

REPORT NUMBER TR-P26003-01-NC

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**GENERAL MOTORS CORPORATION
2006 CHEVROLET IMPALA
4-DOOR SEDAN**

NHTSA NUMBER: M60111

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OCTOBER 20, 2005

FINAL REPORT

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16. Abstract A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2006 Chevrolet Impala 4-Door Sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedures for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering, LLC laboratories in Adelanto, California, on October 20, 2005. The impact velocity of the Moving Deformable Barrier was 61.67 km/h, and the outside ambient temperature at the struck (driver's) side of the vehicle was 22.2 deg. C. The target vehicle's maximum post-test static crush was 223mm located at level 4. The test vehicle's occupant performance data is as follows:																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;">Measurement Description</th> <th style="width: 15%;">Driver SID/HIII</th> <th style="width: 15%;">Pass. SID/HIII</th> <th style="width: 35%;"></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) G's</td> <td style="text-align: center;">43.8</td> <td style="text-align: center;">66.6</td> <td rowspan="5"></td> </tr> <tr> <td>Left Lower Rib (LLR) G's</td> <td style="text-align: center;">56.2</td> <td style="text-align: center;">72.8</td> </tr> <tr> <td>Lower Spine (T₁₂) G's</td> <td style="text-align: center;">53.7</td> <td style="text-align: center;">55.9</td> </tr> <tr> <td>Thoracic Trauma Index (TTI) G's</td> <td style="text-align: center;">55.0</td> <td style="text-align: center;">64.0</td> </tr> <tr> <td>Pelvis (PEV) G's</td> <td style="text-align: center;">99.0</td> <td style="text-align: center;">65.0</td> </tr> </tbody> </table>				Measurement Description	Driver SID/HIII	Pass. SID/HIII		Left Upper Rib (LUR) G's	43.8	66.6		Left Lower Rib (LLR) G's	56.2	72.8	Lower Spine (T ₁₂) G's	53.7	55.9	Thoracic Trauma Index (TTI) G's	55.0	64.0	Pelvis (PEV) G's	99.0	65.0
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17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) Side Impact Dummy (SID/HIII)		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. NHTSA Technical Reference Division 400 Seventh St., SW, Room 5108 Washington, DC 20590																					
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SECTION 1
PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the FY' 2006 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-03-D-32005. The purpose of this test is to generate comparative side impact data on a 2006 Chevrolet Impala 4-Door Sedan manufactured by General Motors Corporation.

1.2 TEST PROCEDURE

The side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Crashworthiness Standards (OCS), laboratory test procedure NCAP Side Impact Testing, dated November 2002. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

SECTION 2
SUMMARY OF SIDE IMPACT TEST

2.1 SUMMARY OF SIDE IMPACT NCAP TEST

A model year 2006 Chevrolet Impala 4-Door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.67 km/h. The specified impact velocity range is from 61.14 to 62.75 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 1843 kg and the test weight of the MDB was 1361 kg. The test was conducted at KARCO Engineering, LLC in Adelanto, California, on October 20, 2005.

Two (2) real-time cameras and eleven (11) high-speed video cameras were used to document the impact event. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and SID/HIIIs can be found in Appendix A. Two 50th percentile adult male Side Impact Dummies, Hybrid III (SID/HIIIs) were placed in the driver's and left rear passenger designated seating positions according to the test procedure. Each SID/HIII is instrumented with contact switches on the pelvis, thorax and six-axis neck load cells, and fourteen accelerometers in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axes primary and redundant)

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front Driver		Left Rear (Passenger)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	No	
Side Torso Airbag	No		No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes

SECTION 2...(CONTINUED)

The test vehicle was instrumented with twenty-six (26) structural accelerometers and the MDB was instrumented with five (5) accelerometers and one (1) contact switch on the right bumper to compare left side to right side bumper impact timing. All data channels were recorded with the fully self contained on-board Data Acquisition System (DAS). The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

The driver and passenger doors remained closed during impact. The test vehicle sustained a maximum static crush of 223 mm at level 4, 1500 mm at the impact point. The driver SID/Hybrid III, Serial No. 275 and the passenger SID/Hybrid III, Serial No. 274 were calibrated prior to this test. The SID/Hybrid III injury criteria is summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	55.0	64.0
Peak Pelvic G's (PEV)	G's	99.0	65.0

Tests summaries and post-test observations are presented in Section 3. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID/HIIIs, vehicle, and MDB response data traces. Appendix C contains the SID Configuration and performance verification data.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION SHEETS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

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

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M60111
Make	Chevrolet
Model	Impala
Body Style	4-Door
Vin No.	2G1WB58KX69113792
Color	White
Delivery Date	10/3/2005
Odometer	71
Dealer	Crest Chevrolet
Transmission	4-Speed Automatic
Final Drive	Front
Type/No. Cyl.	V6
Engine Disp. (L)	3.5
Engine Placement	Transverse
Roof Rack	No
Sunroof/T-Top	Yes
Tinted Glass	No
Traction Control	No
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	No
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Side Torso Airbag	No
Driver Side Head Airbag	No
Driver Curtain/Airbag	Yes
Rear Pass. Airbag	No
Rear Pass. Side Airbag	No
Rear Pass. Head Airbag	No
Rear Pass. Curtain/Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
Air Cond.	Yes
AM/FM Cassette	Yes
Tilt Steering	Yes
Automatic Door Locks	No
Power Windows	Yes
Power Seats	Yes
Other	None

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors Corporation
Date of Manufacture	08/05

GVWR (kg)	2123
GAWR Front (kg)	1146
GAWR Rear (kg)	977

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	3	3		6
Capacity Weight (VCW) (kg)				496
Cargo Weight (RCLW) (kg)				88

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

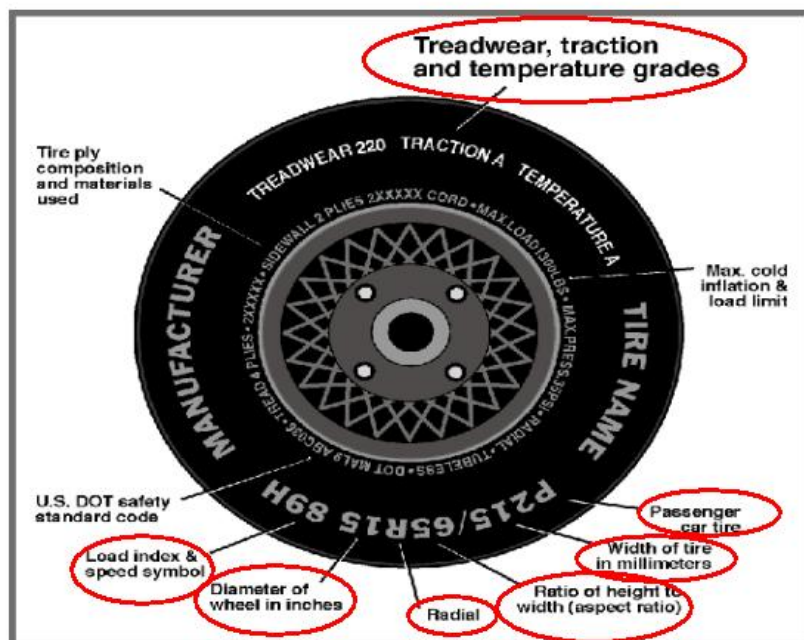
Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

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)	308	308
Cold Pressure (kPa)	210	210
Recommended Tire Size	P225/60R16	P225/60R16
Tire Size on Vehicle	P225/60R16	P225/60R16
Tire Manufacturer	Good Year	Good Year
Treadwear	460	460
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel	1 Polyester, 2 Steel
Load Index/Speed Symbol	976	976
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Right	M6X0 E6DR 2605	M6X0 E6DR 2605
DOT Safety Code Left	M6X0 E6DR 2605	M6X0 E6DR 2605

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	493	309		552	395	
Right	kg	506	291		532	364	
Ratio	%	62.5	37.5		58.8	41.2	
Totals	kg	999	600	1599	1084	759	1843

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1599
Weight of 2 P572 ATD's	kg	161
Rated Cargo/Luggage Wt. (RCLW)	kg	88
Calculated Vehicle Target Wt. (TVTW)	kg	1848

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	721	740	712	714	967
As Tested	mm	745	742	746	747	1063
Fully Loaded	mm	732	741	695	710	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2811
Total Vehicle Length at Left Side	mm	3290
Total Vehicle Length at Centerline	mm	5085
Total Vehicle Length at Right Side	mm	3295
Weight of Ballast In Cargo Area	kg	36
Amount of Stoddard Solvent in Fuel Tank	liters	64.6

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2811
Target Impact Point Aft of Front Axle	mm	466
Actual Impact Point Aft of Front Axle	mm	481

DATA SHEET NO. 1...(CONTINUED)

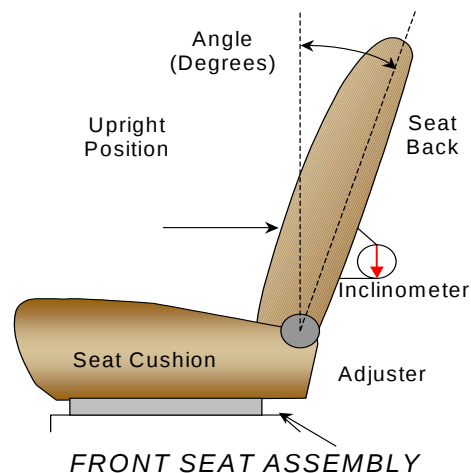
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

NHTSA No.: M60111
 Test Date: 10/20/05

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturer's designated angle. The procedure is as follows: Seat back angle was measured at the headrest using a digital inclinometer.



SEAT BACK ANGLES

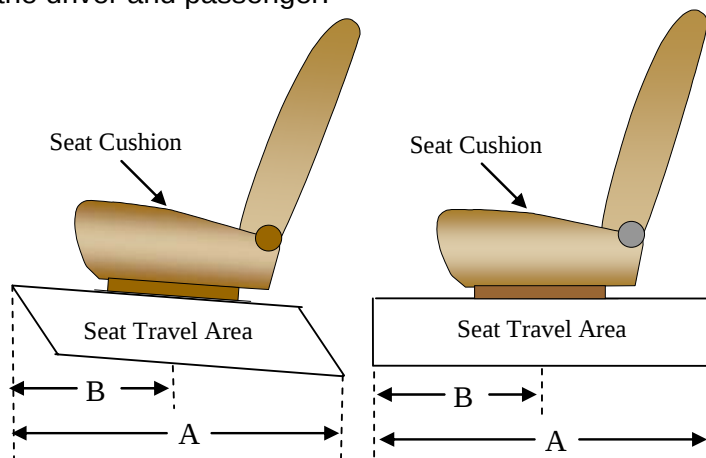
	Deg.
Driver Seat Back Angle	24.0
Rear Seat Back Angle	

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 Seat	25 detents	7th detent
Rear Seat	Fixed	Fixed



SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	5	1
Rear Seat	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

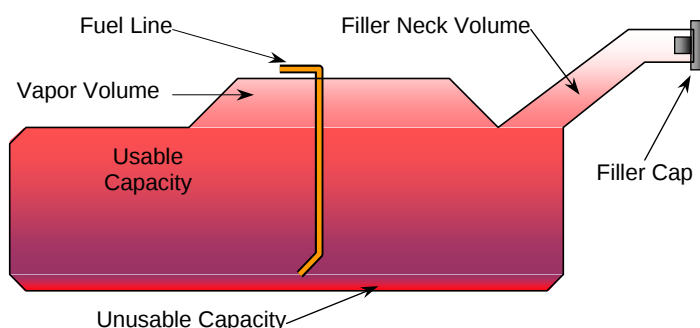
Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	66.2
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	60.94 to 62.27
Actual Amount of Solvent used	61.6

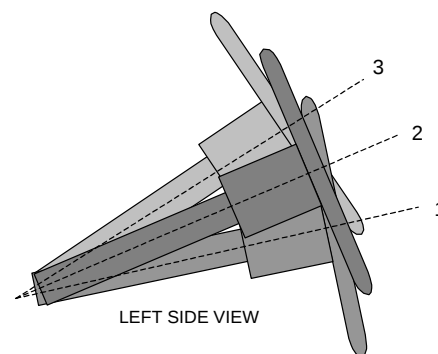
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately three (3) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender.



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

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	12.5	
Geometric center position No. 2	23.9	
Uppermost position No. 3	35.2	

DATA SHEET NO. 2**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2006 Chevrolet Impala 4-Door SedanNHTSA No.: M60111Test Program: 55/28 km/h Side Impact NCAPTest Date: 10/20/05**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UWV)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	493	309		552	395	
Right	kg	506	291		532	364	
Ratio	%	62.5	37.5		58.8	41.2	
Totals	kg	999	600	1599	1084	759	1843

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	18	215
Level 2	Occupant H-Point	mm	209	530
Level 3	Mid Door	mm	207	551
Level 4	Window Sill	mm	223	911
Level 5	Window top	mm	90	1388
N/A	Maximum Penetration	mm	223	

INSTRUMENTATION

Driver SID/Hybrid III Accelerometers	20
Passenger SID/Hybrid III Accelerometers	20
Vehicle Structure Accelerometers	26
MDB Accelerometers	5
Total No. of Contact Switches	5
Total	76

CAMERA COVERAGE

High Speed, Vehicle On-Board	3
High Speed, Off-Board	5
High Speed, MDB On-Board	2
Real Time, Panning	2
Total	12

DATA SHEET NO. 3**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2006 Chevrolet Impala 4-Door SedanNHTSA No.: M60111Test Program: 55/28 km/h Side Impact NCAPTest Date: 10/20/05**MDB SPECIFICATIONS (mm)**

Measurement Description	Length
Overall Width of Framework Carriage	1252
Overall Length including Honeycomb Face	4115
Wheel Base of Framework Carriage	2590
C.G. location aft of Front Axle	1127

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	384	308	
Right	kg	385	284	
Ratio	%	56.5	43.5	
Totals	kg	769	592	1361

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.67
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.73
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.5

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE (mm)

Vertical Location			From Centerline		Max. Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	193
B	Top of Bumper	533	400	Right	131
C	Mid Level	686	800	Left	106
D	Top of Stack	813	800	Left	122

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	1
High Speed Cameras	2

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/Hybrid III	Rear Seat SID/Hybrid III
Dummy Type / Serial No.	P572F, SID / No. 275	P572F, SID / No. 274
Head Contact	Curtain Airbag	Curtain Airbag, C-pillar
Upper Torso Contact	Door Panel, Front	Door Panel
Lower Torso Contact	Door Panel	Door Panel
Left Knee Contact	Door Panel	Door Panel
Right Knee Contact	No Contact	No Contact

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Door remained closed and latched, jammed	Door remained closed and latched, jammed
Right Side Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Movement	None	None
Seat Back Failure	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation
Sill Separation	None
Windshield Damage	None
Window Damage	Rear passenger side window broke
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 01		Left Rear (Passenger) Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	No	
Side Torso Airbag	No		No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes			
Seat Belt Load Limiter	Yes			

MDB LEFT EDGE IMPACT POINT DATA

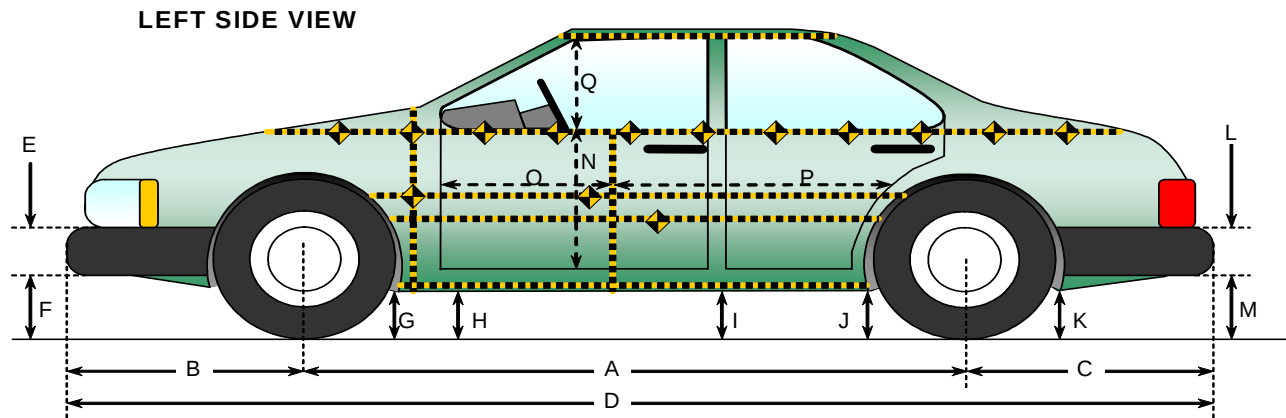
Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	-3 (below)
Vertical Offset	mm	+/- 20	15 (right)

DATA SHEET NO. 5

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

NHTSA No.: M60111
 Test Date: 10/20/05



VEHICLE PRE AND POST TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2811	2784	-27
B	Front Axle to FSOV	1074	1067	-7
C	Rear Axle to RSOV	1200	1200	0
D	Total Length at Centerline	5085	5080	-5
E	Front Bumper Thickness	378	379	1
F	Front Bumper Bottom to Ground	207	257	50
G	Sill Height at Front Wheel Well	191	205	14
H	Sill Height at Front Door Leading Edge	191	213	22
I	Sill Height at "B" Pillar	193	213	20
J1	Sill Height at Rear Wheel Well	186	246	60
J2	Pinch Weld Height at Rear Wheel Well	189	240	51
K	Sill Height aft of Rear Wheel Well	258	312	54
L	Rear Bumper Thickness	368	368	0
M	Rear Bumper Bottom to Ground	331	385	54
N	Sill Height to Window Bottom Sill	707	672	-35
O	Front Door Leading Edge to Impact CL	822	765	-57
P	Rear Door Trailing Edge to Impact CL	1152	1025	-127
Q	Front Window Opening	285	385	100
R	Right Side Length	3295	3295	0
S	Left Side Length	3290	3225	-65
T	Vehicle Width at "B" Post	1842	1655	-187

DATA SHEET NO. 6

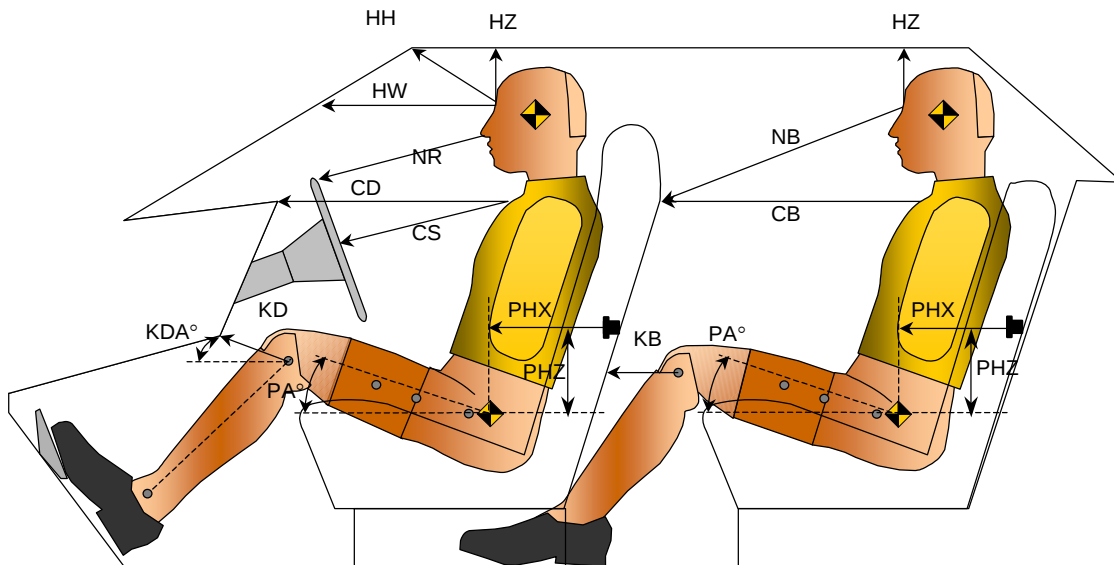
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05



LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length(mm)	Angle	Length(mm)	Angle
HH		Head to Header	400	17.6		
HW		Head to Windshield	645			
HZ	HZ	Head to Roof	200	90.0	190	90.0
NR	NB	Nose to Rim/Nose to Seat Back	470	10.7	670	24.5
CD	CB	Chest to Dash or Seat Back	600	2.0	580	3.0
CS		Chest to Steering Wheel	375	5.7		
KDL	KBL	Left Knee to Dash or Seat Back	250	4.0	200	
KDR	KBR	Right Knee to Dash or Seat Back	280		240	
PA	PA	Pelvic Angle		23.0		23.0
PHX	PHX	H-Point to Striker (X-Axis)	240	27.0	433	50.0
PHZ	PHZ	H-Point to Striker (Z-Axis)	110		330	

DATA SHEET NO. 7

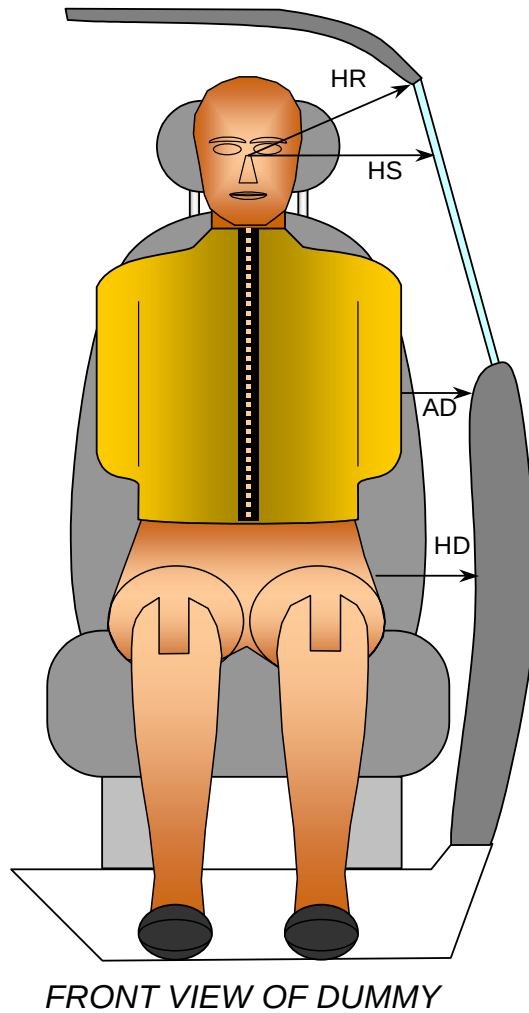
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05



LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	250	280
HS	Head to Side Window	mm	350	330
AD	Arm to Door	mm	120	100
HD	H-Point to Door	mm	140	130

DATA SHEET NO. 8

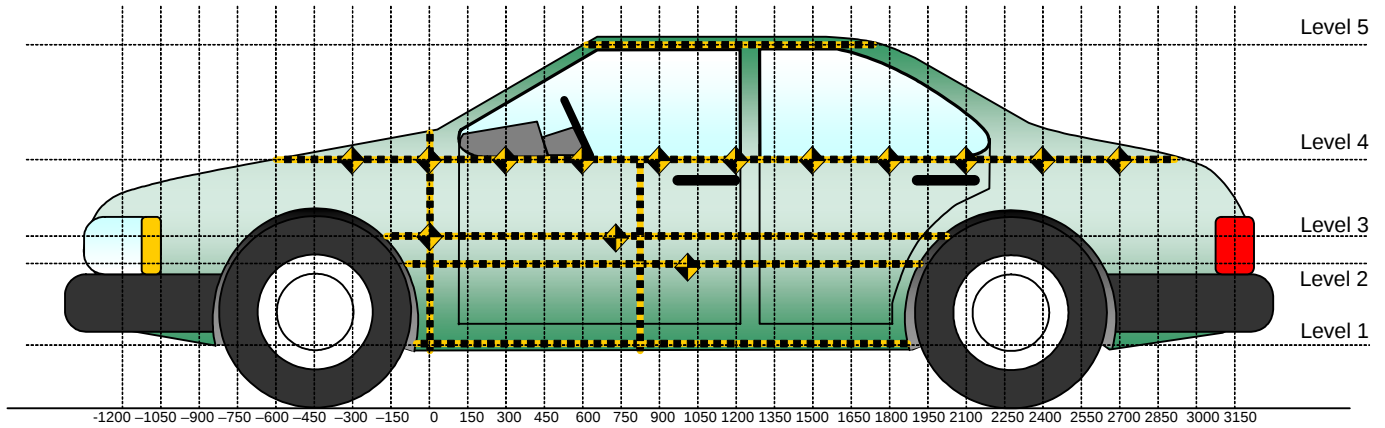
VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.

Measurements taken 900 mm right of impact reference.

All measurements below in mm.

Level	Measurement Description	Height Above Ground
1	Sill Top	215
2	Occupant H-Point	530
3	Mid Door	551
4	Window Sill	911
5	Window Top	1388

DATA SHEET NO. 9

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

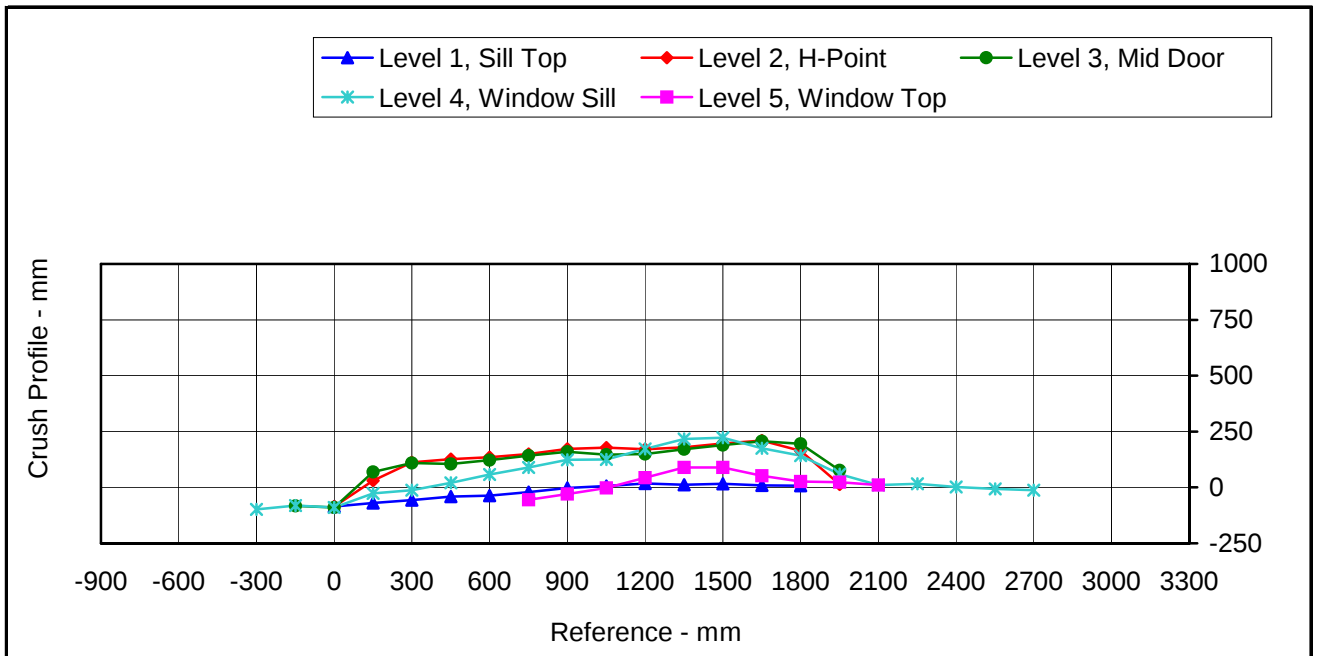
Test Date: 10/20/05

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600				768					640					-128	
-450				745					628					-117	
-300				729					631					-98	
-150			624	715				541	634				-83	-81	
0	688	627	630	695		602	542	541	605		-86	-85	-89	-90	
150	695	630	625	679		625	660	695	652		-70	30	70	-27	
300	690	628	620	671		633	740	730	658		-57	112	110	-13	
450	685	620	615	660		644	747	720	681		-41	127	105	21	
600	682	615	612	653		646	750	734	711		-36	135	122	58	
750	675	610	605	644	930	654	760	747	734	875	-21	150	142	90	-55
900	670	605	600	638	915	667	778	760	762	885	-3	173	160	124	-30
1050	671	600	596	632	905	677	778	742	757	902	6	178	146	125	-3
1200	660	595	591	630	895	678	766	740	802	939	18	171	149	172	44
1350	663	593	589	620	889	675	773	760	837	979	12	180	171	217	90
1500	656	590	585	617	880	673	787	775	840	969	17	197	190	223	89
1650	656	586	583	610	872	665	795	790	785	924	9	209	207	175	52
1800	642	583	580	608	870	650	747	775	751	897	8	164	195	143	27
1950	634	576	573	608	865	630	590	650	667	888	-4	14	77	59	23
2100			570	600	869			585	611	880			15	11	11
2250				599	895				616	875				17	-20
2400				602					604					2	
2550				602					595					-7	
2700				610					597					-13	
2850				612					605					-7	
3000				630					606					-24	

DATA SHEET NO. 9...(CONTINUED)
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

NHTSA No.: M60111
 Test Date: 10/20/05



	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	18	209	207	223	90
Distance from Impact	mm	1200	1650	1650	1500	1350

DATA SHEET NO. 10

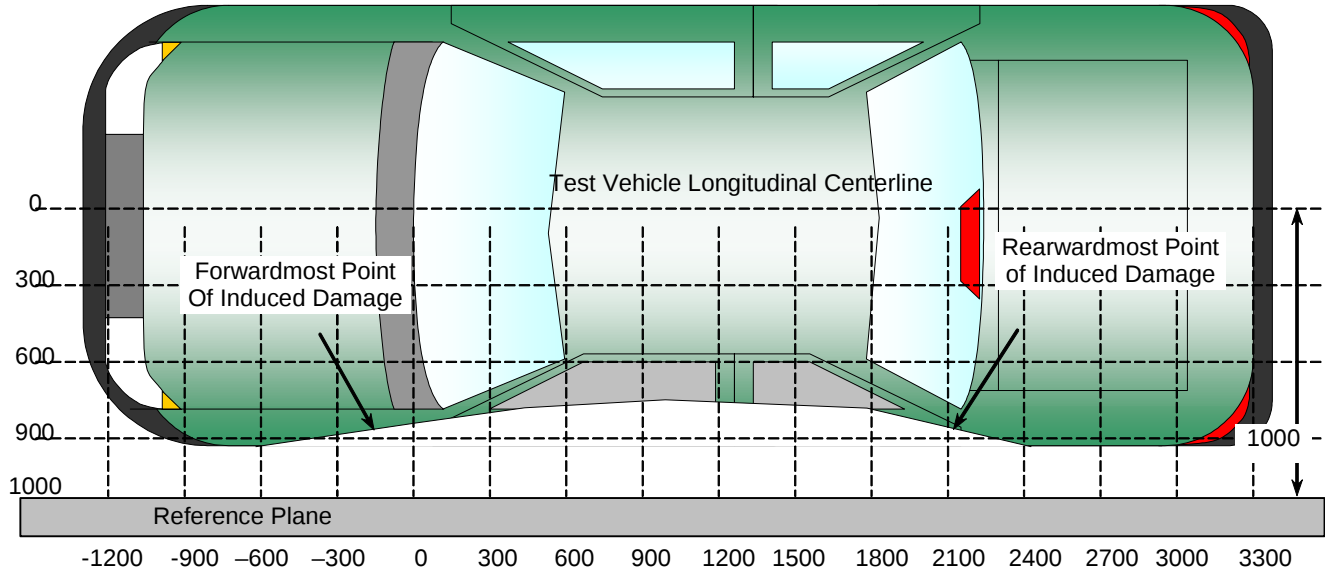
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05



All Dimensions Shown in millimeters

TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	-600	4	768	640	-128
2	0	2	627	542	-85
3	600	2	615	750	135
4	1200	4	630	802	172
5	1800	3	580	775	195
6	2400	4	602	604	2

DATA SHEET NO. 11

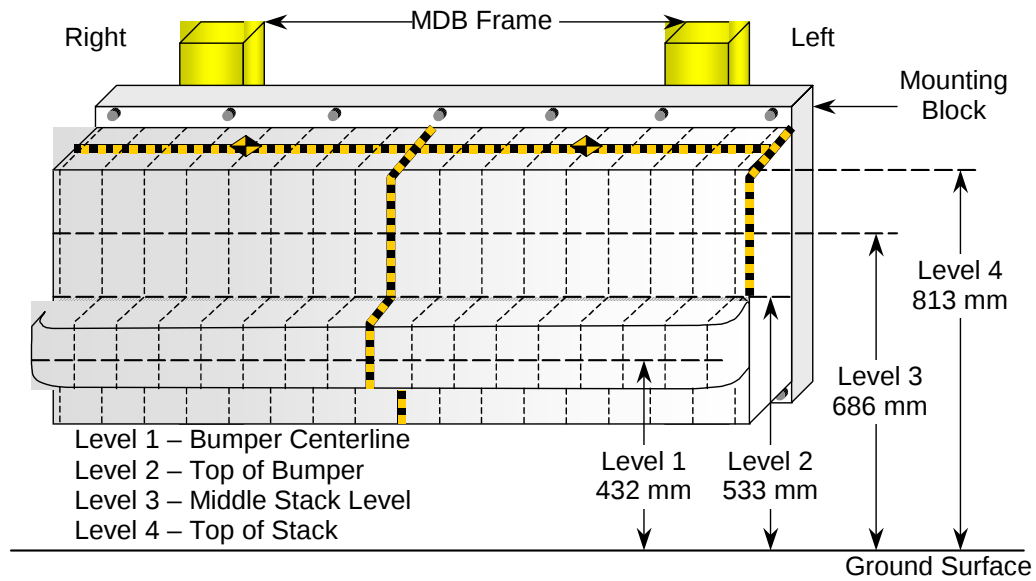
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	711	690	681	680	680	686	691	669	657	651	646	638	644	644	649	661	681
2	748	750	749	750	751	751	736	728	717	725	724	725	724	726	726	735	748
3	671	649	649	650	651	657	681	665	658	656	649	648	654	665	680	691	726
4	681	651	637	627	621	636	663	664	659	659	657	661	671	684	703	721	742

All Dimensions in mm

DATA SHEET NO. 12

VEHICLE ACCELEROMETER LOCATIONS

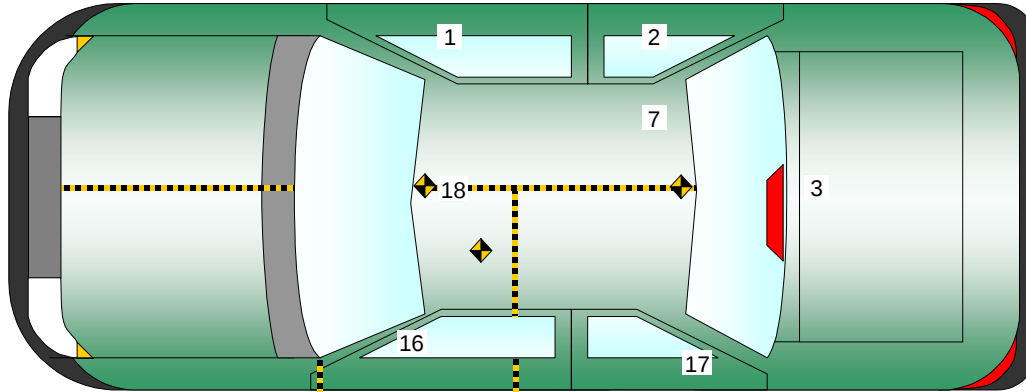
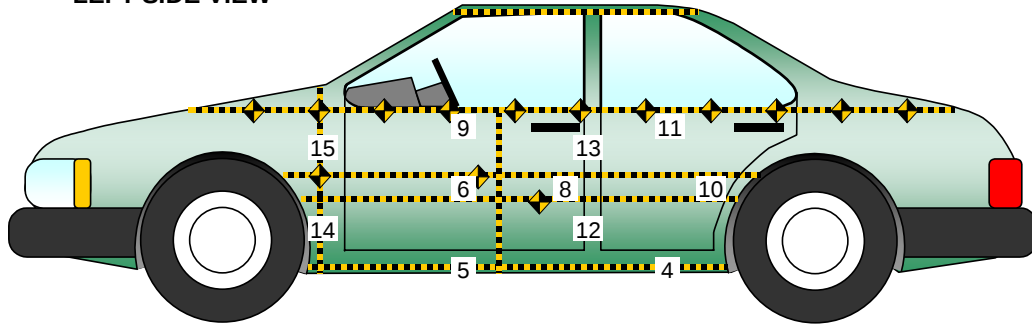
Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

LEFT SIDE VIEW



No.	Location
1	Right Sill at Front Seat
2	Right Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Sill at Rear Door
5	Left Sill at Front Door
6	Left Front Door Centerline
7	Right Rear Occupant Compartment
8	Left Front Door Mid-Rear
9	Left Front Door Upper Centerline

No.	Location
10	Left Rear Door Mid-Rear
11	Left Rear Door Upper Centerline
12	Left Lower B-Post
13	Left Middle B-Post
14	Left Lower A-Post
15	Left Middle A-Post
16	Front Seat Track
17	Rear Seat Track or Structure
18	Vehicle CG

DATA SHEET NO. 12...(CONTINUED)
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2778	620	250
2	Right Sill at Rear Seat	1160	620	250
3	Rear Floorpan Above Axle	370	386	540
4	Left Sill at Rear Door	1582	-430	190
5	Left Sill at Front Door	2332	-430	190
6	Front Door Centerline	2639	-594	690
7	Rt. Rear Occ. Compartment	2115	460	250
8	Front Door Mid-Rear	2752	-594	560
9	Front Door Upper Centerline	2639	-594	790
10	Rear Door Mid-Rear	1782	-594	650
11	Rear Door Upper Centerline	1678	-594	825
12	B-Post Lower	2054	-542	720
13	B-Post Middle	2054	-542	789
14	A-Post Lower	3243	-640	475
15	A-Post Middle	3243	-640	760
16	Front Seat Track	2253	-832	434
17	Rear Seat Structure			
18	Vehicle CG	2859	218	250

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

1.) Not installed

DATA SHEET NO. 13
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

Test Program: 55/28 km/h Side Impact NCAP

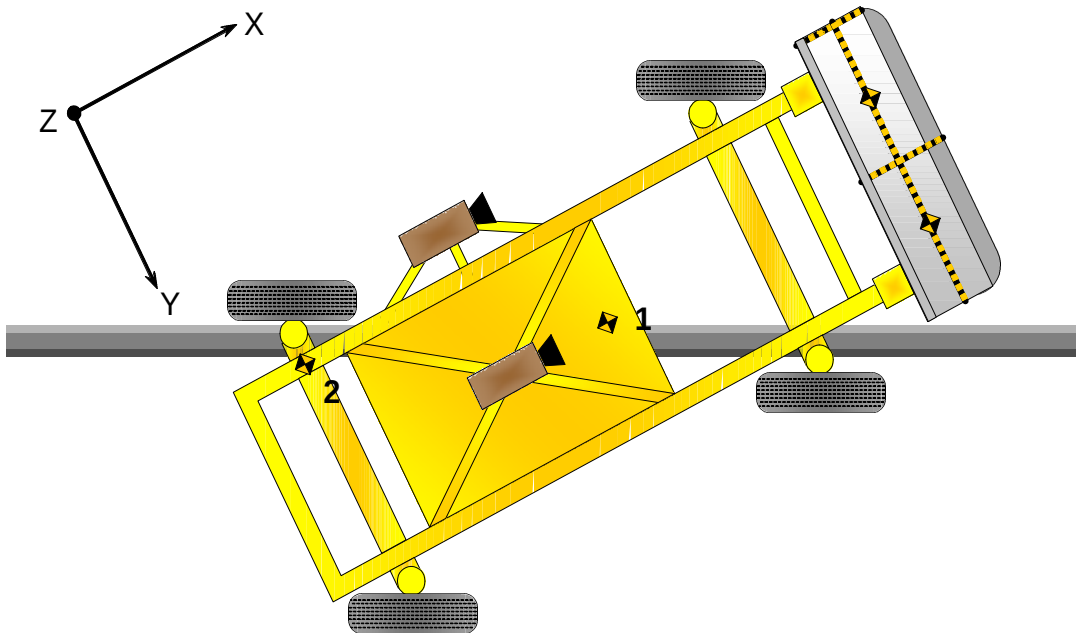
NHTSA No.: M60111

Test Date: 10/20/05

MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Locations	Measurements (mm)		
		X	Y	Z
1	MDB CG	-1195	0	430
2	MDB Rear	-2642	-593	608

Reference Points: X - MDB Front Axle
Y - MDB Centerline
Z - Ground Plane



DATA SHEET NO. 14

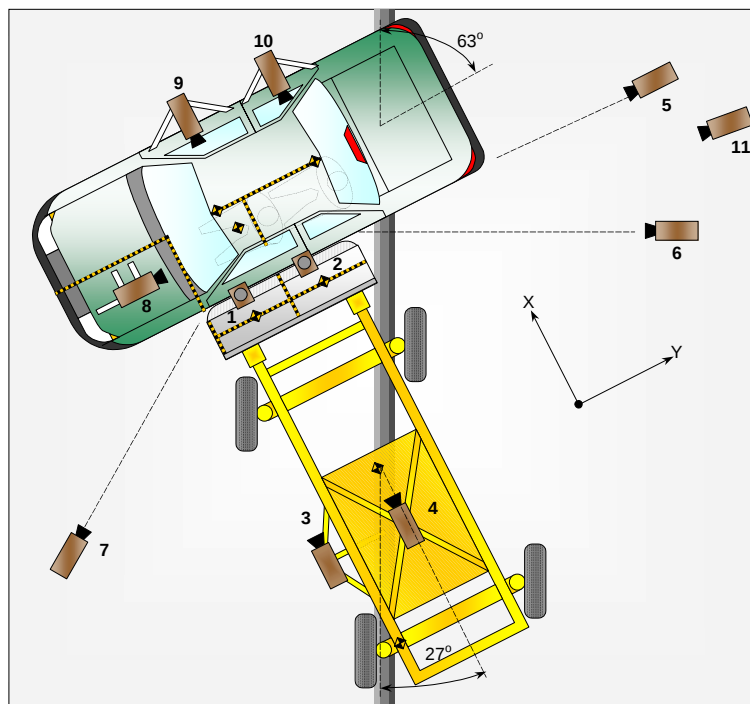
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 10/20/05



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X	Y	Z			
Doc	Real Time Digital	3658	22860	-1727	-5	N/A	30
1	Overhead Overall	1220	2286	-5486	-90	14mm	1000
2	Overhead Close Up	609	1676	-5486	-90	25mm	1000
3	Left Impact Point	-2134	0	-1143	-7	25mm	1000
4	Side Overall	-3912	838	-1829	-11	12.5mm	1000
5	Rear	228	15545	-1371	-1	50mm	1000
6	Left Rear	-7188	16459	-939	-1	25mm	1000
7	Left Front	-2666	-3550	-1473	-10	24mm	1000
8	Driver Front	387	-540	-1350	-20	35mm	1000
9	Driver Side	1707	705	-1050	-2	20mm	1000
10	Passenger Side	1697	1595	-1100	-2	20mm	1000
Doc	Real Time Digital	-7100	16459	-839	-1	N/A	30
6b	Left Rear	-7188	16459	-939	-1	50mm	1000

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

DATA SHEET NO. 15

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan NHTSA No.: M60111
Test Program: 55/28 km/h Side Impact NCAP Test Date: 10/20/05

Test Time: 2:39 PM Temperature: 22.2 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 Details: No leakage occurred

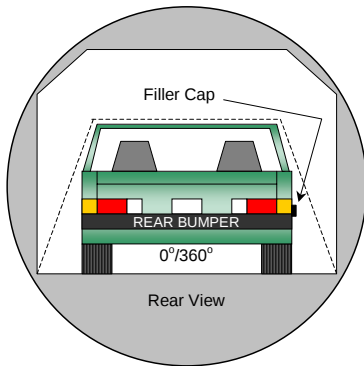
DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan

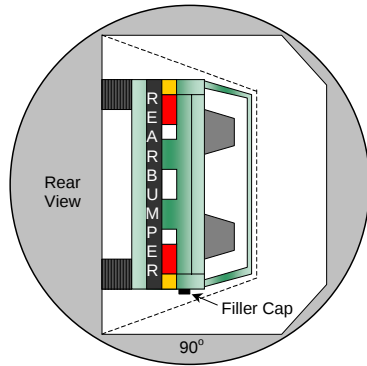
NHTSA No.: M60111

Test Program: 55/28 km/h Side Impact NCAP

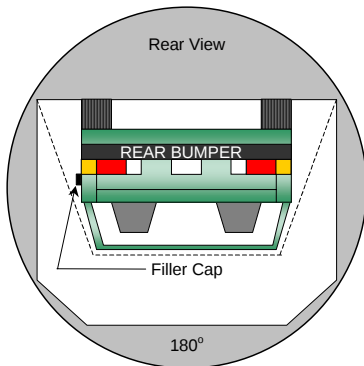
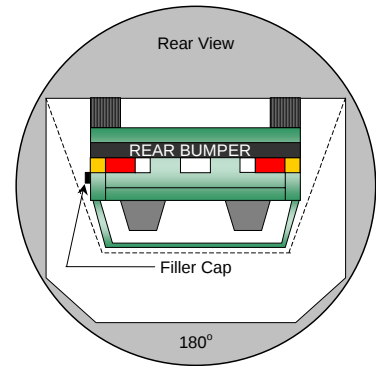
Test Date: 10/20/05



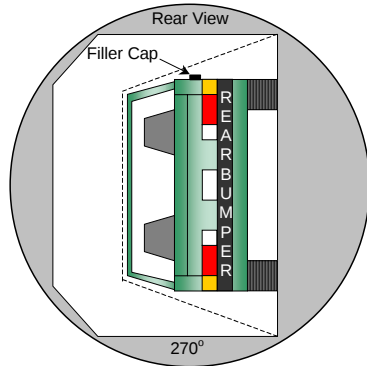
0° to 90°



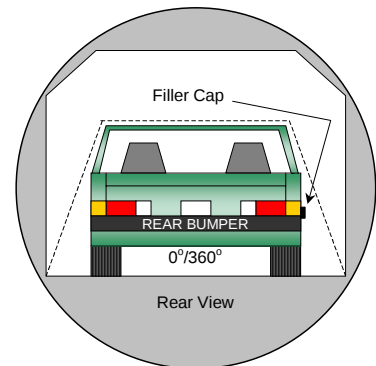
90° to 180°



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. Details of Stoddard Solvent spillage locations.
No solvent leakage occurred during static rollover testing.

DATA SHEET NO. 16...(CONTINUED)**FMVSS 301 STATIC ROLLOVER DATA SHEET**Test Vehicle: 2006 Chevrolet Impala 4-Door SedanNHTSA No.: M60111Test Program: 55/28 km/h Side Impact NCAPTest Date: 10/20/05**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	87	300	387
90° to 180°	78	300	378
180° to 270°	80	300	380
270° to 360°	77	300	377

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

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

**APPENDIX A
PHOTOGRAPHS**

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Figure A-1: Left Front $\frac{3}{4}$ View, as Received



Figure A-2: Right Rear $\frac{3}{4}$ View, as Received



MFD BY GENERAL MOTORS OF CANADA LTD.

DATE
08/05

GVWR
2123 KG
4681 LB

GAWR FRT
1146 KG
2526 LB

GAWR RR
977 KG
2155 LB

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

2G1WB58KX69113792

TYPE: PASS CAR

Figure A-3: Manufacturer's Label



TIRE AND LOADING INFORMATION

SEATING CAPACITY : TOTAL 6 : FRONT 3 : CENTER 0 : REAR 3

The combined weight of occupants and cargo should never exceed 496 kg or 1093 lbs.

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
P225/60R16	FRONT	210 kPa, 30 PSI
P225/60R16	REAR	210 kPa, 30 PSI
T125/70D16	SPARE	420 kPa, 60 PSI

**SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION**

Figure A-4: Tire Placard



Figure A-5: Pre-Test Front View



Figure A-6: Post-Test Front View



Figure A-7: Pre-Test Left Front 3/4 View



Figure A-8: Post-Test Left Front $\frac{3}{4}$ View



Figure A-10: Post-Test Left Side View



Figure A-11: Pre-Test Left Rear $\frac{3}{4}$ View



Figure A-12: Post-Test Left Rear $\frac{3}{4}$ View



Figure A-13: Pre-Test Rear View



Figure A-14: Post-Test Rear View



Figure A-15: Pre-Test Right Rear $\frac{3}{4}$ View



Figure A-16: Post-Test Right Rear $\frac{3}{4}$ View



Figure A-17: Pre-Test Right Side View



Figure A-18: Post-Test Right Side View



Figure A-19: Pre-Test Right Front ¾ View



Figure A-20: Post-Test Right Front $\frac{3}{4}$ View



Figure A-21: Pre-Test Overhead View



Figure A-22: Post-Test Overhead View



Figure A-23: Pre-Test Overhead Close-up View



Figure A-24: Post-Test Overhead Close-up View



Figure A-25: Pre-Test Left Impact Point



Figure A-26: Post-Test Left Impact Point



Figure A-27: Pre-Test Front $\frac{3}{4}$ View of Left Side Doors



Figure A-28: Post-Test Front $\frac{3}{4}$ View of Left Side Doors



Figure A-29: Pre-Test Rear $\frac{3}{4}$ View of Left Side Doors



Figure A-30: Post-Test Rear $\frac{3}{4}$ View of Left Side Doors



Figure A-31: Pre-Test Left Front Door



Figure A-32: Post-Test Left Front Door



Figure A-33: Pre-Test Left Rear Door



Figure A-34: Post-Test Left Rear Door



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

This Space Left Blank Intentionally



Figure A-36: Pre-Test Driver Dummy (Through Window)



Figure A-37: Post-Test Driver Dummy (Through Window)



Figure A-38: Pre-Test Driver Dummy Clearance From Door



Figure A-39: Post-Test Driver Dummy Clearance From Door



Figure A-40: Pre-Test Driver Dummy Right Side View



Figure A-41: Post-Test Driver Dummy Right Side View



Figure A-42: Pre-Test Front Door Panel (Interior)



Figure A-43: Post-Test Front Door Panel (Interior)



Figure A-44: Pre-Test Passenger Dummy Left Side (Door Open)

This Space Left Blank Intentionally



Figure A-45: Pre-Test Passenger Dummy Left Side (Through Window)



Figure A-46: Post-Test Passenger Dummy Left Side (Through Window)



Figure A-47: Pre-Test Passenger Dummy Clearance From Door



Figure A-48: Post-Test Passenger Dummy Clearance From Door



Figure A-49: Pre-Test Passenger Dummy Right Side View



Figure A-50: Post-Test Passenger Dummy Right Side View



Figure A-51: Pre-Test Rear Door Panel (Interior)



Figure A-52: Post-Test Rear Door Panel (Interior)



Figure A-53: Pre-Test Front View of Deformable Barrier



Figure A-54: Post-Test Front View of Deformable Barrier

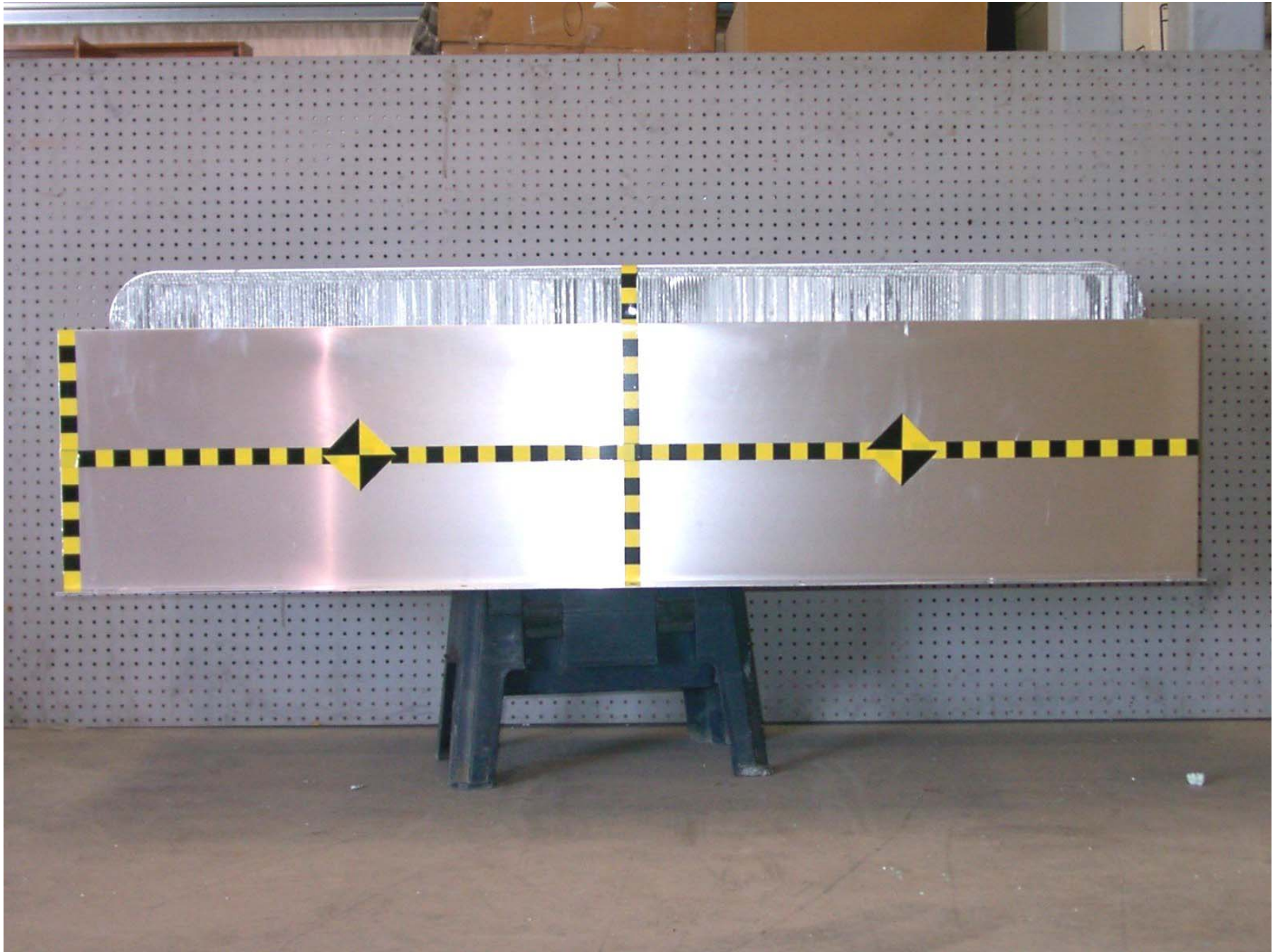


Figure A-55: Pre-Test Top View of Deformable Barrier



Figure A-56: Post-Test Top View of Deformable Barrier



Figure A-57: Pre-Test Right Side View of Deformable Barrier



Figure A-58: Post-Test Right Side View of Deformable Barrier



Figure A-59: Pre-Test Left Side View of Deformable Barrier

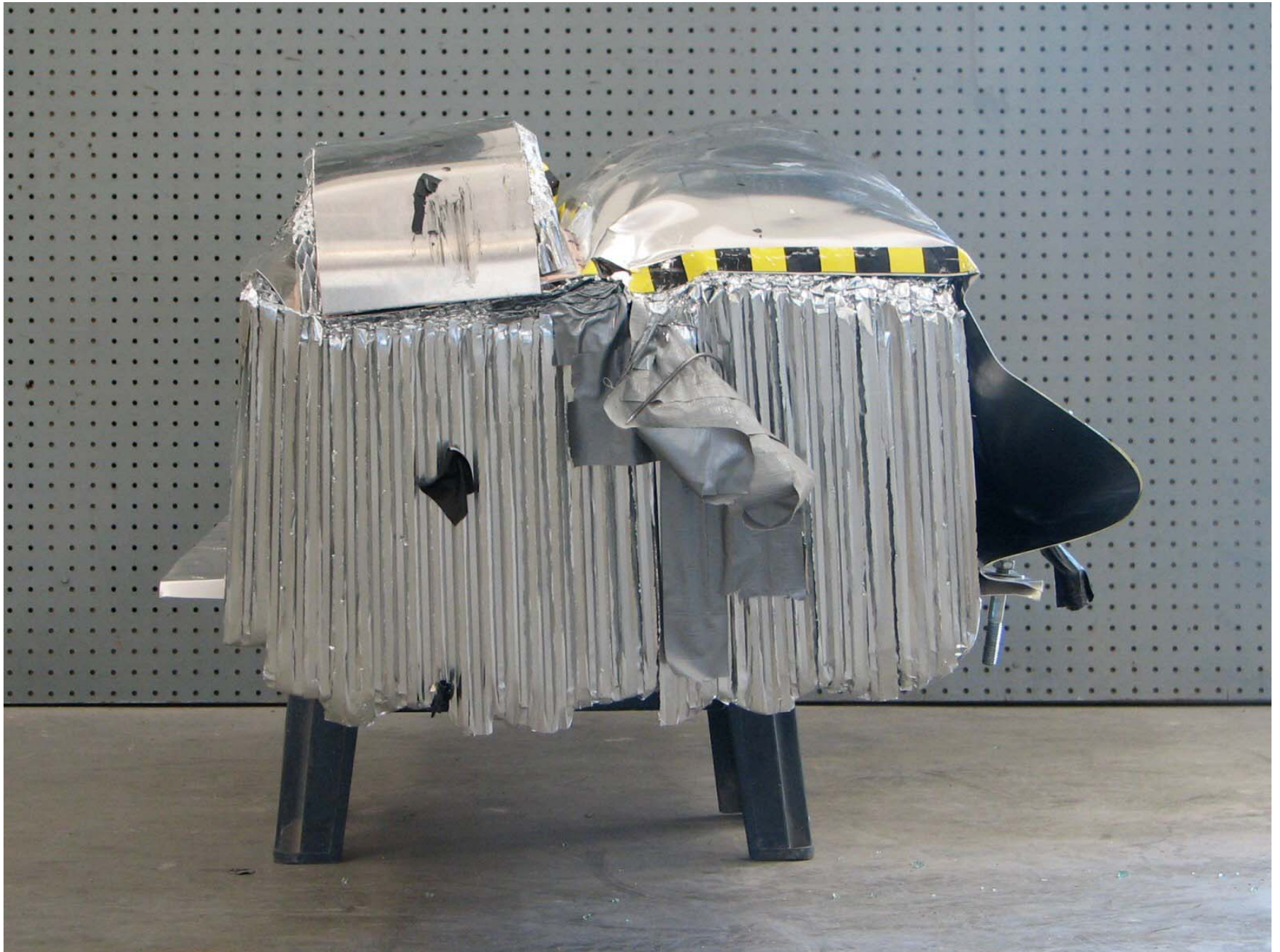


Figure A-60: Post-Test Left Side View of Deformable Barrier



Figure A-61: Vehicle on Rollover Device (0°)



Figure A-62: Vehicle on Rollover Device (90°)

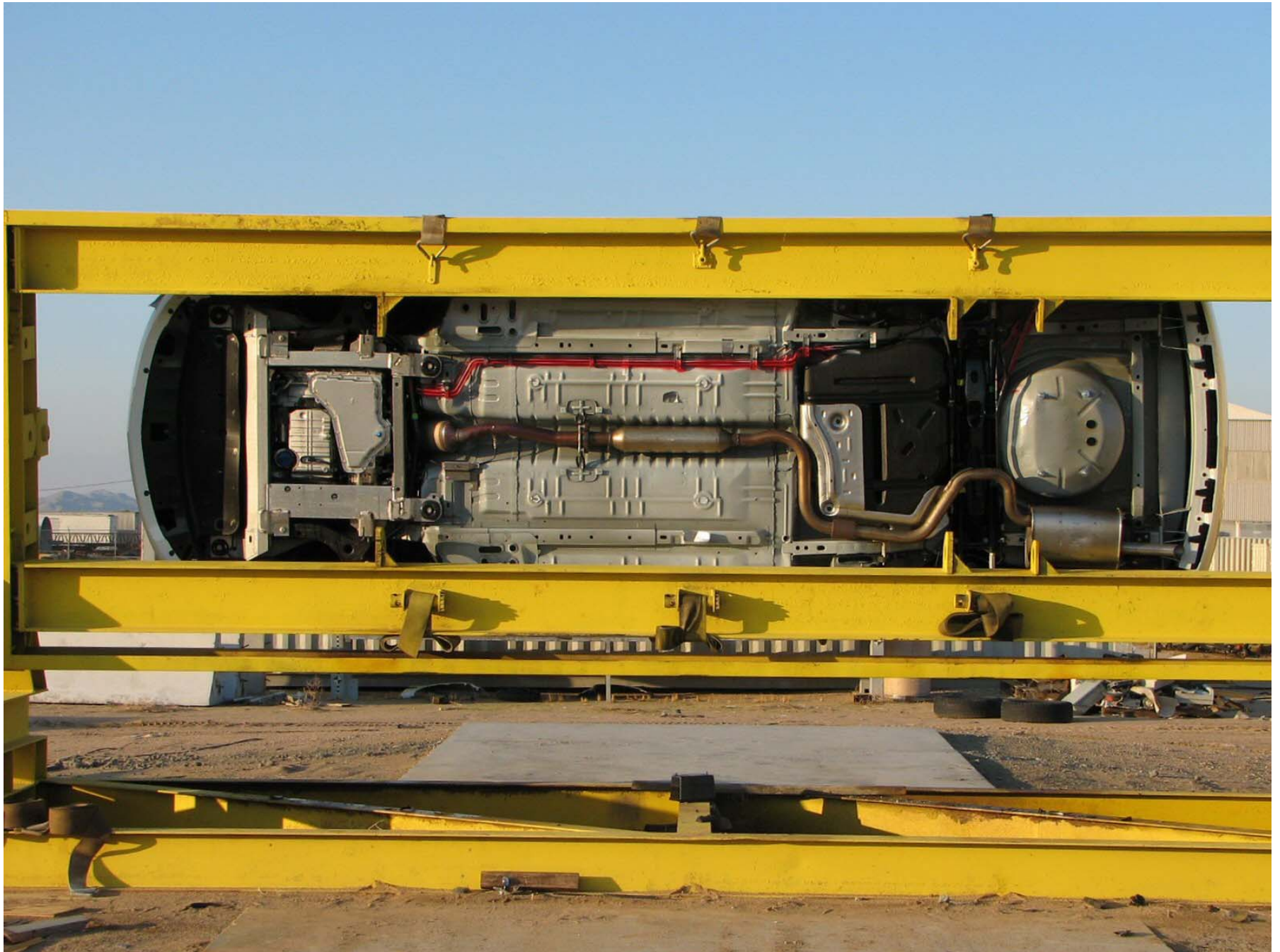


Figure A-64: Vehicle on Rollover Device (270°)



Figure A-65: Vehicle Impact



Figure A-66: Post-Test Front Door Panel (Interior Close-up)

APPENDIX B
SID/HIII, VEHICLE AND MDB RESPONSE DATA

LIST OF DATA PLOTS

<u>Data Plot</u>	<u>Page</u>
B-1	Driver Upper Rib Primary Y
	Driver Lower Rib Primary Y
	Driver Lower Spine Primary Y
	Driver Pelvis Primary Y
B-2	Passenger Upper Rib Primary Y
	Passenger Lower Rib Primary Y
	Passenger Lower Spine Primary Y
	Passenger Pelvis Primary Y

The following additional data plots for this test can be obtained from the research and development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov

LIST OF DATA PLOTS...(CONTINUED)

Driver Head X Primary
Driver Head Y Primary
Driver Head Z Primary
Driver Head Resultant Primary
Driver Head Primary X Velocity
Driver Head Primary Y Velocity
Driver Head Primary Z Velocity
Driver Head X Redundant
Driver Head Y Redundant
Driver Head Z Redundant
Driver Head Resultant Redundant
Driver Head Redundant X Velocity
Driver Head Redundant Y Velocity
Driver Head Redundant Z Velocity
Driver Upper Neck Force X
Driver Upper Neck Force Y
Driver Upper Neck Force Z
Driver Upper Neck Force Resultant
Driver Upper Neck Moment X
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Neck Moment Resultant
Driver Upper Rib Primary Y Velocity
Driver Lower Rib Primary Y Velocity
Driver Lower Spine Primary Y Velocity
Driver Pelvis Primary Y Velocity
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y

LIST OF DATA PLOTS...(CONTINUED)

Driver Upper Rib Redundant Y Velocity
Driver Lower Rib Redundant Y Velocity
Driver Lower Spine Redundant Y Velocity
Driver Pelvis Redundant Y Velocity
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head Resultant Primary
Passenger Head Primary X Velocity
Passenger Head Primary Y Velocity
Passenger Head Primary Z Velocity
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Head Resultant Redundant
Passenger Head Redundant X Velocity
Passenger Head Redundant Y Velocity
Passenger Head Redundant Z Velocity
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Force Resultant
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Neck Moment Resultant

LIST OF DATA PLOTS...(CONTINUED)

Passenger Upper Rib Primary Y Velocity
Passenger Lower Rib Primary Y Velocity
Passenger Lower Spine Primary Y Velocity
Passenger Pelvis Primary Y Velocity
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
Passenger Upper Rib Redundant Y Velocity
Passenger Lower Rib Redundant Y Velocity
Passenger Lower Spine Redundant Y Velocity
Passenger Pelvis Redundant Y Velocity
Passenger Thorax Contact
Passenger Pelvis Contact
Vehicle Right Sill at Front Seat X
Vehicle Right Sill at Front Seat Y
Vehicle Right Sill at Front Seat Z
Vehicle Right Sill Front Seat Resultant
Vehicle Right Sill at Front Seat X Velocity
Vehicle Right Sill at Front Seat Y Velocity
Vehicle Right Sill at Front Seat Z Velocity
Vehicle Right Sill at Rear Seat X
Vehicle Right Sill at Rear Seat Y
Vehicle Right Sill at Rear Seat Z
Vehicle Right Sill Rear Seat Resultant
Vehicle Right Sill at Rear Seat X Velocity
Vehicle Right Sill at Rear Seat Y Velocity
Vehicle Right Sill at Rear Seat Z Velocity
Vehicle Rear Floor Above Axle X
Vehicle Rear Floor Above Axle Y
Vehicle Rear Floor Above Axle Z
Vehicle Rear Floor Above Axle Resultant
Vehicle Rear Floor Above Axle X Velocity
Vehicle Rear Floor Above Axle Y Velocity
Vehicle Rear Floor Above Axle Z Velocity

LIST OF DATA PLOTS...(CONTINUED)

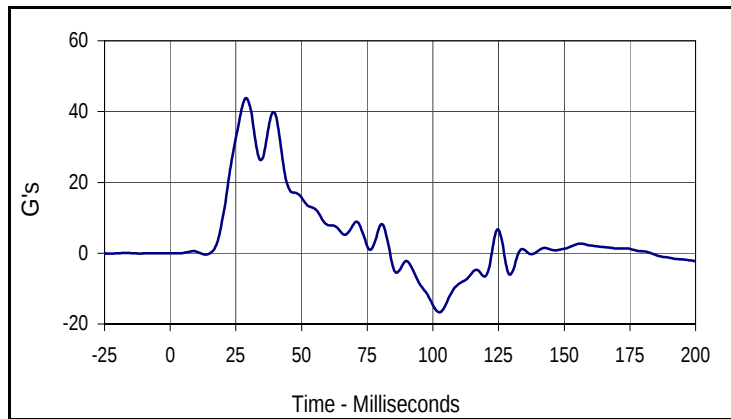
Vehicle Left Sill at Rear Door Y
Vehicle Left Sill at Front Door Y
Vehicle Left Sill at Rear Door Y Velocity
Vehicle Left Sill at Front Door Y Velocity
Vehicle Left Front Door C/L Y
Vehicle Right Rear Occupant Compartment
Vehicle Left Front Door Mid Rear Y
Vehicle Left Front Door Upper CL Y
Vehicle Left Front Door CL Y Velocity
Vehicle Right Rear Occupant Compartment Y Velocity
Vehicle Left Front Door Mid Rear Y Velocity
Vehicle Left Rear Door Upper CL Y Velocity
Vehicle Left Rear Door Mid Rear Y
Vehicle Left Rear Door Upper C/L Y
Vehicle Left Rear Door Mid Rear Y Velocity
Vehicle Left Rear Door Upper CL Y Velocity
Vehicle B-Post Lower Y
Vehicle B-Post Middle Y
Vehicle B-Post Lower Y Velocity
Vehicle B-Post Middle Y Velocity
Vehicle A-Post Lower Y
Vehicle A-Post Middle Y
Vehicle A-Post Lower Y Velocity
Vehicle A-Post Middle Y Velocity
Vehicle Left Front Seat Track
Vehicle Rear Seat Structure
Vehicle Left Front Seat Track Y Velocity
Vehicle Rear Seat Structure Y Velocity
Vehicle CG X
Vehicle CG Y
Vehicle CG Z
Vehicle CG Resultant
Vehicle CG X Velocity
Vehicle CG Y Velocity
Vehicle CG Z Velocity

LIST OF DATA PLOTS...(CONTINUED)

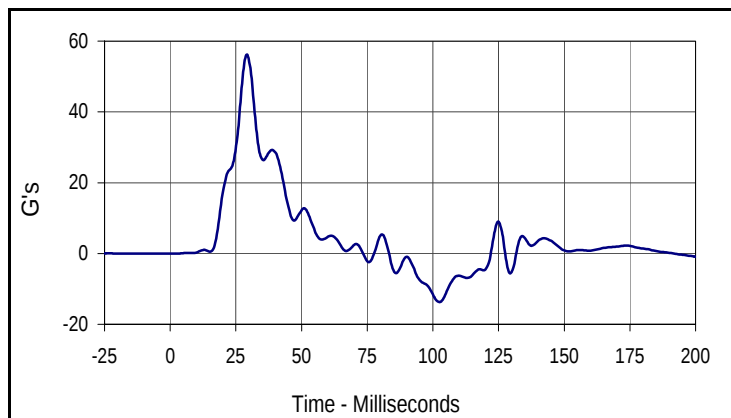
Driver Upper Rib Primary Y
Driver Lower Rib Primary Y
Driver Lower Spine Primary Y
Driver Pelvis Primary Y
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Passenger Upper Rib Primary Y
Passenger Lower Rib Primary Y
Passenger Lower Spine Primary Y
Passenger Pelvis Primary Y
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
MDB CG X
MDB CG Y
MDB CG Z
MDB CG Resultant
MDB CG X Velocity
MDB CG Y Velocity
MDB CG Z Velocity
MDB Rear X
MDB Rear Y
MDB Rear X Velocity
MDB Rear Y Velocity
MDB Right Bumper Contact

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

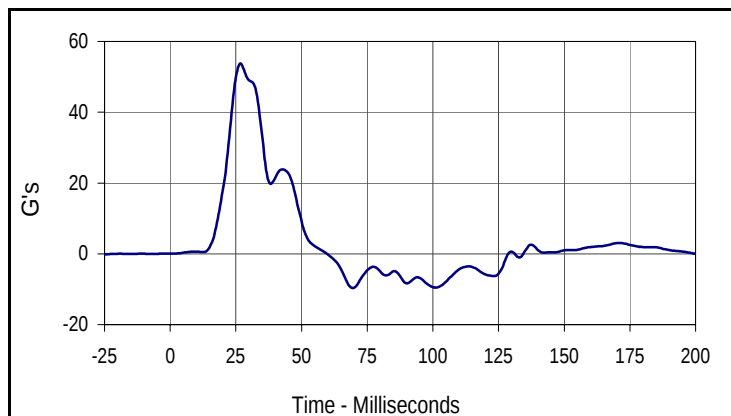
Test Date: 10/20/05
 NHTSA No.: M60111



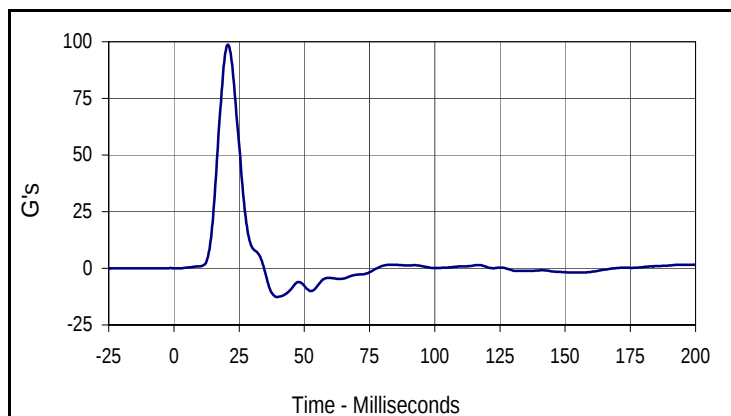
Curve Description			
Driver Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIR	FIR100	G's
Max	Time	Min	Time
43.8	28.8	-16.7	102.5



Curve Description			
Driver Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIR	FIR100	G's
Max	Time	Min	Time
56.2	29.4	-13.8	102.5



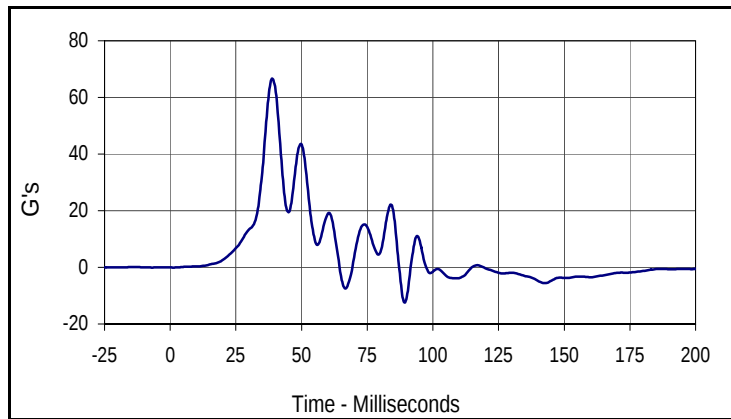
Curve Description			
Driver Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIR	FIR100	G's
Max	Time	Min	Time
53.7	26.9	-9.7	69.4



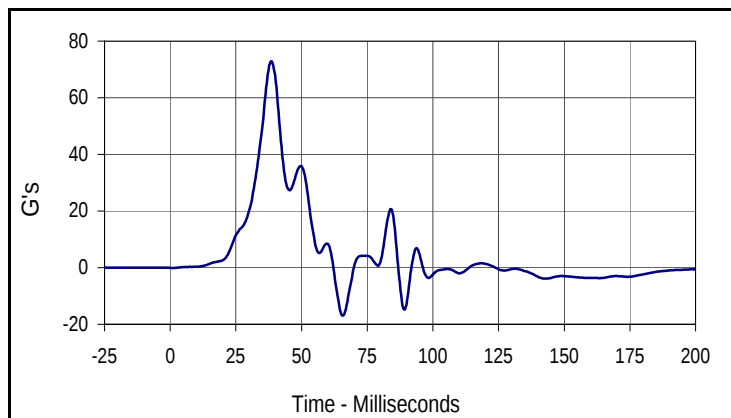
Curve Description			
Driver Pelvis Primary Y			
CURNO	Type	SAE Class	Units
004	FIR	FIR100	G's
Max	Time	Min	Time
98.7	20.6	-12.7	39.4

Test Vehicle: 2006 Chevrolet Impala 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

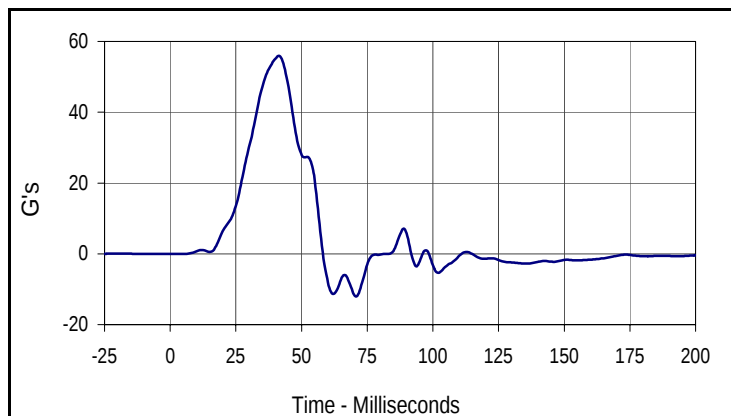
Test Date: 10/20/05
 NHTSA No.: M60111



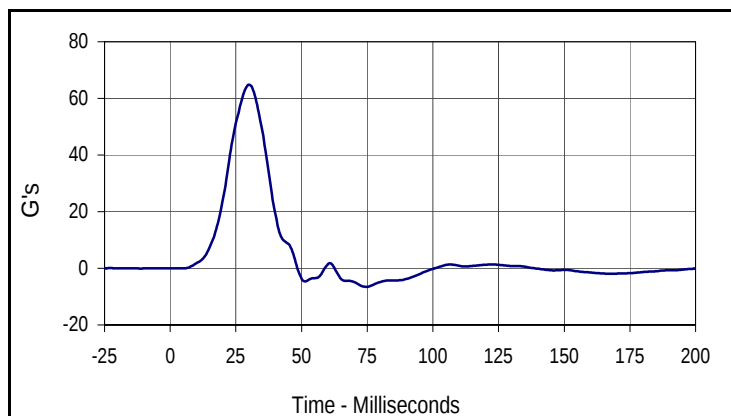
Curve Description			
Passenger Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
005	FIR	FIR100	G's
Max	Time	Min	Time
66.6	38.8	-12.4	89.4



Curve Description			
Passenger Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
006	FIR	FIR100	G's
Max	Time	Min	Time
72.8	38.8	-17.0	65.6



Curve Description			
Passenger Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
007	FIR	FIR100	G's
Max	Time	Min	Time
55.9	41.3	-12.0	70.6



Curve Description			
Passenger Pelvis Primary Y			
CURNO	Type	SAE Class	Units
008	FIR	FIR100	G's
Max	Time	Min	Time
64.8	30.0	-6.5	74.4

APPENDIX C
SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID / HIII External Measurements
 ATD Serial No.: 274

Test Date: 9/14/05
 Test I.D.: N/A



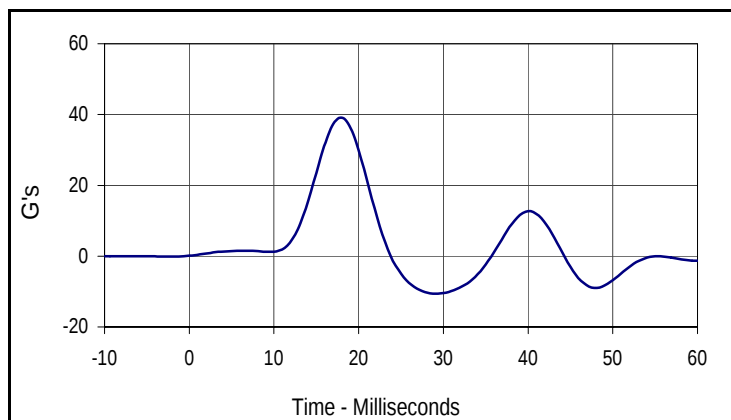
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	900	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	366	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

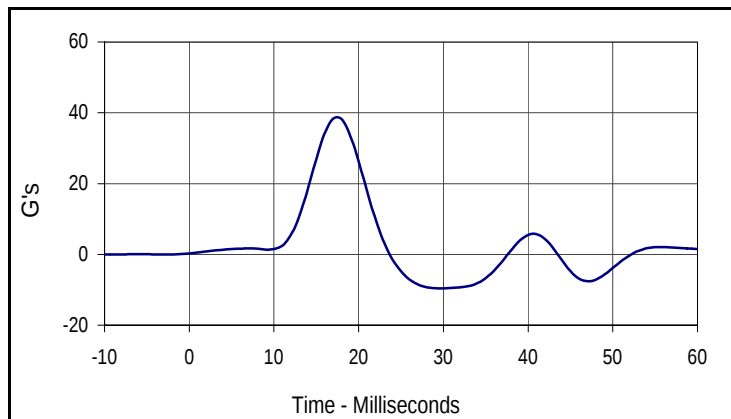
Test Date: 9/12/05
 Test I.D.: TH09M



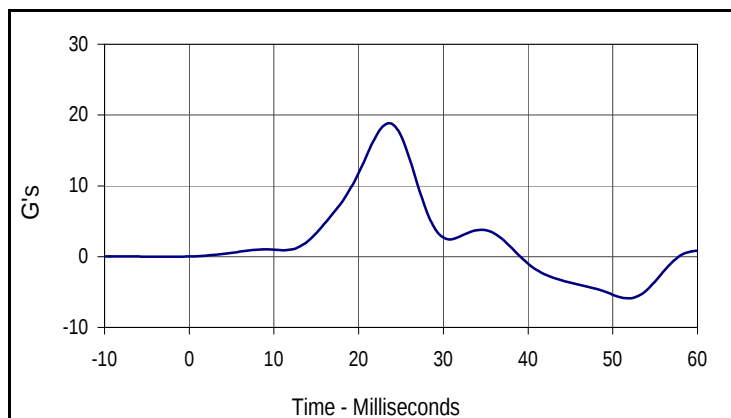
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.30	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	39.0	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	38.8	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	18.8	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
39.0	18.1	-10.6	29.4



Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
38.8	17.5	-9.6	29.4



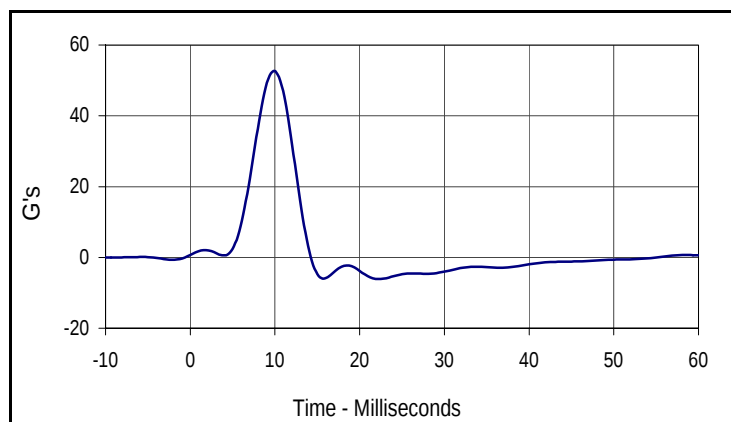
Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
18.8	23.8	-5.9	51.9

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 274

Test Date: 9/12/05
 Test I.D.: PL09M



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
Probe Velocity	m/s	4.21 to 4.33	4.25	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	52.7	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.25	Pass
Overall Test Results				Pass



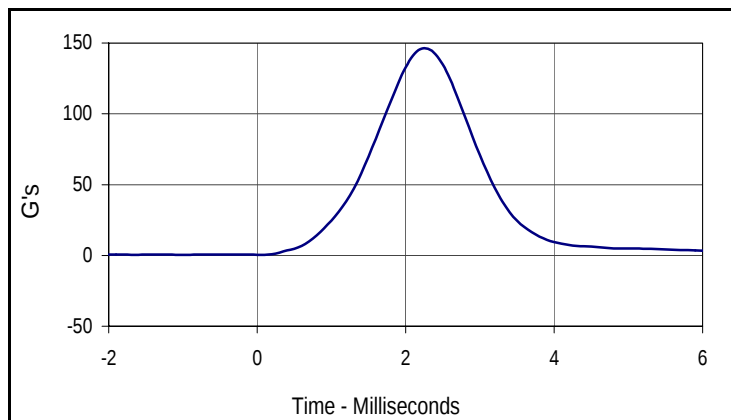
Curve Description			
Pelvis Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
52.7	10.0	-6.1	22.5

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 274

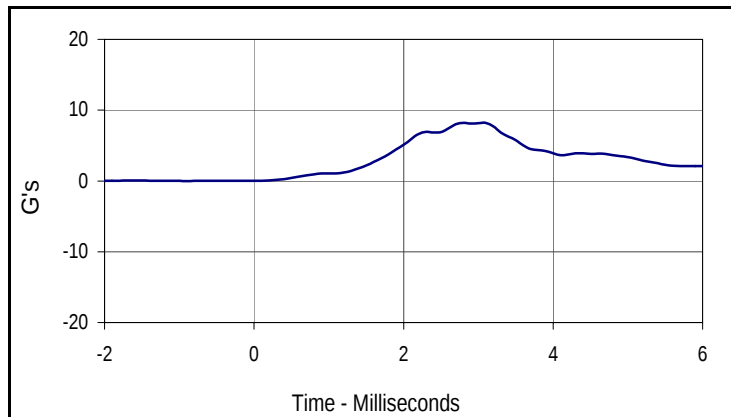
Test Date: 9/13/05
 Test I.D.: HD09M



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	120.0 to 150.0	145.9	Pass
Peak Longitudinal Acceleration	G's	≤15.0	8.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.4	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
145.9	2.3	0.4	0.1



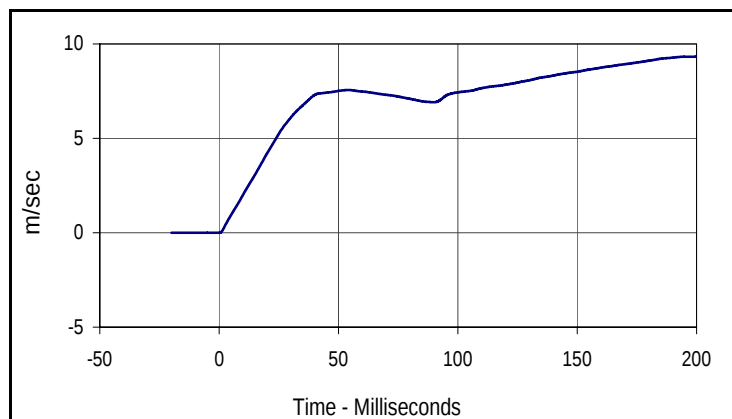
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.2	3.1	0.0	-0.9

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 274

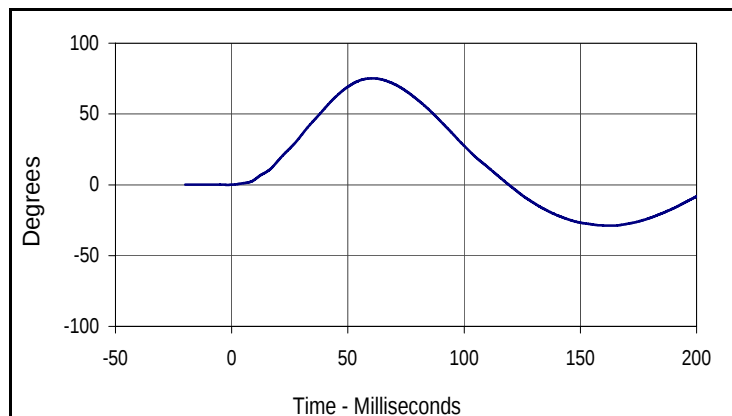
Test Date: 9/13/05
 Test I.D.: NB10X



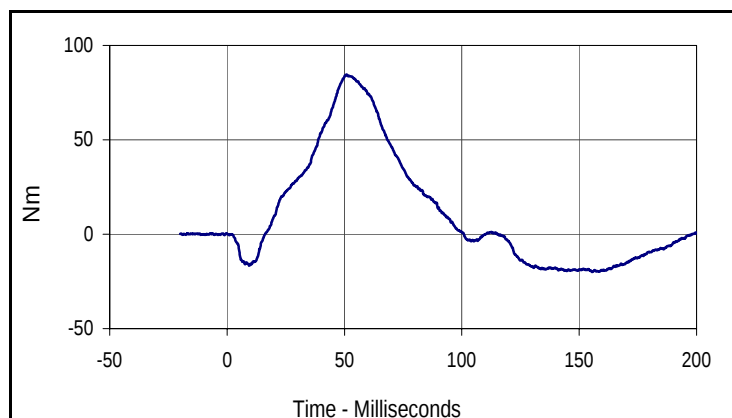
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.94	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.01	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.19	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.10	Pass
	40 to 70	m/sec	6.27 to 7.64	7.56	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	75.2	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	9.6	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	58.8	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	84.5	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	50.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.3	200.0	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.2	60.5	-28.9	163.8



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
84.5	50.9	-20.0	155.5

Test Program: SID / HIII External Measurements
 ATD Serial No.: 275

Test Date: 9/14/05
 Test I.D.: N/A



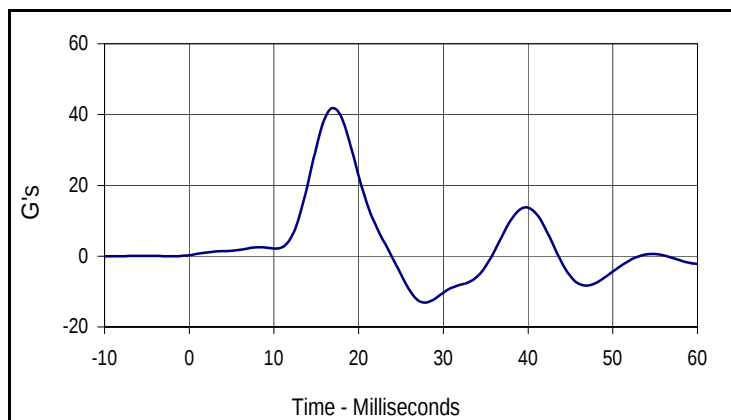
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	895	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	505	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	513	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	381	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 275

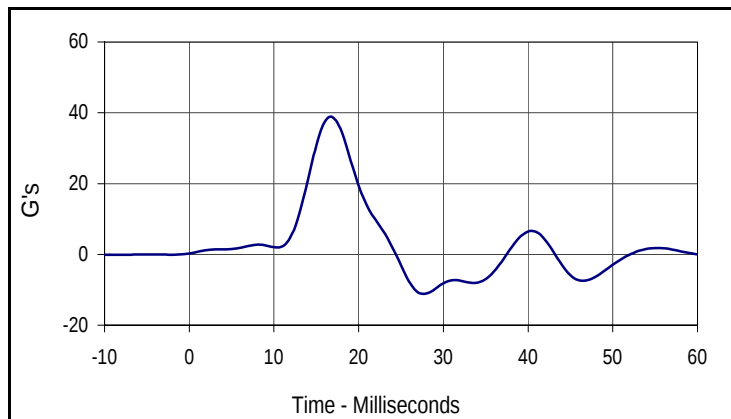
Test Date: 9/12/05
 Test I.D.: TH09N



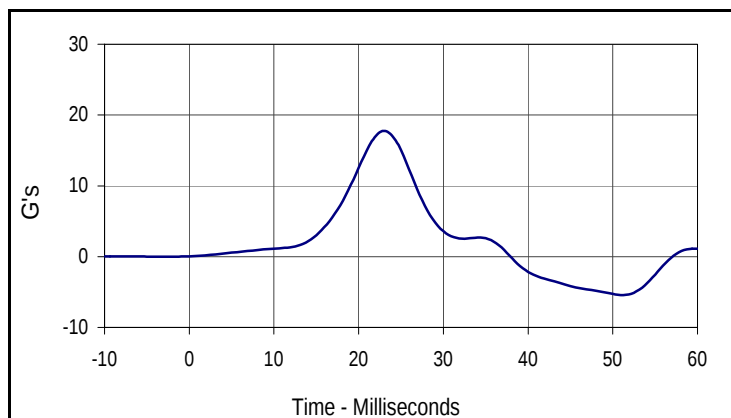
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.25	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	41.8	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	38.9	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	17.8	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
41.8	16.9	-13.1	28.1



Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
38.9	16.9	-11.2	27.5



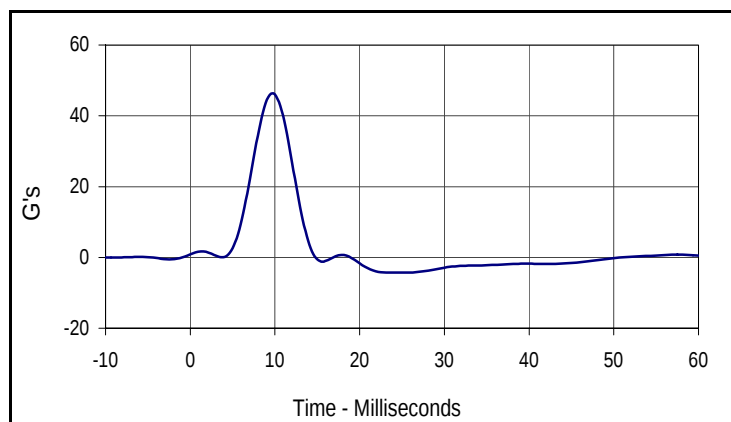
Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
17.8	23.1	-5.4	51.3

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 275

Test Date: 9/12/05
 Test I.D.: PL09N



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
Probe Velocity	m/s	4.21 to 4.33	4.28	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	46.0	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.25	Pass
Overall Test Results				Pass



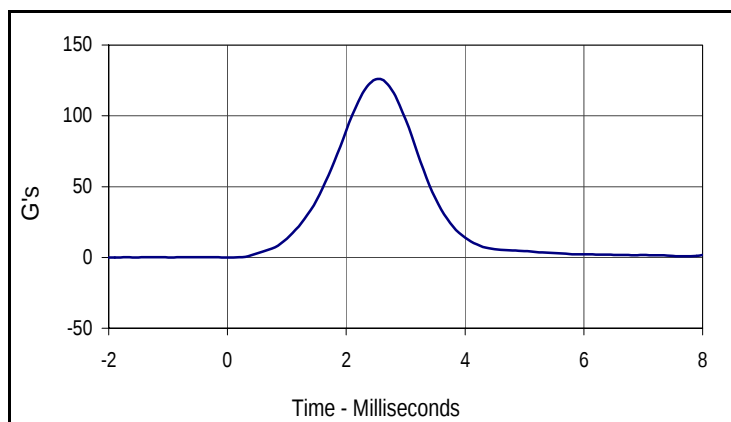
Curve Description			
Pelvis Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
46.0	10.0	-4.3	25.6

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 275

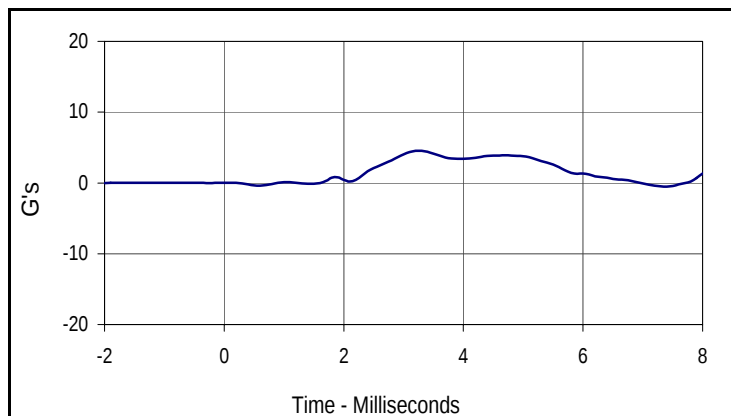
Test Date: 9/13/05
 Test I.D.: HD09N



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	120.0 to 150.0	125.8	Pass
Peak Longitudinal Acceleration	G's	≤15.0	4.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.5	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.8	2.5	0.0	0.0



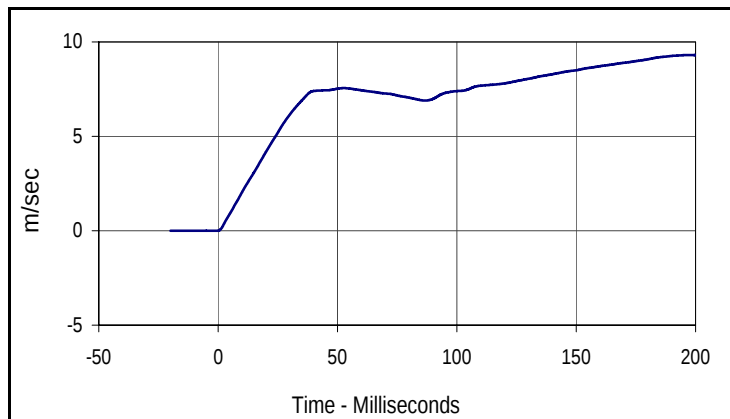
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.5	3.3	-0.4	0.6

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 275

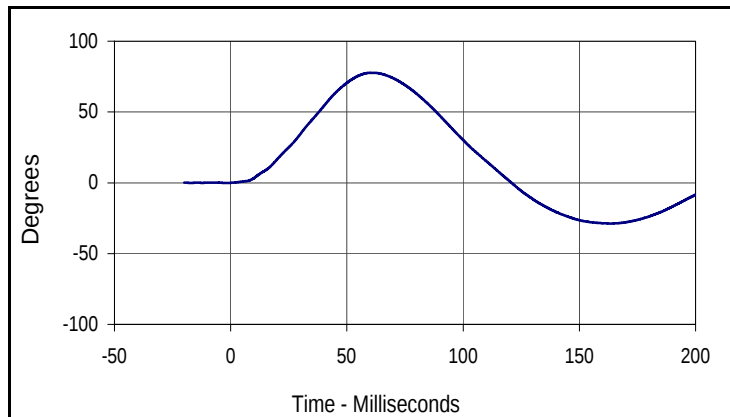
Test Date: 9/13/05
 Test I.D.: NB09Z



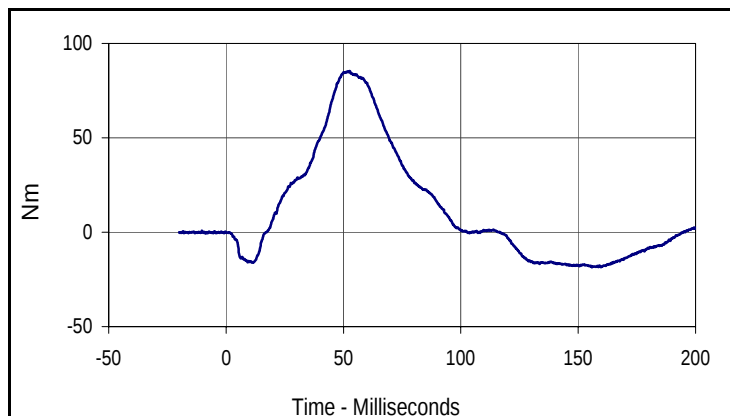
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.04	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.17	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.16	Pass
	40 to 70	m/sec	6.27 to 7.64	7.55	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	77.7	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	8.2	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	60.0	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	85.4	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	50.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.3	200.0	0.0	-0.4



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
77.7	60.9	-28.7	163.5



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
85.4	52.7	-18.5	159.7

APPENDIX C
POST-TEST SID / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID / HIII External Measurements
 ATD Serial No.: 274

Test Date: 10/26/05
 Test I.D.: N/A



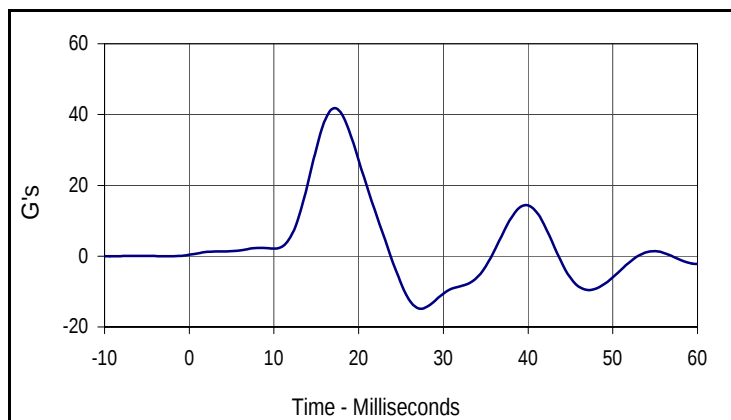
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	900	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	507	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	517	Pass
KV- Knee Pivot From Floor	mm	490 to 505	496	Pass
HW- Hip Width	mm	356 to 391	366	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

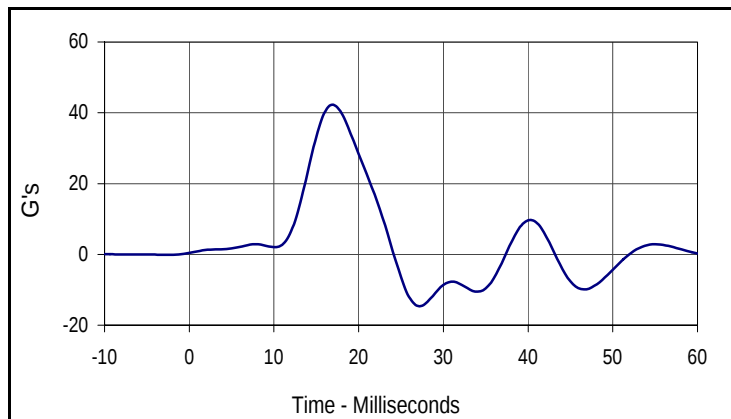
Test Date: 10/24/05
 Test I.D.: TH10A



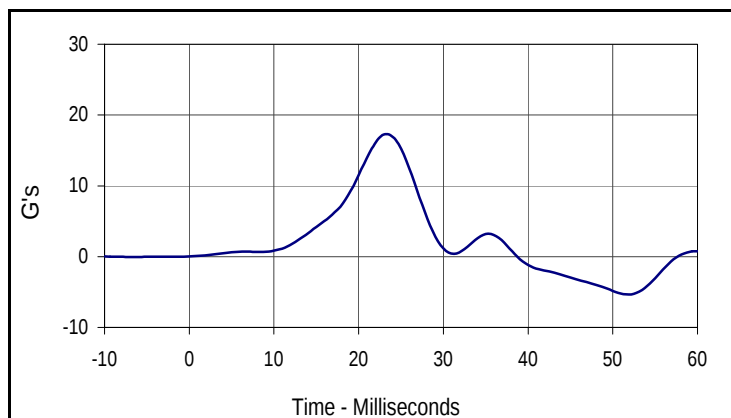
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.26	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	41.6	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	42.3	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	17.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
41.6	16.9	-14.8	27.5



Curve Description			
Lower Rib Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
42.3	16.9	-14.5	26.9



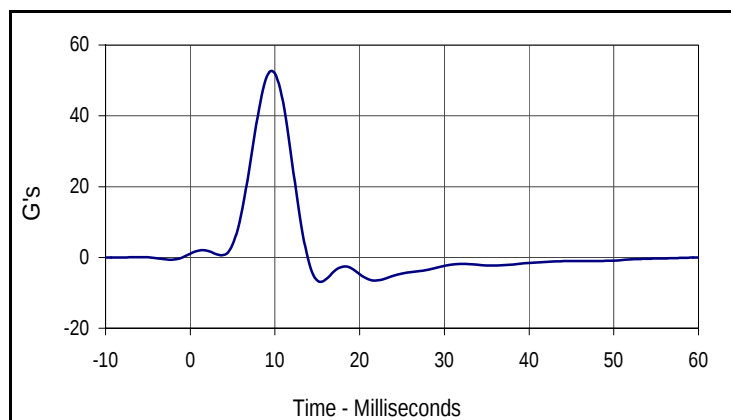
Curve Description			
Lower Spine Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
17.3	23.1	-5.4	51.9

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 274

Test Date: 10/24/05
 Test I.D.: PI10A



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
Probe Velocity	m/s	4.21 to 4.33	4.26	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	52.5	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	5.63	Pass
Overall Test Results				Pass



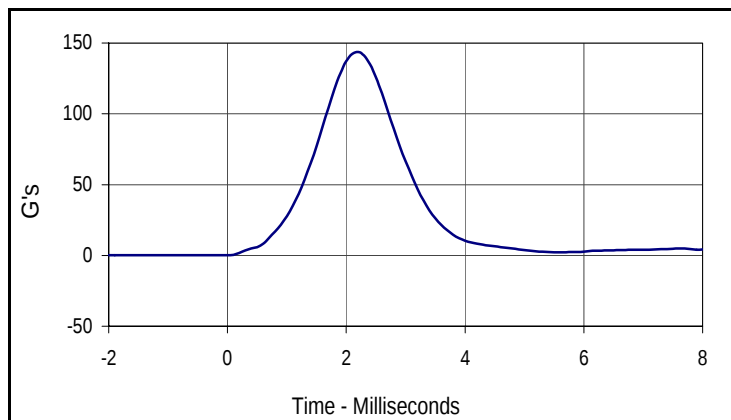
Curve Description			
Pelvis Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
52.5	9.4	-6.8	15.6

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 274

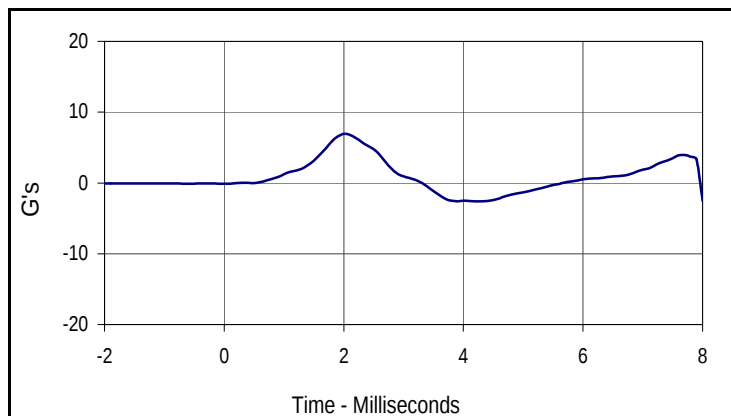
Test Date: 10/25/05
 Test I.D.: HD10A



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	120.0 to 150.0	143.7	Pass
Peak Longitudinal Acceleration	G's	≤15.0	6.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
143.7	2.2	0.1	-0.9



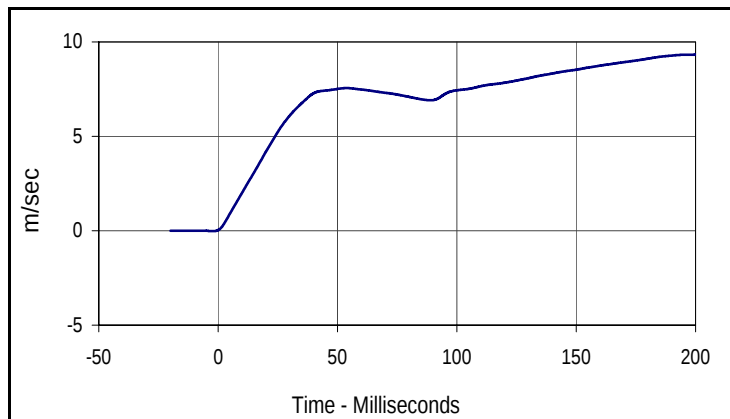
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.9	2.0	-2.6	4.2

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 274

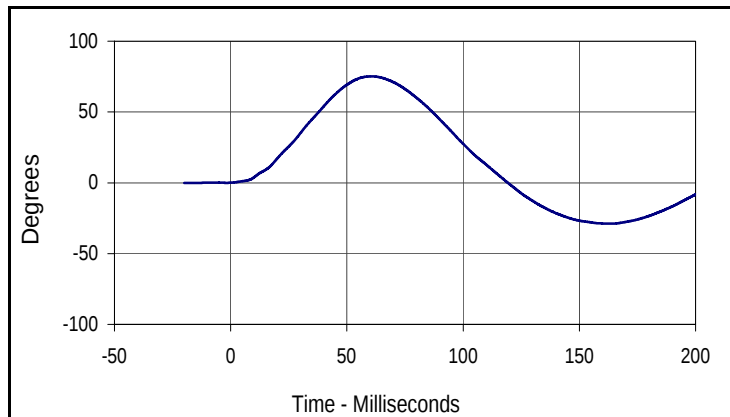
Test Date: 10/25/05
 Test I.D.: NB10A



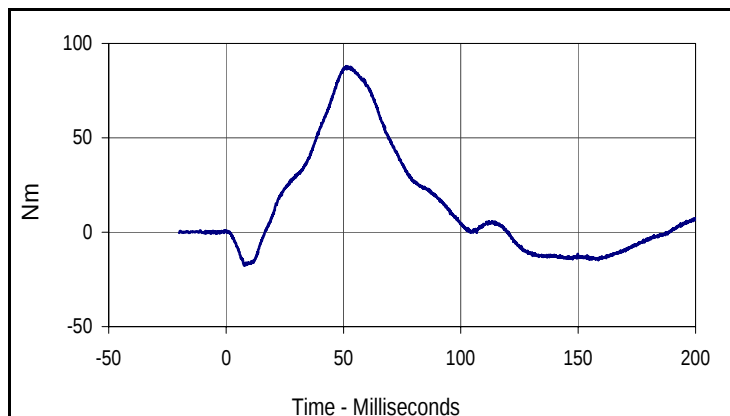
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.01	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.18	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.10	Pass
	40 to 70	m/sec	6.27 to 7.64	7.56	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	75.2	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	9.3	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	58.8	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	87.9	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	52.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.3	200.0	0.0	-2.0



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.2	60.5	-28.9	163.8



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
87.9	51.2	-17.6	8.1

Test Program: SID / HIII External Measurements
 ATD Serial No.: 275

Test Date: 10/26/05
 Test I.D.: N/A



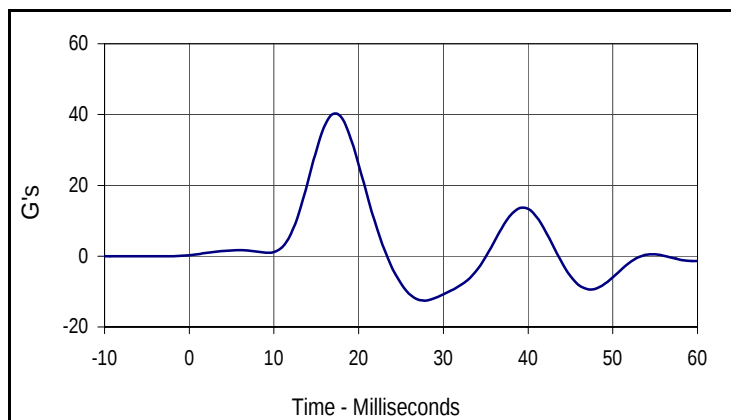
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	902	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	505	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	500	Pass
HW- Hip Width	mm	356 to 391	370	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 275

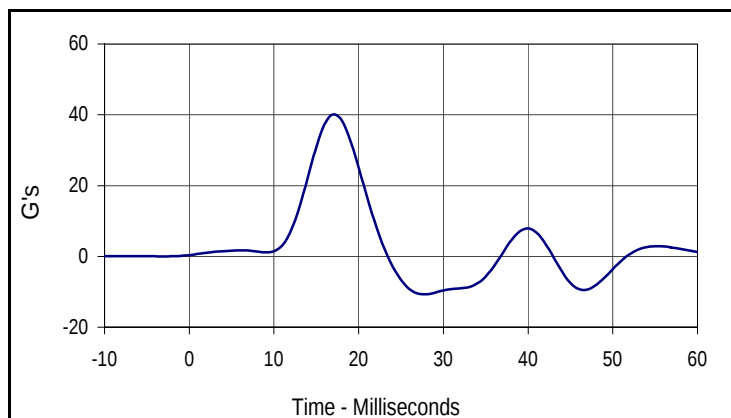
Test Date: 10/24/05
 Test I.D.: TH10B



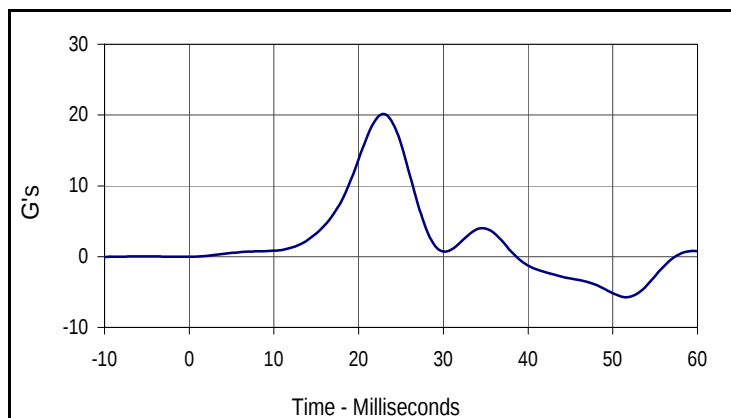
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.26	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	40.2	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	40.0	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
40.2	17.5	-12.5	27.5



Curve Description			
Lower Rib Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
40.0	16.9	-10.7	27.5



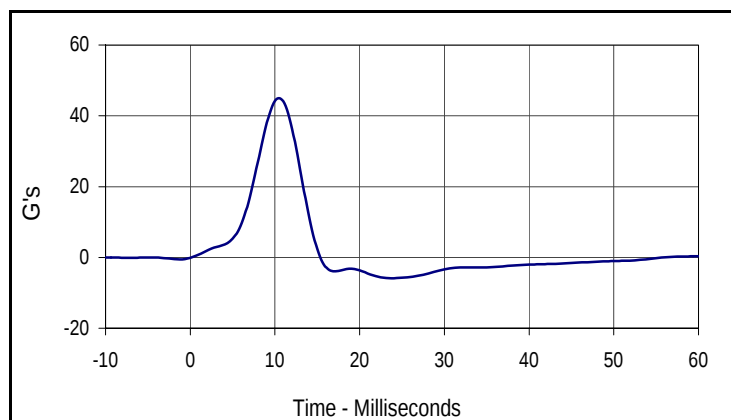
Curve Description			
Lower Spine Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
20.1	23.1	-5.7	51.3

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 275

Test Date: 10/24/05
 Test I.D.: PI10B



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
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	44.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.25	Pass
Overall Test Results				Pass



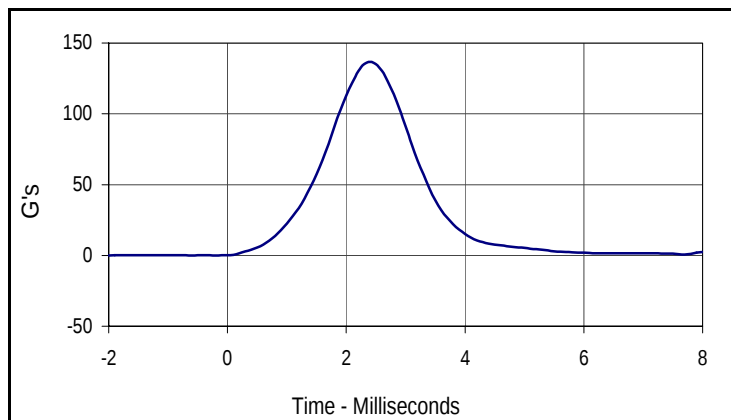
Curve Description			
Pelvis Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
44.9	10.6	-5.9	23.8

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 275

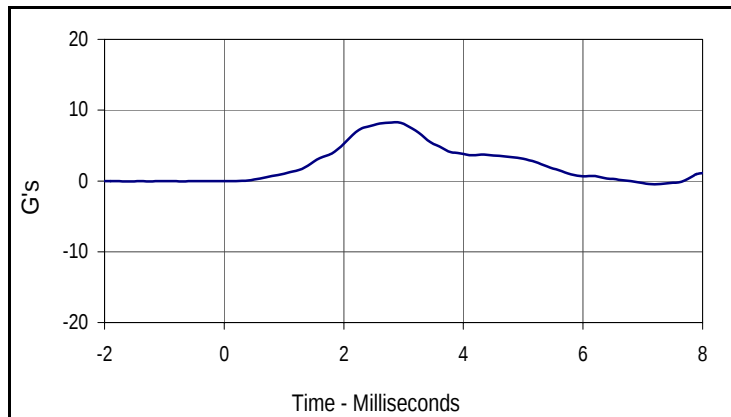
Test Date: 10/25/05
 Test I.D.: HD10B



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	120.0 to 150.0	136.6	Pass
Peak Longitudinal Acceleration	G's	≤15.0	8.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.9	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
136.6	2.4	0.0	-0.2



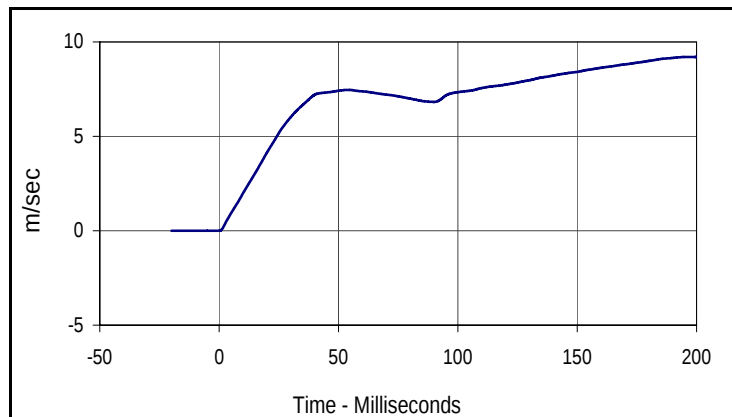
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.3	2.9	-0.1	-1.6

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 275

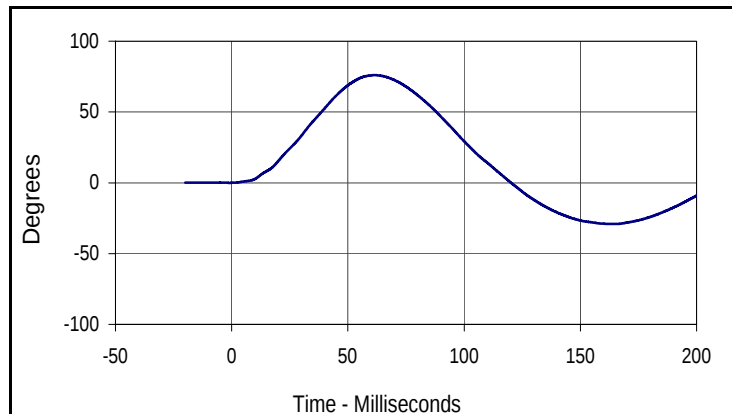
Test Date: 10/25/05
 Test I.D.: NB10B



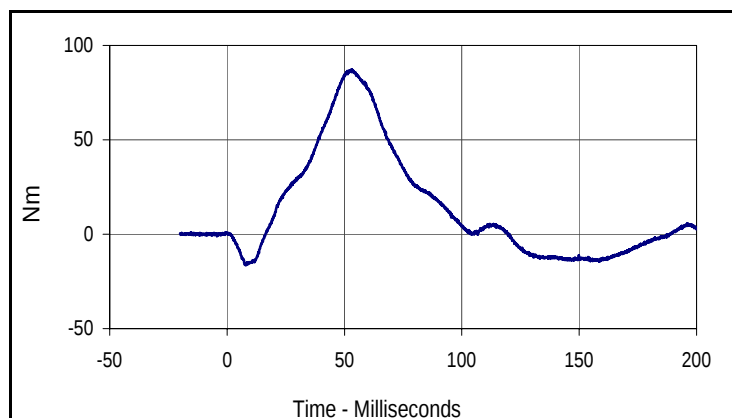
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	1.99	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.13	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.02	Pass
	40 to 70	m/sec	6.27 to 7.64	7.46	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	76.0	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	8.3	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	58.7	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	87.2	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	50.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.2	200.0	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.0	61.5	-29.1	164.8



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	60	Nm
Max	Time	Min	Time
87.2	53.2	-16.4	8.1