

REPORT NUMBER: NCAPSIDE-MGA-2007-002

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**GM DAEWOO AUTO & TECHNOLOGY COMPANY
2007 SUZUKI FORENZA 4-DR.
NHTSA NUMBER: M70511**

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



Test Date: October 16, 2006

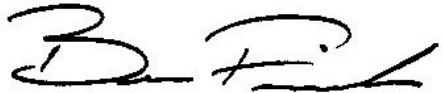
Report Date: November 10, 2006

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
400 SEVENTH STREET, SW, ROOM 5311
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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Technical Report Documentation Page

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16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 2007 Suzuki Forenza 4-Dr. 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 October 16, 2006. The impact velocity of the Moving Deformable Barrier (MDB) was 62.0 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 402 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;">63.5</td> <td style="text-align: center;">59.1</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">66.2</td> <td style="text-align: center;">67.1</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">75.2</td> <td style="text-align: center;">64.2</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">71</td> <td style="text-align: center;">66</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">107.3</td> <td style="text-align: center;">81.9</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">182</td> <td style="text-align: center;">1250</td> </tr> </tbody> </table>					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	63.5	59.1	Left Lower Rib (LLR) Accel., g	66.2	67.1	Lower Spine (T ₁₂) Accel., g	75.2	64.2	Thoracic Trauma Index (TTI)	71	66	Pelvis (PEV) Accel., g	107.3	81.9	HIC	182	1250
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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.																								
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, Room 5108 (NPO-230) 400 Seventh Street, S.W. Washington, D.C. 20590																						
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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 Suzuki Forenza 4-Dr. manufactured by GM Daewoo Auto & Technology 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 2007 Suzuki Forenza 4-Dr. 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 62.0 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 1508.2 kg and the test weight of the MDB was 1360.8 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on October 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 402 mm at level 2, 1500 mm rearward of the left vertical impact point. The driver and passenger SID/HIIIs, Serial Nos. 272 and 904 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	182	29.8	65.8	71	107.3
Passenger	1250	50.6	58.2	66	81.9

SUPPLEMENTAL RESTRAINT INFORMATION

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

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

TEST NOTES

No valid data was collected for the following:

Left Lower A-Post Y after 10 msec.

Left Rear Passenger Door Unlatched, but remained closed.

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

TEST VEHICLE INFORMATION

Make	Suzuki
Model	Forenza
Body Style	Sedan
NHTSA No.	M70511
VIN	KL5JD56Z87K514744
Color	Fusion Red Met
Delivery Date	10/9/06
Odometer Reading (mile)	122
Dealer	Jack Phelan Dodge
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	No
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	No
Traction Control	No
All Wheel Drive	No
Power Seats	No
Pretensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	GM Daewoo Auto & Technology Company
Date of Manufacture	8/06

GVWR (kg)	1695
GAWR Front (kg)	920
GAWR Rear (kg)	845

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				396
Cargo Wt. (RCLW) (kg)				56

DATA SHEET NO. 1 (continued)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2007 Suzuki Forenza 4-Dr.NHTSA No. M70511Test Program: NCAP Side ImpactTest Date: 10/16/2006**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	401.4	254.9		446.3	348.8	
Right	kg	401.0	241.3		411.9	301.2	
Ratio	%	61.8	38.2		56.9	43.1	
Totals	kg	802.4	496.2	1298.6	858.2	650.0	1508.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1298.6
Weight of 2 P572M ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	56
Calculated Vehicle Target Weight (TVTW)	kg	1516.1

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

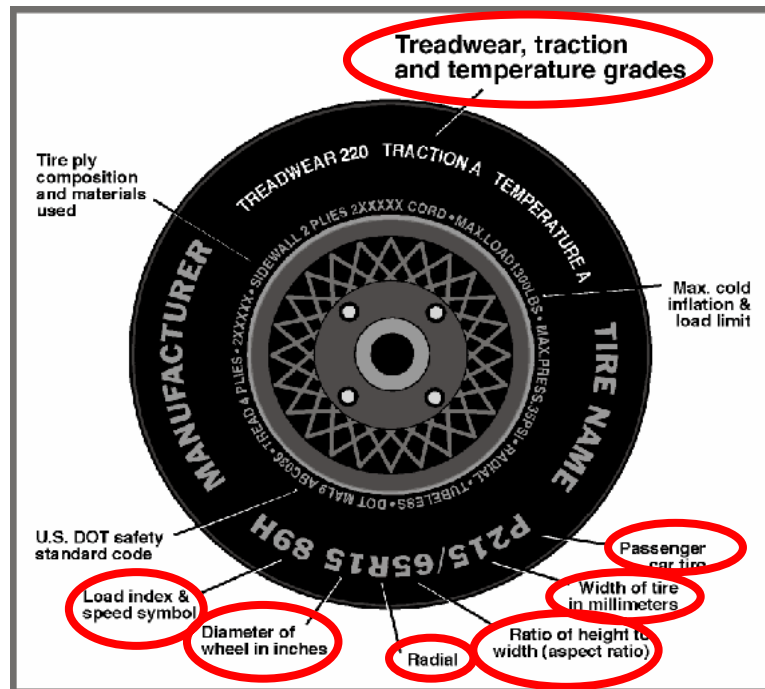
Weight of Ballast in Cargo Area: 13.6 kg**TEST VEHICLE ATTITUDES AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	651	654	657	668	994
As Tested	mm	632	647	609	628	1121
Fully Loaded	mm	630	647	600	626	

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2601
Target Impact Point Aft of Front Axle	mm	361
Actual Impact Point Aft of Front Axle	mm	359

DATA SHEET NO. 2
TEST VEHICLE TIRE INFORMATION



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	340	340
Cold / Test Pressure (kPa)	210	210
Recommended Tire Size	P195/55R15	P195/55R15
Tire Size on Vehicle	P195/55R15	P195/55R15
Tire Manufacturer	Kumho	Kumho
Tire Name	ECSTA HP4	ECSTA HP4
Tire Type	All Season	All Season
Tire Width (mm)	195	195
Ratio of Height to Width (aspect ratio)	55	55
Radial	R	R
Wheel Diameter	15	15
Load Index & Speed Symbol	87H	87H
Treadwear	360	360
Traction Grade	A	A
Temperature Grade	A	A

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

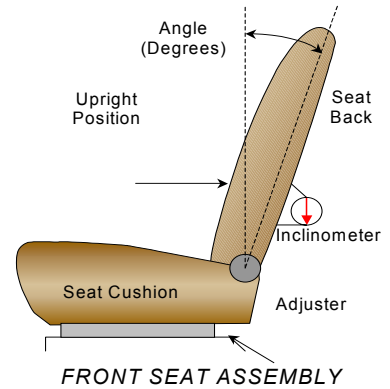
NHTSA No. M70511
 Test Date: 10/16/2006

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 = 24°

Driver seat back angle: 24.4° on seatback

Passenger seat back angle: non adjustable

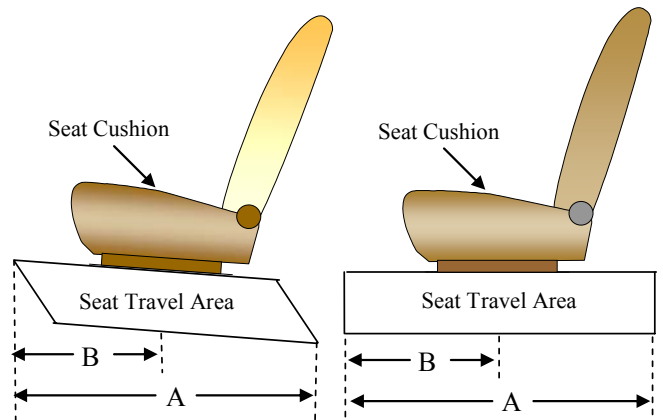


SEAT FORE/AFT POSITIONS

The seat should be positioned at the 10th detent with the forward-most detent defined as 0.

SEAT FORE/AFT POSITIONS

	Total Fore/Aft Travel	Placed in position #
Driver Seat	19 positions	10 th position
Rear Seat	non adjustable	non adjustable



DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

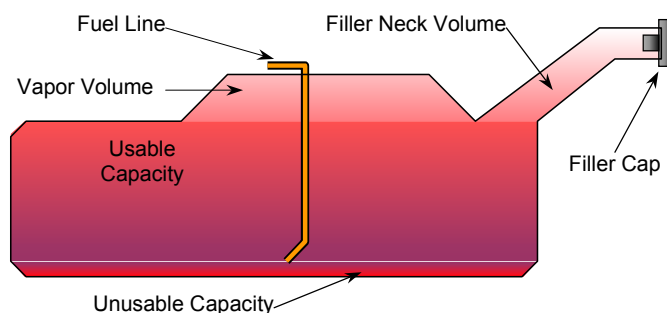
Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	54.1
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	49.8 to 50.9
Actual Amount of Solvent used	50.7
1/3 of Usable Capacity	18.0

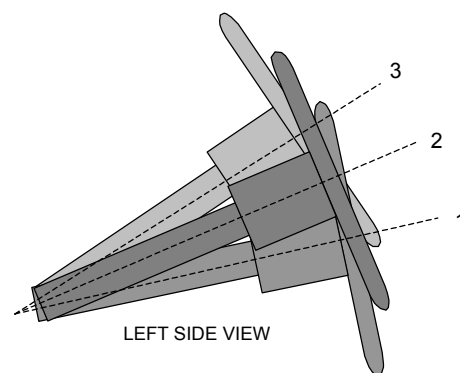
The vehicle is equipped with electric fuel pump.
 The fuel pump will operate about 3 seconds
 when ignition switch on to provide proper fuel
 rail pressure.



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		20.5
Geometric center position No. 2		22.6
Uppermost position No. 3		24.8

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

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	62.0
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	89.8

POST TEST OBSERVATIONS
MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	2 left
Vertical Offset	mm	+/-20	7 up

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID HIII / 272	SID HIII / 904
Head Contact	Side Airbag, Right Front Seat	C-Post Trim, Headrest
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	Cracked
Window Damage	Cracked
Other Notable Effects	Left Rear Passenger Door Unlatched, but remained closed.

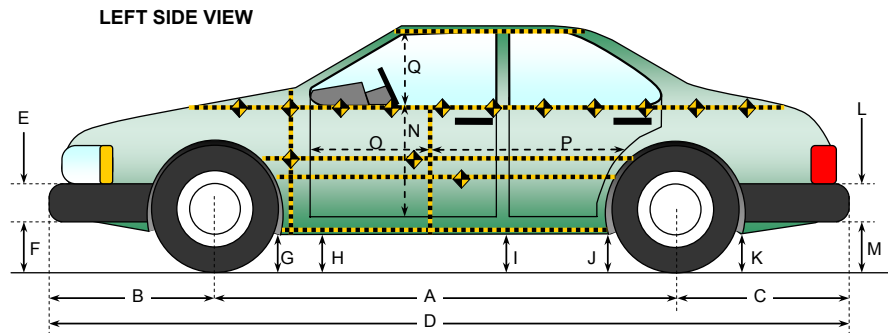
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Occupant Location 01		Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	None	
Head/Torso Airbag	Yes	Yes	None	
Curtain Airbag	None		None	
Seat Belt Pretensioner	Yes		None	
Seat Belt Load Limiter	Yes		None	

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



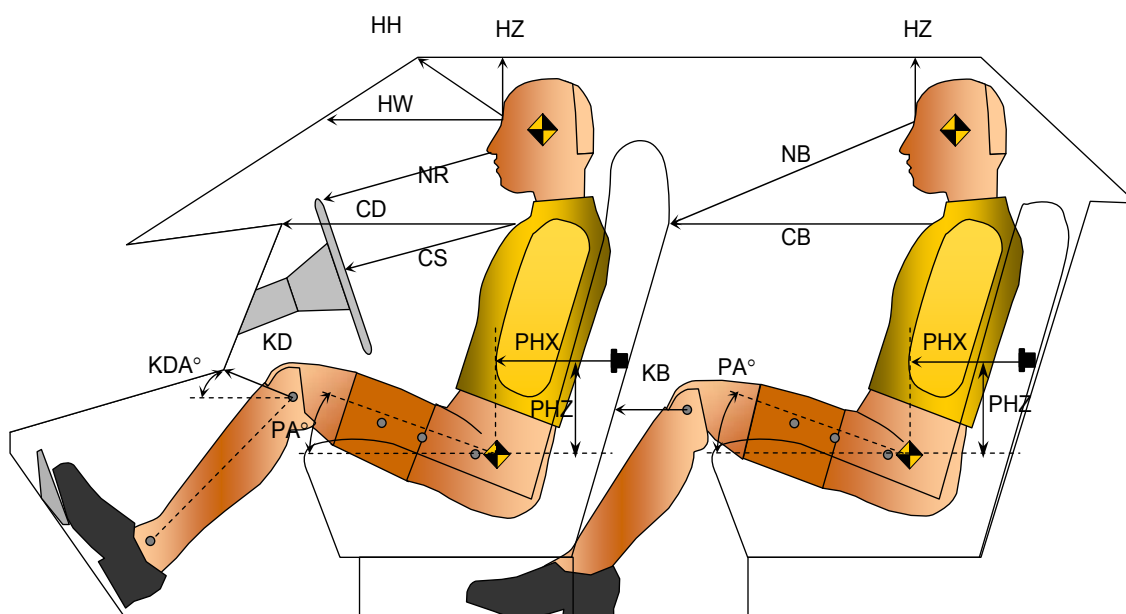
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2601	2551	-50
B	Front Axle to FSOV	928	886	-42
C	Rear Axle to RSOV	986	1016	30
D	Total Length at Centerline	4515	4453	-62
E	Front Bumper Thickness	132	132	0
F	Front Bumper Bottom to Ground	231	238	7
G	Sill Height at Front Wheel Well	172	198	26
H	Sill Height at Front Door Leading Edge	168	191	23
I	Sill Height at "B" Pillar	163	171	8
J1	Sill Height at Rear Wheel Well	153	157	4
J2	Pinch Weld Height at Rear Wheel Well	156	148	-8
K	Sill Height Aft of Rear Wheel Well	183	183	0
L	Rear Bumper Thickness	165	165	0
M	Rear Bumper Bottom to Ground	252	268	16
N	Sill Height to Window Bottom Sill	683	580	-103
O	Front Door Leading Edge to Impact CL	692	674	-18
P	Rear Door Trailing Edge to Impact CL	1282	1384	102
Q	Front Window Opening	395	381	-14
R	Right Side Length	3912	3922	10
S	Left Side Length	3912	3821	-91
T	Vehicle Width at "B" Post	1721	1364	-357

DATA SHEET NO. 7
SID/HII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

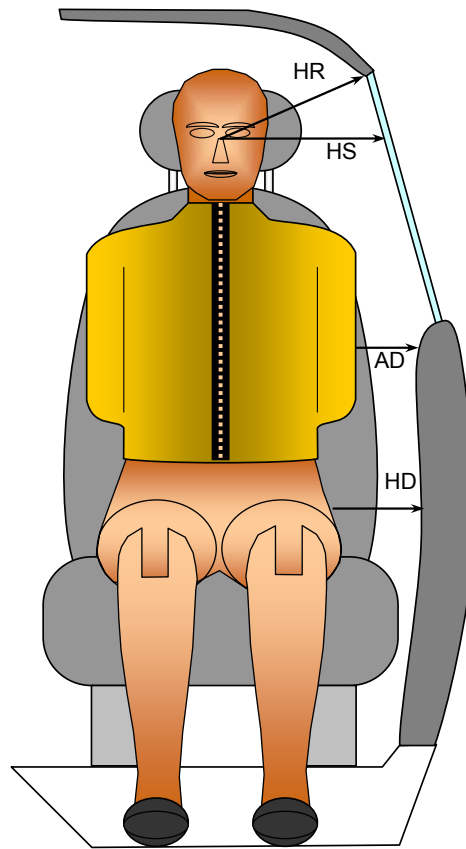


Driver Code	Pass. Code	Measurement Description	Driver S/N 272		Passenger S/N 904	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	381			
HW		Head to Windshield	624			
HZ	HZ	Head to Roof	174		140	
NR	NB	Nose to Rim/Nose to Seatback	471		592	
CD	CB	Chest to Dash or Seatback	549		516	
CS		Chest to Steering Wheel	368			
KDL	KBL	Left Knee to Dash or Seatback	202	26.8	176	26.5
KDR	KBR	Right Knee to Dash or Seatback	194	34.5	182	27.3
PA	PA	Pelvic Angle		24.3		23.2
PHX	PHX	H-Point to Striker (X-Axis)	148		206	
PHZ	PHZ	H-Point to Striker (Z-Axis)	151		297	

DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



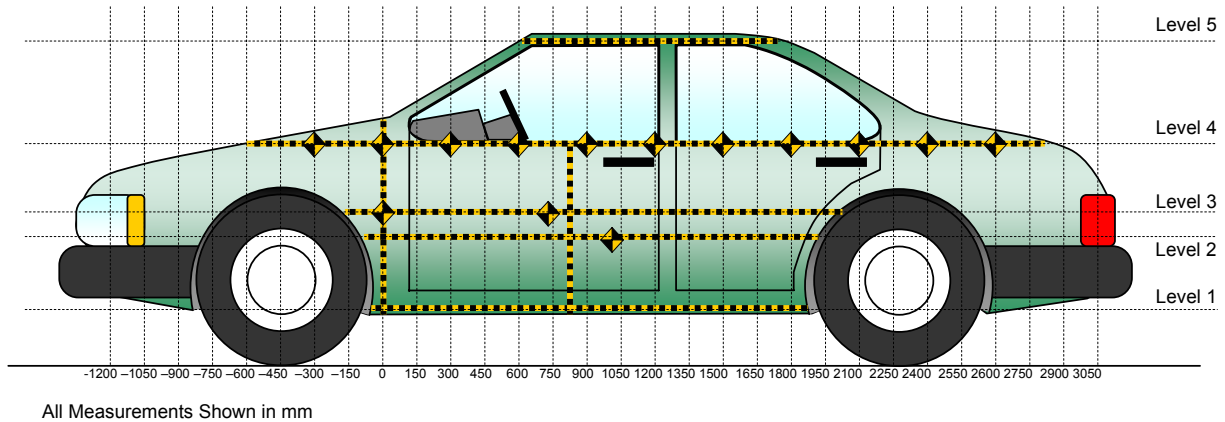
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 272	Passenger S/N 904
HR	Head to Side Header	mm	176	174
HS	Head to Side Window	mm	317	312
AD	Arm to Door	mm	86	108
HD	H-Point to Door	mm	157	165

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



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	152	1350	1389
4	Window Sill	285	1200	920
3	Mid Door	391	1650	604
2	Occupant H-Point	402	1500	527
1	Sill Top	215	1200	228
	Maximum Penetration	402		

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-750				366					374					8	
-600				350					372					22	
-450				340					374					34	
-300				327					383					56	
-150			236	319				323	368				87	49	
0		254	261	314			372	364	367			118	103	53	
150	304	262	258	308		378	498	459	378		74	236	201	70	
300	305	260	254	307		441	543	509	434		136	283	255	127	
450	301	257	251	306		450	574	540	502		149	317	289	196	
600	298	255	248	307		469	585	560	536		171	330	312	229	
750	295	253	247	307	525	483	602	559	548	583	188	349	312	241	58
900	295	252	245	307	523	502	620	569	569	606	207	368	324	262	83
1050	294	250	245	307	532	508	635	578	570	638	214	385	333	263	106
1200	292	251	245	308	540	507	641	604	593	675	215	390	359	285	135
1350	290	251	246	314	545	497	653	604	581	697	207	402	358	267	152
1500	291	252	247	320	545	454	654	611	586	661	163	402	364	266	116
1650	290	253	250	325	547	406	644	641	581	623	116	391	391	256	76
1800	287	254	253	331	548	355	639	621	527	604	68	385	368	196	64
1950		246	256	338	550		514	499	419	596		268	243	81	46
2100			244	345				337	325				92	-20	
2250			240	354				296	401				56	47	
2400			255	365				286	402				31	37	
2550			278	377				297	406				19	29	
2700			289	391				304	410				15	19	
2850			307	412				318	420				11	8	

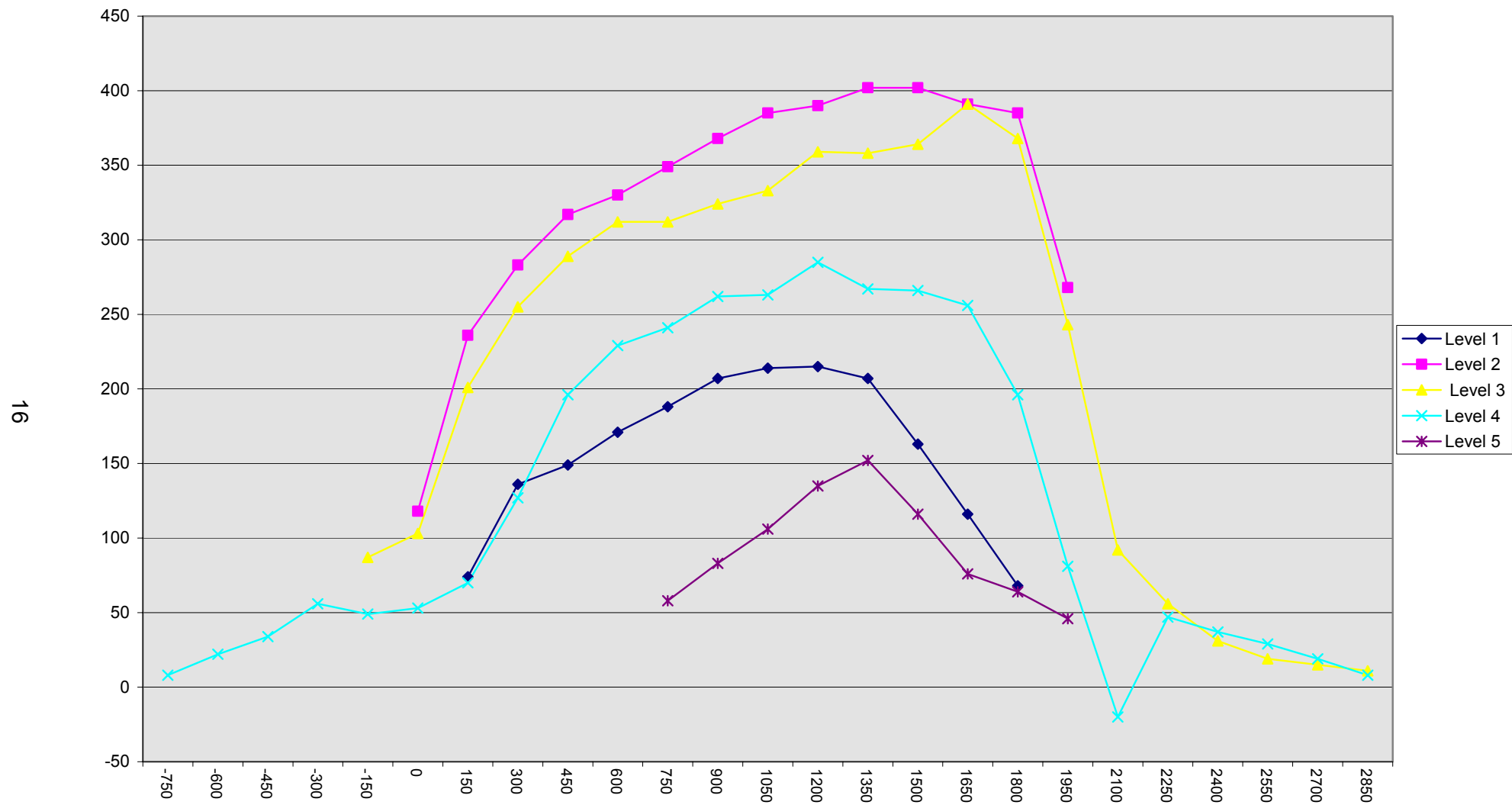
Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

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

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
Test Program: NCAP Side Impact

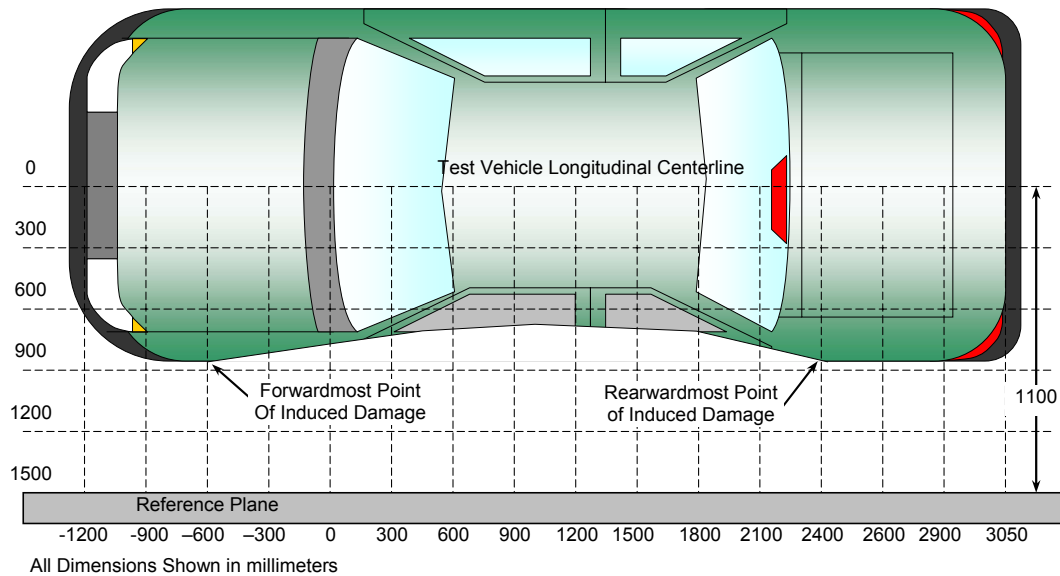
NHTSA No. M70511
Test Date: 10/16/2006



DATA SHEET NO. 11 **VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	2850	4	412	420	8
2	2148	4	348	403	55
3	1336	2	251	653	402
4	631	2	254	616	362
5	-52	2	254	354	100
6	-750	3	307	318	11

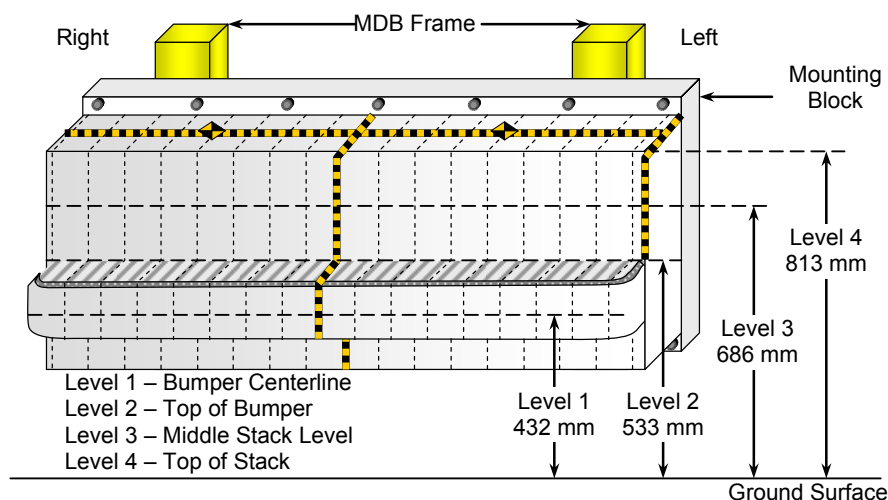
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



DEFORMABLE BARRIER STATIC CRUSH

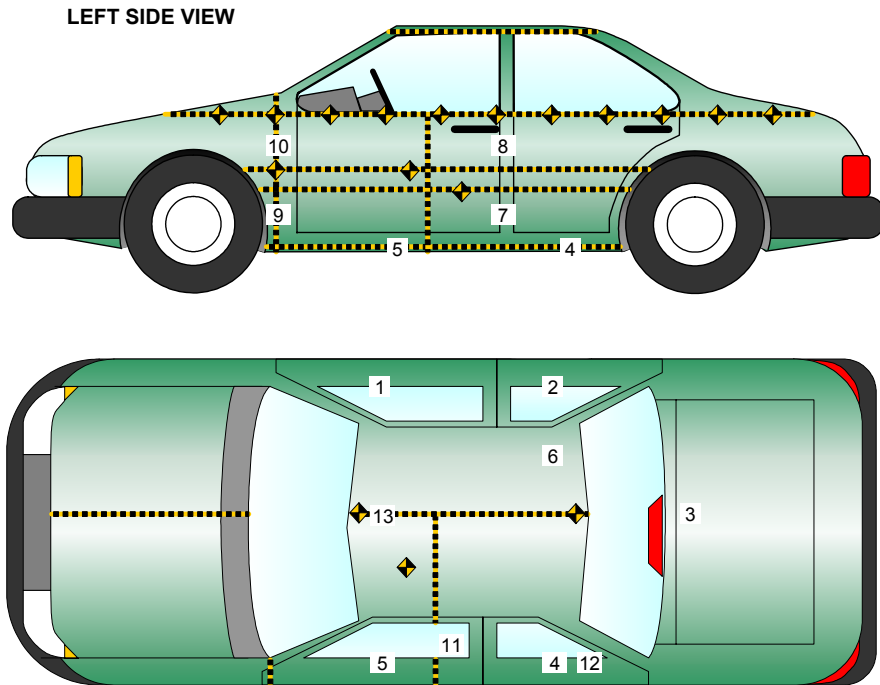
Stack Level	Distance Right of Center								C _L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	61	56	52	50	52	59	58	58	61	66	71	76	81	89	110	150	186
2	31	30	29	29	29	33	34	36	41	46	53	57	62	64	81	122	130
3	-2	-8	-3	-1	1	4	14	9	8	7	10	14	20	34	56	113	160
4	16	-10	-10	1	0	10	23	13	11	11	15	20	23	53	98	159	214

All Dimensions in mm

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



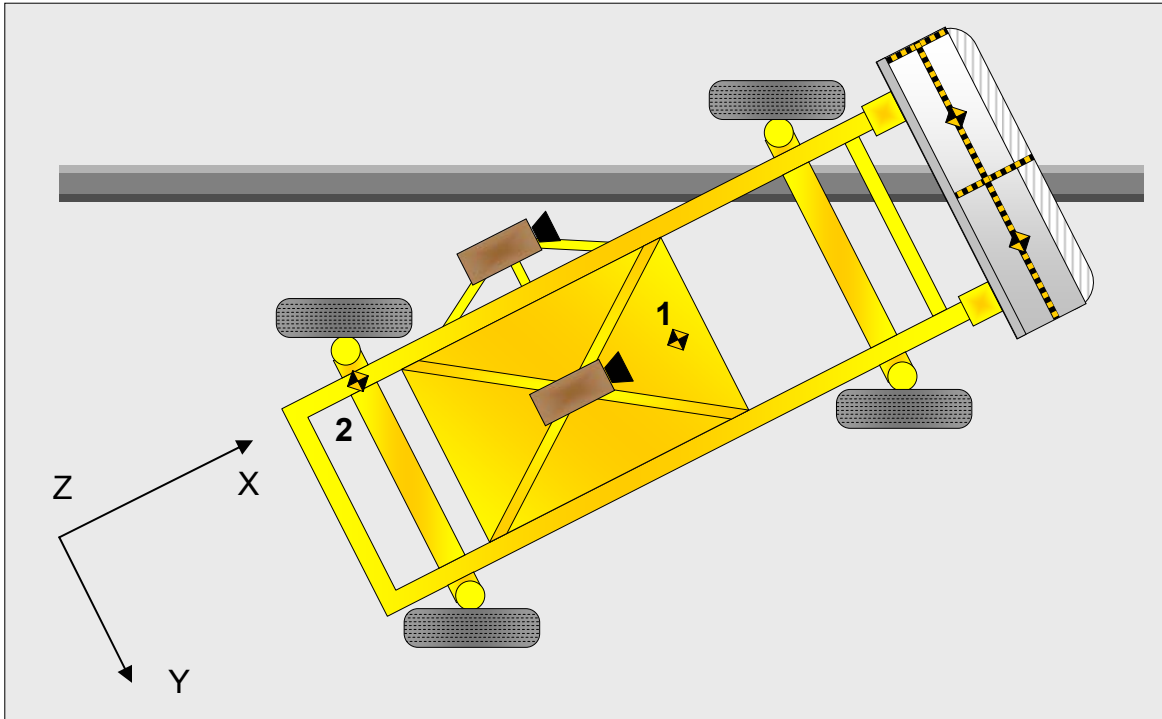
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2588	685	217
2	Right Sill at Rear Seat	1717	665	242
3	Rear Floorpan Above Axle	1002	0	323
4	Left Sill at Rear Door	1704	-685	205
5	Left Sill at Front Door	2546	-665	202
6	Rear Occupant Compartment	1791	370	310
7	Left Lower B-Post	2173	-708	600
8	Left Middle B-Post	2104	-710	794
9	Left Lower A-Post	3056	-775	530
10	Left Middle A-Post	3048	-772	635
11	Front Seat Track	2124	-537	212
12	Rear Seat Track or Structure			
13	Vehicle CG	2646	0	845

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 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



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 Suzuki Forenza 4-Dr.
Test Program: NCAP Side Impact

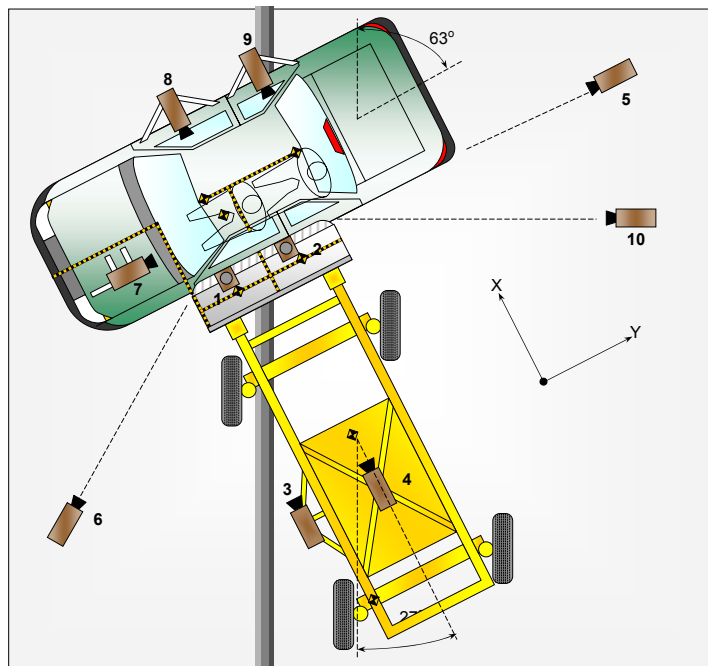
NHTSA No. M70511
Test Date: 10/16/2006

	Elements	Pre-Test (mm)
1	Total Length	4515
2	Total Width	1721
3	Bumper Top Height	538
4	Bumper Bottom Height	409
5	Longitudinal Member Top Height	515
6	Distance between Longitudinal Members	920
7	Longitudinal Member Width	50
8	Engine Top Height	810
9	Engine Bottom Height	193
10	Engine and gearbox width	850
11	Front bumper-engine distance	582
12	Front shock absorber fixing height	848
13	Bonnet leading edge height	710
14	Front shock absorber fixing width	1105
15	Front bumper – front axle distance	928
16	Front axle – a pillar distance	503
17	A-pillar – B-pillar distance	1012
18	B-Pillar – rear axle distance	1081
19	B-pillar – C-pillar distance	970
20	Roof sill bottom height	1375
21	Roof sill top height	1420
22	Floor sill bottom height	210
23	Floor sill top height	308

DATA SHEET NO. 16
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Close-up	835	150	4840	50	1000
2	Overhead Overall	-1080	1155	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	-1845	6435	1155	24	1000
6	Left Side, Ground Level, Overall	2645	-3910	1185	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 Suzuki Forenza 4-Dr.
 Test Program: NCAP Side Impact

NHTSA No. M70511
 Test Date: 10/16/2006

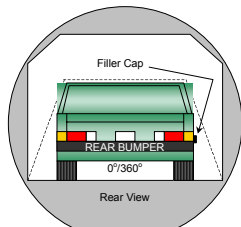
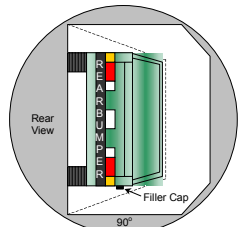
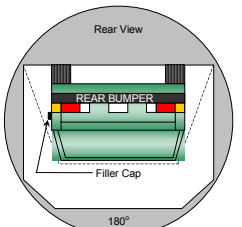
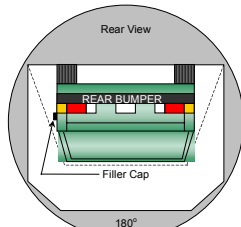
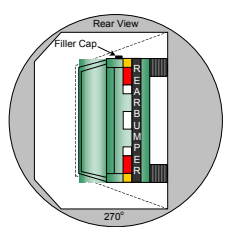
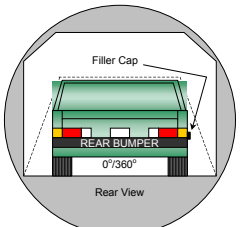
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 10:58 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°	122	300	First 5	0
90° to 180°	116	300	First 5	0
180° to 270°	135	300	First 5	0
270° to 360°	115	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



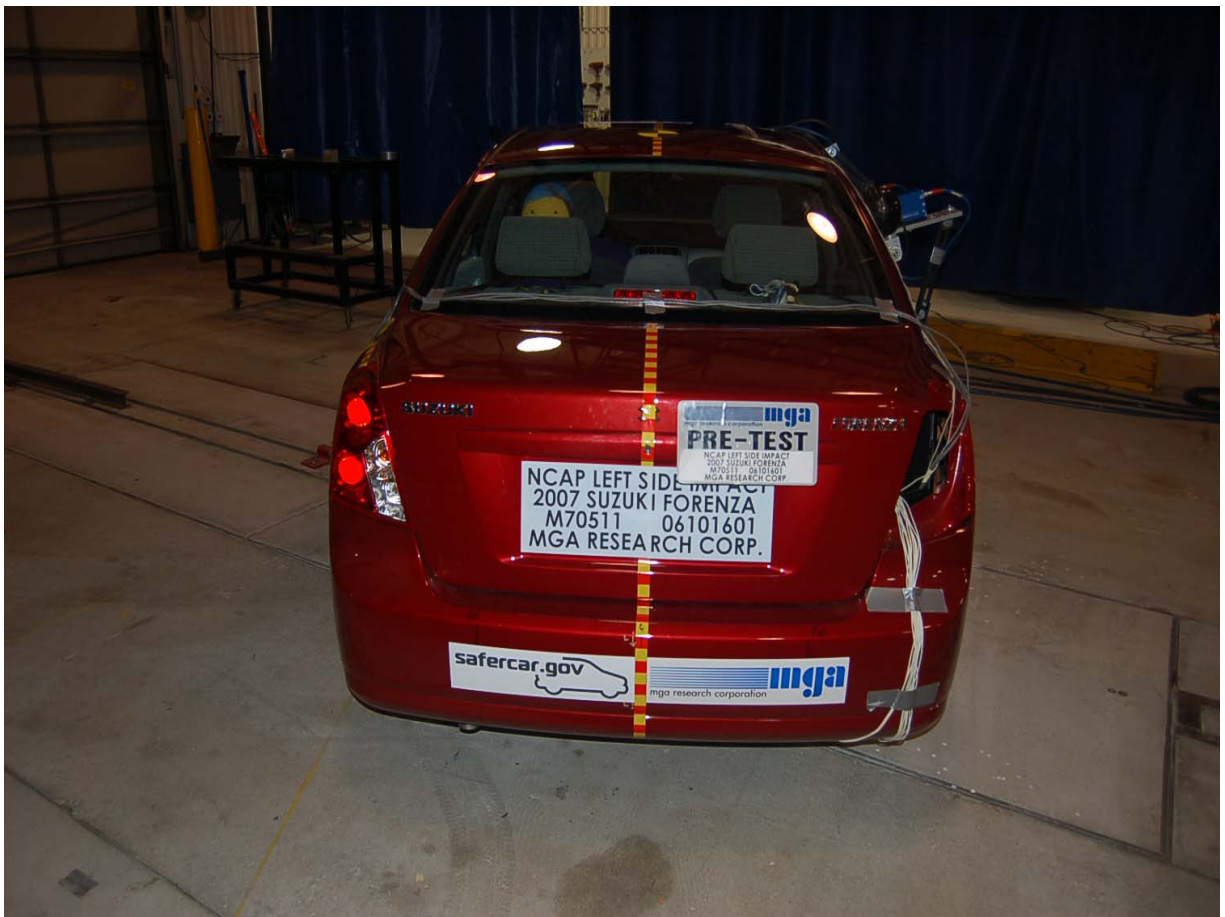
Pre-Test Left Side View



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



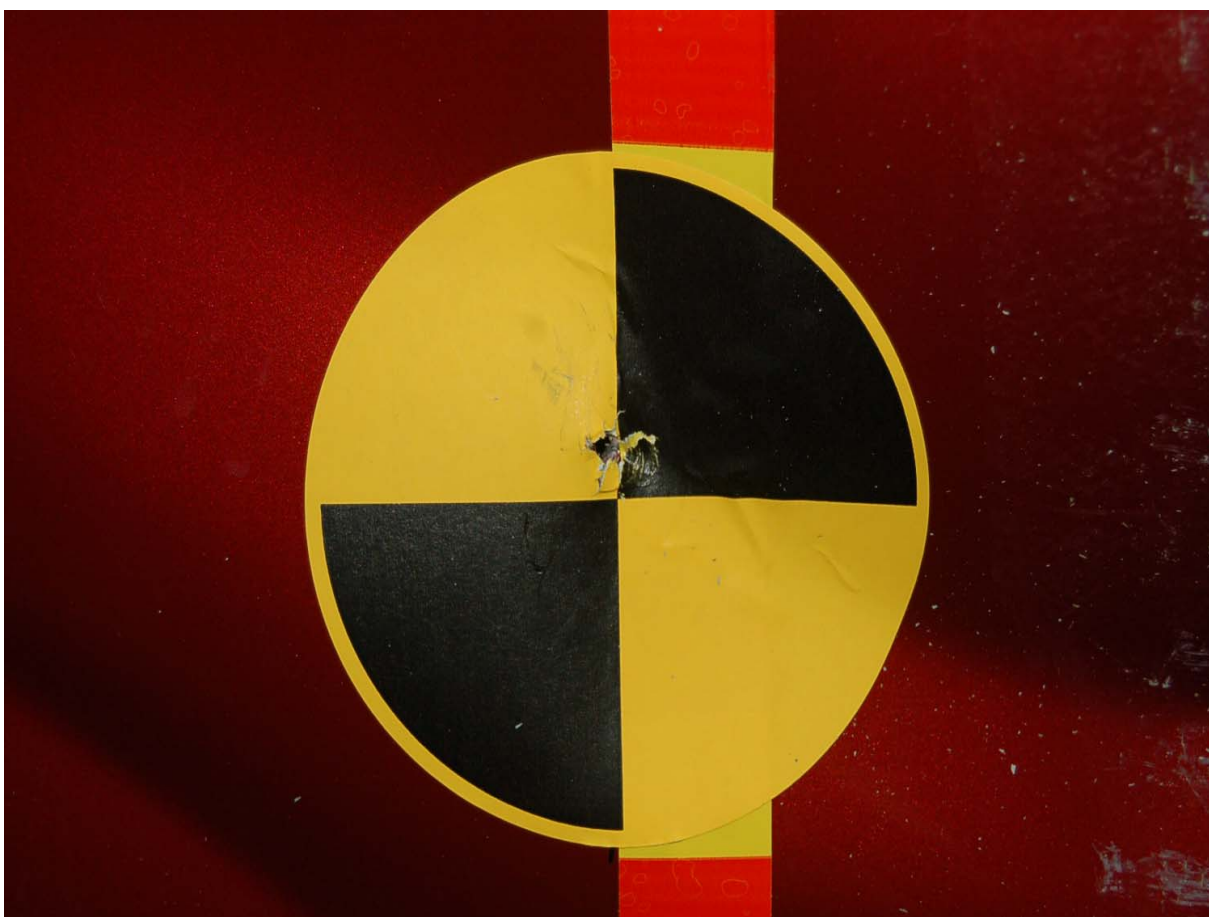
Pre-Test Overhead Close-up View



Post-Test Overhead Close-up View



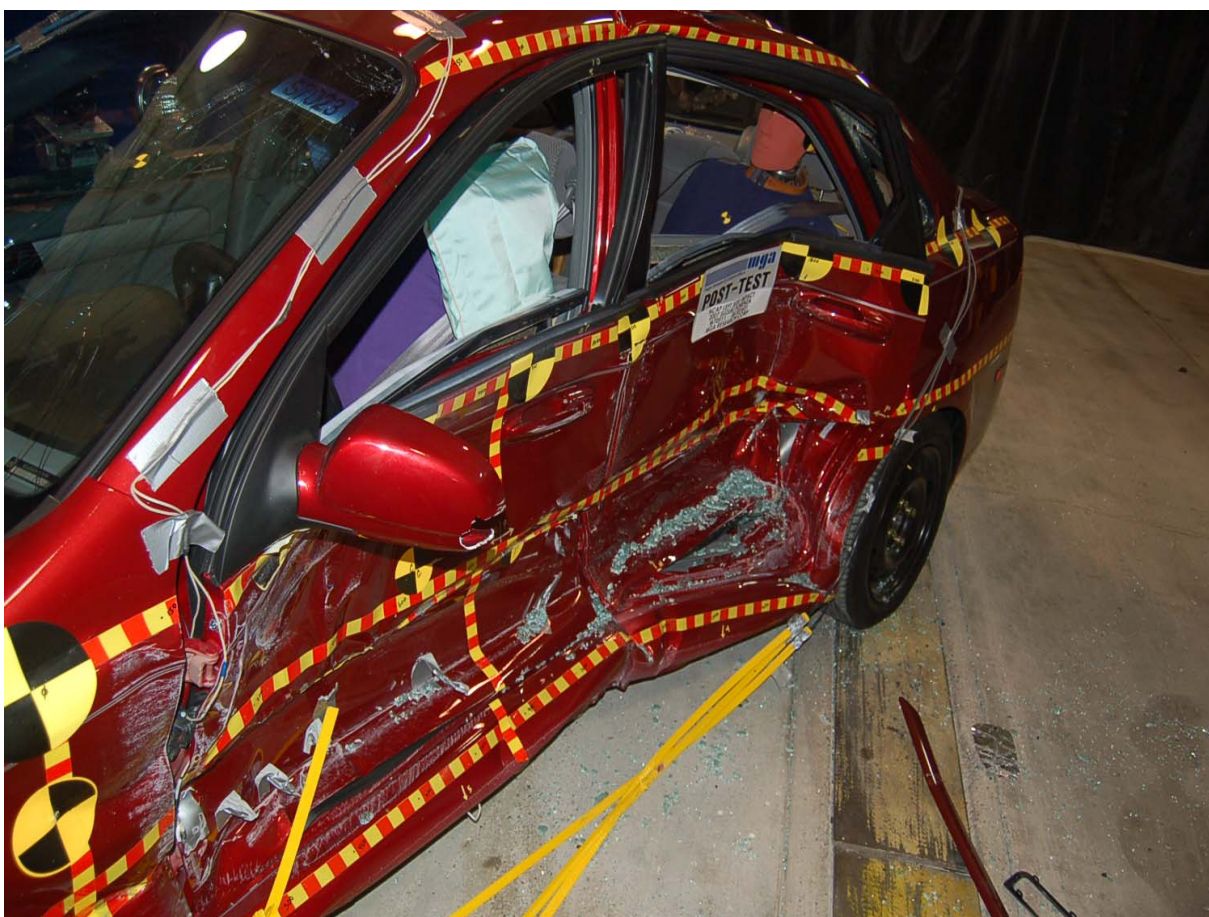
Pre-Test Left Impact Point



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



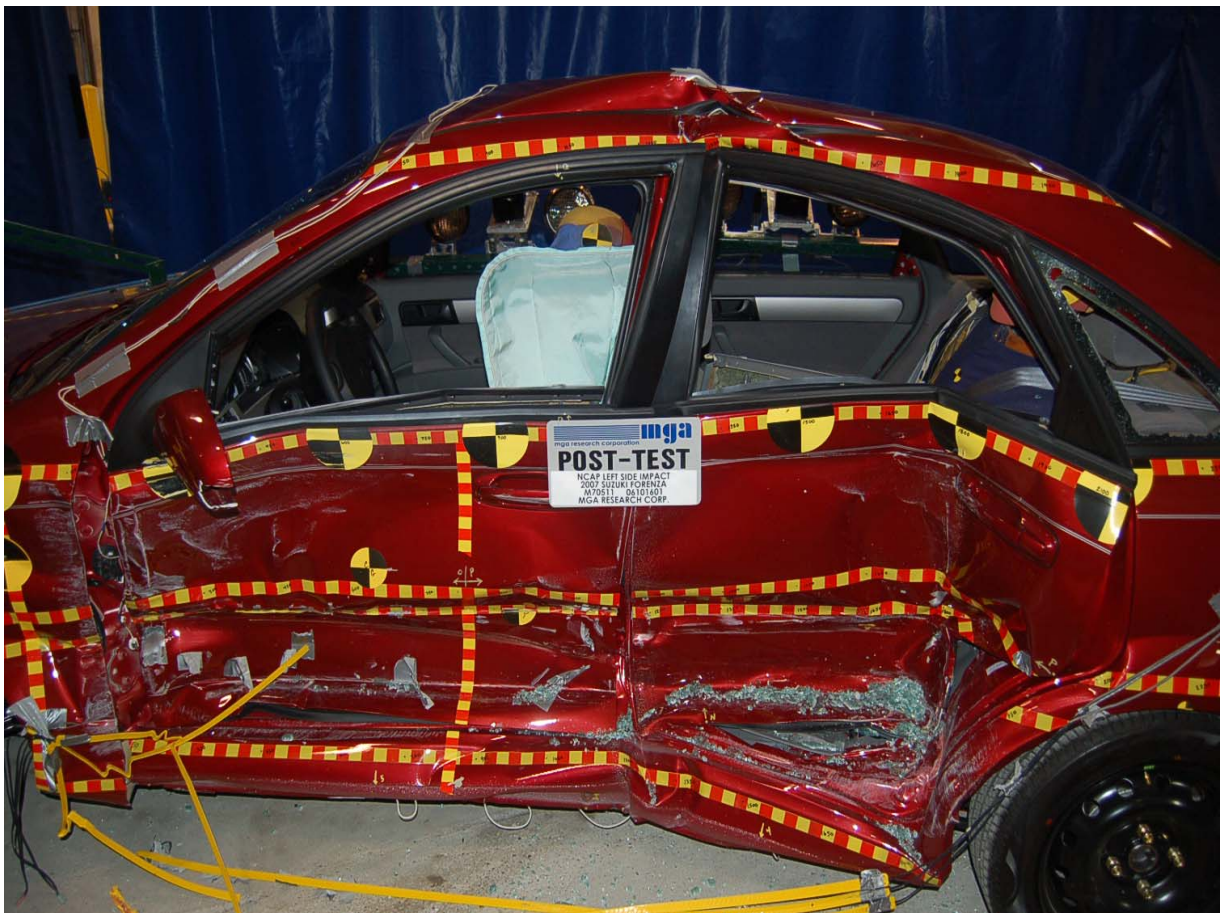
Pre-Test Rear $\frac{3}{4}$ View of Left Side Door



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)



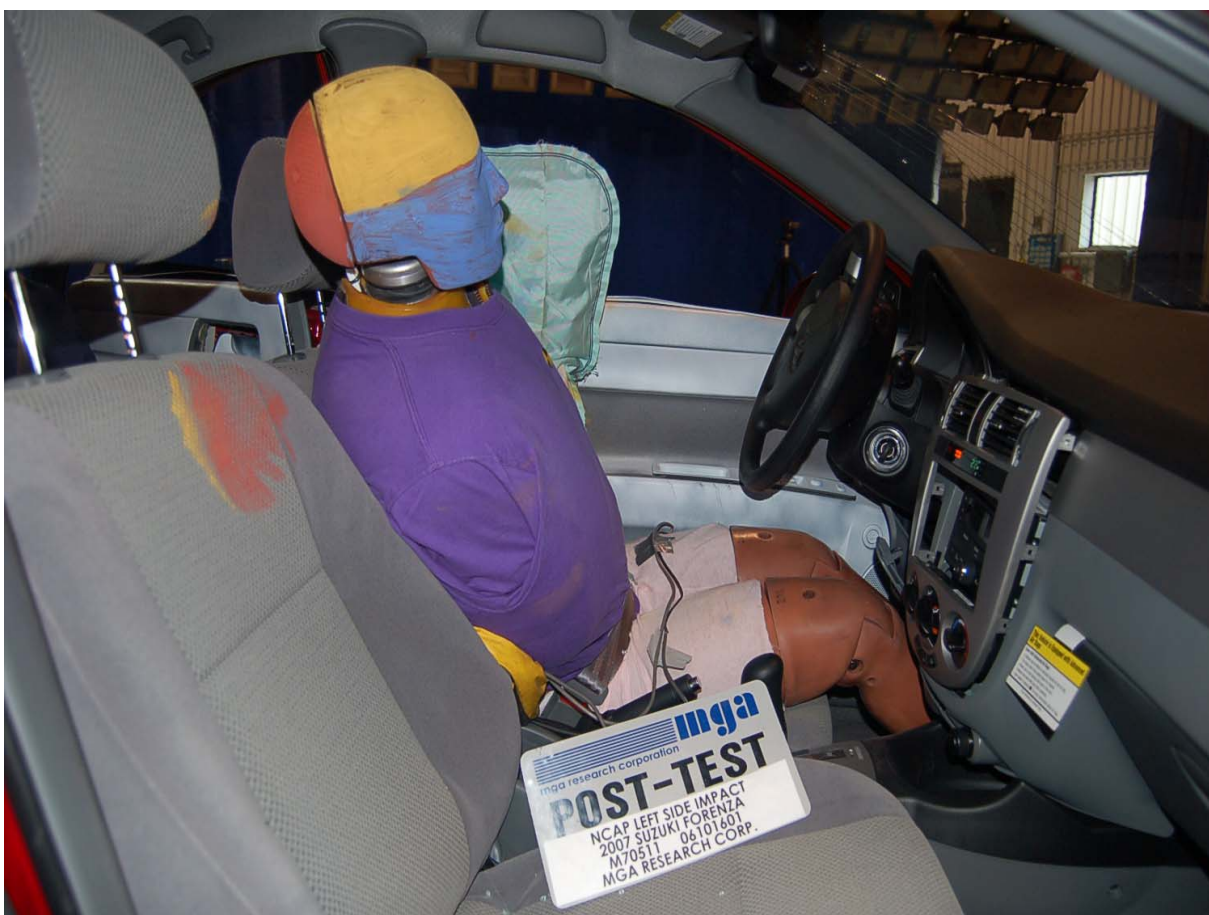
Post-Test Driver Dummy (Through Window)



Pre-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)



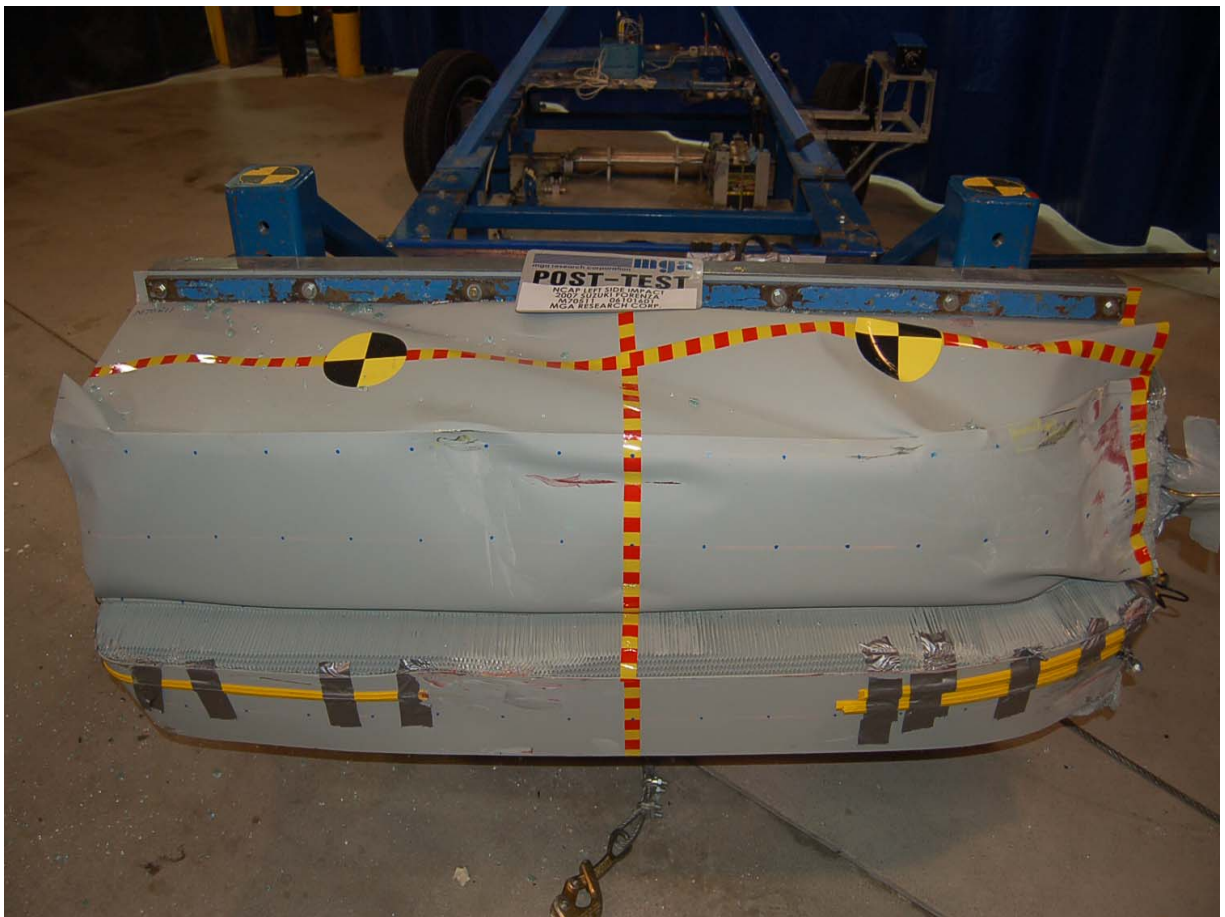
Pre-Test Passenger Dummy Clearance From Door



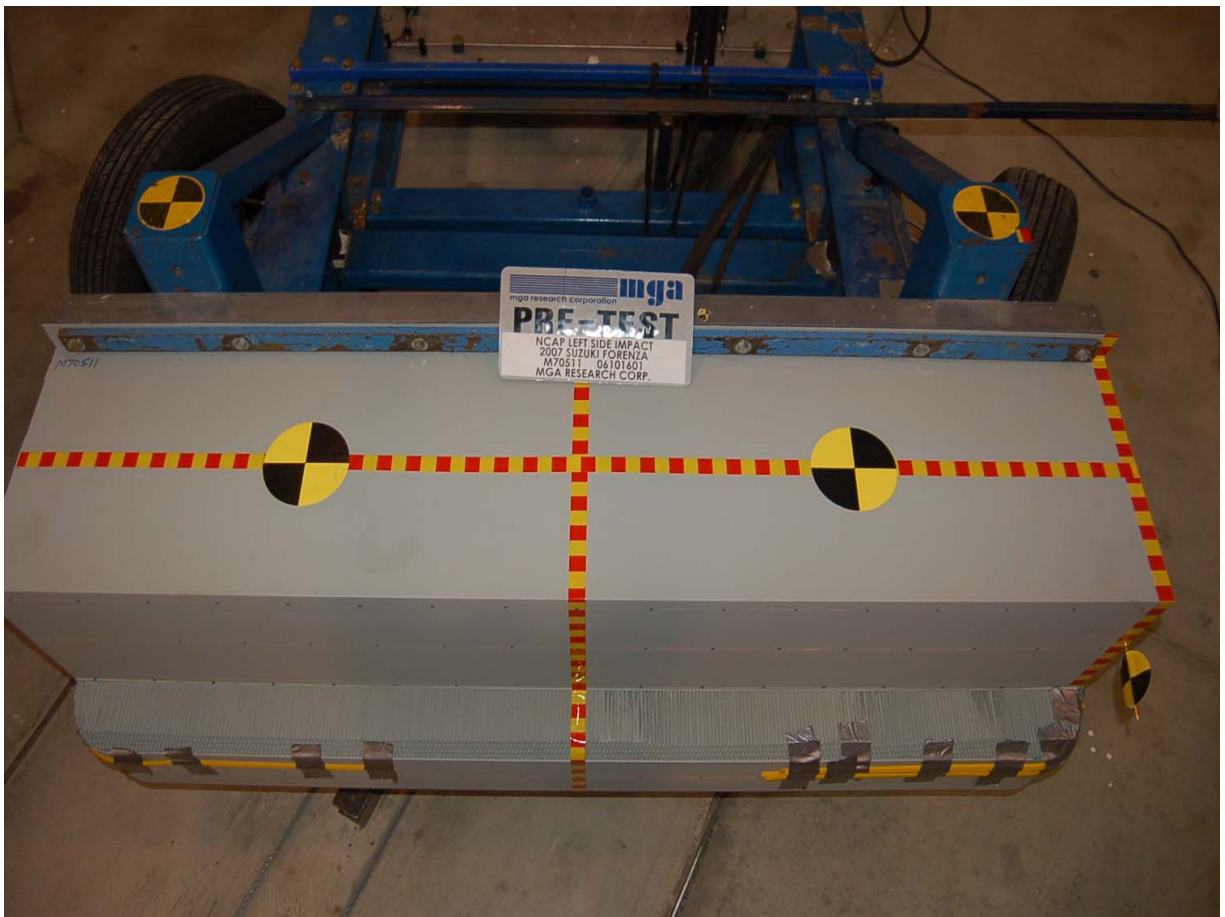
Pre-Test Passenger Dummy Right Side View



Post-Test Passenger Dummy Right Side View



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



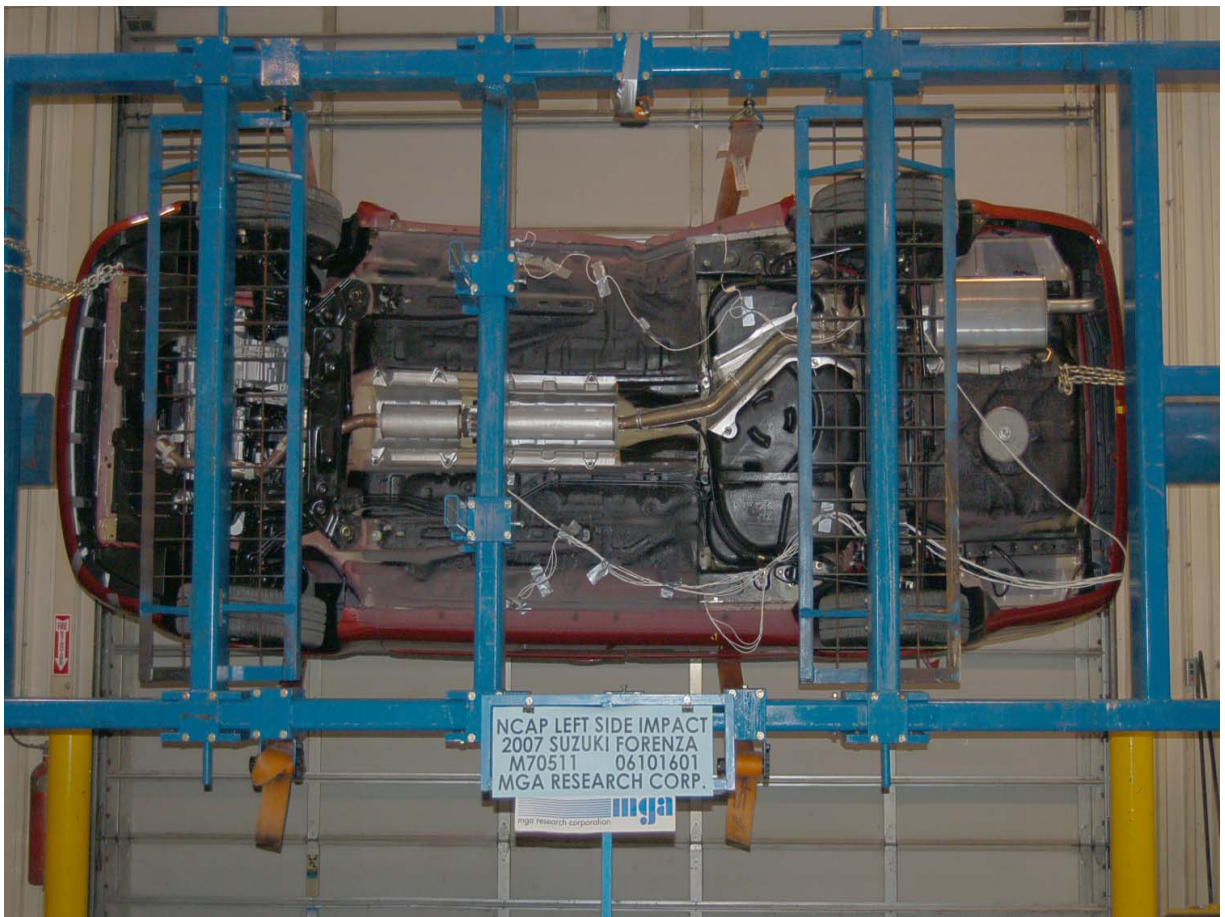
Post-Test Right Side View of Deformable Barrier



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)



100,00 ms • 16 Oct 2006 10:58 • T0: 21 • 1,000 fps • Frame: 121

Vehicle Impact



Post-Test Driver Dummy Head Contact (RF seat)



Post-Test Driver Dummy Head Contact



Post-Test Driver Dummy Upper Torso Contact



Post-Test Driver Dummy Lower Torso Contact



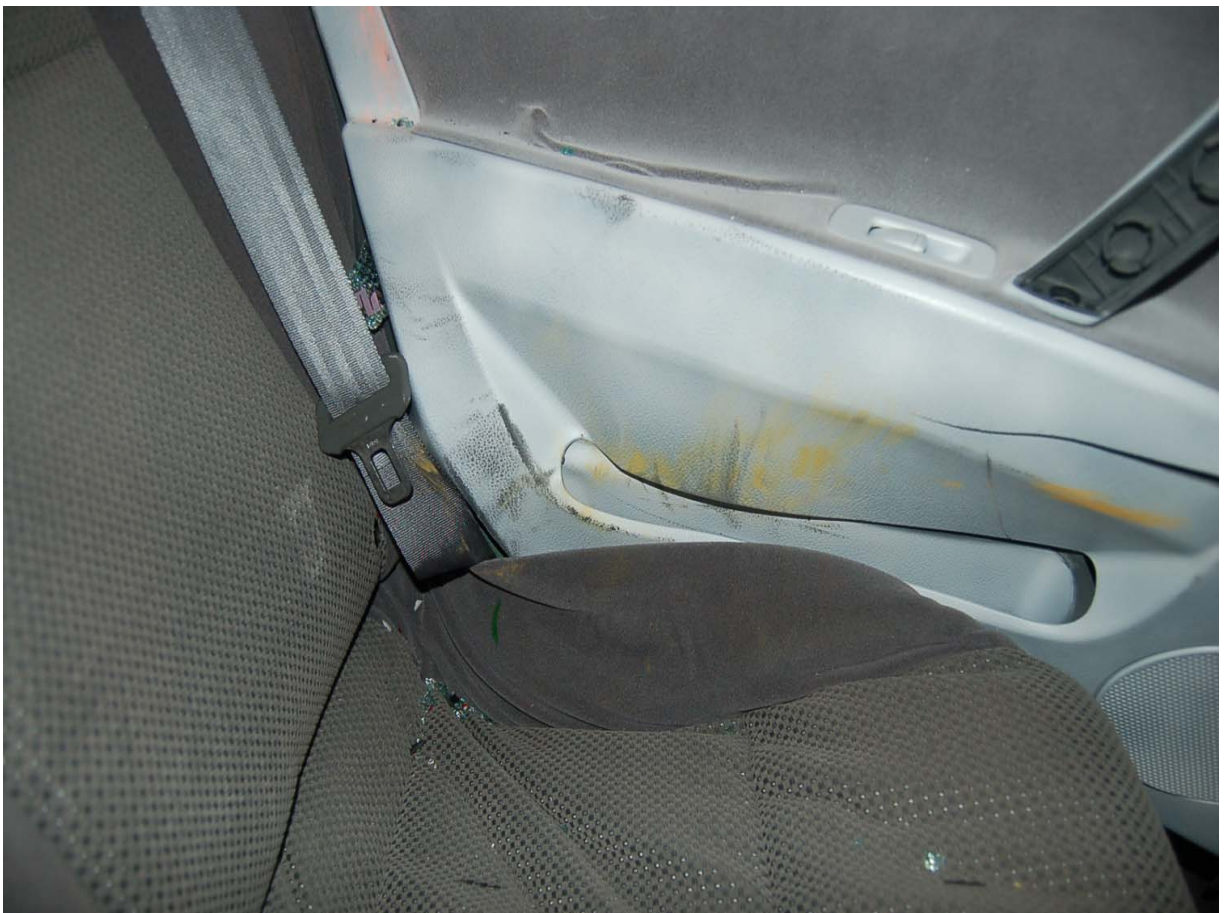
Post-Test Driver Dummy Contact



Post-Test Passenger Dummy Head Contact



Post-Test Passenger Dummy Upper Torso Contact



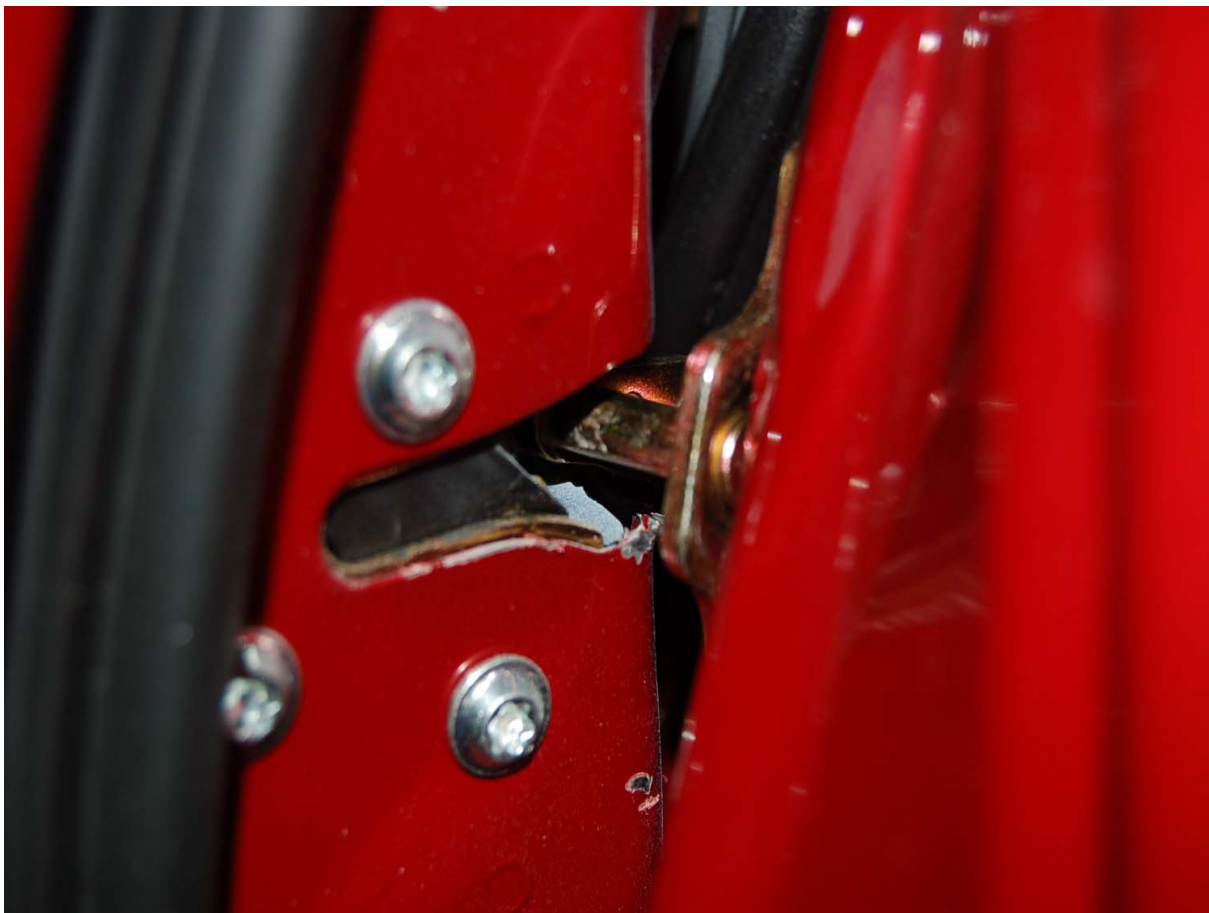
Post-Test Passenger Dummy Lower Torso Contact



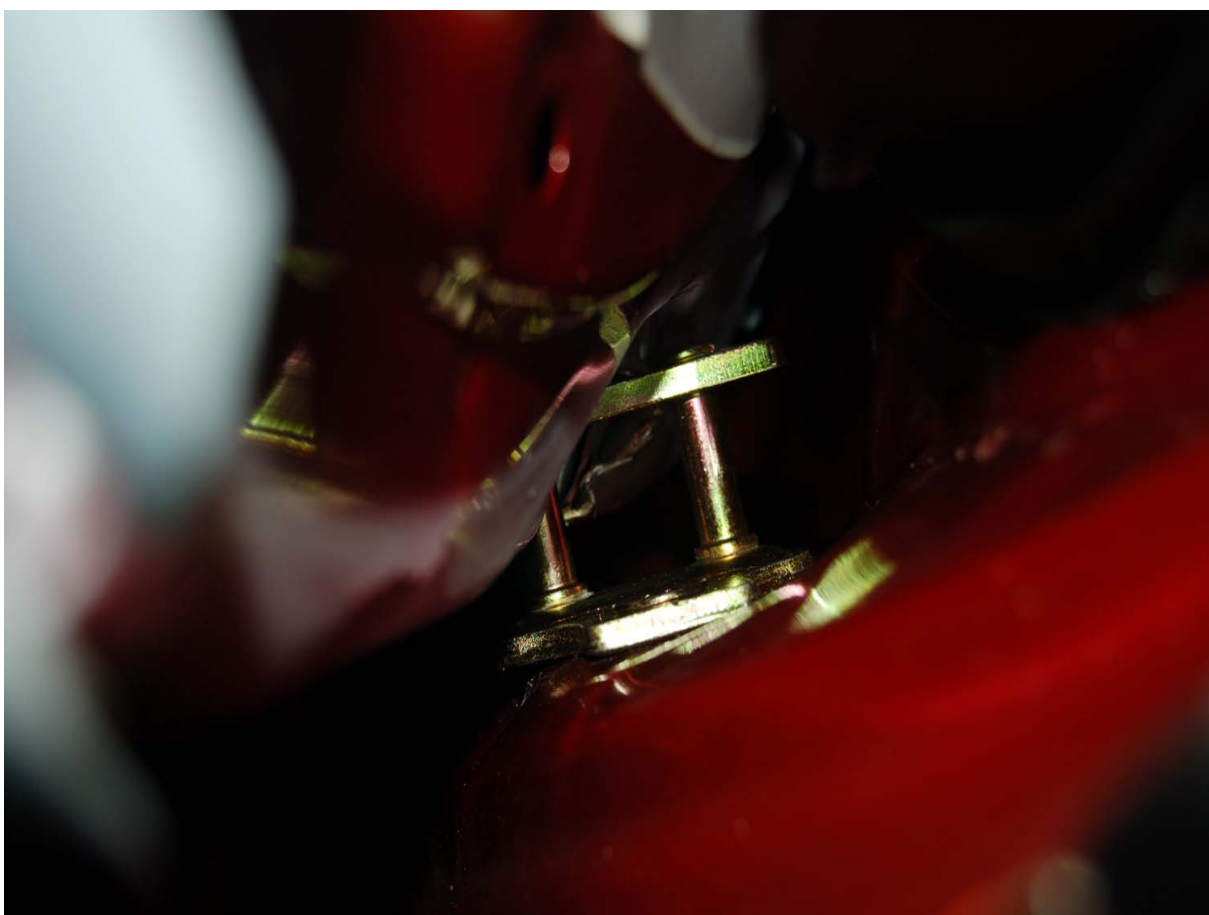
Post-Test Passenger Dummy Contact



Post-Test Left Rear Door Latch View #1



Post-Test Left Rear Door Latch View #2



Post-Test Left Rear Door Latch View #3

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

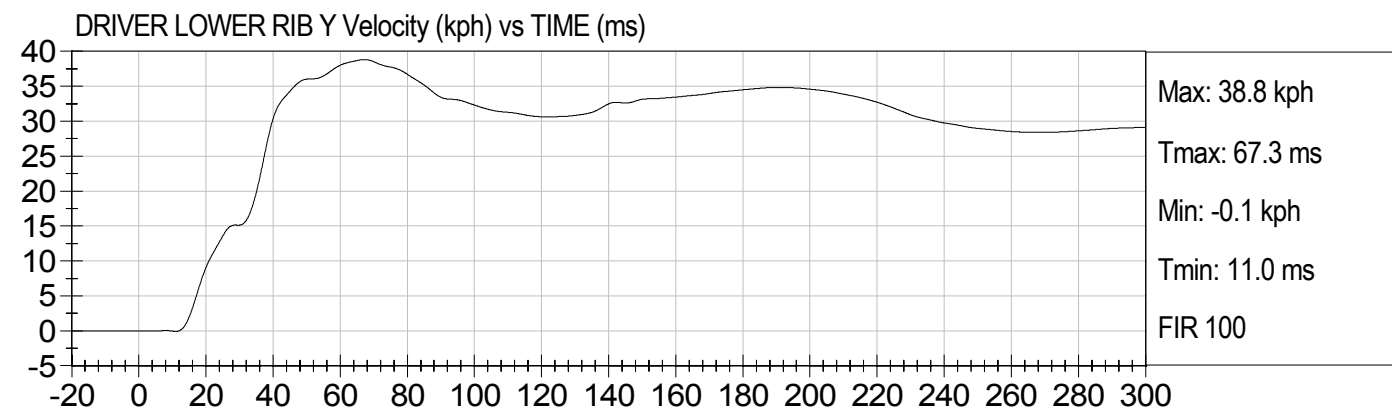
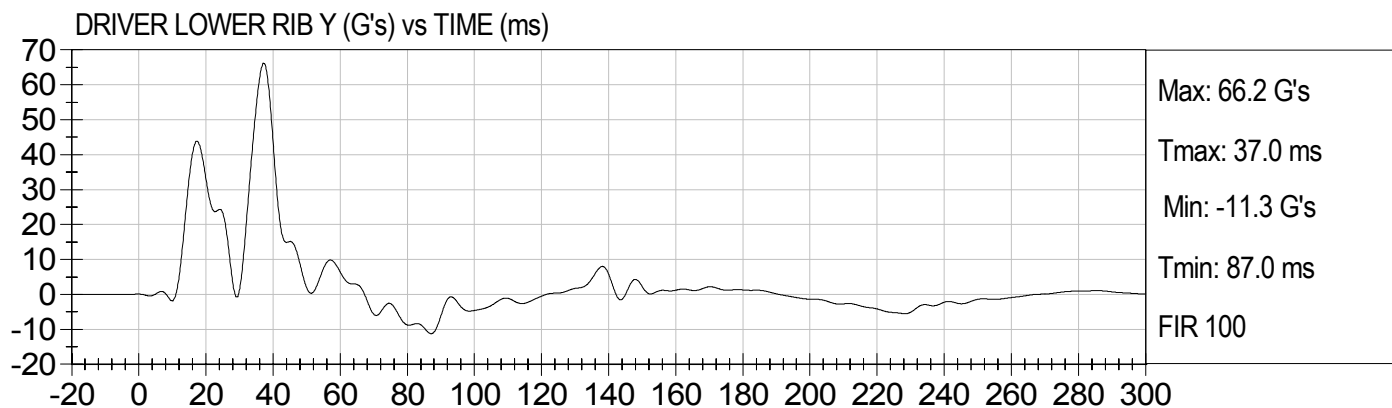
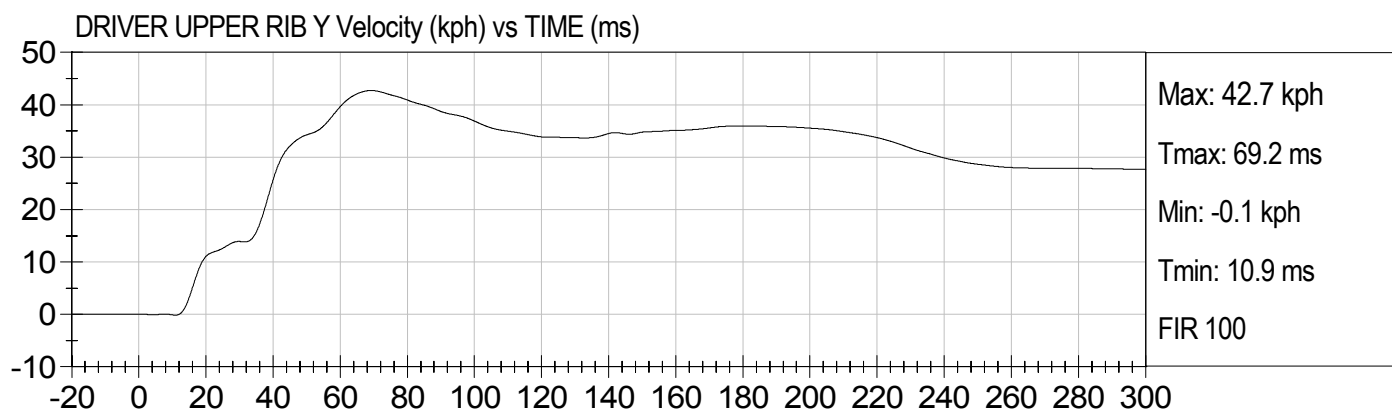
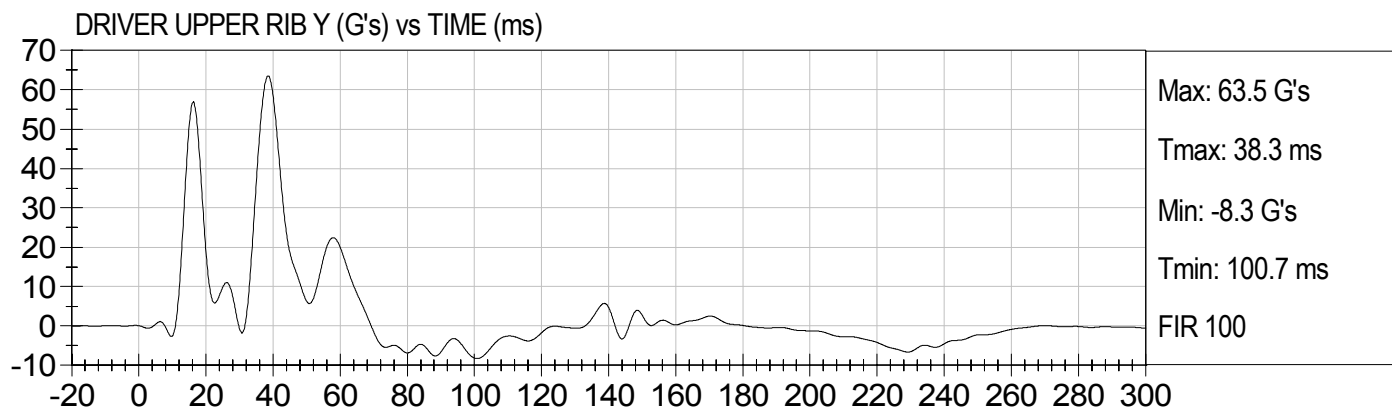
Driver Upper Neck Force Y

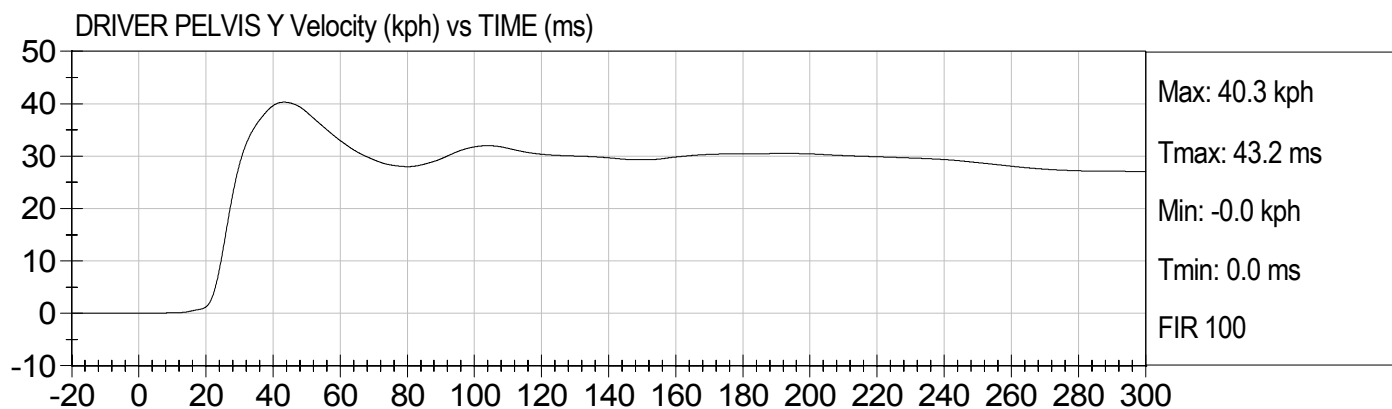
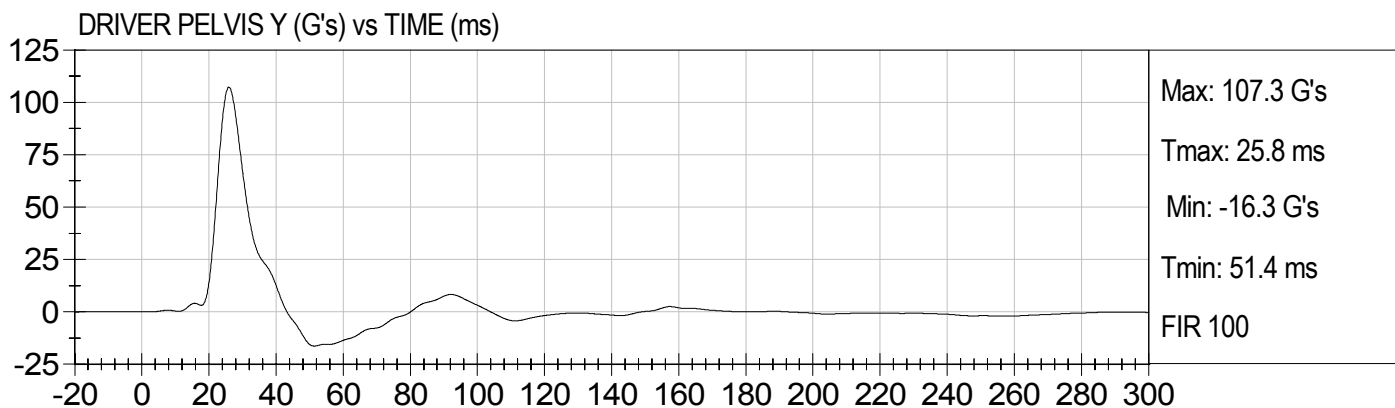
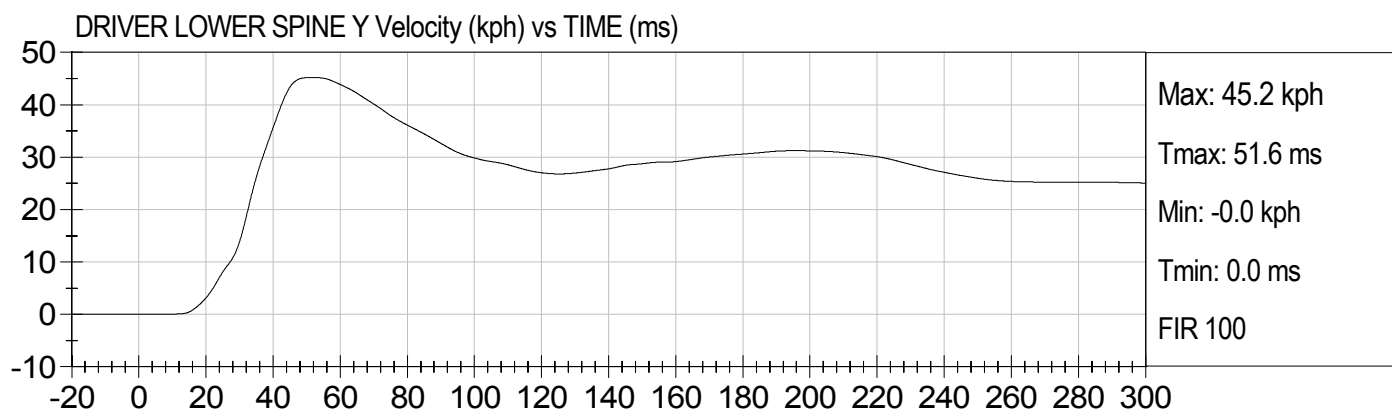
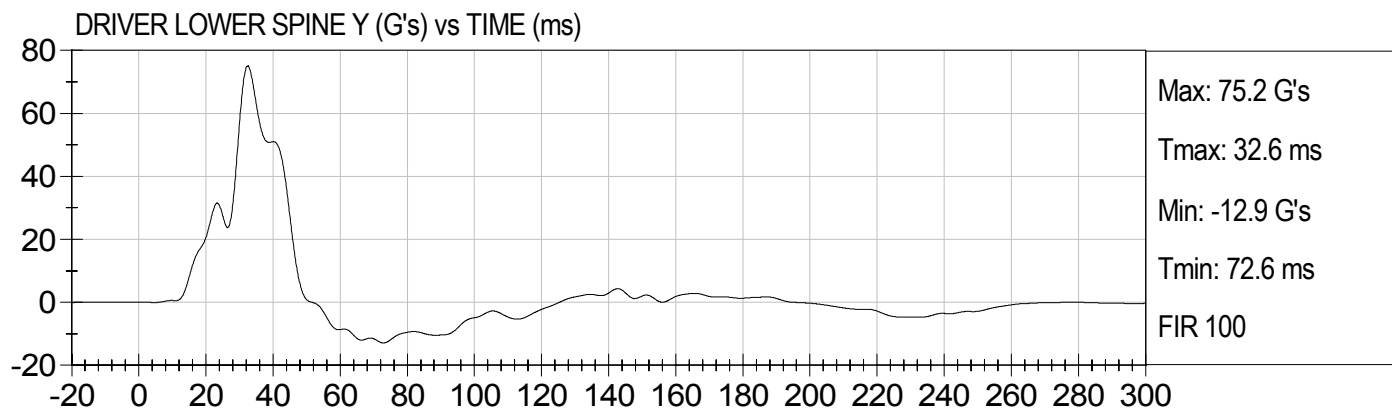
Driver Upper Neck Force Z

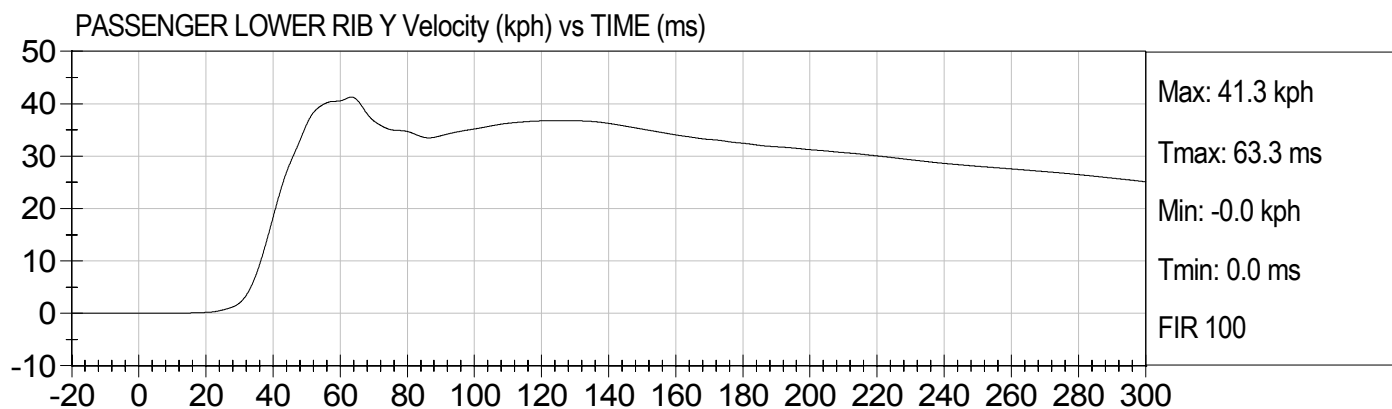
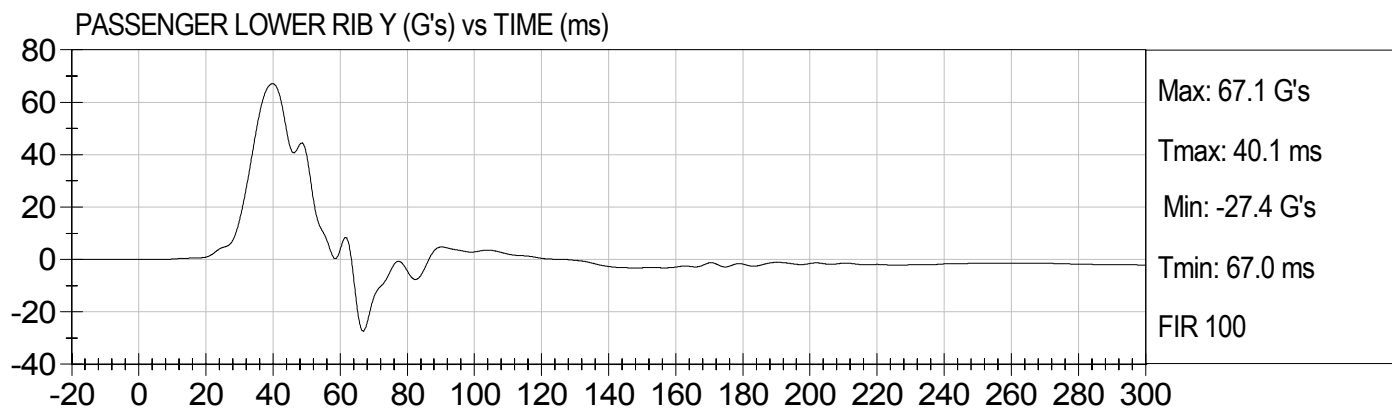
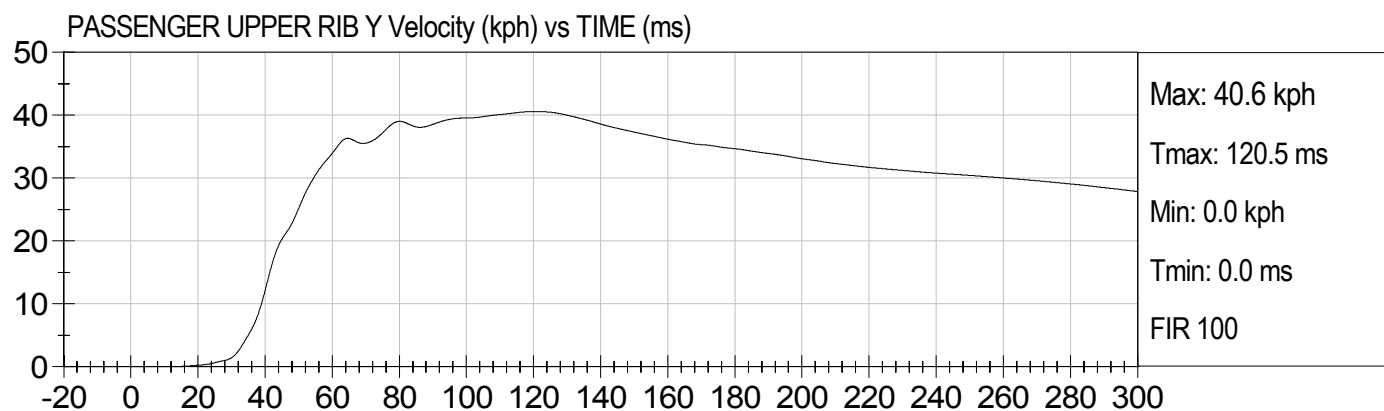
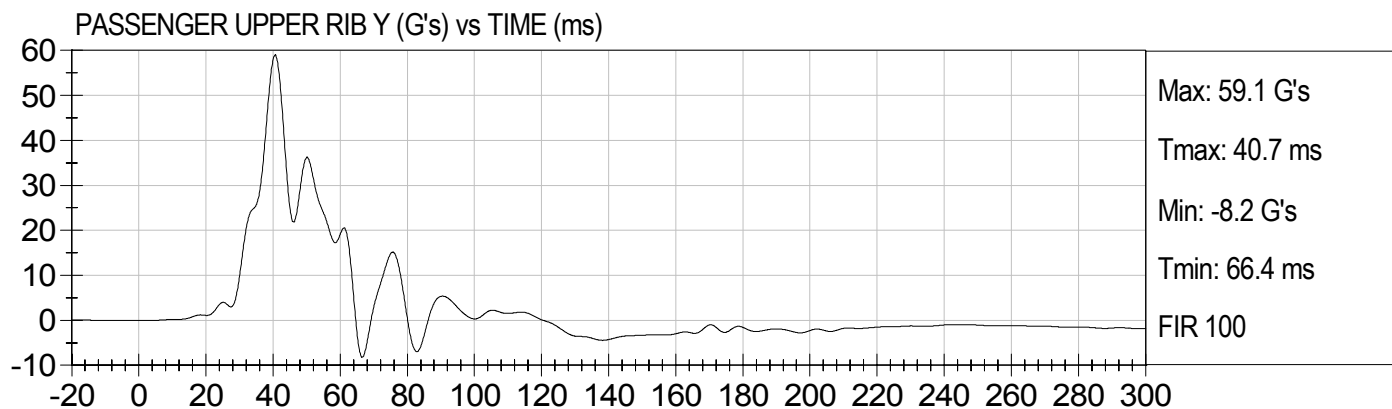
Driver Upper Neck Moment X

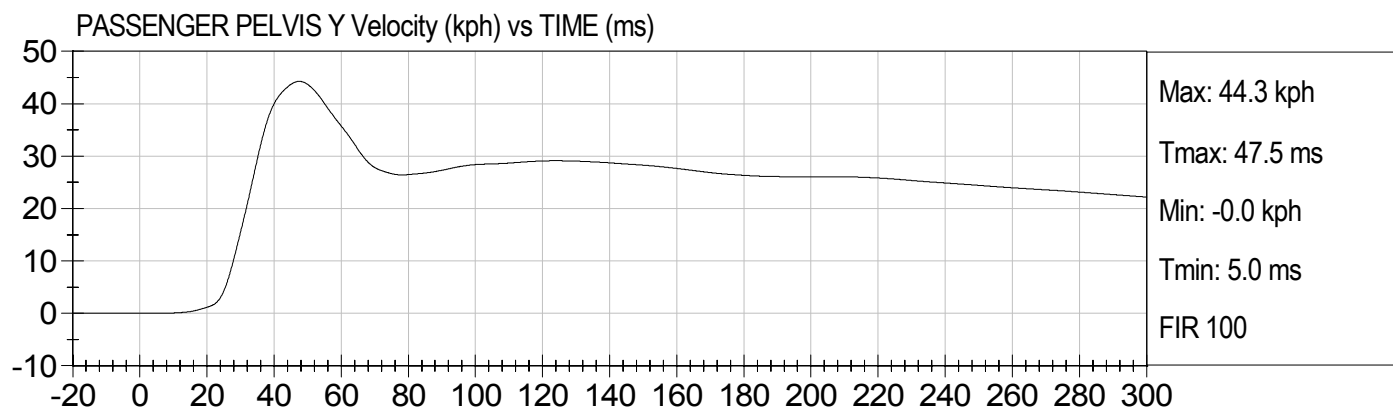
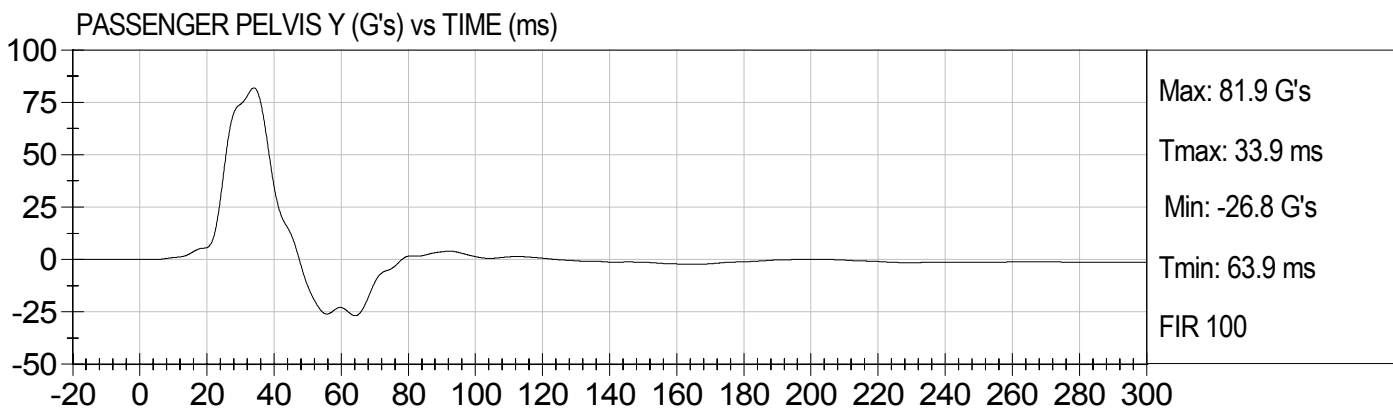
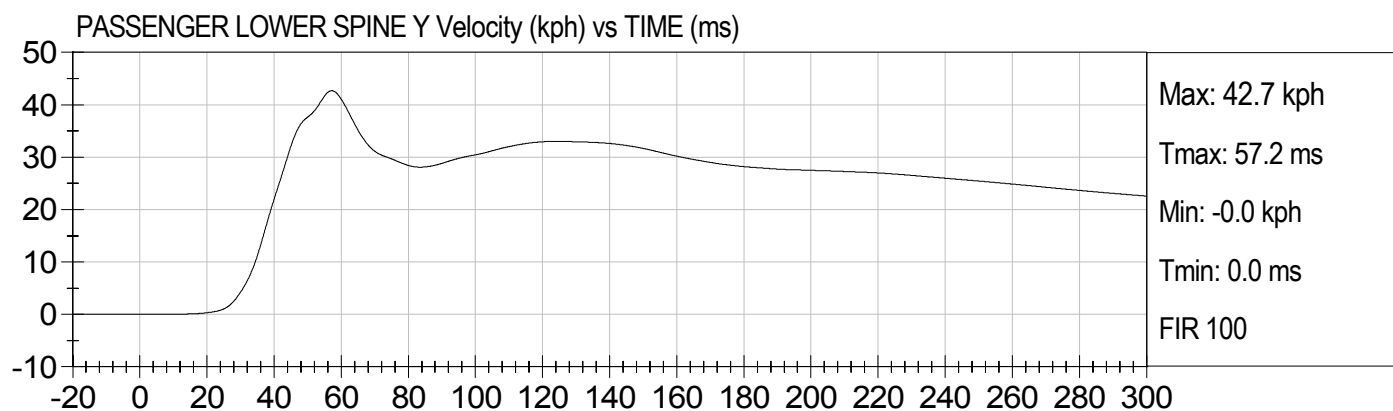
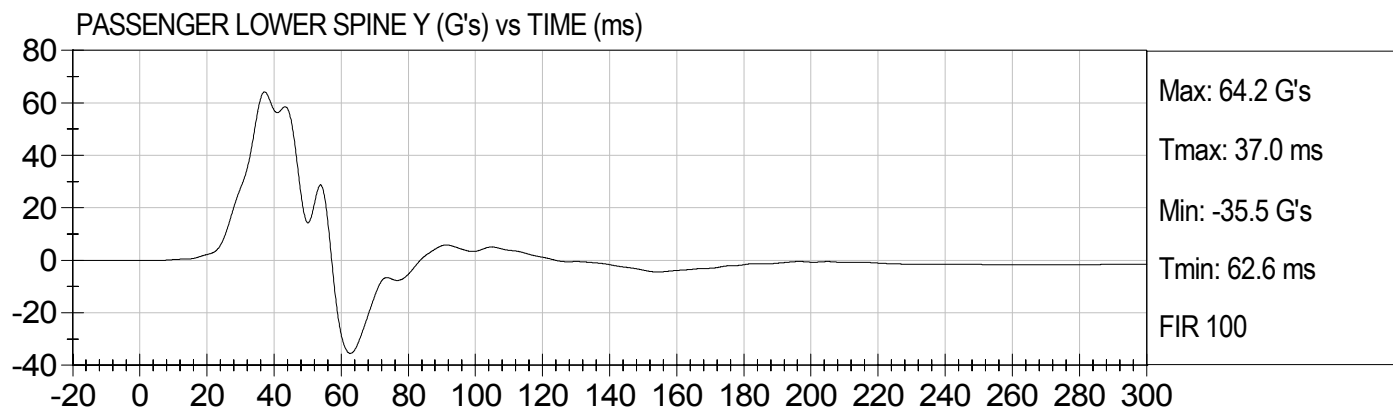
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head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









APPENDIX C
DUMMY CALIBRATION DATA

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 Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 272

Test I.D: D06287

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	


Laboratory Technician


Approved By

09/26/2006

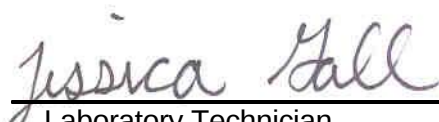
Test Date

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

ATD Serial No: 272

Test I.D: D062871

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	40	Pass
Peak Resultant Acceleration	G's	120 to 150	131	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-5.6	Pass
Overall Test Results				Pass


Laboratory Technician

09/26/2006

Test Date


Approved By



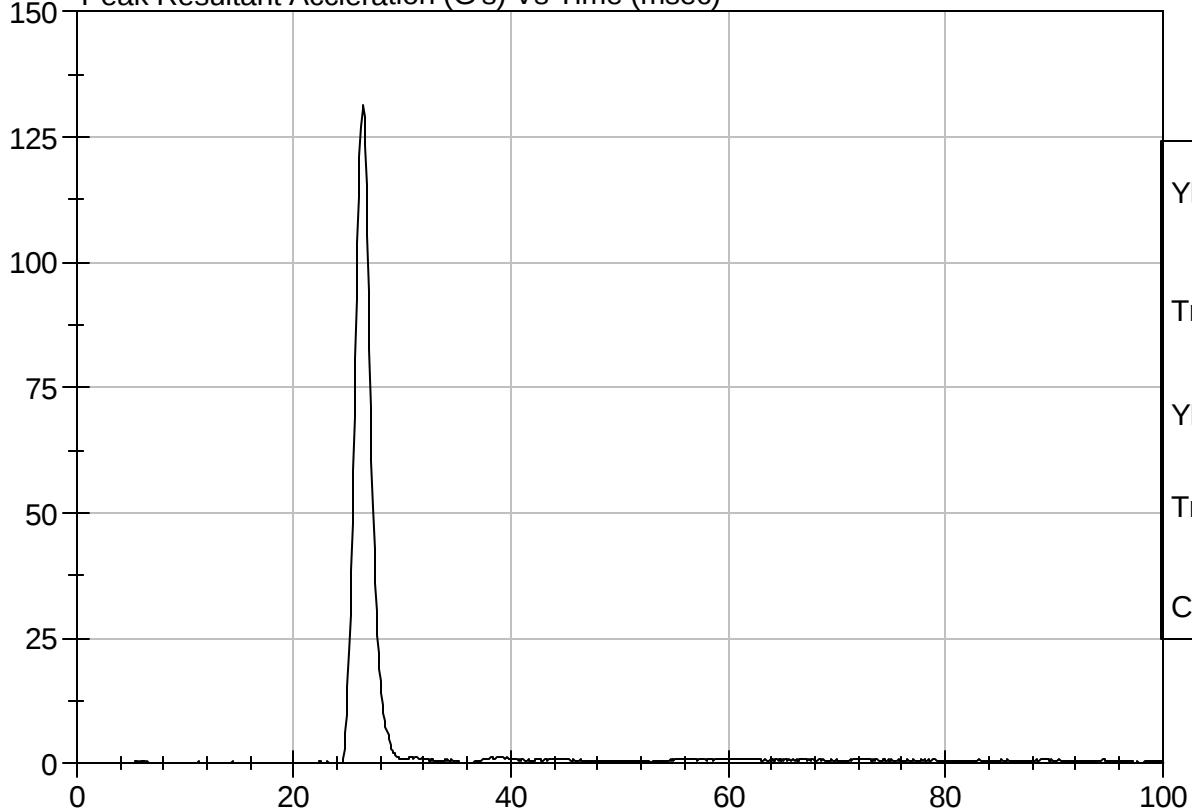
Test Description: Head Drop

Test Date: 09/26/2006

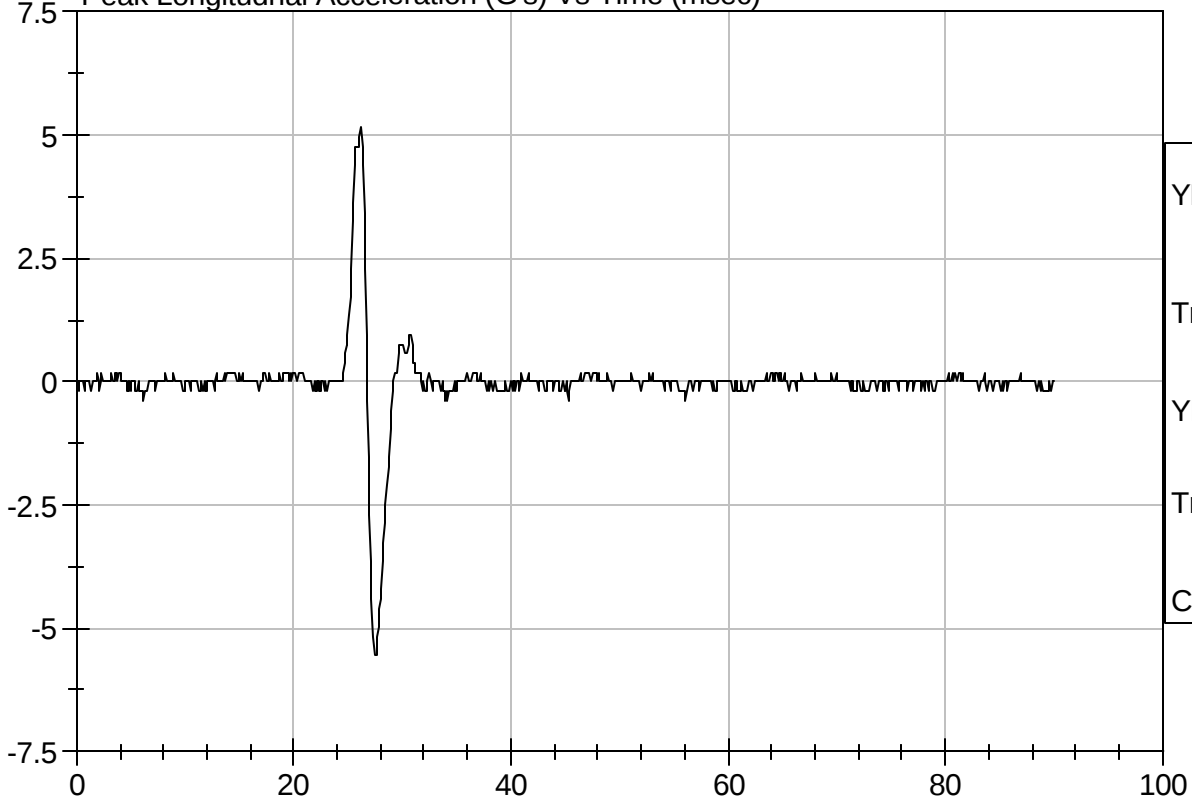
Component: D062871

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 Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 272

Test I.D.: D062872

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Velocity	m/s	4.22 - 4.31	4.29	Pass
Upper Rib	G's	37 - 46	44	Pass
Lower Rib	G's	37 - 46	42	Pass
Lower Spine	G's	15 - 22	22	Pass
Overall Test Results				Pass


Laboratory Technician

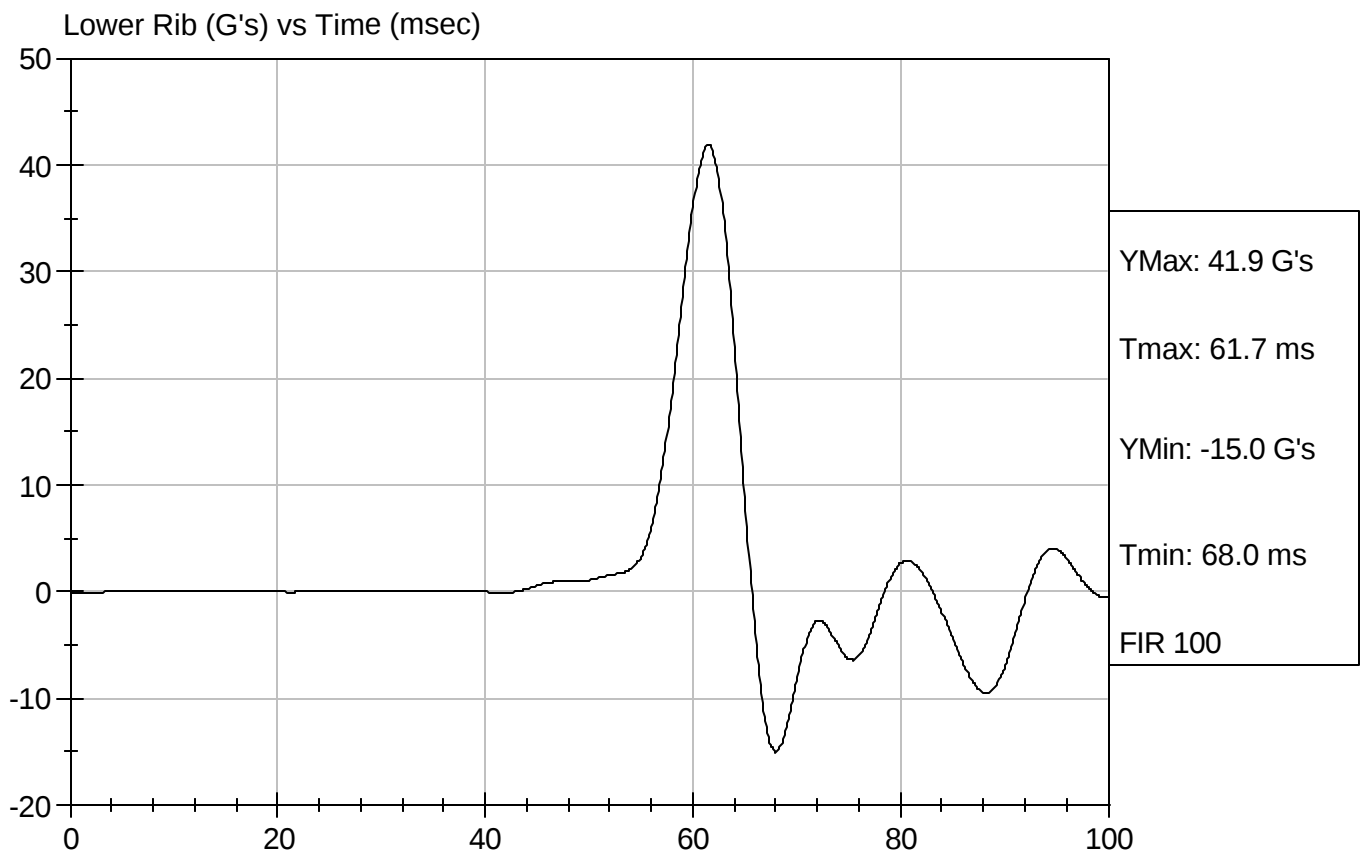
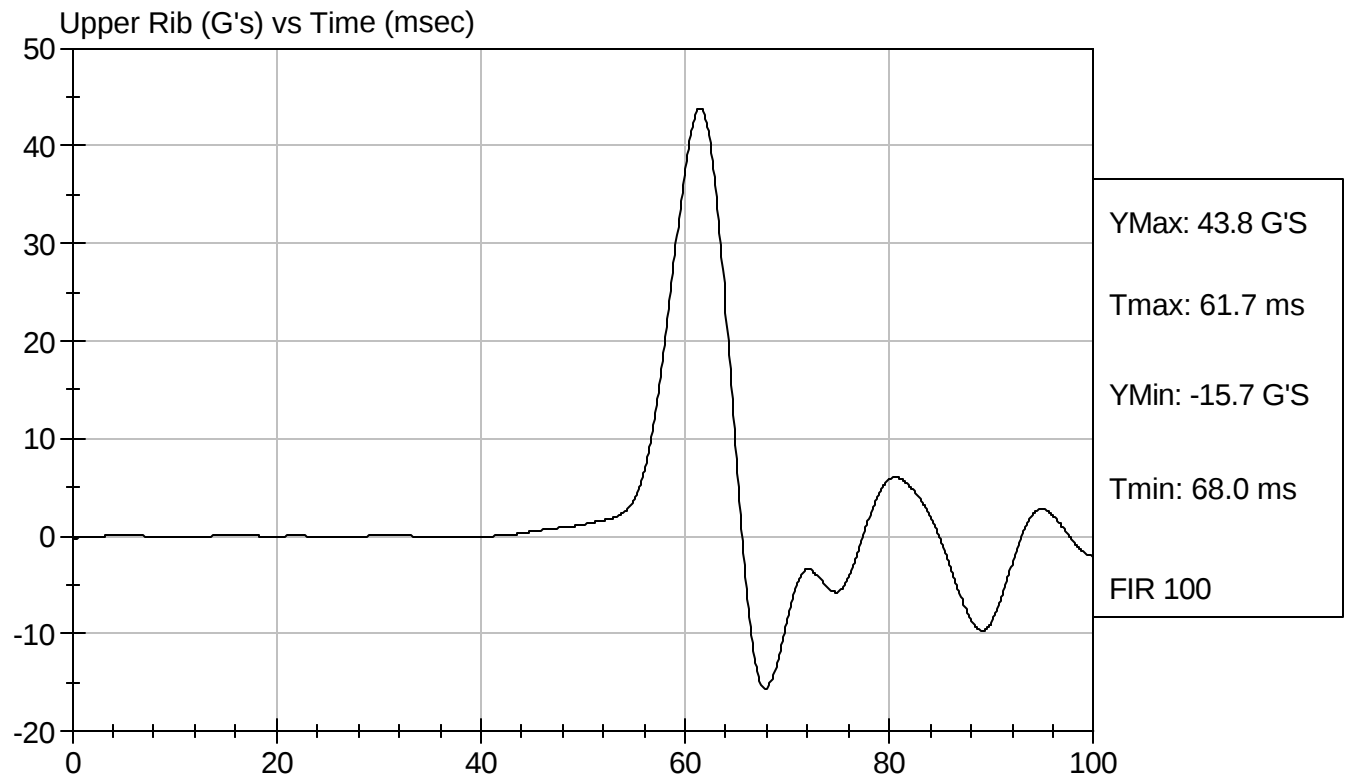
09/26/2006
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D062872

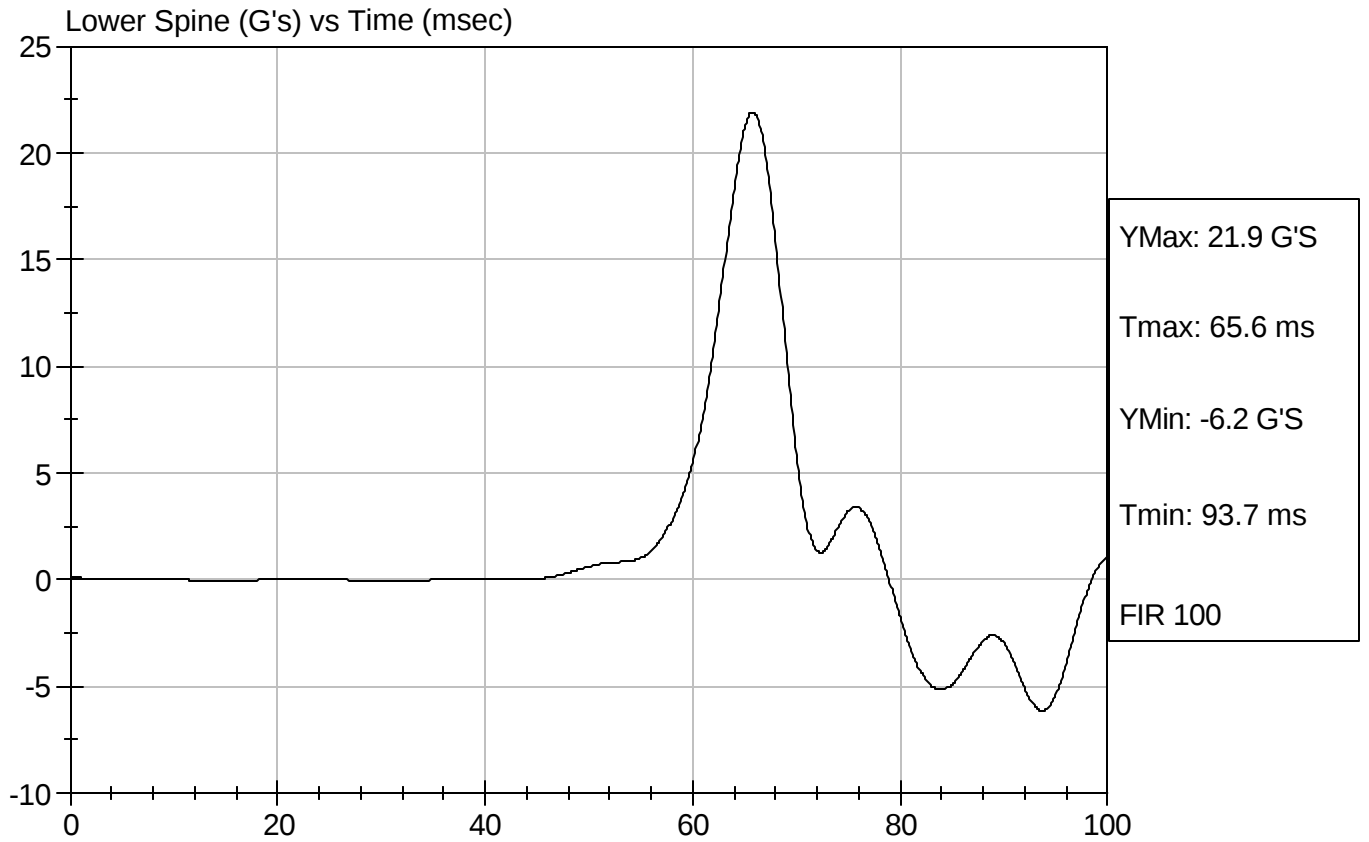
Test Date: 09/26/2006
Speed: 14.07 ft/sec, 4.29 m/sec





Test Desc: Thorax Impact
Component ID: D062872

Test Date: 09/26/2006
Speed: 14.07 ft/sec, 4.29 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 272

Test I.D: D062873

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	40	Pass
Probe Velocity	m/s	4.27 - 4.33	4.32	Pass
Pelvis Acceleration	G's	40 - 60	42	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

09/26/2006

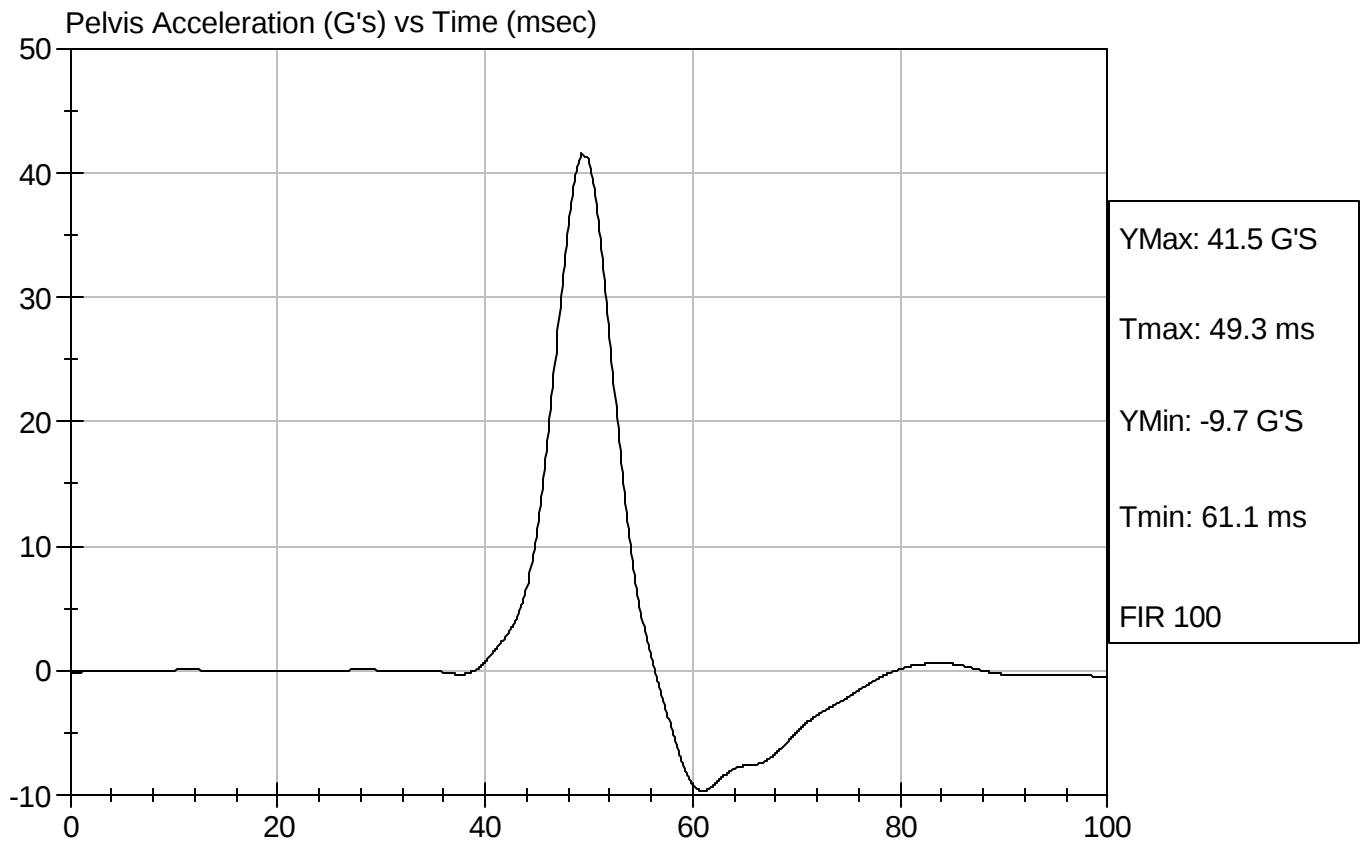
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D062873

Test Date: 09/26/2006
Speed: 14.16 ft/sec, 4.32 m/sec



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

ATD Serial No: 272

Test I.D: D062874

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Force At 12.7 mm	N	104 -162	130	Pass
Force At 19 mm	N	163 - 222	185	Pass
Force At 25.4 mm	N	222 - 280	247	Pass
Force At 33 mm	N	325 - 391	342	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

09/25/2006
Test Date

David Winkelbauer
Approved By

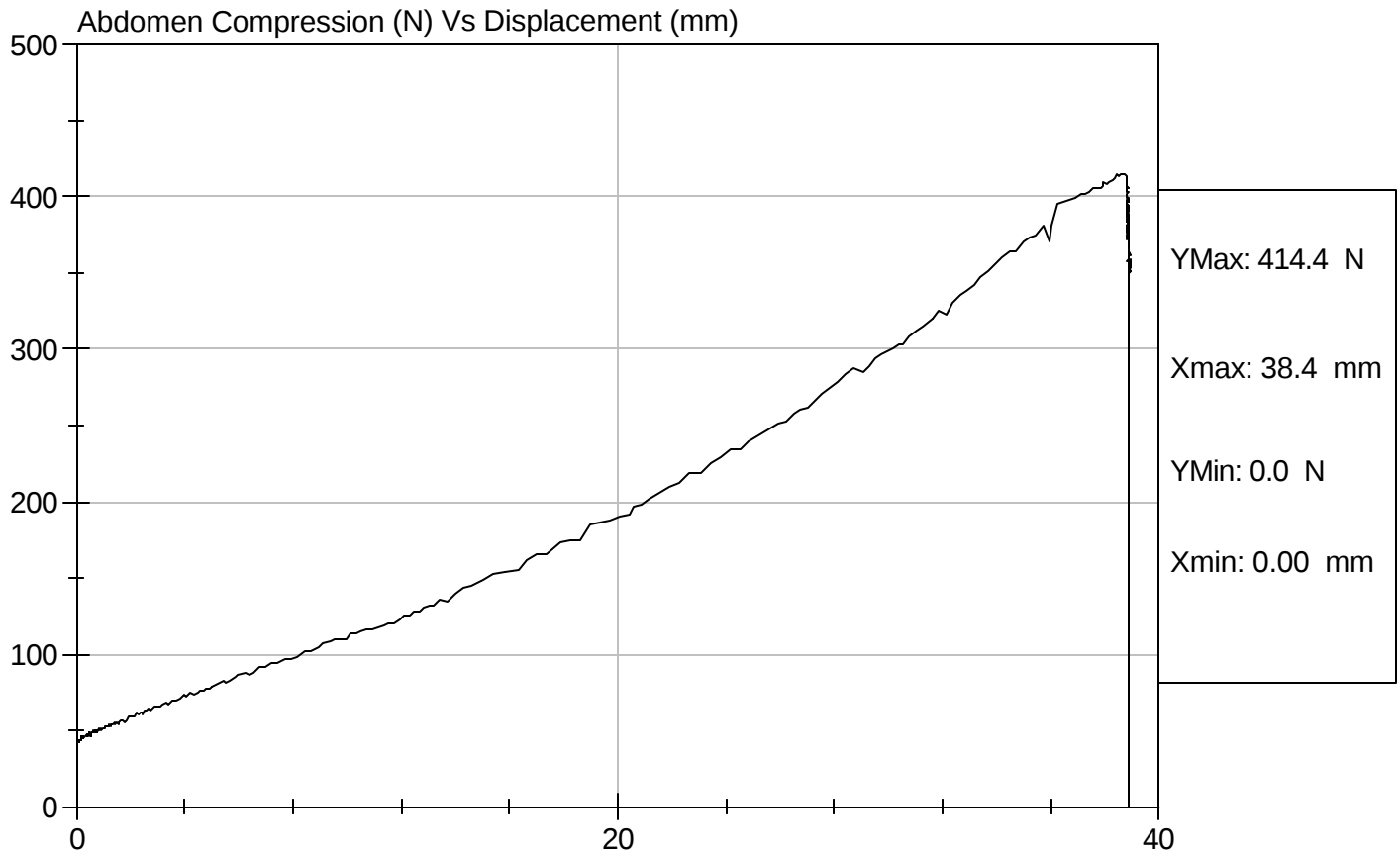


Test Description: Abdomen Compression

Test Date: 09/25/2006

Component: D062874

Speed: 0 ft/sec, 0 m/sec

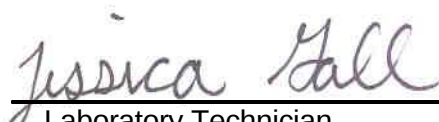


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 272

Test I.D: D062875

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.2	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	112.1	Pass
Force At 30 deg	N	151.2 - 204.6	176.2	Pass
Force At 40 deg	N	204.6 - 258.0	240.3	Pass
Return Angle	Deg	12 Maximum	4	Pass
Overall Test Results			Pass	


Laboratory Technician

09/25/2006

Test Date


Approved By

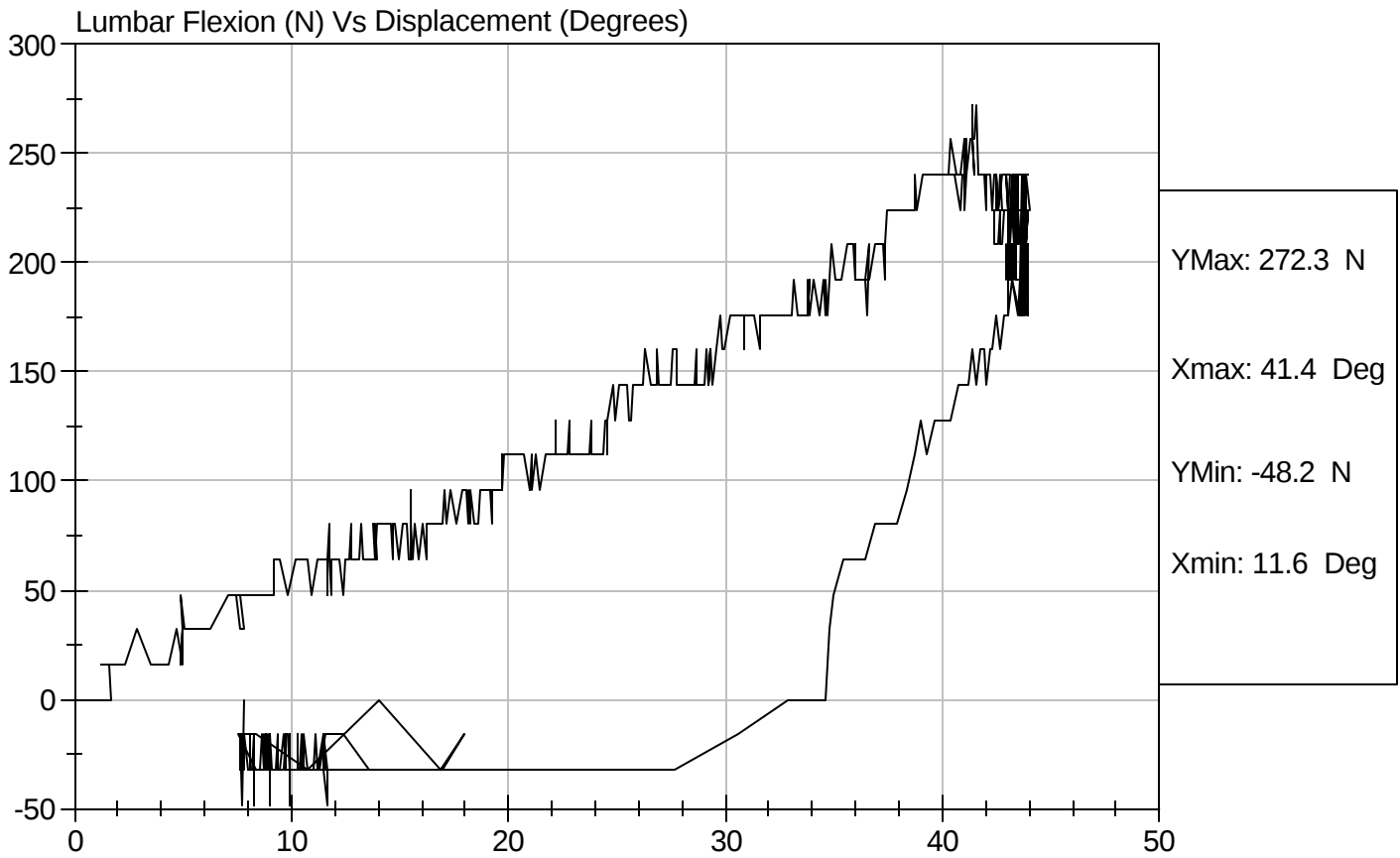


Test Description: Lumbar Flexion

Test Date: 09/25/2006

Component: D062875

Speed: 0 ft/sec, 0 m/sec

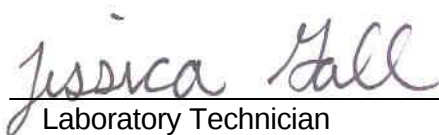


SID Calibration Data Sheet
Side Impact Dummy (SID)
Neck Pendulum Test

ATD Serial No: 272

Test I.D: D062879

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Impact Velocity		m/s	6.89 to 7.13	6.90	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.24	Pass
	20 msec	m/s	4.12 to 5.10	4.48	Pass
	30 msec	m/s	5.73 to 7.01	6.38	Pass
	40 to 70 msec	m/s	6.27 to 7.64	6.81	Pass
Midsagittal 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	75	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	58	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	13	Pass


Laboratory Technician

09/26/2006

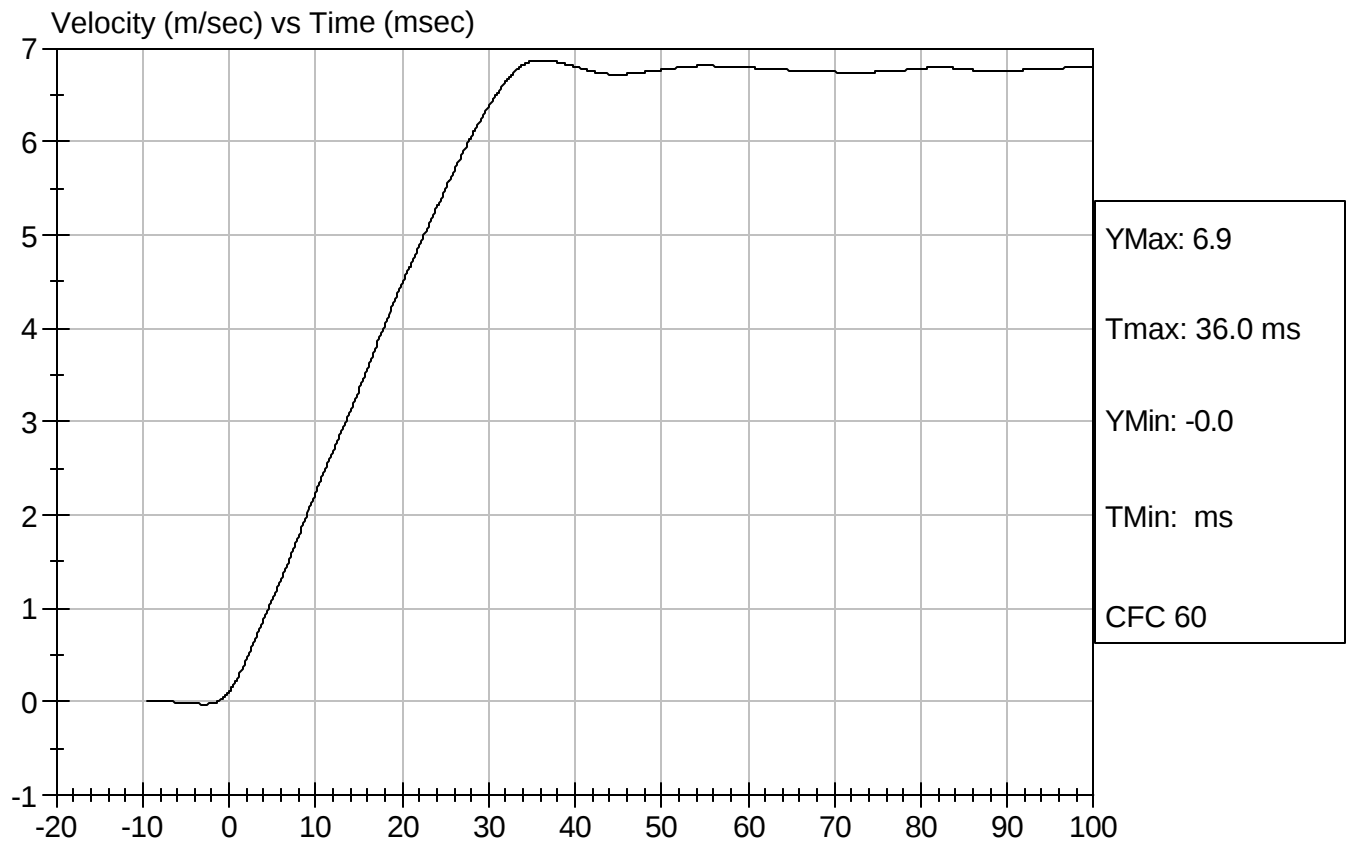
Test Date


Approved By



Test Desc: Neck Bending
Component ID: D062879

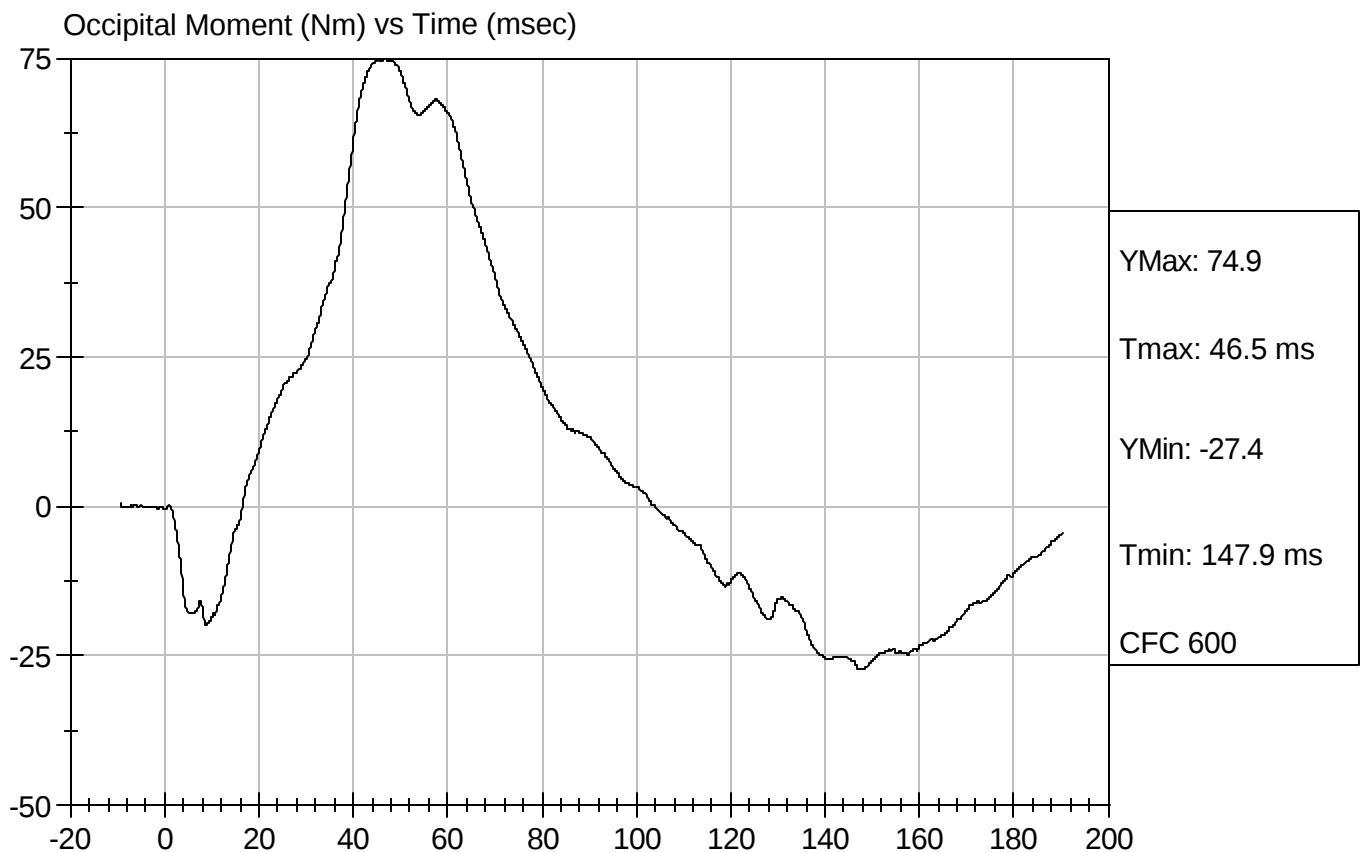
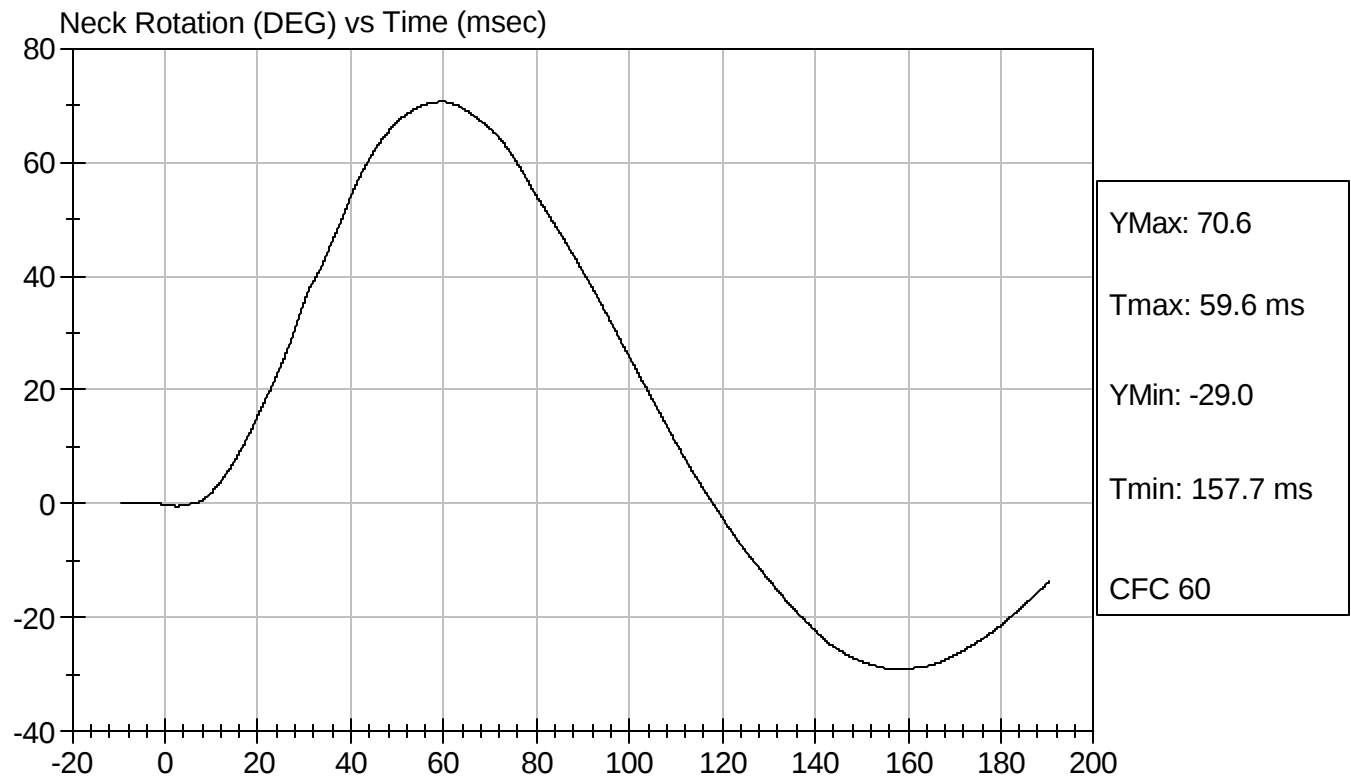
Test Date: 09/26/2006
Speed: 22.63 ft/sec, 6.90 m/sec





Test Desc: Neck Bending
Component ID: D062879

Test Date: 09/26/2006
Speed: 22.63 ft/sec, 6.90 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 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



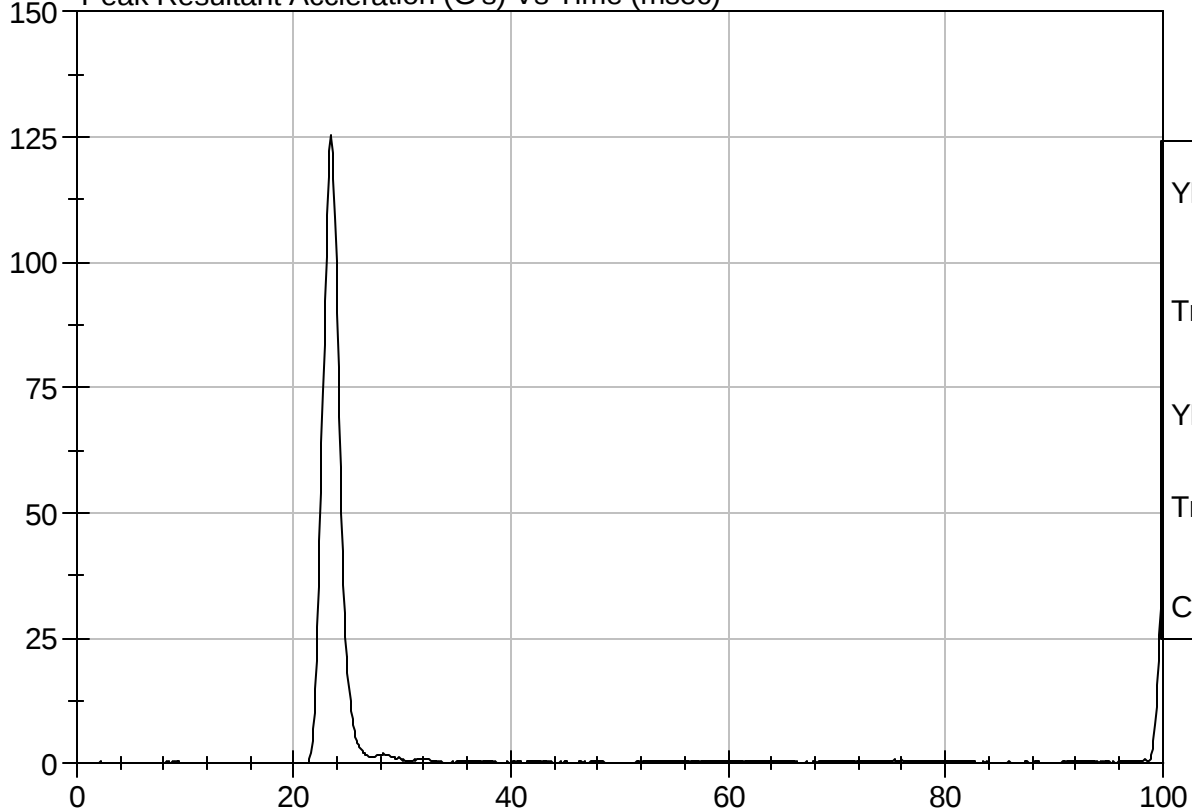
Test Description: Head Drop

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

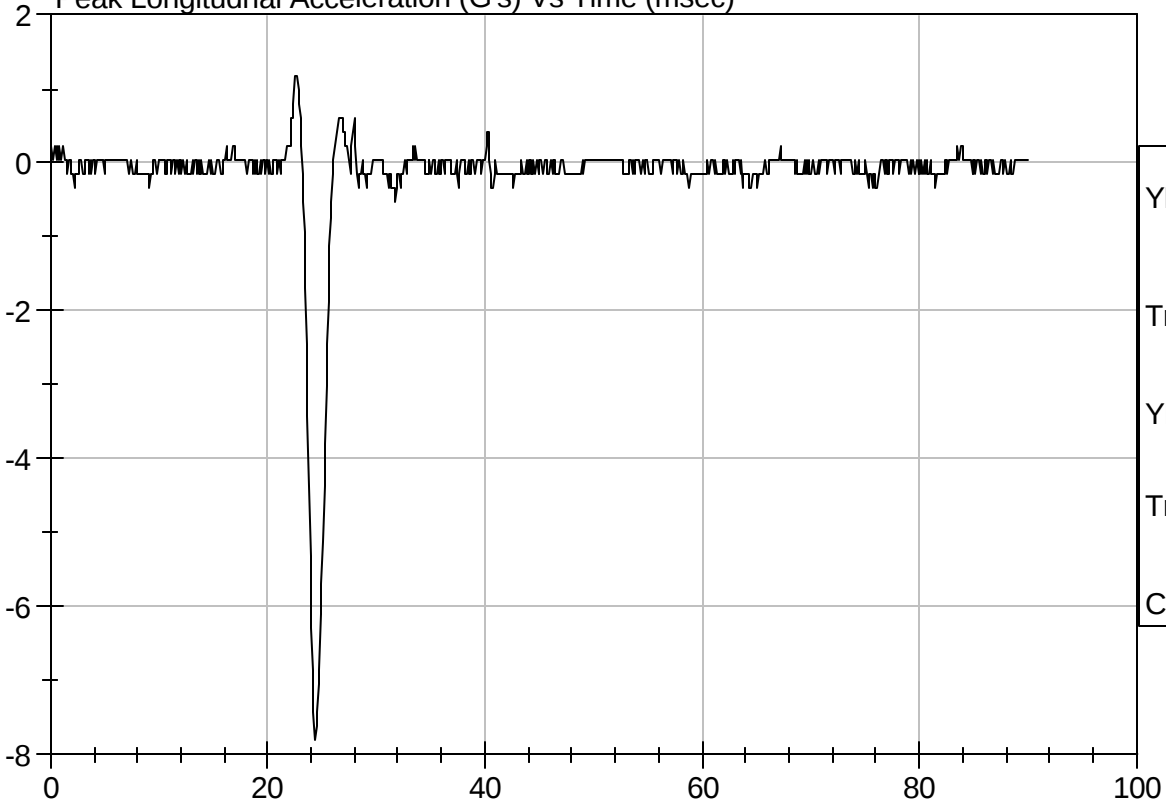
Tmax: 23.4 ms

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

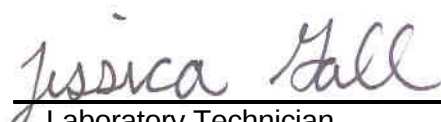
CFC 1000

SID 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


Laboratory Technician

10/16/2006

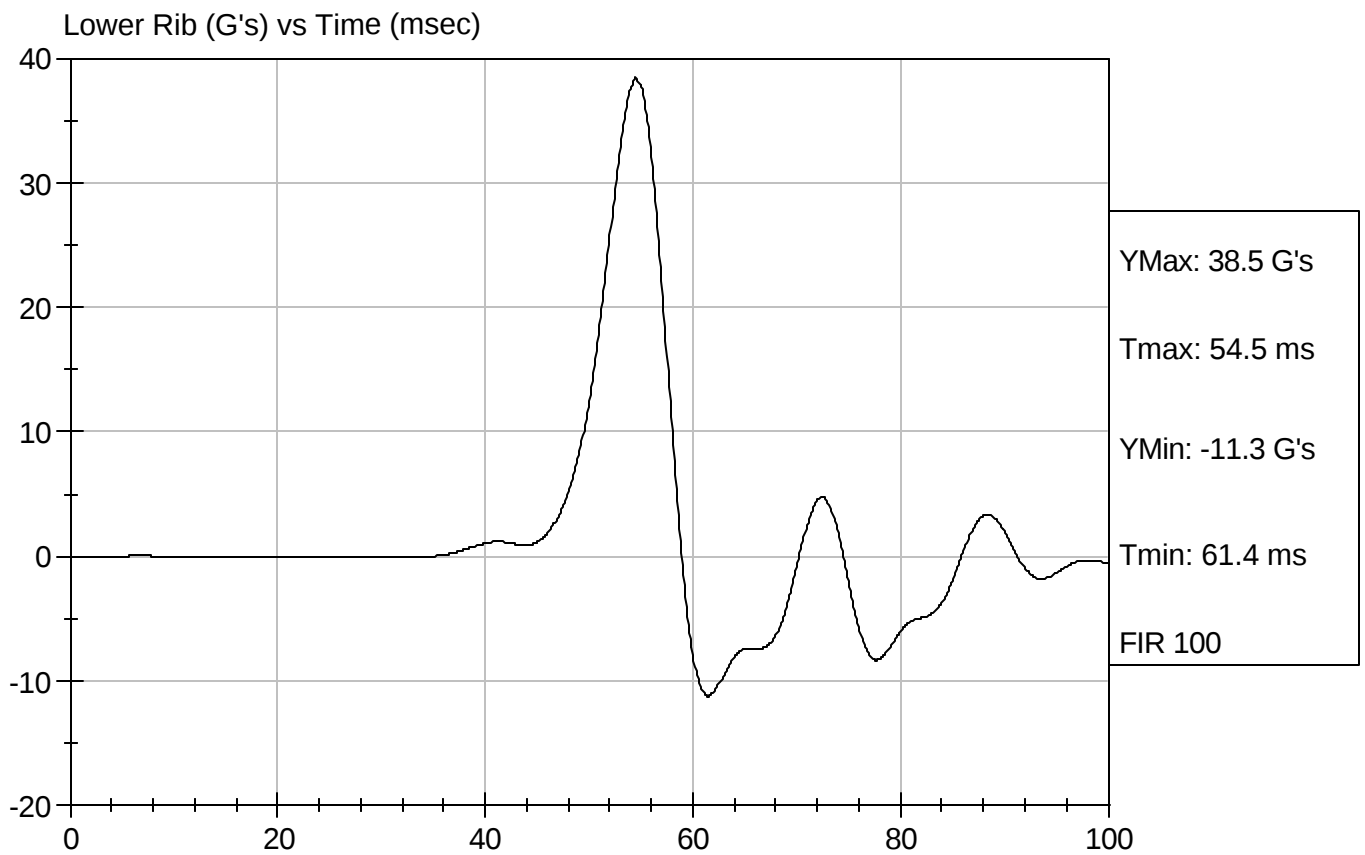
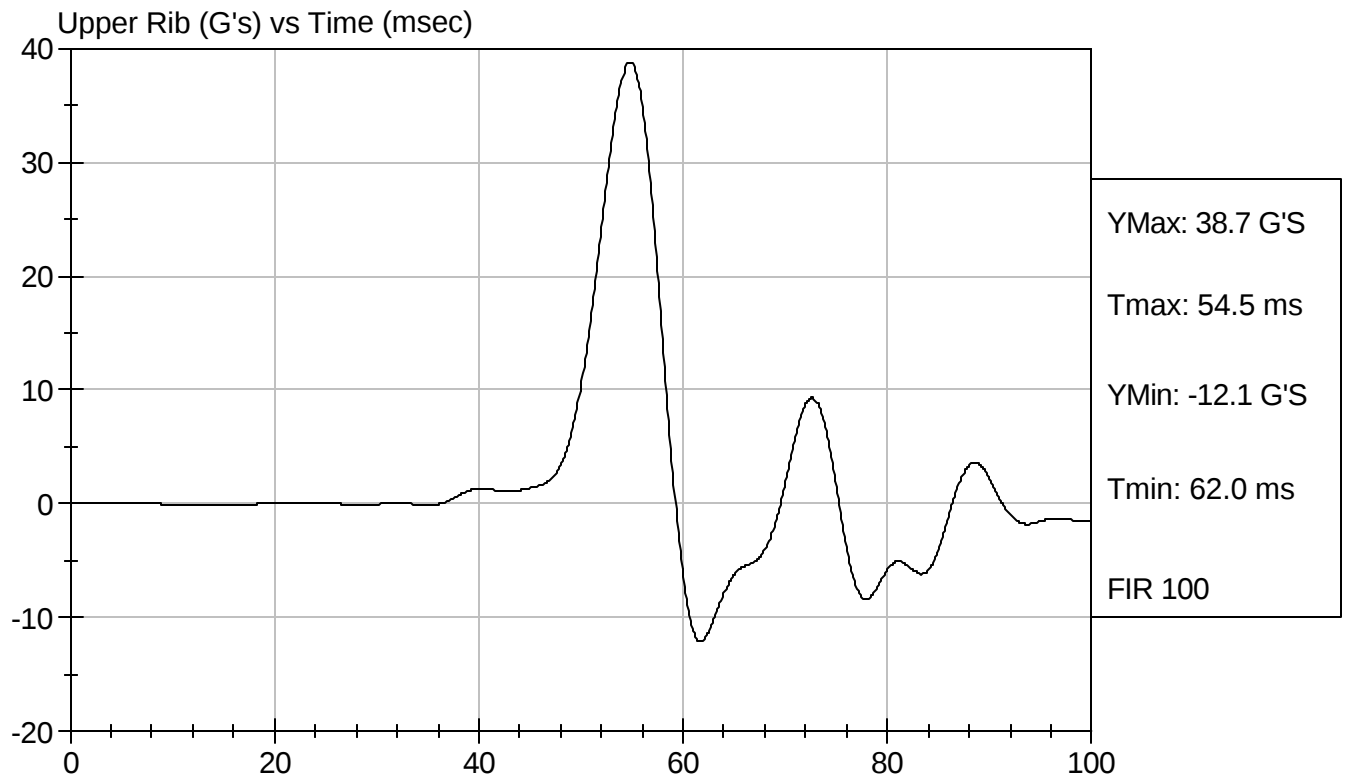
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D063032

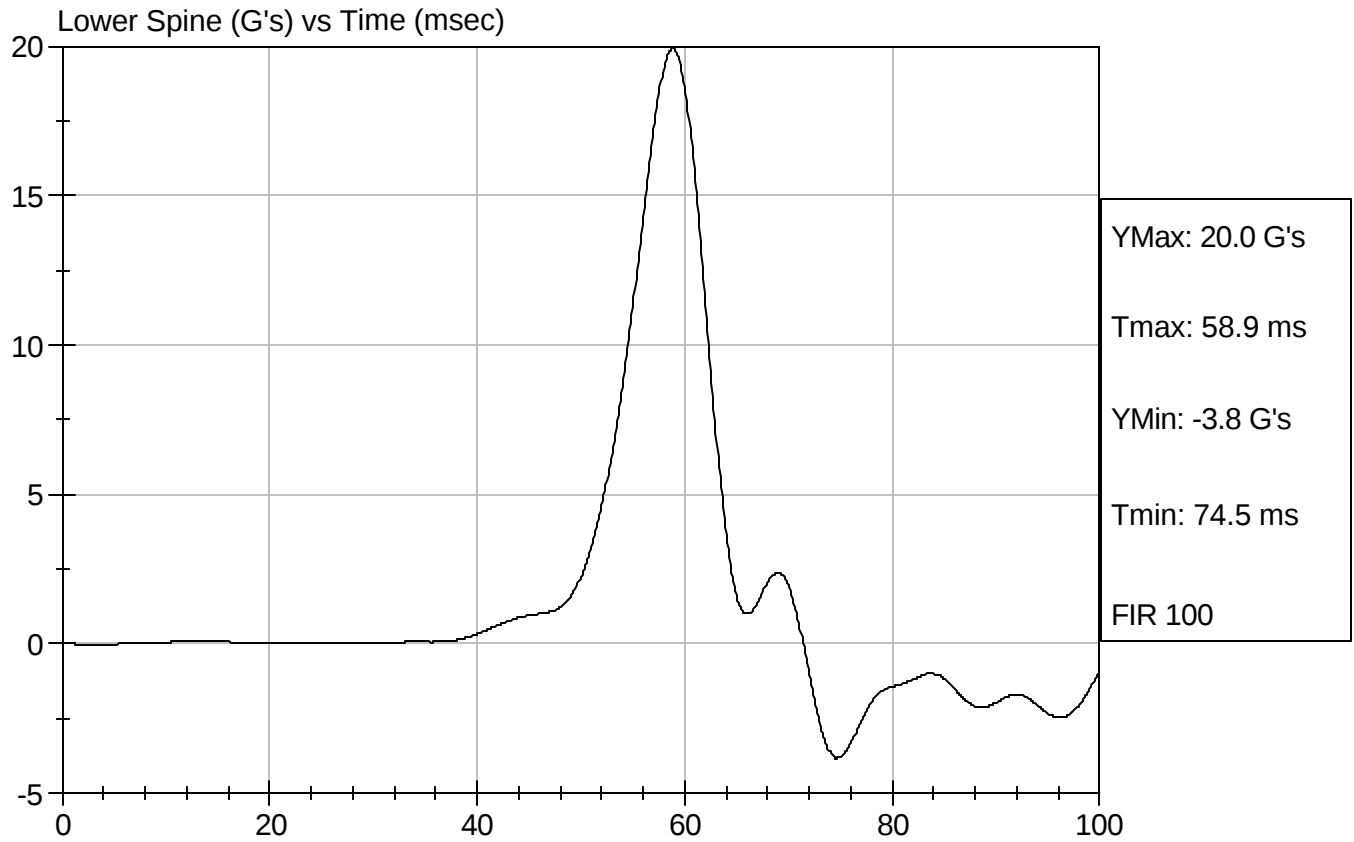
Test Date: 10/16/2006
Speed: 14.11 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D063032

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



SID 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

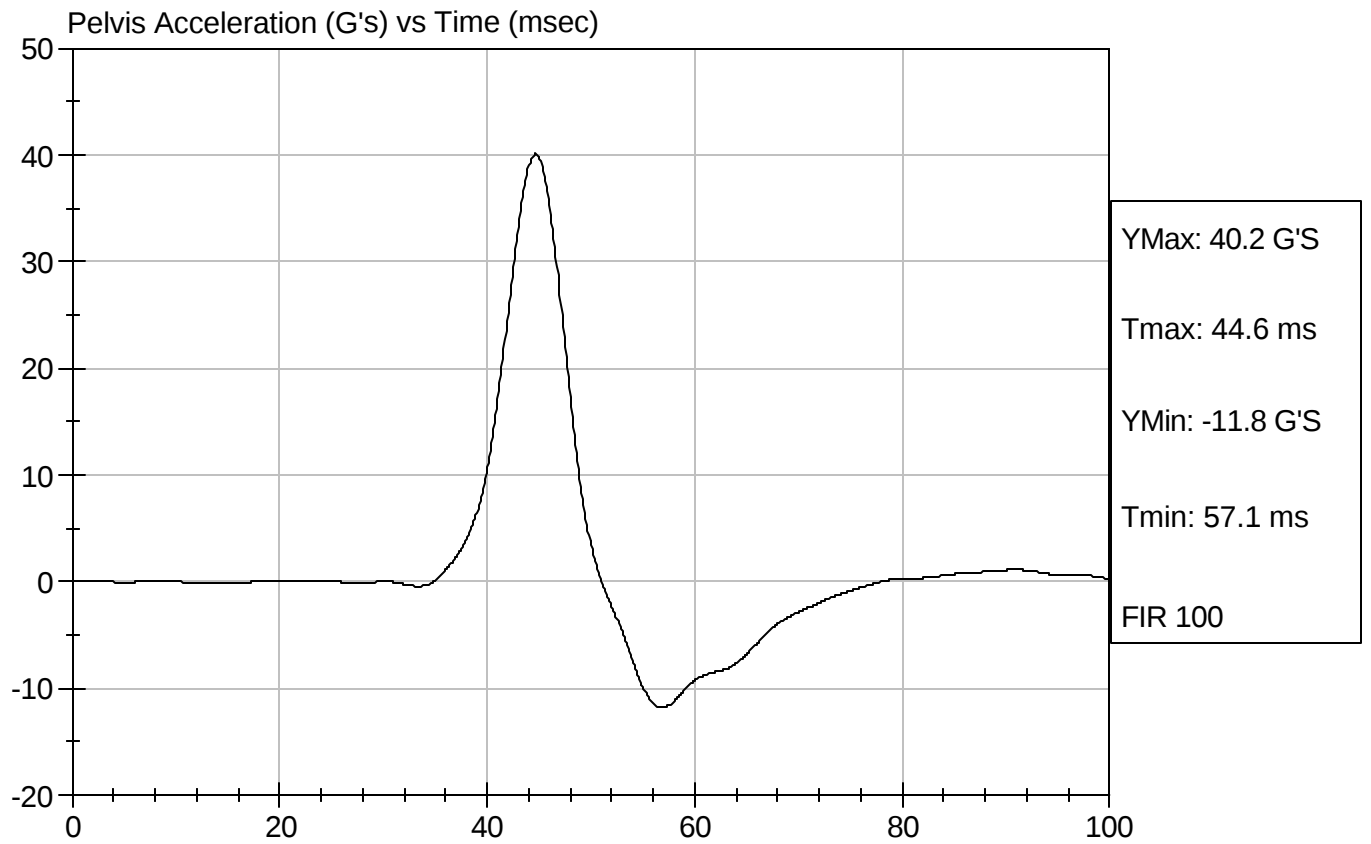
10/16/2006
Test Date

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 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

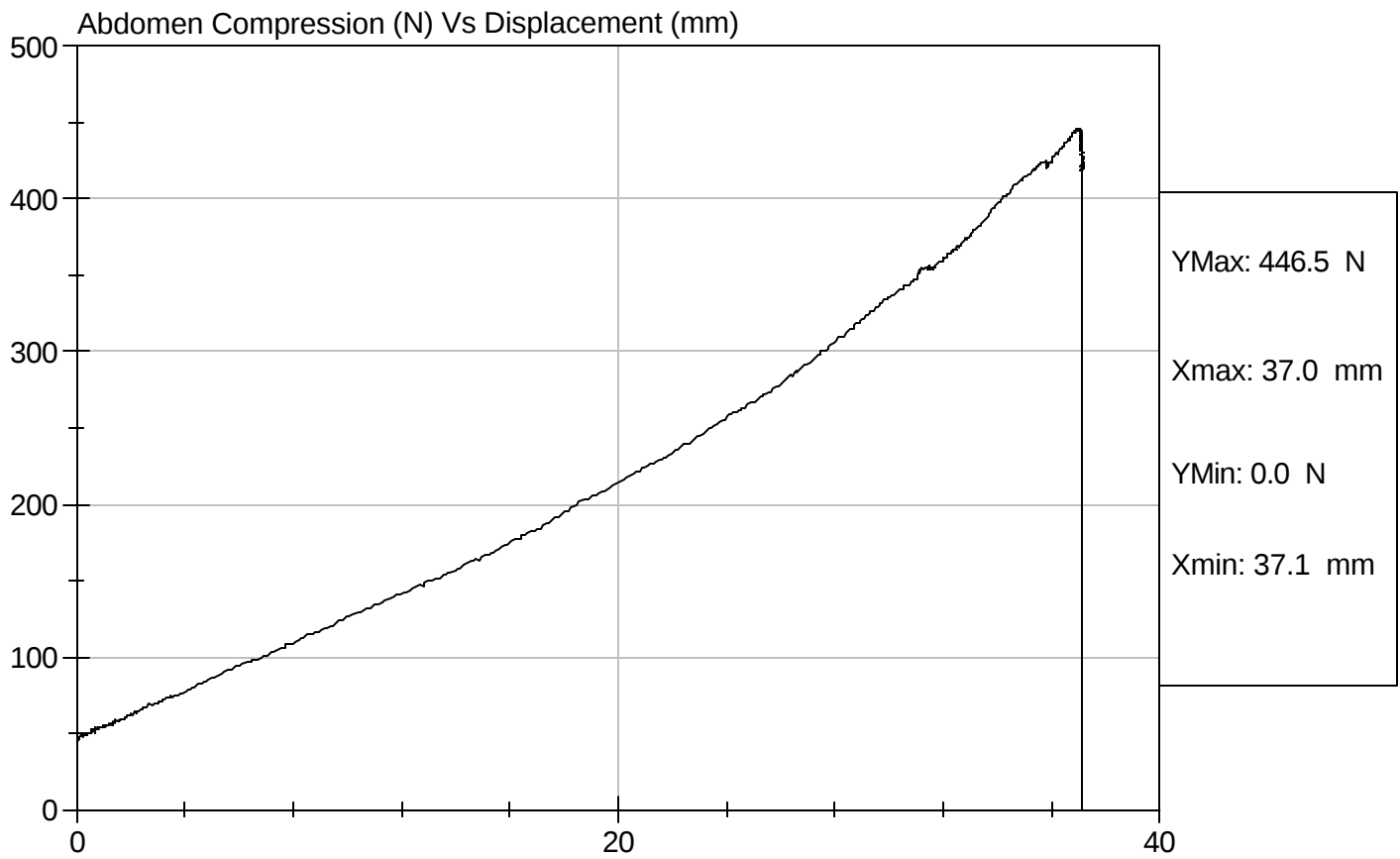


Test Description: Abdomen Compression

Test Date: 10/17/2006

Component: D063034

Speed: 0 ft/sec, 0 m/sec

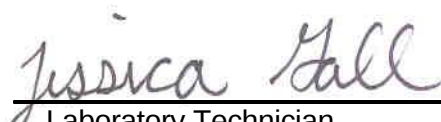


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

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


Laboratory Technician

10/17/2006

Test Date


Approved By

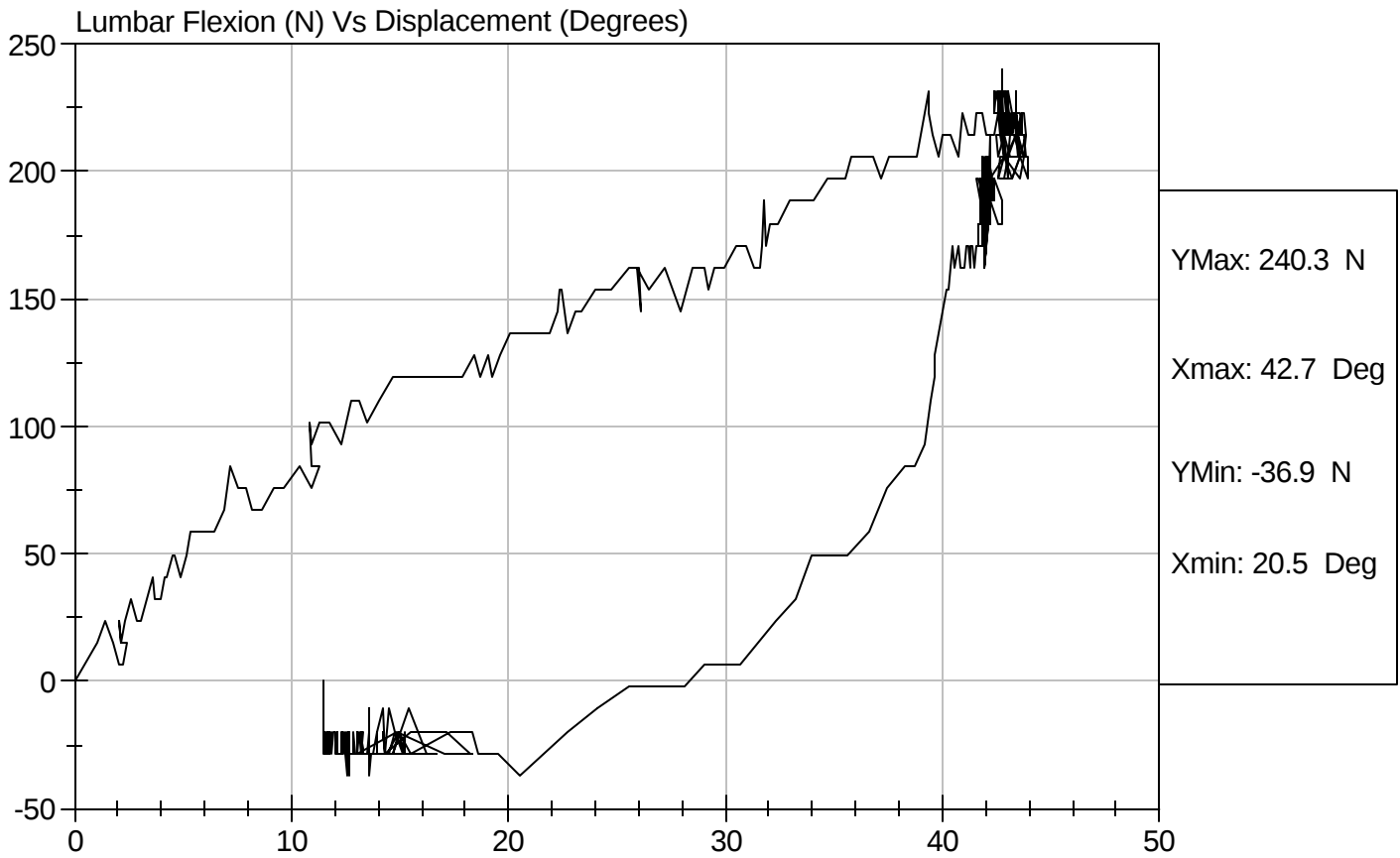


Test Description: Lumbar Flexion

Test Date: 10/17/2006

Component: D063035

Speed: 0 ft/sec, 0 m/sec

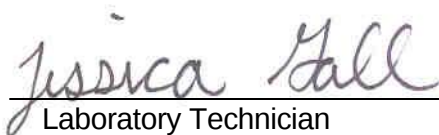


SID Calibration Data Sheet
Side Impact Dummy (SID)
Neck Pendulum Test

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

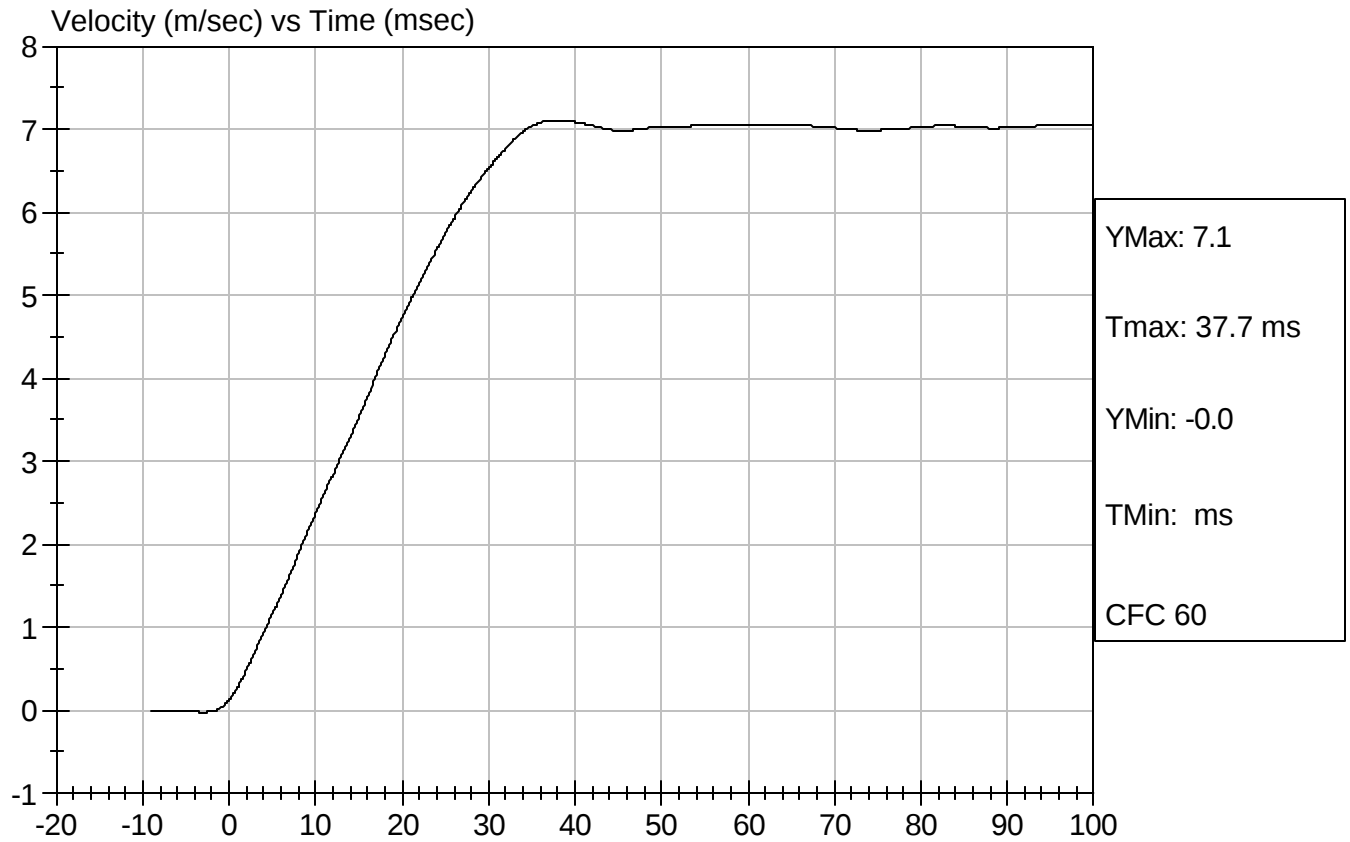
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D063039

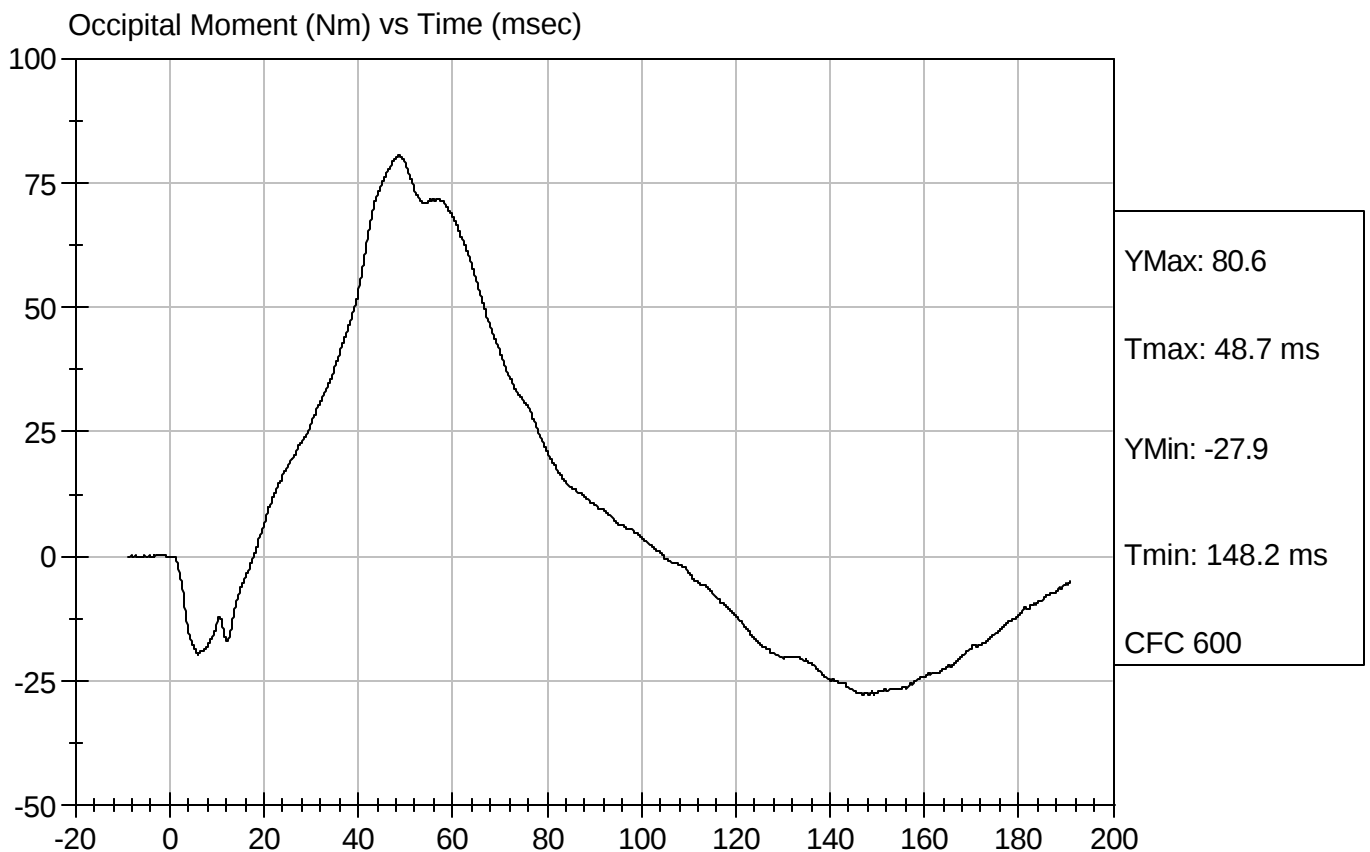
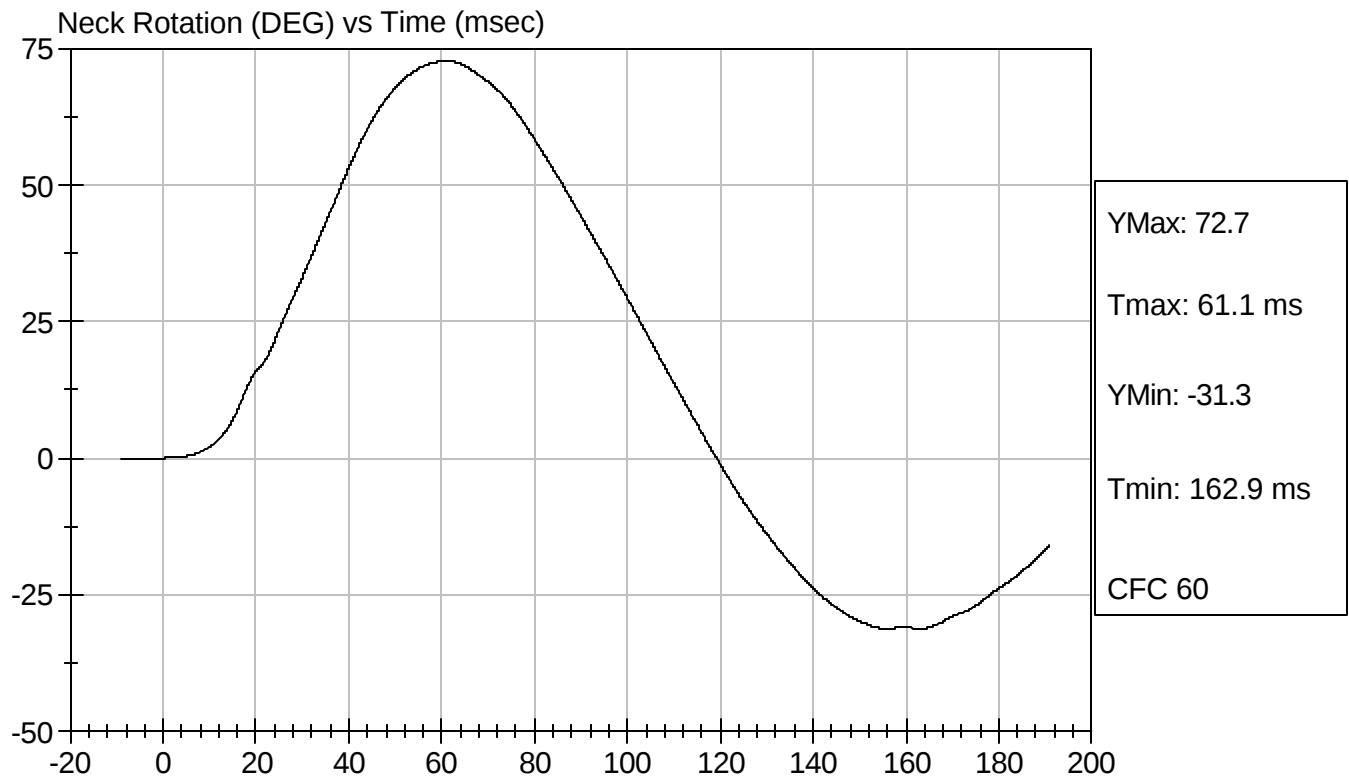
Test Date: 10/18/2006
Speed: 23.16 ft/sec, 7.06 m/sec





Test Desc: Neck Bending
Component ID: D063039

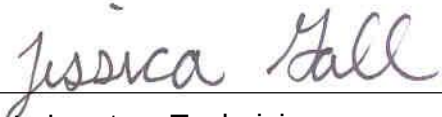
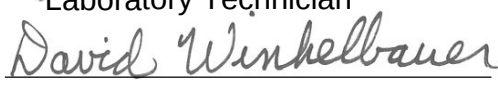
Test Date: 10/18/2006
Speed: 23.16 ft/sec, 7.06 m/sec



SID 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

10/18/2006
Test Date

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 Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 904

Test I.D: D06288

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	


Laboratory Technician


Approved By

09/26/2006

Test Date

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

ATD Serial No: 904

Test I.D: D062881

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	40	Pass
Peak Resultant Acceleration	G's	120 to 150	133	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-8.5	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

09/26/2006

Test Date

David Winkelbauer
Approved By



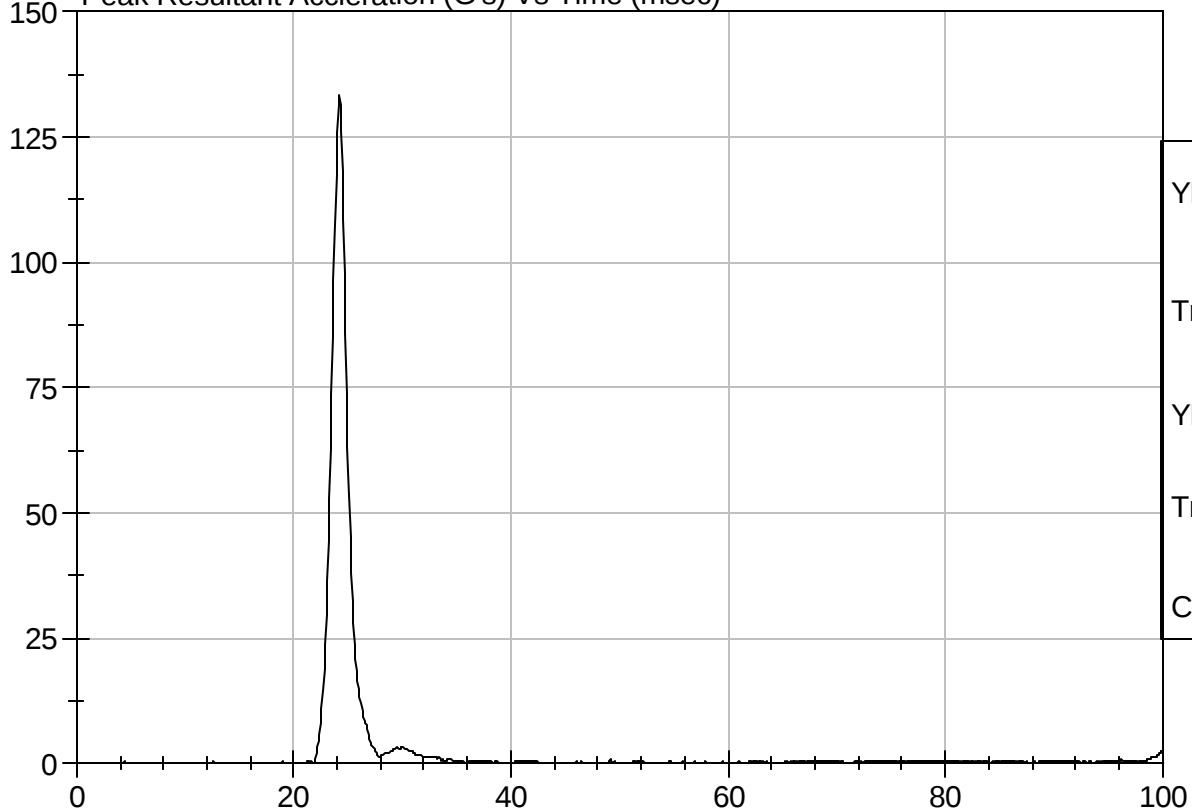
Test Description: Head Drop

Test Date: 09/26/2006

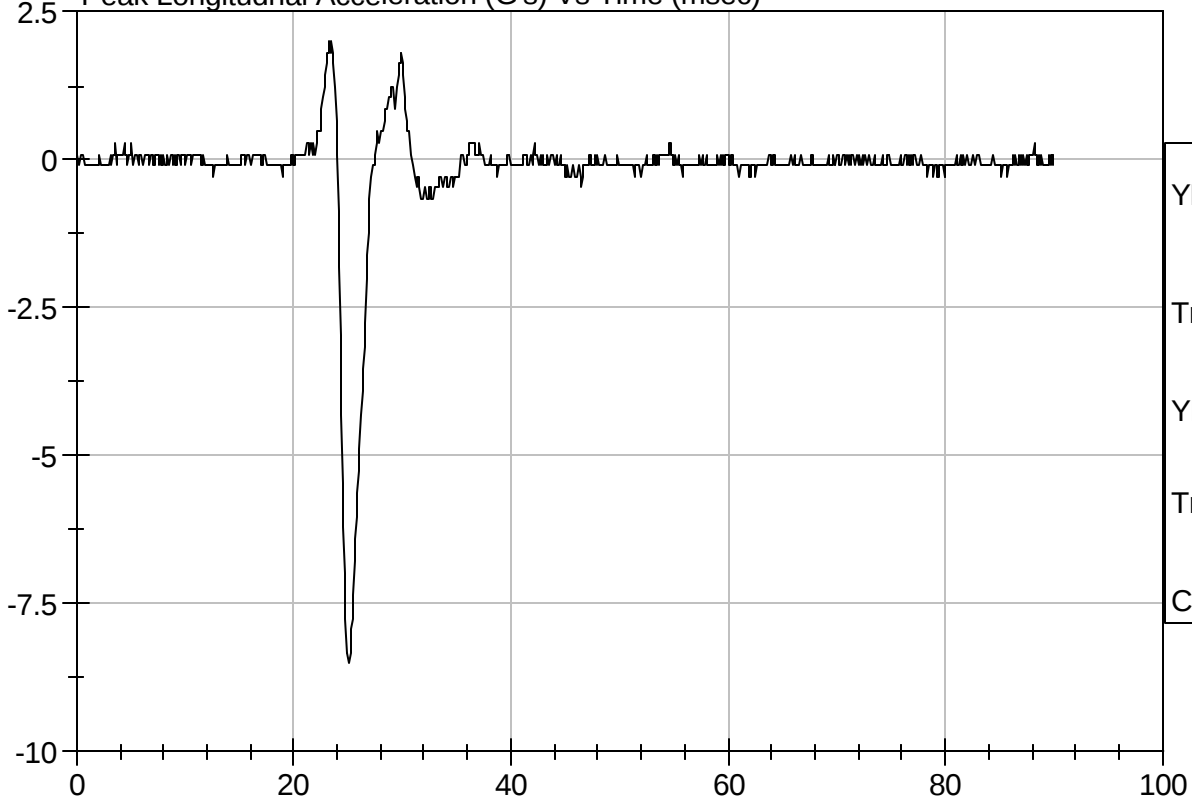
Component: D062881

Speed: 0 ft/s, 0.00 m/s

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



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

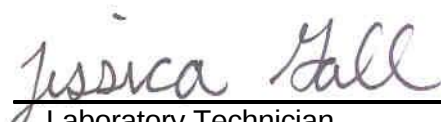


SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 904

Test I.D: D062882

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Velocity	m/s	4.22 - 4.31	4.27	Pass
Upper Rib	G's	37 - 46	42	Pass
Lower Rib	G's	37 - 46	37	Pass
Lower Spine	G's	15 - 22	22	Pass
Overall Test Results				Pass


Laboratory Technician

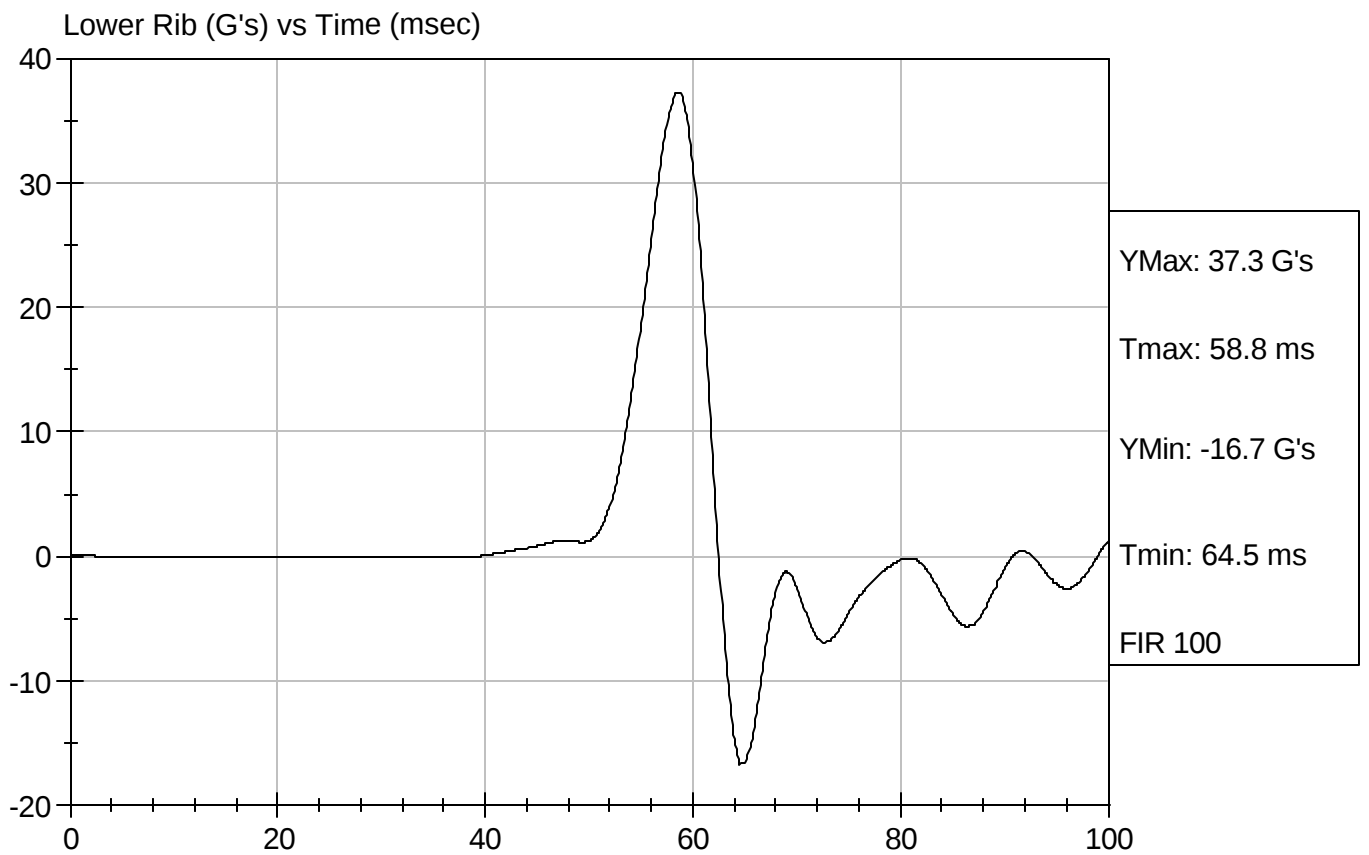
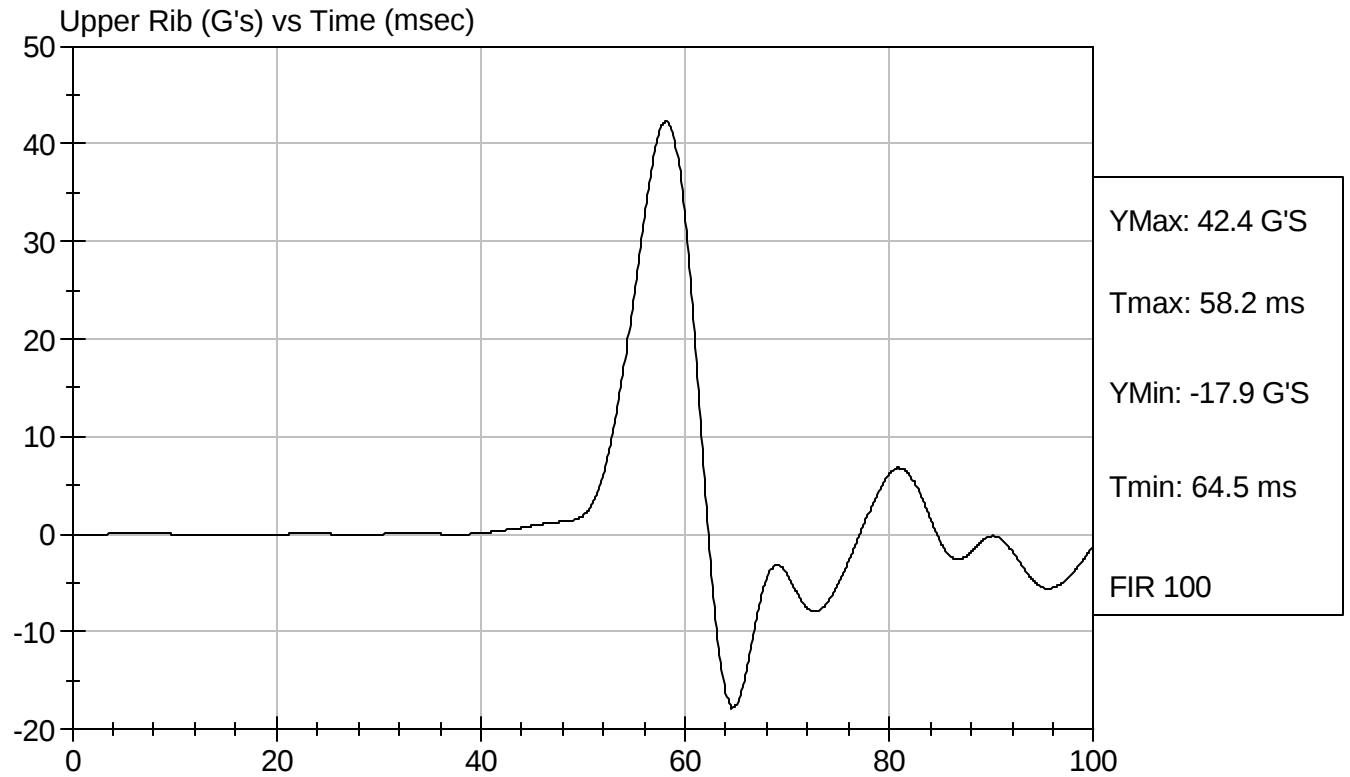
09/26/2006
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D062882

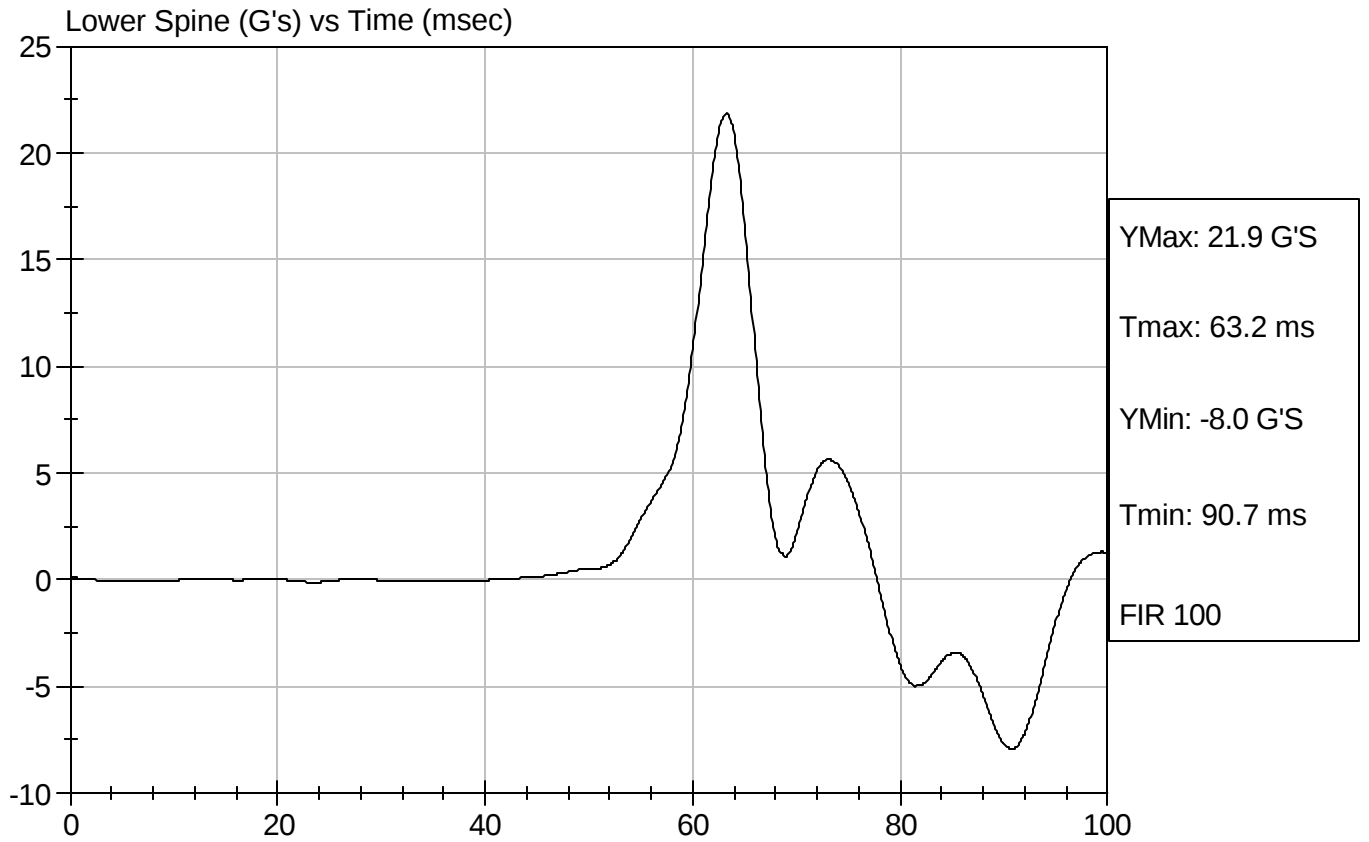
Test Date: 09/26/2006
Speed: 14.01 ft/sec, 4.27 m/sec





Test Desc: Thorax Impact
Component ID: D062882

Test Date: 09/26/2006
Speed: 14.01 ft/sec, 4.27 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 904

Test I.D: D062883

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/s	4.27 - 4.33	4.32	Pass
Pelvis Acceleration	G's	40 - 60	46	Pass
			Overall Test Results	Pass


Laboratory Technician

09/26/2006

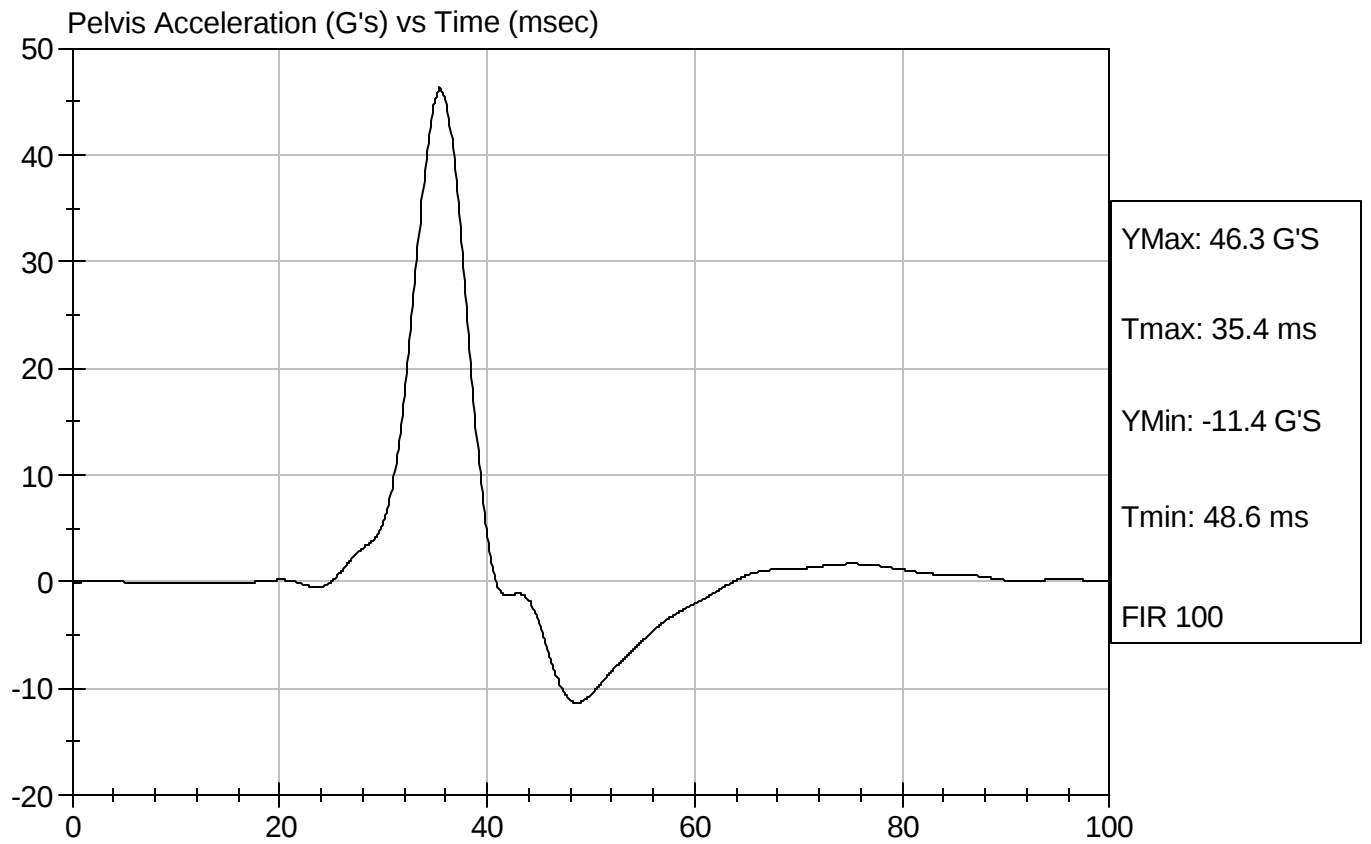
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D062883

Test Date: 09/26/2006
Speed: 14.17 ft/sec, 4.32 m/sec

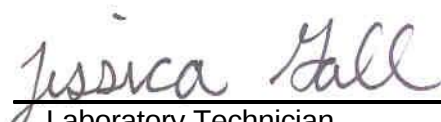


SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 904

Test I.D: D062884

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Force At 12.7 mm	N	104 -162	140	Pass
Force At 19 mm	N	163 - 222	196	Pass
Force At 25.4 mm	N	222 - 280	260	Pass
Force At 33 mm	N	325 - 391	350	Pass
Overall Test Results				Pass


Laboratory Technician

09/25/2006

Test Date


Approved By

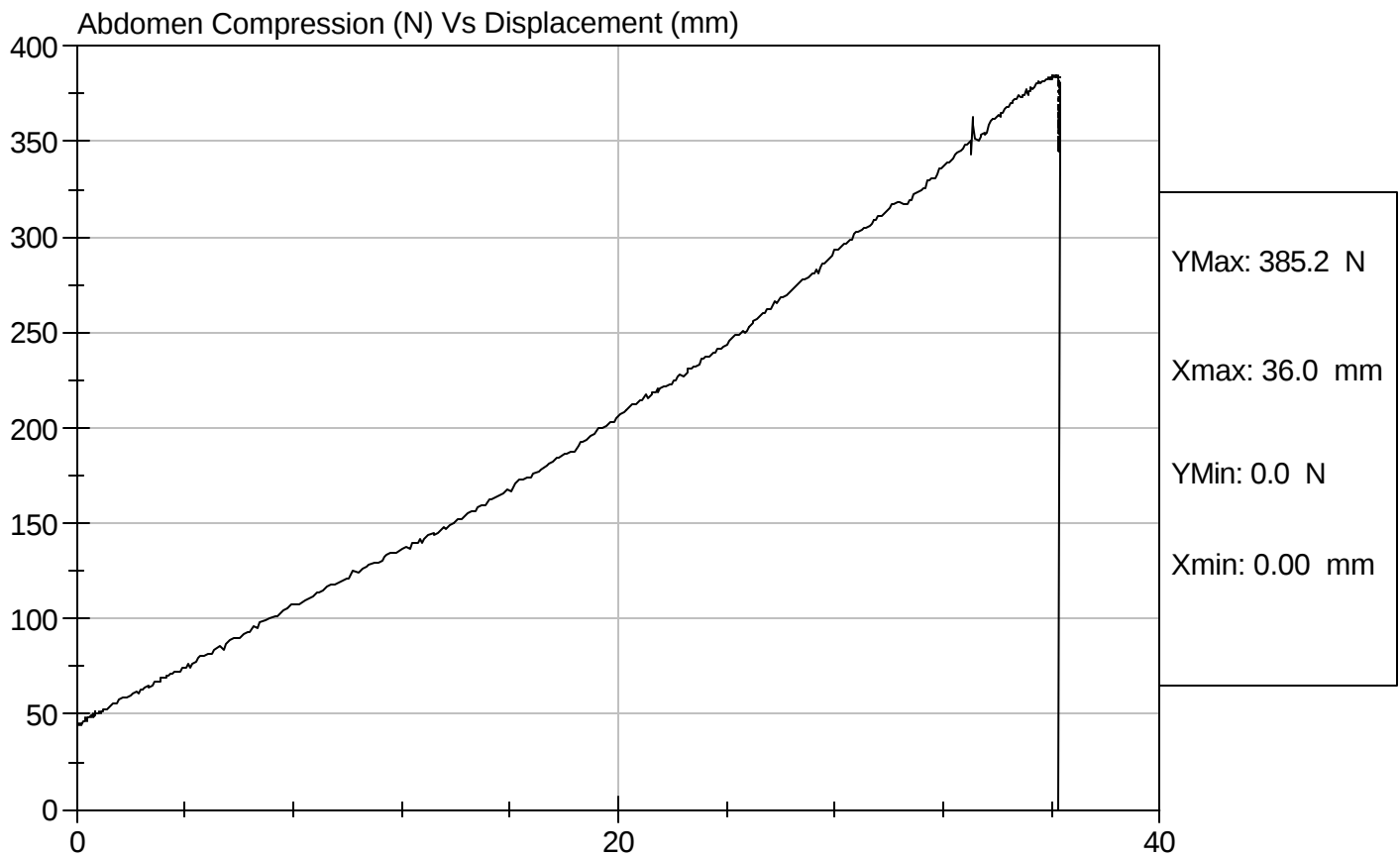


Test Description: Abdomen Compression

Test Date: 09/25/2006

Component: D062884

Speed: 0 ft/sec, 0 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 904

Test I.D: D062885

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.2	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	115.5	Pass
Force At 30 deg	N	151.2 - 204.6	163.6	Pass
Force At 40 deg	N	204.6 - 258.0	227.7	Pass
Return Angle	Deg	12 Maximum	3	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

09/25/2006
Test Date

David Winkelbauer
Approved By

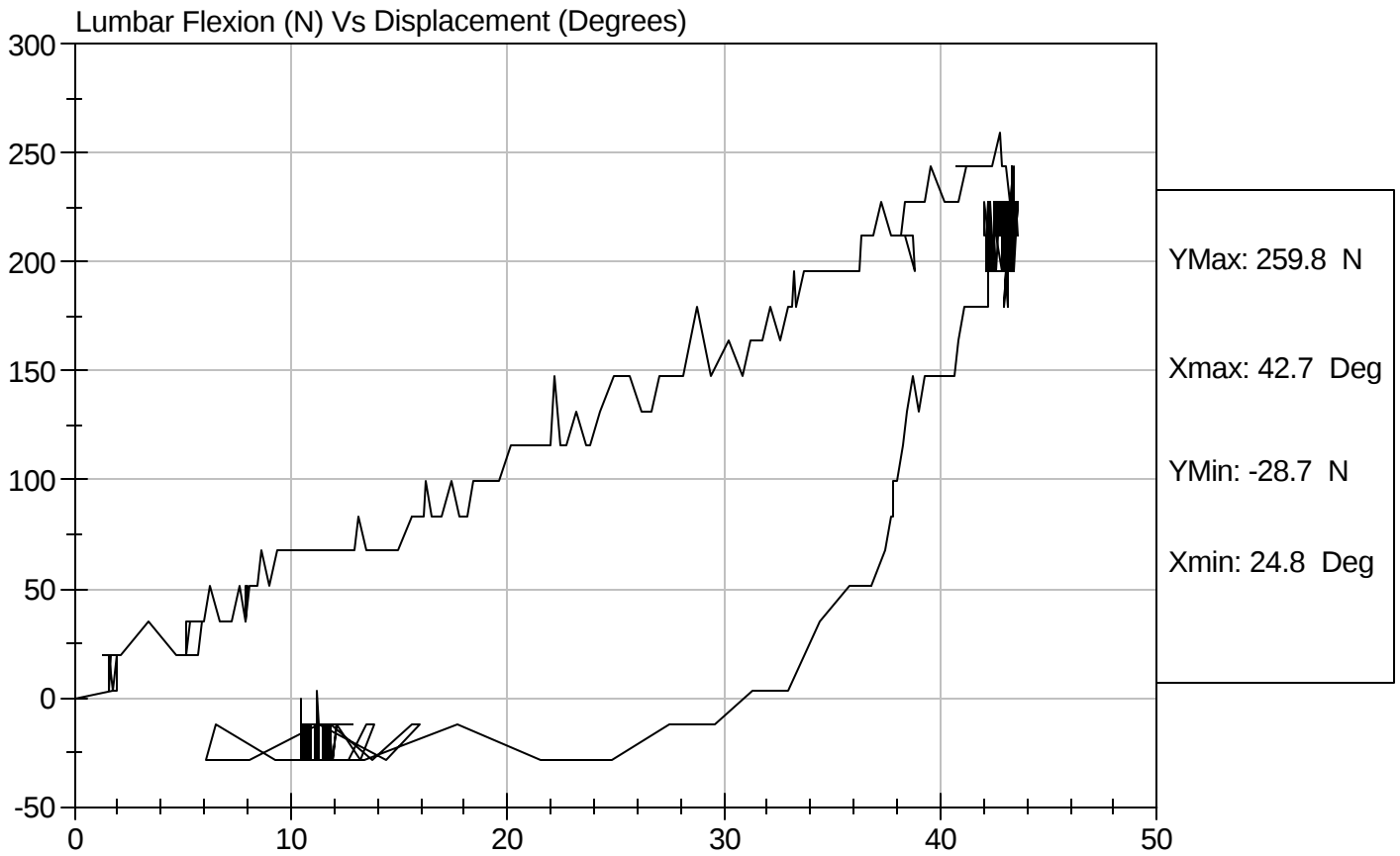


Test Description: Lumbar Flexion

Test Date: 09/25/2006

Component: D062885

Speed: 0 ft/sec, 0 m/sec

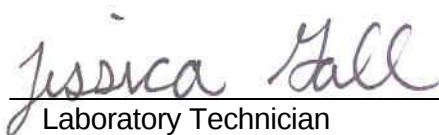


SID Calibration Data Sheet
Side Impact Dummy (SID)
Neck Pendulum Test

ATD Serial No: 904

Test I.D: D062889

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	40	Pass
Impact Velocity		m/s	6.89 to 7.13	6.97	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.15	Pass
	20 msec	m/s	4.12 to 5.10	4.22	Pass
	30 msec	m/s	5.73 to 7.01	5.99	Pass
	40 to 70 msec	m/s	6.27 to 7.64	6.93	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	72	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	58	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	79	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	56	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	10	Pass


 Laboratory Technician

09/26/2006

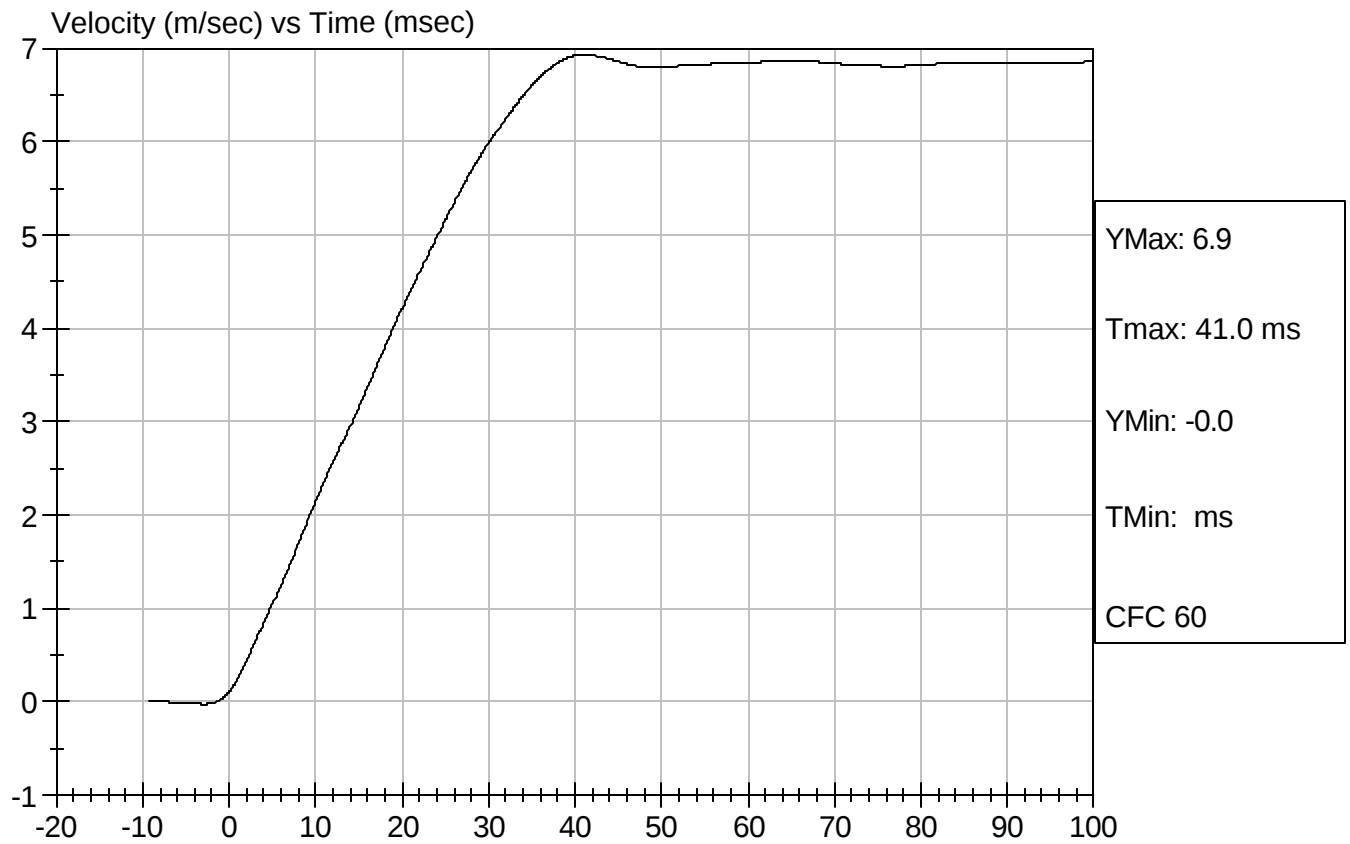
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D062889

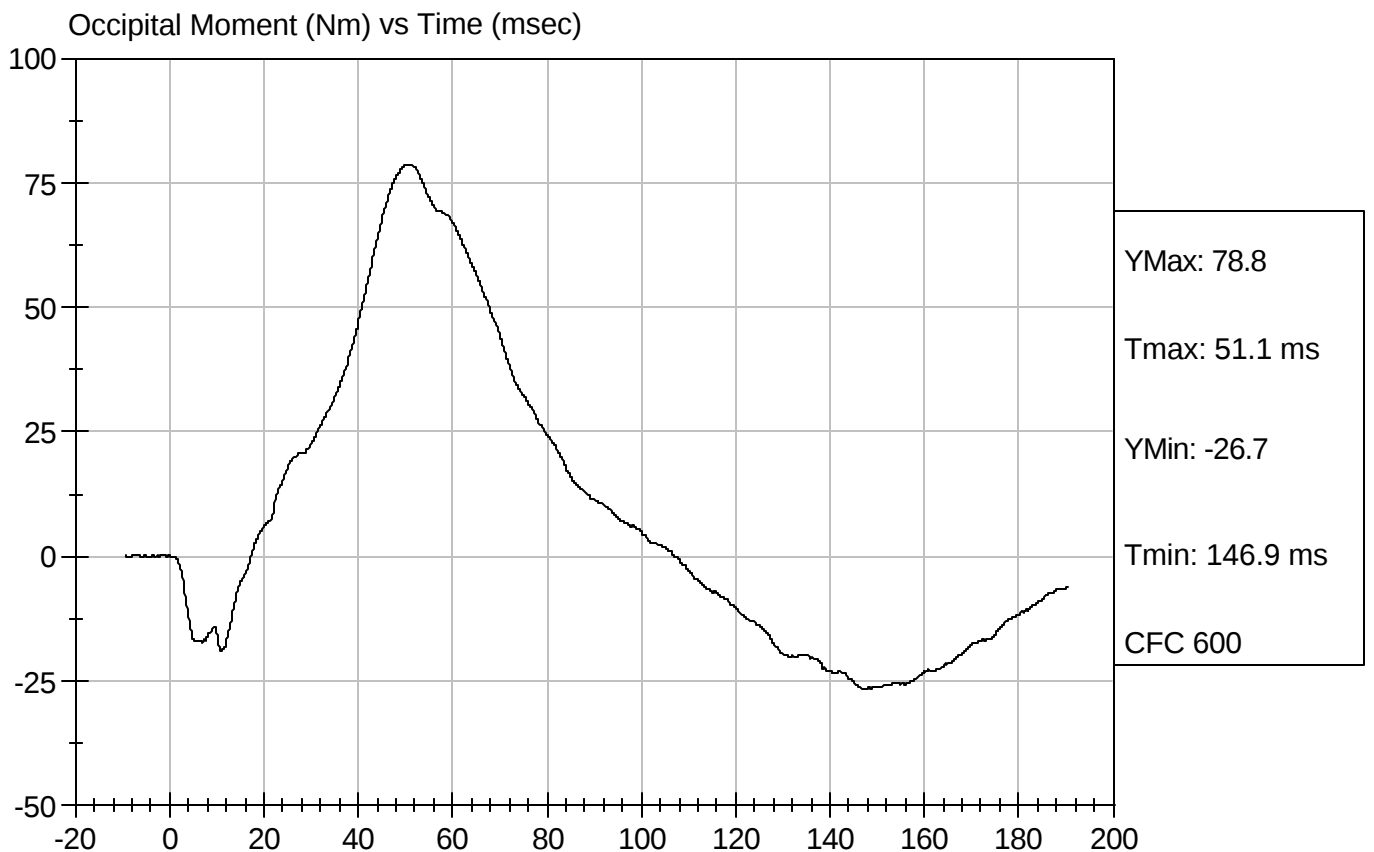
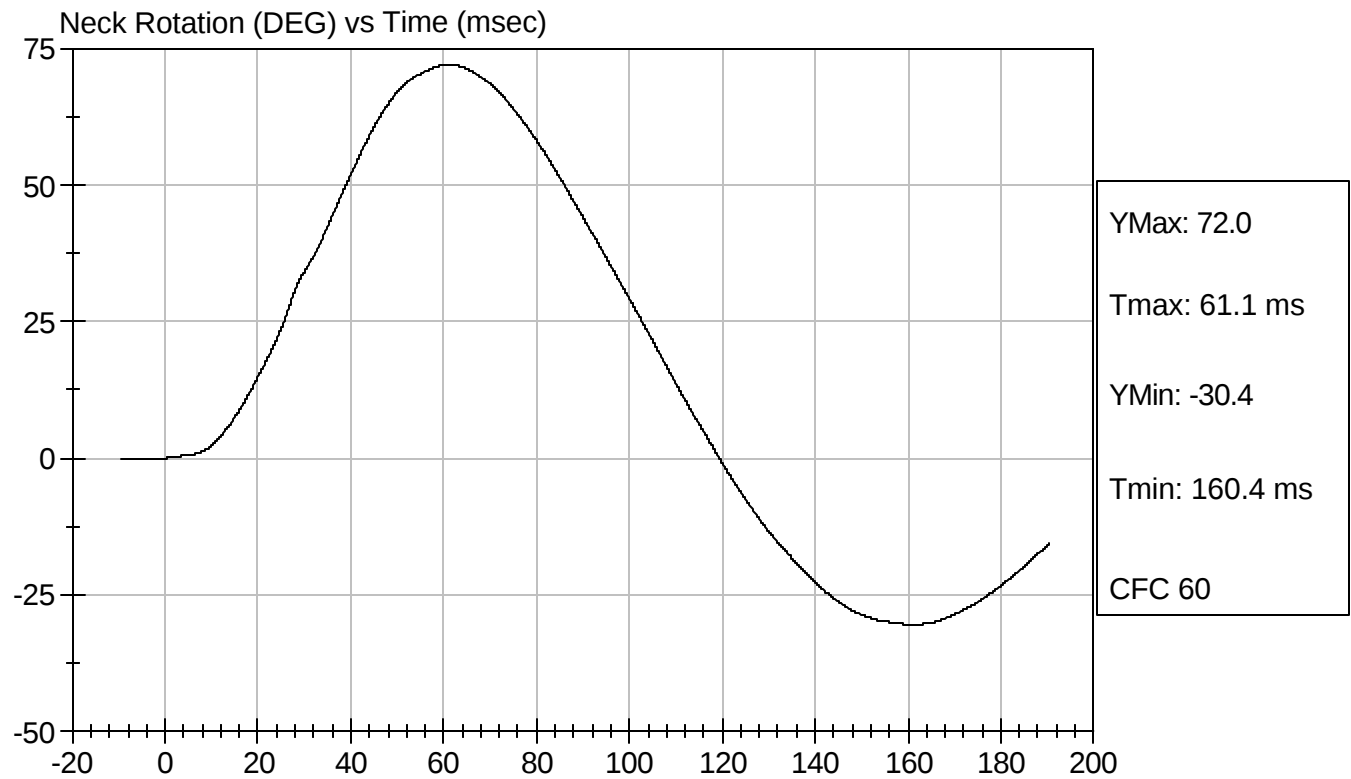
Test Date: 09/26/2006
Speed: 22.86 ft/sec, 6.97 m/sec





Test Desc: Neck Bending
Component ID: D062889

Test Date: 09/26/2006
Speed: 22.86 ft/sec, 6.97 m/sec



Calibration Test Results Summary

Dummy Serial Number: 904

Post-Test Calibration

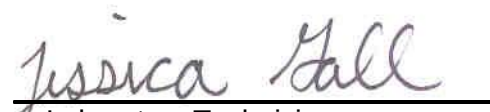
External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis 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 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


Laboratory Technician

10/17/2006
Test Date


Approved By



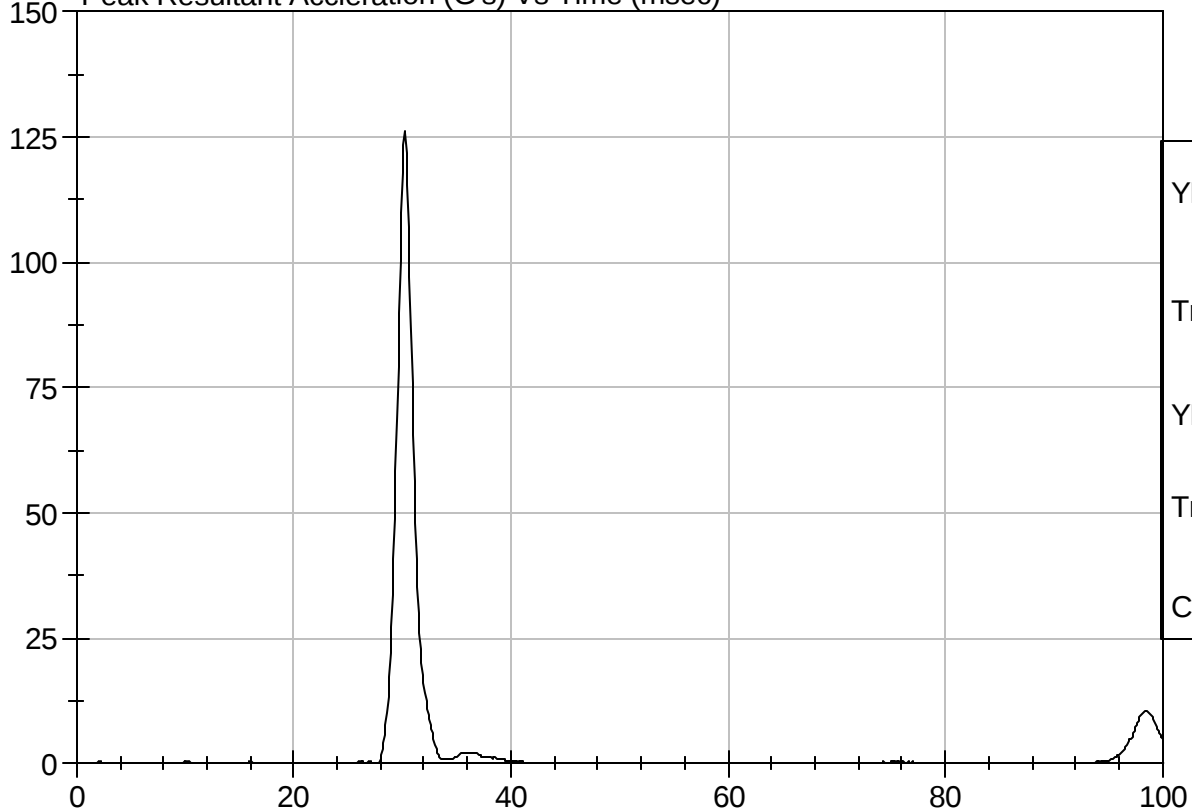
Test Description: Head Drop

Test Date: 10/17/2006

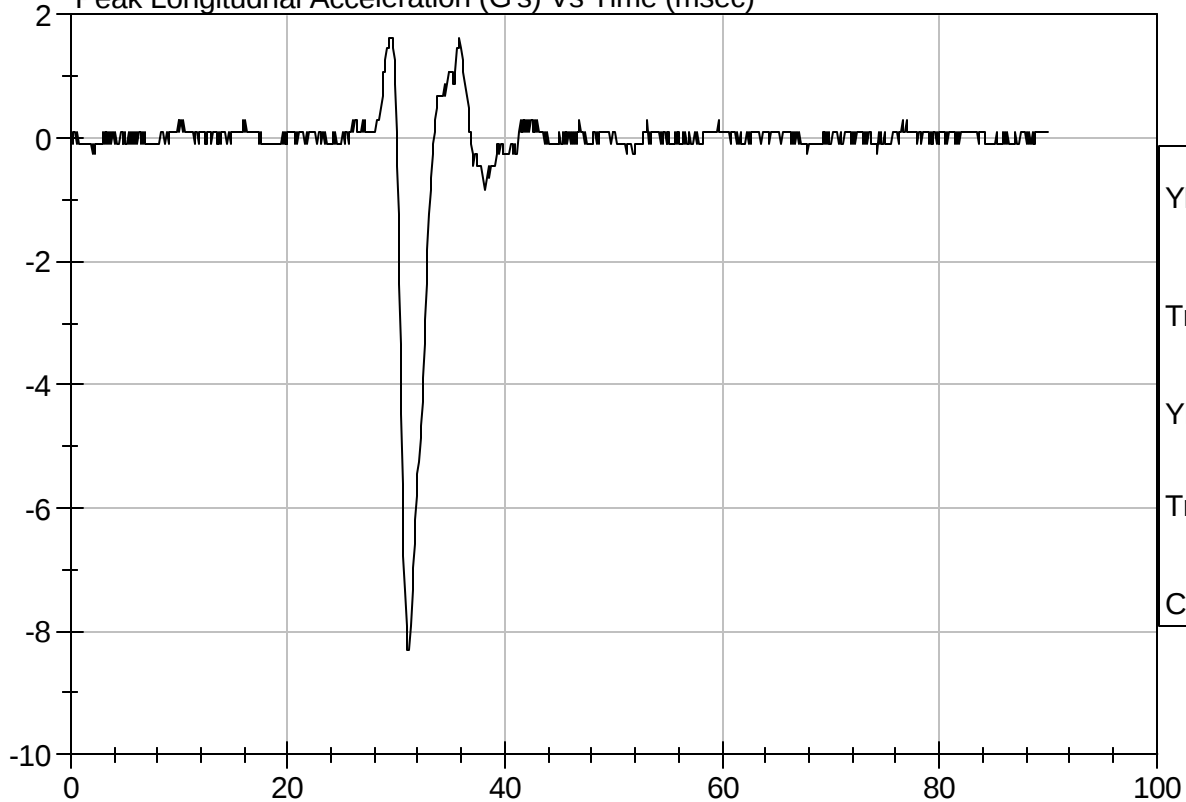
Component: D063041

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 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

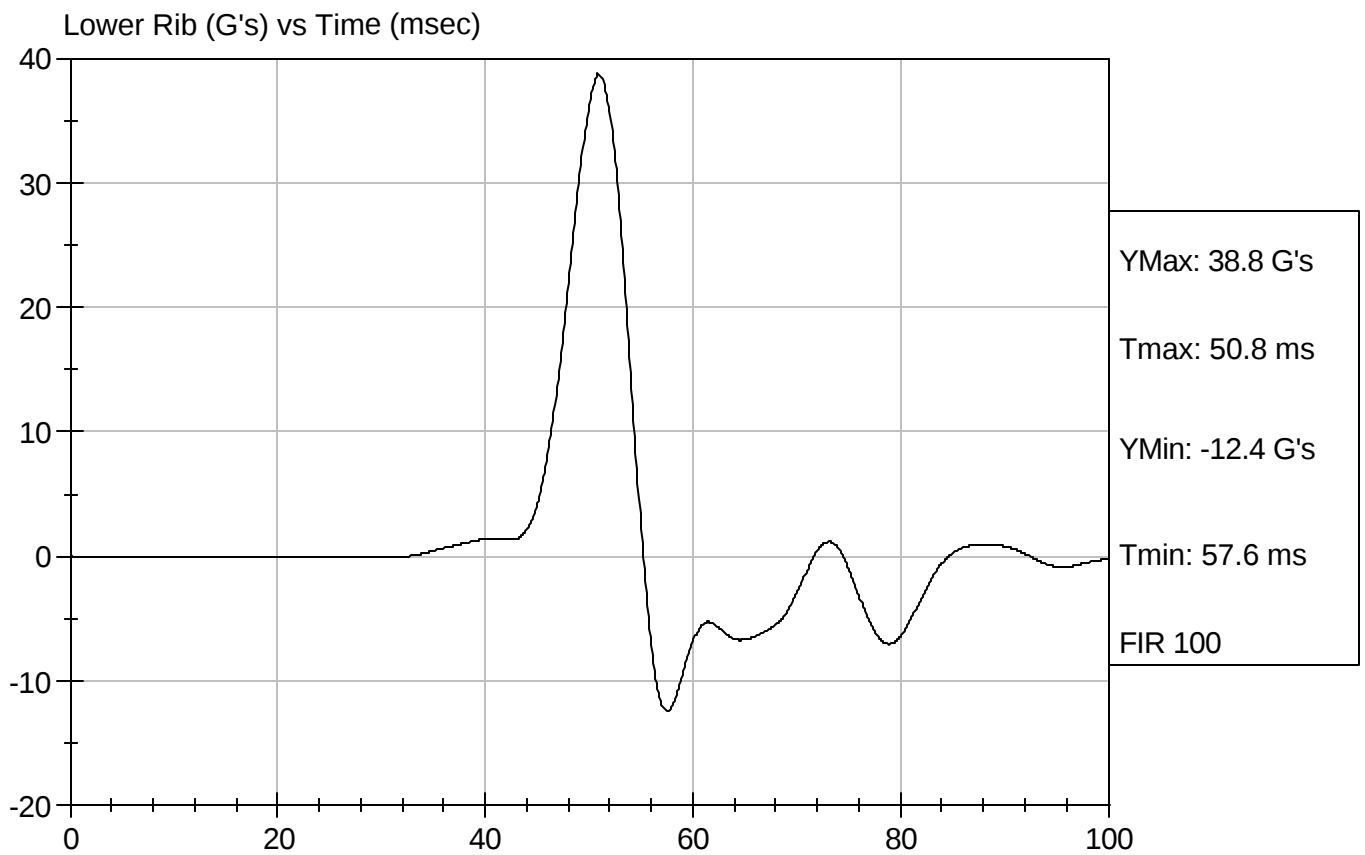
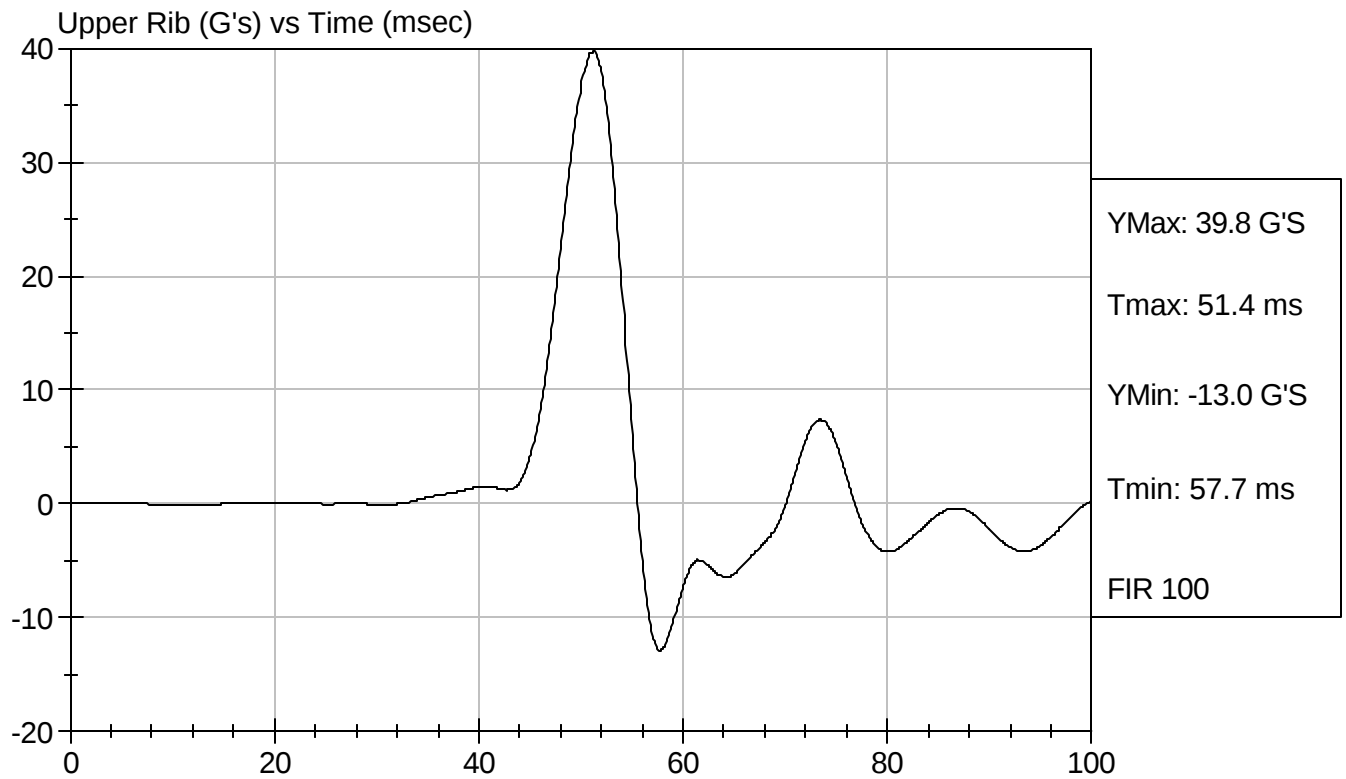
10/17/2006
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D063042

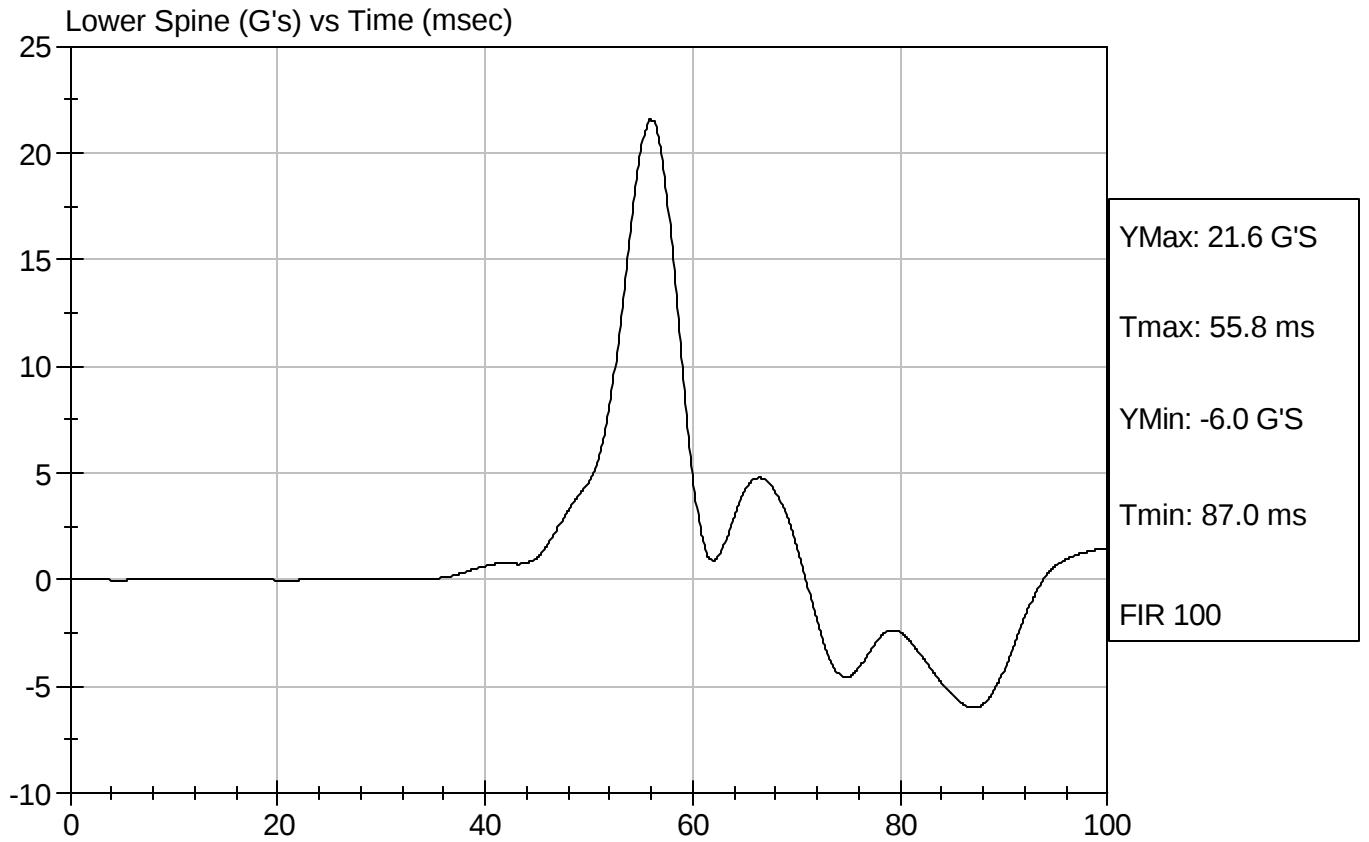
Test Date: 10/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D063042

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



SID 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

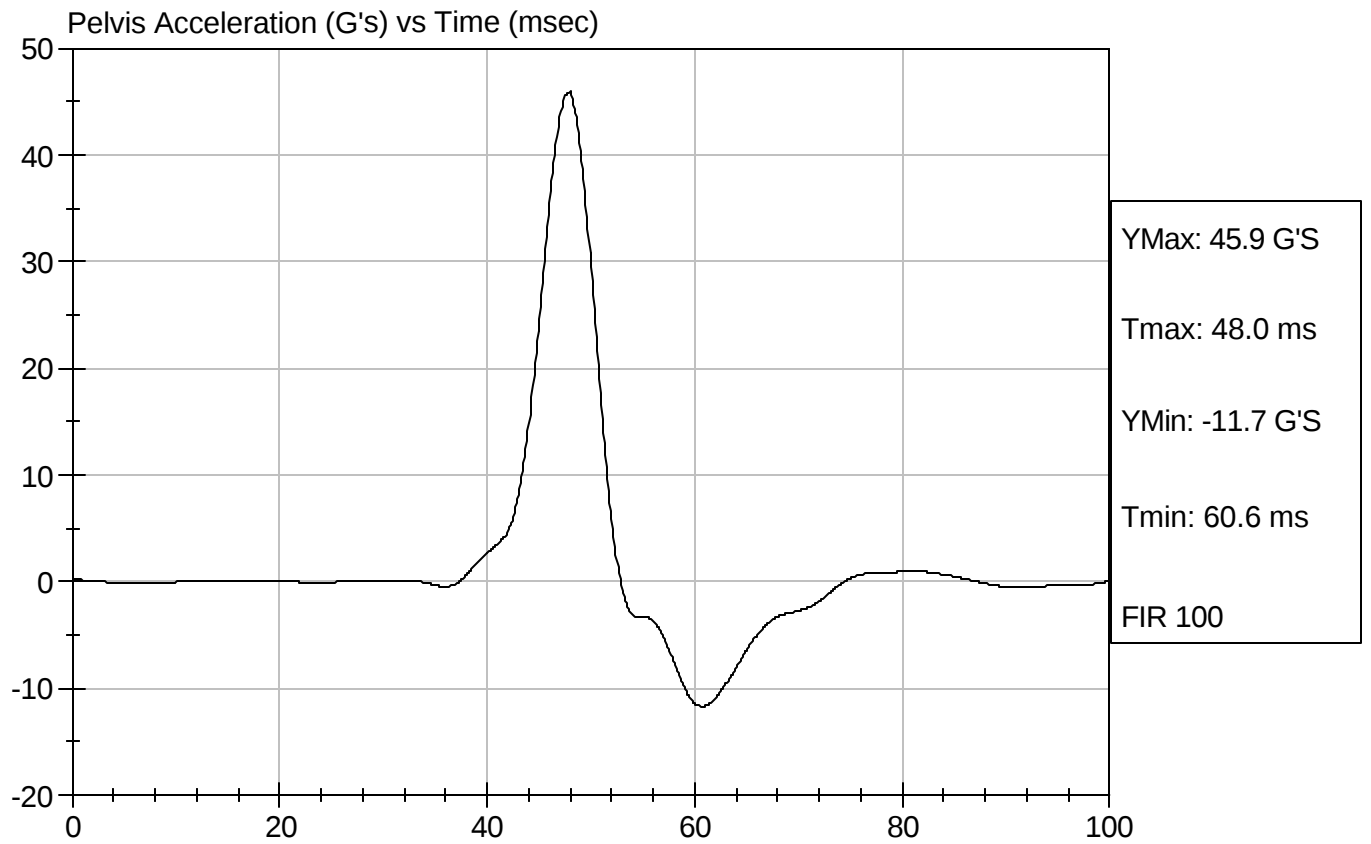
Test Date

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

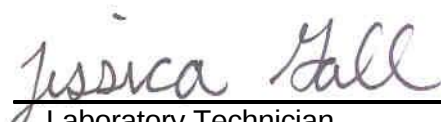


SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

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

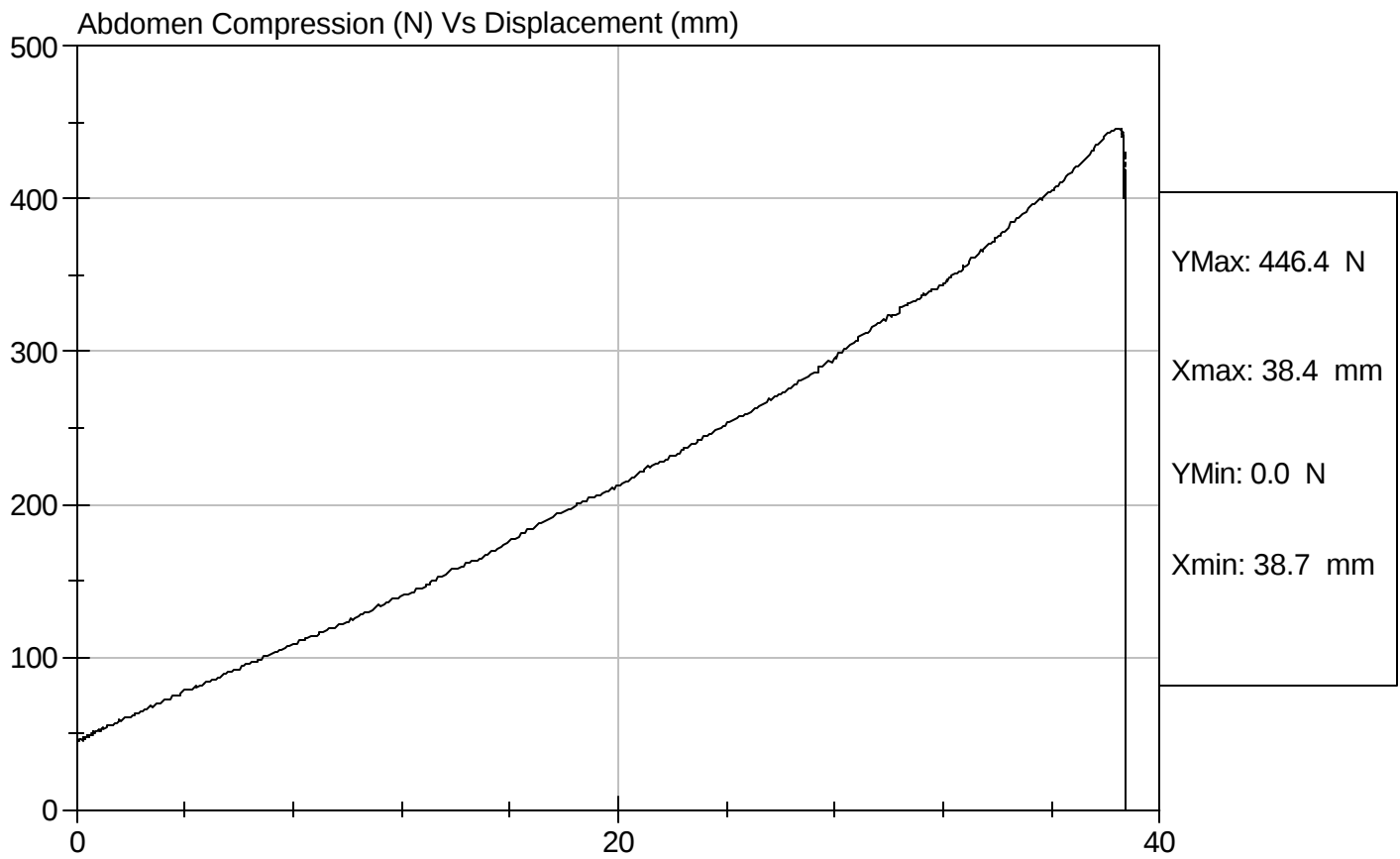


Test Description: Abdomen Compression

Test Date: 10/17/2006

Component: D063044

Speed: 0 ft/sec, 0 m/sec

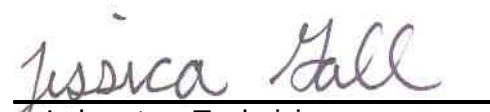


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

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	


Laboratory Technician

10/17/2006
Test Date


Approved By

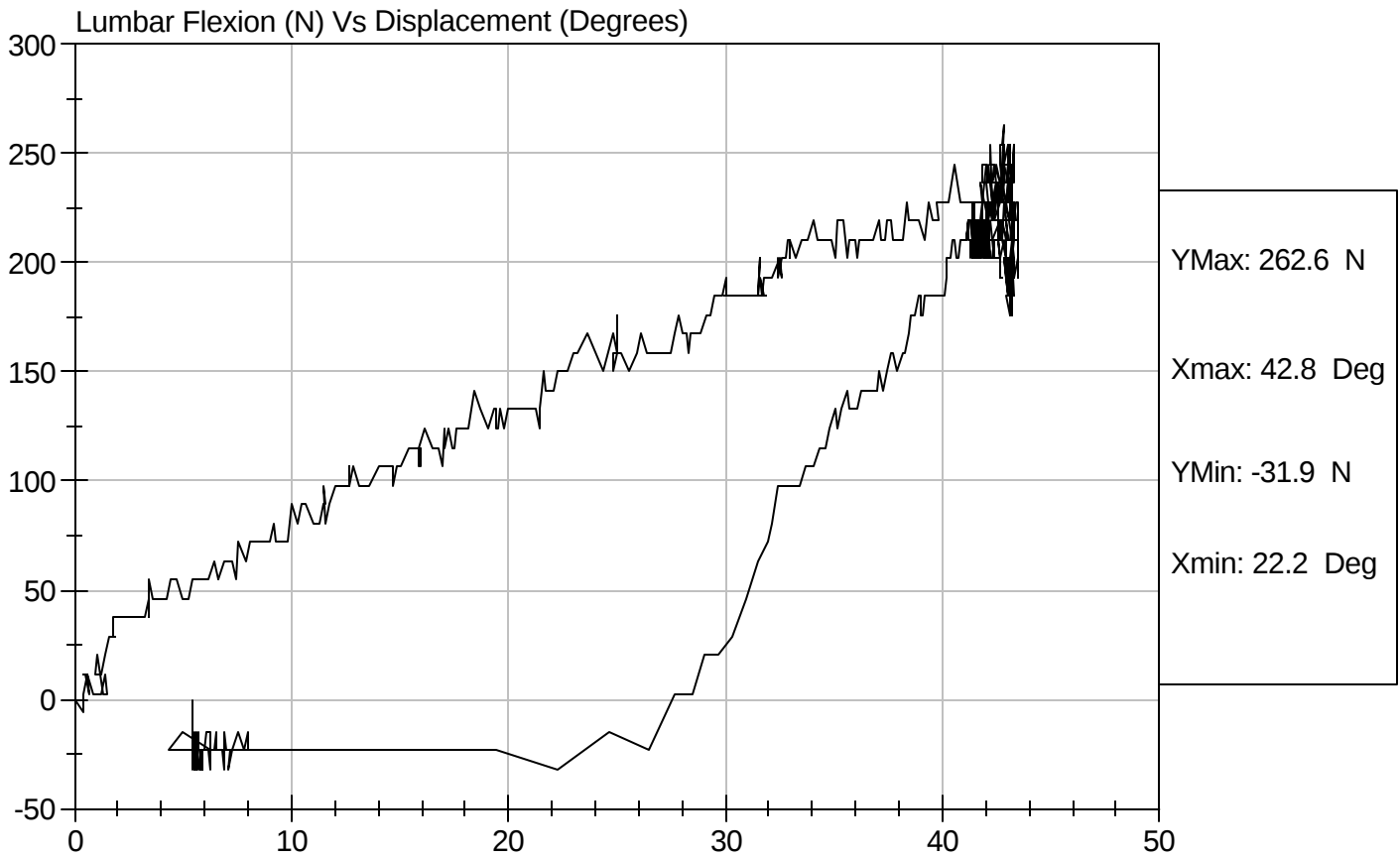


Test Description: Lumbar Flexion

Test Date: 10/17/2006

Component: D063045

Speed: 0 ft/sec, 0 m/sec

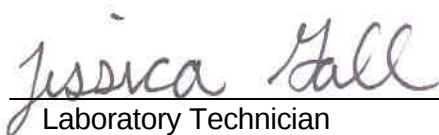


SID Calibration Data Sheet
Side Impact Dummy (SID)
Neck Pendulum Test

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

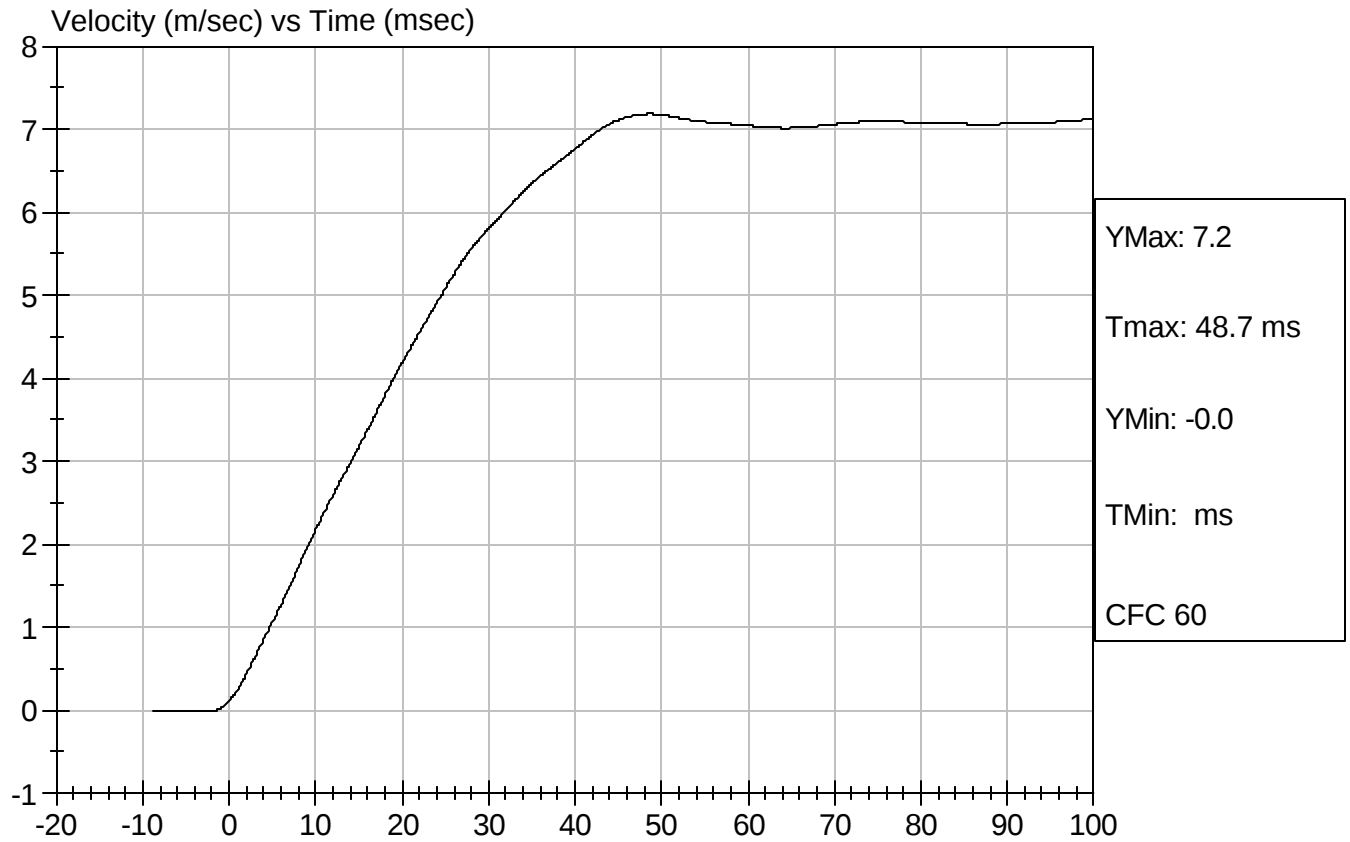
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D063049

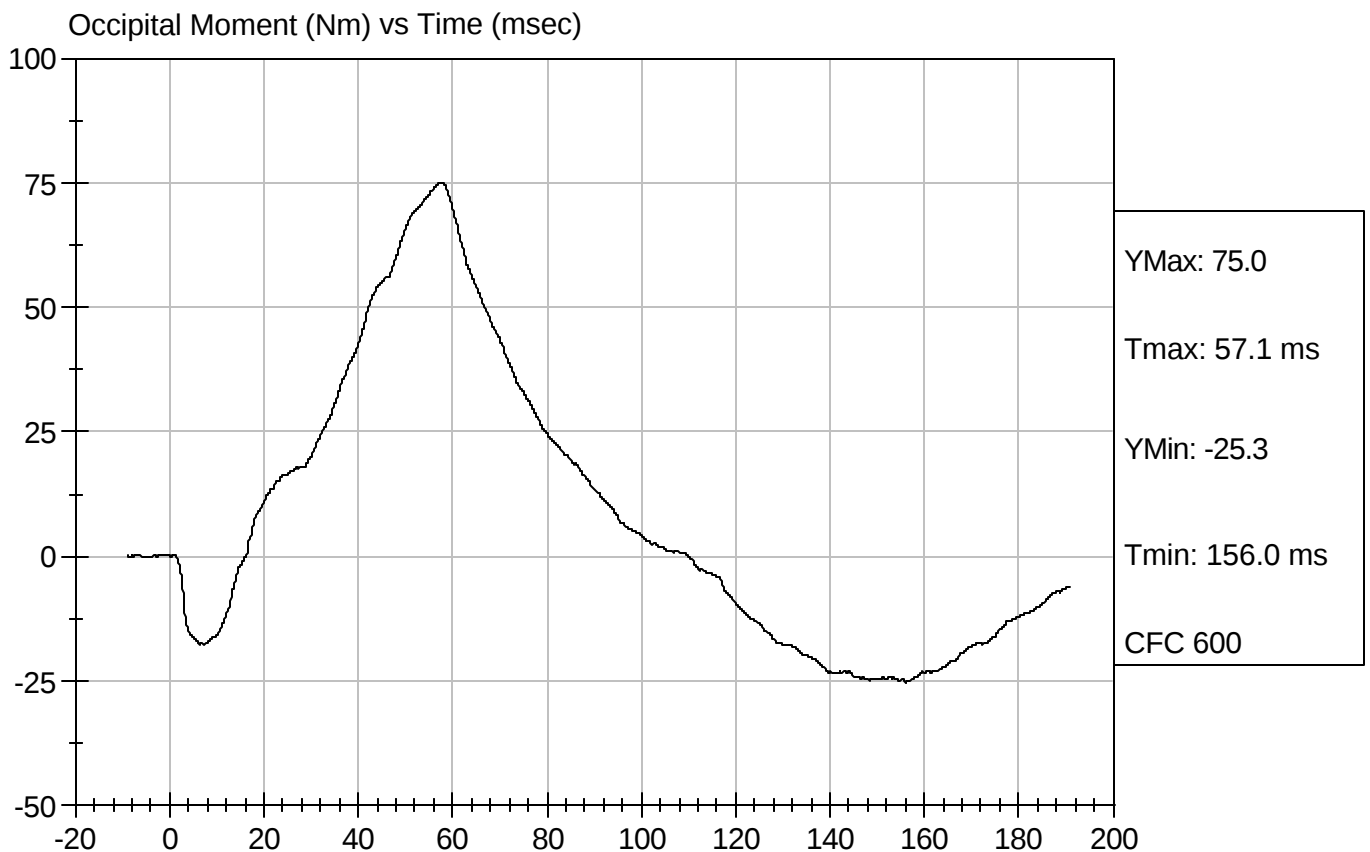
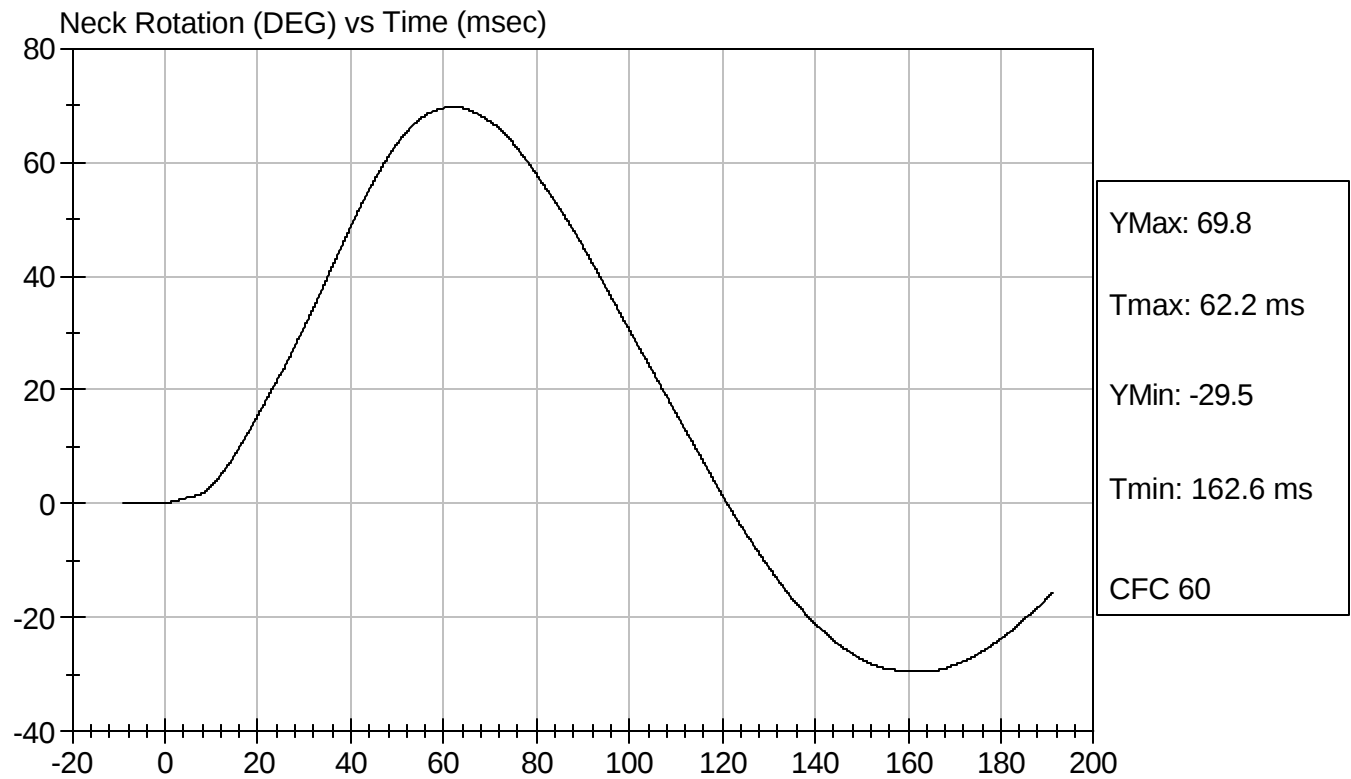
Test Date: 10/18/2006
Speed: 23.19 ft/sec, 7.07 m/sec





Test Desc: Neck Bending
Component ID: D063049

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



SID 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

09/26/2006
Test Date