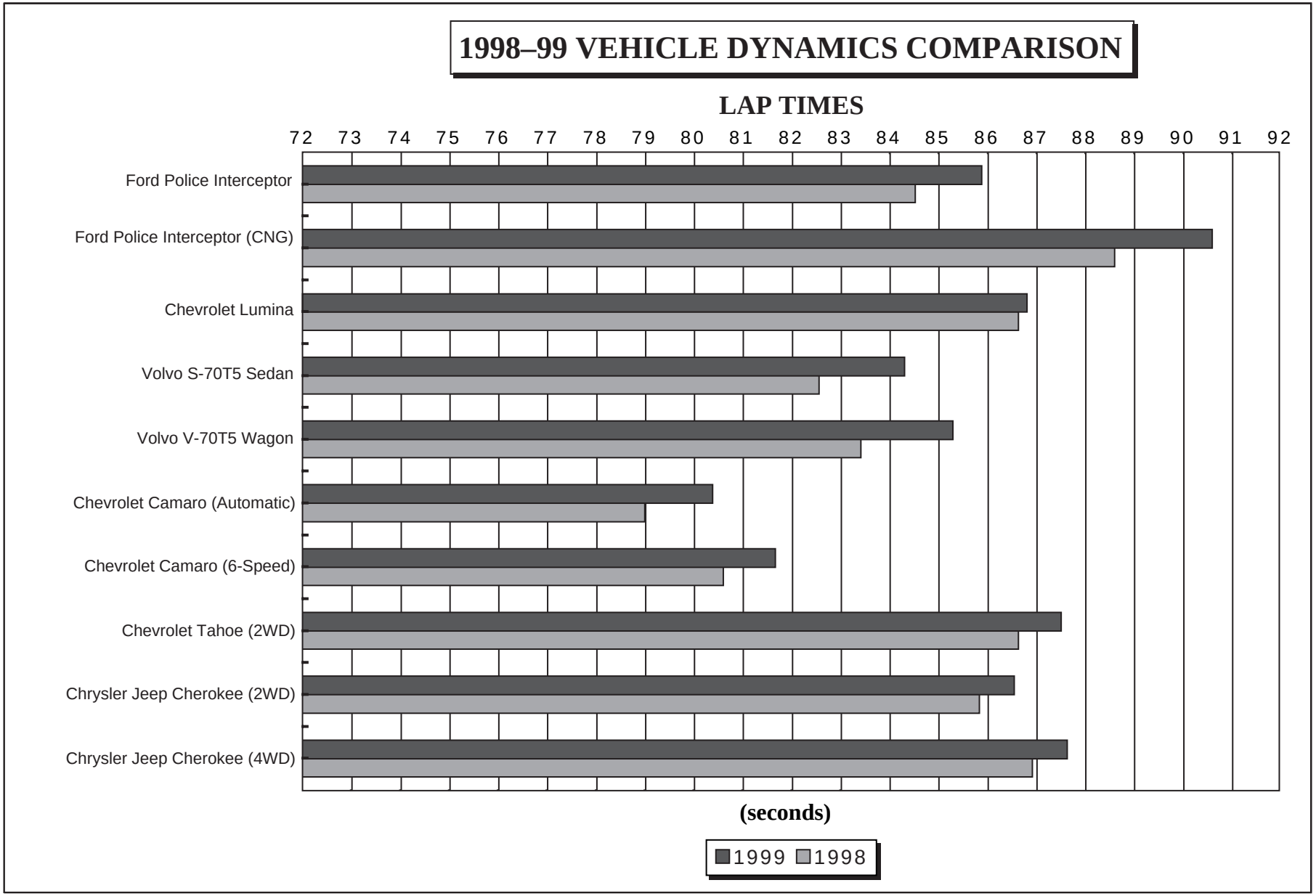
Vehicle Dynamics
Acceleration 0–60 mph
Acceleration 0–80 mph
Acceleration 0–100 mph
Top Speed
Braking (Calculated 60–0 mph Stopping Distance)

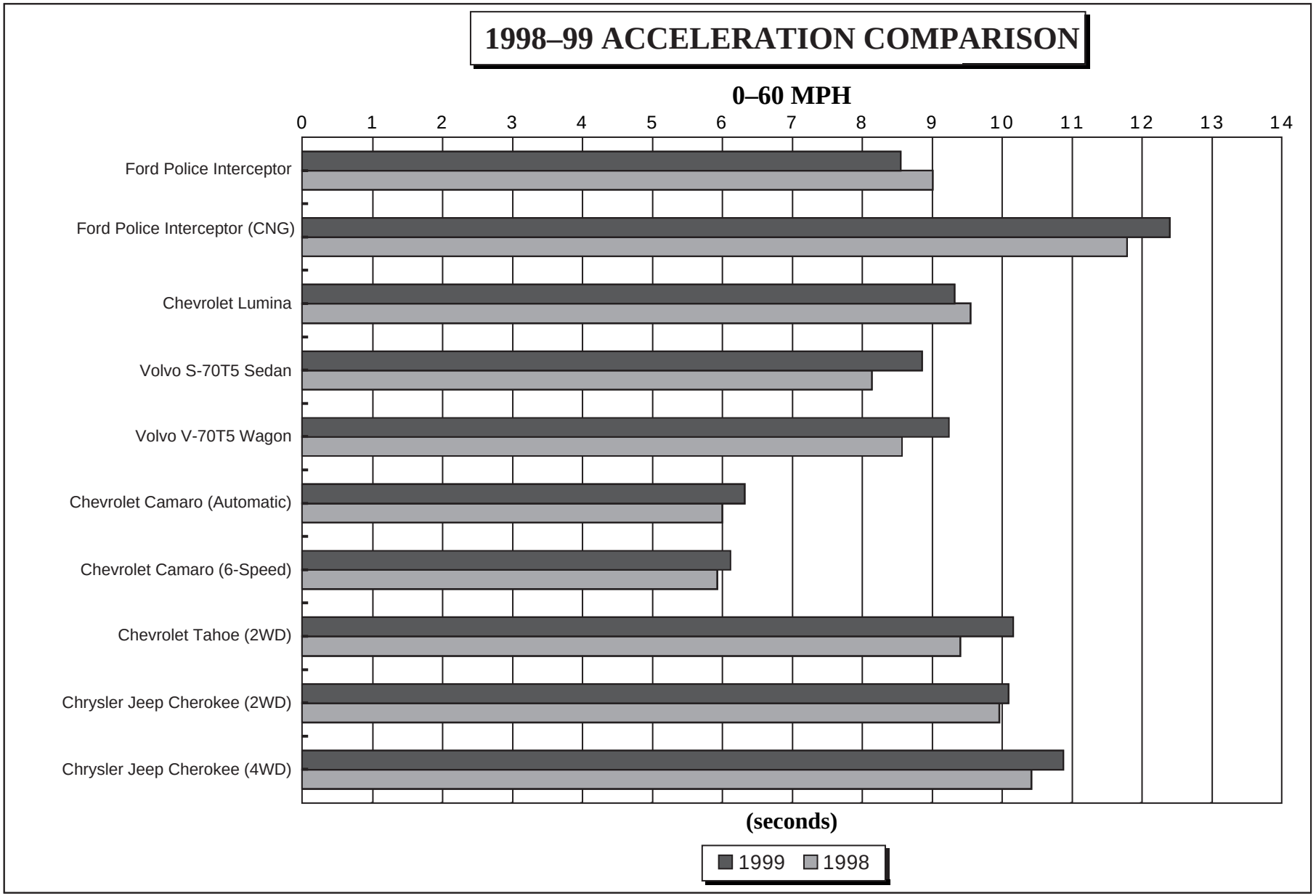
The reader should bear in mind the following information regarding variables when reviewing the 1998–99 performance comparison charts in Appendix I. Although as many variables as possible are eliminated from a given year's testing, those that occur over the span of a year are sometimes impossible to eliminate.

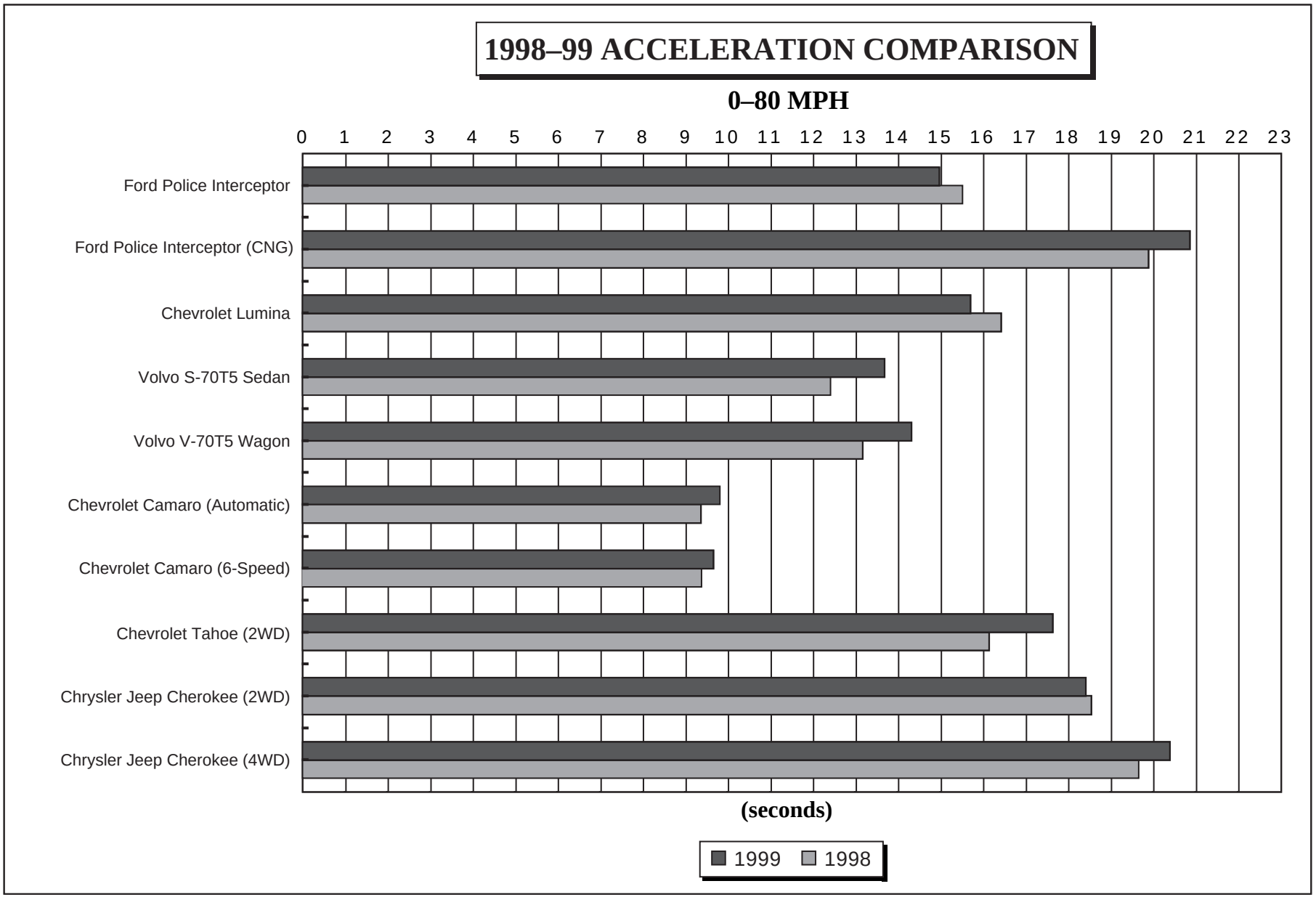
The acceleration, top speed, and brake testing of both the 1998 and 1999 model year cars was conducted in the latter half of September. Temperatures on the test day in September 1997 ranged from 58° F at the start of testing to a high of approximately 67° F during the afternoon. Temperatures during the testing in 1998 varied far more, ranging from 53° F when testing started to an afternoon high of nearly 85° F. Clearly, such things as temperature, humidity, and barometric pressure have an effect on the performance of internal combustion engines and brake components, and may be the cause of minor differences from 1 year's evaluation to the next.

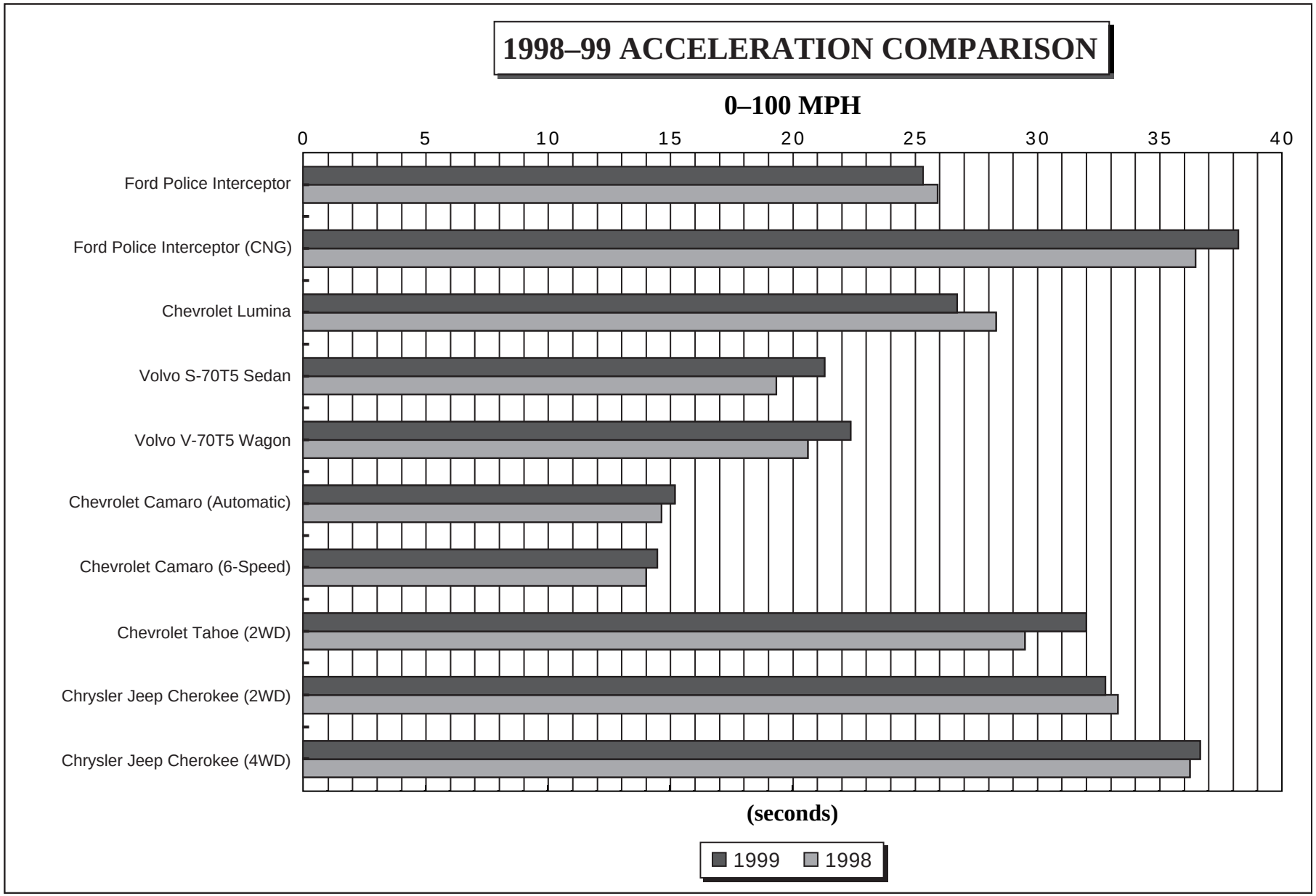
Another factor to be considered is the individual differences between two cars of the same make and model. The test cars that we evaluate are representative of their given make and model. Other cars of the same make and model will not, however, be *exactly* the same, particularly when it comes to performance. (It is well known that two cars off the same assembly line will perform slightly differently from each other.) Consequently, minor differences in performance from year to year in the same make and model not are only possible but are to be expected.

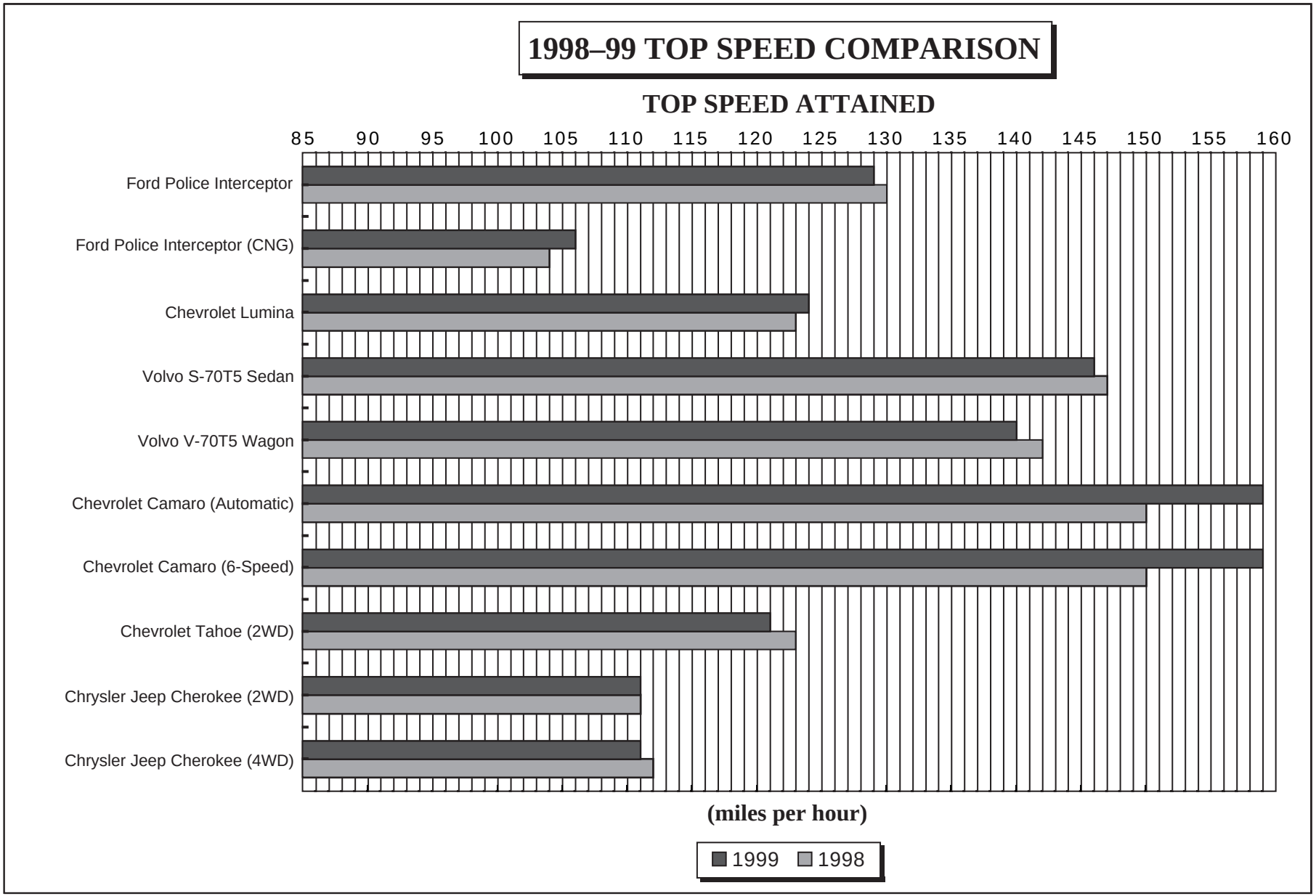
Finally, from year to year we must sometimes make changes in the drivers or in-car observers used in the testing process. Obviously, using a different driver or observer presents a variable that can affect the test data when compared to data from other years and/or other drivers. Once again, minor differences between the same make and model vehicle in consecutive years are not only possible, but likely.


1998–99 VEHICLE DYNAMICS COMPARISON
LAP TIMES
72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(seconds)
1999 1998

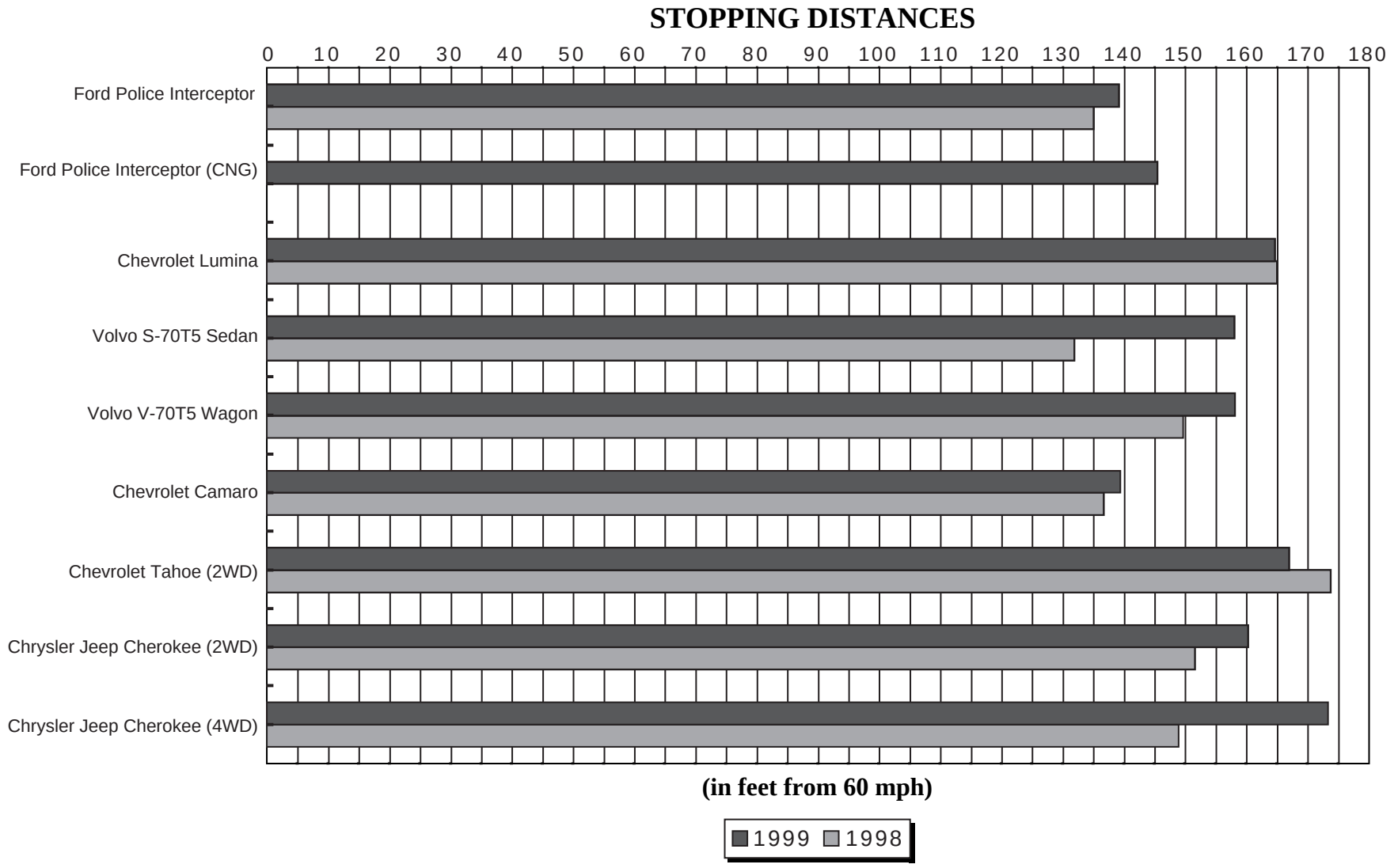

1998–99 ACCELERATION COMPARISON
0–60 MPH
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(seconds)
1999
1998


1998–99 ACCELERATION COMPARISON
0–80 MPH
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(seconds)
1999
1998


1998–99 ACCELERATION COMPARISON
0–100 MPH
0
5
10
15
20
25
30
35
40
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(seconds)
1999
1998


1998–99 TOP SPEED COMPARISON
TOP SPEED ATTAINED
85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160
Ford Police Interceptor
Ford Police Interceptor (CNG)
Chevrolet Lumina
Volvo S-70T5 Sedan
Volvo V-70T5 Wagon
Chevrolet Camaro (Automatic)
Chevrolet Camaro (6-Speed)
Chevrolet Tahoe (2WD)
Chrysler Jeep Cherokee (2WD)
Chrysler Jeep Cherokee (4WD)
(miles per hour)
1999
1998

1998–99 BRAKE TESTING COMPARISON



APPENDIX II:

PERFORMANCE OF 1999 MODEL "SPECIAL-SERVICE-PACKAGE" VEHICLES

The issue of what constitutes a "Police Package" is a controversy that will be with us for some time. Many law enforcement agencies require a police vehicle to be capable of performing a variety of police functions, up to and including participating in a pursuit. These agencies look to the vehicle manufacturers to put their engineering talents toward attaining that goal. We believe that vehicles that perform to these standards have earned the right to be called Police-Package vehicles.

At the same time, other law enforcement agencies need a vehicle that has specific cargo capacity and/or other special attributes, but do not require pursuit capabilities. For these needs, the vehicle manufacturers offer "Special-Service-Package" vehicles.

The Michigan Department of State Police presents this information about Special-Service-Package vehicles with the caveat that these vehicles are *not engineered for high-speed or pursuit driving*. The Special-Service-Package vehicles presented in this appendix were evaluated in the following test categories only: Acceleration, Top Speed, Braking, Fuel Economy, and Ergonomics and Communications. They were not evaluated for Vehicle Dynamics, (high-speed handling) because that test is designed to simulate pursuit situations.

SPECIAL-SERVICE VEHICLES ARE NOT ENGINEERED FOR HIGH-SPEED OR PURSUIT APPLICATIONS.

CHEVROLET TAHOE

5.7L SPFI (4-WHEEL DRIVE)

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Tahoe (4WD)		**SALES CODE NO.** CK10706		
ENGINE DISPLACEMENT	**CUBIC INCHES** 350		**LITERS** 5.7		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	255 @ 4600 RPM		**ALTERNATOR** 140 amp.		
TORQUE	330 ft. lbs. @ 2800 RPM		**BATTERY** 770 cca.		
COMPRESSION RATIO	9.4:1				
TRANSMISSION	**MODEL** 4L60E	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.73:1				
STEERING	Integral Power, Variable Ratio				
TURNING CIRCLE (CURB TO CURB)	40.8 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P245 / 75R16 109S Goodyear Wrangler RT/S				
SUSPENSION TYPE (FRONT)	Independent Coil Springs with 46mm Bilstein Shocks & Stabilizer Bar				
SUSPENSION TYPE (REAR)	Multi-Leaf Springs with 46mm Bilstein Shocks & Stabilizer Bar				
GROUND CLEARANCE, MINIMUM	8.46 in.	**LOCATION** Rear Axle			
BRAKE SYSTEM	Power Assisted Hydraulic, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 203.0 sq. in.		
BRAKES, REAR	**TYPE** Drum		**SWEPT AREA** 192.7 sq. in.		
FUEL CAPACITY	**GALLONS** 30.0		**LITERS** 113.6		
GENERAL MEASUREMENTS	**WHEELBASE** 117.5 in.		**LENGTH** 199.6 in.		
	TEST WEIGHT 5403 lbs.		**HEIGHT** 72.8 in.		
HEADROOM	**FRONT** 39.9 in.		**REAR** 38.9 in.		
LEG ROOM	**FRONT** 41.7 in.		**REAR** 36.7 in.		
SHOULDER ROOM	**FRONT** 65.0 in.		**REAR** 65.0 in.		
HIP ROOM	**FRONT** 59.6 in.		**REAR** 59.6 in.		
INTERIOR VOLUME	**FRONT** 62.4 cu. ft.		**REAR** 53.5 cu. ft.		
	COMB. 115.9 cu. ft.		**TRUNK** 70.3 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 12 (12.3)	**HIGHWAY** 16	**COMBINED** 14		

* Behind second seat.

FORD EXPEDITION

5.4L MPFI (4-WHEEL DRIVE)

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Expedition (4WD)		**SALES CODE NO.** U18		
ENGINE DISPLACEMENT	**CUBIC INCHES** 329		**LITERS** 5.4		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	230 @ 4250 RPM		**ALTERNATOR** 130 amp.		
TORQUE	325 ft. lbs. @ 3000 RPM		**BATTERY** 650 cca.		
COMPRESSION RATIO	9.0:1				
TRANSMISSION	**MODEL** 40R70W	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.31:1				
STEERING	Power, Speed sensitive, Variable assist				
TURNING CIRCLE (CURB TO CURB)	40.4 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P265 / 70R17 113S Goodyear Wrangler RT/S				
SUSPENSION TYPE (FRONT)	SLA type (Independent), Torsion Bar				
SUSPENSION TYPE (REAR)	Coil Spring				
GROUND CLEARANCE, MINIMUM	6.3 in.	**LOCATION** Rear Axle (When loaded)			
BRAKE SYSTEM	Power, Single Caliper, Antilock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 222.0 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 201.0 sq. in.		
FUEL CAPACITY	**GALLONS** 26.0		**LITERS** 98.4		
GENERAL MEASUREMENTS	**WHEELBASE** 119.0 in.		**LENGTH** 204.6 in.		
	TEST WEIGHT 5650 lbs.		**HEIGHT** 74.3 in.		
HEADROOM	**FRONT** 39.8 in.		**REAR** 39.8 in.		
LEG ROOM	**FRONT** 40.8 in.		**REAR** 38.9 in.		
SHOULDER ROOM	**FRONT** 63.9 in.		**REAR** 64.4 in.		
HIP ROOM	**FRONT** 61.5 in.		**REAR** 52.3 in.		
INTERIOR VOLUME	**FRONT** 62.5 cu. ft.		**REAR** 55.8 cu. ft.		
	COMB. 118.3 cu. ft.		**TRUNK** 62.5 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 12 (11.7)	**HIGHWAY** 16	**COMBINED** 13		

* Behind second seat / With second seat down–118.3 cu. ft.

FORD EXPLORER

4.0L MPFI (2-WHEEL DRIVE)

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Explorer (2WD)		**SALES CODE NO.** U32		
ENGINE DISPLACEMENT	**CUBIC INCHES** 245		**LITERS** 4.0		
FUEL SYSTEM	Multiport Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	211 @ 4600 RPM		**ALTERNATOR** 95 amp.		
TORQUE	275 ft. lbs. @ 3200 RPM		**BATTERY** 650 cca.		
COMPRESSION RATIO	9.7:1				
TRANSMISSION	**MODEL** 5R55E	**TYPE** 4-Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.55:1				
STEERING	Power Integral Rack and Pinion				
TURNING CIRCLE (CURB TO CURB)	37.3 Feet				
TIRE SIZE, LOAD, & SPEED RATING	P255 / 70R16 109S Firestone Wilderness AT				
SUSPENSION TYPE (FRONT)	SLA type (Independent), Torsion Bar				
SUSPENSION TYPE (REAR)	Multi-Leaf Spring, Semi-Floating Axle				
GROUND CLEARANCE, MINIMUM	6.7 in.	**LOCATION** Rear Axle (When loaded)			
BRAKE SYSTEM	Power, Single Caliper, Antilock, Brake-Shift Interlock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 203.6 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 143.2 sq. in.		
FUEL CAPACITY	**GALLONS** 21.0		**LITERS** 80.0		
GENERAL MEASUREMENTS	**WHEELBASE** 111.9 in.		**LENGTH** 188.5 in.		
	TEST WEIGHT 4208 lbs.		**HEIGHT** 67.5 in.		
HEADROOM	**FRONT** 39.9 in.		**REAR** 39.3 in.		
LEG ROOM	**FRONT** 42.4 in.		**REAR** 36.8 in.		
SHOULDER ROOM	**FRONT** 57.1 in.		**REAR** 57.0 in.		
HIP ROOM	**FRONT** 51.9 in.		**REAR** 51.7 in.		
INTERIOR VOLUME	**FRONT** 55.9 cu. ft.		**REAR** 48.0 cu. ft.		
	COMB. 103.9 cu. ft.		**TRUNK** 42.6 cu. ft.*		
EPA MILEAGE EST. (MPG)	**CITY** 16 (15.7)	**HIGHWAY** 20	**COMBINED** 18		

* Behind second seat / With second seat down–81.6 cu. ft.

TEST VEHICLE DESCRIPTIONS SUMMARY

	Chevrolet Tahoe (4WD)	Ford Expedition (4WD)	Ford Explorer (2WD)
ENGINE DISPLACEMENT—CU. IN.	350	329	245
ENGINE DISPLACEMENT—LITERS	5.7	5.4	4.0
ENGINE FUEL SYSTEM	SPFI	SPFI	MPFI
HORSEPOWER (SAE NET)	255	230	211
TORQUE (FT. LBS.)	330	325	275
COMPRESSION RATIO	9.4:1	9.0:1	9.7:1
AXLE RATIO	3.73:1	3.31:1	3.55:1
TURNING CIRCLE—FT. CURB to CURB	40.8	40.4	37.3
TRANSMISSION	Elec. Automatic	Elec. Automatic	Elec. Automatic
TRANSMISSION MODEL NUMBER	4L60E	40R70W	5R55E
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P245/75R	P265/70R	P255/70R
WHEEL RIM SIZE—INCHES	16	17	16
GROUND CLEARANCE—INCHES	8.5	6.3	6.7
BRAKE SYSTEM	Power–ABS	Power–ABS	Power–ABS
BRAKES—FRONT TYPE	Vented Disc	Vented Disc	Vented Disc
BRAKES—REAR TYPE	Drum	Solid Disc	Solid Disc
FUEL CAPACITY—GALLONS	30.0	26.0	21.0
FUEL CAPACITY—LITERS	113.6	98.4	80.0
OVERALL LENGTH—INCHES	199.6	204.6	188.5
OVERALL HEIGHT—INCHES	72.8	74.3	67.5
TEST WEIGHT—LBS.	5403	5650	4208
WHEELBASE—INCHES	117.5	119.0	111.9
HEADROOM FRONT—INCHES	39.9	39.8	39.9
HEADROOM REAR—INCHES	38.9	39.8	39.3
LEG ROOM FRONT—INCHES MAX.	41.7	40.8	42.4
LEG ROOM REAR—INCHES MIN.	36.7	38.9	36.8
SHOULDER ROOM FRONT—INCHES	65.0	63.9	57.1
SHOULDER ROOM REAR—INCHES	65.0	64.4	57.0
HIP ROOM FRONT—INCHES	59.6	61.5	51.9
HIP ROOM REAR—INCHES	59.6	52.3	51.7
INTERIOR VOLUME FRONT—CU. FT.	62.4	62.5	55.9
INTERIOR VOLUME REAR—CU. FT.	53.5	55.8	48.0
INTERIOR VOLUME COMB.—CU. FT.	115.9	118.3	103.9
TRUNK VOLUME—CU. FT.	70.3*	62.5**	42.6***
EPA MILEAGE—CITY—MPG	12.3	11.7	15.7
EPA MILEAGE—HIGHWAY—MPG	16	16	20
EPA MILEAGE—COMBINED—MPG	14	13	18

* Behind second seat.

** Behind second seat / Second seat down–118.3 cu. ft.

*** Behind second seat / Second seat down–81.6 cu. ft.

SUMMARY OF ACCELERATION, TOP SPEED, AND BRAKE TESTING

ACCELERATION*		Chevrolet Tahoe (4WD) 5.7L SPFI	Ford Expedition (4WD) 5.4L SPFI	Ford Explorer (2WD) 4.0L SPFI
0–20 mph	(sec.)	2.23	2.11	2.10
0–30 mph	(sec.)	3.70	3.76	3.61
0–40 mph	(sec.)	5.56	5.53	5.28
0–50 mph	(sec.)	8.12	7.93	7.30
0–60 mph	(sec.)	11.06	11.04	9.88
0–70 mph	(sec.)	14.90	14.44	13.05
0–80 mph	(sec.)	20.11	19.54	17.16
0–90 mph	(sec.)	26.31	26.89	23.33
0–100 mph	(sec.)	--	38.26	--
TOP SPEED	(mph)	97**	107**	99**
DISTANCE TO REACH				
110 mph	(miles)	--	--	--
120 mph	(miles)	--	--	--
QUARTER MILE				
Time	(sec.)	18.24	18.10	17.55
Speed	(mph)	76.50	77.93	80.80
		ABS	**ABS**	**ABS**
BRAKING—PHASE I				
Average Deceleration Rate	(ft/s^2)	21.39	22.64	19.68
BRAKING—PHASE II				
Average Deceleration Rate	(ft/s^2)	20.46	23.07	22.40
BRAKING—FINAL SCORE				
Average Deceleration Rate	**(ft/s^2)**	**20.93**	**22.85**	**21.04**
Projected Stopping Distance from 60 mph	(feet)	185.0	169.4	184.1

* Four-run average.

** Vehicle equipped with an electronic speed limiter.

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 4:30 p.m. **TEMPERATURE:** 82.4°F

MAKE and MODEL: Chevrolet Tahoe 5.7L (4WD) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s^2)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	61.3 mph	183.7 feet	22.00 ft/s^2
Stop #2	60.8 mph	185.1 feet	21.48 ft/s^2
Stop #3	60.6 mph	180.2 feet	21.92 ft/s^2
Stop #4	60.5 mph	187.4 feet	21.01 ft/s^2
Stop #5	60.8 mph	189.9 feet	20.94 ft/s^2
Stop #6	60.3 mph	186.3 feet	20.99 ft/s^2

AVERAGE DECELERATION RATE (Phase I): 21.39 ft/s^2

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s^2)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.6 mph	186.5 feet	21.18 ft/s^2
Stop #2	60.7 mph	188.1 feet	21.07 ft/s^2
Stop #3	61.3 mph	193.3 feet	20.91 ft/s^2
Stop #4	60.3 mph	188.4 feet	20.76 ft/s^2
Stop #5	60.2 mph	202.3 feet	19.27 ft/s^2
Stop #6	60.0 mph	197.7 feet	19.59 ft/s^2

AVERAGE DECELERATION RATE (Phase II): 20.46 ft/s^2

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 20.93 ft/s^2

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 4:49 p.m. **TEMPERATURE:** 83.5°F

MAKE and MODEL: Ford Expedition 5.4L (4WD) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s^2)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

				DECELERATION RATE	
Stop #1	60.0	mph	171.2	feet	22.62 ft/s^2
Stop #2	61.3	mph	195.1	feet	20.72 ft/s^2
Stop #3	60.5	mph	172.0	feet	22.89 ft/s^2
Stop #4	60.3	mph	172.0	feet	22.74 ft/s^2
Stop #5	60.5	mph	165.5	feet	23.79 ft/s^2
Stop #6	60.3	mph	169.5	feet	23.07 ft/s^2

AVERAGE DECELERATION RATE (Phase I): 22.64 ft/s^2

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s^2)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

				DECELERATION RATE	
Stop #1	60.5	mph	175.1	feet	22.48 ft/s^2
Stop #2	60.4	mph	167.7	feet	23.40 ft/s^2
Stop #3	60.4	mph	169.0	feet	23.22 ft/s^2
Stop #4	60.3	mph	168.5	feet	23.21 ft/s^2
Stop #5	60.6	mph	168.5	feet	23.44 ft/s^2
Stop #6	60.5	mph	173.7	feet	22.67 ft/s^2

AVERAGE DECELERATION RATE (Phase II): 23.07 ft/s^2

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 22.85 ft/s^2

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds **DATE:** September 19, 1998

BEGINNING TIME: 3:35 p.m. **TEMPERATURE:** 83.8°F

MAKE and MODEL: Ford Explorer 4.0L (2WD) **BRAKE SYSTEM:** Antilock

Phase I

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.1 mph	192.7 feet	20.16 ft/s²
Stop #2	60.3 mph	207.4 feet	18.86 ft/s²
Stop #3	60.5 mph	205.5 feet	19.16 ft/s²
Stop #4	60.3 mph	198.9 feet	19.66 ft/s²
Stop #5	61.4 mph	203.2 feet	19.96 ft/s²
Stop #6	60.9 mph	196.9 feet	20.26 ft/s²

AVERAGE DECELERATION RATE (Phase I): 19.68 ft/s²

HEAT SOAK: (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90–0 mph decelerations @ 22 ft/s²)

TEST: (Six 60–0 mph impending skid (ABS) maximum deceleration rate stops)

			DECELERATION RATE
Stop #1	60.9 mph	172.8 feet	23.09 ft/s²
Stop #2	61.6 mph	174.4 feet	23.40 ft/s²
Stop #3	60.7 mph	178.7 feet	22.18 ft/s²
Stop #4	60.6 mph	177.2 feet	22.29 ft/s²
Stop #5	59.9 mph	171.0 feet	22.57 ft/s²
Stop #6	60.4 mph	187.9 feet	20.88 ft/s²

AVERAGE DECELERATION RATE (Phase II): 22.40 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECELERATION RATE: 21.04 ft/s²

ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Chevrolet Tahoe (4WD)	Ford Expedition (4WD)	Ford Explorer (2WD)
FRONT SEAT			
Padding	8.10	7.20	8.20
Depth of Bucket Seat	7.90	7.40	7.80
Adjustability—Front to Rear	8.30	8.10	7.70
Upholstery	7.44	7.80	7.30
Bucket Seat Design	7.80	7.56	8.10
Headroom	9.20	9.50	8.00
Seatbelts	8.20	8.00	6.60
Ease of Entry and Exit	7.90	7.00	7.00
Overall Comfort Rating	8.20	8.00	7.50
REAR SEAT			
Leg room—Front Seat Back	8.20	8.70	7.00
Ease of Entry and Exit	7.50	6.80	7.00
INSTRUMENTATION			
Clarity	8.30	8.40	7.50
Placement	8.30	8.20	7.00
VEHICLE CONTROLS			
Pedals, Size and Position	7.00	7.90	7.60
Power Window Switch	7.30	8.20	8.60
Inside Door Release	8.60	7.20	5.80
Automatic Door Lock Switch	7.80	8.70	7.90
Outside Mirror Controls	7.60	8.40	7.40
Steering Wheel, Size, Tilt Release, and Surface	8.30	8.00	7.50
Heat/AC Vent Placement and Adjustability	8.30	8.20	6.70
VISIBILITY			
Front (Windshield)	8.80	8.60	7.30
Rear (Back Window)	7.20	7.40	6.80
Left Rear Quarter	7.30	7.40	6.40
Right Rear Quarter	7.30	7.90	7.40
Outside Rearview Mirrors	8.50	8.90	7.40
COMMUNICATIONS			
Dashboard Accessibility	7.04	5.96	5.67
Trunk Accessibility	7.75	6.85	6.85
Engine Compartment	7.92	7.92	6.50
TOTAL SCORES	**222.05**	**220.19**	**202.52**