

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**HYUNDAI MOTOR COMPANY
2010 HYUNDAI GENESIS 2-DR COUPE
NHTSA NUMBER: MA0502**

**PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105**



Test Date: April 20, 2009

Report Date: May 27, 2009

FINAL REPORT

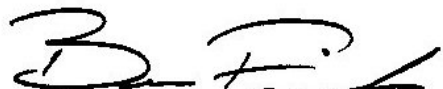
**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVENUE, SE, ROOM W43-410
WASHINGTON, D.C. 20590**

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-12005.

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Date: 5/27/2009

Technical Report Documentation Page

1. Report No. NCAPSIDE-MGA-2009-004	2. Government Accession No.	3. Recipient's Catalog No.																						
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Testing of 2010 Hyundai Genesis 2-Dr Coupe NHTSA No.: MA0502		5. Report Date May 27, 2009																						
		6. Performing Organization Code MGA																						
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer		8. Performing Organization Report No. NCAPSIDE-MGA-2009-004																						
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No.																						
		11. Contract or Grant No. DTNH22-03-D-12005																						
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking, Office of Crashworthiness Standards 1200 New Jersey Ave, SE, Room W43-410, NVS-111 Washington, D.C. 20590		13. Type of Report and Period Covered: Final Report 4/20/2009 to 5/27/2009																						
		14. Sponsoring Agency Code NVS-111																						
15. Supplementary Notes																								
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 2010 Hyundai Genesis 2-Dr Coupe to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on April 20, 2009. The impact velocity of the Moving Deformable Barrier (MDB) was 62.4 km/h, and the ambient temperature at the struck side (drivers) of the vehicle was 21°C. The target vehicle's maximum post test static crush was 297 mm at level 2. The test vehicle's occupant performance is as follows: <table style="margin-left: auto; margin-right: auto; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER</u></th> <th style="text-align: center;"><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">51.2</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">51.9</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">56.6</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">54</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">57.7</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">178</td> <td style="text-align: center;">N/A</td> </tr> </tbody> </table> The door on the struck side of the vehicle did not separate from the body at the hinge or latch and the opposite door did not open during the side impact event.					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	51.2	N/A	Left Lower Rib (LLR) Accel., g	51.9	N/A	Lower Spine (T ₁₂) Accel., g	56.6	N/A	Thoracic Trauma Index (TTI)	54	N/A	Pelvis (PEV) Accel., g	57.7	N/A	HIC	178	N/A
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17. Key Words New Car Assessment Program (NCAP) Side Impact Side Impact Hybrid III Dummy (SID/HIII) Occupant Side Impact Protection		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, 1200 New Jersey Ave, SE Washington, D.C. 20590																						
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 142	22. Price																					

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-03-D-12005. The purpose of this test was to evaluate side impact protection in a 2010 Hyundai Genesis 2-Dr Coupe manufactured by Hyundai Motor Company.

TEST PROCEDURE

The side impact test was conducted in accordance with the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated November 2002 and the corresponding MGA Research Corporation Test Procedure MGA-NHTSA5. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2

SUMMARY OF NCAP SIDE IMPACT TEST

A model year 2010 Hyundai Genesis 2-Dr Coupe 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 62.4 km/h. The specified impact velocity range is from 61.1 to 62.7 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 1735.5 kg and the test weight of the MDB was 1361.5 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on April 20, 2009.

One (1) real-time motion picture camera and nine (9) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and Side Impact Dummies (SID/HIIs) can be found in Appendix A. One 50th percentile adult male SID/HII was placed in the driver designated seating position according to instructions specified in the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated November 2002. Because of head and leg clearance, a ballast dummy was seated in the left rear seating position. The driver SID/HII was instrumented 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)
- Upper Neck load cell (Fx, Fy, Fz, Mx, My, Mz)

The test vehicle was instrumented with twenty (20) structural accelerometers and the MDB was instrumented with five (5) accelerometers and two (2) contact switches on the bumper to compare left side to right side bumper impact timing. All data channels were recorded with a fully self contained on-board DTS TDAS Pro Data Acquisition System. The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 297 mm at level 2, 1650 mm rearward of the vertical impact point. The driver SID/HII, Serial Nos. 271 was calibrated just prior to this test.

Appendix A contains the still photograph prints. Appendix B contains the SID/HII response data traces. Appendix C contains the dummy calibration data.

The occupant data is summarized below:

ATD position	HIC	T ¹	T ²	TTI (G's)	Peak Pelvis (G's)
Driver	178	44.5	80.5	54	57.7
Passenger					

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

The test data can be found on the NHTSA website at www.nhtsa.dot.gov.

TEST NOTES

Because of head and leg clearance, a ballast dummy was seated in the left rear seating position.

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DATA SHEET NO. 1**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

TEST VEHICLE INFORMATION

Make	Hyundai
Model	Genesis
Body Style	Coupe
NHTSA No.	MA0502
VIN	KMHHT6KD8AU004882
Color	Bathurst Black
Delivery Date	4/14/2009
Odometer Reading (mile)	33
Dealer	Northtown Hyundai
Transmission	Automatic
Final Drive	Rear
Number of Cylinders	4
Engine Displacement (L)	2.0
Engine Placement	Longitudinal
Automatic Door Locks (ADL)	Yes
Owner's Manual Details Instructions on Disabling ADLs	No

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Curtain Airbag	Yes
Driver Side Torso Airbag	Yes
Rear Passenger Side Curtain Airbag	No
Rear Passenger Side Torso Airbag	No
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Anti-lock Brakes	Yes
Traction Control	Yes
All Wheel Drive	No
Power Seats	No
Pretensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Hyundai Motor Company
Date of Manufacture	DEC/30/08

GVWR (kg)	1930
GAWR Front (kg)	1000
GAWR Rear (kg)	1050

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket		
Number Of Occupants	2	2		4
Capacity Wt. (VCW) (kg)				322
Cargo Wt. (RCLW) (kg)				50

DATA SHEET NO. 1 (continued)**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	421.4	349.3		478.5	435.9	
Right	kg	410.5	350.2		411.0	410.1	
Ratio	%	54.3	45.7		51.3	48.7	
Totals	kg	831.9	699.5	1531.4	889.5	846.0	1735.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1531.4
Weight of 2 P572M ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Vehicle Target Weight (TVTW)	kg	1742.9

* Actual As Tested Weight (ATW) will be TVTW -5/-10 kg

Weight of Ballast (kg): 4.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	697	697	727	729	1288
As Tested	mm	685	695	716	718	1375
Fully Loaded	mm	684	695	697	705	

TEST VEHICLE VERTICAL IMPACT LINE DATA

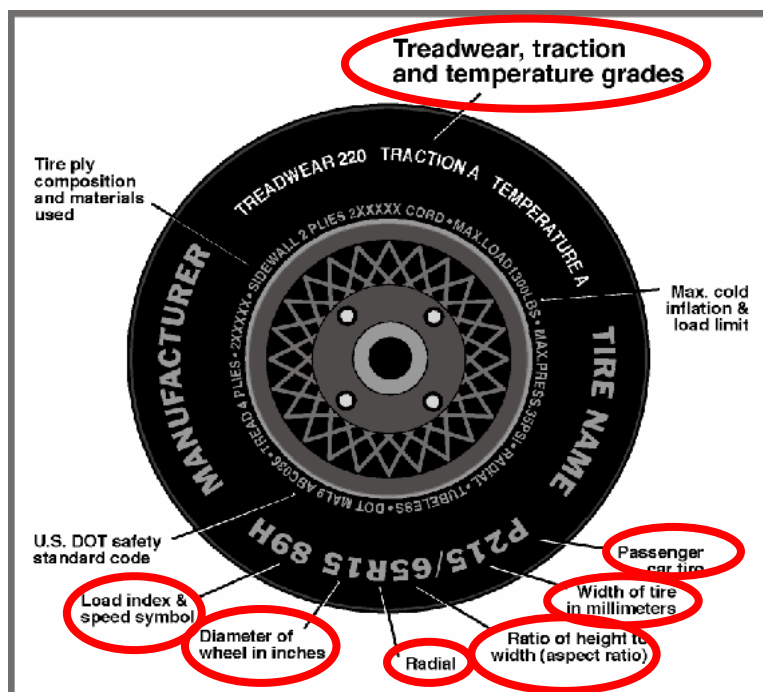
Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2820
Target Impact Point Aft of Front Axle	mm	470
Actual Impact Point Aft of Front Axle	mm	457

DATA SHEET NO. 2

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Test Pressure (kPa)	240	240
Recommended Tire Size	225/45R18	245/45R18
Tire Size on Vehicle	225/45R18	245/45R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Potenza	Potenza
Tire Type	Passenger	Passenger
Tire Width (mm)	225	245
Ratio of Height to Width (aspect ratio)	45	45
Radial	R	R
Wheel Diameter	18	18
Load Index & Speed Symbol	91V	96V
Treadwear	260	260
Traction Grade	A	A
Temperature Grade	A	A

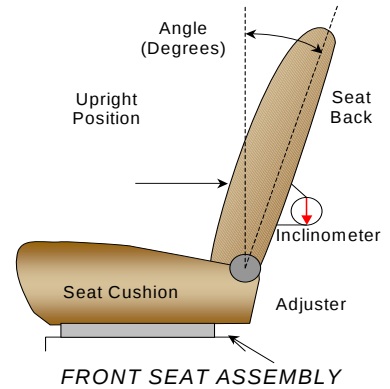
DATA SHEET NO. 3 **TEST VEHICLE INFORMATION**

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

NORMAL DESIGN RIDING POSITION

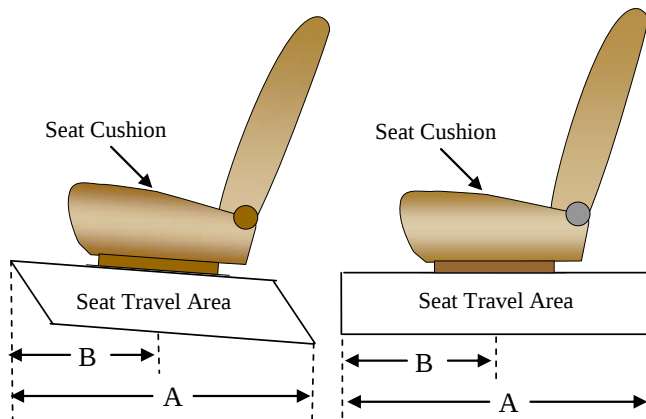
The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows:
 For the driver seat, set at 14 degrees using the head rest post.
 The left rear passenger seat is fixed.



Driver seat back angle: 14.0 degrees (headrest post)
 Passenger seat back angle: Fixed

SEAT FORE/AFT POSITIONS

	Total Fore/Aft Travel	Placed in position #
Driver Seat	22 detents	10 th detent (forward-most as 0)
Rear Seat	Fixed	Fixed



DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

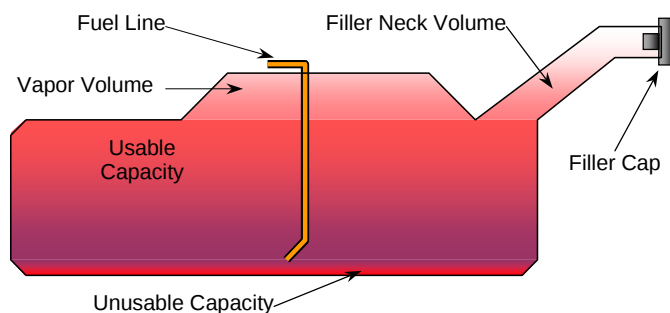
Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	64.3
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	59.2 to 60.4
Actual Amount of Solvent used	59.8
1/3 of Usable Capacity	21.4

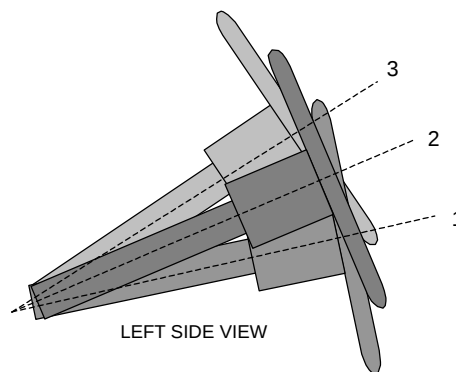
The test vehicle is equipped with an electric fuel pump. Fuel pump will operate when engine system is normally operating.



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 POSITION

	Fore/Aft (mm)	Degrees
Lowermost position No. 1		67.2
Geometric center position No. 2		69.2
Uppermost position No. 3		71.2

DATA SHEET NO. 4
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel base of Framework Carriage	2592
C.G. Location aft of Front Axle	1129

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	411.8	281.6	
Right	kg	356.8	311.3	
Ratio	%	56.5	43.5	
Totals	kg	768.6	592.9	1361.5

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.4
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.4
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.7

POST TEST OBSERVATIONS
MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	13 forward
Vertical Offset	mm	+/-20	3 down

DATA SHEET NO. 5**POST TEST OBSERVATIONS**

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID HIII / 271	Ballast Dummy
Head Contact	Curtain Airbag, Headrest, Door Panel	
Upper Torso Contact	Side Airbag	
Lower Torso Contact	Side Airbag	
Left Knee Contact	Door Panel	
Right Knee Contact	Left Knee	

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Struck side doors were locked; Non-struck side doors were unlocked	
Left Side Door Opening	Door remained closed and latched	
Right Side Door Opening	Door remained closed and latched; Door opened without tools	
Seat Movement	0	0
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	Cracked
Window Damage	Left Front Window Broke
Other Notable Effects	None

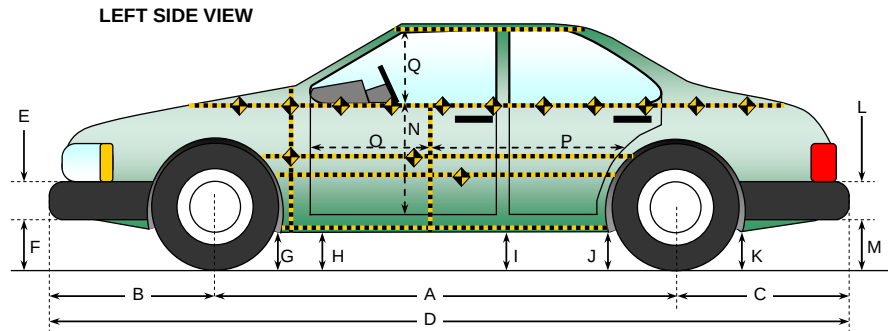
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 6
VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



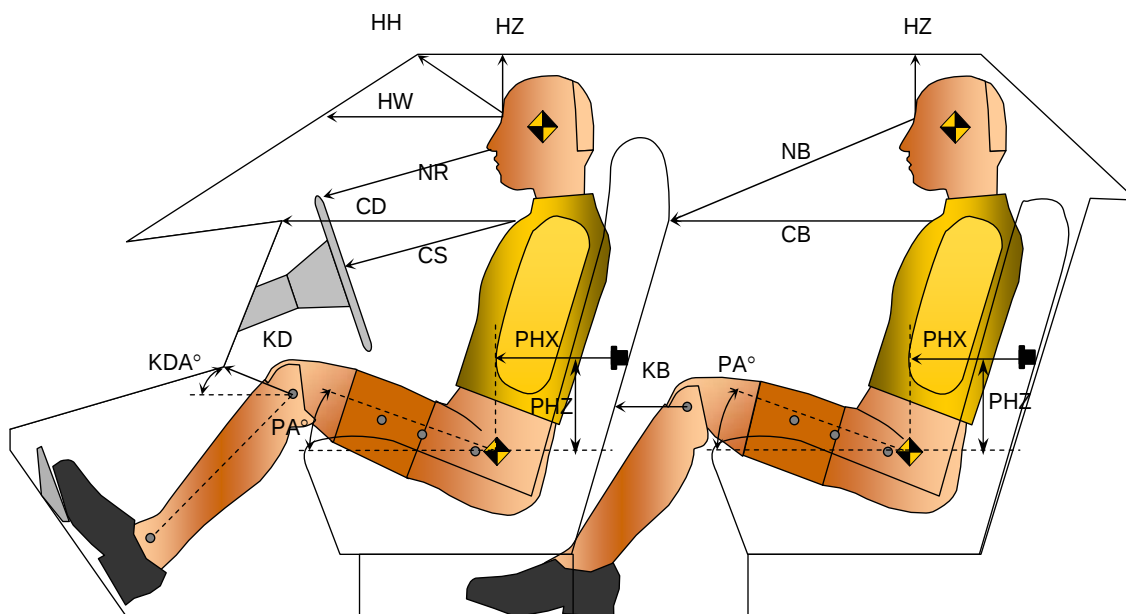
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2820	2809	11
B	Front Axle to FSOV	827	862	-35
C	Rear Axle to RSOV	927	942	-15
D	Total Length at Centerline	4574	4613	-39
E	Front Bumper Thickness	160	160	0
F	Front Bumper Bottom to Ground	230	250	-20
G	Sill Height at Front Wheel Well	152	158	-6
H	Sill Height at Front Door Leading Edge	150	140	10
I	Sill Height at "B" Pillar	165	151	14
J1	Sill Height at Rear Wheel Well	158	152	6
J2	Pinch Weld Height at Rear Wheel Well	160	145	15
K	Sill Height Aft of Rear Wheel Well	212	200	12
L	Rear Bumper Thickness	210	210	0
M	Rear Bumper Bottom to Ground	496	499	-3
N	Sill Height to Window Bottom Sill	671	520	151
O	Front Door Leading Edge to Impact CL	683	660	23
P	Rear Door Trailing Edge to Impact CL	709	722	-13
Q	Front Window Opening	330	398	-68
R	Right Side Length	3848	3846	2
S	Left Side Length	3848	3792	56
T	Vehicle Width at "B" Post	1827	1577	250

DATA SHEET NO. 7
SID/HII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

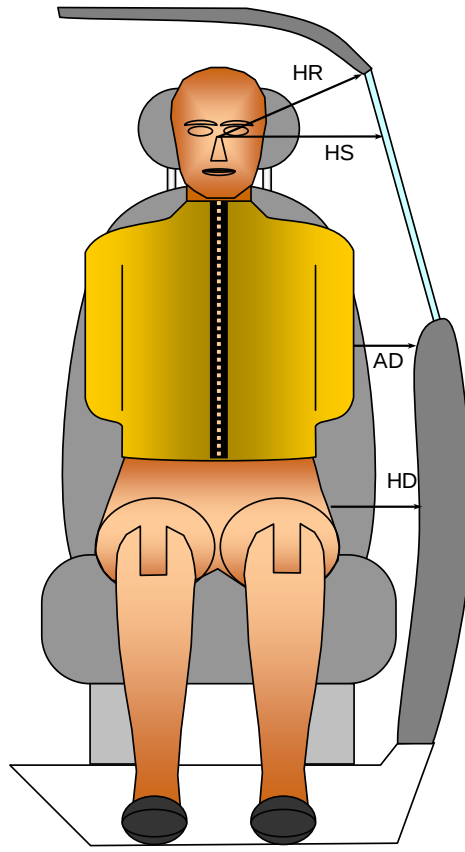


Driver Code	Pass. Code	Measurement Description	Driver S/N 271		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	446			
HW		Head to Windshield	663			
HZ	HZ	Head to Roof	179			
NR	NB	Nose to Rim/Nose to Seatback	476			
CD	CB	Chest to Dash or Seatback	564			
CS		Chest to Steering Wheel	364			
KDL	KBL	Left Knee to Dash or Seatback	252	18.5		
KDR	KBR	Right Knee to Dash or Seatback	219	19.3		
PA	PA	Pelvic Angle		23.4		
PHX	PHX	H-Point to Striker (X-Axis)	498			
PHZ	PHZ	H-Point to Striker (Z-Axis)	317			

DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



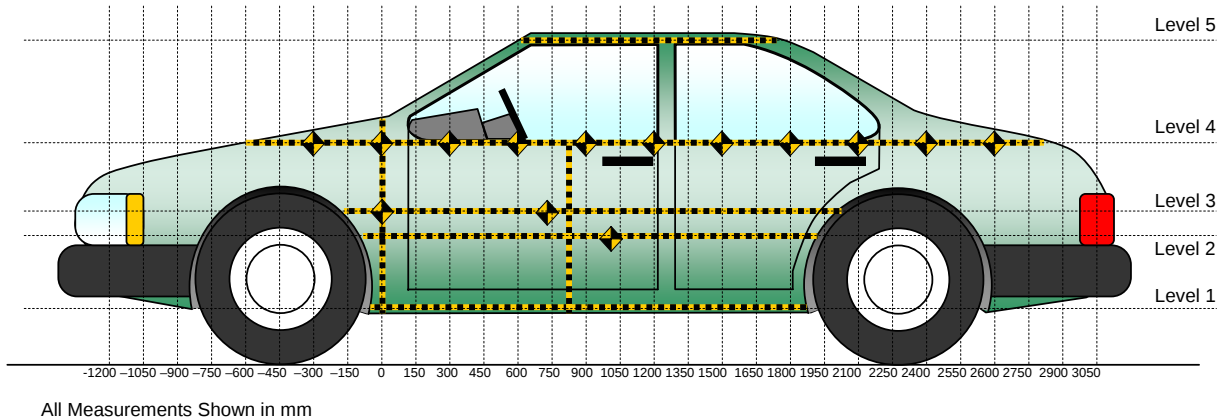
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 271	Passenger
HR	Head to Side Header	mm	215	
HS	Head to Side Window	mm	331	
AD	Arm to Door	mm	144	
HD	H-Point to Door	mm	162	

DATA SHEET NO. 9 **VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
 Measurements along the vertical 800 mm.
 All measurements below in mm.

Level	Measurement Description	Maximum Exterior Static Crush	Distance From Impact	Height Above Ground
5	Window	41	1650	1300
4	Window Sill	109	600	922
3	Mid Door	289	1650	615
2	Occupant H-Point	297	1650	442
1	Sill Top	89	1350	205
	Maximum Penetration	297		

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-600				266					274					8	
-450				259					270					11	
-300				251					272					21	
-150			176	248				226	272				50	24	
0	222	190	189	246		250	284	268	273		28	94	79	27	
150	237	196	191	246		296	363	332	283		59	167	141	37	
300	242	199	193	243		305	418	392	314		63	219	199	71	
450	245	202	194	245		311	449	413	340		66	247	219	95	
600	247	202	194	245		320	461	420	354		73	259	226	109	
750	249	202	194	250		324	471	425	353		75	269	231	103	
900	248	203	194	253	467	328	476	421	344	483	80	273	227	91	16
1050	245	203	193	258	462	330	468	430	352	486	85	265	237	94	24
1200	245	201	192	264	462	332	470	440	368	491	87	269	248	104	29
1350	241	198	189	271	466	330	478	442	349	497	89	280	253	78	31
1500	239	194	185	280	469	323	487	446	334	505	84	293	261	54	36
1650	235	187	183	293	476	316	484	472	349	517	81	297	289	56	41
1800	223	179	178	300	488	305	451	457	345	518	82	272	279	45	30
1950	213	171	171	312	508	258	320	385	360	524	45	149	214	48	16
2100			166	324	520			296	353	537			132	29	17
2250				337					355					18	
2400				346					360					14	
2550				359					360					1	
2700				374					375					1	
2850				396					393					-3	
3000				425					425					0	

Reference plane is parallel to test vehicle longitudinal centerline.

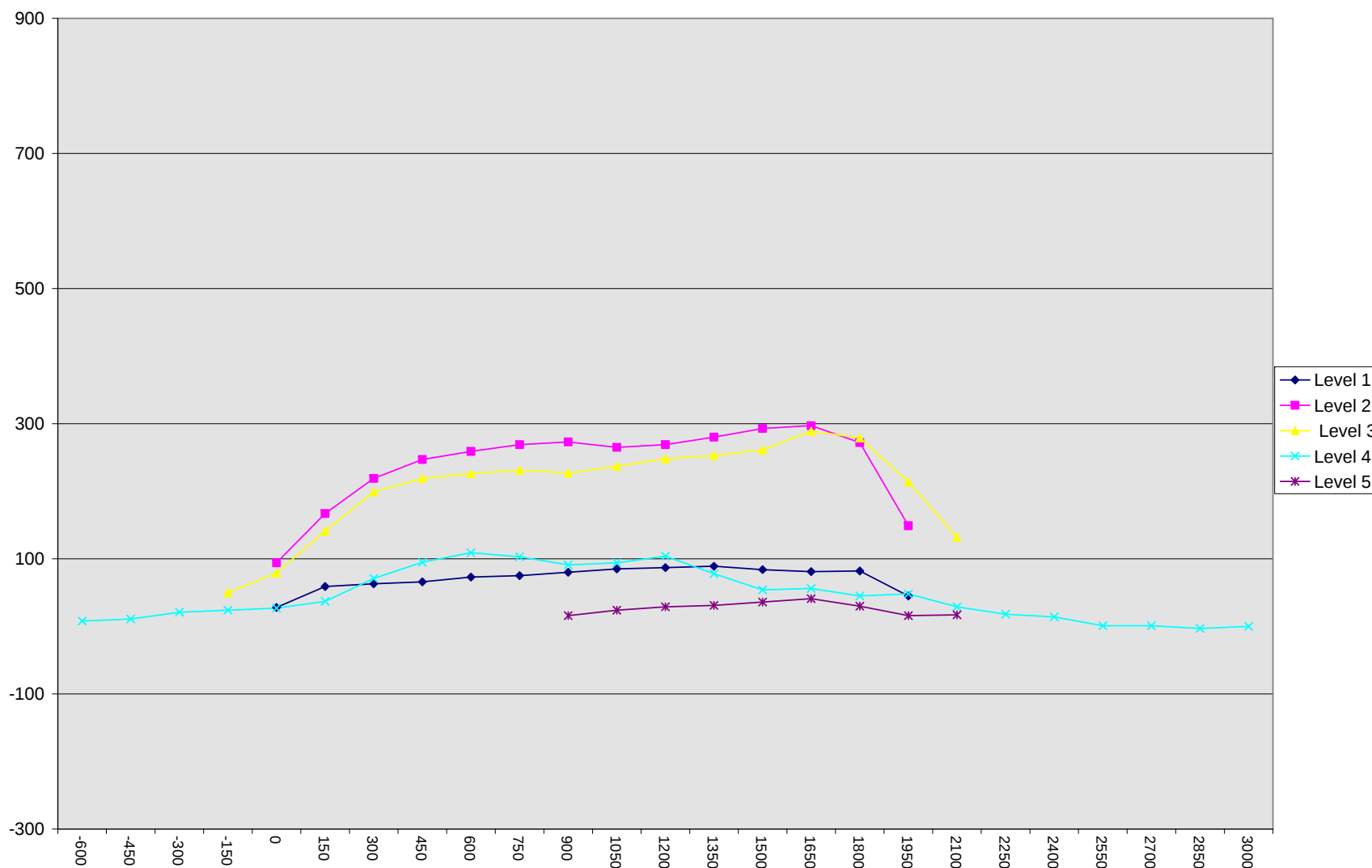
Given dimensions = Reference plane to car body

DATA SHEET NO. 10... (continued)
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
Test Program: NCAP Side Impact

NHTSA No. MA0502
Test Date: 4/20/2009

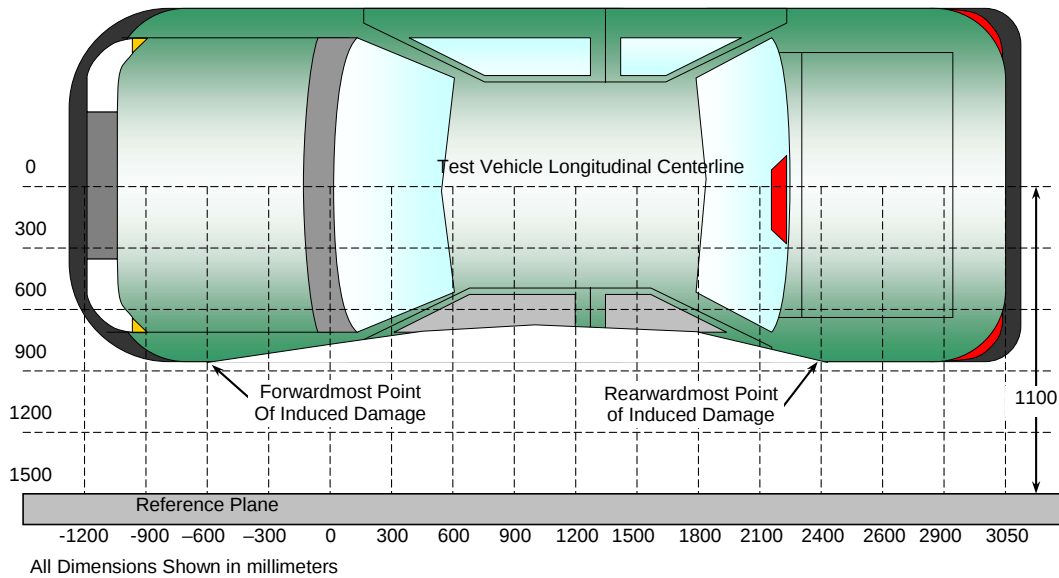
16



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	3000	4	425	425	0
2	2290	4	336	354	18
3	1580	2	197	490	293
4	820	2	202	480	278
5	110	2	193	348	155
6	-600	4	266	274	8

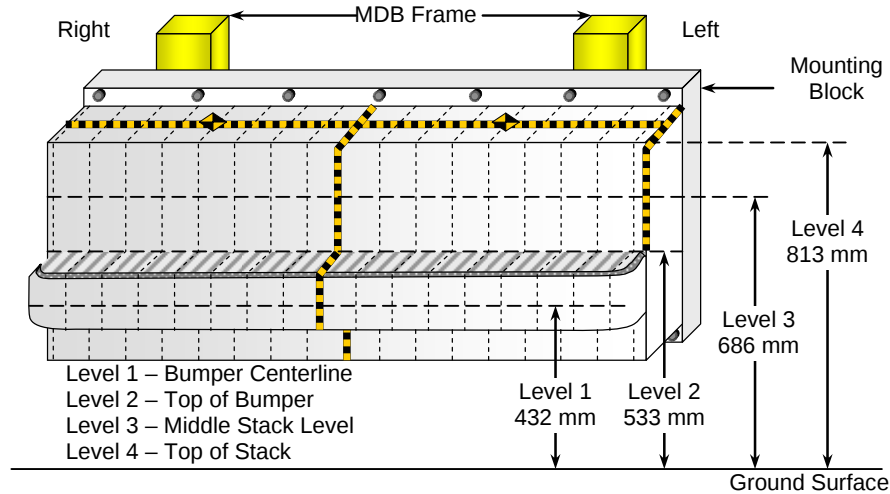
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



DEFORMABLE BARRIER STATIC CRUSH

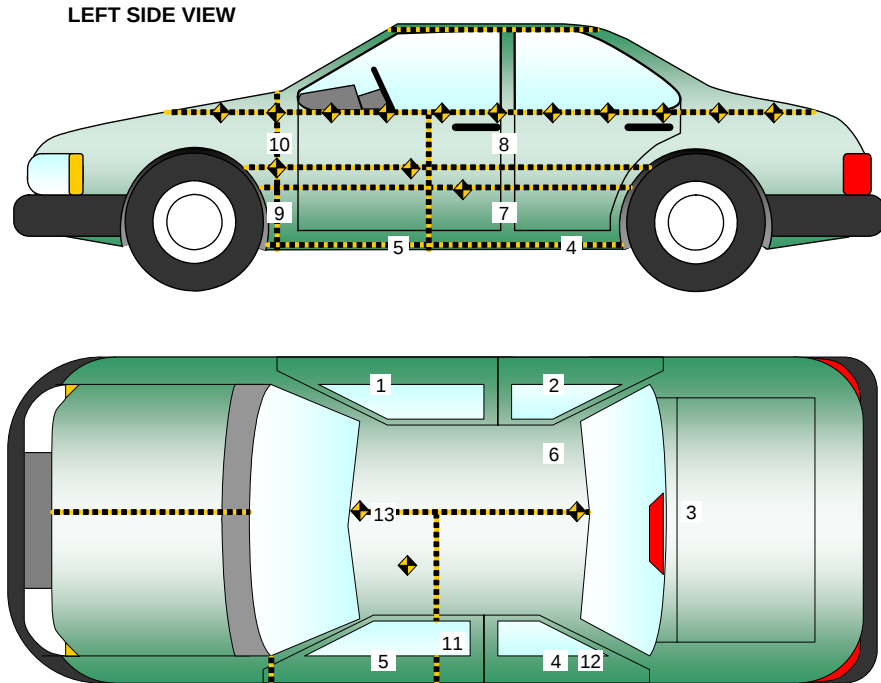
Stack Level	Distance Right of Center								C _L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
4	87	57	90	96	63	24	19	21	17	37	45	45	69	87	140	182	217
3	62	47	71	53	31	23	18	15	17	18	22	28	35	50	82	130	155
2	83	82	67	80	70	59	53	63	62	65	66	68	71	75	91	113	131
1	151	152	147	149	137	134	115	109	106	109	110	112	115	127	149	178	184

All Dimensions in mm

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



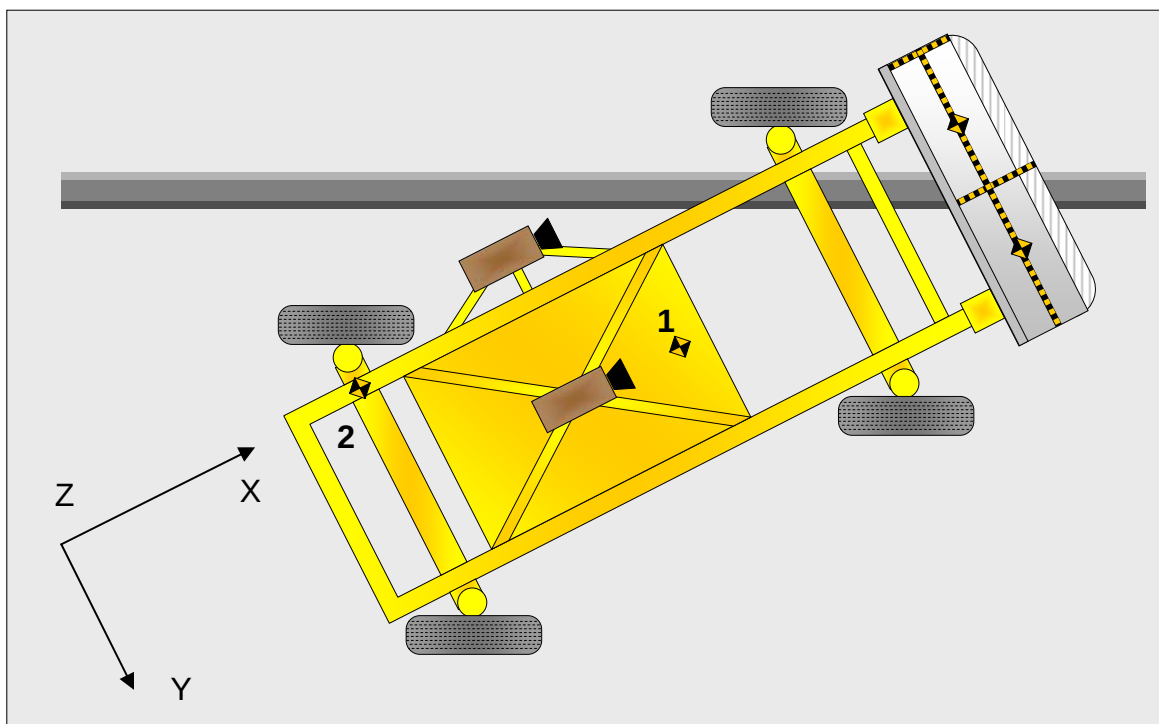
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2155	702	-185
2	Right Sill at Rear Seat	1370	707	-196
3	Rear Floorpan Above Axle	204	0	-536
4	Left Sill at Rear Door	1391	-707	-193
5	Left Sill at Front Door	2170	-702	-187
6	Rear Occupant Compartment	1776	-356	-354
7	Left Lower B-Post	1859	-731	-497
8	Left Middle B-Post	1809	-736	-728
9	Left Lower A-Post	3017	-756	-505
10	Left Middle A-Post	3064	-822	-709
11	Front Seat Track	2164	-609	-296
12	Rear Seat Track or Structure			
13	Vehicle CG	2623	0	-479

Reference Points X - Test Vehicle Rear Bumper (+ forward)
 Y - Test Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 14
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	MDB CG	-1105	0	-330
2	MDB Rear	-2580	-650	-625

Reference Points X - MDB Front Axle (+ forward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 15
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
Test Program: NCAP Side Impact

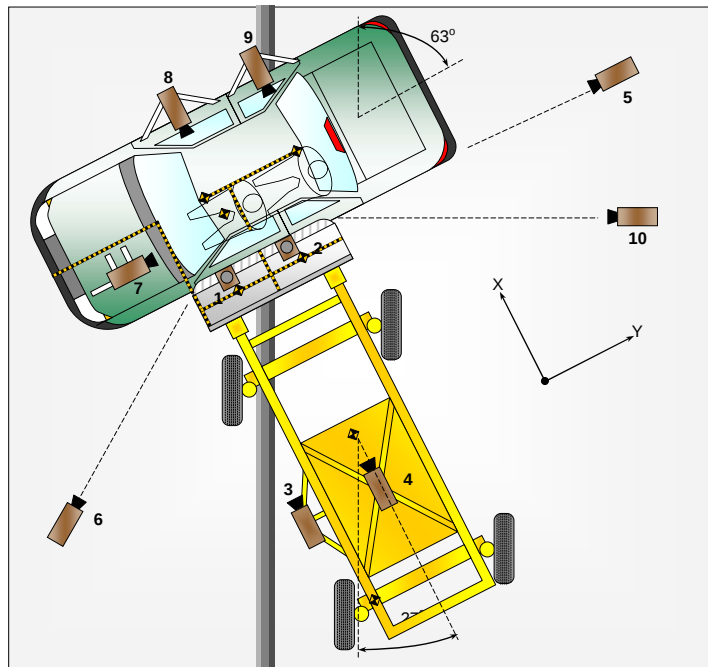
NHTSA No. MA0502
Test Date: 4/20/2009

	Elements	Pre-Test (mm)
1	Total Length	4574
2	Total Width	1827
3	Bumper Top Height	518
4	Bumper Bottom Height	375
5	Longitudinal Member Top Height	477
6	Distance between Longitudinal Members	932
7	Longitudinal Member Width	71
8	Engine Top Height	846
9	Engine Bottom Height	156
10	Engine and gearbox width	694
11	Front bumper-engine distance	523
12	Front shock absorber fixing height	876
13	Bonnet leading edge height	659
14	Front shock absorber fixing width	1206
15	Front bumper – front axle distance	832
16	Front axle – a pillar distance	619
17	A-pillar – B-pillar distance	1397
18	B-Pillar – rear axle distance	796
19	B-pillar – C-pillar distance	657
20	Roof sill bottom height	1316
21	Roof sill top height	1364
22	Floor sill bottom height	188
23	Floor sill top height	334

DATA SHEET NO. 16
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Close-up	-510	-215	5080	50	1000
2	Overhead Overall	125	1280	5055	14	1000
3	MDB Onboard, Impact Point Close-up				50	1000
4	MDB Onboard, Centerline of Impact				16	1000
5	Right Side, Ground Level, Overall	70	6675	1160	24	1000
6	Left Side, Ground Level, Overall	-3240	-4810	1100	24	1000
7	Vehicle Onboard Front SID/HIII, Front				12.5	1000
8	Vehicle Onboard Front SID/HIII, Side				8	1000
9	Vehicle Onboard Rear SID/HIII, Side				8	1000
10	Real Time Coverage				13	24

Reference Points X - Impact Line
 Y - MDB Left Edge Impact Point
 Z - Ground Plane

DATA SHEET NO. 17
SUMMARY OF FMVSS 301 DATA

Test Vehicle: 2010 Hyundai Genesis 2-Dr Coupe
 Test Program: NCAP Side Impact

NHTSA No. MA0502
 Test Date: 4/20/2009

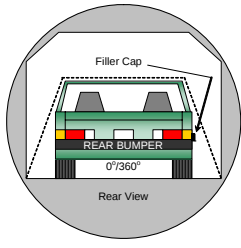
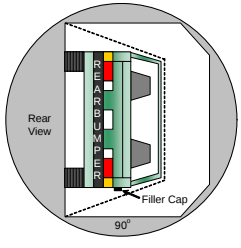
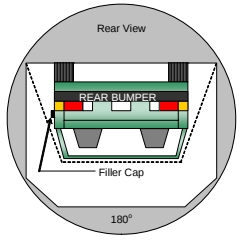
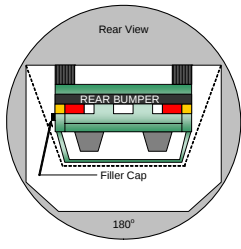
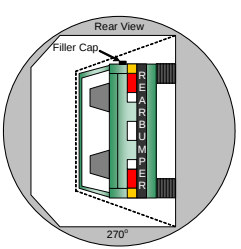
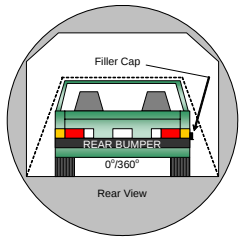
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 10:50 am

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0 oz.
 (Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: None
 (Maximum allowable = 5 ounces)
- C. For the following 25 minutes: None
 (Maximum allowable = 1 oz./minute)
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA

			1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds. 2. The position hold time at each position is 300 seconds (minimum). 3. Details of Stoddard Solvent spillage locations: None
0° to 90°		90° to 180°	
			
180° to 270°		270° to 360°	

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage Collection Time (min)	Spillage (oz.)
0° to 90°	136	300	First 5	0
90° to 180°	118	300	First 5	0
180° to 270°	110	300	First 5	0
270° to 360°	112	300	First 5	0

APPENDIX A
PHOTOGRAPHS

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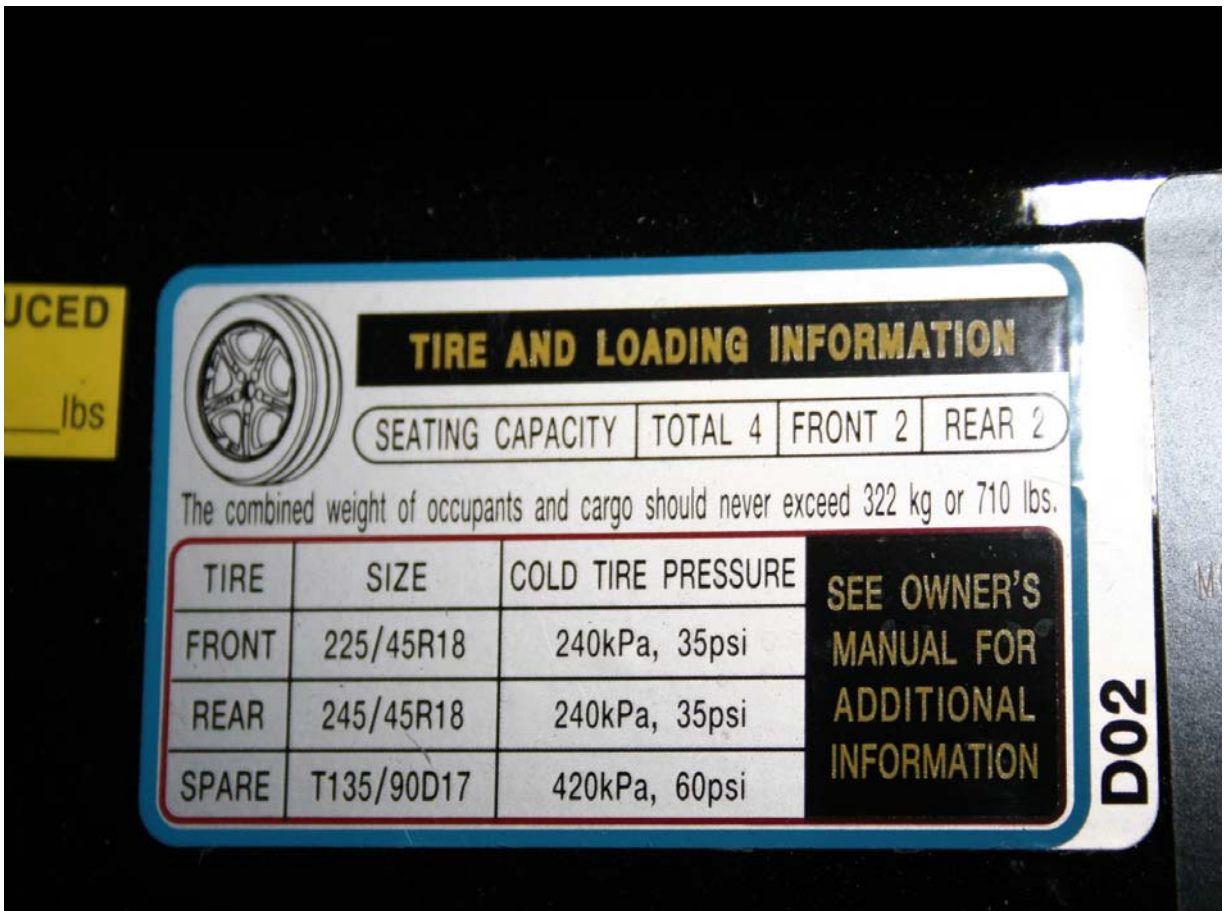
Left Front ¾ View, As Received



Right Rear ¾ View, As Received



Manufacturer's Label



Tire Placard



Pre-Test Front View



Post-Test Front View



Pre-Test Left Front $\frac{3}{4}$ View



Post-Test Left Front $\frac{3}{4}$ View



Pre-Test Left Side View



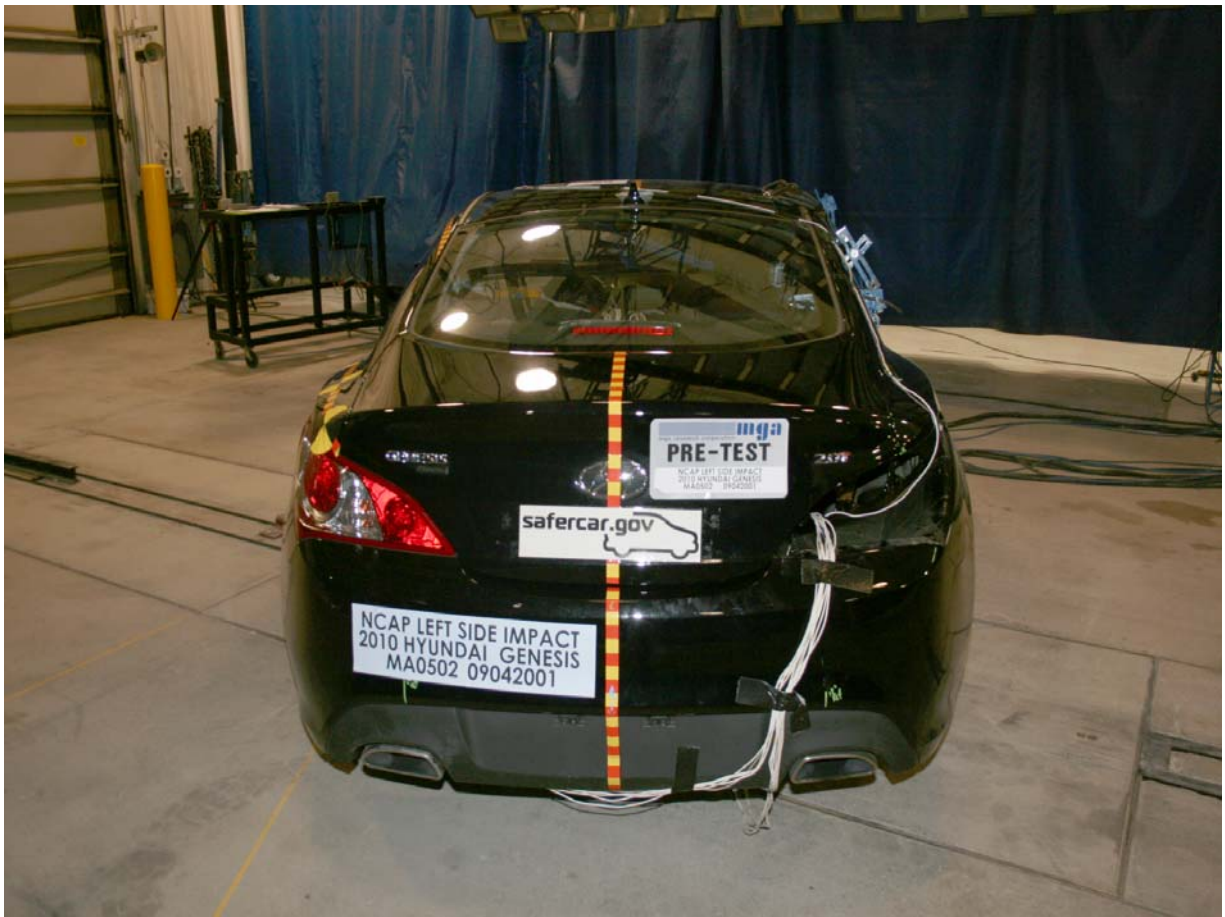
Post-Test Left Side View



Pre-Test Left Rear $\frac{3}{4}$ View



Post-Test Left Rear $\frac{3}{4}$ View



Pre-Test Rear View



Post-Test Rear View



Pre-Test Right Rear $\frac{3}{4}$ View



Post-Test Right Rear $\frac{3}{4}$ View



Pre-Test Right Side View



Post-Test Right Side View



Pre-Test Right Front 3/4 View



Post-Test Right Front 3/4 View



Pre-Test Left Impact Point



Post-Test Left Impact Point



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



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



Post-Test Left Side Impact Close-up



Pre-Test Overhead View



Post-Test Overhead View



Pre-Test Overhead Close-up View



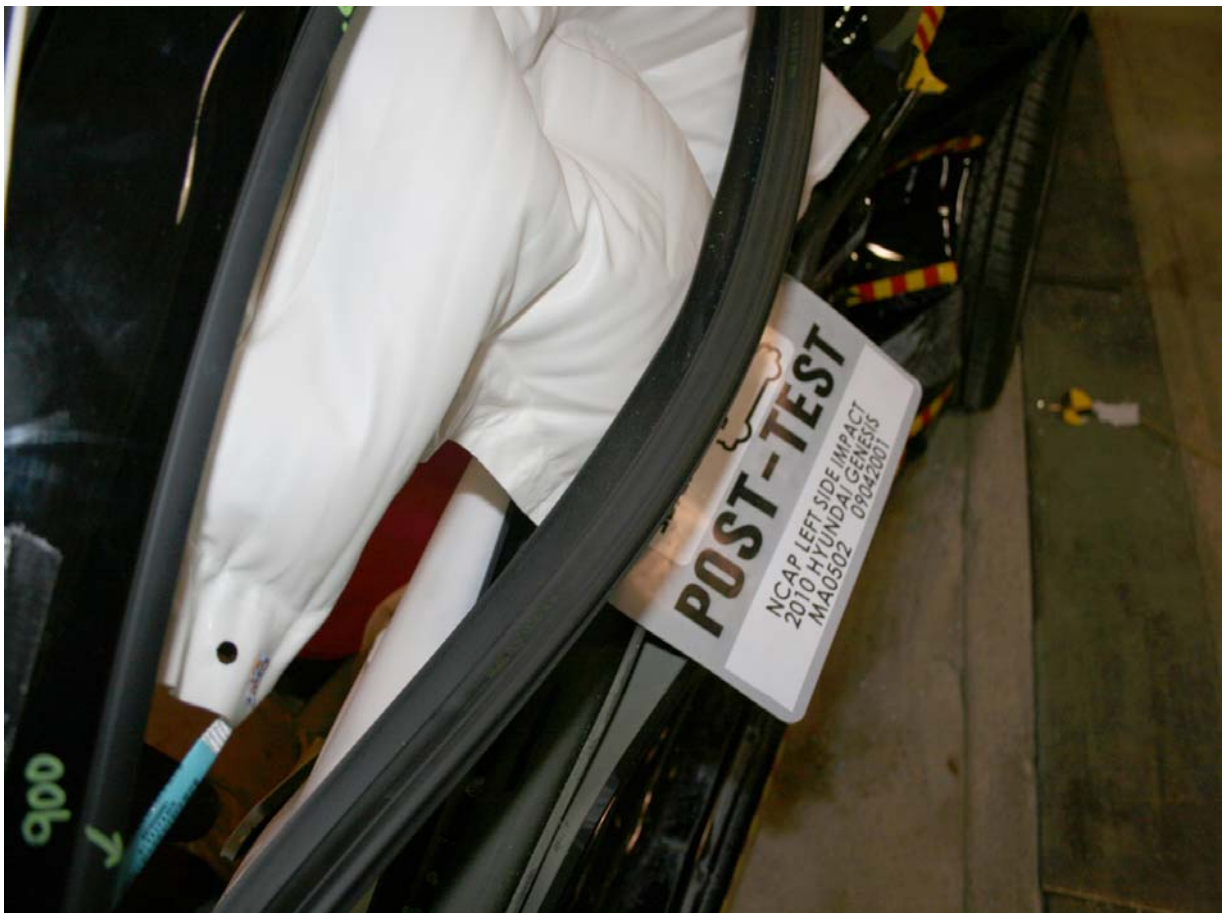
Post-Test Overhead Close-up View



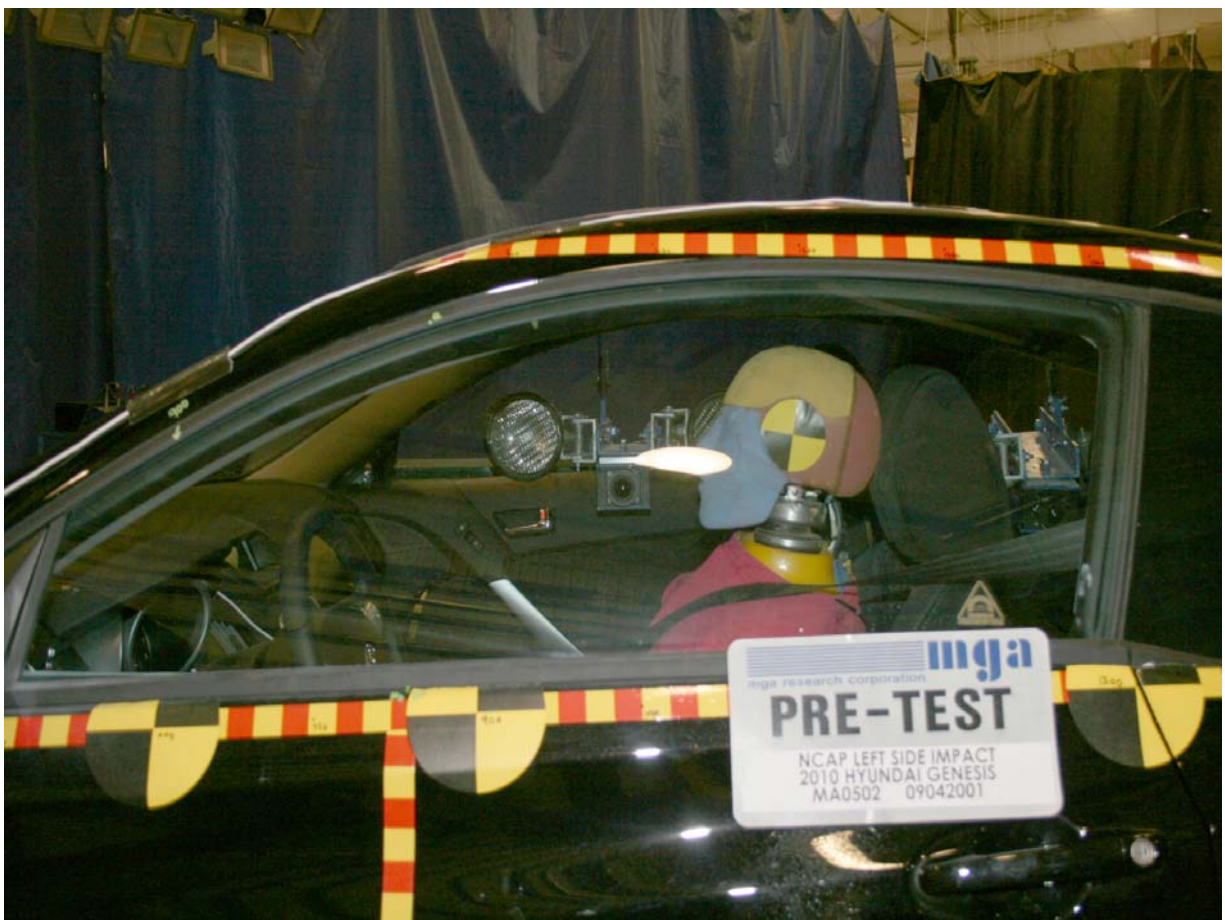
Pre-Test Driver Dummy (Door Open)



Pre-Test Driver Dummy Clearance From Door



Post-Test Driver Dummy Clearance From Door



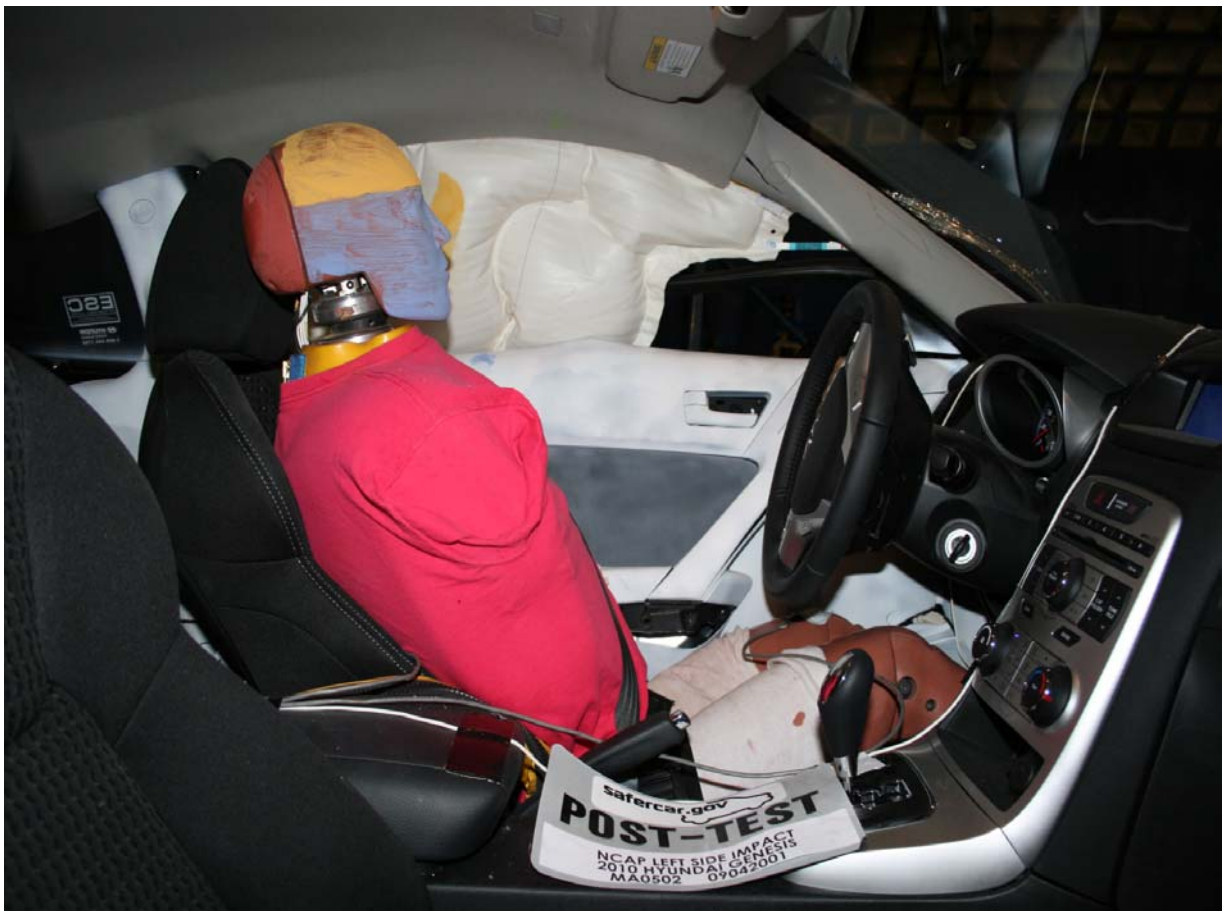
Pre-Test Driver Dummy (Through Window)



Post-Test Driver Dummy (Through Window)



Pre-Test Driver Dummy Right Side View



Post-Test Driver Dummy Right Side View



Pre-Test Passenger Dummy Clearance From Door



Pre-Test Passenger Dummy (Through Window)



Post-Test Passenger Dummy (Through Window)



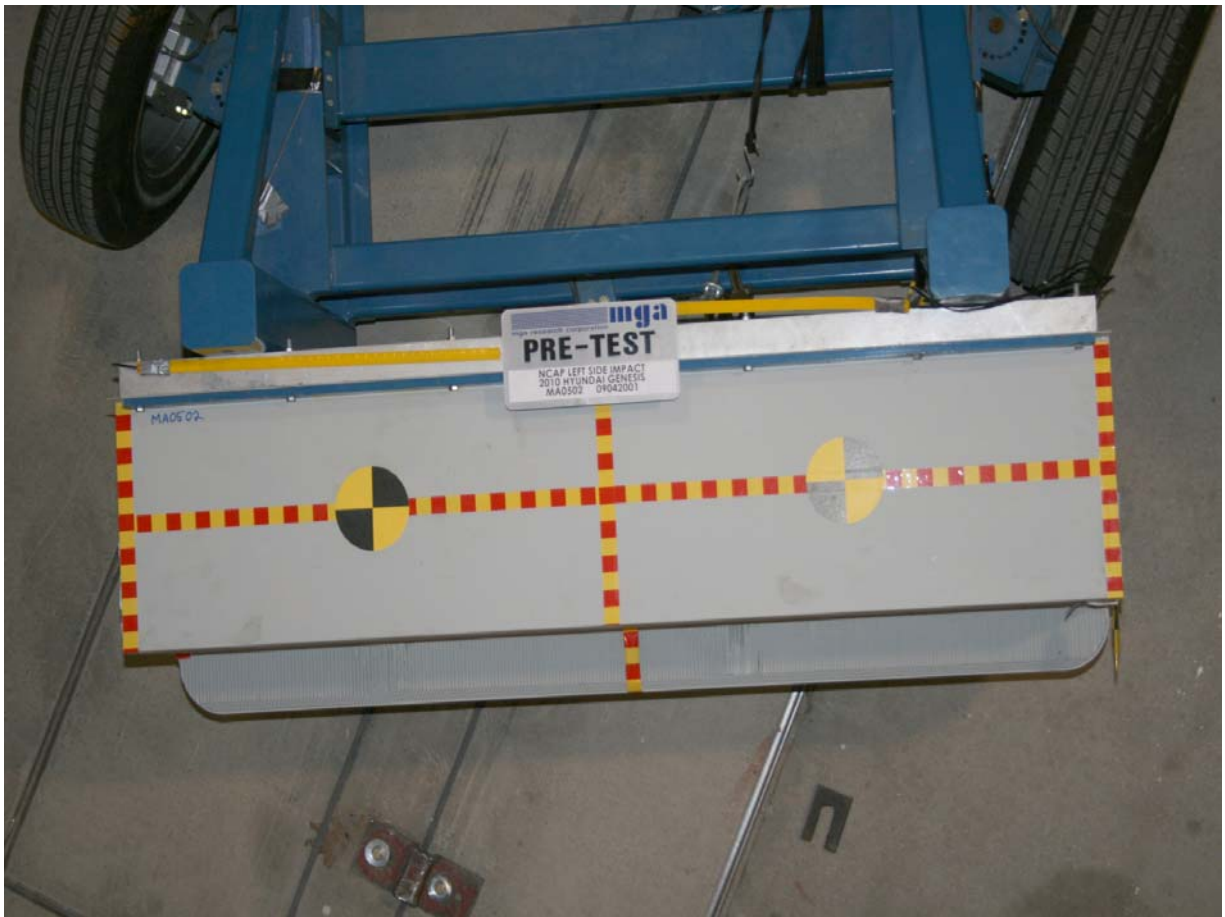
Pre-Test Passenger Dummy Right Side View



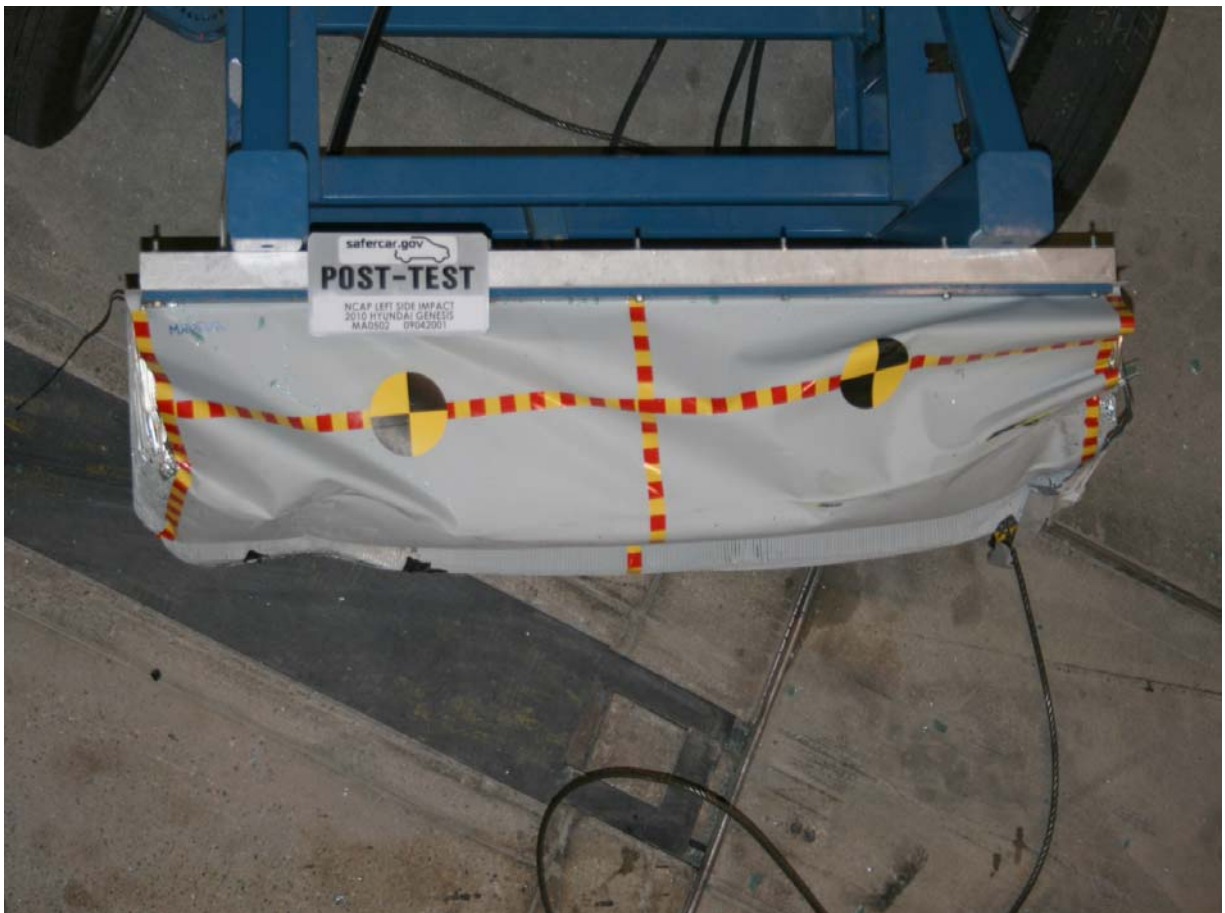
Pre-Test Front View of Deformable Barrier



Post-Test Front View of Deformable Barrier



Pre-Test Top View of Deformable Barrier



Post-Test Top View of Deformable Barrier



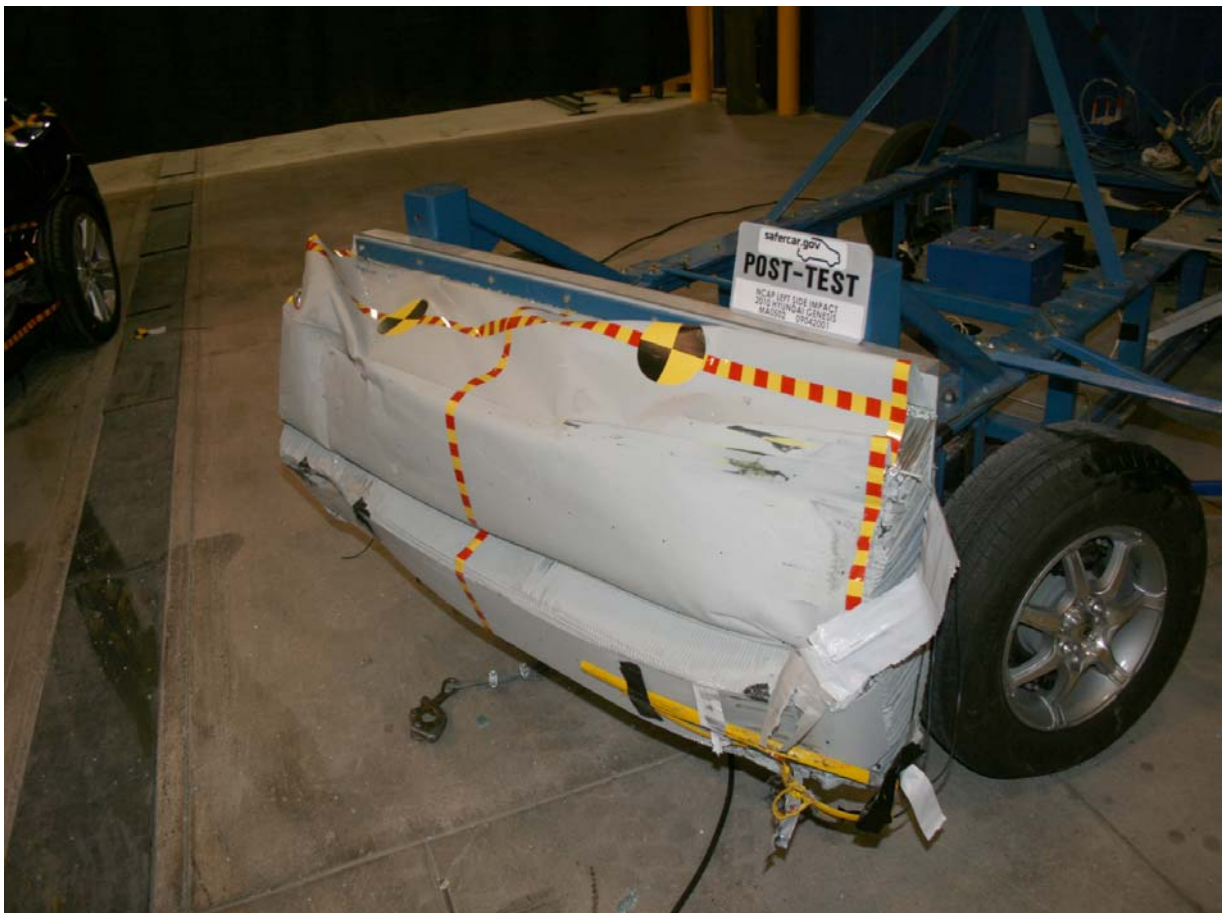
Pre-Test Right Side View of Deformable Barrier



Post-Test Right Side View of Deformable Barrier



Pre-Test Left Side View of Deformable Barrier



Post-Test Left Side View of Deformable Barrier



Vehicle on Rollover Device (90 Degrees)



Vehicle on Rollover Device (180 Degrees)



Vehicle on Rollover Device (270 Degrees)



Vehicle on Rollover Device (360 Degrees)



Vehicle Impact



Post-Test Driver Dummy Head Contact



Post-Test Driver Dummy Upper Torso Contact



Post-Test Driver Dummy Lower Torso Contact



Post-Test Driver Dummy Contact



Post-Test Passenger Dummy Contact

APPENDIX B

SID/HIII RESPONSE DATA TRACES

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Figure No. 7.	Driver Pelvis Y Acceleration vs. Time	B-2
Figure No. 8.	Driver Pelvis Y Velocity vs. Time	B-2

The following dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

Driver Head X Primary

Driver Head Y Primary

Driver Head Z Primary

Driver Head X Redundant

Driver Head Y Redundant

Driver Head Z Redundant

Driver Upper Neck Force X

Driver Upper Neck Force Y

Driver Upper Neck Force Z

Driver Upper Neck Moment X

Driver Upper Neck Moment Y

Driver Upper Neck Moment Z

Driver Upper Rib Redundant Y

Driver Lower Rib Redundant Y

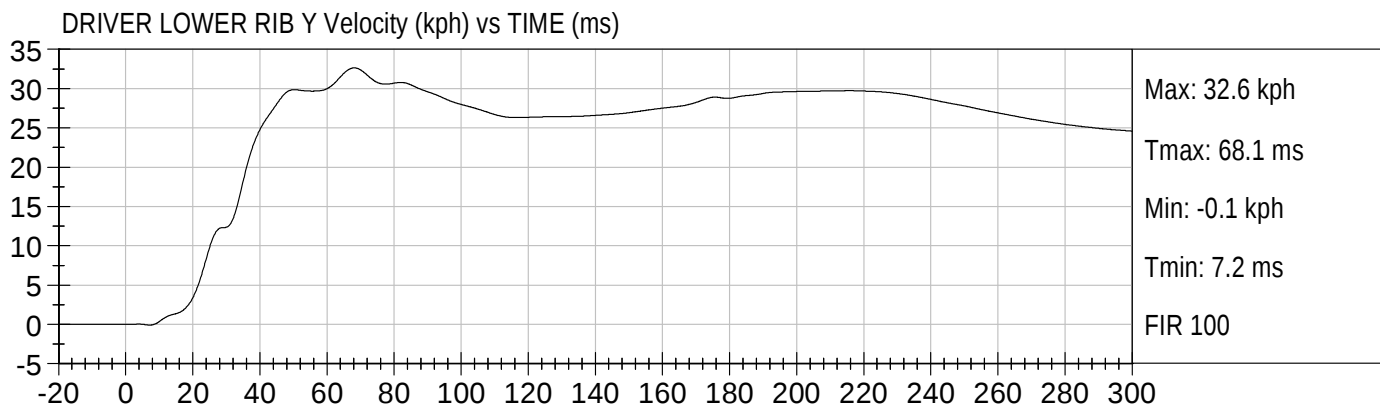
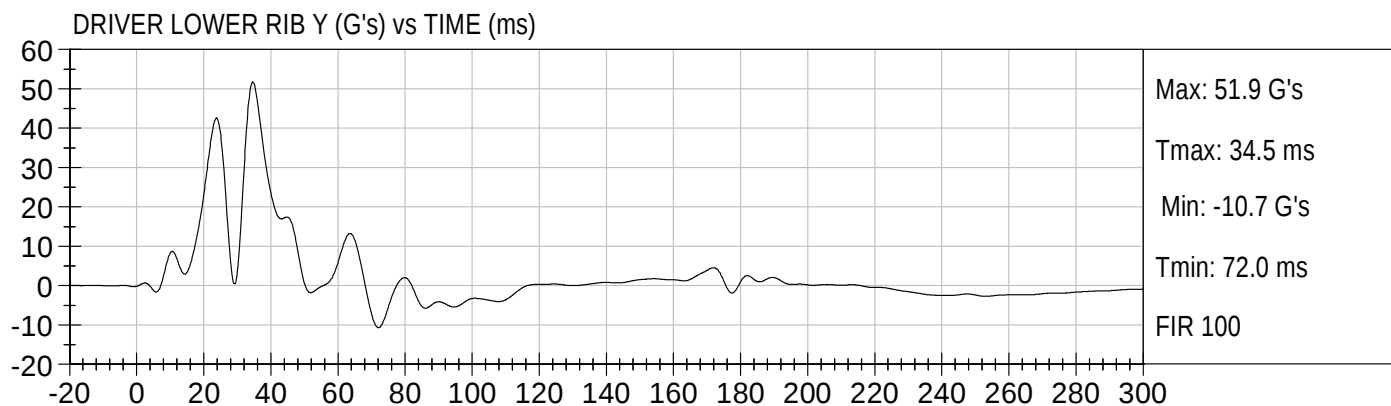
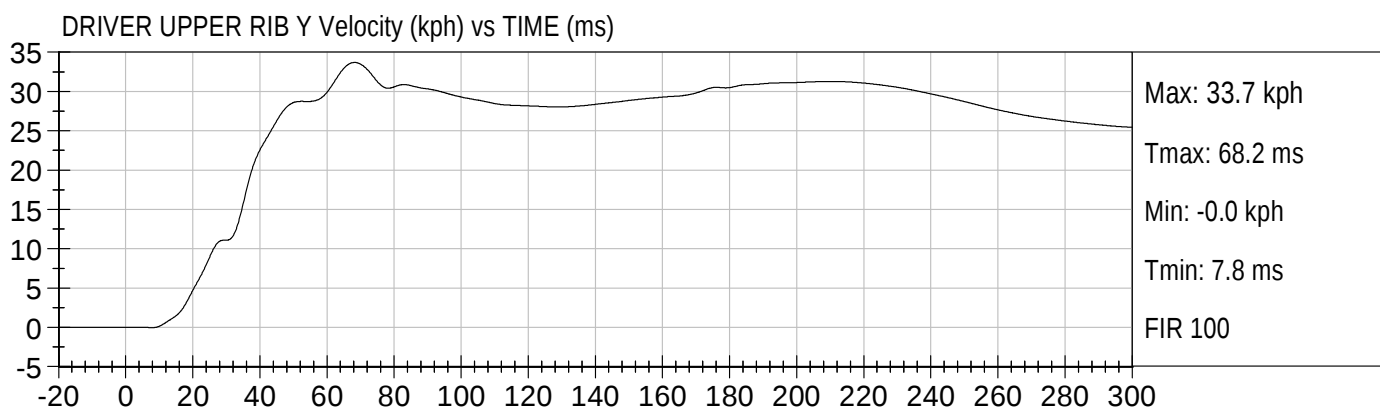
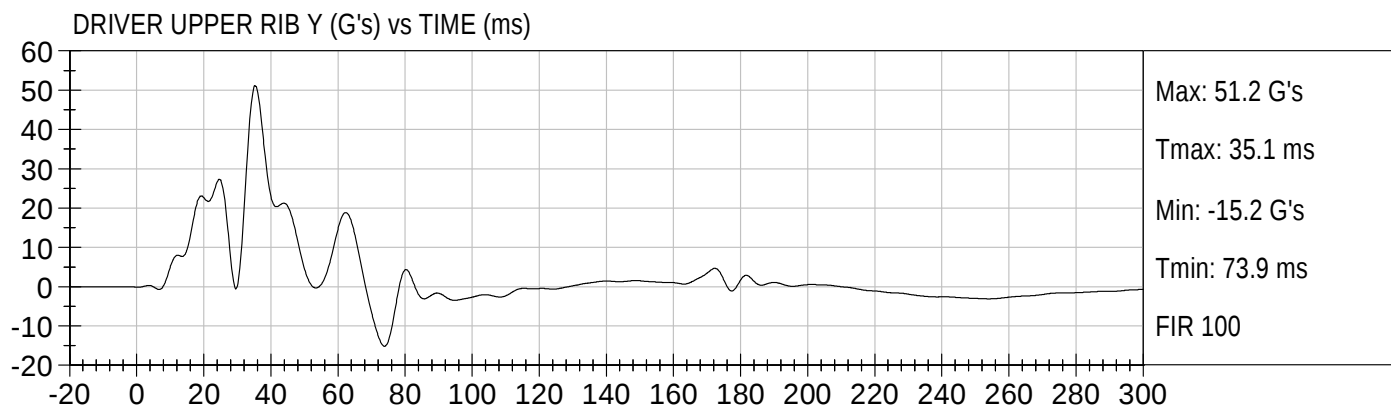
Driver Lower Spine Redundant Y

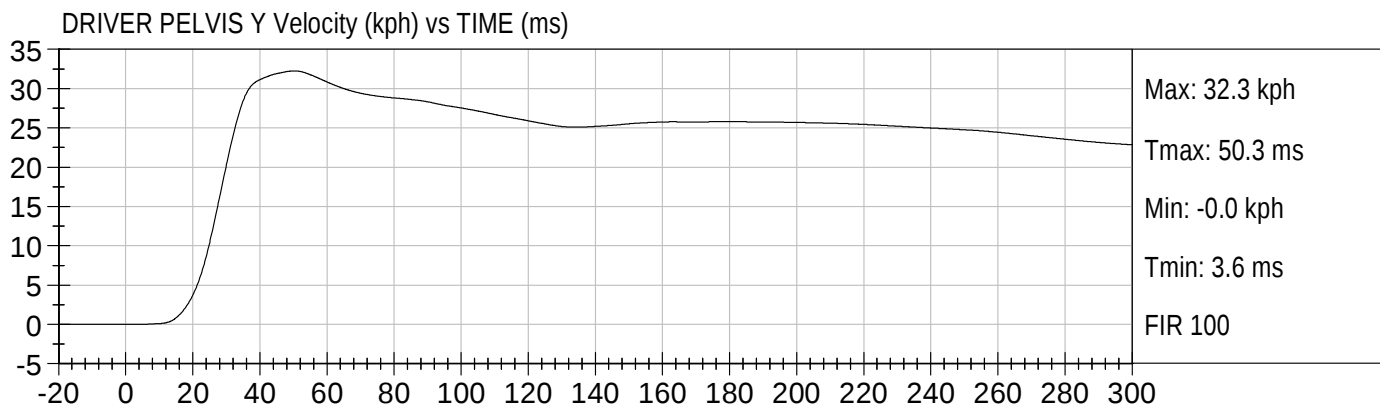
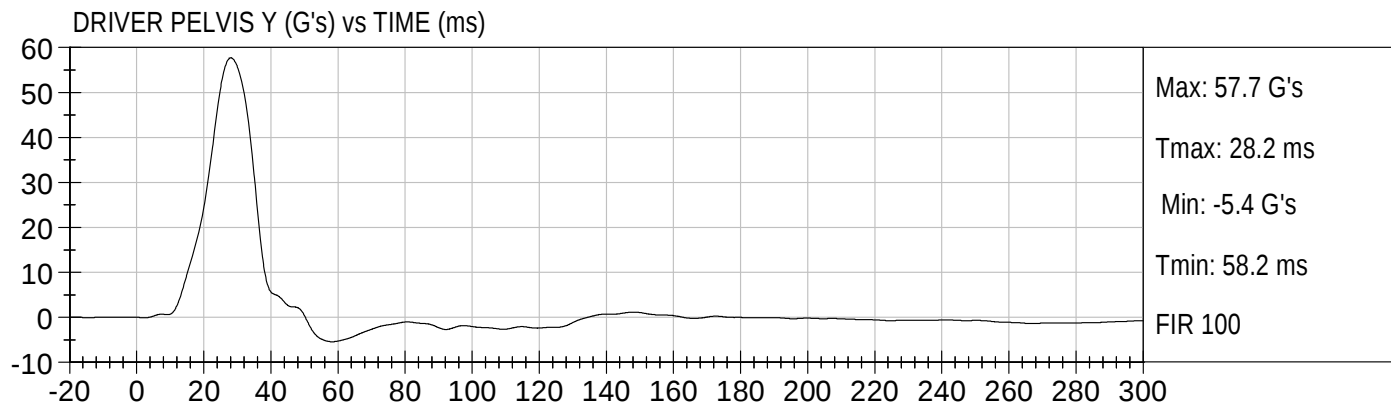
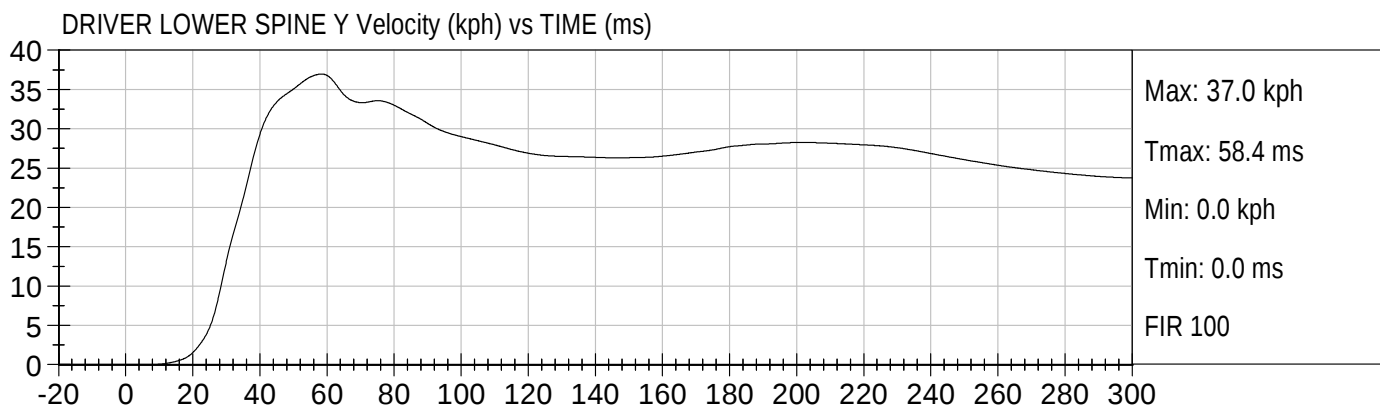
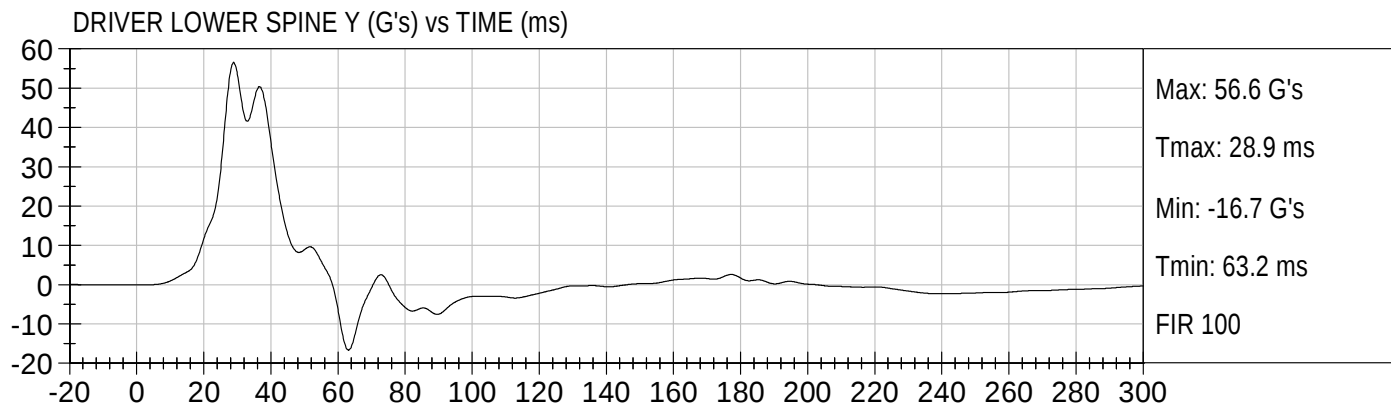
Driver Pelvis Redundant Y

Driver Thorax Contact

Driver 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 at Rear Seat X
Vehicle Right Sill at Rear Seat Y
Vehicle Right Sill at Rear Seat Z
Vehicle Rear Floor Above Axle X
Vehicle Rear Floor Above Axle Y
Vehicle Rear Floor Above Axle Z
Vehicle Left Sill at Rear Door Y
Vehicle Left Sill at Front Door Y
Vehicle Right Rear Occupant Compartment
Vehicle B-Post Lower Y
Vehicle B-Post Middle Y
Vehicle A-Post Lower Y
Vehicle A-Post Middle Y
Vehicle Left Front Seat Track
Vehicle CG X
Vehicle CG Y
Vehicle CG Z
MDB CG X
MDB CG Y
MDB CG Z
MDB Rear X
MDB Rear Y
MDB Left Bumper Contact
MDB Right Bumper Contact





APPENDIX C
DUMMY CALIBRATION DATA

CERTIFICATION DATA

Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 271

Test I.D: D08251

Tested Parameter	Units	Specification	Result	Pass/Fail
SH - Seated Height	mm	889 - 909	905	Pass
RH - Rib Height	mm	501 - 521	502	Pass
HP - Hip Pivot Height	mm	99 ref.	99	Pass
RD - Rib from Back Line	mm	229 - 241	239	Pass
KV - Knee Pivot to Back Line	mm	511 - 526	526	Pass
SW - Knee Pivot to Floor	mm	490 - 505	497	Pass
HW - Hip Width	mm	356 - 391	371	Pass
Overall Test Results			Pass	


 Laboratory Technician


 Approved By

1/26/09

Test Date

SID/HIII Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration (Lateral)

ATD Serial No: 271

Test I.D: D09121

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Peak Resultant Acceleration	G's	120 to 150	139	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-9.2	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

1/23/09
Test Date

David Winkelbauer
Approved By



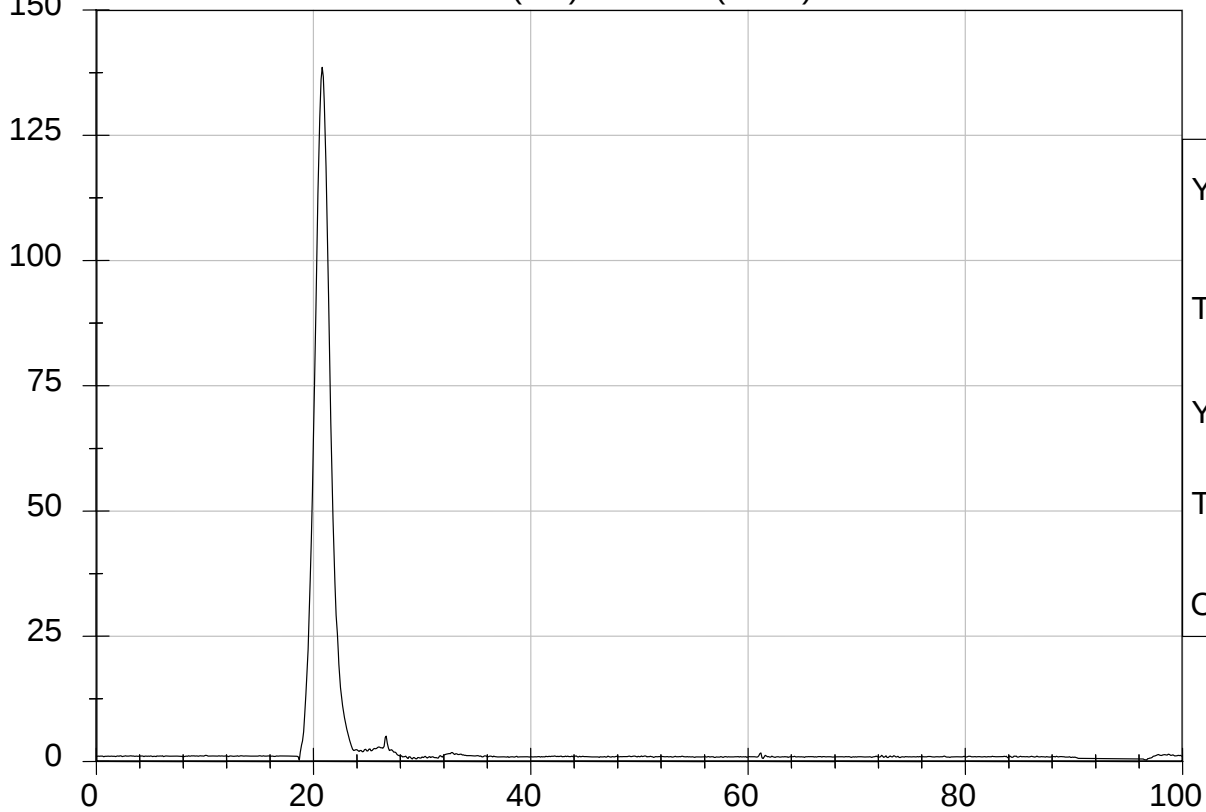
Test Description: Head Drop

Test Date: 1/23/09

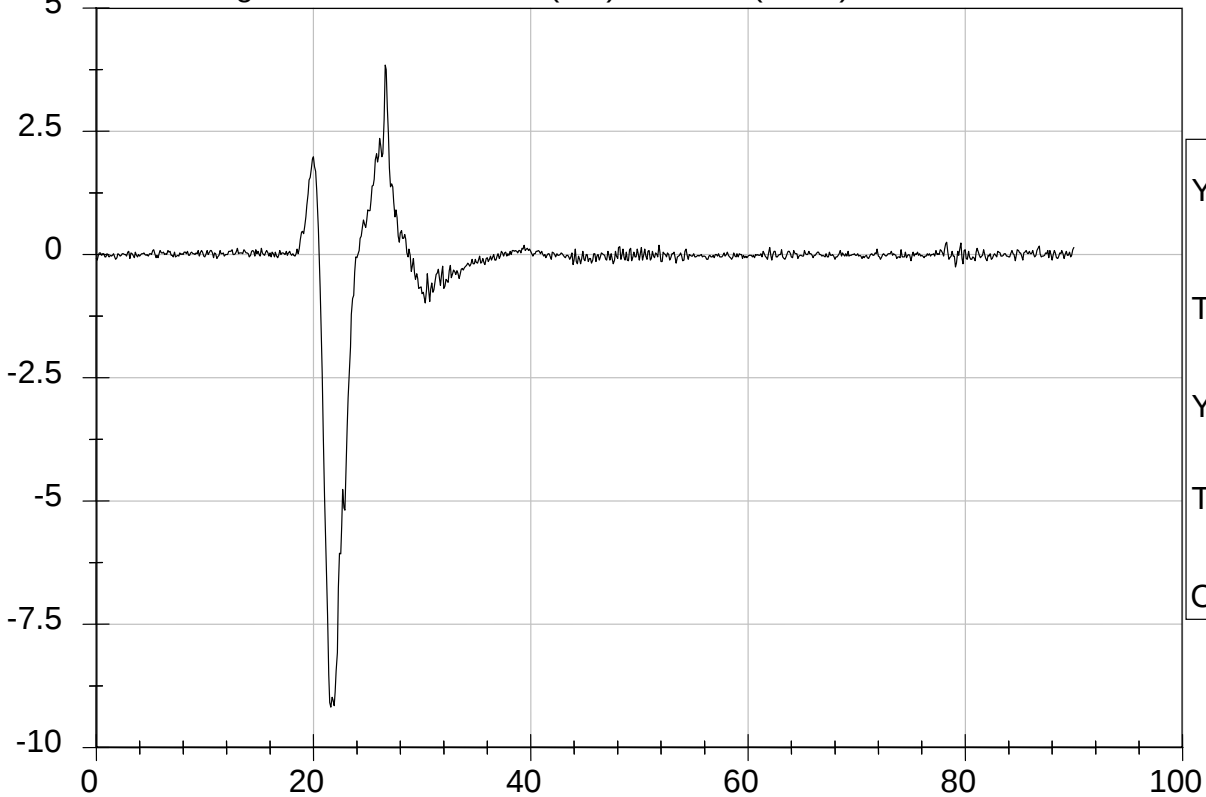
Component: D09121

Speed: 0 ft/s, 0 m/s

Peak Resultant Acceleration (G's) Vs Time (msec)



Peak Longitudinal Acceleration (G's) Vs Time (msec)

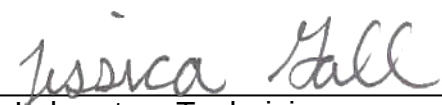


SID/HIII Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 271

Test I.D: D09122

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.3	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	38	Pass
Lower Rib	G's	37 - 46	38	Pass
Lower Spine	G's	15 - 22	18	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

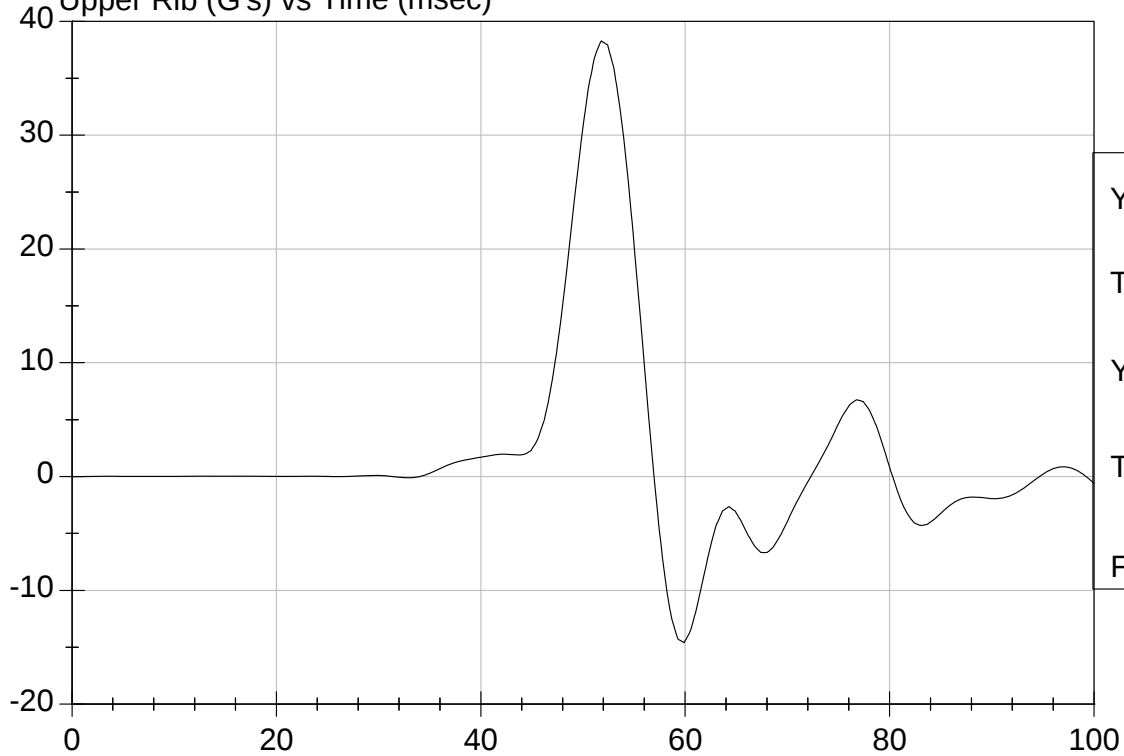
1/23/09
Test Date



Test Desc: Thorax Impact
Component ID: D09122

Test Date: 1/23/09
Speed: 14.12 ft/sec, 4.30 m/sec

Upper Rib (G's) vs Time (msec)



YMax: 38.3 G's

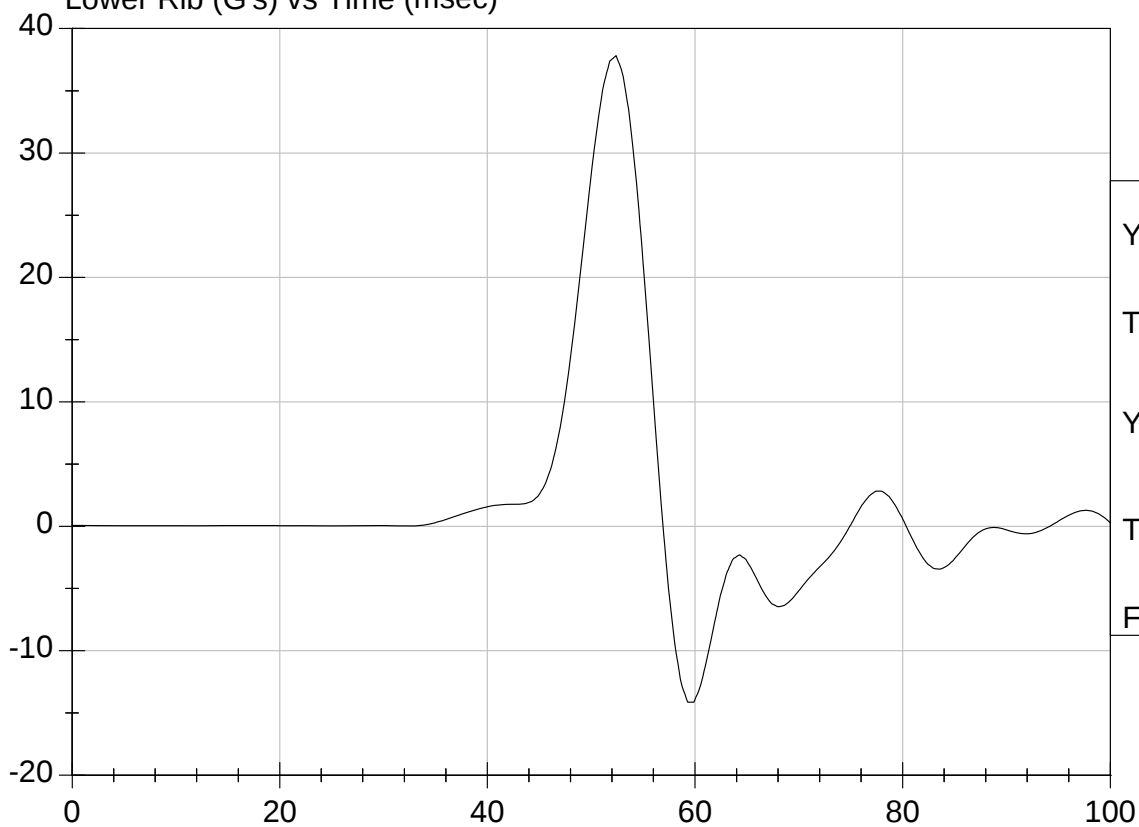
Tmax: 51.8 ms

YMin: -14.6 G's

Tmin: 59.9 ms

FIR 100

Lower Rib (G's) vs Time (msec)



YMax: 37.8 g's

Tmax: 52.4 ms

YMin: -14.1 g's

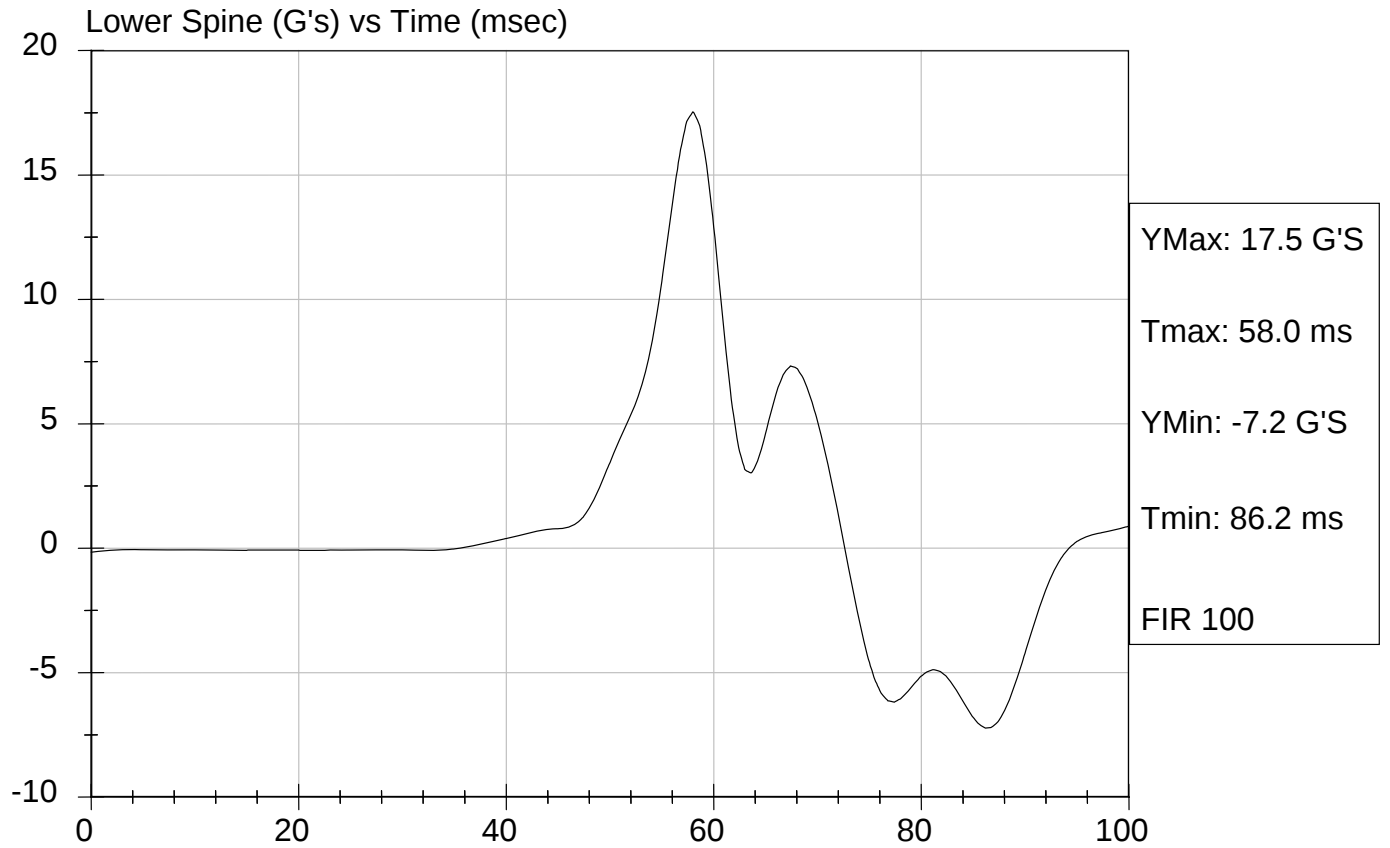
Tmin: 59.9 ms

FIR 100



Test Desc: Thorax Impact
Component ID: D09122

Test Date: 1/23/09
Speed: 14.12 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 271

Test I.D: D09123

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	16	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	40	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

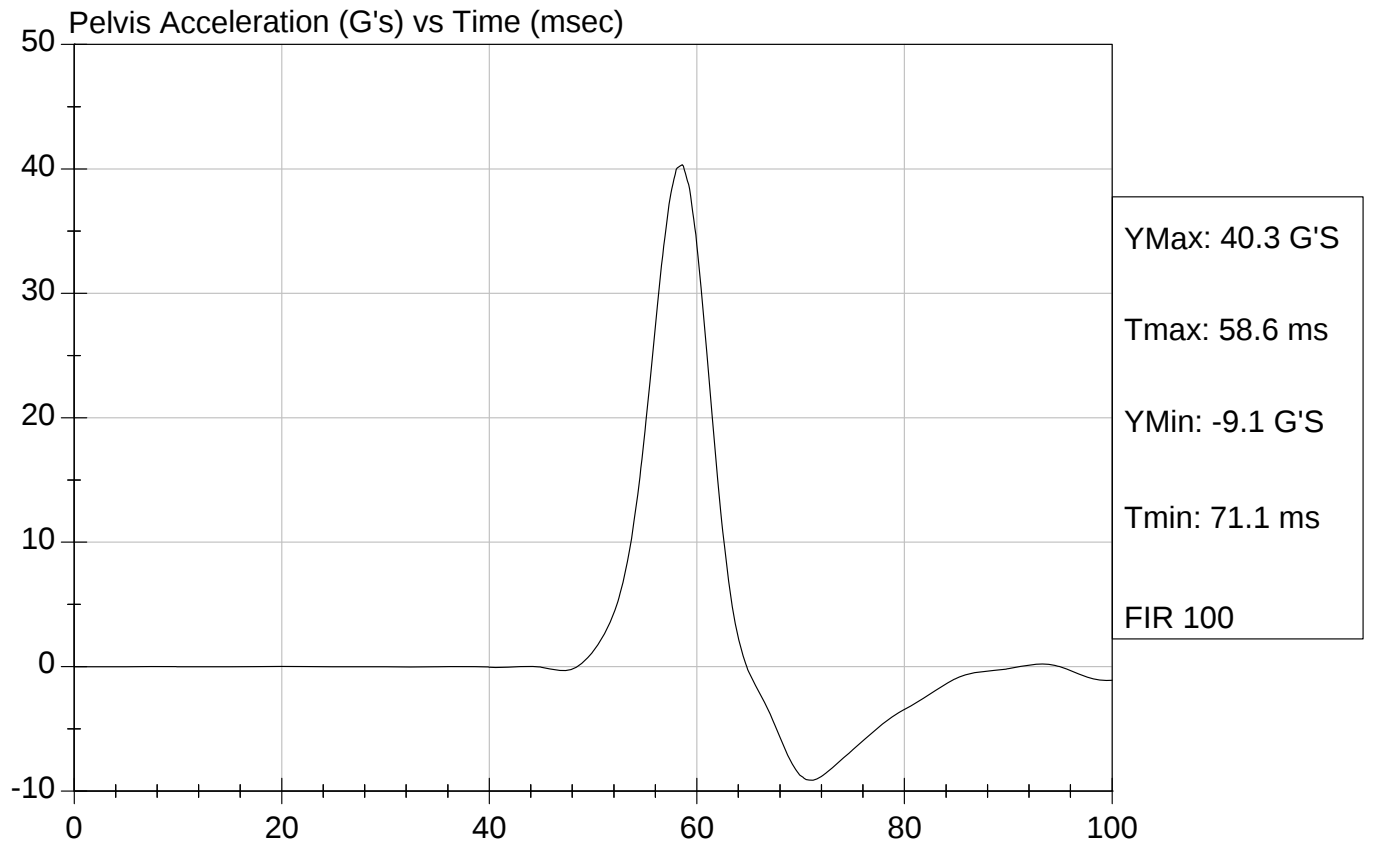
David Winkelbauer
Approved By

1/23/09
Test Date



Test Desc: Pelvis Impact
Component ID: D09123

Test Date: 1/23/09
Speed: 14.12 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 271

Test I.D: D09124

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Force At 12.7 mm	N	104 -162	135	Pass
Force At 19 mm	N	163 - 222	193	Pass
Force At 25.4 mm	N	222 - 280	267	Pass
Force At 33 mm	N	325 - 391	370	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

1/23/09
Test Date

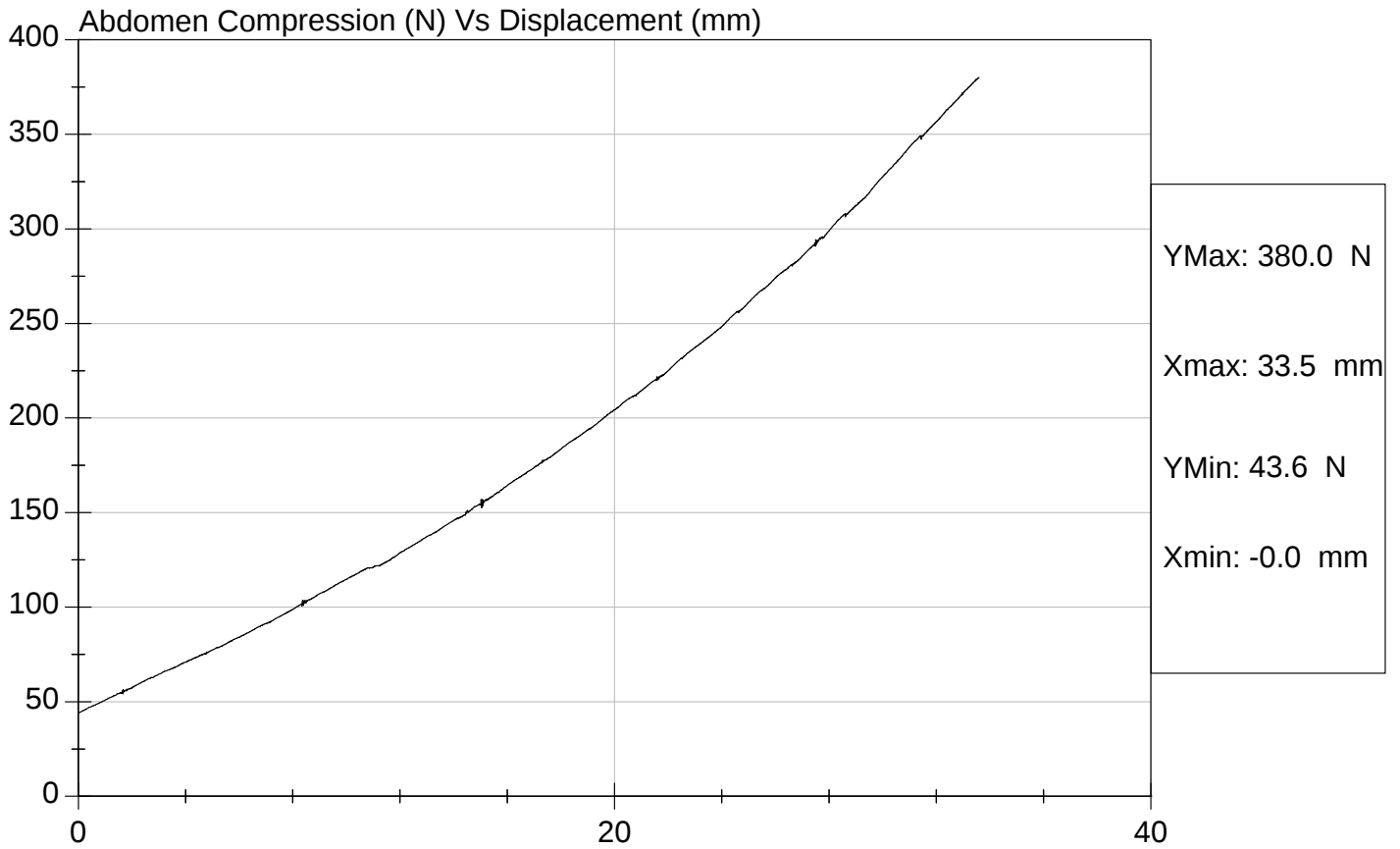
David Winkelbauer
Approved By



Test Description: Abdomen Compression Test Date: 1/23/09

Component: D09124

Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 271

Test I.D: D09125

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	119.4	Pass
Force At 30 deg	N	151.2 - 204.6	171.2	Pass
Force At 40 deg	N	204.6 - 258.0	216.3	Pass
Return Angle	Deg	12 Maximum	4	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

1/23/09
Test Date

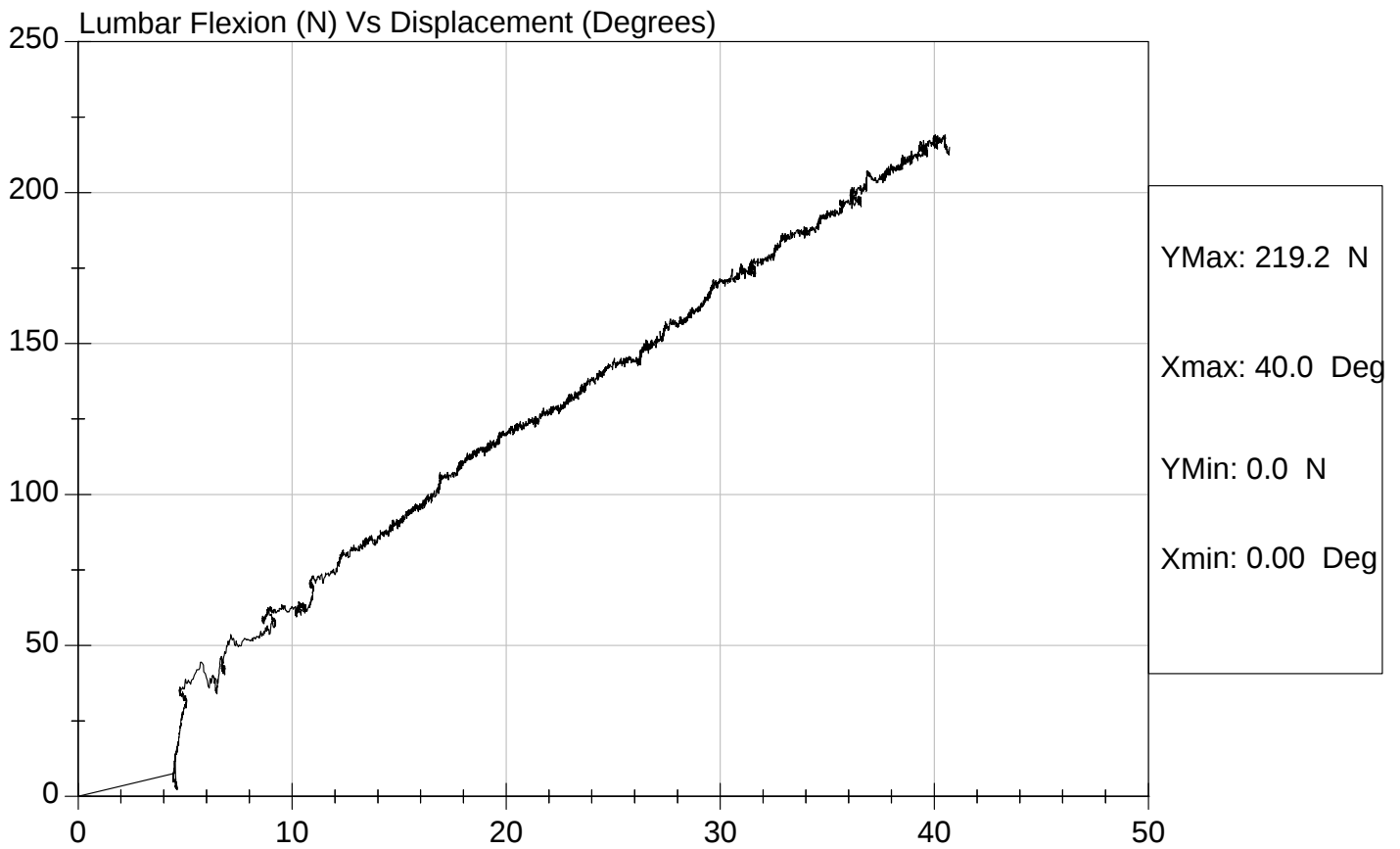


Test Description: Lumbar Flexion

Test Date: 1/23/09

Component: D09125

Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Neck Pendulum Test

ATD Serial No: 271

Test I.D: D09129

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	14	Pass
Impact Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.07	Pass
	20 msec	m/s	4.12 to 5.10	4.26	Pass
	30 msec	m/s	5.73 to 7.01	5.99	Pass
	40 to 70 msec	m/s	6.27 to 7.64	6.49	Pass
Midsaggital Plane Max Rotation		deg	66 to 82	72	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	60	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	74	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	60	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	15	Pass


 Laboratory Technician

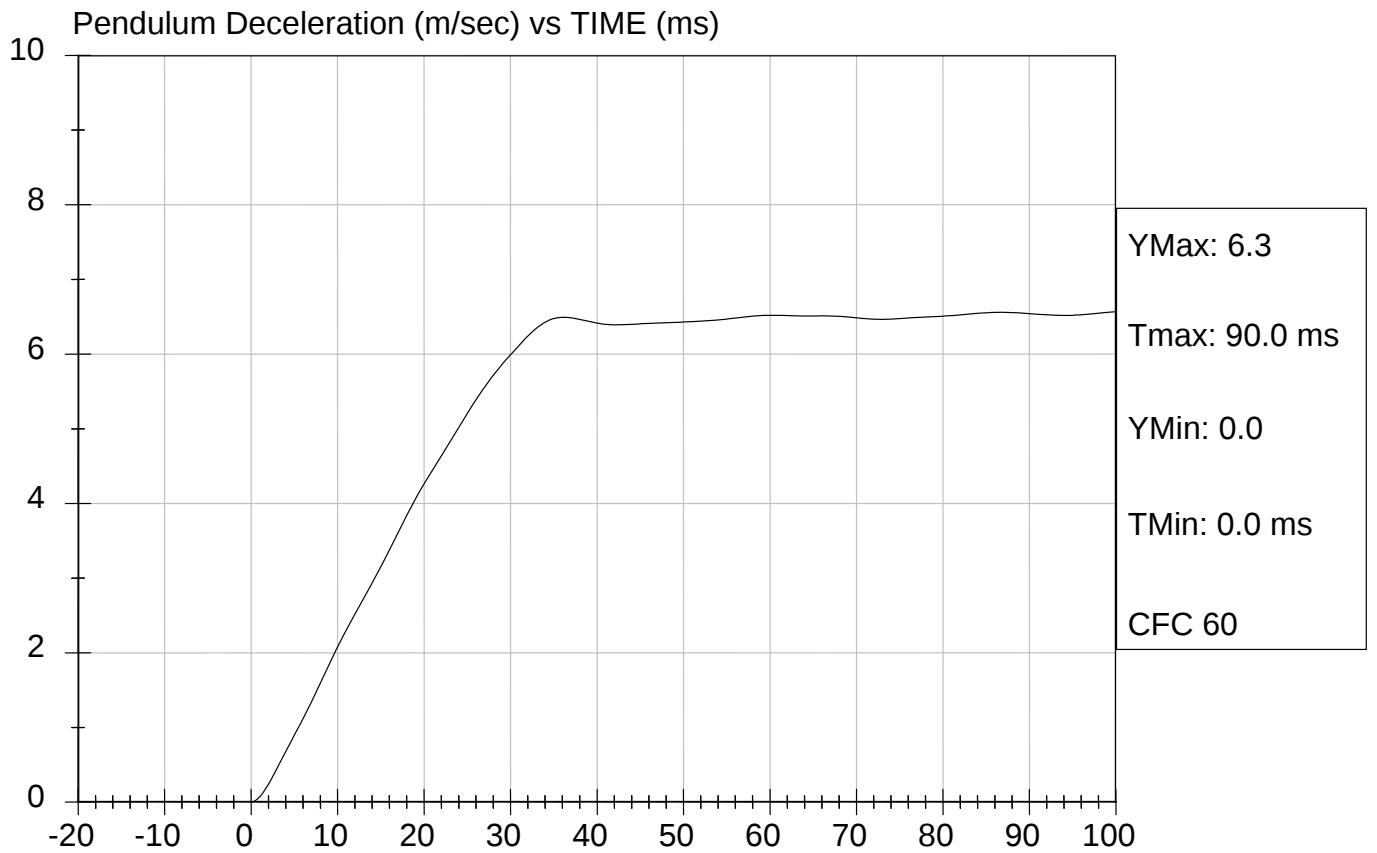

 Approved By

1/26/09
 Test Date



Test Desc: Neck Bending
Component ID: D09129

Test Date: 1/26/09
Speed: 23.14 ft/sec, 7.05 m/sec

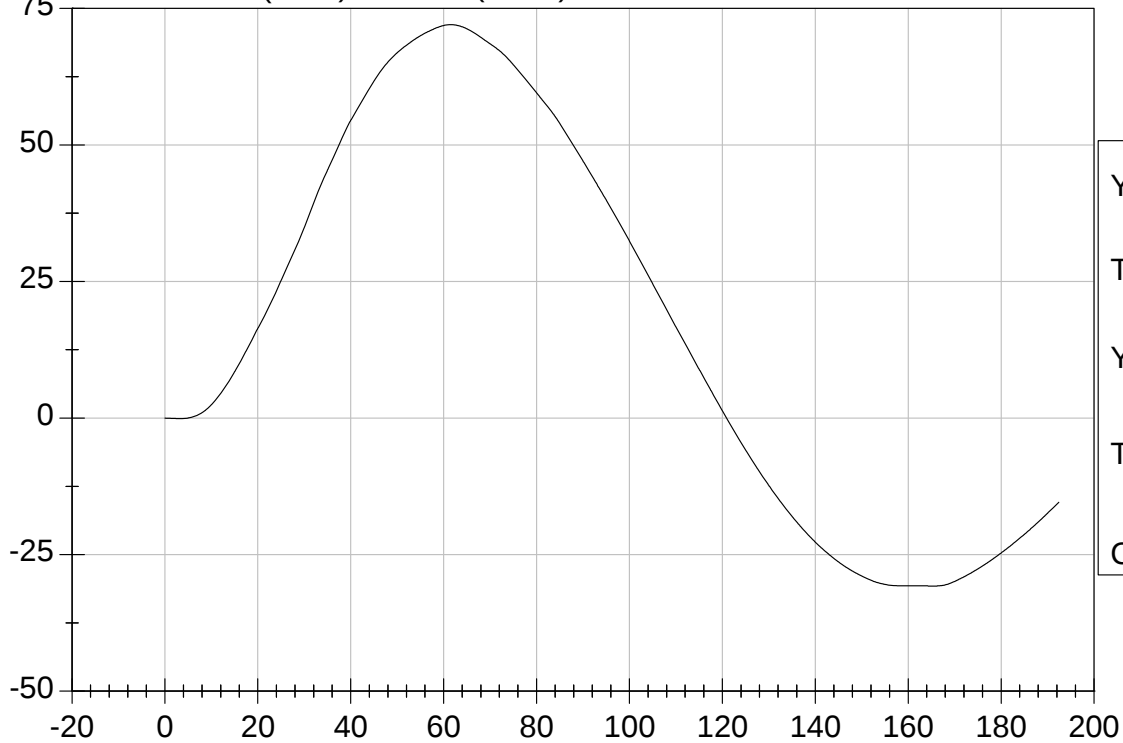




Test Desc: Neck Bending
Component ID: D09129

Test Date: 1/26/09
Speed: 23.14 ft/sec, 7.05 m/sec

Neck Rotation (DEG) vs Time (msec)



YMax: 72.0

Tmax: 61.5 ms

YMin: -30.7

Tmin: 165.4 ms

CFC 60

Occipital Moment (Nm) vs Time (msec)



YMax: 74.1

Tmax: 46.8 ms

YMin: -27.2

Tmin: 147.5 ms

CFC 600

Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SID/HIII Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration (Lateral)

ATD Serial No: 271

Test I.D: D09861

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Resultant Acceleration	G's	120 to 150	143	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	9	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

4/21/09
Test Date



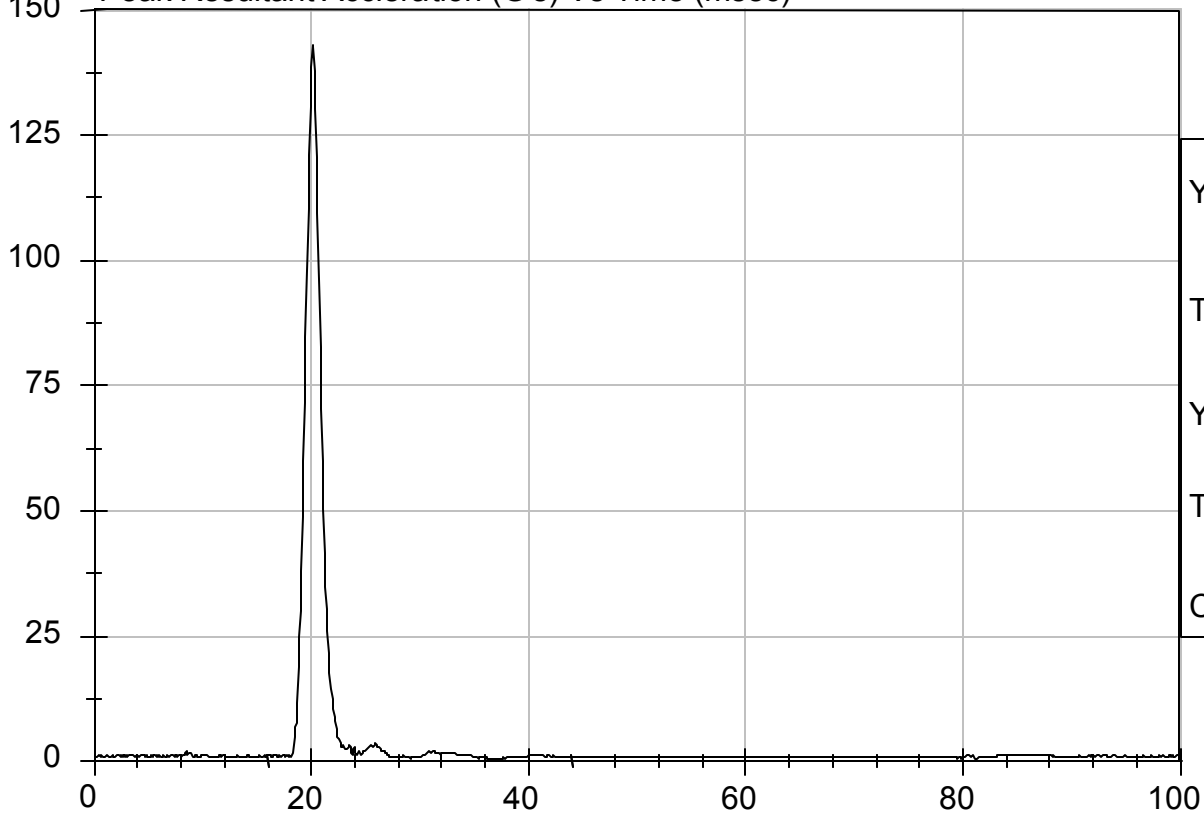
Test Description: Head Drop

Test Date: 4/21/09

Component: D09861

Speed: 0 ft/s, 0 m/s

Peak Resultant Acceleration (G's) Vs Time (msec)



YMax: 143.1 G

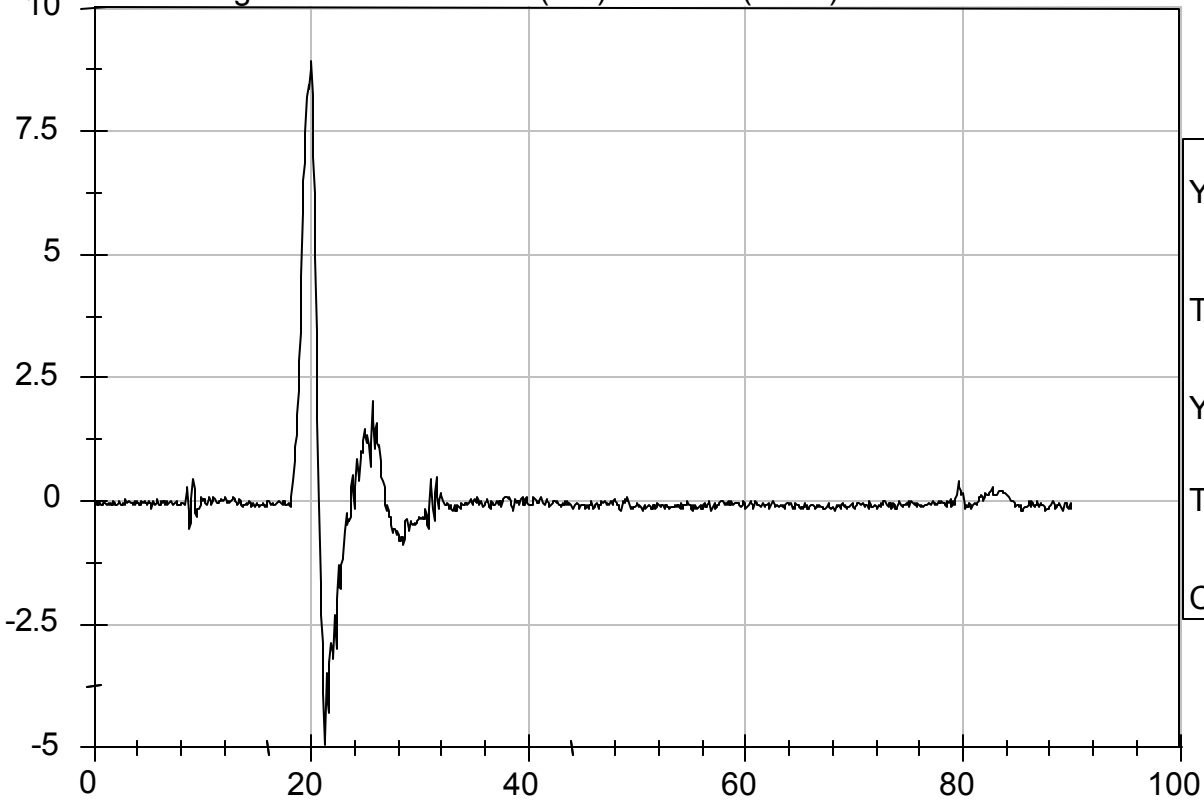
Tmax: 20.1 ms

YMin: 0.5 G

Tmin: 37.1 ms

CFC 1000

Peak Longitudinal Acceleration (G's) Vs Time (msec)



YMax: 8.9 G

Tmax: 20.0 ms

YMin: -5.0 G

Tmin: 21.2 ms

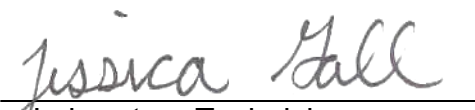
CFC 1000

SID/HIII Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 271

Test I.D: D09862

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	39	Pass
Lower Rib	G's	37 - 46	38	Pass
Lower Spine	G's	15 - 22	17	Pass
Overall Test Results				Pass


Laboratory Technician

4/21/09

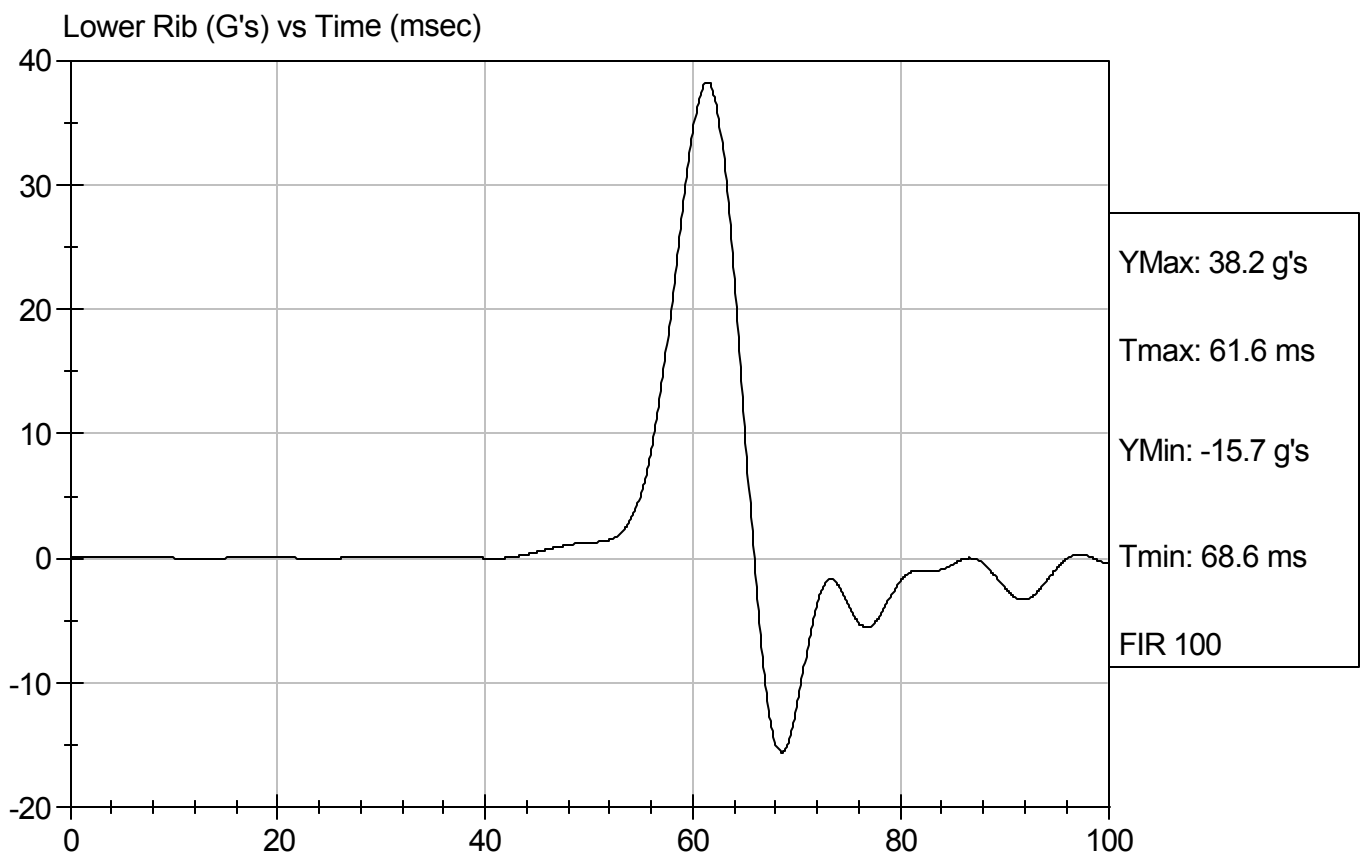
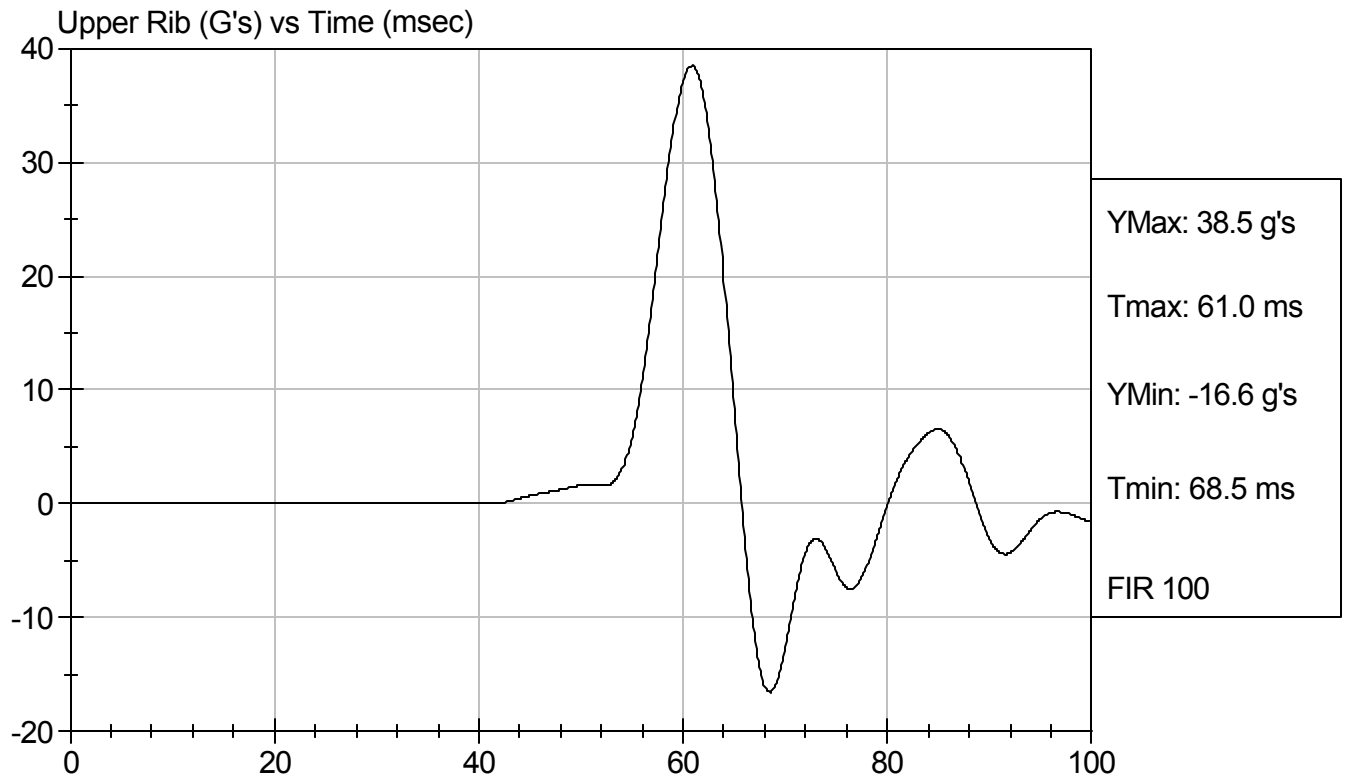
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D09862

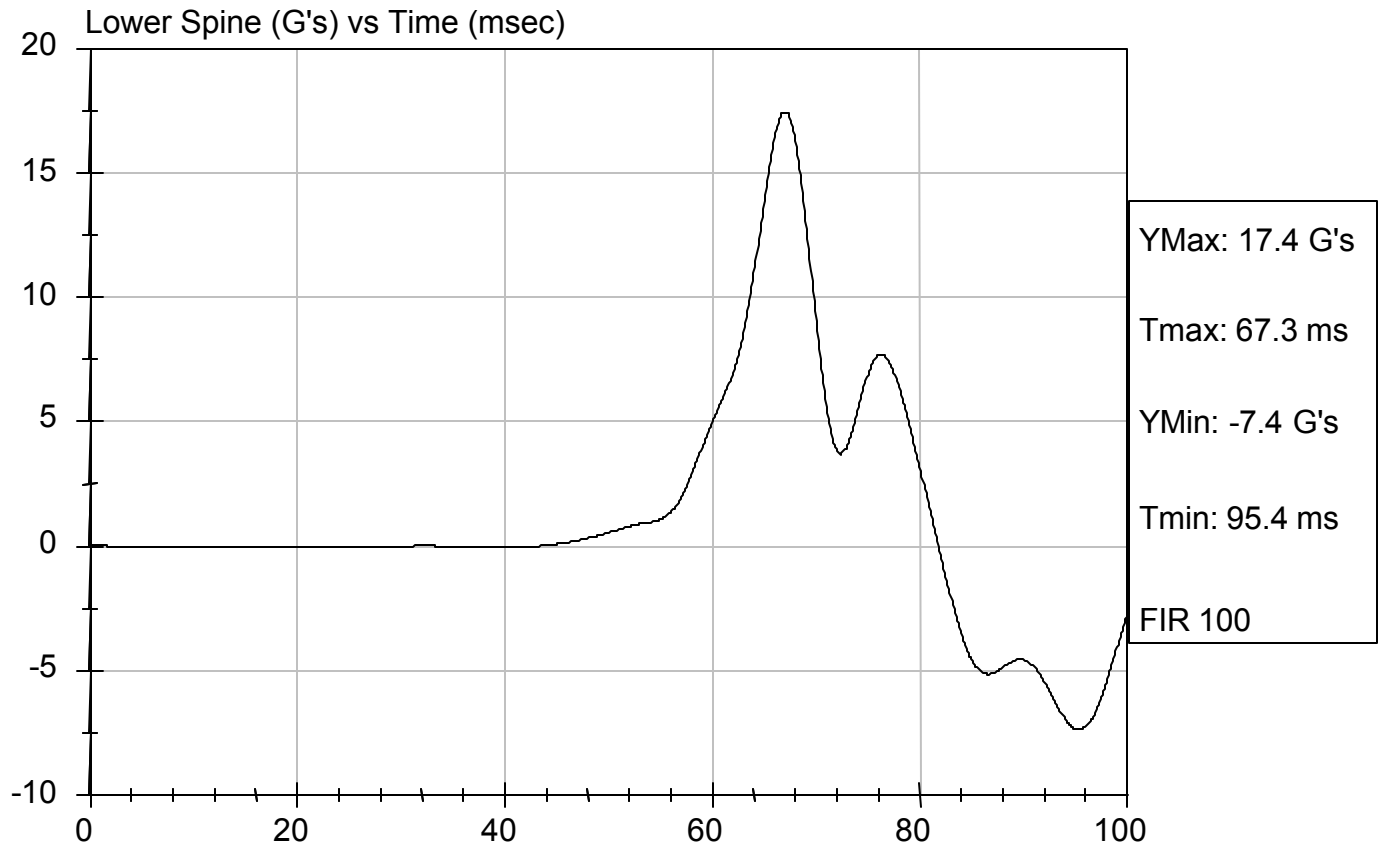
Test Date: 4/21/09
Speed: 14.12 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D09862

Test Date: 4/21/09
Speed: 14.12 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 271

Test I.D: D09863

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	45	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

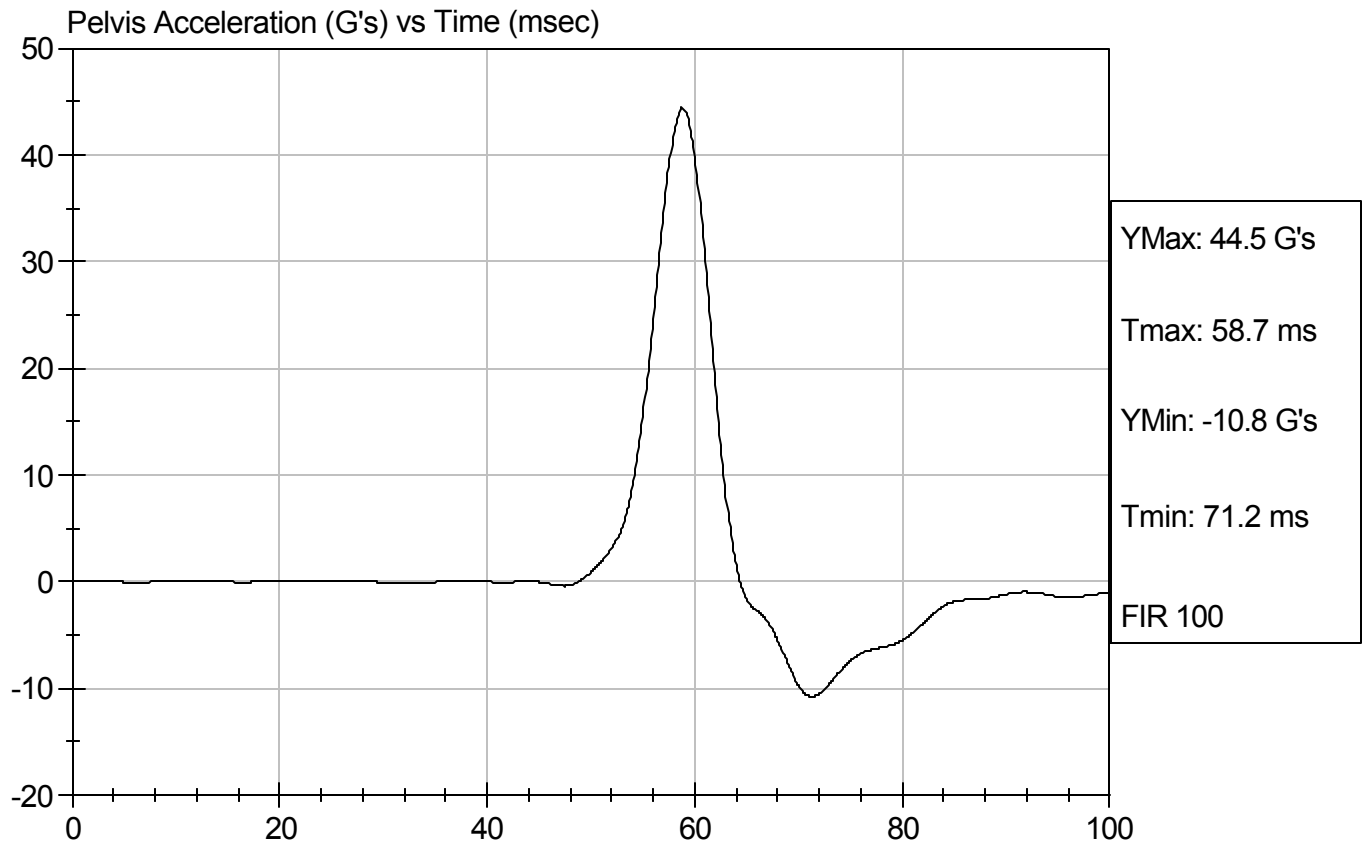
David Winkelbauer
Approved By

4/21/09
Test Date



Test Desc: Pelvis Impact
Component ID: D09863

Test Date: 4/21/09
Speed: 14.12 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 271

Test I.D: D09864

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	32	Pass
Force At 12.7 mm	N	104 -162	132	Pass
Force At 19 mm	N	163 - 222	185	Pass
Force At 25.4 mm	N	222 - 280	248	Pass
Force At 33 mm	N	325 - 391	339	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

4/21/09
Test Date

David Winkelbauer
Approved By

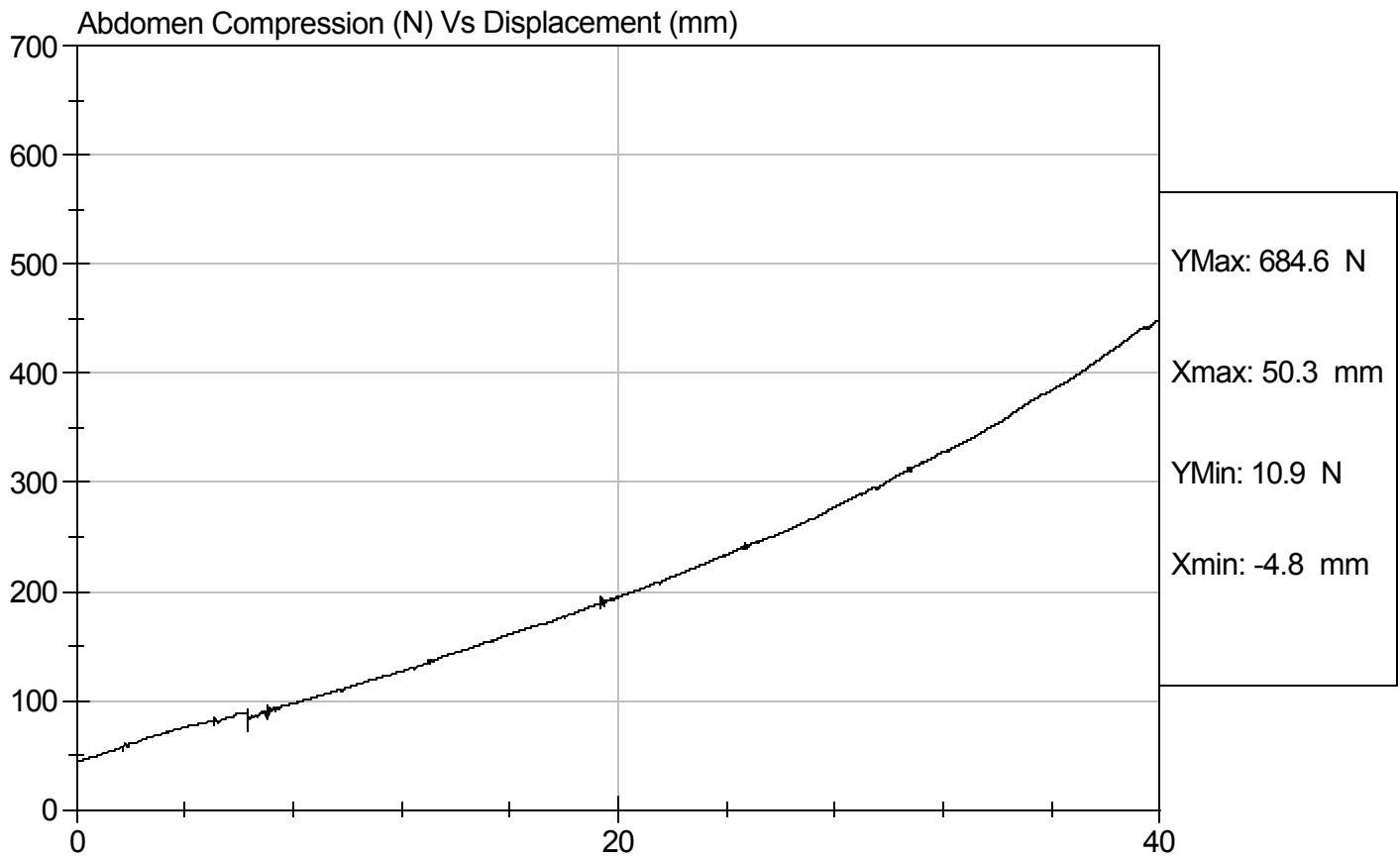


Test Description: Abdomen Compression

Test Date: 4/21/09

Component: D09864

Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 271

Test I.D: D09865

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	32	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	123.2	Pass
Force At 30 deg	N	151.2 - 204.6	178.2	Pass
Force At 40 deg	N	204.6 - 258.0	232.8	Pass
Return Angle	Deg	12 Maximum	9	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

4/21/09
Test Date

David Winkelbauer
Approved By

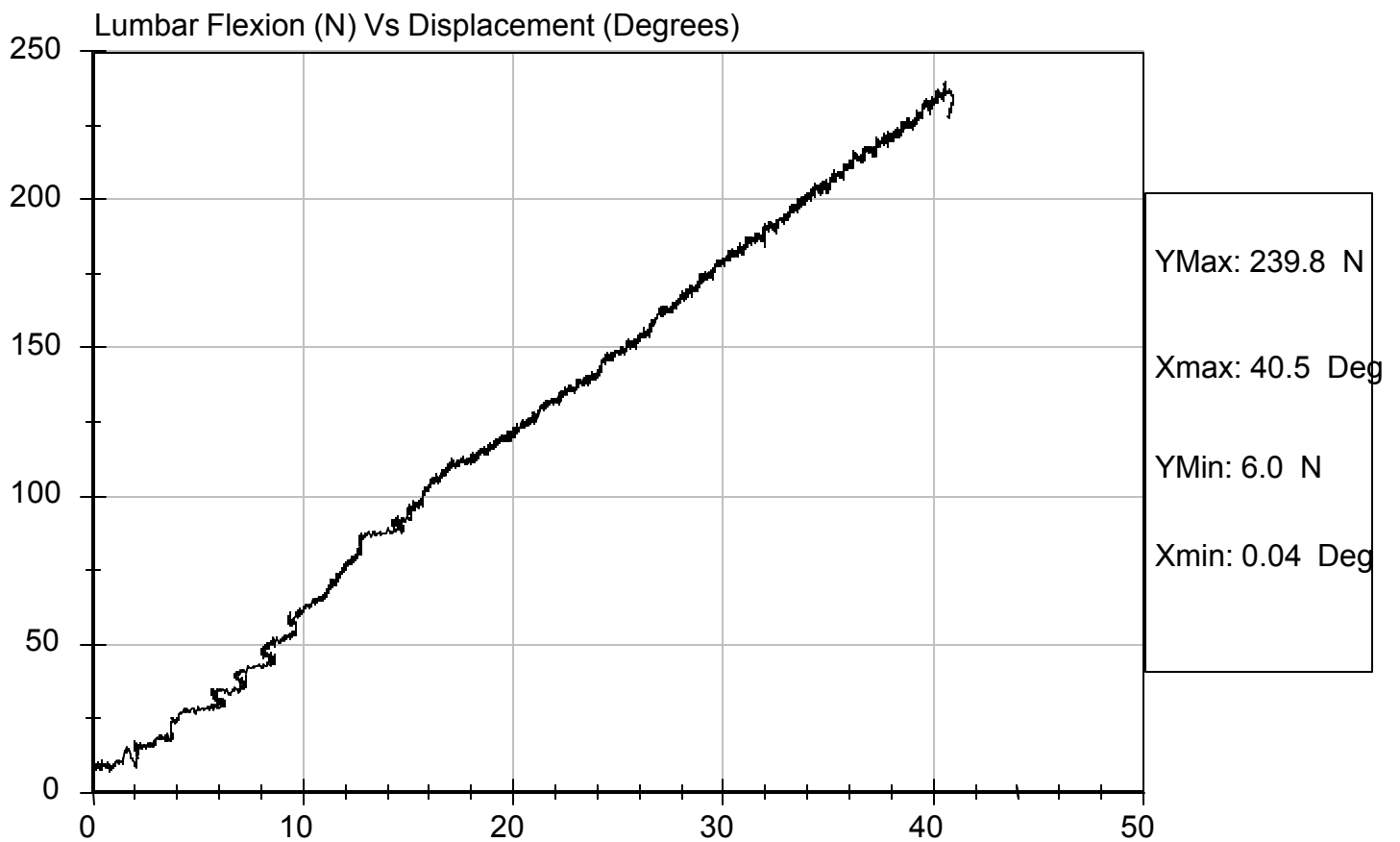


Test Description: Lumbar Flexion

Test Date: 4/21/09

Component: D09865

Speed: 0 ft/sec, 0 m/sec

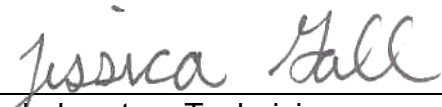


SID/HIII Calibration Data Sheet
Side Impact Dummy
Neck Pendulum Test

ATD Serial No: 271

Test I.D: D09869

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	32	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.26	Pass
	20 msec	m/s	4.12 to 5.10	4.54	Pass
	30 msec	m/s	5.73 to 7.01	6.32	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.00	Pass
Midsaggital Plane Max Rotation		deg	66 to 82	71	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	59	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	78	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	58	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	11	Pass


 Laboratory Technician

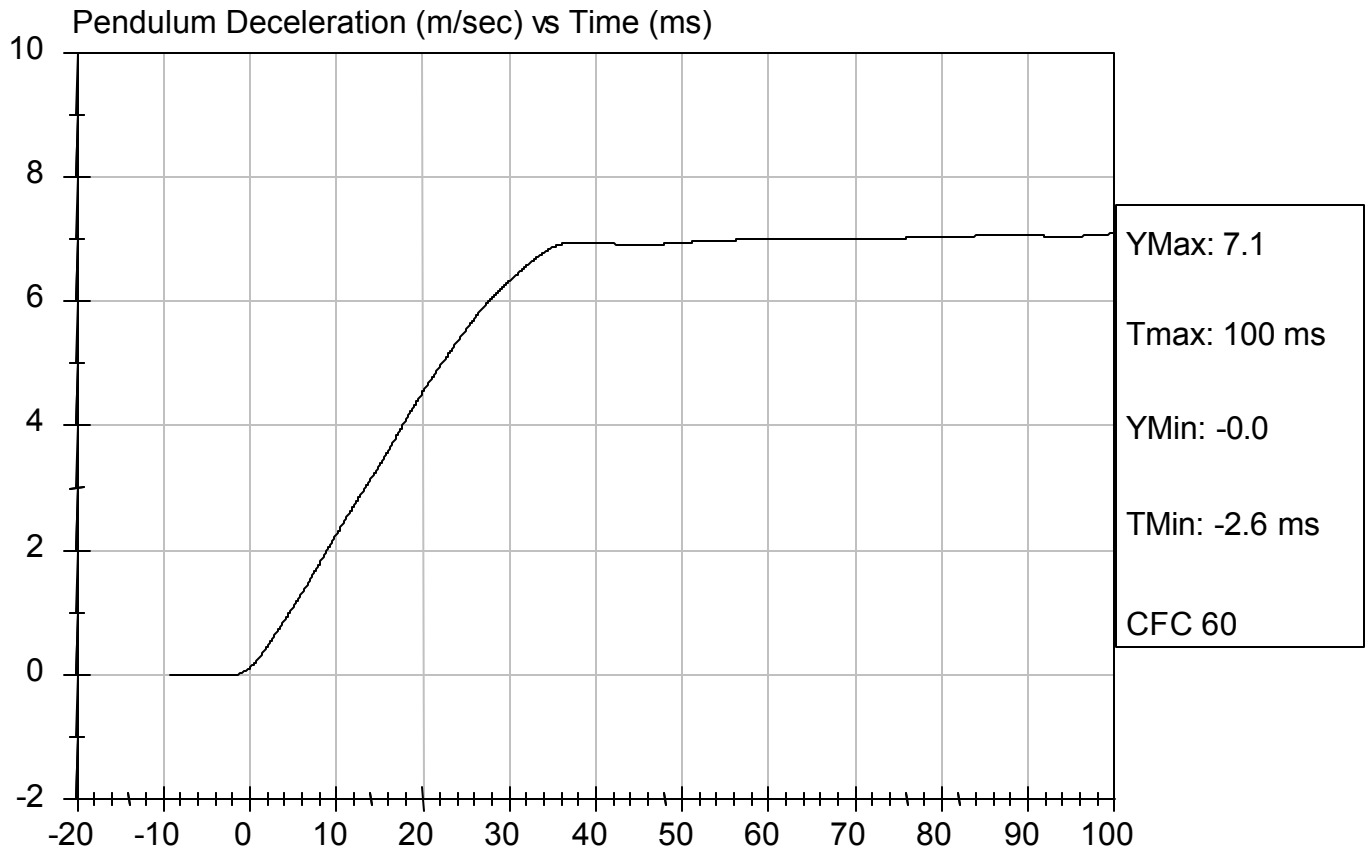
4/21/09
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D09869

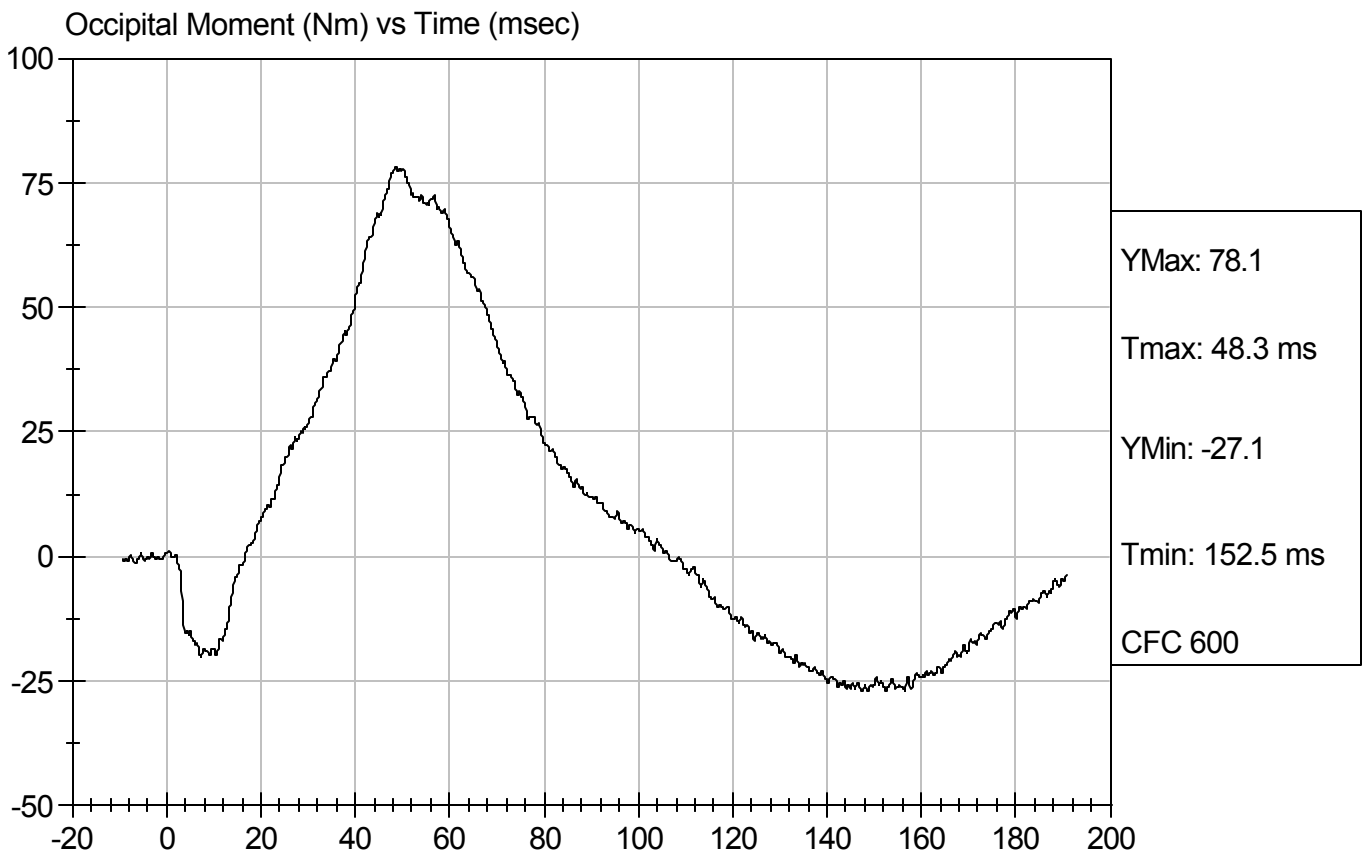
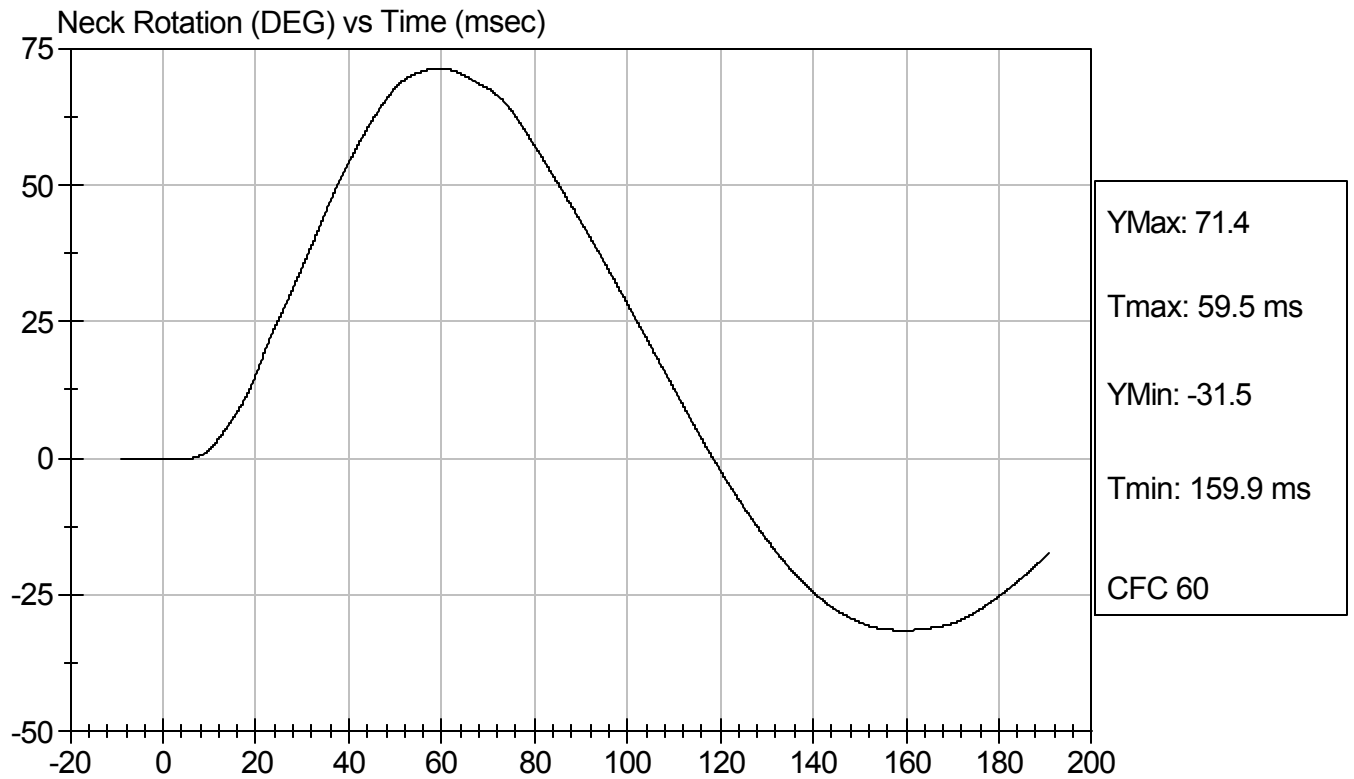
Test Date: 4/21/09
Speed: 23.15 ft/sec, 7.06 m/sec





Test Desc: Neck Bending
Component ID: D09869

Test Date: 4/21/09
Speed: 23.15 ft/sec, 7.06 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No: 271

Test Part	Items Checked	Result
Skin	Visual inspection	Pass
Head	Visual, ballast, accelerometer mount	Pass
Neck	Visual	Pass
Spine Box	Visual, ballast, accelerometer mount	Pass
Rib Cage	Visual, measure	Pass
Sternum	Visual	Pass
Lumbar Spine	Visual	Pass
Abdomen	Visual	Pass
Pelvis	Visual, palpate, accelerometer mount	Pass
Upper Legs	Visual	Pass
Knees	Visual	Pass
Lower Legs	Visual, range of motion	Pass
Ankles	Visual, range of motion	Pass
Feet	Visual, range of motion	Pass
Joints	1 to 2 g range	Pass
Other		Pass

Jessica Hall
Laboratory Technician
David Winkelbauer
Approved By

4/21/09

Test Date