Police Vehicle Evaluation
Model Year 2007

State of Michigan
Department of State Police
Department of Management and Budget

National Law Enforcement and Corrections Technology Center
A Program of the National Institute of Justice

STATE OF MICHIGAN
Department of State Police
and
Department of Management and Budget

2007 Model Year
Police Vehicle
Evaluation Program

Published by:
Michigan State Police
Training Division
December, 2006

Prepared by:
Ms. Gina Rosendall, Precision Driving Unit
Sgt. James Flegel, Precision Driving Unit

Photographs by:
Mr. Raymond Holt, Media Production Unit
Mr. Leon Pratt, Media Production Unit

AUTHORIZATION: 1935 PA 59
Total Copies: 1,100
Cost Per Copy: $8.78
Total Cost: $9,660.00

TABLE OF CONTENTS

PREFACE

The Michigan State Police Vehicle Test Team is pleased to announce the results of the 2007 model year Police Vehicle Evaluation. This year we tested nineteen vehicles in total, including one pickup truck and three motorcycles. We appreciate your continued support and encouragement. The vehicles evaluated this year included the following:

POLICE CATEGORY

Ford Police Interceptor (3.27:1)	4.6L
Ford Police Interceptor (3.55:1)	4.6L
Chevrolet Impala 9C1	3.9L
Chevrolet Tahoe PPV 2WD E85	5.3L
Chevrolet Tahoe PPV 2WD	5.3L
Dodge Charger	3.5L
Dodge Charger	5.7L
Dodge Magnum	3.5L
Dodge Magnum	5.7L

SPECIAL SERVICE CATEGORY

*Special Service Package vehicles are not suitable for high speed, pursuit or emergency driving.

Ford Escape (Hybrid)*	2.3L SMFE	(4 Wheel Drive)
Ford Explorer*	4.6L SFI	(2 Wheel Drive)
Ford Expedition*	5.4L 3V SMFI	(2 Wheel Drive)
Ford Expedition EL*	5.4L 3V SMFI	(2 Wheel Drive)
Chevrolet Tahoe*	5.3L SPFI	(4 Wheel Drive)
Dodge Magnum*	3.5L SPFI	(2 Wheel Drive)
Ford F250 Super Crew Pickup*	5.4L SMFI	(2 Wheel Drive)

MOTORCYCLES

Harley Davidson Electra Glide FLHTP

Harley Davidson Road King FLHP

BMW Motorrad USA R1200RT-P

GENERAL INFORMATION

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

Each vehicle was tested with the tires that are available as original equipment on the production model. Specific tire information for each vehicle is available in the Vehicle Description portion of this report. All vehicles listed in this report were equipped with electronic speed limiters.

Motorcycles were tested with emergency lights, sirens, and other equipment installed as provided by their respective manufacturer. We will continue to refine the testing procedures with the motorcycle manufacturers and their participation.

DaimlerChrysler Proving Grounds - Acceleration, Top Speed, & Braking Tests
Saturday began with a two hour fog delay but we still managed to finish on time despite the delayed start. This is the first year that we have had a pickup truck in the mix and we are excited to capture information for law enforcement for this new vehicle. This is also the first year for motorcycle testing. We are very pleased with the support we received from Harley Davidson and BMW to add this important component to the testing lineup. We expect other manufacturers that produce law enforcement motorcycles to participate in the future.

Michigan State Police Precision Driving Unit- Motorcycle Dynamics
Sunday we completed the motorcycle dynamics testing with great weather. Considering it was the first year, we had a good turnout here at our home track.

Grattan Raceway - Vehicle Dynamics (High Speed Handling) Test
We had a substantial rain delay at Grattan Raceway Park but after consulting with the manufacturers, we elected to test with three or four vehicles on the track at once.
*The Chevrolet 4WD Tahoe, Ford Explorer, Ford Expedition, Ford Escape, Ford F250 and one of the Dodge Magnum’s are “special service” vehicles and are not driven through the vehicle dynamics (high-speed handling) test. These vehicles are not engineered or recommended for high-speed emergency driving or pursuit applications.

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’s available for your officers so they can do their job effectively and safely. If anything in this report requires further explanation or clarification, please call or write.

Lt. David Halliday
Michigan State Police
Precision Driving Unit
7426 North Canal Road
Lansing, Michigan 48913

Phone: 517-322-1787 Fax: 517-322-0725 E-mail: hallidd@michigan.gov

ACKNOWLEGEMENTS

We would like to thank the following contributors. We are grateful for their support and encouragement toward our ultimate goal: a safe, successful testing program that benefits the law enforcement community nationwide and beyond.

Colonel Peter C. Munoz, Director, Michigan Department of State Police
Lt. Colonel Thomas J. Miller, Deputy Director, Field Services Bureau
Lt. Colonel Kriste K. Etue, Deputy Director, Administrative Services Bureau
Personnel from the Michigan Department of Management & Budget, Vehicle and Travel Services

The National Institute of Justice, The National Law Enforcement and Corrections Technology Center, Mr. Lance Miller, Mr. Alex Sundstrom, Lockheed Martin Aspen Systems

Mr. Terry Packer, Craig Hageman and personnel from DaimlerChrysler Proving Grounds
Mr. Sam Faasen and personnel from Grattan Raceway Park

Michigan State Police Volunteers – Ernie and Hazel Schutter, Denny Steendam, Austin & Reathel Waldron, Al Burnett, and Roger Chittenden

The Michigan State Police Rockford Post for their assistance at Grattan Raceway.

Michigan State Police Ergonomic Evaluators –Tpr. Charles Murry, Tpr. Greg Galarneau, MC Officer Niki Brehm, Tpr. Ernie Felkers, Tpr. Scott Carlson, Tpr. Derrick Jordan, Tpr. Todd Price, Tpr. Paul Neal, Tpr. Brett Vogt

Canfield Equipment Service, Inc. for assisting us with communication evaluations for the vehicles and motorcycles.

Special thanks to General Motors, Ford Motor Company, DaimlerChrysler Motors, Harley Davidson Motor Company and BMW Motorrad USA for their hard work in building and preparing the test cars and motorcycles. We are grateful for your dedication to law enforcement. Everyday law enforcement looks to these vehicles to do a list of duties varied and enduring.

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:

BACK ROW (left to right):	**FRONT ROW (left to right):**	**NOT SHOWN:**
Lt. David “Doc” Halliday	Sgt. Doug Schutter	Tpr. Dan Thayer
F/Lt. Mike Krumm	Tpr. Matt Rogers	Tpr. Mike McCarthy
Sgt. Keith Wilson	Mrs. Noelle Lewis	Ofc. Loren Lee
Ret. Sgt. Bill McFall	Sgt. Jim Flegel	Mrs. Nicole Marsh
Sgt. Rick Stevens	Ms. Gina Rosendall	Capt. Gene Hoekwater
Tpr. Nate Johnson	Sgt. Ron Gromak	
Ret. Sgt. Dick Rothermel	Tpr. Marcus Trammel	
Ret. Sgt. Bob Ring		

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., 21654 Melrose Ave., Building 16, Southfield, Michigan 48075

DLS Smart Sensor – Optical non-contact speed and distance sensor

MicroSat GPS Speed and Distance Sensor

Shoei Helmets, 3002 Dow Ave., Suite 128, Tustin, CA 92780

Law Enforcement Helmet – Model RJ-Air LE

AMB i.t. US INC., 1631 Phoenix Blvd., Suite 11, College Park, GA 30349

AMB TranX extended loop decoder

Mains adapter 230 V AC/12 V DC

AMB TranX260 transponders

AMMCO TOOLS, Inc., 2100 Commonwealth Ave., North Chicago, IL 60064

Decelerometer, Model 7350

TEST VEHICLE DESCRIPTIONS AND PHOTOGRAPHS

Ford Police Interceptor
3.27:1

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Police Interceptor	**SALES CODE NO.** P71	
ENGINE DISPLACEMENT	**CUBIC INCHES** 281	**LITERS** 4.6	
FUEL SYSTEM	Sequential Multiport Fuel Injection	**EXHAUST** Dual	
HORSEPOWER (SAE NET)	250 @ 5000 RPM	**ALTERNATOR** 200	
TORQUE	297ft-lbs @ 4000 RPM	**BATTERY** 750 CCA	
COMPRESSION RATIO	9.4:1		
TRANSMISSION	**MODEL** 4R70W	**TYPE** 4-Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes		
	OVERDRIVE? Yes		
AXLE RATIO	3.27		
STEERING	Power Rack and Pinion, variable ratio		
TURNING CIRCLE (CURB TO CURB)	40.3 ft.		
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RS-A P235/55R17 98W		
SUSPENSION TYPE (FRONT)	Independent SLA with ball joint & coil spring		
SUSPENSION TYPE (REAR)	4 bar link with Watts Linkage		
GROUND CLEARANCE, MINIMUM	5.6 in.	**LOCATION** Exhaust joint	
BRAKE SYSTEM	Power, dual front piston, single rear piston, 4 circuit and ABS		
BRAKES, FRONT	**TYPE** Vented disc	**SWEPT AREA** 273 sq. in.	
BRAKES, REAR	**TYPE** Vented disc	**SWEPT AREA** 176 sq. in.	
FUEL CAPACITY	**GALLONS** 19.0	**LITERS** 71.9	
GENERAL MEASUREMENTS	**WHEELBASE** 114.6 in.	**LENGTH** 212.0 in.	
	TEST WEIGHT 4157	**HEIGHT** 58.3 in.	
HEADROOM	**FRONT** 39.5 in.	**REAR** 37.8 in.	
LEGROOM	**FRONT** 41.6 in.	**REAR** 38.0 in.	
SHOULDER ROOM	**FRONT** 60.6 in.	**REAR** 60.0 in.	
HIPROOM	**FRONT** 57.4 in.	**REAR** 56.1 in.	
INTERIOR VOLUME	**FRONT** 57.6 cu. ft.	**REAR** 48.8 cu. ft.	
	COMB 106.4 cu. ft.	**TRUNK** 20.6 cu. ft.	
EPA MILEAGE EST. (MPG)	**CITY** 16 (15.6)	**HIGHWAY** 23	**COMBINED** 18

Ford Police Interceptor
3.55:1

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Police Interceptor	**SALES CODE NO.** P71	
ENGINE DISPLACEMENT	**CUBIC INCHES** 281	**LITERS** 4.6	
FUEL SYSTEM	Sequential Multiport Fuel Injection	**EXHAUST** Dual	
HORSEPOWER (SAE NET)	250 @ 5000 RPM	**ALTERNATOR** 200	
TORQUE	297 ft-lbs @ 4000 RPM	**BATTERY** 750 CCA	
COMPRESSION RATIO	9.4:1		
TRANSMISSION	**MODEL** 4R70W	**TYPE** 4-Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes		
	OVERDRIVE? Yes		
AXLE RATIO	3.55		
STEERING	Power Rack and Pinion, variable ratio		
TURNING CIRCLE (CURB TO CURB)	40.3 ft.		
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RS-A P235/55R17 98W		
SUSPENSION TYPE (FRONT)	Independent SLA with ball joint & coil spring		
SUSPENSION TYPE (REAR)	4 bar link with Watts Linkage		
GROUND CLEARANCE, MINIMUM	5.6 in.	**LOCATION** Exhaust joint	
BRAKE SYSTEM	Power, dual front piston, single rear piston, 4 circuit and ABS		
BRAKES, FRONT	**TYPE** Vented disc	**SWEPT AREA** 273 sq. in.	
BRAKES, REAR	**TYPE** Vented disc	**SWEPT AREA** 176 sq. in.	
FUEL CAPACITY	**GALLONS** 19.0	**LITERS** 71.9	
GENERAL MEASUREMENTS	**WHEELBASE** 114.6 in.	**LENGTH** 212.0 in.	
	TEST WEIGHT 4142	**HEIGHT** 58.3 in.	
HEADROOM	**FRONT** 39.5 in.	**REAR** 37.8 in.	
LEGROOM	**FRONT** 41.6 in.	**REAR** 38.0 in.	
SHOULDER ROOM	**FRONT** 60.6 in.	**REAR** 60.0 in.	
HIPROOM	**FRONT** 57.4 in.	**REAR** 56.1 in.	
INTERIOR VOLUME	**FRONT** 57.6 cu. ft.	**REAR** 48.8 cu. ft.	
	COMB 106.4 cu. ft.	**TRUNK** 20.6 cu. ft.	
EPA MILEAGE EST. (MPG)	**CITY** 16 (15.6)	**HIGHWAY** 23	**COMBINED** 18

Chevrolet Impala 9C1

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Impala 9C1	**SALES CODE NO.** 1WS19	
ENGINE DISPLACEMENT	**CUBIC INCHES** 237	**LITERS** 3.9	
FUEL SYSTEM	Sequential Port Fuel Injection	**EXHAUST** Single	
HORSEPOWER (SAE NET)	233 @ 5200 RPM	**ALTERNATOR** 150 amp.	
TORQUE	245 ft-lbs @ 4800 RPM	**BATTERY** 750 CCA	
COMPRESSION RATIO	9.4:1		
TRANSMISSION	**MODEL** 4T65E	**TYPE** 4-Speed Automatic	
	LOCKUP TORQUE CONVERTER? Yes		
	OVERDRIVE? Yes		
AXLE RATIO	3.29:1		
STEERING	Power Rack and Pinion		
TURNING CIRCLE (CURB TO CURB)	38.0 ft.		
TIRE SIZE, LOAD & SPEED RATING	Pirelli P6, P225/60R16 97V		
SUSPENSION TYPE (FRONT)	Independent McPherson strut, coil springs & stabilizer bar		
SUSPENSION TYPE (REAR)	Independent Tri-Link coil spring over strut & stabilizer bar		
GROUND CLEARANCE, MINIMUM	7.1 in.	**LOCATION** Engine cradle	
BRAKE SYSTEM	Power, dual hydraulic, anti-lock		
BRAKES, FRONT	**TYPE** Vented disc	**SWEPT AREA** 235.4 sq. in.	
BRAKES, REAR	**TYPE** Solid disc	**SWEPT AREA** 160.3 sq. in.	
FUEL CAPACITY	**GALLONS** 17.0	**LITERS** 64.3	
GENERAL MEASUREMENTS	**WHEELBASE** 110.5 in.	**LENGTH** 200.4 in.	
	TEST WEIGHT 3742	**HEIGHT** 58.7 in.	
HEADROOM	**FRONT** 39.4 in.	**REAR** 37.8 in.	
LEGROOM	**FRONT** 42.3 in.	**REAR** 37.6 in.	
SHOULDER ROOM	**FRONT** 58.7 in.	**REAR** 58.6 in.	
HIPROOM	**FRONT** 56.4 in.	**REAR** 57.2 in.	
INTERIOR VOLUME	**FRONT** 56.5 cu. ft.	**REAR** 55.7 cu. ft.	
	COMB 104.8 cu. ft.	**TRUNK** 18.6 cu. ft. w/ compact spare	
EPA MILEAGE EST. (MPG)	**CITY** 19 (19.2)	**HIGHWAY** 27	**COMBINED** 22

Chevrolet Tahoe PPV
2WD E85

VEHICLE TEST DESCRIPTION

MAKE Chevrolet	**MODEL** Tahoe PPV – 2WD		**SALES CODE NO.** CC15706		
ENGINE DISPLACEMENT	**CUBIC INCHES** 327		**LITERS** 5.3		
FUEL SYSTEM	SPFI – E85 Ethanol		**EXHAUST** Single		
HORSEPOWER (SAE NET)	320 @ 5200 RPM		**ALTERNATOR** 160		
TORQUE	340 ft-lbs @ 4000 RPM		**BATTERY** 730 CCA		
COMPRESSION RATIO	9.5:1				
TRANSMISSION	**MODEL** 4L60E	**TYPE** 4 – Speed Automatic Overdrive			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.73				
STEERING	Power – Rack & Pinion				
TURNING CIRCLE (CURB TO CURB)	39.0 ft.				
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RSA P265/60R17 108H				
SUSPENSION TYPE (FRONT)	Independent, single coil over shock with stabilizer bar				
SUSPENSION TYPE (REAR)	Multi-link with coil springs				
GROUND CLEARANCE, MINIMUM	8.00 in.	**LOCATION** Rear axle			
BRAKE SYSTEM	Vacuum-boost, power, anti-lock				
BRAKES, FRONT	**TYPE** Disc		**SWEPT AREA** 213 sq. in.		
BRAKES, REAR	**TYPE** Disc		**SWEPT AREA** 133 sq. in.		
FUEL CAPACITY	**GALLONS** 26.0		**LITERS** 98.4		
GENERAL MEASUREMENTS	**WHEELBASE** 116 in.		**LENGTH** 202.0 in.		
	TEST WEIGHT 5239		**HEIGHT** 73.9		
HEADROOM	**FRONT** 40.3 in.		**REAR** 39.2 in.		
LEGROOM	**FRONT** 41.3 in.		**REAR** 39.0 in.		
SHOULDER ROOM	**FRONT** 65.3 in.		**REAR** 65.2 in.		
HIPROOM	**FRONT** 64.4 in.		**REAR** 60.6 in.		
INTERIOR VOLUME ***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**FRONT** 62.9 cu. ft.		**REAR** 57.68 cu. ft.		
	COMB 120.58 cu. ft.		***MAX. CARGO** 108.9 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 16 (15.6)	**HIGHWAY** 20	**COMBINED** 17		

Chevrolet Tahoe PPV
2WD

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Tahoe PPV – 2WD	**SALES CODE NO.** CC10706	
ENGINE DISPLACEMENT	**CUBIC INCHES** 327	**LITERS** 5.3	
FUEL SYSTEM	Sequential Port Fuel Injection	**EXHAUST** Single	
HORSEPOWER (SAE NET)	320 @ 5200 RPM	**ALTERNATOR** 160	
TORQUE	340 ft-lbs @ 4000 RPM	**BATTERY** 730 CCA	
COMPRESSION RATIO	9.5:1		
TRANSMISSION	**MODEL** 4L60E	**TYPE** 4 – Speed Automatic Overdrive	
	LOCKUP TORQUE CONVERTER? Yes		
	OVERDRIVE? Yes		
AXLE RATIO	3.73		
STEERING	Power – Rack & Pinion		
TURNING CIRCLE (CURB TO CURB)	39.0 ft.		
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RSA P265/60R17 108H		
SUSPENSION TYPE (FRONT)	Independent, single coil over shock with stabilizer bar		
SUSPENSION TYPE (REAR)	Multi-link with coil springs		
GROUND CLEARANCE, MINIMUM	8.00 in.	**LOCATION** Rear Axle	
BRAKE SYSTEM	Vacuum-boost, power, anti-lock		
BRAKES, FRONT	**TYPE** Disc	**SWEPT AREA** 213 sq. in.	
BRAKES, REAR	**TYPE** Disc	**SWEPT AREA** 133 sq. in.	
FUEL CAPACITY	**GALLONS** 26.0	**LITERS** 98.4	
GENERAL MEASUREMENTS	**WHEELBASE** 116 in.	**LENGTH** 202.0 in.	
	TEST WEIGHT 5237	**HEIGHT** 73.9	
HEADROOM	**FRONT** 40.3 in.	**REAR** 39.2 in.	
LEGROOM	**FRONT** 41.3 in.	**REAR** 39.0 in.	
SHOULDER ROOM	**FRONT** 65.3 in.	**REAR** 65.2 in.	
HIPROOM	**FRONT** 64.4 in.	**REAR** 60.6 in.	
INTERIOR VOLUME ***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**FRONT** 62.9 cu. ft.	**REAR** 57.68 cu. ft.	
	COMB 120.58 cu. ft.	***MAX. CARGO** 108.9 cu. ft.	
EPA MILEAGE EST. (MPG)	**CITY** 16 (15.6)	**HIGHWAY** 20	**COMBINED** 17

Dodger Charger
3.5L

TEST VEHICLE DESCRIPTION

MAKE Dodge	**MODEL** Charger	**SALES CODE NO.** 27A	
ENGINE DISPLACEMENT	**CUBIC INCHES** 214	**LITERS** 3.5	
FUEL SYSTEM	Sequential Port Fuel Injection	**EXHAUST** Single	
HORSEPOWER (SAE NET)	250 @ 6400	**ALTERNATOR** 160 Amp	
TORQUE	250 lbs-ft @ 3800	**BATTERY** 800 CCA	
COMPRESSION RATIO	10.0:1		
TRANSMISSION	**MODEL** A580	**TYPE** 5 Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes		
	OVERDRIVE? Yes		
AXLE RATIO	2.87:1		
STEERING	Power Rack & Pinion		
TURNING CIRCLE (CURB TO CURB)	38.9		
TIRE SIZE, LOAD & SPEED RATING	Continental ProContact P225/60 R 18 99V		
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar		
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar		
GROUND CLEARANCE, MINIMUM	5.2 in.	**LOCATION** Fascia Belly Pan	
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock		
BRAKES, FRONT	**TYPE** Vented Disc	**SWEPT AREA** 282 sq. in.	
BRAKES, REAR	**TYPE** Vented Disc	**SWEPT AREA** 242 sq. in.	
FUEL CAPACITY	**GALLONS** 19	**LITERS** 72	
GENERAL MEASUREMENTS	**WHEELBASE** 120 in.	**LENGTH** 200.1 in.	
	TEST WEIGHT 3916	**HEIGHT** 58.2 in.	
HEADROOM	**FRONT** 38.7 in.	**REAR** 36.2 in.	
LEGROOM	**FRONT** 41.8 in.	**REAR** 40.2 in.	
SHOULDER ROOM	**FRONT** 59.3 in.	**REAR** 57.6 in.	
HIPROOM	**FRONT** 56.2 in.	**REAR** 55.5 in.	
INTERIOR VOLUME	**FRONT** 55.5 cu. ft.	**REAR** 48.5 cu. ft.	
	COMB 104 cu. ft.	**TRUNK** 16.2 cu. ft.	
EPA MILEAGE EST. (MPG)	**CITY** 19 (18.8)	**HIGHWAY** 27	**COMBINED** 22

Dodger Charger
5.7L

TEST VEHICLE DESCRIPTION

MAKE Dodge	**MODEL** Charger		**SALES CODE NO.** 29A		
ENGINE DISPLACEMENT	**CUBIC INCHES** 345		**LITERS** 5.7		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Dual		
HORSEPOWER (SAE NET)	340 @ 5000		**ALTERNATOR** 160 Amp		
TORQUE	390 lbs-ft @ 4000		**BATTERY** 800 CCA		
COMPRESSION RATIO	9.7:1				
TRANSMISSION	**MODEL** A580	**TYPE** 5 Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.82:1				
STEERING	Power Rack & Pinion				
TURNING CIRCLE (CURB TO CURB)	38.9				
TIRE SIZE, LOAD & SPEED RATING	Continental ProContact P225/60 R 18 99V				
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar				
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar				
GROUND CLEARANCE, MINIMUM	5.2 in.	**LOCATION** Fascia Belly Pan			
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 282 sq. in.		
BRAKES, REAR	**TYPE** Vented Disc		**SWEPT AREA** 242 sq. in.		
FUEL CAPACITY	**GALLONS** 19		**LITERS** 72		
GENERAL MEASUREMENTS	**WHEELBASE** 120 in.		**LENGTH** 200.1 in.		
	TEST WEIGHT 4127		**HEIGHT** 58.2 in.		
HEADROOM	**FRONT** 38.7 in.		**REAR** 36.2 in.		
LEGROOM	**FRONT** 41.8 in.		**REAR** 40.2 in.		
SHOULDER ROOM	**FRONT** 59.3 in.		**REAR** 57.6 in.		
HIPROOM	**FRONT** 56.2 in.		**REAR** 55.5 in.		
INTERIOR VOLUME	**FRONT** 55.5 cu. ft.		**REAR** 48.5 cu. ft.		
	COMB 104 cu. ft.		**TRUNK** 16.2 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 17 (16.9)	**HIGHWAY** 25	**COMBINED** 20		

Dodge Magnum
3.5L

TEST VEHICLE DESCRIPTION

MAKE Dodge	**MODEL** Magnum		**SALES CODE NO.** 27A		
ENGINE DISPLACEMENT	**CUBIC INCHES** 214		**LITERS** 3.5		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	250 @ 6400		**ALTERNATOR** 160 amp.		
TORQUE	250 lbs-ft @ 3800		**BATTERY** 800 CCA		
COMPRESSION RATIO	10.0:1				
TRANSMISSION	**MODEL** A580	**TYPE** 5 Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.87:1				
STEERING	Power Rack & Pinion				
TURNING CIRCLE (CURB TO CURB)	38.9				
TIRE SIZE, LOAD & SPEED RATING	Continental ProContact P225/60/R18 99V				
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar				
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar				
GROUND CLEARANCE, MINIMUM	5.2 in.	**LOCATION** Fascia Belly Pan			
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 282 sq. in.		
BRAKES, REAR	**TYPE** Vented Disc		**SWEPT AREA** 242 sq. in.		
FUEL CAPACITY	**GALLONS** 19		**LITERS** 72		
GENERAL MEASUREMENTS	**WHEELBASE** 120 in.		**LENGTH** 197.7 in.		
	TEST WEIGHT 4019		**HEIGHT** 58.3 in.		
HEADROOM	**FRONT** 38.7 in.		**REAR** 38.1 in.		
LEGROOM	**FRONT** 41.8 in.		**REAR** 40.2 in.		
SHOULDER ROOM	**FRONT** 58.7 in.		**REAR** 57.6 in.		
HIPROOM	**FRONT** 56.2 in.		**REAR** 56.1 in.		
INTERIOR VOLUME	**FRONT** 55.0 cu. ft.		**REAR** 51.0 cu. ft.		
	COMB 106.0 cu. ft.		**TRUNK** 27.3 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 19 (18.8)	**HIGHWAY** 27	**COMBINED** 22		

Dodge Magnum
5.7L

TEST VEHICLE DESCRIPTION

MAKE Dodge	**MODEL** Magnum		**SALES CODE NO.** 29A		
ENGINE DISPLACEMENT	**CUBIC INCHES** 345		**LITERS** 5.7		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Dual		
HORSEPOWER (SAE NET)	340 @ 5000		**ALTERNATOR** 160 amp.		
TORQUE	390 lbs-ft @ 4000		**BATTERY** 800 CCA		
COMPRESSION RATIO	9.7:1				
TRANSMISSION	**MODEL** A580	**TYPE** 5 Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.82:1				
STEERING	Power Rack & Pinion				
TURNING CIRCLE (CURB TO CURB)	38.9				
TIRE SIZE, LOAD & SPEED RATING	Continental ProContact P225/60/R18 99V				
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar				
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar				
GROUND CLEARANCE, MINIMUM	5.2 in.	**LOCATION** Fascia Belly Pan			
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 282 sq. in.		
BRAKES, REAR	**TYPE** Vented Disc		**SWEPT AREA** 242 sq. in.		
FUEL CAPACITY	**GALLONS** 19		**LITERS** 72		
GENERAL MEASUREMENTS	**WHEELBASE** 120 in.		**LENGTH** 197.7 in.		
	TEST WEIGHT 4227		**HEIGHT** 58.3 in.		
HEADROOM	**FRONT** 38.7 in.		**REAR** 38.1 in.		
LEGROOM	**FRONT** 41.8 in.		**REAR** 40.2 in.		
SHOULDER ROOM	**FRONT** 58.7 in.		**REAR** 57.6 in.		
HIPROOM	**FRONT** 56.2 in.		**REAR** 56.1 in.		
INTERIOR VOLUME	**FRONT** 55.0 cu. ft.		**REAR** 51.0 cu. ft.		
	COMB 106.0 cu. ft.		**TRUNK** 27.3 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 17 (16.9)	**HIGHWAY** 25	**COMBINED** 20		

TEST VEHICLE DESCRIPTION SUMMARY

	Ford Police Interceptor 3.27	Chevrolet Impala 9C1	Dodge Charger 3.5L
ENGINE DISPLACEMENT – CU. IN.	281	237	214
ENGINE DISPLACEMENT – LITERS	4.6	3.9	3.5
ENGINE FUEL SYSTEM	SPFI	SPFI	SPFI
HORSEPOWER (SAE NET)	250	233	250
TORQUE (FT. LBS.)	297	245	250
COMPRESSION RATIO	9.4:1	9.4:1	10.0:1
AXLE RATIO	3.27	3.29:1	2.87:1
TURNING CIRCLE – FT. CURB TO CURB	40.3	38.0	38.9
TRANSMISSION	4 Speed elec. auto	4 Speed auto	5 Speed elec. auto
TRANSMISSION MODEL NUMBER	4R70W	4T65E	A580
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P235/55R	P225/60R	P225/60R
WHEEL RIM SIZE – INCHES	17	16	18
GROUND CLEARANCE – INCHES	5.6	7.1	5.2
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Vented Disc	Vented Disc	Vented Disc
BRAKES – REAR TYPE	Vented Disc	Solid Disc	Vented Disc
FUEL CAPACITY – GALLONS	19	17	19
FUEL CAPACITY – LITERS	71.9	64.3	72
OVERALL LENGTH – INCHES	212.0	200.4	200.1
OVERALL HEIGHT – INCHES	58.3	58.7	58.2
TEST WEIGHT – LBS.	4157	3742	3916
WHEELBASE – INCHES	114.6	110.5	120
HEADROOM FRONT – INCHES	39.5	39.4	38.7
HEADROOM REAR – INCHES	37.8	37.8	36.2
LEGROOM FRONT – INCHES	41.6	42.3	41.8
LEGROOM REAR – INCHES	38.0	37.6	40.2
SHOULDER ROOM FRONT – INCHES	60.6	58.7	59.3
SHOULDER ROOM REAR – INCHES	60.0	58.6	57.6
HIPROOM FRONT – INCHES	57.4	56.4	56.2
HIPROOM REAR – INCHES	56.1	57.2	55.5
INTERIOR VOLUME FRONT – CU. FT.	57.6	56.5	55.5
INTERIOR VOLUME REAR – CU. FT.	48.8	55.7	48.5
INTERIOR VOLUME COMB. – CU. FT.	106.4	104.8	104
TRUNK VOLUME – CU. FT.	20.6	18.6	16.2
EPA MILEAGE – CITY – MPG	16	19	19
EPA MILEAGE – HIGHWAY – MPG	23	27	27
EPA MILEAGE – COMBINED – MPG	18	22	22

TEST VEHICLE DESCRIPTION SUMMARY

	Dodge Charger 5.7L	Dodge Magnum 3.5L	Ford Police Interceptor 3.55
ENGINE DISPLACEMENT – CU. IN.	345	214	281
ENGINE DISPLACEMENT – LITERS	5.7	3.5	4.6
ENGINE FUEL SYSTEM	SPFI	SPFI	SPFI
HORSEPOWER (SAE NET)	340	250	250
TORQUE (FT. LBS.)	390	250	297
COMPRESSION RATIO	9.7:1	10.0:1	9.4:1
AXLE RATIO	2.82:1	2.87:1	3.55
TURNING CIRCLE – FT. CURB TO CURB	38.9	38.9	40.3
TRANSMISSION	5 Speed elec. auto	5 Speed elec. auto	4 Speed elec. auto
TRANSMISSION MODEL NUMBER	A580	A580	4R70W
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P225/60R	P225/60R	P235/55R
WHEEL RIM SIZE – INCHES	18	18	17
GROUND CLEARANCE – INCHES	5.2	5.2	5.6
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Vented Disc	Vented Disc	Vented Disc
BRAKES – REAR TYPE	Vented Disc	Vented Disc	Vented Disc
FUEL CAPACITY – GALLONS	19	19	19
FUEL CAPACITY – LITERS	72	72	71.9
OVERALL LENGTH – INCHES	200.1	197.7	212.0
OVERALL HEIGHT – INCHES	58.2	58.3	58.3
TEST WEIGHT – LBS.	4127	4019	4142
WHEELBASE – INCHES	120	120	114.6
HEADROOM FRONT – INCHES	38.7	38.7	39.5
HEADROOM REAR – INCHES	36.2	38.1	37.8
LEGROOM FRONT – INCHES	41.8	41.8	41.6
LEGROOM REAR – INCHES	40.2	40.2	38.0
SHOULDER ROOM FRONT – INCHES	59.3	58.7	60.6
SHOULDER ROOM REAR – INCHES	57.6	57.6	60.0
HIPROOM FRONT – INCHES	56.2	56.2	57.4
HIPROOM REAR – INCHES	55.5	56.1	56.1
INTERIOR VOLUME FRONT – CU. FT.	55.5	55.0	57.6
INTERIOR VOLUME REAR – CU. FT.	48.5	51.0	48.8
INTERIOR VOLUME COMB. – CU. FT.	104	106.0	106.4
TRUNK VOLUME – CU. FT.	16.2	27.3	20.6
EPA MILEAGE – CITY – MPG	17	19	16
EPA MILEAGE – HIGHWAY – MPG	25	27	23
EPA MILEAGE – COMBINED – MPG	20	22	18

TEST VEHICLE DESCRIPTION SUMMARY

	Dodge Magnum 5.7L	Chevrolet Tahoe PPV E85	Chevrolet Tahoe PPV
ENGINE DISPLACEMENT – CU. IN.	345	327	327
ENGINE DISPLACEMENT – LITERS	5.7	5.3	5.3
ENGINE FUEL SYSTEM	SPFI	SPFI – E85 Ethanol	SPFI
HORSEPOWER (SAE NET)	340	320	320
TORQUE (FT. LBS.)	390	340	340
COMPRESSION RATIO	9.7:1	9.5:1	9.5:1
AXLE RATIO	2.82:1	3.73	3.73
TURNING CIRCLE – FT. CURB TO CURB	38.9	39.0	39.0
TRANSMISSION	5 Speed elec. auto	4-Speed Automatic Overdrive	4-Speed Automatic Overdrive
TRANSMISSION MODEL NUMBER	A580	4L60E	4L60E
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P225/60	P265/60R	P265/60R
WHEEL RIM SIZE – INCHES	18	17	17
GROUND CLEARANCE – INCHES	5.2	8.00	8.00
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Vented Disc	Disc	Disc
BRAKES – REAR TYPE	Vented Disc	Disc	Disc
FUEL CAPACITY – GALLONS	19	26	26
FUEL CAPACITY – LITERS	72	98.4	98.4
OVERALL LENGTH – INCHES	197.7	202.0	202.0
OVERALL HEIGHT – INCHES	58.3	73.9	73.9
TEST WEIGHT – LBS.	4227	5239	5237
WHEELBASE – INCHES	120	116	116
HEADROOM FRONT – INCHES	38.7	40.3	40.3
HEADROOM REAR – INCHES	38.1	39.2	39.2
LEGROOM FRONT – INCHES	41.8	41.3	41.3
LEGROOM REAR – INCHES	40.2	39.0	39.0
SHOULDER ROOM FRONT – INCHES	58.7	65.3	65.3
SHOULDER ROOM REAR – INCHES	57.6	65.2	65.2
HIPROOM FRONT – INCHES	56.2	64.4	64.4
HIPROOM REAR – INCHES	56.1	60.6	60.6
INTERIOR VOLUME FRONT – CU. FT.	55.0	62.9	62.9
INTERIOR VOLUME REAR – CU. FT.	51.0	57.68	57.68
INTERIOR VOLUME COMB. – CU. FT.	106.0	120.58	120.58
MAXIMUM CARGO	27.3	108.9	108.9
EPA MILEAGE – CITY – MPG	17	16	16
EPA MILEAGE – HIGHWAY – MPG	25	20	20
EPA MILEAGE – COMBINED – MPG	20	17	17

VEHICLE DYNAMICS TESTING

TEST OBJECTIVE

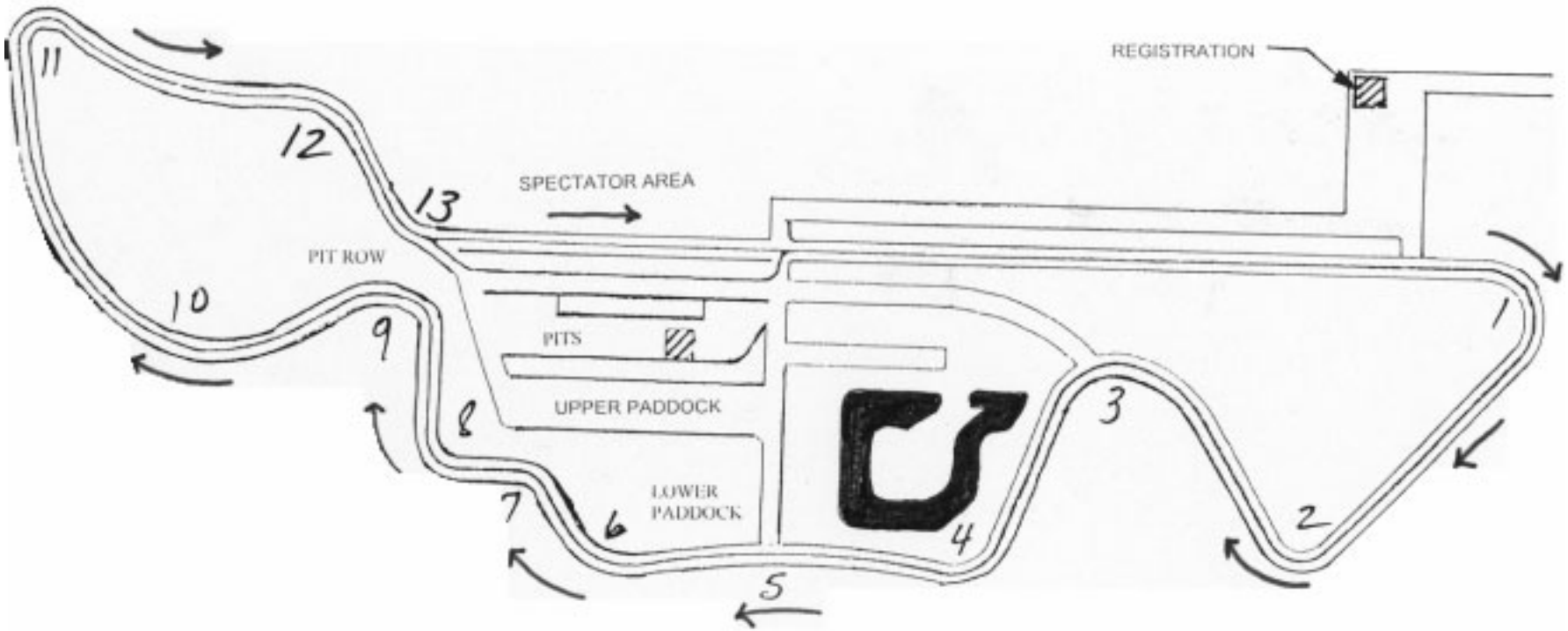
Determine each vehicle's high-speed pursuit or emergency handling characteristics and performance in comparison to the other vehicles in the test group. The course used is a 2-mile road-racing type configuration, containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is 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 is driven over the course a total of 32 timed laps, using four separate drivers, each driving an 8 lap series. The final score for the vehicle is the combined average (from the 4 drivers) of the 5 fastest laps for each driver during the 8 lap series.

Grattan Raceway Park

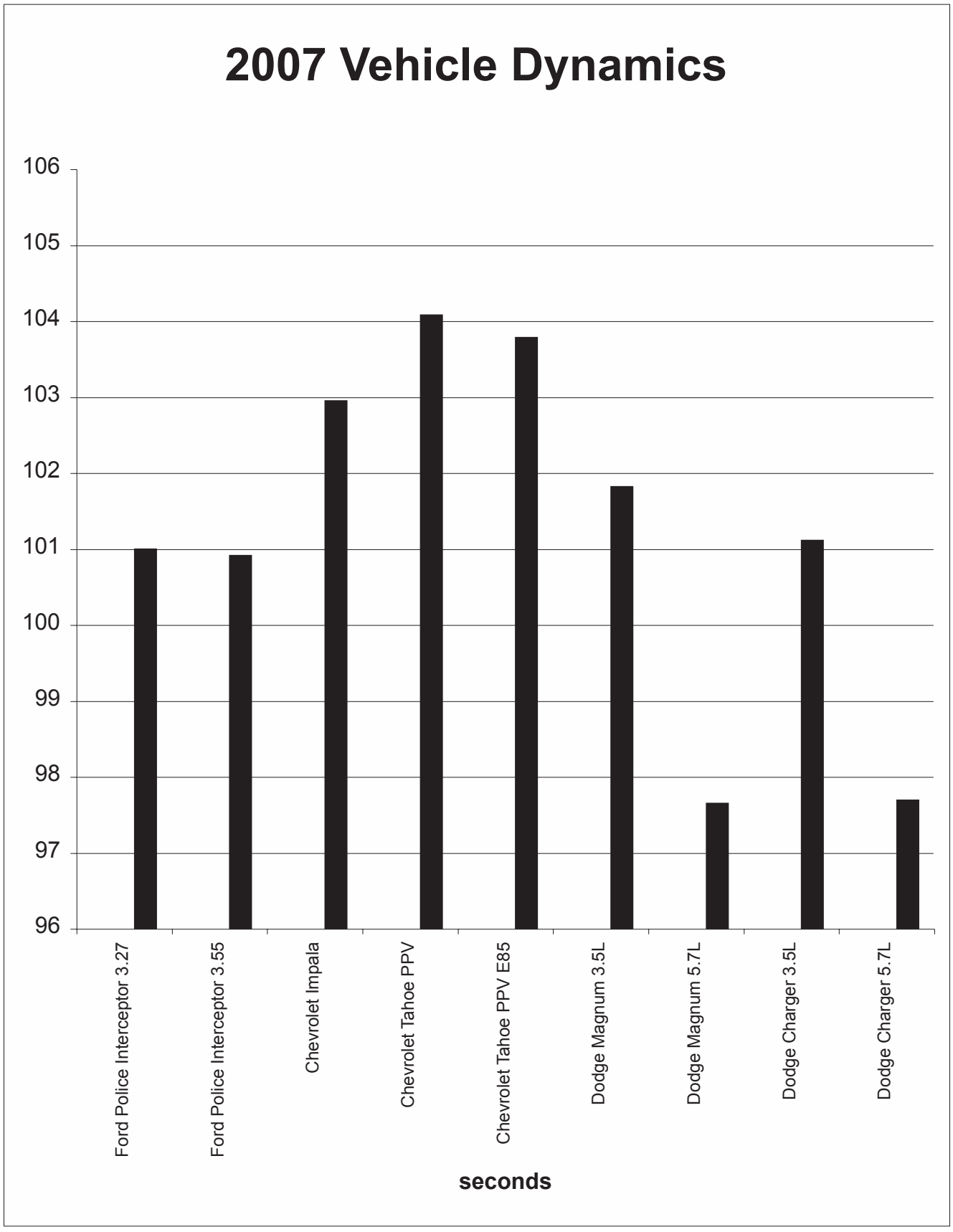
7201 Lessiter
Belding, Michigan 48809



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	Lap 5	Average
Ford Police Interceptor 3:27 SPFI	GROMAK	01:40.30	01:40.30	01:40.50	01:40.60	01:40.80	01:40.50
	ROGERS	01:41.30	01:41.40	01:41.50	01:41.70	01:41.70	01:41.52
	WILSON	01:40.90	01:41.10	01:41.40	01:41.40	01:41.50	01:41.26
	FLEGEL	01:40.50	01:40.60	01:40.80	01:40.80	01:40.90	01:40.72
Overall Average							**01:41.00**
Ford Police Interceptor 3:55 SPFI	GROMAK	01:40.20	01:40.40	01:40.40	01:40.60	01:40.70	01:40.46
	ROGERS	01:40.50	01:40.80	01:41.50	01:41.60	01:41.60	01:41.20
	WILSON	01:41.10	01:41.50	01:41.70	01:41.80	01:41.90	01:41.60
	FLEGEL	01:40.20	01:40.30	01:40.40	01:40.40	01:40.70	01:40.40
Overall Average							**01:40.91**
Chevrolet Impala 9C1 3.9L SPFI	GROMAK	01:41.50	01:41.80	01:42.20	01:42.20	01:42.20	01:41.98
	ROGERS	01:43.20	01:43.20	01:43.30	01:43.40	01:43.50	01:43.32
	WILSON	01:42.70	01:42.80	01:42.90	01:43.30	01:43.40	01:43.02
	FLEGEL	01:43.00	01:43.30	01:43.60	01:43.70	01:43.70	01:43.46
Overall Average							**01:42.95**
Chevrolet Tahoe PPV 2WD E85	GROMAK	01:43.30	01:43.50	01:43.60	01:43.70	01:43.80	01:43.58
	ROGERS	01:43.70	01:44.00	01:44.30	01:44.30	01:44.40	01:44.14
	WILSON	01:43.60	01:43.80	01:43.80	01:43.90	01:44.00	01:43.82
	FLEGEL	01:43.40	01:43.60	01:43.60	01:43.70	01:43.70	01:43.60
Overall Average							**01:43.78**
Chevrolet Tahoe PPV 2WD	GROMAK	01:43.90	01:44.20	01:44.30	01:44.30	01:44.50	01:44.24
	ROGERS	01:43.70	01:43.80	01:43.80	01:44.00	01:44.10	01:43.88
	WILSON	01:44.00	01:44.20	01:44.50	01:44.60	01:44.80	01:44.42
	FLEGEL	01:43.60	01:43.70	01:43.80	01:43.90	01:44.00	01:43.80
Overall Average							**01:44.08**
Dodge Magnum 3.5L SPFI	GROMAK	01:40.40	01:40.60	01:40.80	01:40.80	01:40.90	01:40.70
	ROGERS	01:42.30	01:42.30	01:42.30	01:42.40	01:42.70	01:42.40
	WILSON	01:41.80	01:42.40	01:42.60	01:42.70	01:42.70	01:42.44
	FLEGEL	01:41.40	01:41.70	01:41.80	01:41.80	01:41.90	01:41.72
Overall Average							**01:41.82**
Dodge Magnum 5.7L SPFI	GROMAK	01:36.60	01:36.60	01:36.60	01:36.60	01:36.70	01:36.62
	ROGERS	01:37.40	01:37.50	01:37.50	01:37.60	01:37.60	01:37.52
	WILSON	01:38.00	01:38.10	01:38.20	01:38.30	01:38.40	01:38.20
	FLEGEL	01:37.90	01:38.20	01:38.30	01:38.40	01:38.50	01:38.26
Overall Average							**01:37.65**
Dodge Charger 3.5L SPFI	GROMAK	01:40.30	01:40.40	01:40.40	01:40.40	01:40.80	01:40.46
	ROGERS	01:40.60	01:40.80	01:41.10	01:41.30	01:41.40	01:41.04
	WILSON	01:41.30	01:41.40	01:41.40	01:41.60	01:41.70	01:41.48
	FLEGEL	01:41.20	01:41.40	01:41.50	01:41.60	01:41.60	01:41.46
Overall Average							**01:41.11**
Dodge Charger 5.7L SPFI	GROMAK	01:36.80	01:36.90	01:37.10	01:37.50	01:37.60	01:37.18
	ROGERS	01:37.10	01:37.20	01:37.30	01:37.50	01:37.50	01:37.32
	WILSON	01:37.90	01:38.40	01:38.40	01:38.40	01:38.40	01:38.30
	FLEGEL	01:37.00	01:37.70	01:38.30	01:38.30	01:38.50	01:37.96
Overall Average							**01:37.69**


2007 Vehicle Dynamics
106
105
104
103
102
101
100
99
98
97
96
Ford Police Interceptor 3.27
Ford Police Interceptor 3.55
Chevrolet Impala
Chevrolet Tahoe PPV
Chevrolet Tahoe PPV E85
Dodge Magnum 3.5L
Dodge Magnum 5.7L
Dodge Charger 3.5L
Dodge Charger 5.7L
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

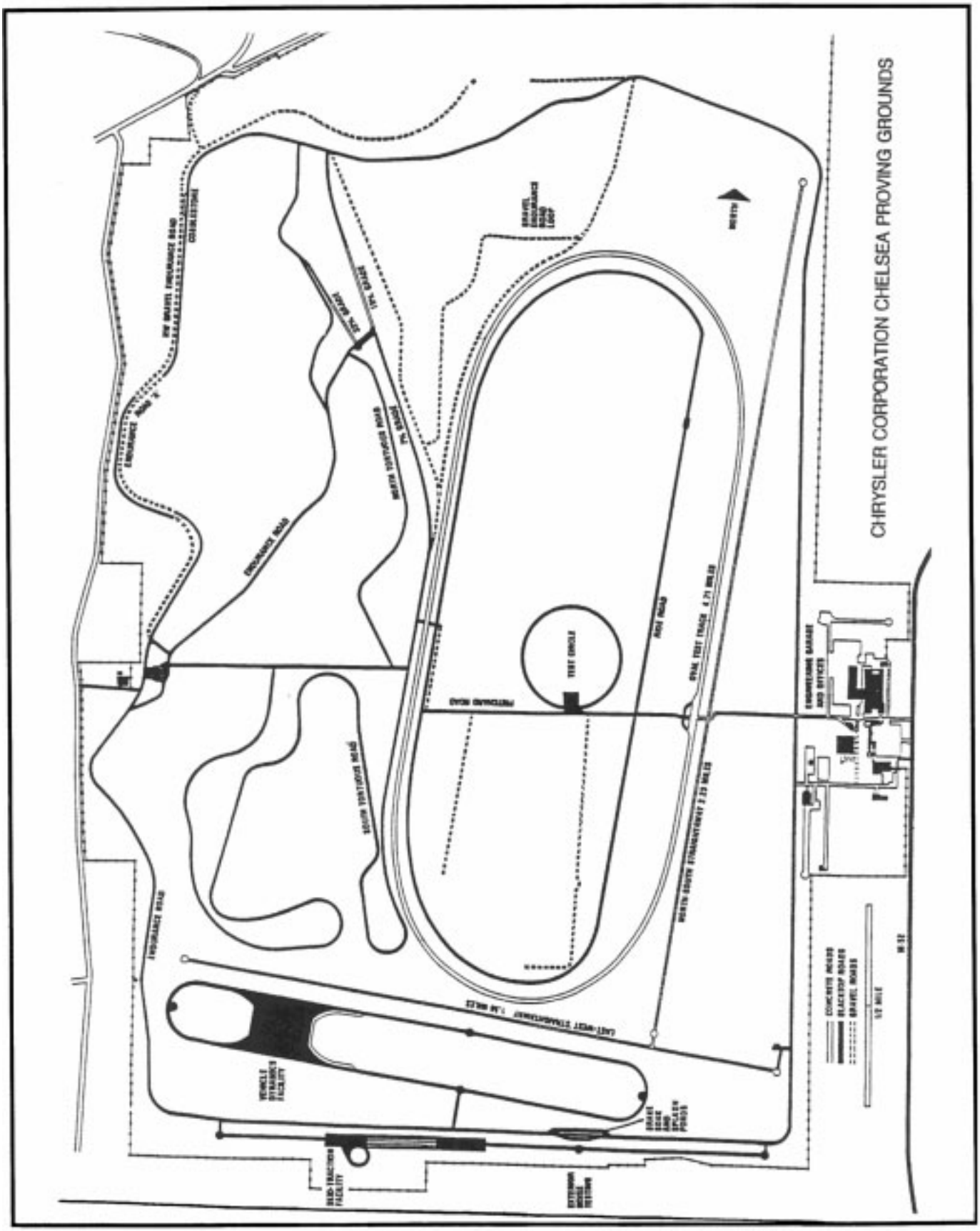
Using a DLS Smart Sensor – Optical non-contact Speed and Distance Sensor in conjunction with a lap top computer, each vehicle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and 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 continues 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 is the vehicle's score on the competitive test for top speed.


CHRYSLER CORPORATION CHELSEA PROVING GROUNDS

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

MAKE & MODEL: Ford Interceptor 4.6L 3.27 **BEGINNING TIME:** 11:39 a.m.

WIND VELOCITY: 7.2 mph **WIND DIRECTION:** 169° **TEMPERATURE:** 65.7°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	8.82	8.61	8.82	8.58	**8.71**
0 – 80	**16.4 sec.**	14.25	13.95	14.51	14.06	**14.19**
0 – 100	**27.1 sec.**	24.45	23.15	25.04	23.40	**24.01**

DISTANCE TO REACH: **110 MPH** .63 mile **120 MPH** 1.00 mile

TOP SPEED ATTAINED: 130 mph

MAKE & MODEL: Ford Police Interceptor 4.6L 3.55 **BEGINNING TIME:** 12:48 p.m.

WIND VELOCITY: 5.9 mph **WIND DIRECTION:** 140° **TEMPERATURE:** 69.3°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	8.98	8.61	8.68	8.60	**8.72**
0 – 80	**16.4 sec.**	14.82	14.22	14.55	14.09	**14.42**
0 – 100	**27.1 sec.**	24.8	23.39	24.73	23.10	**24.01**

DISTANCE TO REACH: **110 MPH** .61 mile **120 MPH** N/A

TOP SPEED ATTAINED: 119 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

MAKE & MODEL: Dodge Magnum 3.5L **BEGINNING TIME:** 10:40 a.m.

WIND VELOCITY: 2.9 mph **WIND DIRECTION:** 160° **TEMPERATURE:** 62.8°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	9.11	8.92	8.97	8.95	**8.99**
0 – 80	**16.4 sec.**	14.98	14.71	14.82	14.70	**14.80**
0 – 100	**27.1 sec.**	25.59	24.51	25.13	24.55	**24.95**

DISTANCE TO REACH: **110 MPH** .65 mile **120 MPH** .95 mile

TOP SPEED ATTAINED: 131 mph

MAKE & MODEL: Dodge Magnum 5.7L **BEGINNING TIME:** 2:42 p.m.

WIND VELOCITY: 8 mph **WIND DIRECTION:** 161° **TEMPERATURE:** 71.2°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	6.55	6.49	6.59	6.53	**6.54**
0 – 80	**16.4 sec.**	10.95	10.70	10.85	10.73	**10.81**
0 – 100	**27.1 sec.**	16.78	16.43	16.63	16.28	**16.53**

DISTANCE TO REACH: **110 MPH** .39 mile **120 MPH** .56 mile

TOP SPEED ATTAINED: 131 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

MAKE & MODEL: Dodge Charger 3.5L **BEGINNING TIME:** 10:17 a.m.

WIND VELOCITY: 4.8 mph **WIND DIRECTION:** 145° **TEMPERATURE:** 60.6°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	8.94	8.82	8.83	8.72	**8.83**
0 – 80	**16.4 sec.**	14.84	14.53	14.44	14.27	**14.52**
0 – 100	**27.1 sec.**	25.25	23.72	24.10	23.45	**24.13**

DISTANCE TO REACH: **110 MPH** .61 mile **120 MPH** .87 mile

TOP SPEED ATTAINED: 132 mph

MAKE & MODEL: Dodge Charger 5.7L **BEGINNING TIME:** 2:18 p.m.

WIND VELOCITY: 9.1 mph **WIND DIRECTION:** 174° **TEMPERATURE:** 72°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	6.59	6.56	6.50	6.48	**6.53**
0 – 80	**16.4 sec.**	10.95	10.65	10.66	10.51	**10.69**
0 – 100	**27.1 sec.**	16.80	16.15	16.28	16.06	**16.32**

DISTANCE TO REACH: **110 MPH** .37 mile **120 MPH** .52 mile

TOP SPEED ATTAINED: 148 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

MAKE & MODEL: Chevrolet Impala 9C1 **BEGINNING TIME:** 11:14 a.m.

WIND VELOCITY: 4.7 mph **WIND DIRECTION:** 115° **TEMPERATURE:** 66.1°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**9.6 sec**	8.94	8.74	8.71	8.89	**8.82**
0 – 80	**16.4 sec.**	14.48	14.03	14.15	14.17	**14.21**
0 – 100	**27.1 sec.**	24.78	23.68	24.41	23.55	**24.11**

DISTANCE TO REACH: **110 MPH** .61 mile **120 MPH** .87 mile

TOP SPEED ATTAINED: 139 mph

MAKE & MODEL: Chevrolet Tahoe PPV **BEGINNING TIME:** 12:13 p.m.

WIND VELOCITY: 8.9 mph **WIND DIRECTION:** 195° **TEMPERATURE:** 68.6°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**10.0 sec**	8.82	8.64	8.64	8.55	**8.66**
0 – 80	**16.0 sec.**	14.64	14.10	14.40	13.97	**14.28**
0 – 100	**27.0 sec.**	25.64	23.86	25.28	23.69	**24.52**

DISTANCE TO REACH: **110 MPH** .61 mile **120 MPH** .88 mile

TOP SPEED ATTAINED: 136 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

MAKE & MODEL: Chevrolet Tahoe PPV E85 **BEGINNING TIME:** 1:34 p.m.

WIND VELOCITY: 7.8 mph **WIND DIRECTION:** 174° **TEMPERATURE:** 70.5°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	**10.0 sec**	8.64	8.41	8.54	8.38	**8.49**
0 – 80	**16.0 sec.**	14.22	13.71	13.97	13.51	**13.85**
0 – 100	**27.0 sec.**	24.17	22.74	24.37	22.52	**23.45**

DISTANCE TO REACH: **110 MPH** .56 mile **120 MPH** .79 mile

TOP SPEED ATTAINED: 137 mph

*Michigan State Police minimum requirement.

SUMMARY OF ACCELERATION AND TOP SPEED

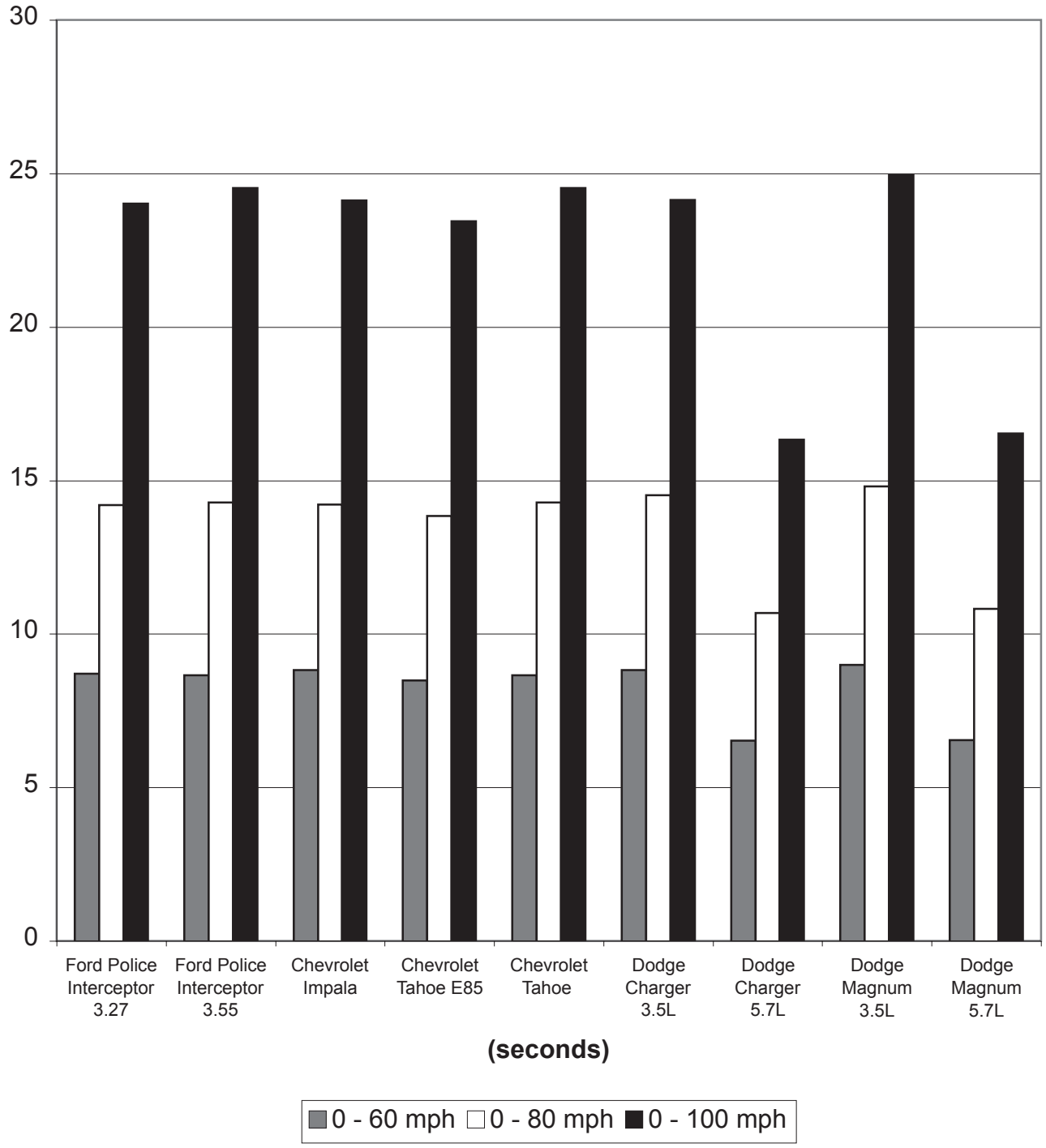
ACCELERATION*		Ford Police Interceptor 4.6 L 3.27	Dodge Charger 3.5 L	Chevrolet Impala 9C1 3.9 L	Dodge Magnum 3.5 L	Chevrolet Tahoe PPV
0 – 20 mph	(sec.)	1.81	1.96	1.95	2.02	2.07
0 – 30 mph	(sec.)	3.11	3.32	3.21	3.39	3.32
0 – 40 mph	(sec.)	4.48	4.77	4.56	4.86	4.61
0 – 50 mph	(sec.)	6.43	6.53	6.36	6.67	6.44
0 – 60 mph	(sec.)	8.71	8.83	8.82	8.99	8.66
0 – 70 mph	(sec.)	11.16	11.51	11.35	11.71	11.01
0 – 80 mph	(sec.)	14.19	14.52	14.21	14.80	14.28
0 – 90 mph	(sec.)	18.74	18.93	18.26	19.39	19.10
0 – 100 mph	(sec.)	24.01	24.13	24.11	24.95	24.52
TOP SPEED	**(mph)**	130	132	139	131	136
DISTANCE TO REACH						
110 mph (miles)		.63	.61	.61	.65	.61
120 mph (miles)		1.00	.87	.87	.95	.88
QUARTER MILE						
Time	(sec.)	16.58	16.77	16.65	16.89	16.64
Speed (miles)		85.75	85.33	87.13	84.73	84.80

SUMMARY OF ACCELERATION AND TOP SPEED

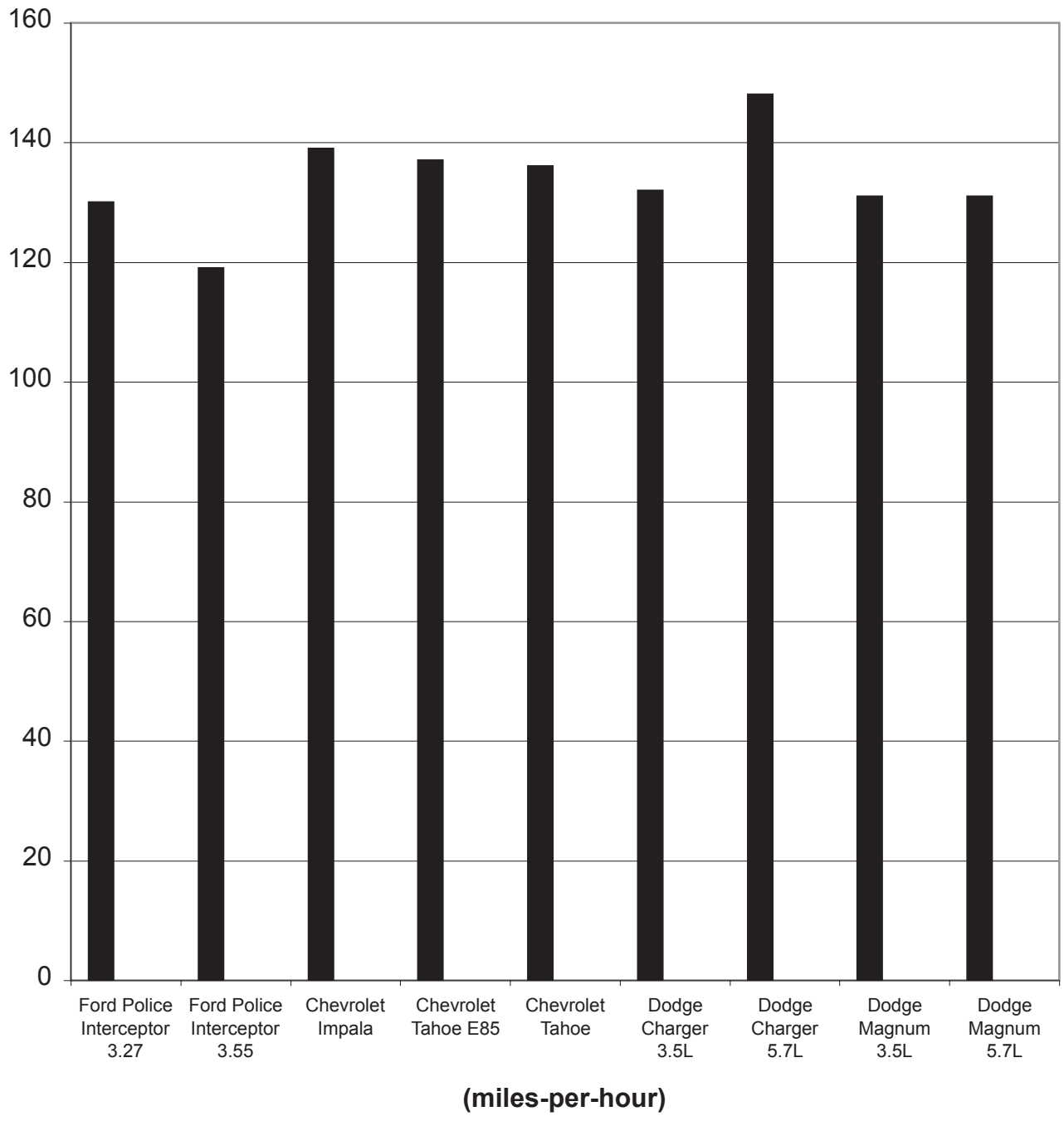
ACCELERATION*		Ford Police Interceptor 4.6 L 3.55	Dodge Charger 5.7 L	Dodge Magnum 5.7 L	Chevrolet Tahoe PPV E85
0 – 20 mph	(sec.)	1.84	1.57	1.55	2.04
0 – 30 mph	(sec.)	3.10	2.57	2.56	3.26
0 – 40 mph	(sec.)	4.52	3.57	3.57	4.52
0 – 50 mph	(sec.)	6.55	4.97	5.01	6.34
0 – 60 mph	(sec.)	8.72	6.53	6.54	8.49
0 – 70 mph	(sec.)	11.14	8.24	8.30	10.74
0 – 80 mph	(sec.)	14.42	10.69	10.81	13.85
0 – 90 mph	(sec.)	18.83	13.36	13.48	18.40
0 – 100 mph	(sec.)	24.01	16.32	16.53	23.45
TOP SPEED	**(mph)**	119	148	131	137
DISTANCE TO REACH					
110 mph (miles)		.61	.37	.39	.56
120 mph (miles)		N/A	.52	.56	.79
QUARTER MILE					
Time	(sec.)	16.63	14.99	15.03	16.50
Speed (miles)		85.10	95.68	95.23	85.80

2007 ACCELERATION COMPARISON

ACCELERATION TIMES



2007 TOP SPEED COMPARISON



BRAKE TESTING

BRAKE TEST OBJECTIVE

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

BRAKE TEST METHODOLOGY

Each vehicle makes 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 is turned around and makes six measured 60 – 0 mph impending skid (threshold) stops with ABS in operation, if so equipped, at specific predetermined points. Following a four (4) minute heat soak, the entire sequence is 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 is recorded by means of a non contact optical sensor in conjunction with electronic speed and distance meters. The data resulting from the twelve total stops is 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.

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 12:58 p.m. **TEMPERATURE:** 69.0°F

MAKE & MODEL: Ford Police Interceptor 4.6L 3.27 **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.9 mph	141.0 feet	27.41 ft/s^2
Stop #2	60.0 mph	144.8 feet	26.75 ft/s^2
Stop #3	60.3 mph	143.2 feet	27.33 ft/s^2
Stop #4	60.2 mph	144.5 feet	27.02 ft/s^2
Stop #5	60.2 mph	142.6 feet	27.35 ft/s^2
Stop #6	59.7 mph	143.1 feet	26.76 ft/s^2

AVERAGE DECELERATION RATE 27.10 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.5 mph	143.8 feet	27.36 ft/s^2
Stop #2	60.0 mph	140.2 feet	27.63 ft/s^2
Stop #3	59.8 mph	140.3 feet	27.40 ft/s^2
Stop #4	59.9 mph	144.3 feet	26.76 ft/s^2
Stop #5	60.2 mph	140.8 feet	27.65 ft/s^2
Stop #6	60.2 mph	144.4 feet	26.98 ft/s^2

AVERAGE DECELERATION RATE 27.30 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 DECEL. RATE: 27.20 ft/s^2

Projected Stopping Distance from 60.0 mph 142.4

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 2:44 p.m. **TEMPERATURE:** 71.2°F

MAKE & MODEL: Ford Police Interceptor 4.6L 3.55 **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	146.5 feet	26.99 ft/s^2
Stop #2	60.0 mph	147.1 feet	26.35 ft/s^2
Stop #3	59.4 mph	139.2 feet	27.29 ft/s^2
Stop #4	60.8 mph	148.7 feet	26.76 ft/s^2
Stop #5	60.5 mph	146.2 feet	26.92 ft/s^2
Stop #6	60.7 mph	150.6 feet	26.31 ft/s^2

AVERAGE DECELERATION RATE 26.77 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.3 mph	145.4 feet	26.91 ft/s^2
Stop #2	60.7 mph	147.9 feet	26.79 ft/s^2
Stop #3	60.2 mph	142.7 feet	27.29 ft/s^2
Stop #4	60.9 mph	146.7 feet	27.20 ft/s^2
Stop #5	60.8 mph	144.9 feet	27.39 ft/s^2
Stop #6	60.9 mph	142.7 feet	27.97 ft/s^2

AVERAGE DECELERATION RATE 27.26 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 DECEL. RATE: 27.02 ft/s^2

Projected Stopping Distance from 60.0 mph 143.3

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 12:04 p.m. **TEMPERATURE:** 67.8°F

MAKE & MODEL: Chevrolet Impala 9C1 3.9L **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	140.6 feet	27.70 ft/s^2
Stop #2	60.5 mph	143.2 feet	27.48 ft/s^2
Stop #3	60.5 mph	142.1 feet	27.75 ft/s^2
Stop #4	60.3 mph	139.6 feet	28.01 ft/s^2
Stop #5	60.7 mph	141.0 feet	28.07 ft/s^2
Stop #6	60.7 mph	146.2 feet	27.12 ft/s^2

AVERAGE DECELERATION RATE 27.69 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.1 mph	141.0 feet	27.54 ft/s^2
Stop #2	60.4 mph	146.1 feet	26.83 ft/s^2
Stop #3	60.4 mph	139.8 feet	28.11 ft/s^2
Stop #4	60.5 mph	147.0 feet	26.81 ft/s^2
Stop #5	60.2 mph	140.0 feet	27.84 ft/s^2
Stop #6	60.5 mph	143.7 feet	27.38 ft/s^2

AVERAGE DECELERATION RATE 27.42 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 DECEL. RATE: 27.55 ft/s^2

Projected Stopping Distance from 60.0 mph 140.5

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 11:09 a.m. **TEMPERATURE:** 66.1°F

MAKE & MODEL: Dodge Charger 3.5L **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	133.9 feet	29.33 ft/s^2
Stop #2	60.9 mph	140.7 feet	28.33 ft/s^2
Stop #3	60.0 mph	135.7 feet	28.55 ft/s^2
Stop #4	61.4 mph	139.2 feet	29.14 ft/s^2
Stop #5	61.3 mph	136.4 feet	29.58 ft/s^2
Stop #6	59.5 mph	132.2 feet	28.79 ft/s^2

AVERAGE DECELERATION RATE 28.95 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	133.0 feet	29.68 ft/s^2
Stop #2	60.5 mph	132.6 feet	29.70 ft/s^2
Stop #3	60.9 mph	134.7 feet	29.66 ft/s^2
Stop #4	59.9 mph	127.2 feet	30.32 ft/s^2
Stop #5	61.3 mph	135.5 feet	29.83 ft/s^2
Stop #6	60.5 mph	134.0 feet	29.34 ft/s^2

AVERAGE DECELERATION RATE 29.75 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 DECEL. RATE: 29.35 ft/s^2

Projected Stopping Distance from 60.0 mph 131.9

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 3:33 p.m. **TEMPERATURE:** 72.7°F

MAKE & MODEL: Dodge Charger 5.7L **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	135.5 feet	29.18 ft/s^2
Stop #2	60.0 mph	132.4 feet	29.25 ft/s^2
Stop #3	60.1 mph	131.4 feet	29.52 ft/s^2
Stop #4	61.0 mph	134.6 feet	29.73 ft/s^2
Stop #5	61.4 mph	138.8 feet	29.24 ft/s^2
Stop #6	61.1 mph	139.0 feet	28.90 ft/s^2

AVERAGE DECELERATION RATE 29.30 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	135.5 feet	28.95 ft/s^2
Stop #2	60.3 mph	134.2 feet	29.17 ft/s^2
Stop #3	60.6 mph	138.9 feet	28.46 ft/s^2
Stop #4	60.9 mph	133.2 feet	29.92 ft/s^2
Stop #5	61.0 mph	140.6 feet	28.44 ft/s^2
Stop #6	60.5 mph	135.3 feet	29.05 ft/s^2

AVERAGE DECELERATION RATE 29.00 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 DECEL. RATE: 29.15 ft/s^2

Projected Stopping Distance from 60.0 mph 132.8

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 11:36 a.m. **TEMPERATURE:** 66.9°F

MAKE & MODEL: Dodge Magnum 3.5L **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.3 mph	130.2 feet	30.07 ft/s^2
Stop #2	60.5 mph	128.7 feet	30.57 ft/s^2
Stop #3	61.2 mph	133.3 feet	30.23 ft/s^2
Stop #4	61.1 mph	134.7 feet	29.77 ft/s^2
Stop #5	59.8 mph	130.2 feet	29.53 ft/s^2
Stop #6	60.9 mph	135.4 feet	29.46 ft/s^2

AVERAGE DECELERATION RATE 29.94 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	132.8 feet	29.35 ft/s^2
Stop #2	60.7 mph	130.2 feet	30.46 ft/s^2
Stop #3	60.0 mph	130.3 feet	29.68 ft/s^2
Stop #4	60.9 mph	134.3 feet	29.73 ft/s^2
Stop #5	60.4 mph	133.7 feet	29.34 ft/s^2
Stop #6	60.5 mph	133.5 feet	29.53 ft/s^2

AVERAGE DECELERATION RATE 29.68 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 DECEL. RATE: 29.81 ft/s^2

Projected Stopping Distance from 60.0 mph 129.9

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 4:15 p.m. **TEMPERATURE:** 72.4°F

MAKE & MODEL: Dodge Magnum 5.7L **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.9 mph	136.3 feet	29.23 ft/s^2
Stop #2	61.1 mph	133.6 feet	30.09 ft/s^2
Stop #3	61.5 mph	136.9 feet	29.74 ft/s^2
Stop #4	60.5 mph	135.0 feet	29.18 ft/s^2
Stop #5	61.0 mph	136.0 feet	29.40 ft/s^2
Stop #6	60.8 mph	136.2 feet	29.23 ft/s^2

AVERAGE DECELERATION RATE 29.48 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.8 mph	133.3 feet	28.85 ft/s^2
Stop #2	60.4 mph	132.9 feet	29.51 ft/s^2
Stop #3	60.5 mph	137.6 feet	28.61 ft/s^2
Stop #4	60.4 mph	136.3 feet	28.80 ft/s^2
Stop #5	60.8 mph	137.0 feet	28.99 ft/s^2
Stop #6	60.4 mph	135.5 feet	28.96 ft/s^2

AVERAGE DECELERATION RATE 28.95 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 DECEL. RATE: 29.21 ft/s^2

Projected Stopping Distance from 60.0 mph 132.5

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 1:37 p.m. **TEMPERATURE:** 70.5°F

MAKE & MODEL: Chevrolet Tahoe 5.3L 2WD **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.8 mph	140.9 feet	28.17 ft/s^2
Stop #2	60.3 mph	140.6 feet	27.76 ft/s^2
Stop #3	60.3 mph	138.9 feet	28.13 ft/s^2
Stop #4	60.8 mph	143.1 feet	27.75 ft/s^2
Stop #5	60.5 mph	140.0 feet	28.12 ft/s^2
Stop #6	60.6 mph	141.6 feet	27.88 ft/s^2

AVERAGE DECELERATION RATE 27.97 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	140.4 feet	27.96 ft/s^2
Stop #2	60.5 mph	139.3 feet	28.27 ft/s^2
Stop #3	60.4 mph	138.1 feet	28.44 ft/s^2
Stop #4	60.2 mph	141.6 feet	27.54 ft/s^2
Stop #5	60.0 mph	138.3 feet	27.95 ft/s^2
Stop #6	60.9 mph	140.6 feet	28.35 ft/s^2

AVERAGE DECELERATION RATE 28.08 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 DECEL. RATE: 28.03 ft/s^2

Projected Stopping Distance from 60.0 mph 138.2

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 1:37 p.m. **TEMPERATURE:** 70.5°F

MAKE & MODEL: Chevrolet Tahoe 5.3L 2WD E85 **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.8 mph	140.9 feet	28.17 ft/s^2
Stop #2	60.3 mph	140.6 feet	27.76 ft/s^2
Stop #3	60.3 mph	138.9 feet	28.13 ft/s^2
Stop #4	60.8 mph	143.1 feet	27.75 ft/s^2
Stop #5	60.5 mph	140.0 feet	28.12 ft/s^2
Stop #6	60.6 mph	141.6 feet	27.88 ft/s^2

AVERAGE DECELERATION RATE 27.97 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	140.4 feet	27.96 ft/s^2
Stop #2	60.5 mph	139.3 feet	28.27 ft/s^2
Stop #3	60.4 mph	138.1 feet	28.44 ft/s^2
Stop #4	60.2 mph	141.6 feet	27.54 ft/s^2
Stop #5	60.0 mph	138.3 feet	27.95 ft/s^2
Stop #6	60.9 mph	140.6 feet	28.35 ft/s^2

AVERAGE DECELERATION RATE 28.08 ft/s^2

Phase III

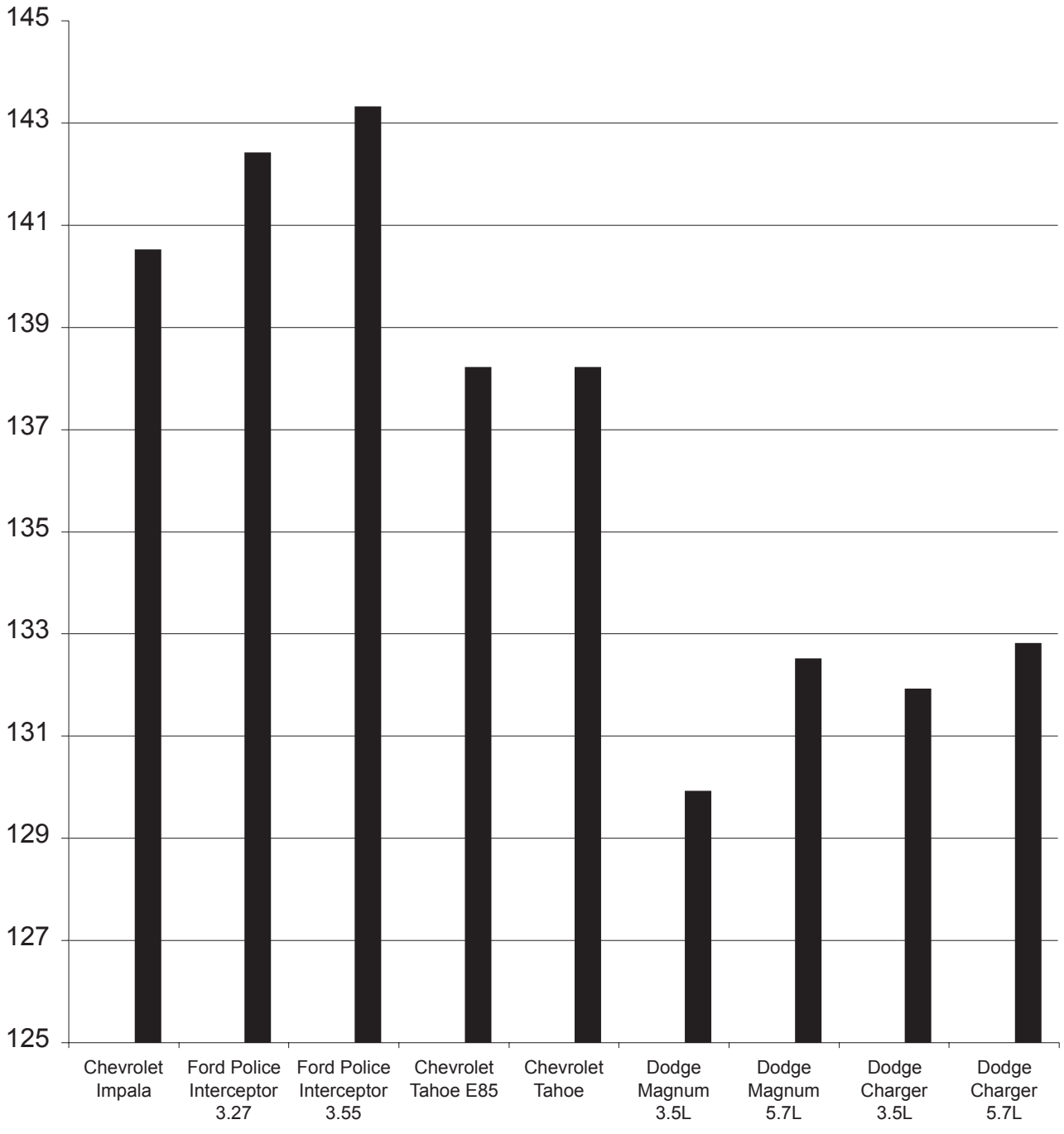
	Yes/No
Evidence of severe fading?	No
Vehicle stopped in straight line?	Yes
Vehicle stopped within correct lane?	Yes

OVERALL AVERAGE DECEL. RATE: 28.03 ft/s^2

Projected Stopping Distance from 60.0 mph 138.2

2007 Brake Testing Comparison

STOPPING DISTANCE



(in "feet" from 60.0 mph)

ERGONOMICS AND COMMUCATIONS

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 (in this case 10) 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 is conducted by personnel from the Canfield Equipment Service, Inc., based upon the relative difficulty of the necessary installations. Each factor is graded on a 1 to 10 scale, with 1 representing "totally unacceptable," 5 representing "average," and 10 representing "superior." The scores are averaged to minimize personal prejudice for or against any given vehicle.

ERGONOMICS AND COMMUNICATIONS

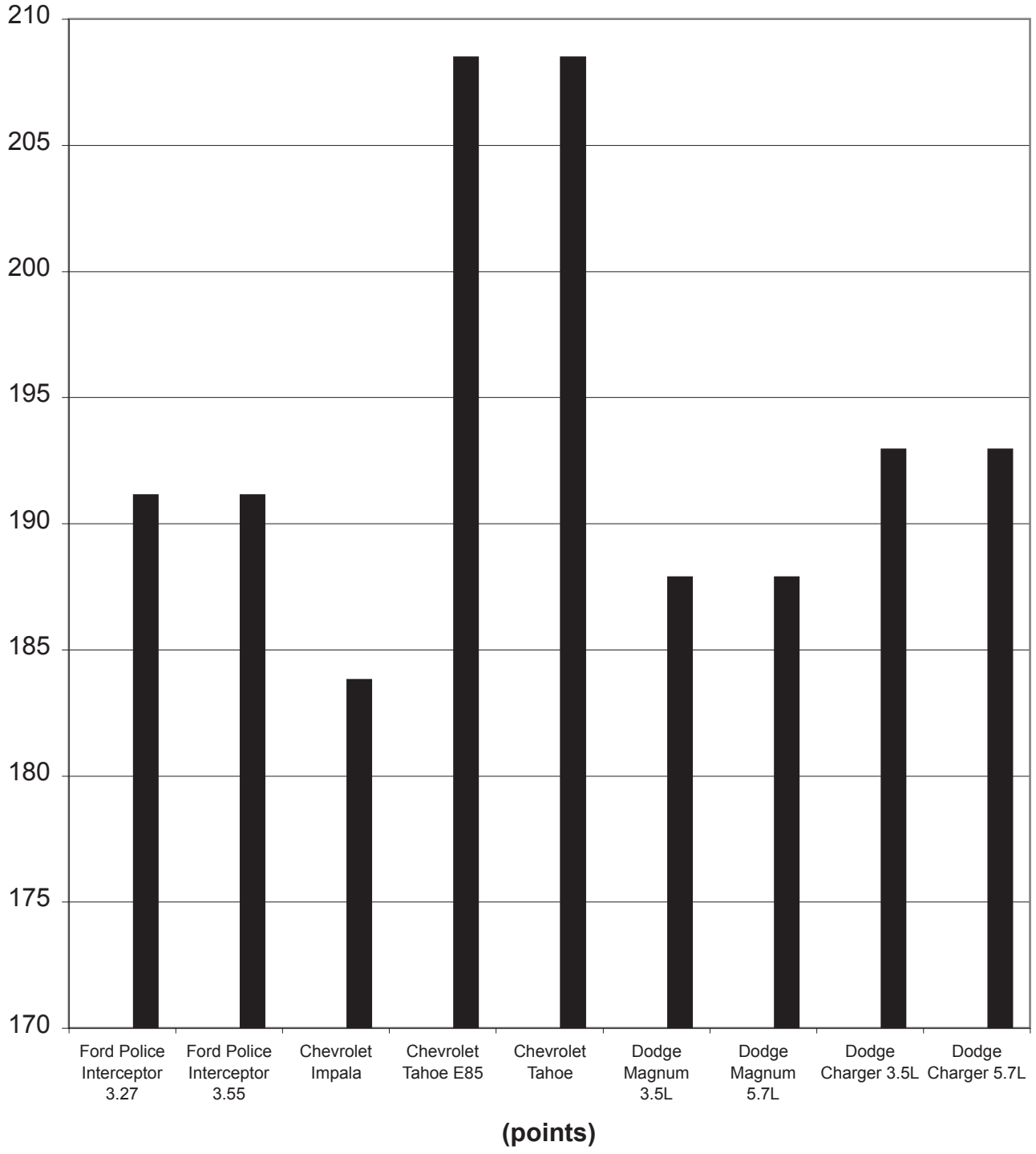
ERGONOMICS	Ford Police Interceptor 3.27	Dodge Charger 3.5 L	Chevrolet Impala 9C1	Dodge Magnum 3.5 L	Chevrolet Tahoe PPV
FRONT SEAT					
Padding	6.89	6.11	6.89	6.11	7.33
Depth of Bucket Seat	6.44	5.78	5.89	5.78	6.78
Adjustability – Front to Rear	7.11	6.89	6.89	6.78	6.67
Upholstery	6.33	6.44	6.44	6.56	7.44
Bucket Seat Design	5.89	6.11	6.11	6.22	6.67
Headroom	7.78	7.78	6.89	7.89	8.89
Seatbelts	6.11	6.78	7.11	6.78	6.89
Ease of Entry and Exit	6.56	7.22	6.33	7.11	8.22
Overall Comfort Rating	6.44	6.78	6.56	6.89	7.67
REAR SEAT					
Leg room – Front seat back	4.44	5.56	2.67	6.00	6.44
Ease of Entry and Exit	4.22	5.22	3.33	5.67	6.56
INSTRUMENTATION					
Clarity	6.22	6.56	6.78	6.22	7.44
Placement	6.56	6.67	8.00	6.33	7.44
VEHICLE CONTROLS					
Pedals, Size and Position	6.89	6.56	6.89	6.44	7.56
Power Window Switch	7.22	7.56	7.44	7.00	8.00
Inside Door Lock Switch	7.11	7.56	6.00	7.44	7.22
Automatic Door Lock Switch	6.78	6.00	5.67	6.00	7.00
Outside Mirror Controls	6.67	6.67	6.00	6.22	7.67
Steering Wheel, Size, Tilt Release, and Surface	7.00	6.00	7.22	6.33	7.67
Heat/AC Vent Placement and Adjustability	7.33	7.56	6.89	7.33	7.00
VISIBILITY					
Front (Windshield)	8.56	8.00	7.67	7.89	8.33
Rear (Back Window)	7.33	6.22	6.33	4.44	6.22
Left Rear Quarter	7.33	5.78	6.78	5.33	6.22
Right Rear Quarter	7.11	5.67	6.11	4.67	5.33
Outside Rear View Mirrors	6.78	6.89	5.33	6.44	8.44
COMMUNICATIONS					
Dashboard Accessibility	8.00	9.60	8.73	9.67	9.40
Trunk Accessibility	8.00	9.33	9.07	8.87	8.53
Engine Compartment	8.00	9.67	7.78	9.44	9.44
TOTAL SCORES	**191.11**	**192.93**	**183.80**	**187.87**	**208.48**

ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Ford Police Interceptor 3.55	Dodge Charger 5.7 L	Dodge Magnum 5.7 L	Chevrolet Tahoe PPV E85
FRONT SEAT				
Padding	6.89	6.11	6.11	7.33
Depth of Bucket Seat	6.44	5.78	5.78	6.78
Adjustability – Front to Rear	7.11	6.89	6.78	6.67
Upholstery	6.33	6.44	6.56	7.44
Bucket Seat Design	5.89	6.11	6.22	6.67
Headroom	7.78	7.78	7.89	8.89
Seatbelts	6.11	6.78	6.78	6.89
Ease of Entry and Exit	6.56	7.22	7.11	8.22
Overall Comfort Rating	6.44	6.78	6.89	7.67
REAR SEAT				
Leg room – Front seat back	4.44	5.56	6.00	6.44
Ease of Entry and Exit	4.22	5.22	5.67	6.56
INSTRUMENTATION				
Clarity	6.22	6.56	6.22	7.44
Placement	6.56	6.67	6.33	7.44
VEHICLE CONTROLS				
Pedals, Size and Position	6.89	6.56	6.44	7.56
Power Window Switch	7.22	7.56	7.00	8.00
Inside Door Lock Switch	7.11	7.56	7.44	7.22
Automatic Door Lock Switch	6.78	6.00	6.00	7.00
Outside Mirror Controls	6.67	6.67	6.22	7.67
Steering Wheel, Size, Tilt Release, and Surface	7.00	6.00	6.33	7.67
Heat/AC Vent Placement and Adjustability	7.33	7.56	7.33	7.00
VISIBILITY				
Front (Windshield)	8.56	8.00	7.89	8.33
Rear (Back Window)	7.33	6.22	4.44	6.22
Left Rear Quarter	7.33	5.78	5.33	6.22
Right Rear Quarter	7.11	5.67	4.67	5.33
Outside Rear View Mirrors	6.78	6.89	6.44	8.44
COMMUNICATIONS				
Dashboard Accessibility	8.00	9.60	9.67	9.40
Trunk Accessibility	8.00	9.33	8.87	8.53
Engine Compartment	8.00	9.67	9.44	9.44
TOTAL SCORES	**191.11**	**192.93**	**187.87**	**208.48**

2007 ERGONOMICS/COMMUNICATIONS

VEHICLE SCORES



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, while not necessarily being an accurate predictor of actual fuel economy in police patrol service.

TEST METHODOLOGY

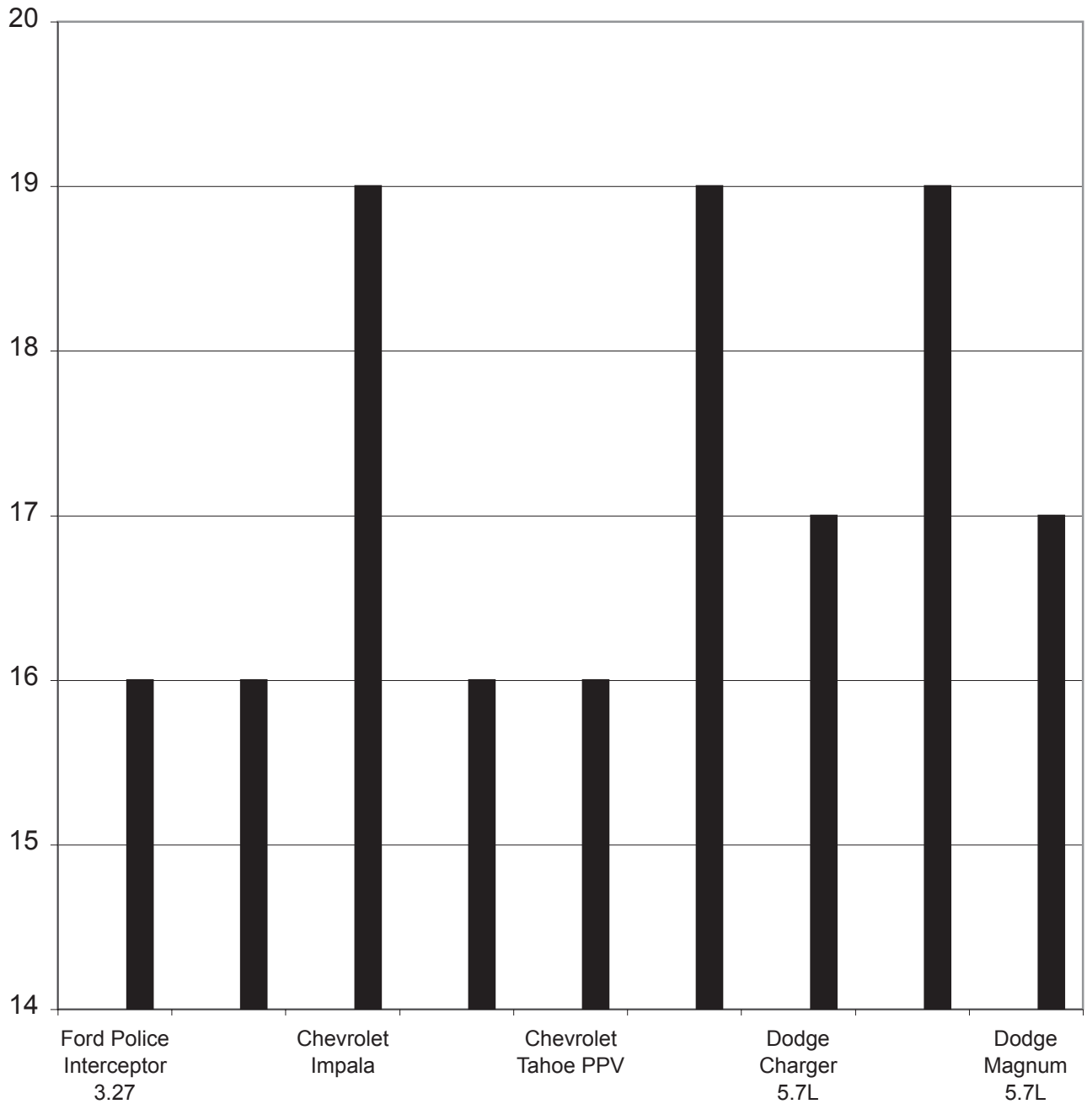
The vehicles will be scored based on estimates for city fuel economy to the nearest 1/10th mile per gallon (mpg) developed from data supplied by the vehicle manufacturer and certified by the Environmental Protection Agency.

Vehicles Make/Model/Engine	E.P.A. Miles Per Gallon		
	City*	Highway	Combined
Ford 4.6L SPFI Police Interceptor 3.27	16 (15.6)	23	18
Ford 4.6L SPFI Police Interceptor 3.55	16 (15.6)	23	18
Chevrolet Impala 3.9L SPFI	19 (19.2)	27	22
Dodge Charger 3.5L SPFI	19 (18.8)	27	22
Dodge Charger 5.7L SPFI	17 (16.9)	25	20
Dodge Magnum 3.5L SPFI	19 (18.8)	27	22
Dodge Magnum 5.7L SPFI	17 (16.9)	25	20
Chevrolet Tahoe 5.3L SPFI PPV E85	16 (15.6)	20	17
Chevrolet Tahoe 5.3L SPFI PPV	16 (15.6)	20	17

*Scored on city mileage only to the nearest 1/10 mpg.

2007 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)	BRAKING RATE (ft/sec^2)	ACCEL. (seconds)	TOP SPEED (mph)	ERGONOMICS & COMMUN. (points)	FUEL ECONOMY (mpg)
92.210	26.380	45.790	115.000	173.900	14.300

STEP II: DEVIATION FACTOR

In each evaluation category, the best scoring vehicle's score is used as the benchmark against which each of the other vehicles' scores are compared. (In the Vehicle Dynamics and Acceleration categories the lowest score is best, while 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 **.042**
CAR "B"	118.800 **.010**
CAR "C"	117.900 **.018**
CAR "D"	120.000 **0**

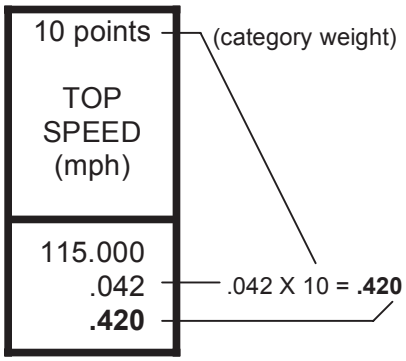
EXAMPLE:

Best Score (Car "D")		Other Vehicle Score (Car "A")		Absolute Difference		Best Score		Deviation Factor (Car "A")
120.000	-	115.000	=	5	/	120.000	=	**.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.

RAW SCORE
DEVIATION FACTOR
WEIGHTED CATEGORY SCORE



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

STEP IV: TOTAL WEIGHTED SCORE

Adding together the six (6) weighted category scores for that vehicle derives the total weighted score for each vehicle.

EXAMPLE:

CAR	30 pts. VEH. DYN. (seconds)	25 pts. BRAKE DECEL. (ft/sec^2)	20 pts. ACCEL. (seconds)	10 pts. TOP SPEED (mph)	10 pts. ERGO/ COMM. (points)	5 pts. FULE ECON. (mpg)	TOTAL WEIGHTED SCORE
Car "A"	92.210 .018 .540	45.790 .163 4.075	26.380 0 0	115.000 .042 .420	173.900 .184 1.840	14.300 0 0	**6.875**

STEP V: BID ADJUSTMENT FIGURE

The bid adjustment figure that we have chosen to use is one percent (1%) of the lowest bid price received. As an example, in this and the following 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	**=**
6.875	$152.38	**$1,047.61**

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	**$16,520.61**

PERFORMANCE COMPARISONS OF 2006 AND 2007 TEST VEHICLES

The following charts illustrate the scores achieved by each make and model of vehicle tested for model years 2006 and 2007. 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)

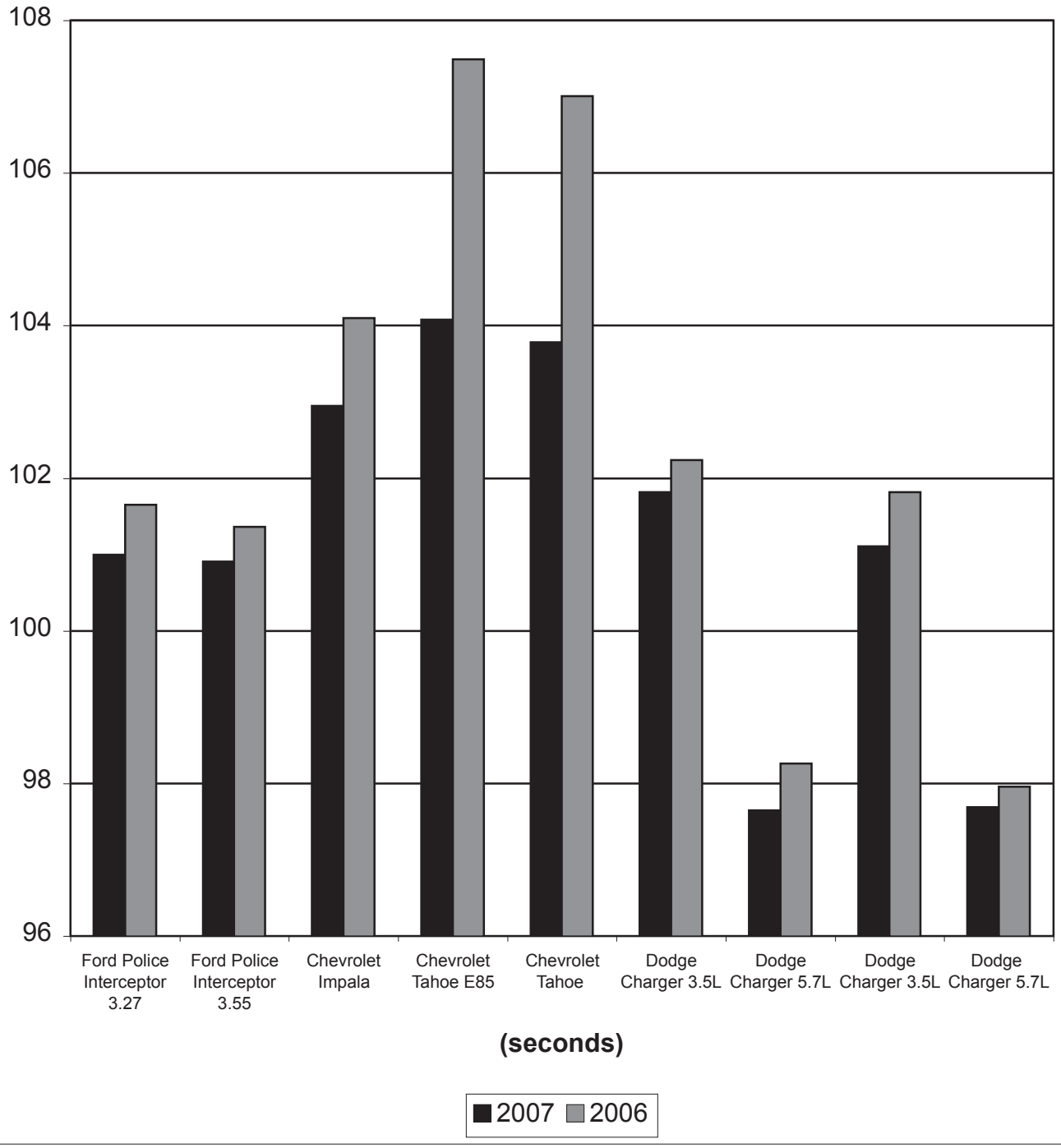
The reader should bear in mind the following information regarding variables when reviewing the 2006 – 2007 performance comparison charts. While as many variables as possible are eliminated from a given year's testing, those that occur over the span of a full year are sometimes impossible to eliminate.

The acceleration, top speed, and brake testing of both the 2006 and 2007 model year vehicles were conducted in the latter half of September. Temperatures on the test day in September of 2005 ranged between 59.0° F at the start of testing to a high of approximately 66.8° F during the afternoon. Temperatures during the testing this year varied, ranging between 56.0° F when testing started, to an afternoon high of 72.4° F. Such things as temperature, humidity, and barometric pressure affect the performance of internal combustion engines and brake components, and may cause minor differences from one year's evaluation to the next.

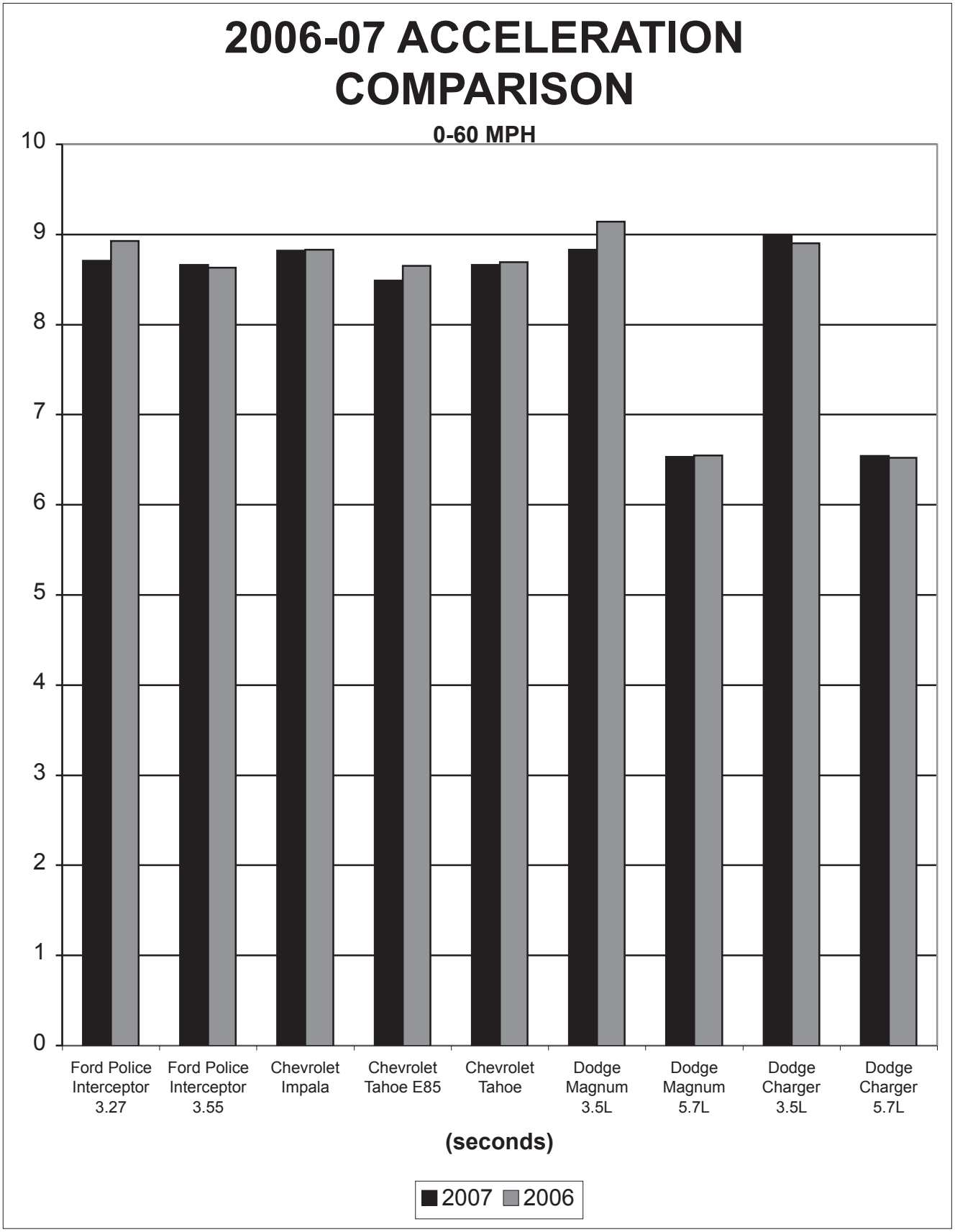
Another factor to be considered is the individual differences between two cars of the same make and model. The test cars that we evaluate are representative of their given make and model. Other cars of the same make and model will not, however, be exactly the same, particularly when it comes to performance.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

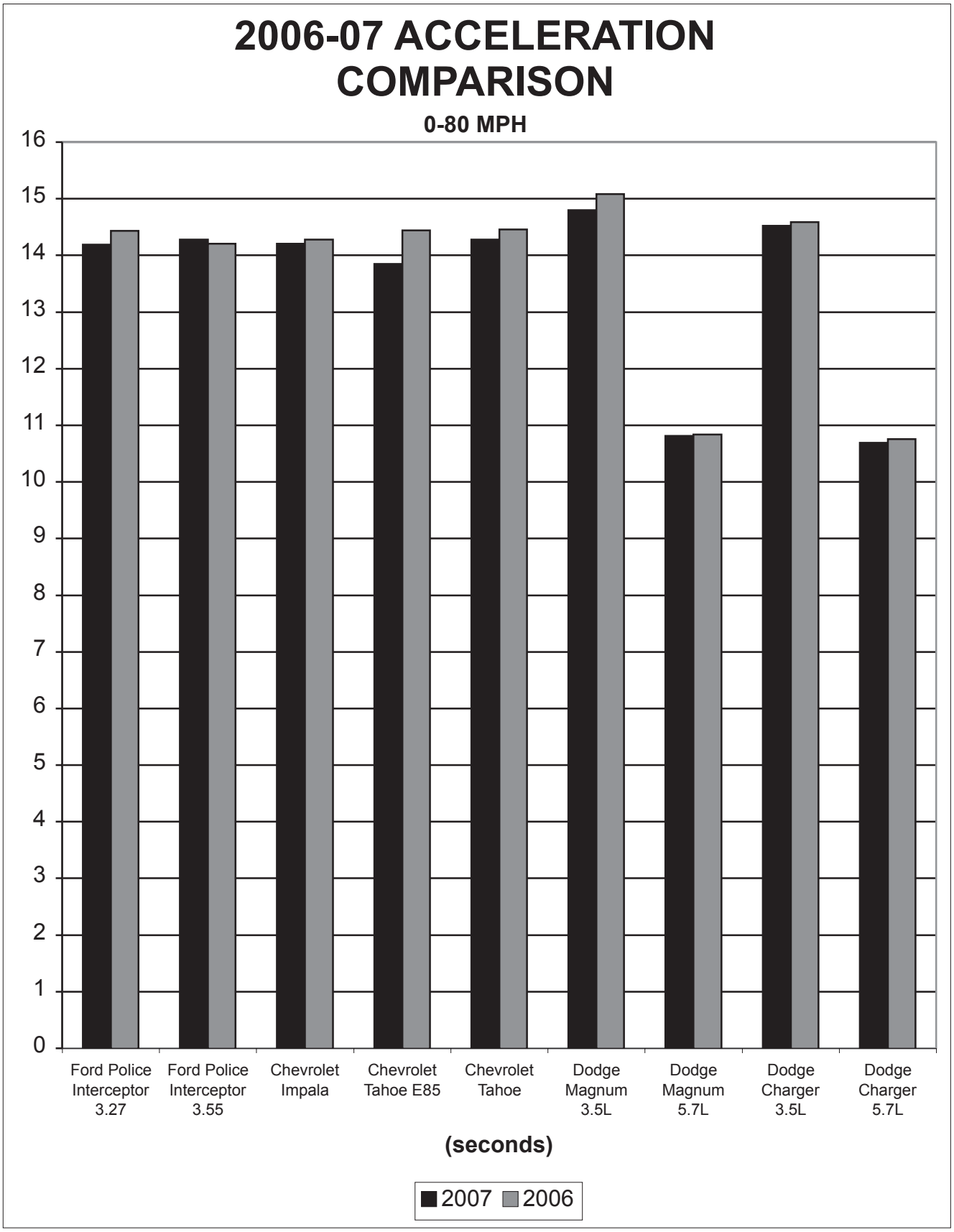
2006-07 Vehicle Dynamics Comparison

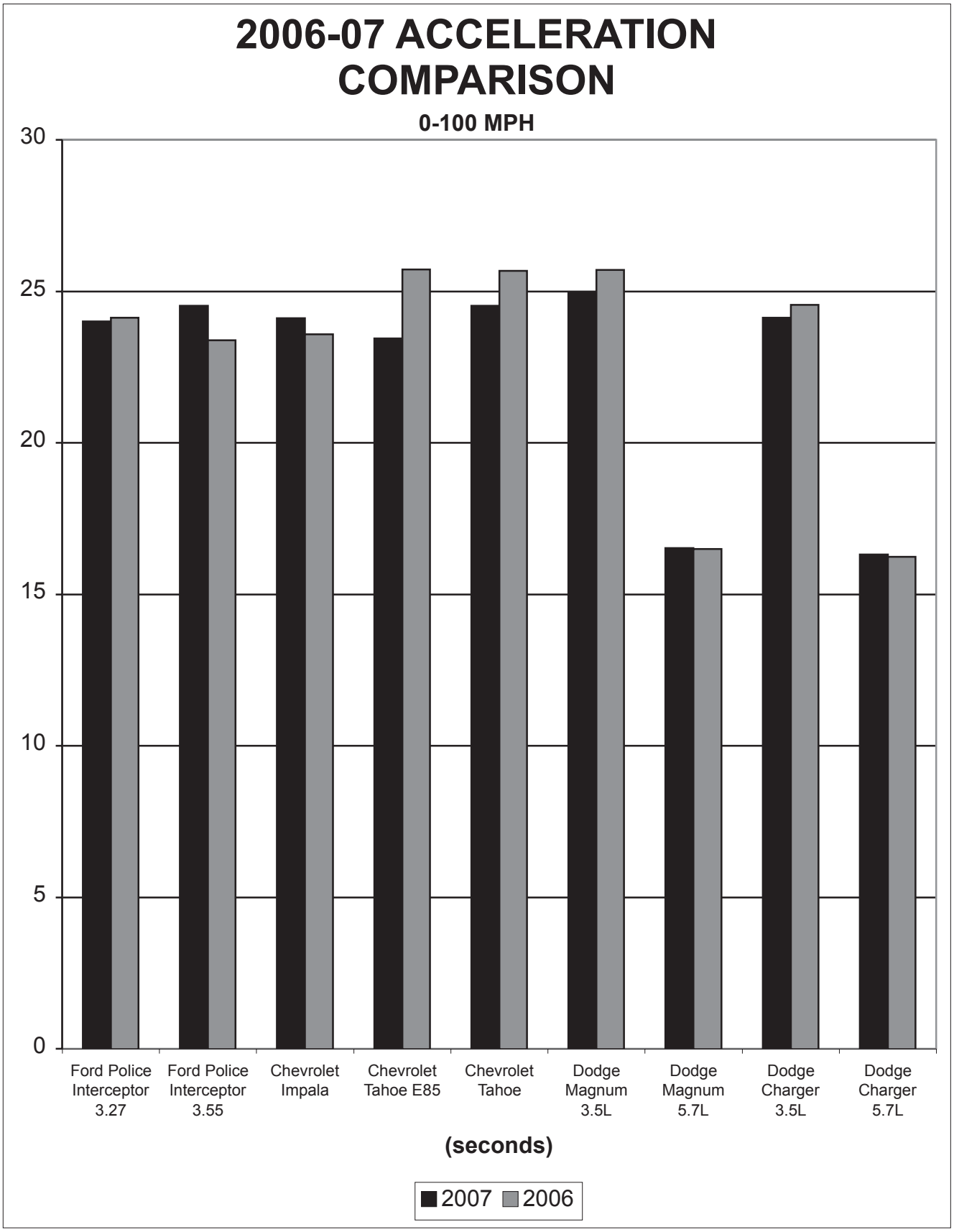
LAP TIMES



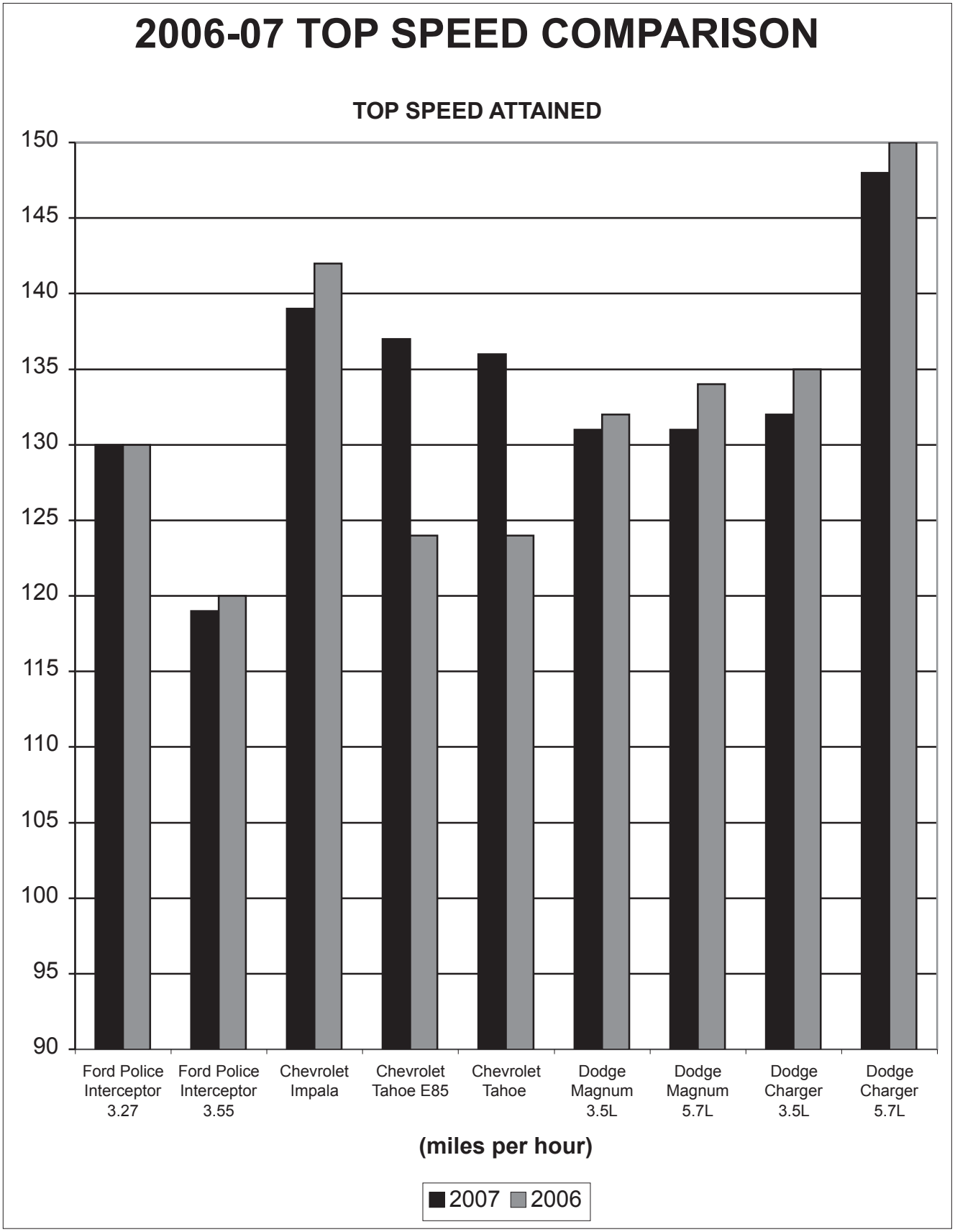
2006-07 ACCELERATION COMPARISON

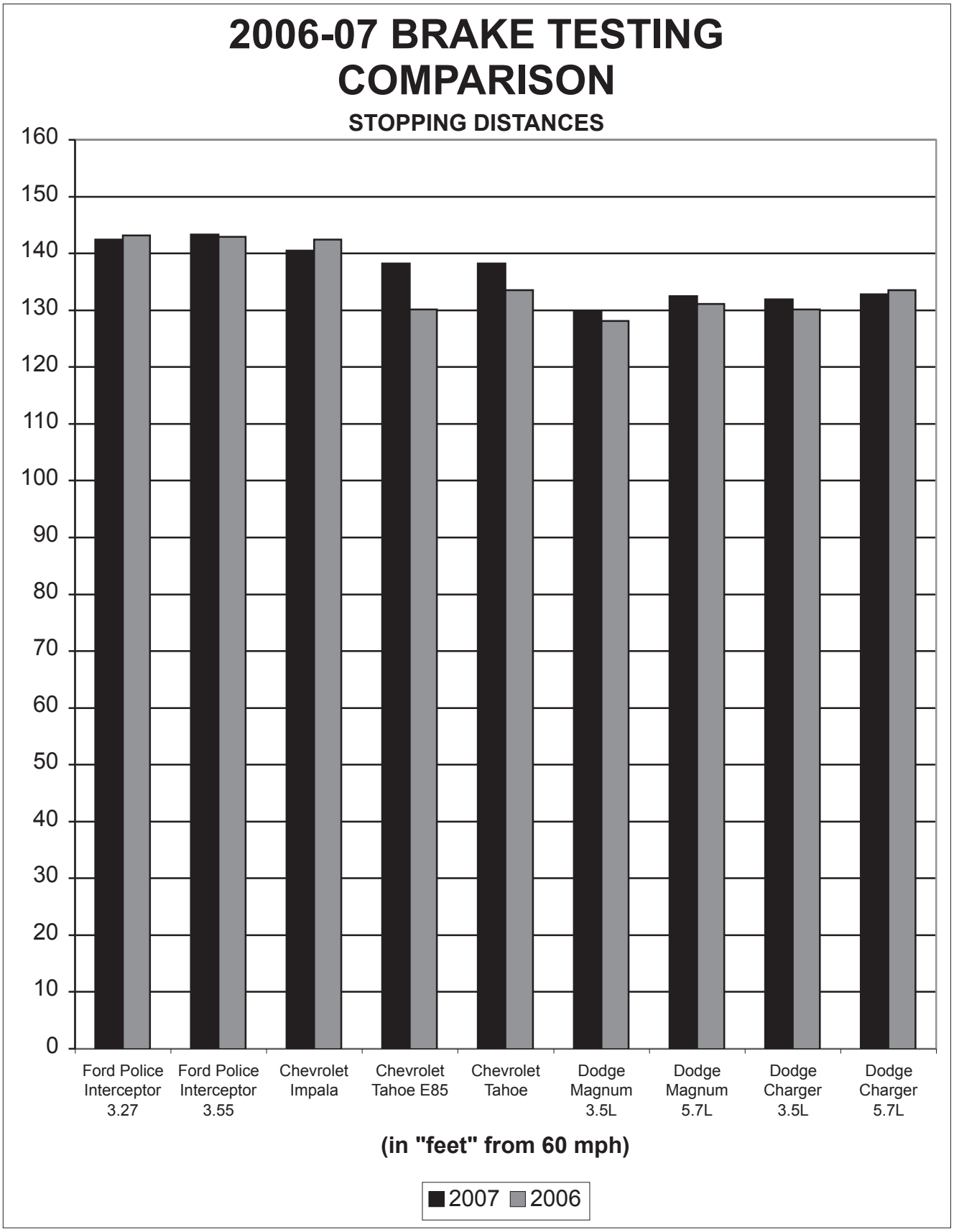



2006-07 ACCELERATION COMPARISON
0-80 MPH
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Ford Police Interceptor 3.27
Ford Police Interceptor 3.55
Chevrolet Impala
Chevrolet Tahoe E85
Chevrolet Tahoe
Dodge Magnum 3.5L
Dodge Magnum 5.7L
Dodge Charger 3.5L
Dodge Charger 5.7L
(seconds)
2007
2006


2006-07 ACCELERATION COMPARISON
0-100 MPH
30
25
20
15
10
5
0
Ford Police Interceptor 3.27
Ford Police Interceptor 3.55
Chevrolet Impala
Chevrolet Tahoe E85
Chevrolet Tahoe
Dodge Magnum 3.5L
Dodge Magnum 5.7L
Dodge Charger 3.5L
Dodge Charger 5.7L
(seconds)
2007
2006

2006-07 TOP SPEED COMPARISON




2006-07 BRAKE TESTING COMPARISON
STOPPING DISTANCES
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Ford Police Interceptor 3.27
Ford Police Interceptor 3.55
Chevrolet Impala
Chevrolet Tahoe E85
Chevrolet Tahoe
Dodge Magnum 3.5L
Dodge Magnum 5.7L
Dodge Charger 3.5L
Dodge Charger 5.7L
(in "feet" from 60 mph)
2007
2006

SPECIAL SERVICE VEHICLES

The issue of what makes a police vehicle a “police package” is a matter that will be with us for some time. Many law enforcement agencies still require a police vehicle to be capable of participating in a pursuit and look to the manufacturers to put their engineering talents towards that goal. At the same time some law enforcement agencies need a vehicle that has cargo capacity and other attributes, but does not require pursuit capabilities. For this, the manufacturers offer “special service” vehicles.

The Michigan Department of State Police presents this information on “special service” vehicles with the caveat that the reader is aware that these vehicles are not engineered for high speed or pursuit driving. The vehicles were tested in all the categories except vehicle dynamics, which is high-speed handling and represents pursuit applications.

The special service vehicles were tested in the following: Acceleration, Top Speed, Braking, Fuel Economy, and Ergonomics & Communications.

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

Chevrolet Tahoe 4WD

TEST VEHICLE DESCRIPTION

MAKE Chevrolet	**MODEL** Tahoe 5W4 – 4WD		**SALES CODE NO.** CK10706		
ENGINE DISPLACEMENT	**CUBIC INCHES** 325		**LITERS** 5.3		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	320 @ 5200 RPM		**ALTERNATOR** 160		
TORQUE	320 ft-lbs @ 5200 RPM		**BATTERY** 730 CCA		
COMPRESSION RATIO	9.5:1				
TRANSMISSION	**MODEL** 4L60E	**TYPE** 4 – Speed Automatic Overdrive			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.73				
STEERING	Power – Rack & Pinion				
TURNING CIRCLE (CURB TO CURB)	39.0 ft.				
TIRE SIZE, LOAD & SPEED RATING	Goodyear Wrangler P265/70R17 113S				
SUSPENSION TYPE (FRONT)	Independent, single coil over shock w/ stabilizer bar				
SUSPENSION TYPE (REAR)	Multi-link with coil springs				
GROUND CLEARANCE, MINIMUM	9.1 in.	**LOCATION** Rear Axle			
BRAKE SYSTEM	Vacuum boost, power, anti-lock				
BRAKES, FRONT	**TYPE** Disc		**SWEPT AREA** 213 sq. in.		
BRAKES, REAR	**TYPE** Disc		**SWEPT AREA** 133 sq. in.		
FUEL CAPACITY	**GALLONS** 26.0		**LITERS** 98.4		
GENERAL MEASUREMENTS	**WHEELBASE** 116 in.		**LENGTH** 202.0 in.		
	TEST WEIGHT 5570		**HEIGHT** 76.9 in.		
HEADROOM	**FRONT** 40.3 in.		**REAR** 39.2 in.		
LEGROOM	**FRONT** 41.3 in.		**REAR** 39.0 in.		
SHOULDER ROOM	**FRONT** 65.3 in.		**REAR** 65.2 in.		
HIPROOM	**FRONT** 64.4 in.		**REAR** 60.6 in.		
INTERIOR VOLUME ***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**FRONT** 62.9 cu. ft.		**REAR** 57.68 cu. ft.		
	COMB 120.58 cu. ft.		***MAX. CARGO** 108.9 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 15	**HIGHWAY** 19	**COMBINED** 16		

Dodge Magnum 3.5L

TEST VEHICLE DESCRIPTION

MAKE Dodge	**MODEL** Magnum		**SALES CODE NO.** 27B		
ENGINE DISPLACEMENT	**CUBIC INCHES** 214		**LITERS** 3.5		
FUEL SYSTEM	Sequential Port Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	250 @ 6400		**ALTERNATOR** 160 amp.		
TORQUE	250 lbs-ft @ 3800		**BATTERY** 730 CCA		
COMPRESSION RATIO	10.0:1				
TRANSMISSION	**MODEL** A580	**TYPE** 5 Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	2.87:1				
STEERING	Power Rack & Pinion				
TURNING CIRCLE (CURB TO CURB)	38.9				
TIRE SIZE, LOAD & SPEED RATING	Goodyear Integrity P215/65R17 98T				
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar				
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar				
GROUND CLEARANCE, MINIMUM	5.2 in.	**LOCATION** Fascia Belly Pan			
BRAKE SYSTEM	Power, Single Piston Front/Single Piston Rear, Anti-Lock				
BRAKES, FRONT	**TYPE** Vented Disc		**SWEPT AREA** 264 sq. in.		
BRAKES, REAR	**TYPE** Solid Disc		**SWEPT AREA** 218 sq. in.		
FUEL CAPACITY	**GALLONS** 18		**LITERS** 68		
GENERAL MEASUREMENTS	**WHEELBASE** 120 in.		**LENGTH** 197.7 in.		
	TEST WEIGHT 3905		**HEIGHT** 58.3 in.		
HEADROOM	**FRONT** 38.7 in.		**REAR** 38.1 in.		
LEGROOM	**FRONT** 41.8 in.		**REAR** 40.2 in.		
SHOULDER ROOM	**FRONT** 58.7 in.		**REAR** 57.6 in.		
HIPROOM	**FRONT** 56.2 in.		**REAR** 56.1 in.		
INTERIOR VOLUME	**FRONT** 55.0 cu. ft.		**REAR** 51.0 cu. ft.		
	COMB 106.0 cu. ft.		**TRUNK** 27.3 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 19	**HIGHWAY** 27	**COMBINED** 22		

Ford Escape 4WD Hybrid

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Escape Hybrid FWD		**SALES CODE NO.** U49
ENGINE DISPLACEMENT	**CUBIC INCHES** 140		**LITERS** 2.3-liter
FUEL SYSTEM	Sequential multi-port electronic		**EXHAUST** Single
HORSEPOWER (SAE NET)	(155 w/ Hybrid) @ 6,000 rpm		**ALTERNATOR** Permanent Magnet AC synchronous motor
TORQUE	124 lbs.-ft. @ 4,250 rpm		**BATTERY** 330 volt nickel - metal hydride battery pack
COMPRESSION RATIO	12.3:1		
TRANSMISSION	**MODEL** T-032	**TYPE** Electronically Controlled Continuously Variable	
	LOCKUP TORQUE CONVERTER Damper		
	OVERDRIVE N/A for Continuously Variable Transmission		
AXLE RATIO	2.93:1		
STEERING	Rack and pinion with electric power assist		
TURNING CIRCLE (CURB TO CURB)	37.7 ft		
TIRE SIZE, LOAD & SPEED RATING	Continential Contitrac P235/70R16		
SUSPENSION TYPE (FRONT)	Independent, MacPherson struts, coil springs and stabilizer bar		
SUSPENSION TYPE (REAR)	Multi-link independent		
GROUND CLEARANCE, MINIMUM	8.4	**LOCATION** Rear suspension	
BRAKE SYSTEM	Four wheel power brakes with standard 4-sensor, 4-channel anti-lock braking system (ABS)		
BRAKES, FRONT	**TYPE** 11.9-in vented disc		**SWEPT AREA** 248.2 sq. in.
BRAKES, REAR	**TYPE** 11.9-in disc		**SWEPT AREA** 218.5 sq. in.
FUEL CAPACITY	**GALLONS** 15		**LITERS** 57
GENERAL MEASUREMENTS	**WHEELBASE** 103.2		**LENGTH** 174.9
	TEST WEIGHT 3835		**HEIGHT** 69.9
HEADROOM	**FRONT** 40.4		**REAR** 39.2
LEGROOM	**FRONT** 41.6		**REAR** 35.6
SHOULDER ROOM	**FRONT** 65.3		**REAR** 55.9
HIPROOM	**FRONT** 53.2		**REAR** 49.1
INTERIOR VOLUME	**FRONT** 54.8		**REAR** 44.4
***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**COMB** 99.2		***MAX CARGO** 65.5
EPA MILEAGE EST. (MPG)	**CITY** 36	**HIGHWAY** 31	**COMBINED** 34

Ford Explorer 2WD

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Explorer 2WD		**SALES CODE NO.** U63		
ENGINE DISPLACEMENT	**CUBIC INCHES** 281		**LITERS** 4.6		
FUEL SYSTEM	Sequential Multiport Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	292@ 5750 RPM		**ALTERNATOR** 130 amp.		
TORQUE	300 lb-ft @ 3950 RPM		**BATTERY** 650 CCA		
COMPRESSION RATIO	9.3:1				
TRANSMISSION	**MODEL** 5R55	**TYPE** 6-Speed Automatic Overdrive			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.55				
STEERING	Power rack and pinion				
TURNING CIRCLE (CURB TO CURB)	36.8 ft.				
TIRE SIZE, LOAD & SPEED RATING	Michelin Cross Terrain P235/65R18				
SUSPENSION TYPE (FRONT)	Independent SLA with coil spring				
SUSPENSION TYPE (REAR)	Independent SLA with coil spring				
GROUND CLEARANCE, MINIMUM	8.5 in.	**LOCATION** Transmission crossmember			
BRAKE SYSTEM	Power disc w/ 4-wheel ABS				
BRAKES, FRONT	**TYPE** Disc		**SWEPT AREA** 239.3sq. in.		
BRAKES, REAR	**TYPE** Disc		**SWEPT AREA** 217.3 sq. in.		
FUEL CAPACITY	**GALLONS** 22.5		**LITERS** 85.1		
GENERAL MEASUREMENTS	**WHEELBASE** 113.7 in.		**LENGTH** 193.4 in.		
	TEST WEIGHT 4844		**HEIGHT** 72.2 in.		
HEADROOM	**FRONT** 39.8 in.		**REAR** 38.7 in.		
LEGROOM	**FRONT** 42.4 in.		**REAR** 36.9 in.		
SHOULDER ROOM	**FRONT** 59.0 in.		**REAR** 58.9 in.		
HIPROOM	**FRONT** 55.4 in.		**REAR** 55.5 cu. ft.		
INTERIOR VOLUME	**FRONT** 57.6 cu. ft.		**REAR** 48.7 cu. ft.		
***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**COMB** 106.3 cu. ft.		***MAX. CARGO** 83.7 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 15	**HIGHWAY** 21	**COMBINED** 17		

Ford Expedition 2WD

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Expedition 2WD		**SALES CODE NO.** U15		
ENGINE DISPLACEMENT	**CUBIC INCHES** 330		**LITERS** 5.4 3V		
FUEL SYSTEM	Sequential Multiport Fuel Injection		**EXHAUST** Single		
HORSEPOWER (SAE NET)	300 @ 5000 RPM		**ALTERNATOR** 150 amp.		
TORQUE	365 ft-lbs @ 3750 RPM		**BATTERY** 650 CCA		
COMPRESSION RATIO	9.8:1				
TRANSMISSION	**MODEL** 6R75	**TYPE** 6-Speed Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.31 standard, 3.73 optional				
STEERING	Low-friction rack and pinion with power assist				
TURNING CIRCLE (CURB TO CURB)	40.8 ft.				
TIRE SIZE, LOAD & SPEED RATING	Pirelli Scorpion P265/70R17				
SUSPENSION TYPE (FRONT)	Independent, double-wishbone, short- and long-arms (SLA) design with coil-over shocks, 36 mm stabilizer bar				
SUSPENSION TYPE (REAR)	Independent, multilink design with coil-over shocks. 18mm, 19 mm or 21 mm stabilizer bar				
GROUND CLEARANCE, MINIMUM	8.7 in.	**LOCATION** Rear differential			
BRAKE SYSTEM	Four wheel power disc brakes with standard 4 sensor, 4 channel anti-lock braking system (ABS) and AdvanceTrac® with Roll Stability Control				
BRAKES, FRONT	**TYPE** Disc		**SWEPT AREA** 283.6 sq. in.		
BRAKES, REAR	**TYPE** Disc		**SWEPT AREA** 159.0 sq. in.		
FUEL CAPACITY	**GALLONS** 28.0		**LITERS** 106.0		
GENERAL MEASUREMENTS	**WHEELBASE** 119.0 in.		**LENGTH** 205.8 in.		
	TEST WEIGHT 5732		**HEIGHT** 76.7 in.		
HEADROOM	**FRONT** 39.6 in.		**REAR** 39.8 in.		
LEGROOM	**FRONT** 41.2 in.		**REAR** 39.1 in.		
SHOULDER ROOM	**FRONT** 63.2 in.		**REAR** 63.7 in.		
HIPROOM	**FRONT** 60.2 in.		**REAR** 59.1 in.		
INTERIOR VOLUME ***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**FRONT** 59.6 cu. ft.		**REAR** 57.3 cu. ft.		
	COMB 116.9 cu. ft.		***MAX. CARGO** 108.3 cu. ft.		
EPA MILEAGE EST. (MPG)	**CITY** 14	**HIGHWAY** 20	**COMBINED** 16		

Ford Expedition EL 2WD

TEST VEHICLE DESCRIPTION

MAKE Ford	**MODEL** Expedition EL 2WD		**0SALES CODE NO**. K15		
ENGINE DISPLACEMENT	**CUBIC INCHES** 330		**LITERS**	5.4 3V	
FUEL SYSTEM	Sequential Multiport Fuel Inj.		**EXHAUST**	Single	
HORSEPOWER (SAE NET)	300 @ 5000 RPM		**ALTERNATOR**	150 amp.	
TORQUE	365 ft-lbs @ 3750 RPM		**BATTERY**	650 CCA	
COMPRESSION RATIO	9.8:1				
TRANSMISSION	**MODEL** 6R75	TYPE 6-speed automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.31 STD, 3.73 optional				
STEERING	Low-friction rack and pinion with power assist				
TURNING CIRCLE (CURB TO CURB)	43.9 ft.				
TIRE SIZE, LOAD & SPEED RATING	Pirelli Scorpion P265/70R17				
SUSPENSION TYPE (FRONT)	Independent, double-wishbone, short- and long-arms (SLA) design with coil-over shocks. 36 mm stabilizer bar				
SUSPENSION TYPE (REAR)	Independent, multilink design with coil-over shocks. 18 mm, 19 mm or 21 mm stabilizer bar				
GROUND CLEARANCE, MINIMUM	8.7 in.	**LOCATION** Rear differential			
BRAKE SYSTEM	Four wheel power disc brakes with standard 4 sensor, 4 channel anti-lock braking system (ABS) and AdvanceTrac® with Roll Stability Control				
BRAKES, FRONT	**TYPE**	Disc	**SWEPT AREA**	283.6 sq. in.	
BRAKES, REAR	**TYPE**	Disc	**SWEPT AREA**	159.0 sq. in.	
FUEL CAPACITY	**GALLONS**	33.5	**LITERS**	126.8	
GENERAL MEASUREMENTS	**WHEELBASE**	131.0 in.	**LENGTH**	221.3 in.	
	TEST WEIGHT	5967	**HEIGHT**	78.3 in	
HEADROOM	**FRONT**	39.5 in.	**REAR**	39.7 in.	
LEGROOM	**FRONT**	41.1 in.	**REAR**	39.1 in.	
SHOULDER ROOM	**FRONT**	63.2 in.	**REAR**	63.7 in.	
HIPROOM	**FRONT**	60.2 in.	**REAR**	59.1 in.	
INTERIOR VOLUME ***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**FRONT**	59.6	**REAR**	57.3	
	COMB	116.9	***MAX. CARGO**	130.8	
EPA MILEAGE EST. (MPG)	***CITY** See Note	***HIGHWAY** See Note	***COMBINED** See Note		

Trucks with Gross Vehicle Weight Ratings over 8,500 lbs are not included in the EPA fuel economy rating system. Fuel economy information on these models is generally not available because of wide variances in vehicle loading and operational conditions between various customer applications.

Ford F-250 Crew Cab 2WD

TEST VEHICLE DESCRIPTION

MAKE	**MODEL** F250 Crew Cab XL 4x2		**SALES CODE NO.** W20		
ENGINE DISPLACEMENT	**CUBIC INCHES** 330		**LITERS** 5.4L V8		
FUEL SYSTEM	EFI		**EXHAUST** Single		
HORSEPOWER (SAE NET)	300 @ 5000		**ALTERNATOR** 115 amp		
TORQUE	365 @ 3750		**BATTERY** 650 CCA		
COMPRESSION RATIO	9:0:1				
TRANSMISSION	**MODEL** 5R110W	**TYPE** 5 Speed Electronic Automatic			
	LOCKUP TORQUE CONVERTER? Yes				
	OVERDRIVE? Yes				
AXLE RATIO	3.73 limited slip				
STEERING	Power; type – recirculating ball				
TURNING CIRCLE (CURB TO CURB)	51.8 ft.				
TIRE SIZE, LOAD & SPEED RATING	Continental Contitrac LT245/75RR17				
SUSPENSION TYPE (FRONT)	Coil, computer selected				
SUSPENSION TYPE (REAR)	Leaf, two-stage variable rate main				
GROUND CLEARANCE, MINIMUM	8.5	**LOCATION** Rear Axle			
BRAKE SYSTEM	4-wheel disc with ABS				
BRAKES, FRONT	**TYPE** Disc.		**SWEPT AREA** 306.4 sq. in.		
BRAKES, REAR	**TYPE** Disc.		**SWEPT AREA** 272.01 sq. in.		
FUEL CAPACITY	**GALLONS** 29.0		**LITERS** 109.0		
GENERAL MEASUREMENTS	**WHEELBASE** 156.2 in.		**LENGTH** 245.8 in.		
	TEST WEIGHT 6033		**HEIGHT** 80.0 in.		
HEADROOM	**FRONT** 41.3 in.		**REAR** 41.8in.		
LEGROOM	**FRONT** 41.0 in.		**REAR** 41.7 in.		
SHOULDER ROOM	**FRONT** 68.0 in.		**REAR** 68.0 in.		
HIPROOM	**FRONT** 67.4 in.		**REAR** 67.3 in.		
INTERIOR VOLUME ***MAX. CARGO IS W/REAR SEATS FOLDED DOWN**	**FRONT** 66.6 cu. ft..		**REAR** 67.0 cu. ft.		
	COMB 133.6 cu. ft.		***MAX. CARGO** 64.8 cu. ft.		
EPA MILEAGE EST. (MPG)	***CITY** See Note	***HIGHWAY** See Note	***COMBINED** See Note		

Trucks with Gross Vehicle Weight Ratings over 8,500 lbs are not included in the EPA fuel economy rating system. Fuel economy information on these models is generally not available because of wide variances in vehicle loading and operational conditions between various customer applications.

TEST VEHICLE DESCRIPTION SUMMARY

	Chevrolet 4WD Tahoe	Ford Escape	Dodge Magnum	Ford Expedition
ENGINE DISPLACEMENT – CU. IN.	325	140	214	330
ENGINE DISPLACEMENT – LITERS	5.3	2.3	3.5	5.4
ENGINE FUEL SYSTEM	SPFI	SMFE	SPFI	SMPFI
HORSEPOWER (SAE NET)	320	155	250	300
TORQUE (FT. LBS.)	320	124	250	365
COMPRESSION RATIO	9.5:1	12.3:1	10.1:1	9.8:1
AXLE RATIO	3.73	2.93:1	3.64:1	3.31
TURNING CIRCLE – FT. CURB TO CURB	39.0	37.7	38.9	40.8
TRANSMISSION	4 Speed auto	Elec. Controlled Continuous Variable	5 Speed Automatic	6 Speed Automatic
TRANSMISSION MODEL NUMBER	4L60E	T-032	A580	6R75
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	N/A	Yes	Yes
TIRE SIZE	265/70R	P235/70R	P215/65R	P255/70R
WHEEL RIM SIZE – INCHES	17	16	17	17
GROUND CLEARANCE – INCHES	9.1	8.4	5.2	8.7
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Disc	Vented disc	Vented disc	Disc
BRAKES – REAR TYPE	Disc	Disc	Solid disc	Disc
FUEL CAPACITY – GALLONS	26	15	18	28
FUEL CAPACITY – LITERS	98.4	57	68	106
OVERALL LENGTH – INCHES	202.0	174.9	197.7	205.8
OVERALL HEIGHT – INCHES	76.9	69.9	58.3	76.7
TEST WEIGHT – LBS.	5570	3835	3905	5732
WHEELBASE – INCHES	116	103.2	120	119
HEADROOM FRONT – INCHES	40.3	40.4	38.7	39.6
HEADROOM REAR – INCHES	39.2	39.2	38.1	39.8
LEGROOM FRONT – INCHES	41.3	41.6	41.8	41.2
LEGROOM REAR – INCHES	39.0	35.6	40.2	39.1
SHOULDER ROOM FRONT – INCHES	65.3	65.3	58.7	63.2
SHOULDER ROOM REAR – INCHES	65.2	55.9	57.6	63.7
HIPROOM FRONT – INCHES	64.4	53.2	56.2	60.2
HIPROOM REAR – INCHES	60.6	49.1	56.1	59.1
INTERIOR VOLUME FRONT – CU. FT.	62.9	54.8	55.0	59.6
INTERIOR VOLUME REAR – CU. FT.	57.68	44.4	51.0	57.3
INTERIOR VOLUME COMB. – CU. FT.	120.58	99.2	106.0	116.9
REAR MAXIMUM CARGO – CU. FT.	108.9	65.5	27.3*	108.3
EPA MILEAGE – CITY – MPG	15	36	19	14
EPA MILEAGE – HIGHWAY – MPG	19	31	27	20
EPA MILEAGE – COMBINED – MPG	16	34	22	16

TEST VEHICLE DESCRIPTION SUMMARY

	Ford Explorer	Ford Expedition EL	Ford F-250
ENGINE DISPLACEMENT – CU. IN.	281	330	330
ENGINE DISPLACEMENT – LITERS	4.6	5.4	5.4
ENGINE FUEL SYSTEM	SPFI	SMFI	EFI
HORSEPOWER (SAE NET)	292	300	300
TORQUE (FT. LBS.)	300	365	365
COMPRESSION RATIO	9.3:1	9.8:1	9.0:1
AXLE RATIO	3.55	3.31	3.73
TURNING CIRCLE – FT. CURB TO CURB	36.8	43.9	51.8
TRANSMISSION	6 Speed Auto	6 Speed Auto	5 Speed Auto
TRANSMISSION MODEL NUMBER	5R55	6R75	5R110W
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	P235/65R	P255/70R	LT245/75R
WHEEL RIM SIZE – INCHES	18	17	17
GROUND CLEARANCE – INCHES	8.5	8.7	8.5
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Disc	Disc	Disc
BRAKES – REAR TYPE	Disc	Disc	Disc
FUEL CAPACITY – GALLONS	22.5	33.5	29.0
FUEL CAPACITY – LITERS	85.1	126.8	109.0
OVERALL LENGTH – INCHES	193.4	221.3	245.8
OVERALL HEIGHT – INCHES	72.2	78.3	80.0
TEST WEIGHT – LBS.	4844	5967	6033
WHEELBASE – INCHES	113.7	131.0	156.2
HEADROOM FRONT – INCHES	39.8	39.5	41.3
HEADROOM REAR – INCHES	38.7	39.7	41.8
LEGROOM FRONT – INCHES	42.4	41.1	41.0
LEGROOM REAR – INCHES	36.9	39.1	41.7
SHOULDER ROOM FRONT – INCHES	59.0	63.2	68.0
SHOULDER ROOM REAR – INCHES	58.9	63.7	68.0
HIPROOM FRONT – INCHES	55.4	60.2	67.4
HIPROOM REAR – INCHES	55.5	59.1	67.3
INTERIOR VOLUME FRONT – CU. FT.	57.6	59.6	66.6
INTERIOR VOLUME REAR – CU. FT.	48.7	57.3	67.0
INTERIOR VOLUME COMB. – CU. FT.	106.3	116.9	133.6
REAR MAXIMUM CARGO – CU. FT.	83.7	130.8	64.8
EPA MILEAGE – CITY – MPG	15	*N/A	*N/A
EPA MILEAGE – HIGHWAY – MPG	21	*N/A	*N/A
EPA MILEAGE – COMBINED – MPG	17	*N/A	*N/A

Trucks with Gross Vehicle Weight Ratings over 8,500 lbs are not included in the EPA fuel economy rating system. Fuel economy information on these models is generally not available because of wide variances in vehicle loading and operational conditions between various customer applications.

SUMMARY OF ACCELERATION AND TOP SPEED

ACCELERATION*		Chevrolet Tahoe 4WD 5.3L SPFI	Ford Explorer 2WD 4.6L SMFI	Ford Expedition 2WD 5.4L SMFI	Dodge Magnum 3.5L SPFI
0 – 20 mph	(sec.)	2.17	1.93	2.09	1.99
0 – 30 mph	(sec.)	3.45	3.09	3.31	3.32
0 – 40 mph	(sec.)	4.82	4.83	5.21	4.77
0 – 50 mph	(sec.)	6.92	6.69	7.14	6.52
0 – 60 mph	(sec.)	9.18	8.84	9.65	8.81
0 – 70 mph	(sec.)	11.64	11.93	12.67	11.44
0 – 80 mph	(sec.)	15.95	15.14	16.08	14.53
0 – 90 mph	(sec.)	20.82	19.06	20.32	18.90
0 – 100 mph	(sec.)		24.88	26.68	24.11
TOP SPEED	**(mph)**	98	101	104	116
QUARTER MILE					
Time	(sec.)	17.07	16.89	17.33	16.76
Speed	(miles)	82.43	84.88	83.18	85.28

ACCELERATION*		Ford Expedition EL 2WD 5.4L SMFI	Ford Escape Hybrid 4WD 2.3L SMPE	Ford F-250 2WD 5.4L EFI
0 – 20 mph	(sec.)	1.99	2.86	2.34
0 – 30 mph	(sec.)	3.36	4.65	3.79
0 – 40 mph	(sec.)	5.13	6.76	5.54
0 – 50 mph	(sec.)	7.04	9.45	7.59
0 – 60 mph	(sec.)	9.77	12.76	10.31
0 – 70 mph	(sec.)	12.68	17.09	13.39
0 – 80 mph	(sec.)	16.13	22.56	18.15
0 – 90 mph	(sec.)	20.94	31.31	24.56
0 – 100 mph	(sec.)	31.58	52.30	
TOP SPEED	**(mph)**	100	102	95
QUARTER MILE				
Time	(sec.)	17.31	19.38	17.81
Speed	(miles)	82.63	74.63	79.58

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 8:55 a.m. **TEMPERATURE:** 57.6°F

MAKE & MODEL: Ford Escape 2.3L 2WD **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	62.0 mph	149.4 feet	27.70 ft/s^2
Stop #2	59.7 mph	139.7 feet	27.44 ft/s^2
Stop #3	59.8 mph	137.5 feet	27.97 ft/s^2
Stop #4	59.4 mph	136.3 feet	27.85 ft/s^2
Stop #5	60.7 mph	136.0 feet	29.15 ft/s^2
Stop #6	59.8 mph	136.3 feet	28.18 ft/s^2

AVERAGE DECELERATION RATE 28.05 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	141.3 feet	27.77 ft/s^2
Stop #2	60.2 mph	139.9 feet	27.87 ft/s^2
Stop #3	60.4 mph	145.3 feet	26.98 ft/s^2
Stop #4	60.8 mph	143.1 feet	27.78 ft/s^2
Stop #5	60.6 mph	143.0 feet	27.61 ft/s^2
Stop #6	60.7 mph	145.7 feet	27.23 ft/s^2

AVERAGE DECELERATION RATE 27.54 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 DECEL. RATE: 27.79 ft/s^2

Projected Stopping Distance from 60.0 mph 139.3

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 5:01 p.m. **TEMPERATURE:** 71.3°F

MAKE & MODEL: Ford Explorer 4.6L 2WD **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.9 mph	159.0 feet	24.24 ft/s^2
Stop #2	60.2 mph	159.5 feet	24.39 ft/s^2
Stop #3	59.5 mph	158.9 feet	23.99 ft/s^2
Stop #4	60.3 mph	159.1 feet	24.60 ft/s^2
Stop #5	60.4 mph	160.7 feet	24.41 ft/s^2
Stop #6	60.5 mph	155.9 feet	25.25 ft/s^2

AVERAGE DECELERATION RATE 24.48 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	152.2 feet	25.78 ft/s^2
Stop #2	60.5 mph	154.2 feet	25.53 ft/s^2
Stop #3	60.5 mph	155.4 feet	25.35 ft/s^2
Stop #4	60.1 mph	150.2 feet	25.91 ft/s^2
Stop #5	60.3 mph	150.3 feet	26.03 ft/s^2
Stop #6	59.8 mph	151.3 feet	25.42 ft/s^2

AVERAGE DECELERATION RATE 25.67 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 DECEL. RATE: 25.07 ft/s^2

Projected Stopping Distance from 60.0 mph 154.4

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 10:16 a.m. **TEMPERATURE:** 60.6°F

MAKE & MODEL: Ford Expedition 5.4L 2WD **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.1 mph	154.4 feet	25.12 ft/s^2
Stop #2	60.6 mph	155.3 feet	25.44 ft/s^2
Stop #3	60.3 mph	153.4 feet	25.53 ft/s^2
[2]Stop #4	60.8 mph	149.4 feet	26.60 ft/s^2
Stop #5	60.7 mph	160.2 feet	24.71 ft/s^2
Stop #6	60.7 mph	149.1 feet	26.59 ft/s^2

AVERAGE DECELERATION RATE 25.66 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.8 mph	146.0 feet	26.31 ft/s^2
Stop #2	60.1 mph	155.0 feet	25.10 ft/s^2
Stop #3	59.2 mph	150.1 feet	25.14 ft/s^2
Stop #4	59.7 mph	151.7 feet	25.28 ft/s^2
Stop #5	60.3 mph	151.3 feet	25.86 ft/s^2
Stop #6	61.0 mph	154.4 feet	25.90 ft/s^2

AVERAGE DECELERATION RATE 25.60 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 DECEL. RATE: 25.63 ft/s^2

Projected Stopping Distance from 60.0 mph 151.1

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 8:25 a.m. **TEMPERATURE:** 56.3°F

MAKE & MODEL: Ford Expedition EL 5.4L 2WD **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.3 mph	153.6 feet	24.64 ft/s^2
Stop #2	60.5 mph	155.5 feet	25.30 ft/s^2
Stop #3	60.5 mph	151.7 feet	25.94 ft/s^2
Stop #4	60.6 mph	150.6 feet	26.24 ft/s^2
Stop #5	60.5 mph	152.3 feet	25.82 ft/s^2
Stop #6	60.2 mph	149.8 feet	26.04 ft/s^2

AVERAGE DECELERATION RATE 25.66 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.3 mph	144.5 feet	27.10 ft/s^2
Stop #2	60.5 mph	147.8 feet	26.62 ft/s^2
Stop #3	60.6 mph	146.0 feet	27.05 ft/s^2
Stop #4	60.2 mph	143.7 feet	27.12 ft/s^2
Stop #5	60.5 mph	149.7 feet	26.31 ft/s^2
Stop #6	60.5 mph	151.8 feet	25.92 ft/s^2

AVERAGE DECELERATION RATE 26.69 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 DECEL. RATE: 26.18 ft/s^2

Projected Stopping Distance from 60.0 mph 147.9

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 9:28 a.m. **TEMPERATURE:** 58.3°F

MAKE & MODEL: Ford F250 Crew Cab 2WD **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	61.0 mph	160.3 feet	24.96 ft/s^2
Stop #2	60.8 mph	157.4 feet	25.22 ft/s^2
Stop #3	60.5 mph	155.6 feet	25.31 ft/s^2
Stop #4	61.0 mph	165.6 feet	24.14 ft/s^2
Stop #5	60.1 mph	154.9 feet	25.07 ft/s^2
Stop #6	61.2 mph	160.9 feet	25.07 ft/s^2

AVERAGE DECELERATION RATE 24.96 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.8 mph	160.8 feet	24.73 ft/s^2
Stop #2	60.7 mph	158.5 feet	24.98 ft/s^2
Stop #3	61.0 mph	157.0 feet	25.53 ft/s^2
Stop #4	60.8 mph	157.8 feet	25.24 ft/s^2
Stop #5	61.4 mph	165.6 feet	24.52 ft/s^2
Stop #6	60.3 mph	156.9 feet	24.93 ft/s^2

AVERAGE DECELERATION RATE 24.99 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 DECEL. RATE: 24.97 ft/s^2

Projected Stopping Distance from 60.0 mph 155.0

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds

DATE: September 16, 2006

BEGINNING Time: 10:42 a.m..

TEMPERATURE: 62.8°F

MAKE & MODEL: Chevrolet Tahoe 5.3L 4WD

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	147.4 feet	26.84 ft/s^2
Stop #2	60.5 mph	145.3 feet	27.07 ft/s^2
Stop #3	60.0 mph	143.4 feet	26.98 ft/s^2
Stop #4	60.2 mph	145.2 feet	26.86 ft/s^2
Stop #5	60.4 mph	146.7 feet	26.71 ft/s^2
Stop #6	60.1 mph	147.6 feet	26.29 ft/s^2

AVERAGE DECELERATION RATE 26.79 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	155.2 feet	25.12 ft/s^2
Stop #2	60.2 mph	153.8 feet	25.36 ft/s^2
Stop #3	60.6 mph	156.9 feet	25.16 ft/s^2
Stop #4	60.2 mph	157.3 feet	24.74 ft/s^2
Stop #5	60.1 mph	158.9 feet	24.47 ft/s^2
Stop #6	60.1 mph	163.8 feet	23.76 ft/s^2

AVERAGE DECELERATION RATE 24.77 ft/s^2

Phase III

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

OVERALL AVERAGE DECEL. RATE: 25.78 ft/s^2

Projected Stopping Distance from 60.0 mph 150.2

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds

DATE: September 16, 2006

BEGINNING Time: 12:28 p.m.

TEMPERATURE: 68.1°F

MAKE & MODEL: Dodge Magnum 3.5L

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.8 mph	145.0 feet	27.44 ft/s^2
Stop #2	61.0 mph	143.9 feet	27.77 ft/s^2
Stop #3	60.2 mph	146.6 feet	26.60 ft/s^2
Stop #4	60.7 mph	145.0 feet	27.30 ft/s^2
Stop #5	59.7 mph	142.8 feet	26.87 ft/s^2
Stop #6	59.3 mph	145.5 feet	25.98 ft/s^2

AVERAGE DECELERATION RATE 26.99 ft/s^2

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	141.7 feet	27.87 ft/s^2
Stop #2	61.0 mph	145.3 feet	27.55 ft/s^2
Stop #3	59.9 mph	138.4 feet	27.88 ft/s^2
Stop #4	60.9 mph	142.8 feet	27.95 ft/s^2
Stop #5	60.4 mph	142.2 feet	27.57 ft/s^2
Stop #6	60.1 mph	139.5 feet	27.89 ft/s^2

AVERAGE DECELERATION RATE 27.79 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 DECEL. RATE: 27.39 ft/s^2

Projected Stopping Distance from 60.0 mph 141.4

ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Ford Explorer	Ford Expedition	Chevrolet Tahoe 4WD	Dodge Magnum
FRONT SEAT				
Padding	6.78	7.56	7.33	6.22
Depth of Bucket Seat	6.00	7.00	6.78	5.67
Adjustability – Front to Rear	5.56	6.44	6.67	6.67
Upholstery	7.78	8.22	7.44	6.44
Bucket Seat Design	6.78	7.11	6.67	6.33
Headroom	6.56	7.78	8.89	7.67
Seatbelts	4.56	6.33	6.89	5.67
Ease of Entry and Exit	5.33	5.75	8.22	6.33
Overall Comfort Rating	5.89	6.75	7.67	6.89
REAR SEAT				
Leg room – Front seat back	4.89	6.78	6.44	6.00
Ease of Entry and Exit	4.89	6.22	6.56	5.67
INSTRUMENTATION				
Clarity	6.11	6.89	7.44	6.22
Placement	6.11	6.44	7.44	6.33
VEHICLE CONTROLS				
Pedals, Size and Position	6.56	7.33	7.56	6.56
Power Window Switch	7.44	7.33	8.00	7.00
Inside Door Lock Switch	5.22	6.67	7.22	7.44
Automatic Door Lock Switch	7.22	7.11	7.00	6.00
Outside Mirror Controls	5.89	6.78	7.67	6.22
Steering Wheel, Size, Tilt Release, and Surface	6.11	7.22	7.67	6.44
Heat/AC Vent Placement and Adjustability	6.56	6.89	7.00	7.33
VISIBILITY				
Front (Windshield)	7.11	7.78	8.33	7.89
Rear (Back Window)	6.11	6.22	6.22	4.44
Left Rear Quarter	5.22	5.67	6.22	5.33
Right Rear Quarter	4.44	5.44	5.33	4.67
Outside Rear View Mirrors	6.56	7.33	8.44	6.44
COMMUNICATIONS				
Dashboard Accessibility	5.80	6.60	9.40	7.67
Trunk Accessibility	6.73	7.00	8.53	8.40
Engine Compartment	6.78	7.44	9.44	7.78
TOTAL SCORES	**170.98**	**192.10**	**208.48**	**181.74**

ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Ford F-250 Crew Cab	Ford Expedition EL	Ford Escape
FRONT SEAT			
Padding	4.90	7.56	6.00
Depth of Bucket Seat	2.60	7.00	5.89
Adjustability – Front to Rear	4.80	6.44	5.44
Upholstery	5.10	8.22	7.67
Bucket Seat Design	0.00	7.11	6.00
Headroom	8.30	7.78	6.67
Seatbelts	5.50	6.33	5.67
Ease of Entry and Exit	5.50	5.75	6.00
Overall Comfort Rating	5.40	6.75	5.63
REAR SEAT			
Leg room – Front seat back	6.90	6.78	4.11
Ease of Entry and Exit	5.20	6.22	4.11
INSTRUMENTATION			
Clarity	6.20	6.89	7.11
Placement	5.80	6.44	7.33
VEHICLE CONTROLS			
Pedals, Size and Position	6.50	7.33	6.44
Power Window Switch	0.00	7.33	6.78
Inside Door Lock Switch	5.60	6.67	6.78
Automatic Door Lock Switch	0.00	7.11	7.11
Outside Mirror Controls	0.00	6.78	5.22
Steering Wheel, Size, Tilt Release, and Surface	4.90	7.22	6.22
Heat/AC Vent Placement and Adjustability	5.70	6.89	7.00
VISIBILITY			
Front (Windshield)	7.60	7.78	7.56
Rear (Back Window)	7.20	6.22	4.78
Left Rear Quarter	6.40	5.67	5.67
Right Rear Quarter	7.10	5.44	5.00
Outside Rear View Mirrors	7.00	7.33	5.56
COMMUNICATIONS			
Dashboard Accessibility	8.27	6.60	6.13
Trunk Accessibility	7.07	7.00	7.93
Engine Compartment	8.44	7.44	6.44
TOTAL SCORES	**147.98**	**192.10**	**172.24**

MOTORCYCLES

Like many law enforcement agencies, the Michigan State Police used motorcycles up until late 1941 and then switched to automobiles. The Michigan State Police rekindled interest in motorcycles for day to day patrol operations in 1993. In 2004, Michigan State Police headquarters asked if we had additional information as a resource for our purchasing decisions regarding motorcycles. During that time we were given direction to expand vehicle testing to include motorcycle testing. We are pleased to announce the first MSP police motorcycle test beginning with the 2007 model year. We would like to thank Harley Davidson and BMW for being the first police motorcycle manufacturers to participate and provide their assistance in preparation for the testing program.

We are constantly evaluating our various tests with the manufacturers and the law enforcement industry to provide you with the most objective test data available. While there are many similarities to automobiles, there are also quite a few differences. Law enforcement motorcycles will encounter a variety of surfaces during patrol operations or emergencies. Because of that, we developed a braking test with substantially different coefficient of friction surfaces. An example of this in the real world would be if a motor officer was run off the road on to a gravel or a wet grassy surface and had to brake at the same time.

When looking at the data, it is very important for the reader to apply your mission requirements to the motorcycle you are considering so that you make an appropriate decision. We also contacted other major motorcycle manufacturers to participate in the test and believe there will be others in the future.

This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job more effectively and safely. If anything in this report requires further explanation or clarification, please call or write.

TEST VEHICLE DESCRIPTION SUMMARY

	Harley Davidson FLHTP	Harley Davidson FLHP	BMW
CUBIC CENTIMETERS	1690	1690	1170
ENGINE DISPLACEMENT – CU. IN.	103	103	71.4
ENGINE FUEL SYSTEM	EFI	EFI	Injection
EXHAUST	Crossover Dual	Crossover Dual	Stainless Steel
BORE & STROKE	3.75x4.38 (inches)	3.75x4.38 (inches)	101x73 (mm)
ALTERNATOR	3 phase, 50 amp	3 phase, 50 amp	720 watts
TORQUE - FT. LBS.	102	102	85
BATTERY	28	28	2x19
COMPRESSION RATIO	9.6/1	9.6/1	12.0:1
TRANSMISSION			
PRIMARY DRIVE	34/46	34/46	1:1.882
FINAL DRIVE	32/66	32/66	No Maintenance
GEAR RATIO	2.79	2.79	1:2.75
LEAN ANGLE - LEFT	30°	30°	46°
LEAN ANGLE – RIGHT	32°	32°	46°
CLUTCH	Dry multi plate	Dry multi plate	Dry single plate
WHEELS/TIRES	3x16 MT/90-16 72H	3x16 MT/90-16 72H	Alum. MTH2
FRONT SUSPENSION			
FORK ANGLE	29.3°	29.3°	63.4°
RAKE	26°	26°	4.3 in.
REAR SUSPENSION	Swing Arm	Swing Arm	EVO Paralever
SUSPENSION TRAVEL – FRONT	4.6 in.	4.6 in.	4.7 in.
SUSPENSION TRAVEL – BACK	3.0 in.	3.0 in.	5.3 in.
GROUND CLEARANCE-MINIMUM	5.1 in.	5.1 in.	5.675 in.
BRAKE SYSTEM	Disc.	Disc.	IABS
FRONT SWEPT AREA (sq. in.)	180	180	186.17
REAR SWEPT AREA (sq. in.)	90	90	62.34
FUEL CAPACITY – GALLONS	5	5	7.1
FUEL CAPACITY – LITERS	18.9	18.9	27
OIL CAPACITY – QUARTERS	4	4	4
WHEELBASE	63.5	63.5	58.4
LENGTH	93.7	93.7	87.8
WEIGHT	835	827	695
OVERALL HEIGHT	61	61	56.3
SEAT HEIGHT	30	30	32.2
EPA MILEAGE – CITY	32.5	32.5	N/A
EPA MILEAGE - HIGHWAY	45	45	48 @ 75mph 65 @ 55mph

Harley Davidson Road King

TEST VEHICLE DESCRIPTION

MAKE Harley Davidson	**MODEL** FLHP		**SALES CODE NO.** N/A
ENGINE DISPLACEMENT	**CUBIC CENTIMETERS** 1690		**CUBIC INCHES** 103
FUEL SYSTEM	EFI		**EXHAUST** Crossover Dual
BORE & STROKE	3.75 x 4.38 in		**ALTERNATOR** 3 phase 50 amp
TORQUE	102 Ft Lbs		**BATTERY** 28 Amp Hour
COMPRESSION RATIO	9.6/1		
TRANSMISSION	**PRIMARY DRIVE** 34/46		**FINAL DRIVE** 32/66
GEAR RATIO	2.79 overall		
LEAN ANGLE	**LEFT** 30 Deg		**RIGHT** 32 Deg
CLUTCH	Dry multiple plate		
WHEELS/TIRES	3x16 MT/90-16 72H		
FRONT SUSPENSION	**FORK ANGLE** 29.3 Deg		**RAKE** 26 Deg
REAR SUSPENSION	Swing Arm		
SUSPENSION TRAVEL	**FRONT** 4.6 in		**REAR** 3.0 in
GROUND CLEARANCE, MINIMUM	5.1 in.		
BRAKE SYSTEM	Disc		
BRAKES, FRONT	**TYPE** Dual Disc		**SWEPT AREA** 180sq in
BRAKES, REAR	**TYPE** Single Disc		**SWEPT AREA** 90sq in
FUEL CAPACITY	**GALLONS** 5		**LITERS** 18.9
OIL CAPACITY	4Qts		
GENERAL MEASUREMENTS	**WHEELBASE** 63.5 in		**LENGTH** 93.7
	TEST WEIGHT 827 lbs.		**OVERALL HEIGHT** 61 in.
	SEAT HEIGHT 30 in.		
EPA MILEAGE EST. (MPG)	**CITY** 32.5	**HIGHWAY** 45	**COMBINED**

Harley Davidson Electra Glide

TEST VEHICLE DESCRIPTION

MAKE Harley Davidson	**MODEL** FLHTP		**SALES CODE NO.** N/A
ENGINE DISPLACEMENT	**CUBIC CENTIMETERS** 1690		**CUBIC INCHES** 103
FUEL SYSTEM	EFI		**EXHAUST** Crossover Dual
BORE & STROKE	3.75 x 4.38 in		**ALTERNATOR** 3 phase 50 amp
TORQUE	102 Ft Lbs		**BATTERY** 28 Amp Hour
COMPRESSION RATIO	9.6/1		
TRANSMISSION	**PRIMARY DRIVE** 34/46		**FINAL DRIVE** 32/66
GEAR RATIO	2.79 overall		
LEAN ANGLE	**LEFT** 30 Deg		**RIGHT** 32 Deg
CLUTCH	Dry multiple plate		
WHEELS/TIRES	3x16 MT/90-16 72H		
FRONT SUSPENSION	**FORK ANGLE** 29.3 Deg		**RAKE** 26 Deg
REAR SUSPENSION	Swing Arm		
SUSPENSION TRAVEL	**FRONT** 4.6 in		**REAR** 3.0 in
GROUND CLEARANCE, MINIMUM	5.1 in.		
BRAKE SYSTEM	Disc		
BRAKES, FRONT	**TYPE** Dual Disc		**SWEPT AREA** 180sq in
BRAKES, REAR	**TYPE** Single Disc		**SWEPT AREA** 90sq in
FUEL CAPACITY	**GALLONS** 5		**LITERS** 18.9
OIL CAPACITY	4Qts		
GENERAL MEASUREMENTS	**WHEELBASE** 63.5 in		**LENGTH** 93.7
	TEST WEIGHT 835 lbs.		**OVERALL HEIGHT** 61 in.
	SEAT HEIGHT 30 in.		
EPA MILEAGE EST. (MPG)	**CITY** 32.5	**HIGHWAY** 45	**COMBINED**

BMW R1200RTP

TEST VEHICLE DESCRIPTION

MAKE BMW	**MODEL** R1200RT-P		**SALES CODE NO.** 06RB
ENGINE DISPLACEMENT	**CUBIC CENTIMETERS** 1170		**CUBIC INCHES** 71.4
FUEL SYSTEM	Injection		**EXHAUST** Stainless Steel with Catalytic Converter
BORE & STROKE	101 mm x 73 mm		**ALTERNATOR** 720 W
TORQUE	85 lb/ft @ 6,000 rpm		**BATTERY** 2 batteries at 19 Amp hours each
COMPRESSION RATIO	12.0 : 1		
TRANSMISSION	**PRIMARY DRIVE** Gear 1:1.882		**FINAL DRIVE** No Maintenance Shaft Drive
GEAR RATIO	1 : 2.75 rear drive ratio		
LEAN ANGLE	**LEFT** 46 degrees		**RIGHT** 46 degrees
CLUTCH	Self-adjusting Hydraulic Actuating Single Plate Dry Clutch		
WHEELS/TIRES	Die-cast Aluminum MTH2 Rim Profile fitted with Run-Flat Tires (meets California Highway Patrol Run-Flat Protocol)		
FRONT SUSPENSION	**FORK ANGLE** 63.4 BMW Telelever		**RAKE** (Castor in normal position) 4.3 inches
REAR SUSPENSION	BMW Evo Paralever		
SUSPENSION TRAVEL	**FRONT** 4.7 inches		**REAR** 5.3 Inches
GROUND CLEARANCE, MINIMUM	5.675 in.		
BRAKE SYSTEM	BMW IABS Partial Integral Power Brake System		
BRAKES, FRONT	**TYPE** Dual Disc		**SWEPT AREA** 186.17 sq. in.
BRAKES, REAR	**TYPE** Single Disc		**SWEPT AREA** 62.34 sq. in.
FUEL CAPACITY	**GALLONS** 7.1 Gal		**LITERS** 27
OIL CAPACITY	4 Qts.		
GENERAL MEASUREMENTS	**WHEELBASE** 58.4 inches		**LENGTH** 87.8 inches
	TEST WEIGHT 695 lbs.		**OVERALL HEIGHT** 56.3 “
	SEAT HEIGHT 32.2 “		
EPA MILEAGE EST. (MPG) (Based on DIN standard test)	**CITY** N/A	**HIGHWAY** 48 @ 75mph 65 @ 55mph	**COMBINED** N/A

MOTORCYCLE DYNAMICS TESTING

MOTORYCLCLE DYNAMICS TEST OBJECTIVE

Determine each motorcycle's high speed handling characteristics and performance in comparison to other motorcycles. The course used contains 9 turns and curves (including a 90 degree left turn, a switch back, a sweeping turn, a high speed turn and a decreasing radius, with different braking requirements) and is .9 miles in length. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the vehicle manufacturers in offering balanced packages of acceleration capabilities, suspension components, and braking characteristics.

MOTORCYCLE DYNAMICS TEST METHODOLOGY

Each motorcycle is driven using four separate riders for a six lap series. The best 5 out of six laps for each rider will be totaled for a cumulative time. The cumulative time is the score for each driver. The final score of each motorcycle is the combined average from the four riders cumulative times.

2007 MOTORCYCLE DYNAMICS

VEHICLES	DRIVERS	COMBINED CUMULATIVE
HD FLHTP	GROMAK	06:19.2
Electra Glide	JOHNSON	06:37.5
	TRAMMEL	06:33.8
	FLEGEL	06:19.3
Overall Average		06:27.5
BMW	GROMAK	05:44.9
R1200RTP	JOHNSON	06:02.1
	TRAMMEL	06:08.1
	FLEGEL	05:47.9
Overall Average		05:55.7
HD FLHP	GROMAK	06:12.4
Road King	JOHNSON	06:29.5
	TRAMMEL	06:30.6
	FLEGEL	06:14.6
Overall Average		06:21.8

MOTORCYCLE ACCELERATION AND TOP SPEED TESTING

ACCELERATION TEST OBJECTIVE

Determine the ability of each test motorcycle 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 Microsat GPS speed and distance sensor, each motorcycle 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 motorcycle within a distance of 10 miles from a standing start.

TOP SPEED TEST METHODOLOGY

Following the fourth acceleration run, each test motorcycle will continue to accelerate to the top speed attainable within 10 miles from the start of the run. The highest speed attained within the 10-mile distance will be the vehicle's score on the competitive test for top speed.

SUMMARY OF ACCELERATION & TOP SPEED

ACCELERATION*		Harley Davidson FLHP	Harley Davidson FLHTP	BMW
0 – 20 mph	(sec.)	1.26	1.47	1.48
0 – 30 mph	(sec.)	2.04	2.31	2.16
0 – 40 mph	(sec.)	2.89	3.39	2.80
0 – 50 mph	(sec.)	4.06	4.75	3.49
0 – 60 mph	(sec.)	5.40	6.44	4.44
0 – 70 mph	(sec.)	7.28	8.37	5.44
0 – 80 mph	(sec.)	9.59	10.96	6.75
0 – 90 mph	(sec.)	13.35	15.14	8.47
0 – 100 mph	(sec.)	20.35	17.55	10.55
TOP SPEED	**(mph)**	107.1	103.9	130.1
QUARTER MILE				
Time	(sec.)	14.42	15.56	12.85
Speed	(mph)	92.7	89.7	109.5

BRAKE TESTING

BRAKE TEST OBJECTIVE

Determine the deceleration rate attained by each test motorcycle on twelve 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 motorcycle makes 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 turns around and makes six measured 60 – 0 mph impending skid (threshold) stops with ABS in operation at specific predetermined points. The entire sequence is 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 is recorded by means of a non contact microsat GPS in conjunction with electronic speed and distance meters. The data resulting from the twelve total stops is used to calculate the average deceleration rate which is the motorcycle'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 motorcycle'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 motorcycle 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.

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 3:40 p.m. **TEMPERATURE:** 72.6°F

MAKE & MODEL: Harley Davidson FLHP Road King **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.$^{2)}$
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.5 mph	166.6 feet	23.63 ft/s^2
Stop #2	60.9 mph	158.9 feet	25.09 ft/s^2
Stop #3	60.6 mph	158.9 feet	24.89 ft/s^2
Stop #4	60.5 mph	153.6 feet	25.63 ft/s^2
Stop #5	60.5 mph	148.0 feet	26.63 ft/s^2
Stop #6	61.0 mph	165.1 feet	24.25 ft/s^2

AVERAGE DECELERATION RATE 25.02 ft/s^2

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.$^{2)}$
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.9 mph	162.5 feet	23.76 ft/s^2
Stop #2	60.7 mph	175.9 feet	22.51 ft/s^2
Stop #3	60.1 mph	166.2 feet	23.39 ft/s^2
Stop #4	60.5 mph	167.7 feet	23.45 ft/s^2
Stop #5	60.6 mph	159.6 feet	24.77 ft/s^2
Stop #6	60.5 mph	158.2 feet	24.91 ft/s^2

AVERAGE DECELERATION RATE 23.80 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 DECEL. RATE: 24.41 ft/s^2

Projected Stopping Distance from 60.0 mph 158.6

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 4:00 p.m. **TEMPERATURE:** 72.1°F

MAKE & MODEL: Harley Davidson FLHTP **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.8 mph	157.5 feet	25.28 ft/s^2
Stop #2	56.9 mph	129.5 feet	26.92 ft/s^2
Stop #3	60.4 mph	155.9 feet	25.17 ft/s^2
Stop #4	60.1 mph	164.7 feet	23.60 ft/s^2
Stop #5	60.4 mph	158.2 feet	24.77 ft/s^2
Stop #6	61.8 mph	163.2 feet	25.18 ft/s^2

AVERAGE DECELERATION RATE 25.15 ft/s^2

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	160.8 feet	24.23 ft/s^2
Stop #2	59.2 mph	161.0 feet	23.44 ft/s^2
Stop #3	59.7 mph	161.3 feet	23.78 ft/s^2
Stop #4	59.8 mph	154.7 feet	24.87 ft/s^2
Stop #5	60.3 mph	159.5 feet	24.49 ft/s^2
Stop #6	60.7 mph	163.0 feet	24.29 ft/s^2

AVERAGE DECELERATION RATE 24.18 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 DECEL. RATE: 24.67 ft/s^2

Projected Stopping Distance from 60.0 mph 157.0

BRAKE TESTING

TEST LOCATION: DaimlerChrysler Proving Grounds **DATE:** September 16, 2006

BEGINNING Time: 1:50 p.m. **TEMPERATURE:** 70.5°F

MAKE & MODEL: BMW R1200RTP **BRAKE SYSTEM:** Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.5 mph	140.7 feet	27.98 ft/s^2
Stop #2	59.6 mph	128.7 feet	29.69 ft/s^2
Stop #3	59.9 mph	134.8 feet	28.63 ft/s^2
Stop #4	59.9 mph	143.1 feet	26.97 ft/s^2
Stop #5	60.3 mph	136.5 feet	28.65 ft/s^2
Stop #6	60.7 mph	133.5 feet	29.69 ft/s^2

AVERAGE DECELERATION RATE 28.60 ft/s^2

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.[2)]
TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	139.6 feet	28.11 ft/s^2
Stop #2	59.5 mph	132.8 feet	28.67 ft/s^2
Stop #3	61.0 mph	144.1 feet	27.77 ft/s^2
Stop #4	60.9 mph	143.6 feet	27.78 ft/s^2
Stop #5	59.9 mph	142.6 feet	27.06 ft/s^2
Stop #6	61.1 mph	136.1 feet	29.50ft/s^2

AVERAGE DECELERATION RATE 28.15 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 DECEL. RATE: 28.38 ft/s^2

Projected Stopping Distance from 60.0 mph 136.5

HIGH TO LOW Um TRANSITION ANTI-LOCK BRAKE SYSTEM TEST

TEST OBJECTIVE

Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

TEST METHODOLOGY

The motorcycle is accelerated to 40 mph and both brakes (front and rear) applied simultaneously to simulate an ABS panic stop. The initial deceleration begins on a dry asphalt surface (with a relatively high coefficient of friction-high uM) and transitions 30 feet further to a wet seal coated skid pad surface (with a relatively low coefficient of friction-low uM). The exact initial velocity at the beginning of each 40 mph – 0 decelerations and the exact distance required to make each stop is recorded by means of a Microsat GPS non contact sensor measuring speed and distance. The data from the best 5 out of 6 total stops is used to calculate the average deceleration rate which is the vehicle's score for this test.

TEST LOCATION: Precision Driving Unit, Lansing

DATE: September 15, 2006

BEGINNING Time: 12:00 p.m.

TEMPERATURE: 62°F

MAKE & MODEL: Harley Davidson FLHP-Road King

BRAKE SYSTEM: Anti-lock

Phase I

TEST: Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	37.7 mph	150.8 feet	10.11 ft/s^2
Stop #2	38.1 mph	134.1 feet	11.62 ft/s^2
Stop #3	38.9 mph	142.0 feet	11.44 ft/s^2
Stop #4	38.4 mph	136.6 feet	11.59 ft/s^2
Stop #5	38.4 mph	135.4 feet	11.74 ft/s^2

AVERAGE DECELERATION RATE 11.30 ft/s^2

Phase II

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

Projected Stopping Distance from 40.0 mph 152.3

HIGH TO LOW Um TRANSITION ANTI-LOCK BRAKE SYSTEM TEST

TEST LOCATION: Precision Driving Unit, Lansing **DATE:** September 15, 2006

BEGINNING Time: 11:00 a.m. **TEMPERATURE:** 62°F

MAKE & MODEL: Harley Davidson FLHTP-Electra Glide **BRAKE SYSTEM:** Anti-lock

Phase I

TEST: Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	39.5 mph	150.2 feet	11.16 ft/s^2
Stop #2	38.7 mph	143.2 feet	11.26 ft/s^2
Stop #3	39.0 mph	136.5 feet	11.98 ft/s^2
Stop #4	38.8 mph	140.0 feet	11.58 ft/s^2
Stop #5	37.7 mph	127.5 feet	11.99 ft/s^2

AVERAGE DECELERATION RATE 11.60 ft/s^2

Phase II

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

Projected Stopping Distance from 40.0 mph 148.4

TEST LOCATION: Precision Driving Unit, Lansing **DATE:** September 15, 2006

BEGINNING Time: 11:30 a.m. **TEMPERATURE:** 62°F

MAKE & MODEL: BMW R1200RTP **BRAKE SYSTEM:** Anti-lock

Phase I

TEST: Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	39.6 mph	142.8 feet	11.81 ft/s^2
Stop #2	38.7 mph	129.4 feet	12.44 ft/s^2
Stop #3	38.5 mph	127.0 feet	12.58 ft/s^2
Stop #4	39.6 mph	109.6 feet	15.42 ft/s^2
Stop #5	39.9 mph	124.8 feet	13.71 ft/s^2

AVERAGE DECELERATION RATE 13.19 ft/s^2

Phase II

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

Projected Stopping Distance from 40.0 mph 130.5

COMMUNICATIONS

TEST OBJECTIVE

Rate each test motorcycle's ability to:

Accommodate the required communications and emergency warning equipment and assess the relative difficulty of such installations.

TEST METHODOLOGY

The installation and communications portion of the evaluation will be conducted by Canfield Equipment Service, Inc. based upon the relative difficulty of the necessary installations. Each factor will be graded on a 1 to 10 scale, 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 motorcycle.

	BMW R1200RTP	FLPH ROAD KING	FLHTP ELECTRA GLIDE
Dash Access			
Ignition Fuse terminal block	9.00	8.00	8.00
Radio-Siren Mounting location	9.00	9.00	9.00
Radio-Installation	8.67	8.67	7.33
Radio Box Position	8.33	8.00	8.00
Emergency Lights	8.67	8.33	8.33
Radio Box			
Radio Installation	7.67	7.67	7.67
Antenna Installation	9.00	8.67	8.67
Emergency Lights Installation	9.00	9.00	9.00
Engine Access			
Radio Power Conn.	8.67	7.67	7.67
Power/Cont.Cable	8.67	7.67	7.67
TOTAL	**86.67**	**82.67**	**81.33**

About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. The Institute provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 USC §§ 3721–3723).

The NIJ Director is appointed by the President and confirmed by the Senate. The Director establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice, and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

A. **Creating relevant knowledge and tools**

1. Partner with State and local practitioners and policymakers to identify social science research and technology needs.

2. Create scientific, relevant, and reliable knowledge—with a particular emphasis on terrorism, violent crime, drugs and crime, cost-effectiveness, and community-based efforts—to enhance the administration of justice and public safety.

3. Develop affordable and effective tools and technologies to enhance the administration of justice and public safety.

B. **Dissemination**

4. Disseminate relevant knowledge and information to practitioners and policymakers in an understandable, timely, and concise manner.

5. Act as an honest broker to identify the information, tools, and technologies that respond to the needs of stakeholders.

C **Agency management**

6. Practice fairness and openness in the research and development process.

7. Ensure professionalism, excellence, accountability, cost-effectiveness, and integrity in the management and conduct of NIJ activities and programs.

Program Areas

In addressing these strategic challenges, the Institute is involved in the following program areas: crime control and prevention, including policing; drugs and crime; justice systems and offender behavior, including corrections; violence and victimization; communications and information technologies; critical incident response; investigative and forensic sciences, including DNA; less-than-lethal technologies; officer protection; education and training technologies; testing and standards; technology assistance to law enforcement and corrections agencies; field testing of promising programs; and international crime control.

In addition to sponsoring research and development and technology assistance, NIJ evaluates programs, policies, and technologies. NIJ communicates its research and evaluation findings through conferences and print and electronic media.

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 directed NIJ 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 on 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 equipment performance 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 NLECTC. Some documents are also available online through the Justice Technology Information Network (JUSTNET), the center's Internet/World Wide Web site. To request a document or additional information, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center
2277 Research Boulevard
Mail Stop 8J
Rockville, MD 20850
E-mail: *asknlectc@nlectc.org*
World Wide Web address: *http://www.justnet.org*

About the National Law Enforcement and Corrections Technology Center System

The National Law Enforcement and Corrections Technology Center (NLECTC) system exists to support the Nation's structure of State and local law enforcement and corrections. The United States has more than 18,000 law enforcement agencies, 50 State correctional systems, and thousands of prisons and jails. The fragmented nature of law enforcement and corrections impedes the dissemination of valuable new information, fosters a patchwork marketplace that discourages the commercialization of new technologies, and underscores the need for uniform performance standards for equipment and technologies.

The National Institute of Justice's (NIJ's) Office of Science and Technology (OS&T) created NLECTC in 1994 as a national system of technology centers that are clearinghouses of information and sources of technology assistance and that also attend to special needs, including technology commercialization and standards development.

The NLECTC system's purpose is to determine the needs of the law enforcement and corrections communities and assist them in understanding, using, and benefitting from new and existing technologies that, increasingly, are vital levers of progress in criminal justice. NIJ/OS&T and the NLECTC system are the only current programs developed by the Federal Government that focus solely on the development and transfer of technologies to State and local law enforcement and corrections.

NLECTC is a program of NIJ, the research and development arm of the U.S. Department of Justice. The system currently consists of a national center, five regional centers, and several speciality offices. Also contributing to the initiatives of the center system is the Office of Law Enforcement Standards. The centers are co-located with a host organization or agency that specializes in one or more areas of technology research and development.

The National Center, located in Rockville, Maryland, is the system's information hub. Regional centers are currently located in Alaska, California, Colorado, New York, and South Carolina. Speciality centers located around the country deal with border matters (California), commercialization of law enforcement and corrections technologies (West Virginia), rural law enforcement issues (Kentucky), and standards and testing (Maryland).

Each center shares roles with the other centers and has distinctive characteristics. All are focused on helping law enforcement and corrections take full advantage of technology's rapidly growing capacity to serve the purposes of crime control and the criminal justice system.

A national body of criminal justice professionals, the Law Enforcement and Corrections Technology Advisory Council (LECTAC), helps identify research and development priorities, thereby influencing the work of the NLECTC system. In addition, each NLECTC center has a regional advisory council of law enforcement and corrections officials. Together, LECTAC and the advisory councils help to keep the NLECTC system attentive to technological priorities and the needs of law enforcement and corrections. They help to link the end user with the developer to create technologies that adequately meet operational requirements and establish which potential technologies should be pursued for development.

All of the current regional centers have distinctive roles or focus areas, that, in many cases, are aligned with the expertise of host organizations and agencies. The centers are currently operated under cooperative agreements or interagency agreements with host organizations and agencies whose employees staff the centers.

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
2277 Research Boulevard
Mail Stop 8J
Rockville, MD 20850
E-mail: *asknlectc@nlectc.org*
World Wide Web address: *http://www.justnet.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*

NLECTC–Northwest
3000 C Street
Suite 304
Anchorage, AK 99503–3975
(p) 866–569–2969
(f) 907–569–6939
E-mail: *nlectc_nw@ctsc.net*

Border Research and Technology Center
1010 Second Avenue
Suite 1920
San Diego, CA 92101–4912
(p) 888–656–2782
(f) 888–660–2782
E-mail: *info@brtc.nlectc.org*

Rural Law Enforcement Technology Center
101 Bulldog Lane
Hazard, KY 41701
(p) 866–787–2553
(f) 606–436–6758
E-mail: *ruletc@aol.com*

Office of Law Enforcement Technology Commercialization
2001 Main Street
Suite 500
Wheeling, WV 26003
(p) 888–306–5382
(f) 304–230–2310
E-mail: *oletc@oletc.org*

Office of Law Enforcement Standards
100 Bureau Drive
Stop 8102
Gaithersburg, MD 20899–8102
(p) 301–975–2757
(f) 301–948–0978
E-mail: *oles@nist.gov*

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 on the recommendations of the President's Commission on Crime. OLES's 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's projects varies depending on priorities of the criminal justice community at any given time and, as necessary, draws on 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 equipment performance, 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.

MICHIGAN STATE POLICE
PRECISION DRIVING UNIT
7426 N. CANAL ROAD
LANSING, MI 48913