

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**HONDA MOTOR CO., LTD
2009 ACURA TSX
4-DOOR SEDAN**

NHTSA NUMBER: H95301

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



JUNE 2, 2008

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 final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-03-D-32005.

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Prepared by:  Date: June 2, 2008
Mr. Johnny H. Dutto, Project Engineer
KARCO Engineering, LLC

Reviewed by:  Date: June 2, 2008
Mr. Michael L. Dunlap, Director of Operations
KARCO Engineering, LLC

Approved by:  Date: June 2, 2008
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

FINAL REPORT ACCEPTED BY:

Manager, Side Impact NCAP

Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-P28067-01-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 2009 Acura TSX 4-Door Sedan NHTSA No. H95301		5. Report Date June 2, 2008	
		6. Performing Organization Code KAR	
7. Authors Mr. Johnny H. Dutto, Project Engineer, Karco Mr. Frank Richardson, Program Manager, Karco		8. Performing Organization Report No. TR-P28067-01-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. DTNH22-03-D-32005	
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 2009 Acura TSX 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 in Adelanto, CA, on June 2, 2008. The impact velocity of the Moving Deformable Barrier was 62.43 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 27.2 deg. C. The target vehicle's maximum post-test static crush was 260 mm located at level 2. The test vehicle's occupant performance data is as follows:			
Measurement Description	Driver SID/HIII	Pass. SID/HIII	
Left Upper Rib (LUR) G's	37.3	37.7	
Left Lower Rib (LLR) G's	45.5	38.8	
Lower Spine (T ₁₂) G's	47.9	45.6	
Thoracic Trauma Index (TTI) G's	47.0	42.0	
Pelvis (PEV) G's	61.4	37.7	
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 132	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 FY' 2008 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 2009 Acura TSX 4-Door Sedan manufactured by Honda Motor Co., LTD.

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 2009 Acura TSX 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 62.43 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 1931 kg and the test weight of the MDB was 1361 kg. The test was conducted at KARCO Engineering, LLC in Adelanto, California, on June 2, 2008.

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)

SUPPLEMENTAL RESTRAINT INFORMATION

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

SECTION 2...(CONTINUED)

The test vehicle was instrumented with twenty-one (21) 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 260 mm at level 2, 1200 mm rearward of the left vertical 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 are summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	47	42
Peak Pelvic G's (PEV)	G's	61	38

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. Appendix D contains the Child Restraint System data.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION SHEETS

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08

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: 2009 Acura TSX 4-Door Sedan NHTSA No.: H95301
 Test Program: 55/28 km/h Side Impact NCAP Test Date: 6/2/08

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	H95301	Anti-Lock Brakes	Yes
Make	Acura	All Wheel Drive	No
Model	TSX	Power Steering	Yes
Body Style	4-Door Sedan	Driver Front Airbag	Yes
Vin No.	JH4CU26679C003206	Driver Side Torso Airbag	Yes
Color	Charcoal Grey	Driver Side Head Airbag	No
Delivery Date	4/16/2008	Driver Curtain/Airbag	Yes
Odometer (Miles)	95.0	Rear Pass. Airbag	No
Dealer	Cerritos Acura	Rear Pass. Side Airbag	No
Transmission	5-Speed Automatic	Rear Pass. Head Airbag	No
Final Drive	Front	Rear Pass. Curtain/Airbag	Yes
Type/No. Cyl.	Inline 4	Pre-Tensioners	Yes
Engine Disp. (L)	2.4	Load Limiters	Yes
Engine Placement	Transverse	Bucket Seats	Yes
Roof Rack	No	Air Cond.	Yes
Sunroof/T-Top	Yes	AM/FM CD	Yes
Tinted Glass	Yes	Tilt Steering	Yes
Traction Control	Yes	Automatic Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	Yes
Rear Disc	Yes	Other	None

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda Motor Co., LTD	GVWR (kg)	2030
Date of Manufacture	Mar-08	GAWR Front (kg)	1095
		GAWR Rear (kg)	950

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				385
Cargo Weight (RCLW) (kg)				45

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

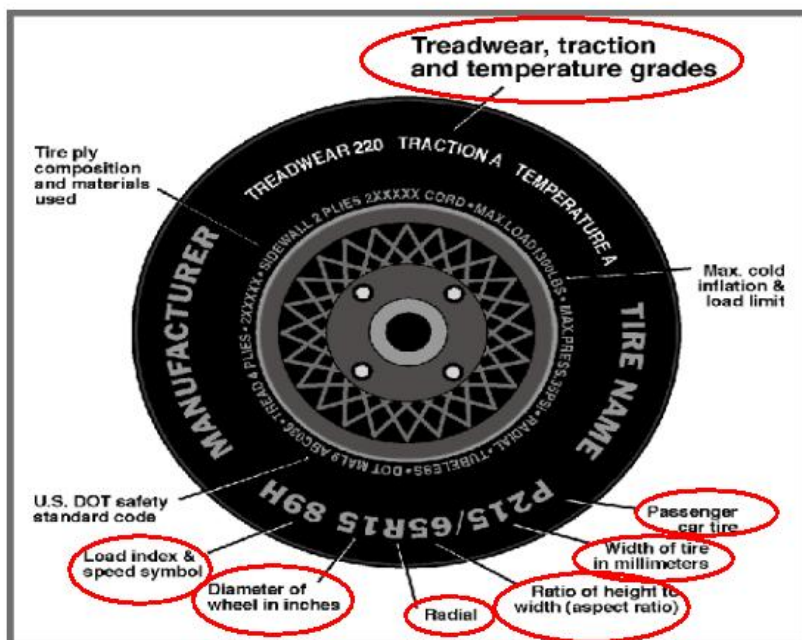
Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08

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)	230	230
Recommended Tire Size	P225/50R17	P225/50R17
Tire Size on Vehicle	P225/50R17	P225/50R17
Tire Manufacturer	Michelin	Michelin
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	
Tire Plies Body	2 Polyester + 1 Polyamide + 2 Steel	2 Polyester + 1 Polyamide + 2 Steel
Load Index/Speed Symbol	93V	93V
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	B90A NJLX4907	B90A NJLX4907
DOT Safety Code Left	B90A NJLX4907	B90A NJLX4907

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	462	309	771	512	399	911
Right	kg	473	317	790	480	369	849
Ratio	%	59.9	40.1	100.0	56.4	43.6	100.0
Totals	kg	935	626	1561	992	768	1760

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1561
Weight of 2 P572 ATD's	kg	162
Rated Cargo/Luggage Wt. (RCLW)	kg	45
Calculated Vehicle Target Wt. (TVTW)	kg	1768

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	695	694	748	705	1082
As Tested	mm	683	687	674	686	1177
Fully Loaded	mm	682	692	672	684	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2698
Total Vehicle Length at Left Side	mm	3170
Total Vehicle Length at Centerline	mm	4700
Total Vehicle Length at Right Side	mm	3170
Weight of Ballast In Cargo Area	kg	23
Amount of Stoddard Solvent in Fuel Tank	liters	65.14

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2698
Target Impact Point Aft of Front Axle	mm	409
Actual Impact Point Aft of Front Axle	mm	419

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Acura TSX 4-Door Sedan

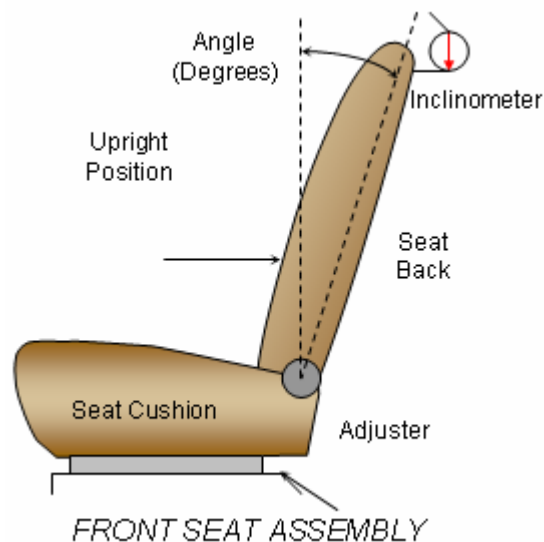
NHTSA No.: H95301

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

Test Date: 6/2/08

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

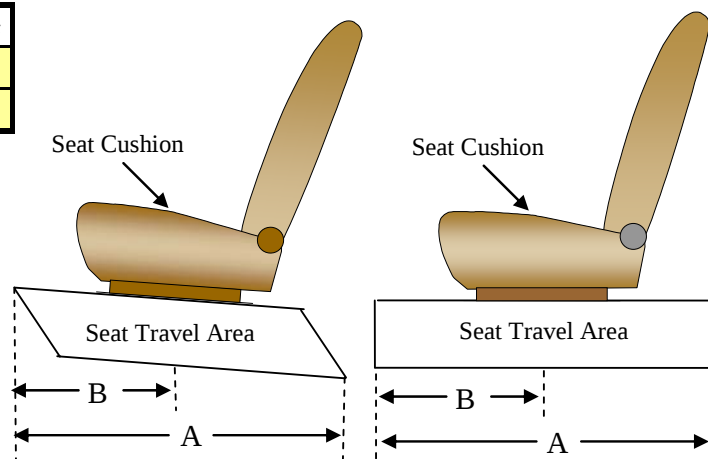
	Deg.
Driver w/seated Dummy	7.0 @ Headrest
Passenger w/seated Dummy	Fixed

SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position at the highest vertical seat height to rearmost position at the lowest vertical seat height. The seat was set at the longitudinal mid position. There were vertical adjustments on the driver seat that was equipped with the vehicle. There were no 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	292 mm	146 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	2
Rear Seat	Fixed	Fixed

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

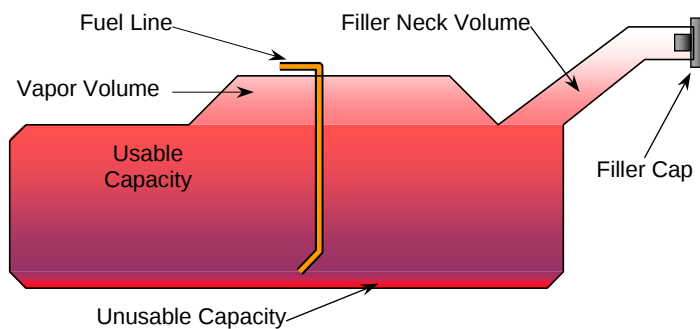
Test Program: 55/28 km/h Side Impact NCAP

Test Date: 6/2/08

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	70.02
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	64.40 to 65.80
Actual Amount of Solvent used	65.14

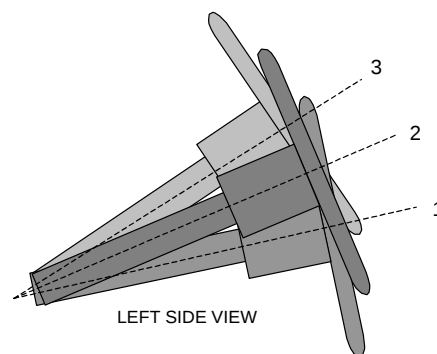
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately two (2) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat and pickup bed.



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	16.4	0
Geometric center position No. 2	19.9	20
Uppermost position No. 3	23.3	40

DATA SHEET NO. 2**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2009 Acura TSX 4-Door SedanNHTSA No.: H95301Test Program: 55/28 km/h Side Impact NCAPTest Date: 6/2/08**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UWV)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	462	309		512	399	
Right	kg	473	317		480	369	
Ratio	%	59.9	40.1		56.4	43.6	
Totals	kg	935	626	1561	992	768	1760

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	55	235
Level 2	Occupant H-Point	mm	260	500
Level 3	Mid Door	mm	248	615
Level 4	Window Sill	mm	220	860
Level 5	Window top	mm	33	1365
N/A	Maximum Penetration	mm	260	

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	4
High Speed, MDB On-Board	3
Real Time, Panning	2
Total	12

DATA SHEET NO. 3**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2009 Acura TSX 4-Door SedanNHTSA No.: H95301Test Program: 55/28 km/h Side Impact NCAPTest Date: 6/2/08**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	62.43
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.45
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	223
B	Top of Bumper	533	800	Right	101
C	Mid Level	686	800	Left	109
D	Top of Stack	813	800	Left	171

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	1
High Speed Cameras	2

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08

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 / Roof Liner	Curtain Airbag / Roof Liner
Upper Torso Contact	Side Airbag	Door Panel
Lower Torso Contact	Side Airbag	Door Panel
Left Knee Contact	Door Panel	Door Panel
Right Knee Contact	Left Knee	Left Knee

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	Front & rear passenger side sill separated
Windshield Damage	Cracked
Window Damage	Driver & passenger side windows broken
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	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes		No	
Seat Belt Load Limiter	Yes		No	

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	+10 (right)
Vertical Offset	mm	+/- 20	+8 (above)

DATA SHEET NO. 5

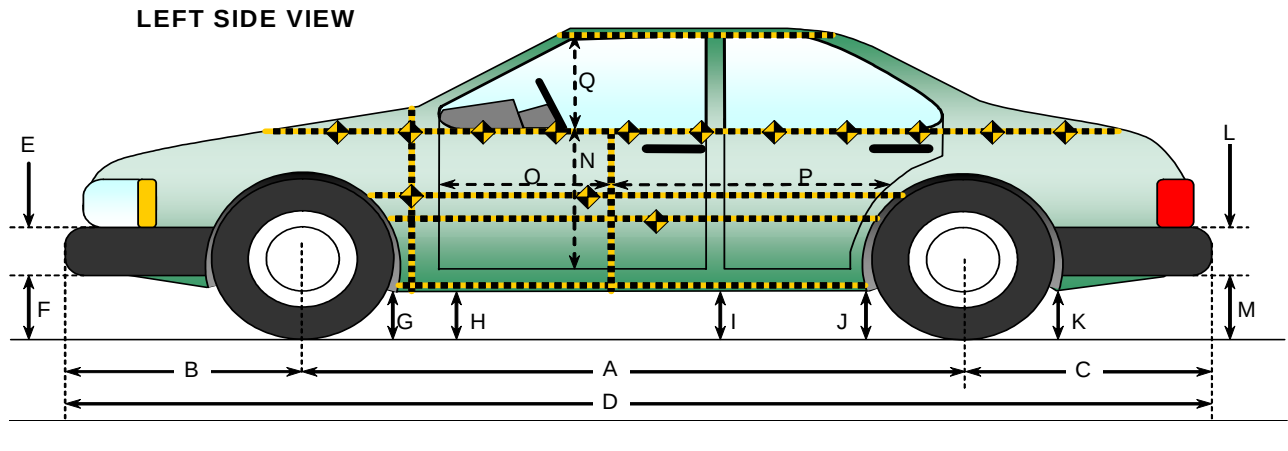
VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2698	2698	0
B	Front Axle to FSOV	968	968	0
C	Rear Axle to RSOV	1034	1034	0
D	Total Length at Centerline	4700	4700	0
E	Front Bumper Thickness	130	132	2
F	Front Bumper Bottom to Ground	397	405	8
G	Sill Height at Front Wheel Well	171	163	-8
H	Sill Height at Front Door Leading Edge	171	256	85
I	Sill Height at "B" Pillar	170	274	104
J1	Sill Height at Rear Wheel Well	144	196	52
J2	Pinch Weld Height at Rear Wheel Well	168	256	88
K	Sill Height aft of Rear Wheel Well	211	251	40
L	Rear Bumper Thickness	275	310	35
M	Rear Bumper Bottom to Ground	266	316	50
N	Sill Height to Window Bottom Sill	695	585	-110
O	Front Door Leading Edge to Impact CL	810	760	-50
P	Rear Door Trailing Edge to Impact CL	1125	1295	170
Q	Front Window Opening	370	345	-25
R	Right Side Length	3170	3170	0
S	Left Side Length	3170	3160	-10
T	Vehicle Width at "B" Post	1827	1637	-190

All Dimensions shown in millimeters

DATA SHEET NO. 6

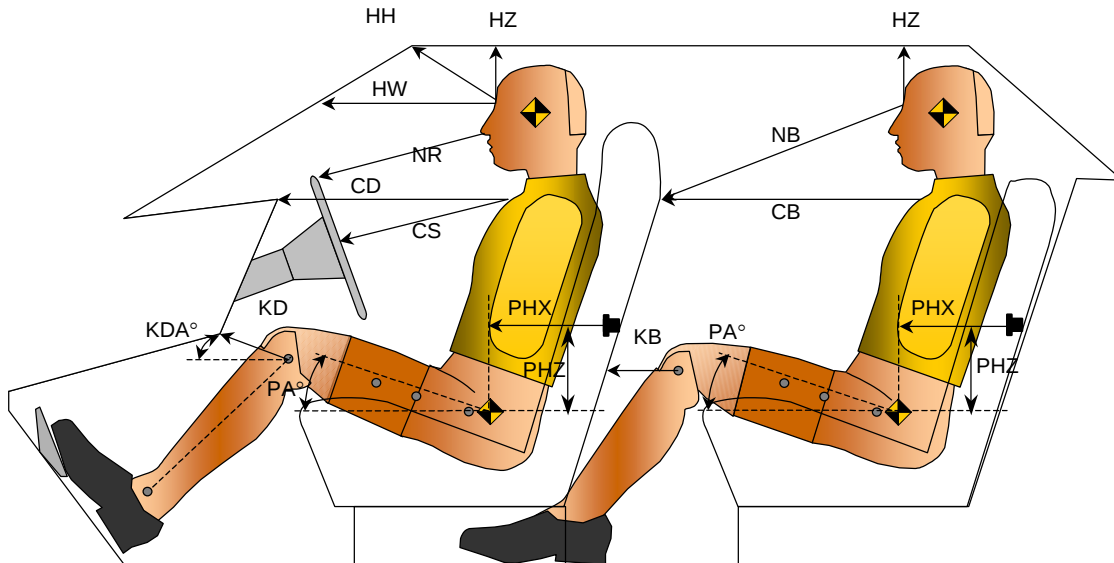
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length(mm)	Angle	Length(mm)	Angle
HH		Head to Header	330	20.6		
HW		Head to Windshield	540	0.0		
HZ	HZ	Head to Roof	135	90.0	155	90.0
NR	NB	Nose to Rim/Nose to Seat Back	360	16.8	645	17.5
CD	CB	Chest to Dash or Seat Back	495	11.8	559	1.0
CS		Chest to Steering Wheel	250	3.8		
KDL	KBL	Left Knee to Dash or Seat Back	198	0.0	250	0.0
KDR	KBR	Right Knee to Dash or Seat Back	185		237	
PA	PA	Pelvic Angle		23.4		23.8
PHX	PHX	H-Point to Striker (X-Axis)	220		210	
PHZ	PHZ	H-Point to Striker (Z-Axis)	180		265	

All Dimensions shown in millimeters

DATA SHEET NO. 7

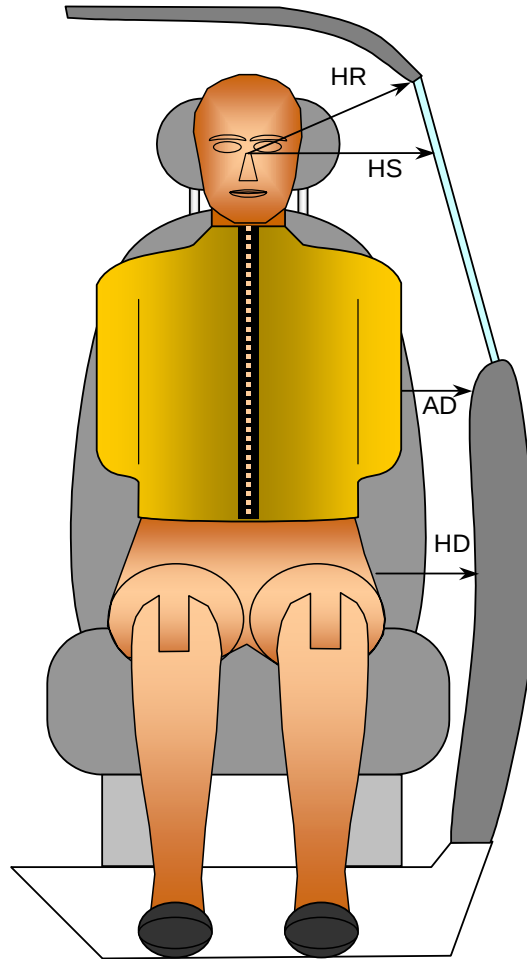
SID/HII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



FRONT VIEW OF DUMMY

LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	275	243
HS	Head to Side Window	mm	350	320
AD	Arm to Door	mm	118	109
HD	H-Point to Door	mm	145	166

DATA SHEET NO. 8

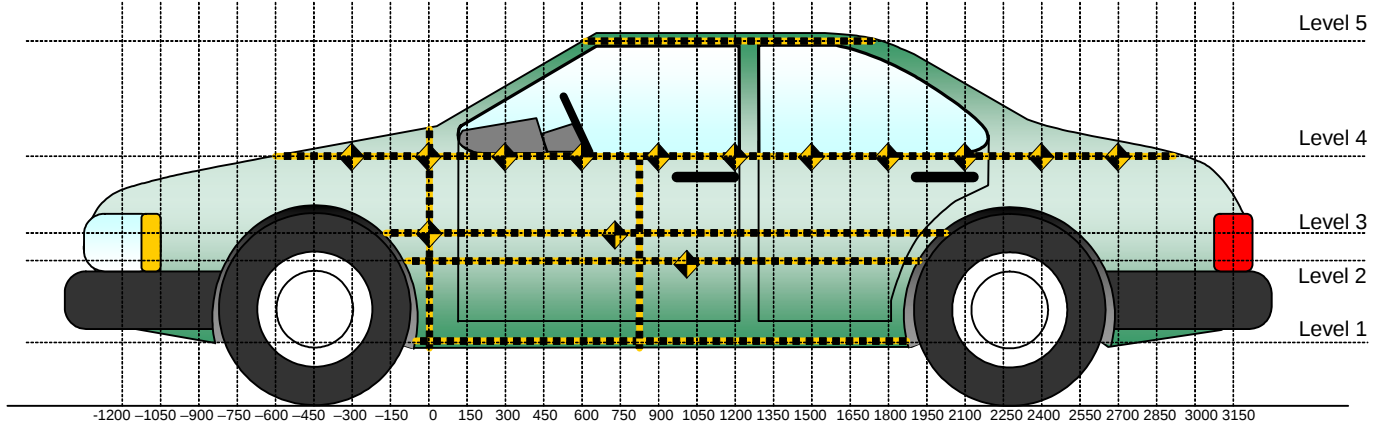
VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



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	235
2	Occupant H-Point	500
3	Mid Door	615
4	Window Sill	860
5	Window Top	1365

All Dimensions shown in millimeters

DATA SHEET NO. 9

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150			511	602				545	635				34	33	
0	531	513	517	595		535	537	548	622		4	24	31	27	
150	549	516	519	590		587	685	667	638		38	169	148	48	
300	550	515	516	580		595	722	708	692		45	207	192	112	
450	548	514	515	573		596	735	718	740		48	221	203	167	
600	548	511	513	566		597	745	720	755		49	234	207	189	
750	547	511	512	557		600	745	724	760		53	234	212	203	
900	547	511	511	550	835	602	756	730	770	855	55	245	219	220	20
1050	547	511	511	53	805	597	767	732	760	835	50	256	221	707	30
1200	547	511	511	540	808	600	771	747	720	840	53	260	236	180	32
1350	547	512	513	540	807	596	755	747	760	840	49	243	234	220	33
1500	544	515	515	542	815	580	746	750	760	840	36	231	235	218	25
1650	532	515	517	545	817	562	740	765	745	845	30	225	248	200	28
1800	522	513	517	552	827	528	677	728	712	845	6	164	211	160	18
1950			512	558	852			585	643	855			73	85	3
2100				560					605					45	
2250				563					588					25	
2400				574					585					11	
2550															
2700															
2850															
3000															

All Dimensions shown in millimeters.

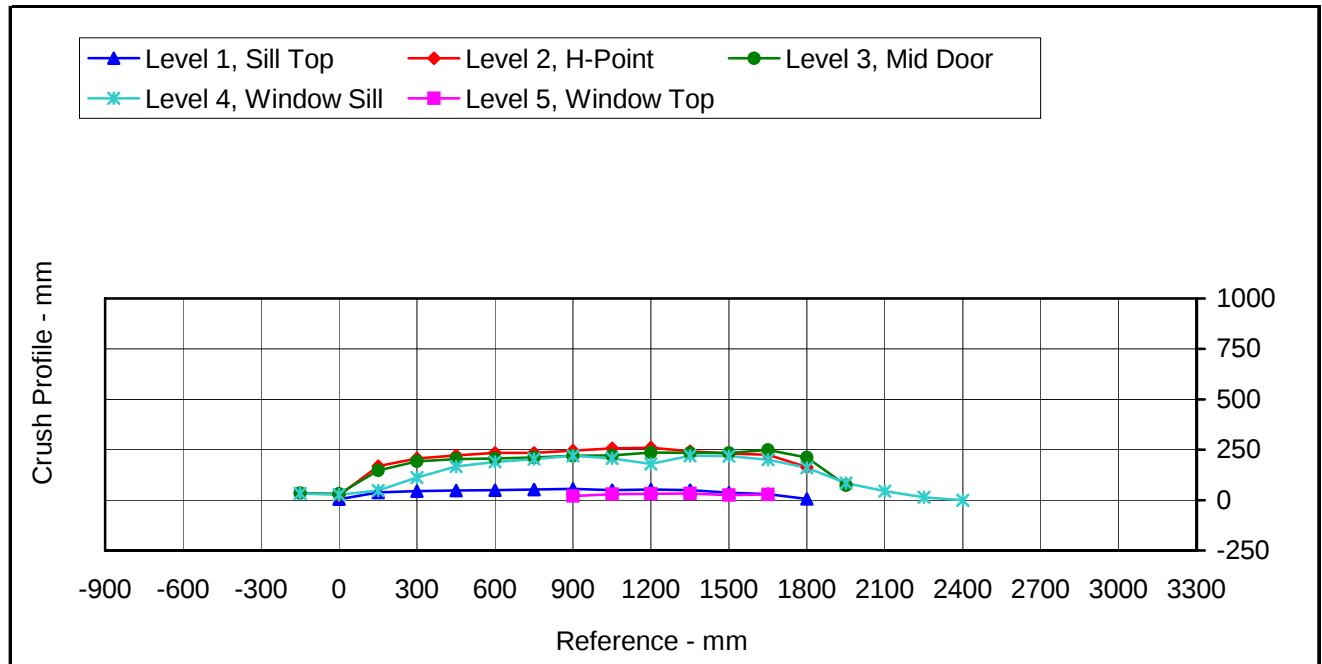
DATA SHEET NO. 9...(CONTINUED)
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	55	260	248	220	33
Distance from Impact	mm	900	1200	1650	900	1350

DATA SHEET NO. 10

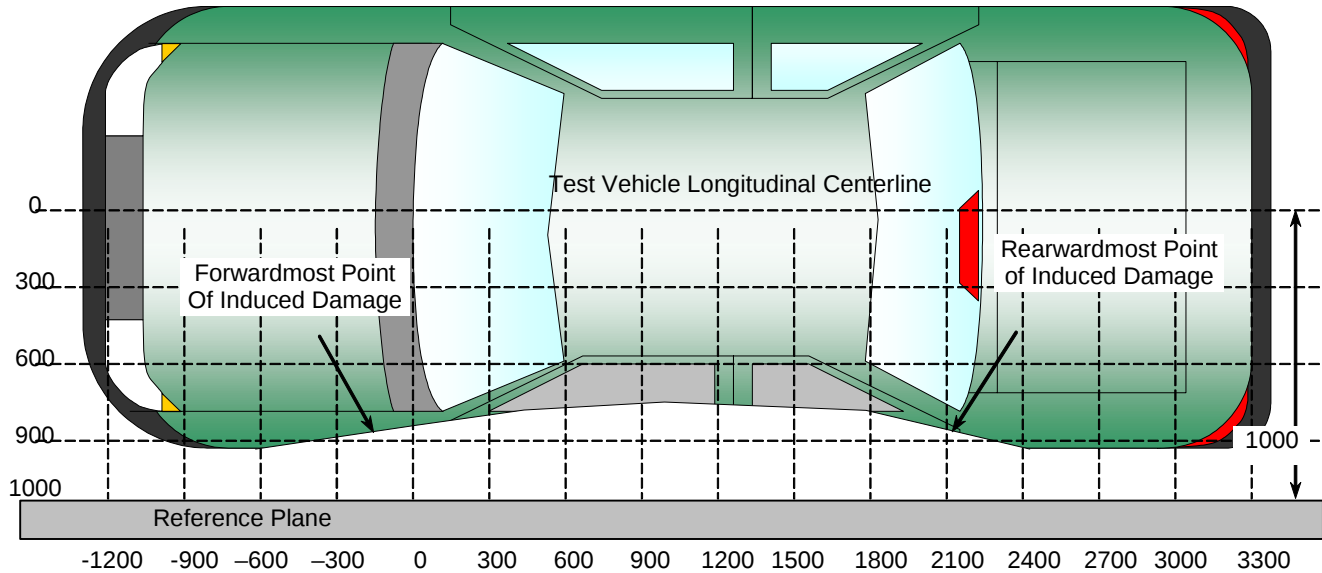
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



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	2100	4	636	681	45
2	1650	3	593	841	248
3	1200	2	587	847	260
4	750	2	587	821	234
5	300	3	591	798	207
6	-150	4	587	621	34

DATA SHEET NO. 11

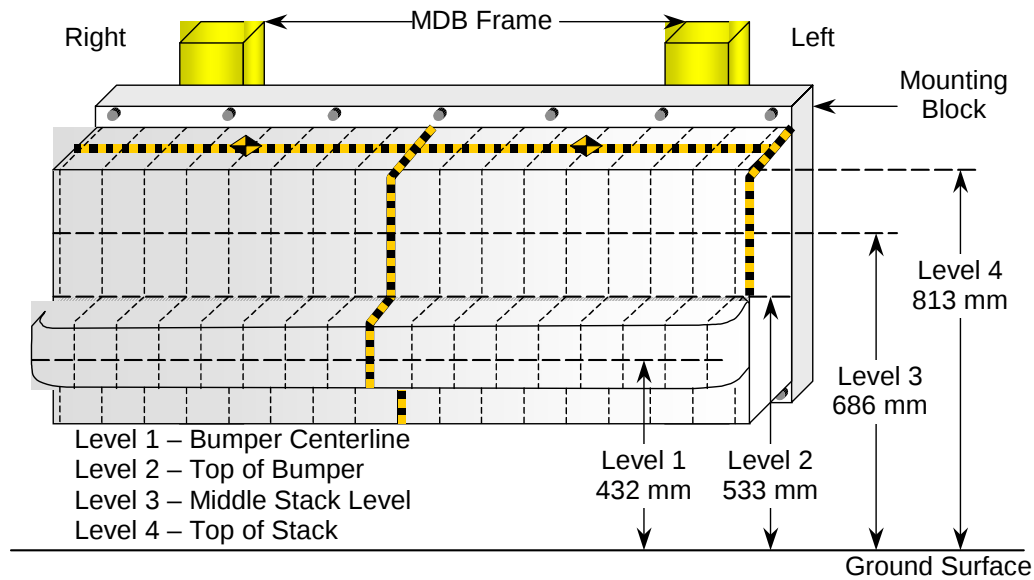
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



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	741	731	716	706	703	701	686	677	671	668	634	656	656	651	643	643	662
2	721	716	706	694	692	695	693	691	681	676	673	674	676	676	678	678	691
3	726	706	686	678	673	689	686	668	653	641	636	636	638	646	658	686	729
4	736	702	676	666	666	688	713	699	673	655	641	646	651	657	682	736	791

All Dimensions in mm

DATA SHEET NO. 12

VEHICLE ACCELEROMETER LOCATIONS

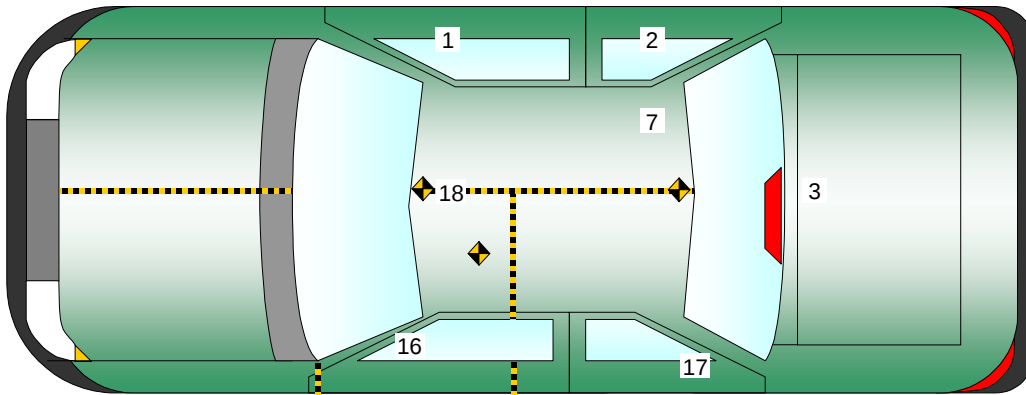
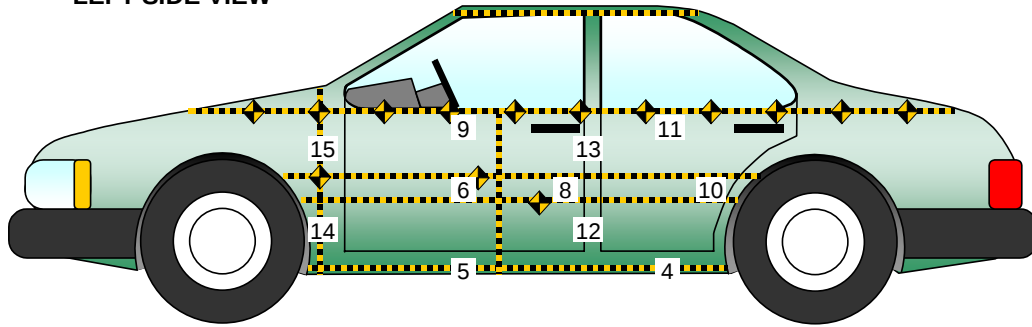
Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08

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:	2009 Acura TSX 4-Door Sedan	NHTSA No.:	H95301
Test Program:	55/28 km/h Side Impact NCAP	Test Date:	6/2/08

VEHICLE ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2595	735	315
2	Right Sill at Rear Seat	1975	730	315
3	Rear Floorpan Above Axle	940	0	515
4	Left Sill at Rear Door	1950	-670	130
5	Left Sill at Front Door	2510	-665	135
6	Front Door Centerline			
7	Rt. Rear Occ. Compartment	2185	420	190
8	Front Door Mid-Rear			
9	Front Door Upper Centerline			
10	Rear Door Mid-Rear			
11	Rear Door Upper Centerline			
12	B-Post Lower	2130	755	530
13	B-Post Middle	2130	755	700
14	A-Post Lower	0	-845	310
15	A-Post Middle	3240	-850	670
16	Front Seat Track	2690	580	300
17	Rear Seat Structure			
18	Vehicle CG	2805	235	195

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: 2009 Acura TSX 4-Door Sedan

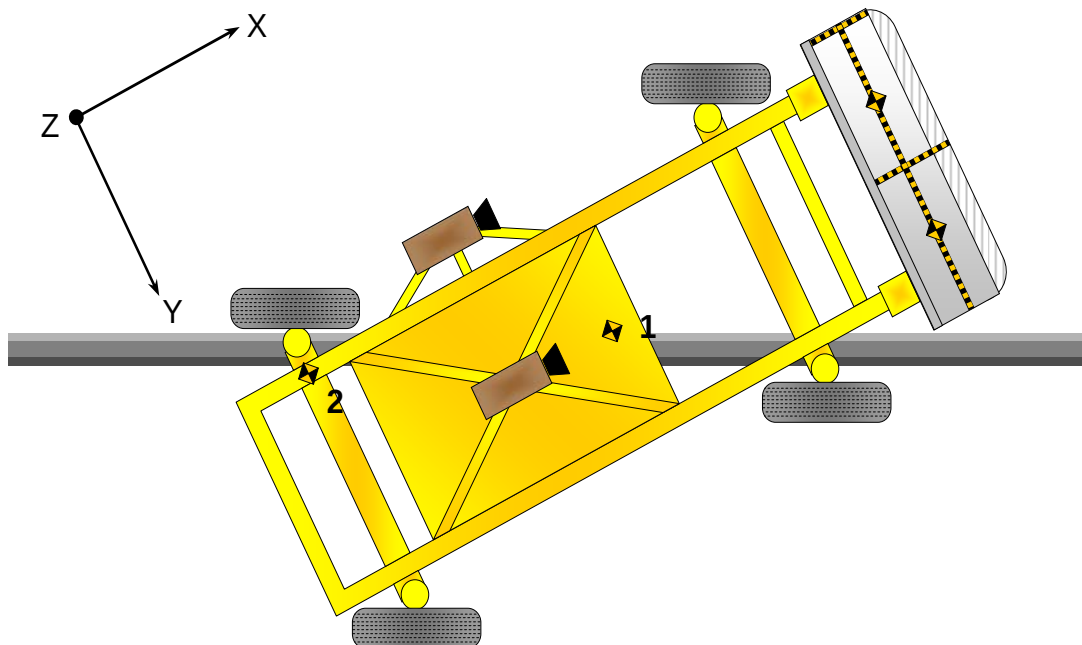
NHTSA No.: H95301

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

Test Date: 6/2/08

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

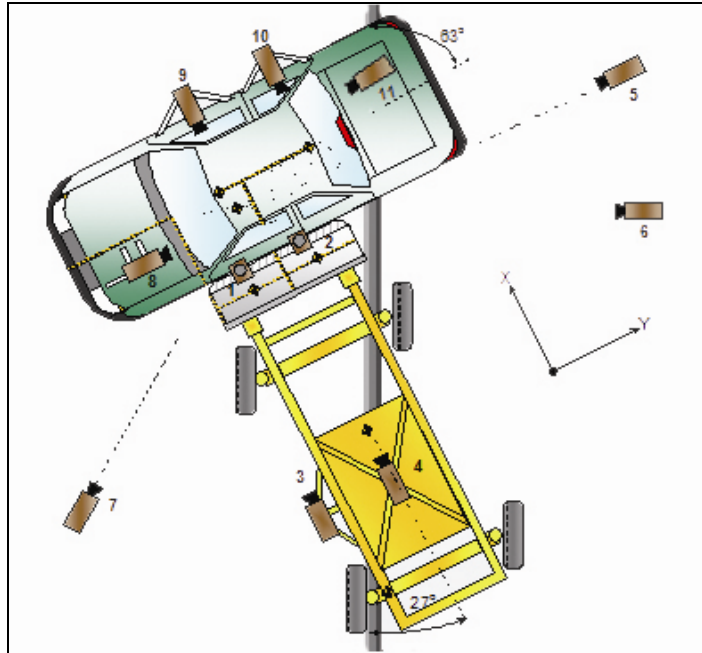
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X	Y	Z			
Doc	Real Time Inrun	-2484	-3958	-1506			30
Doc	Real Time Left Front	-2266	3549	-1475	-2		30
1	Overhead Overall	1220	2287	-5486	-90	14mm	1000
2	Overhead Close Up	609	2287	-5102	-90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	-2	12mm	1000
4	Side Overall (MDB)	-3912	838	-1829	-4	12mm	1000
5	Rear	-64	20485	-1348	0	105mm	1000
6	Left Rear (MDB)	-2137	-1302	-339	-4	85mm	1000
7	Left Front	-2266	-3564	-1475	-2	24mm	1000
8	Driver Front (O.B.)	838.2	482.6	-1320.8	-7	35mm	1000
9	Driver Side (O.B.)	2286	-825.5	-1117.6	-9	20mm	1000
10	Passenger Side (O.B.)	3149.6	-787.4	-1054.1	-7	20mm	1000

All measurements are relative to the point of impact.

DATA SHEET NO. 15

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2009 Acura TSX 4-Door Sedan NHTSA No.: H95301

Test Program: 55/28 km/h Side Impact NCAP Test Date: 6/2/08

Test Time: 1:23 PM Temperature: 27.2 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

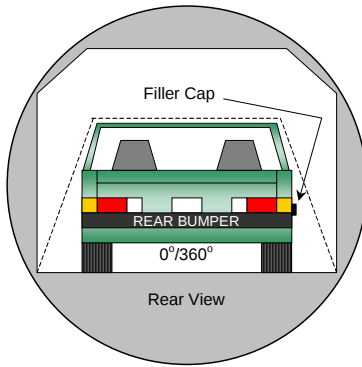
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2009 Acura TSX 4-Door Sedan

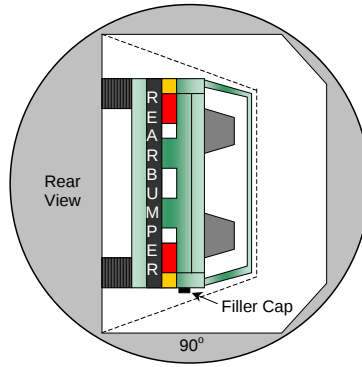
NHTSA No.: H95301

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

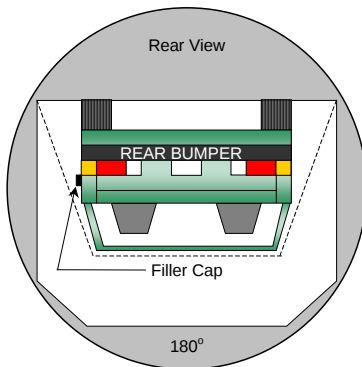
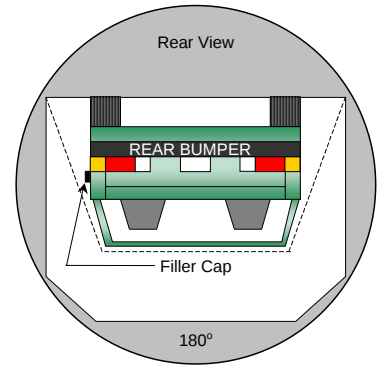
Test Date: 6/2/08



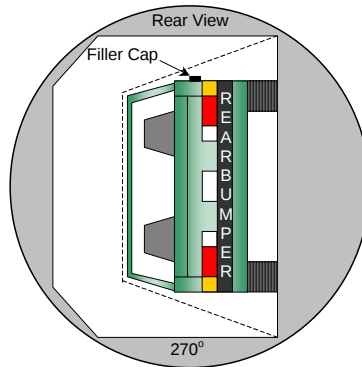
0° to 90°



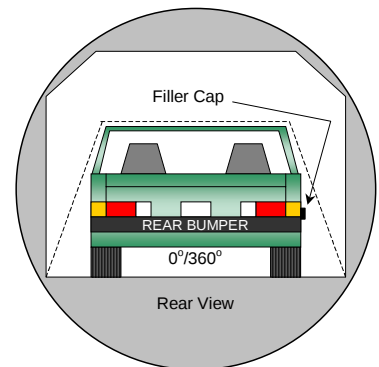
90° to 180°



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: 2009 Acura TSX 4-Door SedanNHTSA No.: H95301Test Program: 55/28 km/h Side Impact NCAPTest Date: 6/2/08**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	85	301	386
90° to 180°	87	302	389
180° to 270°	89	301	390
270° to 360°	90	300	390

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

DATA SHEET NO. 17

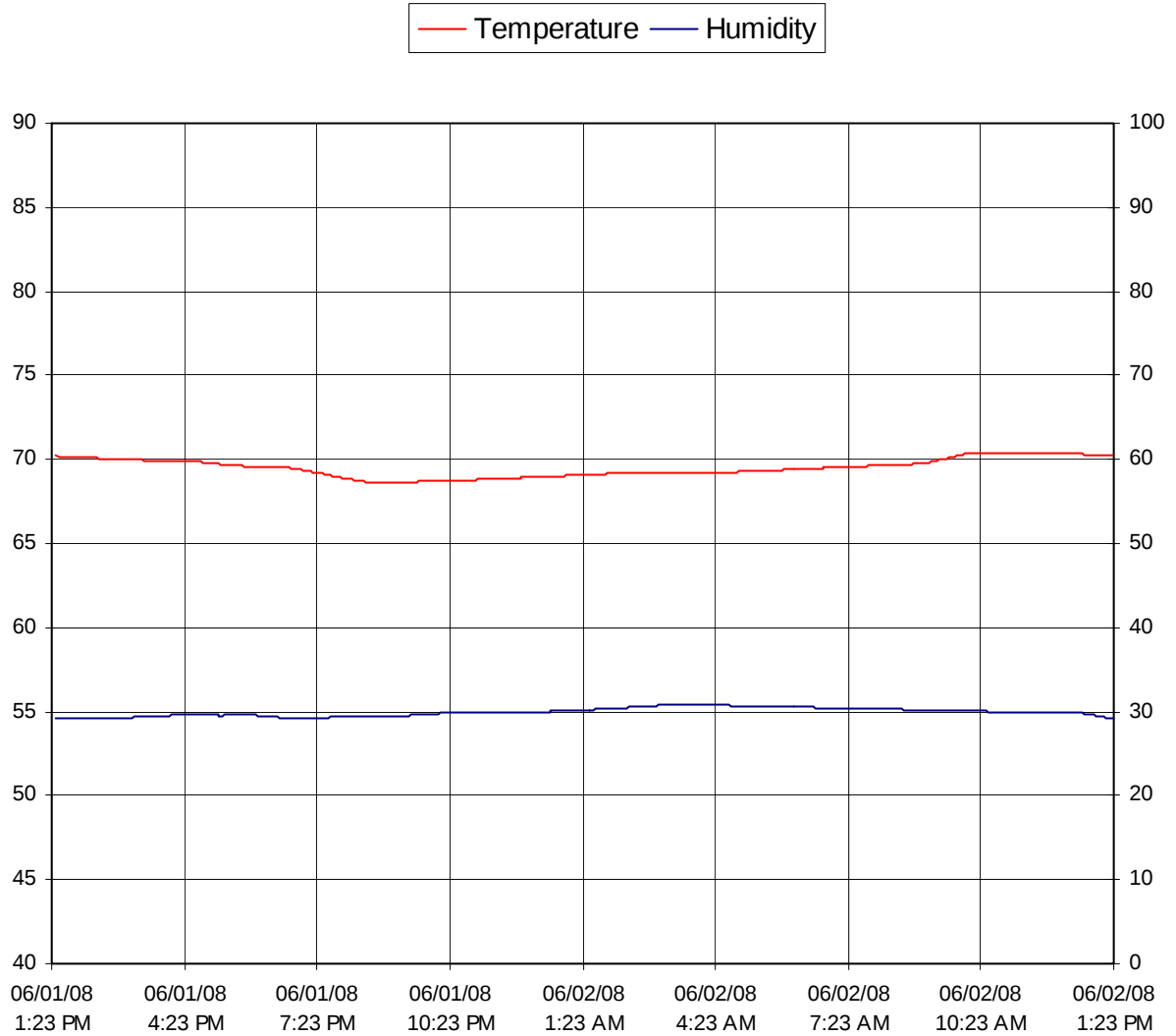
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2009 Acura TSX 4-Door Sedan

NHTSA No.: H95301

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

Test Date: 6/2/08



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

Figure		Page
A-1	Left Front $\frac{3}{4}$ View, as Received	A-1
A-2	Right 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 Doors	A-27
A-28	Post-Test Front $\frac{3}{4}$ View of Left Side Doors	A-28
A-29	Pre-Test Rear $\frac{3}{4}$ View of Left Side Doors	A-29
A-30	Post-Test Rear $\frac{3}{4}$ View of Left Side Doors	A-30
A-31	Pre-Test Left Front Door	A-31
A-32	Post-Test Left Front Door	A-32
A-33	Pre-Test Left Rear Door	A-33
A-34	Post-Test Left Rear Door	A-34

LIST OF PHOTOGRAPHS...(CONTINUED)

Figure		Page
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 Door Panel (Interior)	A-51
A-52	Post-Test Rear Door 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 Impact	A-65



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



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

MFD. IN JAPAN BY HONDA MOTOR CO., LTD; 03/' 08

GVWR 4475LBS GAWR F 2410LBS R 2090LBS

GVWR 2030KG GAWR F 1095KG R 950KG

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

V.I.N.: JH4CU26679C003206 TYPE: PASSENGER CAR



TL2

9

AA7

-NH736M

-A

-C

Figure A-3: Manufacturer's Label



TIRE AND LOADING INFORMATION

SEATING CAPACITY : TOTAL 5 : FRONT 2 : REAR 3

The combined weight of occupants and cargo should never exceed 385kg or 850lbs.

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	P225/50R17 93V	230KPA, 33PSI	
REAR		230KPA, 33PSI	
SPARE	T135/80D16 101M	420KPA, 60PSI	

TL2-A0

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 $\frac{3}{4}$ 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

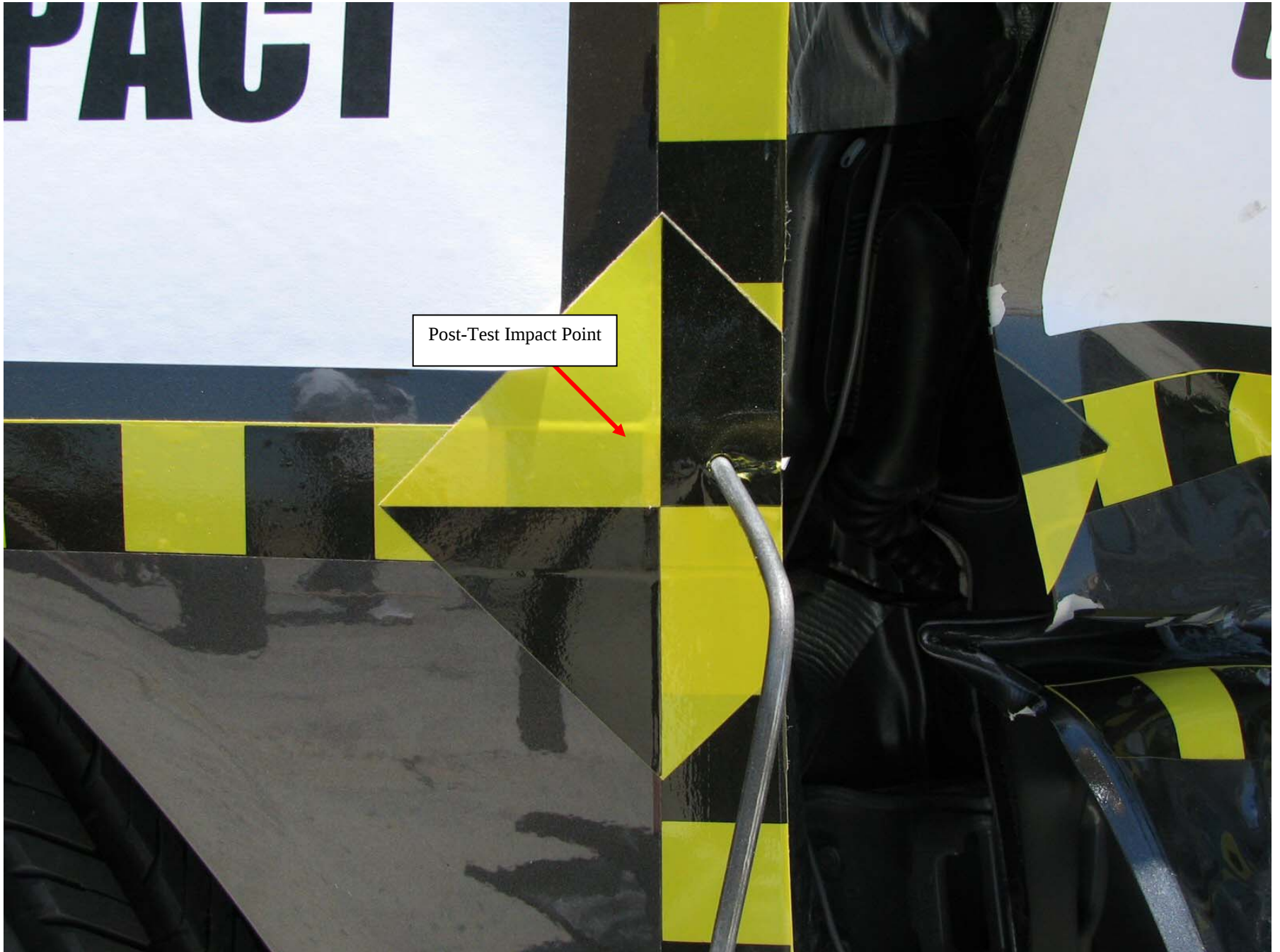


Figure A-26: Post-Test Left Impact Point



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



Figure A-28: Post-Test Front ¾ 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

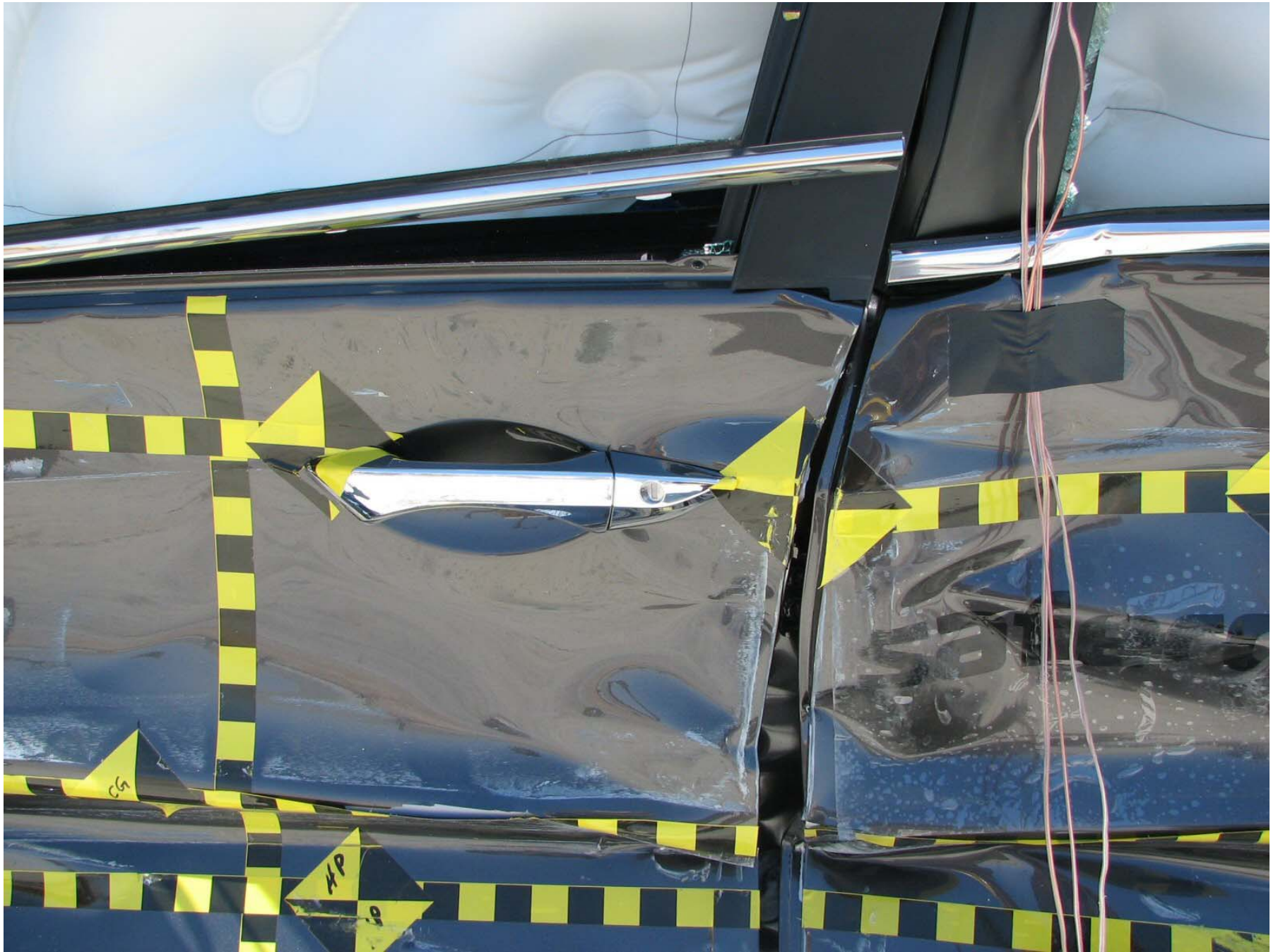


Figure A-32: Post-Test Left Front Door



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-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 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 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)

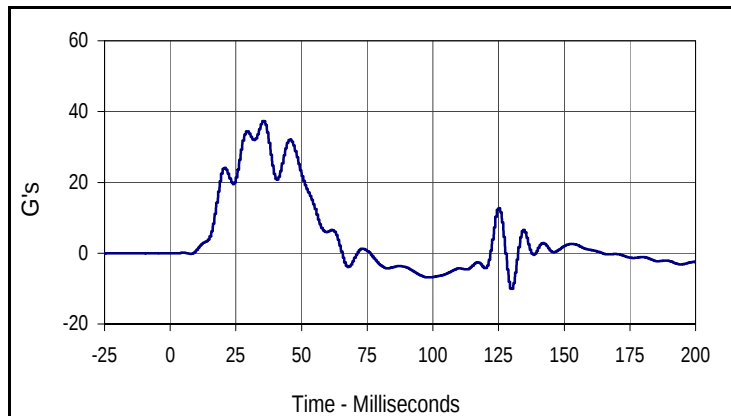
Vehicle Left Sill at Rear Door Y
Vehicle Left Sill at Front Door Y
Vehicle Left Sill at Rear Door Y Velocity
Vehicle Left Sill at Front Door Y Velocity
Vehicle Left Front Door C/L Y
Vehicle Right Rear Occupant Compartment
Vehicle Left Front Door Mid Rear Y
Vehicle Left Front Door Upper CL Y
Vehicle Left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

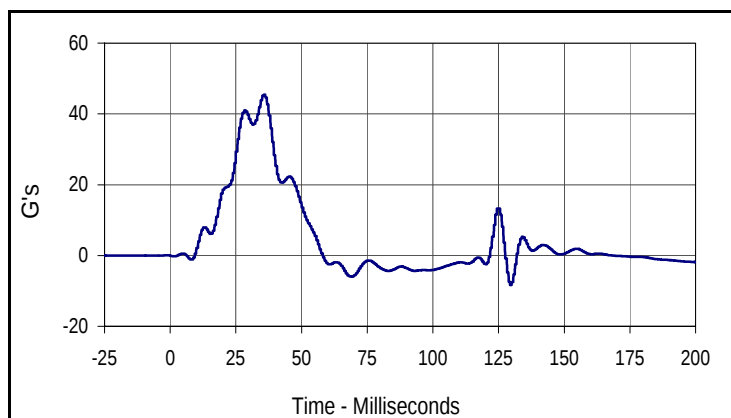
Driver Upper Rib Primary Y
Driver Lower Rib Primary Y
Driver Lower Spine Primary Y
Driver Pelvis Primary Y
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Passenger Upper Rib Primary Y
Passenger Lower Rib Primary Y
Passenger Lower Spine 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: 2009 Acura TSX 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

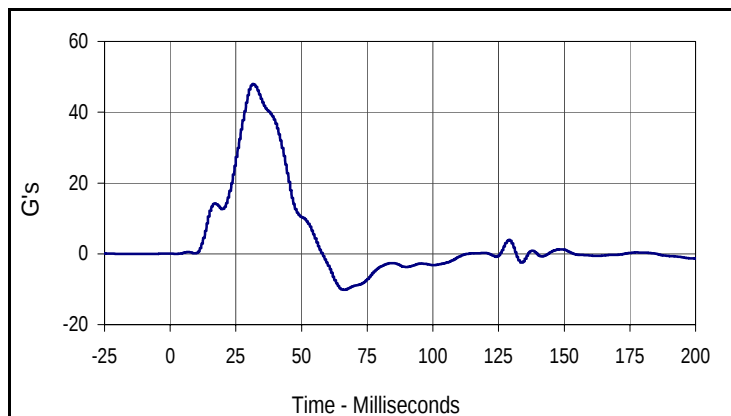
Test Date: 6/2/08
 NHTSA No.: H95301



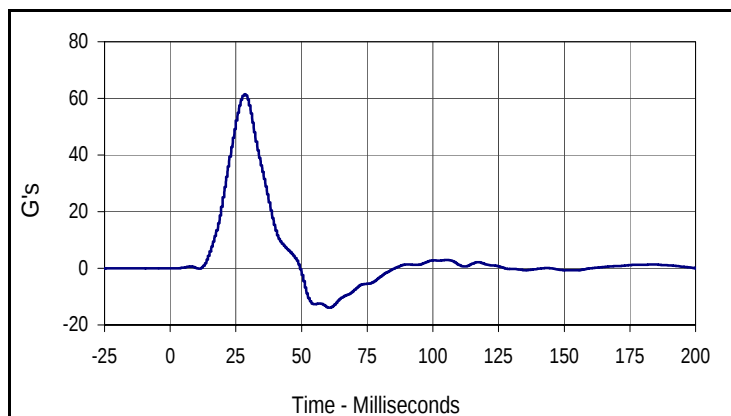
Curve Description			
Driver Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIR	FIR100	G's
Max	Time	Min	Time
37.3	35.0	-10.1	130.0



Curve Description			
Driver Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIR	FIR100	G's
Max	Time	Min	Time
45.5	35.7	-8.3	129.4



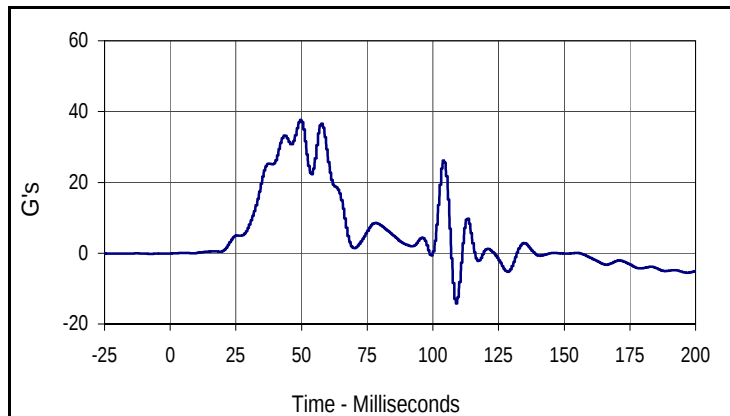
Curve Description			
Driver Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIR	FIR100	G's
Max	Time	Min	Time
47.9	31.3	-10.2	65.7



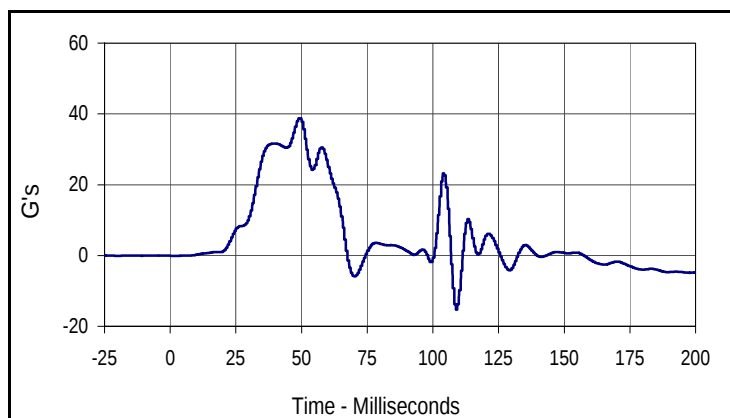
Curve Description			
Driver Pelvis Primary Y			
CURNO	Type	SAE Class	Units
004	FIR	FIR100	G's
Max	Time	Min	Time
61.4	28.2	-13.9	60.7

Test Vehicle: 2009 Acura TSX 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

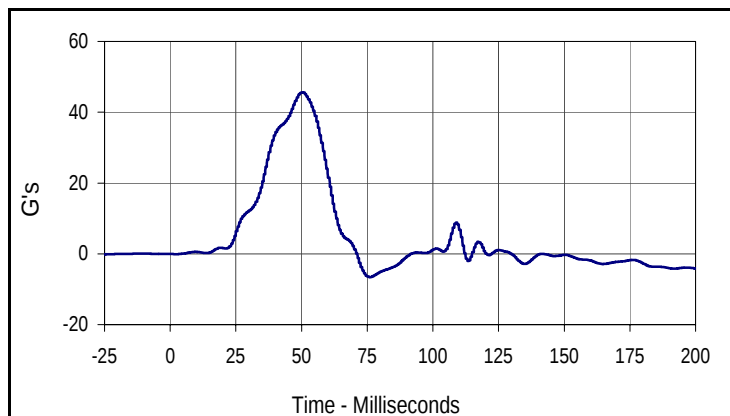
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 NHTSA No.: H95301



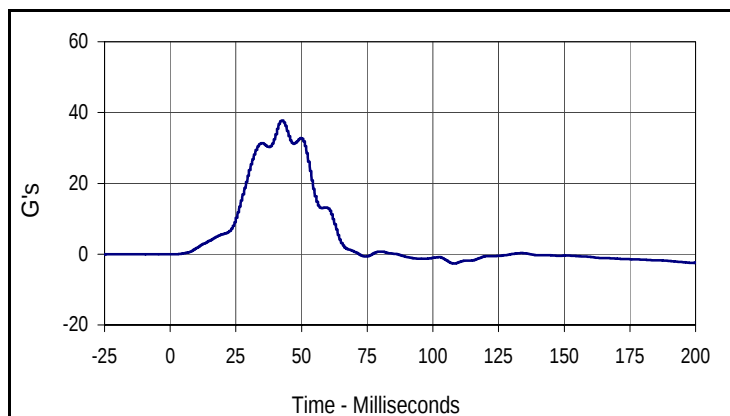
Curve Description			
Passenger Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
005	FIR	FIR100	G's
Max	Time	Min	Time
37.7	49.4	-14.2	108.8



Curve Description			
Passenger Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
006	FIR	FIR100	G's
Max	Time	Min	Time
38.8	48.8	-15.3	108.8



Curve Description			
Passenger Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
007	FIR	FIR100	G's
Max	Time	Min	Time
45.7	50.0	-6.6	75.7



Curve Description			
Passenger Pelvis Y Primary			
CURNO	Type	SAE Class	Units
008	FIR	FIR100	G's
Max	Time	Min	Time
37.7	42.5	-2.7	107.5

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.: 275

Test Date: 5/20/08
Test I.D.: N/A



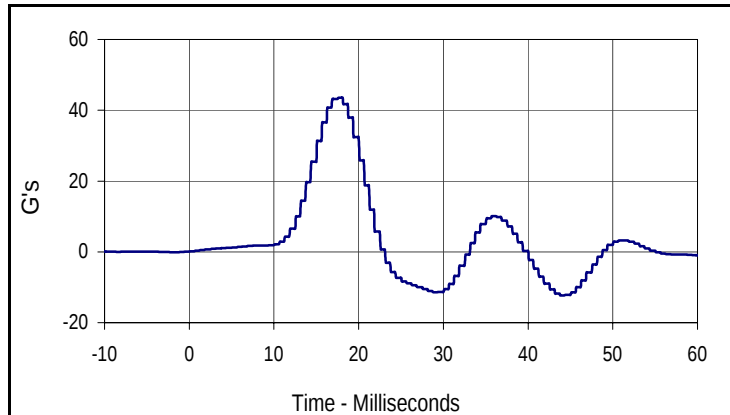
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	897	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	518	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	520	Pass
KV- Knee Pivot From Floor	mm	490 to 505	490	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

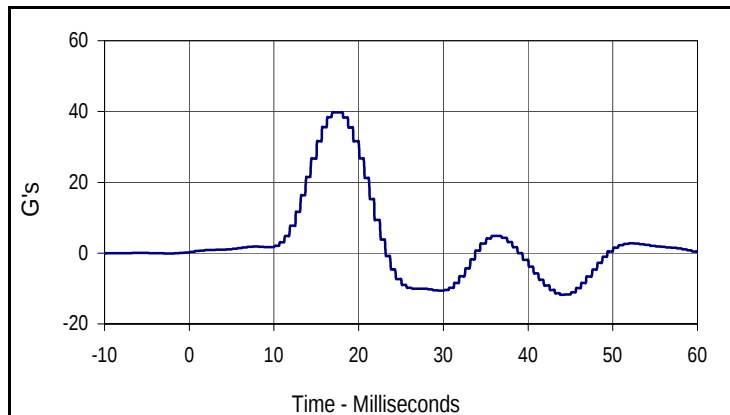
Test Date: 5/19/08
 Test I.D.: TH05C



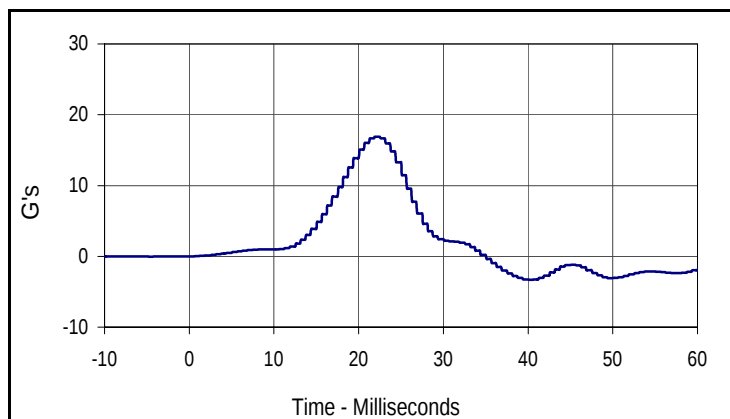
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	43.5	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	39.8	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	16.9	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
43.5	17.6	-12.3	43.8



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
39.8	16.9	-11.8	43.8



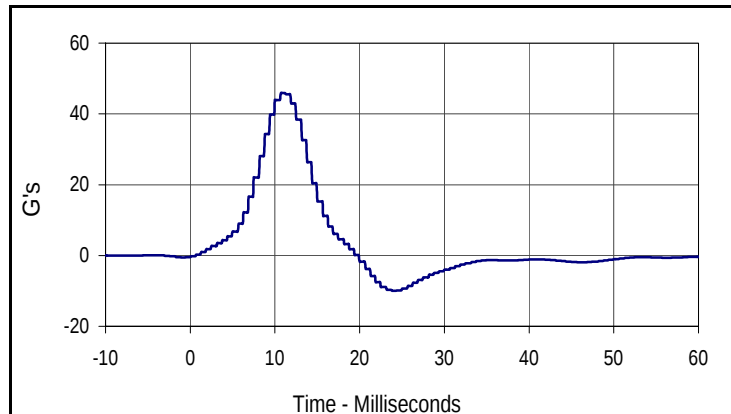
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
16.9	21.9	-3.3	40.1

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

Test Date: 5/19/08
 Test I.D.: PL05C



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



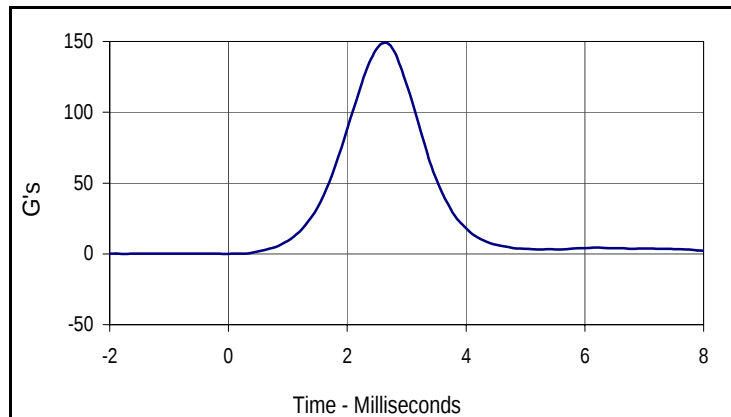
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
45.9	10.7	-10.0	23.8

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

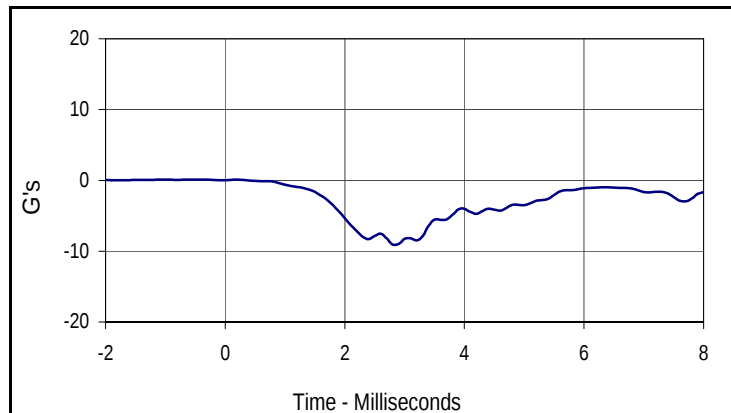
Test Date: 5/19/08
 Test I.D.: HD05C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	148.9	Pass
Peak Longitudinal Acceleration	G's	≤15.0	9.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.0	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
148.9	2.6	0.0	-0.1



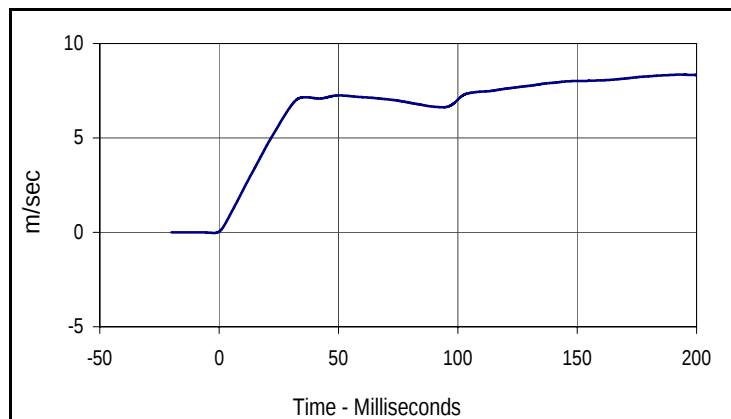
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.0	-9.0	2.8

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

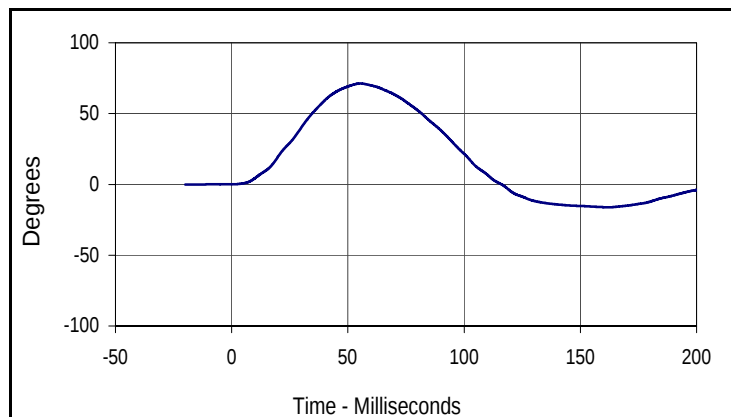
Test Date: 5/19/08
 Test I.D.: NB05C



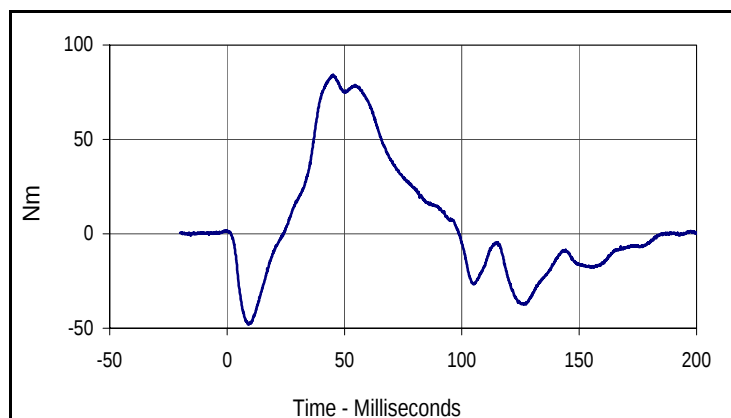
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.09	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.24	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.61	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.69	Pass
	40 to 70	m/sec	6.27 to 7.64	7.25	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	71.2	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	10.3	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	60.7	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	84.2	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	53.7	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/sec
Max	Time	Min	Time
8.4	193.2	0.0	-2.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.2	55.4	-16.2	162.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	60	Nm
Max	Time	Min	Time
84.2	45.1	-48.1	9.2

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

Test Date: 5/20/08
 Test I.D.: N/A



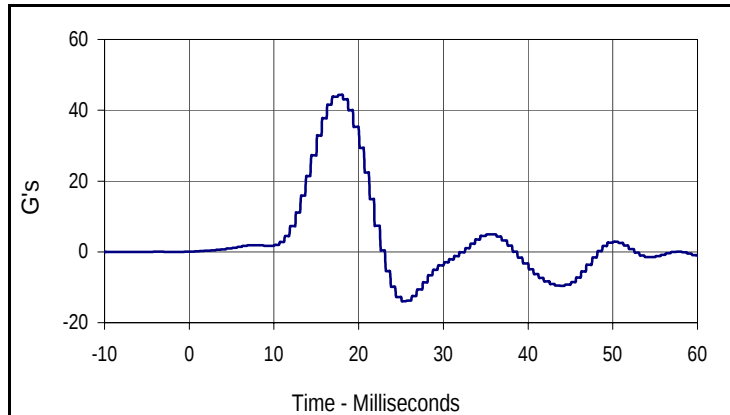
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	899	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	518	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	520	Pass
KV- Knee Pivot From Floor	mm	490 to 505	499	Pass
HW- Hip Width	mm	356 to 391	367	Pass
Overall Test Results				Pass

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

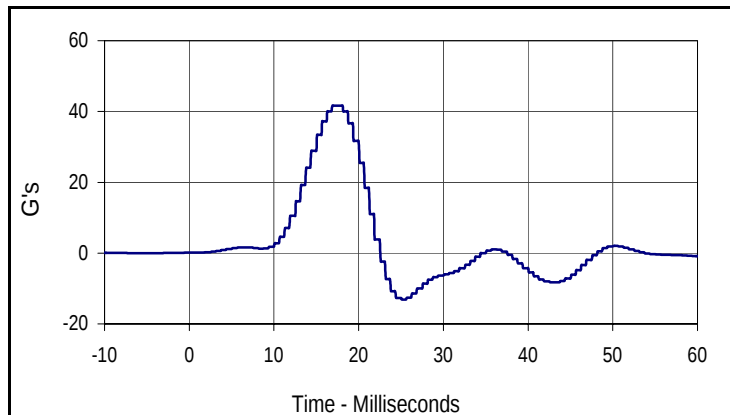
Test Date: 5/20/08
 Test I.D.: TH05D



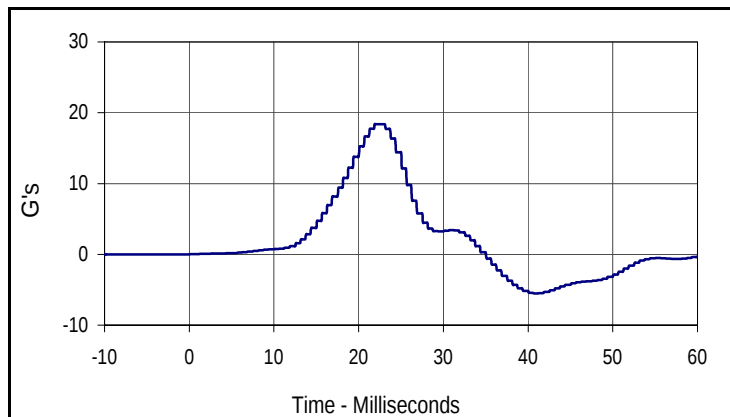
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	44.4	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	41.6	Pass
Thoracic 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
44.4	17.6	-14.0	25.1



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
41.6	17.6	-13.1	25.1



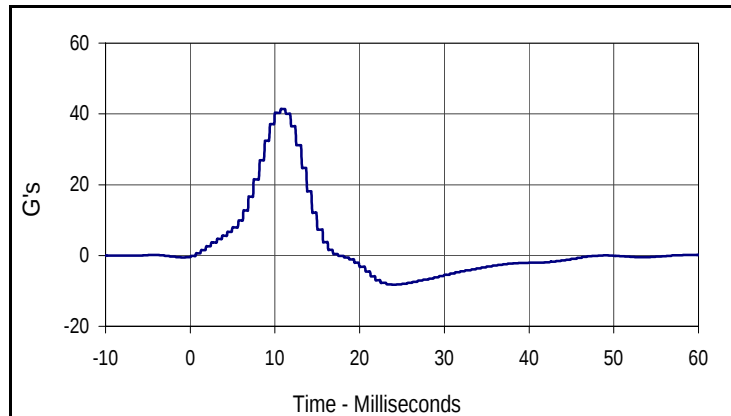
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
18.4	22.6	-5.5	40.7

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

Test Date: 5/20/08
 Test I.D.: PL05D



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



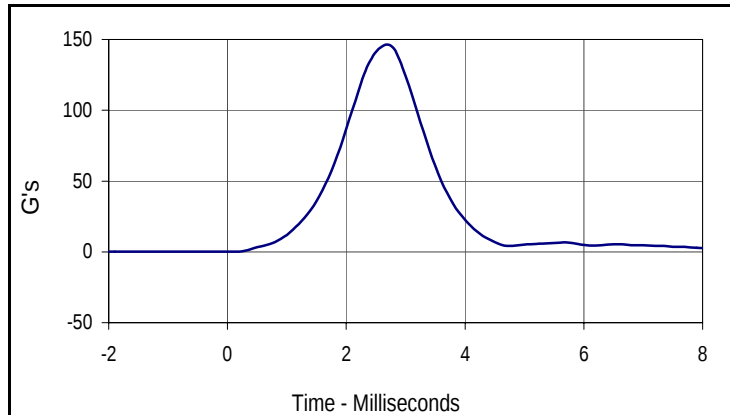
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
41.4	10.7	-8.3	23.8

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

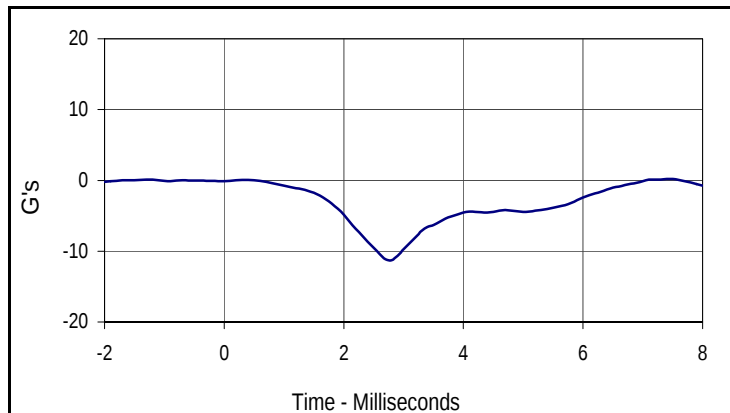
Test Date: 5/20/08
 Test I.D.: HD05D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	146.4	Pass
Peak Longitudinal Acceleration	G's	≤15.0	11.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.5	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
146.4	2.7	0.1	-1.7



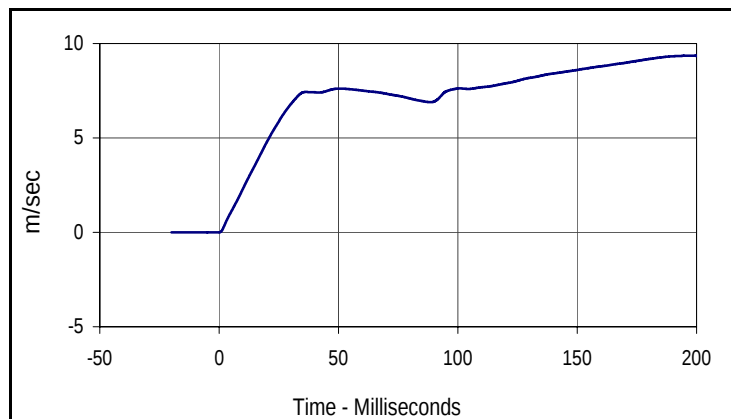
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.3	-11.3	2.8

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

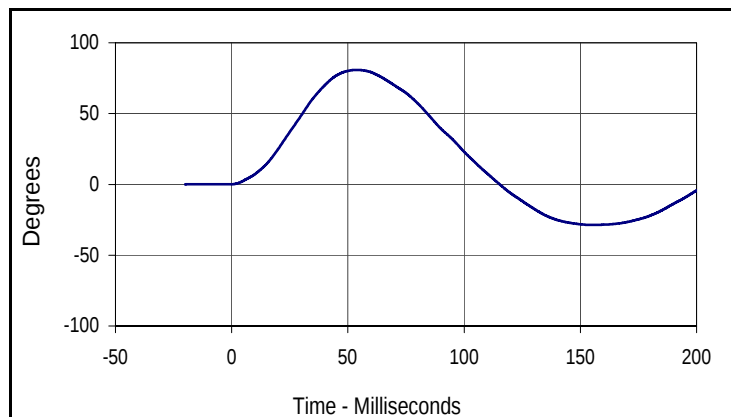
Test Date: 5/20/08
 Test I.D.: NB05D



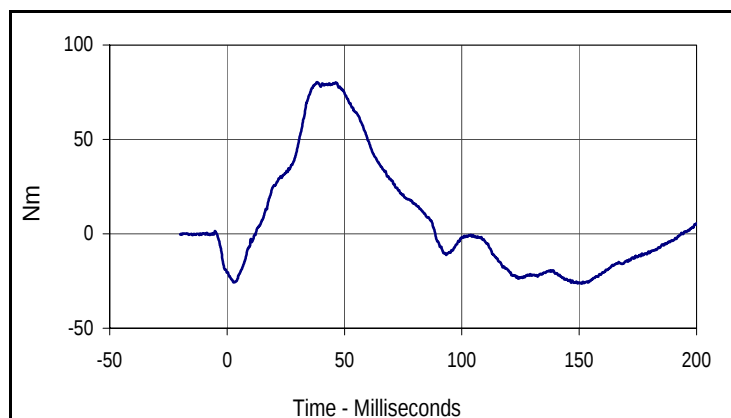
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.09	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.32	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.79	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.79	Pass
	40 to 70	m/sec	6.27 to 7.64	7.62	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	80.9	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	15.5	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	61.6	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	80.4	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	50.4	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.4	196.6	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
80.9	53.8	-28.7	155.3



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
80.4	38.3	-26.4	151.0

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

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

Test Date: 6/5/08
Test I.D.: N/A



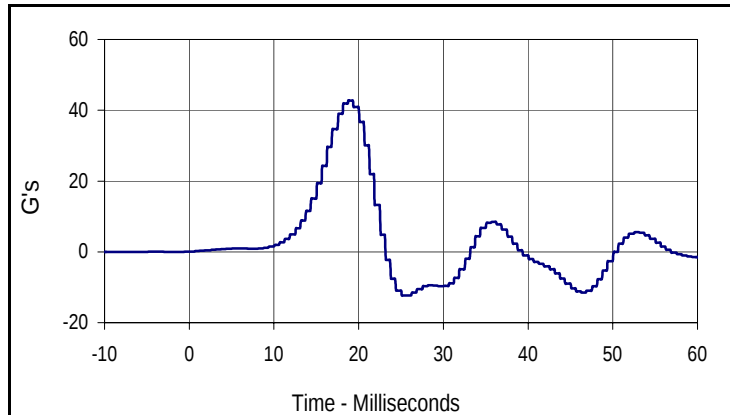
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	890	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	517	Pass
KV- Knee Pivot From Floor	mm	490 to 505	496	Pass
HW- Hip Width	mm	356 to 391	360	Pass
Overall Test Results				Pass

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

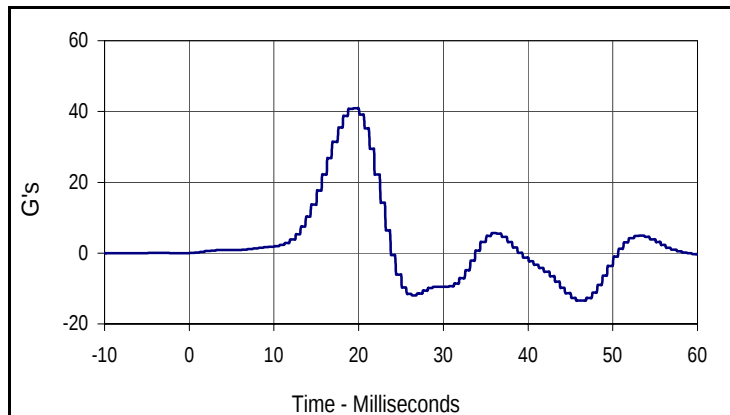
Test Date: 6/5/08
 Test I.D.: TH06A



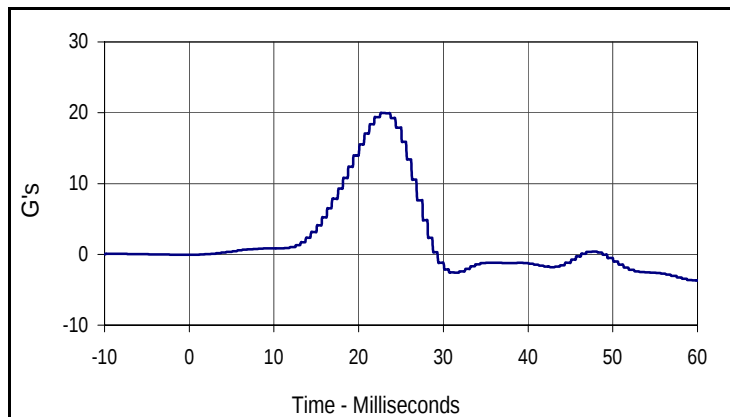
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	42.7	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	40.9	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.0	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
42.7	18.8	-12.3	25.1



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
40.9	19.4	-13.4	46.3



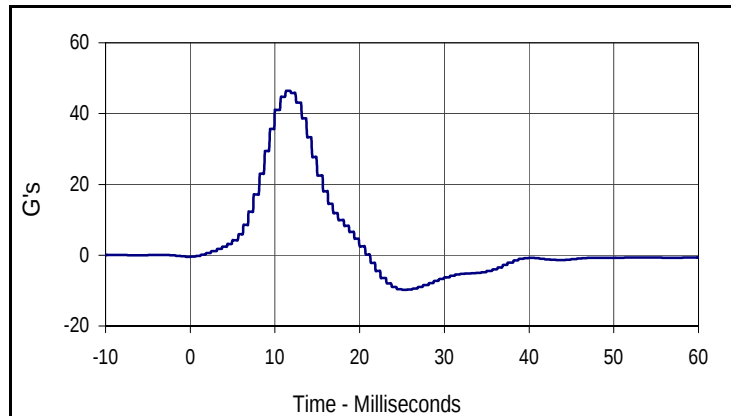
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
20.0	22.6	-3.7	60.1

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

Test Date: 6/5/08
 Test I.D.: PL06A



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	46.4	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.70	Pass
Overall Test Results				Pass



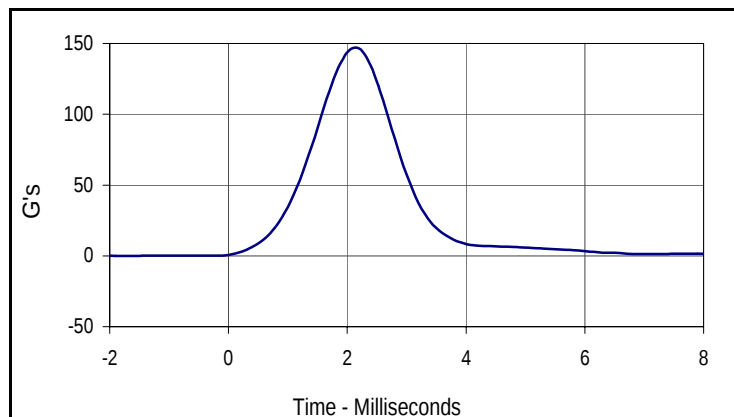
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
46.4	11.3	-9.8	25.0

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

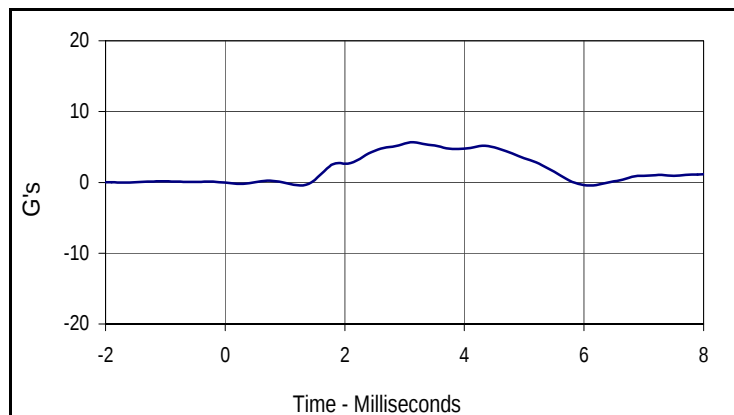
Test Date: 6/5/08
 Test I.D.: HD06A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	146.9	Pass
Peak Longitudinal Acceleration	G's	≤15.0	5.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.0	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
146.9	2.1	0.0	-1.6



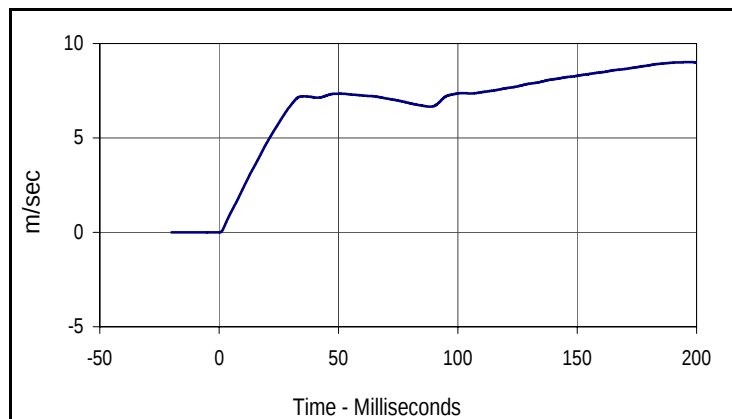
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.7	3.1	-0.4	1.3

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

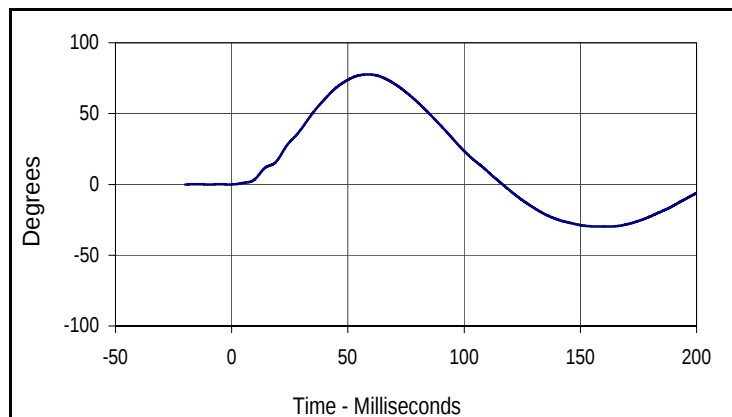
Test Date: 6/5/08
 Test I.D.: NB06A



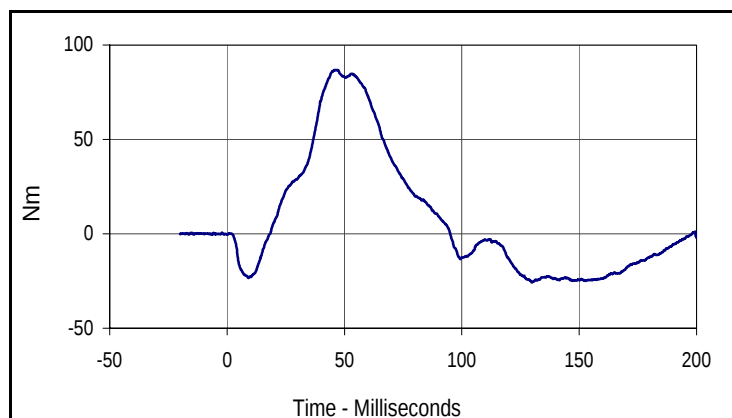
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.09	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.33	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.75	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.73	Pass
	40 to 70	m/sec	6.27 to 7.64	7.35	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	12.5	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	58.1	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	86.8	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.1	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.0	197.3	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
77.7	58.5	-29.8	161.6



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
86.8	46.0	-25.8	129.9

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

Test Date: 6/5/08
 Test I.D.: N/A



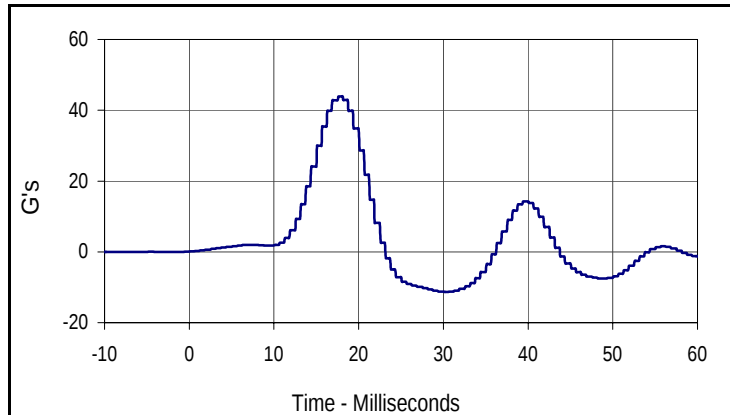
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	893	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	516	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	513	Pass
KV- Knee Pivot From Floor	mm	490 to 505	494	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

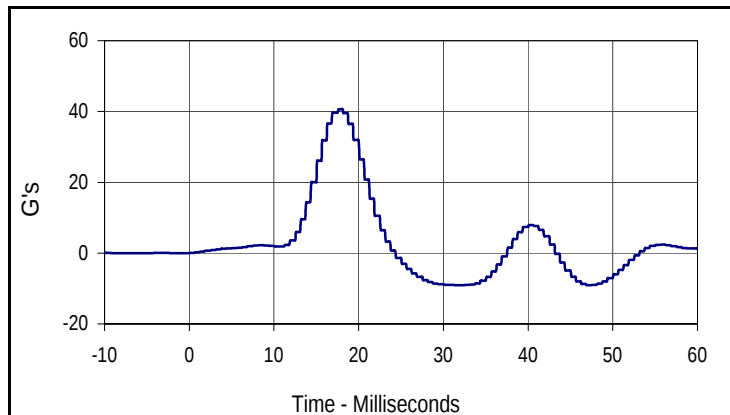
Test Date: 6/5/08
 Test I.D.: TH06B



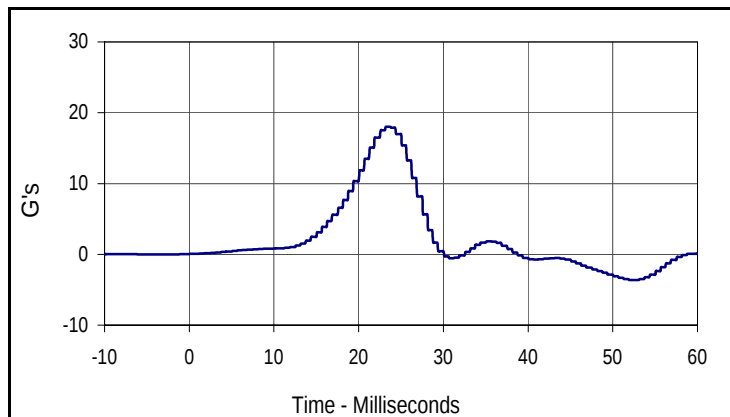
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	43.9	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	40.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	18.0	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
43.9	17.6	-11.3	30.1



Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
40.7	17.6	-9.0	31.9



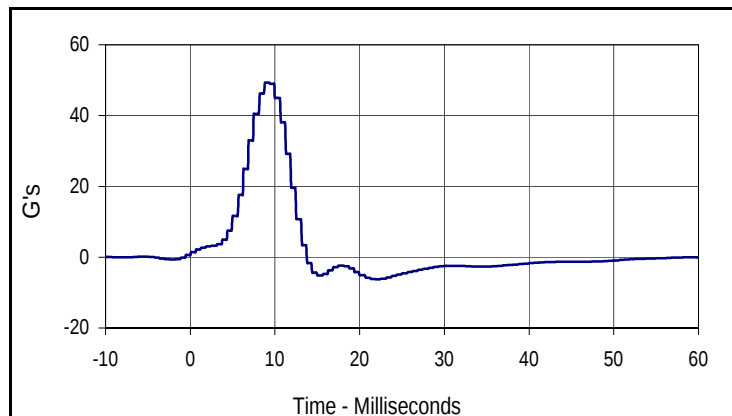
Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
18.0	23.2	-3.6	52.6

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

Test Date: 6/5/08
 Test I.D.: PL06B



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



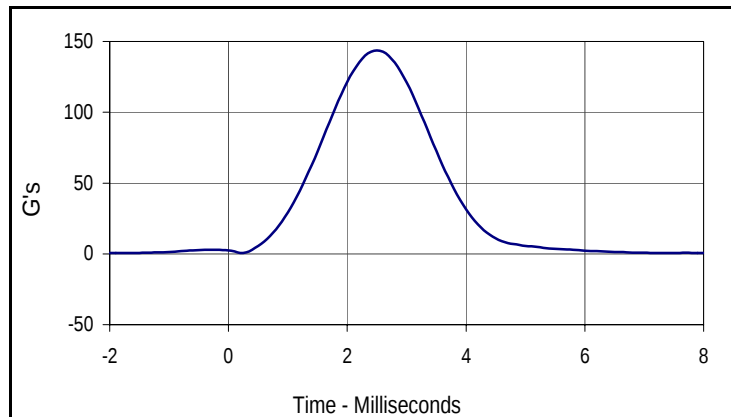
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
49.3	8.8	-6.3	21.9

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

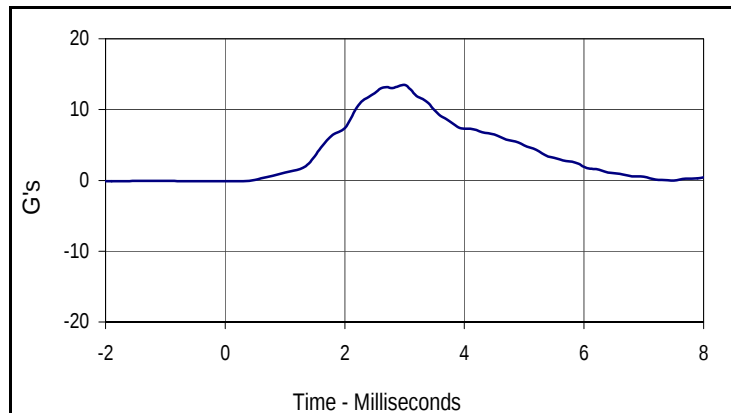
Test Date: 6/5/08
 Test I.D.: HD06B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	143.8	Pass
Peak Longitudinal Acceleration	G's	≤15.0	13.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.0	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
143.8	2.5	0.6	-2.0



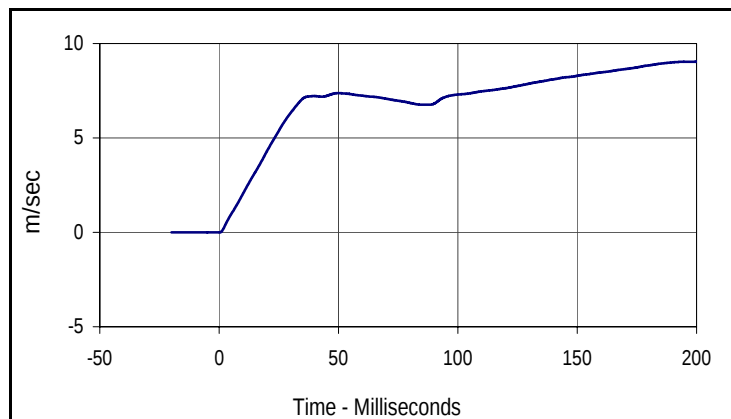
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
13.5	3.0	-0.1	-0.6

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

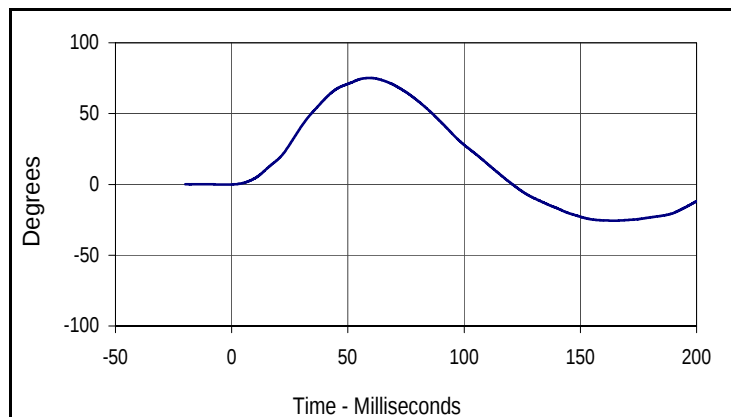
Test Date: 6/5/08
 Test I.D.: NB06B



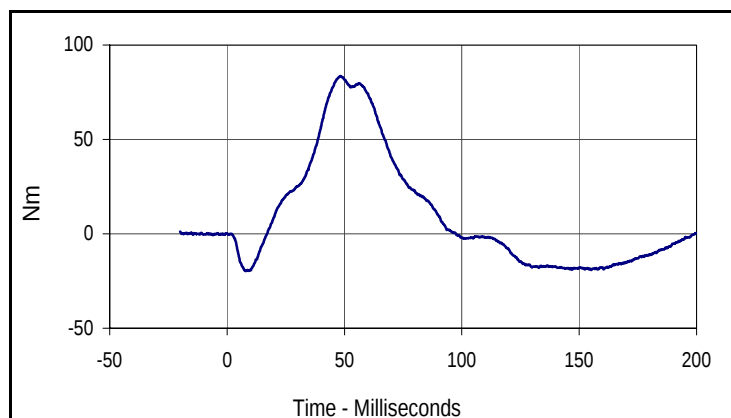
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.09	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.05	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.29	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.34	Pass
	40 to 70	m/sec	6.27 to 7.64	7.37	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	75.1	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	11.0	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	61.5	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	83.6	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.2	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.0	195.5	0.0	-0.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.1	59.3	-25.6	164.5



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
83.6	48.3	-19.7	8.1