

REPORT NUMBER: NCAPSIDE-MGA-2007-003

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**KIA MOTORS CORPORATION
2007 KIA SPORTAGE 4X2
NHTSA NUMBER: M70510**

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



Test Date: November 16, 2006

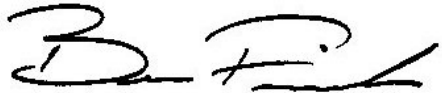
Report Date: December 28, 2006

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
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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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15. <i>Supplementary Notes</i>																								
16. <i>Abstract</i> A 55/28 km/h 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 2007 Kia Sportage 4x2 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 November 16, 2006. The impact velocity of the Moving Deformable Barrier (MDB) was 62.3 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 280 mm at level 2. The test vehicle's occupant performance is as follows: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <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;">22.8</td> <td style="text-align: center;">26.6</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">27.4</td> <td style="text-align: center;">46.5</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">35.6</td> <td style="text-align: center;">57.2</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">31</td> <td style="text-align: center;">52</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">59.6</td> <td style="text-align: center;">75.8</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">67</td> <td style="text-align: center;">224</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	22.8	26.6	Left Lower Rib (LLR) Accel., g	27.4	46.5	Lower Spine (T ₁₂) Accel., g	35.6	57.2	Thoracic Trauma Index (TTI)	31	52	Pelvis (PEV) Accel., g	59.6	75.8	HIC	67	224
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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY' 2007 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 2007 Kia Sportage 4x2 manufactured by Kia Motors Corporation.

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 2007 Kia Sportage 4x2 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 62.3 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 1742.3 kg and the test weight of the MDB was 1360.8 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on November 16, 2006.

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/HIIIs) can be found in Appendix A. Two 50th percentile adult male SID/HIIIs were placed in the driver and left rear passenger designated seating positions according to instructions specified in the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated November 2002. Each SID/HIII 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 six (6) 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 280 mm at level 2, 1200 mm rearward of the left vertical impact point. The driver and passenger SID/HIIIs, Serial Nos. 904 and 272 respectively, were calibrated just prior to this test.

Appendix A contains the still photograph prints. Appendix B contains the SID/HIII 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	67	39.8	75.8	31	59.6
Passenger	224	55.5	77.9	52	75.8

SUPPLEMENTAL RESTRAINT 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	Yes	Yes

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

TEST NOTES

None

DATA SHEET NO. 1**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2007 Kia Sportage 4x2NHTSA No. M70510Test Program: NCAP Side ImpactTest Date: 11/16/2006**TEST VEHICLE INFORMATION**

Make	Kia
Model	Sportage
Body Style	SUV
NHTSA No.	M70510
VIN	KNDJF724177306072
Color	White
Delivery Date	11/2/06
Odometer Reading (mile)	40
Dealer	Frank Boucher
Transmission	Automatic
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	2.0
Engine Placement	Lateral
Automatic Door Locks (ADL)	No
Owner's Manual Details Instructions on Disabling ADLs	N/A

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Curtain Airbag	Yes
Driver Side Torso Airbag	Yes
Rear Passenger Side Curtain Airbag	Yes
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	Kia Motors Corporation
Date of Manufacture	07/06

GVWR (kg)	2050
GAWR Front (kg)	1170
GAWR Rear (kg)	1100

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				390
Cargo Wt. (RCLW) (kg)				50

DATA SHEET NO. 1 (continued)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2007 Kia Sportage 4x2NHTSA No. M70510Test Program: NCAP Side ImpactTest Date: 11/16/2006**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	449.1	318.4		501.2	403.3	
Right	kg	460.4	309.8		471.3	366.5	
Ratio	%	59.1	40.9		55.8	44.2	
Totals	kg	909.5	628.2	1537.7	972.5	769.8	1742.3

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1537.7
Weight of 2 P572M ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Vehicle Target Weight (TVTW)	kg	1749.2

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

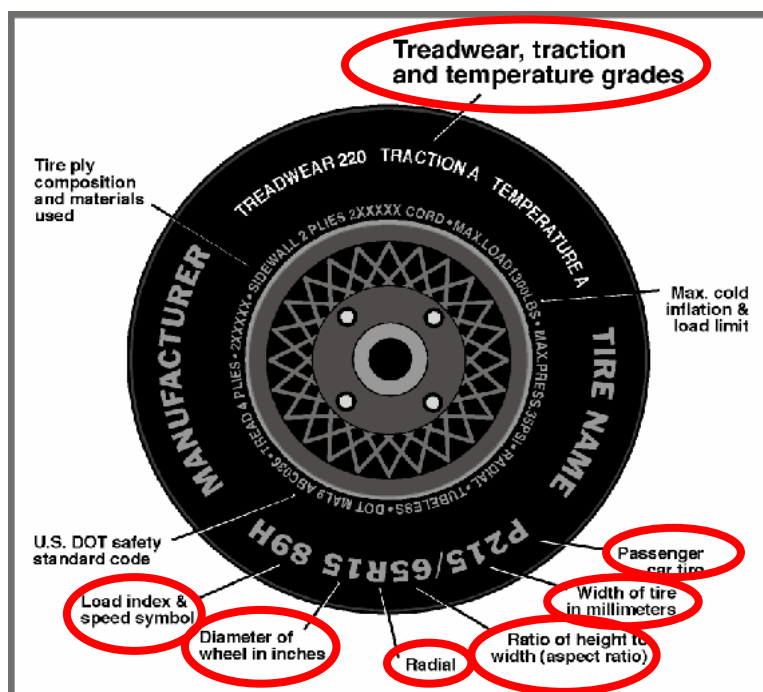
Weight of Ballast in Cargo Area: 0**TEST VEHICLE ATTITUDES AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	774	774	797	803	1076
As Tested	mm	757	768	756	772	1164
Fully Loaded	mm	757	768	756	772	

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2634
Target Impact Point Aft of Front Axle	mm	377
Actual Impact Point Aft of Front Axle	mm	382

TEST VEHICLE TIRE INFORMATION



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	210	210
Recommended Tire Size	P215/65R16	P215/65R16
Tire Size on Vehicle	P215/65R16	P215/65R16
Tire Manufacturer	Kumho	Kumho
Tire Name	ECSTA HP4	ECSTA HP4
Tire Type	Passenger	Passenger
Tire Width (mm)	215	215
Ratio of Height to Width (aspect ratio)	65	65
Radial	R	R
Wheel Diameter	16	16
Load Index & Speed Symbol	96T	96T
Treadwear	360	360
Traction Grade	A	A
Temperature Grade	B	B

DATA SHEET NO. 3

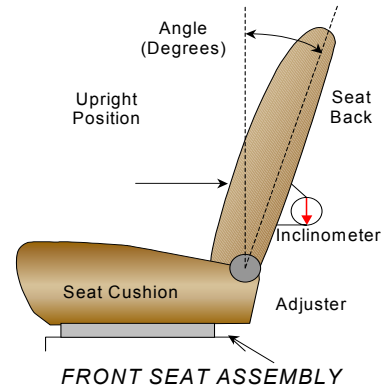
TEST VEHICLE INFORMATION

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows:
 Seatback angle at test position = 21° You can rotate a seat back by 12 step forward and 33 step backward at the nominal design position (2° per 1 step). Rotate a seat back 12 step backward at the foremost position.



Driver seat back angle: 12th step with 1st step as 1

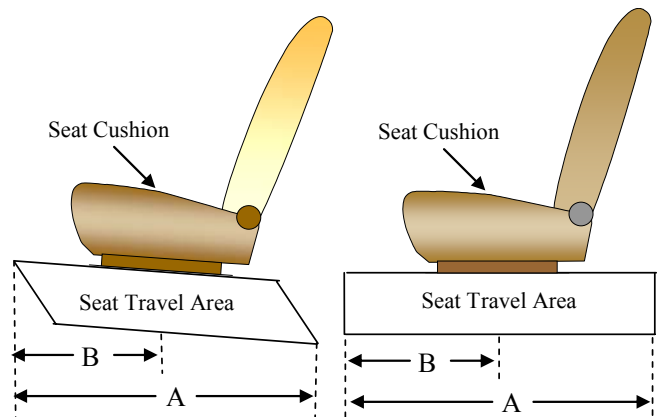
Passenger seat back angle: 1st step with 1st as 1.

SEAT FORE/AFT POSITIONS

Seat track is moved by 23 step forward and 1 step backward at the s.r.p. position (10 mm per 1 step). So you can find the center of fore and aft travel to adjust track by 12 step forward at the rearmost position.

SEAT FORE/AFT POSITIONS

	Total Fore/Aft Travel	Placed in position #
Driver Seat	24 positions	12 th position, 1 st as 0
Rear Seat	non adjustable	non adjustable



DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

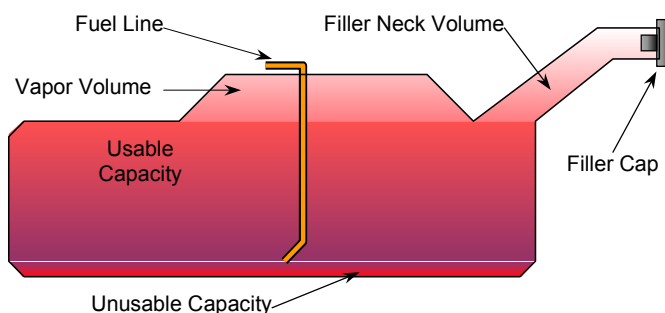
Test Vehicle: 2007 Kia Sportage 4x2
Test Program: NCAP Side Impact

NHTSA No. M70510
Test Date: 11/16/2006

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	58.0
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	53.3 – 54.5
Actual Amount of Solvent used	53.8
1/3 of Usable Capacity	19.3

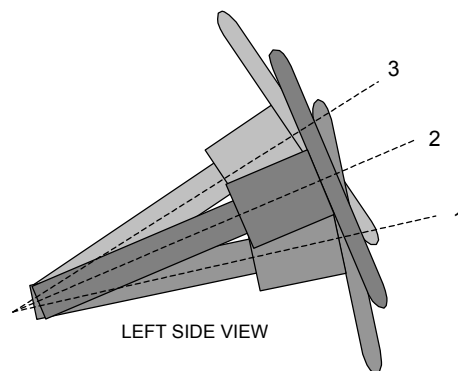
The vehicle is equipped with electric fuel pump.



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

	Fore/Aft (mm)	Degrees
Lowermost position No. 1		25.9
Geometric center position No. 2		27.9
Uppermost position No. 3		29.9

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

Test Vehicle: 2007 Kia Sportage 4x2
Test Program: NCAP Side Impact

NHTSA No. M70510
Test Date: 11/16/2006

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel base of Framework Carriage	2588
C.G. Location aft of Front Axle	1101

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	473.5	219.5	
Right	kg	308.3	359.5	
Ratio	%	57.5	42.5	
Totals	kg	781.8	579.0	1360.8

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.3
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.1
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	5 rear
Vertical Offset	mm	+/-20	9 up

DATA SHEET NO. 5**POST TEST OBSERVATIONS**Test Vehicle: 2007 Kia Sportage 4x2NHTSA No. M70510Test Program: NCAP Side ImpactTest Date: 11/16/2006**TEST DUMMY INFORMATION AND CONTACT POINTS**

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID HIII / 904	SID HIII / 272
Head Contact	Curtain Airbag	Curtain Airbag
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
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
Left Side Door Opening	Door remained closed and latched	Door Unlatched but remained closed
Right Side Door Opening	Door remained closed and latched; Door opened without tools	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	None
Window Damage	Left front and left rear windows broke.
Other Notable Effects	None

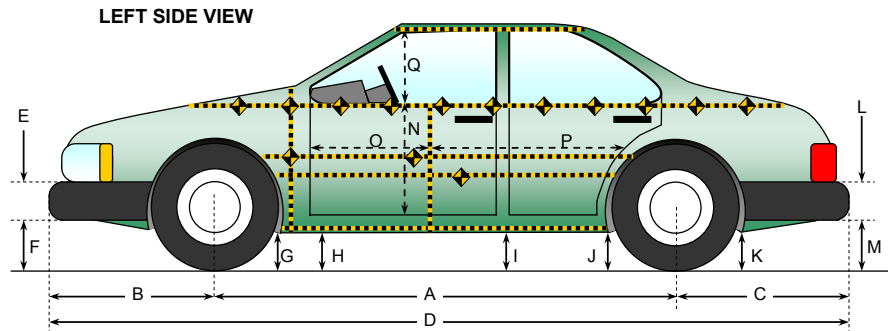
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Occupant Location 01		Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	None	
Side Torso Airbag	Yes	Yes	None	
Curtain Airbag	Yes	Yes	Yes	Yes

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

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



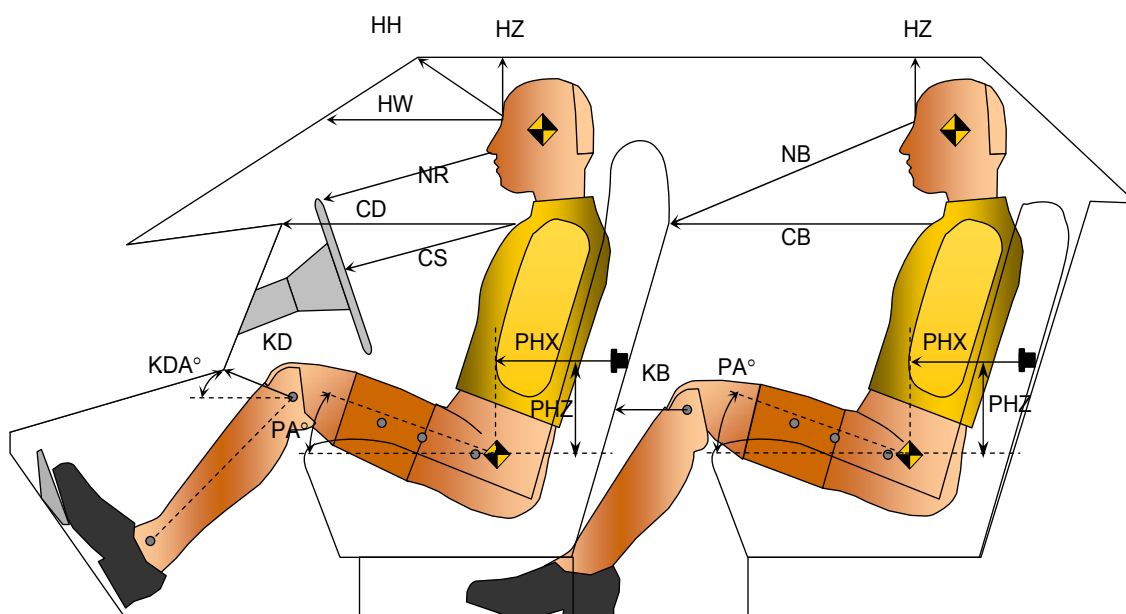
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2634	2633	1
B	Front Axle to FSOV	863	844	19
C	Rear Axle to RSOV	858	821	37
D	Total Length at Centerline	4355	4298	57
E	Front Bumper Thickness	100	100	0
F	Front Bumper Bottom to Ground	342	354	-12
G	Sill Height at Front Wheel Well	273	275	-2
H	Sill Height at Front Door Leading Edge	273	282	-9
I	Sill Height at "B" Pillar	272	322	-50
J1	Sill Height at Rear Wheel Well	259	285	-26
J2	Pinch Weld Height at Rear Wheel Well	262	288	-26
K	Sill Height Aft of Rear Wheel Well	314	308	6
L	Rear Bumper Thickness	167	167	0
M	Rear Bumper Bottom to Ground	582	327	255
N	Sill Height to Window Bottom Sill	764	698	66
O	Front Door Leading Edge to Impact CL	738	731	7
P	Rear Door Trailing Edge to Impact CL	1230	1154	76
Q	Front Window Opening	500	501	-1
R	Right Side Length	3686	3694	-8
S	Left Side Length	3685	3644	41
T	Vehicle Width at "B" Post	1797	1636	161

DATA SHEET NO. 7
SID/HII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006

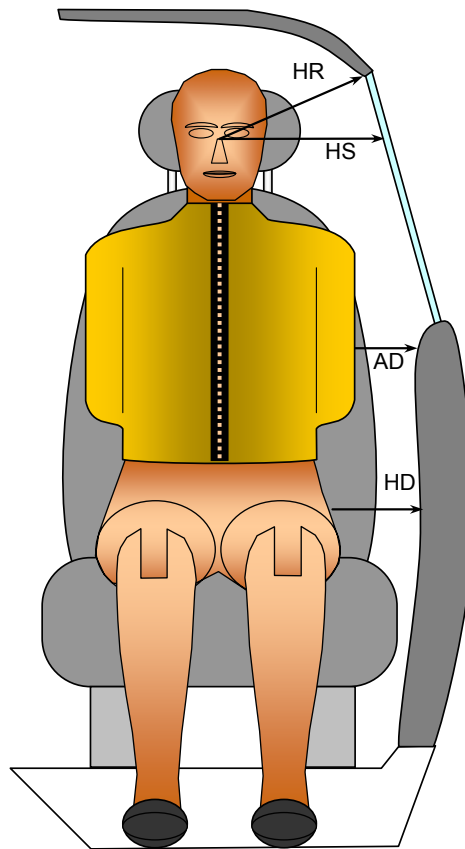


Driver Code	Pass. Code	Measurement Description	Driver S/N 904		Passenger S/N 272	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	420			
HW		Head to Windshield	619			
HZ	HZ	Head to Roof	195		199	
NR	NB	Nose to Rim/Nose to Seatback	445		643	
CD	CB	Chest to Dash or Seatback	534		571	
CS		Chest to Steering Wheel	321			
KDL	KBL	Left Knee to Dash or Seatback	133	36.8	248	24.5
KDR	KBR	Right Knee to Dash or Seatback	137	36.9	250	21.7
PA	PA	Pelvic Angle		23.5		24.3
PHX	PHX	H-Point to Striker (X-Axis)	213		246	
PHZ	PHZ	H-Point to Striker (Z-Axis)	78		229	

DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



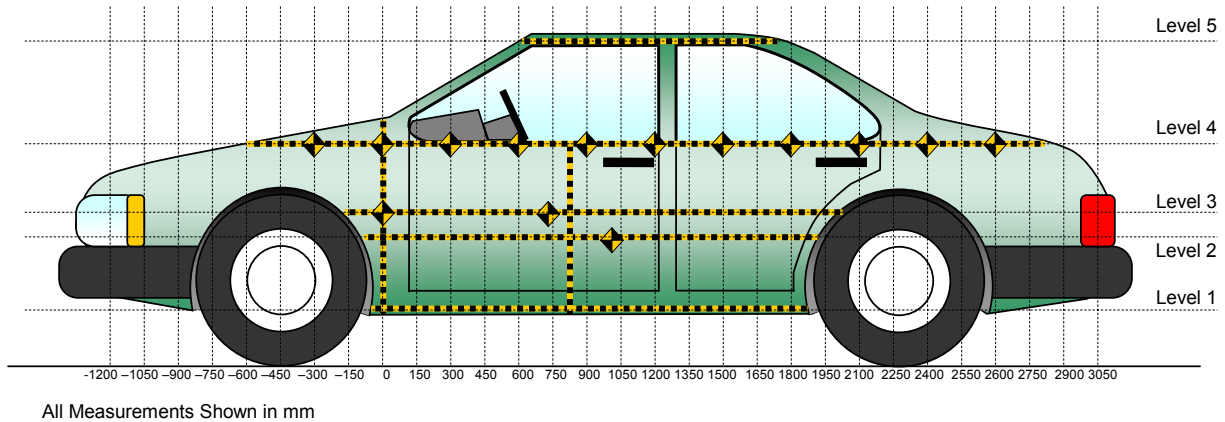
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 904	Passenger S/N 272
HR	Head to Side Header	mm	212	222
HS	Head to Side Window	mm	342	341
AD	Arm to Door	mm	63	120
HD	H-Point to Door	mm	208	178

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

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



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	7	1350	1583
4	Window Sill	209	1200	1078
3	Mid Door	274	1200	738
2	Occupant H-Point	280	1200	686
1	Sill Top	161	1350	344
	Maximum Penetration	280		

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-750				335					321					-14	
-600				324					312					-12	
-450				317					308					-9	
-300				308					305					-3	
-150				301					305					4	
0		201	202	296			229	225	304			28	23	8	
150	274	211	213	291		383	376	264	284		109	165	51	-7	
300	270	212	213	287		394	412	390	296		124	200	177	9	
450	270	213	213	287		406	423	407	314		136	210	194	27	
600	271	214	212	288		411	434	424	334		140	220	212	46	
750	271	214	212	288	493	416	437	437	357	489	145	223	225	69	-4
900	272	213	212	286	489	421	443	450	382	489	149	230	238	96	0
1050	272	213	211	286	488	428	459	461	417	491	156	246	250	131	3
1200	271	212	211	287	189	431	492	485	496	495	160	280	274	209	6
1350	271	210	211	287	490	432	485	473	463	497	161	275	262	176	7
1500	271	210	213	288	492	432	479	461	427	498	161	269	248	139	6
1650	273	211	214	289	494	432	468	453	399	499	159	257	239	110	5
1800	274	211	215	293	495	413	440	449	369	502	139	229	234	76	7
1950		201	202	295	497		354	353	338	496		153	151	43	-1
2100			202	299	500			285	332	498			83	33	-2
2250				304	504				344	502				40	-2
2400				305	511				335	507				30	-4
2550				310	526				327	520				17	-6
2700				313					320					7	

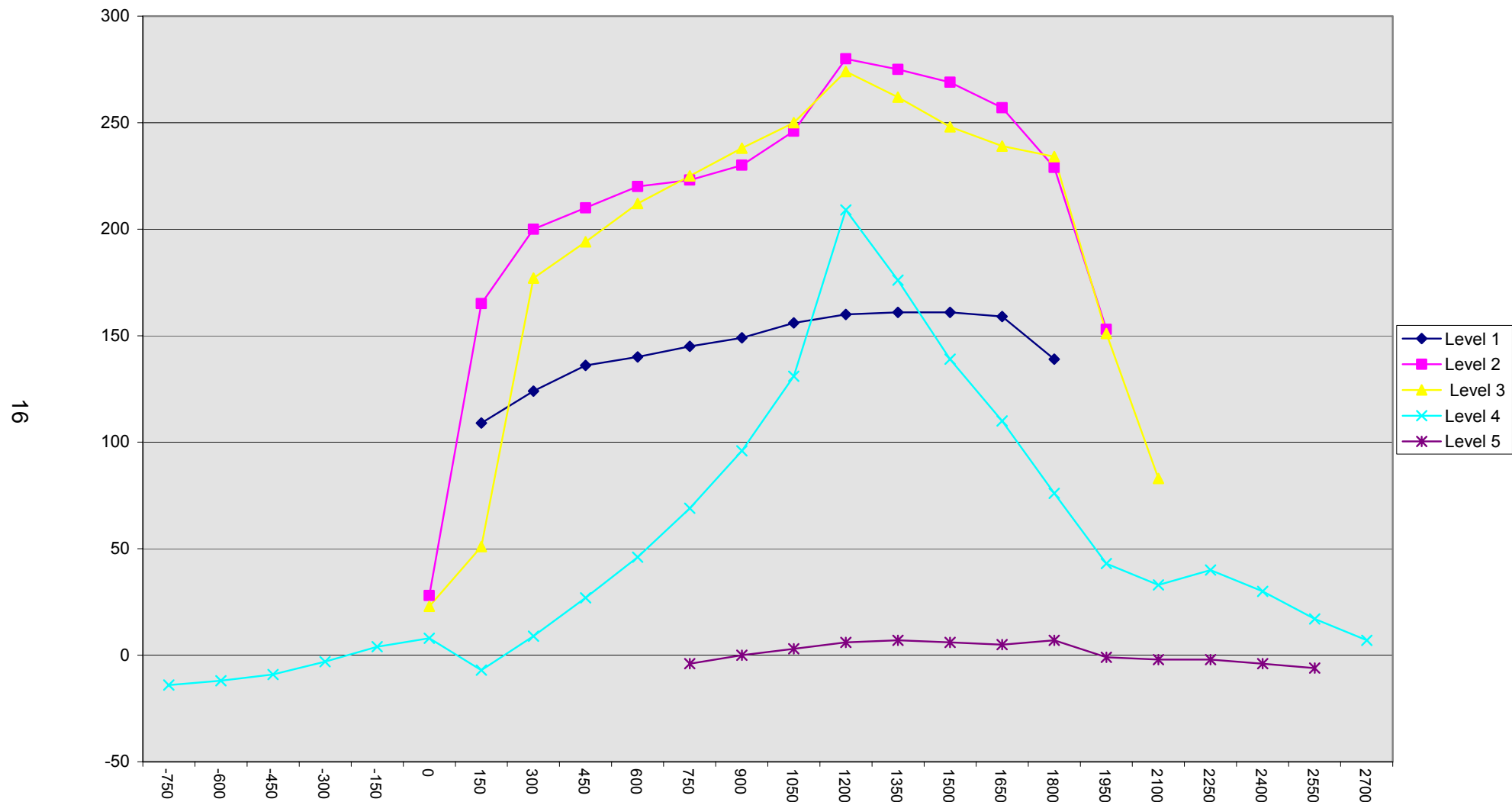
Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

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

Test Vehicle: 2007 Kia Sportage 4x2
Test Program: NCAP Side Impact

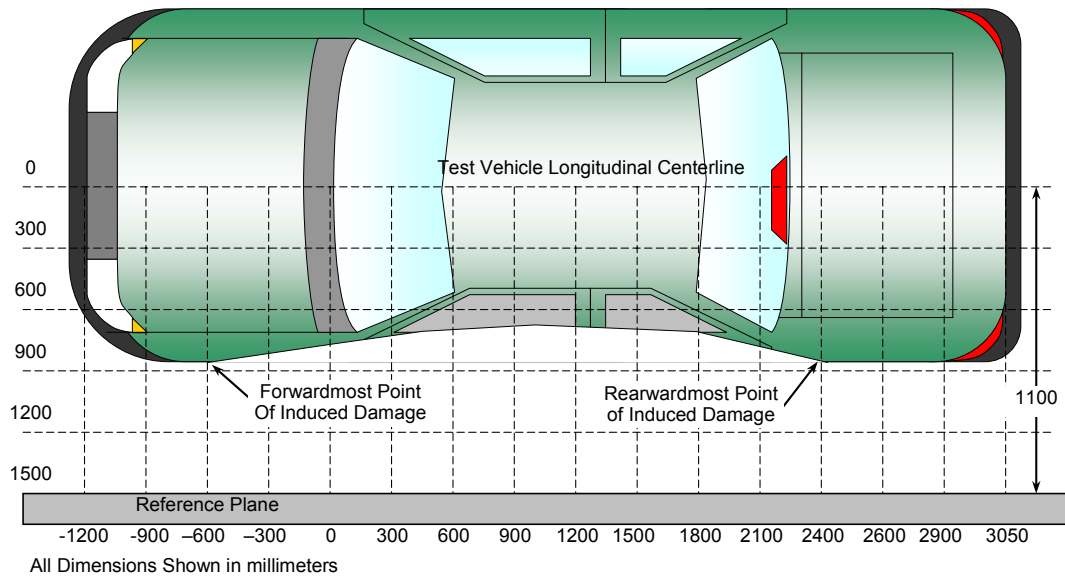
NHTSA No. M70510
Test Date: 11/16/2006



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	2700	4	313	320	7
2	2096	4	299	334	35
3	1490	2	219	482	263
4	864	2	222	442	220
5	278	2	221	402	181
6	-300	4	308	305	-3

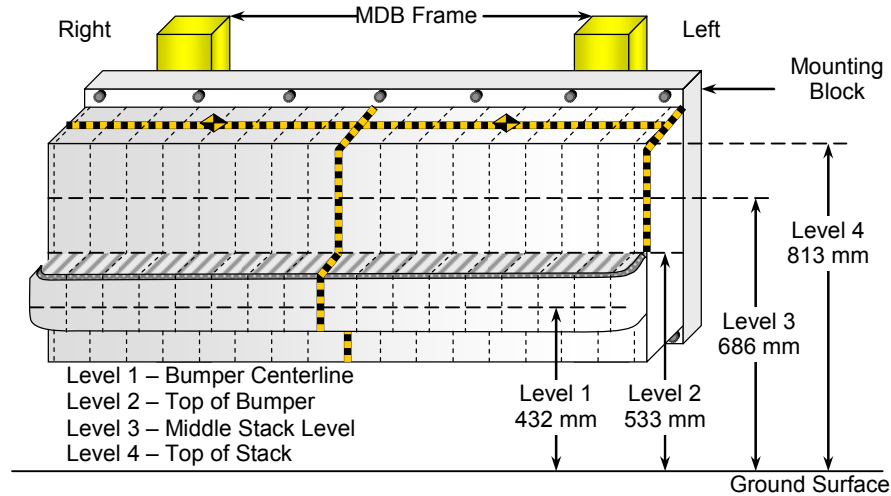
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



DEFORMABLE BARRIER STATIC CRUSH

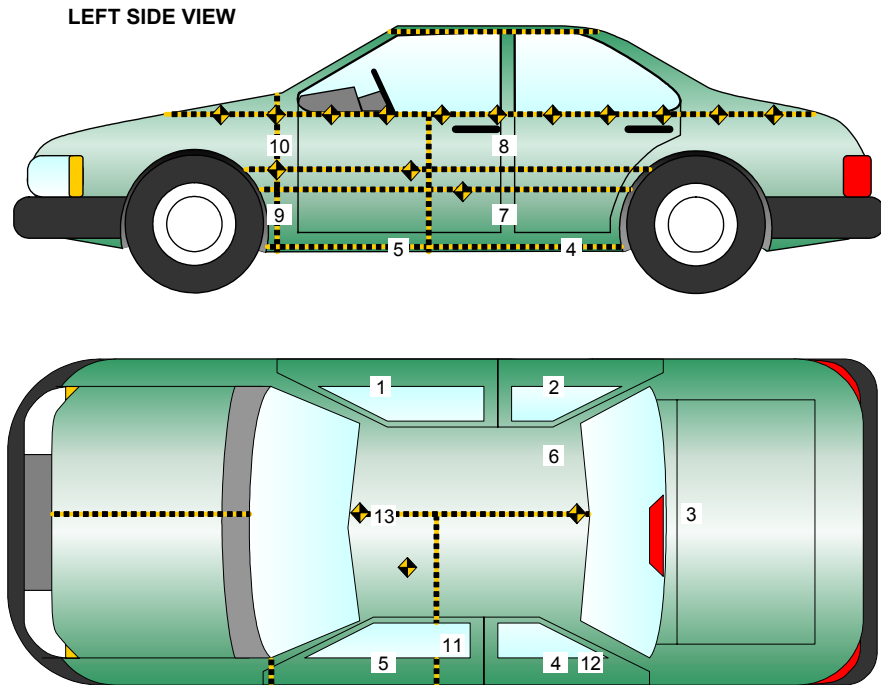
Stack Level	Distance Right of Center								C _L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	103	85	73	71	72	79	79	81	85	86	89	92	95	97	103	117	133
2	40	53	52	51	50	52	54	55	57	52	59	65	66	68	73	75	85
3	45	27	13	7	5	7	10	17	13	12	13	16	21	30	50	67	100
4	41	27	19	13	10	20	34	19	19	25	32	44	58	74	91	124	162

All Dimensions in mm

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



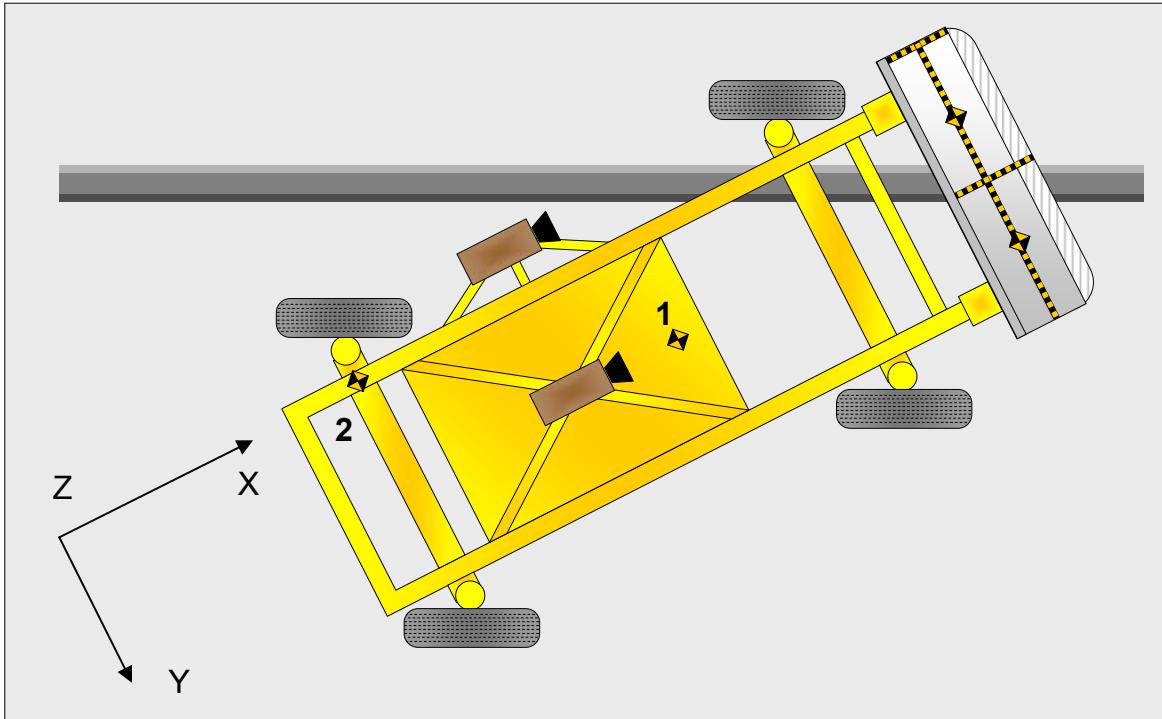
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2439	702	328
2	Right Sill at Rear Seat	1630	703	335
3	Rear Floorpan Above Axle	984	0	554
4	Left Sill at Rear Door	1611	-702	334
5	Left Sill at Front Door	2492	-703	326
6	Rear Occupant Compartment	1597	320	496
7	Left Lower B-Post	1868	-713	721
8	Left Middle B-Post	1876	-708	913
9	Left Lower A-Post	2948	-713	679
10	Left Middle A-Post	2943	-809	904
11	Front Seat Track	2111	-565	554
12	Rear Seat Track or Structure			
13	Vehicle CG	2414	0	394

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: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	MDB CG	-1092	0	-483
2	MDB Rear	-2591	-625	-622

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: 2007 Kia Sportage 4x2
Test Program: NCAP Side Impact

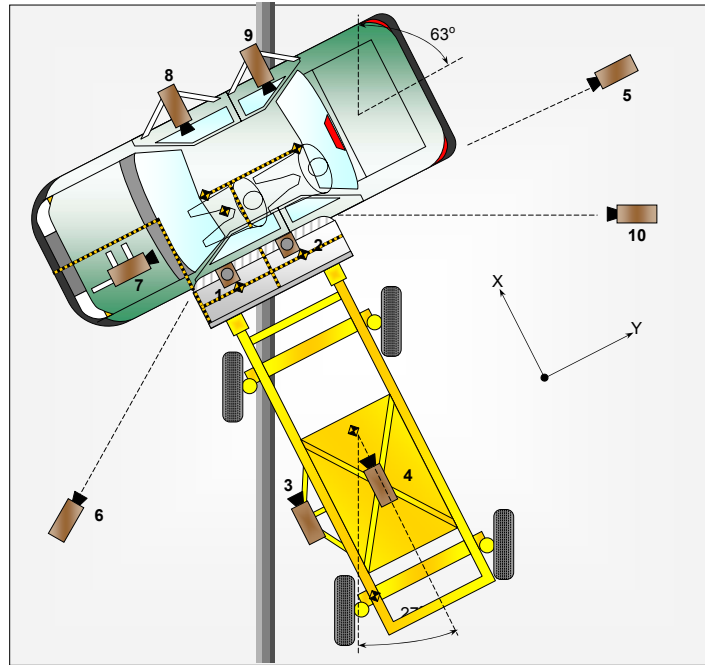
NHTSA No. M70510
Test Date: 11/16/2006

	Elements	Pre-Test (mm)
1	Total Length	4355
2	Total Width	1797
3	Bumper Top Height	765
4	Bumper Bottom Height	663
5	Longitudinal Member Top Height	620
6	Distance between Longitudinal Members	950
7	Longitudinal Member Width	80
8	Engine Top Height	834
9	Engine Bottom Height	248
10	Engine and gearbox width	922
11	Front bumper-engine distance	445
12	Front shock absorber fixing height	950
13	Bonnet leading edge height	936
14	Front shock absorber fixing width	1144
15	Front bumper – front axle distance	873
16	Front axle – a pillar distance	480
17	A-pillar – B-pillar distance	1047
18	B-Pillar – rear axle distance	1105
19	B-pillar – C-pillar distance	920
20	Roof sill bottom height	1608
21	Roof sill top height	1664
22	Floor sill bottom height	332
23	Floor sill top height	483

DATA SHEET NO. 16
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Close-up	810	40	4840	50	1000
2	Overhead Overall	-695	1240	4840	14	1000
3	MDB Onboard, Impact Point Close-up				50	1000
4	MDB Onboard, Centerline of Impact				25	1000
5	Right Side, Ground Level, Overall	-2985	6535	1350	24	1000
6	Left Side, Ground Level, Overall	3025	-4070	1310	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: 2007 Kia Sportage 4x2
 Test Program: NCAP Side Impact

NHTSA No. M70510
 Test Date: 11/16/2006

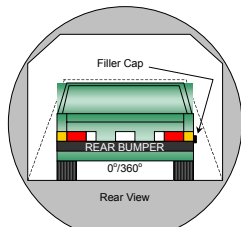
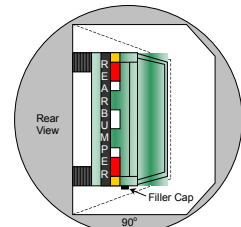
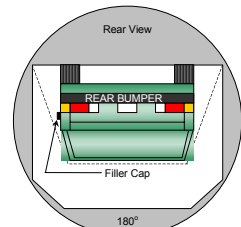
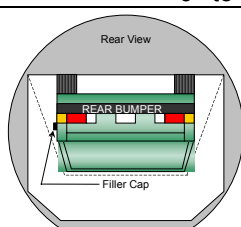
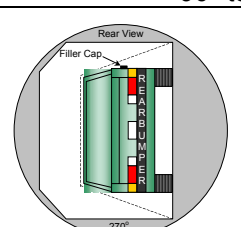
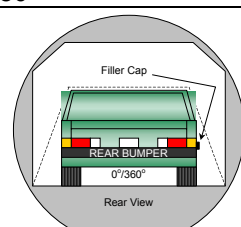
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 11:01 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°	118	300	First 5	0
90° to 180°	112	300	First 5	0
180° to 270°	114	300	First 5	0
270° to 360°	119	300	First 5	0

APPENDIX A
PHOTOGRAPHS

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Left Front $\frac{3}{4}$ View, As Received



Right Rear $\frac{3}{4}$ 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 $\frac{3}{4}$ View



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



Pre-Test Overhead View



Post-Test Overhead View



Pre-Test Overhead Close-up View



Post-Test Overhead Close-up View



Pre-Test Left Impact Point



Post-Test Left Impact Point



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



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



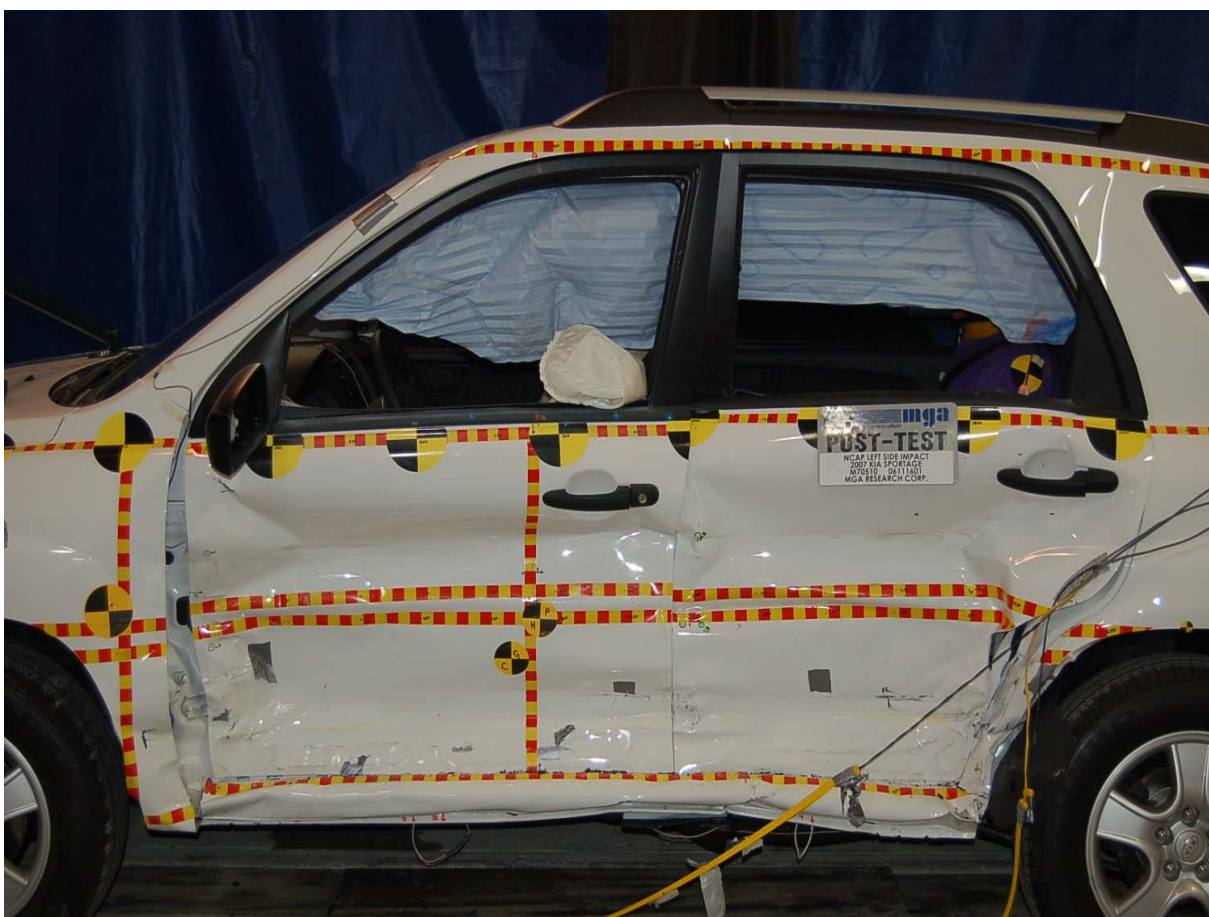
Pre-Test Rear $\frac{3}{4}$ View of Left Side Door



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



Pre-Test Left Side Impact Close-up



Post-Test Left Side Impact Close-up



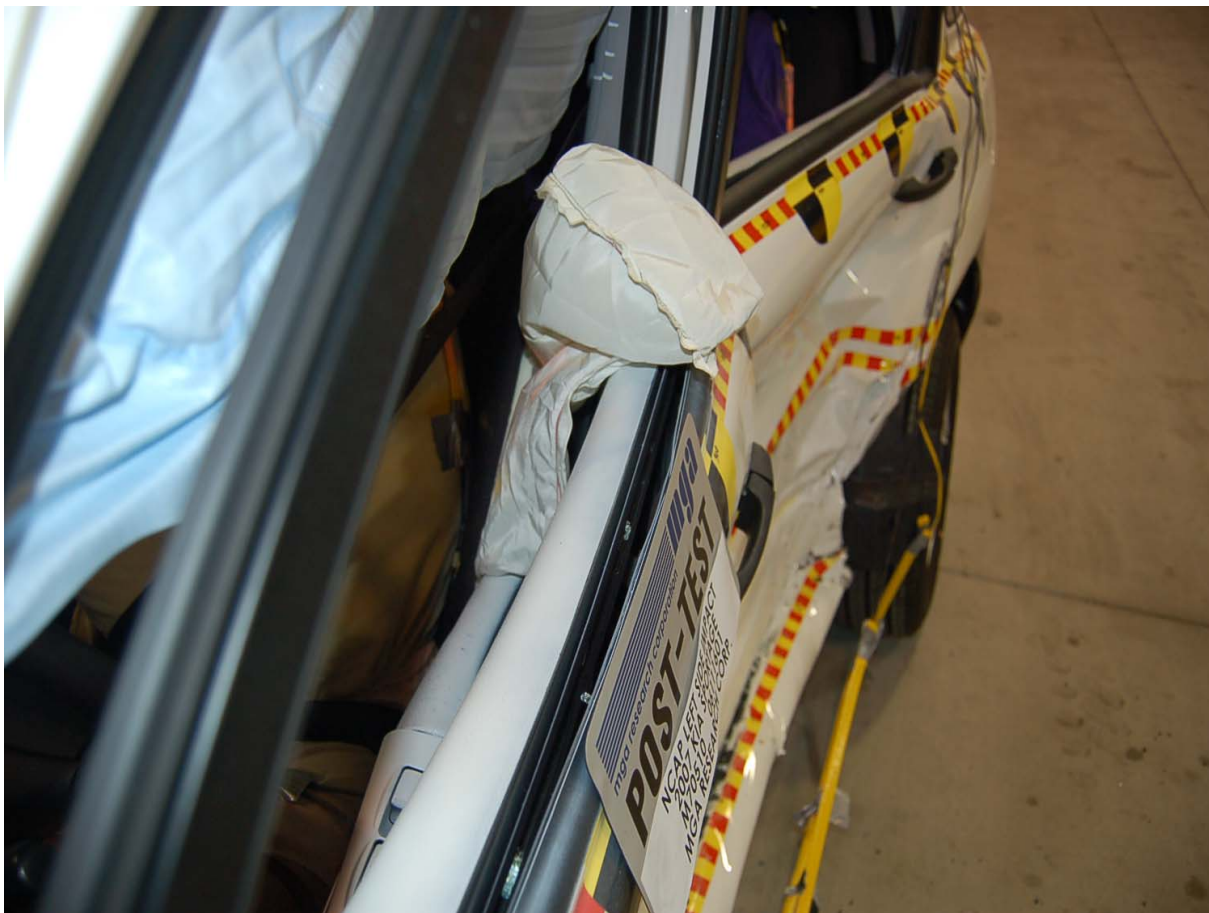
Pre-Test Driver Dummy (Door Open)



Pre-Test Driver Dummy (Through Window)



Post-Test Driver Dummy (Through Window)



Post-Test Driver Dummy Clearance From Door



Pre-Test Driver Dummy Right Side View



Post-Test Driver Dummy Right Side View



Pre-Test Passenger Dummy (Door Open)



Pre-Test Passenger Dummy (Through Window)



Post-Test Passenger Dummy (Through Window)



Post-Test Passenger Dummy Clearance From Door



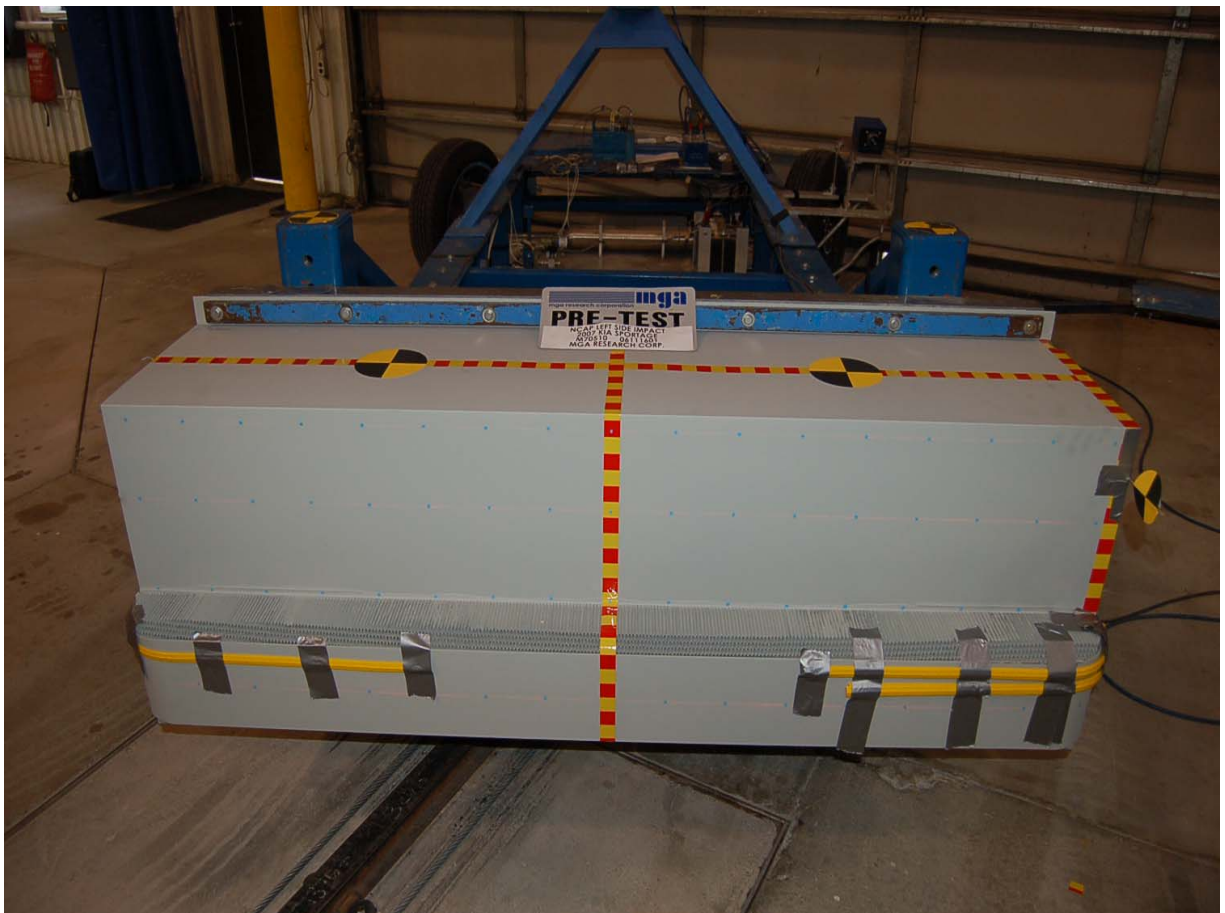
Pre-Test Passenger Dummy Right Side View



Post-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



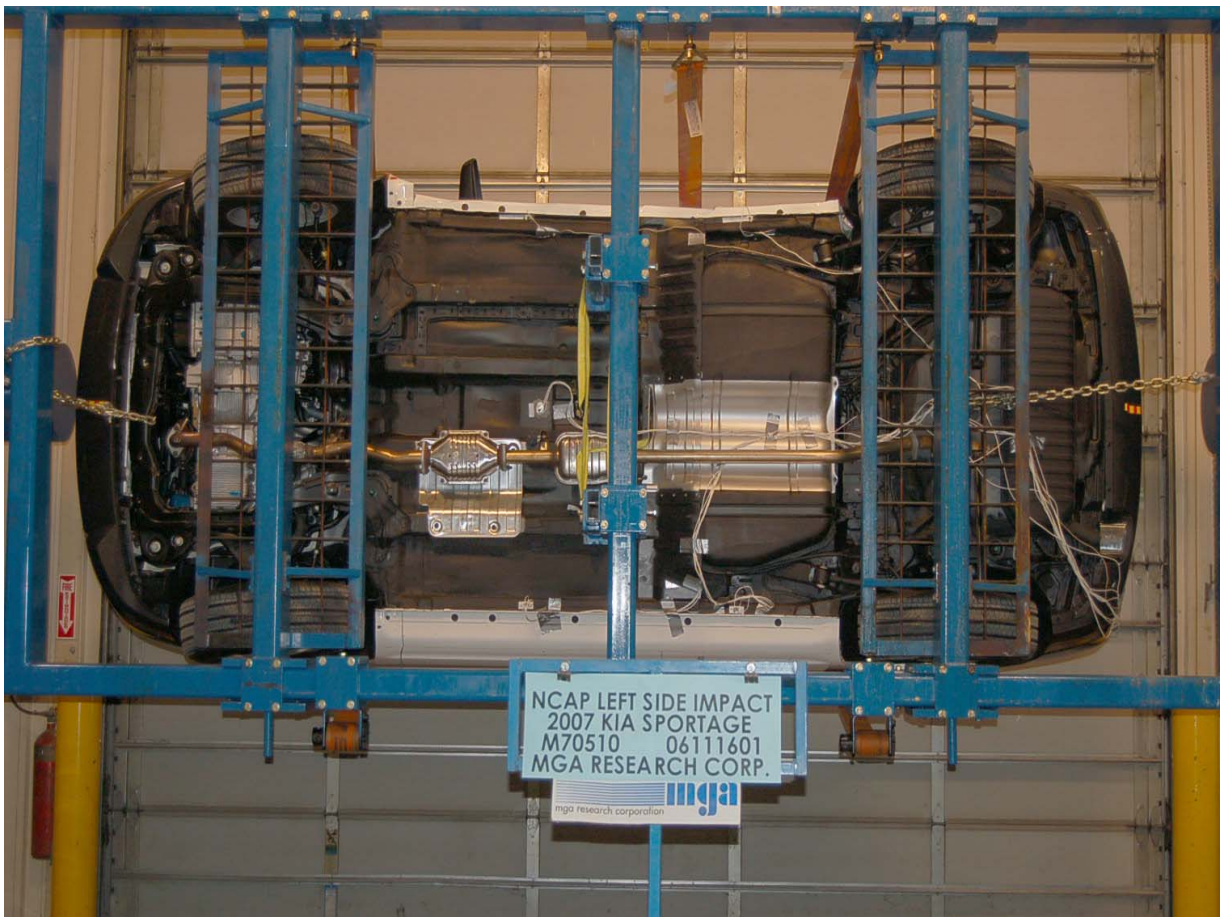
Post-Test Left Side View of Deformable Barrier



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 Head Contact



Post-Test Passenger Dummy Upper Torso Contact



Post-Test Passenger Dummy Lower Torso Contact



Post-Test Passenger Dummy Contact

APPENDIX B
SID/HIII RESPONSE DATA TRACES

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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

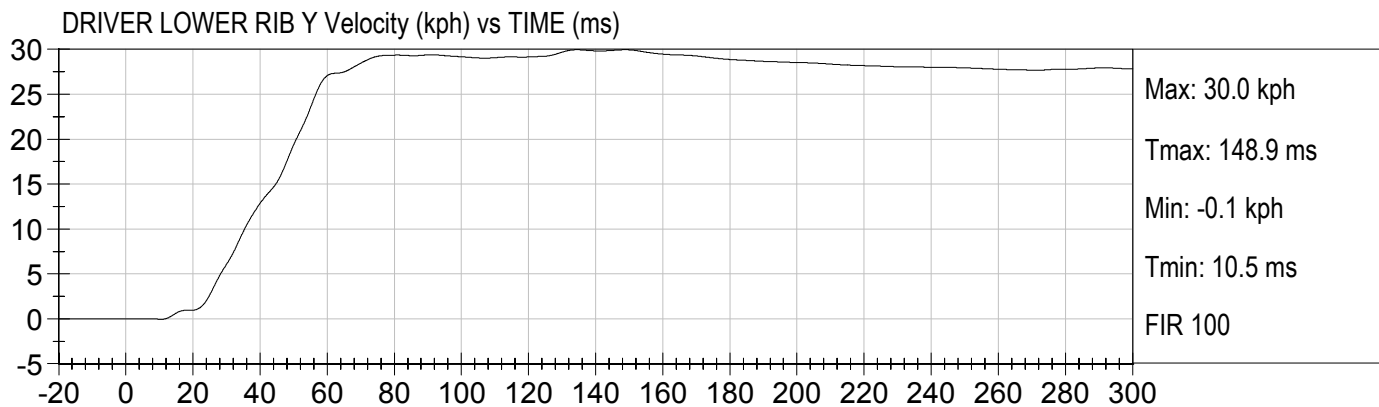
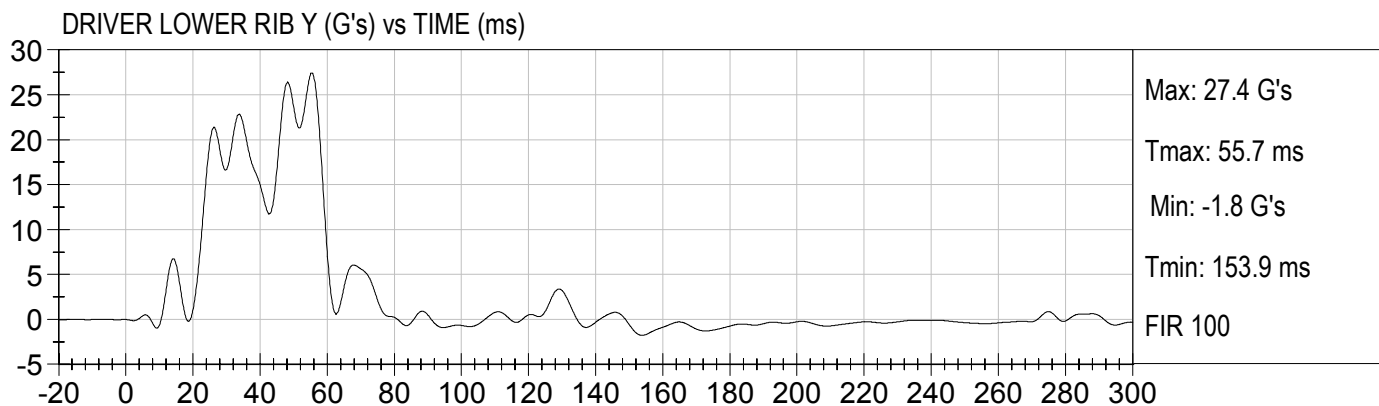
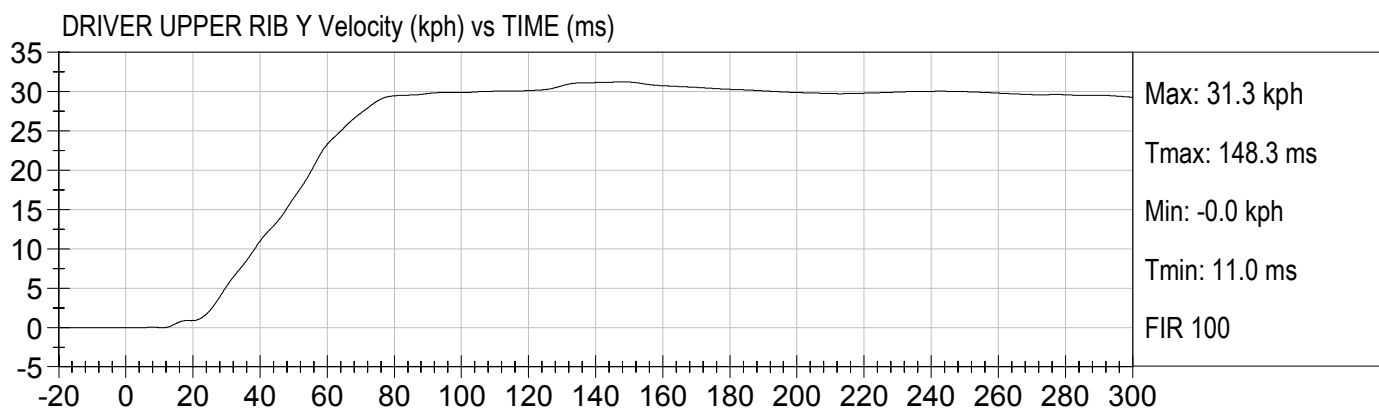
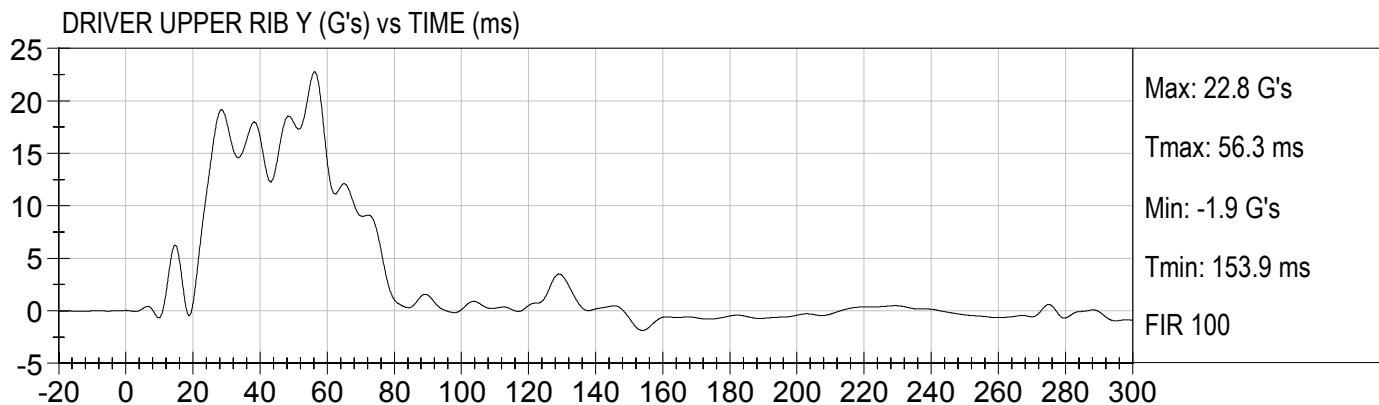
Driver Upper Neck Force Y

Driver Upper Neck Force Z

Driver Upper Neck Moment X

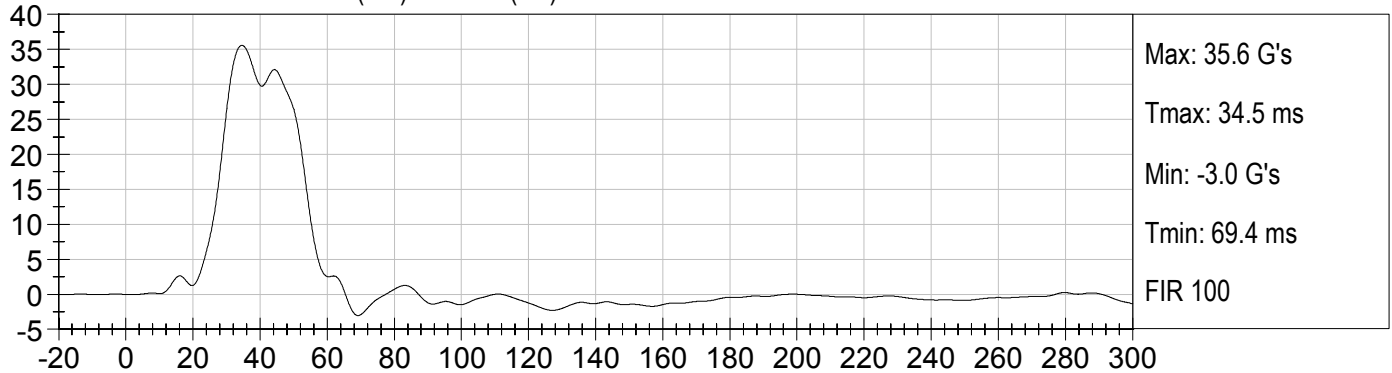
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
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 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 Rear Z
MDB Left Bumper Contact
MDB Right Bumper Contact

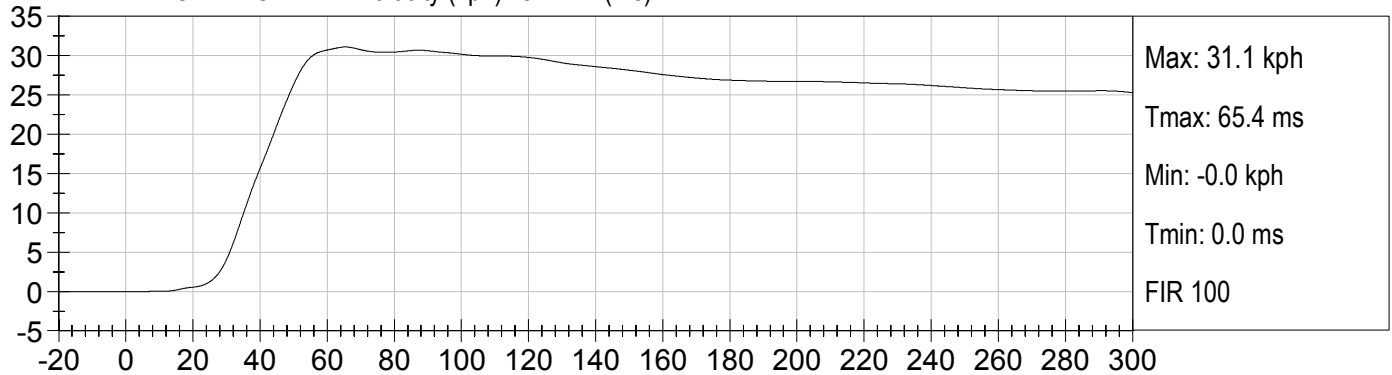




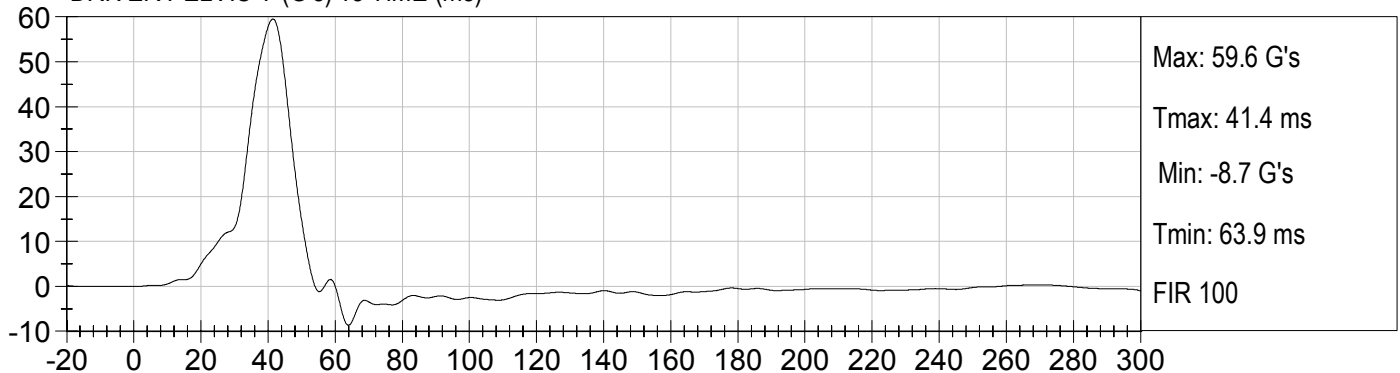
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



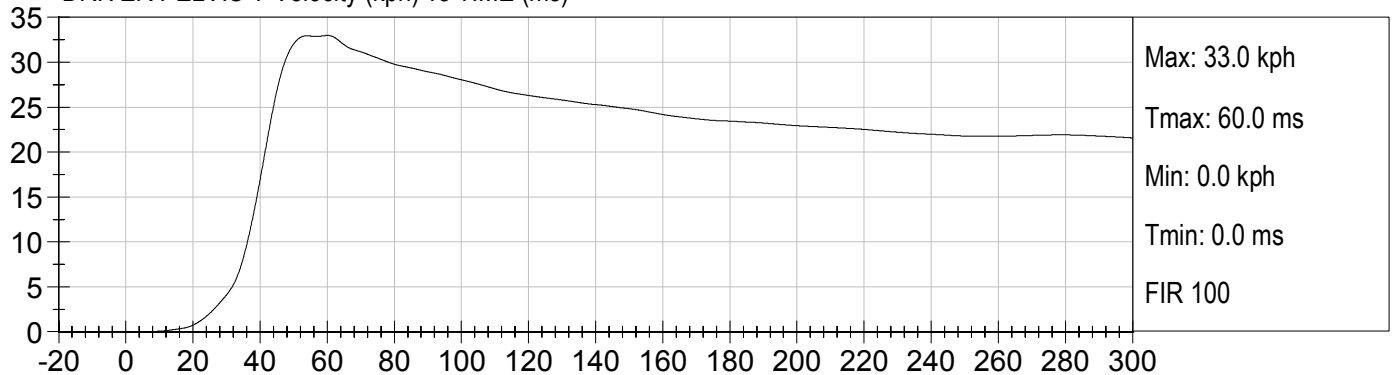
DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)



DRIVER PELVIS Y (G's) vs TIME (ms)

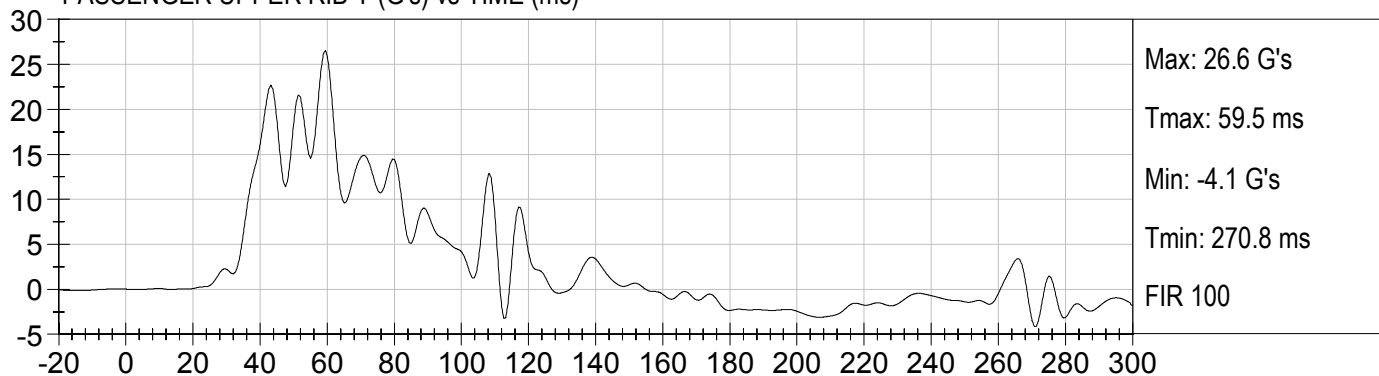


DRIVER PELVIS Y Velocity (kph) vs TIME (ms)

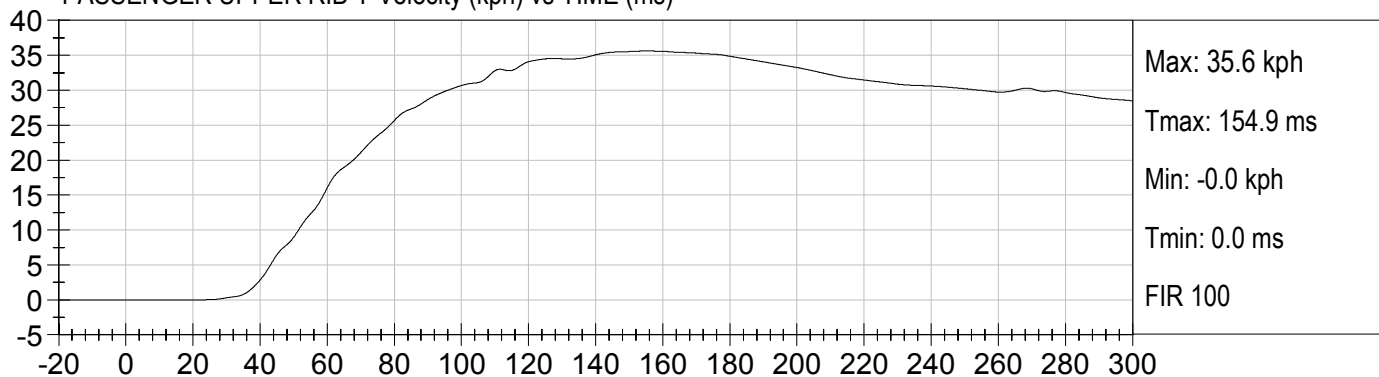




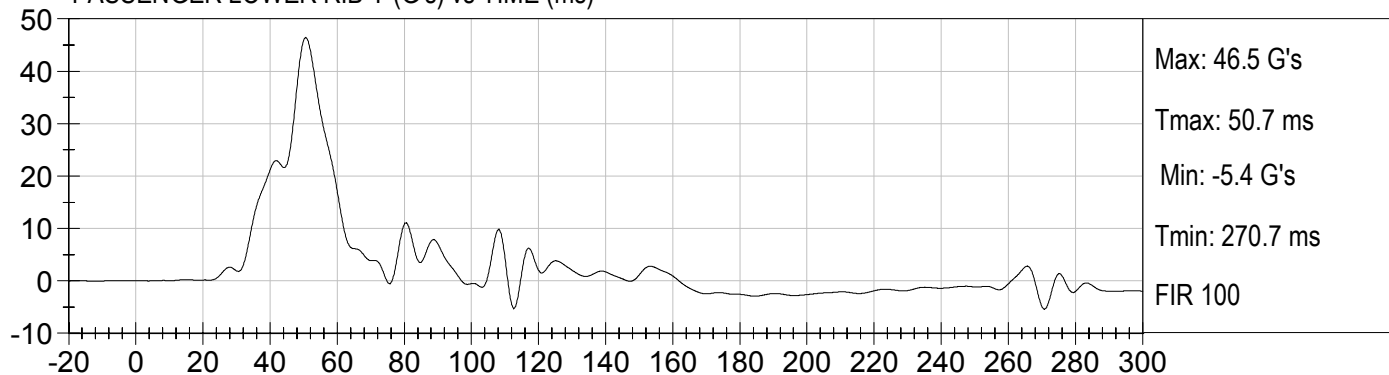
PASSENGER UPPER RIB Y (G's) vs TIME (ms)



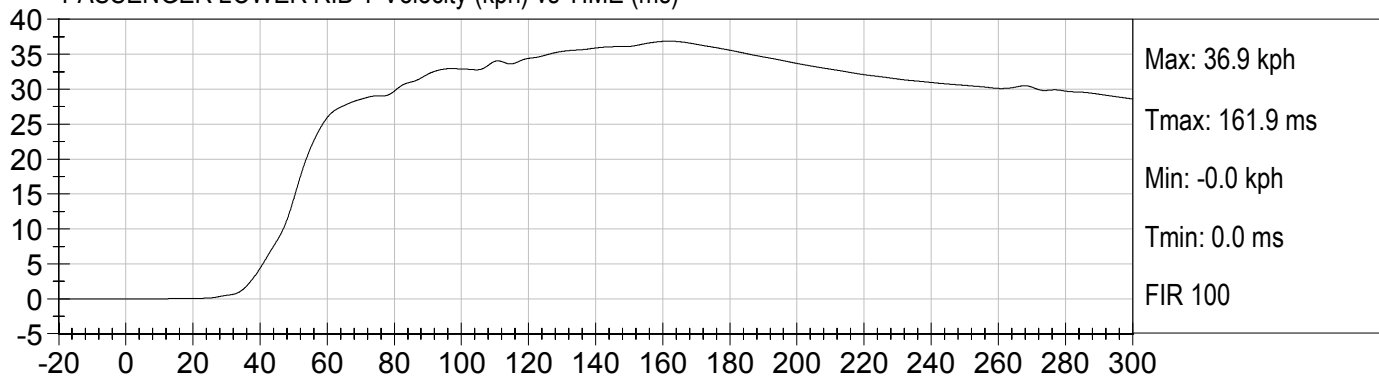
PASSENGER UPPER RIB Y Velocity (kph) vs TIME (ms)

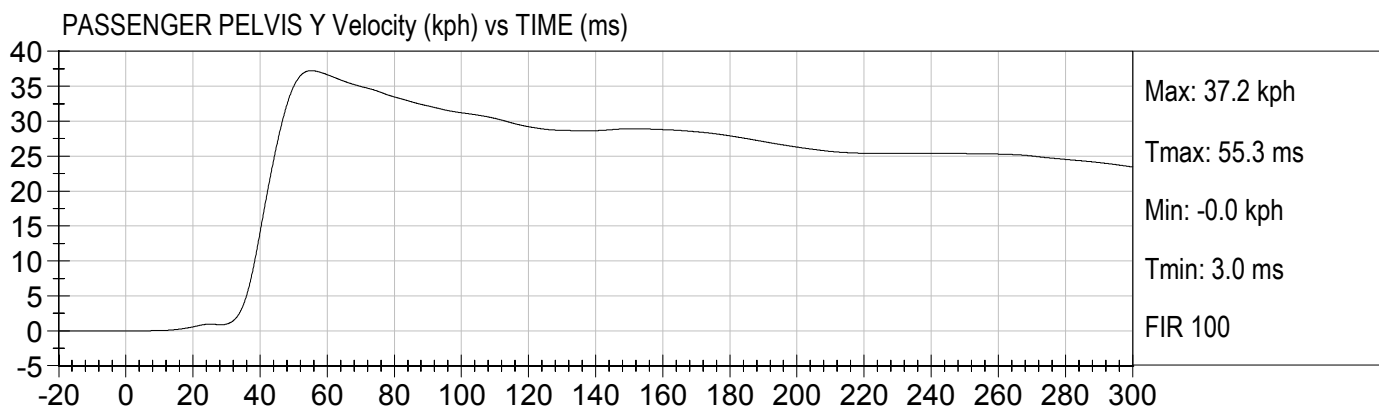
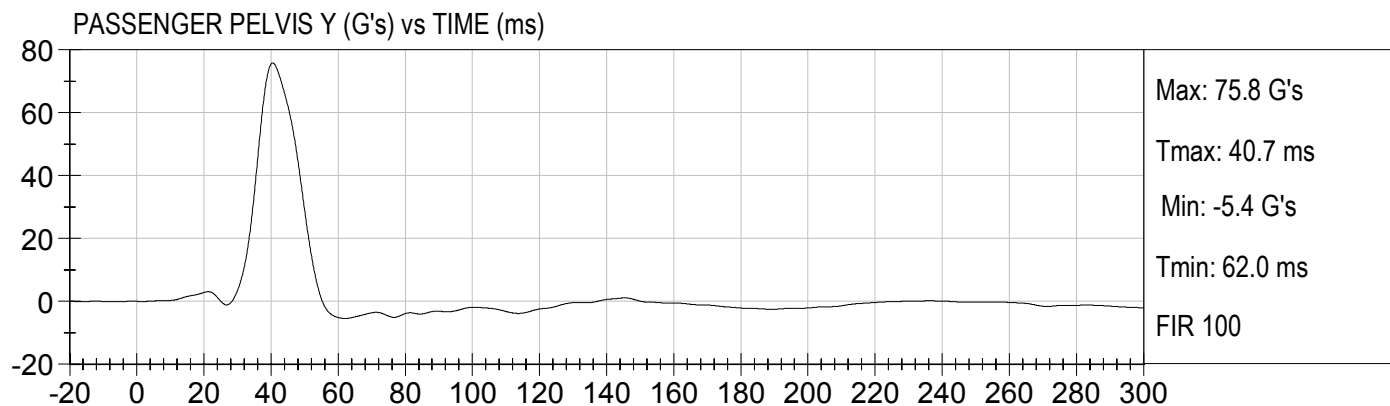
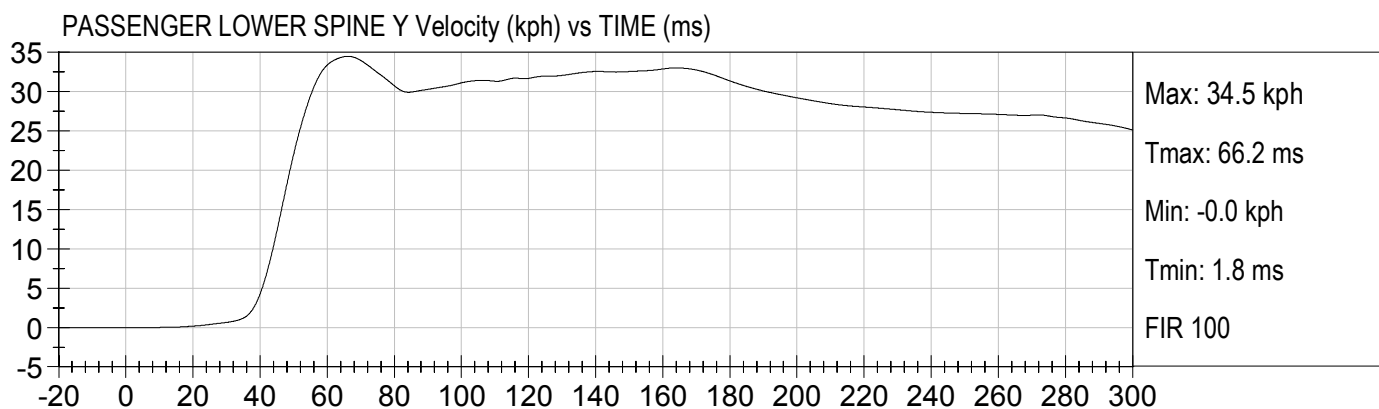
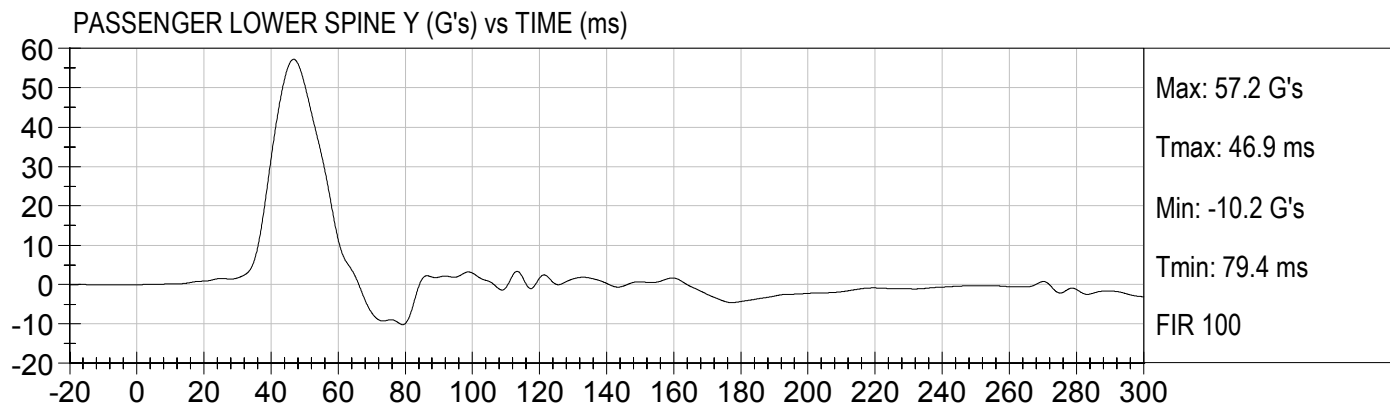


PASSENGER LOWER RIB Y (G's) vs TIME (ms)



PASSENGER LOWER RIB Y Velocity (kph) vs TIME (ms)





APPENDIX C
DUMMY CALIBRATION DATA

CERTIFICATION DATA

Dummy Serial Number: 904

Calibration Test Results Summary

Dummy Serial Number: 904

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/HIII Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 904

Test I.D: D06304

Tested Parameter	Units	Specification	Result	Pass/Fail
SH - Seated Height	mm	889 - 909	906	Pass
RH - Rib Height	mm	501 - 521	508	Pass
HP - Hip Pivot Height	mm	99 ref.	99	Pass
RD - Rib from Back Line	mm	229 - 241	240	Pass
KV - Knee Pivot to Back Line	mm	511 - 526	523	Pass
SW - Knee Pivot to Floor	mm	490 - 505	496	Pass
HW - Hip Width	mm	356 - 391	360	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

10/17/2006
Test Date

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

ATD Serial No: 904

Test I.D: D063041

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	120 to 150	126	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-8.3	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

10/17/2006
Test Date

David Winkelbauer
Approved By



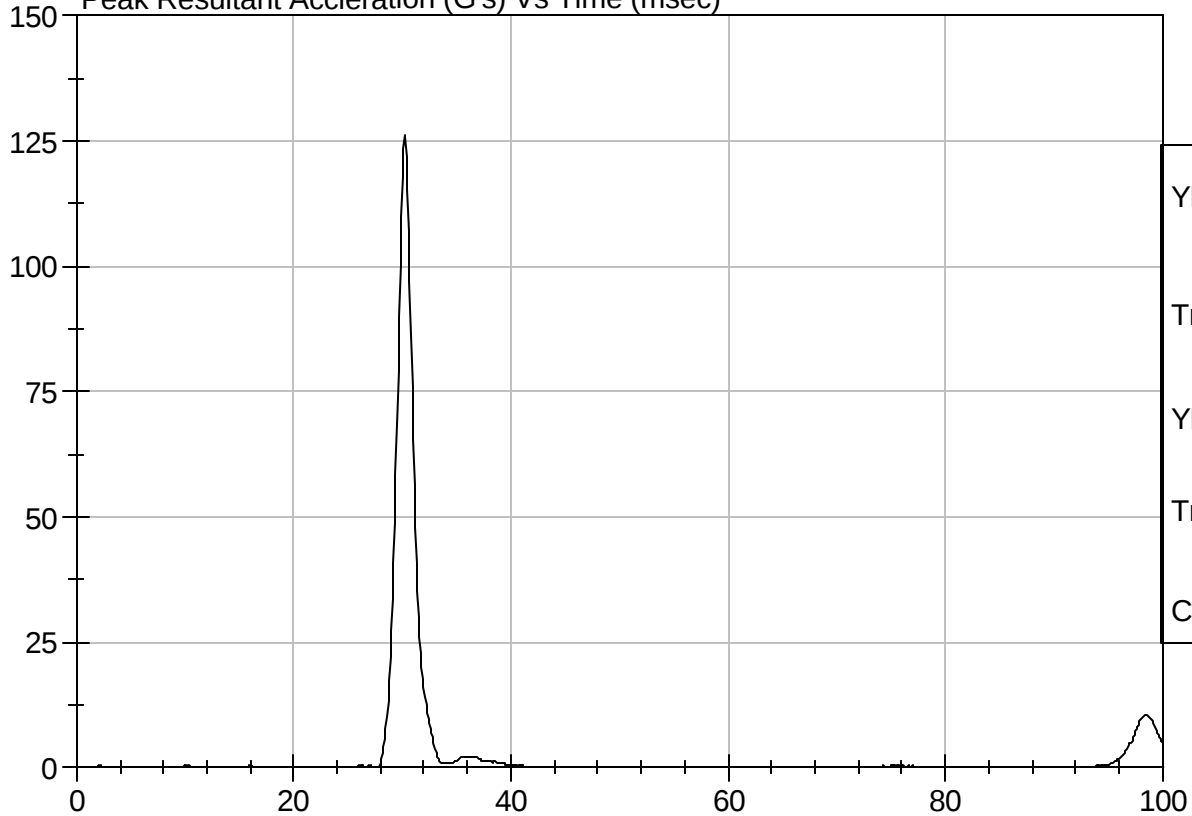
Test Description: Head Drop

Test Date: 10/17/2006

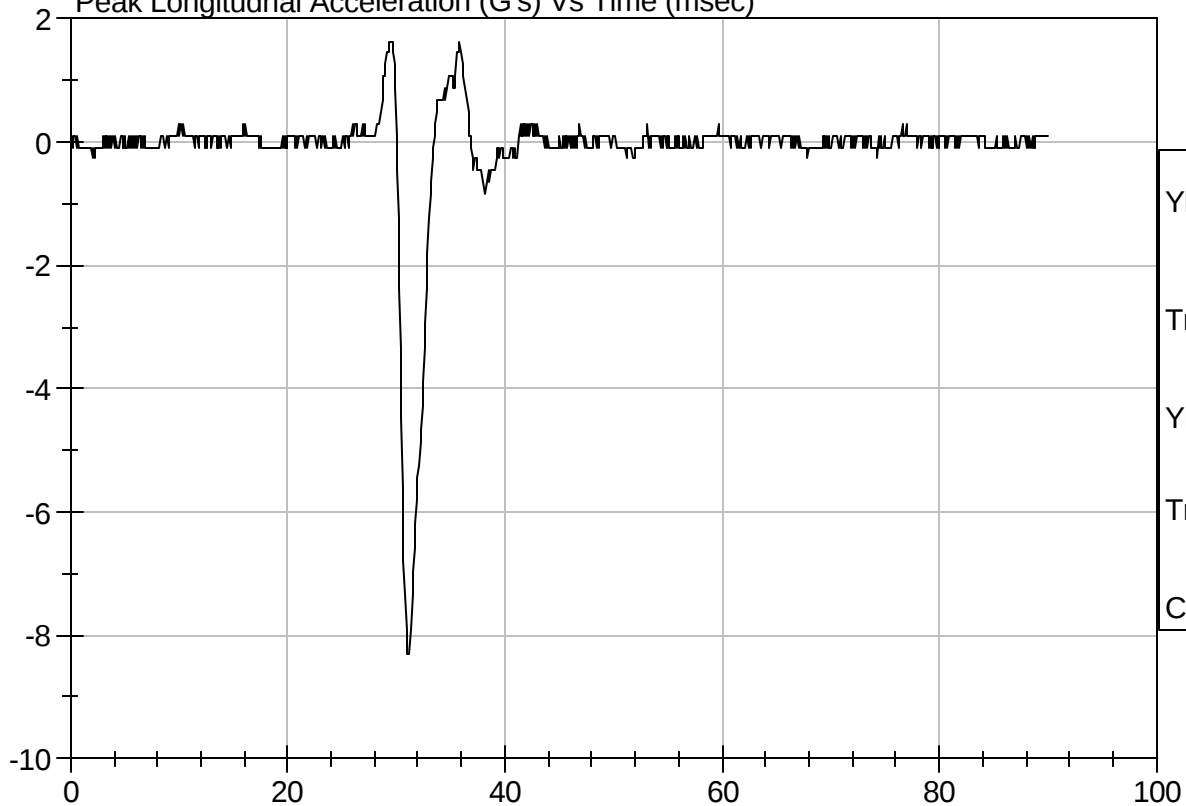
Component: D063041

Speed: 0 ft/s, 0.00 m/s

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



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



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

ATD Serial No: 904

Test I.D: D063042

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	40	Pass
Lower Rib	G's	37 - 46	39	Pass
Lower Spine	G's	15 - 22	22	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

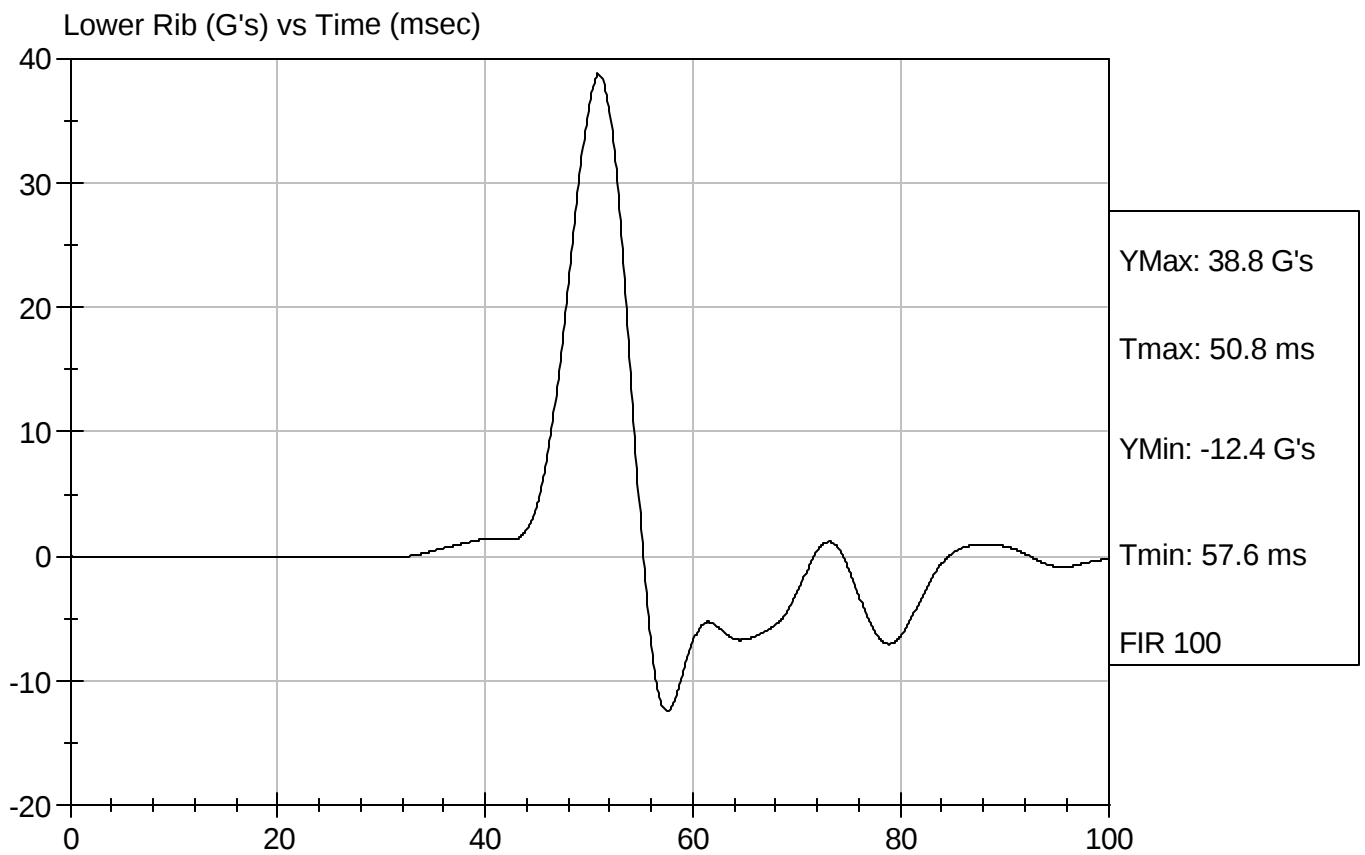
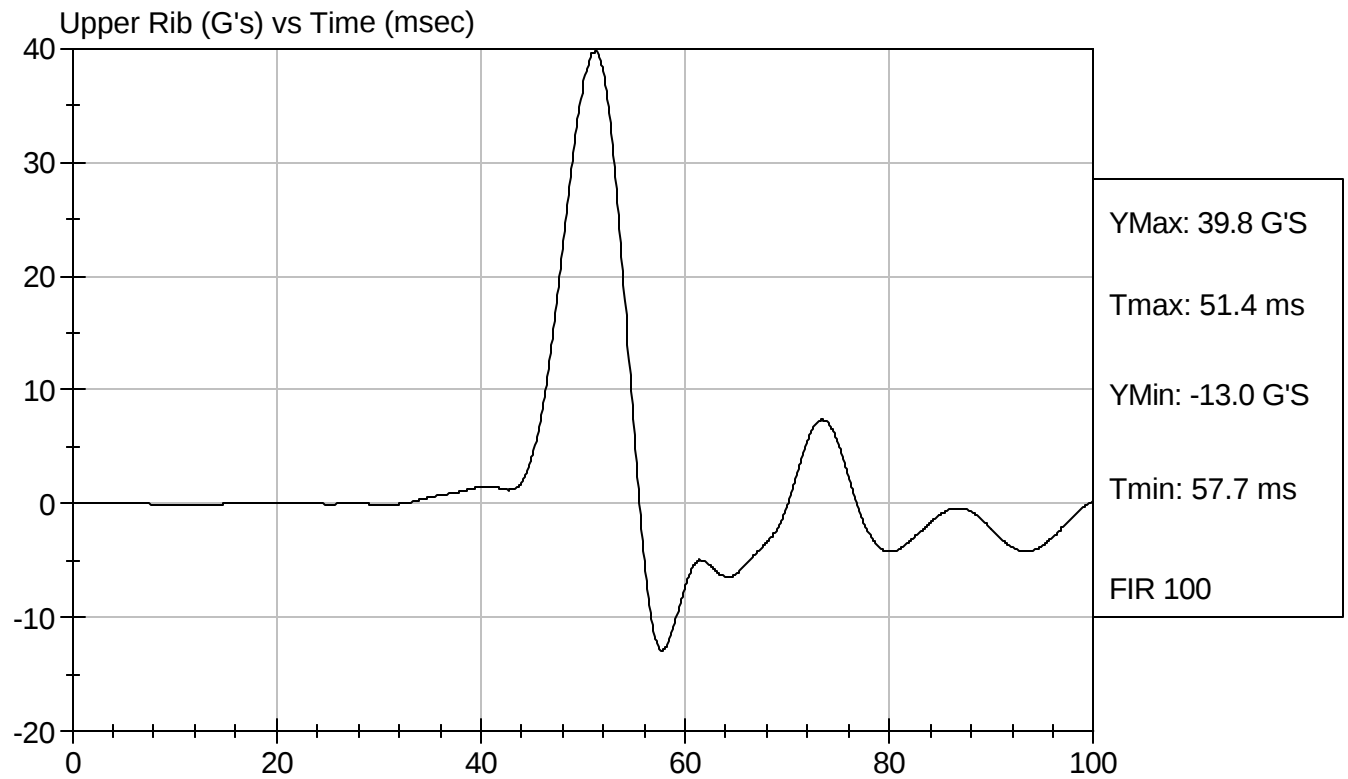
10/17/2006
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D063042

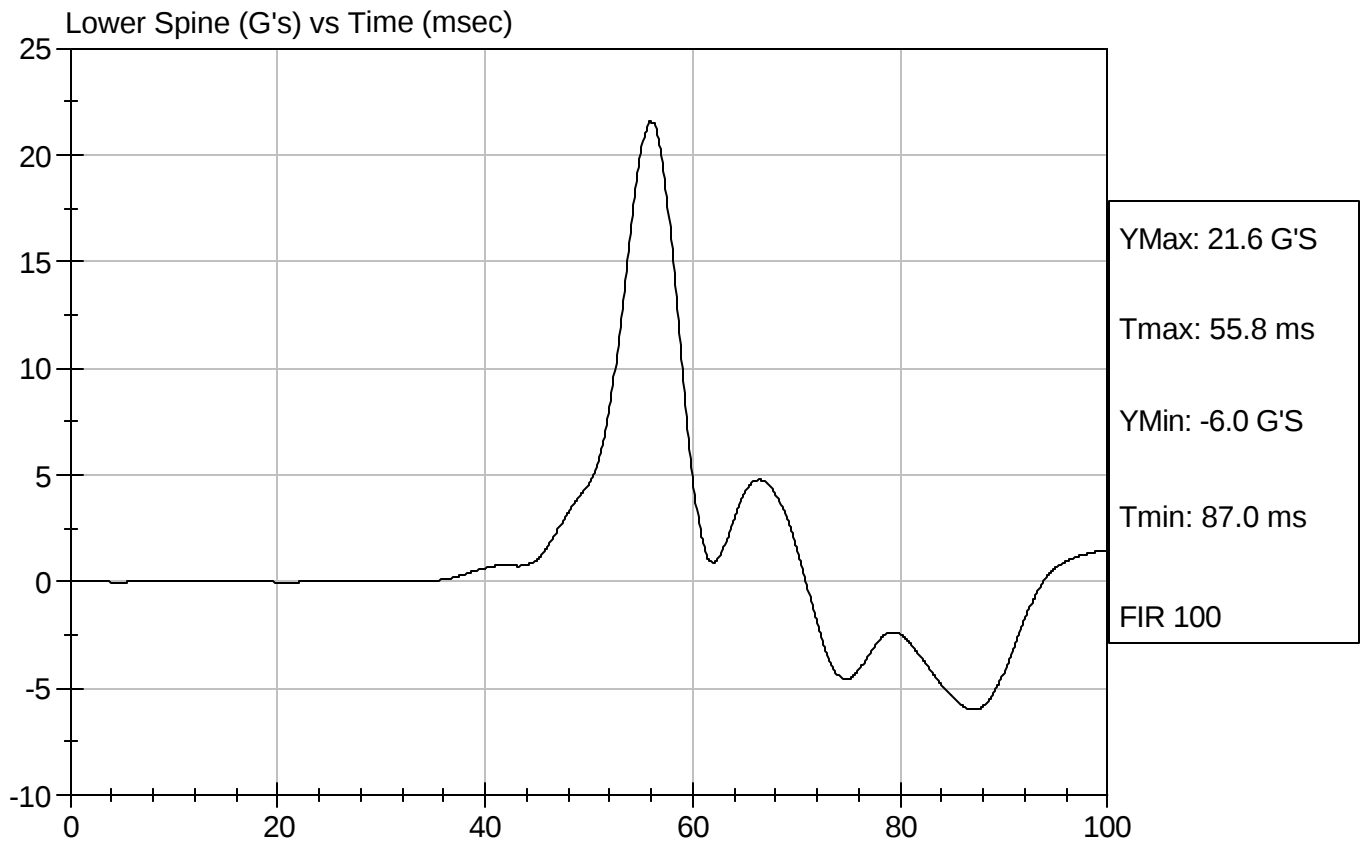
Test Date: 10/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D063042

Test Date: 10/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Test

ATD Serial No: 904

Test I.D: D063043

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Velocity	m/s	4.27 - 4.33	4.29	Pass
Pelvis Acceleration	G's	40 - 60	46	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

10/17/2006

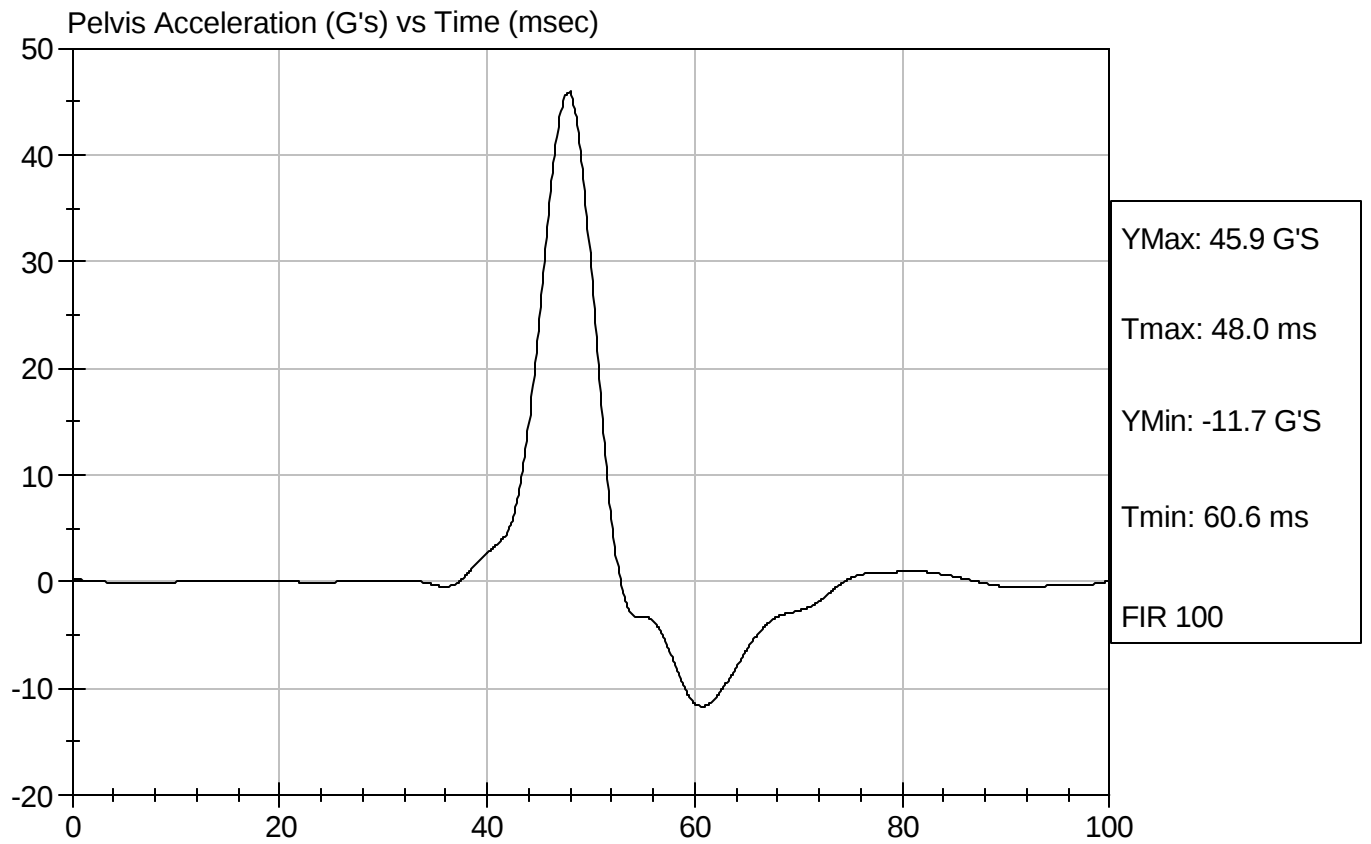
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D063043

Test Date: 10/17/2006
Speed: 14.07 ft/sec, 4.29 m/sec

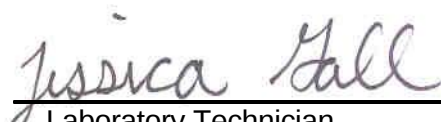


SID/HIII Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 904

Test I.D: D063044

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Force At 12.7 mm	N	104 -162	145	Pass
Force At 19 mm	N	163 - 222	204	Pass
Force At 25.4 mm	N	222 - 280	266	Pass
Force At 33 mm	N	325 - 391	357	Pass
			Overall Test Results	Pass


Laboratory Technician

10/17/2006
Test Date


Approved By

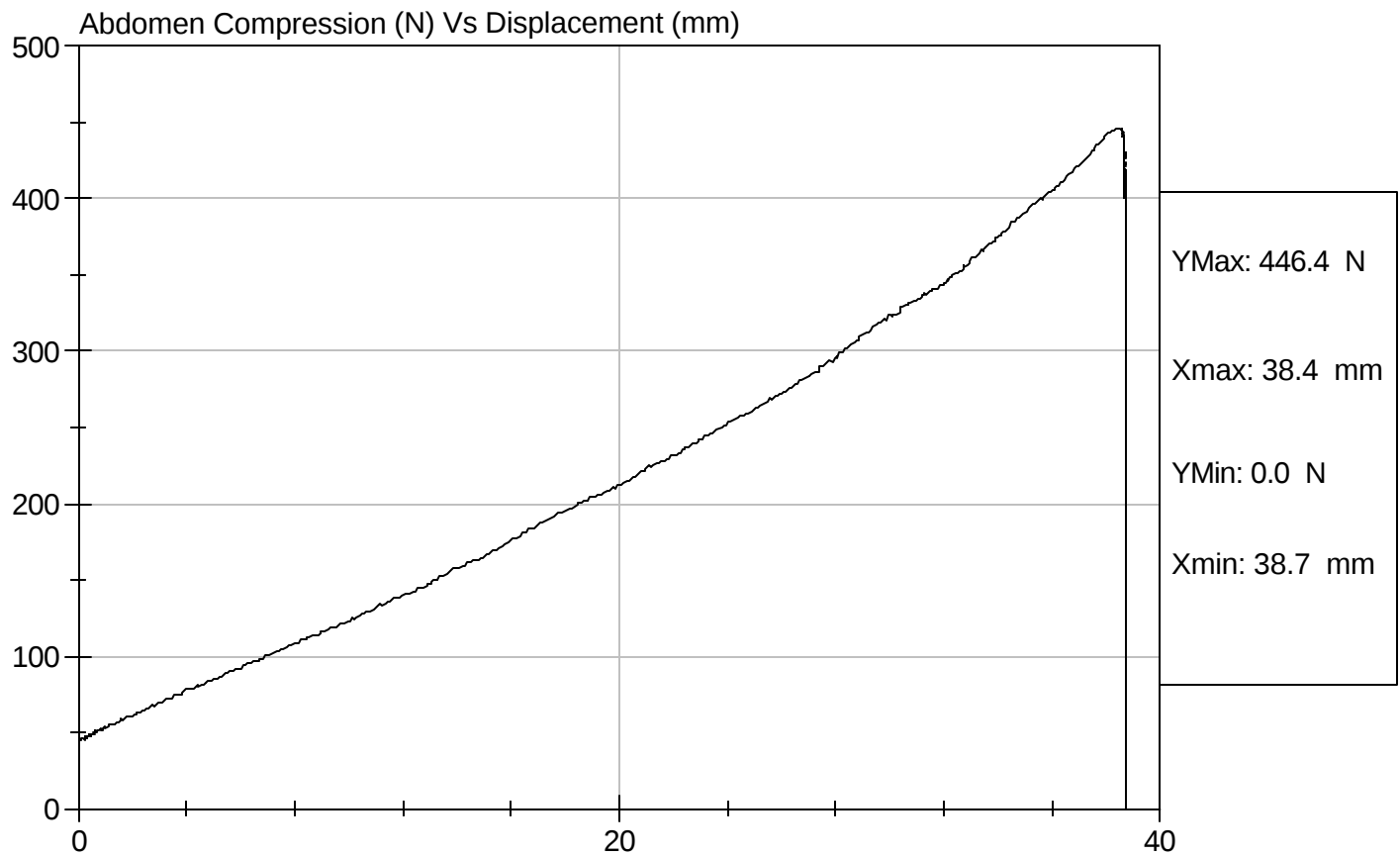


Test Description: Abdomen Compression

Test Date: 10/17/2006

Component: D063044

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 904

Test I.D: D063045

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	41	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	132.7	Pass
Force At 30 deg	N	151.2 - 204.6	184.7	Pass
Force At 40 deg	N	204.6 - 258.0	228.0	Pass
Return Angle	Deg	12 Maximum	5	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

10/17/2006
Test Date

David Winkelbauer
Approved By

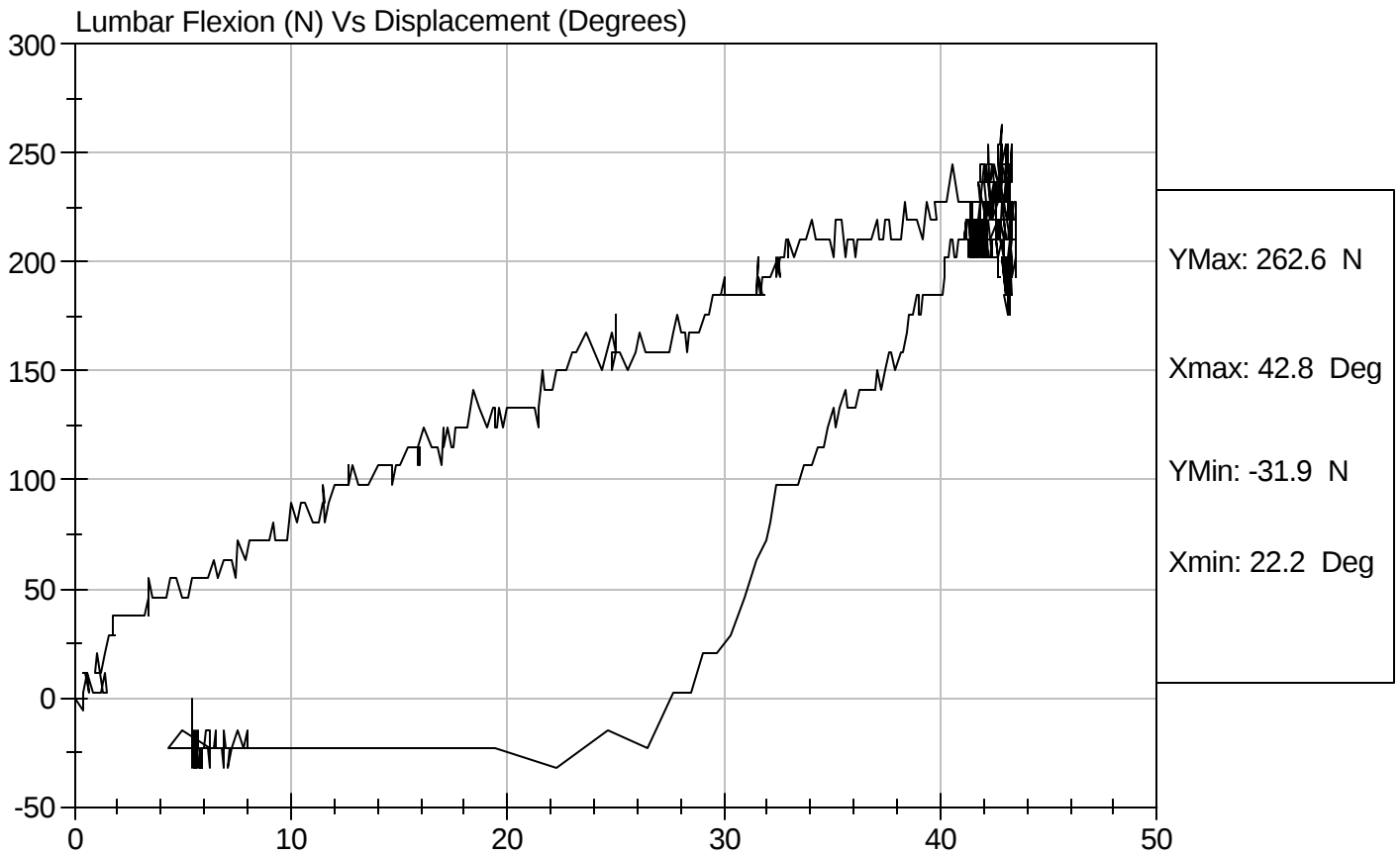


Test Description: Lumbar Flexion

Test Date: 10/17/2006

Component: D063045

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 904

Test I.D: D063049

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Impact Velocity		m/s	6.89 to 7.13	7.07	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.18	Pass
	20 msec	m/s	4.12 to 5.10	4.19	Pass
	30 msec	m/s	5.73 to 7.01	5.81	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.19	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	70	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	59	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	75	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	53	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	5	Pass


 Laboratory Technician

10/18/2006

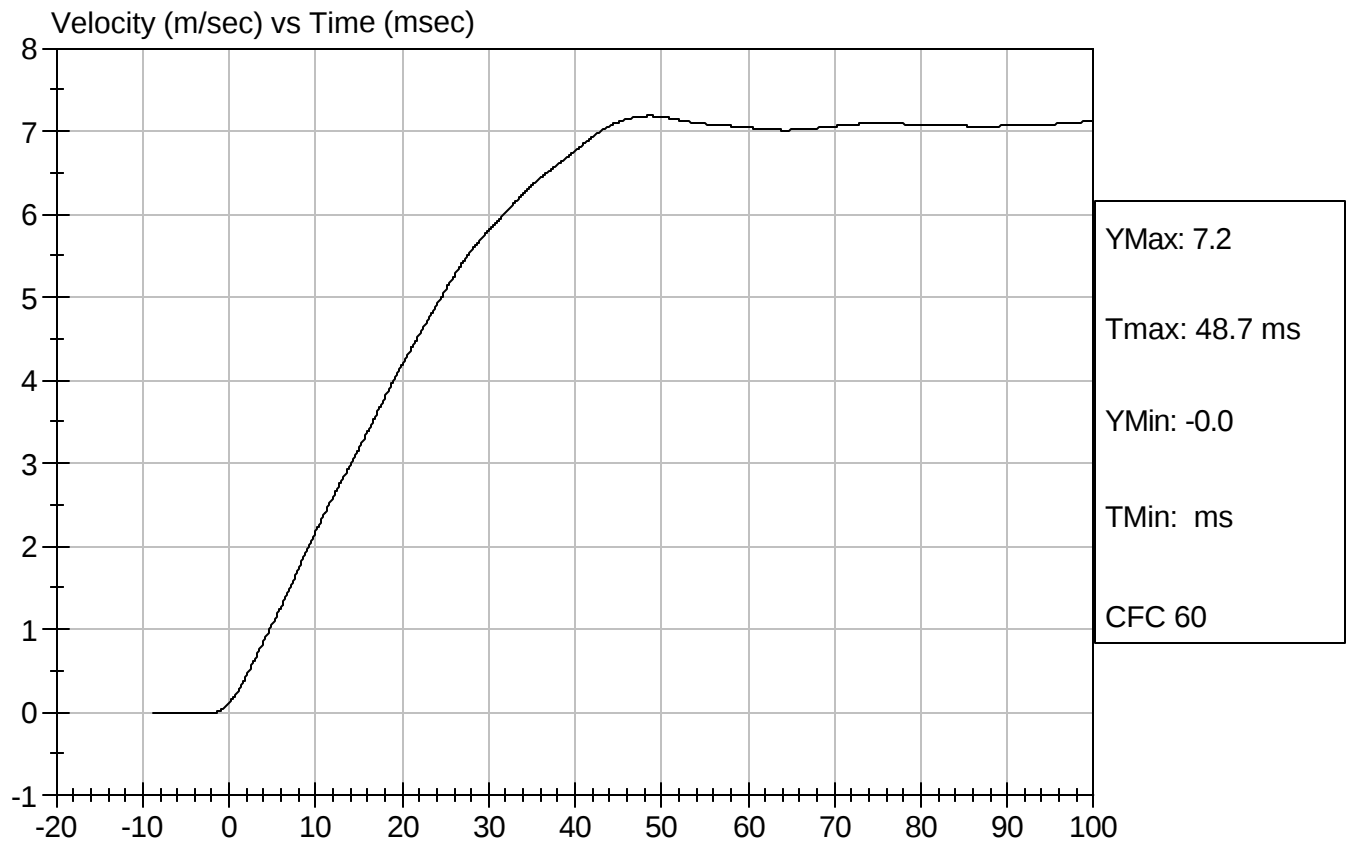
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D063049

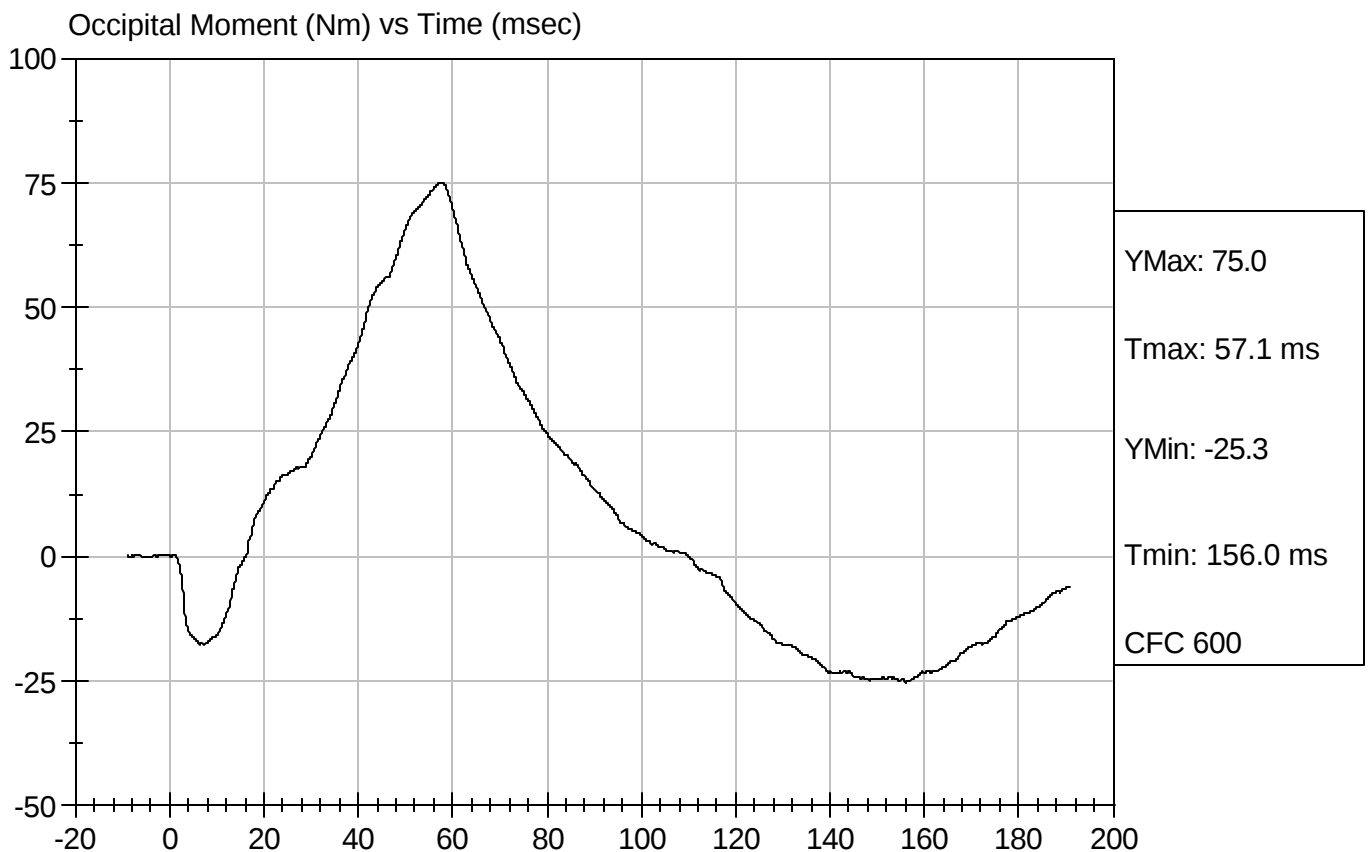
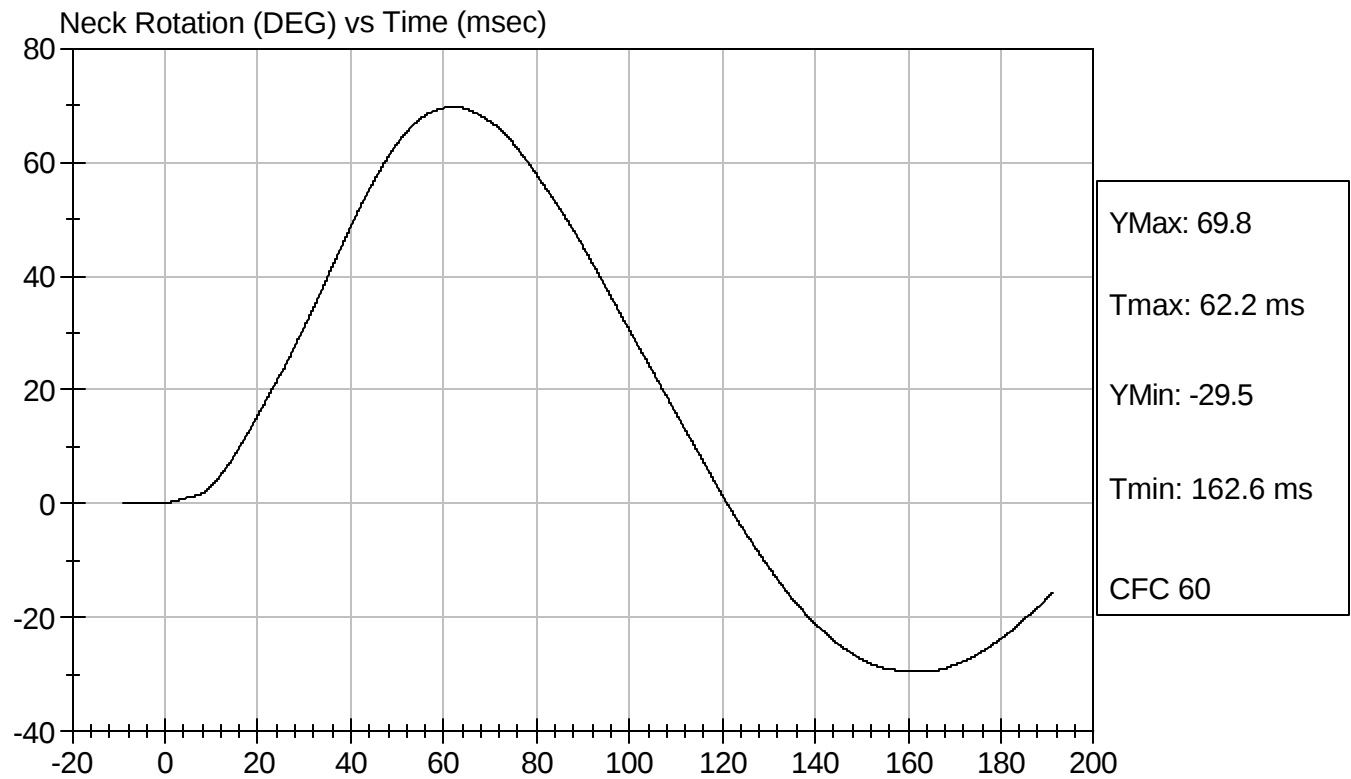
Test Date: 10/18/2006
Speed: 23.19 ft/sec, 7.07 m/sec





Test Desc: Neck Bending
Component ID: D063049

Test Date: 10/18/2006
Speed: 23.19 ft/sec, 7.07 m/sec



Calibration Test Results Summary

Dummy Serial Number: 904

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: 904

Test I.D: D063301

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Peak Resultant Acceleration	G's	120 to 150	136	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-10.3	Pass
Overall Test Results				Pass


Laboratory Technician

11/16/2006
Test Date


Approved By



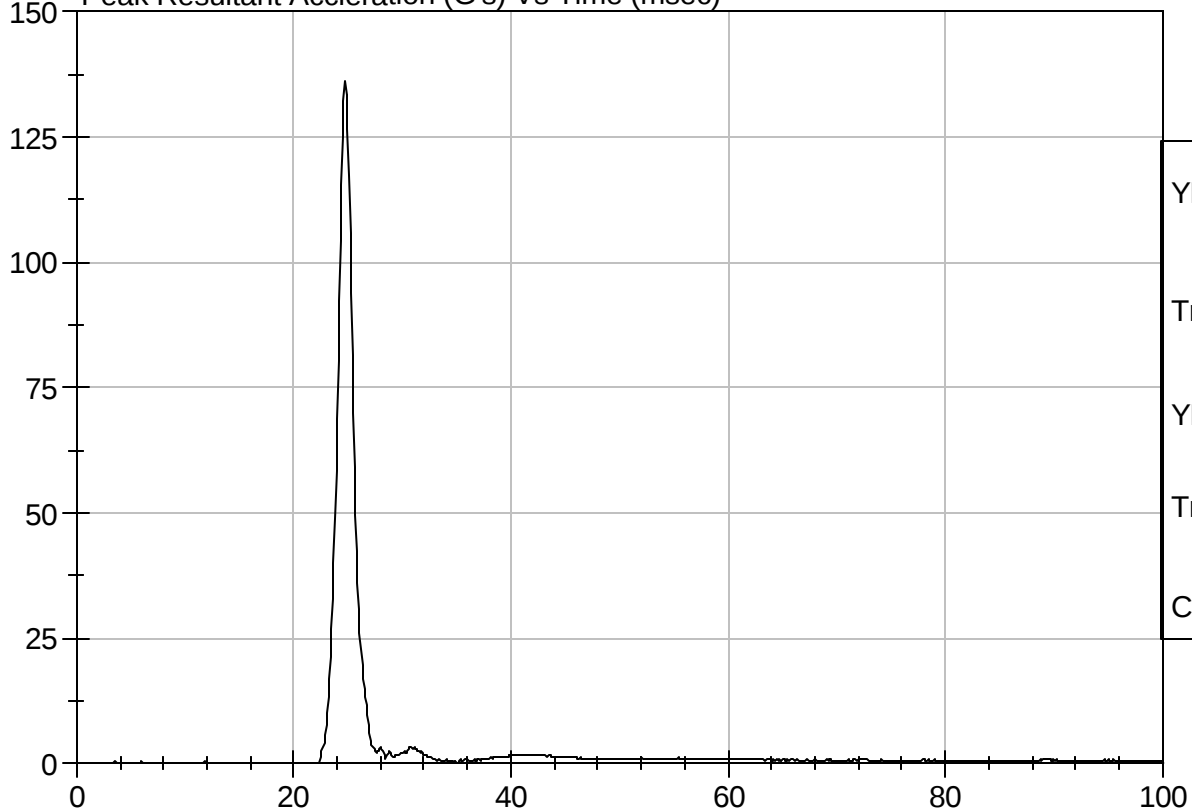
Test Description: Head Drop

Test Date: 11/16/2006

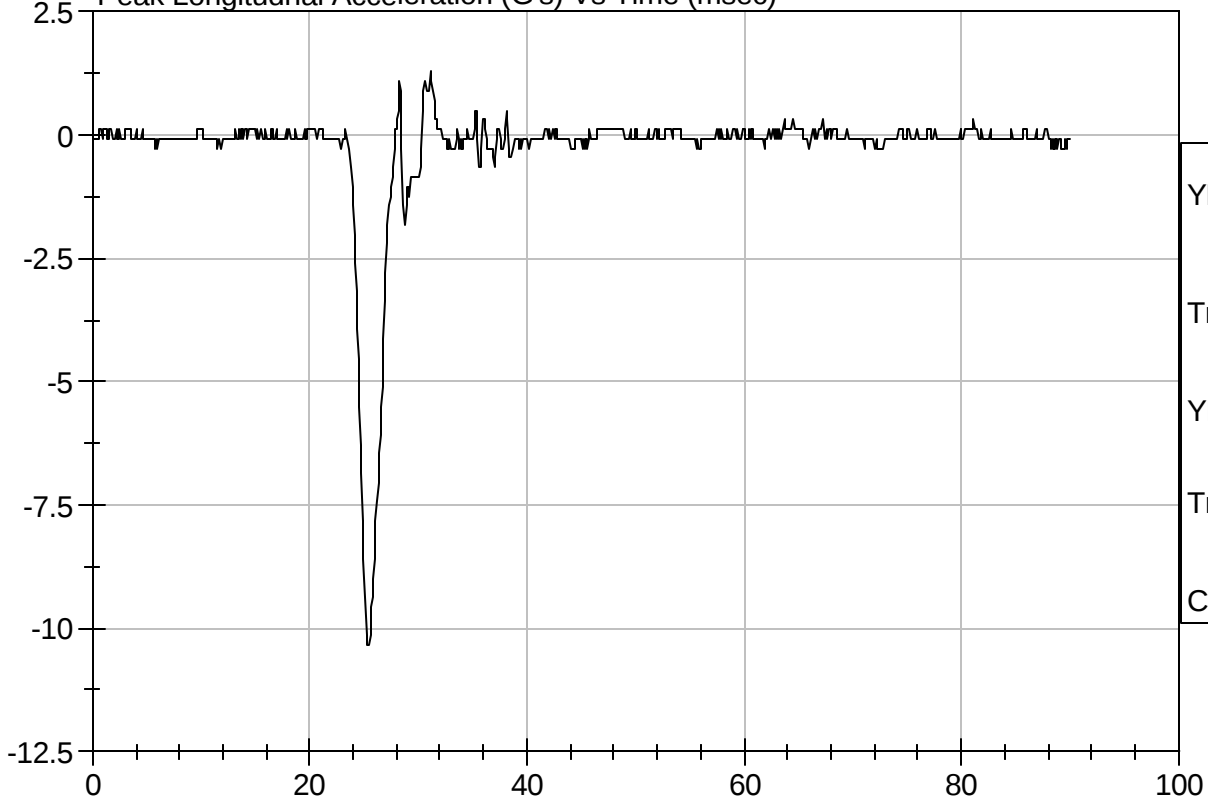
Component: D063301

Speed: 0 ft/s, 0.00 m/s

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



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



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

ATD Serial No: 904

Test I.D: D063302

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	41	Pass
Lower Rib	G's	37 - 46	42	Pass
Lower Spine	G's	15 - 22	19	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

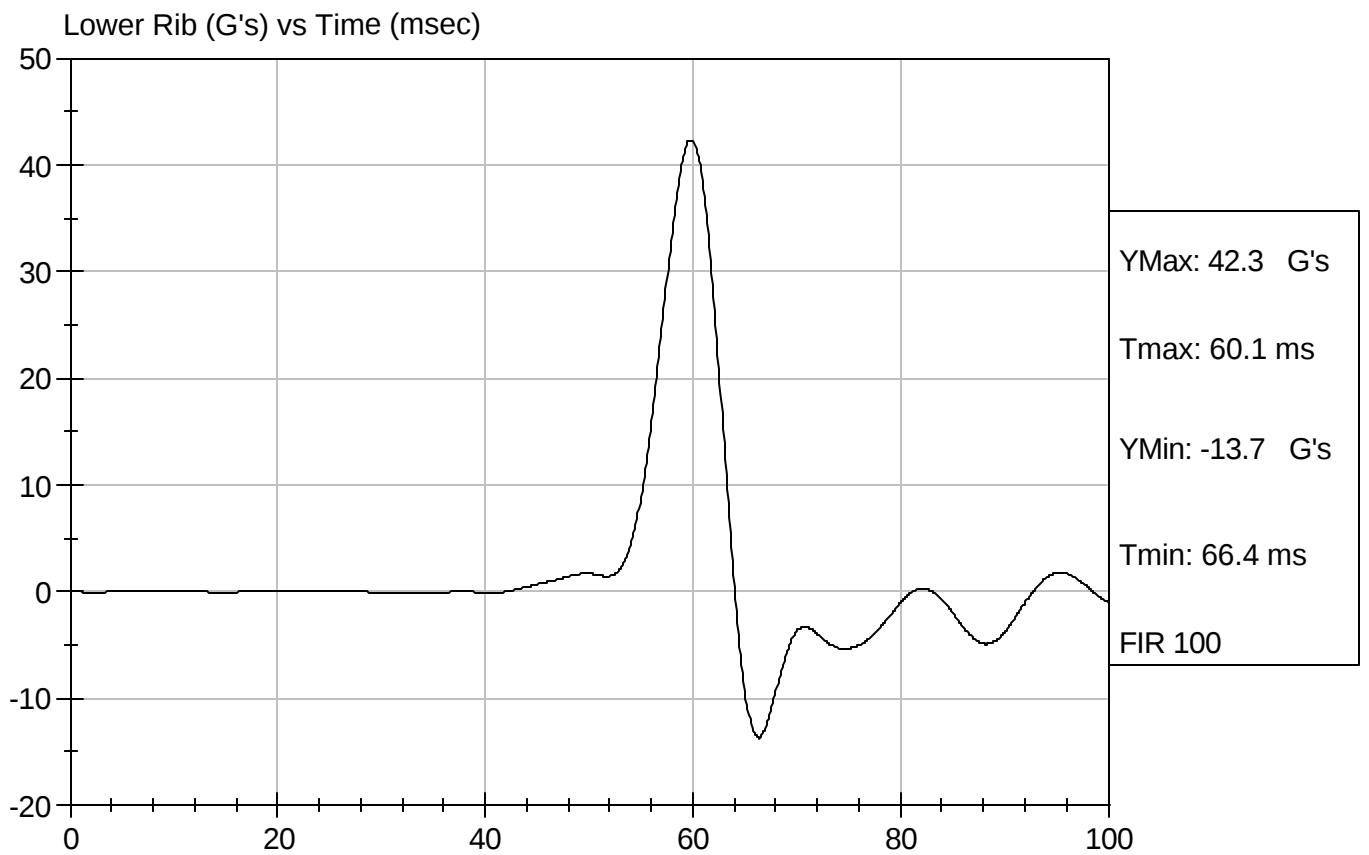
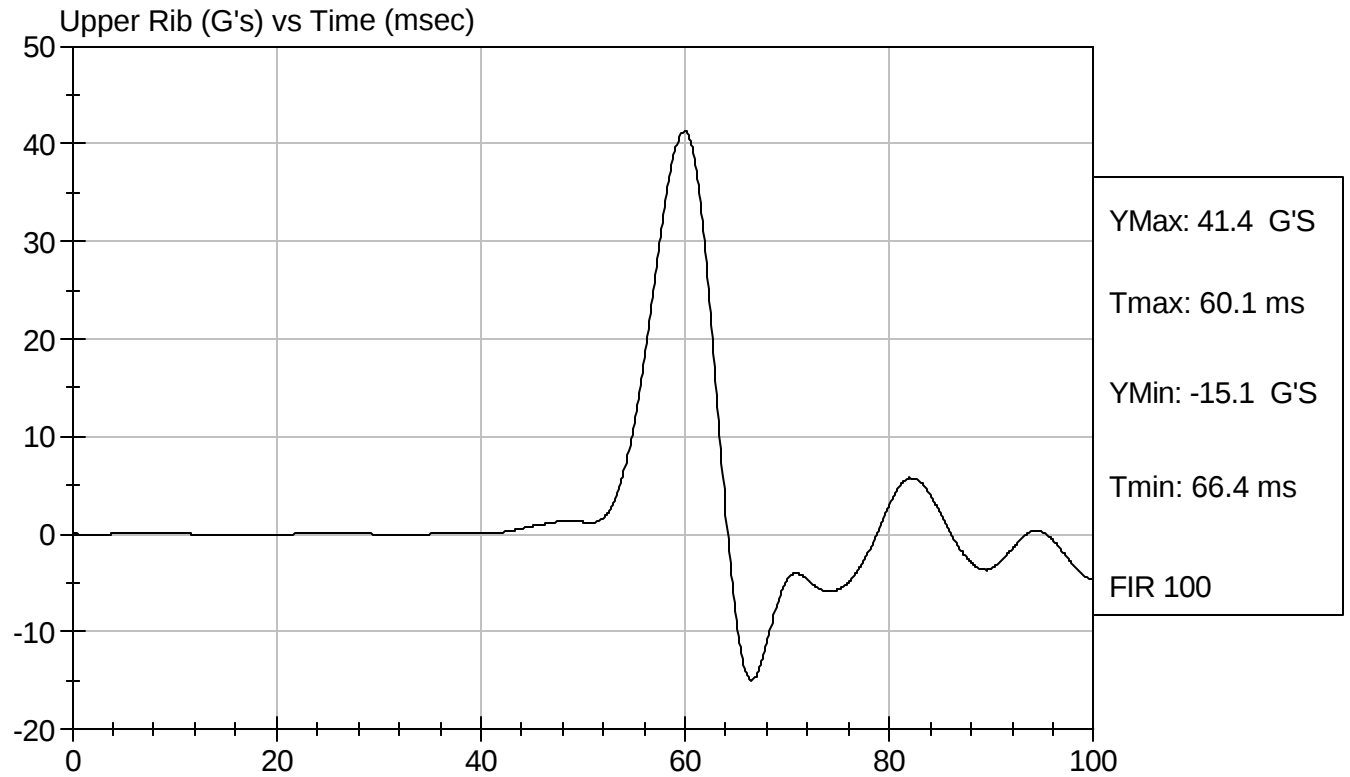
David Winkelbauer
Approved By

11/16/2006
Test Date



Test Desc: Thorax Impact
Component ID: D063302

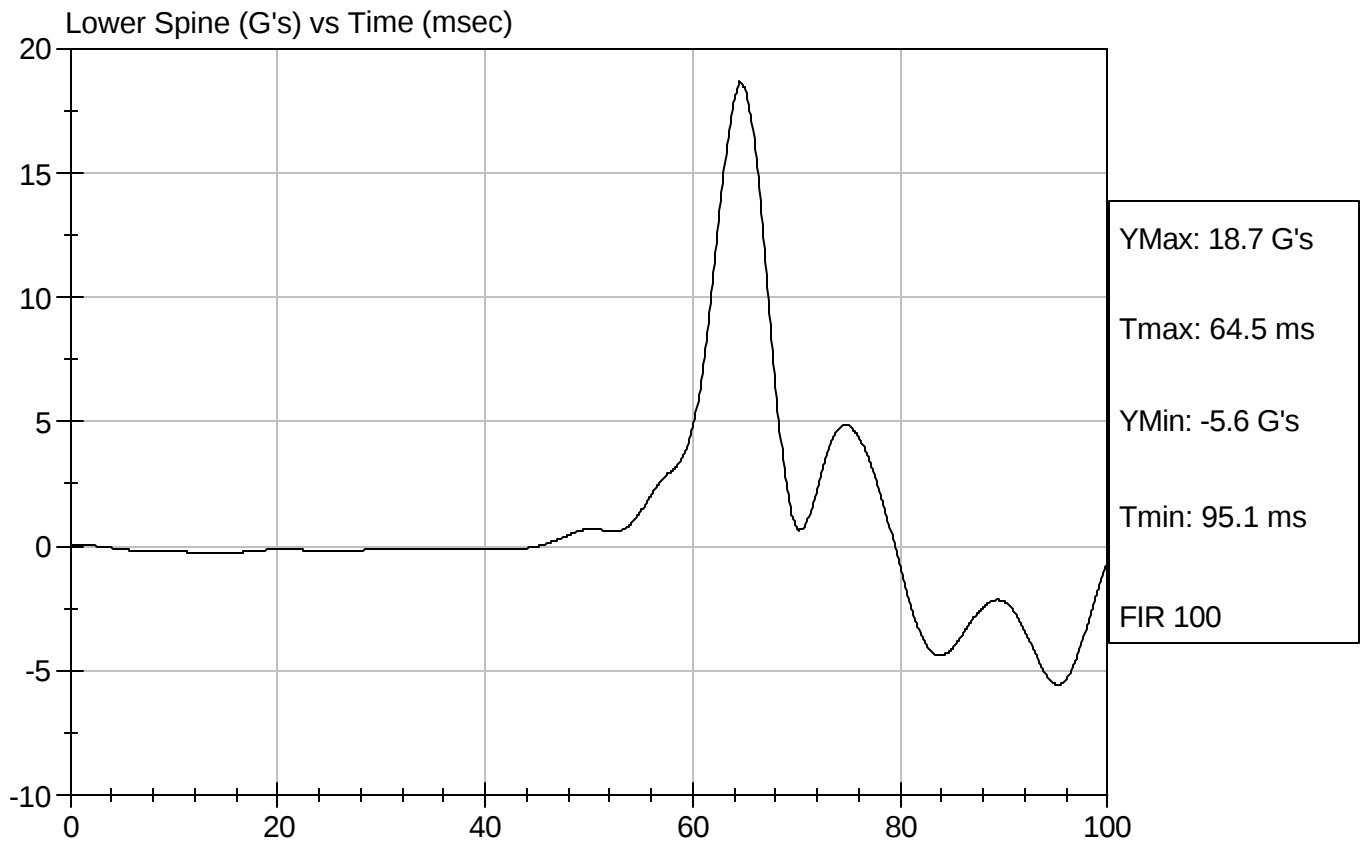
Test Date: 11/16/2006
Speed: 14.12 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D063302

Test Date: 11/16/2006
Speed: 14.12 ft/sec, 4.30 m/sec



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

ATD Serial No: 904

Test I.D: D063303

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	4.27 - 4.33	4.32	Pass
Pelvis Acceleration	G's	40 - 60	45	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

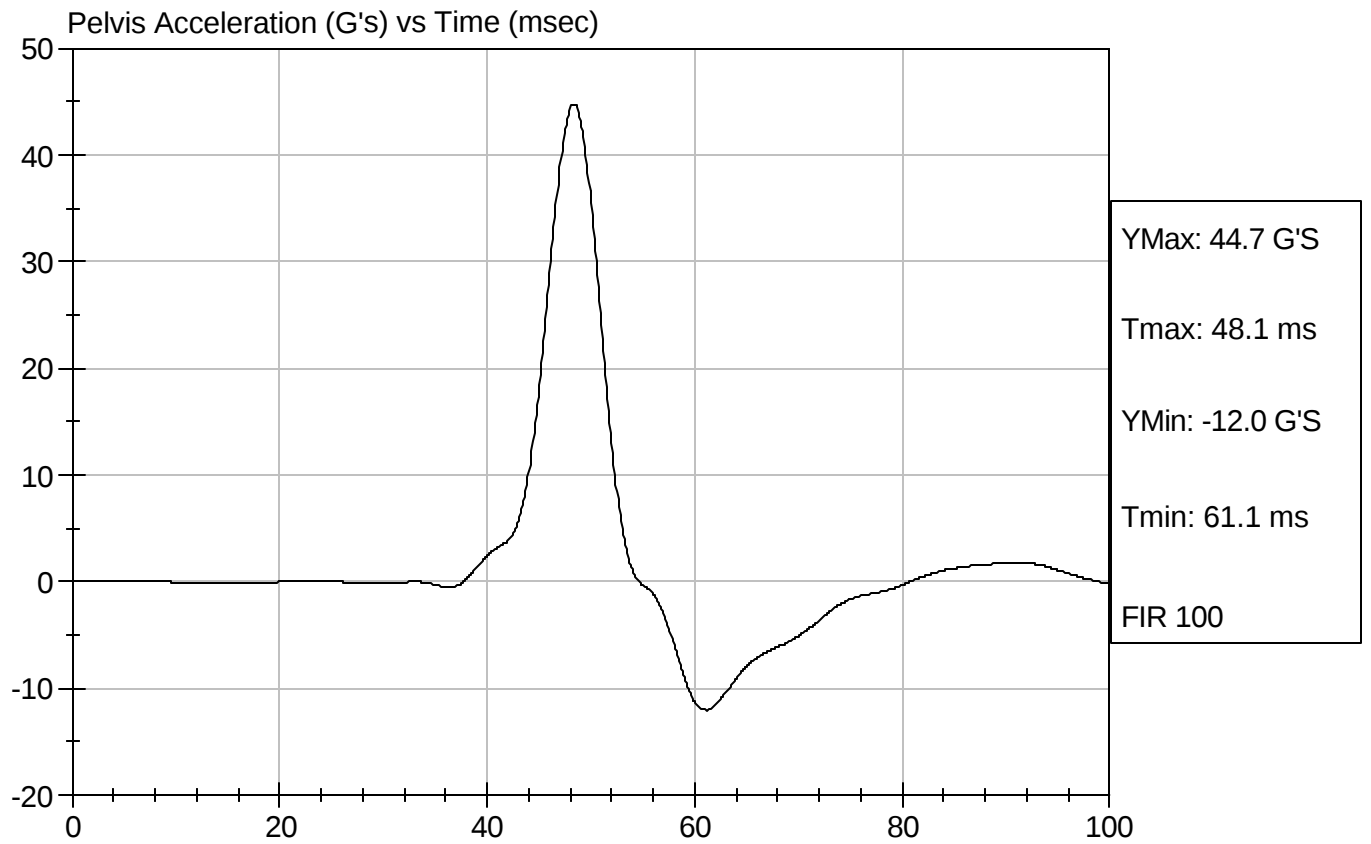
David Winkelbauer
Approved By

11/16/2006
Test Date



Test Desc: Pelvis Impact
Component ID: D063303

Test Date: 11/16/2006
Speed: 14.17 ft/sec, 4.32 m/sec



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

ATD Serial No: 904

Test I.D: D063304

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Force At 12.7 mm	N	104 -162	148	Pass
Force At 19 mm	N	163 - 222	208	Pass
Force At 25.4 mm	N	222 - 280	271	Pass
Force At 33 mm	N	325 - 391	371	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

11/16/2006
Test Date

David Winkelbauer
Approved By

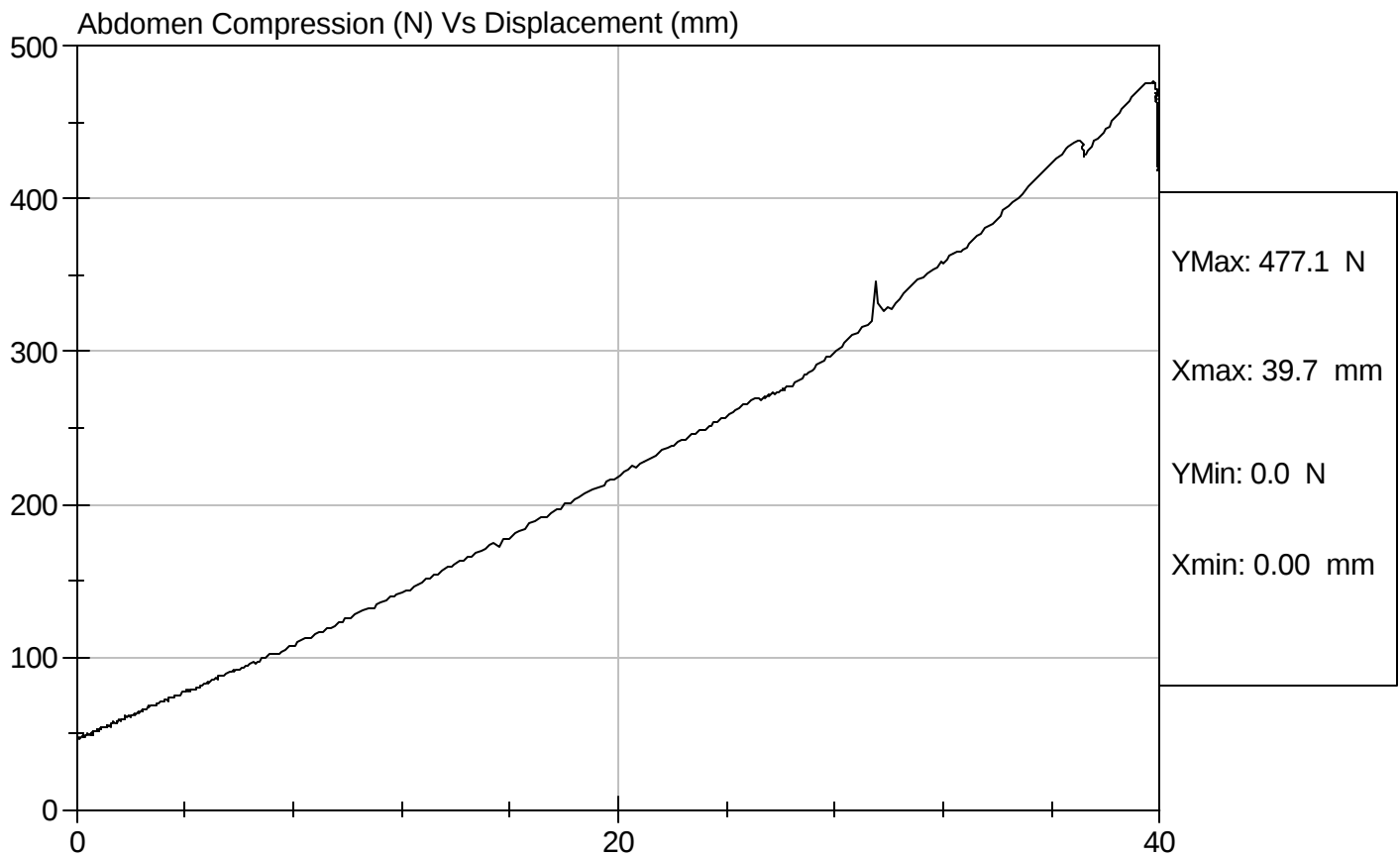


Test Description: Abdomen Compression

Test Date: 11/16/2006

Component: D063304

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 904

Test I.D: D063305

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	144.0	Pass
Force At 30 deg	N	151.2 - 204.6	201.5	Pass
Force At 40 deg	N	204.6 - 258.0	236.0	Pass
Return Angle	Deg	12 Maximum	5	Pass
Overall Test Results			Pass	


Laboratory Technician


Approved By

11/16/2006
Test Date

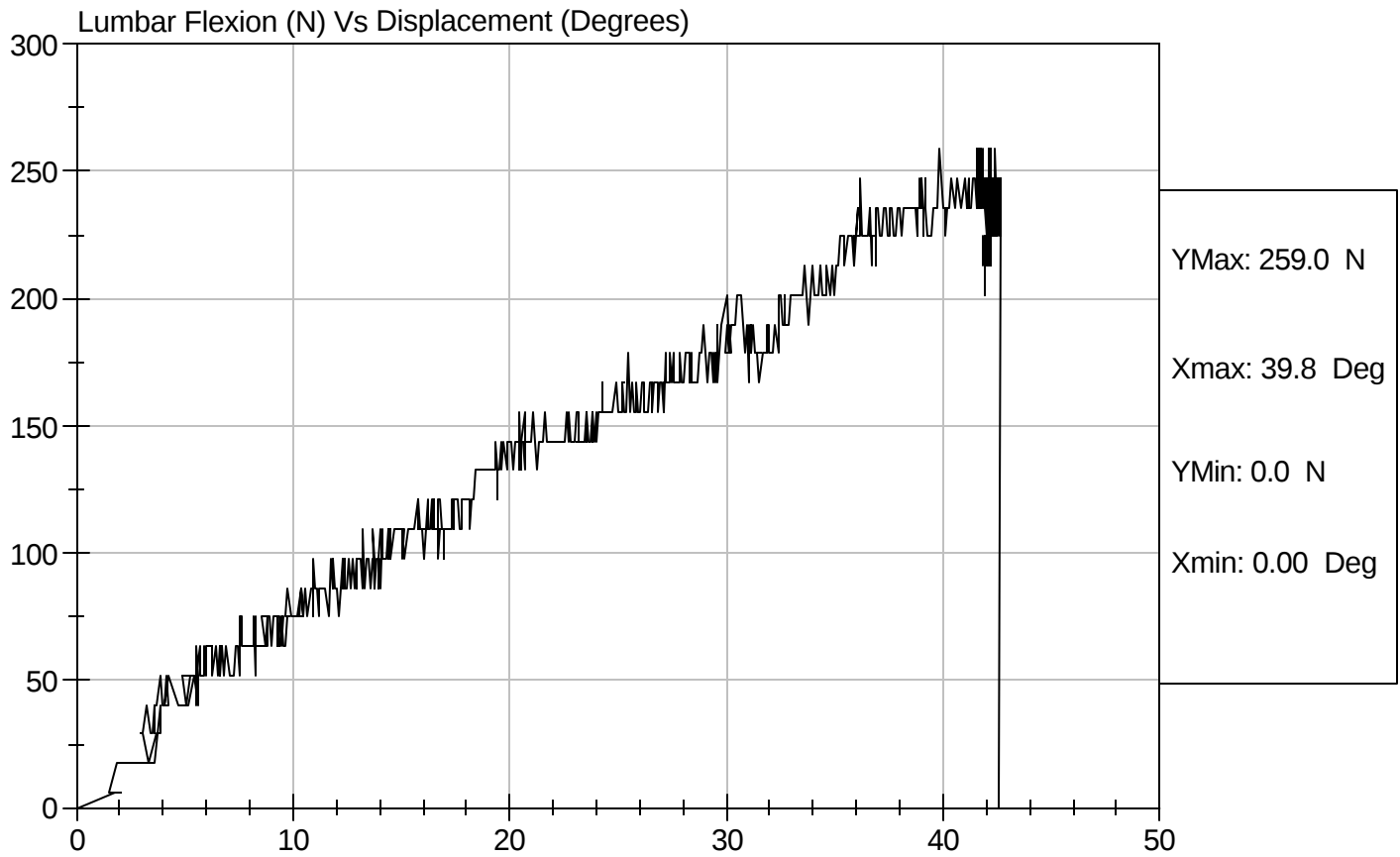


Test Description: Lumbar Flexion

Test Date: 11/16/2006

Component: D063305

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 904

Test I.D: D063309

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Impact Velocity		m/s	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.44	Pass
	20 msec	m/s	4.12 to 5.10	4.85	Pass
	30 msec	m/s	5.73 to 7.01	6.87	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.05	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	75	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	58	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	78	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	59	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	15	Pass


 Laboratory Technician

11/16/2006

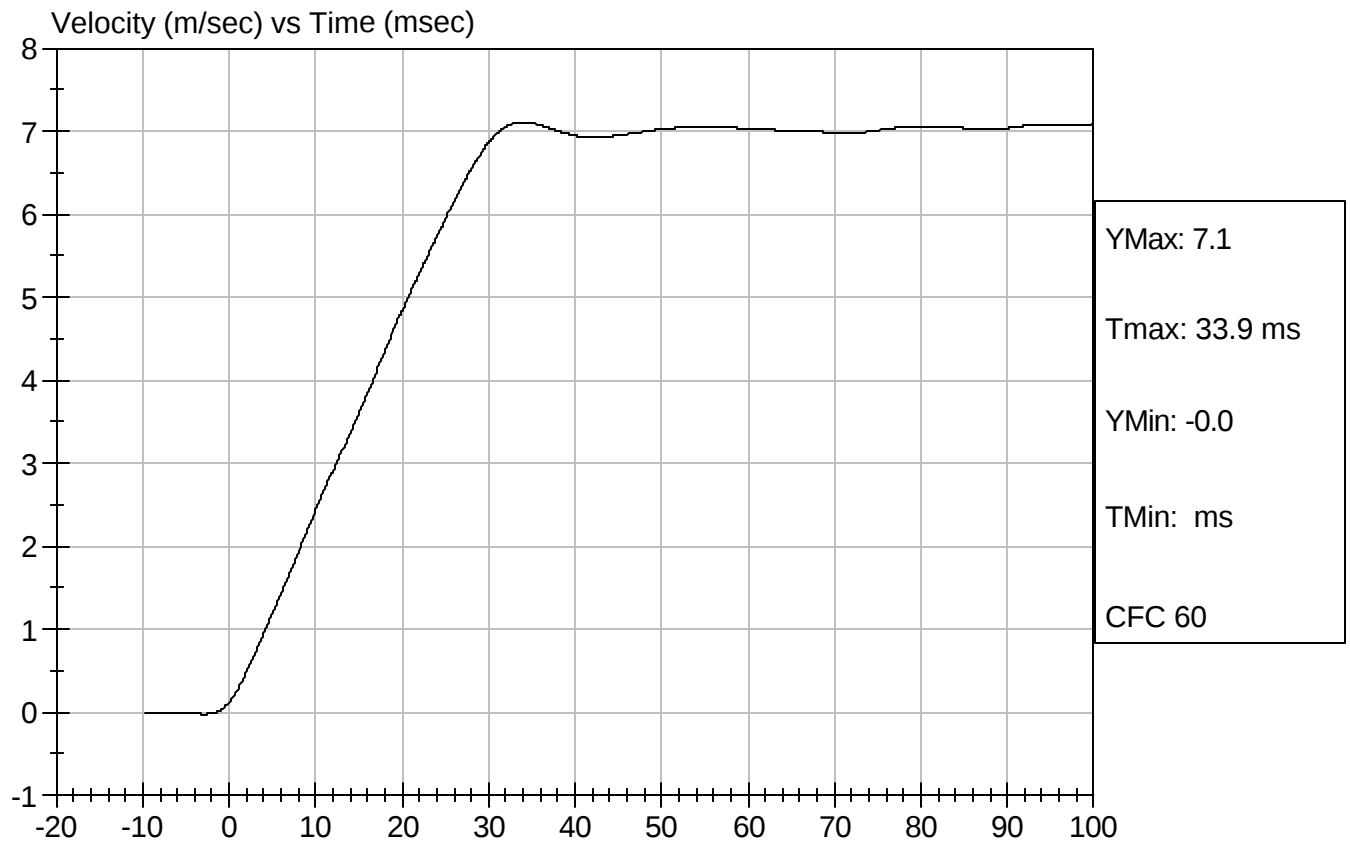
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D063309

Test Date: 11/16/2006
Speed: 23.29 ft/sec, 7.10 m/sec

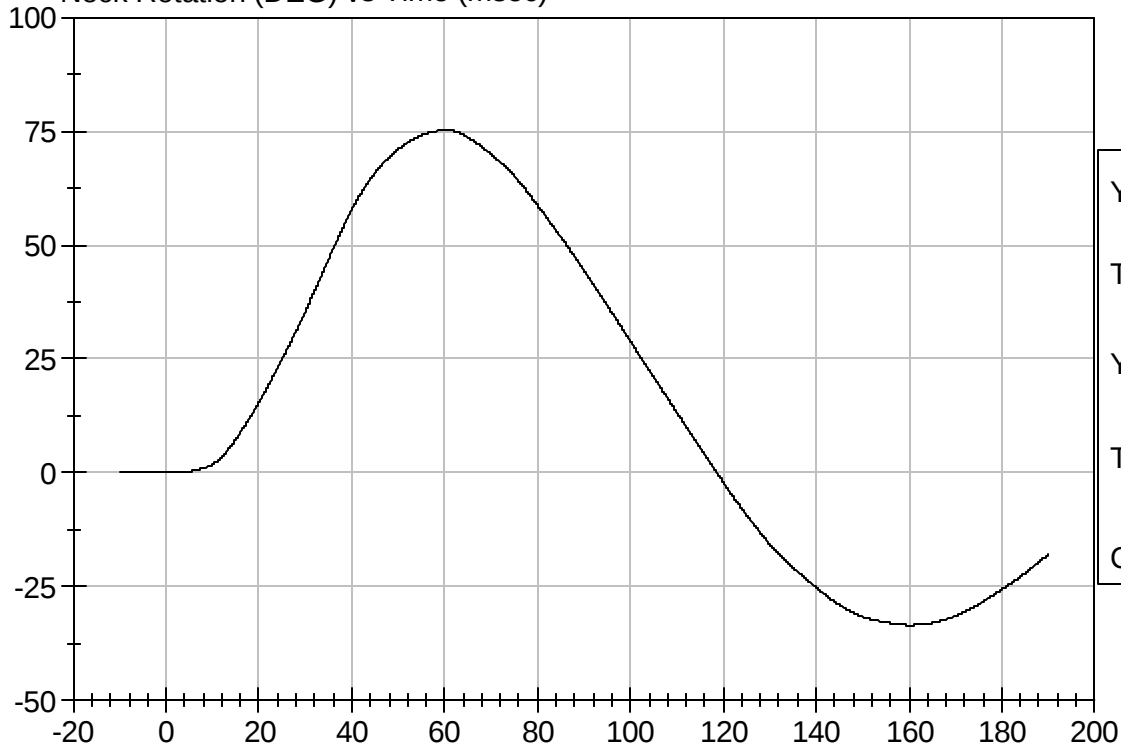




Test Desc: Neck Bending
Component ID: D063309

Test Date: 11/16/2006
Speed: 23.29 ft/sec, 7.10 m/sec

Neck Rotation (DEG) vs Time (msec)



YMax: 75.2

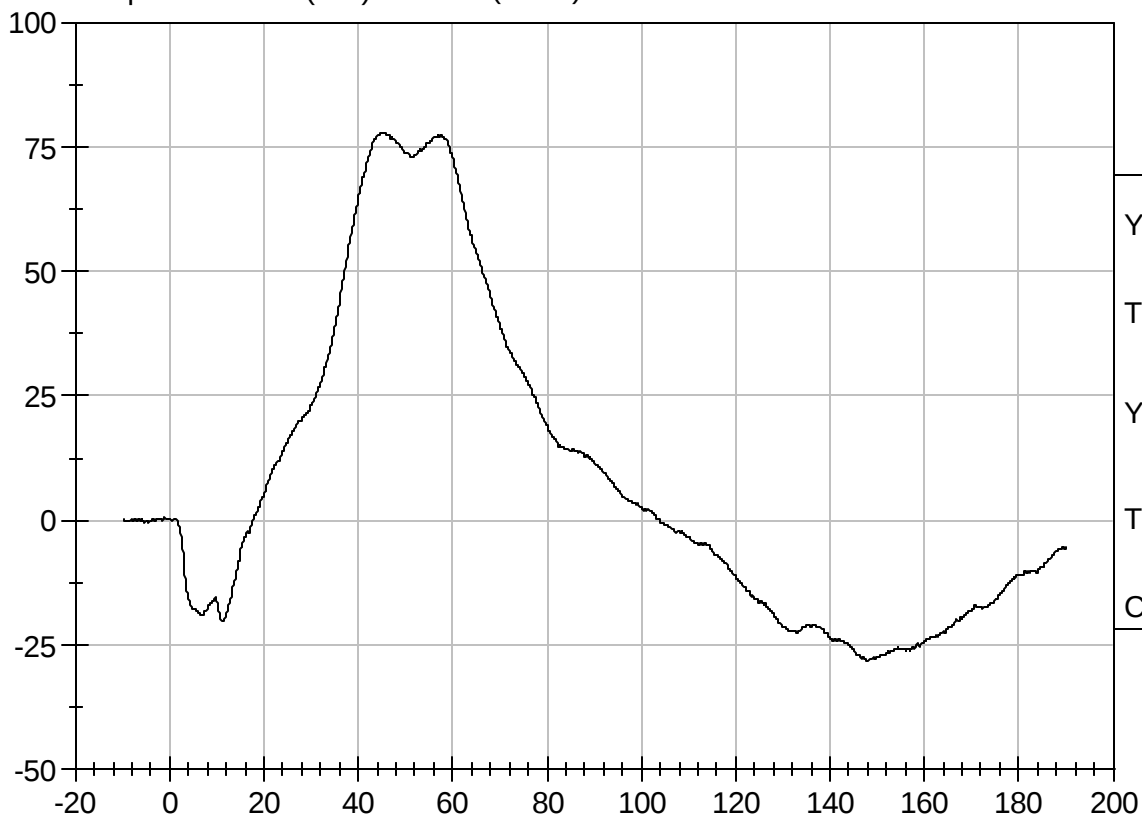
Tmax: 60.4 ms

YMin: -33.5

Tmin: 160.2 ms

CFC 60

Occipital Moment (Nm) vs Time (msec)



YMax: 78.0

Tmax: 45.5 ms

YMin: -28.3

Tmin: 148.0 ms

CFC 600

SID/HIII Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No: 904

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

11/16/2006
Test Date

CERTIFICATION DATA

Dummy Serial Number: 272

Calibration Test Results Summary

Dummy Serial Number: 272

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/HIII Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 272

Test I.D: D06303

Tested Parameter	Units	Specification	Result	Pass/Fail
SH - Seated Height	mm	889 - 909	907	Pass
RH - Rib Height	mm	501 - 521	520	Pass
HP - Hip Pivot Height	mm	99 ref.	99	Pass
RD - Rib from Back Line	mm	229 - 241	230	Pass
KV - Knee Pivot to Back Line	mm	511 - 526	525	Pass
SW - Knee Pivot to Floor	mm	490 - 505	495	Pass
HW - Hip Width	mm	356 - 391	358	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

10/17/2006
Test Date

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

ATD Serial No: 272

Test I.D: D063031

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	120 to 150	125	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-7.8	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

10/17/2006
Test Date

David Winkelbauer
Approved By



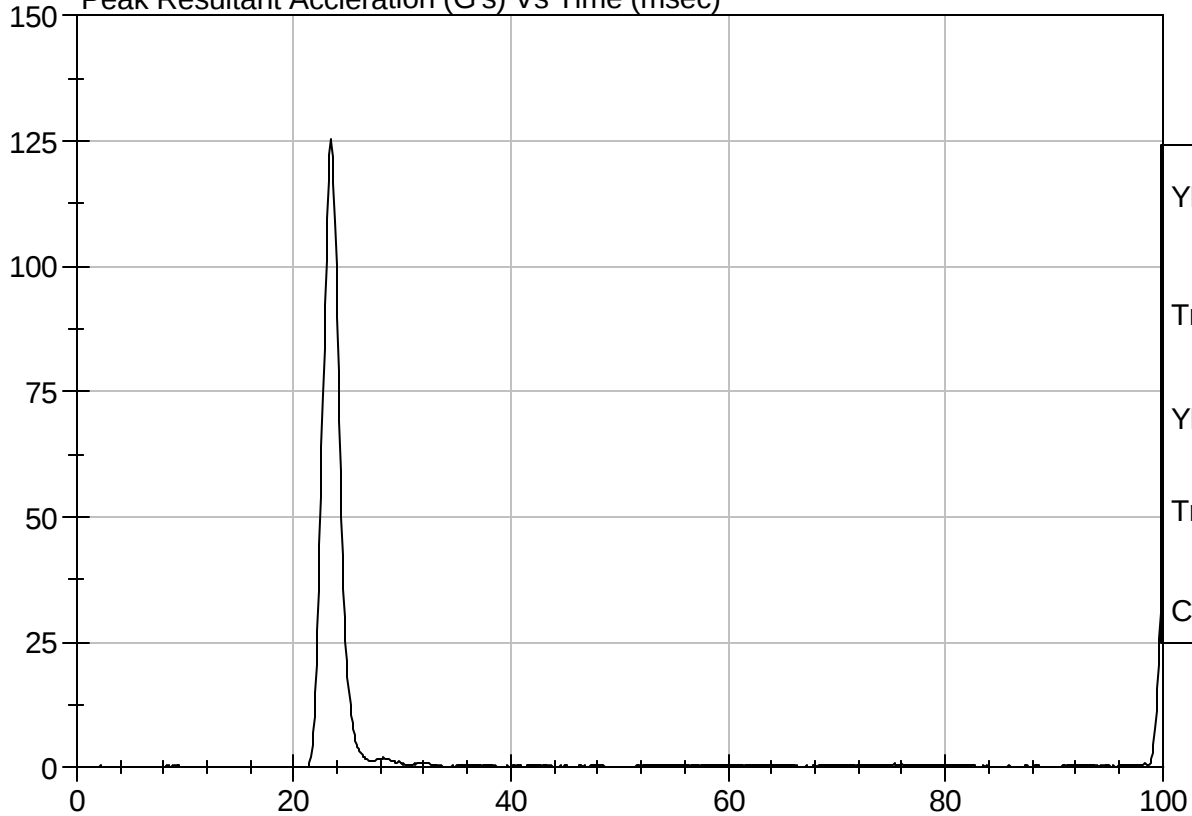
Test Description: Head Drop

Test Date: 10/17/2006

Component: D063031

Speed: 0 ft/s, 0.00 m/s

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



YMax: 125.4 G

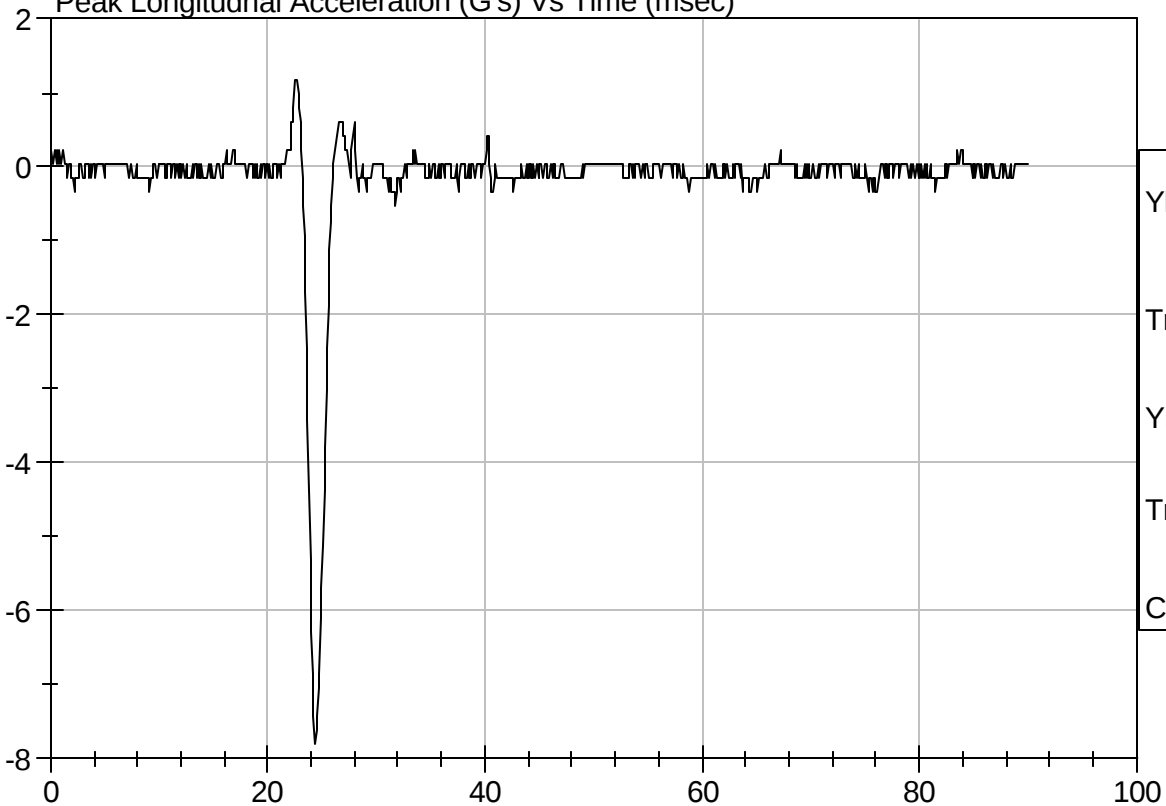
Tmax: 23.4 ms

YMin: 0.0 G

Tmin: -0.5 ms

CFC 1000

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



YMax: 1.2 G

Tmax: 22.5 ms

YMin: -7.8 G

Tmin: 24.3 ms

CFC 1000

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

ATD Serial No: 272

Test I.D: D063032

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	36	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	39	Pass
Lower Spine	G's	15 - 22	20	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

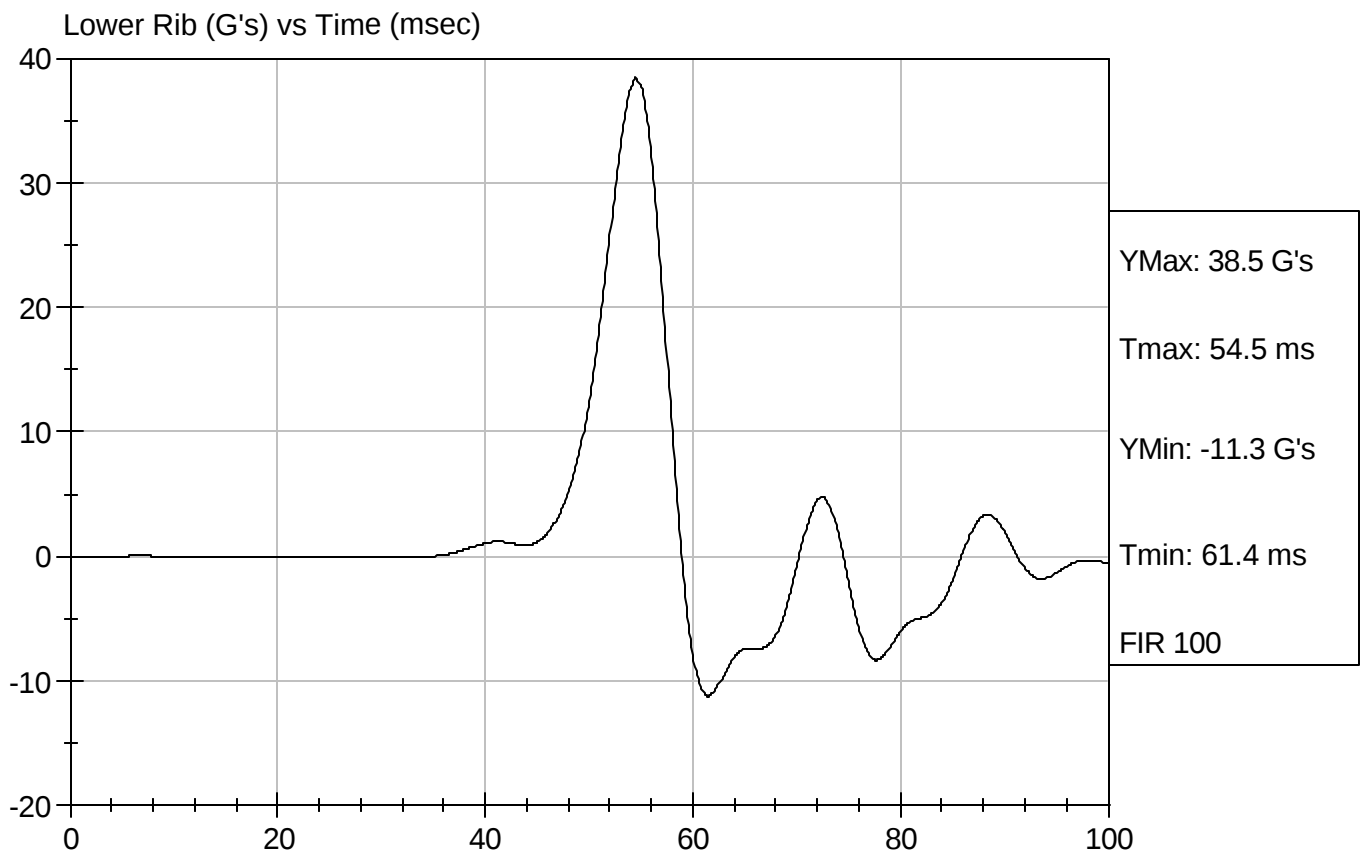
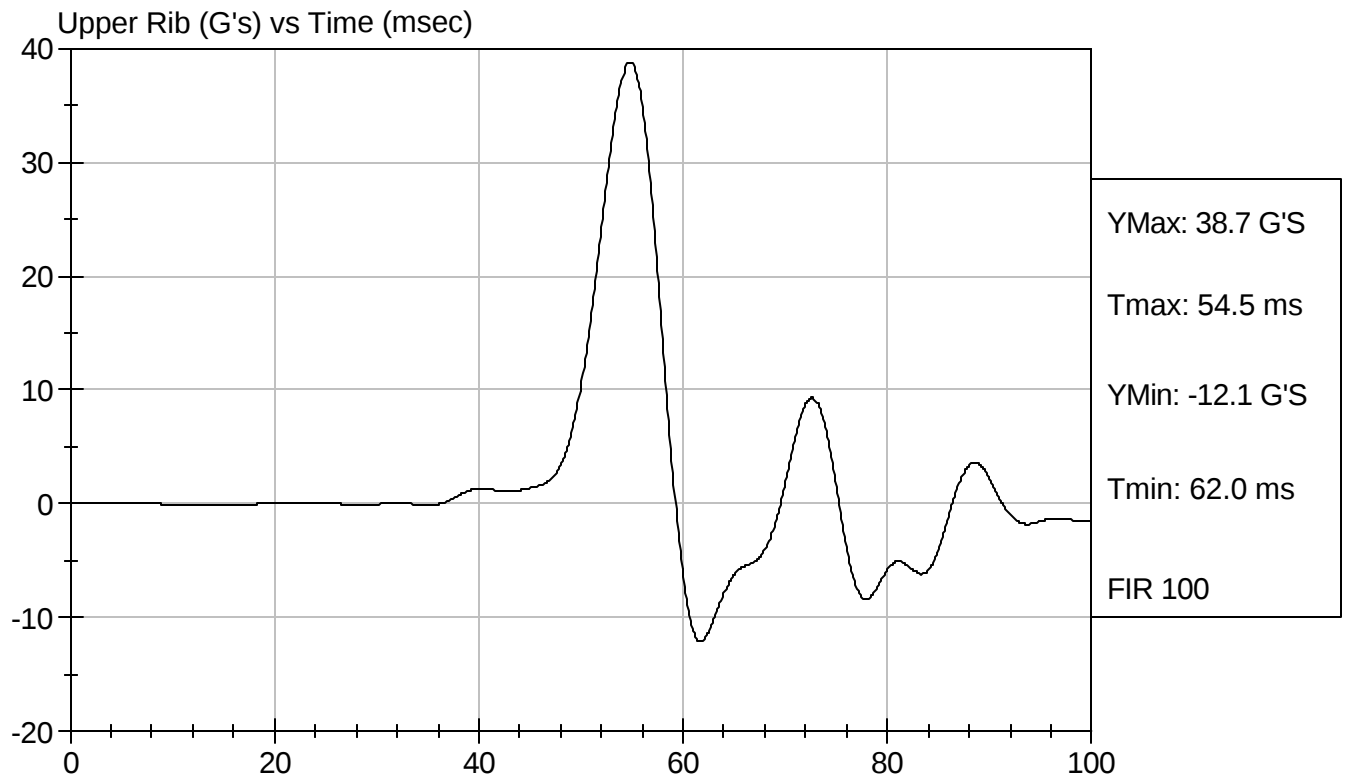
10/16/2006
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D063032

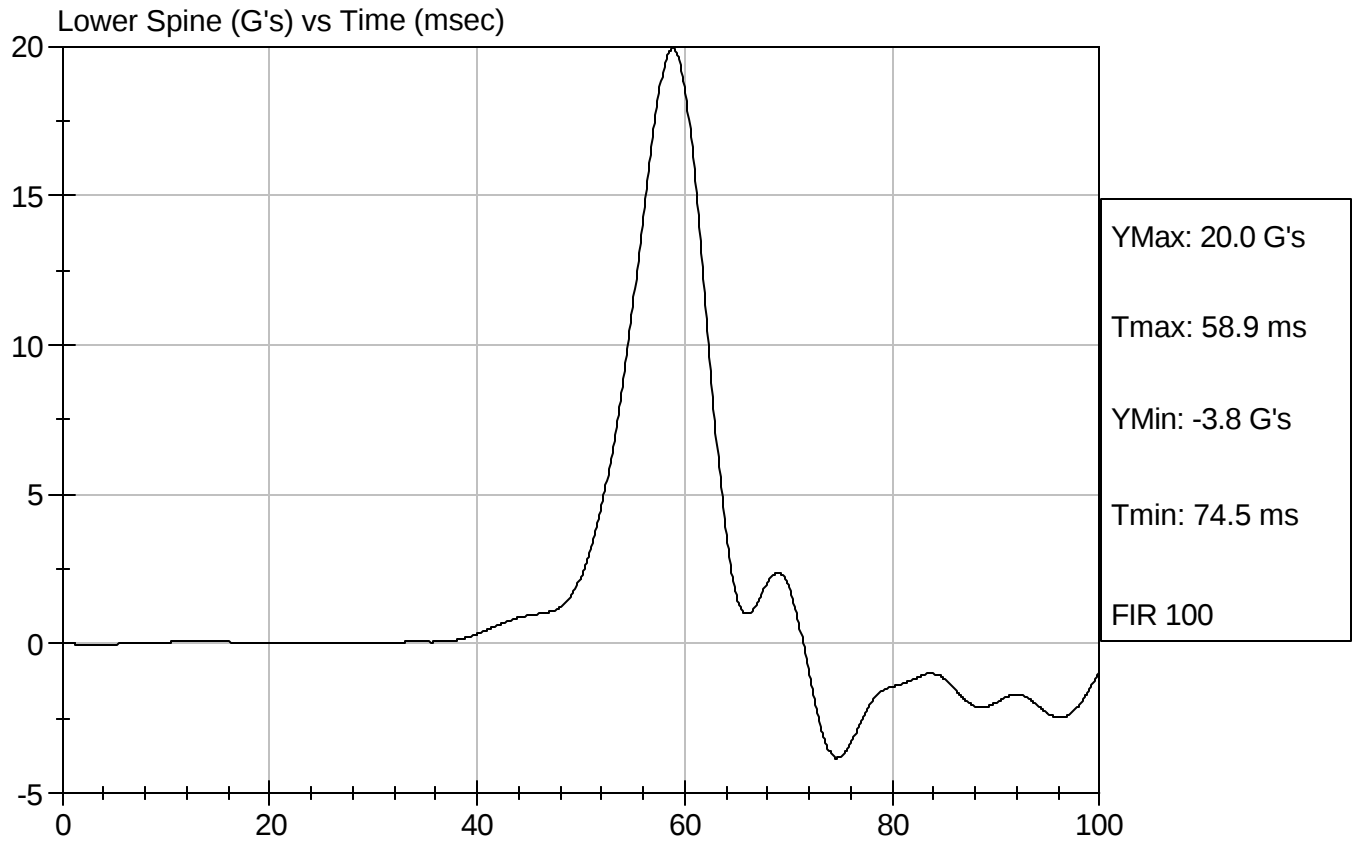
Test Date: 10/16/2006
Speed: 14.11 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D063032

Test Date: 10/16/2006
Speed: 14.11 ft/sec, 4.30 m/sec



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

ATD Serial No: 272

Test I.D: D063033

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/s	4.27 - 4.33	4.32	Pass
Pelvis Acceleration	G's	40 - 60	40	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

10/16/2006

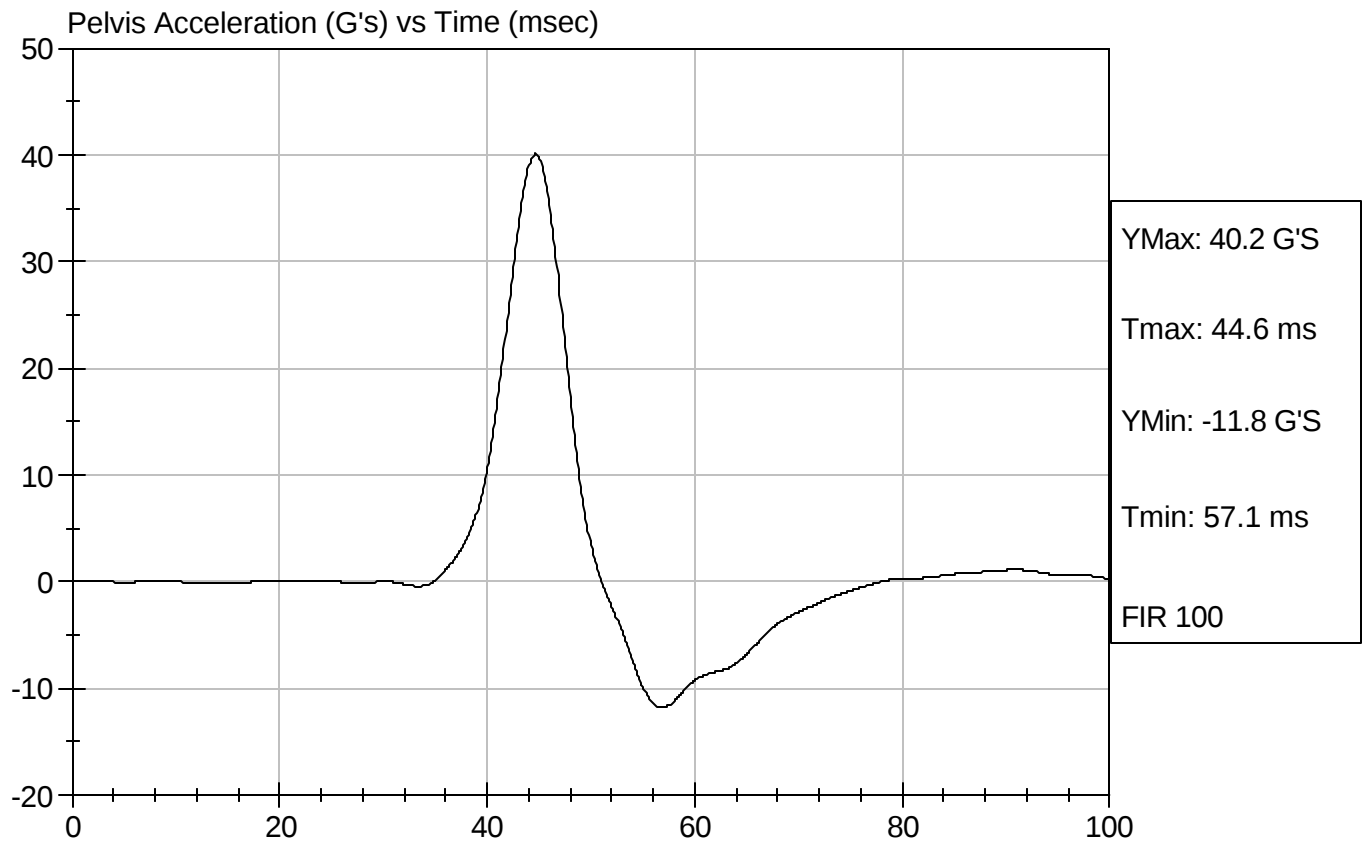
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D063033

Test Date: 10/16/2006
Speed: 14.18 ft/sec, 4.32 m/sec



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

ATD Serial No: 272

Test I.D: D063034

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Force At 12.7 mm	N	104 -162	146	Pass
Force At 19 mm	N	163 - 222	205	Pass
Force At 25.4 mm	N	222 - 280	271	Pass
Force At 33 mm	N	325 - 391	375	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

10/17/2006

Test Date

David Winkelbauer
Approved By

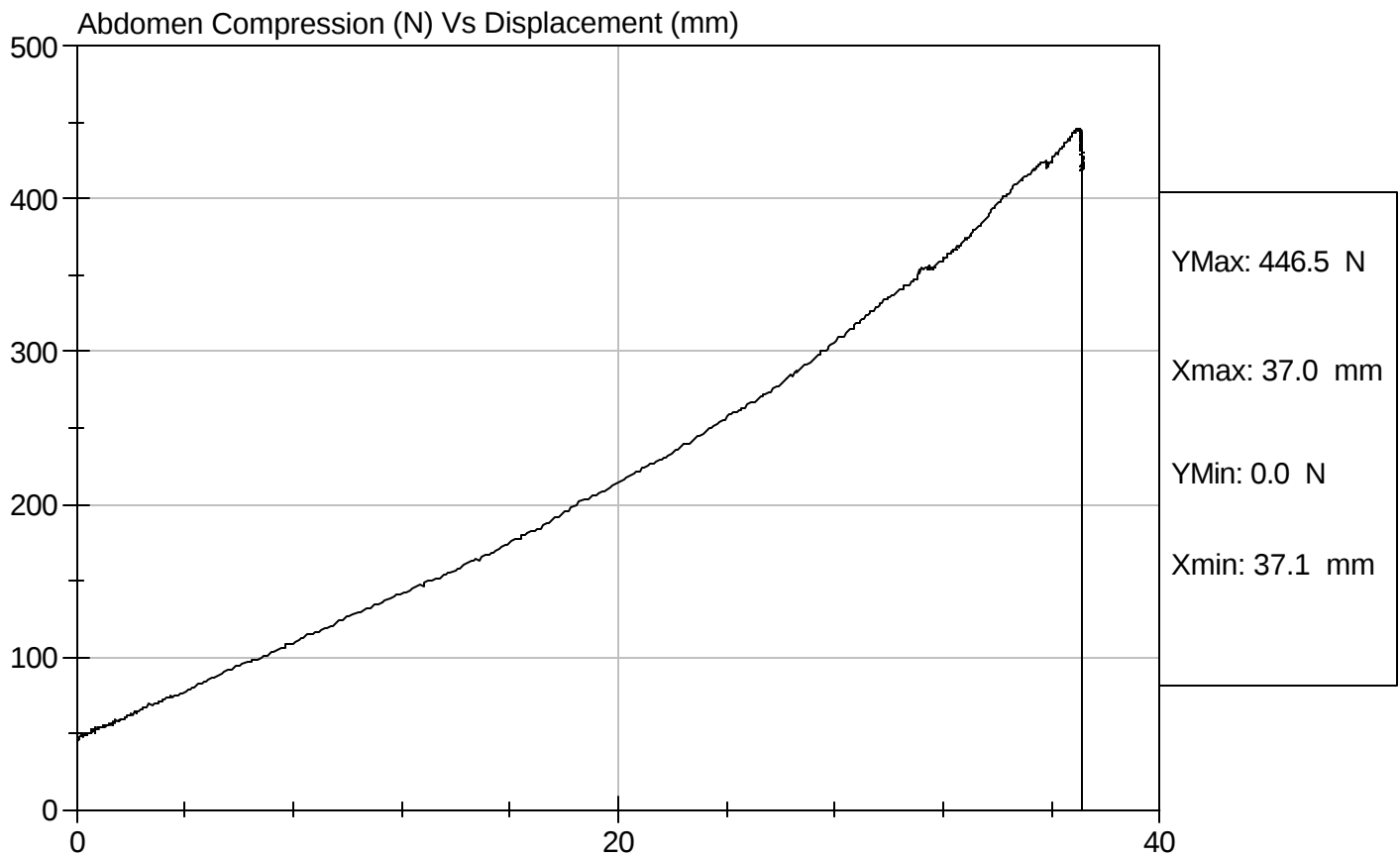


Test Description: Abdomen Compression

Test Date: 10/17/2006

Component: D063034

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 272

Test I.D: D063035

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	41	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	136.4	Pass
Force At 30 deg	N	151.2 - 204.6	171.0	Pass
Force At 40 deg	N	204.6 - 258.0	214.4	Pass
Return Angle	Deg	12 Maximum	4	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

10/17/2006
Test Date

David Winkelbauer
Approved By

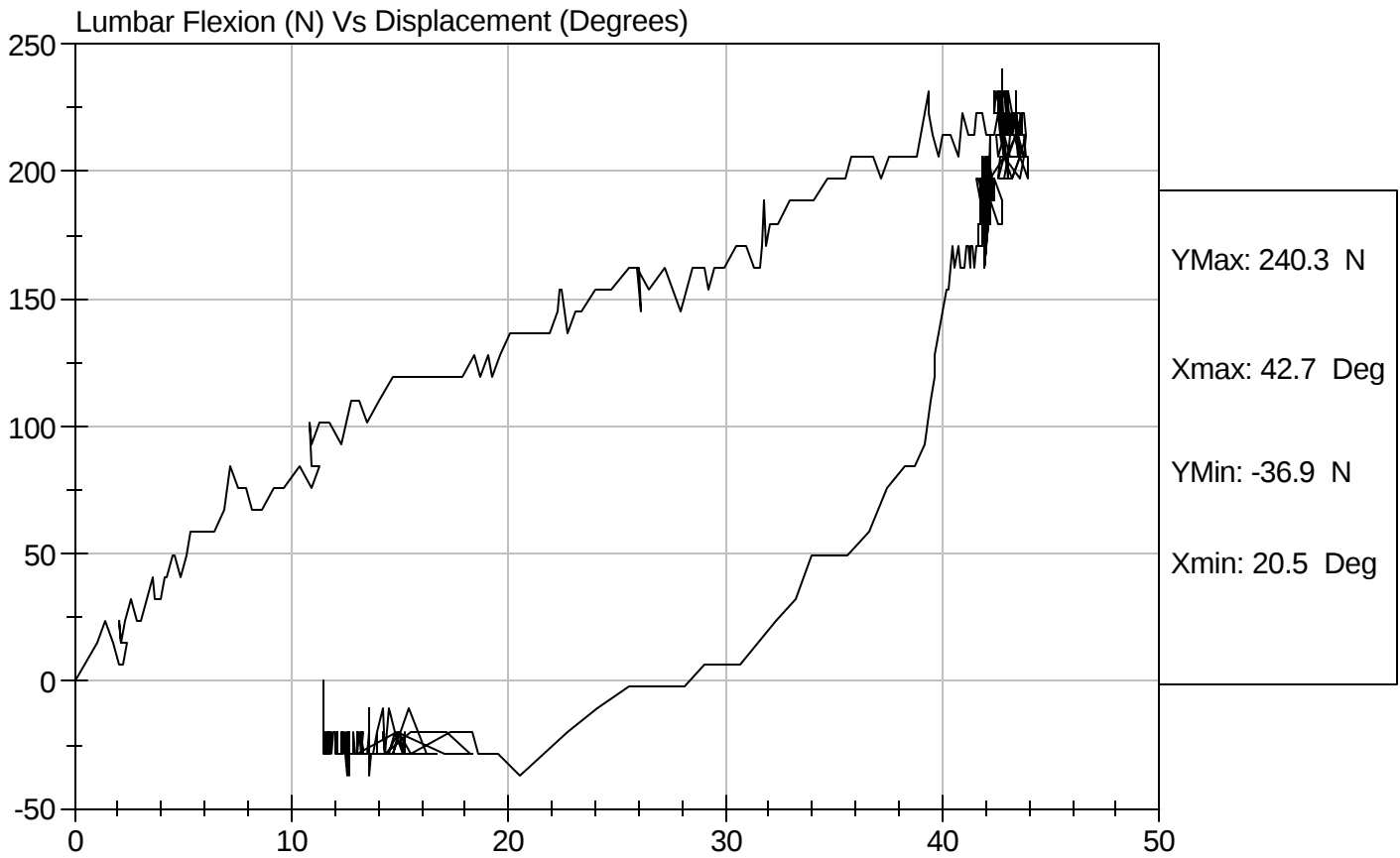


Test Description: Lumbar Flexion

Test Date: 10/17/2006

Component: D063035

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 272

Test I.D: D063039

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.38	Pass
	20 msec	m/s	4.12 to 5.10	4.74	Pass
	30 msec	m/s	5.73 to 7.01	6.53	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.09	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	73	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	58	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	81	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	56	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	12	Pass


 Laboratory Technician

10/18/2006

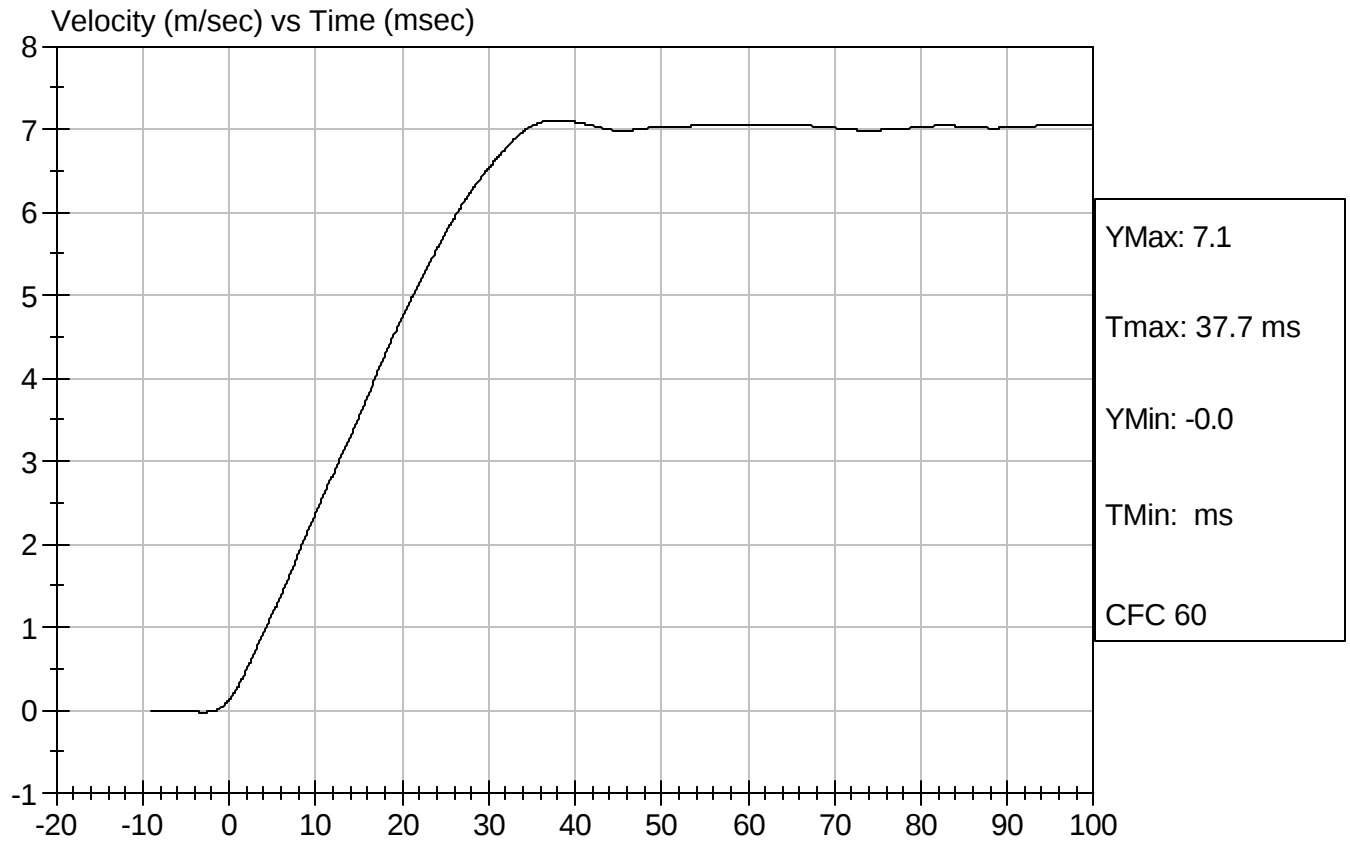
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D063039

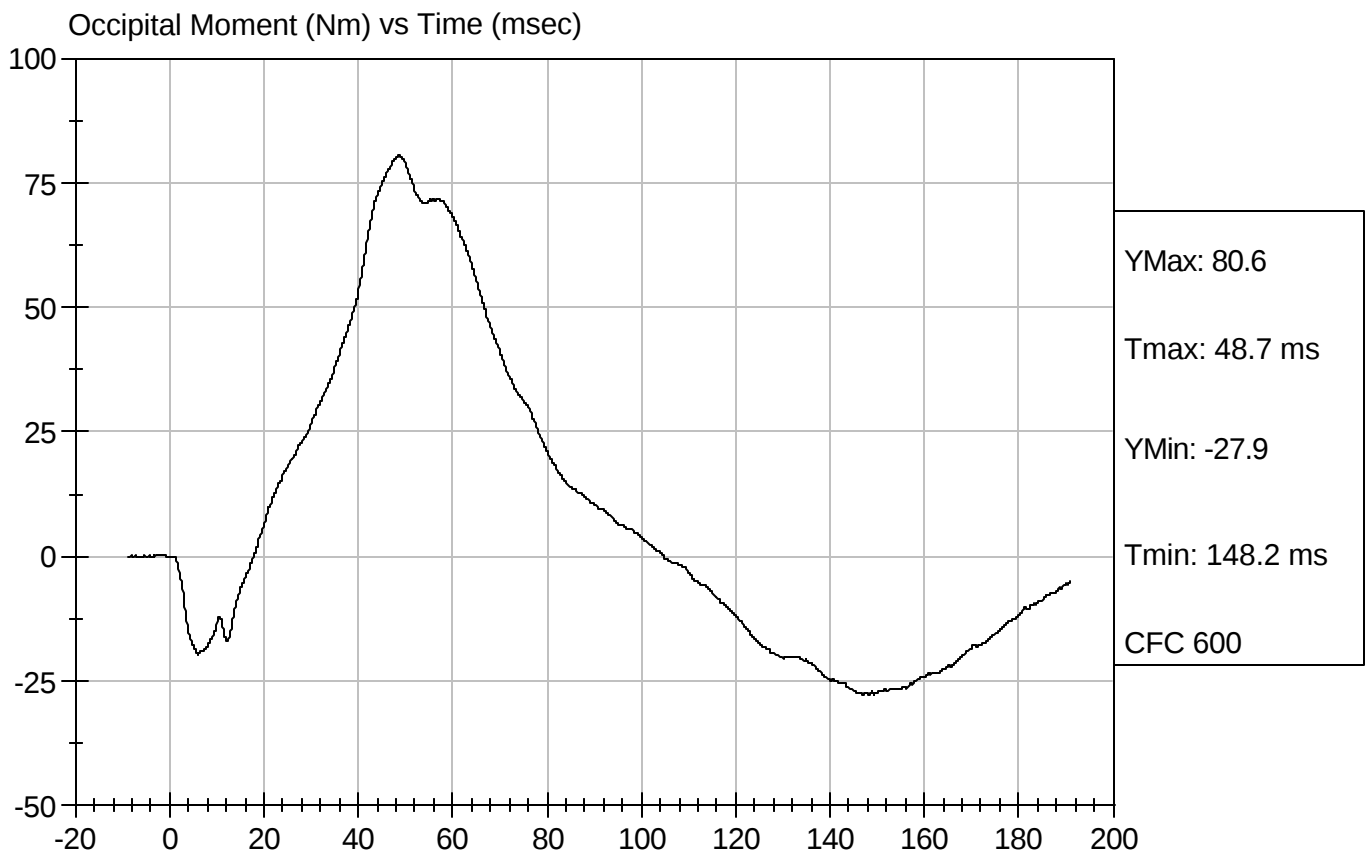
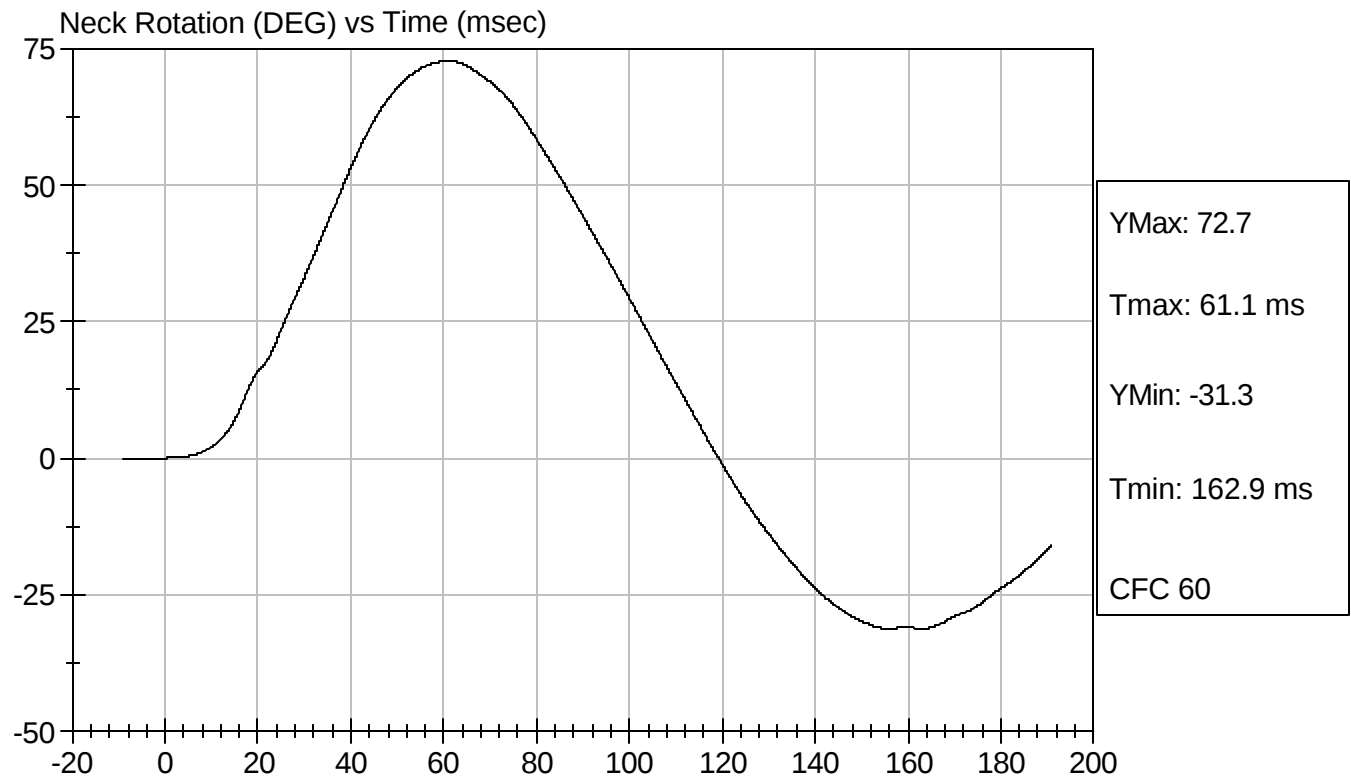
Test Date: 10/18/2006
Speed: 23.16 ft/sec, 7.06 m/sec





Test Desc: Neck Bending
Component ID: D063039

Test Date: 10/18/2006
Speed: 23.16 ft/sec, 7.06 m/sec



Calibration Test Results Summary

Dummy Serial Number: 272

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: 272

Test I.D: D063291

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Peak Resultant Acceleration	G's	120 to 150	138	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-12.7	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

11/16/2006
Test Date

David Winkelbauer
Approved By



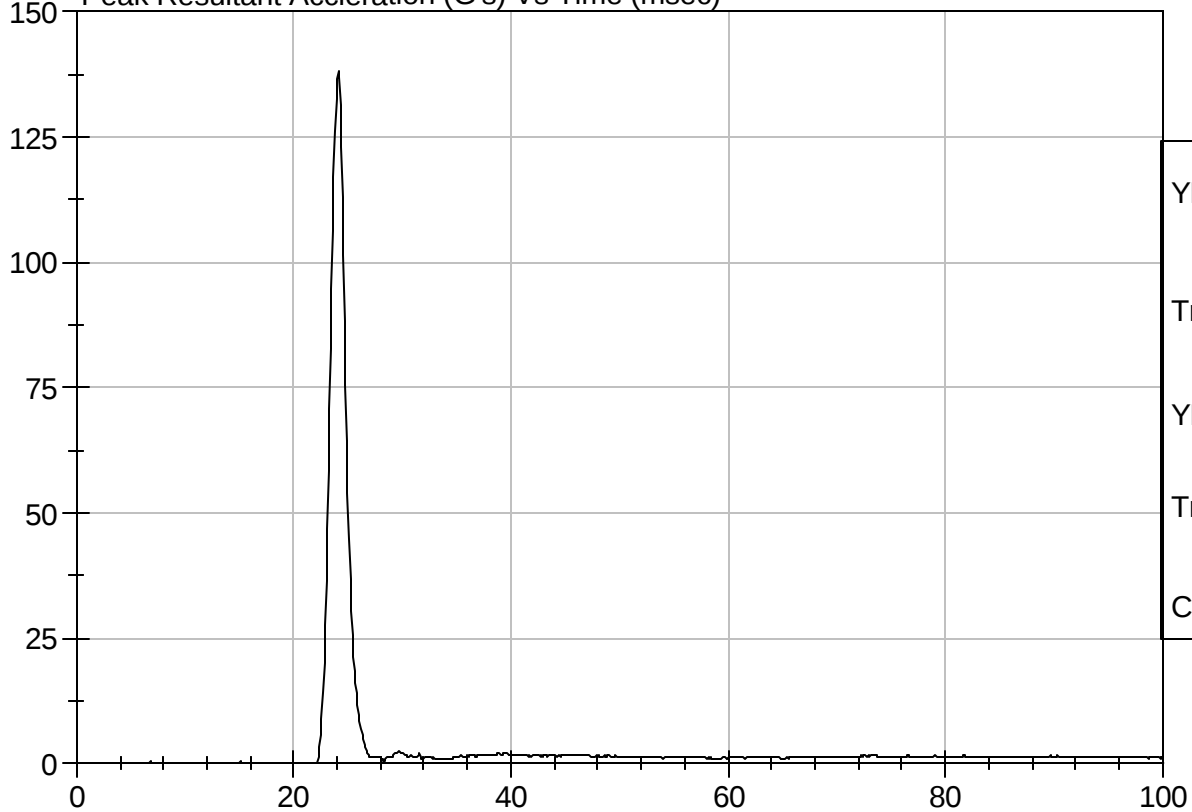
Test Description: Head Drop

Test Date: 11/16/2006

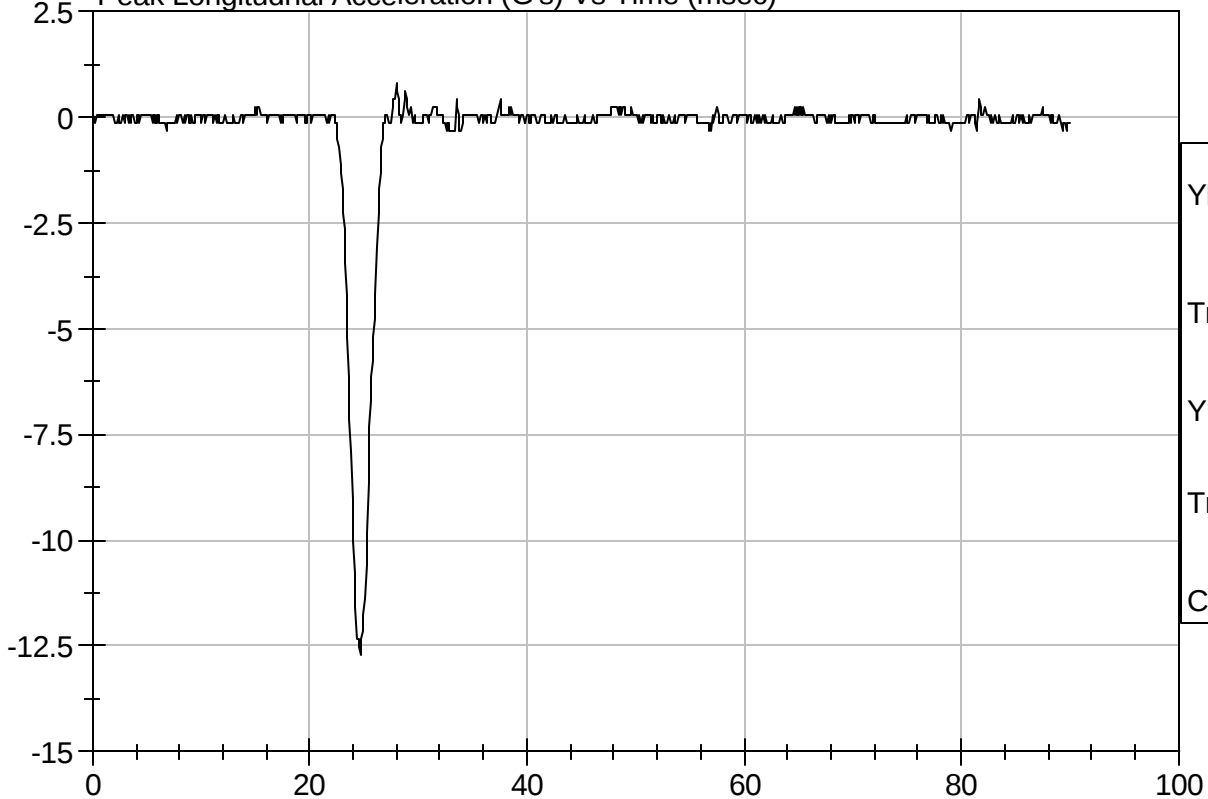
Component: D063291

Speed: 0 ft/s, 0.00 m/s

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



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



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

ATD Serial No: 272

Test I.D: D063292

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	4.22 - 4.31	4.29	Pass
Upper Rib	G's	37 - 46	42	Pass
Lower Rib	G's	37 - 46	40	Pass
Lower Spine	G's	15 - 22	19	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

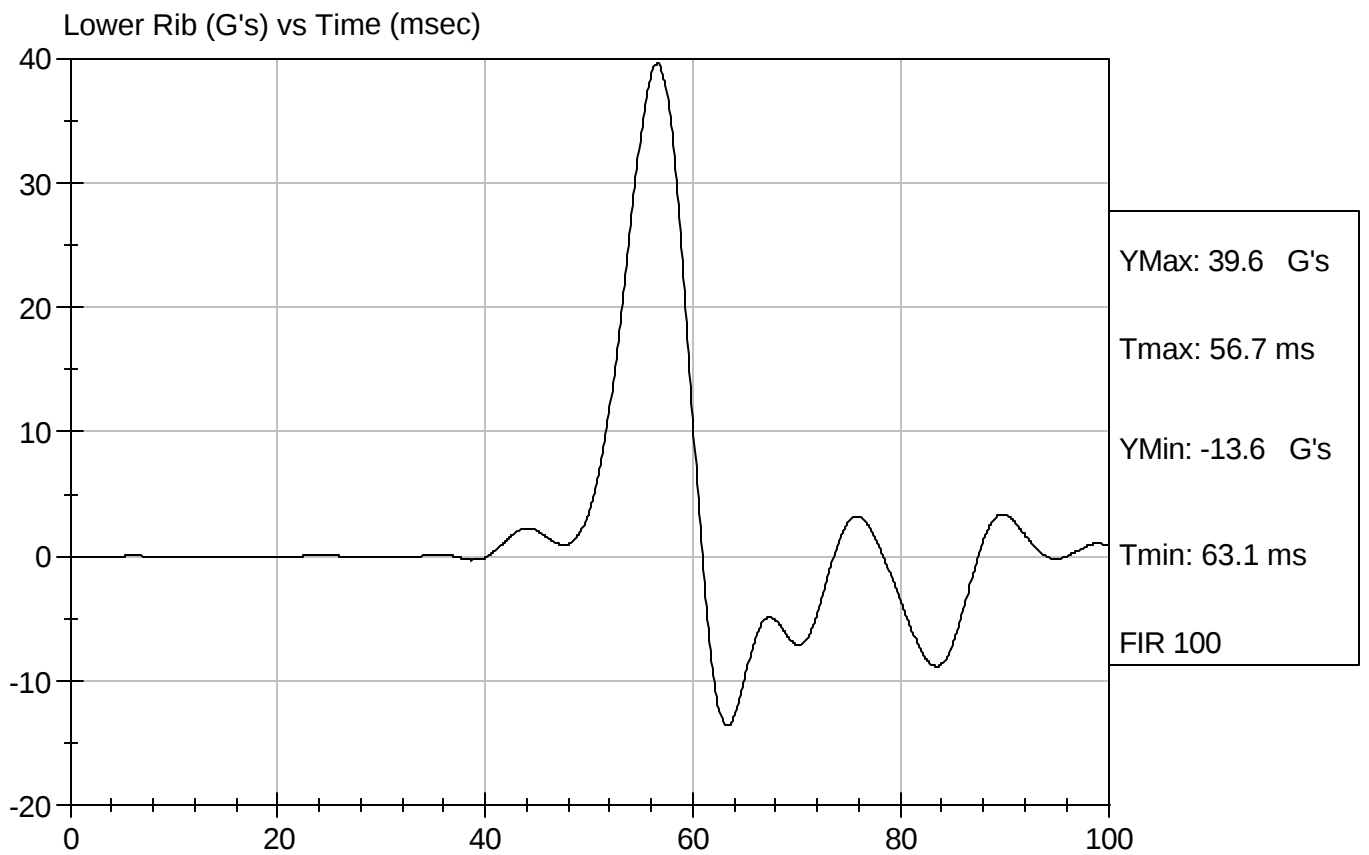
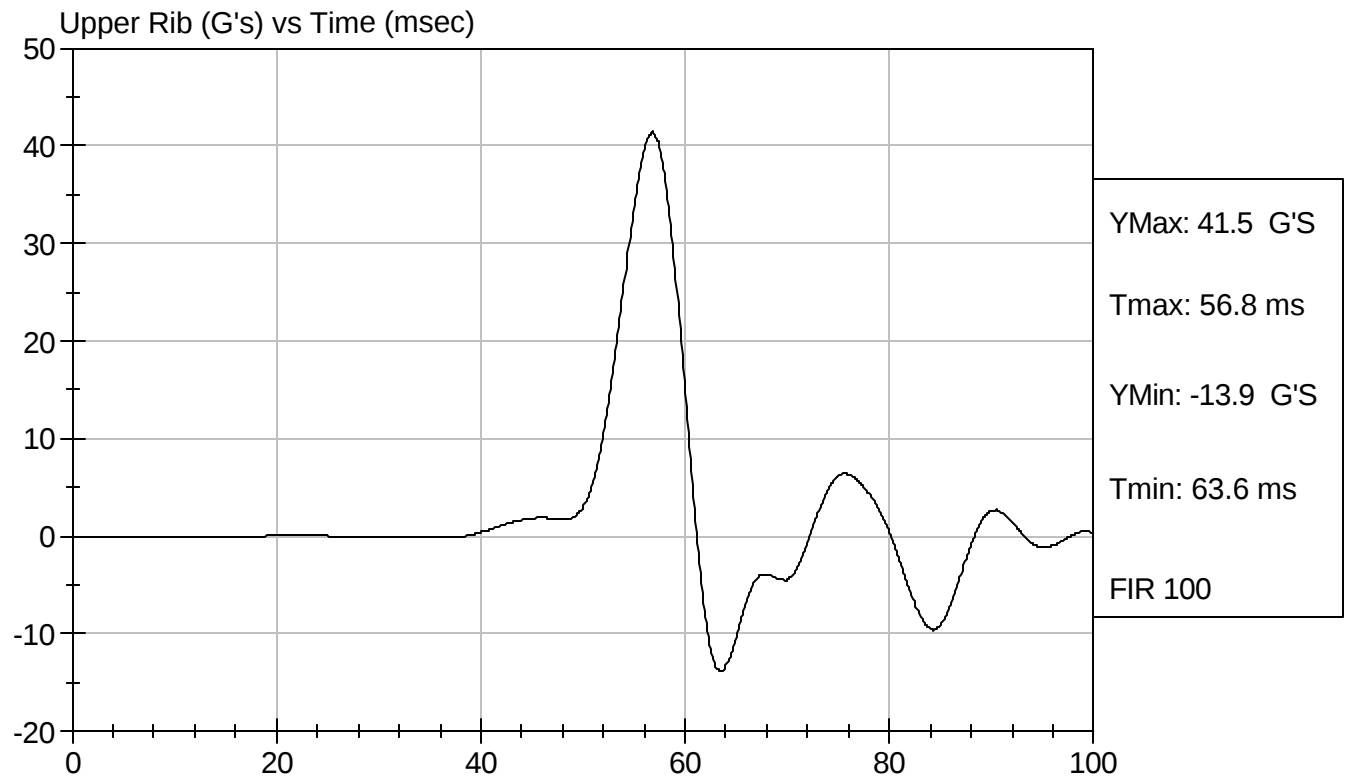
David Winkelbauer
Approved By

11/16/2006
Test Date



Test Desc: Thorax Impact
Component ID: D063292

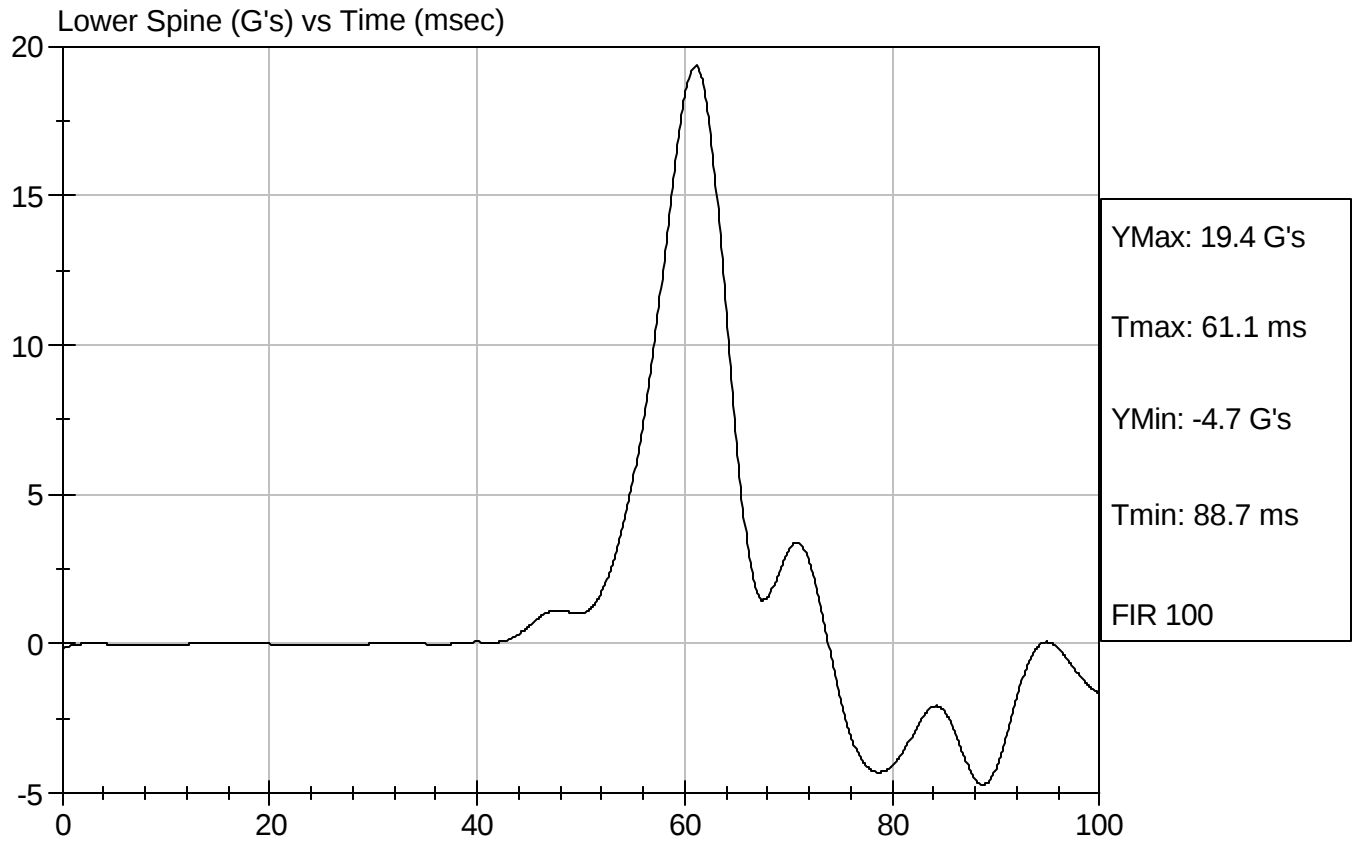
Test Date: 11/16/2006
Speed: 14.08 ft/sec, 4.29 m/sec





Test Desc: Thorax Impact
Component ID: D063292

Test Date: 11/16/2006
Speed: 14.08 ft/sec, 4.29 m/sec



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

ATD Serial No: 272

Test I.D: D063293

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Probe Velocity	m/s	4.27 - 4.33	4.27	Pass
Pelvis Acceleration	G's	40 - 60	40	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

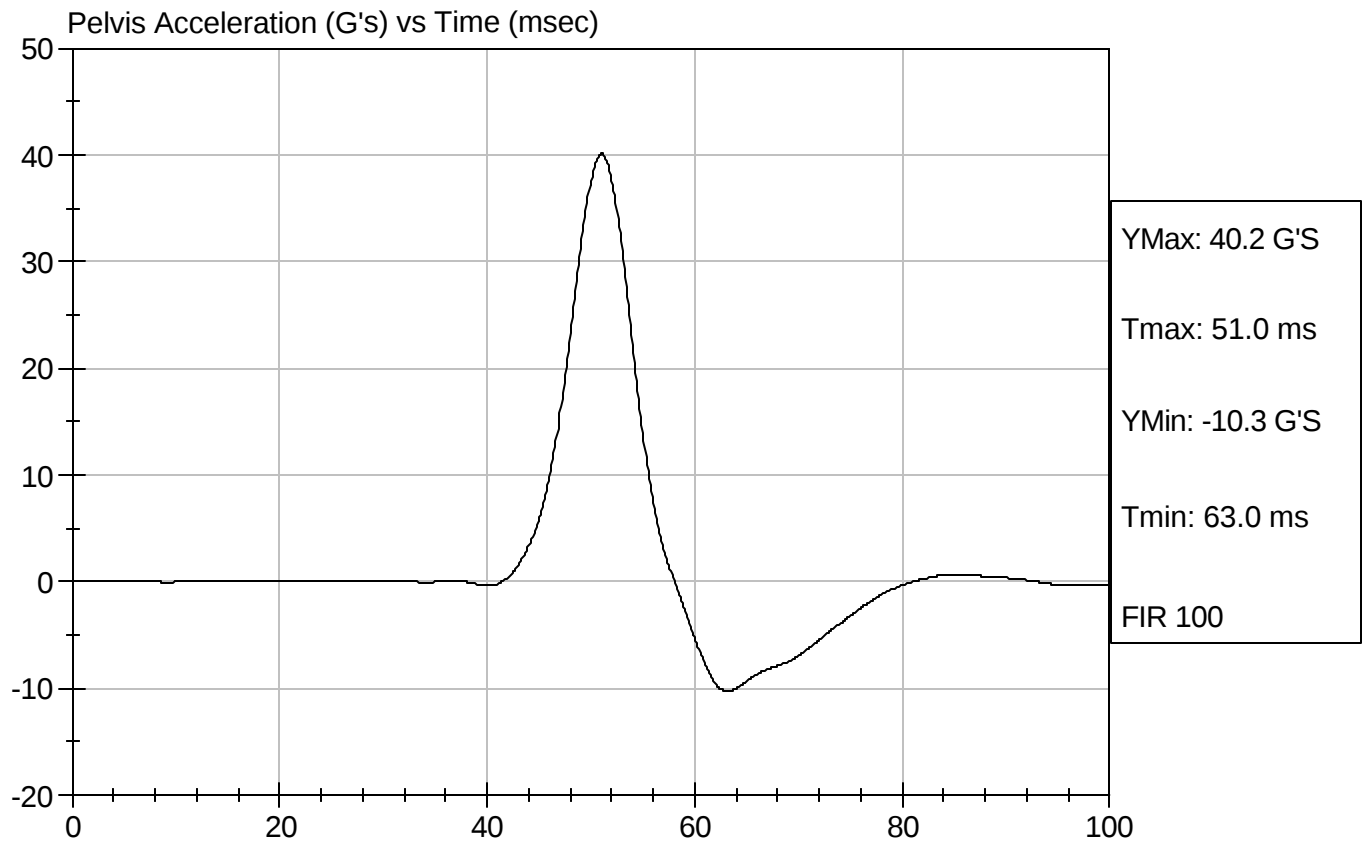
David Winkelbauer
Approved By

11/16/2006
Test Date



Test Desc: Pelvis Impact
Component ID: D063293

Test Date: 11/16/2006
Speed: 14.02 ft/sec, 4.27 m/sec



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

ATD Serial No: 272

Test I.D: D063294

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Force At 12.7 mm	N	104 -162	151	Pass
Force At 19 mm	N	163 - 222	211	Pass
Force At 25.4 mm	N	222 - 280	276	Pass
Force At 33 mm	N	325 - 391	391	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

11/16/2006
Test Date

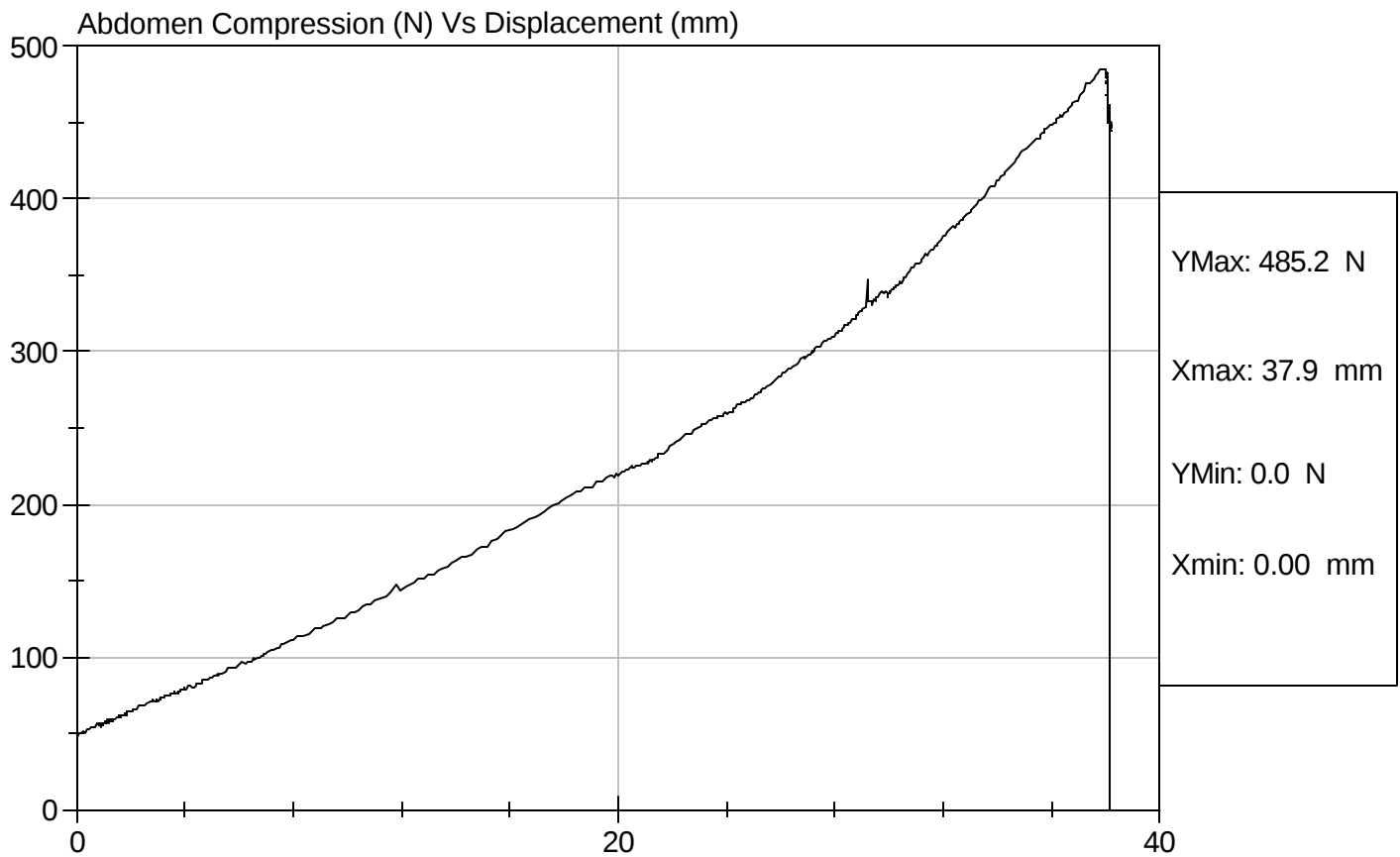


Test Description: Abdomen Compression

Test Date: 11/16/2006

Component: D063294

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 272

Test I.D: D063295

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	22	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	128.5	Pass
Force At 30 deg	N	151.2 - 204.6	174.5	Pass
Force At 40 deg	N	204.6 - 258.0	209.0	Pass
Return Angle	Deg	12 Maximum	4	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

11/16/2006
Test Date

David Winkelbauer
Approved By

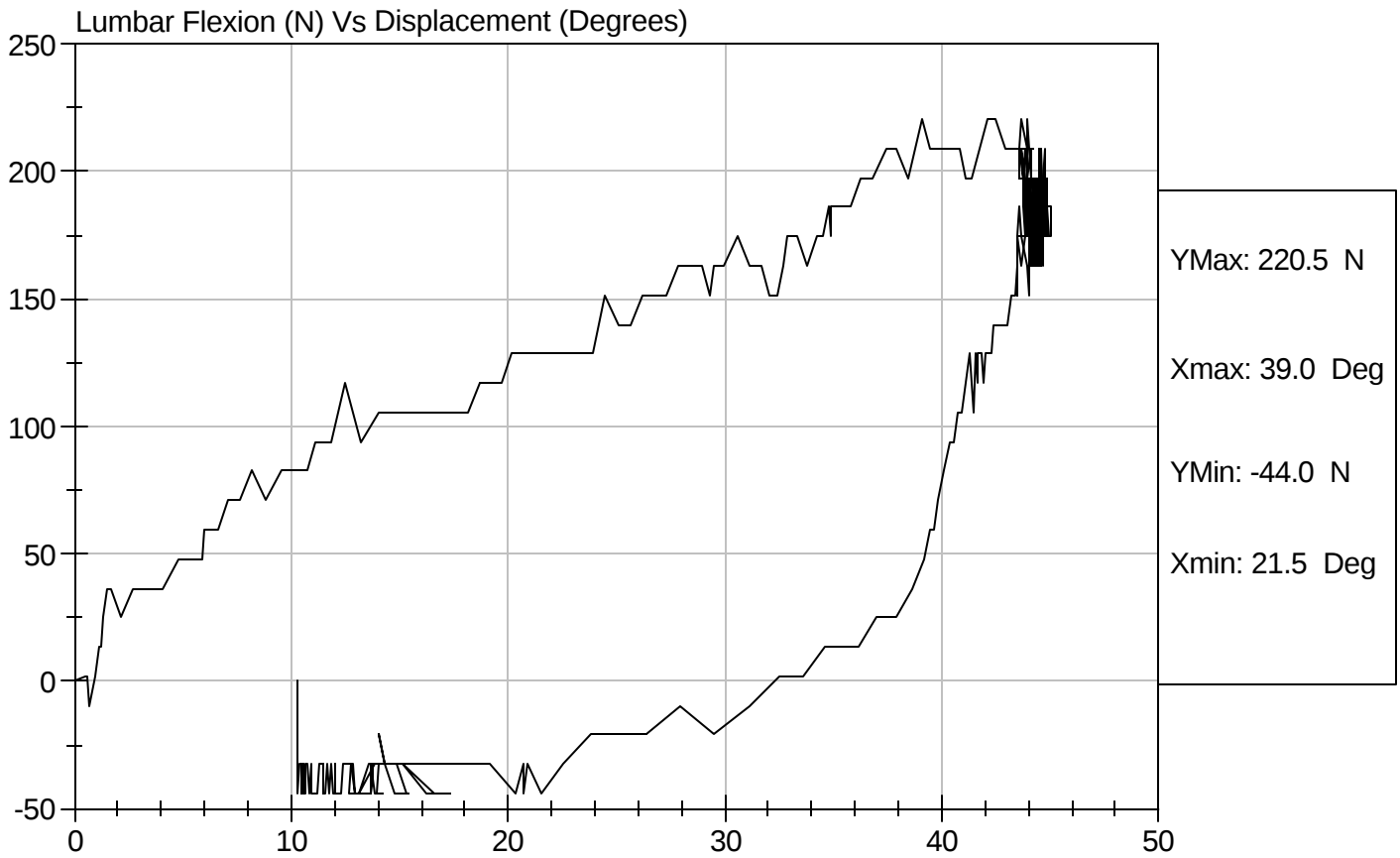


Test Description: Lumbar Flexion

Test Date: 11/16/2006

Component: D063295

Speed: 0 ft/sec, 0 m/sec



SID/HII Calibration Data Sheet
Side Impact Dummy (SID)
Neck Pendulum Test

ATD Serial No: 272

Test I.D: D063299

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Impact Velocity		m/s	6.89 to 7.13	7.08	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.35	Pass
	20 msec	m/s	4.12 to 5.10	4.80	Pass
	30 msec	m/s	5.73 to 7.01	6.69	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.08	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	74	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	12	Pass


 Laboratory Technician

11/16/2006

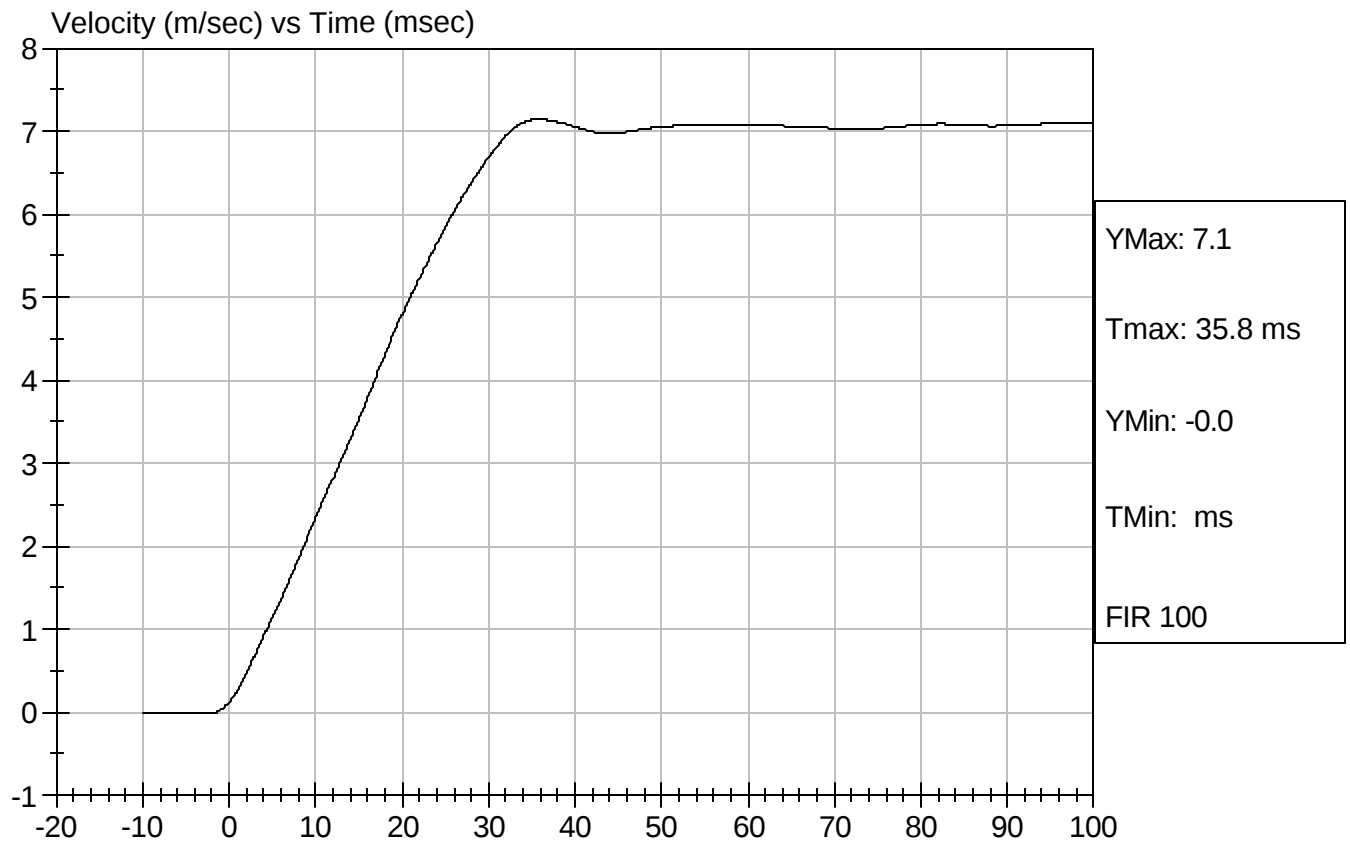
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D063299

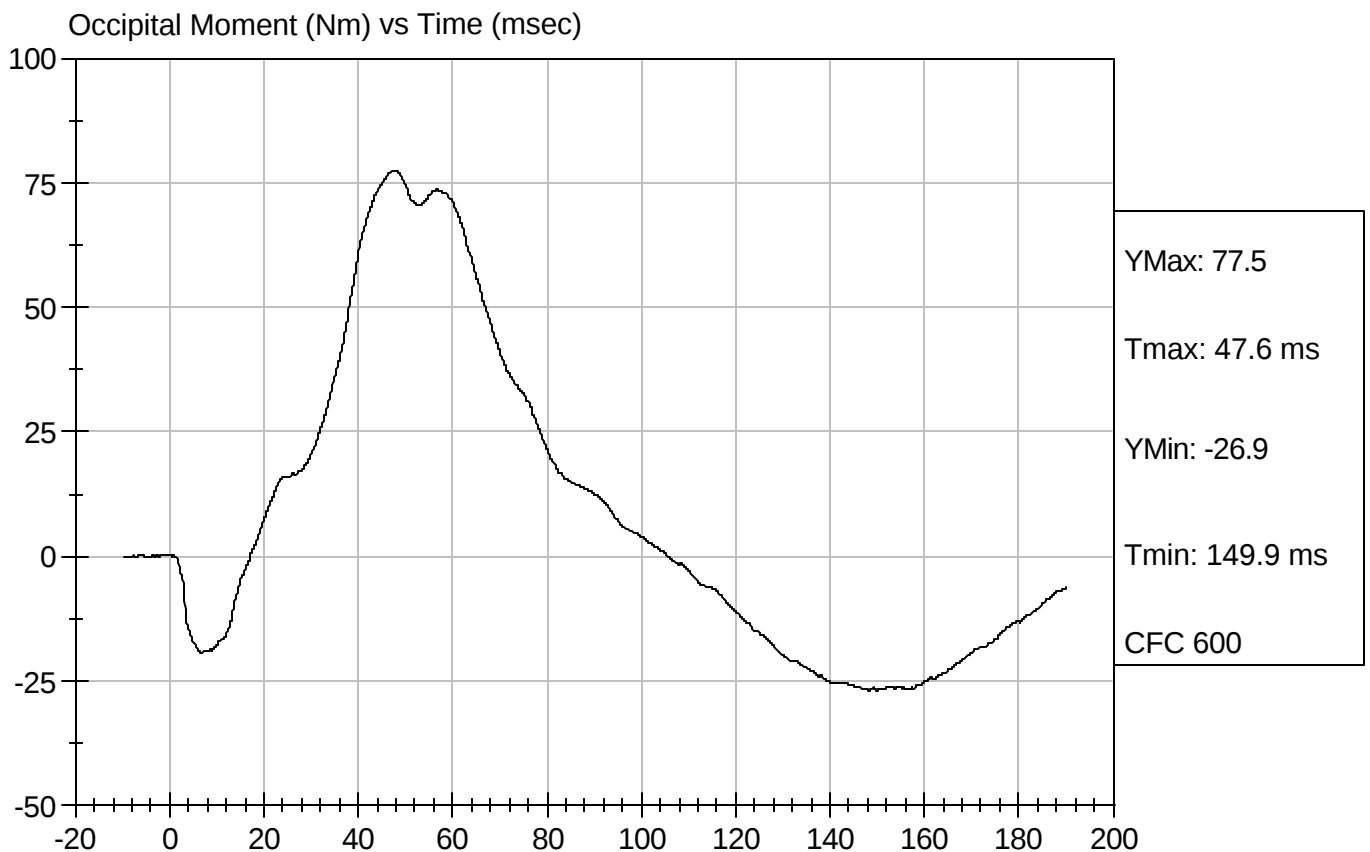
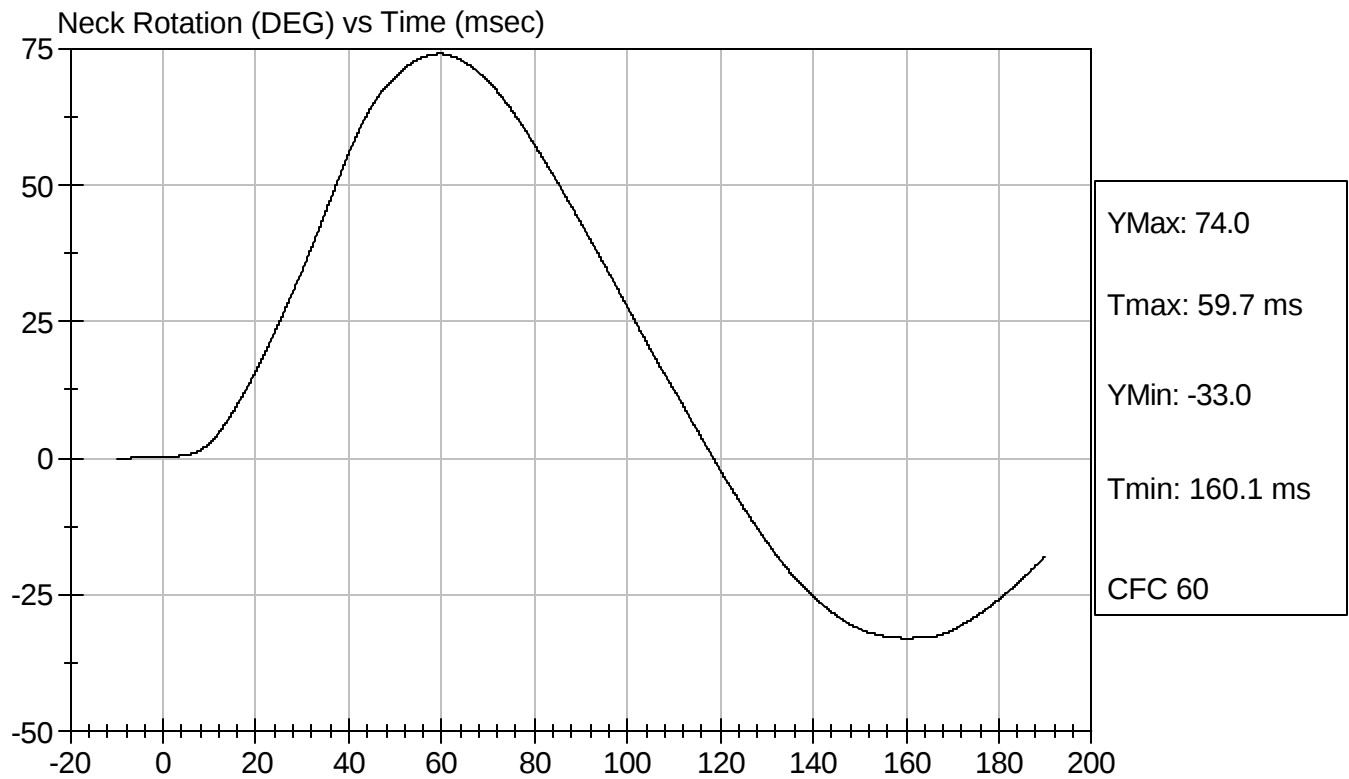
Test Date: 11/16/2006
Speed: 23.24 ft/sec, 7.08 m/sec





Test Desc: Neck Bending
Component ID: D063299

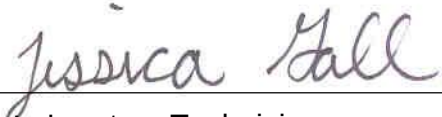
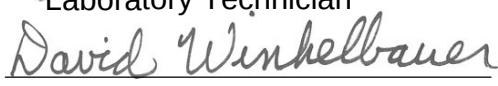
Test Date: 11/16/2006
Speed: 23.24 ft/sec, 7.08 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No: 272

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


Laboratory Technician

Approved By

11/16/2006
Test Date