

REPORT NUMBER TR-P25044-01-NC

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**GENERAL MOTORS CORPORATION
2005 PONTIAC MONTANA SV6
5-DOOR MPV**

NHTSA NUMBER: G50103

**PREPARED BY:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301**



FEBRUARY 25, 2005

FINAL REPORT

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Prepared by: _____
Mr. Biren J. Patel, Project Engineer
KARCO Engineering, LLC

Date: 3/8/05

Reviewed by: _____
Mr. Michael L. Dunlap, Quality Assurance Manager
KARCO Engineering, LLC

Date: 3/8/05

Approved by: _____
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

Date: 3/8/05

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2005 Pontiac Montana SV6 5-Door MPV at Karco Engineering, LLC on February 25, 2005. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.02 km/h. The ambient temperature at the barrier face at the time of impact was 16.7 degrees Celsius. The vehicle's maximum post-test static crush was 545 mm at the right side of the vehicle's centerline. The test vehicle is equipped with 3 point continious seat belts and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:					
Measurement Description		Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC ₃₆)			1000	354.3	348.4
Max. Chest Accel. (3 msec Clip)		G's	60	34.4	31.7
Left Femur Force		Newtons	10008	-5105.8	-3991.3
Right Femur Force		Newtons	10008	-5176.7	-4867.5
17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2005 Pontiac Montana SV6 5-Door MPV NHTSA No. G50103				18. Distribution of Statement Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590	
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SECTION 1

PURPOSE AND SUMMARY OF TEST G50103

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the New Car Assessment Program (NCAP) sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-02005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph (48.3 km/h) requirements.

This 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301, "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

1.2 SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2005 Pontiac Montana SV6 5-Door MPV at a velocity of 56.02 km/h (34.82 mph). The test was performed at Karco Engineering, LLC on February 25, 2005.

Three (3) real-time video and fourteen (14) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in data sheet number 15 (Page Number 27) of this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head (primary and redundant), chest (primary and redundant) and pelvic tri-axial accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also placed on the driver and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. Shoulder belt spool-off was also measured for the driver and passenger dummies. The driver (position 1) ATD (Serial No. 034) and the right-front passenger (position 2) ATD (Serial No. 035) were calibrated one test prior to this test.

Ninety seven (97) channels of data were recorded using an on-board data acquisition system. Appendix A contains Pre and Post-Test Photographs, Appendix B contains the vehicle and dummy response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the Instrumentation Data Channel assignments. Appendix E contains the Dummy Calibration data. Appendix F contains the Child Restraint data.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the impact event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 545 mm and both the driver and passenger side doors remained closed during the impact and were operable after the impact.

The driver's visible contact points were as follows: The driver ATD's head, chest and abdomen contacted the airbag and on rebound the head contacted the headrest. Both knees contacted the knee bolster.

The passenger's visible contact points were as follows: The passenger ATD's head, chest and abdomen contacted the airbag and on rebound the head contacted the headrest. Both knees contacted the glove box.

Occupant injury data is contained in the table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC ₃₆	Clip (g)	Chest Def. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	354.3	34.4	-26.4	-5105.8	-5176.7	86.5
Passenger	348.4	31.7	-18.4	-3991.3	-4867.5	246.2

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.02
Test Weight	kg	2234
Impact Angle	degrees	0
Average Rebound	mm	660
Maximum Static Crush	mm	545

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door opening	Remained closed, opened w/o tools	Remained closed, opened w/o tools
Rear Door Opening	Remained closed, opened w/o tools	Remained closed, opened w/o tools
Seat Track Shift (mm)	0	0
Seat Back Failure	No	No

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type/ Serial No.	50% Male Hybrid III No. 034	50% Male Hybrid III No. 035
Head Contact	Airbag, Head Rest	Airbag, Head Rest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

16mm MOVIE COVERAGE

Description	Standard	Additional
High Speed	14	0
Real Time	1	2
Total	15	2

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	36
Total	133

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	G50103	Anti-Lock Brakes	Yes
Make	Pontiac	All Wheel Drive	No
Model	Montana SV6	Power Steering	Yes
Body Style	5-Door MPV	Driver Front Airbag	Yes
Vin No.	1GMDV33L35D227625	Driver Side Airbag	No
Color	Blue	Driver Head Airbag	No
Delivery Date	2/23/2005	Driver Curtain Airbag	No
Odometer (mi)	74	Pass. Airbag	Yes
Dealer	Rio Rancho	Pass. Side Airbag	No
Transmission	4-Speed Automatic	Pass. Head Airbag	No
Final Drive	Front	Pass. Curtain Airbag	No
Type/No. Cyl.	V6	Pre-Tensioners	Yes
Engine Disp. (L)	3.5	Load Limiters	Yes
Engine Placement	Transverse	Bucket Seats	Yes
Roof Rack	Yes	Air Cond.	Yes
Sunroof/T-Top	No	AM/FM Cassette	Yes
Tinted Glass	Yes	Tilt Steering	Yes
Traction Control	No	Automatic Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	Yes
Rear Disc	Yes	Other	

Does Owners Manual provide instructions to turn off automatic door locks?

No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors Corporation	GVWR (kg)	2550
Date of Manufacture	Feb-05	GAWR Front (kg)	1300
		GAWR Rear (kg)	1250

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	Split Bench	
Number of Occupants	2	2	3	7
Capacity Weight (VCW) (kg)				594
Cargo Weight (RCLW) (kg)				117

DATA SHEET NO. 2...(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

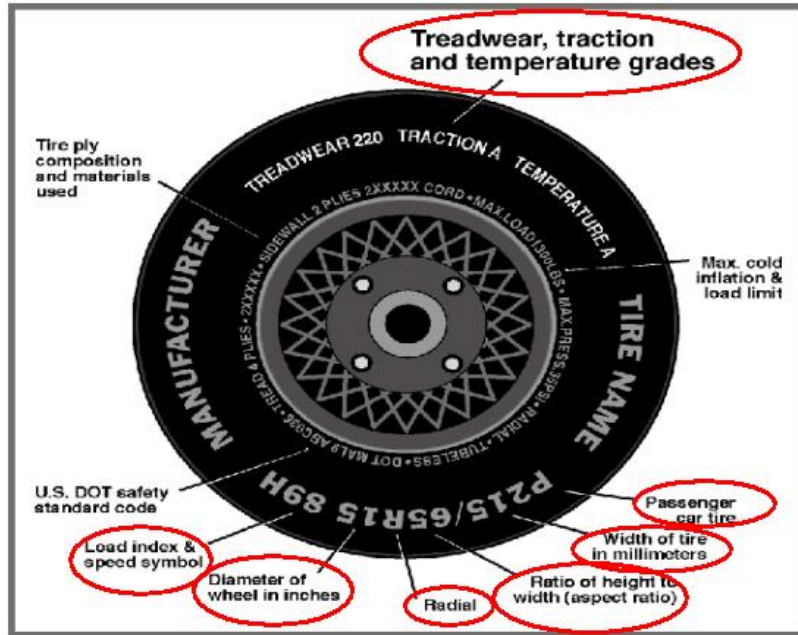
Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	240	240
Recommended Tire Size	P225/60R17	P225/60R17
Tire Size on Vehicle	P225/60R17	P225/60R17
Tire Manufacturer	Continental	Continental
Treadwear	520	520
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	1 Ply Polyester	1 Ply Polyester
Tire Plies Body	1 Polyester + 2 Steel	1 Polyester + 2 Steel
Load Index/Speed Symbol	98S	98S
Tire Material	Polyester + Steel + Rubber	Polyester + Steel + Rubber
DOT Safety Code Right	AC79-BL8-0605	AC79-BL8-0605
DOT Safety Code Left	AC79-BL8-0605	AC79-BL8-0605

DATA SHEET NO. 2...(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	565	435	1000	615	496	1111
Right	kg	537	433	970	610	513	1123
Ratio	%	55.9	44.1	100%	54.8	45.2	100%
Totals	kg	1102	868	1970	1225	1009	2234

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1970
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	117
Calculated Vehicle Target Wt. (TVTW)	kg	2239

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	780	776	790	800	1366
As Tested	mm	757	758	767	766	1400

Vehicle Wheelbase (mm) 3100

Weight of Ballast Secured in Cargo Area (kg) 11

Vehicle Components Removed Spare Tire, 3rd Row Seat, Storage Containers, Carpet,
Center Console

* Ballast weight does not include cameras, instrumentation and brake abort system.

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L) 94.6

Usable Capacity Furnished by COTR (L) N/A

Actual Test Volume with Entire Fuel System Filled (L) 88.2

1/3 of Usable Capacity (L) 31.5

Test Fluid Type: Stoddard Solvent N/A

Kinematic Viscosity: as per ASTM Standard D484-71 Purple

Is Vehicle Fuel Pump Electric or Mechanical? Electric

If Electric, Does Pump Operate with Ignition Switch "On" & Engine "OFF" Yes

Fuel System Particulars: None

DATA SHEET NO. 3
POST-TEST IMPACT DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	56.02
Trap No. 1 Entry Distance	mm	<1524	1524
Trap No.1 Exit Distance	mm	<1524	305
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	55.99
Trap No.2 Entry Distance	mm	<1524	1524
Trap No.2 Exit Distance	mm	<1524	305

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	5045	4690	-355
Center	mm	5220	4740	-480
Right Side	mm	5045	4700	-345

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	680
Center	mm	680
Right Side	mm	620
Average	mm	660

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

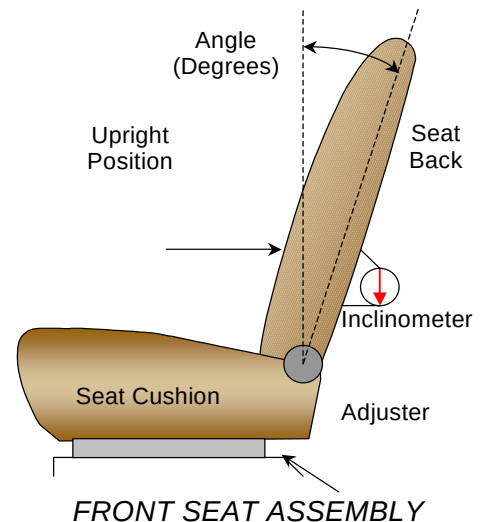
NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: Seat back angle was measured at the headrest using a digital inclinometer. Seat back angle at forward-most locking position or forward stop defined as first position.

SEAT BACK ANGLES

	Angle (Deg.)	Placed in Position #
Driver w/seated Dummy	13.5	7th Detent
Passenger w/seated Dummy	13.5	7th Detent

* Placed in the Manufacturer's nominal design position using detents provided.

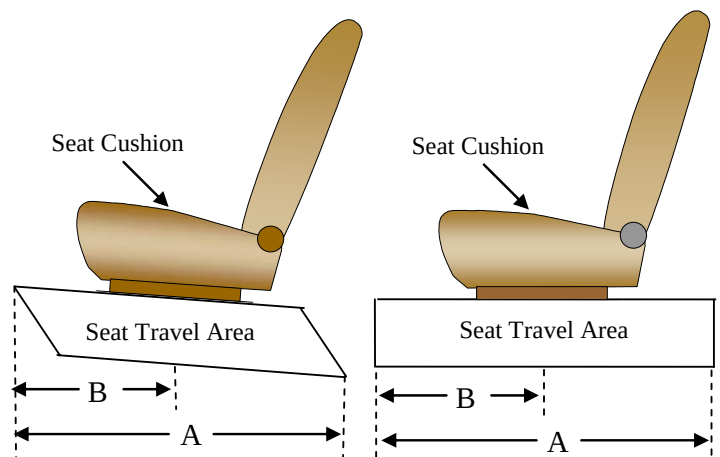


SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for both the driver and passenger.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver	195 mm	98 mm
Passenger	17 Detents	9th Detent



SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position.

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver	3	2
Passenger	3	2

DATA SHEET NO. 4...(CONTINUED)

TEST VEHICLE INFORMATION

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

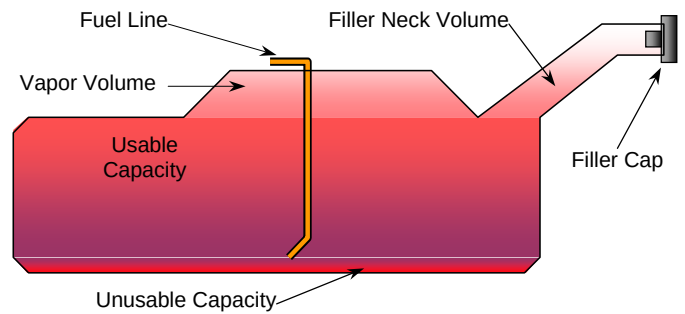
Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	94.6
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	87.1 to 88.9
Actual Amount of Solvent used	88.2
1/3 of Usable Capacity	31.5

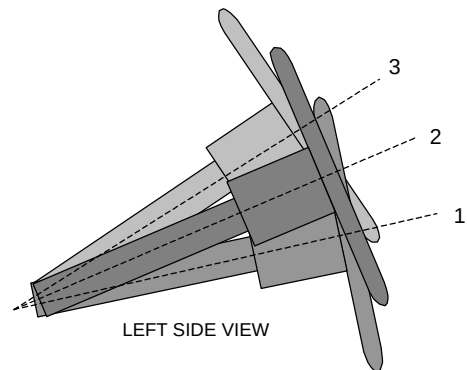
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area under the rear seat.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Fore/Aft Position (mm)	Degrees
Lowermost position No. 1		12.0
Geometric center position No. 2		24.3*
Uppermost position No. 3		35.0

* Placed in the manufacturer's nominal design position.

DATA SHEET NO. 5
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		58.7		
SWA	Steering Wheel Angle		65.7		
SCA	Steering Column Angle		24.3		
SA	Seat Back Angle		13.5		13.5
HZ	Head to Roof (Z)	205	90.0	185	90.0
HH	Head to Header	455		420	
HW	Head to Windshield	770		720	
HR	Head to Side Header (Y)	270		270	
NR	Nose to Rim	375	13.0		
CD	Chest to Dash	540		545	
CS	Chest to Steering Hub	265			
RA	Rim to Abdomen	160			
KDL	Left Knee to Dash	150	8.0	130	
KDR	Right Knee to Dash	150		150	3.6
PA	Pelvic Angle		23.1		24.0
TA	Tibia Angle		57.4		54.2
KK	Knee to Knee (Y)	280		290	
SK	Striker to Knee	665	4.0	673	32.0
ST	Striker to Head	542	73.9	560	75.5
SH	Striker to H-Point	275	9.6	270	20.0
SHY	Striker to H-Point (Y)	250		255	
HS	Head to Side Window	348		330	
HD	H-Point to Door (Y)	130		150	
AD	Arm to Door (Y)	128		65	

DATA SHEET NO. 5...(CONTINUED) **DUMMY POSITIONING IN VEHICLE**

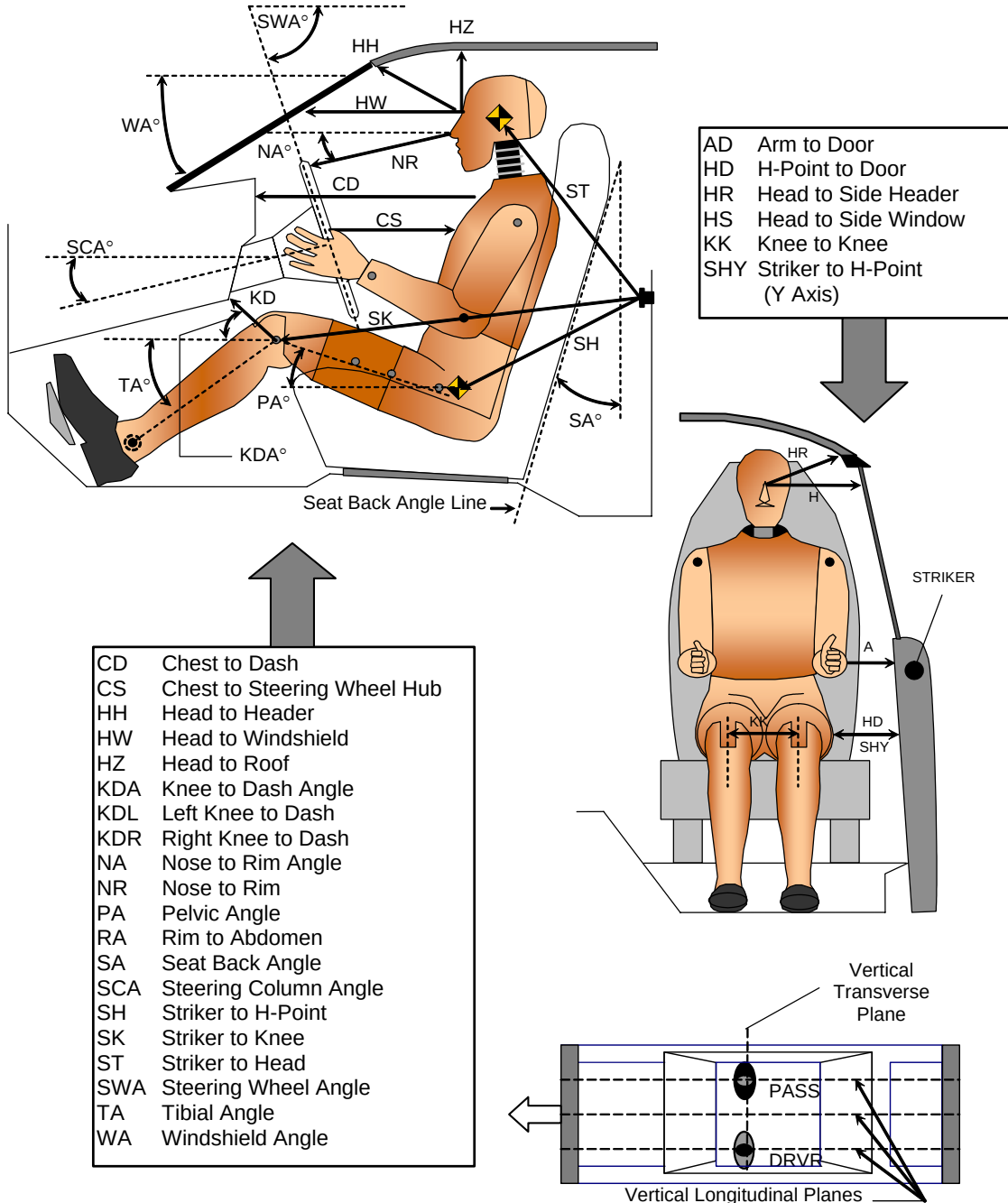
Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

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DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



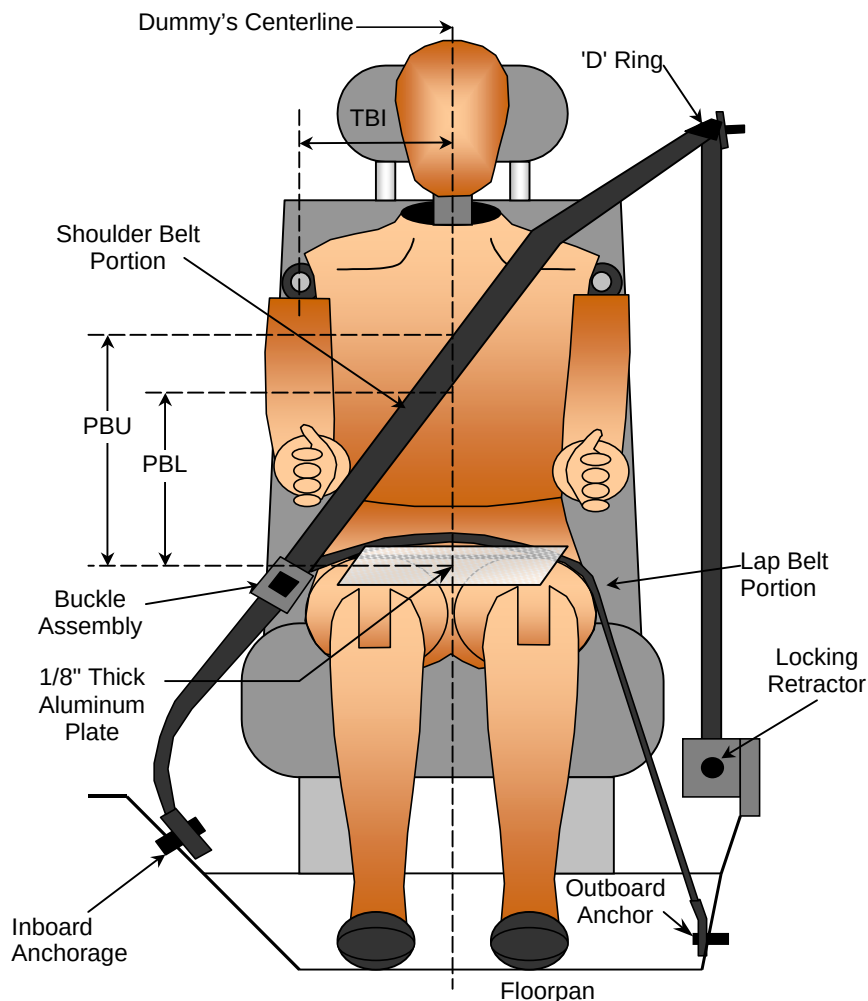
DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	230	230
PBU - Top Surface of reference to belt upper edge	mm	315	320
PBL - Top Surface of reference to belt lower edge	mm	245	250
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension		Retractor	Retractor

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

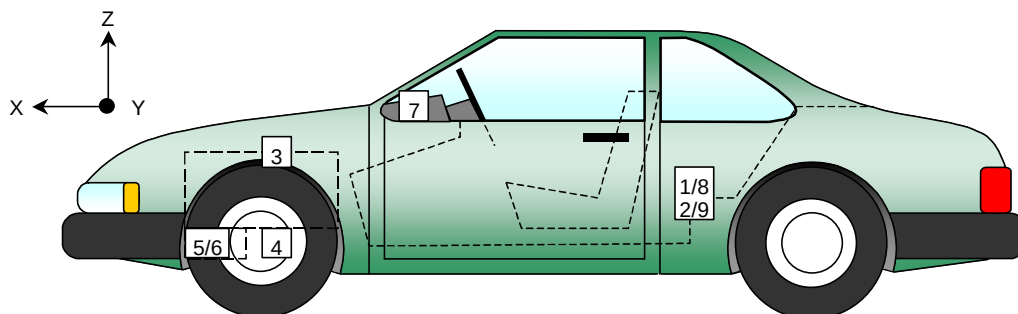
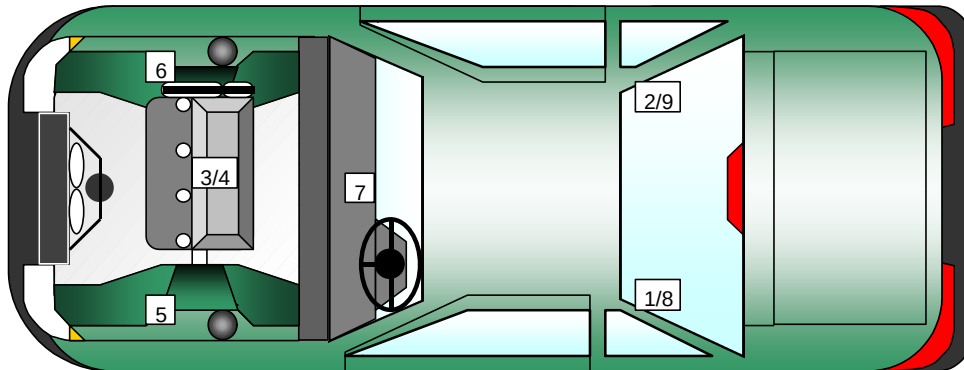
Test Date: 2/25/05

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member	1860	-750	470	G's	1.1	195.6	-30.7	50.6
2	Right Rear X-Member	1860	750	470	G's	1.4	150.5	-29.3	38.5
3	Engine Top	4390	210	850	G's	54.8	48.7	-151.7	36.0
4	Engine Bottom	4320	-230	180	G's	12.7	50.8	-119.9	39.1
5	Left Brake Caliper	4320	-710	290	G's	36.0	65.7	-125.5	47.6
6	Right Brake Caliper	4320	710	290	G's	65.7	69.7	-115.4	47.7
7	Instrument Panel	3520	0	1145	G's	16.2	25.0	-58.3	21.6
8	Left Rear X-Member (Z-Axis)	1800	-750	470	G's	3.5	42.0	-4.2	58.3
9	Right Rear X-Member (Z-Axis)	1800	750	470	G's	6.6	56.3	-6.1	47.3

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

1.) Channel failed at 55.0 msec.



DATA SHEET NO. 8 - HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	1.4	17.7	-48.7	78.9	0.2	19.5	-40.7	88.0
Head CG	Y	G's	2.8	180.6	-6.0	96.3	7.2	82.3	-3.4	156.9
Head CG	Z	G's	12.7	53.8	-4.9	99.5	22.7	84.1	-0.9	152.8
Head CG Resultant	N/A	G's	50.0	78.4			46.5	87.0		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.0	144.5	-34.4	85.3	2.0	142.3	-30.6	81.8
Chest CG	Y	G's	5.2	109.4	-6.9	59.8	4.5	51.1	-5.8	100.2
Chest CG	Z	G's	3.7	27.3	-9.1	59.6	12.5	104.1	-6.7	60.4
Chest CG Resultant	N/A	G's	34.5	85.2			32.2	100.1		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	150.1	148.5	-5105.8	56.1	519.0	37.9	-3991.3	52.0
Right Femur	Z	Newtons	363.2	29.0	-5176.7	58.7	204.1	33.3	-4867.5	70.4

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Shoulder Belt Pullout	N/A	MM	86.5	147.8	-29.2	57.9	246.2	119.4	-25.8	49.0
Shoulder Belt Stretch	N/A	MM/CM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lap Belt Force	N/A	Newtons	2107.4	60.6	0.0	2.8	2814.8	53.1	-20.1	200.4
Shoulder Belt Force	N/A	Newtons	4627.7	57.5	-29.9	187.8	5025.5	108.0	-17.5	196.1

1.) Not used with pre-tensioners

PRIMARY HEAD INJURY CRITERIA (HIC36)

Location	Driver				Passenger			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG Primary	354.3	58.3	94.3	39.5	348.4	78.0	114.0	39.3

PRIMARY CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	34.4	84.4	87.4	31.7	99.3	102.3

DATA SHEET NO. 8...(CONTINUED)

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	0.9	194.5	-52.2	58.9	1.7	130.5	-43.4	55.0
Pelvis	Y	G's	8.7	98.0	-8.4	65.2	4.2	50.4	-6.8	94.7
Pelvis	Z	G's	2.6	25.6	-21.5	82.2	4.3	110.3	-21.7	57.0
Pelvis Resultant	N/A	G's	56.4	58.9			48.3	57.1		

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	679.6	82.7	-326.7	49.6	117.1	95.1	-337.1	84.2
Neck Force	Y	Newtons	115.1	179.9	-93.5	70.7	26.4	86.0	-180.8	157.6
Neck Force	Z	Newtons	669.0	54.7	-36.4	18.3	1254.1	83.9	-34.0	20.1
Neck Force Resultant	N/A	Newtons	932.2	84.7			1298.1	83.9		
Neck Moment	X	Nm	11.4	171.9	-8.0	115.6	9.1	94.6	-11.4	148.2
Neck Moment	Y	Nm	49.3	68.6	-24.3	109.2	22.9	149.4	-37.0	108.8
Neck Moment	Z	Nm	10.8	114.6	-7.5	166.4	6.1	125.8	-12.4	93.3
Neck Moment Resultant	N/A	Nm	49.5	68.6			37.5	108.8		

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	5.1	39.0	-34.4	26.3	12.1	87.3	-80.7	51.4
Left Foot Aft	Z	G's	0.3	13.9	-37.2	32.7	5.3	76.1	-66.0	49.9
Left Foot Fore	Z	G's	7.8	44.7	-46.0	33.3	14.5	79.6	-98.1	61.5
Right Foot Aft	X	G's	17.6	74.2	-36.5	48.3	14.7	43.1	-31.0	69.0
Right Foot Aft	Z	G's	4.7	89.5	-72.8	46.9	16.5	83.7	-43.0	44.2
Right Foot Fore	Z	G's	21.7	48.9	-108.6	46.7	6.9	81.6	-52.4	67.2

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Upper Moment	X	Nm	37.5	106.4	-2.3	79.8	21.6	56.8	-23.6	105.2
Left Upper Moment	Y	Nm	35.0	107.8	-81.2	51.5	19.3	136.5	-66.4	63.8
Right Upper Moment	X	Nm	33.1	74.5	-51.6	94.6	30.8	80.4	-8.4	105.0
Right Upper Moment	Y	Nm	17.2	185.8	-87.8	61.4	24.8	97.4	-77.1	50.0
Left Lower Moment	X	Nm	16.9	63.3	-4.7	80.3	16.2	81.6	-4.1	109.1
Left Lower Moment	Y	Nm	17.8	40.4	-31.8	56.2	29.6	83.2	-50.9	63.2
Left Lower Force	Z	Newtons	350.5	85.0	-1550.4	29.7	119.3	66.1	-2465.7	50.7
Right Lower Moment	X	Nm	99.0	72.6	-8.0	48.6	5.5	55.1	-7.4	44.7
Right Lower Moment	Y	Nm	251.7	72.9	-14.5	48.2	47.8	44.1	-32.3	69.3
Right Lower Force	Z	Newtons	118.6	181.6	-2622.8	51.8	98.7	69.0	-3442.1	44.3

DATA SHEET NO. 8...(CONTINUED)

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

CHEST PEAK DEFLECTIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest	X	MM	0.0	12.8	-26.4	61.9	0.0	12.6	-18.4	111.6

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	0.5	22.5	-48.8	79.6	0.3	16.3	-40.7	87.9
Head CG	Y	G's	2.9	181.5	-6.0	88.9	7.2	83.4	-3.4	159.2
Head CG	Z	G's	12.7	53.8	-5.0	99.4	22.7	85.0	-0.8	20.0
Head CG Resultant	N/A	G's	49.8	79.6			46.6	87.0		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.0	145.0	-34.8	85.2	1.9	142.1	-30.4	81.7
Chest CG	Y	G's	5.2	109.3	-6.4	59.9	4.4	51.1	-5.9	100.2
Chest CG	Z	G's	4.0	27.3	-9.1	59.6	12.6	104.0	-7.1	56.7
Chest CG Resultant	N/A	G's	34.9	85.2			32.1	100.0		

REDUNDANT HEAD INJURY CRITERIA (HIC36)

Location	Driver				Passenger			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG Redundant	354.3	58.4	94.4	39.5	352.4	78.0	114.0	39.4

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	34.8	83.4	86.4	31.5	99.1	102.1

DATA SHEET NO. 9
SEAT BELT ASSESSMENT TEST DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	230	230
PBU - Top Surface of reference to belt upper edge	mm	315	320
PBL - Top Surface of reference to belt lower edge	mm	245	250
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension		Retractor	Retractor

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to "D" ring	mm	940	940
Shoulder Belt length as measured on ATD	mm	860	870
Lap Belt length as measured on ATD	mm	780	720
Remainder of belt on reel	mm	950	910
Total belt length for continuous webbing systems	mm	3530	3440

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	50.0	200.0
As determined electronically	mm	86.5	246.2

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically between belt load cell and "D" ring	mm/cm	*	*
Mechanically	mm/cm		

* Not used with shoulder belt pre-tensioner systems.

DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

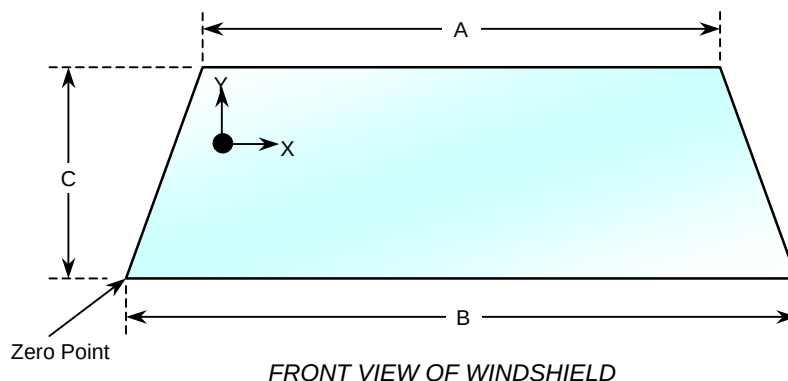
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles that are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	2300	2300	100
Right Side	2300	2300	100
Total	4600	4600	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1320	20
B	mm	1560	30
C-Left	mm	860	20
C-Right	mm	860	20

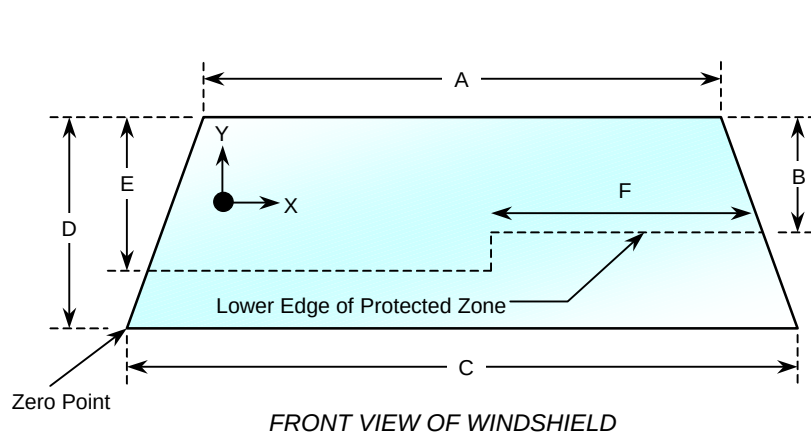
DATA SHEET NO. 11
WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05



**WINDSHIELD AND
PROTECTED ZONE**

Item	Units	Value
A	mm	1320
B	mm	555
C	mm	1560
D	mm	860
E	mm	530
F	mm	600

AREA OF PROTECTED ZONE FAILURES

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one that is normally in contact with the windshield.

X	Y

- B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y

DATA SHEET NO. 12
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV NHTSA No.: G50103
Test Program: 2005 NHTSA 35mph NCAP Test Date: 2/25/05

Test Time: 12:10 PM Temperature: 16.7 Deg. C.

STODDARD SOLVENT SPILLAGE MEASUREMENTS

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5-minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Location Details: No leakage occurred

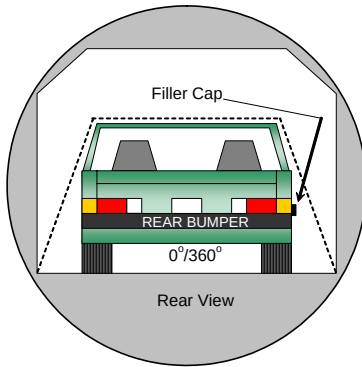
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

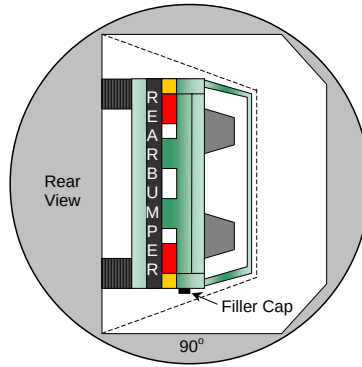
NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

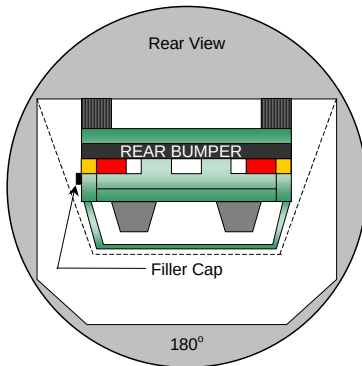
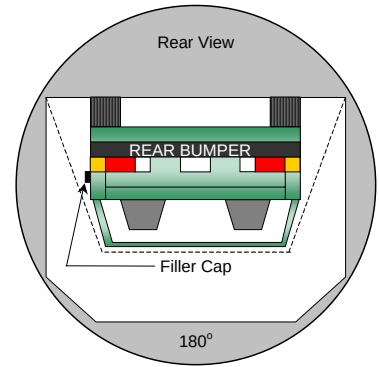
Test Date: 2/25/05



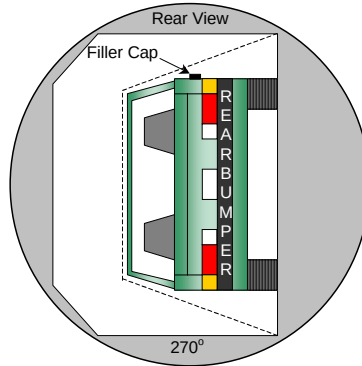
0° to 90°



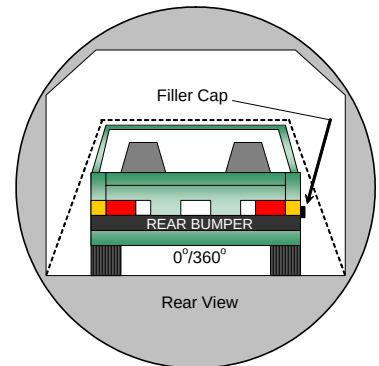
90° to 180°



180° to 270°



270° to 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

DATA SHEET NO. 13...(CONTINUED)
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	83	300	383
90° to 180°	73	300	373
180° to 270°	82	300	382
270° to 360°	78	300	378

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5
Sixth Minute	1
Seventh Minute	1
Eighth Minute	1

ACTUAL TEST VEHICLE SOLVENT SPILLAGE TABLE (oz.)

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	5220	4740	-480
2	RSOV to front of engine	mm	4620	4310	-310
3	RSOV to firewall centerline	mm	4360	4297	-63
4	RSOV to leading edge of right door	mm	3800	3800	0
5	RSOV to leading edge of left door	mm	3800	3790	-10
6	RSOV to lower leading edge of right door	mm	3680	3680	0
7	RSOV to lower leading edge of left door	mm	3685	3690	5
8	RSOV to upper trailing edge of right door	mm	2660	2650	-10
9	RSOV to upper trailing edge of left door	mm	2665	2670	5
10	RSOV to lower trailing edge of right door	mm	2670	2670	0
11	RSOV to lower trailing edge of left door	mm	2680	2680	0
12	RSOV to bottom of right 'A' pillar	mm	3749	3703	-46
13	RSOV to bottom of left 'A' pillar	mm	3750	3736	-14
14	RSOV to firewall on right side	mm	4360	4322	-38
15	RSOV to firewall on left side	mm	4360	4320	-40
16	RSOV to steering column	mm	3250	3230	-20
17	Center of steering column to left 'A' pillar	mm	490	480	-10
18	Center of steering column to headlining	mm	480	460	-20
19	RSOV to right side of front bumper	mm	5045	4700	-345
20	RSOV to left side of front bumper	mm	5045	4690	-355
21	Length of engine block	mm	700	700	0
RD	RSOV to right side of dash panel	mm	3470	3460	-10
CD	RSOV to center of dash panel	mm	3420	3340	-80
LD	RSOV to left side of dash panel	mm	3480	3360	-120

DATA SHEET NO. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

VEHICLE STRUCTURAL MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	5220	4740	-480
2	Total width	mm	1820	1830	10
3	Bumper top height	mm	770	700	-70
4	Bumper bottom height	mm	200	100	-100
5	Longitudinal member top height	mm	580	685	105
6	Longitudinal member bottom height	mm	410	570	160
7	Distance between longitudinal members	mm	960	955	-5
8	Longitudinal member width	mm	110	111	1
9	Engine top height	mm	865	830	-35
10	Engine bottom height	mm	205	103	-102
11	Engine and gear box width	mm	440	440	0
12	Front bumper to engine distance	mm	600	370	-230
13	Front shock absorber fixing width	mm	910	960	50
14	Bonnet leading edge height	mm	1000	945	-55
15	Front shock absorber fixing width	mm	1240	1290	50
16	Front bumper to front axle distance	mm	1010	500	-510
17	Front axle to 'A' pillar distance	mm	415	440	25
18	'A' pillar to 'B' pillar distance	mm	1150	1145	-5
19	'B' pillar to rear axle distance	mm	1530	1542	12
20	'B' pillar to 'C' pillar distance	mm	1200	1195	-5
21	Roof sill bottom height	mm	1530	1604	74
22	Roof sill top height	mm	1670	1700	30
23	Floor sill bottom height	mm	260	362	102
24	Floor sill top height	mm	340	474	134

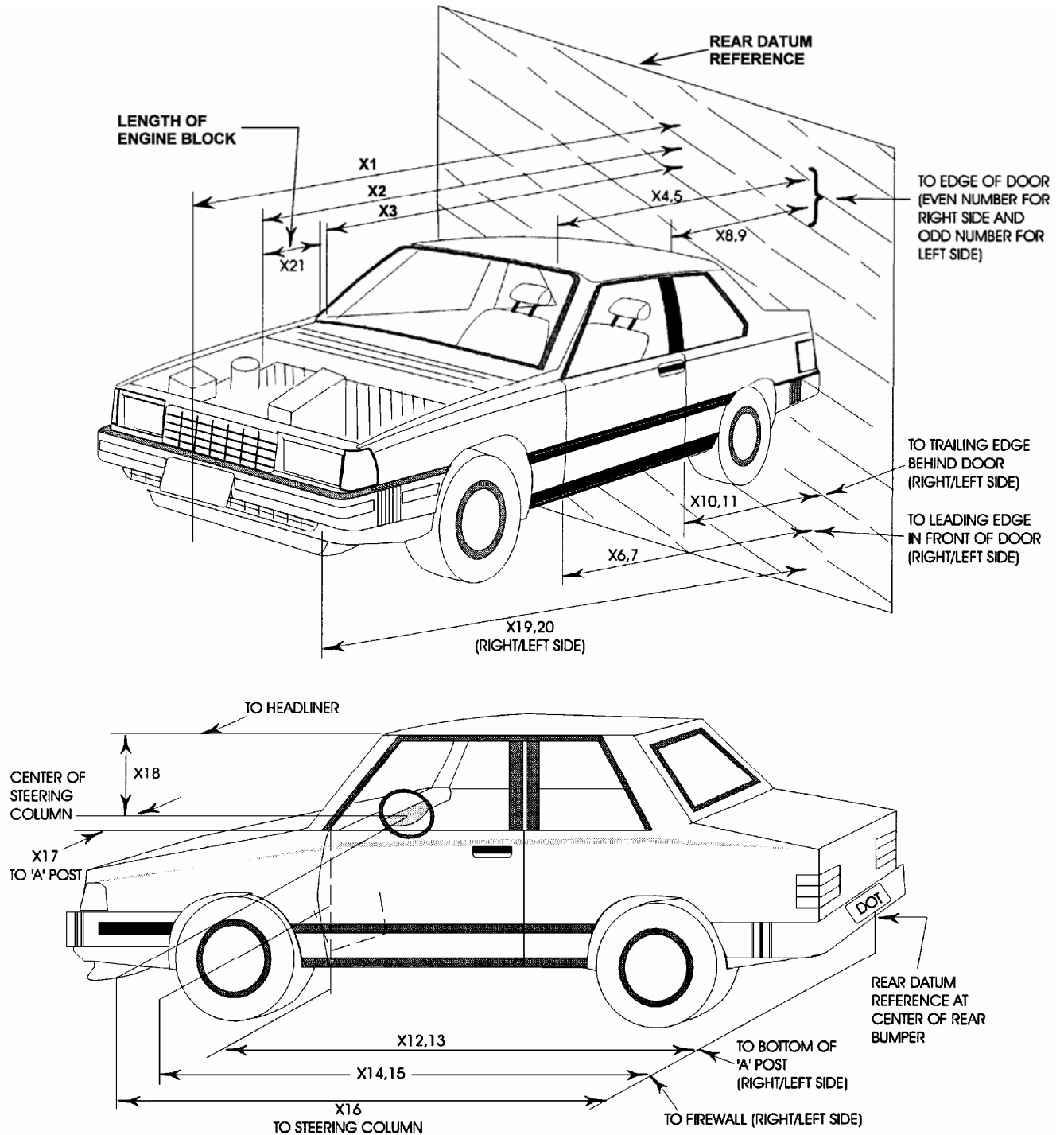
DATA SHEET NO. 14...(CONTINUED)
VEHICLE MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

VEHICLE CAMERA MEASUREMENT TABLE

No.	Camera View	Location (mm)			Angle (deg.)	Film Plane to Head (mm)	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real Time Camera (Panning)	-12192	-6096	-1651	-10		Zoom	30
2	Overall Left Side	-2489	-8280	-1143	-4	7756	24	1000
3	Left Side View	-1677	-7620	-1329	-4	116	50	1000
4	Driver and Interior View	-6477	-10185	-4748	-13	11046	80	
5	Steering Column (Bottom)	-2134	-8230	-2997	-16	7866	19	
6	Steering Column (Top)	-2134	-8230	-3404	-20	7959	19	
7	Overall Right Side	-2083	8230	-1270	-6	7703	13	
8	Right Side View	-1677	7316	-1422	-4	6813	50	1000
9	Passenger and Interior View	-6781	9144	-2997	-9	9847	28	
10	Right Side View	-1829	7316	-1422	-4	6801	28	1000
11	Windshield	-610	0	-5944	-90		13	
12	Driver Front View	610	-432	-2667	-40		13	
13	Passenger Front View	610	432	-2667	-40		13	
14	View of Engine	-914	0	1499	90		6	
15	View of Fuel Tank	-2438	0	1499	90		6	

ADDITIONAL CAMERAS

1	Left Side OverallReal Time Camera	-1219	-8585	-1372	0	8027	Zoom	30
2	Right Side Overall Real Time Camera	-1067	7976	-991	0	7478	Zoom	30

X = Barrier Face Y = Monorail Centerline Z = Ground DNR = Did Not Run NTM = No Timing Marks

DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

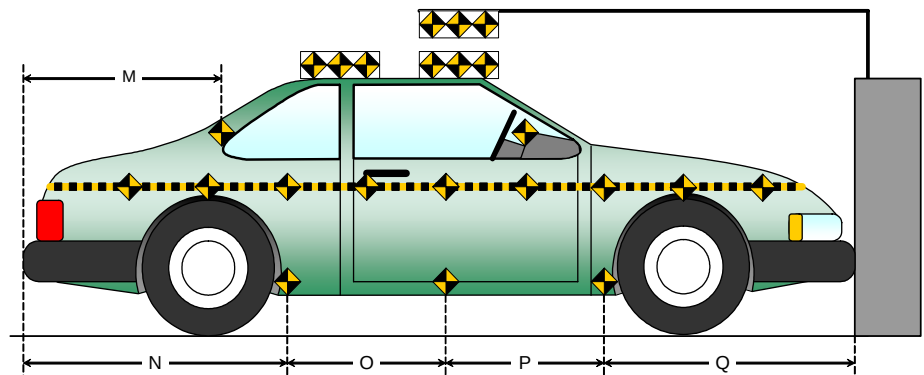
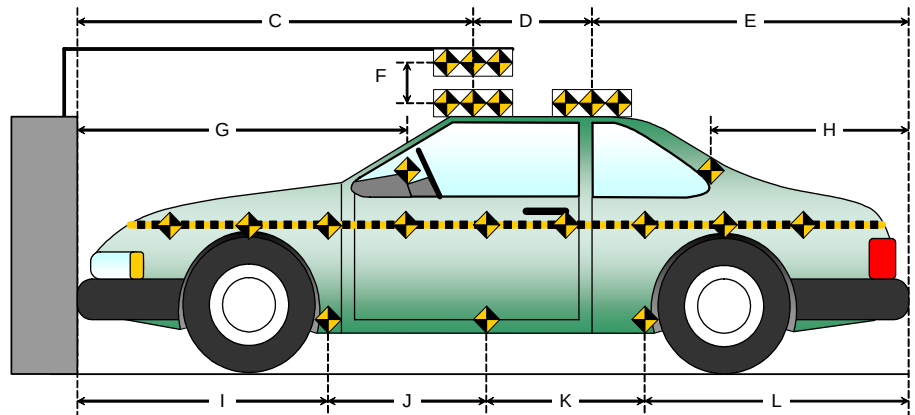
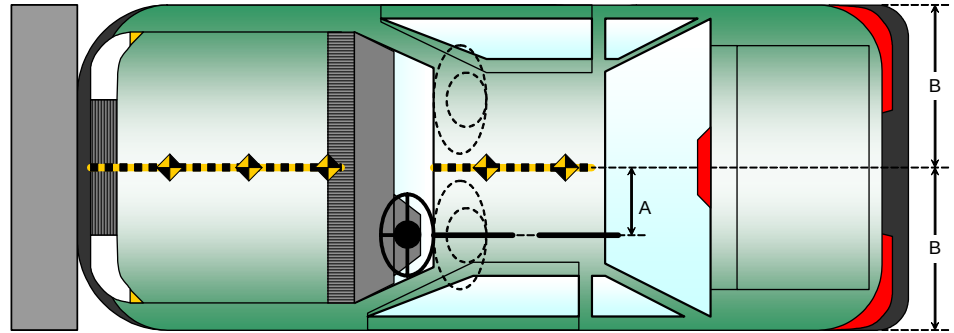
Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

All Dimensions in (mm)	
Item	Value
A	360
B	910
C	2300
D	609
E	2340
F	150
G	1770
H	1420
I	1475
J	1085
K	1085
L	1600
M	1420
N	1600
O	1085
P	1085
Q	1475



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

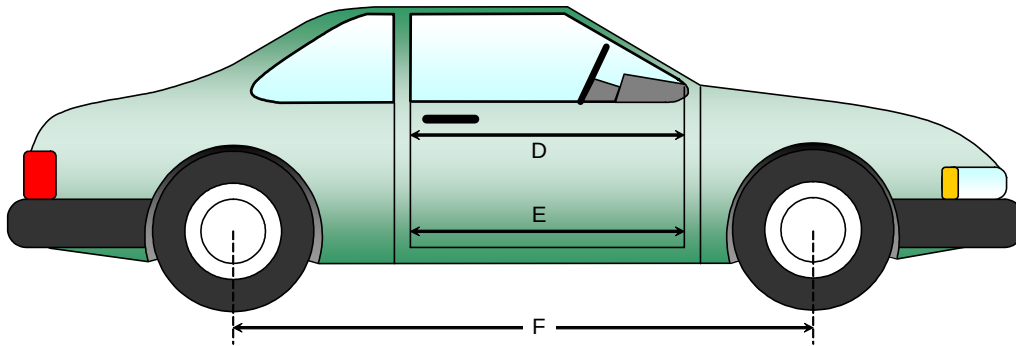
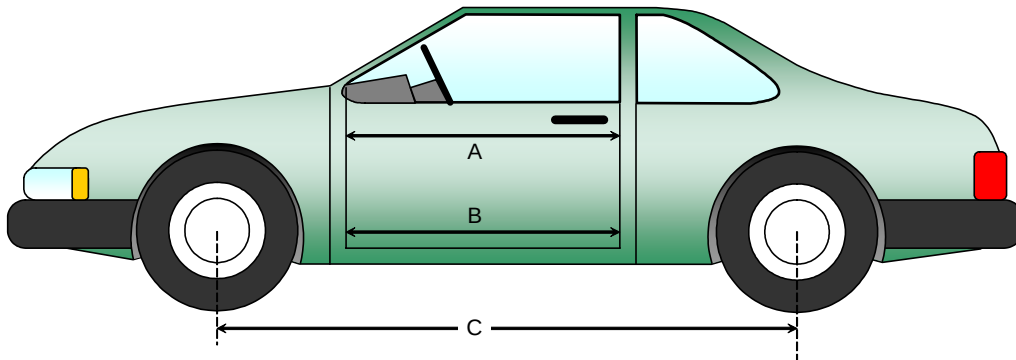
Test Date: 2/25/05

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
A	Left Side Upper	mm	1070	1069	-1
B	Left Side Lower	mm	942	942	0
D	Right Side Upper	mm	1070	1061	-9
E	Right Side Lower	mm	940	937	-3

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
C	Left Side Wheel Base	mm	3100	3005	-95
F	Right Side Wheel Base	mm	3100	2980	-120



DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

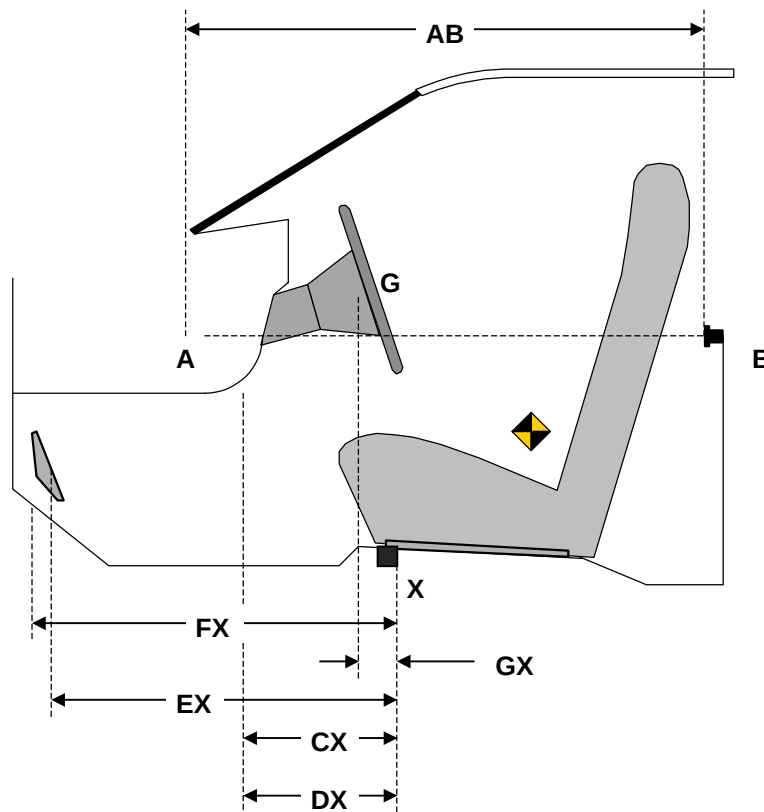
Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

DRIVER COMPARTMENT INTRUSION TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	1070	1069	-1
CX	Left Knee Bolster to X	mm	350	290	-60
DX	Right Knee Bolster to X	mm	360	300	-60
EX	Brake Pedal to X	mm	550	493	-57
FX	Foot Rest to X	mm	570	586	16
GX	Center of Steering Wheel Hub to X	mm	60	70	10

X = Left Front Seat Outboard Anchor Bolt Head



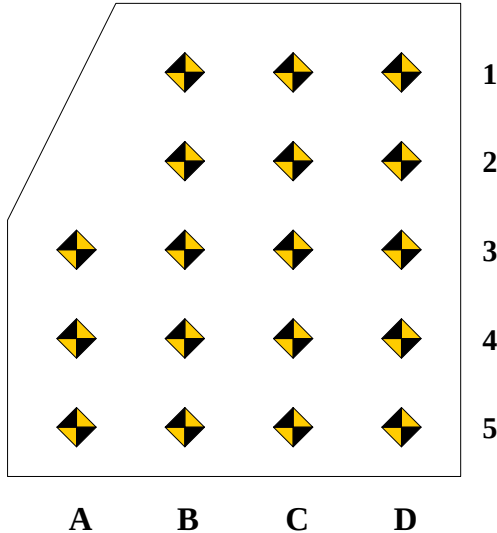
DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05



Measurement reference point for X and Z-axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4 and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		783	802	800		711	705	671		-72	-97	-129
2		707	726	722		650	658	634		-57	-68	-88
3	629	629	632	633	599	591	583	561	-30	-37	-49	-72
4	534	531	538	534	507	498	495	490	-27	-33	-43	-44
5	424	428	433	433	396	391	389	394	-28	-37	-44	-39

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-30	-2	-3		-93	-75	-75		-63	-73	-72
2		35	64	68		-13	16	9		-48	-48	-59
3	100	102	107	107	61	69	81	10	-39	-33	-26	-97
4	103	102	106	107	60	62	61	59	-43	-40	-45	-48
5	90	91	91	94	49	54	52	49	-41	-37	-39	-45

DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

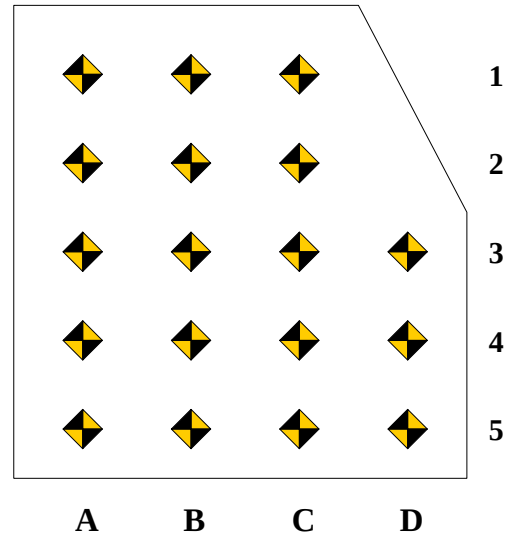
Test Date: 2/25/05

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4 and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	757	765	776		675	685	688		-82	-80	-88	
2	680	691	700		621	637	645		-59	-54	-55	
3	604	610	622	629	579	593	607	618	-25	-17	-15	-11
4	506	513	524	536	494	503	511	522	-12	-10	-13	-14
5	403	411	417	428	392	399	405	420	-11	-12	-12	-8

PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-24	-25	-29		-64	-64	-70		-40	-39	-41	
2	37	38	34		20	17	14		-17	-21	-20	
3	107	107	103	105	113	112	107	104	5	5	4	-1
4	112	110	108	110	99	100	106	104	-13	-10	-2	-6
5	97	95	96	98	92	92	93	98	-5	-3	-3	0

DATA SHEET NO. 18
FIXED BARRIER LOAD CELL LOCATIONS

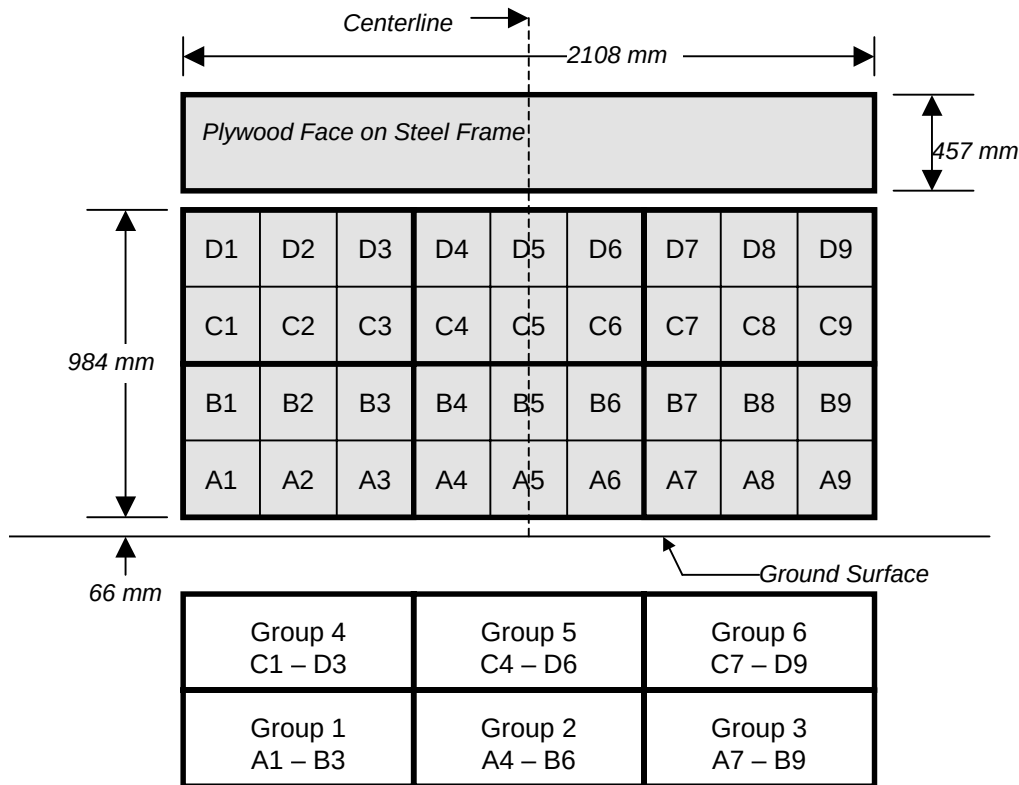
Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

The Data is presented in Appendix C with the following requirements:

- 1.) Data from 36 individual load cells
- 2.) Sum data from 6 groupings shown above (6 cells/group)
- 3.) Total or sum of all 36 individual load cells
- 4.) Sum of all 36 individual load cells vs. vehicle dynamic crush

DATA SHEET NO. 19
POST-TEST AIRBAG DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

POST-TEST AIRBAG DATA

	DRIVER	PASSENGER
No. of vent holes	2	2
Size of vent (mm ²)	493	1264
Total vent area (mm ²)	986	2528

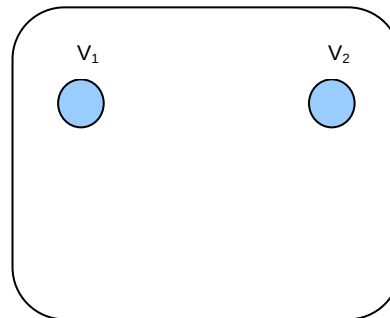
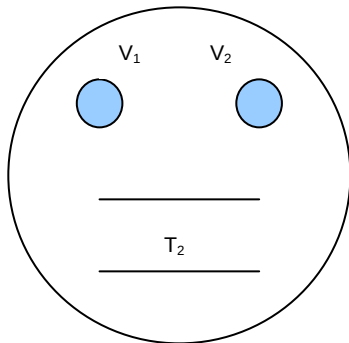
Deflated Airbag Length and Width Dimensions or, If Round, Diameter (mm)		
Length		560
Width		700
Depth or Diameter	560	360

Tethering Information		
Is the airbag tethered?	Yes	No
Record length of tether (mm)	200	

Airbag Manufacturing Information		
Manufacturer	Delphi	*
Part No.	*	GM05119981
Gas Generator	A22F0141194	*

* Manufacturer's, part number and gas generator labels were burned due to airbag deployment.

Sketch the airbag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel:



DATA SHEET NO. 20
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

VEHICLE INFORMATION

VIN: 1GMDV33L35D227625

Wheelbase (mm): 3100

Vehicle Size Category: 5-Door MPV

Test Weight (kg): 2234

ACCELEROMETER DATA

Accelerometer Location: Left Rear Sill

Cal. Procedure/Interval: 6 months / drop test

Integration Algorithm: NHTSA Standard

Linearity: Good

Impact Velocity (km/h): 56.02

Velocity Change (km/h): 62.50

Time of Separation (msec): 90.8

CRUSH PROFILE

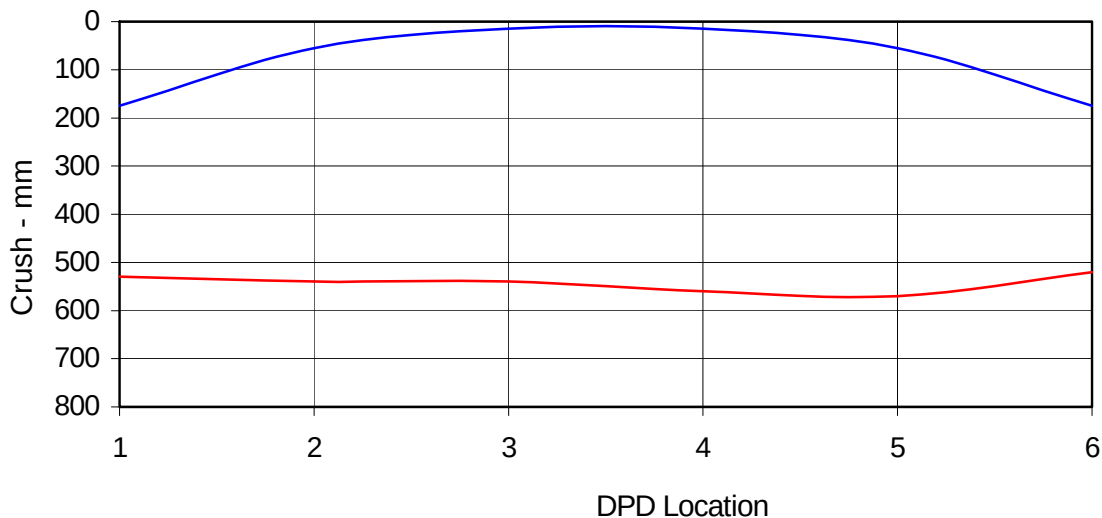
Collision Deformation Classification: 12FDEW6

Maximum Damage: Right Side of the Vehicle's Centerline

Damage Region Length (mm): 1400

Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	175	530	-355
C2	Crush zone 2 on left side	mm	55	540	-485
C3	Crush zone 3 on left side	mm	15	540	-525
C4	Crush zone 4 on right side	mm	15	560	-545
C5	Crush zone 5 on right side	mm	55	570	-515
C6	Crush zone 6 at right side	mm	175	520	-345



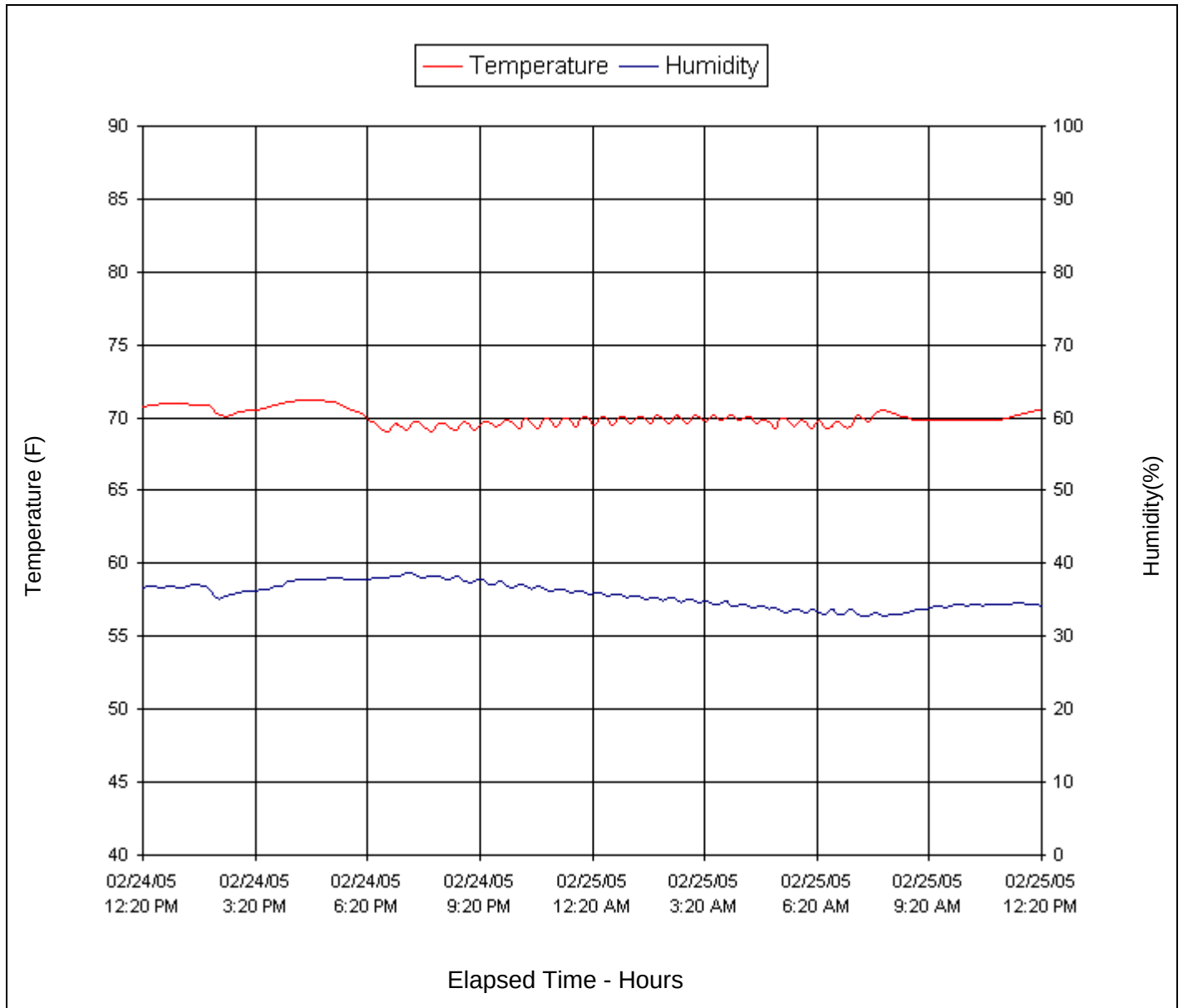
DATA SHEET NO. 21
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05



APPENDIX A
PHOTOGRAPHS

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9	Post-Test Left Side View	A-9
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52	Pre-Test Passenger Side Glove Box	A-52
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55	Post-Test Passenger Side Floor Pan	A-55
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59	Vehicle on Rollover Device (90°)	A-59
60	Vehicle on Rollover Device (180°)	A-60
61	Vehicle on Rollover Device (270°)	A-61
62	Vehicle Impact	A-62

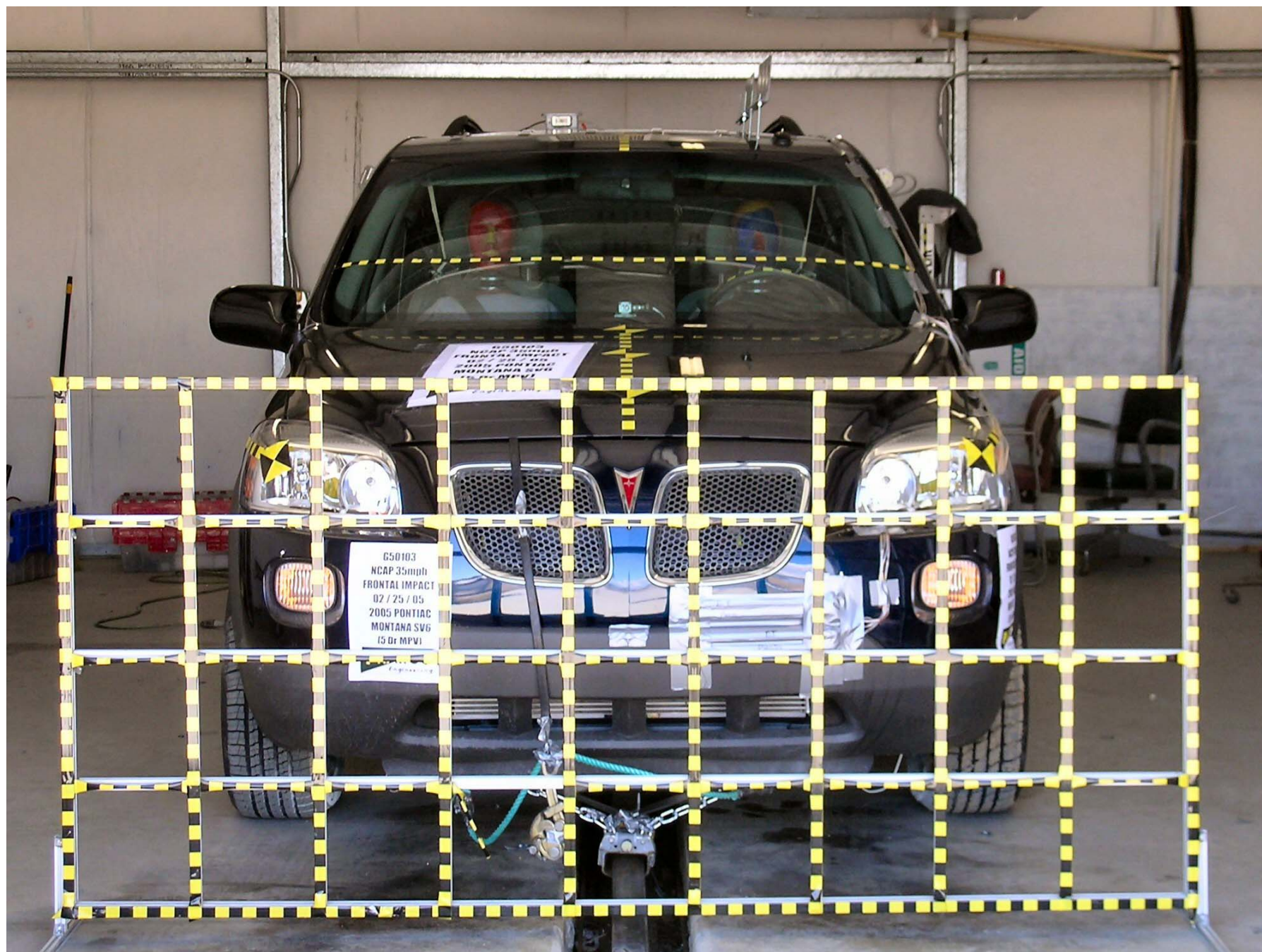


Figure A-1: Load Cell Location



MFD BY GENERAL MOTORS CORP.

02/05

GVWR
2550KG(5622LB)

GAWR FRT
1300KG(2866LB)

GAWR RR
1250KG(2756LB)

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR
VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF
MANUFACTURE SHOWN ABOVE.

1GMDV33L35D227625

TYPE: M.P.V.

MODEL: U12216

UPBG TIRE SIZE SPEED RTG

RIM

COLD TIRE PRESSURE

FRT P225/60R17 S

17X6.5J

240KPA(35PSI)

RR P225/60R17 S

17X6.5J

240KPA(35PSI)

SPA T135/70R16 M

16X4T

420KPA(60PSI)

SEE OWNER'S MANUAL  FOR MORE INFORMATION.

Figure A-2: Manufacturer's Label



TIRE AND LOADING INFORMATION

SEATING CAPACITY | TOTAL 7 | FRONT 2 | CENTER 2 | REAR 3

The combined weight of occupants and cargo should never exceed **594 kg or 1309 lbs.**

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
P225/60R17	FRONT	240 kPa, 35 PSI
P225/60R17	REAR	240 kPa, 35 PSI
T135/70R16	SPARE	420 kPa, 60 PSI

SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION

Figure A-3: Tire Placard



Figure A-4: Right Front $\frac{3}{4}$ View, As Received



Figure A-5: Left Rear $\frac{3}{4}$ View, as Received

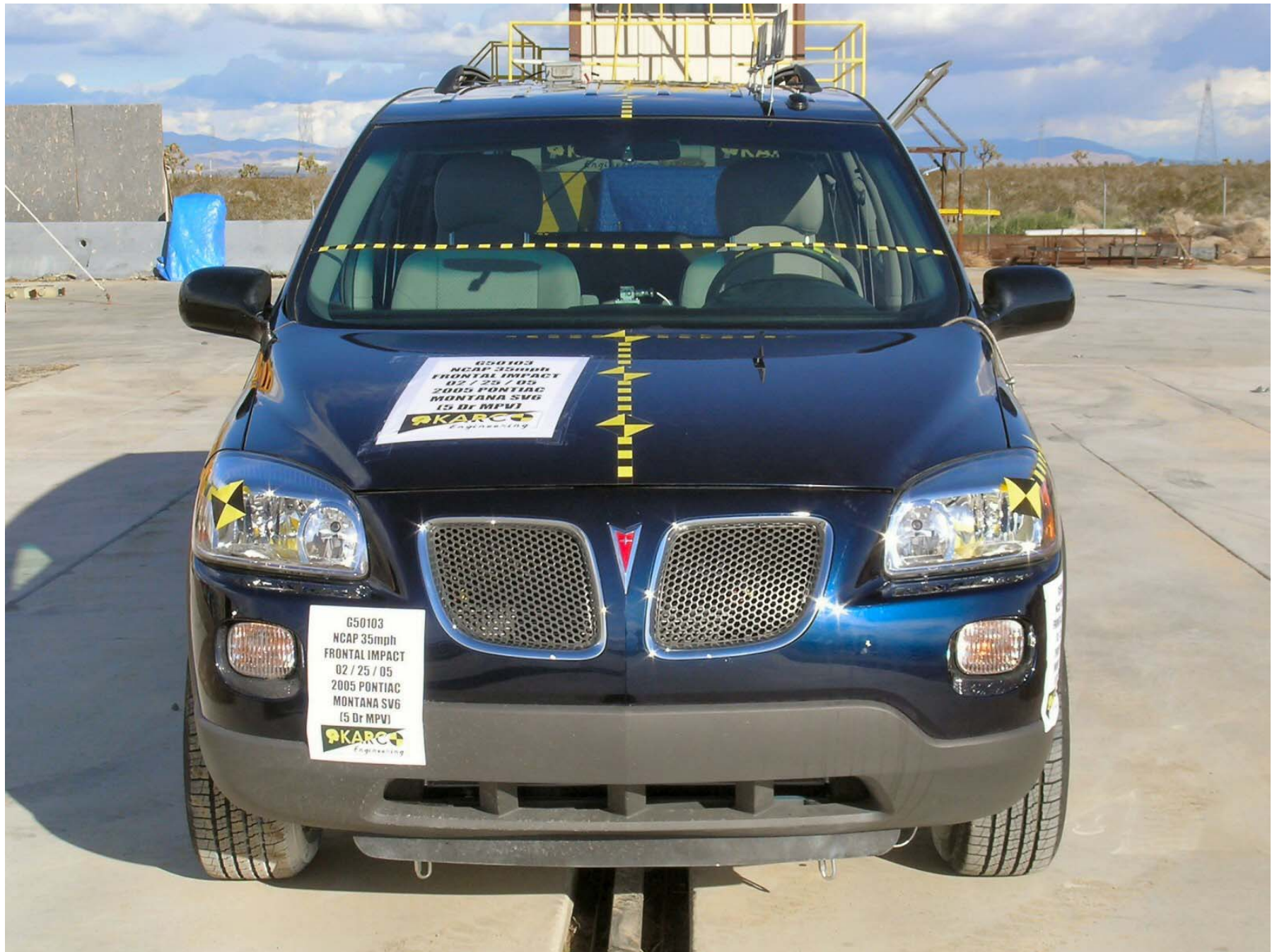


Figure A-6: Pre-Test Front View

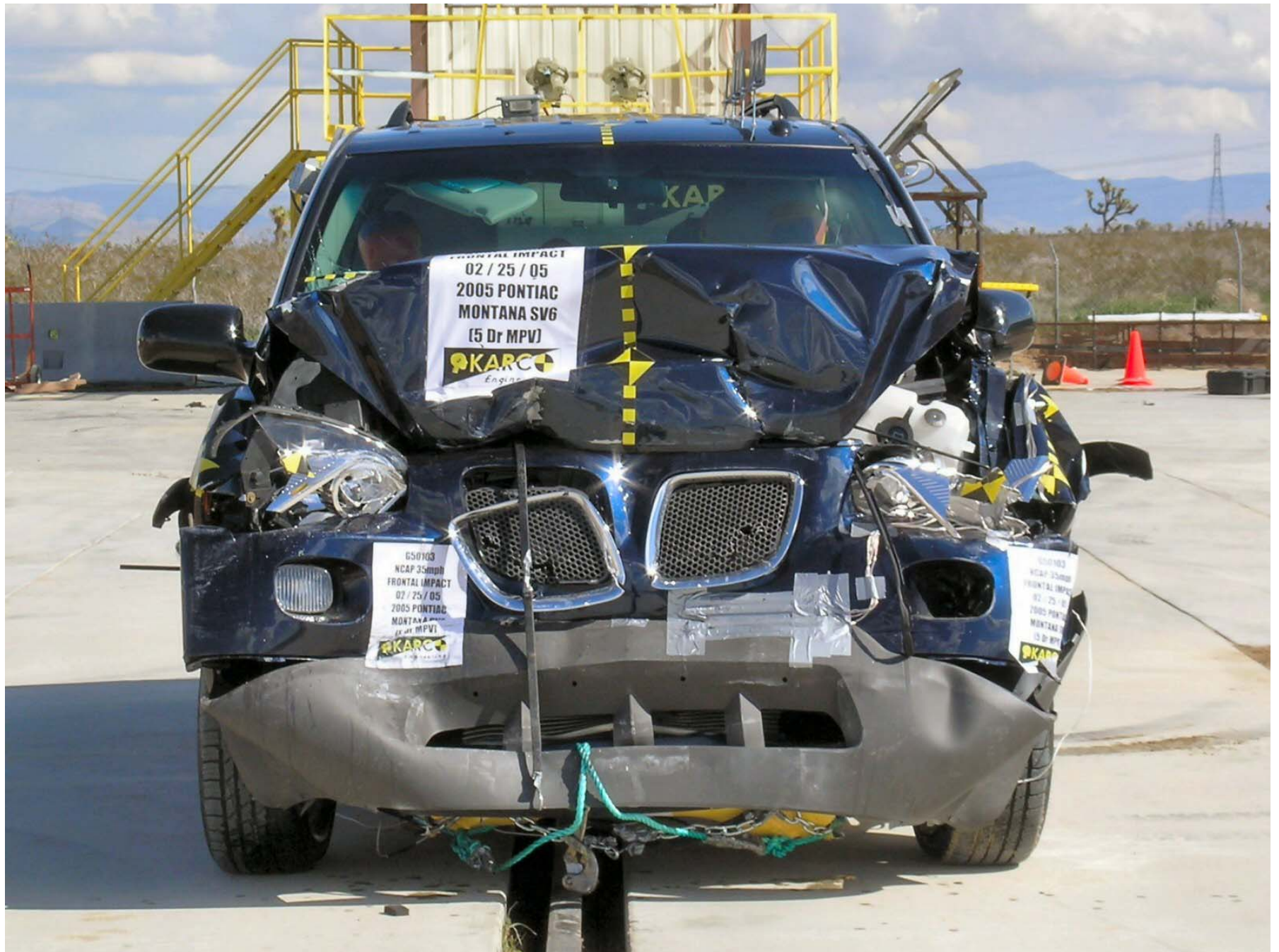


Figure A-7: Post-Test Front View (Vehicle Moved)



Figure A-8: Pre-Test Left Side View



Figure A-9: Post-Test Left Side View



Figure A-10: Pre-Test Right Side View



Figure A-11: Post-Test Right Side View



Figure A-12: Pre-Test Right Front ¾ View

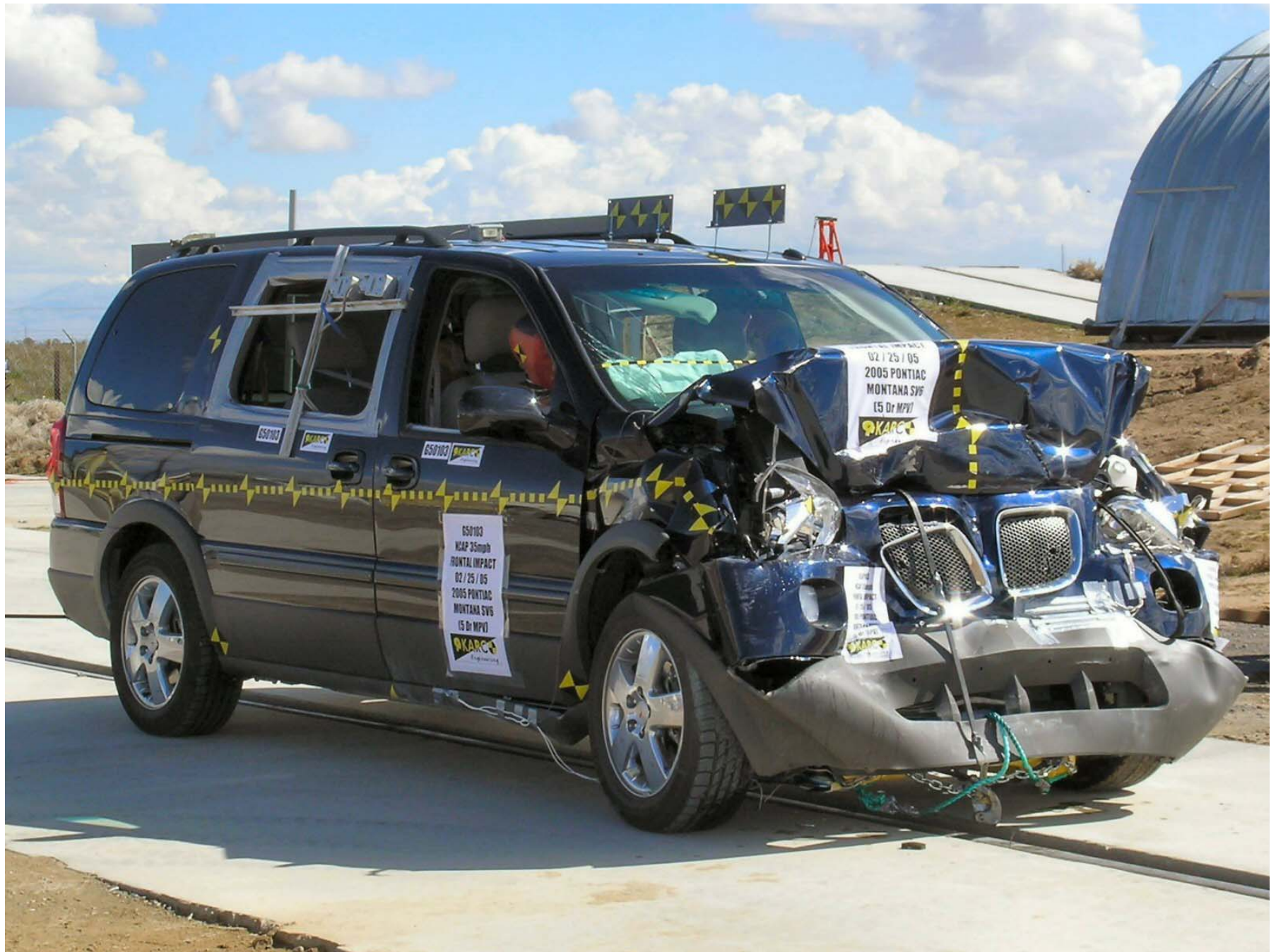


Figure A-13: Post-Test Right Front ¾ View (Vehicle Moved)

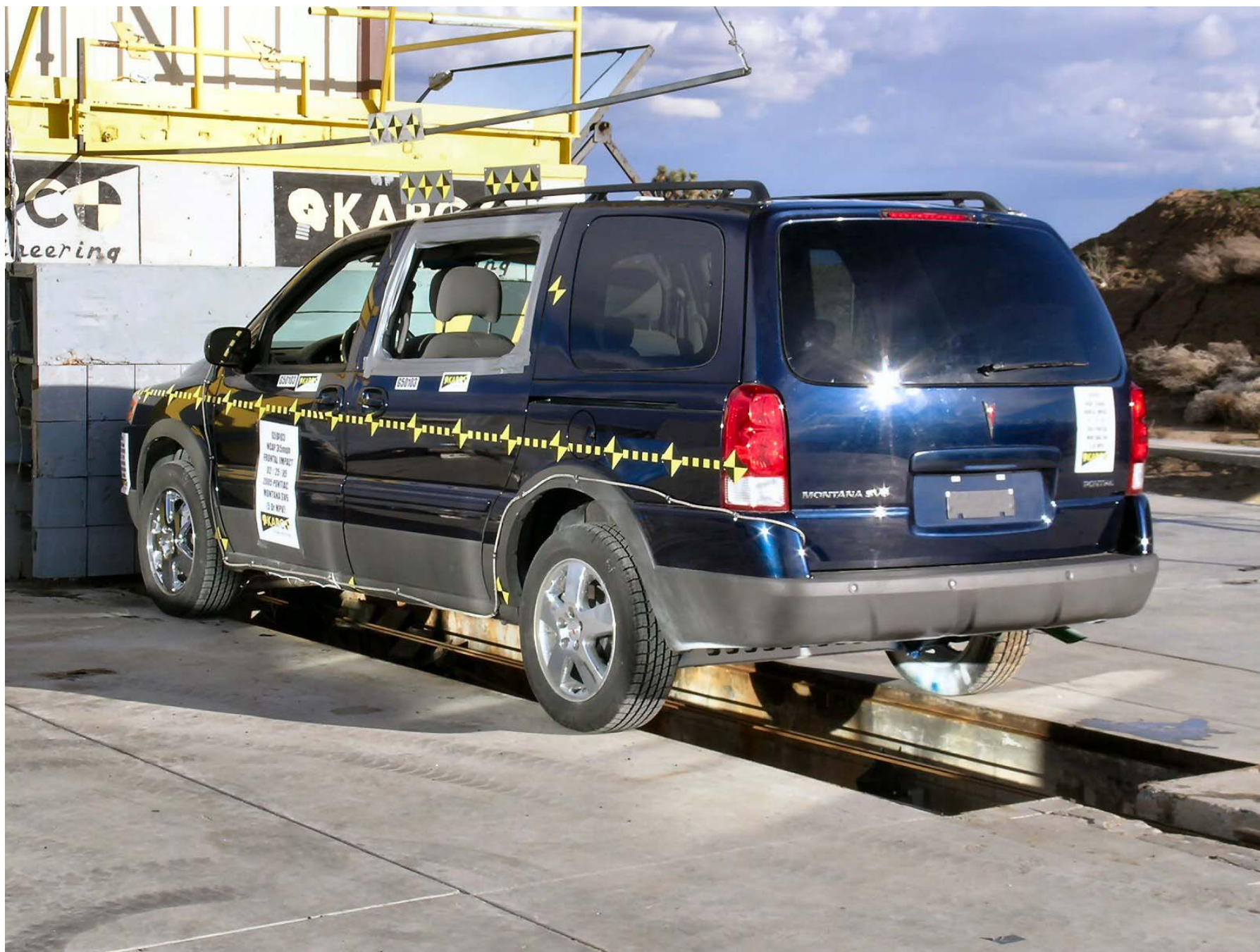


Figure A-14: Pre-Test Left Rear $\frac{3}{4}$ View



Figure A-15: Post-Test Left Rear $\frac{3}{4}$ View



Figure A-16: Post-Test Left Side $\frac{3}{4}$ View of Doors After Impact



Figure A-17: Post-Test Right Side $\frac{3}{4}$ View of Doors After Impact

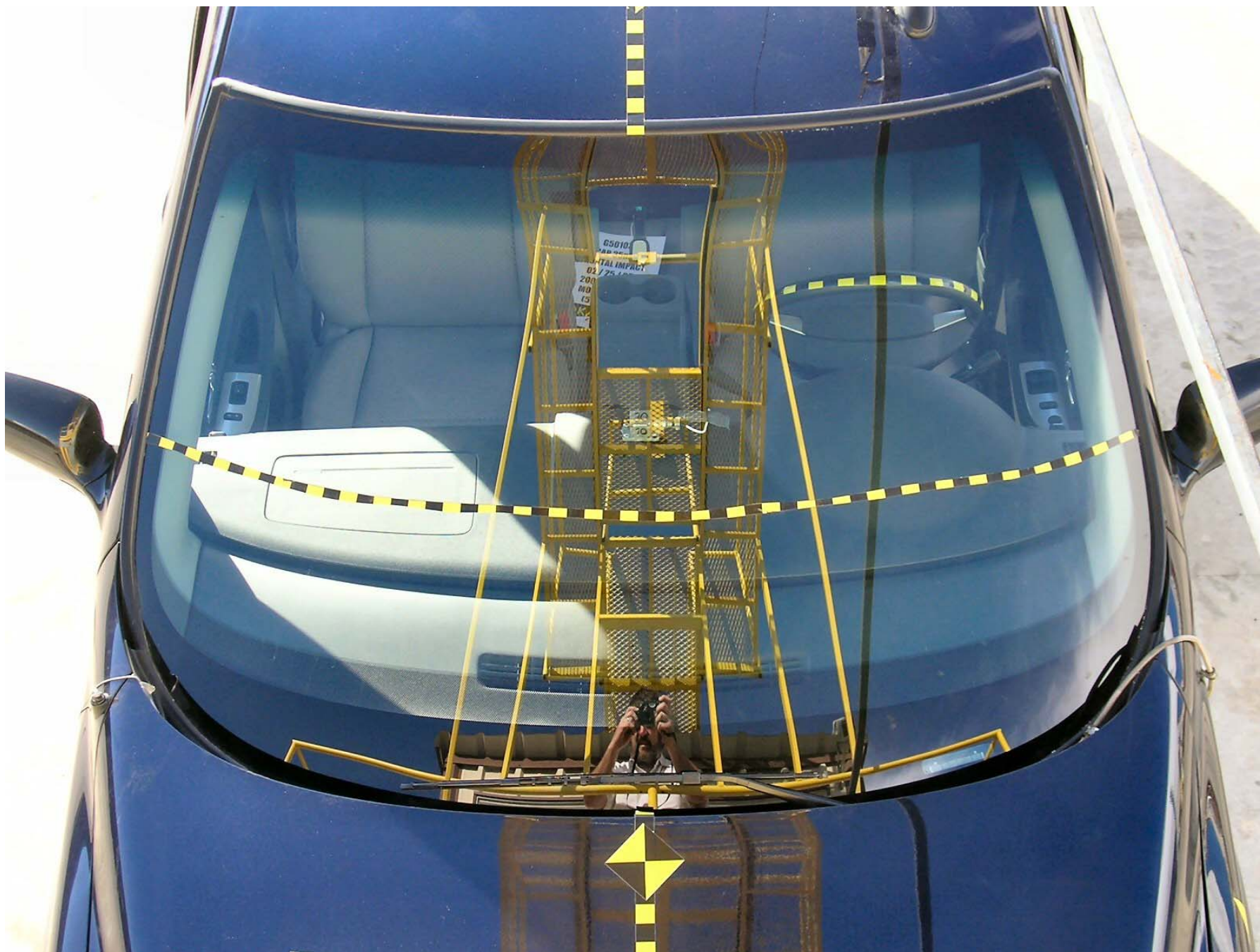


Figure A-18: Pre-Test Windshield



Figure A-19: Post-Test Windshield



Figure A-20: Pre-Test Engine Compartment



Figure A-21: Post-Test Engine Compartment (Vehicle Moved)



Figure A-22: Pre-Test Fuel Cap



Figure A-23: Post-Test Fuel Cap

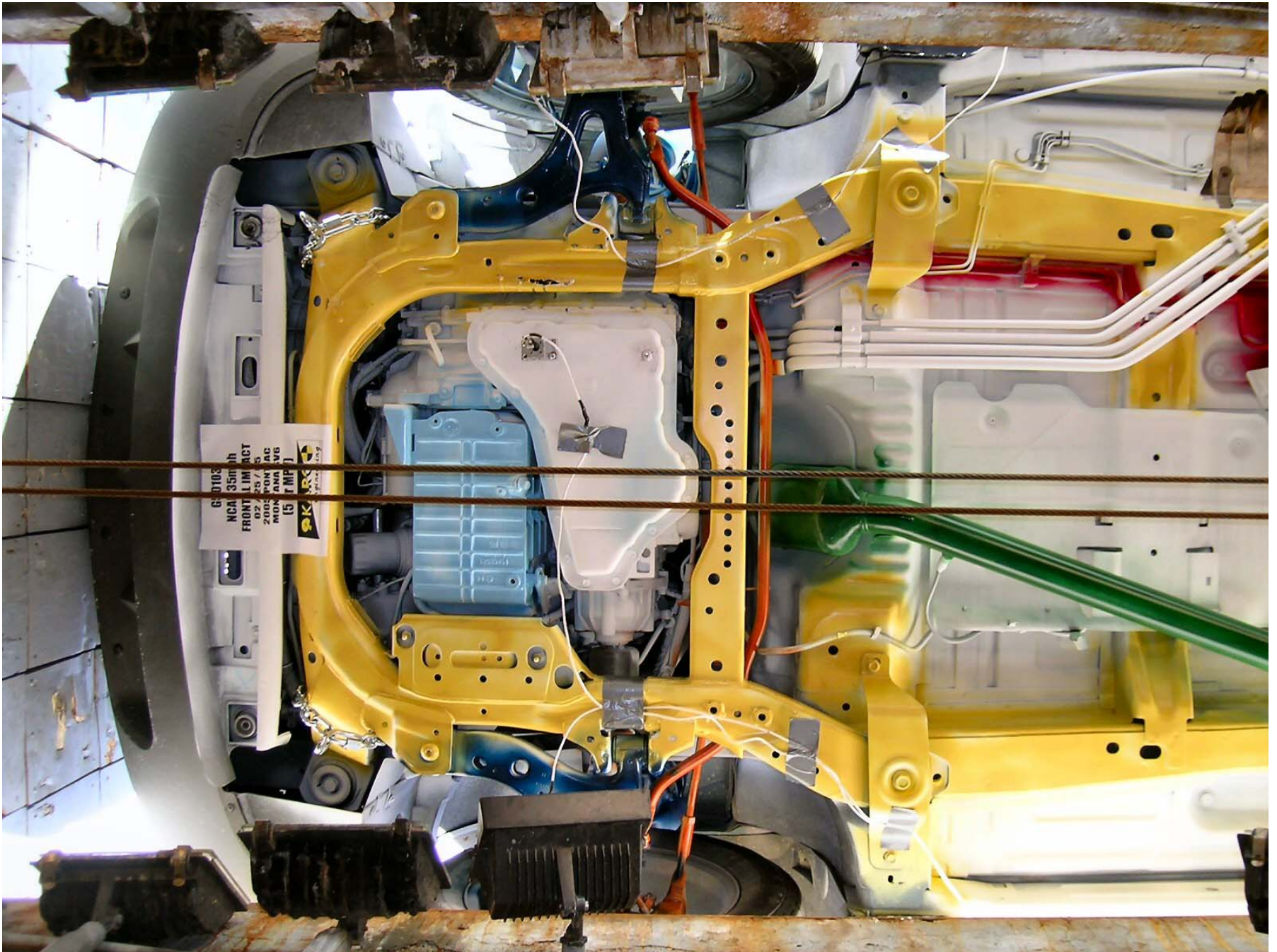


Figure A-24: Pre-Test Front Underbody

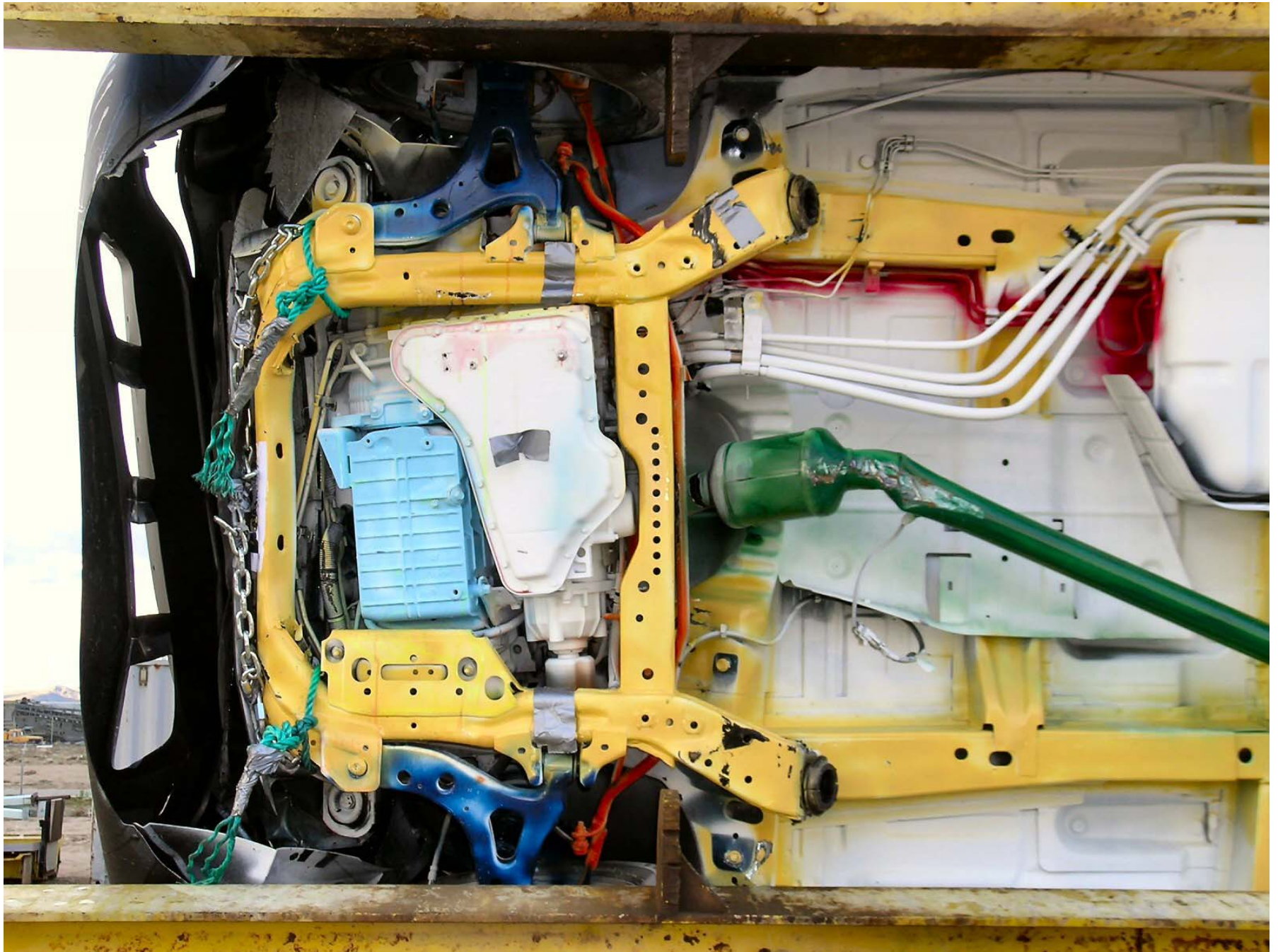


Figure A-25: Post-Test Front Underbody

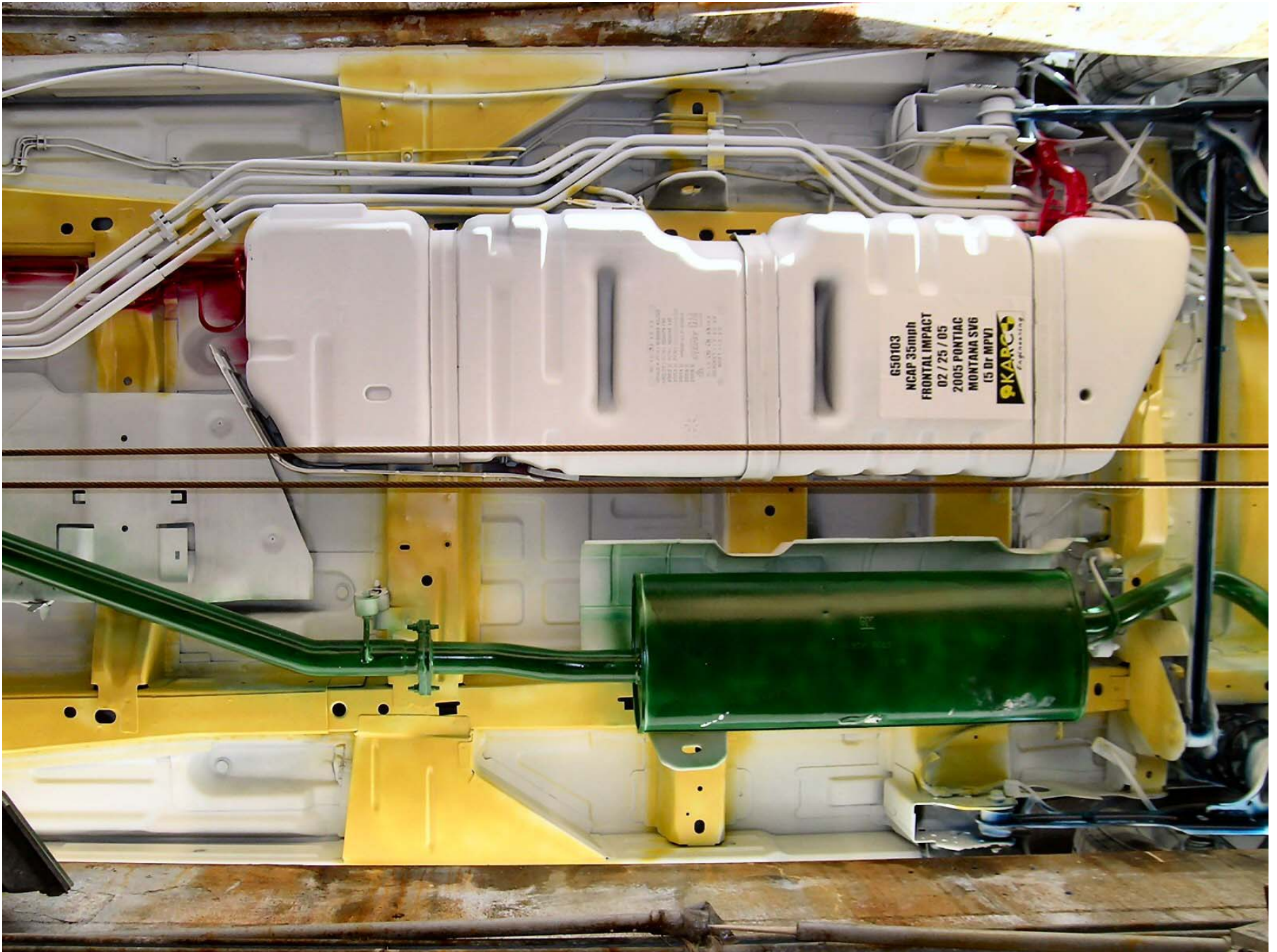


Figure A-26: Pre-Test Mid Underbody



Figure A-27: Post-Test Mid Underbody

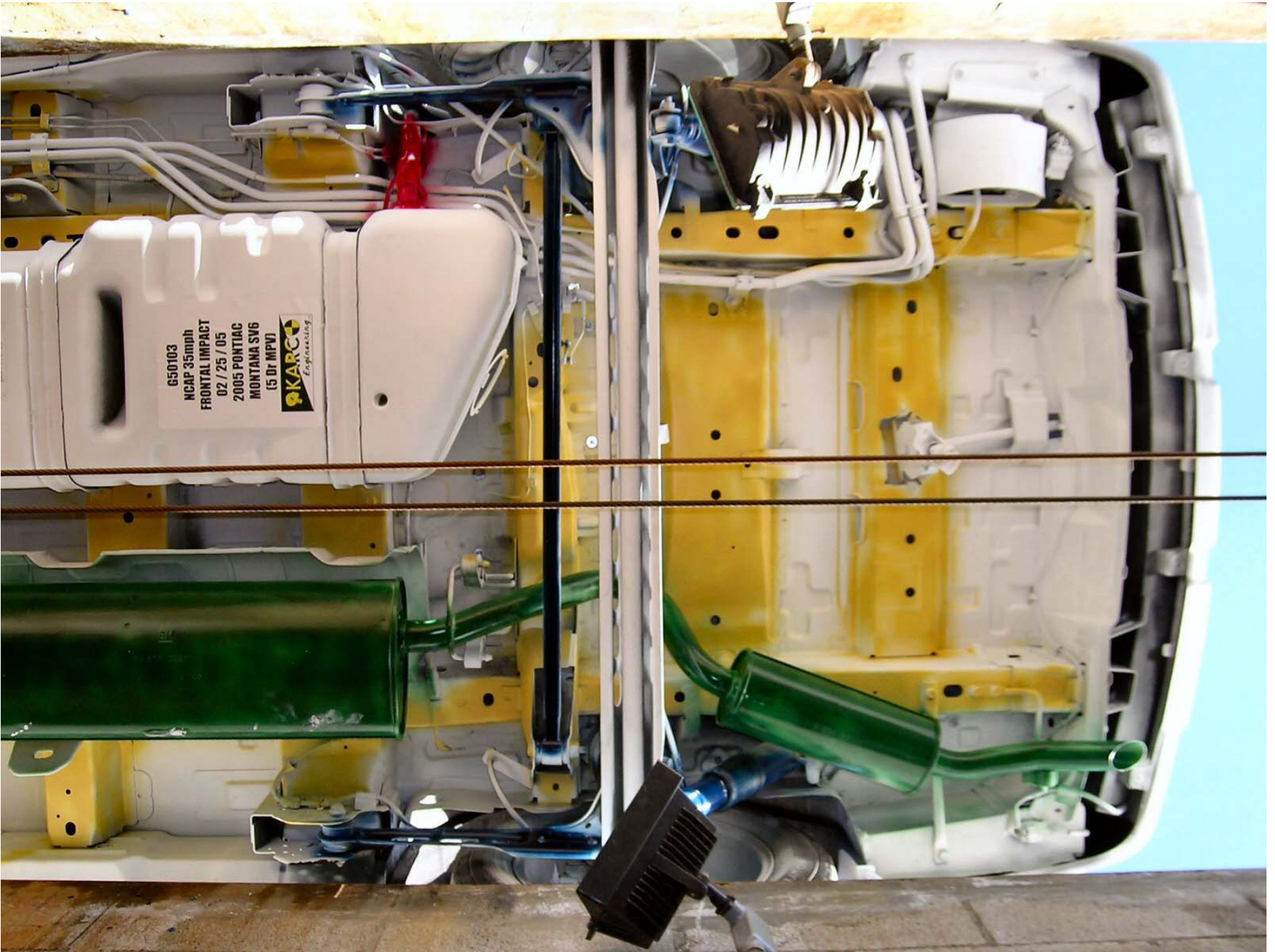


Figure A-28: Pre-Test Rear Underbody

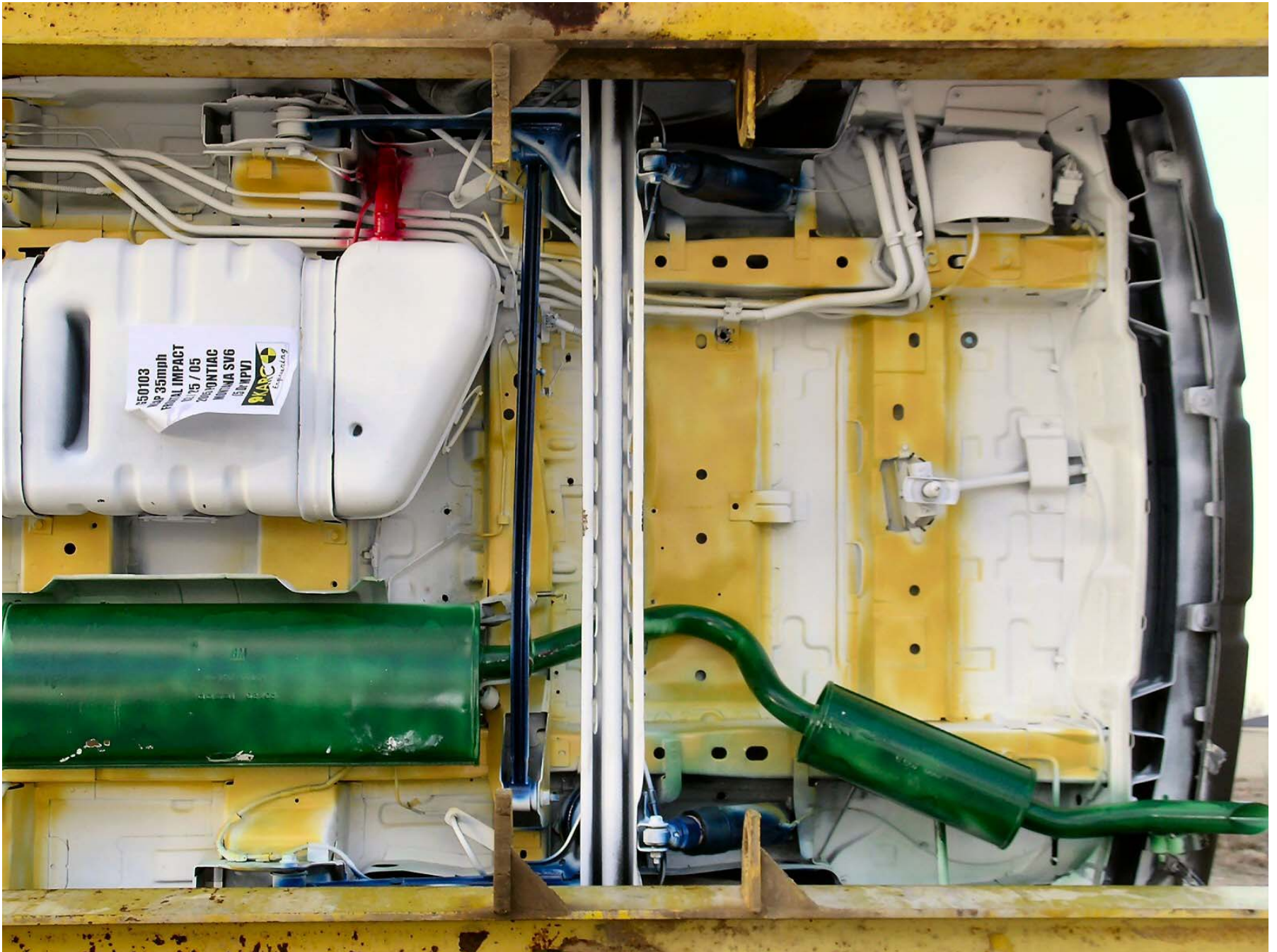


Figure A-29: Post-Test Rear Underbody

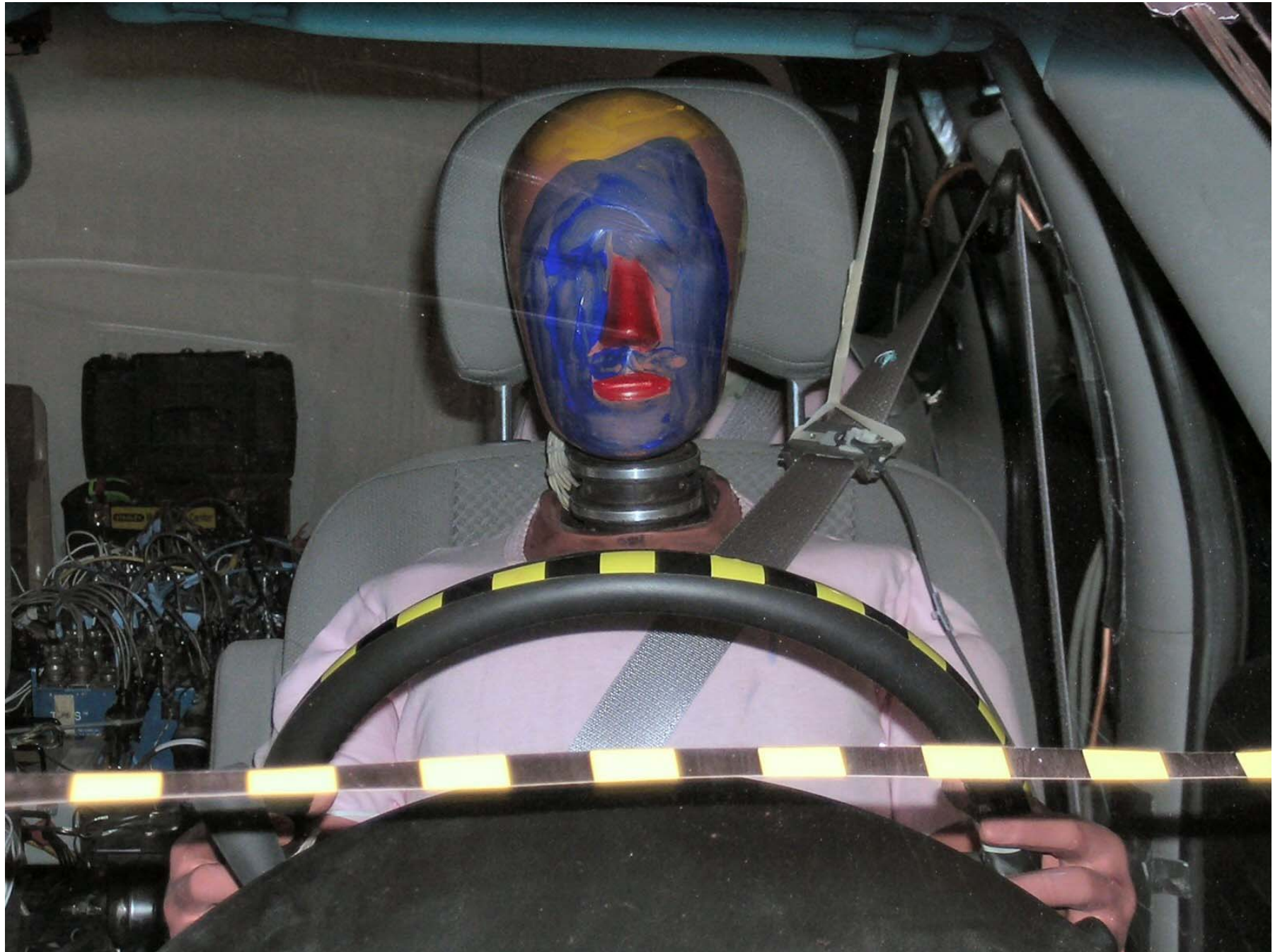


Figure A-30: Pre-Test Driver Dummy Front View (Head Position)



Figure A-31: Post-Test Driver Dummy Front View (Head Position)



Figure A-32: Pre-Test Driver Dummy (Through Window)



Figure A-33: Post-Test Driver Dummy (Through Window)



Figure A-34: Pre-Test Driver Dummy (Door Open)



Figure A-35: Post-Test Driver Dummy (Door Open)



Figure A-36: Pre-Test Driver Dummy Feet



Figure A-37: Post-Test Driver Dummy Feet



Figure A-38: Pre-Test Driver Side Knee Bolster



Figure A-39: Post-Test Driver Side Knee Bolster



Figure A-40: Pre-Test Driver Side Floor Pan



Figure A-41: Post-Test Driver Side Floor Pan



Figure A-42: Post-Test Driver Dummy Head

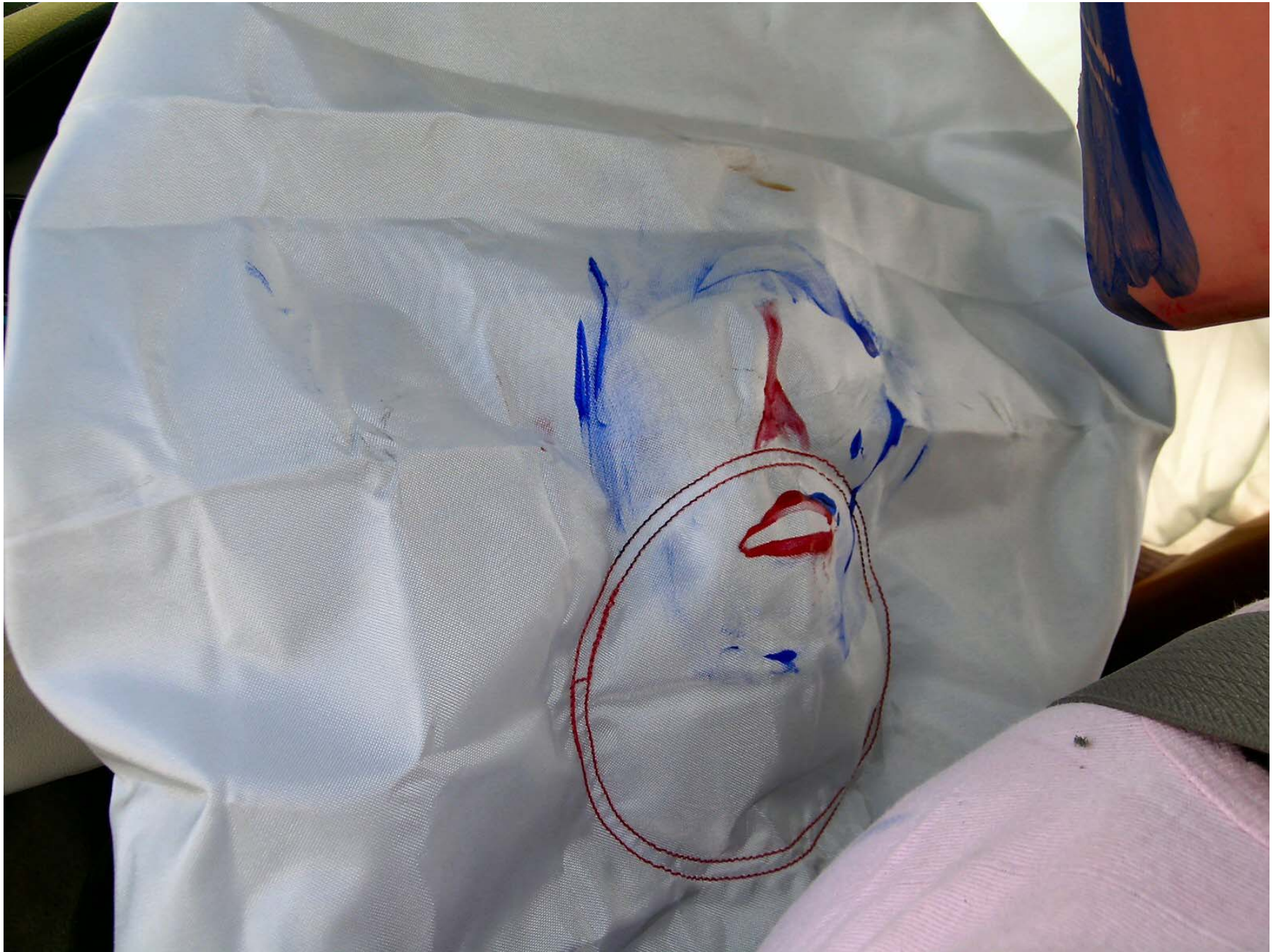


Figure A-43: Post-Test Driver Dummy Airbag Contact



Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)



Figure A-45: Post-Test Passenger Dummy Front View (Head Position)



Figure A-46: Pre-Test Passenger Dummy (Through Window)



Figure A-47: Post-Test Passenger Dummy (Through Window)



Figure A-48: Pre-Test Passenger Dummy (Door Open)



Figure A-49: Post-Test Passenger Dummy (Door Open)

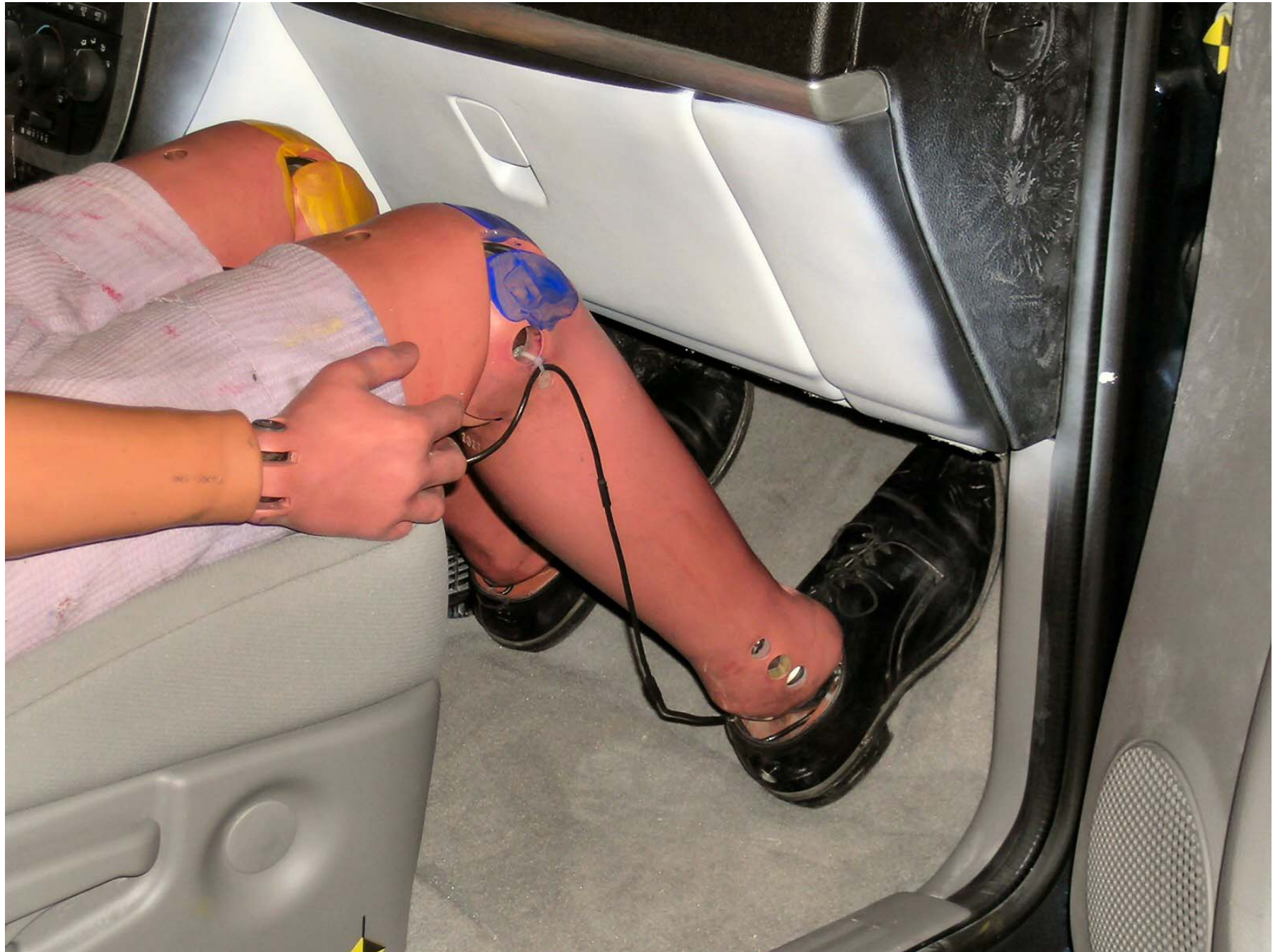


Figure A-50: Pre-Test Passenger Dummy Feet



Figure A-51: Post-Test Passenger Dummy Feet



Figure A-52: Pre-Test Passenger Side Glove Box



Figure A-53: Post-Test Passenger Side Glove Box



Figure A-54: Pre-Test Passenger Side Floor Pan



Figure A-55: Post-Test Passenger Side Floor Pan



Figure A-56: Post-Test Passenger Dummy Head



Figure A-57: Post-Test Passenger Dummy Airbag Contact



Figure A-58: Vehicle on Rollover Device (0°)



Figure A-59: Vehicle on Rollover Device (90°)



Figure A-60: Vehicle on Rollover Device (180°)



Figure A-61: Vehicle on Rollover Device (270°)



Figure A-62: Vehicle Impact

APPENDIX B

DATA PLOTS

LIST OF DATA PLOTS

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B-1	Driver Head Primary X
	Driver Head Primary Y
	Driver Head Primary Z
	Driver Head Resultant Primary
B-2	Driver Head Primary X Velocity
	Driver Head Primary X Displacement
B-3	Driver Head Redundant X
	Driver Head Redundant Y
	Driver Head Redundant Z
	Driver Head Resultant Redundant
B-4	Driver Head Redundant X Velocity
	Driver Head Redundant X Displacement
B-5	Driver Upper Neck Force X
	Driver Upper Neck Force Y
	Driver Upper Neck Force Z
	Driver Upper Neck Force Resultant
B-6	Driver Upper Neck Moment X
	Driver Upper Neck Moment Y
	Driver Upper Neck Moment Z
	Driver Upper Neck Moment Resultant
B-7	Driver Chest Primary X
	Driver Chest Primary Y
	Driver Chest Primary Z
	Driver Chest Resultant Primary
B-8	Driver Chest Primary X Velocity
	Driver Chest Primary X Displacement
B-9	Driver Chest Redundant X
	Driver Chest Redundant Y
	Driver Chest Redundant Z
	Driver Chest Resultant Redundant
B-10	Driver Chest Redundant X Velocity
	Driver Chest Redundant X Displacement
B-11	Driver Chest Deflection

LIST OF DATA PLOTS...(CONTINUED)

Data Plot	Page
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	Driver Pelvis Y
	Driver Pelvis Z
	Driver Pelvis Resultant
B-13	Driver Pelvis X Velocity
	Driver Pelvis X Displacement
B-14	Driver Left Femur Force
	Driver Right Femur Force
B-15	Driver Left Upper Tibia Moment X
	Driver Left Upper Tibia Moment Y
	Driver Right Upper Tibia Moment X
	Driver Right Upper Tibia Moment Y
B-16	Driver Left Lower Tibia Moment X
	Driver Left Lower Tibia Moment Y
	Driver Left Lower Tibia Force Z
B-17	Driver Right Lower Tibia Moment X
	Driver Right Lower Tibia Moment Y
	Driver Right Lower Tibia Force Z
B-18	Driver Left Foot Aft X
	Driver Left Foot Aft Z
	Driver Left Foot Fore Z
B-19	Driver Right Foot Aft X
	Driver Right Foot Aft Z
	Driver Right Foot Fore Z
B-20	Driver Lap Belt Force
	Driver Shoulder Belt Force
	Driver Shoulder Belt Pullout
	Driver Shoulder Belt Elongation
B-21	Passenger Head Primary X
	Passenger Head Primary Y
	Passenger Head Primary Z
	Passenger Head Resultant Primary
B-22	Passenger Head Primary X Velocity
	Passenger Head Primary X Displacement

LIST OF DATA PLOTS...(CONTINUED)

Data Plot	Page
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	Passenger Head Redundant Y
	Passenger Head Redundant Z
	Passenger Head Resultant Redundant
B-24	Passenger Head Redundant X Velocity
	Passenger Head Redundant X Displacement
B-25	Passenger Upper Neck Force X
	Passenger Upper Neck Force Y
	Passenger Upper Neck Force Z
	Passenger Upper Neck Force Resultant
B-26	Passenger Upper Neck Moment X
	Passenger Upper Neck Moment Y
	Passenger Upper Neck Moment Z
	Passenger Upper Neck Moment Resultant
B-27	Passenger Chest Primary X
	Passenger Chest Primary Y
	Passenger Chest Primary Z
	Passenger Chest Resultant Primary
B-28	Passenger Chest Primary X Velocity
	Passenger Chest Primary X Displacement
B-29	Passenger Chest Redundant X
	Passenger Chest Redundant Y
	Passenger Chest Redundant Z
	Passenger Chest Resultant Redundant
B-30	Passenger Chest Redundant X Velocity
	Passenger Chest Redundant X Displacement
B-31	Passenger Chest Deflection
B-32	Passenger Pelvis X
	Passenger Pelvis Y
	Passenger Pelvis Z
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	Passenger Pelvis X Displacement

LIST OF DATA PLOTS...(CONTINUED)

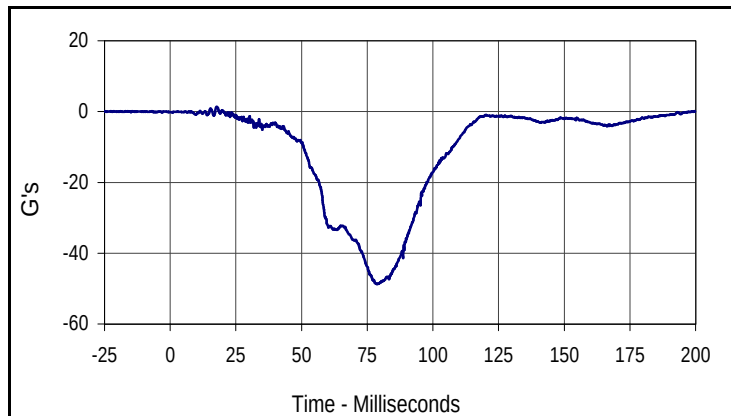
Data Plot		Page
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LIST OF DATA PLOTS...(CONTINUED)

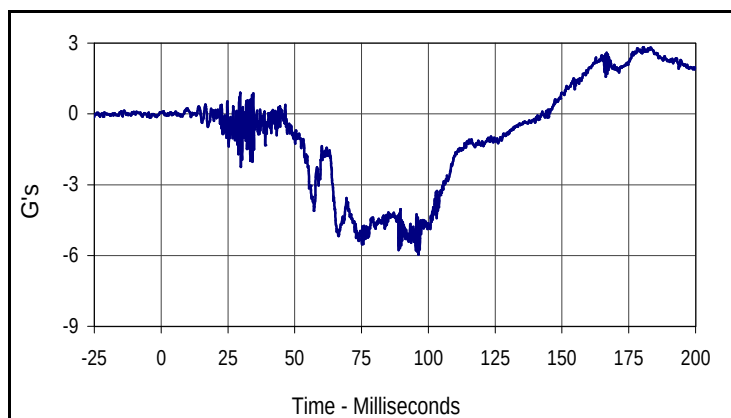
Data Plot		Page
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	Vehicle Right Rear Z Displacement	B-49

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
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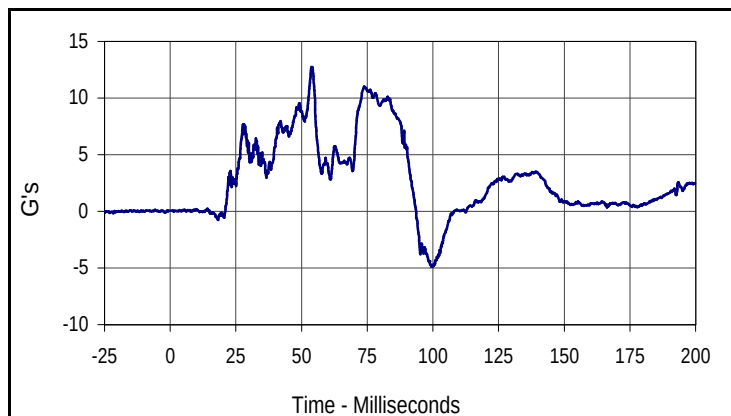
Test Date: 2/25/05
 NHTSA No.: G50103



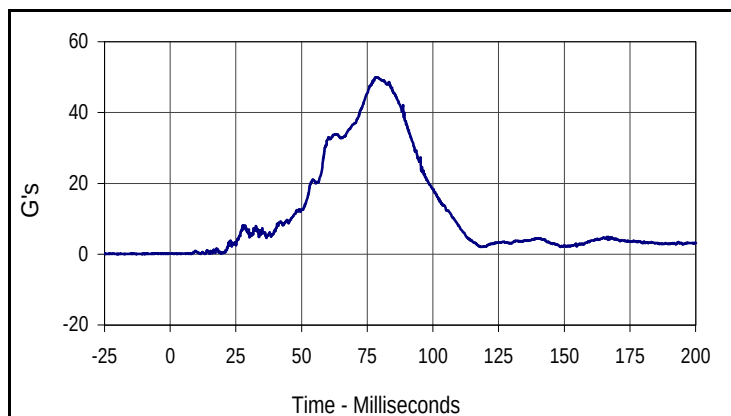
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
1.4	17.7	-48.7	78.9



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.8	180.6	-6.0	96.3



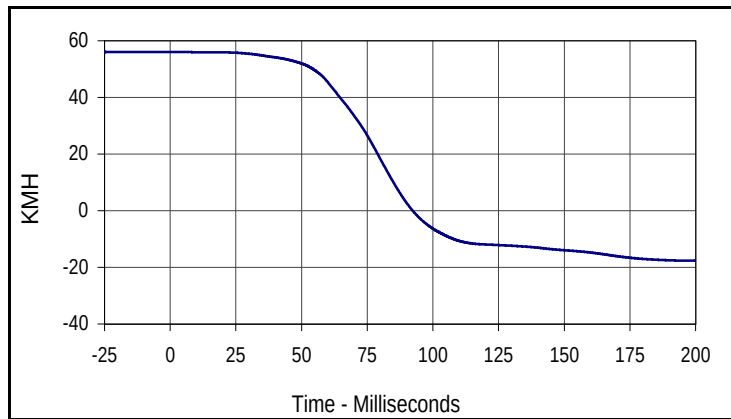
Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
12.7	53.8	-4.9	99.5



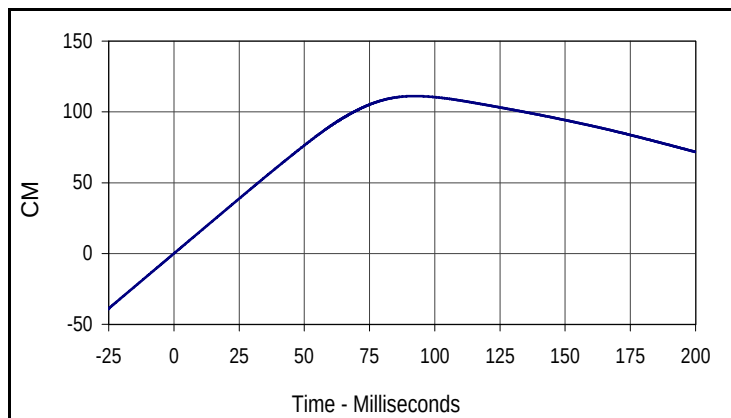
Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
50.0	78.4	0.0	11.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



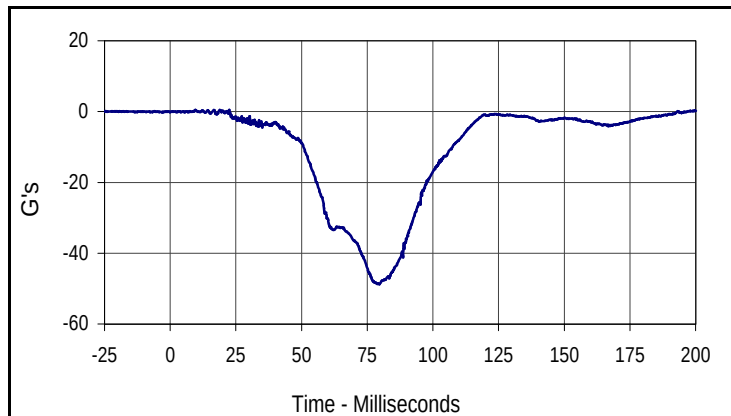
Curve Description			
Driver Head Primary X Velocity			
CURNO	Type	SAE Class	Units
001	IN1	180	KMH
Max	Time	Min	Time
56.0	0.0	-17.6	199.1



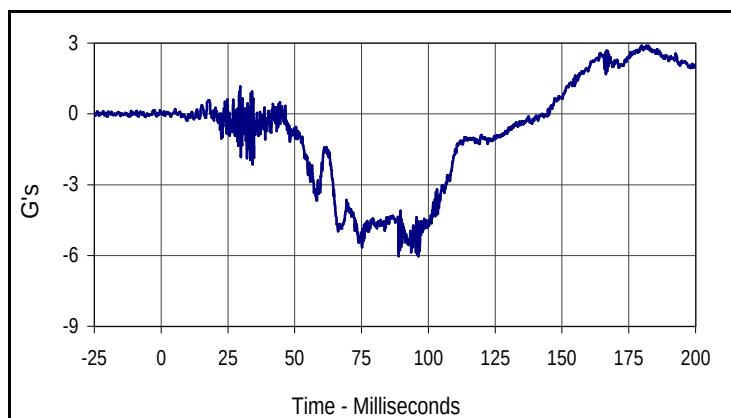
Curve Description			
Driver Head Primary X Displacement			
CURNO	Type	SAE Class	Units
001	IN2	180	CM
Max	Time	Min	Time
111.2	92.3	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

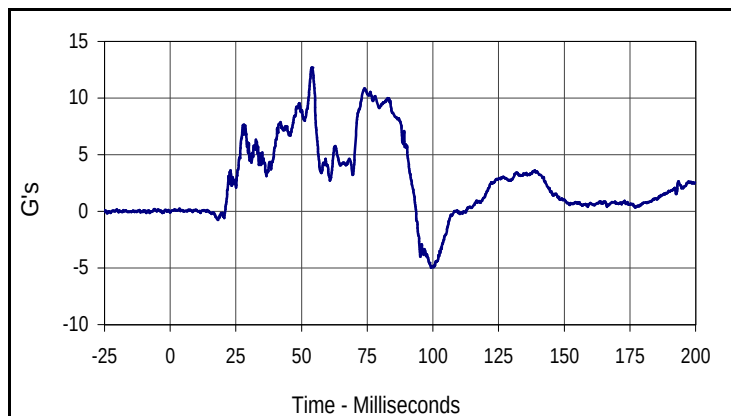
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 NHTSA No.: G50103



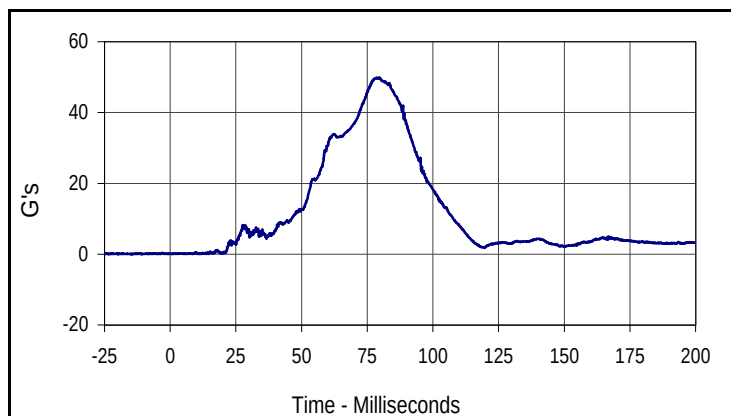
Curve Description			
Driver Head Redundant X			
CURNO	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
0.5	22.5	-48.8	79.6



Curve Description			
Driver Head Redundant Y			
CURNO	Type	SAE Class	Units
005	FIL	1000	G's
Max	Time	Min	Time
2.9	181.5	-6.0	88.9



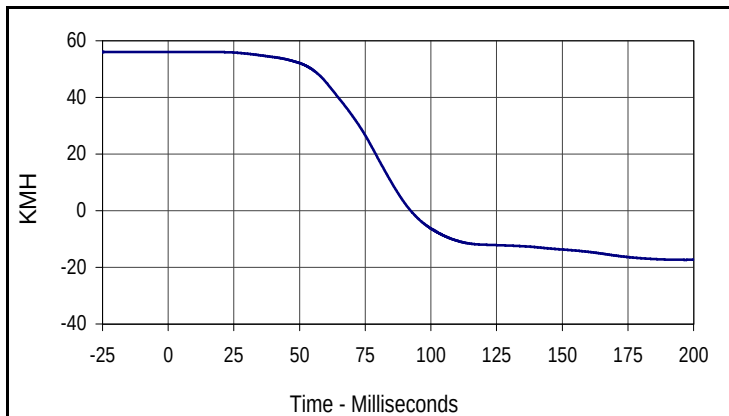
Curve Description			
Driver Head Redundant Z			
CURNO	Type	SAE Class	Units
006	FIL	1000	G's
Max	Time	Min	Time
12.7	53.8	-5.0	99.4



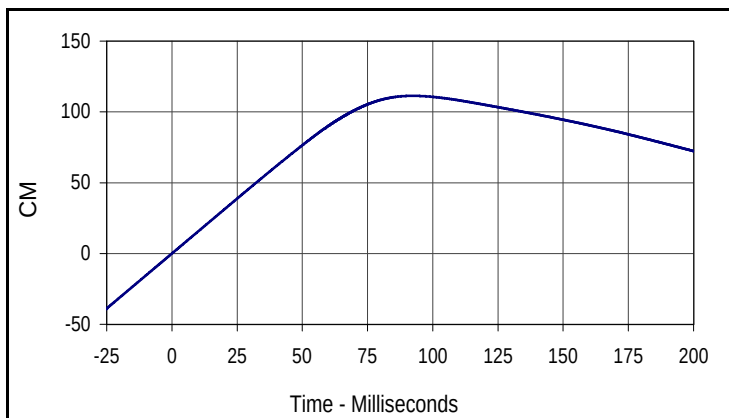
Curve Description			
Driver Head Resultant Redundant			
CURNO	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
49.8	79.6	0.0	0.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



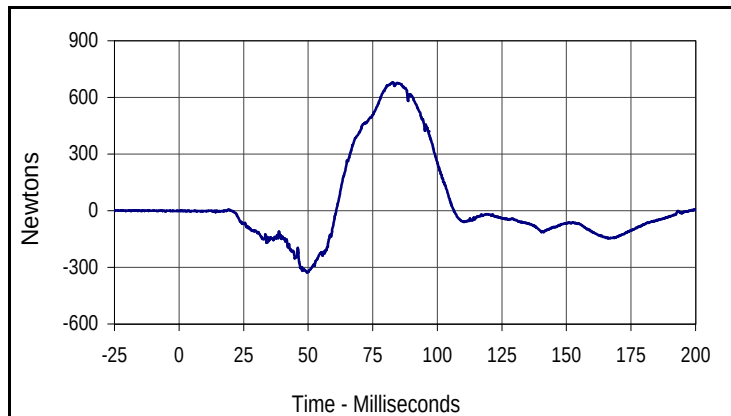
Curve Description			
Driver Head Redundant X Velocity			
CURNO	Type	SAE Class	Units
004	IN1	180	KMH
Max	Time	Min	Time
56.0	0.0	-17.3	196.8



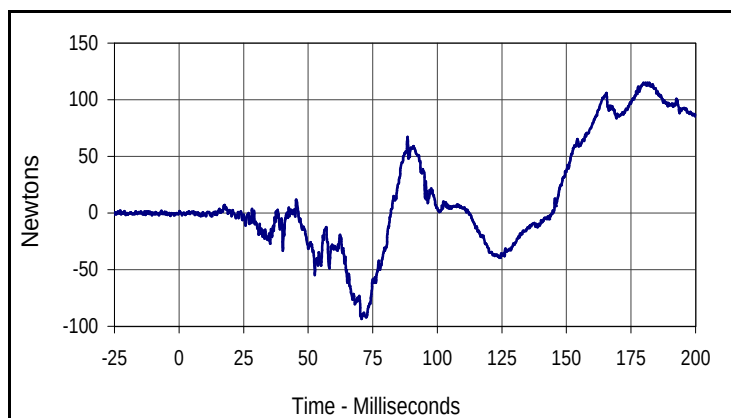
Curve Description			
Driver Head Redundant X Displacement			
CURNO	Type	SAE Class	Units
004	IN2	180	CM
Max	Time	Min	Time
111.4	92.3	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

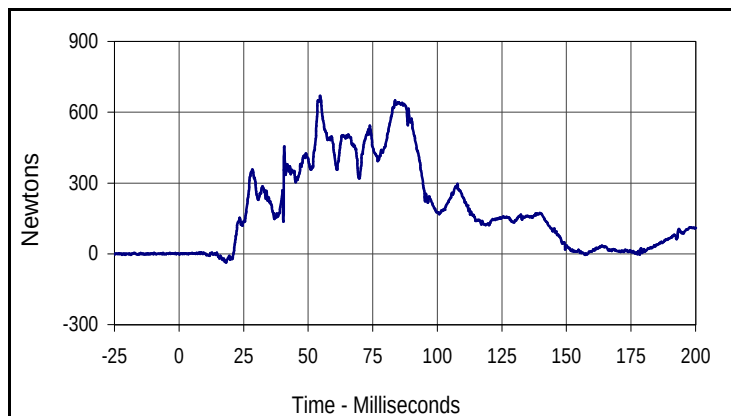
Test Date: 2/25/05
 NHTSA No.: G50103



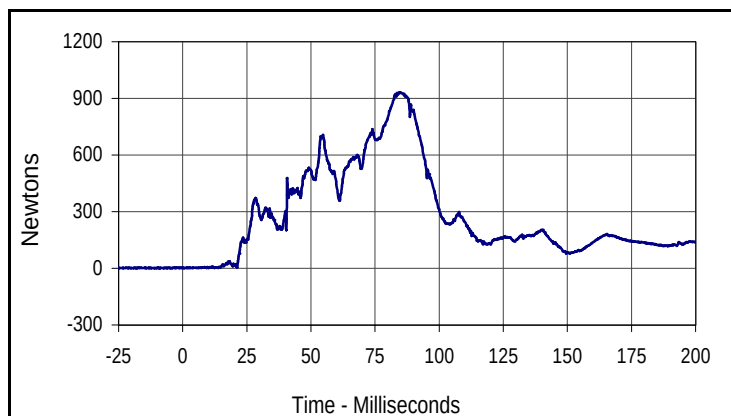
Curve Description			
Driver Upper Neck Force X			
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
679.6	82.7	-326.7	49.6



Curve Description			
Driver Upper Neck Force Y			
CURNO	Type	SAE Class	Units
008	FIL	1000	Newtons
Max	Time	Min	Time
115.1	179.9	-93.5	70.7



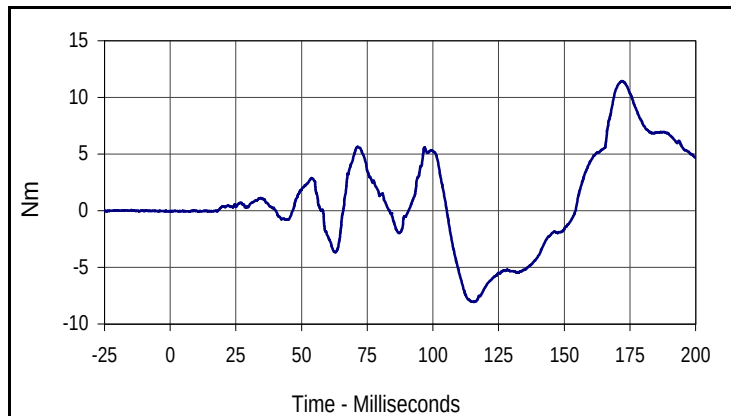
Curve Description			
Driver Upper Neck Force Z			
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
669.0	54.7	-36.4	18.3



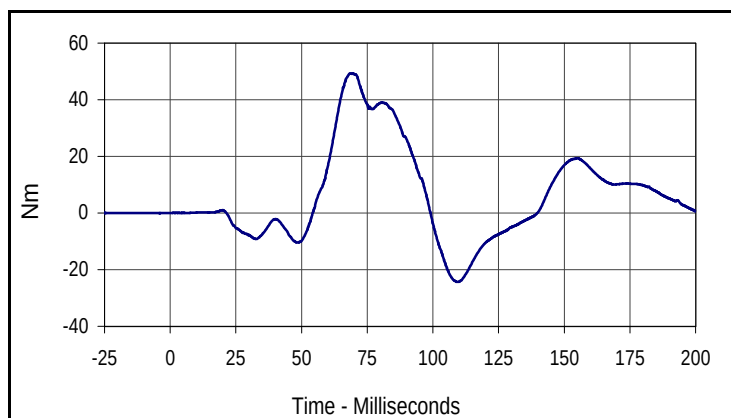
Curve Description			
Driver Upper Neck Force Res.			
CURNO	Type	SAE Class	Units
007	RES	1000	Newtons
Max	Time	Min	Time
932.2	84.7	0.7	0.5

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

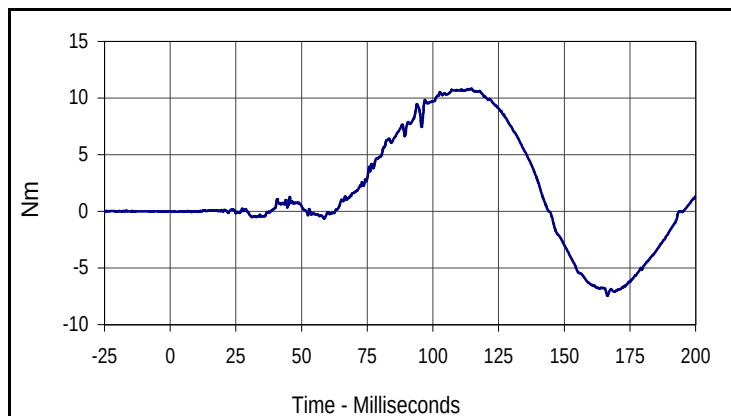
Test Date: 2/25/05
 NHTSA No.: G50103



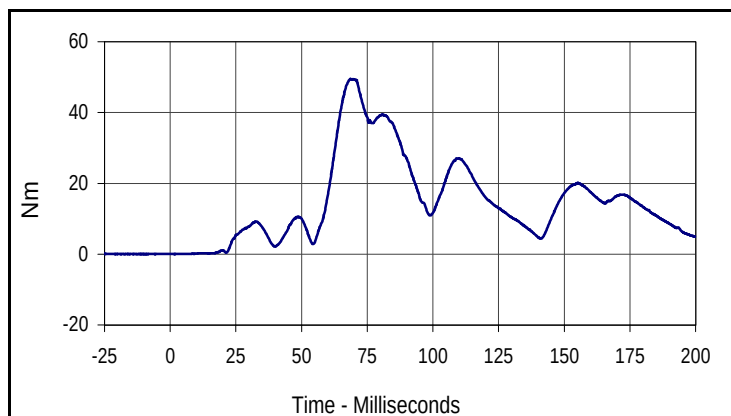
Curve Description			
Driver Upper Neck Moment X			
CURNO	Type	SAE Class	Units
010	FIL	600	Nm
Max	Time	Min	Time
11.4	171.9	-8.0	115.6



Curve Description			
Driver Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
011	FIL	600	Nm
Max	Time	Min	Time
49.3	68.6	-24.3	109.2



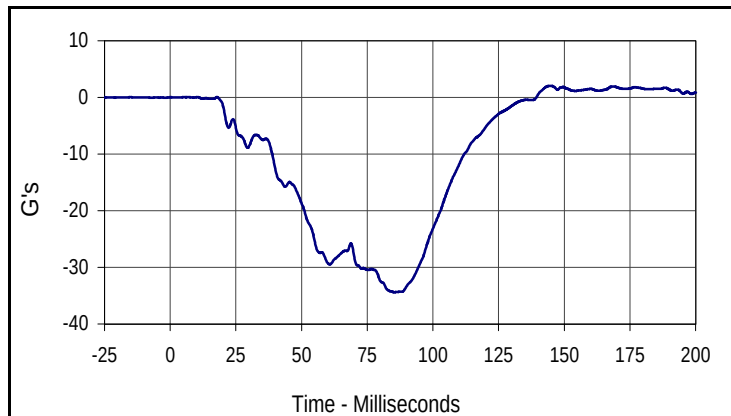
Curve Description			
Driver Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
10.8	114.6	-7.5	166.4



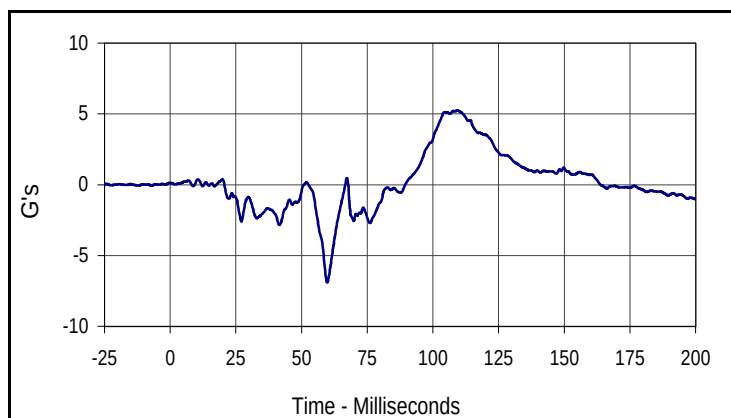
Curve Description			
Driver Upper Neck Moment Res.			
CURNO	Type	SAE Class	Units
010	RES	600	Nm
Max	Time	Min	Time
49.5	68.6	0.0	1.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

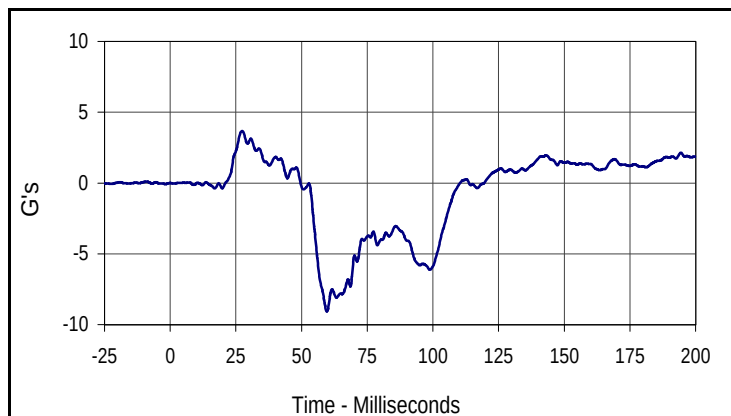
Test Date: 2/25/05
 NHTSA No.: G50103



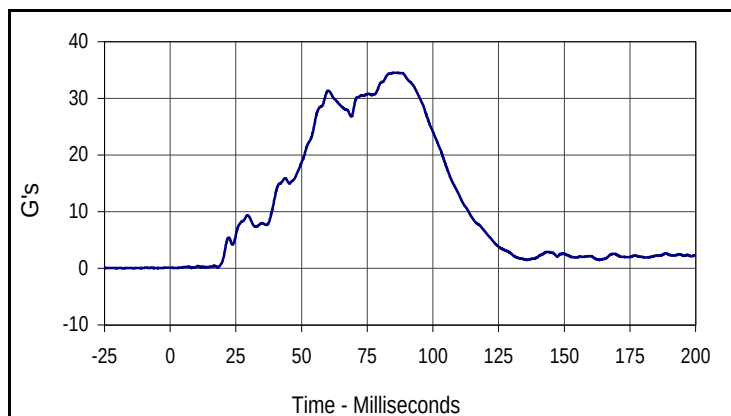
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.0	144.5	-34.4	85.3



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
5.2	109.4	-6.9	59.8



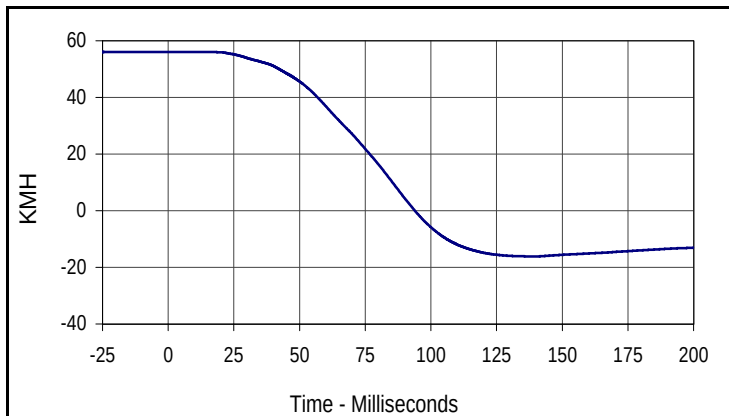
Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
3.7	27.3	-9.1	59.6



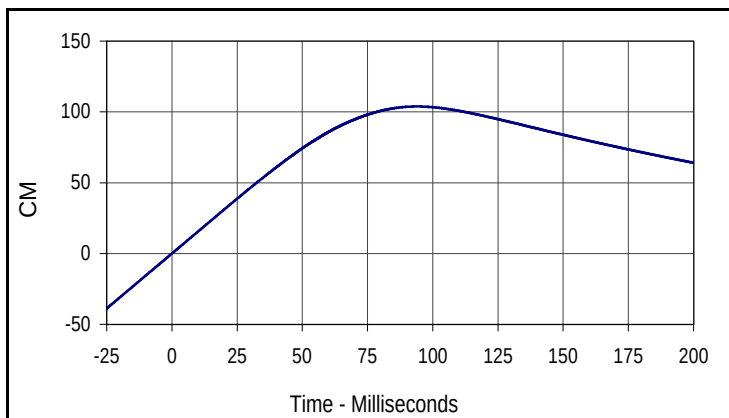
Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
34.5	85.2	0.0	2.1

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



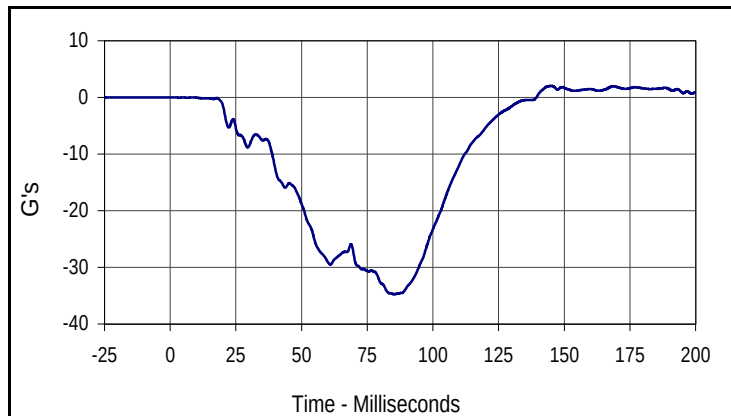
Curve Description			
Driver Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
013	IN1	180	KMH
Max	Time	Min	Time
56.0	10.9	-16.2	139.4



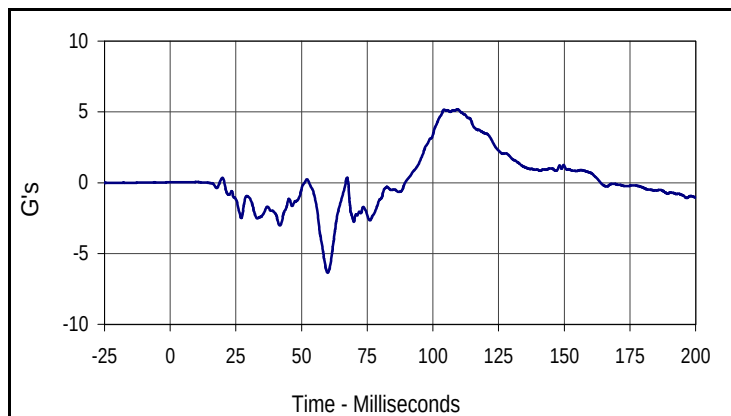
Curve Description			
Driver Chest Primary X Displacement			
CURNO	Type	SAE Class	Units
013	IN2	180	CM
Max	Time	Min	Time
103.8	93.9	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

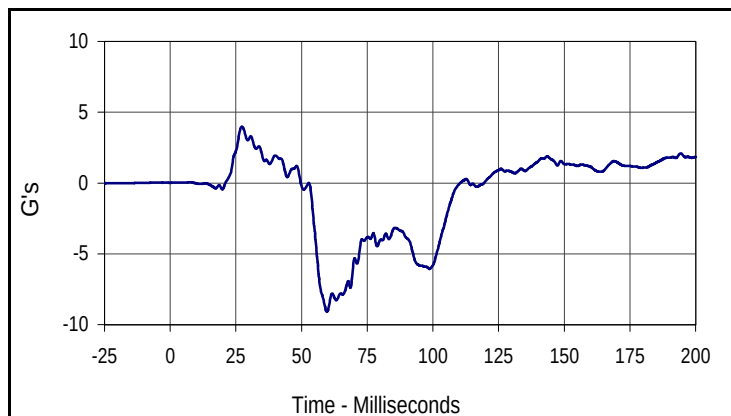
Test Date: 2/25/05
 NHTSA No.: G50103



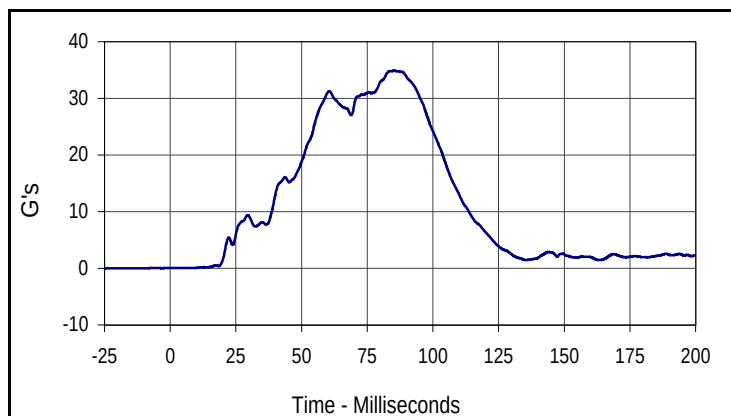
Curve Description			
Driver Chest Redundant X			
CURNO	Type	SAE Class	Units
016	FIL	180	G's
Max	Time	Min	Time
2.0	145.0	-34.8	85.2



Curve Description			
Driver Chest Redundant Y			
CURNO	Type	SAE Class	Units
017	FIL	180	G's
Max	Time	Min	Time
5.2	109.3	-6.4	59.9



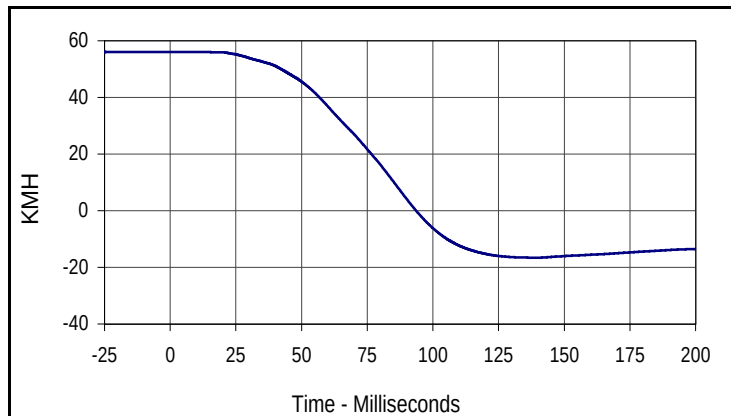
Curve Description			
Driver Chest Redundant Z			
CURNO	Type	SAE Class	Units
018	FIL	180	G's
Max	Time	Min	Time
4.0	27.3	-9.1	59.6



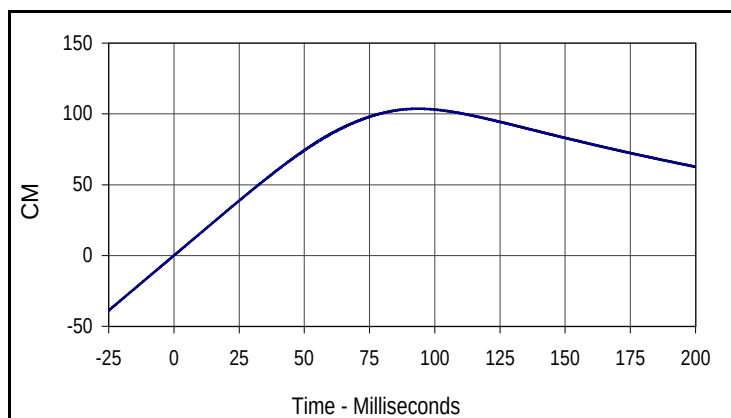
Curve Description			
Driver Chest Resultant Redundant			
CURNO	Type	SAE Class	Units
016	RES	180	G's
Max	Time	Min	Time
34.9	85.2	0.0	9.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

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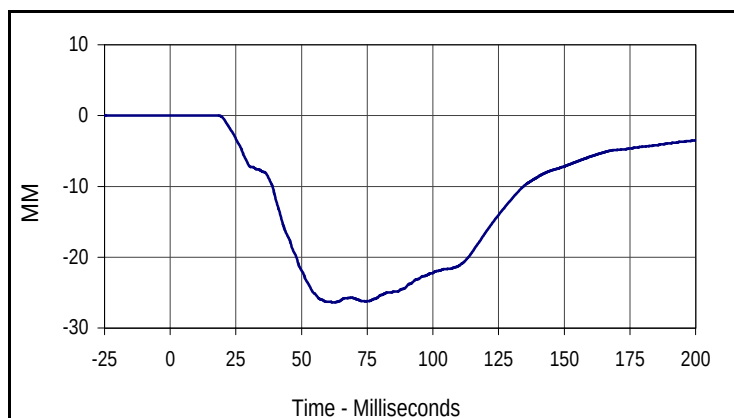
Curve Description			
Driver Chest Redundant X Velocity			
CURNO	Type	SAE Class	Units
016	IN1	180	KMH
Max	Time	Min	Time
56.0	0.0	-16.6	139.4



Curve Description			
Driver Chest Redundant X Displacement			
CURNO	Type	SAE Class	Units
016	IN2	180	CM
Max	Time	Min	Time
103.6	93.6	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

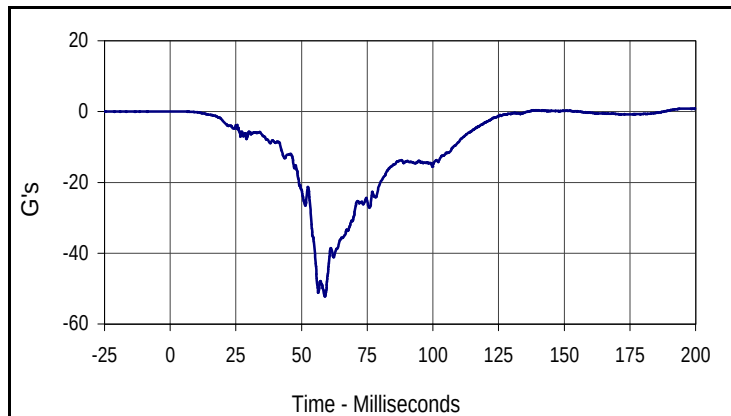
Test Date: 2/25/05
 NHTSA No.: G50103



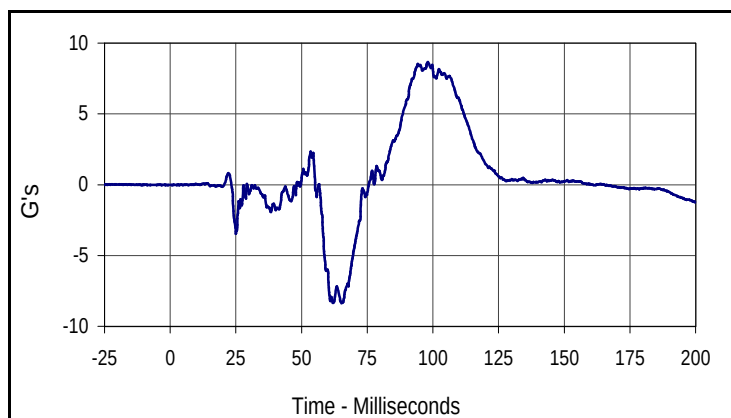
Curve Description			
Driver Chest Deflection			
CURNO	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	12.8	-26.4	61.9

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

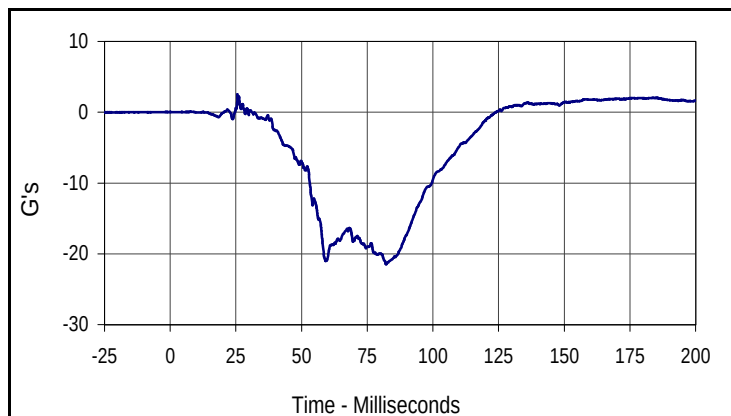
Test Date: 2/25/05
 NHTSA No.: G50103



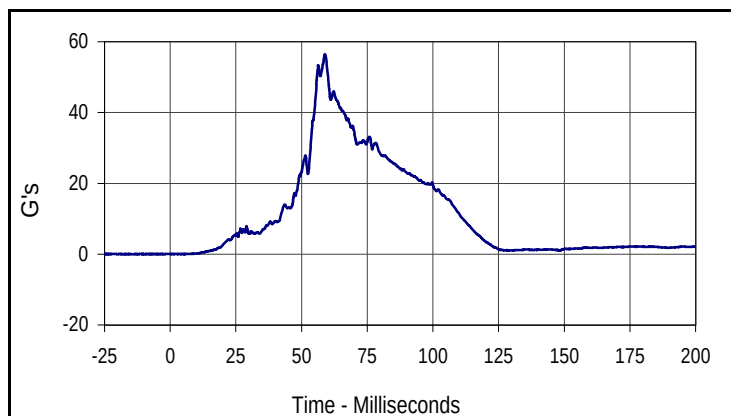
Curve Description			
Driver Pelvis X			
CURNO	Type	SAE Class	Units
020	FIL	1000	G's
Max	Time	Min	Time
0.9	194.5	-52.2	58.9



Curve Description			
Driver Pelvis Y			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
8.7	98.0	-8.4	65.2



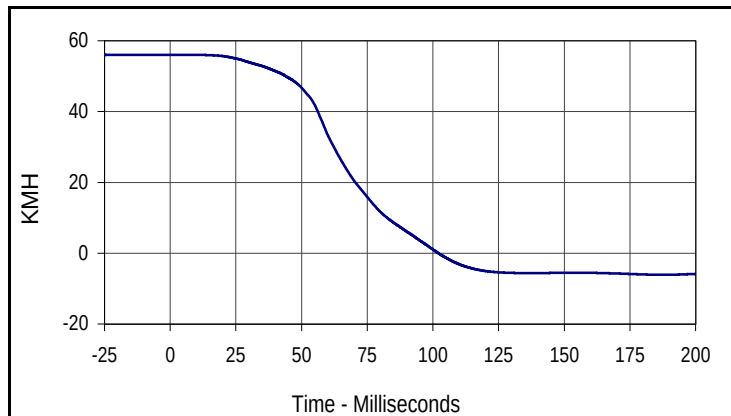
Curve Description			
Driver Pelvis Z			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
2.6	25.6	-21.5	82.2



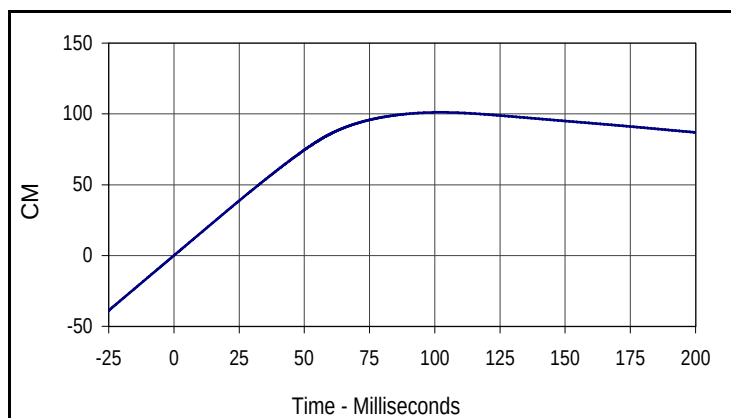
Curve Description			
Driver Pelvis Resultant			
CURNO	Type	SAE Class	Units
020	RES	1000	G's
Max	Time	Min	Time
56.4	58.9	0.0	1.4

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
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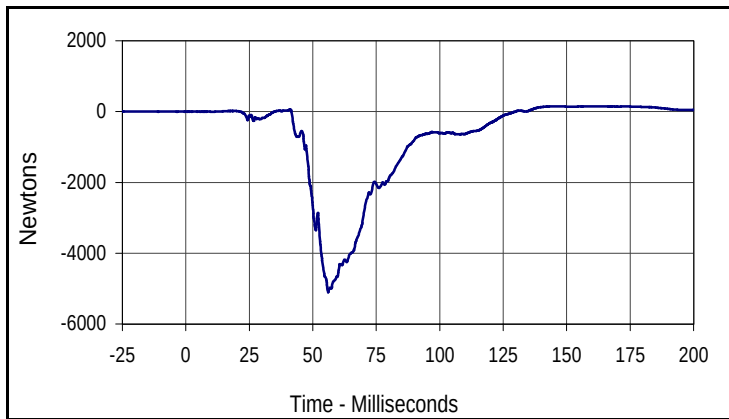
Curve Description			
Driver Pelvis X Velocity			
CURNO	Type	SAE Class	Units
020	IN1	180	KMH
Max	Time	Min	Time
56.0	5.4	-6.1	187.8



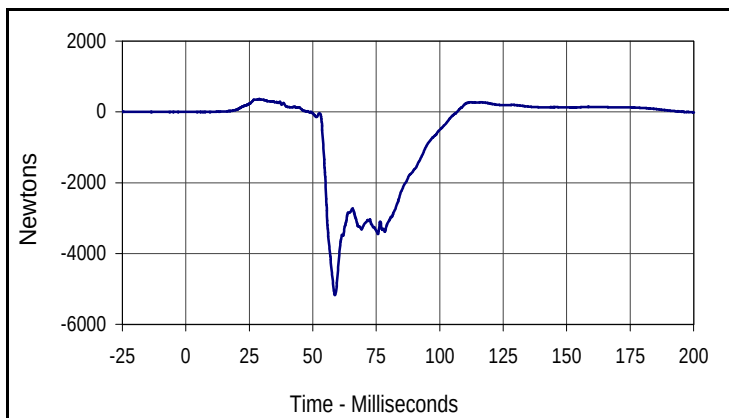
Curve Description			
Driver Pelvis X Displacement			
CURNO	Type	SAE Class	Units
020	IN2	180	CM
Max	Time	Min	Time
101.1	102.1	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



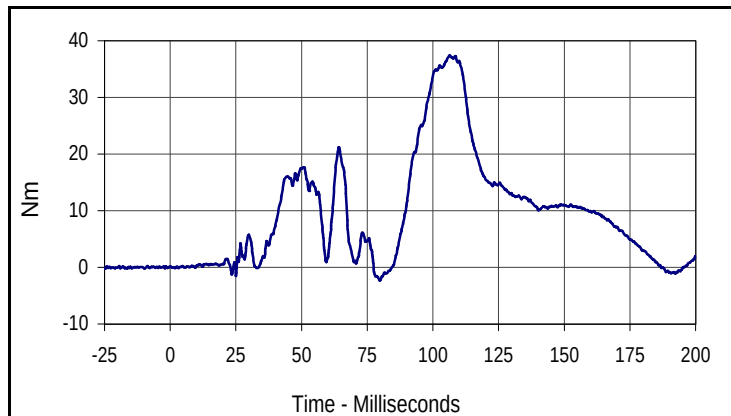
Curve Description			
Driver Left Femur Force			
CURNO	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
150.1	148.5	-5105.8	56.1



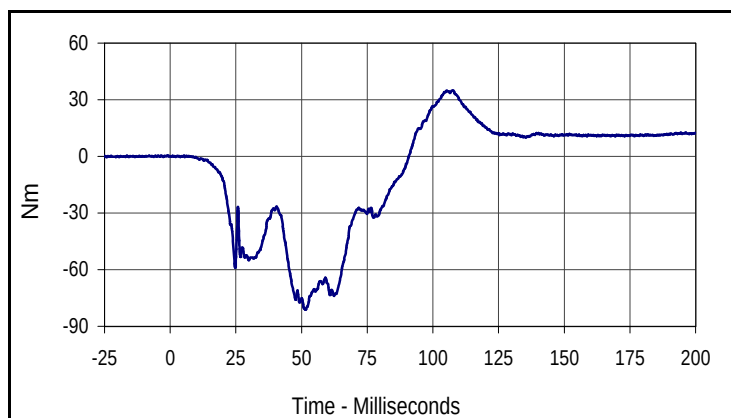
Curve Description			
Driver Right Femur Force			
CURNO	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
363.2	29.0	-5176.7	58.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

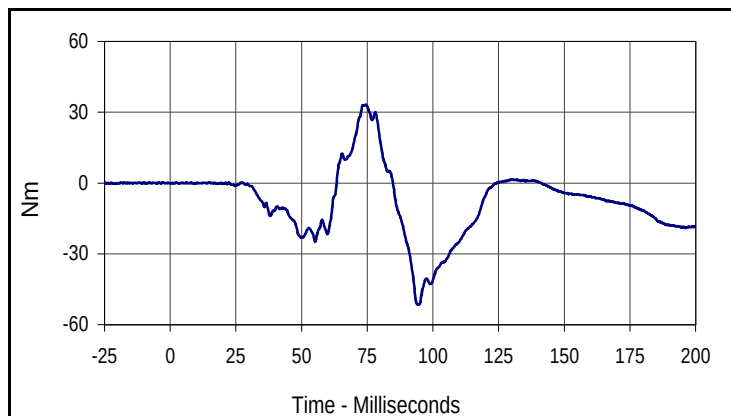
Test Date: 2/25/05
 NHTSA No.: G50103



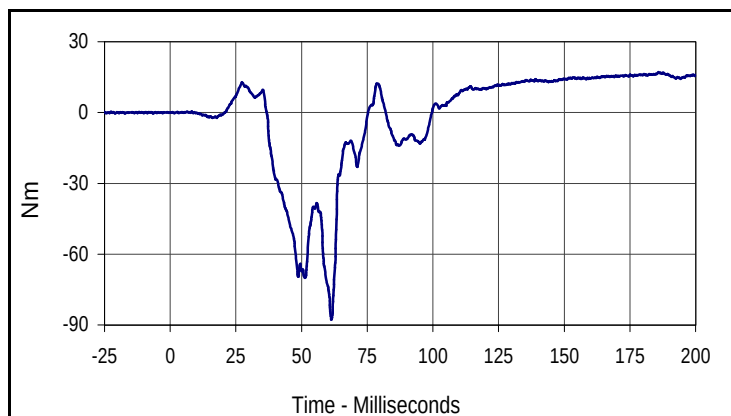
Curve Description			
Driver Left Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
025	FIL	600	Nm
Max	Time	Min	Time
37.5	106.4	-2.3	79.8



Curve Description			
Driver Left Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
35.0	107.8	-81.2	51.5



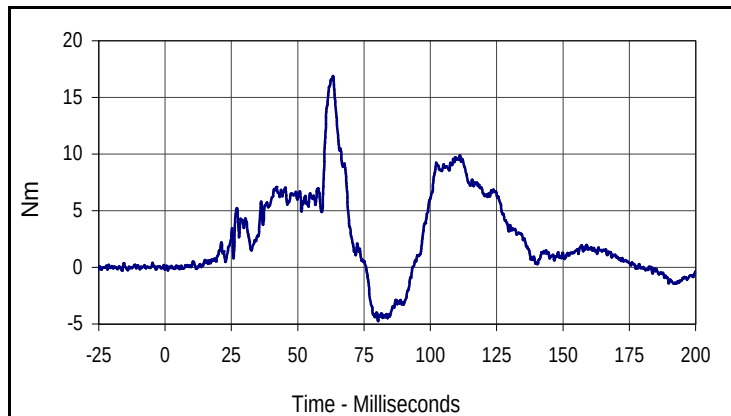
Curve Description			
Driver Right Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
027	FIL	600	Nm
Max	Time	Min	Time
33.1	74.5	-51.6	94.6



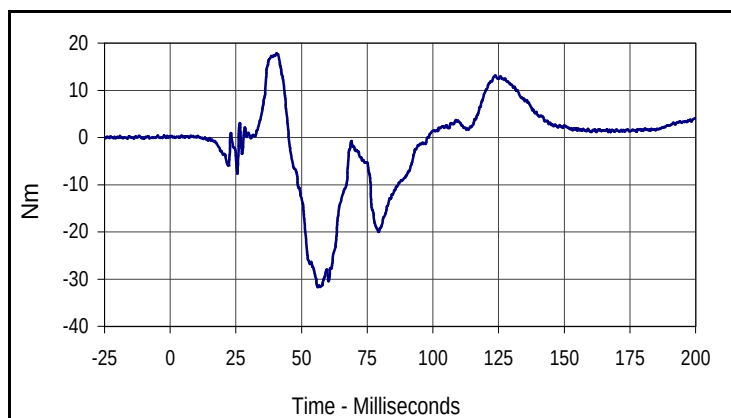
Curve Description			
Driver Right Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
028	FIL	600	Nm
Max	Time	Min	Time
17.2	185.8	-87.8	61.4

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

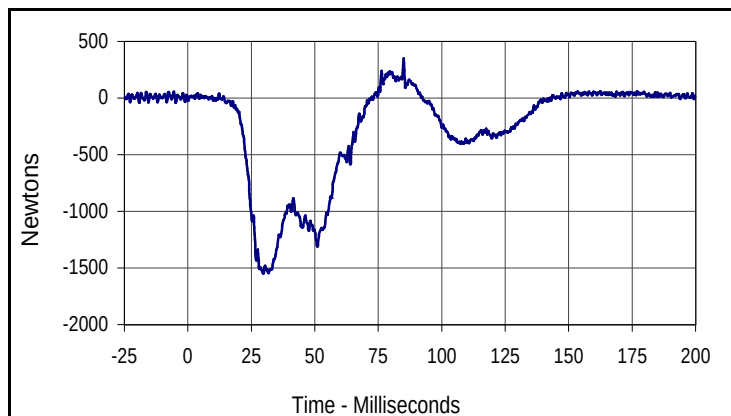
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Driver Left Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
029	FIL	600	Nm
Max	Time	Min	Time
16.9	63.3	-4.7	80.3



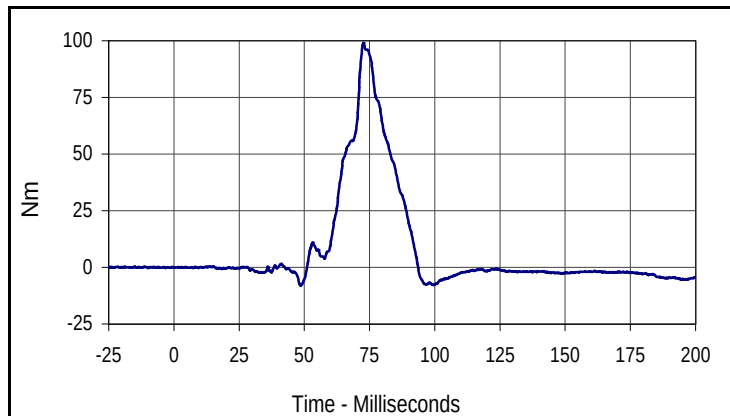
Curve Description			
Driver Left Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
030	FIL	600	Nm
Max	Time	Min	Time
17.8	40.4	-31.8	56.2



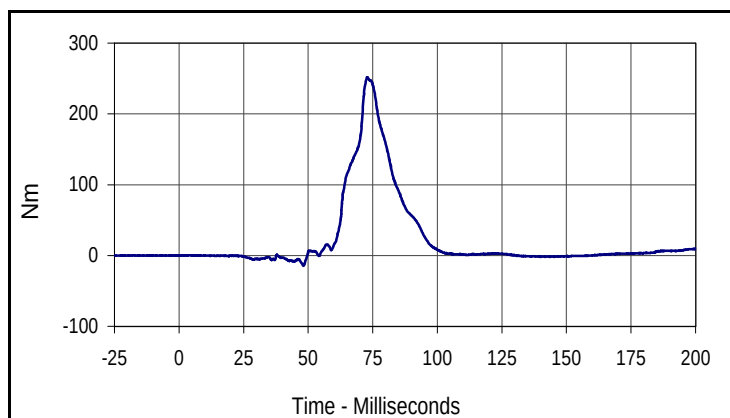
Curve Description			
Driver Left Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
031	FIL	600	Newtons
Max	Time	Min	Time
350.5	85.0	-1550.4	29.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

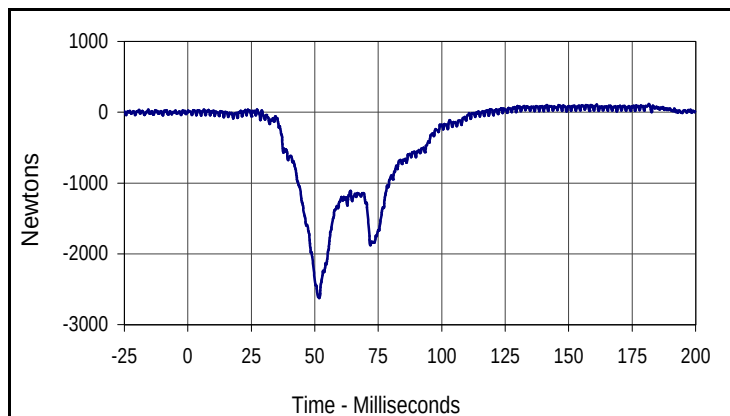
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Driver Right Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
032	FIL	600	Nm
Max	Time	Min	Time
99.0	72.6	-8.0	48.6



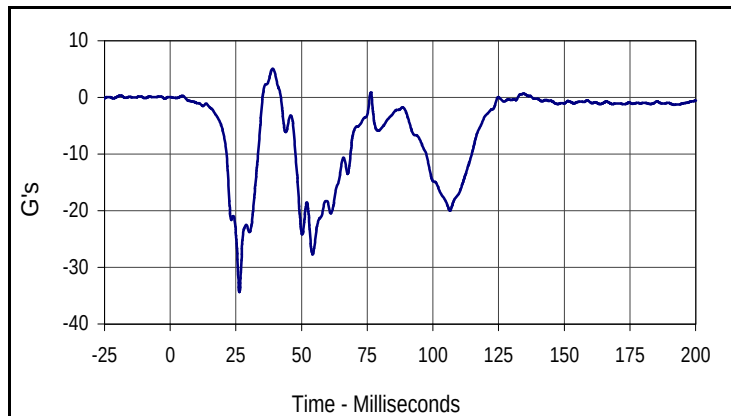
Curve Description			
Driver Right Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
033	FIL	600	Nm
Max	Time	Min	Time
251.7	72.9	-14.5	48.2



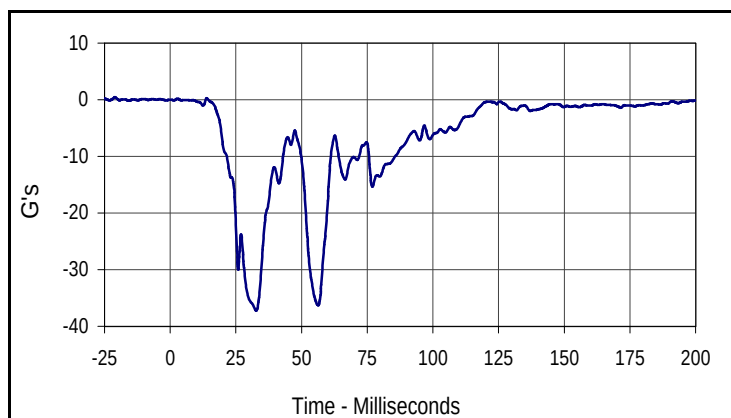
Curve Description			
Driver Right Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
034	FIL	600	Newtons
Max	Time	Min	Time
118.6	181.6	-2622.8	51.8

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

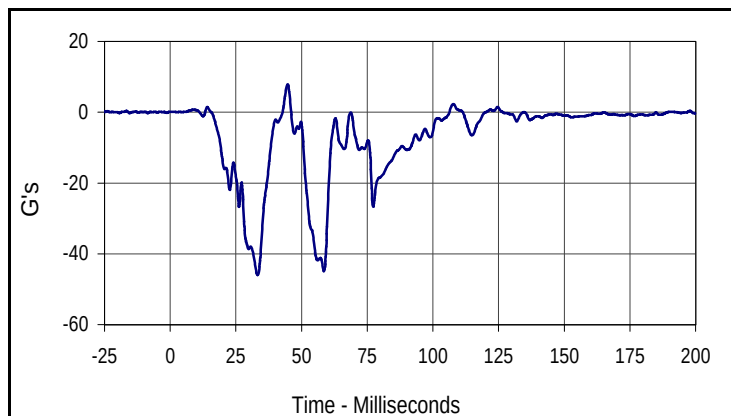
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Driver Left Foot Aft X			
CURNO	Type	SAE Class	Units
035	FIL	180	G's
Max	Time	Min	Time
5.1	39.0	-34.4	26.3



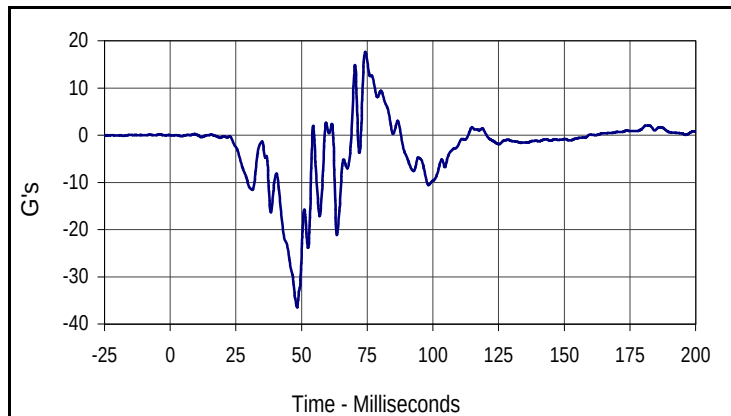
Curve Description			
Driver Left Foot Aft Z			
CURNO	Type	SAE Class	Units
036	FIL	180	G's
Max	Time	Min	Time
0.3	13.9	-37.2	32.7



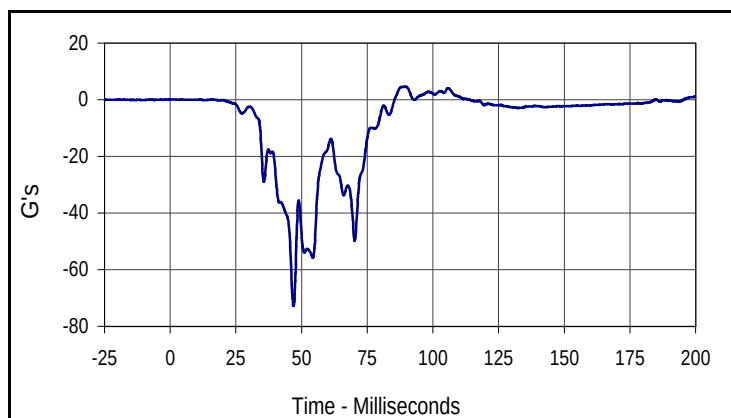
Curve Description			
Driver Left Foot Fore Z			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
7.8	44.7	-46.0	33.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

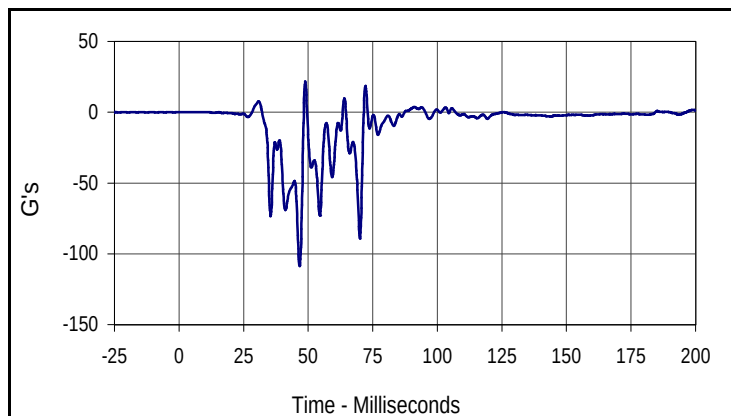
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Driver Right Foot Aft X			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
17.6	74.2	-36.5	48.3



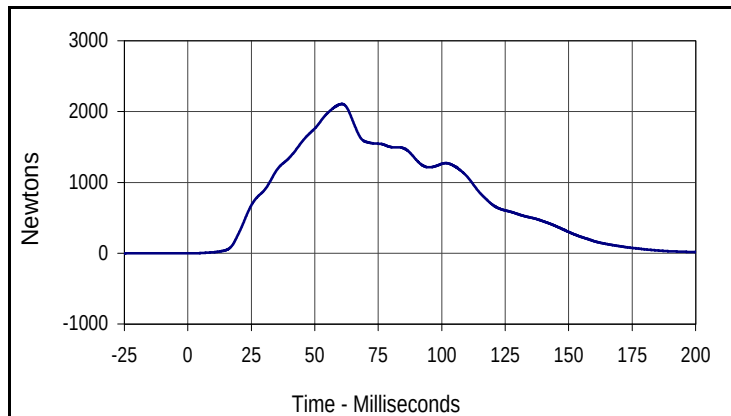
Curve Description			
Driver Right Foot Aft Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
4.7	89.5	-72.8	46.9



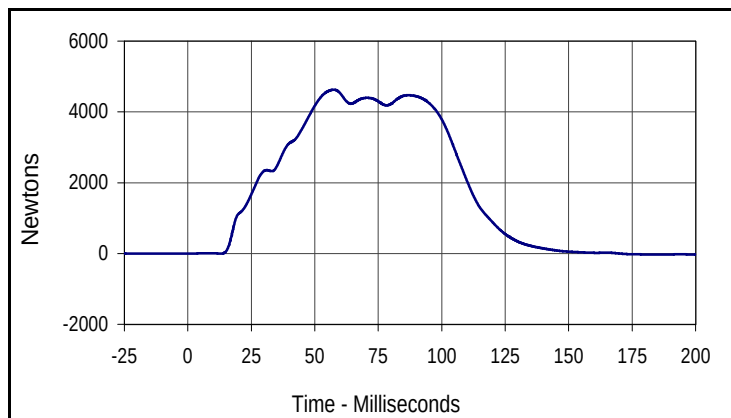
Curve Description			
Driver Right Foot Fore Z			
CURNO	Type	SAE Class	Units
040	FIL	180	G's
Max	Time	Min	Time
21.7	48.9	-108.6	46.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

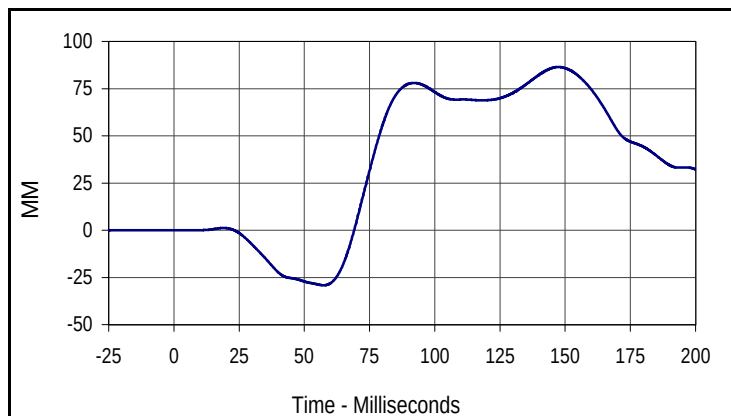
Test Date: 2/25/05
 NHTSA No.: G50103



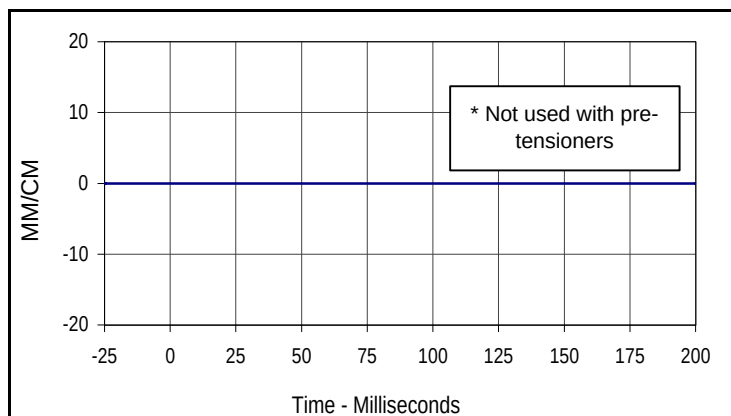
Curve Description			
Driver Lap Belt Force			
CURNO	Type	SAE Class	Units
041	FIL	60	Newtons
Max	Time	Min	Time
2107.4	60.6	0.0	2.8



Curve Description			
Driver Shoulder Belt Force			
CURNO	Type	SAE Class	Units
042	FIL	60	Newtons
Max	Time	Min	Time
4627.7	57.5	-29.9	187.8



Curve Description			
Driver Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
043	FIL	60	MM
Max	Time	Min	Time
86.5	147.8	-29.2	57.9

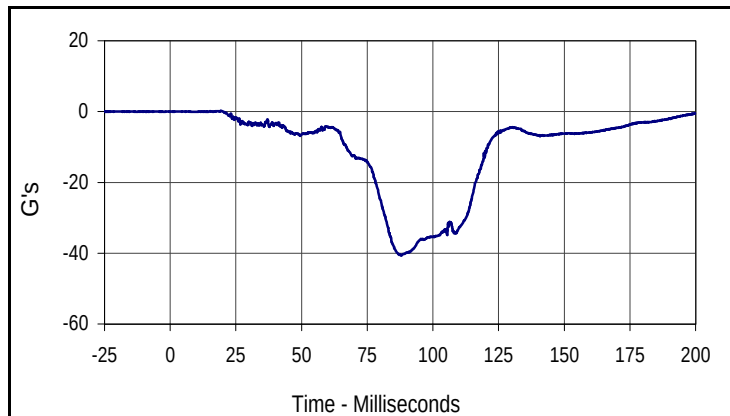


Curve Description			
Driver Shoulder Belt Elongation			
CURNO	Type	SAE Class	Units
044	FIL	60	MM/CM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

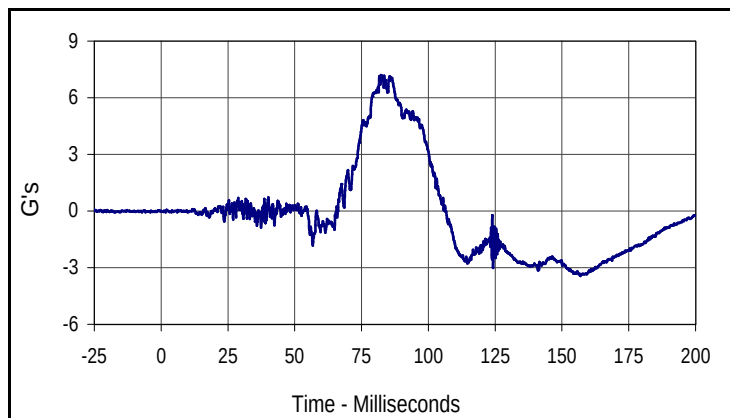
* Not used with pre-tensioners

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

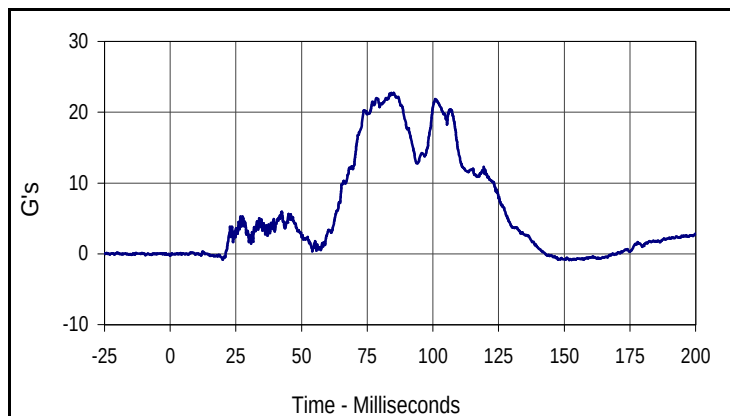
Test Date: 2/25/05
 NHTSA No.: G50103



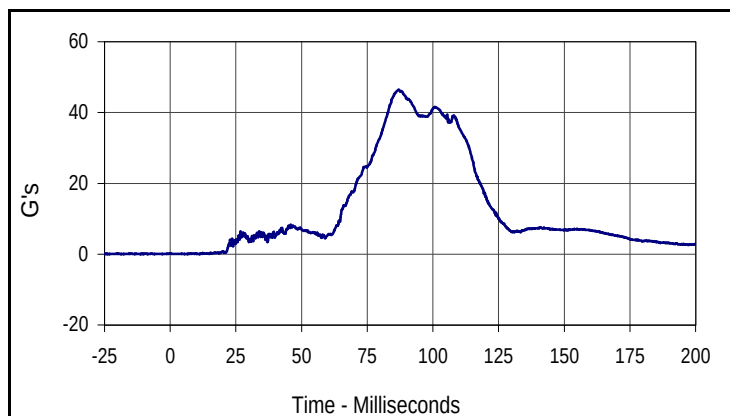
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
045	FIL	1000	G's
Max	Time	Min	Time
0.2	19.5	-40.7	88.0



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
7.2	82.3	-3.4	156.9



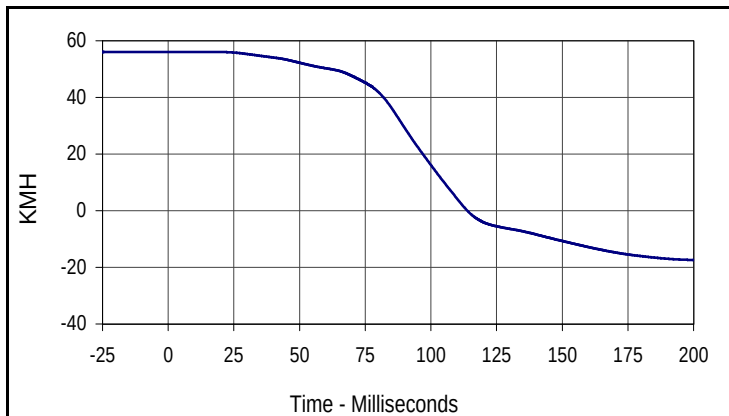
Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
22.7	84.1	-0.9	152.8



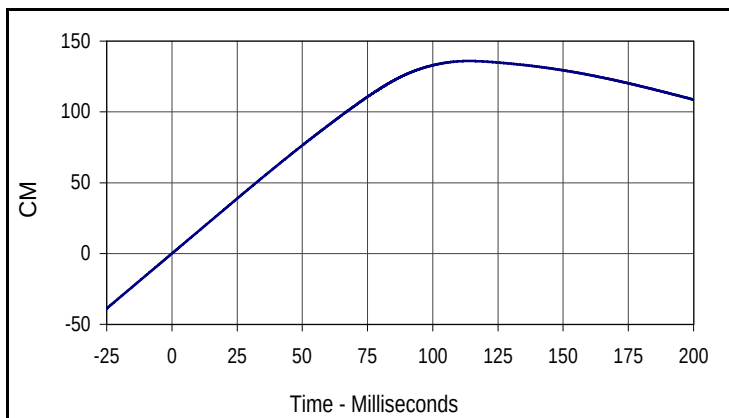
Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
045	RES	1000	G's
Max	Time	Min	Time
46.5	87.0	0.0	6.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
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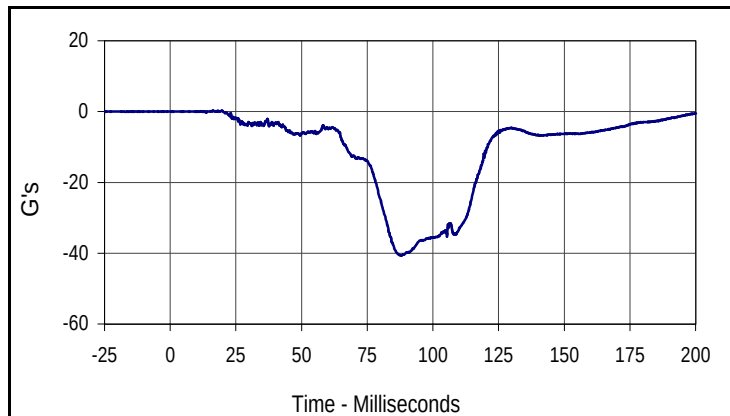
Curve Description			
Passenger Head Primary X Velocity			
CURNO	Type	SAE Class	Units
045	IN1	180	KMH
Max	Time	Min	Time
56.0	20.1	-17.4	200.0



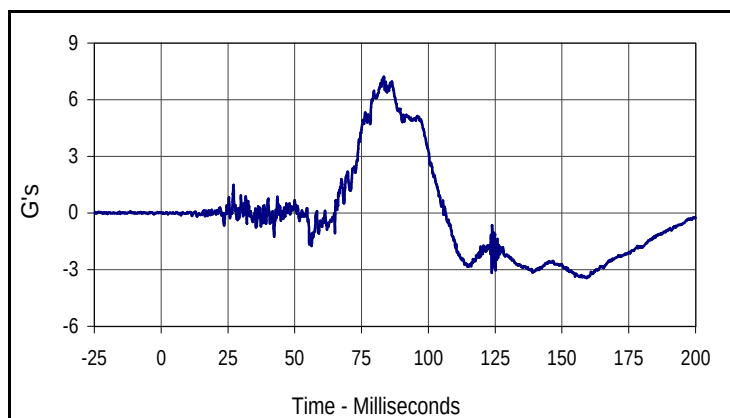
Curve Description			
Passenger Head Primary X Displacement			
CURNO	Type	SAE Class	Units
045	IN2	180	CM
Max	Time	Min	Time
135.9	113.9	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

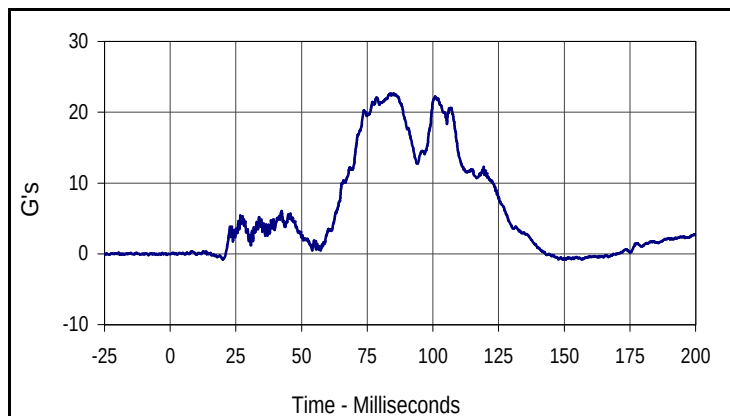
Test Date: 2/25/05
 NHTSA No.: G50103



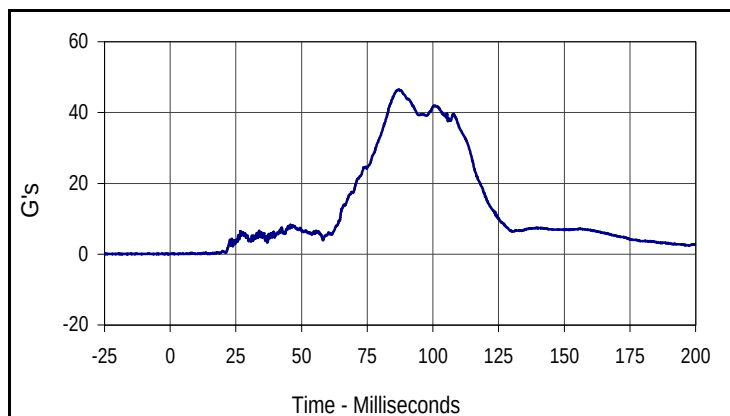
Curve Description			
Passenger Head Redundant X			
CURNO	Type	SAE Class	Units
048	FIL	1000	G's
Max	Time	Min	Time
0.3	16.3	-40.7	87.9



Curve Description			
Passenger Head Redundant Y			
CURNO	Type	SAE Class	Units
049	FIL	1000	G's
Max	Time	Min	Time
7.2	83.4	-3.4	159.2



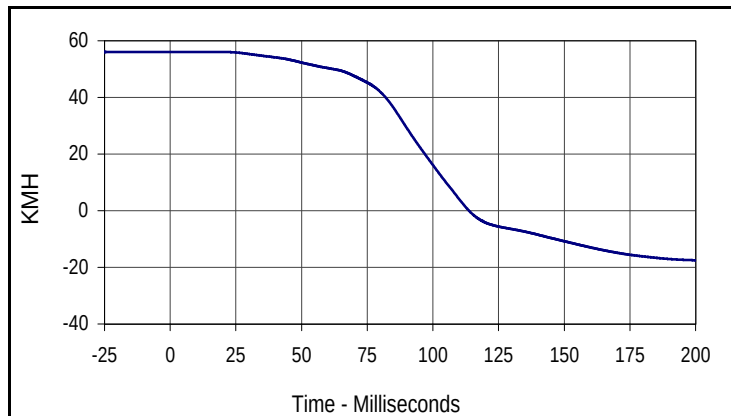
Curve Description			
Passenger Head Redundant Z			
CURNO	Type	SAE Class	Units
050	FIL	1000	G's
Max	Time	Min	Time
22.7	85.0	-0.8	20.0



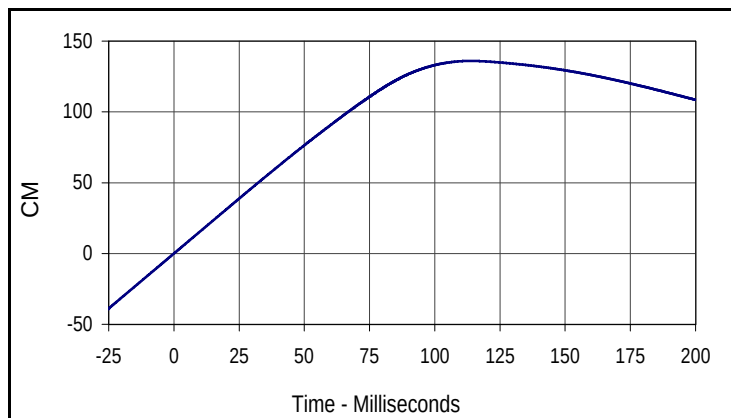
Curve Description			
Passenger Head Resultant Redundant			
CURNO	Type	SAE Class	Units
048	RES	1000	G's
Max	Time	Min	Time
46.6	87.0	0.0	1.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



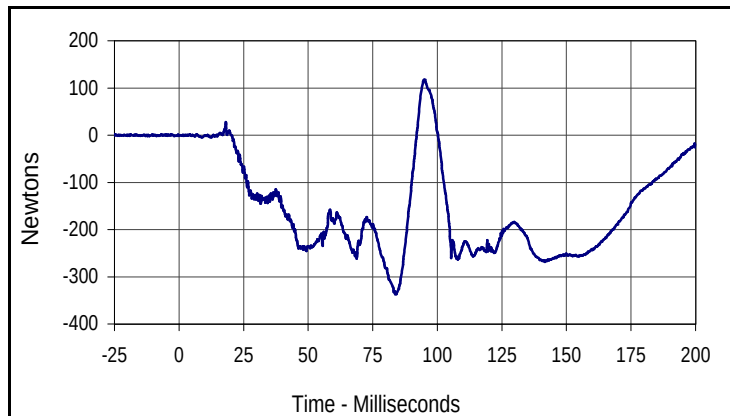
Curve Description			
Passenger Head Redundant X Velocity			
CURNO	Type	SAE Class	Units
048	IN1	180	KMH
Max	Time	Min	Time
56.0	20.1	-17.5	200.0



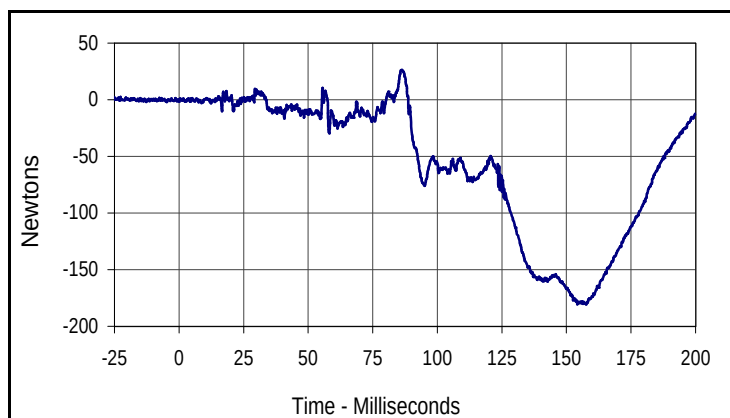
Curve Description			
Passenger Head Redundant X Displacement			
CURNO	Type	SAE Class	Units
048	IN2	180	CM
Max	Time	Min	Time
136.0	113.7	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

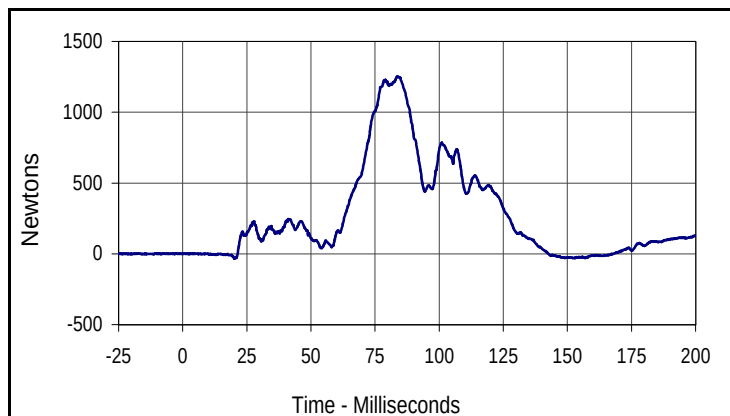
Test Date: 2/25/05
 NHTSA No.: G50103



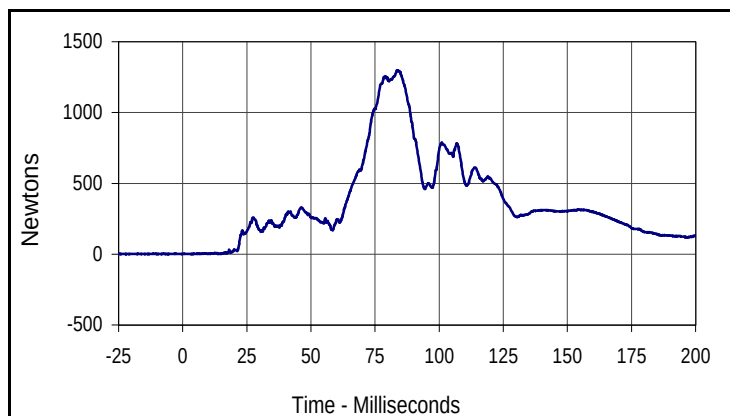
Curve Description			
Passenger Upper Neck Force X			
CURNO	Type	SAE Class	Units
051	FIL	1000	Newtons
Max	Time	Min	Time
117.1	95.1	-337.1	84.2



Curve Description			
Passenger Upper Neck Force Y			
CURNO	Type	SAE Class	Units
052	FIL	1000	Newtons
Max	Time	Min	Time
26.4	86.0	-180.8	157.6



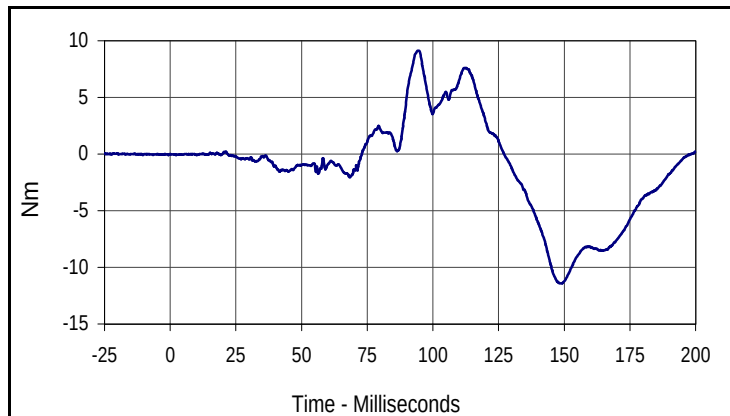
Curve Description			
Passenger Upper Neck Force Z			
CURNO	Type	SAE Class	Units
053	FIL	1000	Newtons
Max	Time	Min	Time
1254.1	83.9	-34.0	20.1



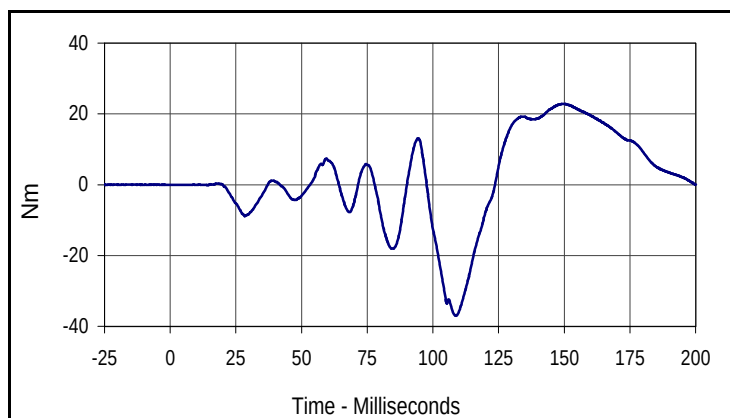
Curve Description			
Passenger Upper Neck Force Res.			
CURNO	Type	SAE Class	Units
051	RES	1000	Newtons
Max	Time	Min	Time
1298.1	83.9	0.3	3.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

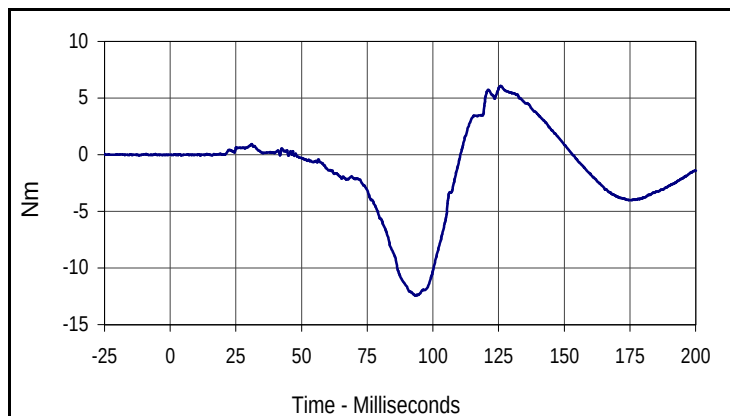
Test Date: 2/25/05
 NHTSA No.: G50103



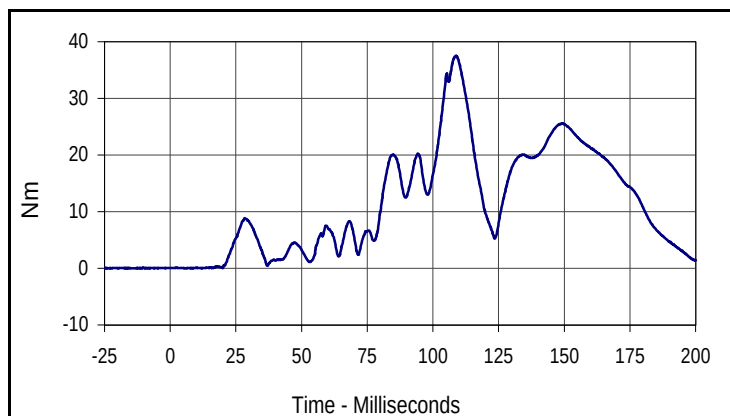
Curve Description			
Passenger Upper Neck Moment X			
CURNO	Type	SAE Class	Units
054	FIL	600	Nm
Max	Time	Min	Time
9.1	94.6	-11.4	148.2



Curve Description			
Passenger Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
055	FIL	600	Nm
Max	Time	Min	Time
22.9	149.4	-37.0	108.8



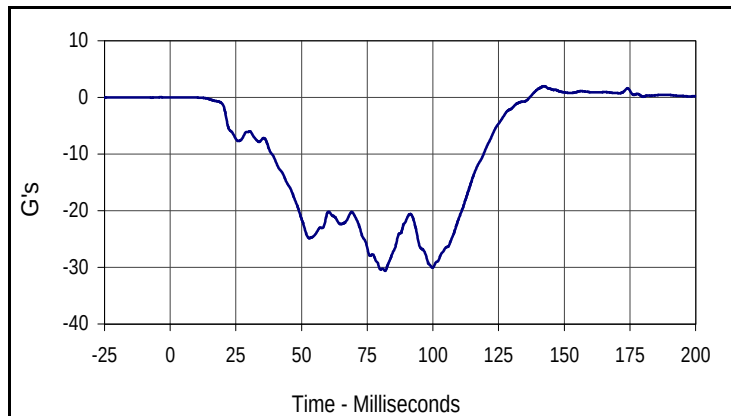
Curve Description			
Passenger Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
056	FIL	600	Nm
Max	Time	Min	Time
6.1	125.8	-12.4	93.3



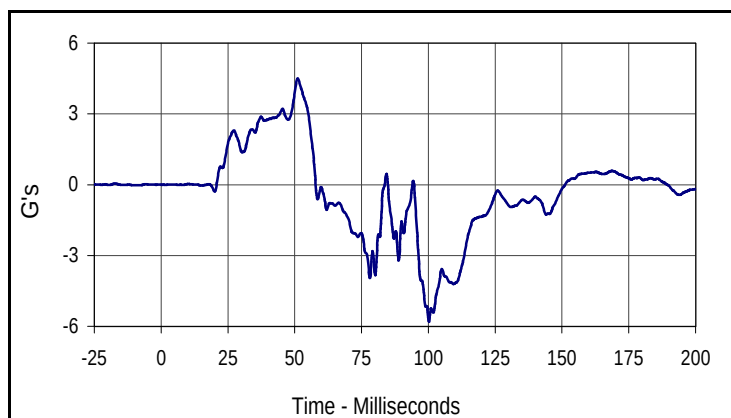
Curve Description			
Passenger Upper Neck Moment Res.			
CURNO	Type	SAE Class	Units
054	RES	600	Nm
Max	Time	Min	Time
37.5	108.8	0.0	5.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

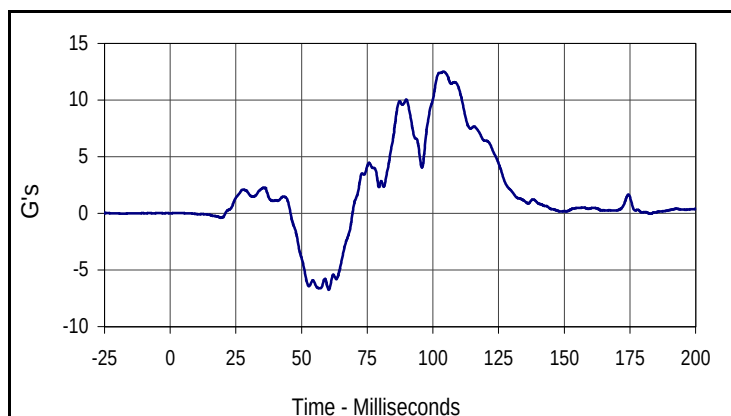
Test Date: 2/25/05
 NHTSA No.: G50103



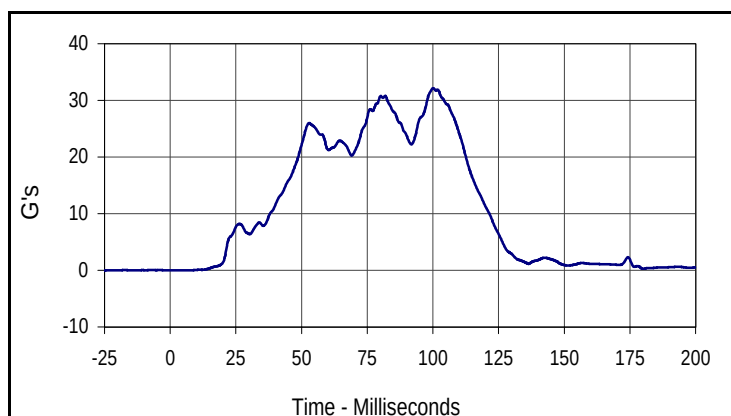
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
057	FIL	180	G's
Max	Time	Min	Time
2.0	142.3	-30.6	81.8



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
058	FIL	180	G's
Max	Time	Min	Time
4.5	51.1	-5.8	100.2



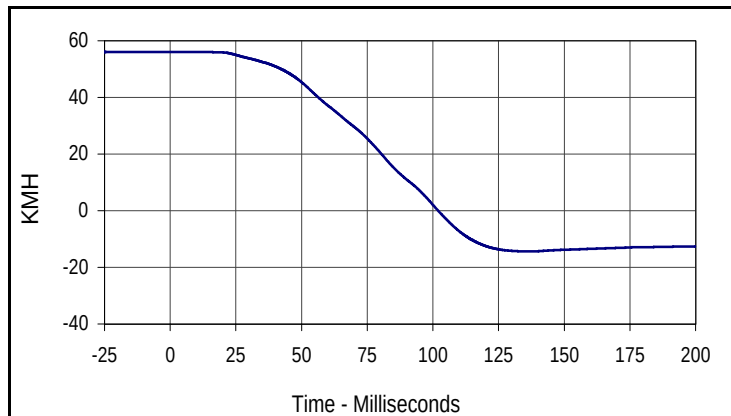
Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
059	FIL	180	G's
Max	Time	Min	Time
12.5	104.1	-6.7	60.4



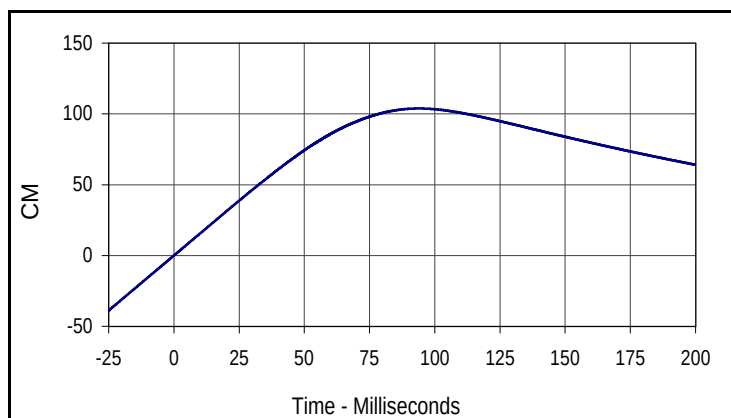
Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
057	RES	180	G's
Max	Time	Min	Time
32.2	100.1	0.0	0.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



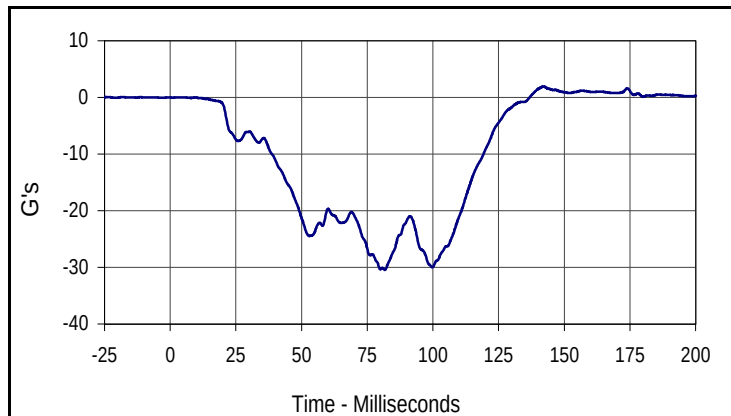
Curve Description			
Passenger Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
057	IN1	180	KMH
Max	Time	Min	Time
56.0	6.2	-14.4	136.8



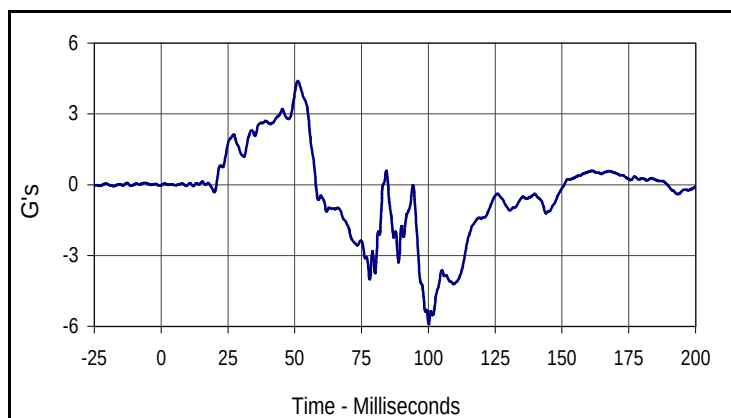
Curve Description			
Passenger Chest Primary X Displacement			
CURNO	Type	SAE Class	Units
057	IN2	180	CM
Max	Time	Min	Time
103.8	93.9	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

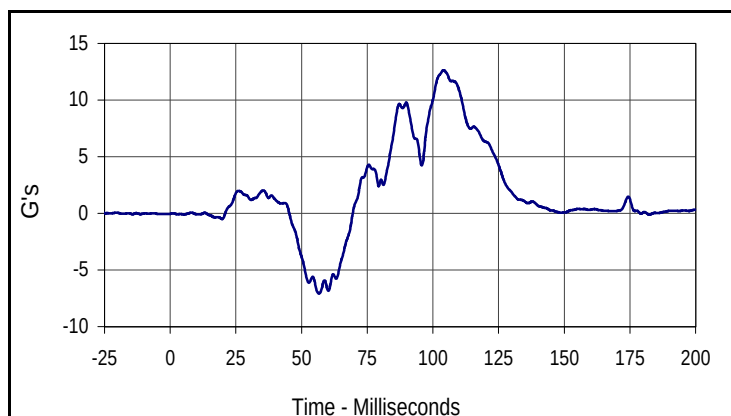
Test Date: 2/25/05
 NHTSA No.: G50103



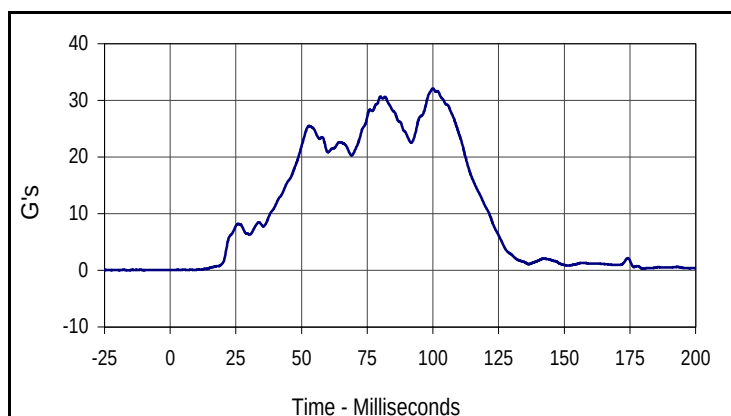
Curve Description			
Passenger Chest Redundant X			
CURNO	Type	SAE Class	Units
060	FIL	180	G's
Max	Time	Min	Time
1.9	142.1	-30.4	81.7



Curve Description			
Passenger Chest Redundant Y			
CURNO	Type	SAE Class	Units
061	FIL	180	G's
Max	Time	Min	Time
4.4	51.1	-5.9	100.2



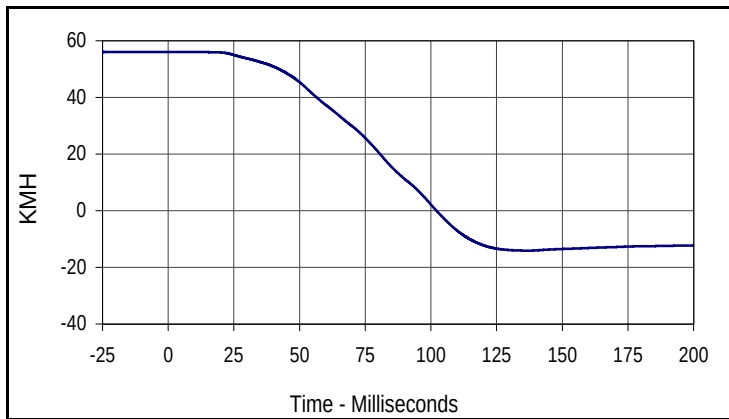
Curve Description			
Passenger Chest Redundant Z			
CURNO	Type	SAE Class	Units
062	FIL	180	G's
Max	Time	Min	Time
12.6	104.0	-7.1	56.7



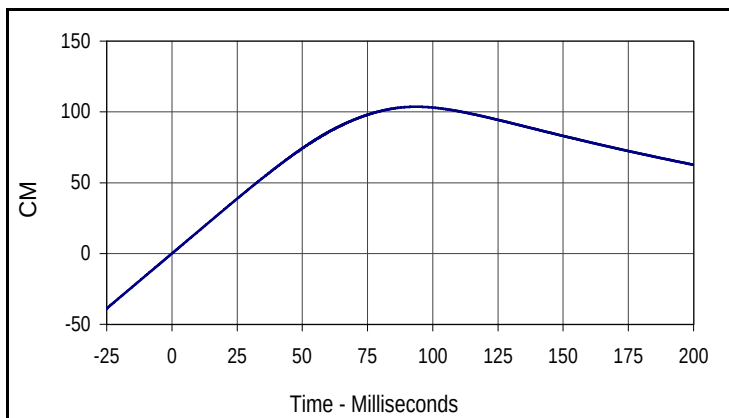
Curve Description			
Passenger Chest Resultant Redundant			
CURNO	Type	SAE Class	Units
060	RES	180	G's
Max	Time	Min	Time
32.1	100.0	0.0	0.5

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Test Date: 2/25/05
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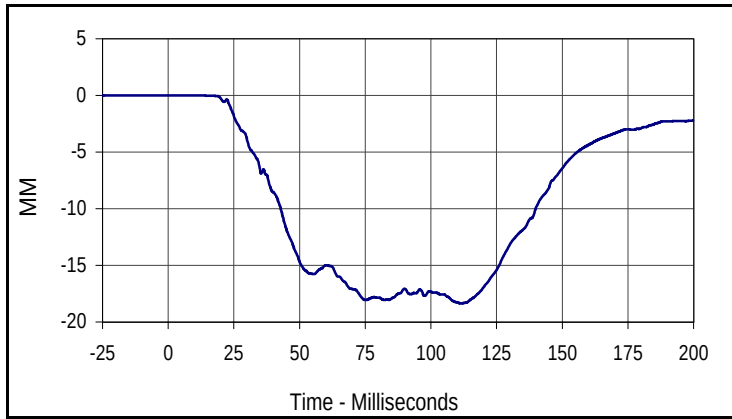
Curve Description			
Passenger Chest Redundant X Velocity			
CURNO	Type	SAE Class	Units
060	IN1	180	KMH
Max	Time	Min	Time
56.0	0.0	-14.1	136.8



Curve Description			
Passenger Chest Redundant X Displacement			
CURNO	Type	SAE Class	Units
060	IN2	180	CM
Max	Time	Min	Time
103.6	93.6	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
Test Program: 2005 NHTSA 35mph NCAP

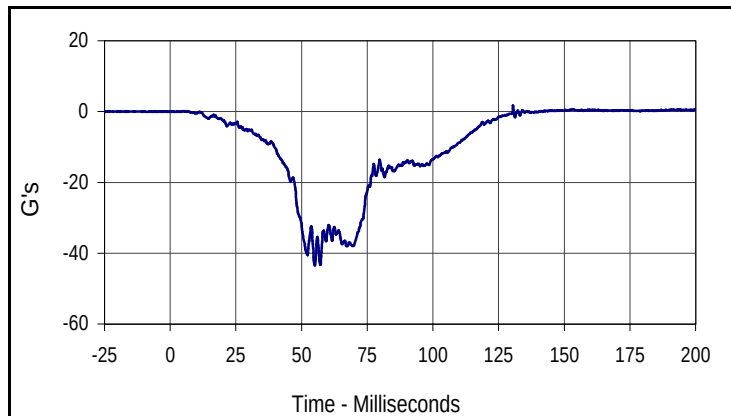
Test Date: 2/25/05
NHTSA No.: G50103



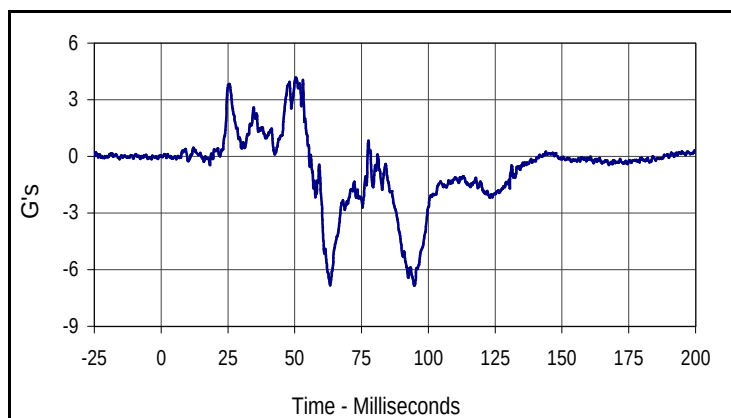
Curve Description			
Passenger Chest Deflection			
CURNO	Type	SAE Class	Units
063	FIL	600	MM
Max	Time	Min	Time
0.0	12.6	-18.4	111.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

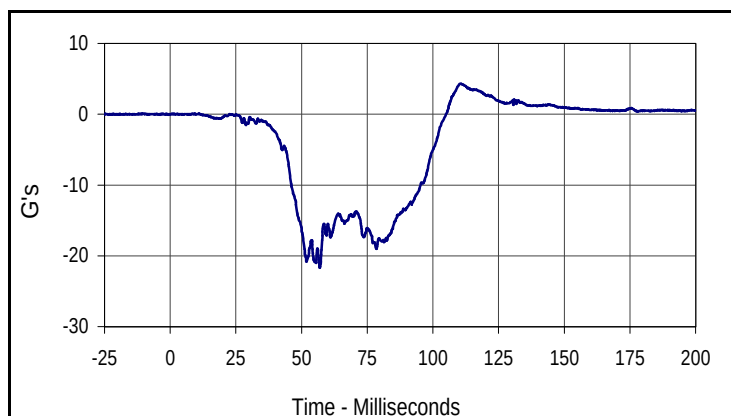
Test Date: 2/25/05
 NHTSA No.: G50103



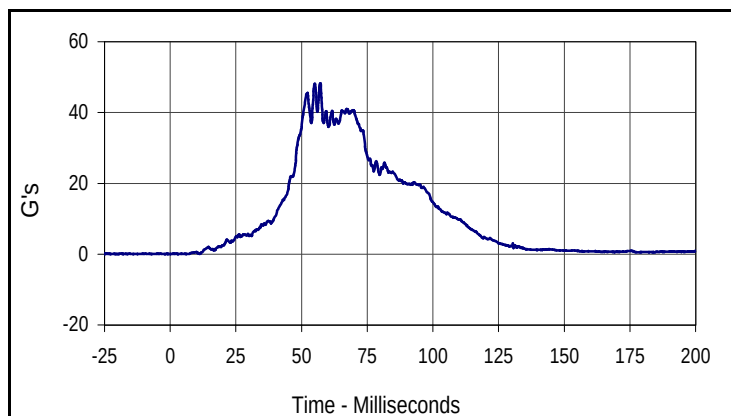
Curve Description			
Passenger Pelvis X			
CURNO	Type	SAE Class	Units
064	FIL	1000	G's
Max	Time	Min	Time
1.7	130.5	-43.4	55.0



Curve Description			
Passenger Pelvis Y			
CURNO	Type	SAE Class	Units
065	FIL	1000	G's
Max	Time	Min	Time
4.2	50.4	-6.8	94.7



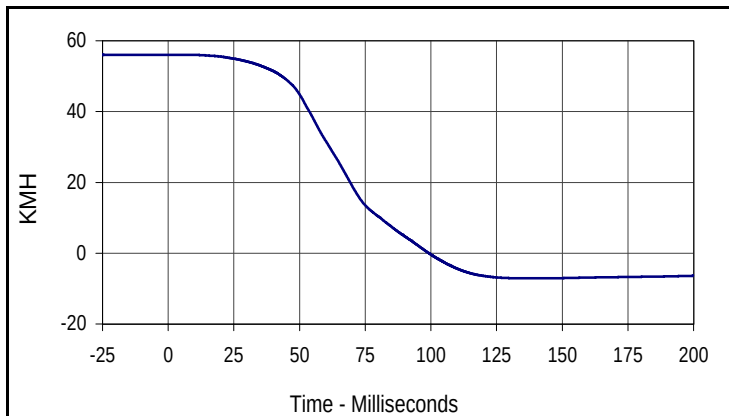
Curve Description			
Passenger Pelvis Z			
CURNO	Type	SAE Class	Units
066	FIL	1000	G's
Max	Time	Min	Time
4.3	110.3	-21.7	57.0



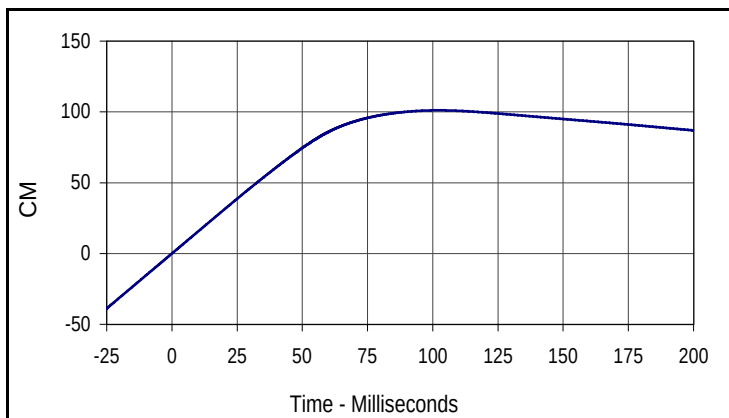
Curve Description			
Passenger Pelvis Resultant			
CURNO	Type	SAE Class	Units
064	RES	1000	G's
Max	Time	Min	Time
48.3	57.1	0.0	3.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



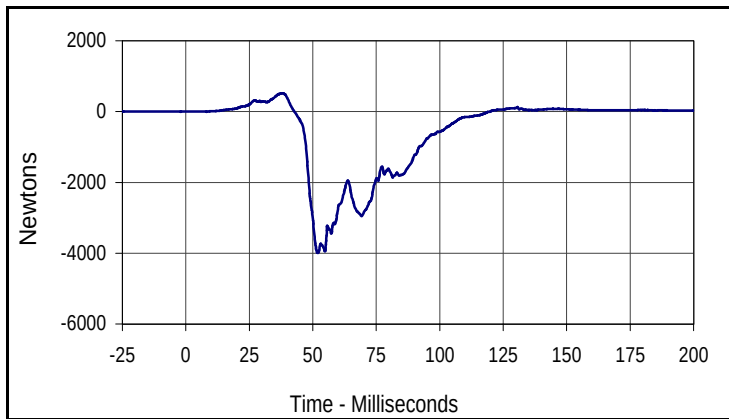
Curve Description			
Passenger Pelvis X Velocity			
CURNO	Type	SAE Class	Units
064	IN1	180	KMH
Max	Time	Min	Time
56.0	0.0	-7.1	140.5



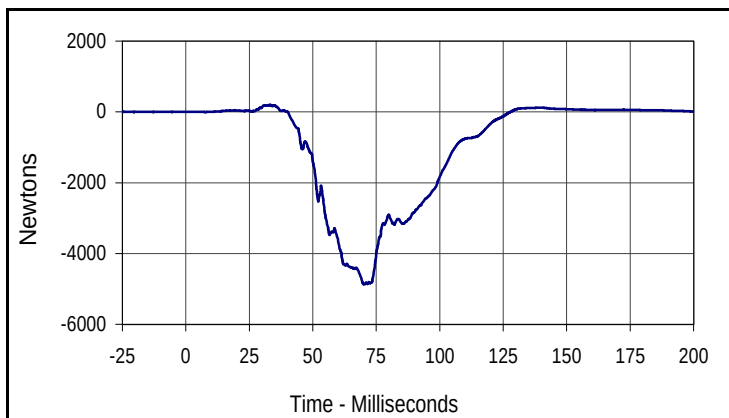
Curve Description			
Passenger Pelvis X Displacement			
CURNO	Type	SAE Class	Units
064	IN2	180	CM
Max	Time	Min	Time
101.1	102.1	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



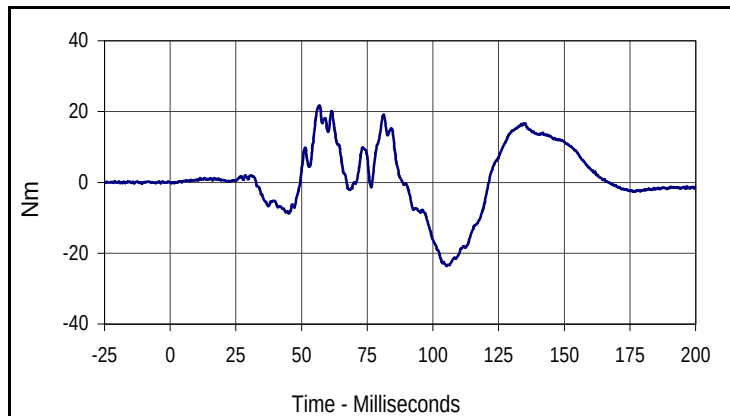
Curve Description			
Passenger Left Femur Force			
CURNO	Type	SAE Class	Units
067	FIL	600	Newtons
Max	Time	Min	Time
519.0	37.9	-3991.3	52.0



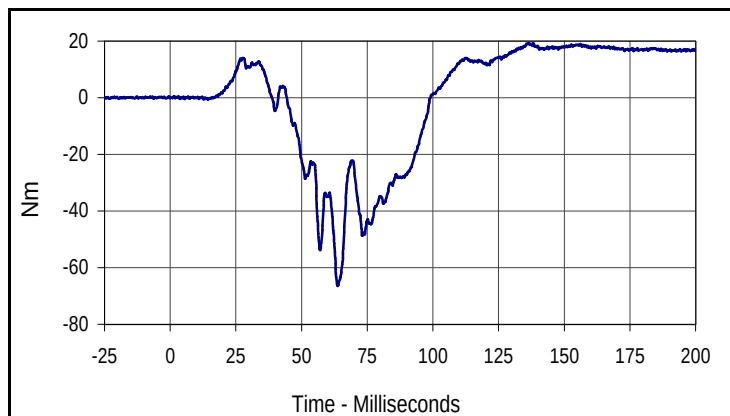
Curve Description			
Passenger Right Femur Force			
CURNO	Type	SAE Class	Units
068	FIL	600	Newtons
Max	Time	Min	Time
204.1	33.3	-4867.5	70.4

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

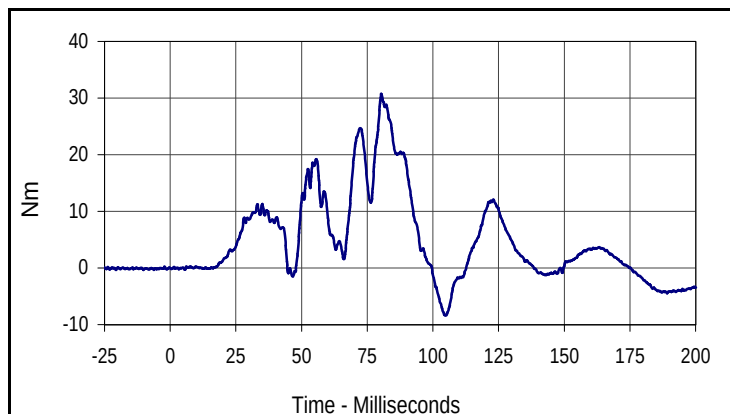
Test Date: 2/25/05
 NHTSA No.: G50103



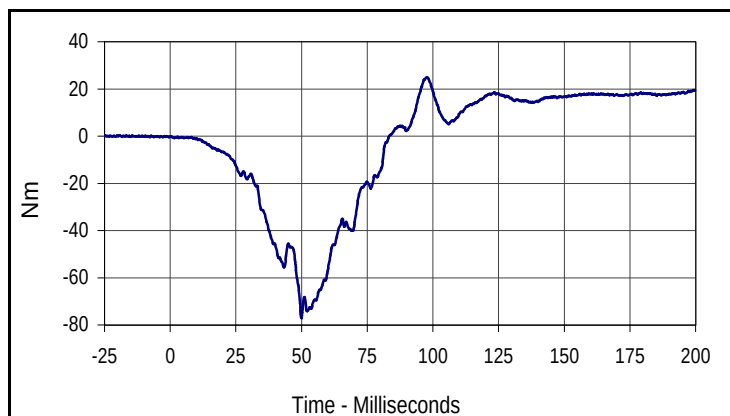
Curve Description			
Passenger Left Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
069	FIL	600	Nm
Max	Time	Min	Time
21.6	56.8	-23.6	105.2



Curve Description			
Passenger Left Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
070	FIL	600	Nm
Max	Time	Min	Time
19.3	136.5	-66.4	63.8



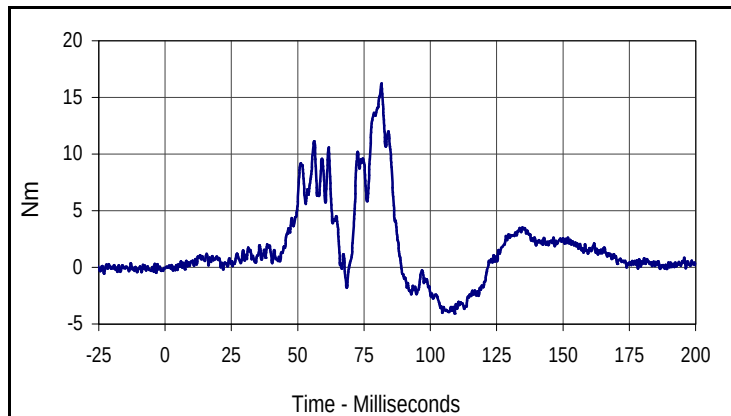
Curve Description			
Passenger Right Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
071	FIL	600	Nm
Max	Time	Min	Time
30.8	80.4	-8.4	105.0



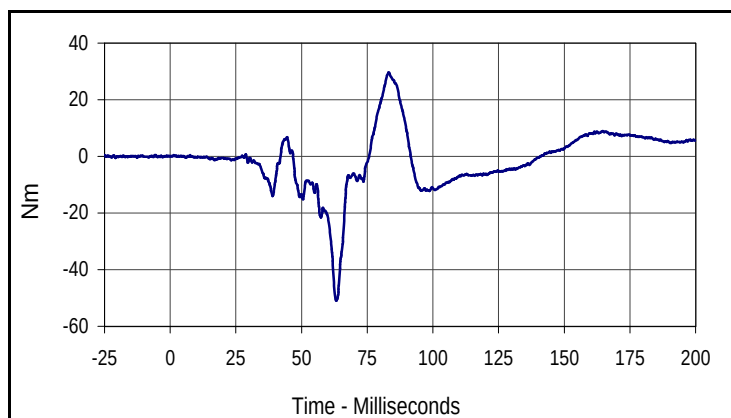
Curve Description			
Passenger Right Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
072	FIL	600	Nm
Max	Time	Min	Time
24.8	97.4	-77.1	50.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

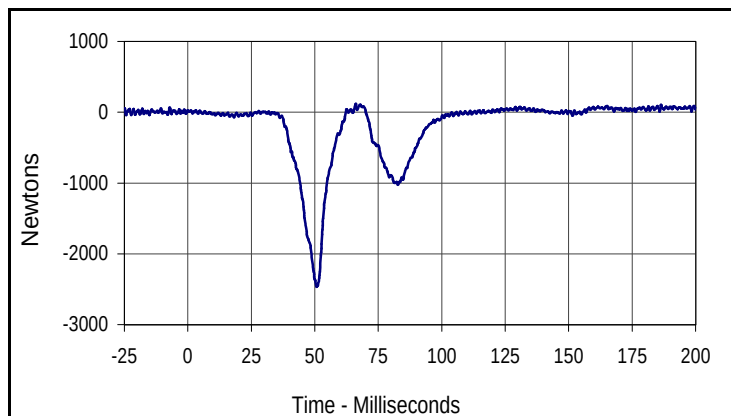
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Passenger Left Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
073	FIL	600	Nm
Max	Time	Min	Time
16.2	81.6	-4.1	109.1



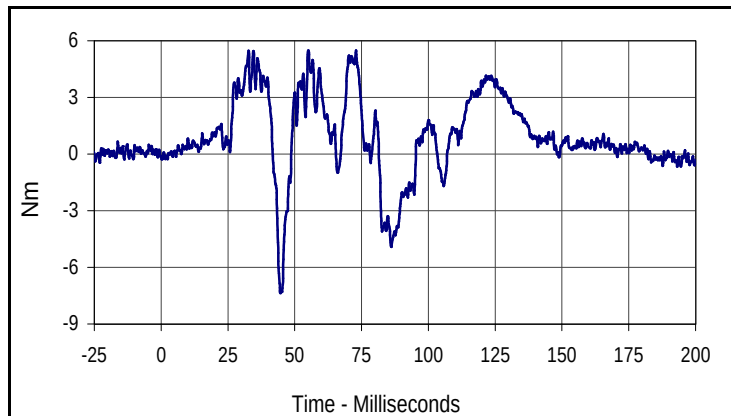
Curve Description			
Passenger Left Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
074	FIL	600	Nm
Max	Time	Min	Time
29.6	83.2	-50.9	63.2



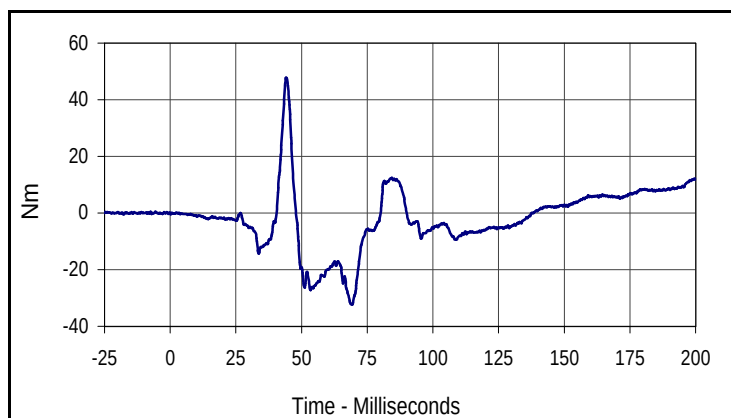
Curve Description			
Passenger Left Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
075	FIL	600	Newtons
Max	Time	Min	Time
119.3	66.1	-2465.7	50.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
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Curve Description			
Passenger Right Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
076	FIL	600	Nm
Max	Time	Min	Time
5.5	55.1	-7.4	44.7



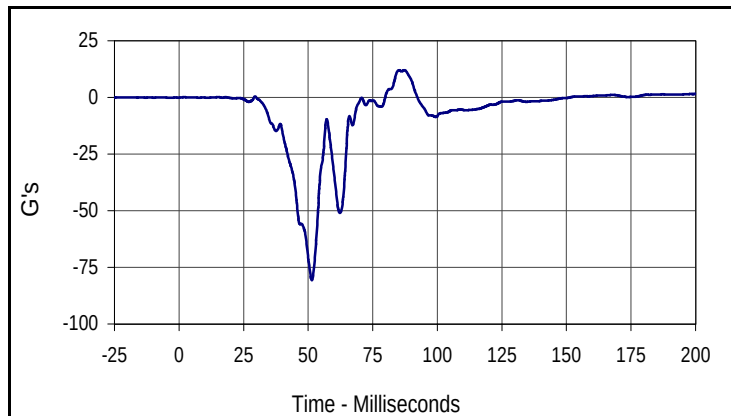
Curve Description			
Passenger Right Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
077	FIL	600	Nm
Max	Time	Min	Time
47.8	44.1	-32.3	69.3



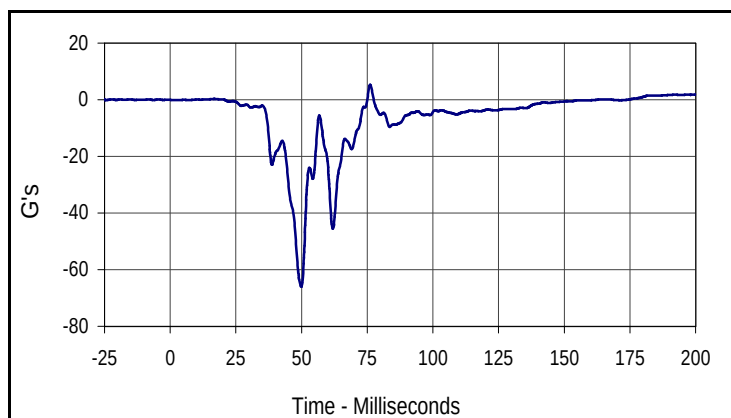
Curve Description			
Passenger Right lower Tibia Force Z			
CURNO	Type	SAE Class	Units
078	FIL	600	Newtons
Max	Time	Min	Time
98.7	69.0	-3442.1	44.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

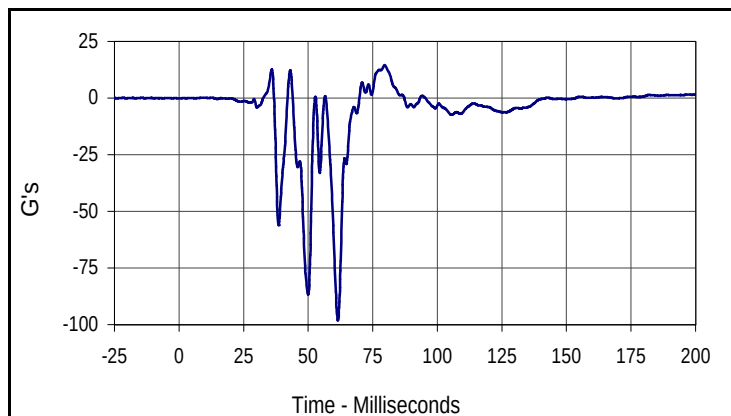
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Passenger Left Foot Aft X			
CURNO	Type	SAE Class	Units
079	FIL	180	G's
Max	Time	Min	Time
12.1	87.3	-80.7	51.4



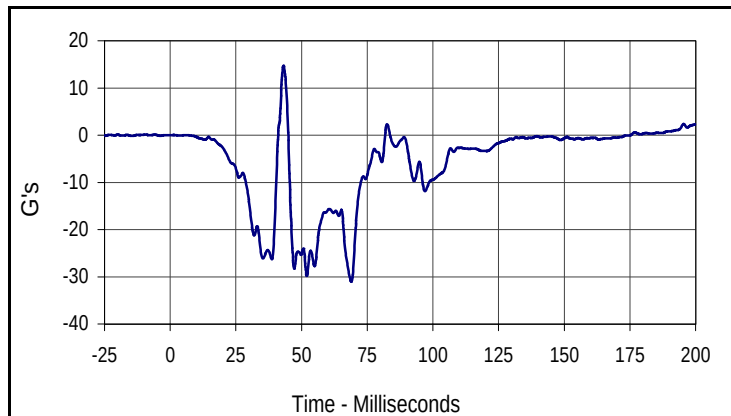
Curve Description			
Passenger Left Foot Aft Z			
CURNO	Type	SAE Class	Units
080	FIL	180	G's
Max	Time	Min	Time
5.3	76.1	-66.0	49.9



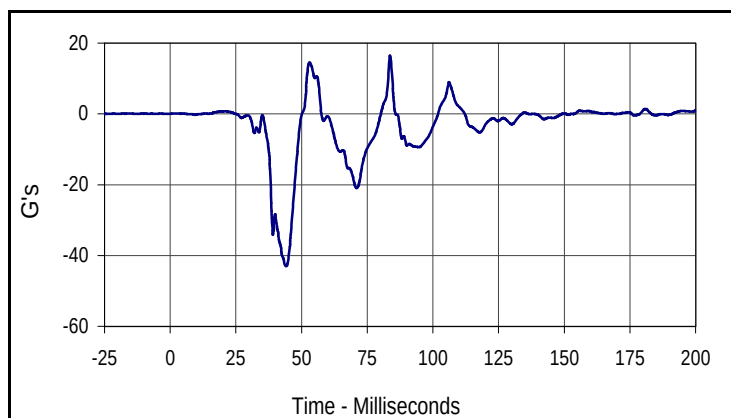
Curve Description			
Passenger Left Foot Fore Z			
CURNO	Type	SAE Class	Units
081	FIL	180	G's
Max	Time	Min	Time
14.5	79.6	-98.1	61.5

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

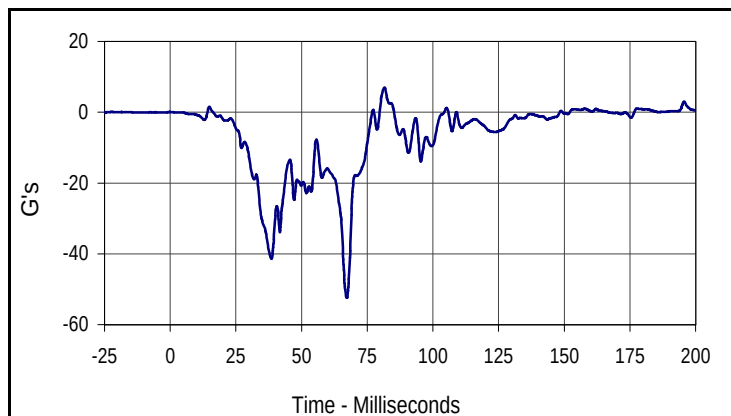
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Passenger Right Foot Aft X			
CURNO	Type	SAE Class	Units
082	FIL	180	G's
Max	Time	Min	Time
14.7	43.1	-31.0	69.0



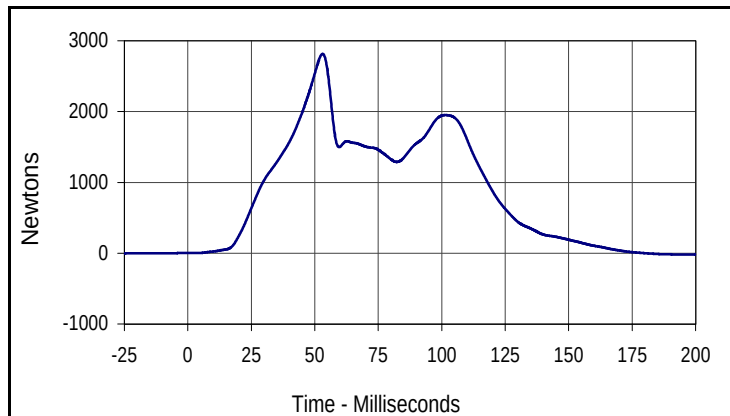
Curve Description			
Passenger Right Foot Aft Z			
CURNO	Type	SAE Class	Units
083	FIL	180	G's
Max	Time	Min	Time
16.5	83.7	-43.0	44.2



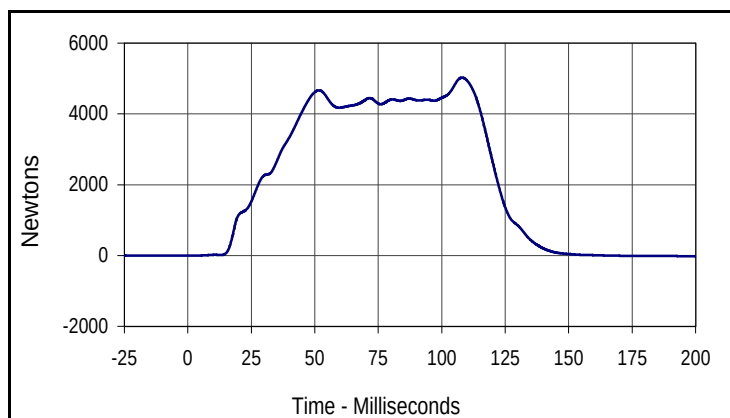
Curve Description			
Passenger Right Foot Fore Z			
CURNO	Type	SAE Class	Units
084	FIL	180	G's
Max	Time	Min	Time
6.9	81.6	-52.4	67.2

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

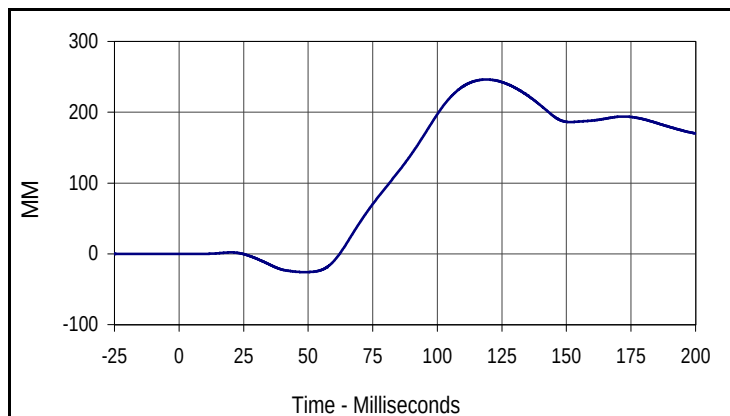
Test Date: 2/25/05
 NHTSA No.: G50103



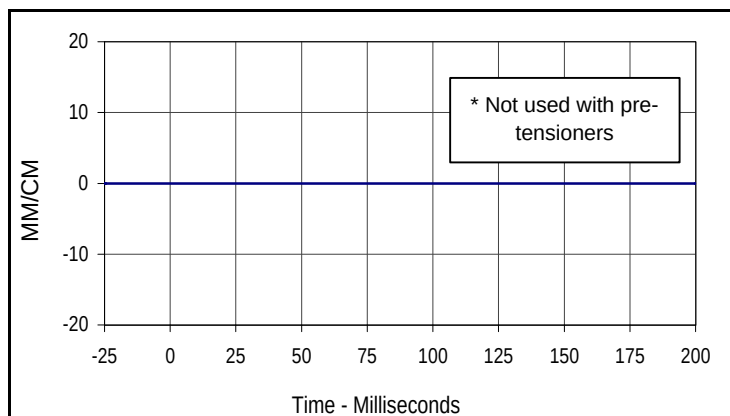
Curve Description			
Passenger Lap Belt Force			
CURNO	Type	SAE Class	Units
085	FIL	60	Newtons
Max	Time	Min	Time
2814.8	53.1	-20.1	200.4



Curve Description			
Passenger Shoulder Belt Force			
CURNO	Type	SAE Class	Units
086	FIL	60	Newtons
Max	Time	Min	Time
5025.5	108.0	-17.5	196.1



Curve Description			
Passenger Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
087	FIL	60	MM
Max	Time	Min	Time
246.2	119.4	-25.8	49.0

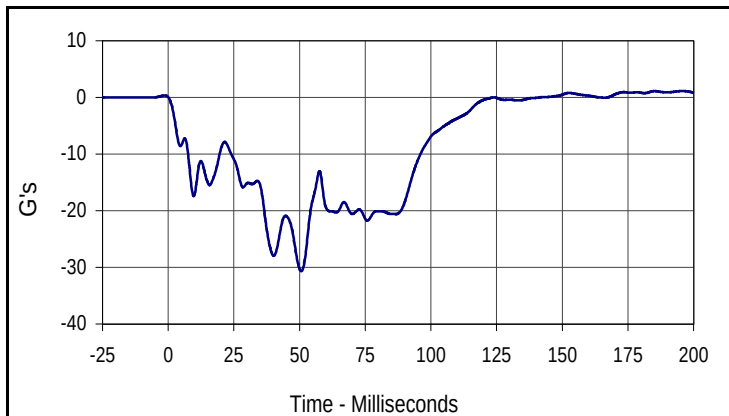


Curve Description			
Passenger Shoulder Belt Elongation			
CURNO	Type	SAE Class	Units
088	FIL	60	MM/CM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

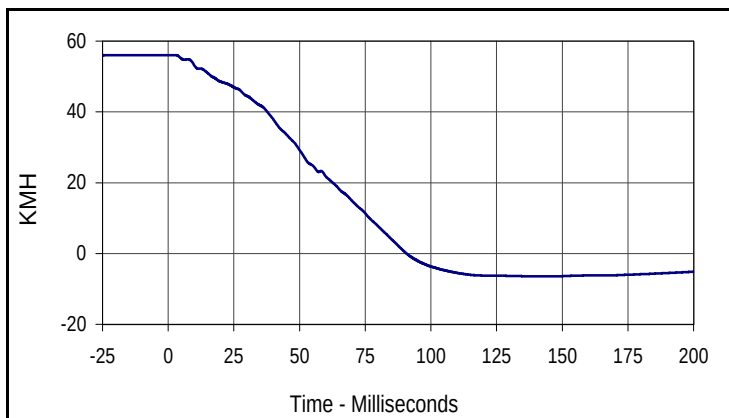
* Not used with pre-tensioners

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

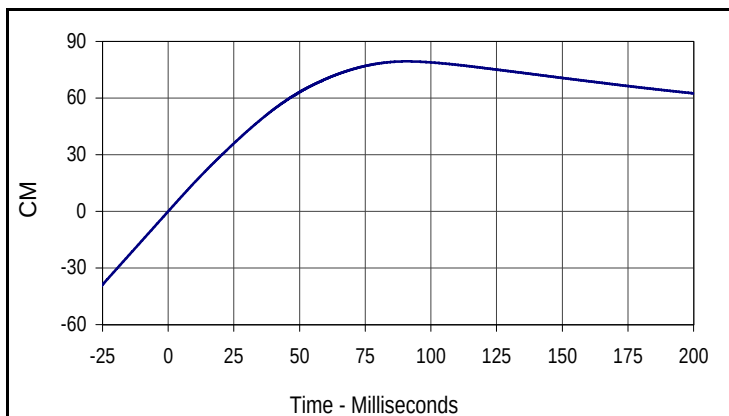
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Left Rear X			
CURNO	Type	SAE Class	Units
089	FIL	60	G's
Max	Time	Min	Time
1.1	195.6	-30.7	50.6



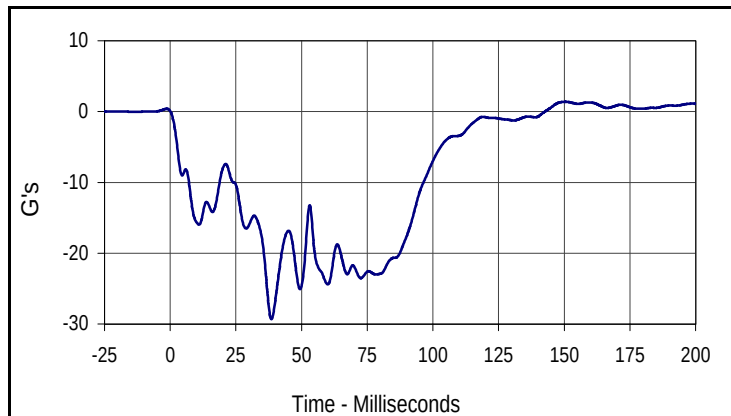
Curve Description			
Vehicle Left Rear X Velocity			
CURNO	Type	SAE Class	Units
089	IN1	180	KMH
Max	Time	Min	Time
56.1	2.6	-6.4	141.7



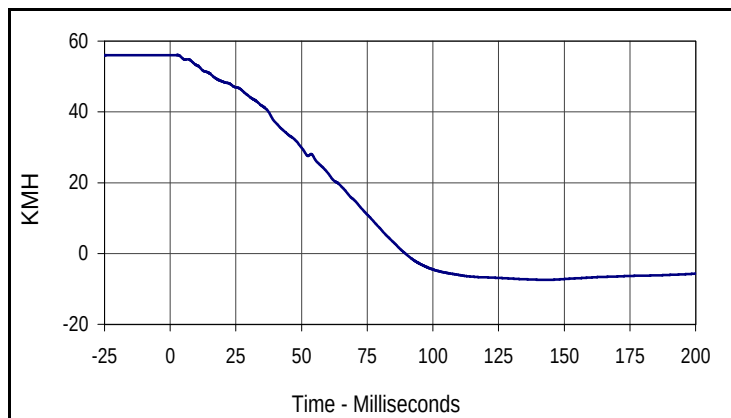
Curve Description			
Vehicle Left Rear X Displacement			
CURNO	Type	SAE Class	Units
089	IN2	180	CM
Max	Time	Min	Time
79.4	90.7	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

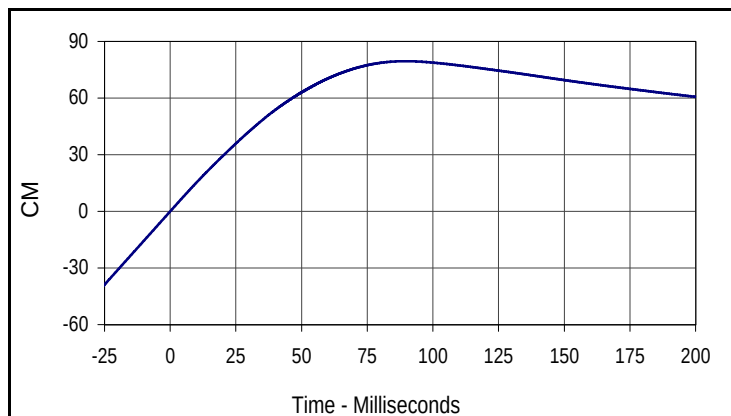
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Right Rear X			
CURNO	Type	SAE Class	Units
090	FIL	60	G's
Max	Time	Min	Time
1.4	150.5	-29.3	38.5



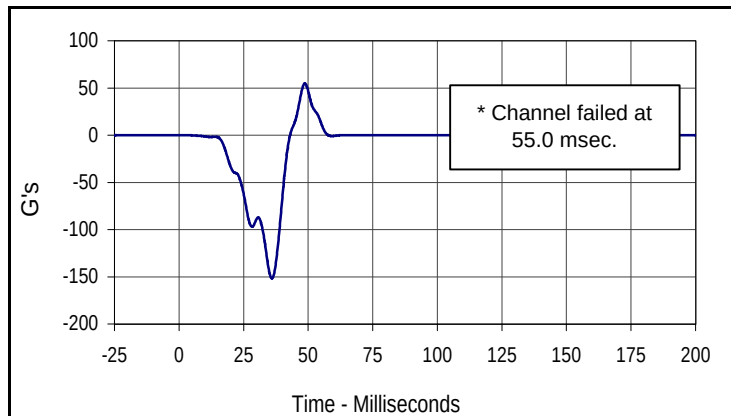
Curve Description			
Vehicle Right Rear X Velocity			
CURNO	Type	SAE Class	Units
090	IN1	180	KMH
Max	Time	Min	Time
56.1	2.7	-7.4	141.2



Curve Description			
Vehicle Right Rear X Displacement			
CURNO	Type	SAE Class	Units
090	IN2	180	CM
Max	Time	Min	Time
79.5	89.5	0.0	0.0

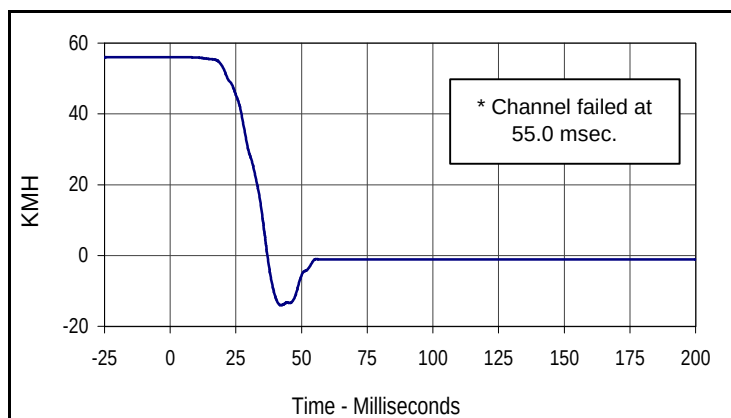
Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
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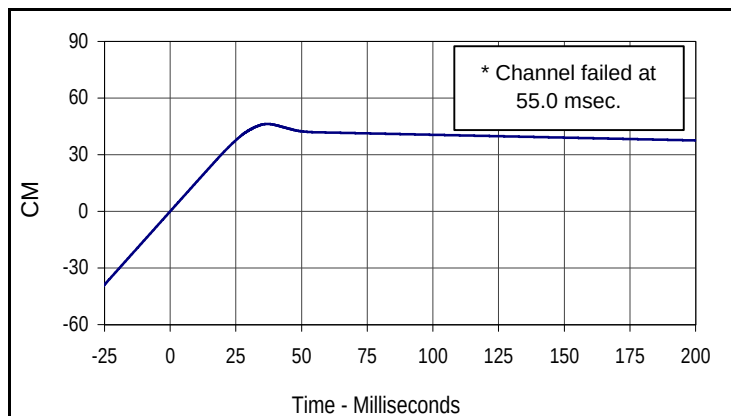
Curve Description			
Vehicle Engine Top X			
CURNO	Type	SAE Class	Units
091	FIL	60	G's
Max	Time	Min	Time
54.8	48.7	-151.7	36.0

* Channel failed at 55.0 msec.



Curve Description			
Vehicle Engine Top X Velocity			
CURNO	Type	SAE Class	Units
091	IN1	180	KMH
Max	Time	Min	Time
56.0	2.0	-14.0	42.1

* Channel failed at 55.0 msec.

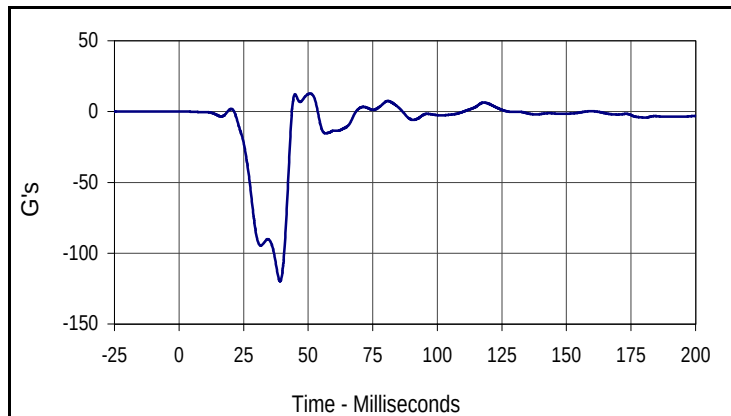


Curve Description			
Vehicle Engine Top X Displacement			
CURNO	Type	SAE Class	Units
091	IN2	180	CM
Max	Time	Min	Time
46.3	37.0	0.0	0.0

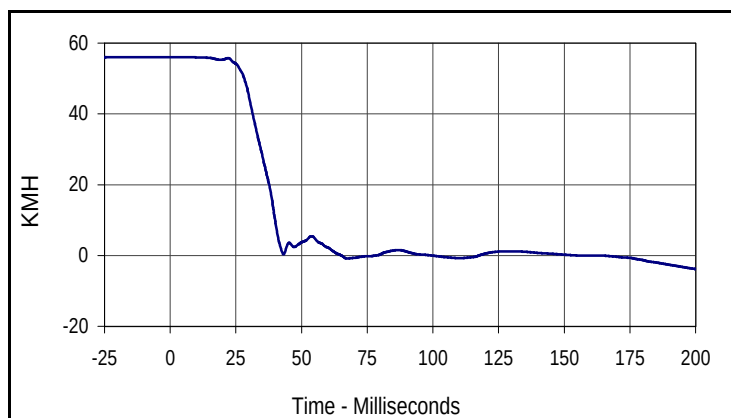
* Channel failed at 55.0 msec.

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

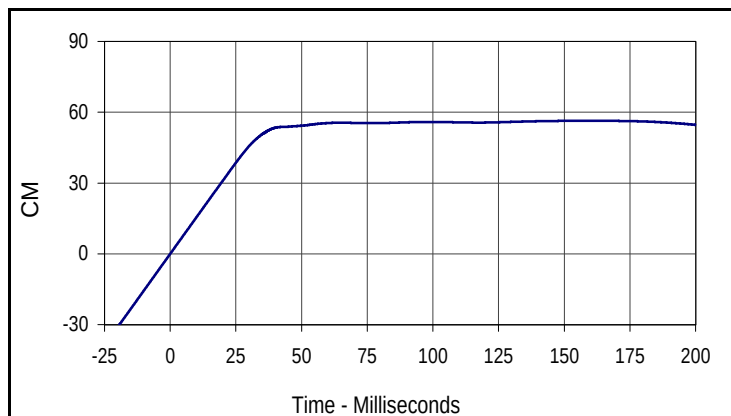
Test Date: 2/25/05
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Curve Description			
Vehicle Engine Bottom X			
CURNO	Type	SAE Class	Units
092	FIL	60	G's
Max	Time	Min	Time
12.7	50.8	-119.9	39.1



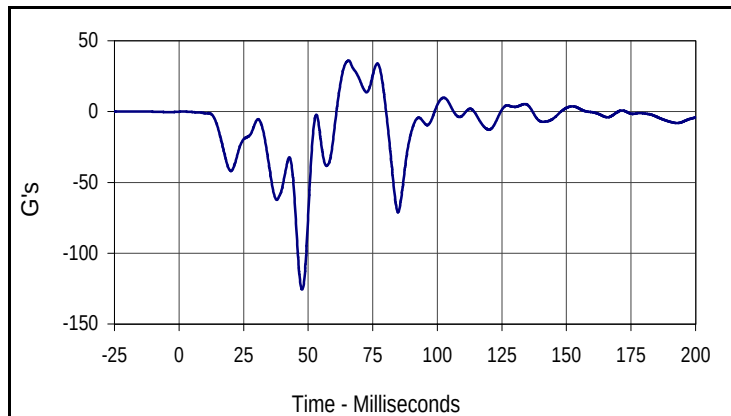
Curve Description			
Vehicle Engine Bottom X Velocity			
CURNO	Type	SAE Class	Units
092	IN1	180	KMH
Max	Time	Min	Time
56.0	0.0	-3.8	200.0



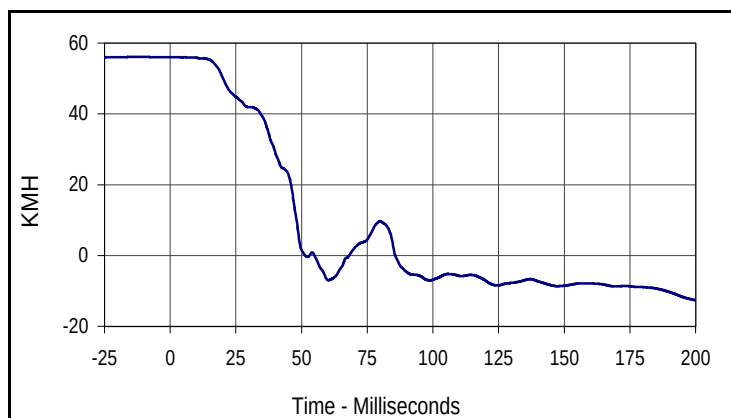
Curve Description			
Vehicle Engine Bottom X Displacement			
CURNO	Type	SAE Class	Units
092	IN2	180	CM
Max	Time	Min	Time
56.3	163.9	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

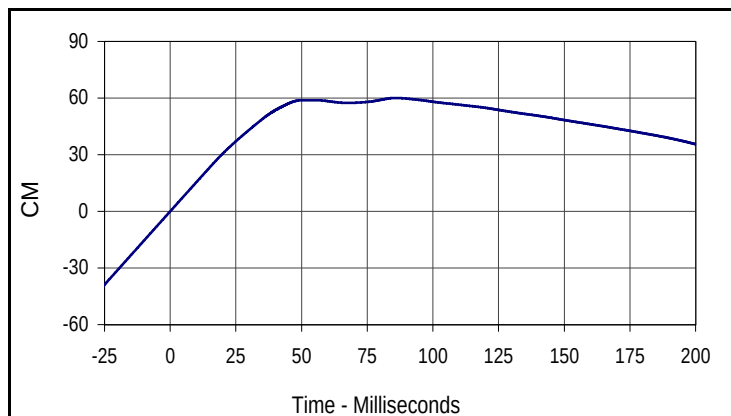
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Left Brake Caliper X			
CURNO	Type	SAE Class	Units
093	FIL	60	G's
Max	Time	Min	Time
36.0	65.7	-125.5	47.6



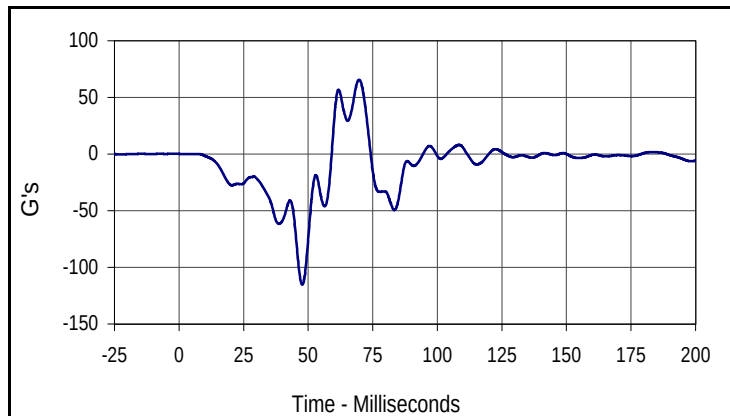
Curve Description			
Vehicle Left Brake Caliper X Velocity			
CURNO	Type	SAE Class	Units
093	IN1	180	KMH
Max	Time	Min	Time
56.0	2.6	-12.6	200.0



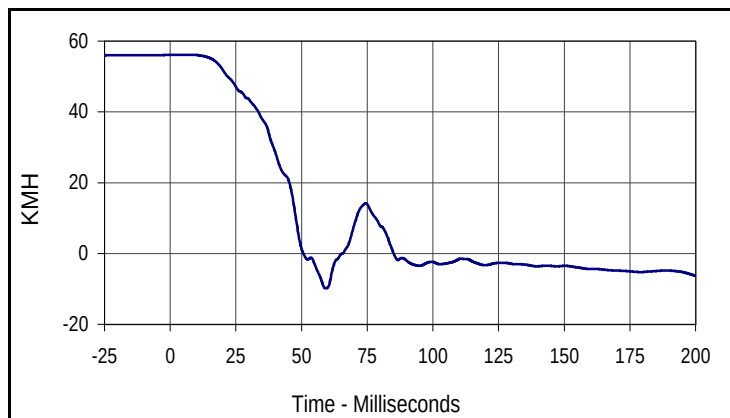
Curve Description			
Vehicle Left Brake Caliper X Displacement			
CURNO	Type	SAE Class	Units
093	IN2	180	CM
Max	Time	Min	Time
60.1	85.7	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

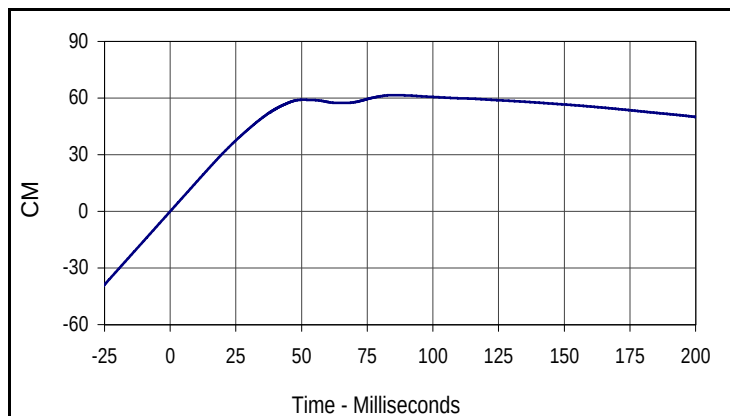
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Right Brake Caliper X			
CURNO	Type	SAE Class	Units
094	FIL	60	G's
Max	Time	Min	Time
65.7	69.7	-115.4	47.7



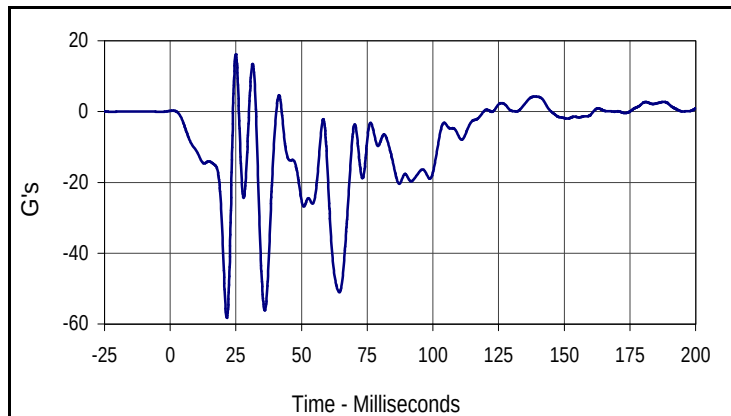
Curve Description			
Vehicle Right Brake Caliper X Velocity			
CURNO	Type	SAE Class	Units
094	IN1	180	KMH
Max	Time	Min	Time
56.1	9.2	-9.8	59.2



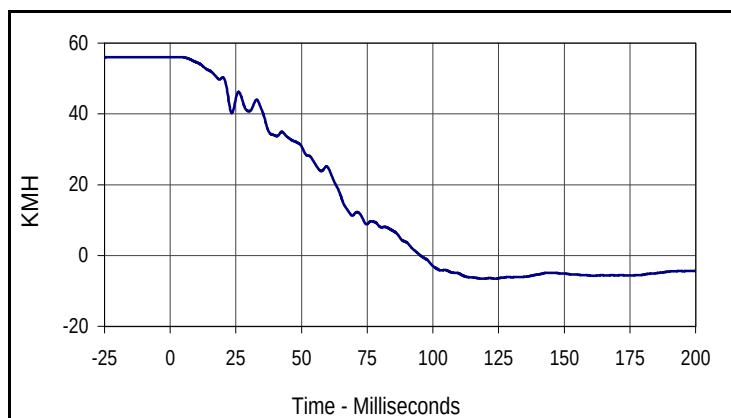
Curve Description			
Vehicle Right Brake Caliper X Displacement			
CURNO	Type	SAE Class	Units
094	IN2	180	CM
Max	Time	Min	Time
61.6	85.0	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

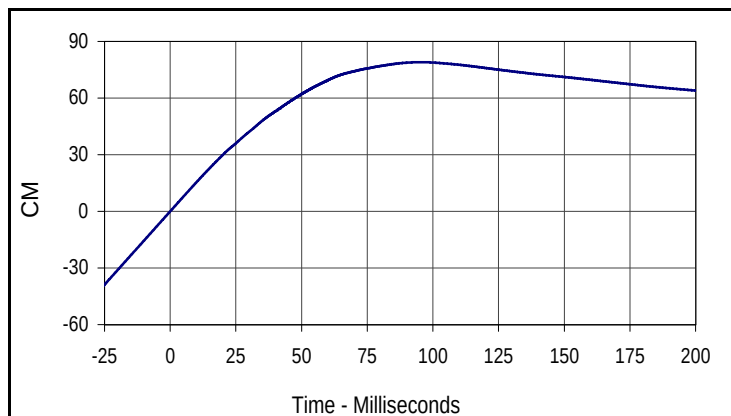
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Instrument Panel X			
CURNO	Type	SAE Class	Units
095	FIL	60	G's
Max	Time	Min	Time
16.2	25.0	-58.3	21.6



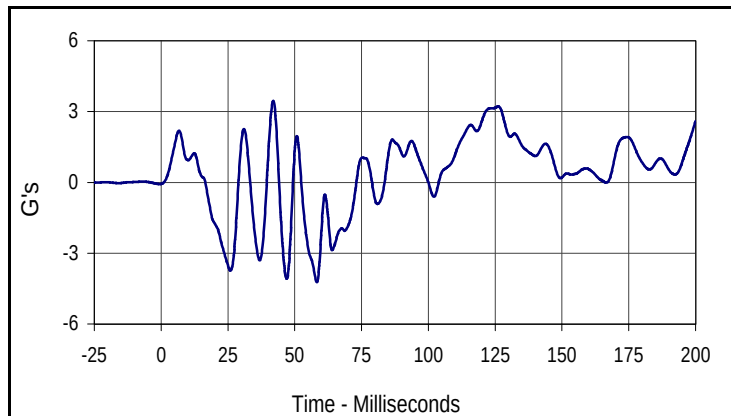
Curve Description			
Vehicle Instrument Panel X Velocity			
CURNO	Type	SAE Class	Units
095	IN1	180	KMH
Max	Time	Min	Time
56.0	2.9	-6.6	119.1



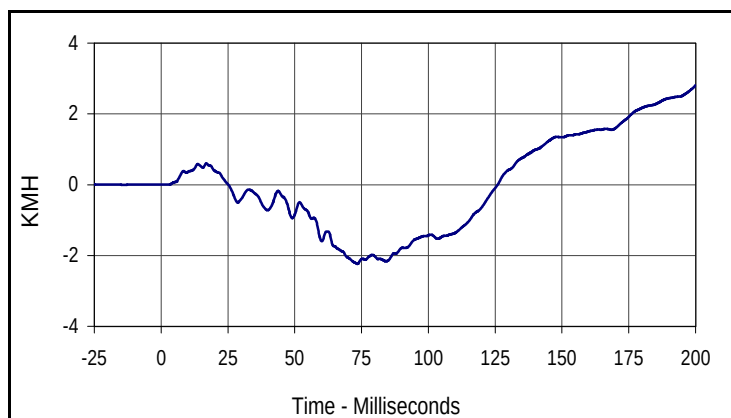
Curve Description			
Vehicle Instrument Panel X Displacement			
CURNO	Type	SAE Class	Units
095	IN2	180	CM
Max	Time	Min	Time
79.0	95.2	0.0	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

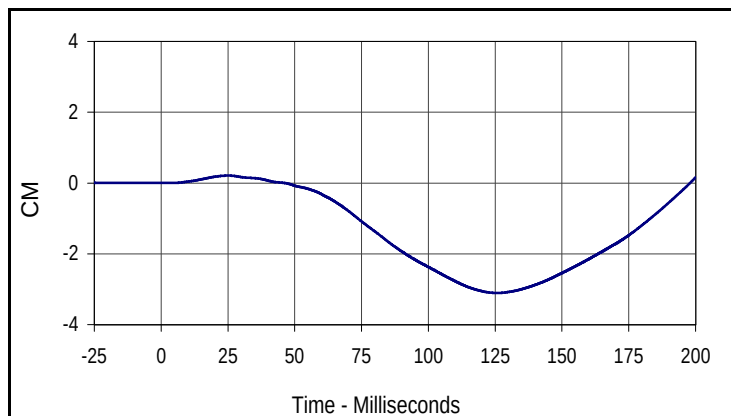
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Left Rear Z			
CURNO	Type	SAE Class	Units
096	FIL	60	G's
Max	Time	Min	Time
3.5	42.0	-4.2	58.3



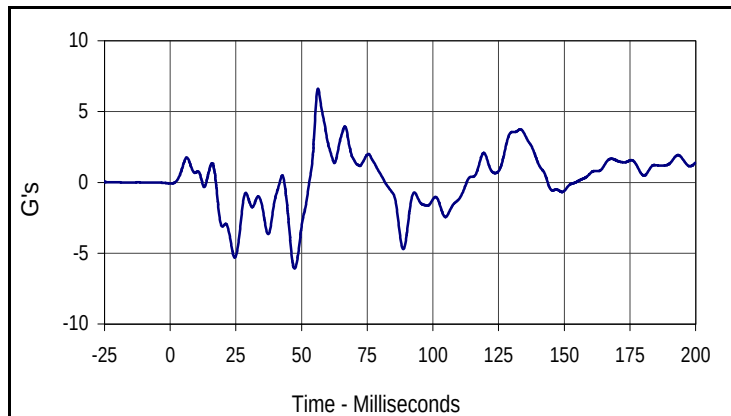
Curve Description			
Vehicle Left Rear Z Velocity			
CURNO	Type	SAE Class	Units
096	IN1	180	KMH
Max	Time	Min	Time
2.8	200.0	-2.2	73.4



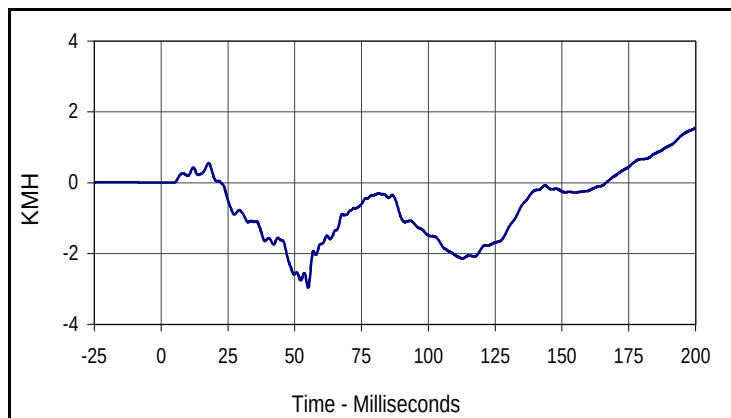
Curve Description			
Vehicle Left Rear Z Displacement			
CURNO	Type	SAE Class	Units
096	IN2	180	CM
Max	Time	Min	Time
0.2	25.2	-3.1	125.9

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

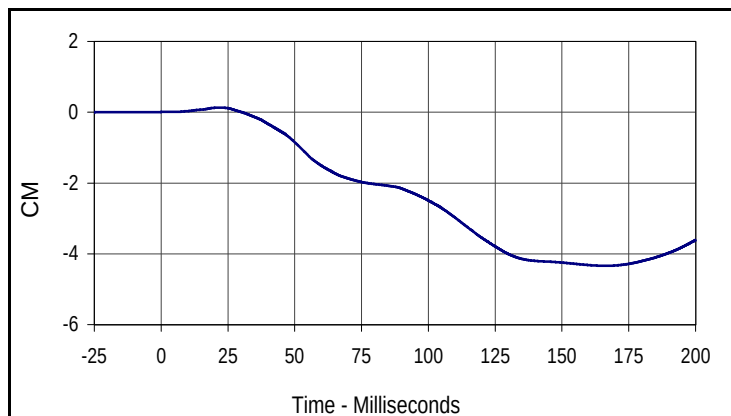
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Vehicle Right Rear Z			
CURNO	Type	SAE Class	Units
097	FIL	60	G's
Max	Time	Min	Time
6.6	56.3	-6.1	47.3



Curve Description			
Vehicle Right Rear Z Velocity			
CURNO	Type	SAE Class	Units
097	IN1	180	KMH
Max	Time	Min	Time
1.6	200.0	-3.0	55.0



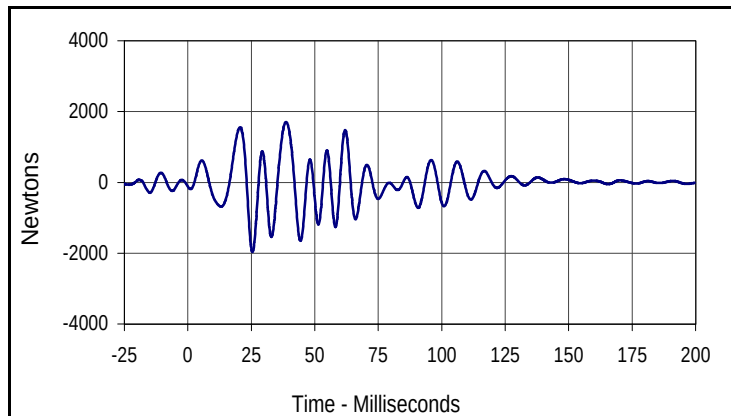
Curve Description			
Vehicle Right Rear Z Displacement			
CURNO	Type	SAE Class	Units
097	IN2	180	CM
Max	Time	Min	Time
0.1	22.4	-4.3	166.5

APPENDIX C

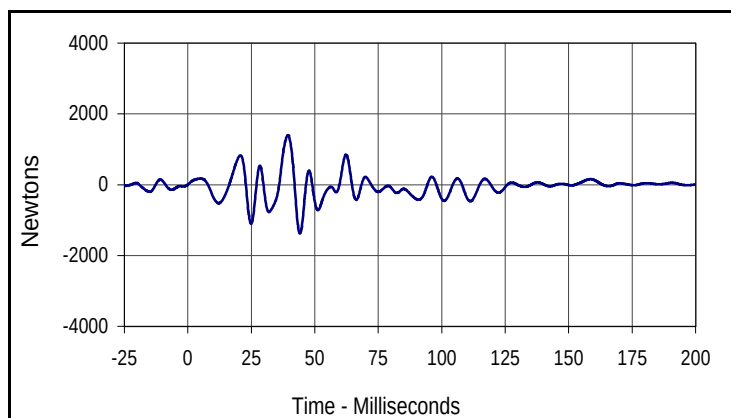
LOAD CELL BARRIER DATA PLOTS

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

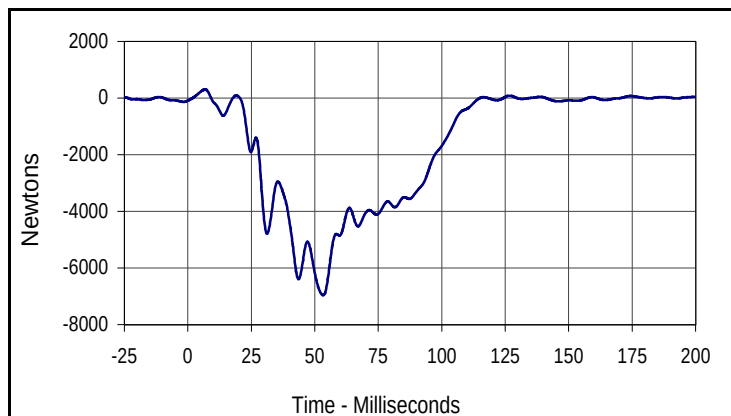
Test Date: 2/25/05
 NHTSA No.: G50103



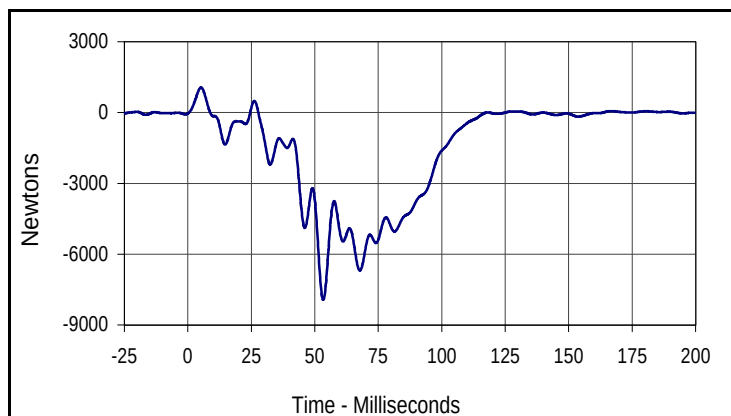
Curve Description			
Barrier Force A1			
CURNO	Type	SAE Class	Units
098	FIL	60	Newtons
Max	Time	Min	Time
1704.1	38.7	-1968.2	25.5



Curve Description			
Barrier Force B1			
CURNO	Type	SAE Class	Units
107	FIL	60	Newtons
Max	Time	Min	Time
1393.0	39.4	-1380.5	44.1



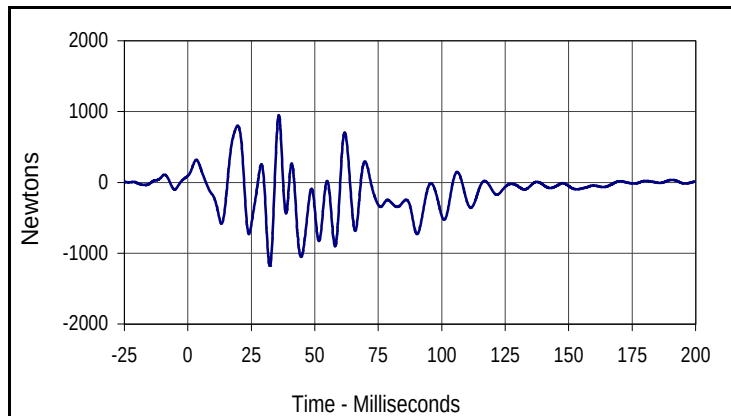
Curve Description			
Barrier Force C1			
CURNO	Type	SAE Class	Units
116	FIL	60	Newtons
Max	Time	Min	Time
304.9	6.7	-6963.4	53.3



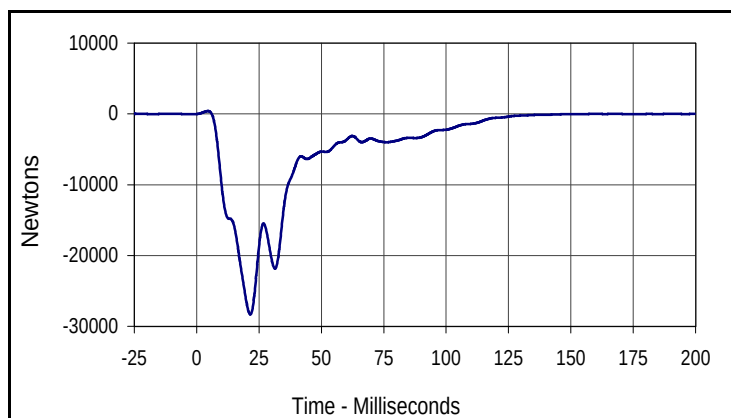
Curve Description			
Barrier Force D1			
CURNO	Type	SAE Class	Units
125	FIL	60	Newtons
Max	Time	Min	Time
1057.6	5.2	-7933.8	53.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

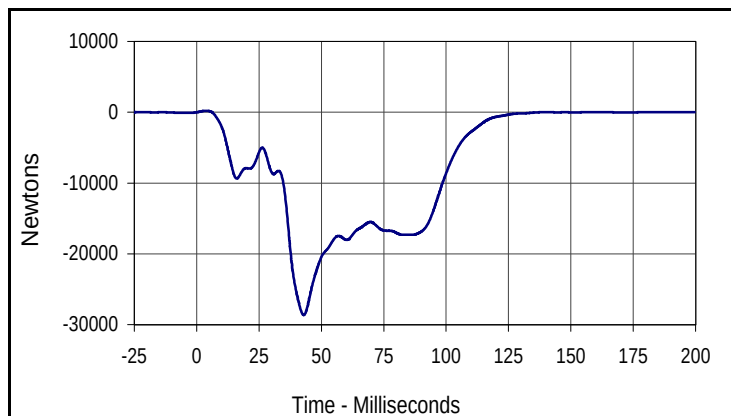
Test Date: 2/25/05
 NHTSA No.: G50103



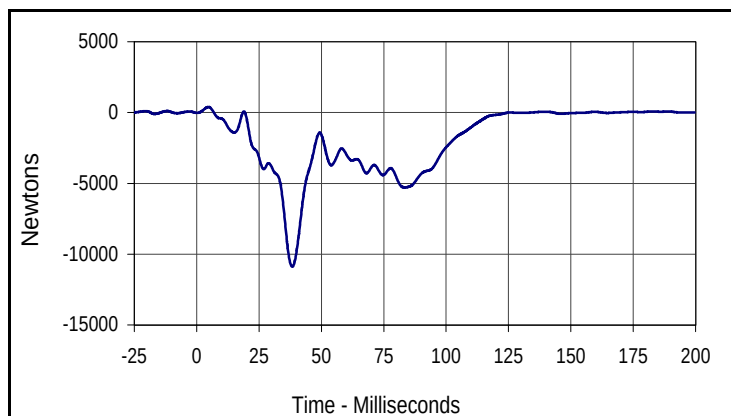
Curve Description			
Barrier Force A2			
CURNO	Type	SAE Class	Units
099	FIL	60	Newtons
Max	Time	Min	Time
945.5	35.8	-1179.5	32.3



Curve Description			
Barrier Force B2			
CURNO	Type	SAE Class	Units
108	FIL	60	Newtons
Max	Time	Min	Time
408.7	4.5	-28316.4	21.5



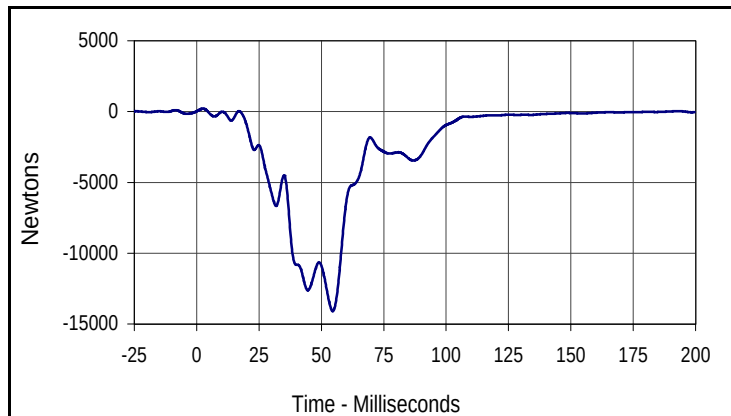
Curve Description			
Barrier Force C2			
CURNO	Type	SAE Class	Units
117	FIL	60	Newtons
Max	Time	Min	Time
213.6	3.8	-28637.4	42.9



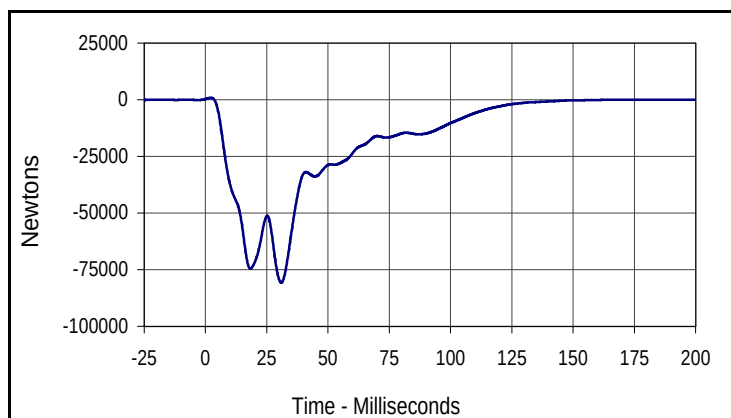
Curve Description			
Barrier Force D2			
CURNO	Type	SAE Class	Units
126	FIL	60	Newtons
Max	Time	Min	Time
398.6	4.7	-10890.8	38.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

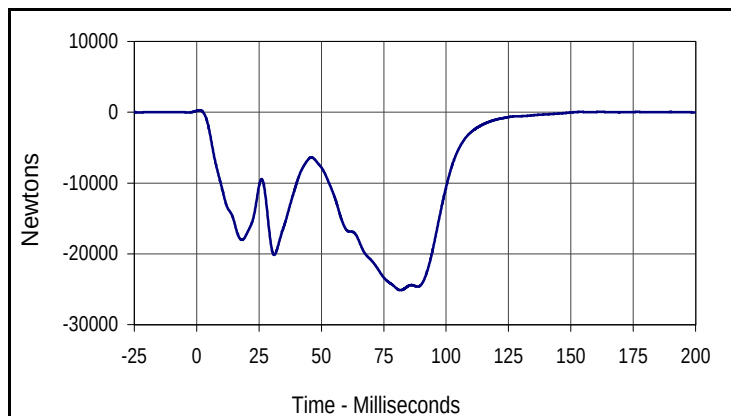
Test Date: 2/25/05
 NHTSA No.: G50103



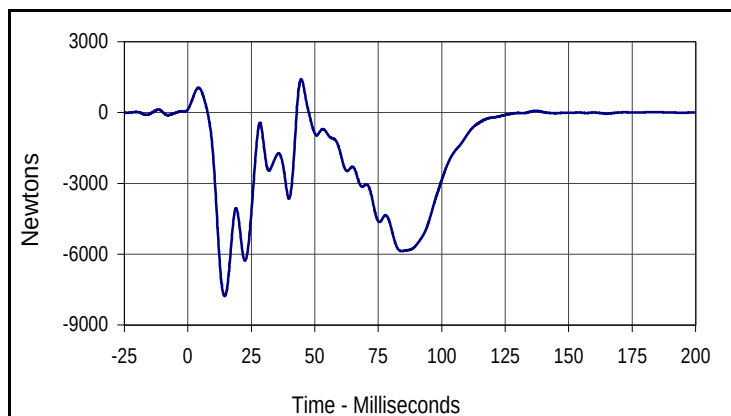
Curve Description			
Barrier Force A3			
CURNO	Type	SAE Class	Units
100	FIL	60	Newtons
Max	Time	Min	Time
210.9	2.5	-14084.9	54.5



Curve Description			
Barrier Force B3			
CURNO	Type	SAE Class	Units
109	FIL	60	Newtons
Max	Time	Min	Time
863.6	2.2	-80745.4	30.9



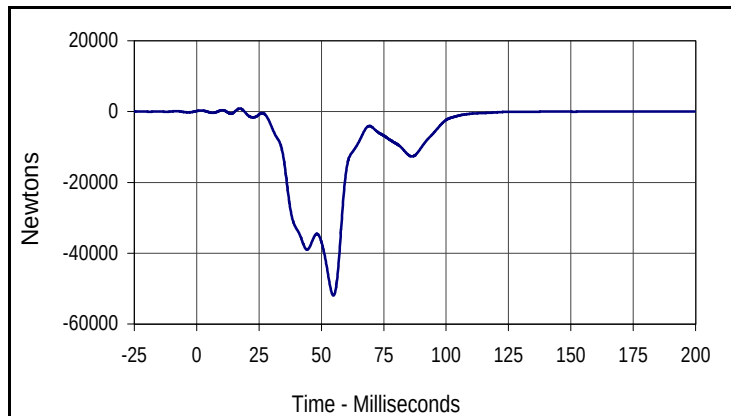
Curve Description			
Barrier Force C3			
CURNO	Type	SAE Class	Units
118	FIL	60	Newtons
Max	Time	Min	Time
268.1	1.1	-25138.9	81.7



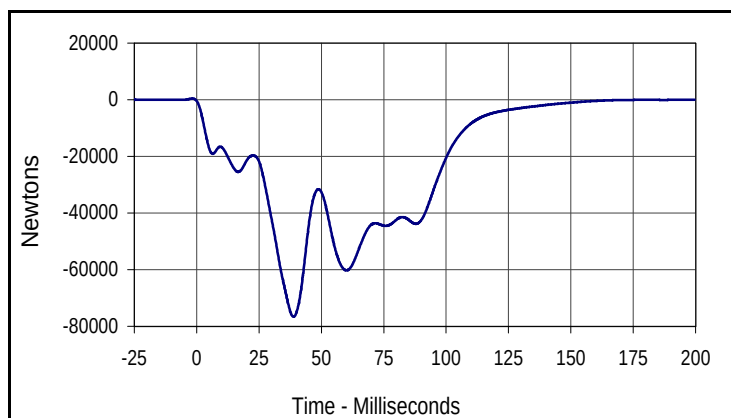
Curve Description			
Barrier Force D3			
CURNO	Type	SAE Class	Units
127	FIL	60	Newtons
Max	Time	Min	Time
1413.3	44.6	-7781.8	14.5

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

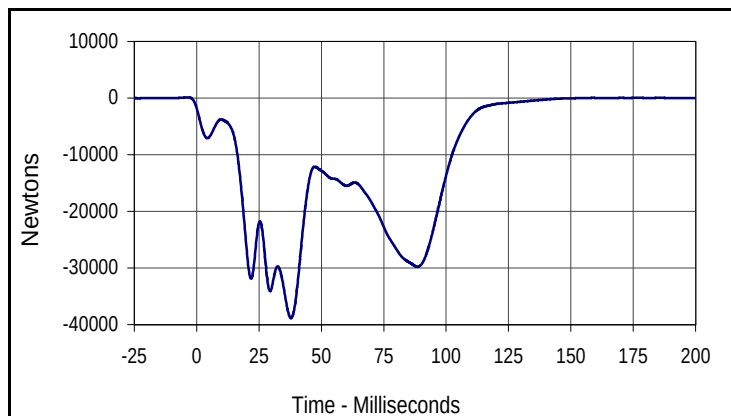
Test Date: 2/25/05
 NHTSA No.: G50103



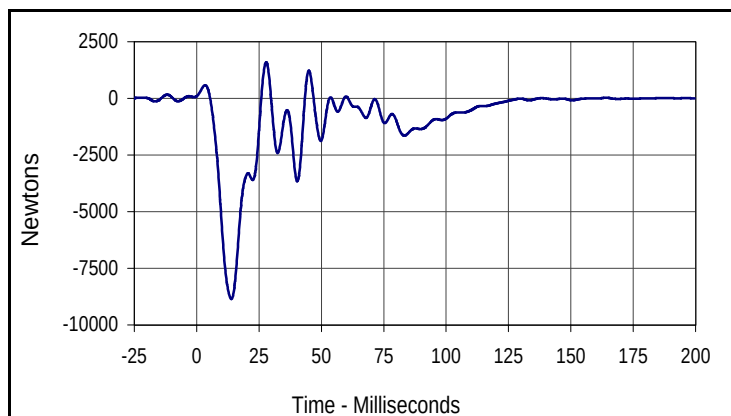
Curve Description			
Barrier Force A4			
CURNO	Type	SAE Class	Units
101	FIL	60	Newtons
Max	Time	Min	Time
849.8	17.3	-51970.3	54.8



Curve Description			
Barrier Force B4			
CURNO	Type	SAE Class	Units
110	FIL	60	Newtons
Max	Time	Min	Time
-0.6	179.7	-76631.2	38.8



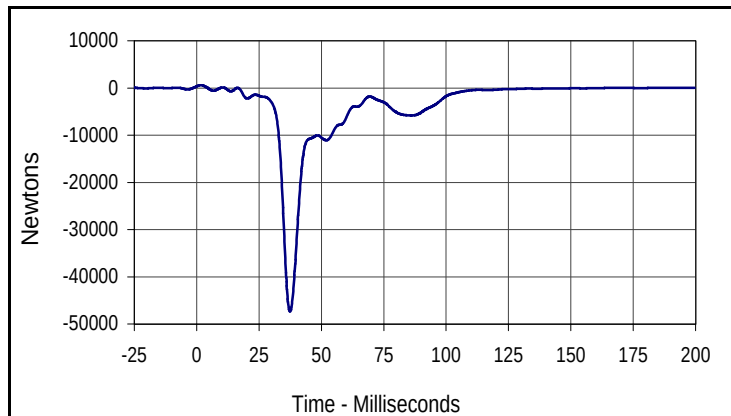
Curve Description			
Barrier Force C4			
CURNO	Type	SAE Class	Units
119	FIL	60	Newtons
Max	Time	Min	Time
42.5	177.2	-38843.3	37.8



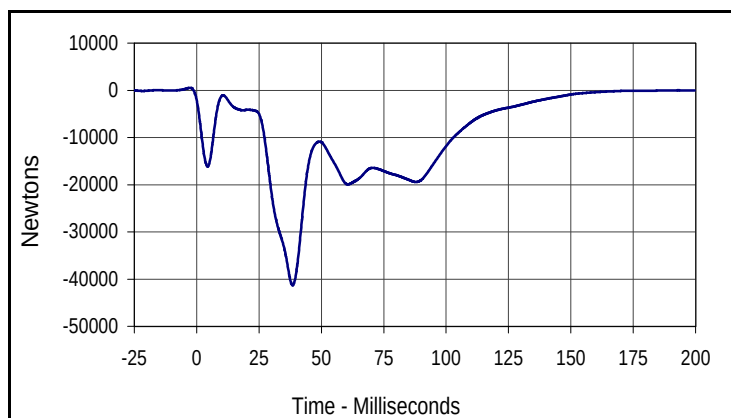
Curve Description			
Barrier Force D4			
CURNO	Type	SAE Class	Units
128	FIL	60	Newtons
Max	Time	Min	Time
1600.5	27.9	-8852.2	13.9

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

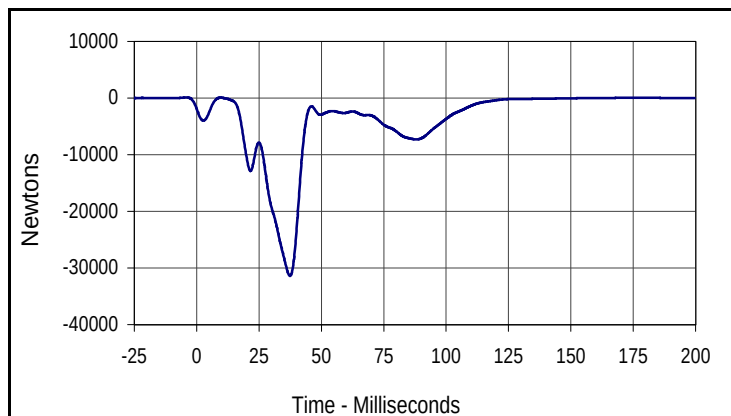
Test Date: 2/25/05
 NHTSA No.: G50103



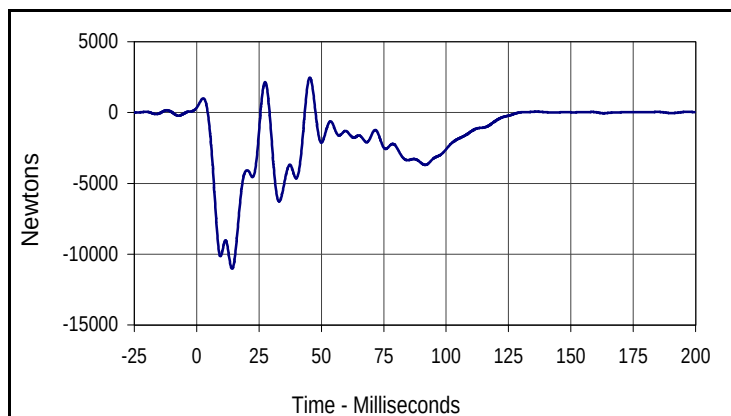
Curve Description			
Barrier Force A5			
CURNO	Type	SAE Class	Units
102	FIL	60	Newtons
Max	Time	Min	Time
602.1	1.7	-47379.7	37.4



Curve Description			
Barrier Force B5			
CURNO	Type	SAE Class	Units
111	FIL	60	Newtons
Max	Time	Min	Time
0.3	193.1	-41301.5	38.5



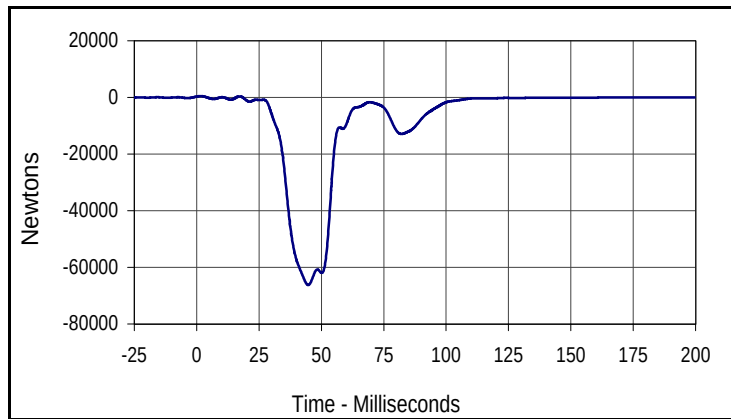
Curve Description			
Barrier Force C5			
CURNO	Type	SAE Class	Units
120	FIL	60	Newtons
Max	Time	Min	Time
104.3	9.5	-31400.2	37.4



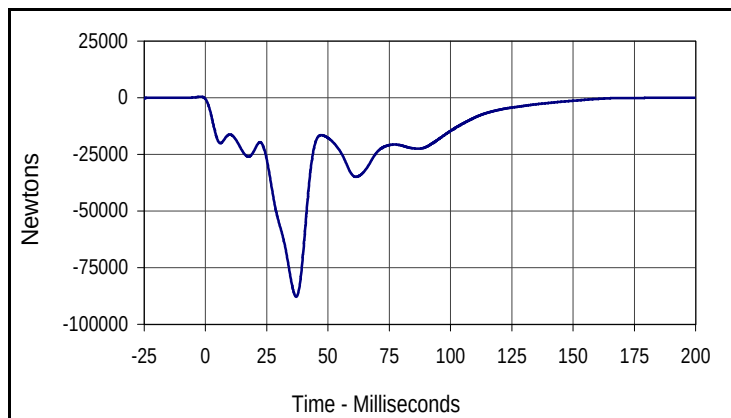
Curve Description			
Barrier Force D5			
CURNO	Type	SAE Class	Units
129	FIL	60	Newtons
Max	Time	Min	Time
2467.8	45.4	-11027.8	14.2

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

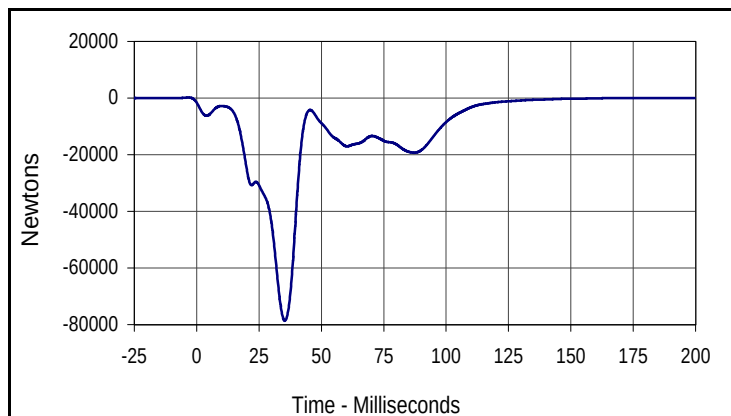
Test Date: 2/25/05
 NHTSA No.: G50103



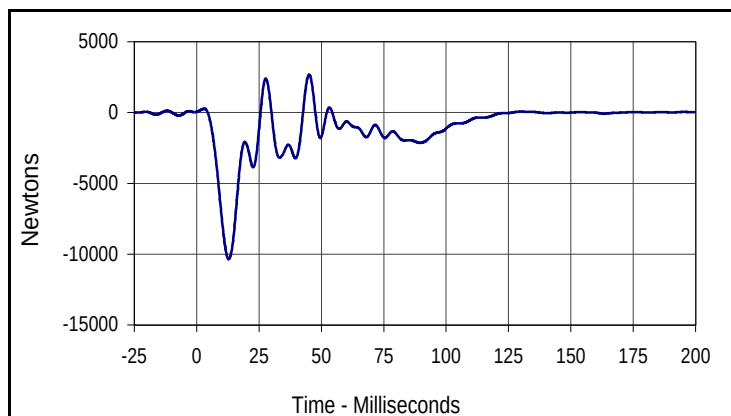
Curve Description			
Barrier Force A6			
CURNO	Type	SAE Class	Units
103	FIL	60	Newtons
Max	Time	Min	Time
467.5	1.7	-66231.9	44.7



Curve Description			
Barrier Force B6			
CURNO	Type	SAE Class	Units
112	FIL	60	Newtons
Max	Time	Min	Time
30.0	200.0	-87810.3	37.0



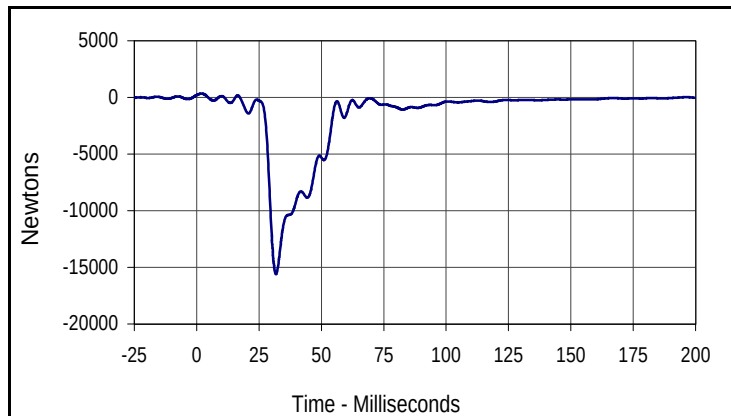
Curve Description			
Barrier Force C6			
CURNO	Type	SAE Class	Units
121	FIL	60	Newtons
Max	Time	Min	Time
28.6	197.9	-78588.8	35.3



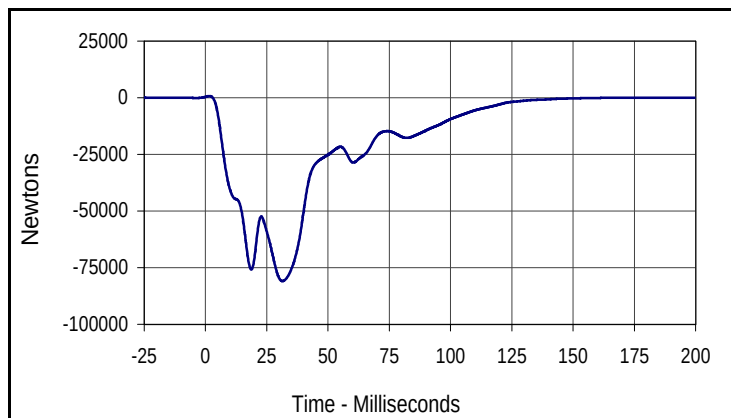
Curve Description			
Barrier Force D6			
CURNO	Type	SAE Class	Units
130	FIL	60	Newtons
Max	Time	Min	Time
2661.6	45.1	-10369.1	12.8

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

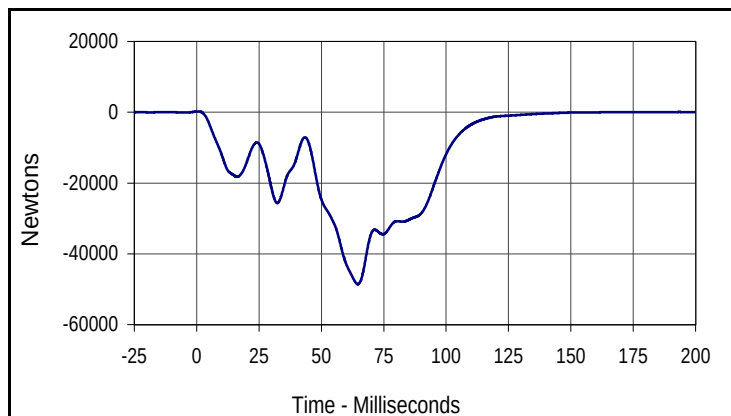
Test Date: 2/25/05
 NHTSA No.: G50103



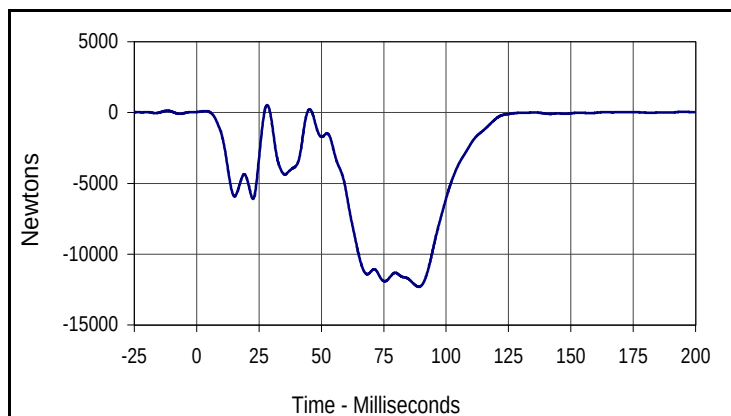
Curve Description			
Barrier Force A7			
CURNO	Type	SAE Class	Units
104	FIL	60	Newtons
Max	Time	Min	Time
339.4	1.9	-15583.5	31.8



Curve Description			
Barrier Force B7			
CURNO	Type	SAE Class	Units
113	FIL	60	Newtons
Max	Time	Min	Time
741.8	1.6	-80927.6	31.4



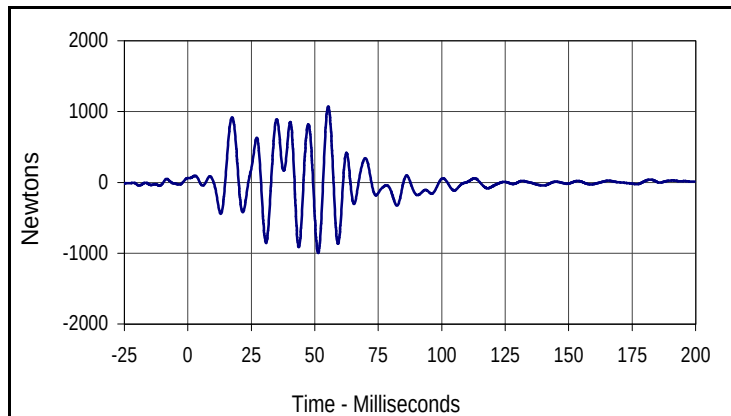
Curve Description			
Barrier Force C7			
CURNO	Type	SAE Class	Units
122	FIL	60	Newtons
Max	Time	Min	Time
240.9	0.6	-48577.6	64.6



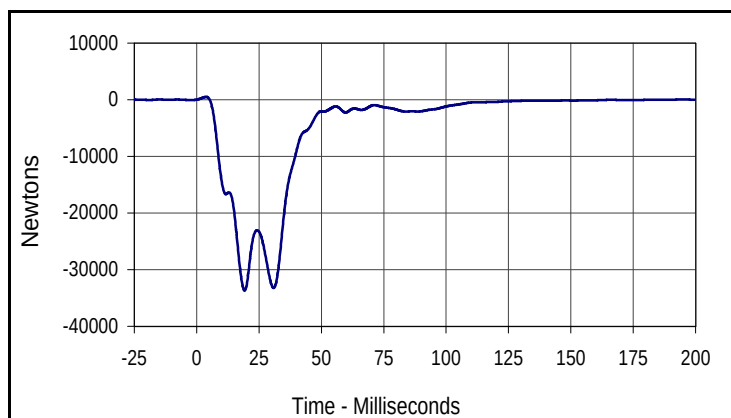
Curve Description			
Barrier Force D7			
CURNO	Type	SAE Class	Units
131	FIL	60	Newtons
Max	Time	Min	Time
529.8	28.2	-12299.5	89.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

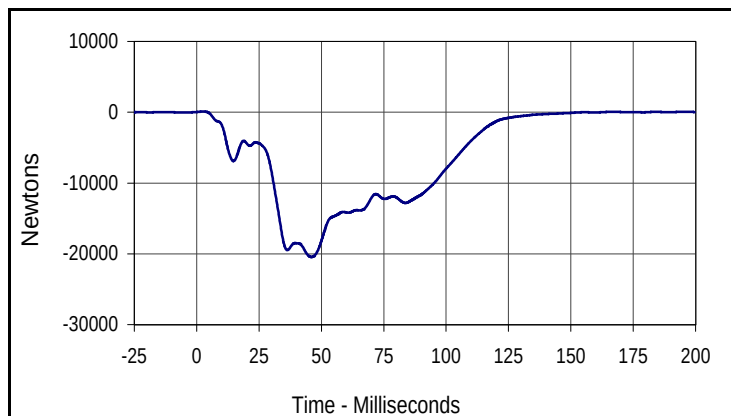
Test Date: 2/25/05
 NHTSA No.: G50103



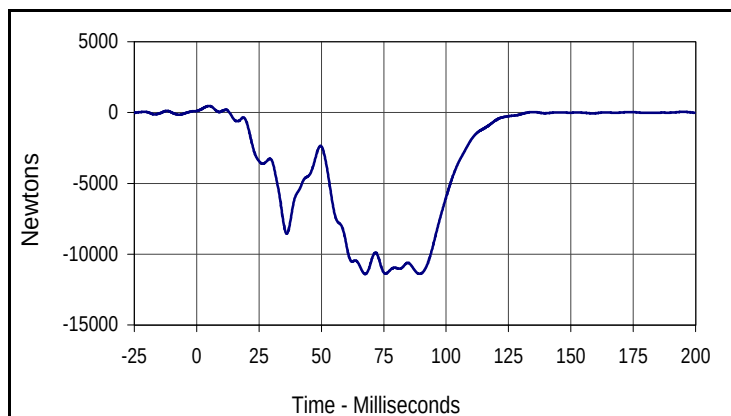
Curve Description			
Barrier Force A8			
CURNO	Type	SAE Class	Units
105	FIL	60	Newtons
Max	Time	Min	Time
1072.1	55.3	-996.6	51.3



Curve Description			
Barrier Force B8			
CURNO	Type	SAE Class	Units
114	FIL	60	Newtons
Max	Time	Min	Time
503.9	3.8	-33658.7	19.2



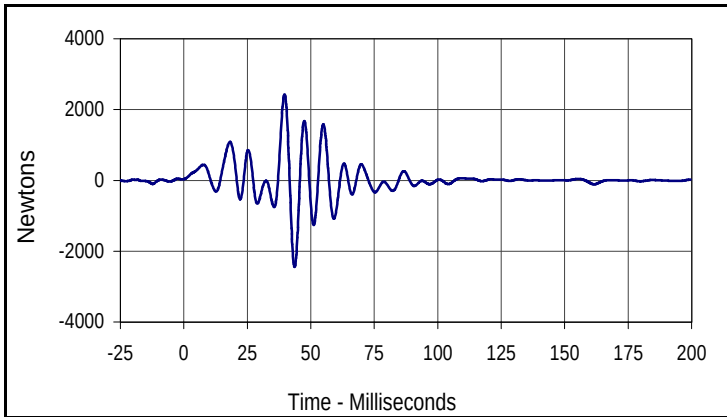
Curve Description			
Barrier Force C8			
CURNO	Type	SAE Class	Units
123	FIL	60	Newtons
Max	Time	Min	Time
101.0	2.6	-20447.8	46.0



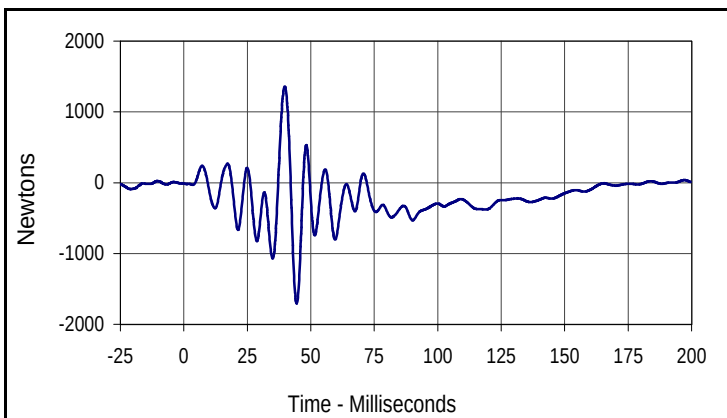
Curve Description			
Barrier Force D8			
CURNO	Type	SAE Class	Units
132	FIL	60	Newtons
Max	Time	Min	Time
460.8	5.0	-11399.9	67.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

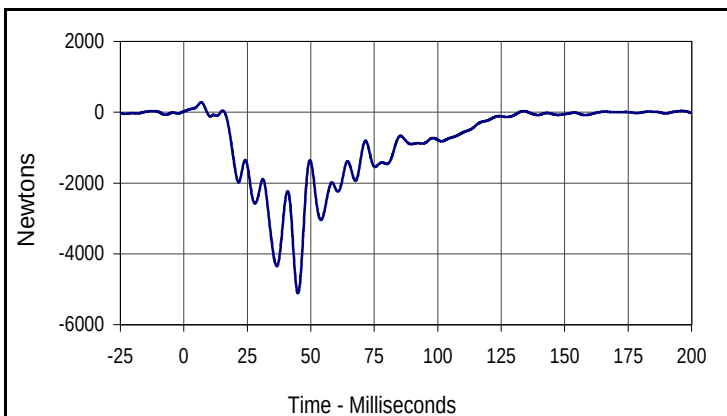
Test Date: 2/25/05
 NHTSA No.: G50103



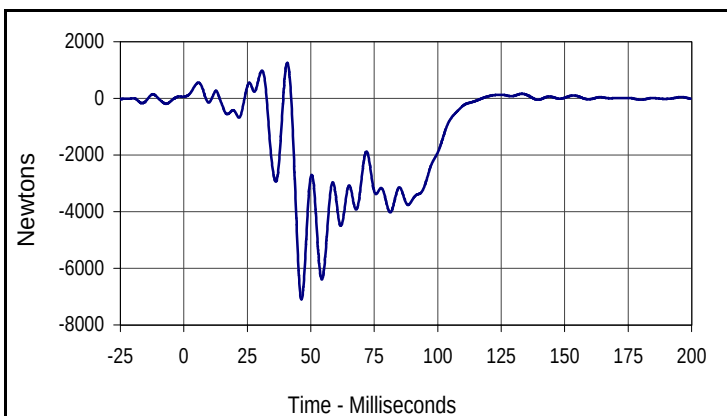
Curve Description			
Barrier Force A9			
CURNO	Type	SAE Class	Units
106	FIL	60	Newtons
Max	Time	Min	Time
2429.5	39.7	-2449.6	43.6



Curve Description			
Barrier Force B9			
CURNO	Type	SAE Class	Units
115	FIL	60	Newtons
Max	Time	Min	Time
1359.5	39.7	-1704.8	44.4



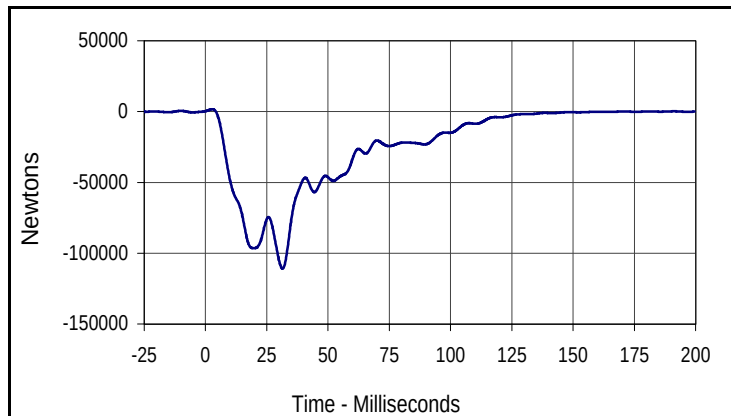
Curve Description			
Barrier Force C9			
CURNO	Type	SAE Class	Units
124	FIL	60	Newtons
Max	Time	Min	Time
283.8	6.9	-5118.0	44.9



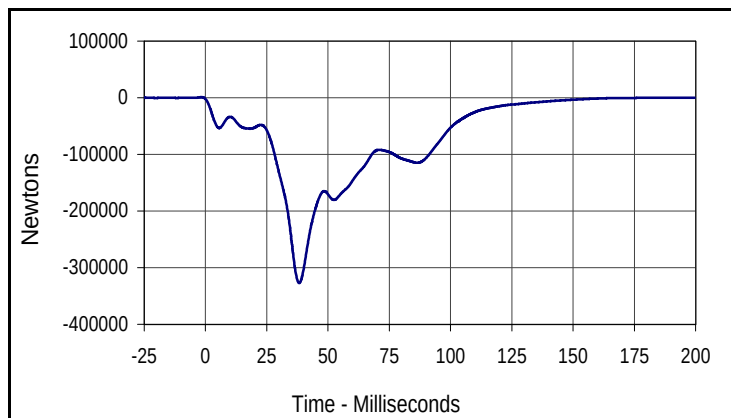
Curve Description			
Barrier Force D9			
CURNO	Type	SAE Class	Units
133	FIL	60	Newtons
Max	Time	Min	Time
1251.0	40.7	-7097.7	46.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

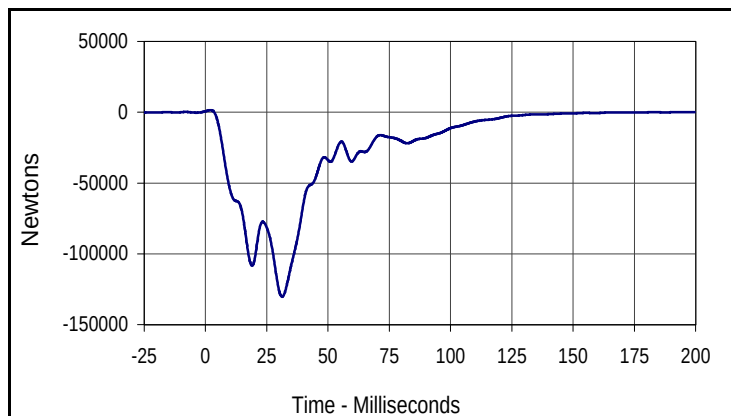
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Barrier Force Sum Group 1			
CURNO	Type	SAE Class	Units
001	SUM	60	Newtons
Max	Time	Min	Time
1693.4	2.8	-110953.9	31.4



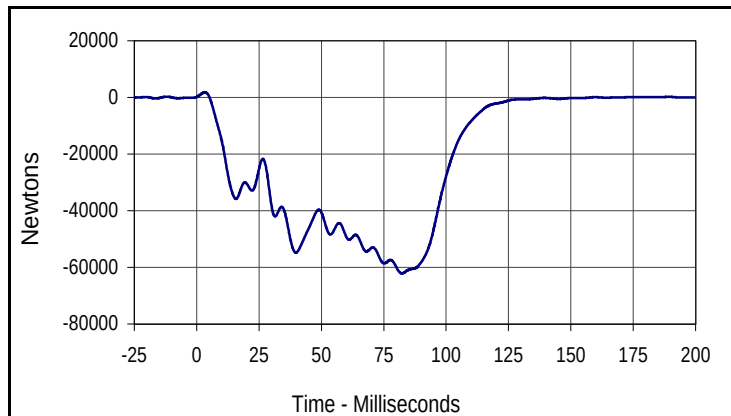
Curve Description			
Barrier Force Sum Group 2			
CURNO	Type	SAE Class	Units
002	SUM	60	Newtons
Max	Time	Min	Time
9.6	193.4	-327081.7	38.2



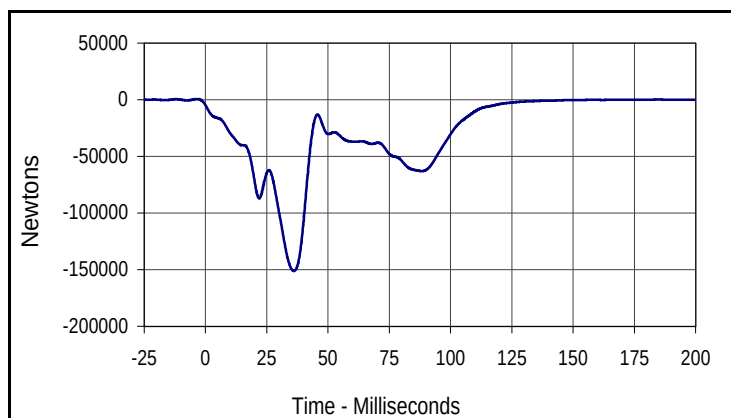
Curve Description			
Barrier Force Sum Group 3			
CURNO	Type	SAE Class	Units
003	SUM	60	Newtons
Max	Time	Min	Time
1507.1	2.0	-130345.0	31.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

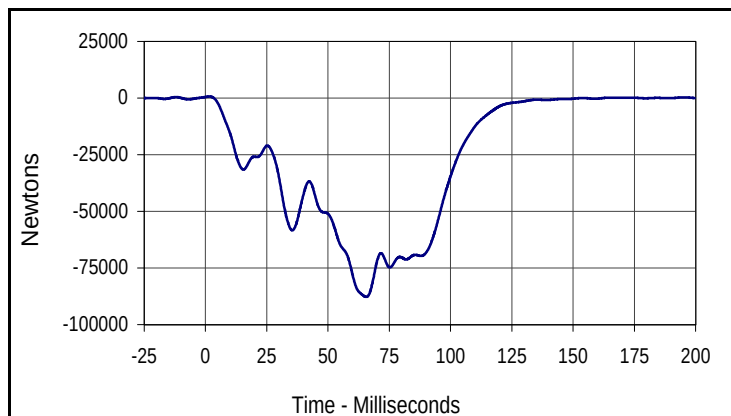
Test Date: 2/25/05
 NHTSA No.: G50103



Curve Description			
Barrier Force Sum Group 4			
CURNO	Type	SAE Class	Units
004	SUM	60	Newtons
Max	Time	Min	Time
1792.5	3.3	-62124.5	82.3



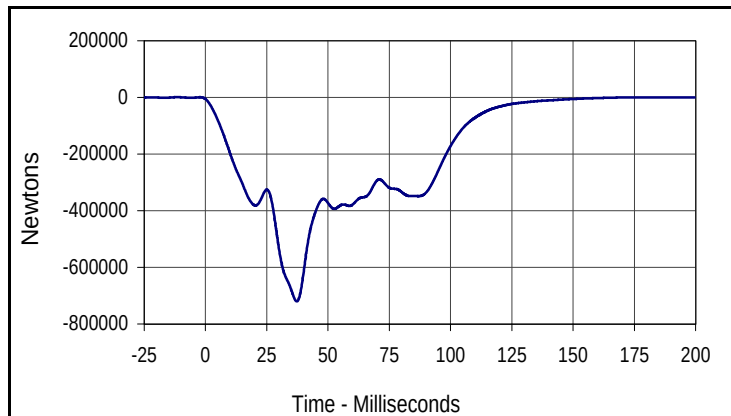
Curve Description			
Barrier Force Sum Group 5			
CURNO	Type	SAE Class	Units
005	SUM	60	Newtons
Max	Time	Min	Time
183.1	184.9	-151253.4	36.1



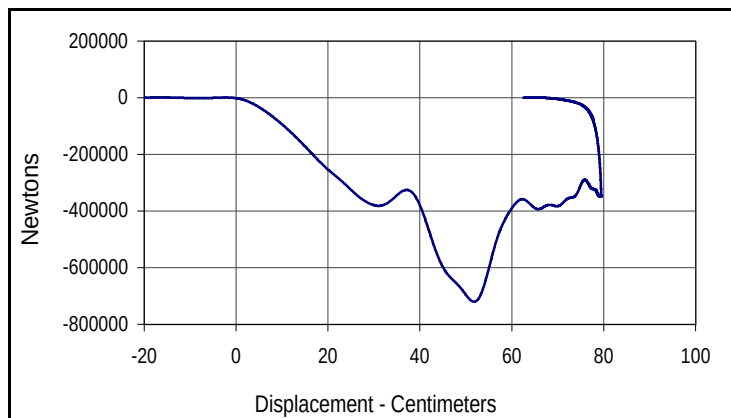
Curve Description			
Barrier Force Sum Group 6			
CURNO	Type	SAE Class	Units
006	SUM	60	Newtons
Max	Time	Min	Time
669.9	1.5	-87762.4	65.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

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Curve Description			
Barrier Force Total Sum			
CURNO	Type	SAE Class	Units
007	SUM	60	Newtons
Max	Time	Min	Time
403.8	192.8	-720079.8	37.3



Curve Description			
Barrier Force Total Sum vs. Displ.			
CURNO	Type	SAE Class	Units
001	XVY	60	Newtons
Max	CM	Min	CM
403.8	63.6	-720079.8	51.0

BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

Location	Units	Max	Time	Min	Time
Barrier Force A1	Newtons	1704.1	38.7	-1968.2	25.5
Barrier Force A2	Newtons	945.5	35.8	-1179.5	32.3
Barrier Force A3	Newtons	210.9	2.5	-14084.9	54.5
Barrier Force A4	Newtons	849.8	17.3	-51970.3	54.8
Barrier Force A5	Newtons	602.1	1.7	-47379.7	37.4
Barrier Force A6	Newtons	467.5	1.7	-66231.9	44.7
Barrier Force A7	Newtons	339.4	1.9	-15583.5	31.8
Barrier Force A8	Newtons	1072.1	55.3	-996.6	51.3
Barrier Force A9	Newtons	2429.5	39.7	-2449.6	43.6
Barrier Force B1	Newtons	1393.0	39.4	-1380.5	44.1
Barrier Force B2	Newtons	408.7	4.5	-28316.4	21.5
Barrier Force B3	Newtons	863.6	2.2	-80745.4	30.9
Barrier Force B4	Newtons	-0.6	179.7	-76631.2	38.8
Barrier Force B5	Newtons	0.3	193.1	-41301.5	38.5
Barrier Force B6	Newtons	30.0	200.0	-87810.3	37.0
Barrier Force B7	Newtons	741.8	1.6	-80927.6	31.4
Barrier Force B8	Newtons	503.9	3.8	-33658.7	19.2
Barrier Force B9	Newtons	1359.5	39.7	-1704.8	44.4
Barrier Force C1	Newtons	304.9	6.7	-6963.4	53.3
Barrier Force C2	Newtons	213.6	3.8	-28637.4	42.9
Barrier Force C3	Newtons	268.1	1.1	-25138.9	81.7
Barrier Force C4	Newtons	42.5	177.2	-38843.3	37.8
Barrier Force C5	Newtons	104.3	9.5	-31400.2	37.4
Barrier Force C6	Newtons	28.6	197.9	-78588.8	35.3
Barrier Force C7	Newtons	240.9	0.6	-48577.6	64.6
Barrier Force C8	Newtons	101.0	2.6	-20447.8	46.0
Barrier Force C9	Newtons	283.8	6.9	-5118.0	44.9
Barrier Force D1	Newtons	1057.6	5.2	-7933.8	53.3
Barrier Force D2	Newtons	398.6	4.7	-10890.8	38.3
Barrier Force D3	Newtons	1413.3	44.6	-7781.8	14.5
Barrier Force D4	Newtons	1600.5	27.9	-8852.2	13.9
Barrier Force D5	Newtons	2467.8	45.4	-11027.8	14.2
Barrier Force D6	Newtons	2661.6	45.1	-10369.1	12.8
Barrier Force D7	Newtons	529.8	28.2	-12299.5	89.0
Barrier Force D8	Newtons	460.8	5.0	-11399.9	67.6
Barrier Force D9	Newtons	1251.0	40.7	-7097.7	46.3
Barrier Force Sum Group 1	Newtons	1693.4	2.8	-110953.9	31.4
Barrier Force Sum Group 2	Newtons	9.6	193.4	-327081.7	38.2
Barrier Force Sum Group 3	Newtons	1507.1	2.0	-130345.0	31.3
Barrier Force Sum Group 4	Newtons	1792.5	3.3	-62124.5	82.3
Barrier Force Sum Group 5	Newtons	183.1	184.9	-151253.4	36.1
Barrier Force Sum Group 6	Newtons	669.9	1.5	-87762.4	65.6
Barrier Force Total Sum	Newtons	403.8	192.8	-720079.8	37.3

APPENDIX D

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	KEAC039	Accel.,1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	KEAC038	Accel.,1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	KEAC027	Accel.,1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	KEAC031	Accel.,1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	KEAC032	Accel.,1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	KEAC026	Accel.,1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST, PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST, PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST, PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST, REDUNDANT	X	KEAC023	Accel.,1/2 bridge	Endevco	7264-200	G
17	CHEST, REDUNDANT	Y	KEAC022	Accel.,1/2 bridge	Endevco	7264-200	G
18	CHEST, REDUNDANT	Z	KEAC024	Accel.,1/2 bridge	Endevco	7264-200	G
19	CHEST DEFLECTION	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	KEAC019	Accel.,1/2 bridge	Endevco	7264-200	G
21	PELVIS, PRIMARY	Y	KEAC020	Accel.,1/2 bridge	Endevco	7264-200	G
22	PELVIS, PRIMARY	Z	KEAC021	Accel.,1/2 bridge	Endevco	7264-200	G
23	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
26	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
31	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
32	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
34	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
35	FOOT LEFT, AFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT, AFT	Z	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT, FORE	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT, AFT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT, AFT	Z	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT, FORE	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	BL134	Load cell, Seat belt	FGP	FN4060	N
42	SHOULDER BELT FORCE	X	BL135	Load cell, Seat belt	FGP	FN4060	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST, PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST, PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST, PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST, REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
61	CHEST, REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
62	CHEST, REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
63	CHEST DEFLECTION	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
65	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
66	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
67	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF004	Load cell, Femur	R.A. Denton	2121	N

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT, AFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT, AFT	Z	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT, FORE	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT, AFT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT, AFT	Z	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT, FORE	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	BL168	Load cell, Seat belt	First Tech	IF-964	N
86	SHOULDER BELT FORCE	X	BL169	Load cell, Seat belt	First Tech	IF-964	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

**2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers
2/25/05
2005 Pontiac Montana SV6 5-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	LEFT REAR	X	KEVA002	Accel., Pre-Amp	I.C.S/Karco	3031-500	G
90	RIGHT REAR	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	ENGINE TOP	X	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	ENGINE BOTTOM	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	LEFT BRAKE CALIPER	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	RIGHT BRAKE CALIPER	X	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	INSTRUMENT PANEL	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	LEFT REAR	Z	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
97	RIGHT REAR	Z	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
98	BARRIER FORCE A1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
99	BARRIER FORCE A2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
100	BARRIER FORCE A3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
101	BARRIER FORCE A4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
102	BARRIER FORCE A5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
103	BARRIER FORCE A6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
104	BARRIER FORCE A7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
105	BARRIER FORCE A8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
106	BARRIER FORCE A9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
107	BARRIER FORCE B1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
108	BARRIER FORCE B2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
109	BARRIER FORCE B3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
110	BARRIER FORCE B4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
111	BARRIER FORCE B5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
112	BARRIER FORCE B6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
113	BARRIER FORCE B7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
114	BARRIER FORCE B8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
115	BARRIER FORCE B9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

**2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
2/25/05
2005 Pontiac Montana SV6 5-Door MPV**

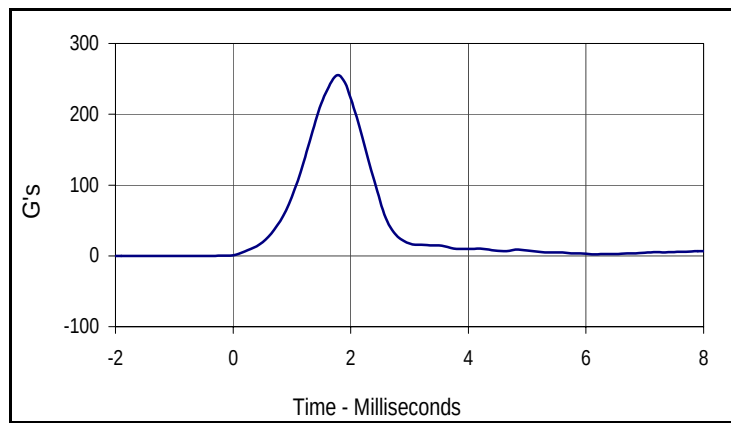
CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
116	BARRIER FORCE C1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
117	BARRIER FORCE C2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
118	BARRIER FORCE C3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
119	BARRIER FORCE C4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
120	BARRIER FORCE C5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
121	BARRIER FORCE C6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
122	BARRIER FORCE C7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
123	BARRIER FORCE C8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
124	BARRIER FORCE C9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
125	BARRIER FORCE D1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
126	BARRIER FORCE D2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
127	BARRIER FORCE D3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
128	BARRIER FORCE D4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
129	BARRIER FORCE D5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
130	BARRIER FORCE D6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
131	BARRIER FORCE D7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
132	BARRIER FORCE D8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
133	BARRIER FORCE D9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

APPENDIX E

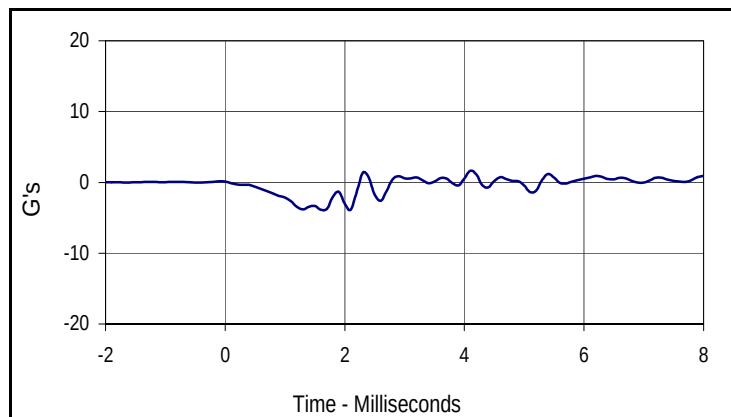
DUMMY CALIBRATION DATA

Test Program: Hybrid III 50th Percentile Male Head Drop TestTest Date: 2/15/05ATD Serial No.: 034Test I.D.: HD02A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	255.0	Pass
Peak Lateral Acceleration	G's	≤15.0	3.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
255.0	1.8	0.0	-0.4



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.6	4.1	-3.9	1.6

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

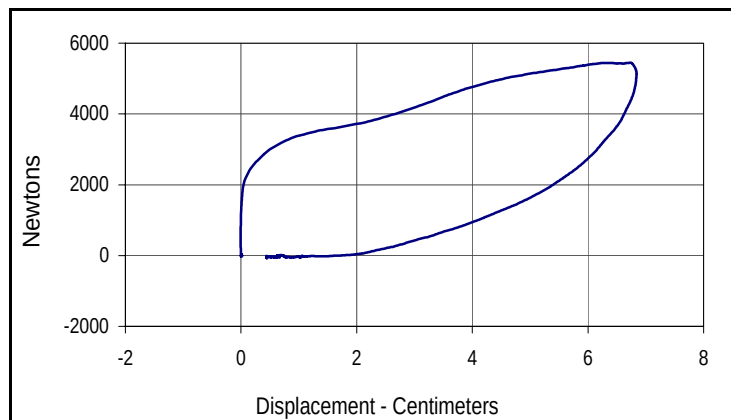
Test Date: 2/16/05

ATD Serial No.: 034

Test I.D.: CH02A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5447	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.84	Pass
Internal Hysteresis	%	69 to 85	75.3	Pass
Overall Test Results				Pass



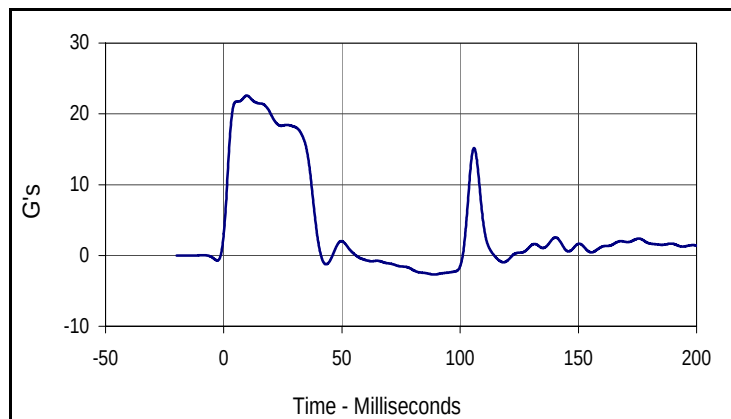
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	75.3
Peak Probe Force		Peak Chest Deflection	
5447		6.84	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 034

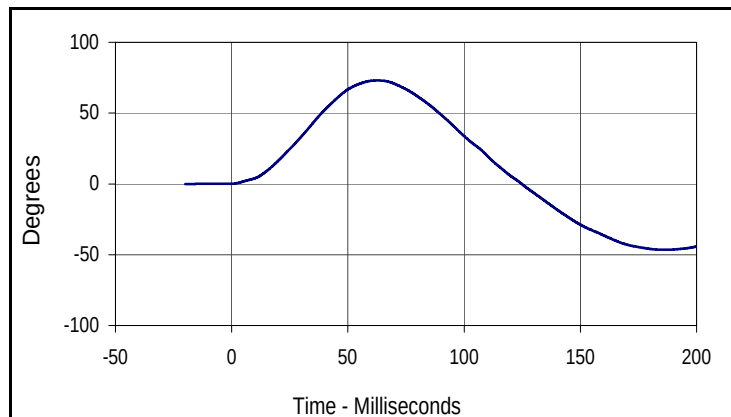
Test Date: 2/16/05
 Test I.D.: NF02A



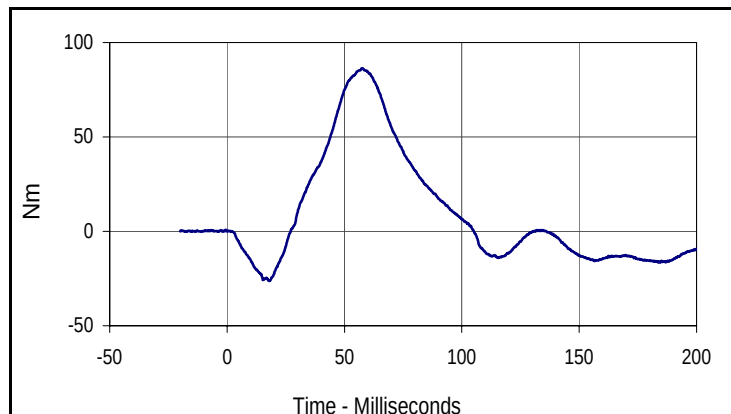
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.6	Pass
	20 Msec.	G's	17.6 to 22.6	19.9	Pass
	30 Msec.	G's	12.5 to 18.5	18.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	73.0	Pass
	Time	Msec.	57.0 to 64.0	62.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	124.8	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	86.4	Pass
	Time	Msec.	47.0 to 58.0	57.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	105.2	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
22.6	9.8	-2.7	89.0



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
73.0	62.7	-46.5	186.7



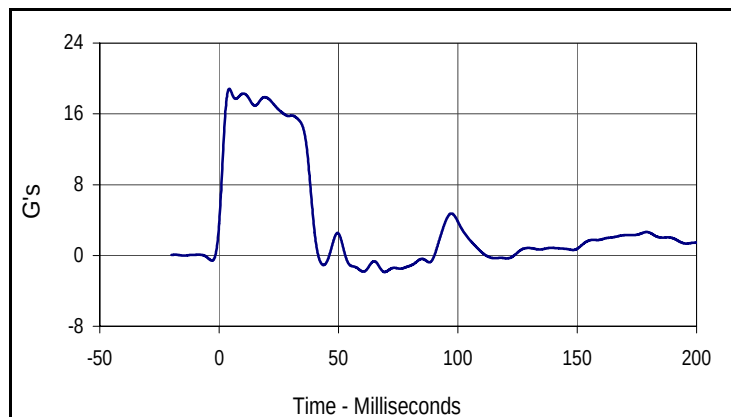
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
86.4	57.5	-26.2	17.9

Test Program: Hybrid III 50th Percentile Male Neck Extension Test
 ATD Serial No.: 034

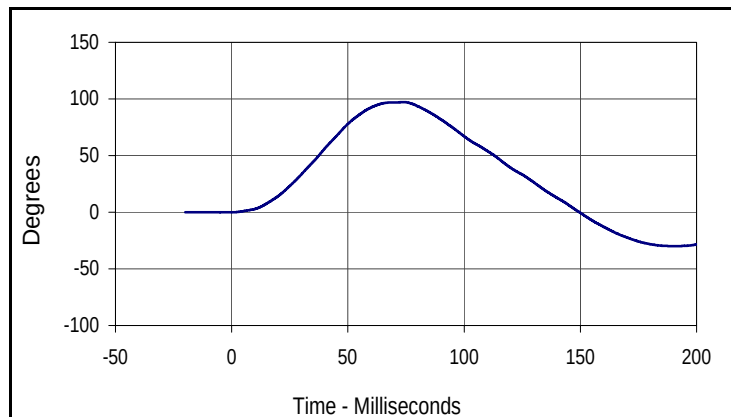
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 Test I.D.: NE02A



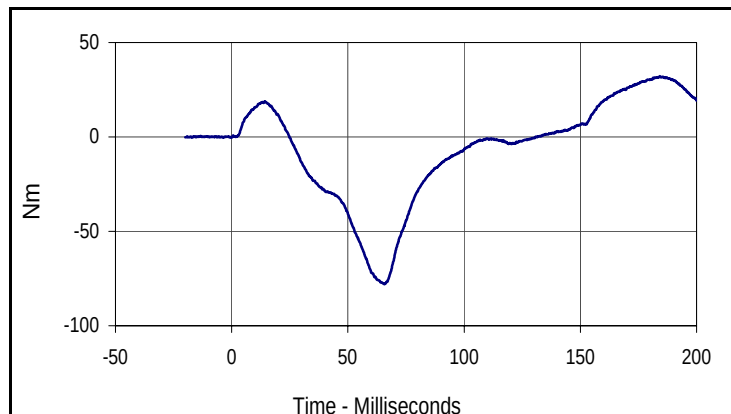
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	5.97	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.3	Pass
	20 Msec.	G's	14.0 to 19.0	17.8	Pass
	30 Msec.	G's	11.0 to 16.0	15.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	97.2	Pass
	Time	Msec.	72.0 to 82.0	74.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	149.6	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-77.9	Pass
	Time	Msec.	65.0 to 79.0	65.6	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	131.6	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
18.8	4.2	-1.9	69.4



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
97.2	74.0	-29.9	190.7



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
32.3	184.2	-77.9	65.6

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 2/15/05

ATD Serial No.: 034

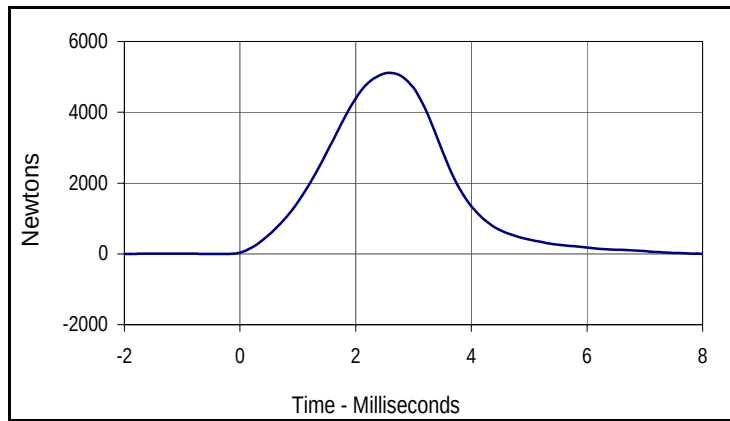
Test I.D.: LK02A , RK02A

**Left Knee**

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5113	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.13	Pass
Peak Probe Force	Newtons	4715 to 5782	5370	Pass
Overall Test Results				Pass

**Curve Description****Left Knee Probe Force**

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5113.0	2.6	-44.9	9.4

**Curve Description****Right Knee Probe Force**

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5370.0	2.4	-34.6	9.2

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 2/16/05

ATD Serial No.: 034

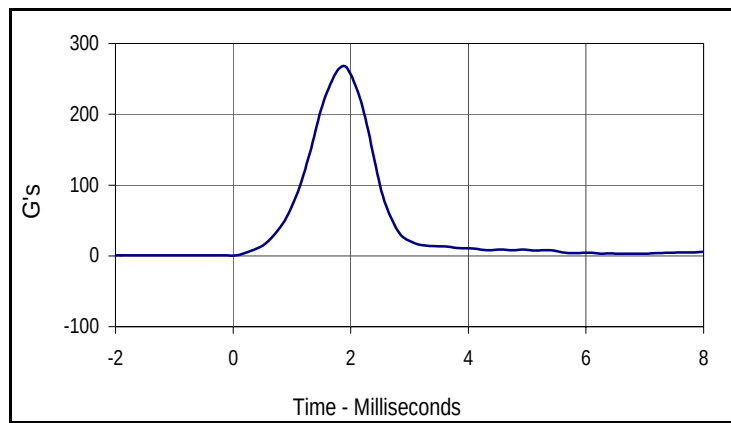
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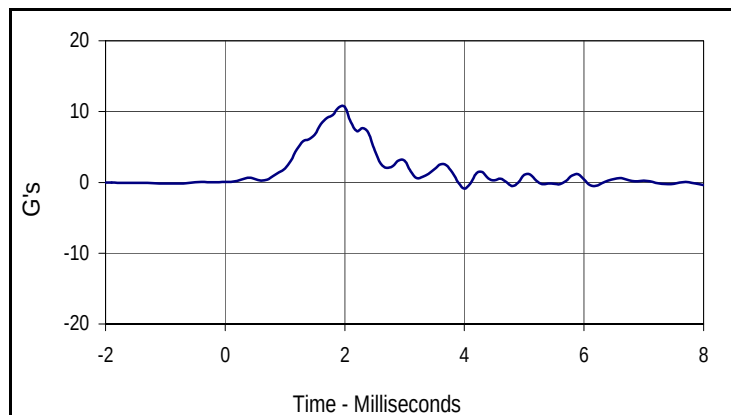
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	86	Pass
D - "H" point from seat back	mm	135 to 140	139	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	210	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Popliteal length	mm	429 to 455	450	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	465	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	265	Pass
V - Shoulder breadth	mm	422 to 437	425	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	1000	Pass
Z - Waist circumference	mm	836 to 866	845	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Test Program: Hybrid III 50th Percentile Male Head Drop TestTest Date: 2/15/05ATD Serial No.: 035Test I.D.: HD02B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	268.0	Pass
Peak Lateral Acceleration	G's	≤15.0	10.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
268.0	1.9	0.4	0.0



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
10.6	2.0	-0.9	4.0

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

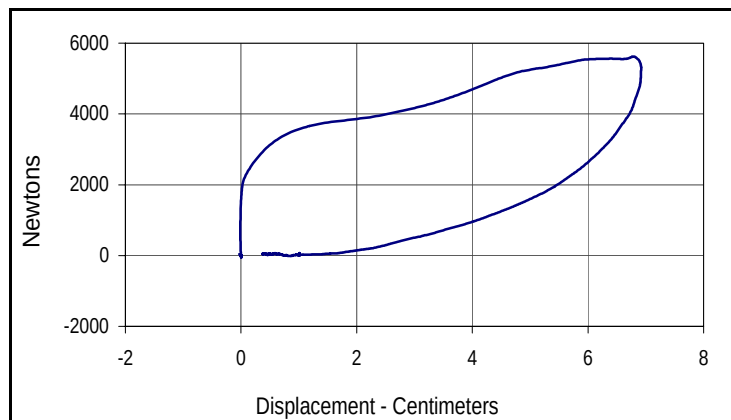
Test Date: 2/16/05

ATD Serial No.: 035

Test I.D.: CH02A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.67	Pass
Peak Probe Force	Newtons	5159 to 5893	5622	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.92	Pass
Internal Hysteresis	%	69 to 85	75.1	Pass
Overall Test Results				Pass



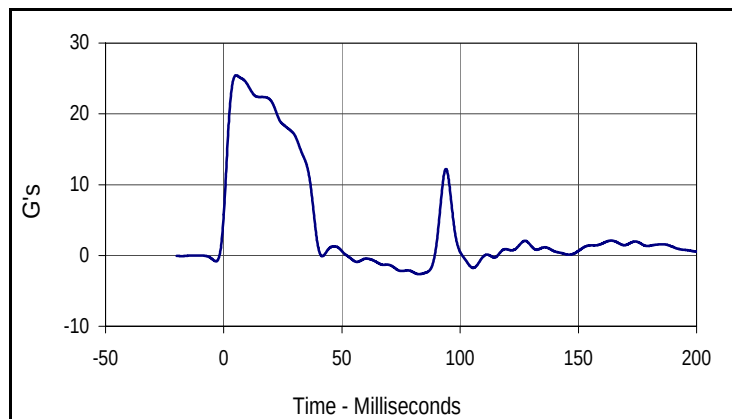
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	75.1
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5622		6.92	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

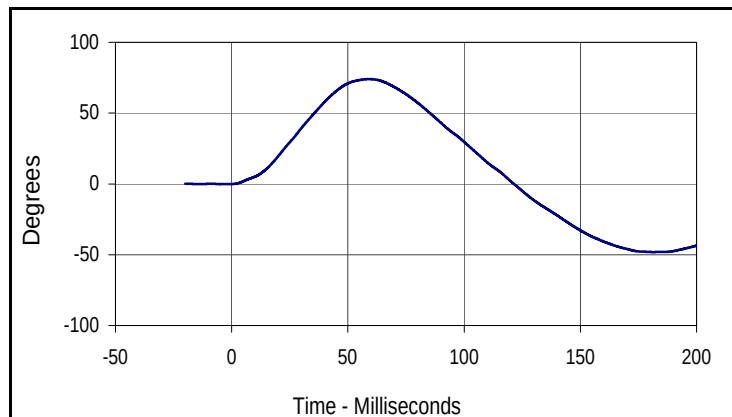
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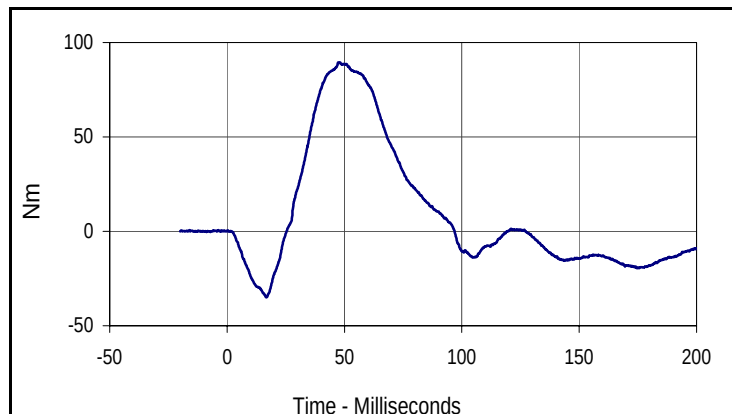
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.2	Pass
	20 Msec.	G's	17.6 to 22.6	21.9	Pass
	30 Msec.	G's	12.5 to 18.5	17.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.5	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	74.0	Pass
	Time	Msec.	57.0 to 64.0	59.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.4	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	89.5	Pass
	Time	Msec.	47.0 to 58.0	47.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.0	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
25.4	5.2	-2.7	82.6



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
74.0	59.1	-48.1	181.3



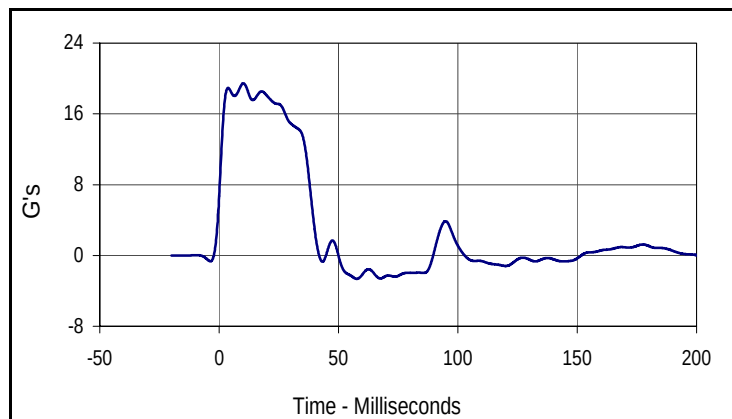
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
89.5	47.4	-34.9	16.8

Test Program: Hybrid III 50th Percentile Male Neck Extension Test
 ATD Serial No.: 035

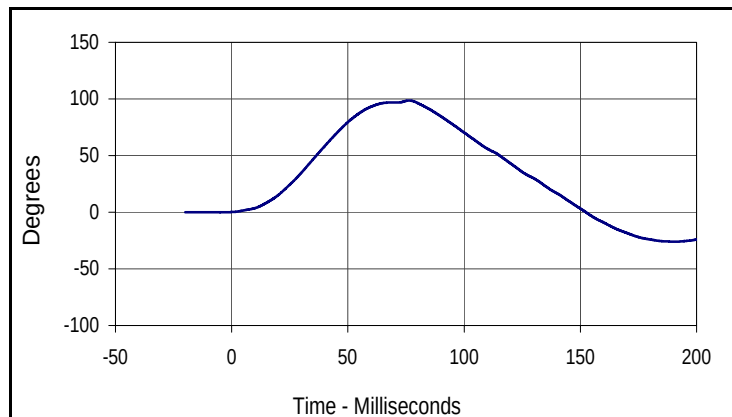
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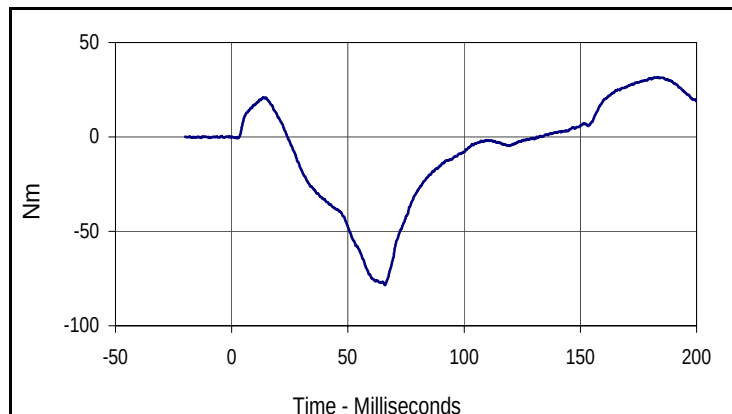
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.4	Pass
	20 Msec.	G's	14.0 to 19.0	18.1	Pass
	30 Msec.	G's	11.0 to 16.0	14.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	98.7	Pass
	Time	Msec.	72.0 to 82.0	76.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	152.4	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-78.5	Pass
	Time	Msec.	65.0 to 79.0	65.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	131.2	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.4	10.1	-2.6	57.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
98.7	76.3	-25.9	190.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
31.7	183.1	-78.5	65.9

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 2/15/05

ATD Serial No.: 035

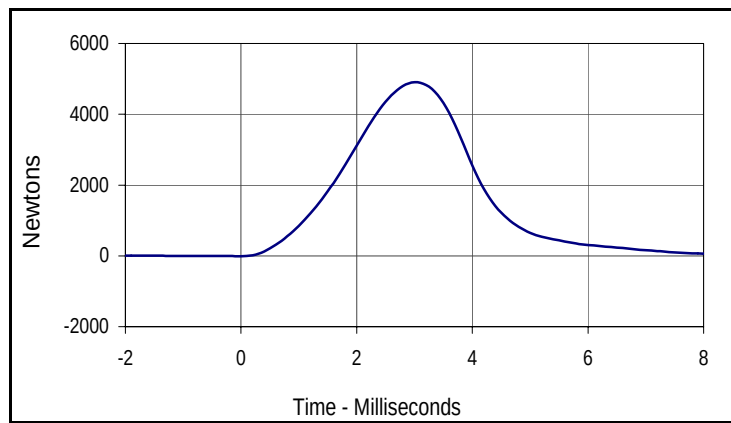
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**Left Knee**

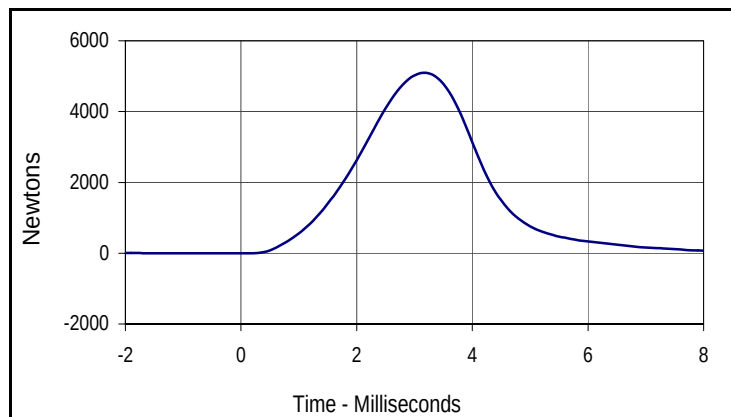
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	4906	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5099	Pass
Overall Test Results				Pass

**Curve Description****Left Knee Probe Force**

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4905.7	3.0	-40.3	10.0

**Curve Description****Right Knee Probe Force**

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5099.0	3.2	-35.4	10.0

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 2/16/05

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	87	Pass
D - "H" point from seat back	mm	135 to 140	139	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	145	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	198	Pass
K - Buttock to knee length	mm	579 to 604	589	Pass
L - Popliteal length	mm	429 to 455	451	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	455	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	265	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	102	Pass
Y - Chest circumference	mm	970 to 1001	987	Pass
Z - Waist circumference	mm	836 to 866	862	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass

APPENDIX F

CHILD RESTRAINT SYSTEM

REPORT NUMBER TR-P25044-01-NC

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**GENERAL MOTORS CORPORATION
2005 PONTIAC MONTANA SV6
5-DOOR MPV**

NHTSA NUMBER: G50103

**PREPARED BY:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301**



FEBRUARY 25, 2005

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-01-D-02005.

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Prepared by: _____
Mr. Biren J. Patel, Project Engineer
KARCO Engineering, LLC

Date: 3/8/05

Reviewed by: _____
Mr. Michael L. Dunlap, Quality Assurance Manager
KARCO Engineering, LLC

Date: 3/8/05

Approved by: _____
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

Date: 3/8/05

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-P25044-01-NC	2. Government Accession No.	3. Recipients Catalog No.																										
4. Title and Subtitle Final Report of a Graco Hi-Back TurboBooster CRS Final Report of a Graco Low-Back TurboBooster CRS NHTSA NO. G50103		5. Report Date February 25, 2005																										
		6. Performing Organization Code KAR																										
7. Authors Mr. Biren J. Patel, Project Engineer, Karco Mr. Frank Richardson, Program Manager, Karco		8. Performing Organization Report No. TR-P25044-01-NC																										
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15. Supplementary Notes																												
16. Abstract A frontal test was conducted on the subject CRS's Graco Hi-Back TurboBooster and Graco Low-Back TurboBooster in conjunction with frontal NCAP testing on a 2005 Pontiac Montana SV6 5-Door MPV and in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. This test was conducted at Karco Engineering, LLC on February 25, 2005																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;">Measurement Description</th> <th style="width: 10%;">Units</th> <th style="width: 10%;"></th> <th style="width: 20%;">Left Rear</th> <th style="width: 25%;">Right Rear</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC) 36</td> <td></td> <td></td> <td style="text-align: center;">768.1</td> <td style="text-align: center;">808.2</td> </tr> <tr> <td>Head Injury Criteria (HIC) 15</td> <td></td> <td></td> <td style="text-align: center;">453.3</td> <td style="text-align: center;">493.6</td> </tr> <tr> <td>3 msec. Chest Clip</td> <td style="text-align: center;">G's</td> <td></td> <td style="text-align: center;">45.3</td> <td style="text-align: center;">50.1</td> </tr> <tr> <td>Peak Chest Deflection</td> <td style="text-align: center;">mm</td> <td></td> <td style="text-align: center;">-47.8</td> <td style="text-align: center;">-35.4</td> </tr> </tbody> </table>		Measurement Description	Units		Left Rear	Right Rear	Head Injury Criteria (HIC) 36			768.1	808.2	Head Injury Criteria (HIC) 15			453.3	493.6	3 msec. Chest Clip	G's		45.3	50.1	Peak Chest Deflection	mm		-47.8	-35.4		
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17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) Final Report of a Graco Hi-Back TurboBooster CRS Final Report of a Graco Low-Back TurboBooster CRS			18. Distribution of Statement Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590																									
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Form DOT F1700.7 (8-72)

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SECTION F-1

PURPOSE AND SUMMARY OF TEST G50103

The purpose of this test is to obtain CRS performance data during an NCAP (35mph) frontal impact test.

The 56.02 km/h NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

Two ten year old child Hybrid III dummies (P3 and P4) were instrumented with head, chest, and pelvic tri-axial accelerometers, a chest displacement potentiometer, six-axis upper neck, lumbar, clavicle, ASIS and femur load cells. In addition, a tri-axial accelerometer was installed on the CRS and the CRS seat back. Seat belt load cells were placed on the shoulder and lap belts. Shoulder belt spool-out and elongation were also measured.

The right rear (Serial No. 009) child dummy was calibrated two tests prior to this test and left rear (Serial No. 011) child dummy was calibrated one test prior to this test. Child dummy calibration information is found in Section F-5.

CHILD DUMMY VALUES

Location	HIC 36 Values	HIC 15 Values	3 Msec. Chest Clip	Peak Chest Deflection
Right Rear Child (10 Yr.)	808.2	493.6	50.1	-35.4
Left Rear Child (10Yr.)	768.1	453.3	45.3	-47.8

DATA SHEET NO.1
CRASH TEST SUMMARY

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

CHILD RESTRAINT SYSTEM INFORMATION

Description	Position #3 CRS	Position #4 CRS
Manufacturer	Graco Children's Products, Inc.	Graco Children's Products, Inc.
Model Name	TurboBooster	TurboBooster
Serial No.	JJ 0105050033769	JJ 1202042320081
Type	Low-Back TurboBooster	Hi-Back TurboBooster
Forward/Rearward	Forward	Forward

VISIBLE DUMMY CONTACT POINTS

Description	Position #3 CRS	Position #4 CRS
Head Contact	Chin to Chest	Chin to Chest, CRS Seat Back
Chest Contact	None	None
Abdomen Contact	None	None
Left Knee Contact	None	None
Right Knee Contact	None	None
Left Toe Contact	Front Passenger Seat Back	Driver Seat Back
Right Toe Contact	Front Passenger Seat Back	Driver Seat Back

POST-TEST DOOR OPENINGS

Description	Position #3 CRS	Position #4 CRS
Front Door	Remained closed/latched, opened w/o tools	Remained closed/latched, opened w/o tools
Rear Door	Remained closed/latched, opened w/o tools	Remained closed/latched, opened w/o tools
Hatch/Other Door		

POST-TEST SEAT DATA

Location	Seat Movement (mm)	Seat Back Failure
Left Rear	0	No
Right Rear	0	No

CAMERA COVERAGE

Description	Standard	Additional
High Speed	2	2
Real Time	0	0
Total	2	2

DATA CHANNELS

Child Sensors	64
Belt Sensors	8
CRS Sensors	9
Total	81

DATA SHEET NO.2
CRS PARAMETER DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

RETAINING CLIP INFORMATION

Description	Position #3 CRS	Position #4 CRS
Ret. Clip Movement		

CHILD HARNESS STRETCH

Description	Position #3 CRS	Position #4 CRS
Harness Stretch		

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	565	435	1000	615	496	1111
Right	kg	537	433	970	610	513	1123
Ratio	%	55.9	44.1	100	54.8	45.2	100
Totals	kg	1102	868	1970	1225	1009	2234

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1970
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	117
Calculated Vehicle Target Wt. (TVTW)	kg	2239

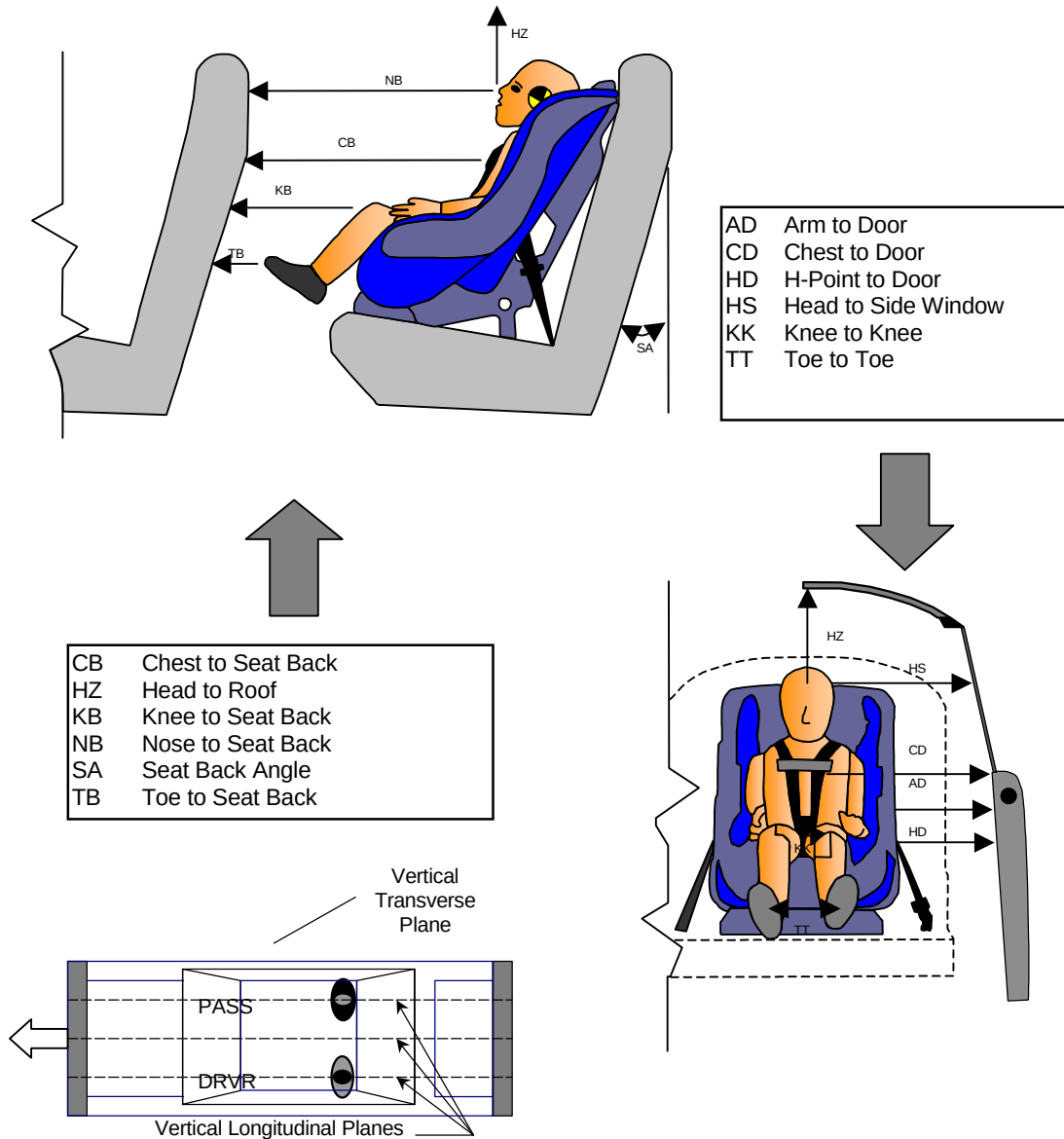
DATA SHEET NO.3 **CHILD DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05



DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS

DATA SHEET NO.3
CHILD DUMMY POSITIONING IN VEHICLE...(CONTINUED)

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

CHILD DUMMY POSITION MEASUREMENTS

Code	Measurement	Units	P3 CRS Serial No. 009			P4 CRS Serial No. 011		
			Pre-Test	Post-Test	Diff.	Pre-Test	Post-Test	Diff.
SA	Seat Back Angle	deg.	16.5	16.2	-0.3	16.5	17.1	0.6
HZ	Head to Roof (Z)	mm	250	310	60	230	240	10
CD	Chest to Door	mm	375	590	215	395	430	35
KK	Knee to Knee (Y)	mm	210	150	-60	193	165	-28
HS	Head to Side Window	mm	300	640	340	310	320	10
HD	H-Point to Door (Y)	mm	200	220	20	210	220	10
AD	Arm to Door	mm	130	280	150	145	200	55
NB	Nose to Seat Back	mm	665	780	115	600	650	50
CB	Chest to Seat Back	mm	620	690	70	550	590	40
FF	Foot to Foot	mm	155	120	-35	195	140	-55
KB-Left	Knee to Seat Back	mm	310	360	50	255	350	95
KB-Right	Knee to Seat Back	mm	360	370	10	235	270	35
TB-Left	Toe to Seat Back	mm	50	70	20	100	90	-10
TB-Right	Toe to Seat Back	mm	50	120	70	100	110	10

DATA SHEET NO. 4 - CHILD HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	0.7	17.6	-34.6	112.2	1.7	26.0	-45.3	113.9
Head CG	Y	G's	10.6	55.4	-3.8	57.8	10.2	112.2	-1.9	56.6
Head CG	Z	G's	60.2	96.4	-0.8	17.7	61.2	93.7	-1.1	40.1
Head CG Resultant	N/A	G's	66.1	96.5			69.6	93.9		

PRIMARY HEAD INJURY CRITERIA (HIC)

Location	Left Rear (10 yr.)				Right Rear (10 yr.)			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG (HIC36)	768.1	77.7	113.7	53.9	808.2	81.7	117.7	55.0
Head CG (HIC15)	453.3	85.6	100.6	61.9	493.6	89.3	104.3	64.1

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	1.4	182.3	-43.9	63.0	2.2	144.6	-52.0	72.6
Chest CG	Y	G's	0.7	144.0	-22.5	104.9	12.7	78.2	-5.4	94.6
Chest CG	Z	G's	23.0	102.4	-10.9	75.6	15.2	112.4	-14.3	90.3
Chest CG Resultant	N/A	G's	46.8	63.3			53.2	72.6		

PRIMARY CHEST CLIP (3MSEC)

Location	Left Rear (10 yr.)			Right Rear (10 yr.)		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG	45.3	62.0	65.0	50.1	70.9	73.9

CHEST PEAK DEFLECTIONS

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest	X	MM	0.0	3.1	-47.8	97.3	0.0	16.3	-35.4	91.9

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	4.4	140.2	-49.5	65.1	6.8	127.8	-57.1	73.1
Pelvis	Y	G's	12.4	100.6	-17.6	55.4	8.5	67.0	-10.4	106.2
Pelvis	Z	G's	3.8	102.3	-33.6	72.5	2.8	116.6	-31.8	78.1
Pelvis Resultant	N/A	G's	58.9	65.1			63.5	73.2		

DATA SHEET NO. 4...(CONTINUED)Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPVNHTSA No.: G50103Test Program: 2005 NHTSA 35mph NCAPTest Date: 2/25/05**UPPER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	2.1	25.8	-814.9	114.7	53.3	33.3	-1162.1	115.0
Neck Force	Y	Newtons	174.7	55.4	-182.4	98.1	285.9	114.5	-133.2	58.9
Neck Force	Z	Newtons	2124.6	106.1	-62.1	41.1	2648.5	112.6	-121.0	9.2
Neck Force Resultant	N/A	Newtons	2245.7	112.7			2851.0	112.6		
Neck Moment	X	Nm	16.2	97.7	-14.1	82.6	6.6	108.6	-7.5	74.0
Neck Moment	Y	Nm	18.8	106.4	-30.2	85.8	20.1	110.0	-34.4	94.4
Neck Moment	Z	Nm	0.2	33.9	-6.9	92.8	4.4	99.1	-2.2	186.8
Neck Moment Resultant	N/A	Nm	32.8	85.1			35.1	95.2		

FEMUR PEAK FORCES AND MOMENTS

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur Force	Z	Newtons	882.4	63.6	-3.2	8.8	928.5	65.5	-114.7	158.9
Right Femur Force	Z	Newtons	1504.3	63.6	-37.9	167.8	1095.1	76.6	-135.1	183.8

LUMBAR PEAK FORCES AND MOMENTS

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Lumbar Force	X	Newtons	939.8	116.4	-783.3	61.7	675.6	71.4	-1313.0	96.9
Lumbar Force	Y	Newtons	1.0	15.0	-1624.4	101.0	937.3	77.8	-52.3	123.9
Lumbar Force	Z	Newtons	1648.3	107.2	-1523.1	68.7	1098.4	114.9	-1488.6	79.8
Lumbar Force Resultant	N/A	Newtons	2254.9	107.1			1749.3	78.7		
Lumbar Moment	X	Nm	1.8	28.7	-161.6	100.5	20.4	184.0	-78.0	74.9
Lumbar Moment	Y	Nm	44.0	127.9	-5.2	48.2	81.6	123.9	-21.5	56.0
Lumbar Moment	Z	Nm	30.3	98.8	0.3	0.3	1.1	8.0	-49.0	79.9
Lumbar Moment Res.	N/A	Nm	168.7	100.6			90.5	76.7		

CLAVICLE PEAK FORCES

Location	Axis	Units	Left Rear (10 yr.)				Right Rear (10 yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Clavicle Force	X	Newtons	2340.9	86.4	-17.9	174.7	57.2	122.4	-127.0	74.2
Left Clavicle Force	Z	Newtons	822.0	75.5	-270.4	101.8	72.2	100.2	-104.2	77.4
Right Clavicle Force	X	Newtons	912.1	112.4	-117.7	70.8	2933.2	85.2	-1.7	0.2
Right Clavicle Force	Z	Newtons	208.3	109.8	-132.8	55.4	1277.7	96.9	-118.7	135.1

DATA SHEET NO.5
CRS PERFORMANCE DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

CRS PERFORMANCE DATA

Location	P3 CRS Serial No. 009		P4 CRS Serial No. 011	
	Damage	Post-Test	Damage	Post-Test
Upper Tether Strap				
Upper Tether Buckle				
Upper Tether Hook				
Veh. Upper Tether Anchor				
Lower Anchor Strap				
Lower Anchor Buckle				
Lower Anchor Hooks				
Veh. Lower CRS Anchors				
5-Point Harness Connections				
Cracks on CRS	No	None	No	None
Fabric Tears on CRS	No	None	No	None
Vehicle Seat Structure	No	None	No	None
Vehicle Seat Fabric Tears	No	None	No	None

DATA SHEET NO.6
CRS CAMERA DATA

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV

NHTSA No.: G50103

Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05

CAMERA LOCATIONS

No.	Camera View	Location(mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Left Rear Dummy Onboard	-2690	787	-1470	-10	670	13	1000
2	Right Rear Dummy Onboard	-2690	-787	-1470	-10	741	13	1000

ADDITIONAL CAMERAS

1	Left Rear Dummy Onboard	-2710	790	-1475	0	1248	8.5	1000
2	Right Rear Dummy Onboard	-2700	-790	-1475	-10	1283	8.5	1000

X = Barrier Face Y = Monorail Centerline Z = Ground DNR = Did Not Run NTM = No Time Marks

SECTION F-2
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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4	Pre-Test Rear View of Position 3 CRS	F-4
5	Post-Test Rear View of Position 3 CRS	F-5
6	Pre-Test Left Side View of Position 3 CRS	F-6
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35	Post-Test Position 4 Right Side View	F-35
36	Post-Test Position 4 Dummy Feet Contacts	F-36

retiradas. Envíe su nombre, dirección y el número de modelo y la
fabricación del asiento a Graco Children's Products Inc., 150 Oak
Exton, PA 19341 EE.UU. o llame al 1-800-345-4109.
Para información sobre retiradas, llame a la línea de información s
seguridad automotriz del gobierno de EE.UU. al 1-800-424-9393
(202-366-0123 en el Distrito de Columbia).

LAP

MODEL 8491CKT NAME: TurboBooster
SERIAL JJ 0105050033769
Manufactured in 010505
GRACO CHILDREN'S PRODUCTS, INC.
EXTON, PA 19341 1-888-224-6549
Made in China

LAPZ0004B

Figure F2-1: Close-up, Position 3 CRS Label



Figure F2-2: Pre-Test Frontal View of Position 3 CRS



Figure F2-3: Post-Test Frontal View of Position 3 CRS



Figure F2-4: Pre-Test Rear View of Position 3 CRS



Figure F2-5: Post-Test Rear View of Position 3 CRS



Figure F2-6: Pre-Test Left Side View of Position 3 CRS



Figure F2-7: Post-Test Left Side View of Position 3 CRS



Figure F2-8: Pre-Test Right Side View of Position 3 CRS



Figure F2-9: Post-Test Right Side View of Position 3 CRS

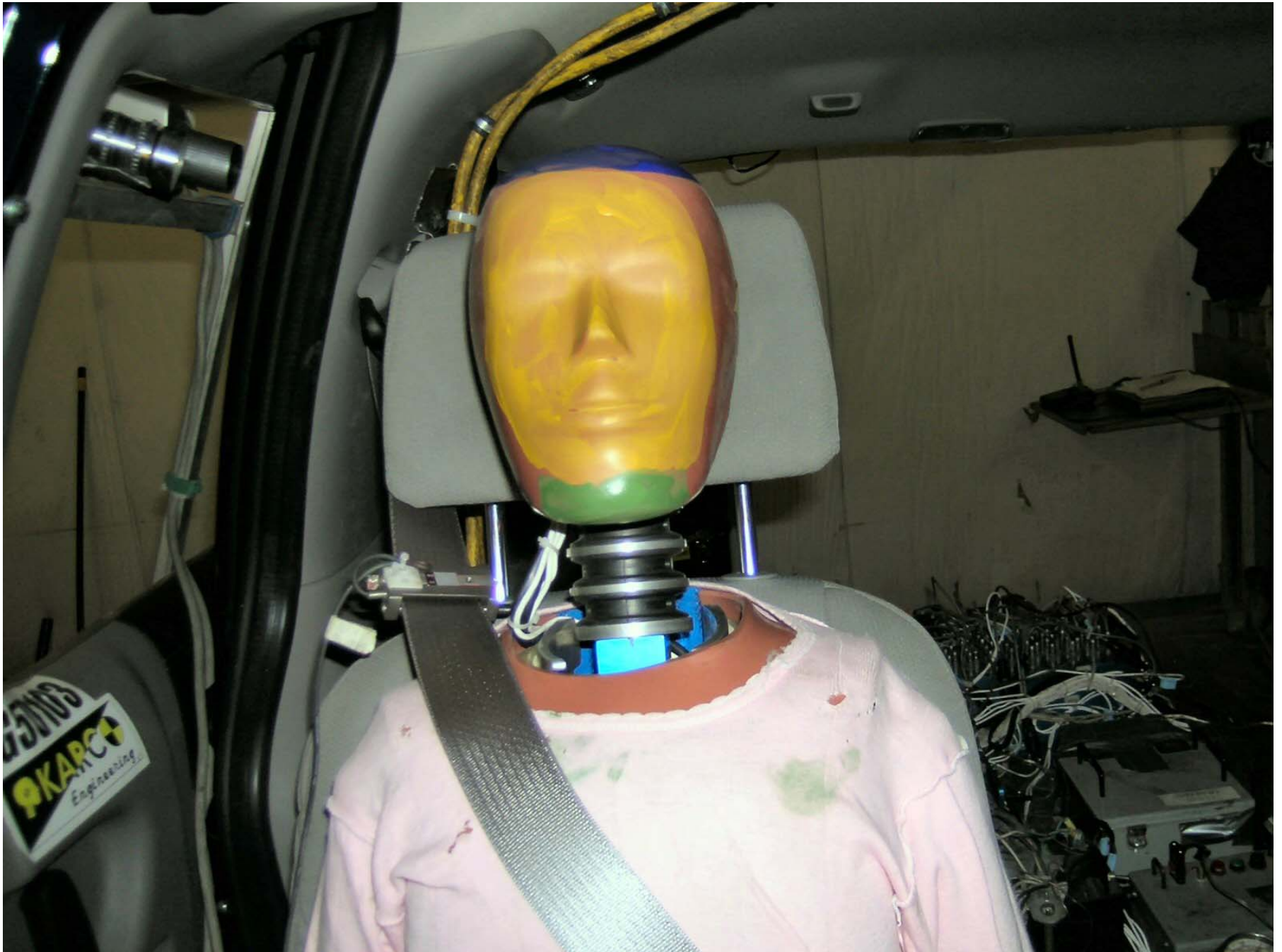


Figure F2-10: Pre-Test Position 3 Front View (Head Position)

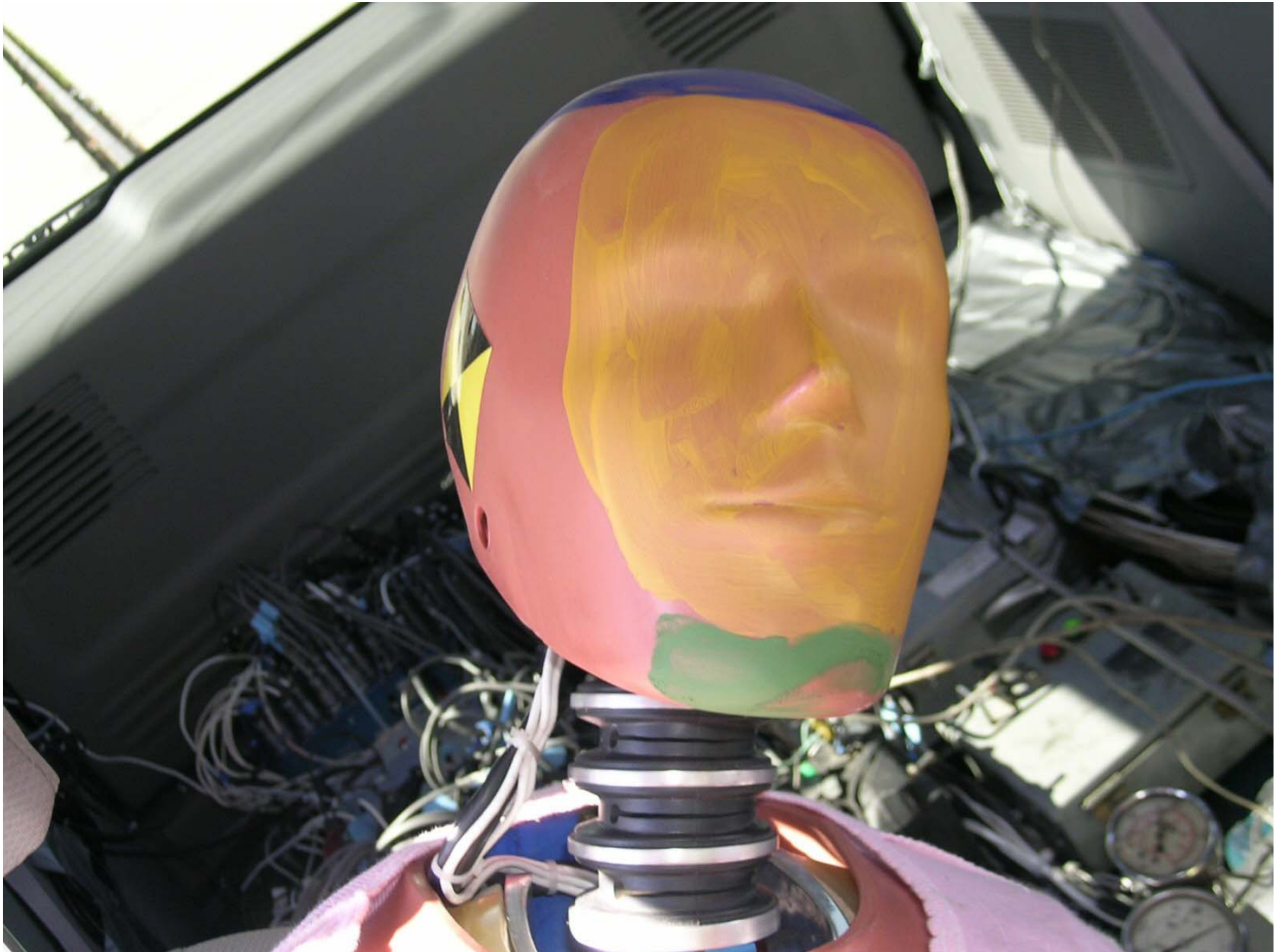


Figure F2-11: Post-Test Position 3 Front View (Head Position)



Figure F2-12: Pre-Test Position 3 Front View (Seat Belt Position)



Figure F2-13: Post-Test Position 3 Front View (Seat Belt Position)



Figure F2-14: Pre-Test Position 3 Right Side View



Figure F2-15: Post-Test Position 3 Right Side View



Figure F2-16: Pre-Test Position 3 Left Side View



Figure F2-17: Post-Test Position 3 Left Side View



Figure F2-18: Post-Test Position 3 Dummy Feet

...ación del asiento a Graco Children's Products Inc., 150 Oaklands B
ton, PA 19341 EE.UU. o llame al 1-800-345-4109.
...ra información sobre retiradas, llame a la línea de información sobre
...guridad automotriz del gobierno de EE.UU. al 1-800-424-9393
...02-366-0123 en el Distrito de Columbia).

LAPB00956

MODEL 8495SRT NAME: TurboBooster
SERIAL JJ 1202042320081
Manufactured in 120204
GRACO CHILDREN'S PRODUCTS, INC.
EXTON, PA 19341 1-888-224-6549
Made in China

LAPZ0004B

Figure F2-19: Close-up, Position 4 CRS Label



Figure F2-20: Pre-Test Frontal View of Position 4 CRS



Figure F2-21: Post-Test Frontal View of Position 4 CRS



Figure F2-22: Pre-Test Rear View of Position 4 CRS



Figure F2-23: Post-Test Rear View of Position 4 CRS



Figure F2-24: Pre-Test Left Side View of Position 4 CRS



Figure F2-25: Post-Test Left Side View of Position 4 CRS



Figure F2-26: Pre-Test Right Side View of Position 4 CRS



Figure F2-27: Post-Test Right Side View of Position 4 CRS



Figure F2-28: Pre-Test Position 4 Front View (Head Position)



Figure F2-29: Post-Test Position 4 Front View (Head Position)



Figure F2-30: Pre-Test Position 4 Front View (Seat Belt Position)



Figure F2-31: Post-Test Position 4 Front View (Seat Belt Position)



Figure F2-32: Pre-Test Position 4 Left Side View



Figure F2-33: Post-Test Position 4 Left Side View



Figure F2-34: Pre-Test Position 4 Right Side View



Figure F2-35: Post-Test Position 4 Right Side View



Figure F2-36: Post-Test Position 4 Dummy Feet Contacts

SECTION F-3

CHILD DUMMY RESPONSE AND CRS DATA TRACES

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LIST OF DATA PLOTS...(CONTINUED)

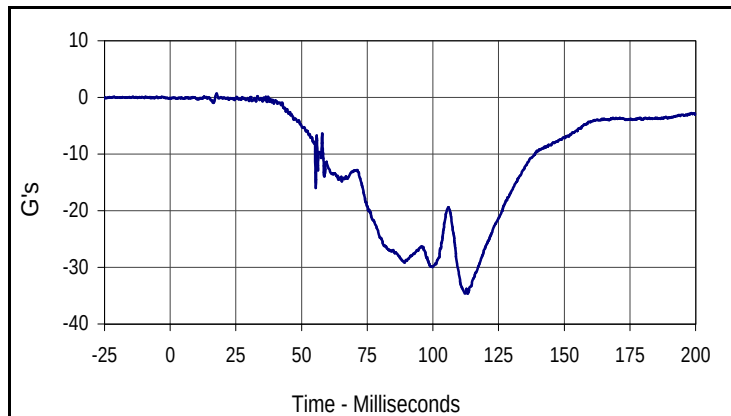
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LIST OF DATA PLOTS...(CONTINUED)

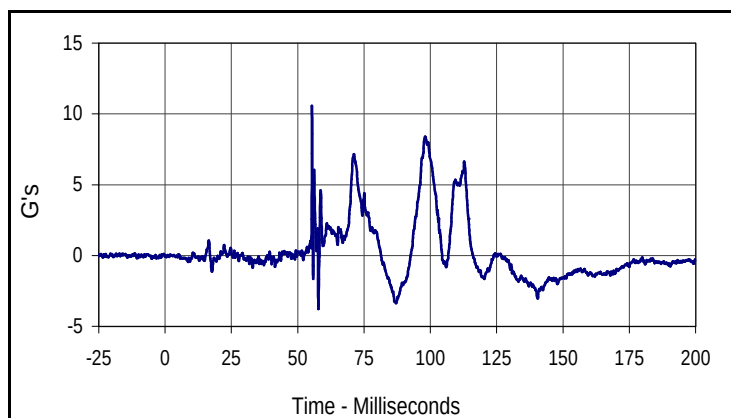
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	Right Rear (10 Yr.) Right Clavicle Force Z	F3-24
F3-25	Right Rear (10 Yr.) Left Upper ASIS Force	F3-25
	Right Rear (10 Yr.) Left Lower ASIS Force	F3-25
	Right Rear (10 Yr.) Right Upper ASIS Force	F3-25
	Right Rear (10 Yr.) Right Lower ASIS Force	F3-25
F3-26	Right Rear (10 Yr.) Lap Belt Force	F3-26
	Right Rear (10 Yr.) Shoulder Belt Force	F3-26
	Right Rear (10 Yr.) Shoulder Belt Pullout	F3-26
	Right Rear (10 Yr.) Shoulder Belt Elongation	F3-26
F3-27	Right Rear (10 Yr.) CRS X	F3-27
	Right Rear (10 Yr.) CRS Y	F3-27
	Right Rear (10 Yr.) CRS Z	F3-27
	Right Rear (10 Yr.) CRS Resultant	F3-27

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

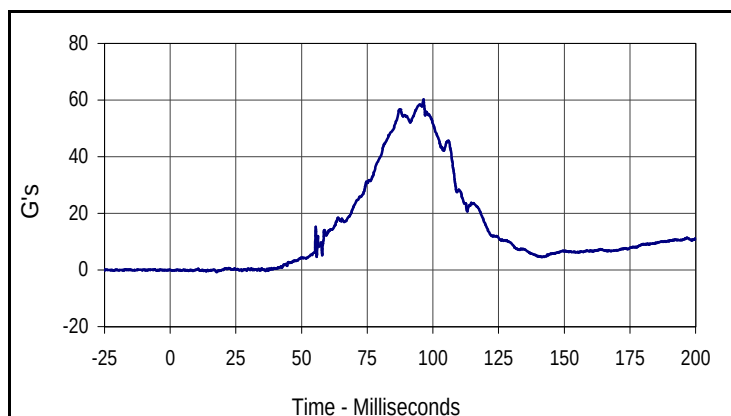
Test Date: 2/25/05
 NHTSA No.: G50103



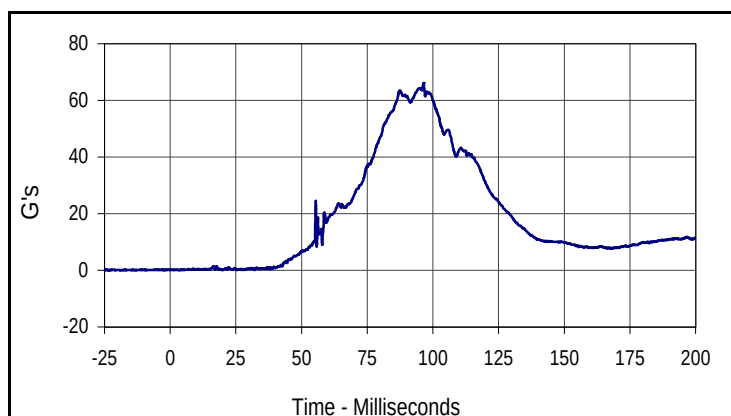
Curve Description			
Left Rear (10 yr.) Head X			
CURNO	Type	SAE Class	Units
134	FIL	1000	G's
Max	Time	Min	Time
0.7	17.6	-34.6	112.2



Curve Description			
Left Rear (10 yr.) Head Y			
CURNO	Type	SAE Class	Units
135	FIL	1000	G's
Max	Time	Min	Time
10.6	55.4	-3.8	57.8



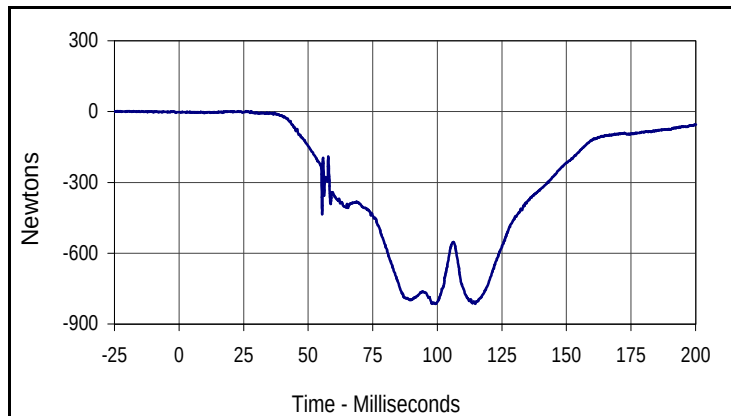
Curve Description			
Left Rear (10 yr.) Head Z			
CURNO	Type	SAE Class	Units
136	FIL	1000	G's
Max	Time	Min	Time
60.2	96.4	-0.8	17.7



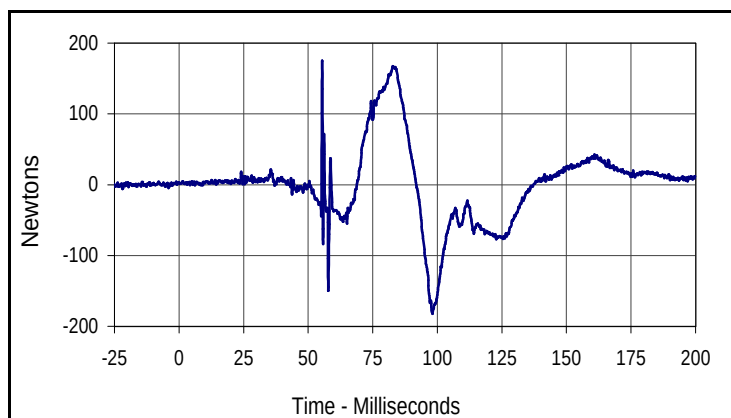
Curve Description			
Left Rear (10 yr.) Head Resultant			
CURNO	Type	SAE Class	Units
134	RES	1000	G's
Max	Time	Min	Time
66.1	96.5	0.1	3.5

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

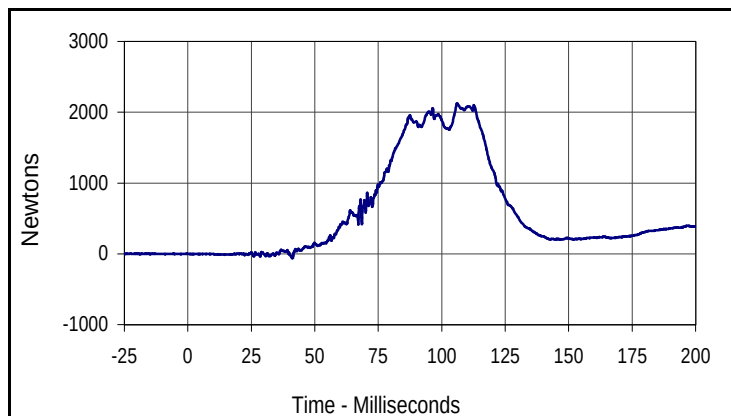
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 NHTSA No.: G50103



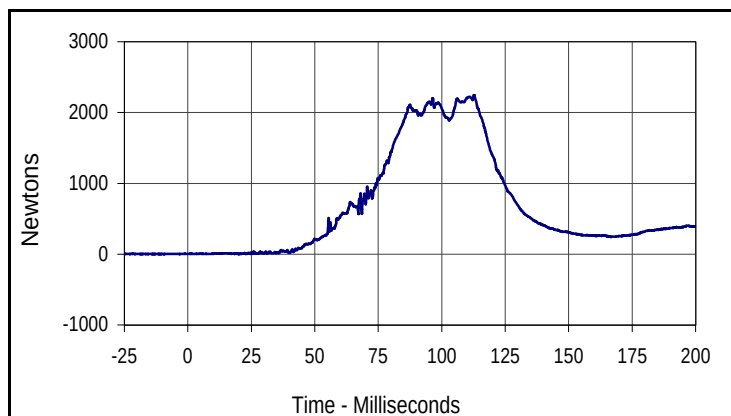
Curve Description			
Left Rear (10 yr.) Upper Neck Force X			
CURNO	Type	SAE Class	Units
137	FIL	1000	Newtons
Max	Time	Min	Time
2.1	25.8	-814.9	114.7



Curve Description			
Left Rear (10 yr.) Upper Neck Force Y			
CURNO	Type	SAE Class	Units
138	FIL	1000	Newtons
Max	Time	Min	Time
174.7	55.4	-182.4	98.1



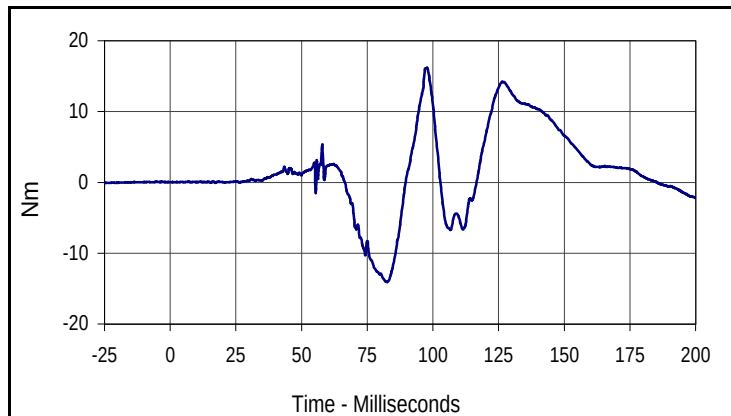
Curve Description			
Left Rear (10 yr.) Upper Neck Force Z			
CURNO	Type	SAE Class	Units
139	FIL	1000	Newtons
Max	Time	Min	Time
2124.6	106.1	-62.1	41.1



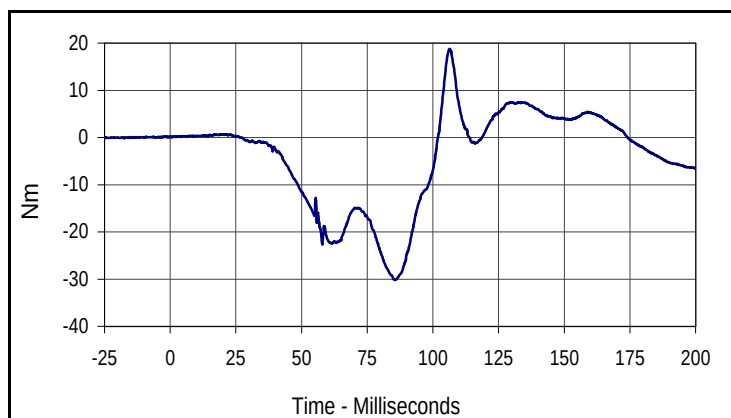
Curve Description			
Left Rear (10 yr.) Upper Neck Force Res.			
CURNO	Type	SAE Class	Units
137	RES	1000	Newtons
Max	Time	Min	Time
2245.7	112.7	1.0	20.1

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

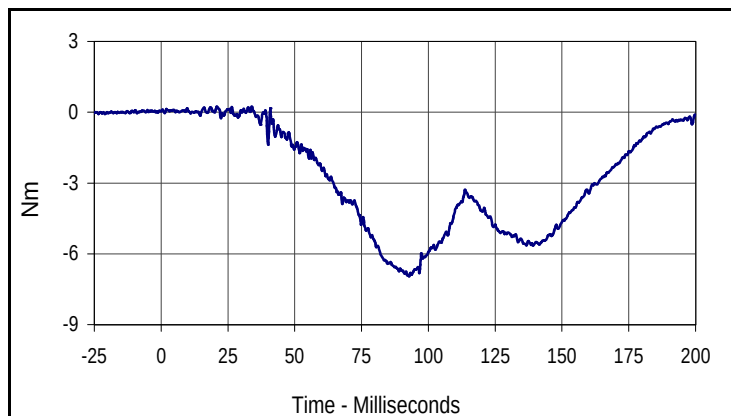
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 NHTSA No.: G50103



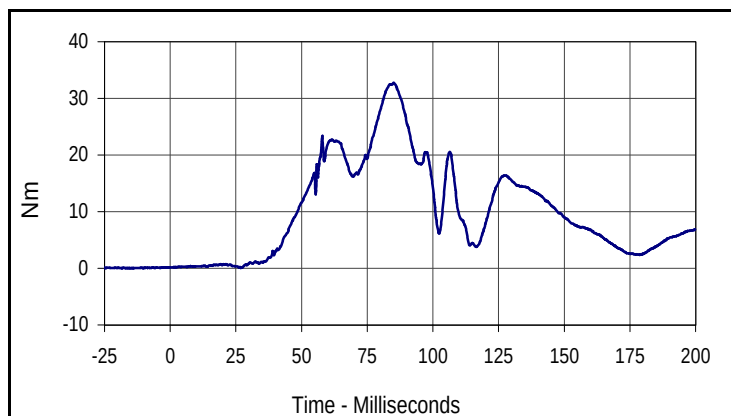
Curve Description			
Left Rear (10 yr.) Upper Neck Moment X			
CURNO	Type	SAE Class	Units
140	FIL	600	Nm
Max	Time	Min	Time
16.2	97.7	-14.1	82.6



Curve Description			
Left Rear (10 yr.) Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
141	FIL	600	Nm
Max	Time	Min	Time
18.8	106.4	-30.2	85.8



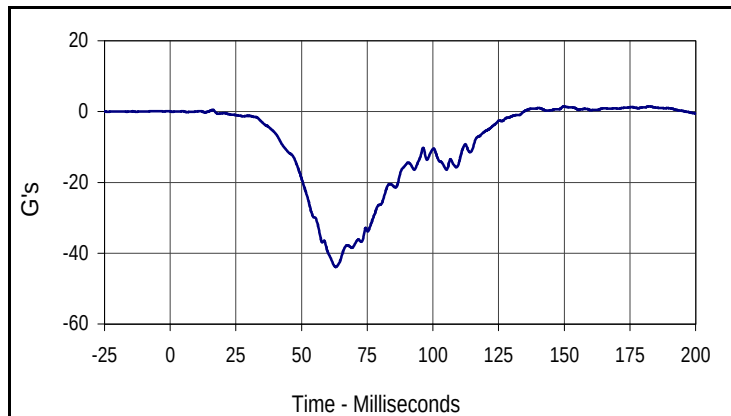
Curve Description			
Left Rear (10 yr.) Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
142	FIL	600	Nm
Max	Time	Min	Time
0.2	33.9	-6.9	92.8



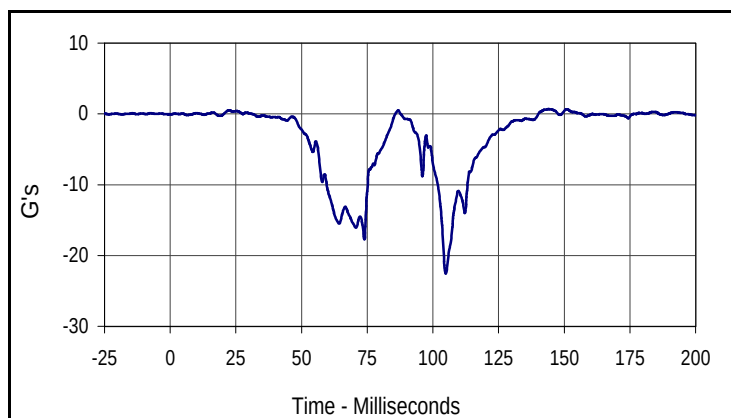
Curve Description			
Left Rear (10 yr.) Upper Neck Moment Res.			
CURNO	Type	SAE Class	Units
140	RES	600	Nm
Max	Time	Min	Time
32.8	85.1	0.0	26.8

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

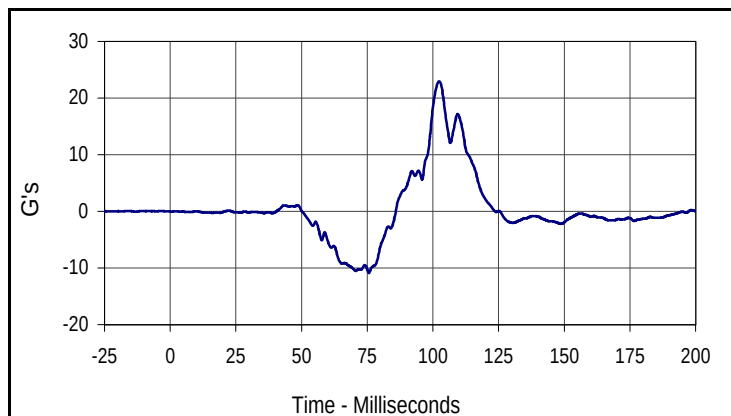
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 NHTSA No.: G50103



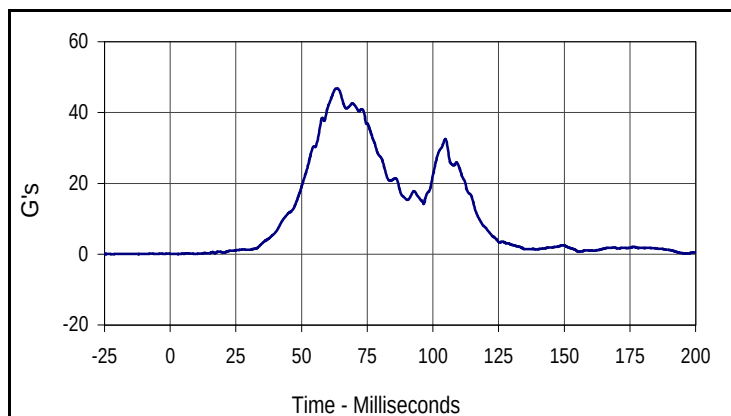
Curve Description			
Left Rear (10 yr.) Chest X			
CURNO	Type	SAE Class	Units
143	FIL	180	G's
Max	Time	Min	Time
1.4	182.3	-43.9	63.0



Curve Description			
Left Rear (10 yr.) Chest Y			
CURNO	Type	SAE Class	Units
144	FIL	180	G's
Max	Time	Min	Time
0.7	144.0	-22.5	104.9



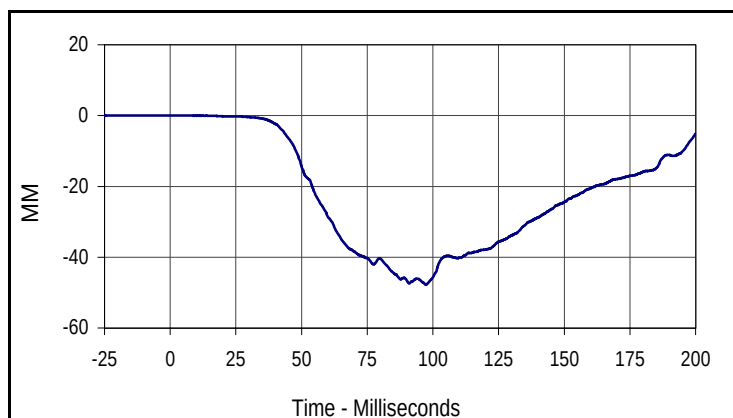
Curve Description			
Left Rear (10 yr.) Chest Z			
CURNO	Type	SAE Class	Units
145	FIL	180	G's
Max	Time	Min	Time
23.0	102.4	-10.9	75.6



Curve Description			
Left Rear (10 yr.) Chest Resultant			
CURNO	Type	SAE Class	Units
143	RES	180	G's
Max	Time	Min	Time
46.8	63.3	0.0	3.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
Test Program: 2005 NHTSA 35mph NCAP

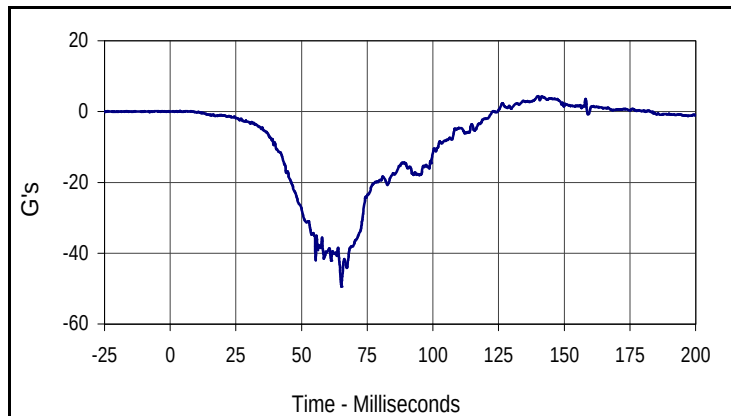
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NHTSA No.: G50103



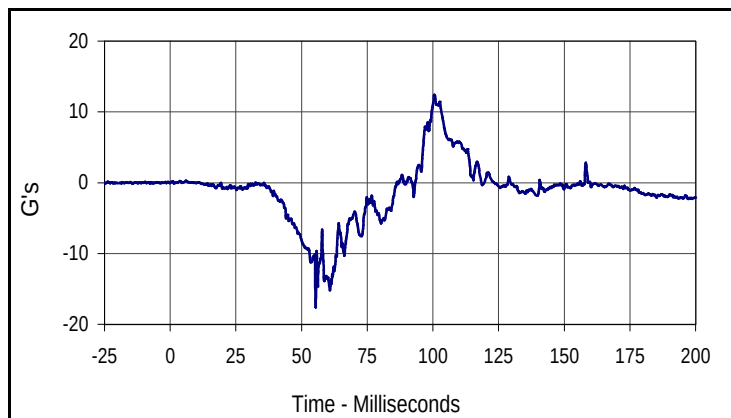
Curve Description			
Left Rear (10 yr.) Chest Deflection			
CURNO	Type	SAE Class	Units
146	FIL	600	MM
Max	Time	Min	Time
0.0	3.1	-47.8	97.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

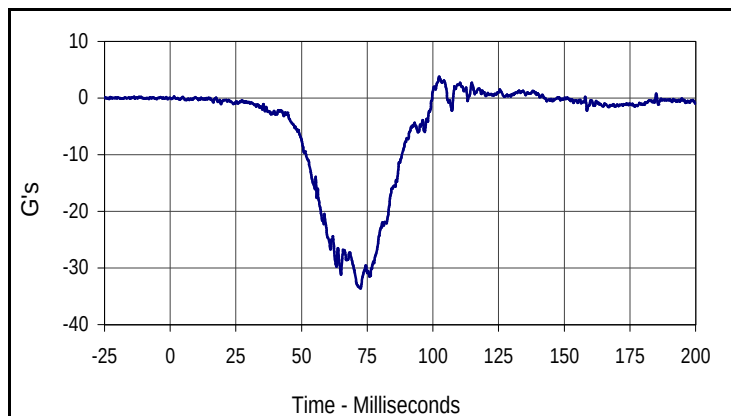
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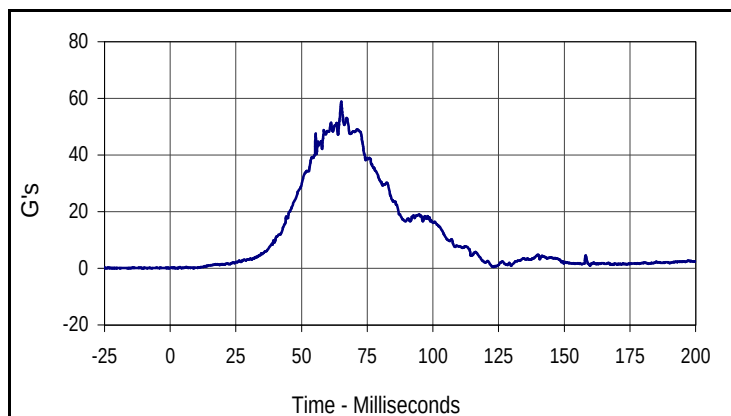
Curve Description			
Left Rear (10 yr.) Pelvis X			
CURNO	Type	SAE Class	Units
147	FIL	1000	G's
Max	Time	Min	Time
4.4	140.2	-49.5	65.1



Curve Description			
Left Rear (10 yr.) Pelvis Y			
CURNO	Type	SAE Class	Units
148	FIL	1000	G's
Max	Time	Min	Time
12.4	100.6	-17.6	55.4



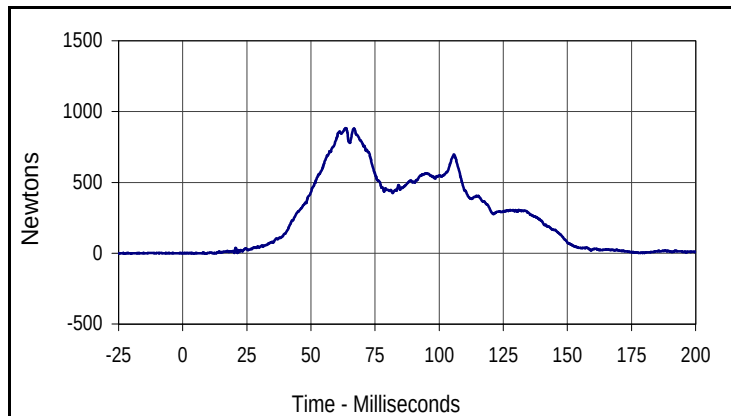
Curve Description			
Left Rear (10 yr.) Pelvis Z			
CURNO	Type	SAE Class	Units
149	FIL	1000	G's
Max	Time	Min	Time
3.8	102.3	-33.6	72.5



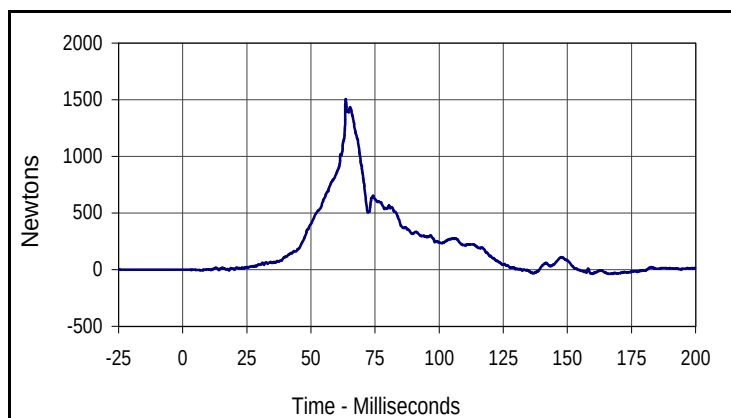
Curve Description			
Left Rear (10 yr.) Pelvis Resultant			
CURNO	Type	SAE Class	Units
147	RES	1000	G's
Max	Time	Min	Time
58.9	65.1	0.0	3.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



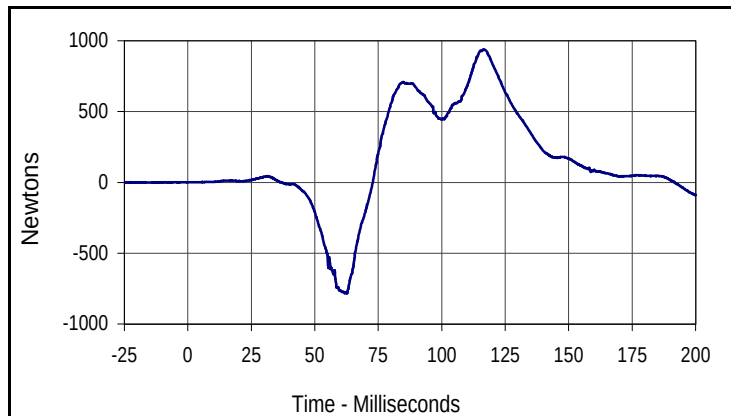
Curve Description			
Left Rear (10 yr.) Left Femur Force			
CURNO	Type	SAE Class	Units
150	FIL	600	Newtons
Max	Time	Min	Time
882.4	63.6	-3.2	8.8



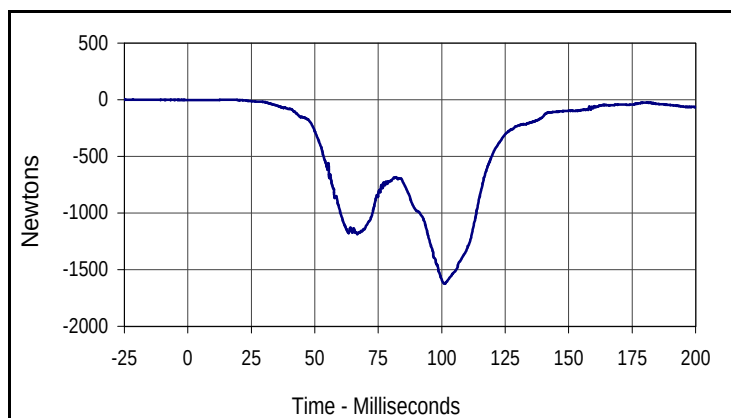
Curve Description			
Left Rear (10 yr.) Right Femur Force			
CURNO	Type	SAE Class	Units
151	FIL	600	Newtons
Max	Time	Min	Time
1504.3	63.6	-37.9	167.8

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

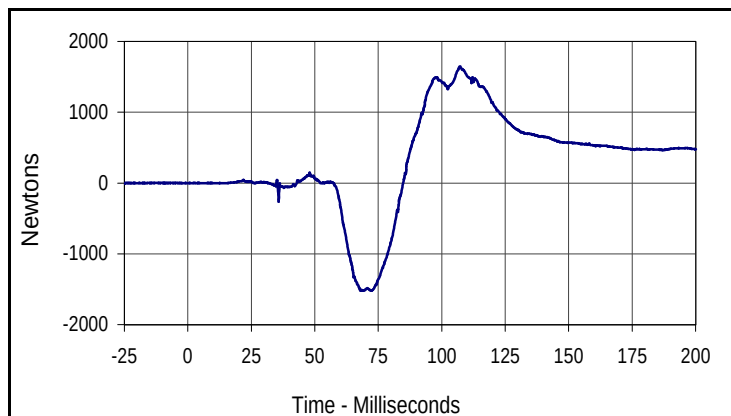
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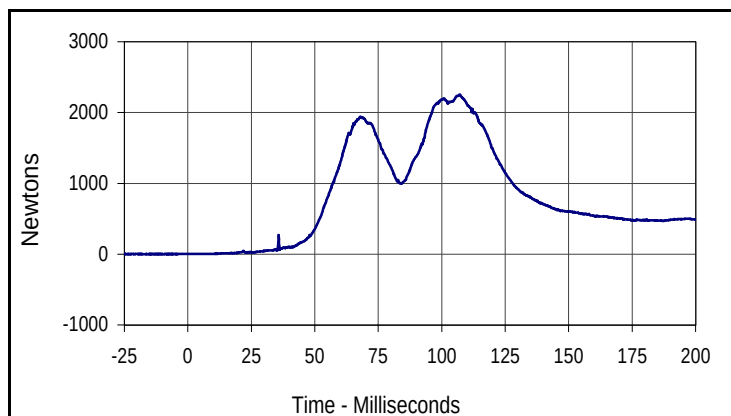
Curve Description			
Left Rear (10 yr.) Lumbar Force X			
CURNO	Type	SAE Class	Units
152	FIL	1000	Newtons
Max	Time	Min	Time
939.8	116.4	-783.3	61.7



Curve Description			
Left Rear (10 yr.) Lumbar Force Y			
CURNO	Type	SAE Class	Units
153	FIL	1000	Newtons
Max	Time	Min	Time
1.0	15.0	-1624.4	101.0



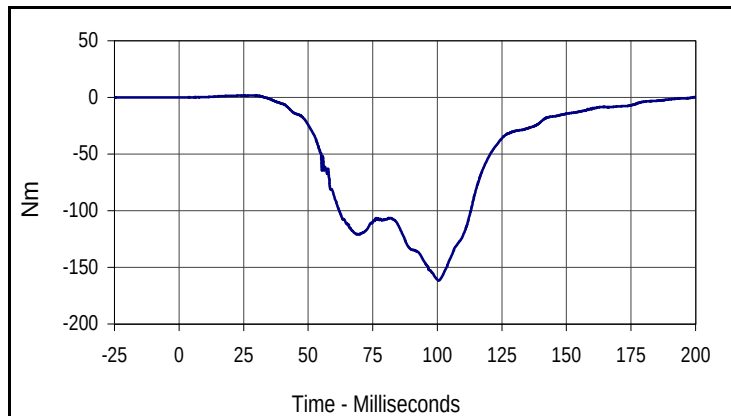
Curve Description			
Left Rear (10 yr.) Lumbar Force Z			
CURNO	Type	SAE Class	Units
154	FIL	1000	Newtons
Max	Time	Min	Time
1648.3	107.2	-1523.1	68.7



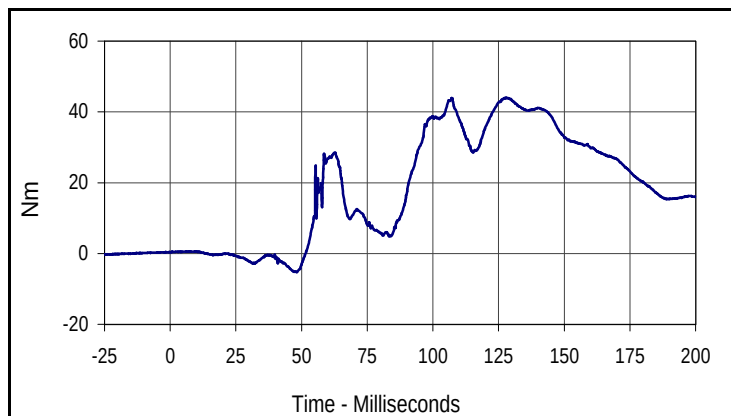
Curve Description			
Left Rear (10 yr.) Lumbar Force Resultant			
CURNO	Type	SAE Class	Units
152	RES	1000	Newtons
Max	Time	Min	Time
2254.9	107.1	2.4	1.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

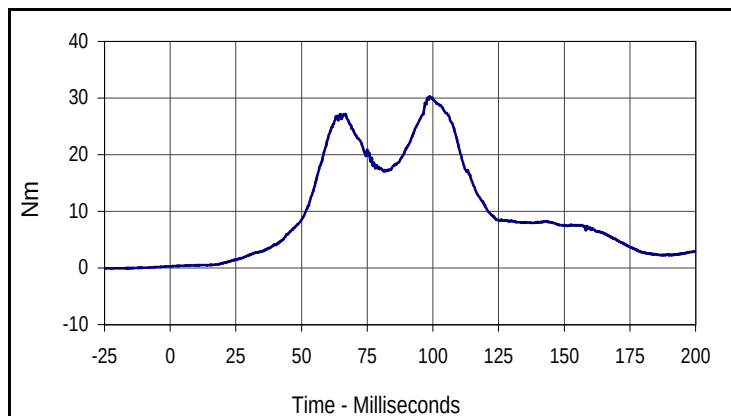
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 NHTSA No.: G50103



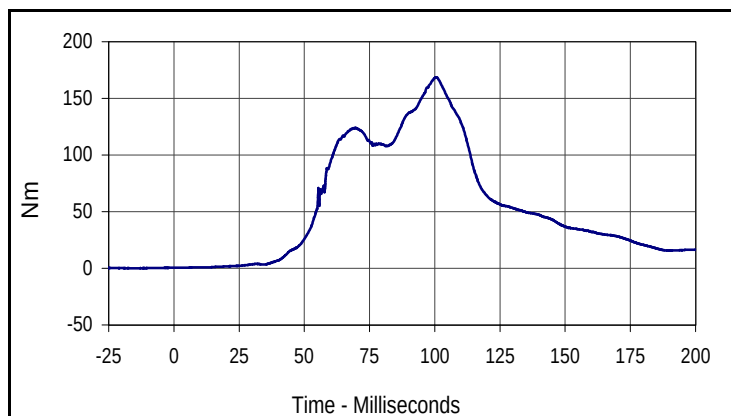
Curve Description			
Left Rear (10 yr.) Lumbar Moment X			
CURNO	Type	SAE Class	Units
155	FIL	1000	Nm
Max	Time	Min	Time
1.8	28.7	-161.6	100.5



Curve Description			
Left Rear (10 yr.) Lumbar Moment Y			
CURNO	Type	SAE Class	Units
156	FIL	1000	Nm
Max	Time	Min	Time
44.0	127.9	-5.2	48.2



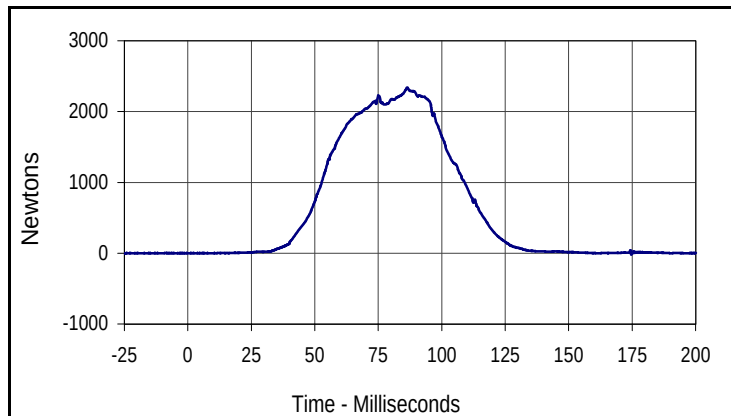
Curve Description			
Left Rear (10 yr.) Lumbar Moment Z			
CURNO	Type	SAE Class	Units
157	FIL	1000	Nm
Max	Time	Min	Time
30.3	98.8	0.3	0.3



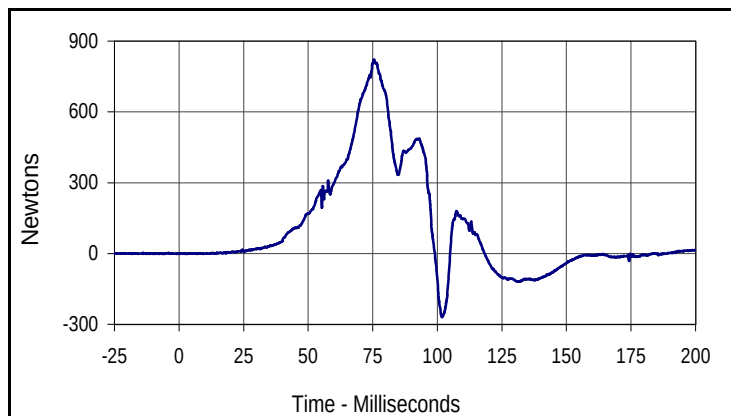
Curve Description			
Left Rear (10 yr.) Lumbar Moment Resultant			
CURNO	Type	SAE Class	Units
155	RES	1000	Nm
Max	Time	Min	Time
168.7	100.6	0.5	0.2

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

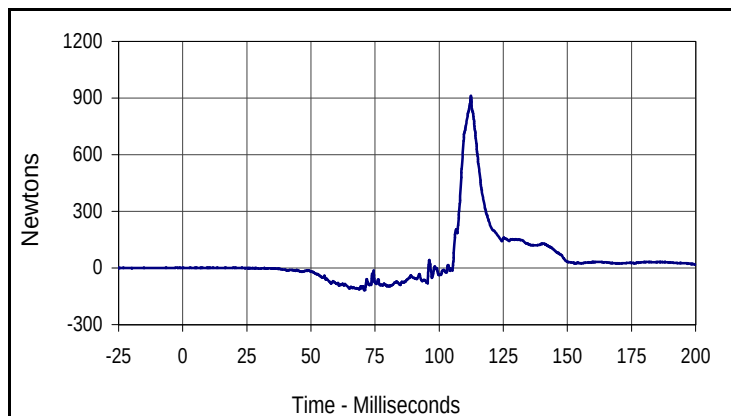
Test Date: 2/25/05
 NHTSA No.: G50103



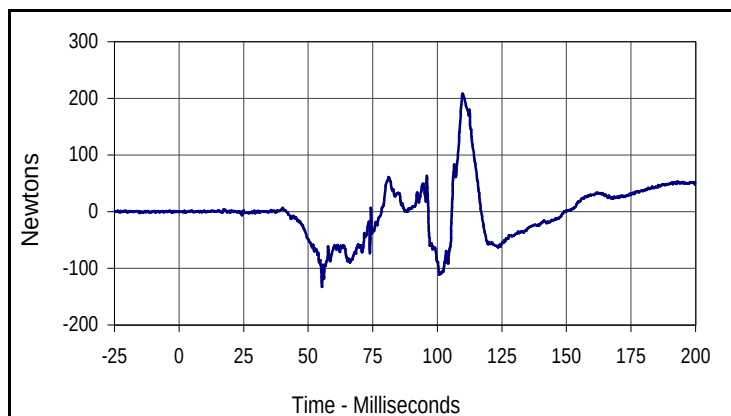
Curve Description			
Left Rear (10 yr.) Left Clavicle Force X			
CURNO	Type	SAE Class	Units
158	FIL	1000	Newtons
Max	Time	Min	Time
2340.9	86.4	-17.9	174.7



Curve Description			
Left Rear (10 yr.) Left Clavicle Force Z			
CURNO	Type	SAE Class	Units
159	FIL	1000	Newtons
Max	Time	Min	Time
822.0	75.5	-270.4	101.8



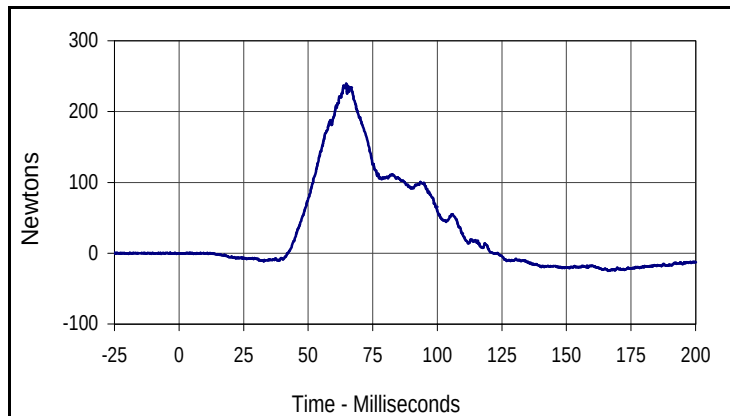
Curve Description			
Left Rear (10 yr.) Right Clavicle Force X			
CURNO	Type	SAE Class	Units
160	FIL	1000	Newtons
Max	Time	Min	Time
912.1	112.4	-117.7	70.8



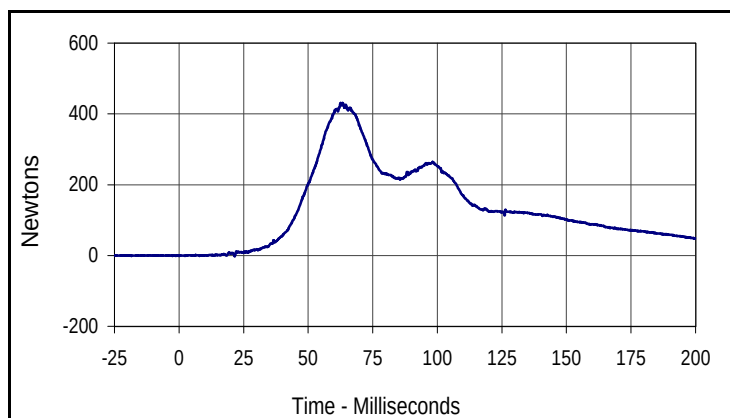
Curve Description			
Left Rear (10 yr.) Right Clavicle Force Z			
CURNO	Type	SAE Class	Units
161	FIL	1000	Newtons
Max	Time	Min	Time
208.3	109.8	-132.8	55.4

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

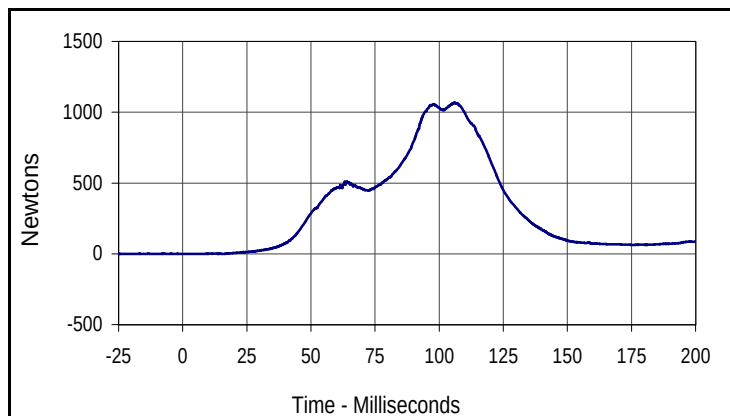
Test Date: 2/25/05
 NHTSA No.: G50103



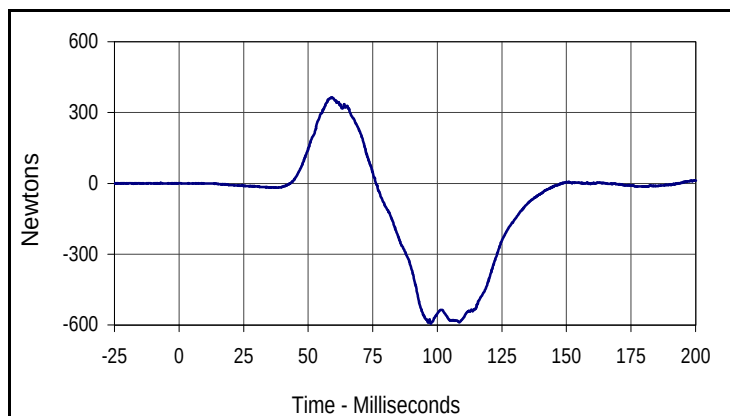
Curve Description			
Left Rear (10 yr.) Left Upper ASIS Force			
CURNO	Type	SAE Class	Units
162	FIL	1000	Newtons
Max	Time	Min	Time
239.4	64.7	-25.0	166.0



Curve Description			
Left Rear (10 yr.) Left Lower ASIS Force			
CURNO	Type	SAE Class	Units
163	FIL	1000	Newtons
Max	Time	Min	Time
431.0	63.4	-2.1	21.5



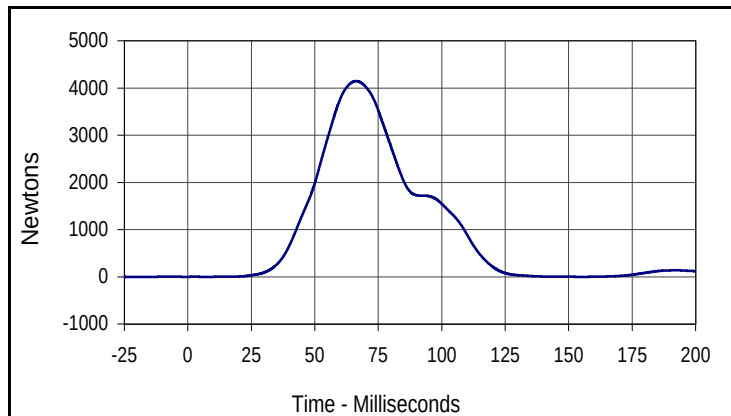
Curve Description			
Left Rear (10 yr.) Right Upper ASIS Force			
CURNO	Type	SAE Class	Units
164	FIL	1000	Newtons
Max	Time	Min	Time
1067.7	106.0	-1.4	8.0



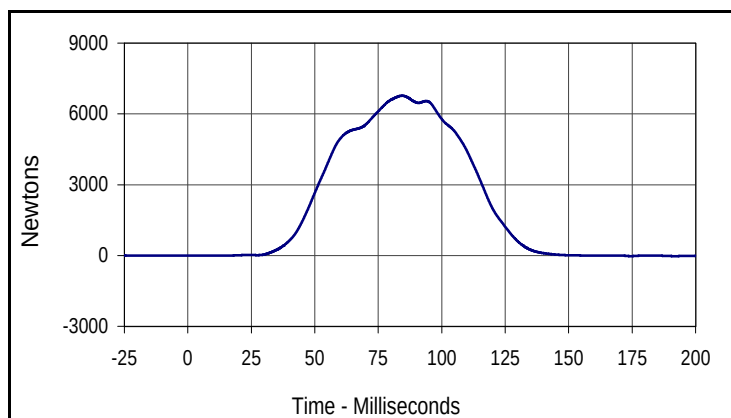
Curve Description			
Left Rear (10 yr.) Right Lower ASIS Force			
CURNO	Type	SAE Class	Units
165	FIL	1000	Newtons
Max	Time	Min	Time
364.0	59.2	-594.2	97.5

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

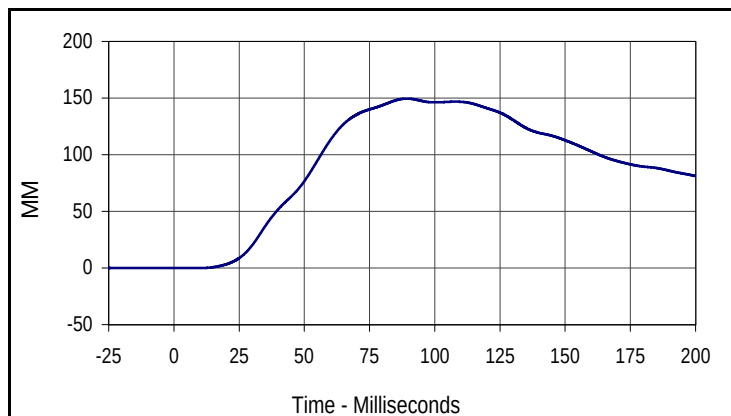
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 NHTSA No.: G50103



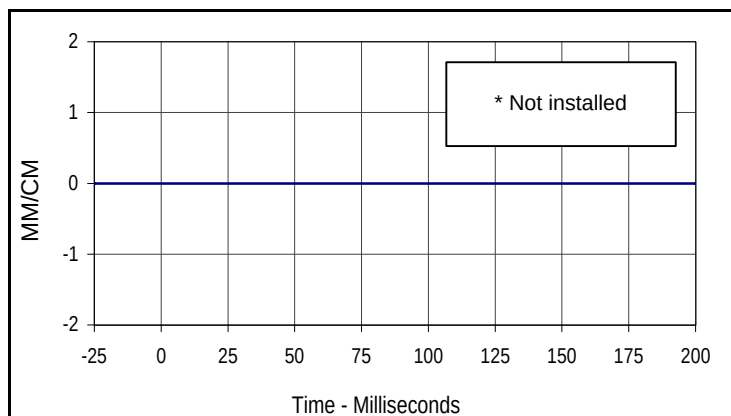
Curve Description			
Left Rear (10 yr.) Lap Belt Force			
CURNO	Type	SAE Class	Units
166	FIL	60	Newtons
Max	Time	Min	Time
4146.1	66.4	-1.7	155.4



Curve Description			
Left Rear (10 yr.) Shoulder Belt Force			
CURNO	Type	SAE Class	Units
167	FIL	60	Newtons
Max	Time	Min	Time
6771.7	84.4	-26.9	174.4



Curve Description			
Left Rear (10 yr.) Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
168	FIL	60	MM
Max	Time	Min	Time
149.5	89.3	0.0	0.0

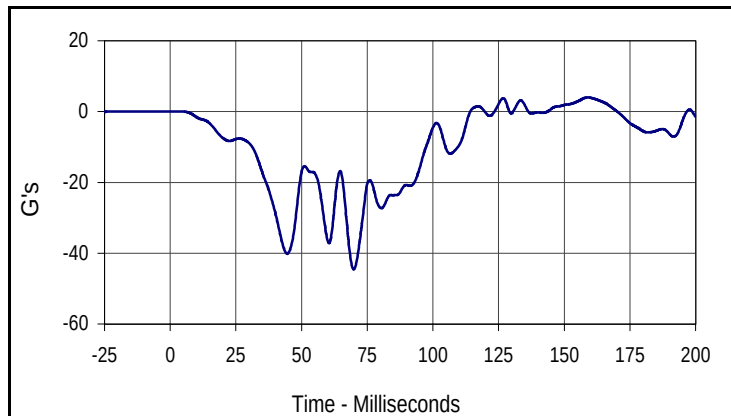


Curve Description			
Left Rear (10 yr.) Shoulder Belt Elongation			
CURNO	Type	SAE Class	Units
169	FIL	60	MM/CM
Max	Time	Min	Time
0.00	0.0	0.00	0.0

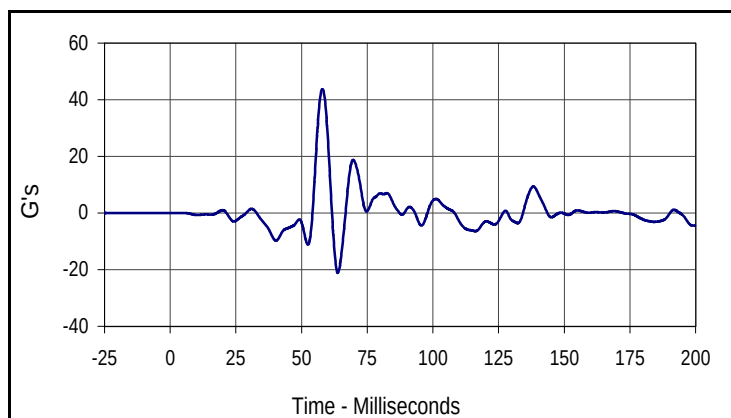
* Not installed

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

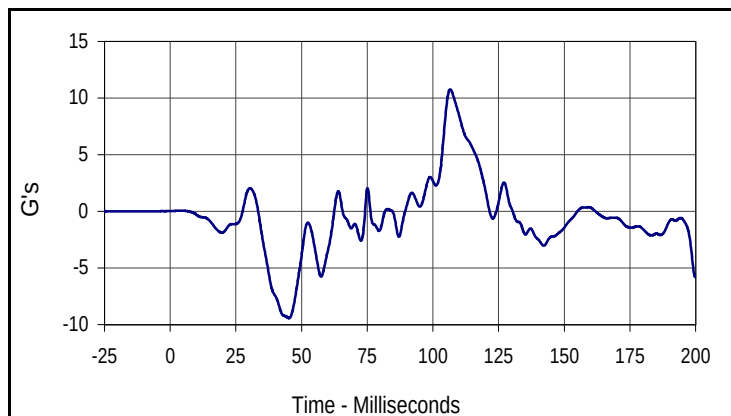
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 NHTSA No.: G50103



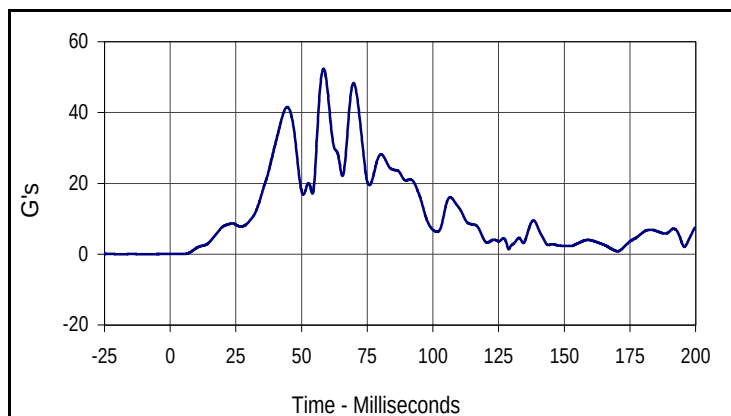
Curve Description			
Left Rear (10 yr.) CRS X			
CURNO	Type	SAE Class	Units
170	FIL	60	G's
Max	Time	Min	Time
4.0	159.0	-44.5	69.9



Curve Description			
Left Rear (10 yr.) CRS Y			
CURNO	Type	SAE Class	Units
171	FIL	60	G's
Max	Time	Min	Time
43.8	57.9	-21.1	63.8



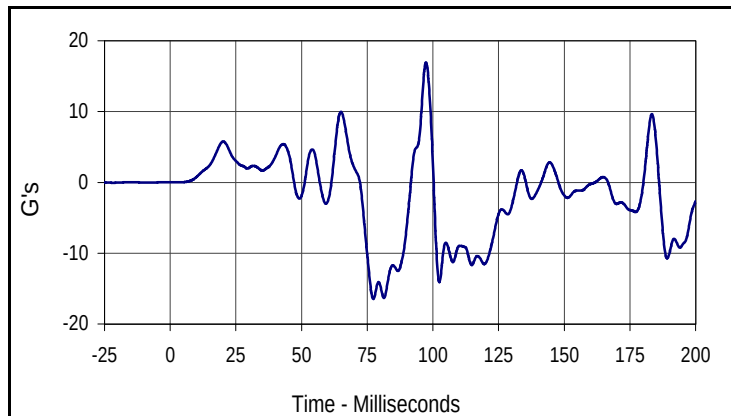
Curve Description			
Left Rear (10 yr.) CRS Z			
CURNO	Type	SAE Class	Units
172	FIL	60	G's
Max	Time	Min	Time
10.8	106.6	-9.4	45.2



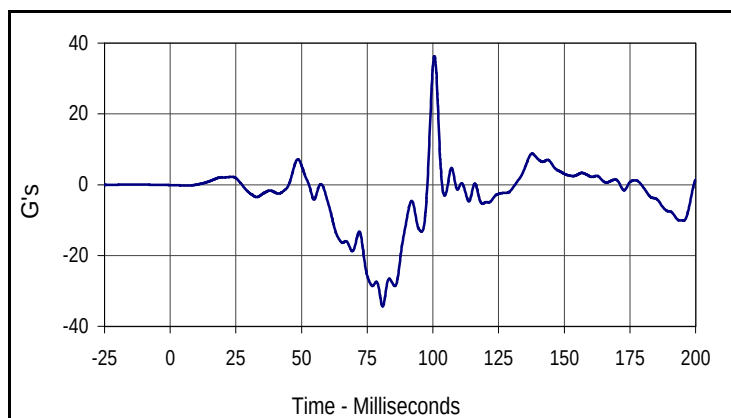
Curve Description			
Left Rear (10 yr.) CRS Resultant			
CURNO	Type	SAE Class	Units
170	RES	60	G's
Max	Time	Min	Time
52.4	58.4	0.0	0.6

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

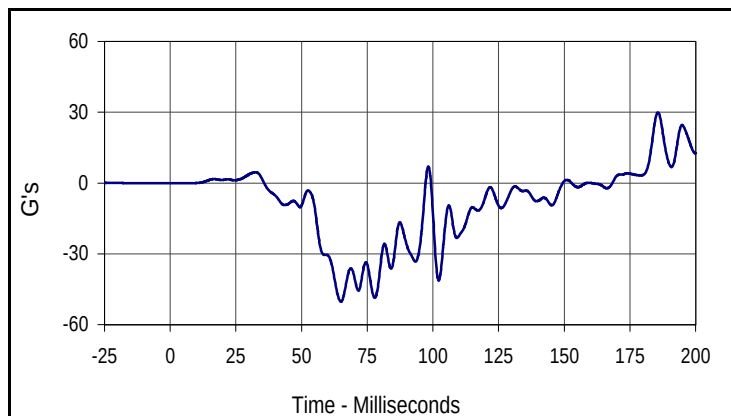
Test Date: 2/25/05
 NHTSA No.: G50103



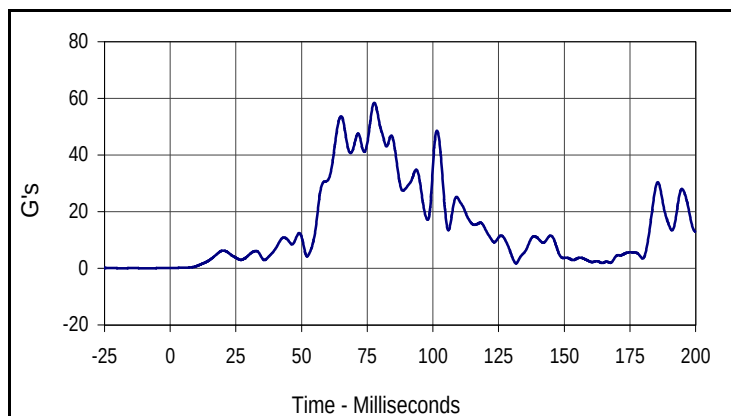
Curve Description			
Left Rear (10 yr.) CRS Seat Back X			
CURNO	Type	SAE Class	Units
173	FIL	60	G's
Max	Time	Min	Time
16.9	97.4	-16.5	77.3



Curve Description			
Left Rear (10 yr.) CRS Seat Back Y			
CURNO	Type	SAE Class	Units
174	FIL	60	G's
Max	Time	Min	Time
36.3	100.6	-34.4	80.9



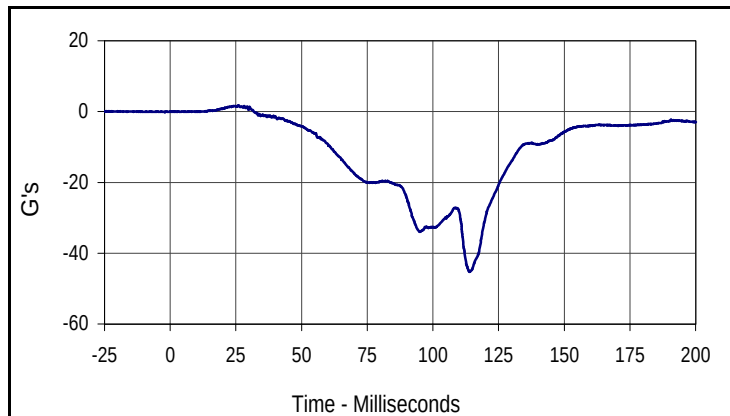
Curve Description			
Left Rear (10 yr.) CRS Seat Back Z			
CURNO	Type	SAE Class	Units
175	FIL	60	G's
Max	Time	Min	Time
30.0	185.7	-50.3	65.0



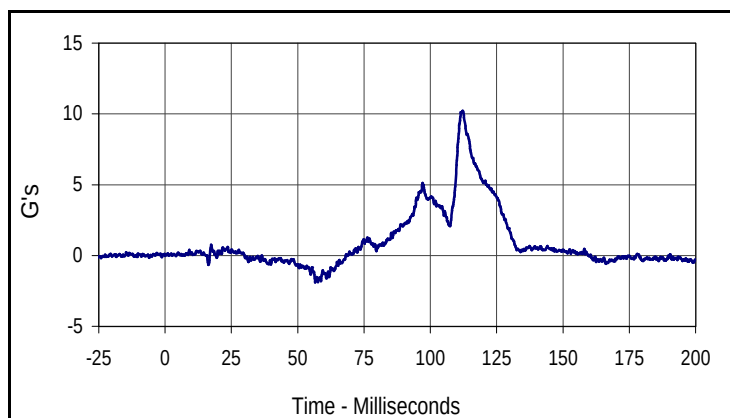
Curve Description			
Left Rear (10 yr.) CRS Seat Back Resultant			
CURNO	Type	SAE Class	Units
173	RES	60	G's
Max	Time	Min	Time
58.4	77.7	0.1	0.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

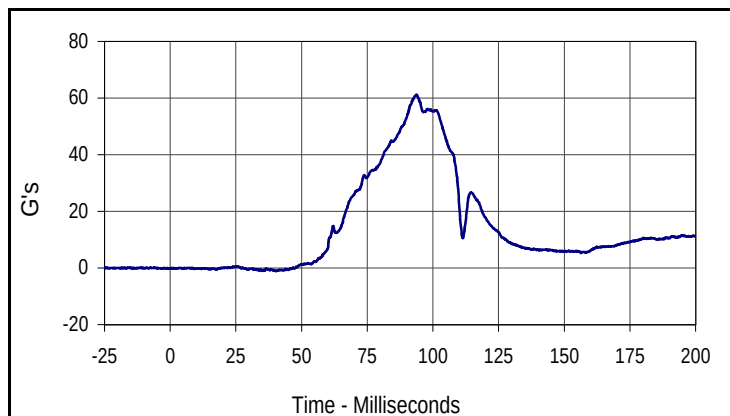
Test Date: 2/25/05
 NHTSA No.: G50103



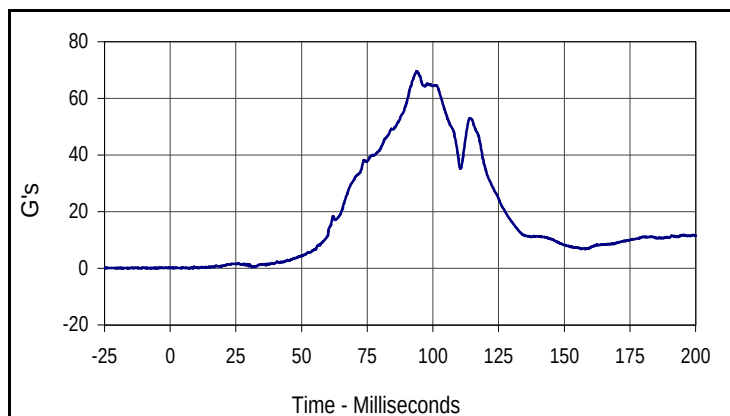
Curve Description			
Right Rear (10 yr.) Head X			
CURNO	Type	SAE Class	Units
176	FIL	1000	G's
Max	Time	Min	Time
1.7	26.0	-45.3	113.9



Curve Description			
Right Rear (10 yr.) Head Y			
CURNO	Type	SAE Class	Units
177	FIL	1000	G's
Max	Time	Min	Time
10.2	112.2	-1.9	56.6



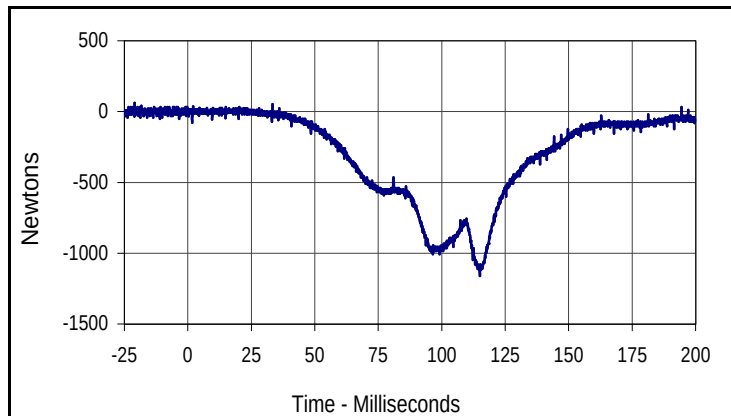
Curve Description			
Right Rear (10 yr.) Head Z			
CURNO	Type	SAE Class	Units
178	FIL	1000	G's
Max	Time	Min	Time
61.2	93.7	-1.1	40.1



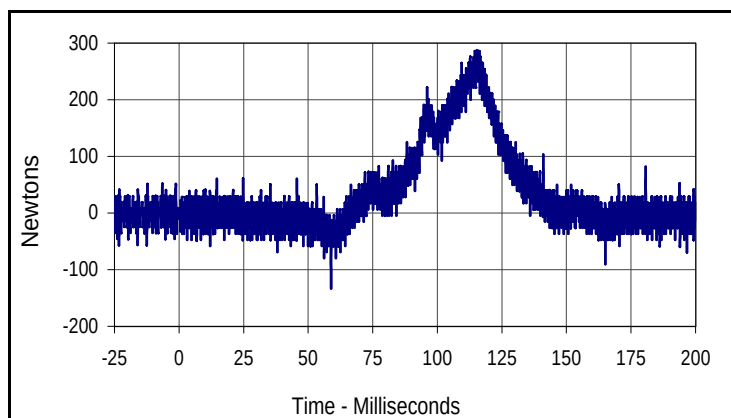
Curve Description			
Right Rear (10 yr.) Head Resultant			
CURNO	Type	SAE Class	Units
176	RES	1000	G's
Max	Time	Min	Time
69.6	93.9	0.0	1.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

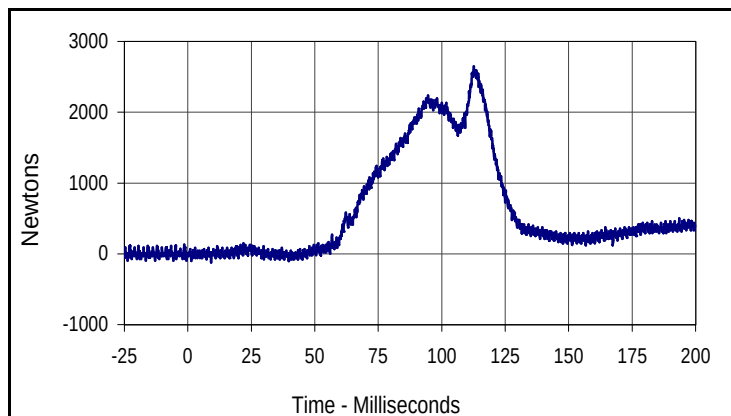
Test Date: 2/25/05
 NHTSA No.: G50103



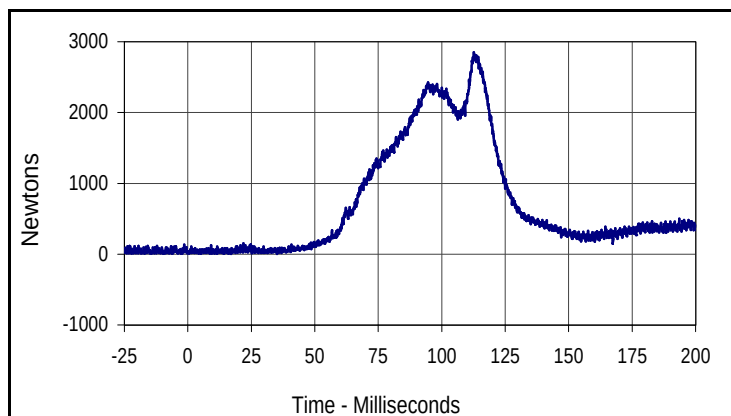
Curve Description			
Right Rear (10 yr.) Upper Neck Force X			
CURNO	Type	SAE Class	Units
179	FIL	1000	Newtons
Max	Time	Min	Time
53.3	33.3	-1162.1	115.0



Curve Description			
Right Rear (10 yr.) Upper Neck Force Y			
CURNO	Type	SAE Class	Units
180	FIL	1000	Newtons
Max	Time	Min	Time
285.9	114.5	-133.2	58.9



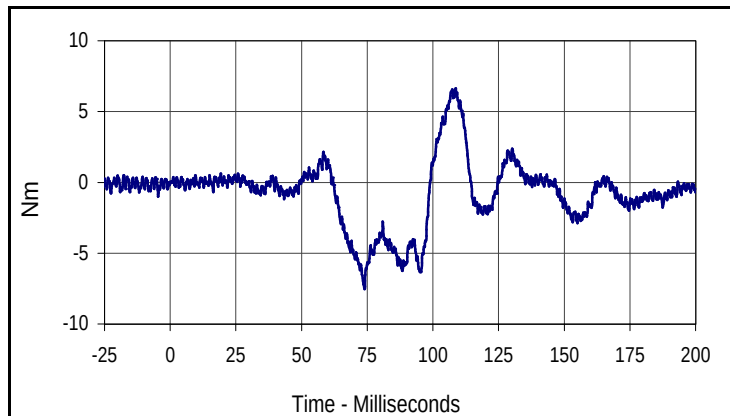
Curve Description			
Right Rear (10 yr.) Upper Neck Force Z			
CURNO	Type	SAE Class	Units
181	FIL	1000	Newtons
Max	Time	Min	Time
2648.5	112.6	-121.0	9.2



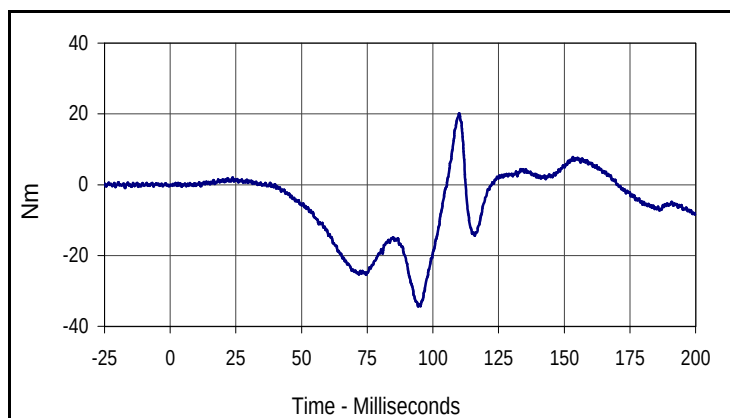
Curve Description			
Right Rear (10 yr.) Neck Force Resultant			
CURNO	Type	SAE Class	Units
179	RES	1000	Newtons
Max	Time	Min	Time
2851.0	112.6	5.4	17.0

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

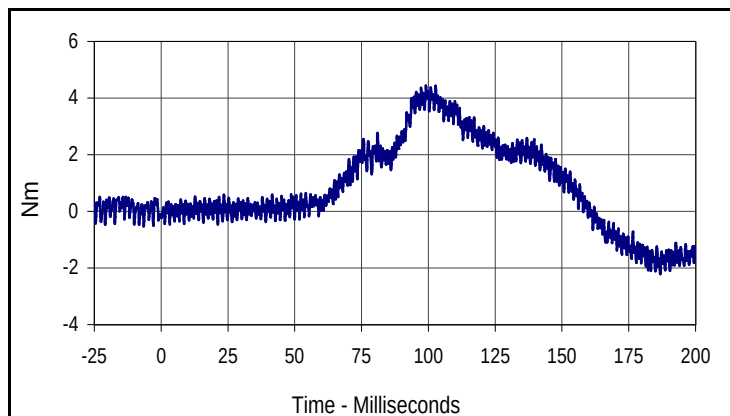
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 NHTSA No.: G50103



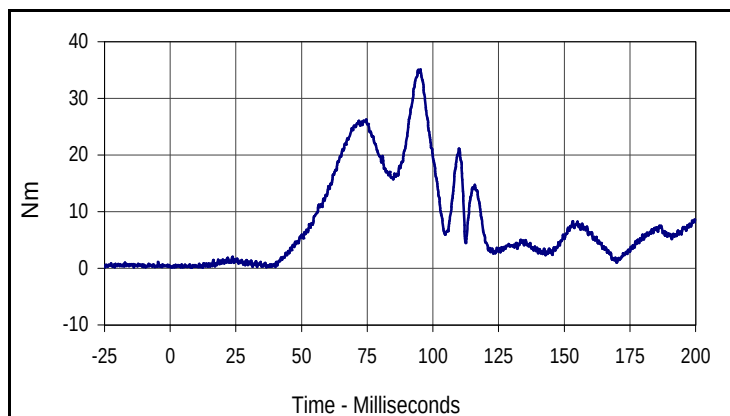
Curve Description			
Right Rear (10 yr.) Upper Neck Moment X			
CURNO	Type	SAE Class	Units
182	FIL	600	Nm
Max	Time	Min	Time
6.6	108.6	-7.5	74.0



Curve Description			
Right Rear (10 yr.) Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
183	FIL	600	Nm
Max	Time	Min	Time
20.1	110.0	-34.4	94.4



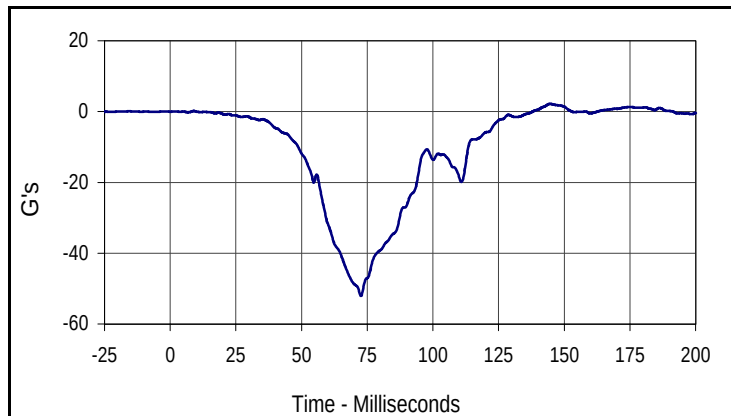
Curve Description			
Right Rear (10 yr.) Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
184	FIL	600	Nm
Max	Time	Min	Time
4.4	99.1	-2.2	186.8



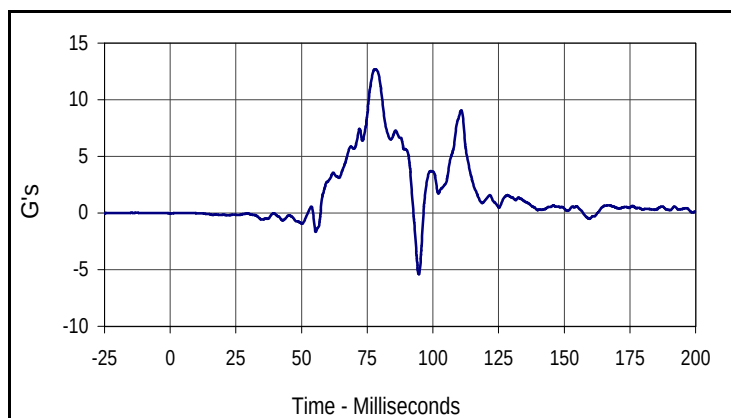
Curve Description			
Right Rear (10 yr.) Neck Moment Resultant			
CURNO	Type	SAE Class	Units
182	RES	600	Nm
Max	Time	Min	Time
35.1	95.2	0.1	8.3

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

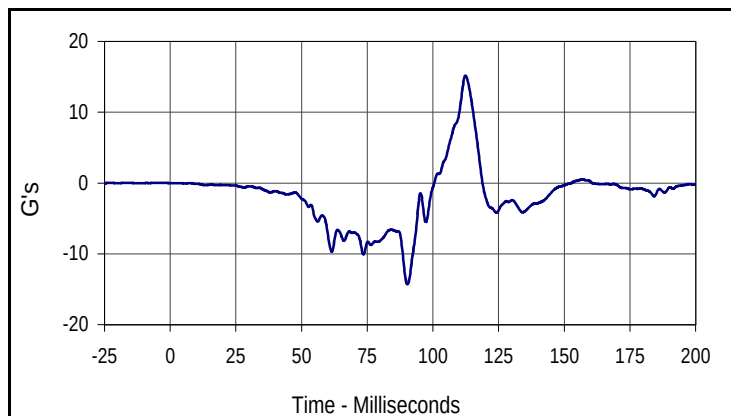
Test Date: 2/25/05
 NHTSA No.: G50103



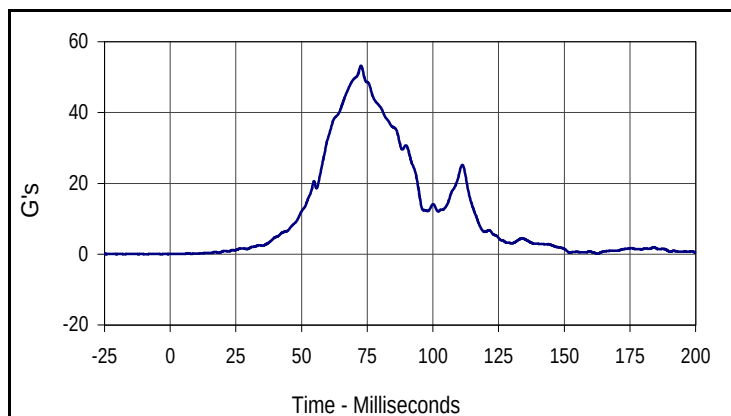
Curve Description			
Right Rear (10 yr.) Chest X			
CURNO	Type	SAE Class	Units
185	FIL	180	G's
Max	Time	Min	Time
2.2	144.6	-52.0	72.6



Curve Description			
Right Rear (10 yr.) Chest Y			
CURNO	Type	SAE Class	Units
186	FIL	180	G's
Max	Time	Min	Time
12.7	78.2	-5.4	94.6



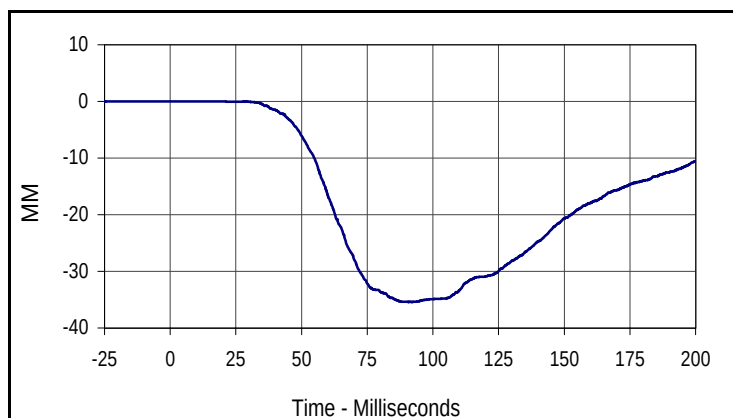
Curve Description			
Right Rear (10 yr.) Chest Z			
CURNO	Type	SAE Class	Units
187	FIL	180	G's
Max	Time	Min	Time
15.2	112.4	-14.3	90.3



Curve Description			
Right Rear (10 yr.) Chest Resultant			
CURNO	Type	SAE Class	Units
185	RES	180	G's
Max	Time	Min	Time
53.2	72.6	0.0	0.9

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

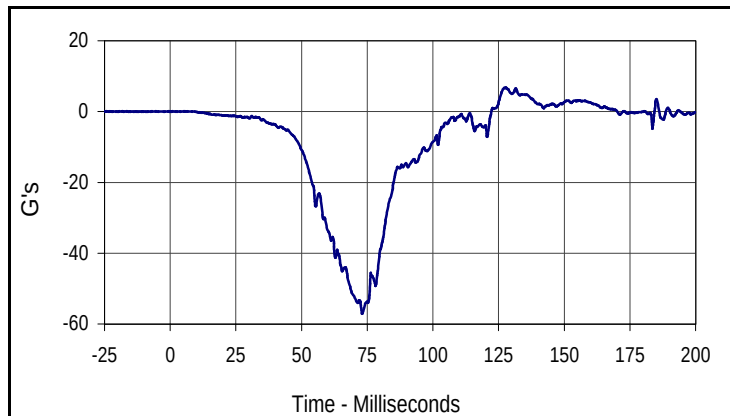
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 NHTSA No.: G50103



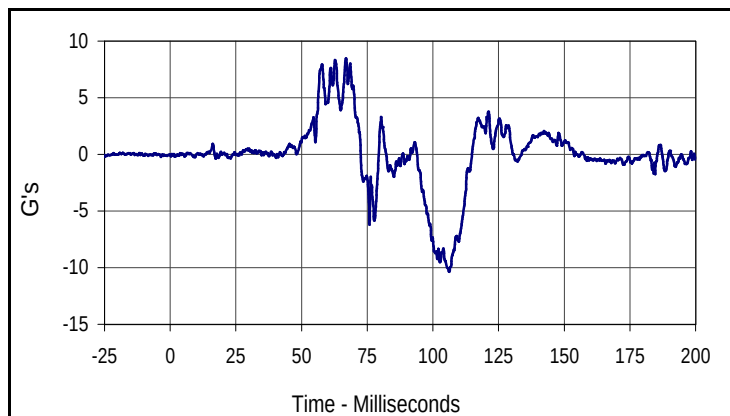
Curve Description			
Right Rear (10 yr.) Chest Deflection			
CURNO	Type	SAE Class	Units
188	FIL	600	MM
Max	Time	Min	Time
0.0	16.3	-35.4	91.9

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

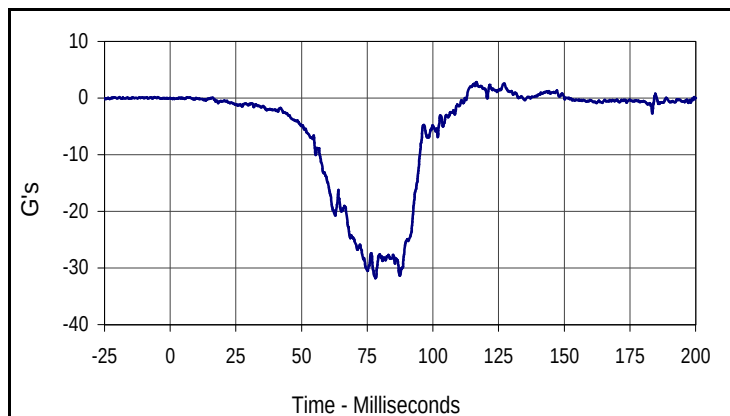
Test Date: 2/25/05
 NHTSA No.: G50103



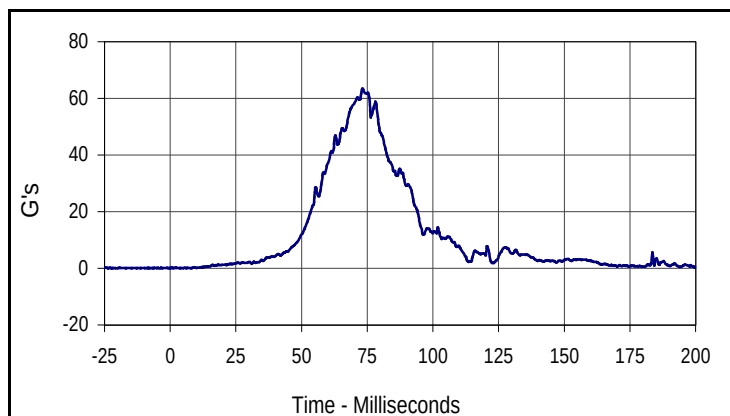
Curve Description			
Right Rear (10 yr.) Pelvis X			
CURNO	Type	SAE Class	Units
189	FIL	1000	G's
Max	Time	Min	Time
6.8	127.8	-57.1	73.1



Curve Description			
Right Rear (10 yr.) Pelvis Y			
CURNO	Type	SAE Class	Units
190	FIL	1000	G's
Max	Time	Min	Time
8.5	67.0	-10.4	106.2



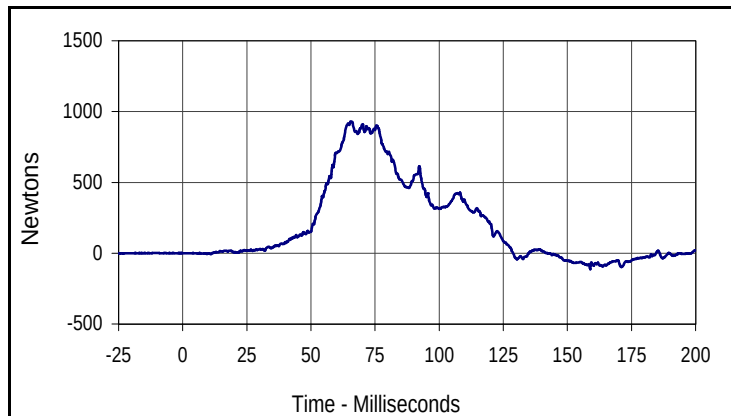
Curve Description			
Right Rear (10 yr.) Pelvis Z			
CURNO	Type	SAE Class	Units
191	FIL	1000	G's
Max	Time	Min	Time
2.8	116.6	-31.8	78.1



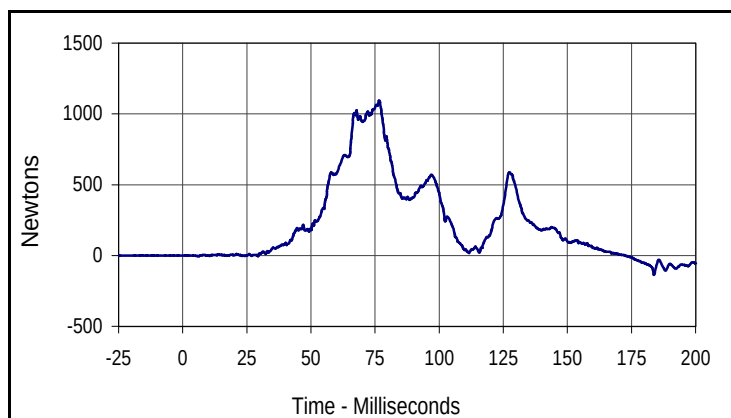
Curve Description			
Right Rear (10 yr.) Pelvis Resultant			
CURNO	Type	SAE Class	Units
189	RES	1000	G's
Max	Time	Min	Time
63.5	73.2	0.0	1.2

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103



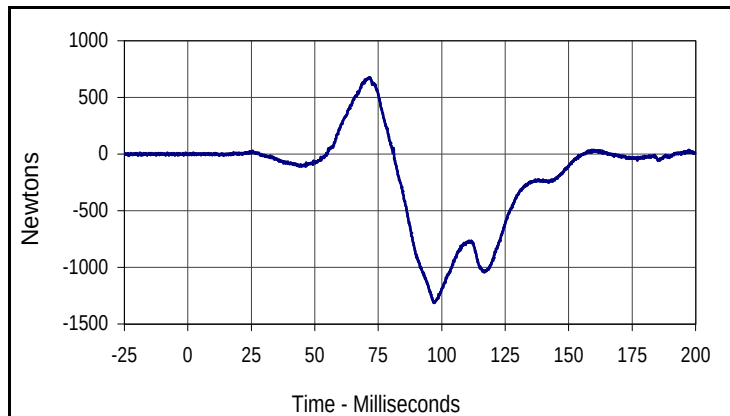
Curve Description			
Right Rear (10 yr.) Left Femur Force			
CURNO	Type	SAE Class	Units
192	FIL	600	Newtons
Max	Time	Min	Time
928.5	65.5	-114.7	158.9



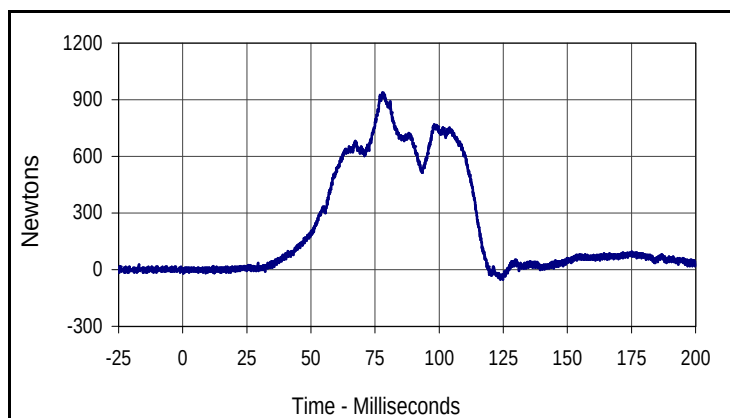
Curve Description			
Right Rear (10 yr.) Right Femur Force			
CURNO	Type	SAE Class	Units
193	FIL	600	Newtons
Max	Time	Min	Time
1095.1	76.6	-135.1	183.8

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

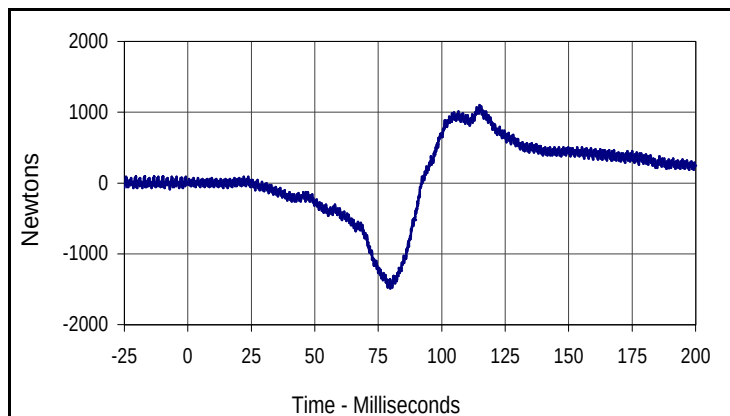
Test Date: 2/25/05
 NHTSA No.: G50103



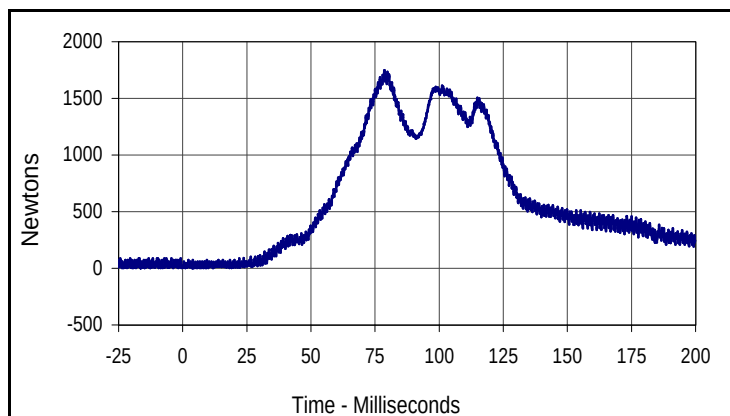
Curve Description			
Right Rear (10 yr.) Lumbar Force X			
CURNO	Type	SAE Class	Units
194	FIL	1000	Newtons
Max	Time	Min	Time
675.6	71.4	-1313.0	96.9



Curve Description			
Right Rear (10 yr.) Lumbar Force Y			
CURNO	Type	SAE Class	Units
195	FIL	1000	Newtons
Max	Time	Min	Time
937.3	77.8	-52.3	123.9



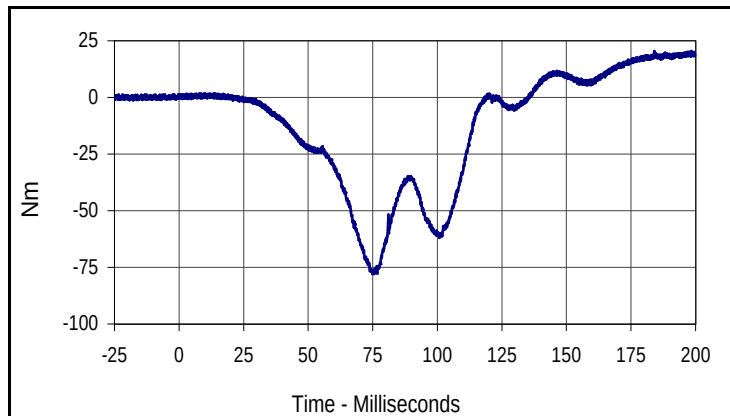
Curve Description			
Right Rear (10 yr.) Lumbar Force Z			
CURNO	Type	SAE Class	Units
196	FIL	1000	Newtons
Max	Time	Min	Time
1098.4	114.9	-1488.6	79.8



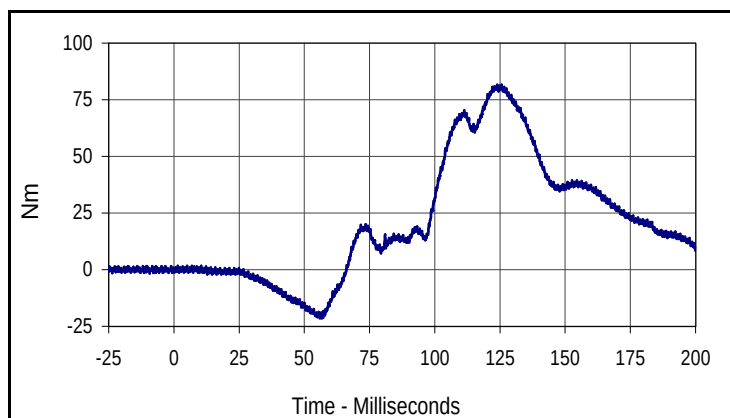
Curve Description			
Right Rear (10 yr.) Lumbar Force Resultant			
CURNO	Type	SAE Class	Units
194	RES	1000	Newtons
Max	Time	Min	Time
1749.3	78.7	2.3	5.7

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

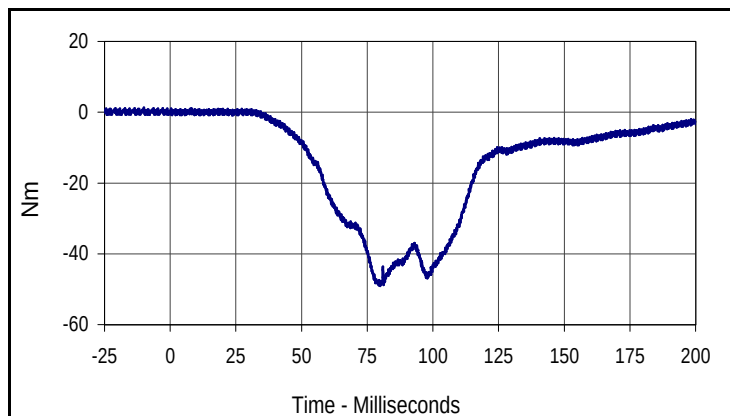
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 NHTSA No.: G50103



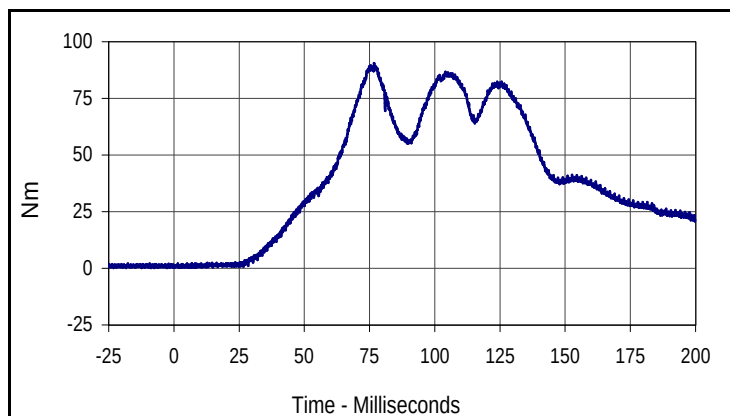
Curve Description			
Right Rear (10 yr.) Lumbar Moment X			
CURNO	Type	SAE Class	Units
197	FIL	1000	Nm
Max	Time	Min	Time
20.4	184.0	-78.0	74.9



Curve Description			
Right Rear (10 yr.) Lumbar Moment Y			
CURNO	Type	SAE Class	Units
198	FIL	1000	Nm
Max	Time	Min	Time
81.6	123.9	-21.5	56.0



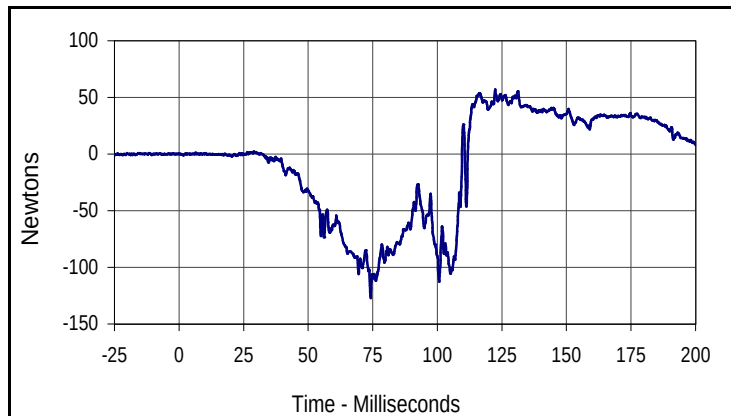
Curve Description			
Right Rear (10 yr.) Lumbar Moment Z			
CURNO	Type	SAE Class	Units
199	FIL	1000	Nm
Max	Time	Min	Time
1.1	8.0	-49.0	79.9



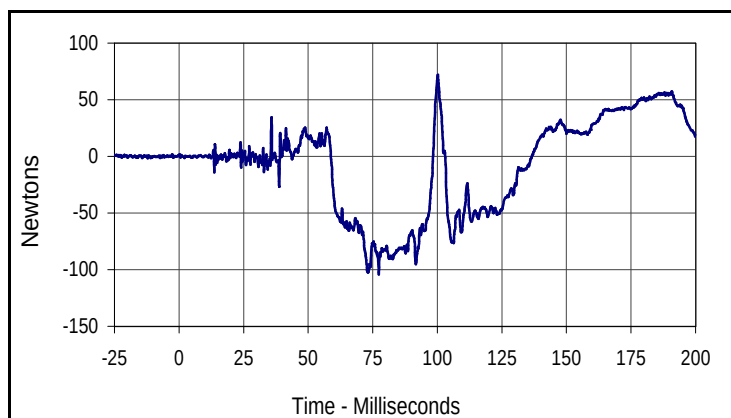
Curve Description			
Right Rear (10 yr.) Lumbar Moment Resultant			
CURNO	Type	SAE Class	Units
197	RES	1000	Nm
Max	Time	Min	Time
90.5	76.7	0.3	0.1

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

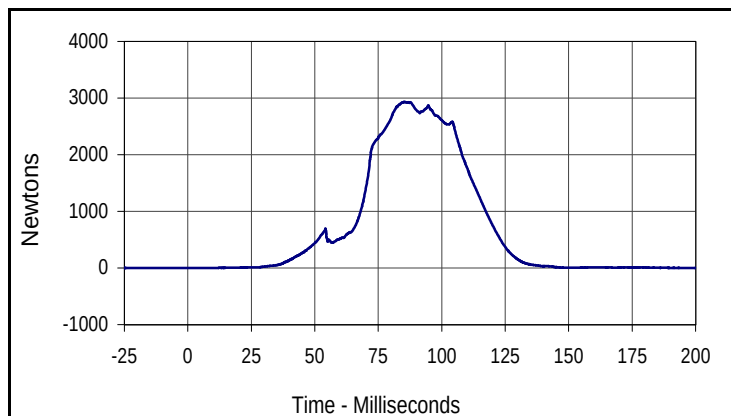
Test Date: 2/25/05
 NHTSA No.: G50103



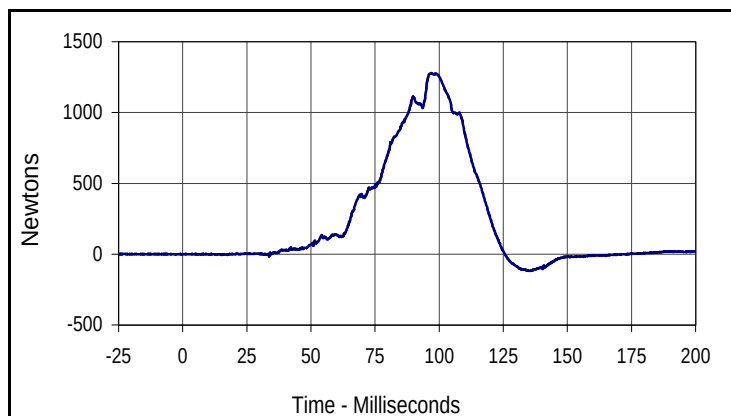
Curve Description			
Right Rear (10 yr.) Left Clavicle Force X			
CURNO	Type	SAE Class	Units
200	FIL	1000	Newtons
Max	Time	Min	Time
57.2	122.4	-127.0	74.2



Curve Description			
Right Rear (10 yr.) Left Clavicle Force Z			
CURNO	Type	SAE Class	Units
201	FIL	1000	Newtons
Max	Time	Min	Time
72.2	100.2	-104.2	77.4



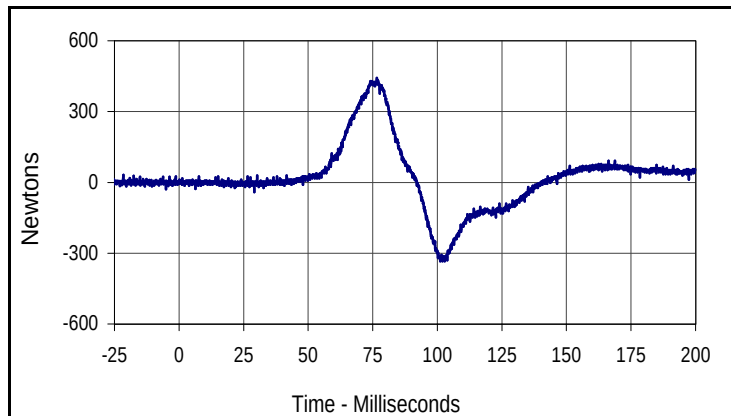
Curve Description			
Right Rear (10 yr.) Right Clavicle Force X			
CURNO	Type	SAE Class	Units
202	FIL	1000	Newtons
Max	Time	Min	Time
2933.2	85.2	-1.7	0.2



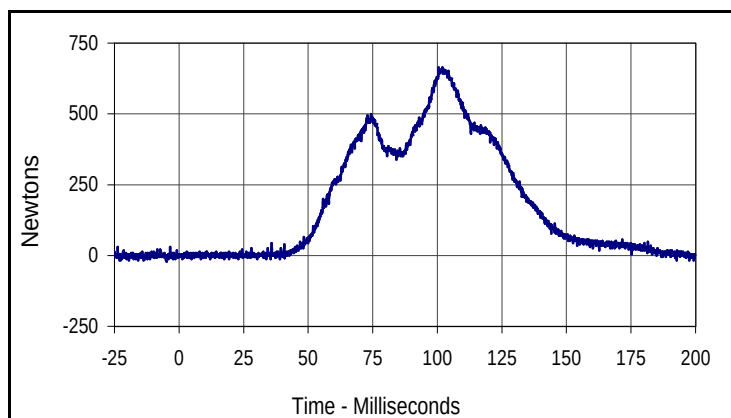
Curve Description			
Right Rear (10 yr.) Right Clavicle Force Z			
CURNO	Type	SAE Class	Units
203	FIL	1000	Newtons
Max	Time	Min	Time
1277.65	96.9	-118.72	135.1

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

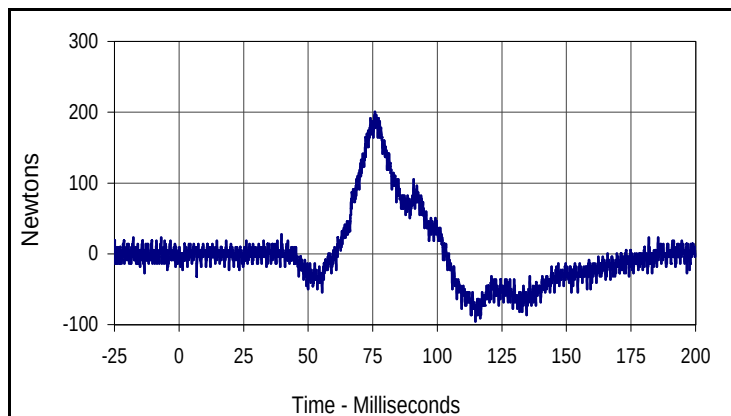
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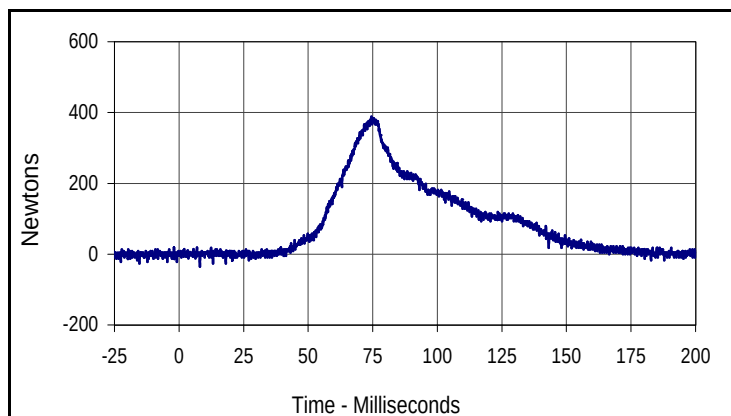
Curve Description			
Right Rear (10 yr.) Left Upper ASIS Force			
CURNO	Type	SAE Class	Units
204	FIL	1000	Newtons
Max	Time	Min	Time
442.5	76.6	-334.4	101.1



Curve Description			
Right Rear (10 yr.) Left Lower ASIS Force			
CURNO	Type	SAE Class	Units
205	FIL	1000	Newtons
Max	Time	Min	Time
664.2	100.5	-17.4	192.7



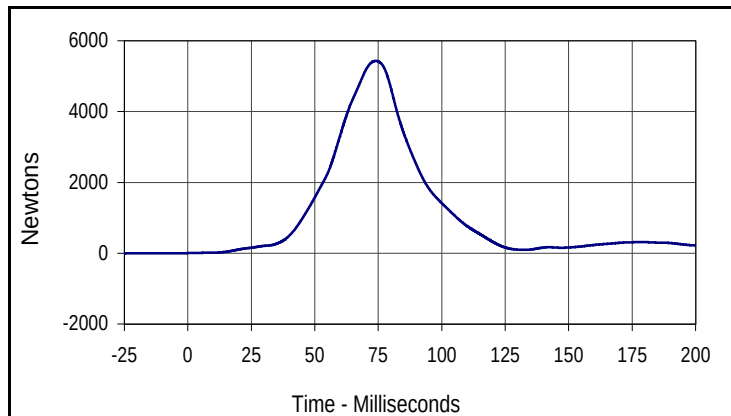
Curve Description			
Right Rear (10 yr.) Right Upper ASIS Force			
CURNO	Type	SAE Class	Units
206	FIL	1000	Newtons
Max	Time	Min	Time
200.8	75.9	-95.5	114.8



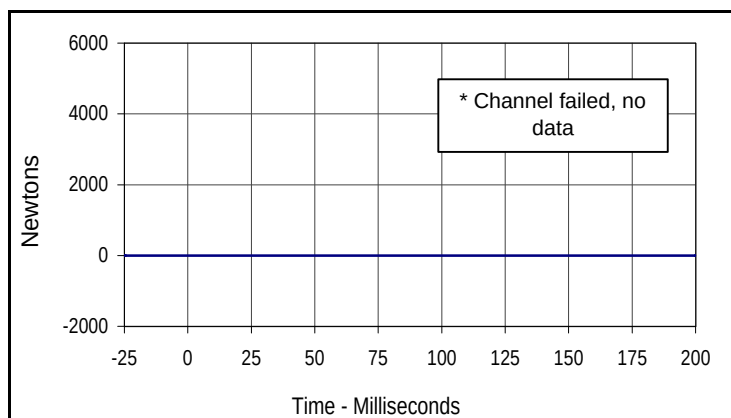
Curve Description			
Right Rear (10 yr.) Right Lower ASIS Force			
CURNO	Type	SAE Class	Units
207	FIL	1000	Newtons
Max	Time	Min	Time
388.7	74.5	-35.3	8.1

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

Test Date: 2/25/05
 NHTSA No.: G50103

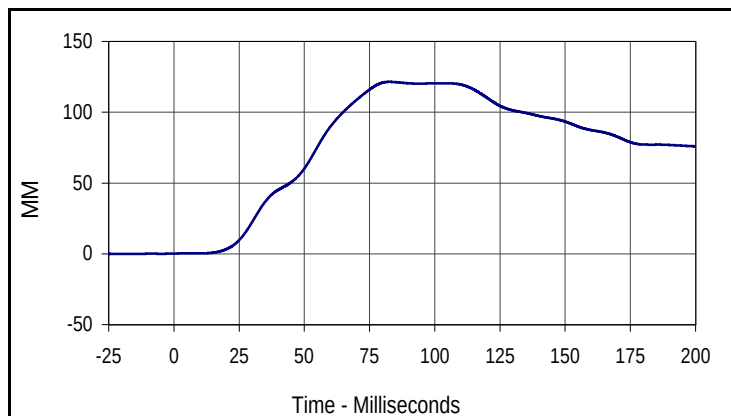


Curve Description			
Right Rear (10 yr.) Lap Belt Force			
CURNO	Type	SAE Class	Units
208	FIL	60	Newtons
Max	Time	Min	Time
5431.7	74.0	2.8	0.0

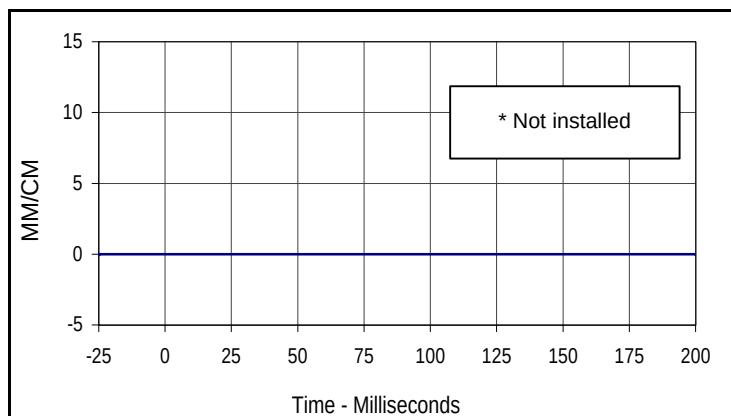


Curve Description			
Right Rear (10 yr.) Shoulder Belt Force			
CURNO	Type	SAE Class	Units
209	FIL	60	Newtons
Max	Time	Min	Time
0.0	0.0	0.0	0.0

* Channel failed, no data



Curve Description			
Right Rear (10 yr.) Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
210	FIL	60	MM
Max	Time	Min	Time
121.4	82.6	0.2	0.0

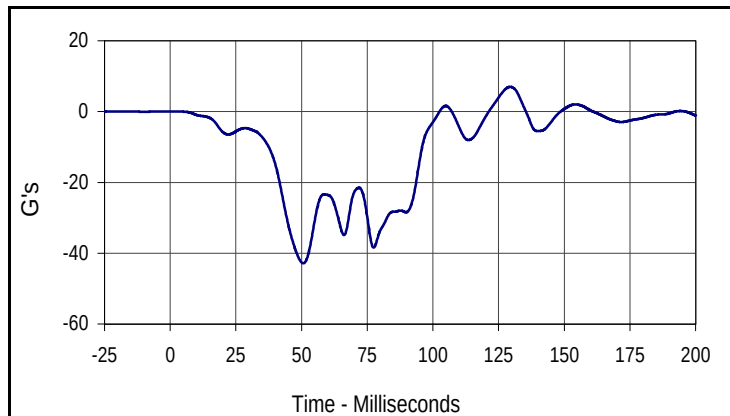


Curve Description			
Right Rear (10 yr.) Shoulder Belt Elongation			
CURNO	Type	SAE Class	Units
211	FIL	60	MM/CM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

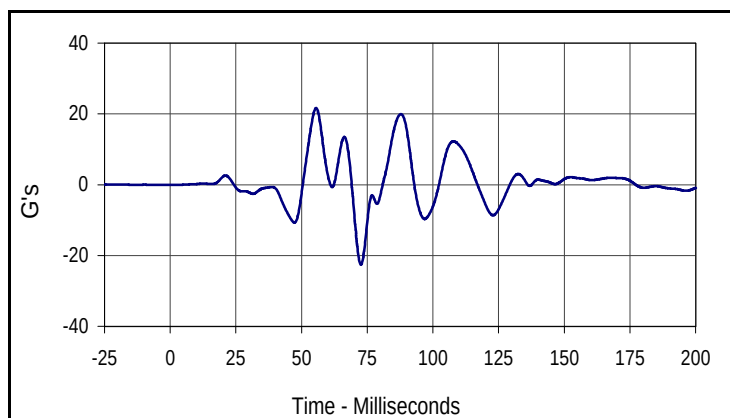
* Not installed

Test Vehicle: 2005 Pontiac Montana SV6 5-Door MPV
 Test Program: 2005 NHTSA 35mph NCAP

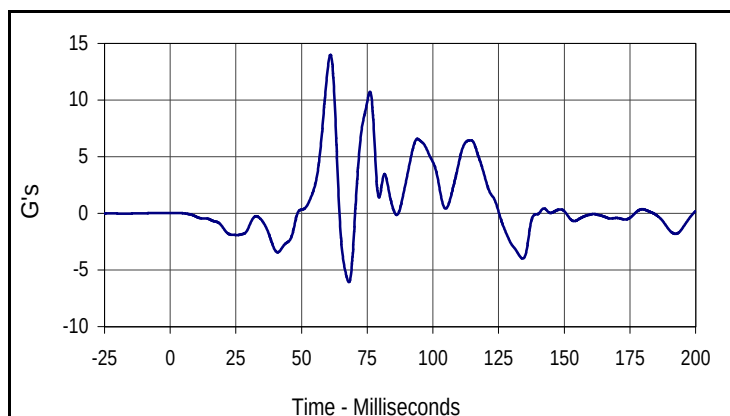
Test Date: 2/25/05
 NHTSA No.: G50103



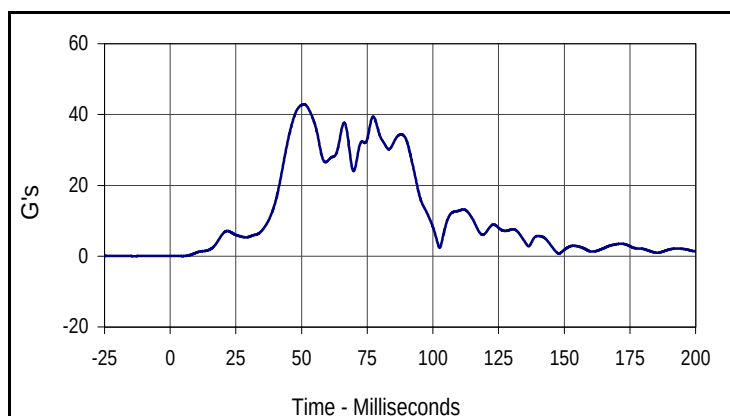
Curve Description			
Right Rear (10 yr.) CRS X			
CURNO	Type	SAE Class	Units
212	FIL	60	G's
Max	Time	Min	Time
7.0	129.4	-42.9	50.7



Curve Description			
Right Rear (10 yr.) CRS Y			
CURNO	Type	SAE Class	Units
213	FIL	60	G's
Max	Time	Min	Time
21.6	55.5	-22.5	72.6



Curve Description			
Right Rear (10 yr.) CRS Z			
CURNO	Type	SAE Class	Units
214	FIL	60	G's
Max	Time	Min	Time
14.0	61.0	-6.1	68.0



Curve Description			
Right Rear (10 yr.) CRS Resultant			
CURNO	Type	SAE Class	Units
212	RES	60	G's
Max	Time	Min	Time
42.9	50.9	0.0	4.7

SECTION F-4

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Left Rear Child A.T.D. Serial Number 011 (10 Yr.)
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
134	HEAD CG	X	GPAC047	Accel.,1/2 bridge	Endevco	7264-2000	G
135	HEAD CG	Y	GPAC048	Accel.,1/2 bridge	Endevco	7264-2000	G
136	HEAD CG	Z	GPAC049	Accel.,1/2 bridge	Endevco	7264-2000	G
137	UPPER NECK FORCE	X	10UNFX	Load cell, six axis neck	R. A. Denton	IF-234	N
138	UPPER NECK FORCE	Y	10UNFY	Load cell, six axis neck	R. A. Denton	IF-234	N
139	UPPER NECK FORCE	Z	10UNFZ	Load cell, six axis neck	R. A. Denton	IF-234	N
140	UPPER NECK MOMENT	X	10UNMX	Load cell, six axis neck	R. A. Denton	IF-234	Nm
141	UPPER NECK MOMENT	Y	10UNMY	Load cell, six axis neck	R. A. Denton	IF-234	Nm
142	UPPER NECK MOMENT	Z	10UNMZ	Load cell, six axis neck	R. A. Denton	IF-234	Nm
143	CHEST CG	X	2116-A01	Accel., Full Bridge	Entran	2000JF	G
144	CHEST CG	Y	2116-A06	Accel., Full Bridge	Entran	2000JF	G
145	CHEST CG	Z	2116-A07	Accel., Full Bridge	Entran	2000JF	G
146	CHEST DEFLECTION	X	10CP	Rotary Pot Chest	Servo	14CBI	MM
147	PELVIS	X	2116-N07	Accel., Full Bridge	Entran	2000JF	G
148	PELVIS	Y	2116-A03	Accel., Full Bridge	Entran	2000JF	G
149	PELVIS	Z	2116-A17	Accel., Full Bridge	Entran	2000JF	G
150	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2090	N
151	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2090	N
152	LUMBAR FORCE	X	LUMFX	Load cell, Lumbar	R.A. Denton	2431	N
153	LUMBAR FORCE	Y	LUMFY	Load cell, Lumbar	R.A. Denton	2431	N
154	LUMBAR FORCE	Z	LUMFZ	Load cell, Lumbar	R.A. Denton	2431	N
155	LUMBAR MOMENT	X	LUMMX	Load cell, Lumbar	R.A. Denton	2431	Nm
156	LUMBAR MOMENT	Y	LUMMY	Load cell, Lumbar	R.A. Denton	2431	Nm
157	LUMBAR MOMENT	Z	LUMMZ	Load cell, Lumbar	R.A. Denton	2431	Nm

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Left Rear Child A.T.D. Serial Number 011 (10 Yr.)
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
158	LEFT CLAVICLE FORCE	X	CLFX	Load cell, Clavicle	R.A. Denton	5400J	N
159	LEFT CLAVICLE FORCE	Z	CLFY	Load cell, Clavicle	R.A. Denton	5400J	N
160	RIGHT CLAVICLE FORCE	X	CLRFX	Load cell, Clavicle	R.A. Denton	5410J	N
161	RIGHT CLAVICLE FORCE	Z	CLRFZ	Load cell, Clavicle	R.A. Denton	5410J	N
162	LEFT ASIS UPPER	X	10LUASIS	Load cell, ASIS	R.A. Denton	3475	N
163	LEFT ASIS LOWER	X	10LLASIS	Load cell, ASIS	R.A. Denton	3475	N
164	RIGHT ASIS UPPER	X	10RUASIS	Load cell, ASIS	R.A. Denton	3476	N
165	RIGHT ASIS LOWER	X	10RLASIS	Load cell, ASIS	R.A. Denton	3476	N
166	LAP BELT FORCE	X	BL168	Load cell, Seat belt	First Tech	IF-964	N
167	SHOULDER BELT FORCE	X	BL169	Load cell, Seat belt	First Tech	IF-964	N
168	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
169	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM
170	CRS	X	KETX1A	Accel.,1/2 bridge	Endevco	7264-200	G
171	CRS	Y	KETX1B	Accel.,1/2 bridge	Endevco	7264-200	G
172	CRS	Z	KETX1C	Accel.,1/2 bridge	Endevco	7264-200	G
173	CRS SEAT BACK	X	KETX6A	Accel.,1/2 bridge	Endevco	7264-200	G
174	CRS SEAT BACK	Y	KETX6B	Accel.,1/2 bridge	Endevco	7264-200	G
175	CRS SEAT BACK	Z	KETX6C	Accel.,1/2 bridge	Endevco	7264-200	G

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Right Rear Child A.T.D. Serial Number 009 (10 Yr.)
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
176	HEAD CG	X	09HDX	Accel.,1/2 bridge	Endevco	7264-2000	G
177	HEAD CG	Y	09HDY	Accel.,1/2 bridge	Endevco	7264-2000	G
178	HEAD CG	Z	09HDZ	Accel.,1/2 bridge	Endevco	7264-2000	G
179	UPPER NECK FORCE	X	09UNFX	Load cell, six axis neck	R. A. Denton	IF-234	N
180	UPPER NECK FORCE	Y	09UNFY	Load cell, six axis neck	R. A. Denton	IF-234	N
181	UPPER NECK FORCE	Z	09UNFZ	Load cell, six axis neck	R. A. Denton	IF-234	N
182	UPPER NECK MOMENT	X	09UNMX	Load cell, six axis neck	R. A. Denton	IF-234	Nm
183	UPPER NECK MOMENT	Y	09UNMY	Load cell, six axis neck	R. A. Denton	IF-234	Nm
184	UPPER NECK MOMENT	Z	09UNMZ	Load cell, six axis neck	R. A. Denton	IF-234	Nm
185	CHEST CG	X	09CHX	Accel., Full Bridge	Entran	2000JF	G
186	CHEST CG	Y	09CHY	Accel., Full Bridge	Entran	2000JF	G
187	CHEST CG	Z	09CHZ	Accel., Full Bridge	Entran	2000JF	G
188	CHEST DEFLECTION	X	09CHP	Rotary Pot Chest	Servo	14CBI	MM
189	PELVIS	X	09PELX	Accel., Full Bridge	Entran	2000JF	G
190	PELVIS	Y	09PELY	Accel., Full Bridge	Entran	2000JF	G
191	PELVIS	Z	09PELZ	Accel., Full Bridge	Entran	2000JF	G
192	LEFT FEMUR FORCE	Z	09LFEM	Load cell, Femur	R.A. Denton	2090	N
193	RIGHT FEMUR FORCE	Z	09RFEM	Load cell, Femur	R.A. Denton	2090	N
194	LUMBAR FORCE	X	09LUMFX	Load cell, Lumbar	R.A. Denton	2431	N
195	LUMBAR FORCE	Y	09LUMFY	Load cell, Lumbar	R.A. Denton	2431	N
196	LUMBAR FORCE	Z	09LUMFZ	Load cell, Lumbar	R.A. Denton	2431	N
197	LUMBAR MOMENT	X	09LUMMX	Load cell, Lumbar	R.A. Denton	2431	Nm
198	LUMBAR MOMENT	Y	09LUMMY	Load cell, Lumbar	R.A. Denton	2431	Nm
199	LUMBAR MOMENT	Z	09LUMMZ	Load cell, Lumbar	R.A. Denton	2431	Nm

2005 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Right Rear Child A.T.D. Serial Number 009 (10 Yr.)
2/25/05
2005 Pontiac Montana SV6 5-Door MPV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
200	LEFT CLAVICLE FORCE	X	09CLFX	Load cell, Clavicle	R.A. Denton	5400J	N
201	LEFT CLAVICLE FORCE	Z	09CLFY	Load cell, Clavicle	R.A. Denton	5400J	N
202	RIGHT CLAVICLE FORCE	X	09CLRFX	Load cell, Clavicle	R.A. Denton	5410J	N
203	RIGHT CLAVICLE FORCE	Z	09CLRFZ	Load cell, Clavicle	R.A. Denton	5410J	N
204	LEFT ASIS UPPER	X	09LUASIS	Load cell, ASIS	R.A. Denton	3475	N
205	LEFT ASIS LOWER	X	09LLASIS	Load cell, ASIS	R.A. Denton	3475	N
206	RIGHT ASIS UPPER	X	09RUASIS	Load cell, ASIS	R.A. Denton	3476	N
207	RIGHT ASIS LOWER	X	09RLASIS	Load cell, ASIS	R.A. Denton	3476	N
208	LAP BELT FORCE	X	BL176	Load cell, Seat belt	First Tech	IF-964	N
209	SHOULDER BELT FORCE	X	BL179	Load cell, Seat belt	First Tech	IF-964	N
210	SHOULDER BELT SPOOL	X	KEPP002	Pullout pot	Celesco	PTX101-0030	MM
211	SHOULDER BELT ELONG.	X	KEEP002	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM
212	CRS	X	KETX4A	Accel.,1/2 bridge	Endevco	7264-200	G
213	CRS	Y	KETX4B	Accel.,1/2 bridge	Endevco	7264-200	G
214	CRS	Z	KETX4C	Accel.,1/2 bridge	Endevco	7264-200	G

SECTION F-5

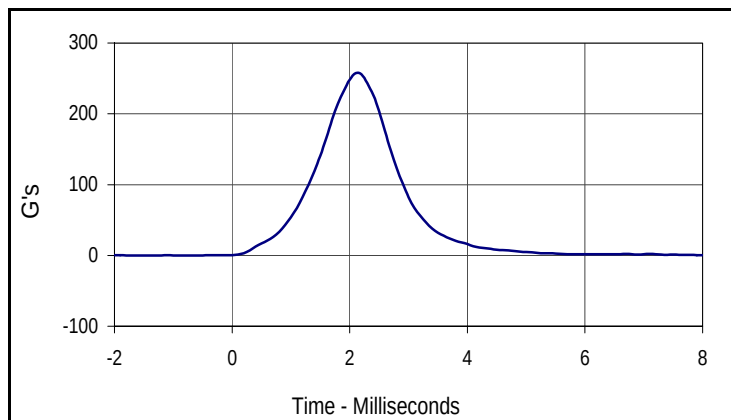
CHILD DUMMY CALIBRATION INFORMATION

Test Program: Hybrid III 10 Yr Old Head Drop Test
 ATD Serial No.: 009

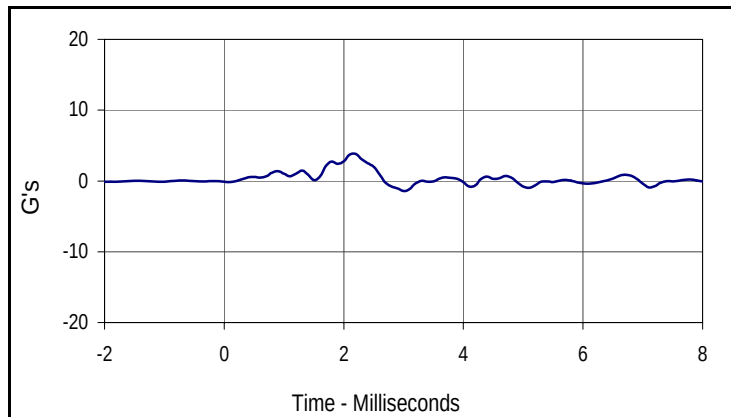
Test Date: 2/15/05
 Test I.D.: HD02A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	257.7	Pass
Peak Lateral Acceleration	G's	≤15.0	3.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	1.9	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
257.7	2.1	0.0	-0.6



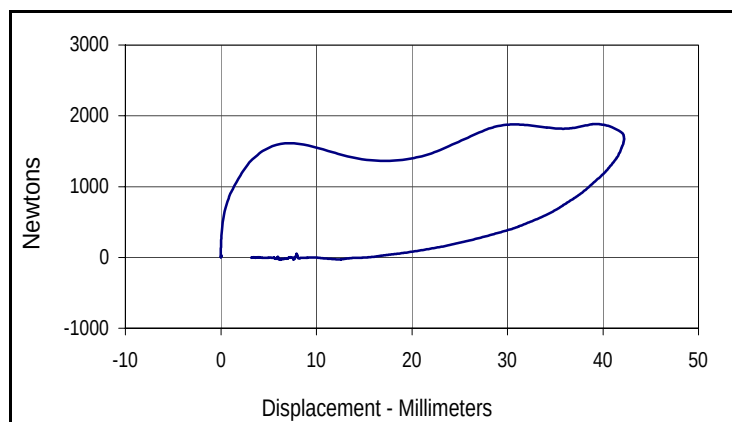
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.8	2.2	-1.4	3.0

Test Program: Hybrid III 10 Yr Old Thorax Impact Test
 ATD Serial No.: 009

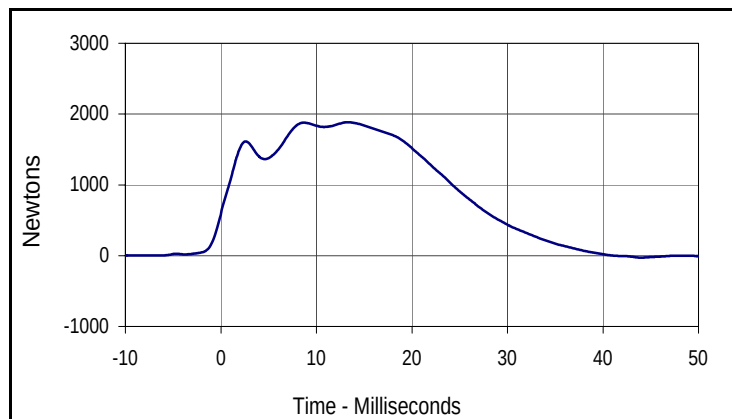
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 Test I.D.: CH02A



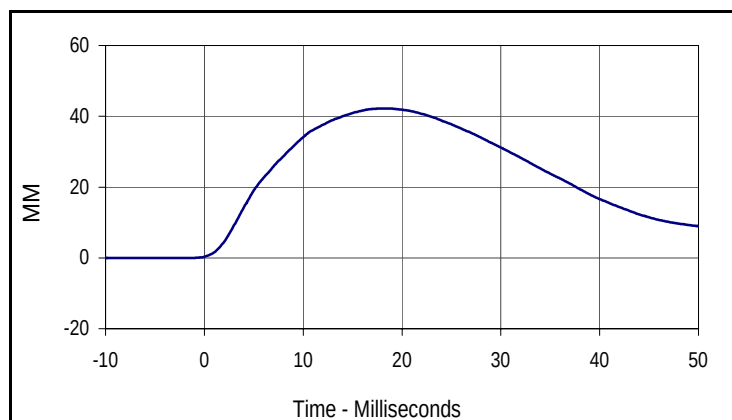
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.88 to 6.12	6.10	Pass
Peak Chest Deflection	MM	40.5 to 48.5	42.2	Pass
Peak Force Between 40.5 and 48.5 MM	Newtons	1830 to 2330	1884	Pass
Peak Force Between 20 and 40.5 MM	Newtons	≤2330	1669	Pass
Internal Hysteresis	%	69 to 85	81.5	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	81.5
Peak Probe Force		Peak Chest Deflection	
1883.5		42.2	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
1883.5	13.3	-32.5	76.7



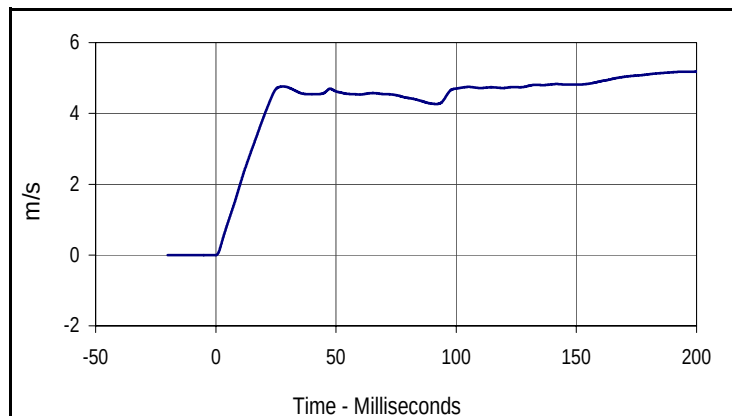
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
42.2	18.4	0.0	-1.5

Test Program: Hybrid III 10 Yr Old Neck Flexion Test
 ATD Serial No.: 009

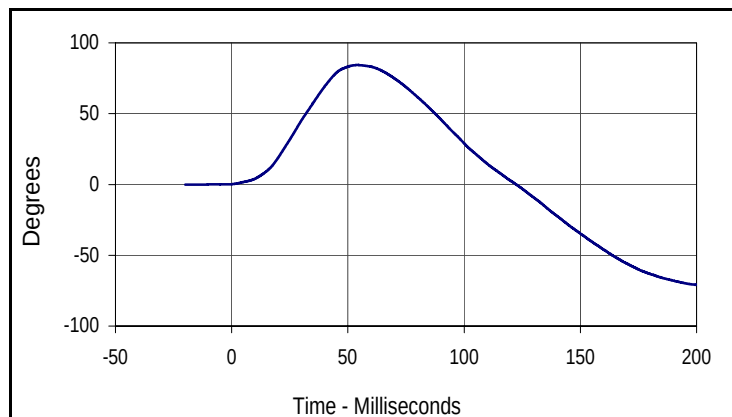
Test Date: 2/15/05
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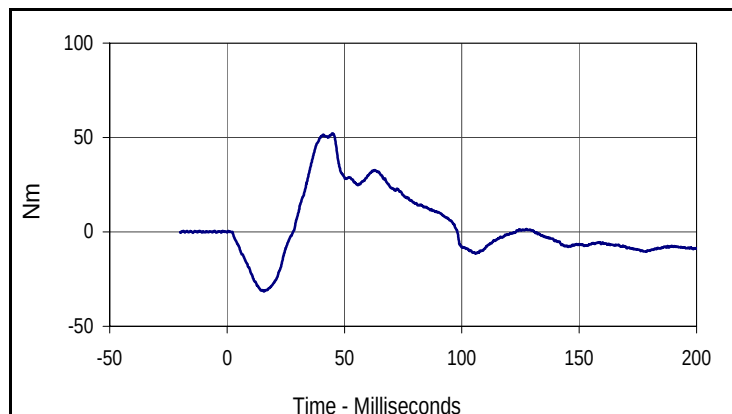
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.98 to 6.22	6.07	Pass
Pendulum Deceleration	10 Msec.	m/s	1.64 to 2.04	1.97	Pass
	20 Msec.	m/s	3.04 to 4.04	3.92	Pass
	30 Msec.	m/s	4.45 to 5.65	4.74	Pass
"D" Plane Rotation	Max	Degrees	74.0 to 88.0	84.3	Pass
Peak Moment in Rotation	Max	Nm	50.0 to 62.0	52.1	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	85.0 to 105.0	90.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
5.2	195.5	0.0	-0.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
84.3	54.1	-70.8	200.0



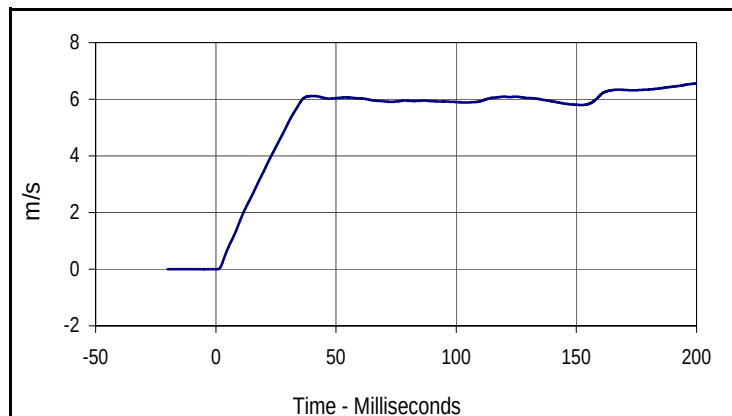
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
52.1	44.9	-31.6	15.7

Test Program: Hybrid III 10 Yr Old Neck Extension Test
 ATD Serial No.: 009

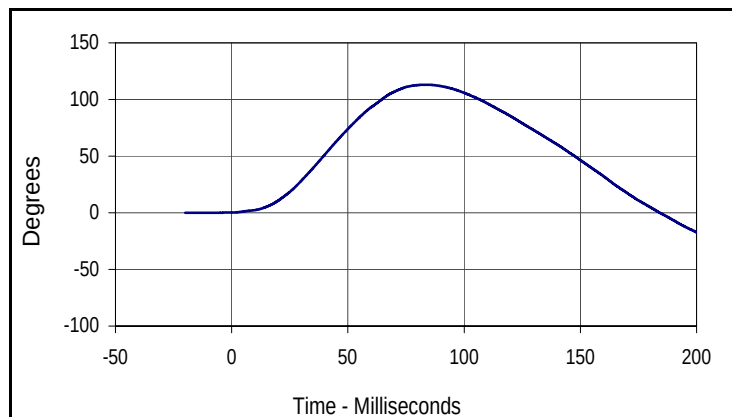
Test Date: 2/16/05
 Test I.D.: NE02A



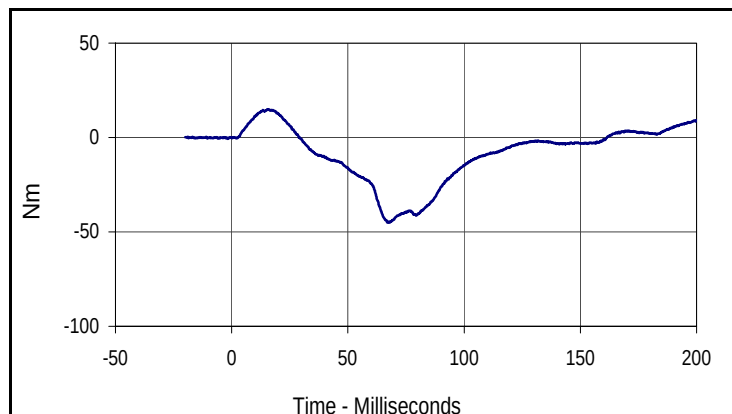
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	4.91 to 5.15	5.03	Pass
Pendulum Deceleration	10 Msec.	m/s	1.59 to 1.89	1.70	Pass
	20 Msec.	m/s	2.88 to 3.68	3.47	Pass
	30 Msec.	m/s	4.20 to 5.20	5.15	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	113.0	Pass
Peak Moment in Rotation	Max	Nm	-35.0 to -47.0	-45.0	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	100.0 to 120.0	107.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.6	200.0	0.0	0.5



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
113.0	83.8	-17.2	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
14.9	15.5	-45.0	67.9

Test Program: Hybrid III 10 Yr Old Knee Impact Test
 ATD Serial No.: 009

Test Date: 2/16/05
 Test I.D.: LK02A , RK02A

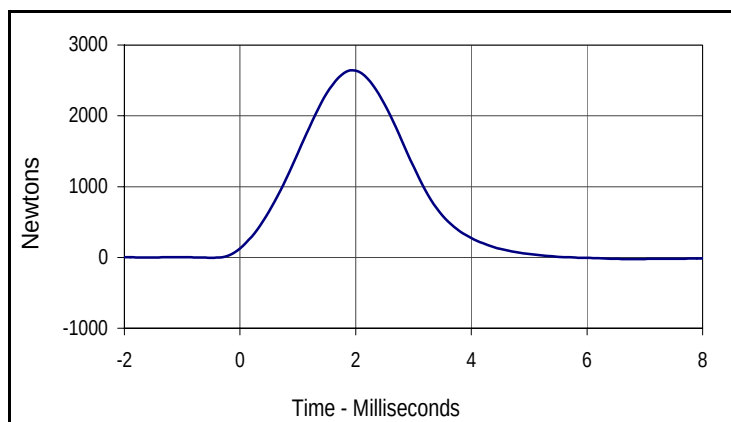


Left Knee

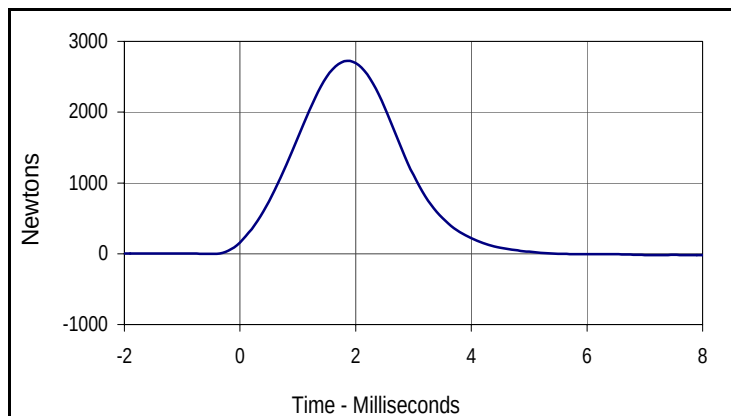
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	2560 to 3140	2642	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	2560 to 3140	2724	Pass
Overall Test Results				Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
2642.4	1.9	-23.5	6.8



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
2724.2	1.9	-24.2	8.5

Test Program: Hybrid III 10 Yr Old External Measurements

Test Date: 2/16/05

ATD Serial No.: 009

Test I.D.: N/A



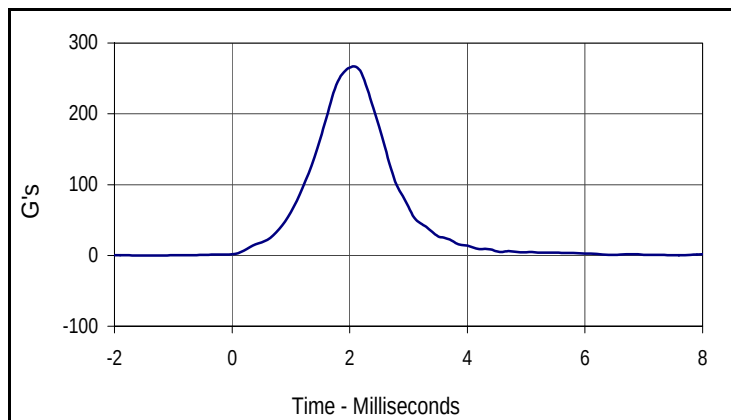
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	710 to 737	725	Pass
B - Shoulder pivot height	mm	385 to 405	400	Pass
C - "H" point height	mm	78 to 88	80	Pass
D - "H" point from backline	mm	133 to 143	136	Pass
E - Shoulder pivot from back	mm	80 to 90	88	Pass
F - Thigh clearance	mm	105 to 121	115	Pass
G - Elbow back to wrist pivot	mm	227 to 243	235	Pass
H - Skull cap to back line	mm	46 to 51	50	Pass
I - Shoulder to elbow length	mm	269 to 285	275	Pass
J - Elbow rest height	mm	137 to 158	140	Pass
K - Buttock to knee length	mm	464 to 484	480	Pass
L - Popliteal length	mm	321 to 342	335	Pass
M - Knee pivot height	mm	370 to 389	380	Pass
N - Buttock popliteal length	mm	367 to 387	375	Pass
O - Chest depth without jacket	mm	158 to 173	165	Pass
P - Foot length	mm	188 to 203	195	Pass
R - Buttock to knee pivot length	mm	414 to 434	430	Pass
S - Head breadth	mm	137 to 147	140	Pass
T - Head depth	mm	178 to 188	180	Pass
U - Hip breadth	mm	257 to 272	265	Pass
V - Shoulder breadth	mm	307 to 323	315	Pass
W - Foot breadth	mm	69 to 84	81	Pass
X - Head circumference	mm	528 to 549	535	Pass
Y - Chest circumference with jacket	mm	691 to 716	710	Pass
Z - Waist circumference	mm	696 to 721	710	Pass
AA - Location for chest circumference	mm	338 to 348	344	Pass
Overall Test Results				Pass

Test Program: Hybrid III 10 Yr Old Head Drop Test
 ATD Serial No.: 011

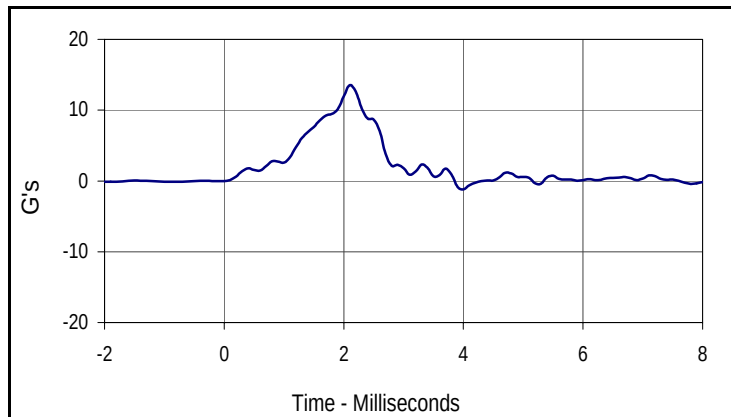
Test Date: 2/15/05
 Test I.D.: HD02B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	266.5	Pass
Peak Lateral Acceleration	G's	≤15.0	13.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	1.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
266.5	2.1	0.1	-1.3



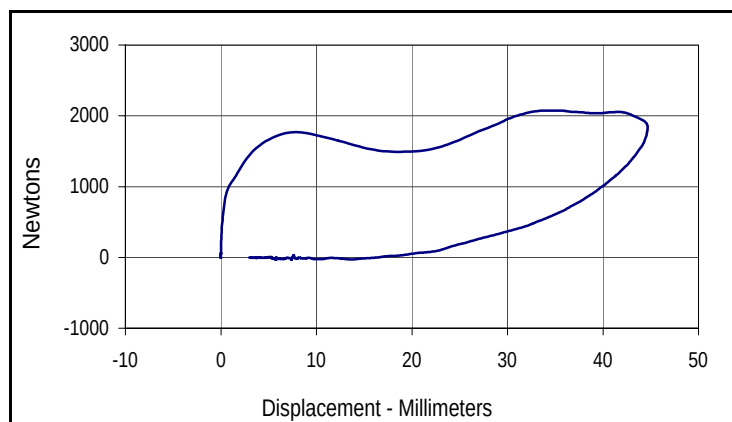
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
13.5	2.1	-1.2	4.0

Test Program: Hybrid III 10 Yr Old Thorax Impact Test
 ATD Serial No.: 011

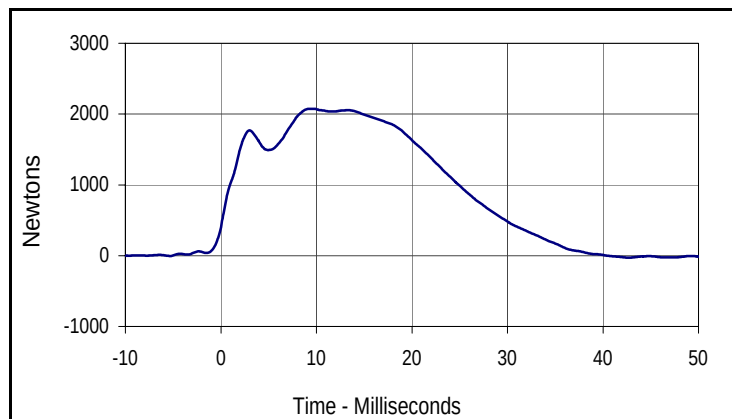
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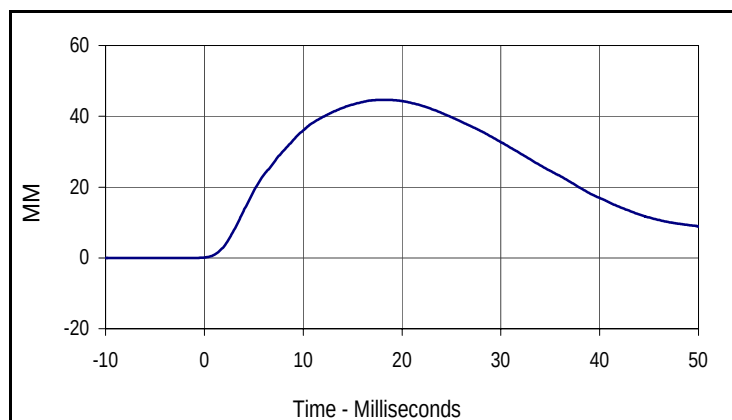
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.88 to 6.12	5.97	Pass
Peak Chest Deflection	MM	40.5 to 48.5	44.7	Pass
Peak Force Between 40.5 and 48.5 MM	Newtons	1830 to 2330	2075	Pass
Peak Force Between 20 and 40.5 MM	Newtons	≤2330	2055	Pass
Internal Hysteresis	%	69 to 85	81.4	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	81.4
Peak Probe Force		Peak Chest Deflection	
2075.3		44.7	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
2075.3	9.7	-33.4	85.1



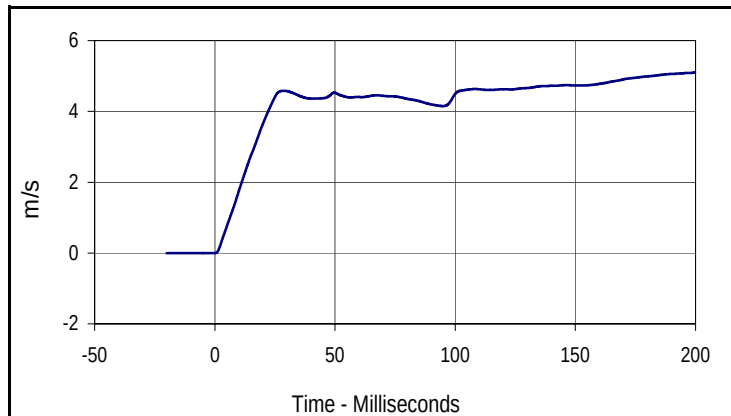
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
44.7	18.2	0.0	-7.1

Test Program: Hybrid III 10 Yr Old Neck Flexion Test
 ATD Serial No.: 011

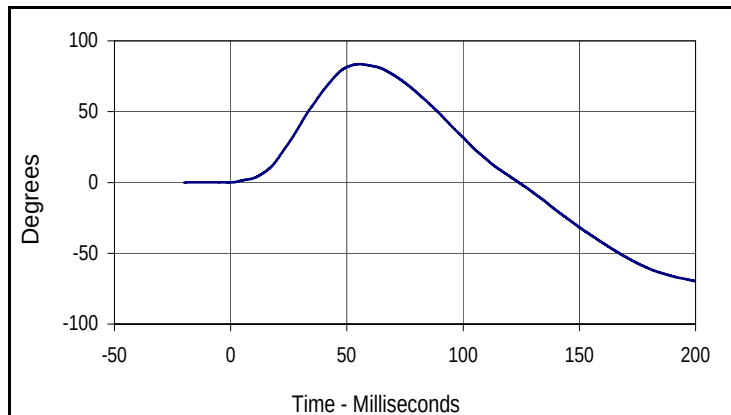
Test Date: 2/15/05
 Test I.D.: NF02B



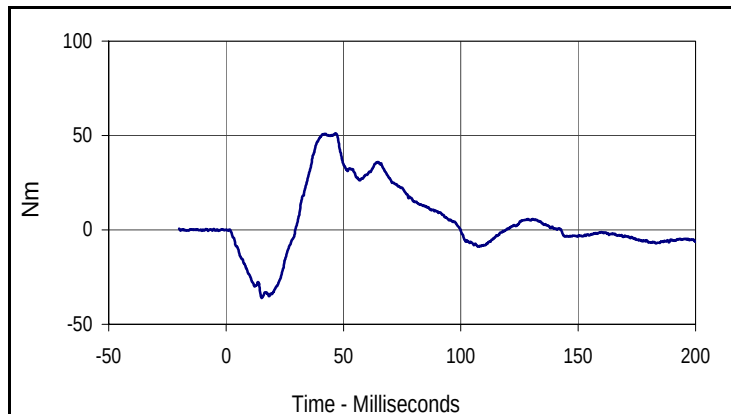
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.98 to 6.22	6.13	Pass
Pendulum Deceleration	10 Msec.	m/s	1.64 to 2.04	1.75	Pass
	20 Msec.	m/s	3.04 to 4.04	3.65	Pass
	30 Msec.	m/s	4.45 to 5.65	4.57	Pass
"D" Plane Rotation	Max	Degrees	74.0 to 88.0	83.6	Pass
Peak Moment in Rotation	Max	Nm	50.0 to 62.0	51.1	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	85.0 to 105.0	88.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
5.1	200.0	0.0	0.0



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
83.6	55.3	-69.6	200.0



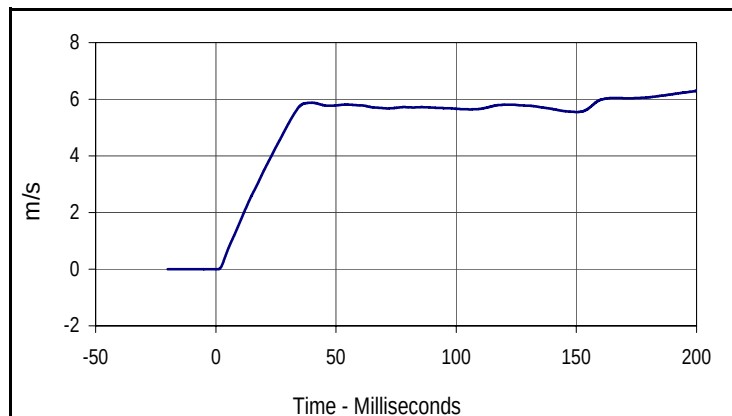
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
51.1	46.5	-36.1	15.2

Test Program: Hybrid III 10 Yr Old Neck Extension Test
 ATD Serial No.: 011

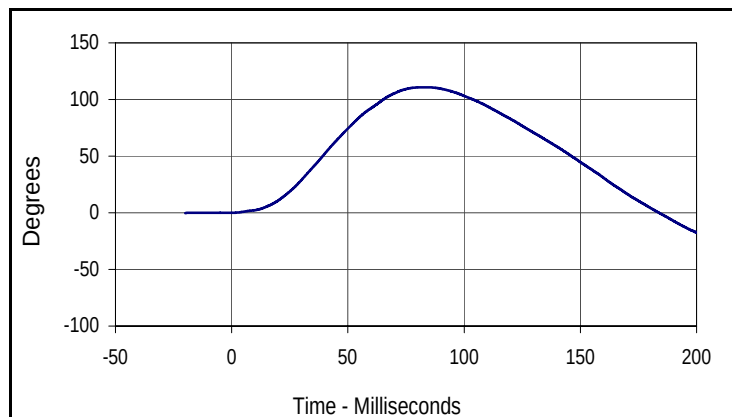
Test Date: 2/16/05
 Test I.D.: NE02B



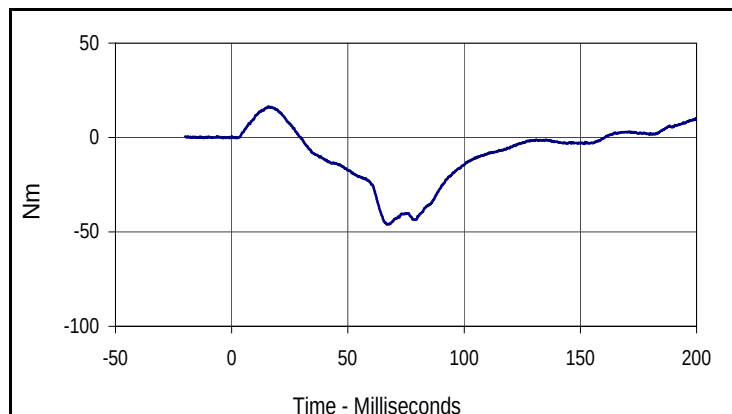
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	4.91 to 5.15	5.07	Pass
Pendulum Deceleration	10 Msec.	m/s	1.59 to 1.89	1.66	Pass
	20 Msec.	m/s	2.88 to 3.68	3.49	Pass
	30 Msec.	m/s	4.20 to 5.20	5.11	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	110.8	Pass
Peak Moment in Rotation	Max	Nm	-35.0 to -47.0	-46.0	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	100.0 to 120.0	106.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.3	200.0	0.0	0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
110.8	82.7	-17.5	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
16.5	15.8	-46.0	66.9

Test Program: Hybrid III 10 Yr Old Knee Impact Test
 ATD Serial No.: 011

Test Date: 2/16/05
 Test I.D.: LK02B , RK02B

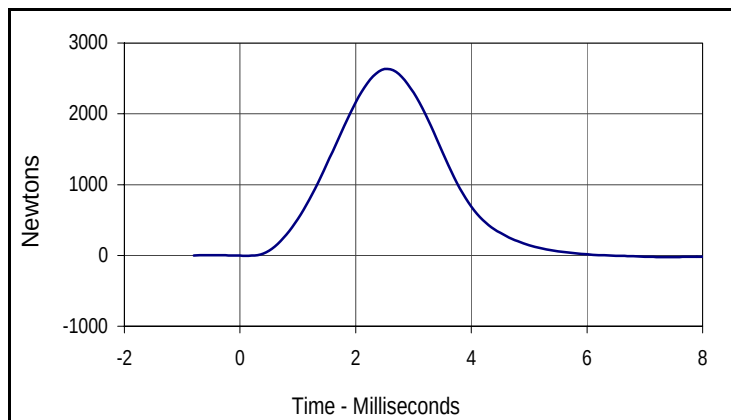


Left Knee

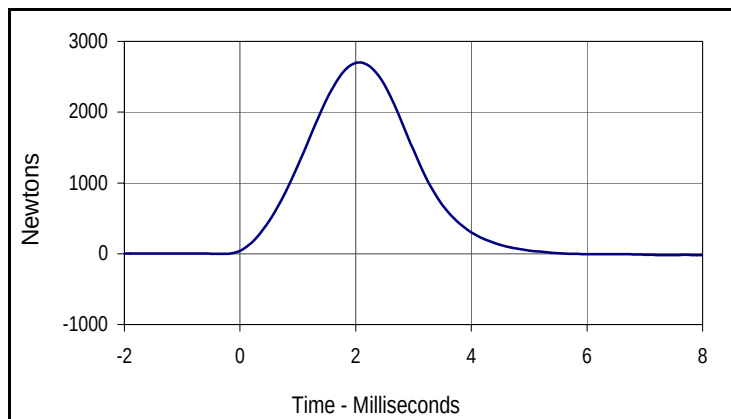
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	2560 to 3140	2633	Pass
Overall Test Results			Pass	

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	2560 to 3140	2701	Pass
Overall Test Results			Pass	



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
2632.9	2.5	-23.4	7.4



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
2700.5	2.1	-24.0	8.7

Test Program: Hybrid III 10 Yr Old External Measurements

Test Date: 2/16/05

ATD Serial No.: 011

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	710 to 737	725	Pass
B - Shoulder pivot height	mm	385 to 405	395	Pass
C - "H" point height	mm	78 to 88	80	Pass
D - "H" point from backline	mm	133 to 143	136	Pass
E - Shoulder pivot from back	mm	80 to 90	88	Pass
F - Thigh clearance	mm	105 to 121	115	Pass
G - Elbow back to wrist pivot	mm	227 to 243	233	Pass
H - Skull cap to back line	mm	46 to 51	50	Pass
I - Shoulder to elbow length	mm	269 to 285	274	Pass
J - Elbow rest height	mm	137 to 158	150	Pass
K - Buttock to knee length	mm	464 to 484	480	Pass
L - Popliteal length	mm	321 to 342	325	Pass
M - Knee pivot height	mm	370 to 389	380	Pass
N - Buttock popliteal length	mm	367 to 387	370	Pass
O - Chest depth without jacket	mm	158 to 173	165	Pass
P - Foot length	mm	188 to 203	195	Pass
R - Buttock to knee pivot length	mm	414 to 434	425	Pass
S - Head breadth	mm	137 to 147	145	Pass
T - Head depth	mm	178 to 188	180	Pass
U - Hip breadth	mm	257 to 272	265	Pass
V - Shoulder breadth	mm	307 to 323	320	Pass
W - Foot breadth	mm	69 to 84	82	Pass
X - Head circumference	mm	528 to 549	535	Pass
Y - Chest circumference with jacket	mm	691 to 716	710	Pass
Z - Waist circumference	mm	696 to 721	710	Pass
AA - Location for chest circumference	mm	338 to 348	339	Pass
Overall Test Results				Pass