

REPORT NUMBER TR-P30003-05-NC

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**HONDA OF CANADA MFG.
2010 ACURA MDX
5-DOOR MPV**

NHTSA NUMBER: MA5305

**Prepared By:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301**



FEBRUARY 2, 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
RULEMAKING
MAIL CODE: NVS-111
1200 NEW JERSEY AVE SE, ROOM W43-410
WASHINGTON, D.C. 20590**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Mr. Kelsey A. Chiu, Project Engineer
KARCO Engineering, LLC

Ms. Angelina Valenzuela, Quality Assurance Manager
KARCO Engineering, LLC

Mr. Michael L. Dunlap, Director of Operations
KARCO Engineering, LLC

Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

Manager, Side Impact NCAP

Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-P30003-05-NC	2. Government Accession No.	3. Recipients Catalog No.																					
4. Title and Subtitle Final Report of Side Impact New Car Assessment Program Testing of a 2010 Acura MDX 5-Door MPV NHTSA No. MA5305		5. Report Date February 5, 2010																					
		6. Performing Organization Code KAR																					
7. Authors Mr. Kelsey A. Chiu, Project Engineer, KARCO Mr. Frank D. Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P30003-05-NC																					
9. Performing Organization Name and Address Karco Engineering, LLC 9270 Holly Rd. Adelanto, CA, 92301		10. Work Unit No.																					
		11. Contract or Grant No. DTNH22-09-R-00201																					
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code NVS-111 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590		13. Type of Report and Period Covered Final Test Report																					
		14. Sponsoring Agency Code DOT/NHTSA/NRM/OCS																					
15. Supplementary Notes																							
16. Abstract A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2010 Acura MDX 5-Door MPV 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 in Adelanto, CA, on February 2, 2010. The impact velocity of the Moving Deformable Barrier was 62.26 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 11.7 deg. C. The target vehicle's maximum post-test static crush was 244 mm located at Level 3. The test vehicle's occupant performance data is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 33%;">Measurement Description</th> <th style="width: 16.5%;">Driver SID/HIII</th> <th style="width: 16.5%;">Pass. SID/HIII</th> <th style="width: 34%;"></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) G's</td> <td style="text-align: center;">20.6</td> <td style="text-align: center;">31.0</td> <td rowspan="5"></td> </tr> <tr> <td>Left Lower Rib (LLR) G's</td> <td style="text-align: center;">27.4</td> <td style="text-align: center;">36.3</td> </tr> <tr> <td>Lower Spine (T₁₂) G's</td> <td style="text-align: center;">21.6</td> <td style="text-align: center;">28.8</td> </tr> <tr> <td>Thoracic Trauma Index (TTI) G's</td> <td style="text-align: center;">25</td> <td style="text-align: center;">32</td> </tr> <tr> <td>Pelvis (PEV) G's</td> <td style="text-align: center;">31.1</td> <td style="text-align: center;">35.0</td> </tr> </tbody> </table>				Measurement Description	Driver SID/HIII	Pass. SID/HIII		Left Upper Rib (LUR) G's	20.6	31.0		Left Lower Rib (LLR) G's	27.4	36.3	Lower Spine (T ₁₂) G's	21.6	28.8	Thoracic Trauma Index (TTI) G's	25	32	Pelvis (PEV) G's	31.1	35.0
Measurement Description	Driver SID/HIII	Pass. SID/HIII																					
Left Upper Rib (LUR) G's	20.6	31.0																					
Left Lower Rib (LLR) G's	27.4	36.3																					
Lower Spine (T ₁₂) G's	21.6	28.8																					
Thoracic Trauma Index (TTI) G's	25	32																					
Pelvis (PEV) G's	31.1	35.0																					
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 1200 New Jersey Ave., SE, Room W43-410 Washington, DC 20590																					
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 134	22. Price																				

TABLE OF CONTENTS

Section		Page
1	Purpose and Test Procedure	1
2	Summary of Side Impact Test	2
3	Occupant and Vehicle Information Sheets	4

Data Sheet No.		Page
1	General Test and Vehicle Parameter Data	5
2	Test Vehicle Summary of Results	10
3	Moving Deformable Barrier (MDB) Summary of Results	11
4	Post-Test Observations	12
5	Vehicle Pre-Test and Post-Test Measurements	13
6	SID/HIII Longitudinal Clearance Dimensions	14
7	SID/HIII Lateral Clearance Dimensions	15
8	Vehicle Side Measurements	16
9	Vehicle Exterior Crush Profiles	17
10	Vehicle Damage Profile Distances	19
11	Deformable Barrier Honeycomb Face Static Crush	20
12	Vehicle Accelerometer Locations	21
13	MDB Accelerometer Locations	23
14	High Speed Camera Locations and Data	24
15	FMVSS 301 Fuel System Integrity Post-Impact Data	25
16	FMVSS 301 Static Rollover Data Sheet	26
17	Dummy / Vehicle Temperature Stabilization	28

Appendix		
A	Photographs	A
B	SID/HIII, Vehicle and MDB Response Data	B
C	SID/HIII Configuration and Performance Verification Data	C

SECTION 1

PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the MY 2010 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-09-R-00201. The purpose of this test is to generate comparative side impact data on a 2010 Acura MDX 5-Door MPV manufactured by Honda of Canada MFG.

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 2010 Acura MDX 5-Door MPV 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 62.26 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 2260.5 kg and the test weight of the MDB was 1361.0 kg. The test was conducted at KARCO Engineering, LLC in Adelanto, California, on February 2, 2010.

Two (2) real-time cameras and ten (10) 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)

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

SECTION 2...(CONTINUED)

The test vehicle was instrumented with twelve (12) 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

Both the driver and passenger doors remained closed during the impact. The test vehicle sustained a maximum static crush of 244 mm at level 3, 600 mm rearward of the left vertical impact point. The driver SID/Hybrid III, Serial No. 274 and the passenger SID/Hybrid III, Serial No. 275 were calibrated prior to this test. The SID/Hybrid III injury criteria are summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	25	32
Peak Pelvic G's (PEV)	G's	31	35

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: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

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	1.609344
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: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MA5305
Make	Acura
Model	MDX
Body Style	5-Door MPV
Vin No.	2HNYD2H28AH501833
Color	Palladium Metallic
Delivery Date	1/16/2010
Odometer (Miles)	101
Dealer	DCT Tustin Acura
Transmission	6-Speed Automatic
Final Drive	AWD
Type/No. Cyl.	V6
Engine Disp. (L)	3.7
Engine Placement	Transverse
Roof Rack	No
Sunroof/T-Top	Yes
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	Yes
Power Steering	Yes
Driver Front Airbag	Yes
Driver Knee Airbag	No
Driver Side Torso/ Pelvis Airbag	Yes
Driver Side Head Airbag	No
Driver Curtain Airbag	Yes
Rear Pass. Front Airbag	No
Rear Pass. Side Torso/ Pelvis Airbag	No
Rear Pass. Head Airbag	No
Rear Pass. Curtain Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
AM/FM CD	Yes
Tilt Steering	Yes
Automatic Door Locks	Yes
Power Windows	Yes
Power Seats	Yes
Other	See Below

Other: Back-up Camera

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of Canada MFG.
Date of Manufacture	Dec-09

GVWR (kg)	2700
GAWR Front (kg)	1310
GAWR Rear (kg)	1440

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	Bench	
Number of Occupants	2	3	2	7
Capacity Weight (VCW) (kg)				525.0
Cargo Weight (RCLW) (kg)				49.0

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

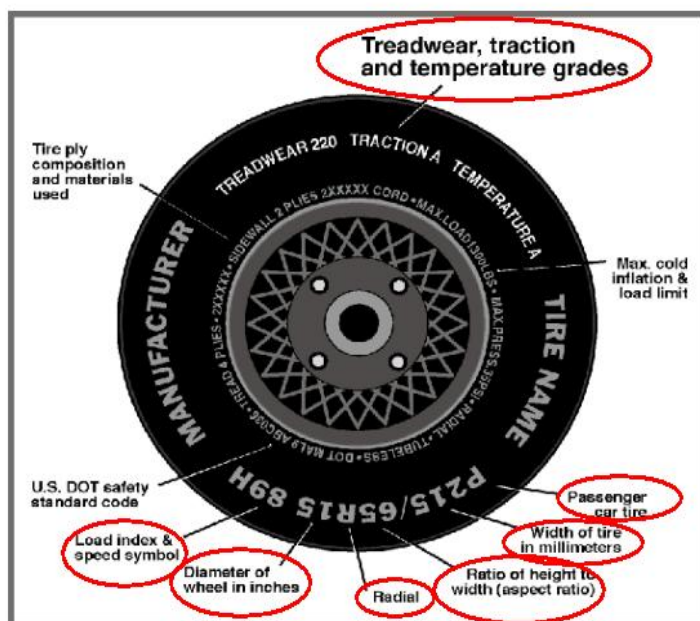
Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

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)	220	220
Recommended Tire Size	P255/55R18	P255/55R18
Tire Size on Vehicle	P255/55R18	P255/55R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler	Dueler
Treadwear	400	400
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Nylon, 2 Steel	2 Polyester, 1 Nylon, 2 Steel
Load Index/Speed Symbol	104H	104H
Tire Material	Polyester, Nylon, Steel	Polyester, Nylon, Steel
DOT Safety Code Right	0B7K 402 4409	0B7K 402 4409
DOT Safety Code Left	0B7K 402 4409	0B7K 402 4409

DATA SHEET NO. 1...(CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2010 Acura MDX 5-Door MPVNHTSA No.: MA5305Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/02/10**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	595.5	469.5	1065.0	648.5	533.5	1182.0
Right	kg	552.5	440.0	992.5	589.5	489.0	1078.5
Ratio	%	55.8	44.2	100.0	54.8	45.2	100.0
Total	kg	1148.0	909.5	2057.5	1238.0	1022.5	2260.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2057.5
Weight of 2 P572 ATDs	kg	163.0
Rated Cargo/Luggage Wt (RCLW)	kg	48.8
Calculated Vehicle Target Wt (TVTW)	kg	2269.3

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	813	815	835	833	1221
As Tested	mm	806	813	817	824	1249
Fully Loaded	mm	806	813	808	820	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2762
Total Vehicle Length at Left Side	mm	3230
Total Vehicle Length at Centerline	mm	4867
Total Vehicle Length at Right Side	mm	3237
Weight of Ballast in Cargo Area	kg	0
Amount of Stoddard Solvent Added	L	70.4

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2762
Target Impact Point Aft of Front Axle	mm	438
Actual Impact Point Aft of Front Axle	mm	459

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Acura MDX 5-Door MPV

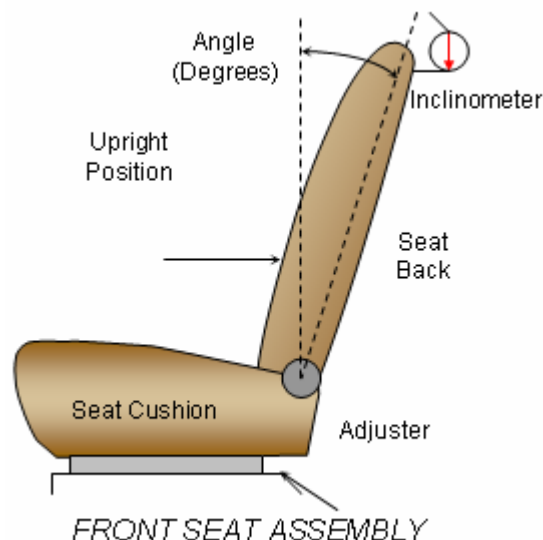
NHTSA No.: MA5305

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

Test Date: 02/02/10

NOMINAL DESIGN RIDING POSITION

The driver seat back is positioned using the manufacturer's designated measurement from a reference location. The left rear passenger seat back is positioned by detent to the manufacturer's location. The procedure for measuring angle is as follows: angle was measured at the headrest post using a digital inclinometer.



SEAT BACK ANGLES

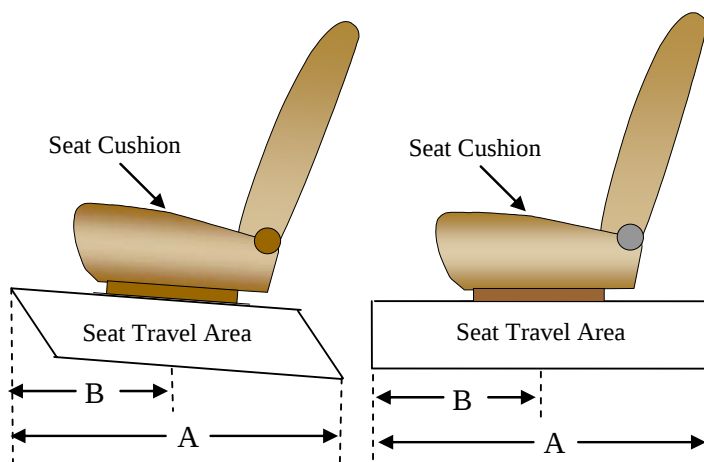
	Deg.
Driver w/seated Dummy	10.2°
Passenger w/seated Dummy	14.6°

SEAT FORE/AFT POSITIONS

Total seat travel was measured from forward most position to rearmost position possible. The driver seat was set at the longitudinal mid position. The passenger seat was fixed. There were vertical adjustments on the driver seat that was equipped with the vehicle. There were no vertical adjustments on the passenger seat. The driver seat was placed at the lowermost position.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	278 mm	139 mm
Rear Seat	Fixed	Fixed



SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	4	1
Rear Seat	Fixed	Fixed

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

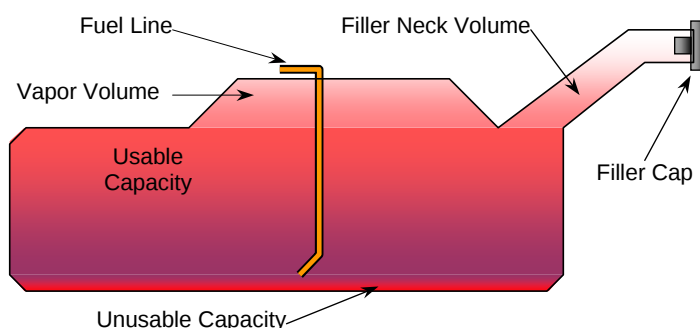
Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/02/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	75.7
Usable Capacity of "Optional" Tank	
Allowable Capacity used for FMVSS 301	69.6 to 71.2
Actual Amount of Solvent used	70.4

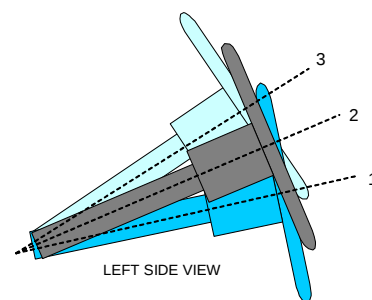
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate when the key is in the start position or when the engine is activated. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the left rear seat.



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. The vehicle's steering column was placed in the mid-telescoping position.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

Description	Tilt Angle (°)	Fore/Aft Position (mm)
Lowermost position No. 1	20.1	122
Geometric center position No. 2	22.6	141
Uppermost position No. 3	25.0	160

DATA SHEET NO. 2**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2010 Acura MDX 5-Door MPVNHTSA No.: MA5305Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/02/10**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	595.5	469.5	1065.0	648.5	533.5	1182.0
Right	kg	552.5	440.0	992.5	589.5	489.0	1078.5
Ratio	%	55.8	44.2	100.0	54.8	45.2	100.0
Total	kg	1148.0	909.5	2057.5	1238.0	1022.5	2260.5

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	148	366
Level 2	Occupant H-Point	mm	237	708
Level 3	Mid Door	mm	244	747
Level 4	Window Sill	mm	142	1065
Level 5	Window top	mm	27	1627
N/A	Maximum Penetration	mm	244	

INSTRUMENTATION

Driver SID/Hybrid III Accelerometers	20
Passenger SID/Hybrid III Accelerometers	20
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches	5
Total	71

CAMERA COVERAGE

High Speed, Vehicle On-Board	3
High Speed, Off-Board	5
High Speed, MDB On-Board	2
Real Time, Panning	1
Total	11

DATA SHEET NO. 3**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2010 Acura MDX 5-Door MPVNHTSA No.: MA5305Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/02/10**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	62.26
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	
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	235
B	Top of Bumper	533	800	Right	183
C	Mid Level	686	800	Right	150
D	Top of Stack	813	800	Right	146

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2
High Speed Cameras	2

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/Hybrid III	Rear Seat SID/Hybrid III
Dummy Type/Serial No.	P572F, SID/No. 274	P572F, SID/No. 275
Head Contact	Curtain Airbag, Headrest	Curtain Airbag, Headliner, Headrest
Upper Torso Contact	Side Airbag	Curtain Airbag, Door Panel
Lower Torso Contact	Side Airbag	Door Panel
Left Knee Contact	None	Door Panel, R. Knee
Right Knee Contact	None	L. Knee

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	None
Window Damage	Left front and left rear window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 2	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Torso/Pelvis Airbag	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Pre-Tensioners	Yes	Yes	No	
Load Limiters	Yes		No	

MDB LEFT EDGE IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	+21 (Right)
Vertical Offset	mm	+/-20	+10 (Up)

DATA SHEET NO. 5

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

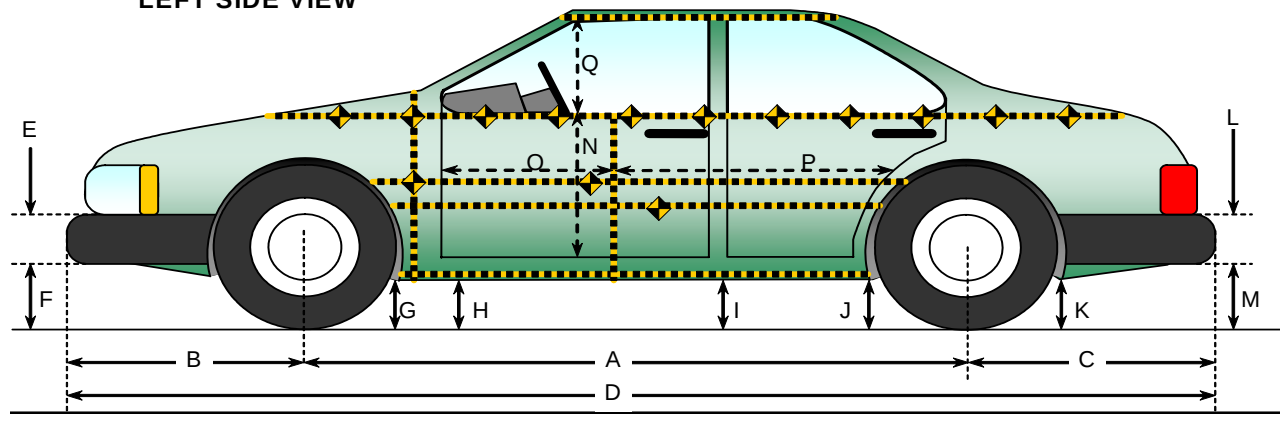
Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV

NHTSA No.: HA5301

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

Test Date: 01/22/10

LEFT SIDE VIEW



VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2762	2726	-36
B	Front Axle to FSOV	1004	1012	8
C	Rear Axle to RSOV	1101	1097	-4
D	Total Length at Centerline	4867	4835	-32
E	Front Bumper Thickness	182	181	-1
F	Front Bumper Bottom to Ground	497	497	0
G	Sill Height at Front Wheel Well	328	345	17
H	Sill Height at Front Door Leading Edge	328	380	52
I	Sill Height at "B" Pillar	356	379	23
J1	Sill Height at Rear Wheel Well	359	407	48
J2	Pinch Weld Height at Rear Wheel Well	322	318	-4
K	Sill Height aft of Rear Wheel Well	472	495	23
L	Rear Bumper Thickness	249	249	0
M	Rear Bumper Bottom to Ground	395	428	33
N	Sill Height to Window Bottom Sill	658	747	89
O	Front Door Leading Edge to Impact CL	33	100	67
P	Rear Door Trailing Edge to Impact CL	2167	2134	-33
Q	Front Window Opening	502	518	16
R	Right Side Length	3237	3198	-39
S	Left Side Length	3230	3240	10
T	Vehicle Width at "B" Post	1947	1836	-111

All dimensions shown in millimeters

DATA SHEET NO. 6

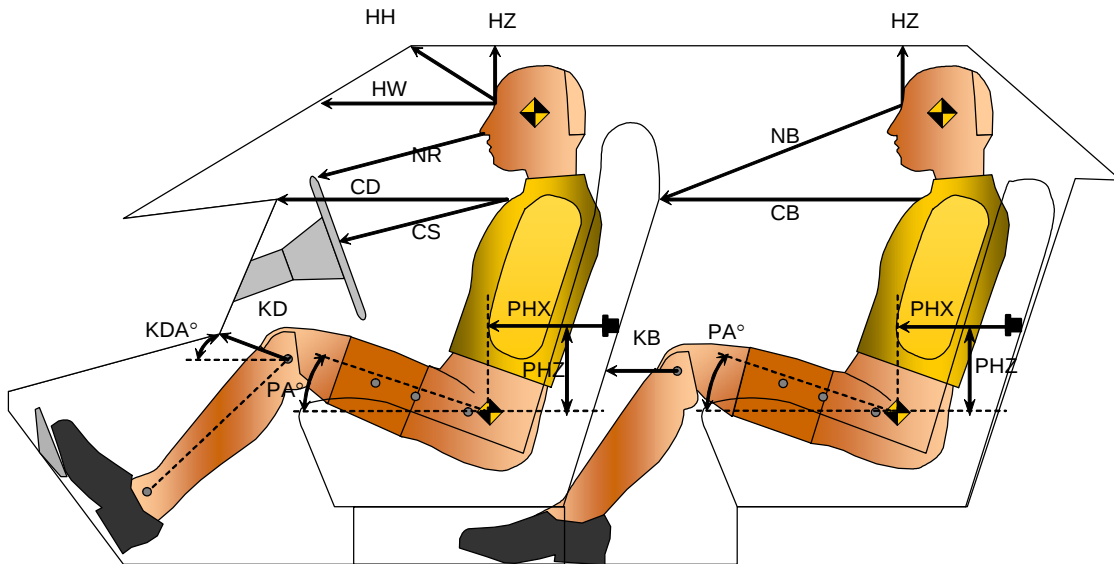
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	448	17.2		
HW		Head to Windshield	652	0.0		
HZ	HZ	Head to Roof	231	90.0	190	90.0
NR	NB	Nose to Rim/Nose to Seat Back	456	8.2	612	23.2
CD	CB	Chest to Dash or Seat Back	575	5.8	535	4.7
CS		Chest to Steering Wheel	360	4.7		
KDL	KBL	Left Knee to Dash or Seat Back	178	31.5	234	19.2
KDR	KBR	Right Knee to Dash or Seat Back	172	38.6	236	28.9
PA	PA	Pelvic Angle		23.9		23.9
PHX	PHX	H-Point to Striker (X-Axis)	207		334	
PHZ	PHZ	H-Point to Striker (Z-Axis)	155		191	

All dimensions shown in millimeters

DATA SHEET NO. 7

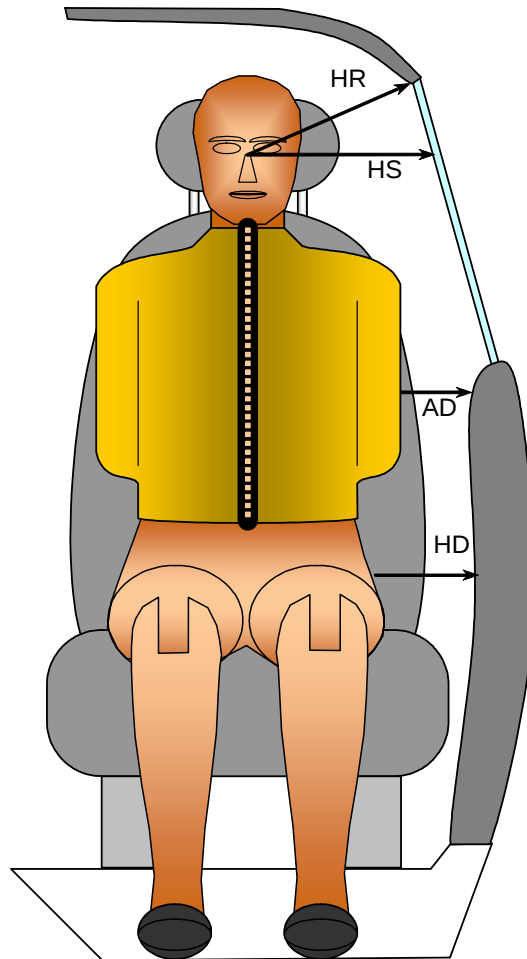
SID/HII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



FRONT VIEW OF DUMMY

LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	263	240
HS	Head to Side Window	mm	349	290
AD	Arm to Door	mm	121	112
HD	H-Point to Door	mm	157	151

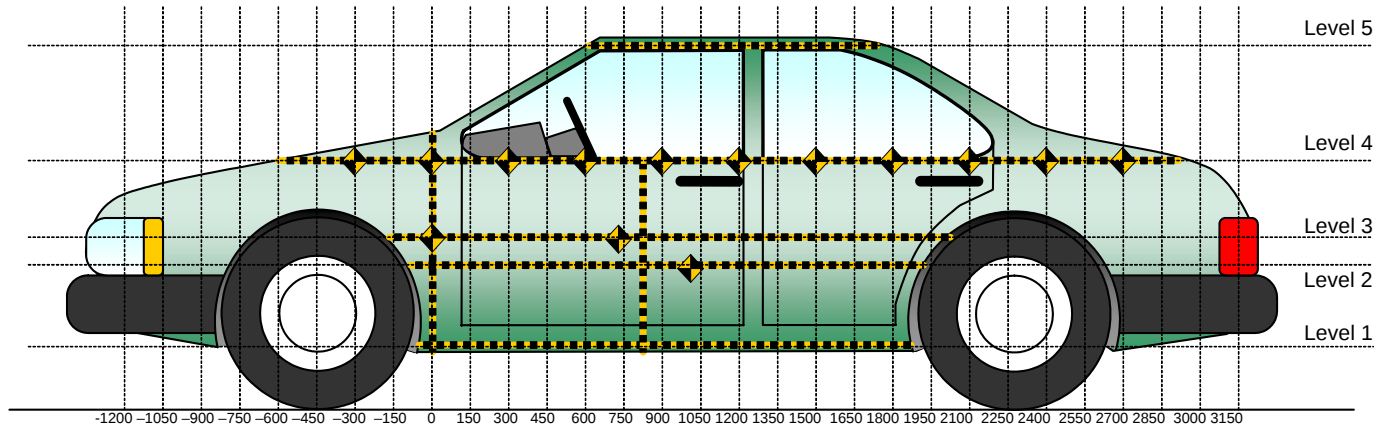
DATA SHEET NO. 8 **VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



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	366
2	Occupant H-Point	708
3	Mid Door	747
4	Window Sill	1065
5	Window Top	1627

All dimensions shown in millimeters

DATA SHEET NO. 9

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450				690					711					21	
-300				671					695					24	
-150		524	526	658			542	549	684			18	23	26	
0		536	539	644			560	566	672			24	27	28	
150	592	542	541	628		673	699	691	654		81	157	150	26	
300	608	538	537	613		686	756	754	667		78	218	217	54	
450	609	535	534	604		709	768	769	697		100	233	235	93	
600	609	534	532	597		710	771	776	705		101	237	244	108	
750	608	533	531	592	856	715	769	775	684	853	107	236	244	92	-3
900	608	532	530	588	836	718	763	764	668	857	110	231	234	80	21
1050	608	532	530	584	829	725	747	737	660	855	117	215	207	76	26
1200	610	533	531	581	829	758	761	762	681	855	148	228	231	100	26
1350	610	535	532	582	828	751	771	774	695	855	141	236	242	113	27
1500	611	537	534	581	829	736	762	774	723	854	125	225	240	142	25
1650	609	539	536	583	835	739	743	759	678	858	130	204	223	95	23
1800	591	540	539	584	841	708	710	725	648	860	117	170	186	64	19
1950		524	525	589	849		616	650	633	873		92	125	44	24
2100			517	592	860			595	625	878			78	33	18
2250				596	872				638	887				42	15
2400				602	896				632	911				30	15
2550				613					636					23	
2700				625					643					18	
2850				643					656					13	
3000															

All dimensions shown in millimeters.

DATA SHEET NO. 9...(CONTINUED)

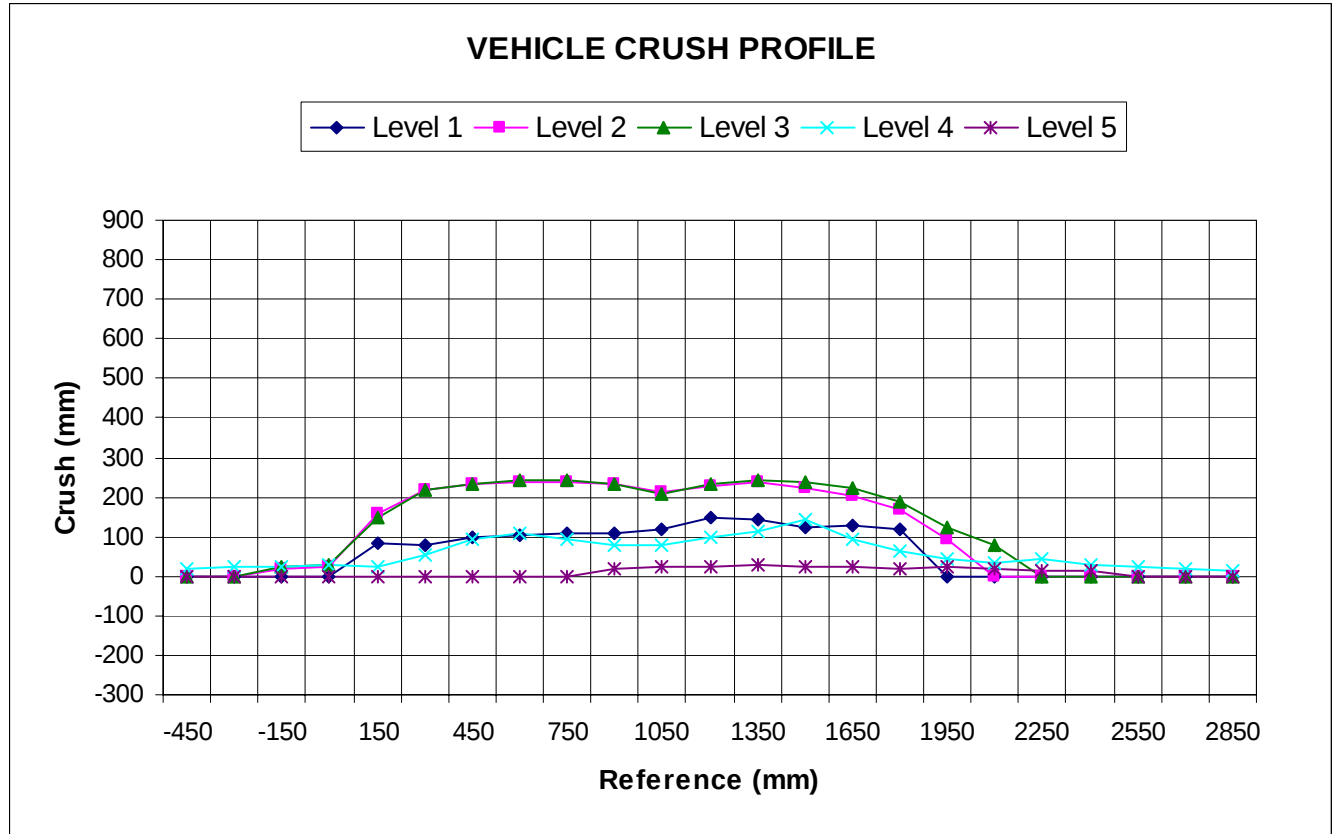
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



DATA SHEET NO. 10

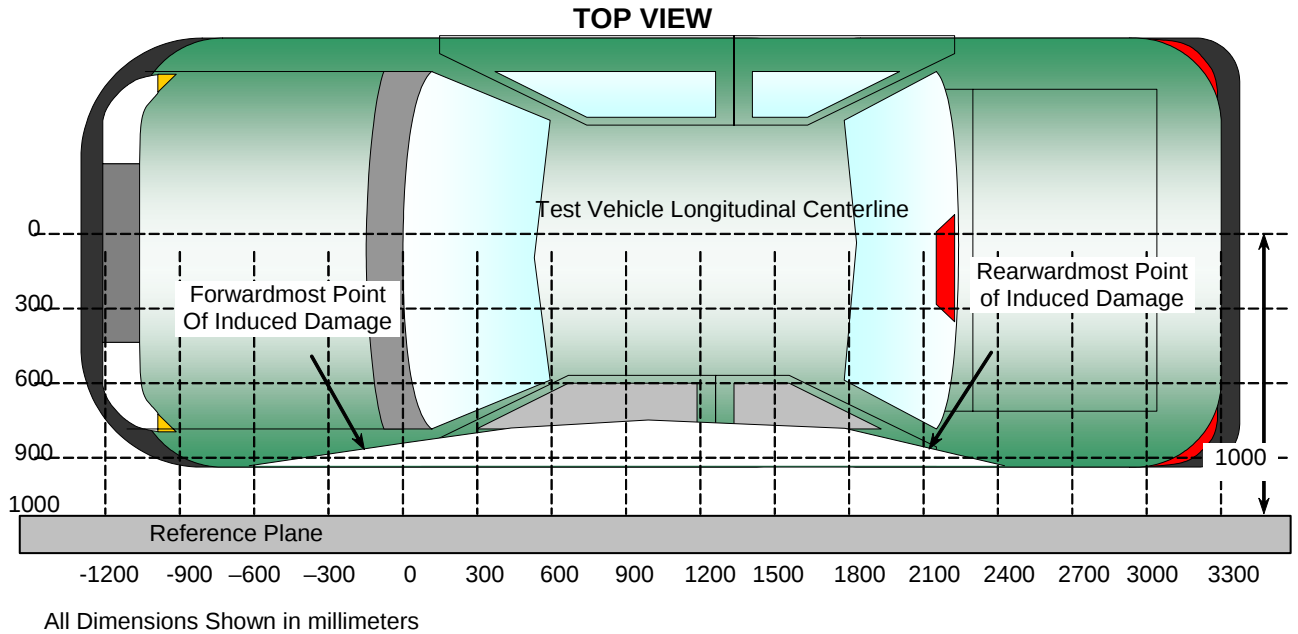
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	1950	3	525	650	125
2	1500	3	534	774	240
3	1050	2	532	747	215
4	600	3	532	776	244
5	150	2	542	699	157
6	-300	4	671	695	24

DATA SHEET NO. 11

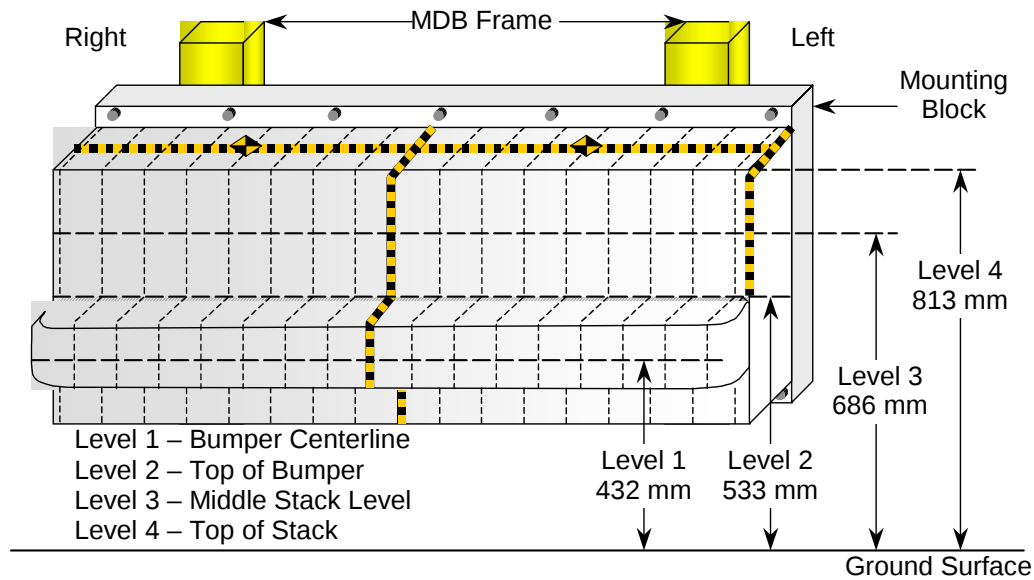
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



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	753	740	738	731	723	717	715	715	718	714	716	716	717	723	728	733	742
2	803	793	773	758	747	732	733	732	725	726	732	738	738	743	747	751	756
3	770	744	737	725	713	710	727	730	722	706	695	688	684	683	689	704	735
4	766	727	703	693	689	696	729	731	713	698	686	683	683	680	701	725	757

All Dimensions in mm

DATA SHEET NO. 12

VEHICLE ACCELEROMETER LOCATIONS

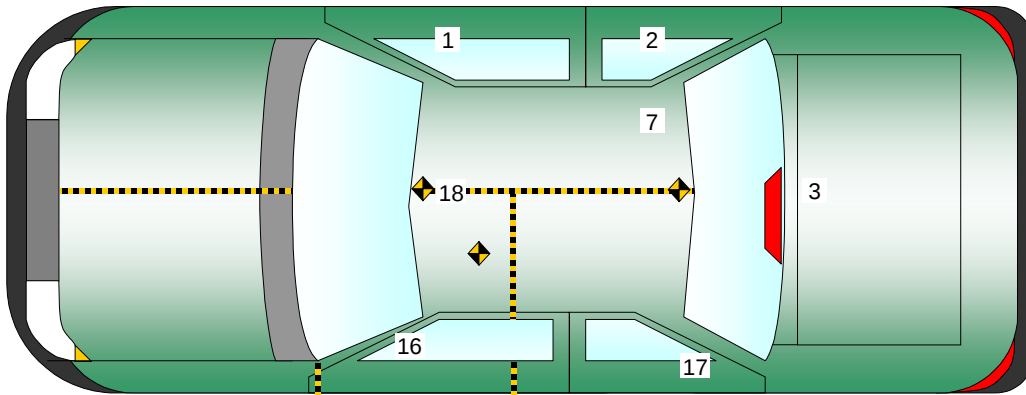
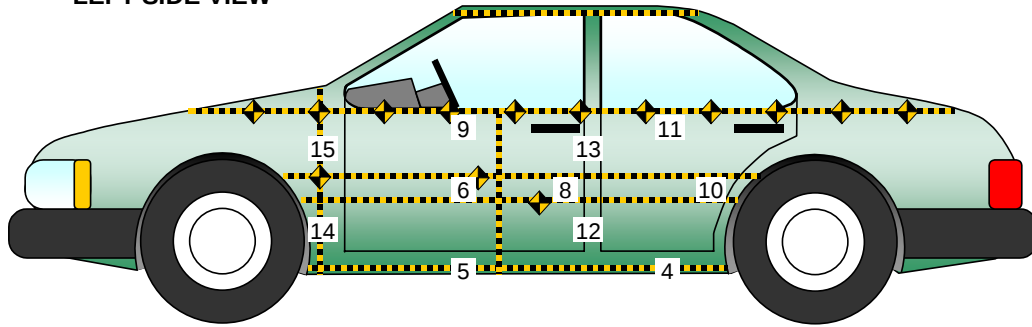
Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

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 LOCATION AND DATA SUMMARY

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10

VEHICLE ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2680	730	-480
2	Right Sill at Rear Seat	2080	73	-480
3	Rear Floorpan Above Axle	590	240	-6520
4	Left Sill at Rear Door	1840	-820	-370
5	Left Sill at Front Door	2270	-820	-370
6	Front Door Centerline			
7	Rt. Rear Occ. Compartment	2140	550	-430
8	Front Door Mid-Rear			
9	Front Door Upper Centerline			
10	Rear Door Mid-Rear			
11	Rear Door Upper Centerline			
12	B-Post Lower	2240	-840	-780
13	B-Post Middle	2240	-840	-990
14	A-Post Lower	3230	-840	-720
15	A-Post Middle	3230	-840	-910
16	Front Seat Track	2560	-625	-610
17	Rear Seat Structure			
18	Vehicle CG	2050	0	-510

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

¹ - Not Installed

DATA SHEET NO. 13

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Acura MDX 5-Door MPV

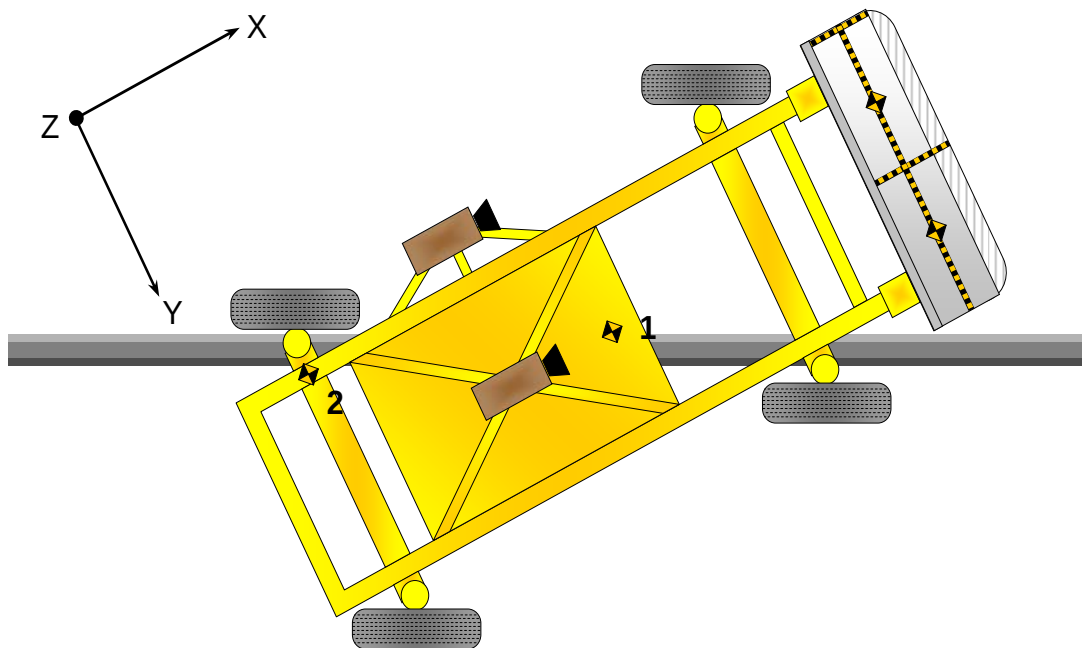
NHTSA No.: MA5305

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

Test Date: 02/02/10

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

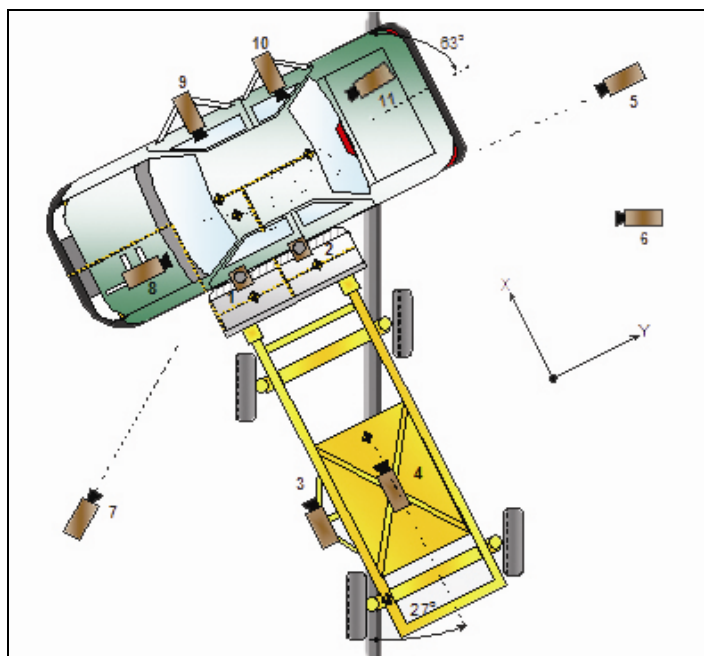
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



No.	Camera View	Location			Angle (deg)	Lens (mm)	Film Speed
		x	y	z			
Doc	Real Time Inrun	-2484	-3958	-1506	0		30
Doc	Real Time Left Front	-2266	3549	-1475	-2		30
1	Overhead Overall	1220	2287	-5486	-90	14	1000
2	Overhead Close-Up	609	2287	-5102	-90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	-2	12	1000
4	Side Overall (MDB)	-3912	838	-1829	-4	15	1000
5	Rear	-64	20485	-1348	0	105	1000
6	Left Rear (MDB)	-2137	-1302	-339	-4	85	1000
7	Left Front	-2266	-3564	-1475	-2	24	1000
8	Driver Front (O.B.)	563	-760	-1360	-7	35	1000
9	Driver Side (O.B.)	1860	623	-1255	-6	20	1000
10	Passenger Side (O.B.)	1882	1289	-1295	-5	20	1000

All measurements are made relative to the point of impact at ground level.

DATA SHEET NO. 15

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2010 Acura MDX 5-Door MPV NHTSA No.: MA5305

Test Program: 55/28 km/h Side Impact NCAP Test Date: 02/02/10

Test Time: 11:05 AM

Temperature: 11.7 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 Details: No leakage occurred

DATA SHEET NO. 16

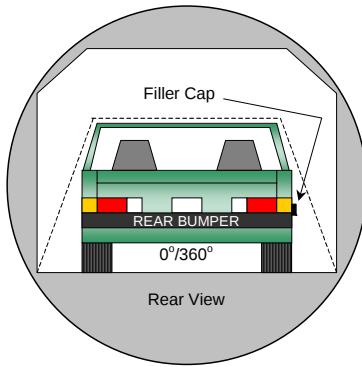
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2010 Acura MDX 5-Door MPV

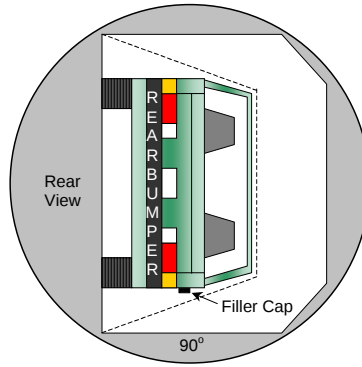
NHTSA No.: MA5305

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

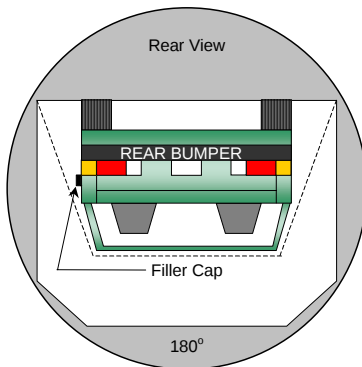
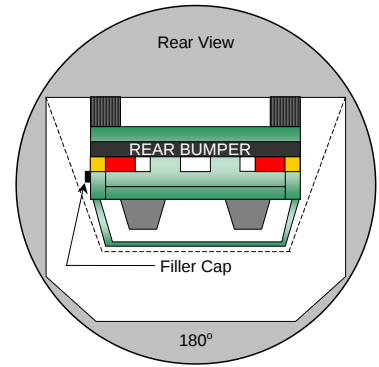
Test Date: 02/02/10



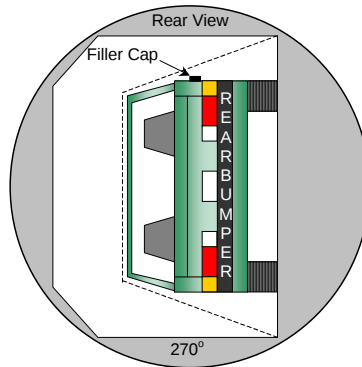
0° to 90°



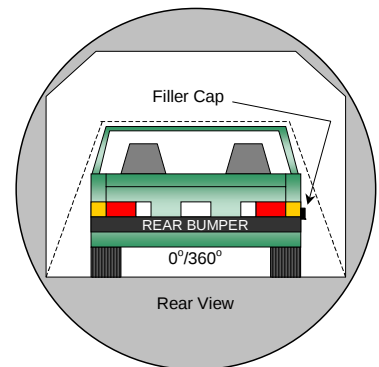
90° to 180°



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: 2010 Acura MDX 5-Door MPVNHTSA No.: MA5305Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/02/10**FMVSS 301 ROLLOVER TIME TABLE (SECONDS)**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	86	300	386
90° to 180°	81	300	381
180° to 270°	76	300	376
270° to 360°	83	300	383

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

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

FMVSS 301 SOLVENT COLLECTED

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0			
90° to 180°	0			
180° to 270°	0			
270° to 360°	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. 17

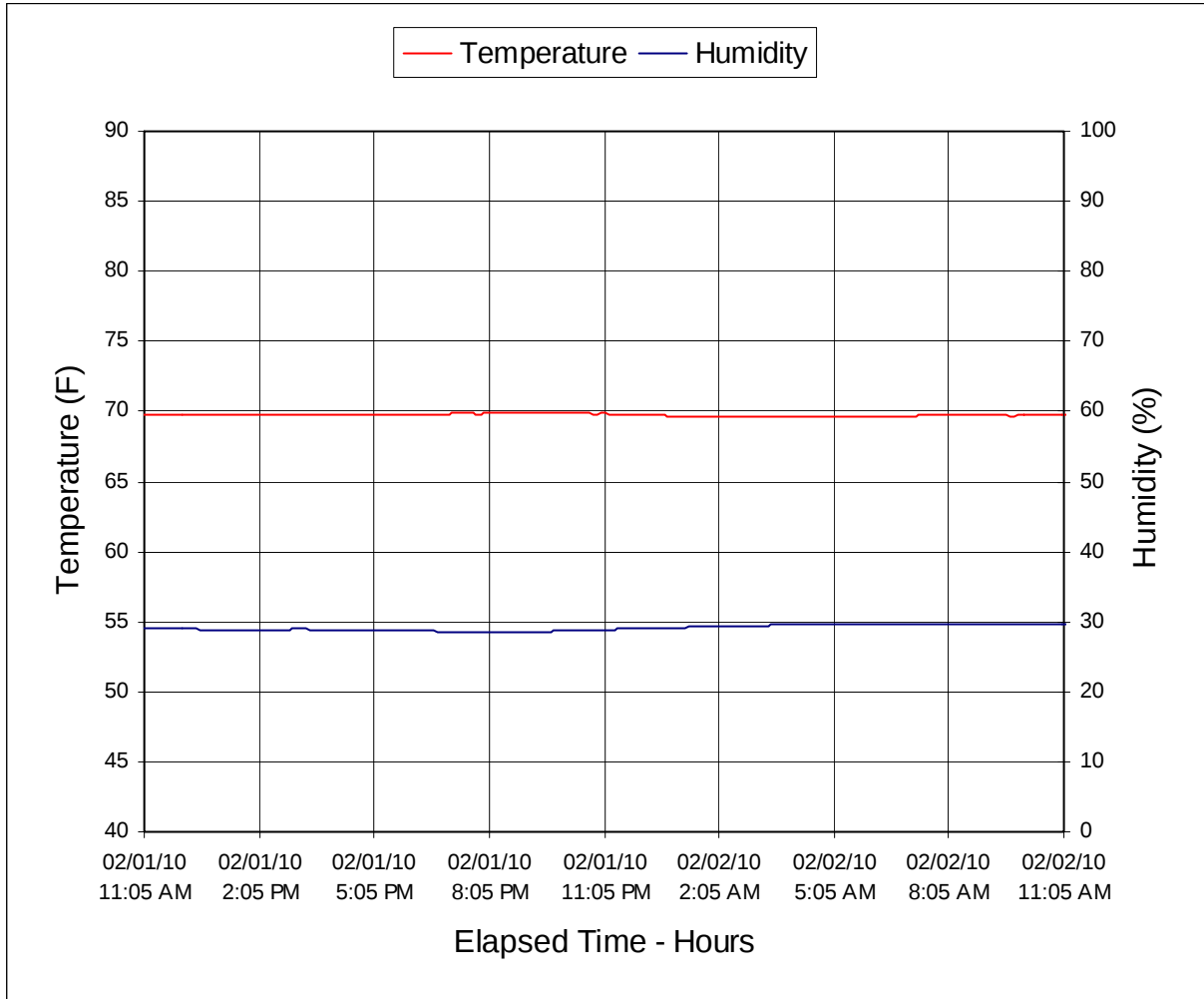
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2010 Acura MDX 5-Door MPV

NHTSA No.: MA5305

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

Test Date: 02/02/10



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

<u>Figure</u>		<u>Page</u>
A-1	Right Front $\frac{3}{4}$ View, as Received	A-1
A-2	Left Rear $\frac{3}{4}$ View, as Received	A-2
A-3	Manufacturer's Label	A-3
A-4	Tire Placard	A-4
A-5	Pre-Test Front View	A-5
A-6	Post-Test Front View	A-6
A-7	Pre-Test Left Front $\frac{3}{4}$ View	A-7
A-8	Post-Test Left Front $\frac{3}{4}$ View	A-8
A-9	Pre-Test Left Side View	A-9
A-10	Post-Test Left Side View	A-10
A-11	Pre-Test Left Rear $\frac{3}{4}$ View	A-11
A-12	Post-Test Left Rear $\frac{3}{4}$ View	A-12
A-13	Pre-Test Rear View	A-13
A-14	Post-Test Rear View	A-14
A-15	Pre-Test Right Rear $\frac{3}{4}$ View	A-15
A-16	Post-Test Right Rear $\frac{3}{4}$ View	A-16
A-17	Pre-Test Right Side View	A-17
A-18	Post-Test Right Side View	A-18
A-19	Pre-Test Right Front $\frac{3}{4}$ View	A-19
A-20	Post-Test Right Front $\frac{3}{4}$ View	A-20
A-21	Pre-Test Overhead View	A-21
A-22	Post-Test Overhead View	A-22
A-23	Pre-Test Overhead Close-up View	A-23
A-24	Post-Test Overhead Close-up View	A-24
A-25	Pre-Test Left Impact Point	A-25
A-26	Post-Test Left Impact Point	A-26
A-27	Pre-Test Front $\frac{3}{4}$ View of Left Side Door	A-27
A-28	Post-Test Front $\frac{3}{4}$ View of Left Side Door	A-28
A-29	Pre-Test Rear $\frac{3}{4}$ View of Left Side Door	A-29
A-30	Post-Test Rear $\frac{3}{4}$ View of Left Side Door	A-30
A-31	Pre-Test Left Front Door	A-31
A-32	Post-Test Left Front Door	A-32

LIST OF PHOTOGRAPHS...(CONTINUED)

Figure		Page
A-33	Pre-Test Left Rear Door	A-33
A-34	Post-Test Left Rear Door	A-34
A-35	Pre-Test Driver Dummy (Door Open)	A-35
A-36	Pre-Test Driver Dummy (Through Window)	A-36
A-37	Post-Test Driver Dummy (Through Window)	A-37
A-38	Pre-Test Driver Dummy Clearance from Door	A-38
A-39	Post-Test Driver Dummy Clearance from Door	A-39
A-40	Pre-Test Driver Dummy Right Side View	A-40
A-41	Post-Test Driver Dummy Right Side View	A-41
A-42	Pre-Test Front Door Panel (Interior)	A-42
A-43	Post-Test Front Door Panel (Interior)	A-43
A-44	Pre-Test Passenger Dummy Left Side (Door Open)	A-44
A-45	Pre-Test Passenger Dummy Left Side (Through Window)	A-45
A-46	Post-Test Passenger Dummy Left Side (Through Window)	A-46
A-47	Pre-Test Passenger Dummy Clearance from Door	A-47
A-48	Post-Test Passenger Dummy Clearance from Door	A-48
A-49	Pre-Test Passenger Dummy Right Side View	A-49
A-50	Post-Test Passenger Dummy Right Side View	A-50
A-51	Pre-Test Rear Panel (Interior)	A-51
A-52	Post-Test Rear Panel (Interior)	A-52
A-53	Pre-Test Front View of Deformable Barrier	A-53
A-54	Post-Test Front View of Deformable Barrier	A-54
A-55	Pre-Test Top View of Deformable Barrier	A-55
A-56	Post-Test Top View of Deformable Barrier	A-56
A-57	Pre-Test Right Side View of Deformable Barrier	A-57
A-58	Post-Test Right Side View of Deformable Barrier	A-58
A-59	Pre-Test Left Side View of Deformable Barrier	A-59
A-60	Post-Test Left Side View of Deformable Barrier	A-60
A-61	Vehicle on Rollover Device (0°)	A-61
A-62	Vehicle on Rollover Device (90°)	A-62
A-63	Vehicle on Rollover Device (180°)	A-63
A-64	Vehicle on Rollover Device (270°)	A-64
A-65	Vehicle on Rollover Device (360°)	A-65
A-66	Timers	A-66
A-67	Vehicle Impact	A-67



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



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

MFD. IN CANADA BY HONDA OF CANADA MFG.,
- A DIVISION OF HONDA CANADA INC. 12/'09

GVWR 2700KG (5952LBS) TIRE SIZE RIM SIZE

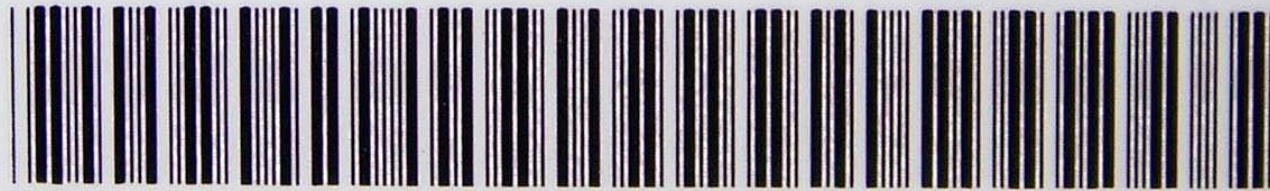
GAWR F 1310KG (2888LBS) P255/55R18 104H 18X8.0J

GAWR R 1440KG (3175LBS) P255/55R18 104H 18X8.0J

THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY

AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE.

V.I.N.: 2HNYD2H28AH501833 TYPE: MPV



STX A AA5 -NH743MX -D -00

Figure A-3: Manufacturer's Label



TIRE AND LOADING INFORMATION

SEATING CAPACITY: TOTAL 7 : FRONT 2 : SECOND 3 : THIRD 2

The combined weight of occupants and cargo should never exceed 525kg or 1158lbs.

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	P255/55R18 104H	220KPA, 32PSI	
REAR		220KPA, 32PSI	
SPARE	T165/80D17 104M	420KPA, 60PSI	

STXA

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 $\frac{3}{4}$ View



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



Figure A-9: Pre-Test Left Side 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

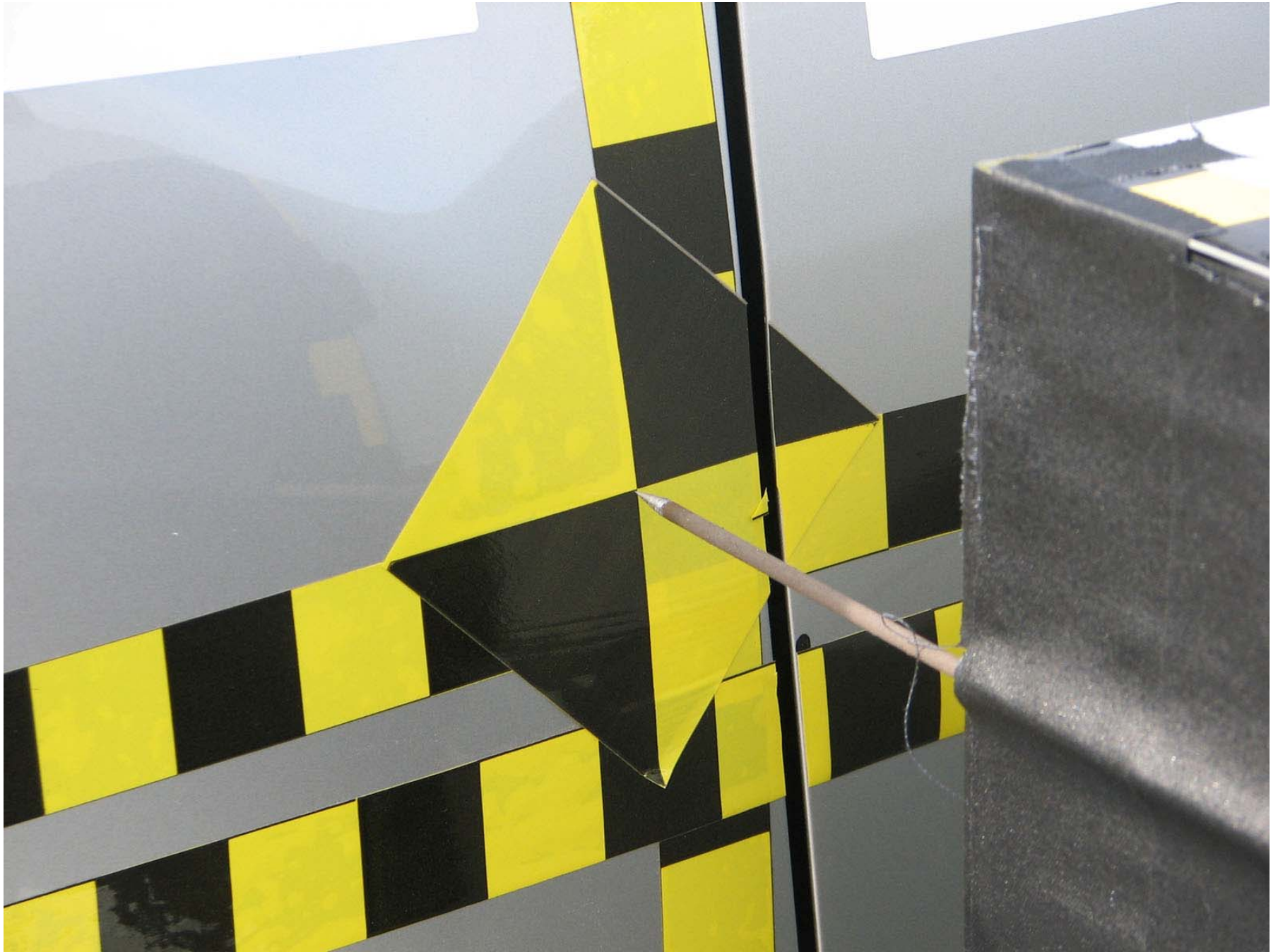


Figure A-25: Pre-Test Left Impact Point

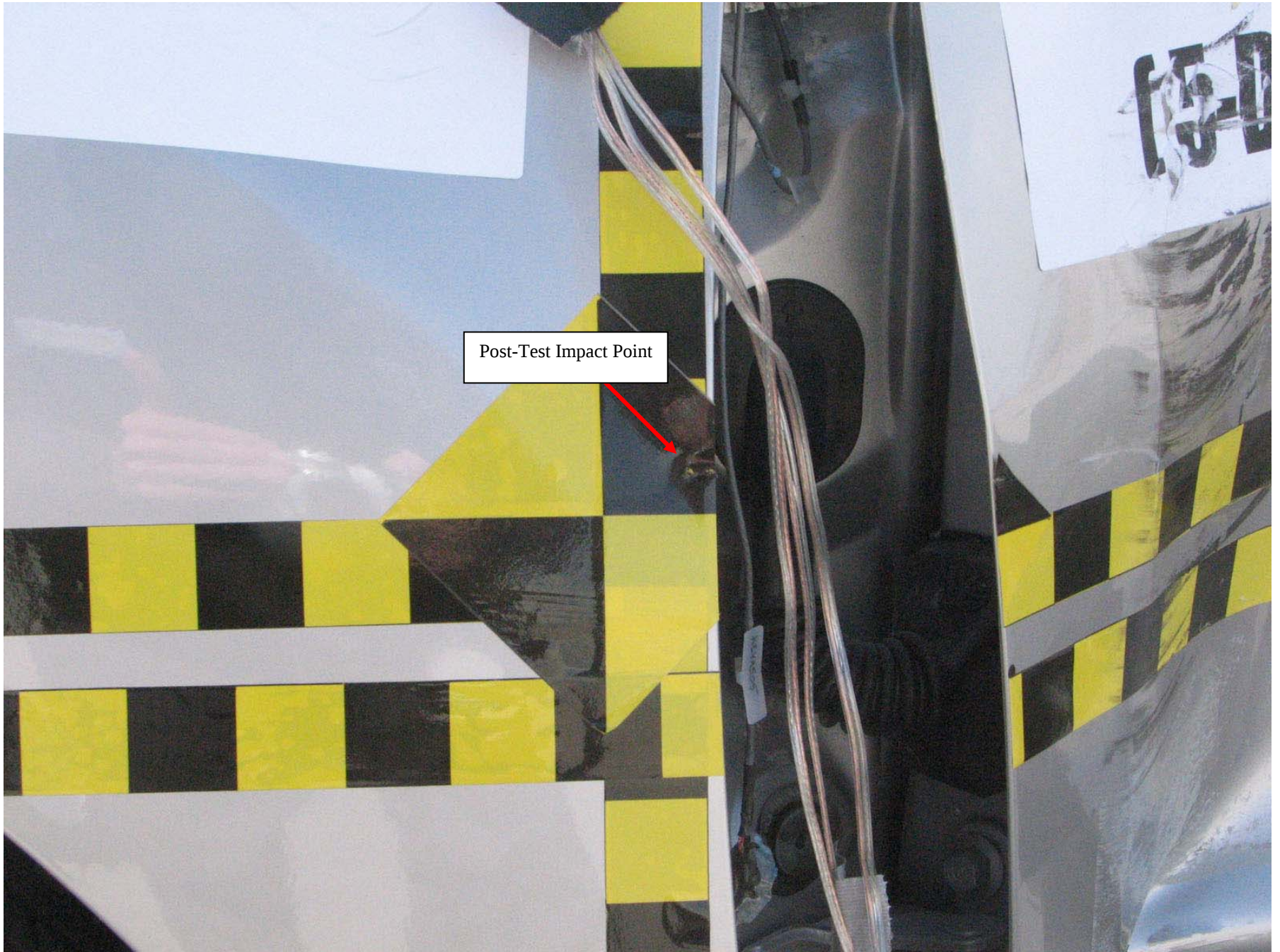


Figure A-26: Post-Test Left Impact Point



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



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



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



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



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)



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)



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-63: Vehicle on Rollover Device (180°)

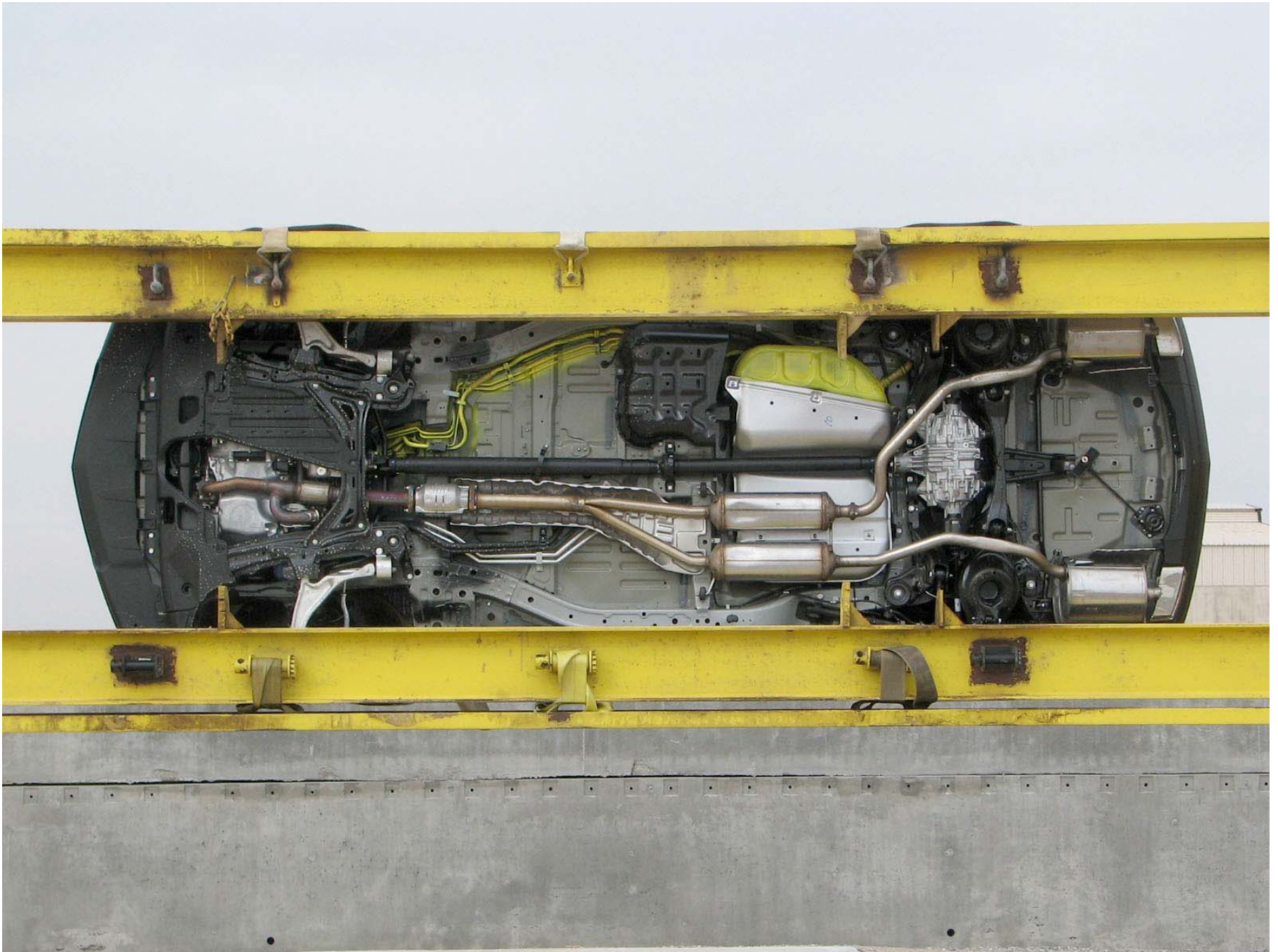


Figure A-64: Vehicle on Rollover Device (270°)



Figure A-65: Vehicle on Rollover Device (360°)



Figure A-66: Timers



Figure A-67: Vehicle Impact

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 Y Primary
	Driver Lower Rib Y Primary
	Driver Lower Spine Y Primary
	Driver Pelvis Primary Y
B-2	Passenger Upper Rib Y Primary
	Passenger Lower Rib Y Primary
	Passenger Lower Spine Y Primary
	Passenger Pelvis Y Primary

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)

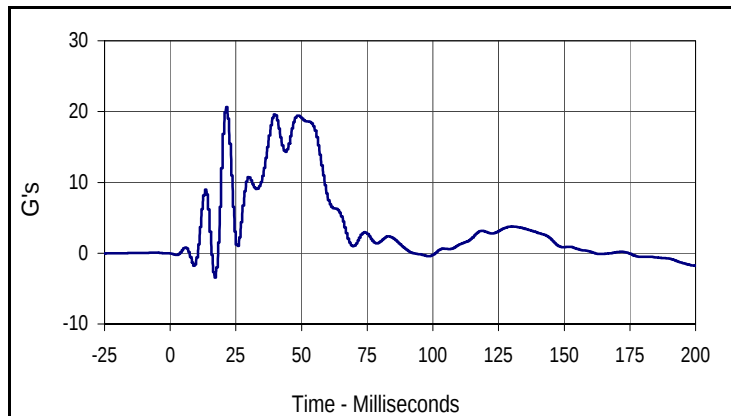
Vehicle Left Sill at Rear Door Y
Vehicle Left Sill at Front Door Y
Vehicle Left Sill at Rear Door Y Velocity
Vehicle Left Sill at Front Door Y Velocity
Vehicle Left Front Door C/L Y
Vehicle Right Rear Occupant Compartment
Vehicle Left Front Door Mid Rear Y
Vehicle Left Front Door Upper CL Y
Vehicle Left 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)

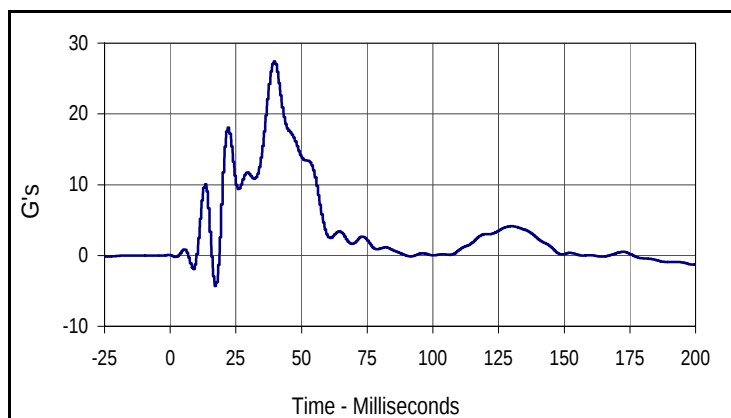
Driver Upper Rib Primary Y
Driver Lower Rib Primary Y
Driver Lower Spine Primary Y
Driver Pelvis Primary Y
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Passenger Upper Rib Primary Y
Passenger Lower Rib Primary Y
Passenger Lower Spine 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: 2010 Acura MDX 5-Door MPV
 Test Program: 55/28 km/h Side Impact NCAP

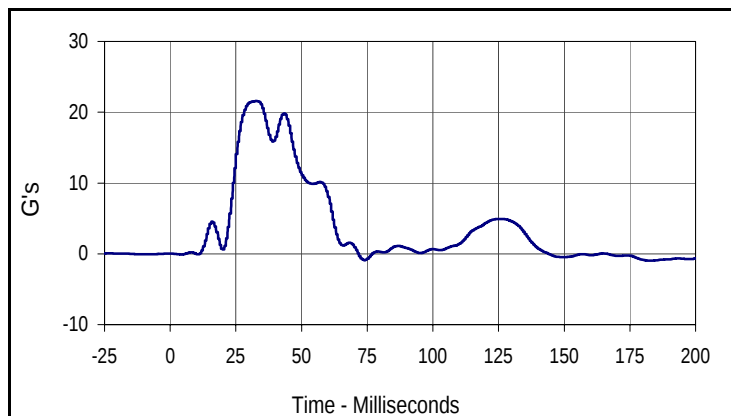
Test Date: 2/2/10
 NHTSA No.: MA5305



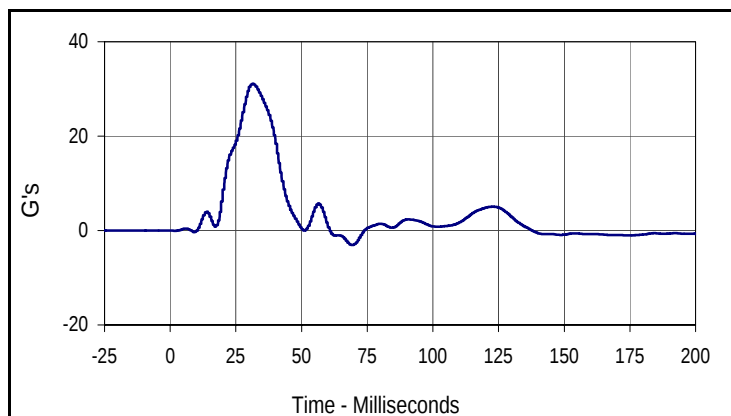
Curve Description			
Driver Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIR	FIR100	G's
Max	Time	Min	Time
20.6	21.3	-3.4	16.9



Curve Description			
Driver Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIR	FIR100	G's
Max	Time	Min	Time
27.4	39.4	-4.3	16.9



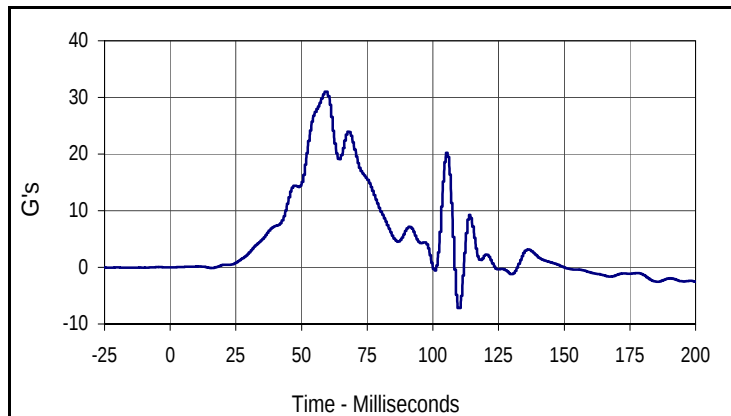
Curve Description			
Driver Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIR	FIR100	G's
Max	Time	Min	Time
21.6	32.5	-1.7	218.8



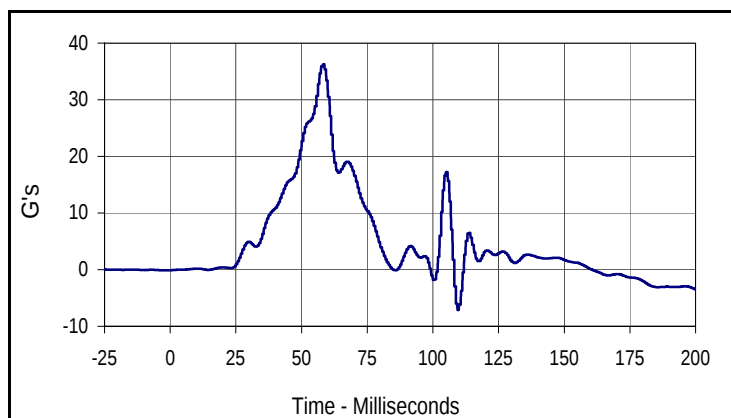
Curve Description			
Driver Pelvis Y Primary			
CURNO	Type	SAE Class	Units
004	FIR	FIR100	G's
Max	Time	Min	Time
31.1	31.3	-3.1	68.8

Test Vehicle: 2010 Acura MDX 5-Door MPV
 Test Program: 55/28 km/h Side Impact NCAP

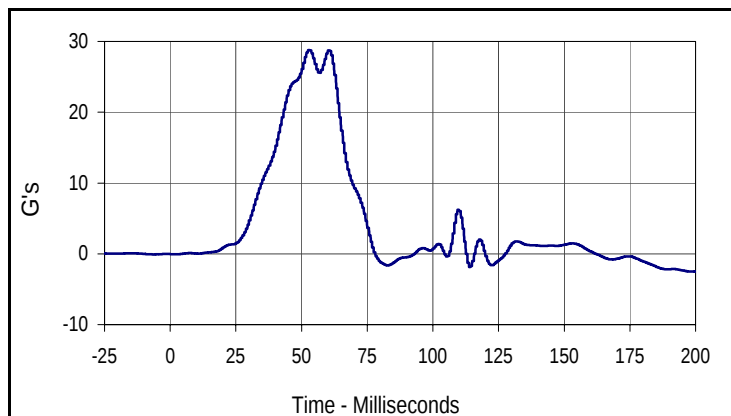
Test Date: 2/2/10
 NHTSA No.: MA5305



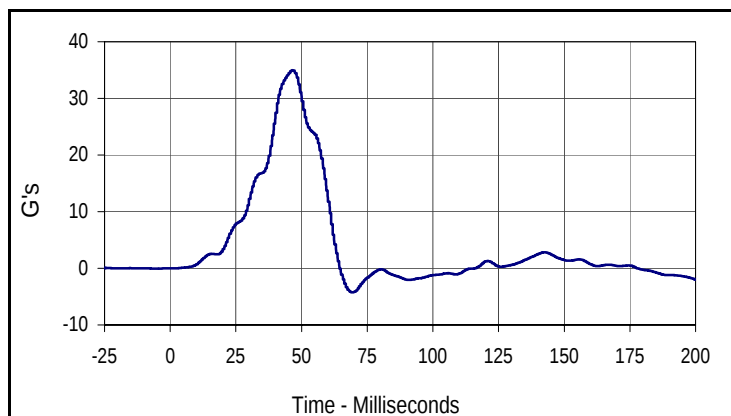
Curve Description			
Passenger Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
005	FIR	FIR100	G's
Max	Time	Min	Time
31.0	58.8	-7.2	109.4



Curve Description			
Passenger Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
006	FIR	FIR100	G's
Max	Time	Min	Time
36.3	58.2	-7.1	109.4



Curve Description			
Passenger Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
007	FIR	FIR100	G's
Max	Time	Min	Time
28.8	52.5	-2.5	198.8



Curve Description			
Passenger Pelvis Y Primary			
CURNO	Type	SAE Class	Units
008	FIR	FIR100	G's
Max	Time	Min	Time
35.0	46.3	-4.2	69.4

APPENDIX C
SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

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

Test Date: 01/25/10
 Test I.D.: N/A



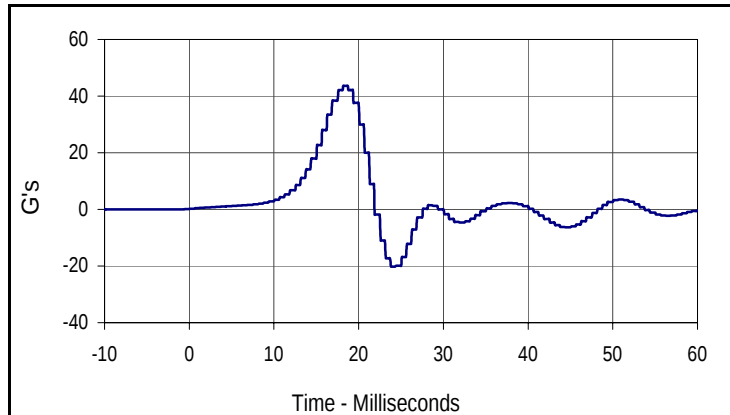
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	893	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back 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	363	Pass
Overall Test Results				Pass

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

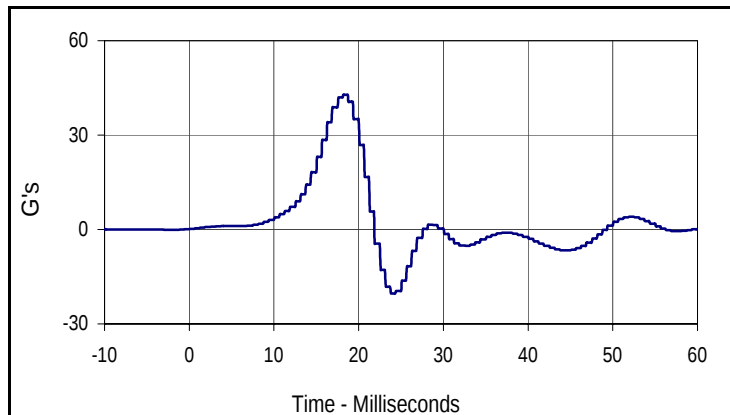
Test Date: 01/25/10
 Test I.D.: TH01E



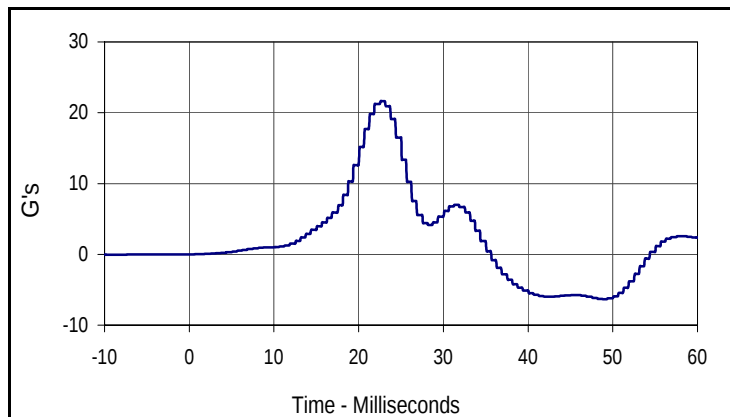
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.22	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	43.6	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	42.8	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	21.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.6	18.2	-20.2	23.8



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
42.8	18.2	-20.4	23.8



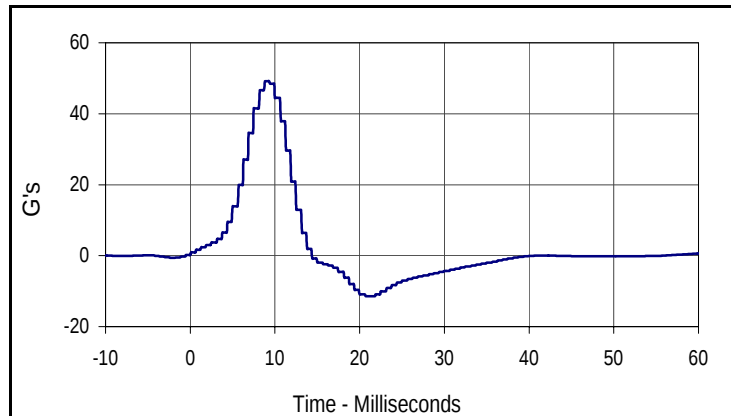
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
21.6	22.6	-6.3	48.8

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

Test Date: 01/25/10
 Test I.D.: PI01E



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
Peak Pelvis Acceleration	G's	40.0 to 60.0	49.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



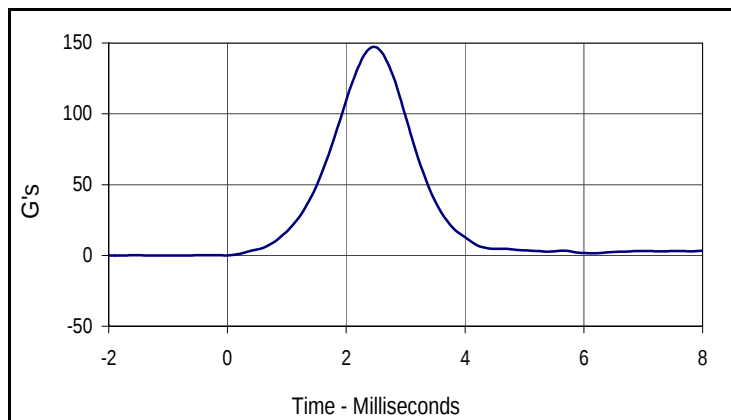
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
49.2	8.8	-11.4	20.7

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

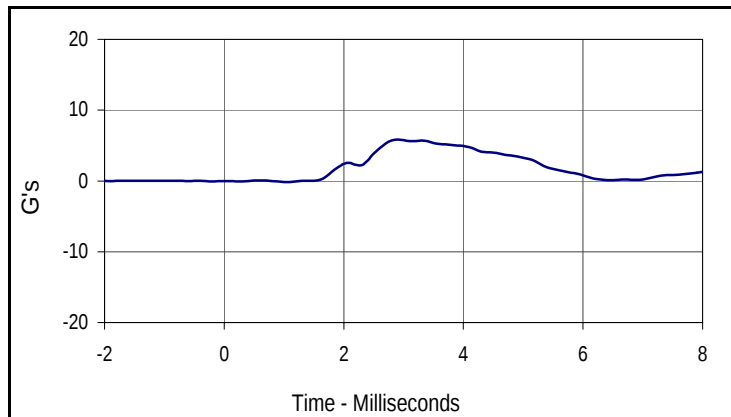
Test Date: 01/25/10
 Test I.D.: HD01E



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	147.0	Pass
Peak Longitudinal Acceleration	G's	≤15.0	5.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.4	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
147.0	2.5	0.0	-1.4



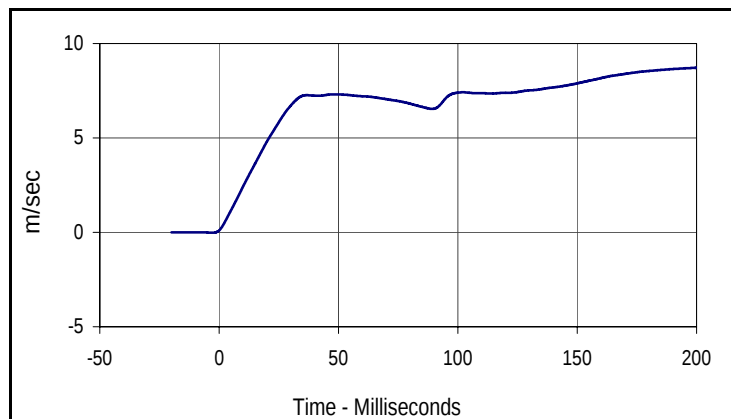
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.8	2.9	-0.2	1.0

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

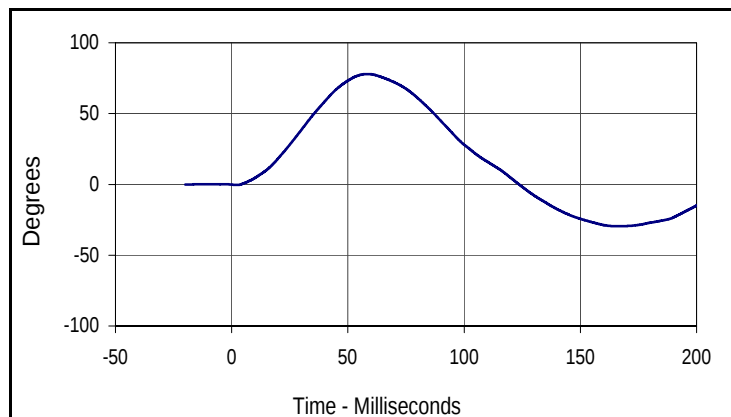
Test Date: 01/25/10
 Test I.D.: NB01D



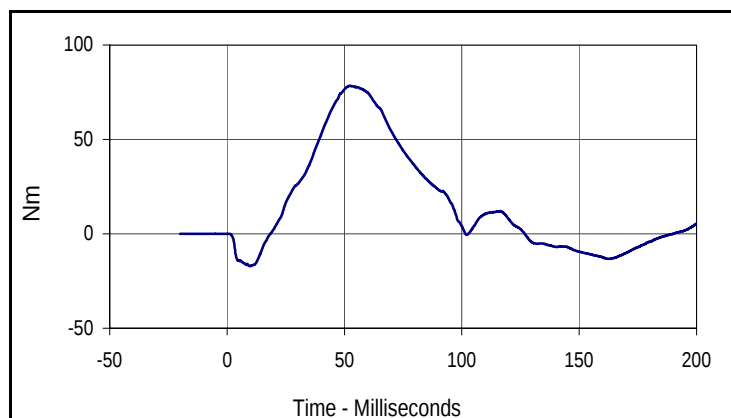
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.42	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.80	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.72	Pass
	40 to 70	m/sec	6.27 to 7.64	7.31	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	77.9	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	6.3	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	65.3	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	78.5	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.5	Pass
Overall Test Results					Pass



Curve Description			
ion			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.7	200.0	0.0	-2.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
77.9	58.4	-29.6	165.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
78.5	52.1	-17.1	9.8

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

Test Date: 01/25/10
 Test I.D.: N/A



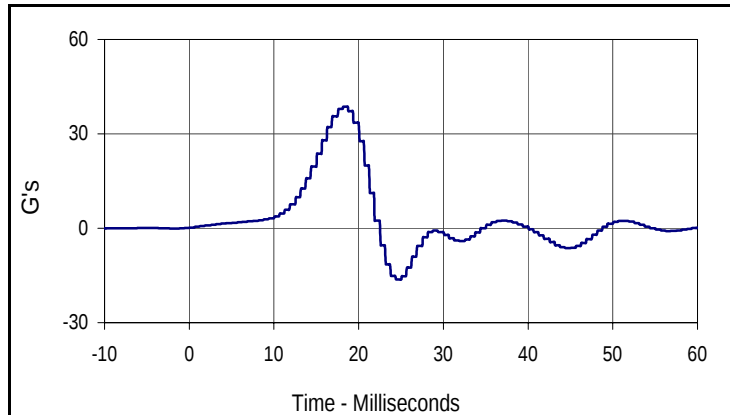
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	891	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	503	Pass
HW- Hip Width	mm	356 to 391	365	Pass
Overall Test Results				Pass

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

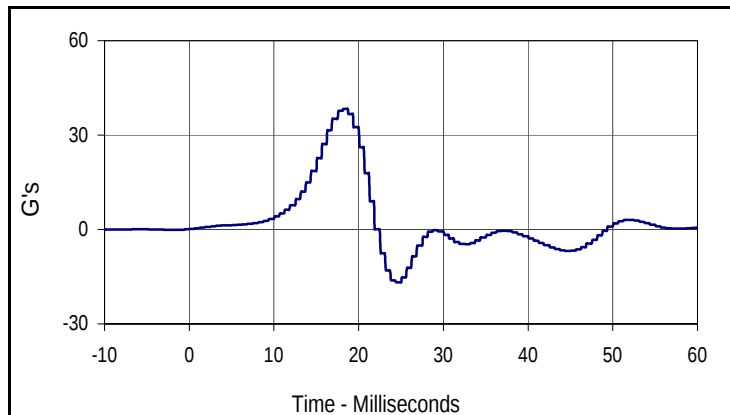
Test Date: 01/25/10
 Test I.D.: TH01F



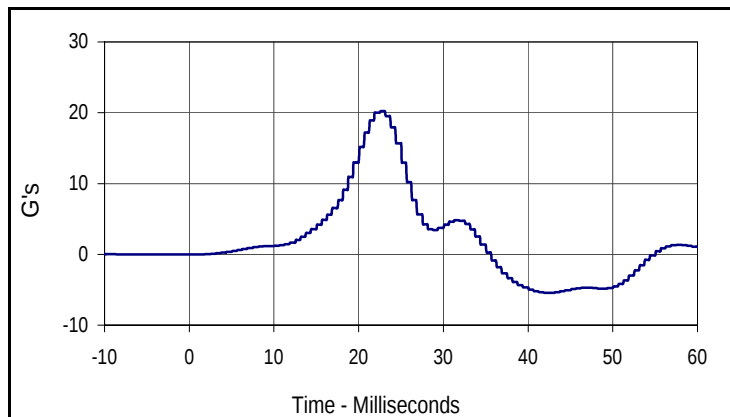
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.24	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	38.6	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	38.4	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
38.6	18.2	-16.3	24.4



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
38.4	18.2	-16.8	24.4



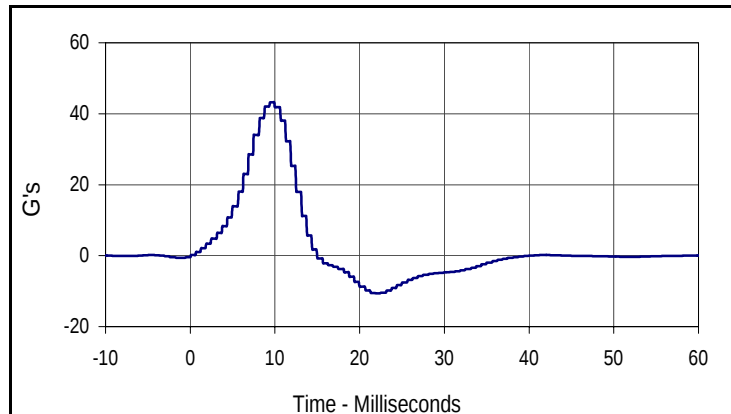
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
20.2	22.6	-5.4	42.6

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

Test Date: 01/25/10
 Test I.D.: PL01F



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	43.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



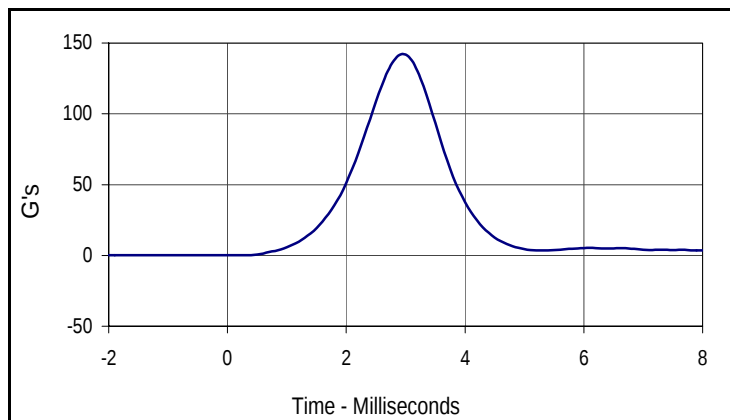
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.2	9.4	-10.7	21.9

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

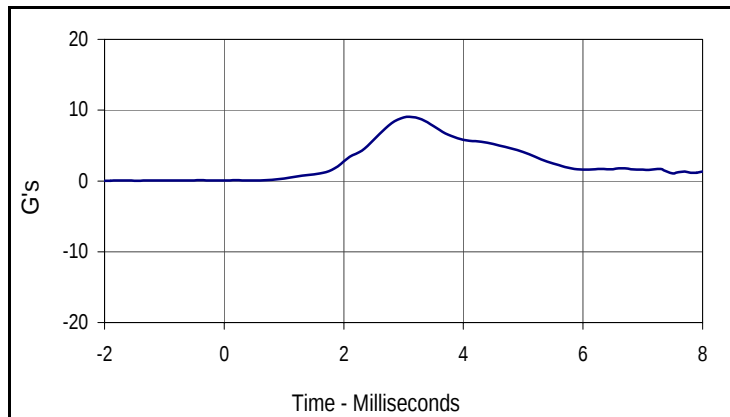
Test Date: 01/25/10
 Test I.D.: HD01F



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	141.8	Pass
Peak Longitudinal Acceleration	G's	≤15.0	9.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.7	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
141.8	3.0	0.1	0.4



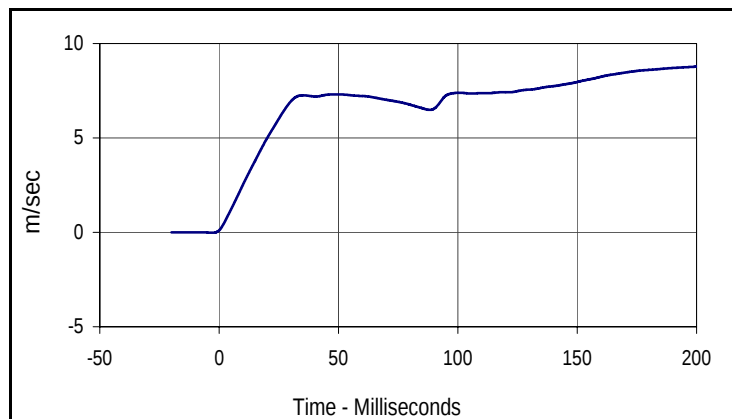
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
9.1	3.1	0.0	-1.5

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

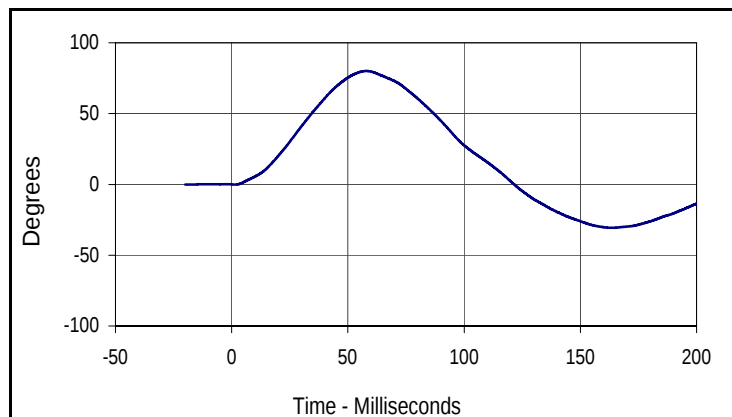
Test Date: 01/25/10
 Test I.D.: NB01F



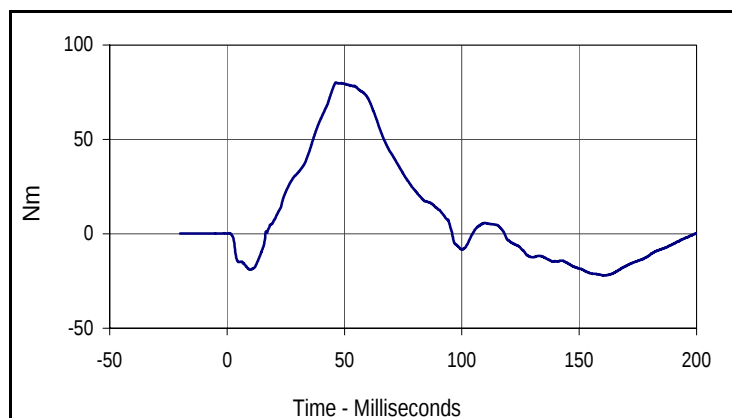
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.53	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.97	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.93	Pass
	40 to 70	m/sec	6.27 to 7.64	7.30	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	80.1	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	11.7	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	63.6	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	80.2	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.6	Pass
Overall Test Results					Pass



Curve Description			
ion			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.8	200.0	0.0	-2.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
80.1	58.0	-30.7	163.4



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
80.2	46.3	-22.1	160.4

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

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

Test Date: 02/02/10
Test I.D.: N/A



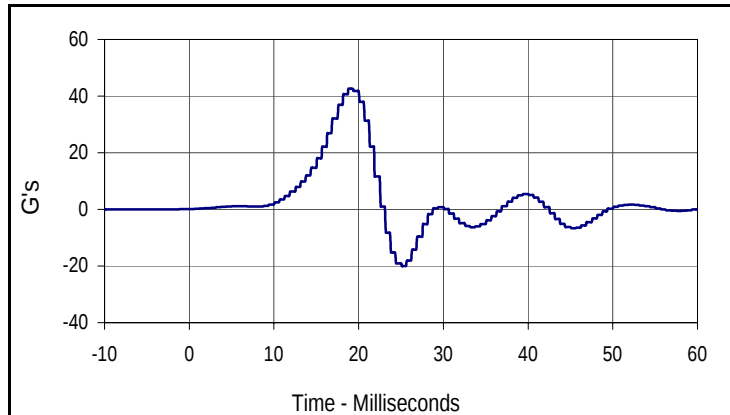
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	891	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	517	Pass
KV- Knee Pivot From Floor	mm	490 to 505	503	Pass
HW- Hip Width	mm	356 to 391	363	Pass
Overall Test Results				Pass

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

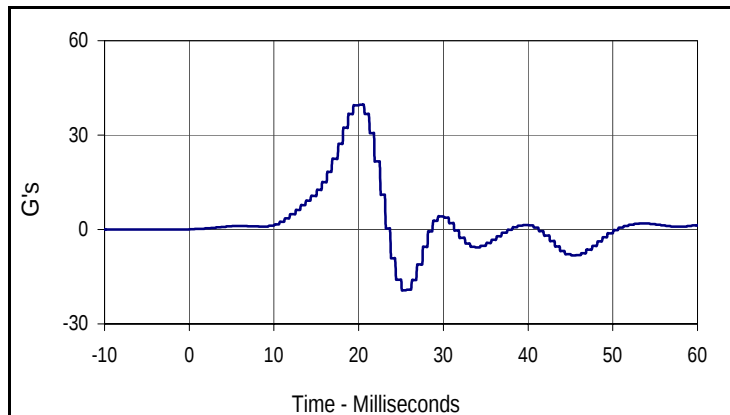
Test Date: 02/02/10
 Test I.D.: TH02a



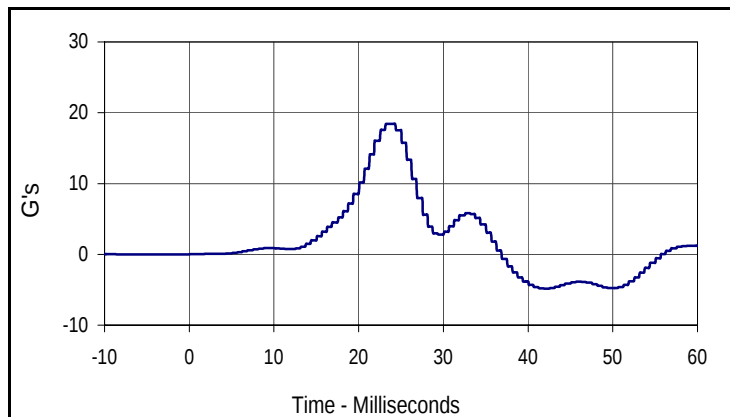
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.32	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	42.5	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	39.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	18.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
42.5	18.8	-20.0	25.1



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
39.7	20.1	-19.3	25.1



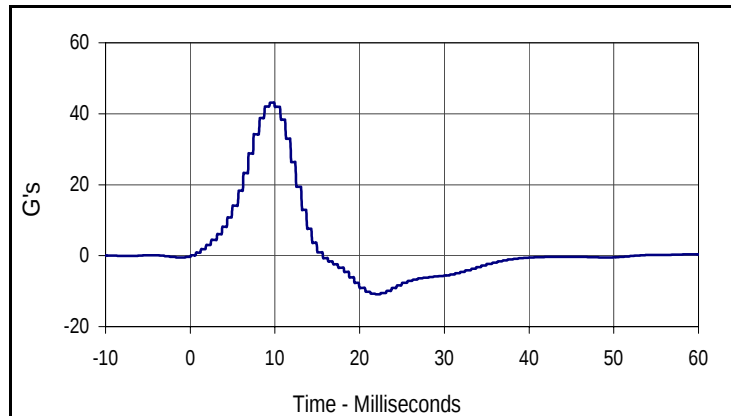
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
18.4	23.8	-4.8	41.9

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

Test Date: 02/02/10
 Test I.D.: PL02A



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	4.32	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	43.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



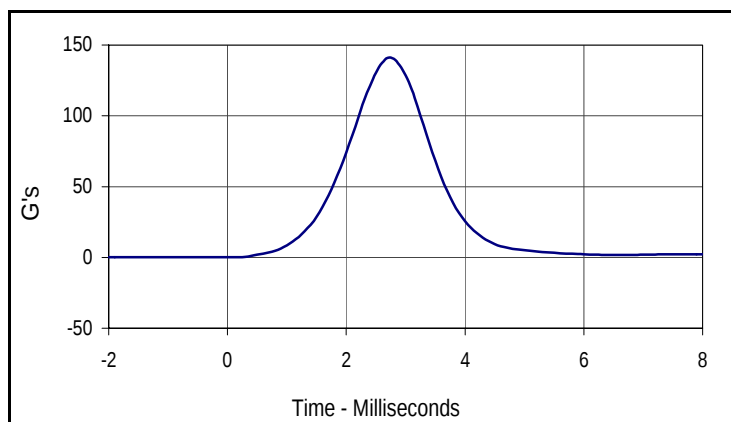
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.2	9.4	-10.9	21.9

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

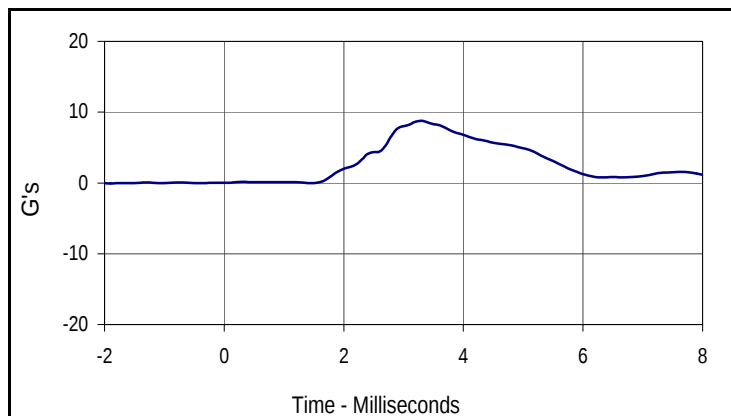
Test Date: 02/02/10
 Test I.D.: HD02A



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	120.0 to 150.0	141.0	Pass
Peak Longitudinal Acceleration	G's	≤15.0	8.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
141.0	2.7	0.1	0.1



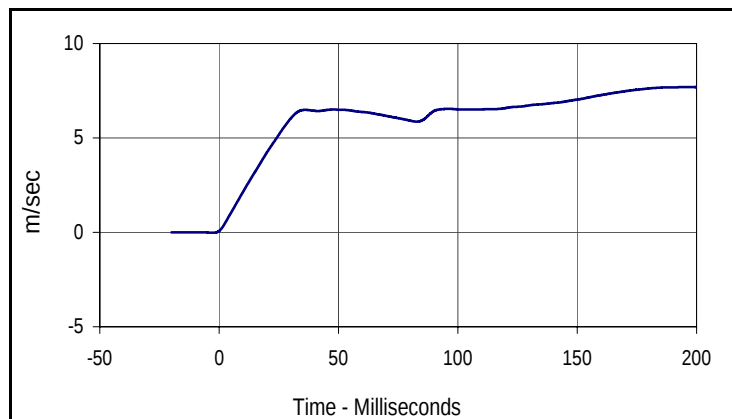
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.8	3.3	0.0	-1.9

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

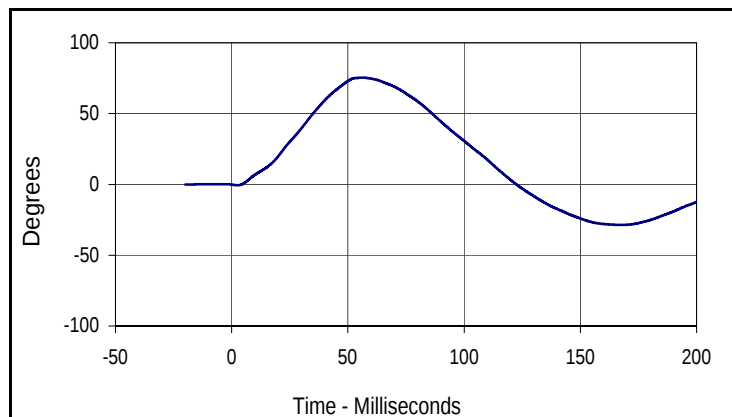
Test Date: 02/02/10
 Test I.D.: NB02A



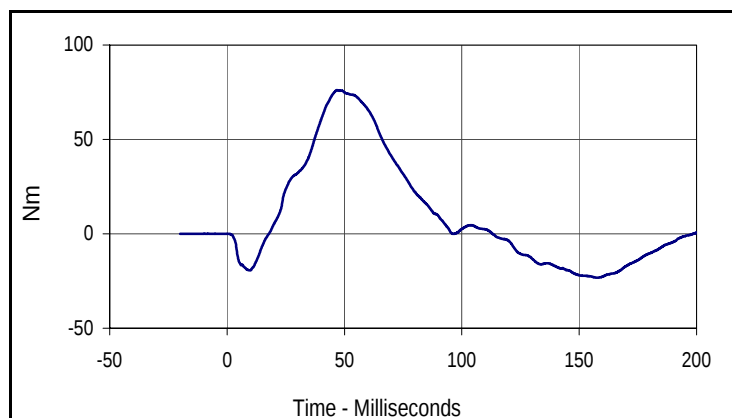
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.15	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.23	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.04	Pass
	40 to 70	m/sec	6.27 to 7.64	6.50	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	75.3	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	66.2	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	76.2	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.8	Pass
Overall Test Results					Pass



Curve Description			
ion			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
7.7	200.0	0.0	-2.6



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
75.3	56.3	-28.6	167.3



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
76.2	46.7	-23.3	157.6

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

Test Date: 02/02/10
 Test I.D.: N/A



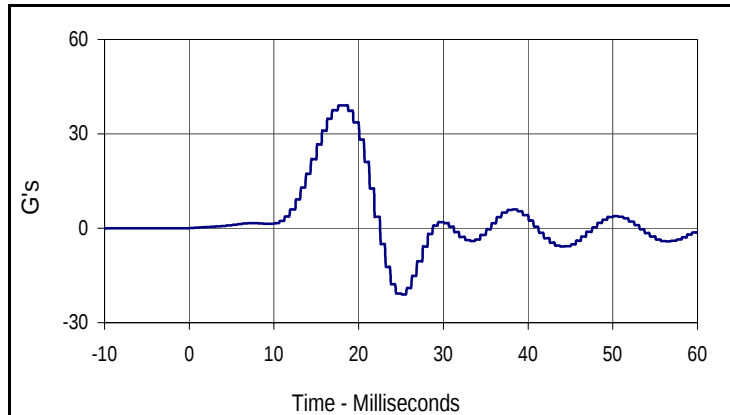
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	892	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	515	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	516	Pass
KV- Knee Pivot From Floor	mm	490 to 505	504	Pass
HW- Hip Width	mm	356 to 391	362	Pass
Overall Test Results				Pass

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

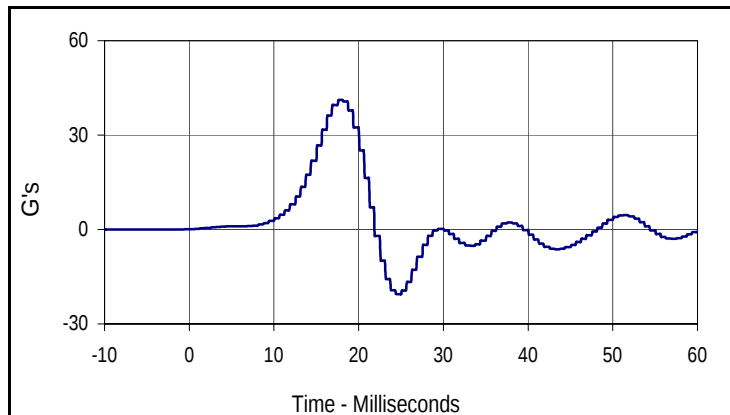
Test Date: 02/02/10
 Test I.D.: TH02b



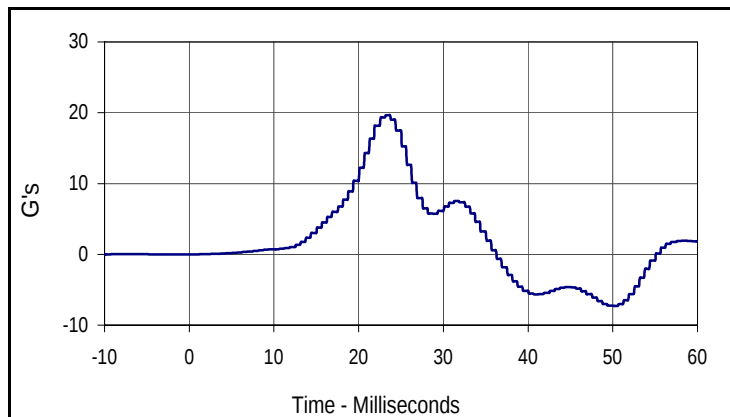
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.26	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	39.1	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	41.2	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
39.1	18.2	-21.0	25.1



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
41.2	17.6	-20.5	24.4



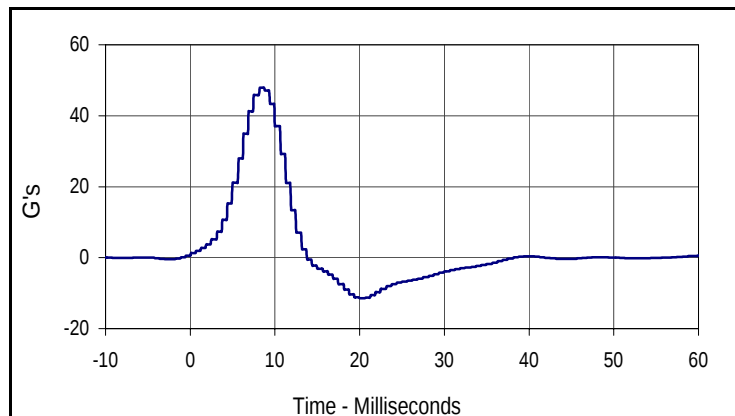
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
19.6	23.2	-7.3	50.1

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

Test Date: 02/02/10
 Test I.D.: PL02b



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	48.0	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



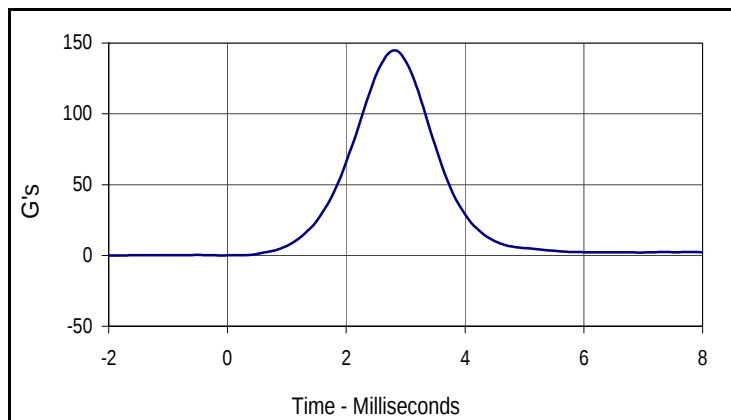
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
48.0	8.2	-11.5	20.0

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

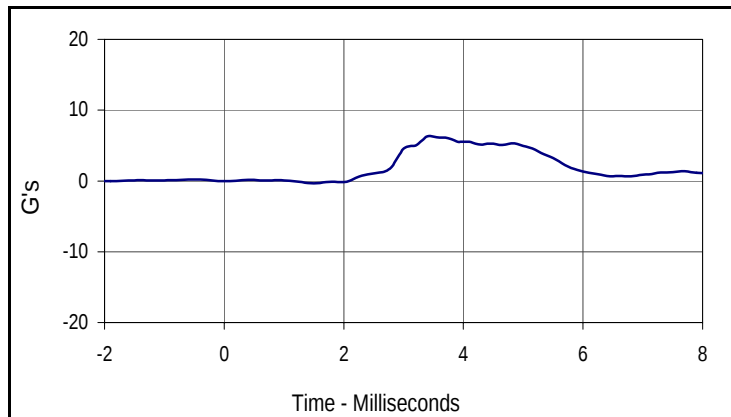
Test Date: 02/02/10
 Test I.D.: HD02B



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	120.0 to 150.0	144.8	Pass
Peak Longitudinal Acceleration	G's	≤15.0	6.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
144.8	2.8	0.0	-0.1



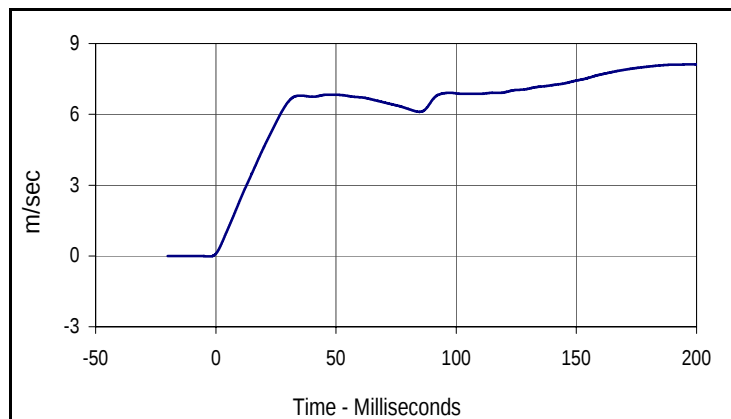
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.3	3.4	-0.3	1.5

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

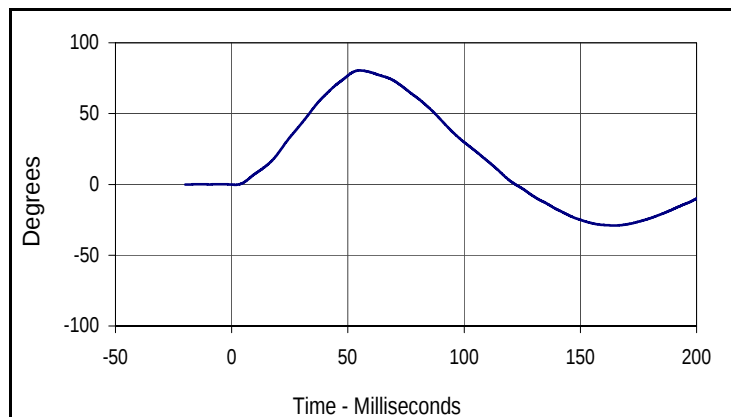
Test Date: 02/02/10
 Test I.D.: NB02A



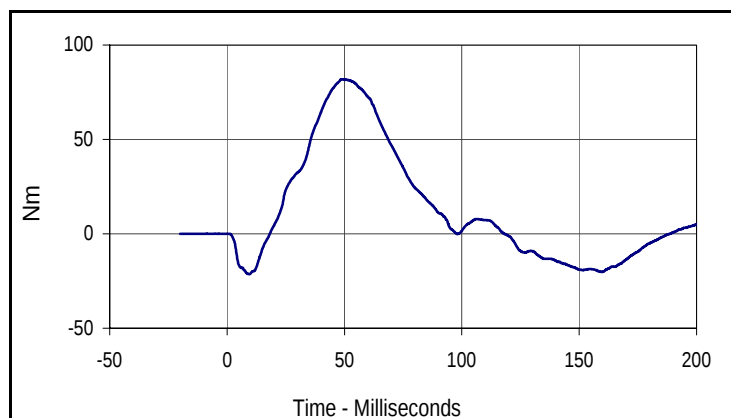
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.95	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.35	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.62	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.51	Pass
	40 to 70	m/sec	6.27 to 7.64	6.83	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	80.5	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	6.2	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	66.9	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	81.9	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.1	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.1	200.0	0.0	-2.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
80.5	55.1	-29.0	164.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
81.9	48.9	-21.4	9.3