

REPORT NUMBER: NCAPSIDE-MGA-2010-010

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**SUZUKI MOTOR CORPORATION
2010 SUZUKI KIZASHI SLS 4-DR SEDAN
NHTSA NUMBER: XA0501**

**PREPARED BY:
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BURLINGTON, WI 53105**



Test Date: January 12, 2010

Report Date: February 24, 2010

FINAL REPORT

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

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-09-D-00124.

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Technical Report Documentation Page

1. Report No. NCAPSIDE-MGA-2010-010	2. Government Accession No. 	3. Recipient's Catalog No. 																						
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Testing of 2010 Suzuki Kizashi SLS 4-Dr Sedan; NHTSA No.: XA0501		5. Report Date February 24, 2010																						
		6. Performing Organization Code MGA																						
7. Author(s) Joe Fleck, Project Engineer Ben Fischer, Project Engineer		8. Performing Organization Report No. NCAPSIDE-MGA-2010-010																						
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No. 																						
		11. Contract or Grant No. DTNH22-09-D-00124																						
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking, Office of Crashworthiness Standards 1200 New Jersey Ave, SE, Room W43-410, NVS-111 Washington, D.C. 20590		13. Type of Report and Period Covered: <i>Final Report</i> 1/12/2010 to 2/24/2010																						
		14. Sponsoring Agency Code NVS-111																						
15. Supplementary Notes 																								
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 2010 Suzuki Kizashi SLS 4-Dr Sedan 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 January 12, 2010. 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 225 mm at level 3. 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>PASSENGER</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">28.7</td> <td style="text-align: center;">55.1</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">32.6</td> <td style="text-align: center;">48.7</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">40.2</td> <td style="text-align: center;">40.5</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">36</td> <td style="text-align: center;">48</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">35.9</td> <td style="text-align: center;">46.2</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">218</td> <td style="text-align: center;">282</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>PASSENGER</u>	Left Upper Rib (LUR) Accel., g	28.7	55.1	Left Lower Rib (LLR) Accel., g	32.6	48.7	Lower Spine (T ₁₂) Accel., g	40.2	40.5	Thoracic Trauma Index (TTI)	36	48	Pelvis (PEV) Accel., g	35.9	46.2	HIC	218	282
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17. Key Words New Car Assessment Program (NCAP) Side Impact Side Impact Hybrid III Dummy (SID/HIII) Occupant Side Impact Protection		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, 1200 New Jersey Ave, SE Washington, D.C. 20590																						
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 141	22. Price 																					

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test was to evaluate side impact protection in a 2010 Suzuki Kizashi SLS 4-Dr Sedan manufactured by Suzuki Motor 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 2010 Suzuki Kizashi SLS 4-Dr Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.0 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 1766.3 kg and the test weight of the MDB was 1361.5 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on January 12, 2010.

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

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 225 mm at level 3, 1500 mm rearward of the vertical impact point. The driver and passenger SID/HIIIs, Serial Nos. 271 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	218	37.1	60.6	36	35.9
Passenger	282	39.3	52.7	48	46.2

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

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

TEST NOTES

There was no valid data collected for:

- Passenger Lower Rib Y Redundant after 90 msec.
- Floorpan @ Rear Axle X, Y, Z
- Left Front Sill Y
- Left Lower B-Post Y
- Left Mid B-Post Y
- Left Lower A-Post Y

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

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

TEST VEHICLE INFORMATION

Make	Suzuki
Model	Kizashi
Body Style	Sedan
NHTSA No.	XA0501
VIN	JS2RE9A75A6100043
Color	Black Pearl
Delivery Date	12/23/2009
Odometer Reading (mile)	58 miles
Dealer	Ray Suzuki
Transmission	Automatic
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	2.4
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	Yes
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Anti-lock Brakes	Yes
Traction Control	Yes
All Wheel Drive	No
Power Seats	Yes
Pretensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Suzuki Motor Corporation
Date of Manufacture	10/09

GVWR (kg)	2000
GAWR Front (kg)	1200
GAWR Rear (kg)	1100

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				400
Cargo Wt. (RCLW) (kg)				60

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

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	466.7	314.4		522.5	401.0	
Right	kg	463.6	306.6		475.4	367.4	
Ratio	%	60.0	40.0		56.5	43.5	
Totals	kg	930.3	621.0	1551.3	997.9	768.4	1766.3

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1551.3
Weight of 2 P572M ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	60
Calculated Vehicle Target Weight (TVTW)	kg	1772.8

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

Weight of Ballast in Trunk (kg): 22.7

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	717	716	709	713	1082
As Tested	mm	704	711	686	694	1175
Fully Loaded	mm	701	710	682	691	

TEST VEHICLE VERTICAL IMPACT LINE DATA

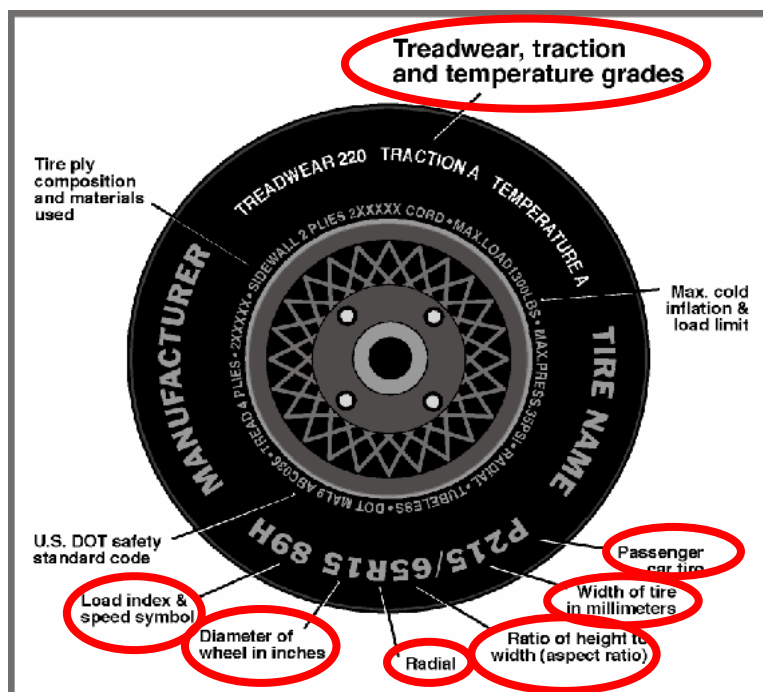
Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2702
Target Impact Point Aft of Front Axle	mm	411
Actual Impact Point Aft of Front Axle	mm	397

DATA SHEET NO. 2

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Test Pressure (kPa)	260	260
Recommended Tire Size	P235/45R18	P235/45R18
Tire Size on Vehicle	P235/45R18	P235/45R18
Tire Manufacturer	Dunlop	Dunlop
Tire Name	SP Sport 700	SP Sport 700
Tire Type	Passenger	Passenger
Tire Width (mm)	235	235
Ratio of Height to Width (aspect ratio)	45	45
Radial	R	R
Wheel Diameter	18	18
Load Index & Speed Symbol	94V	94V
Treadwear	340	340
Traction Grade	A	A
Temperature Grade	A	A

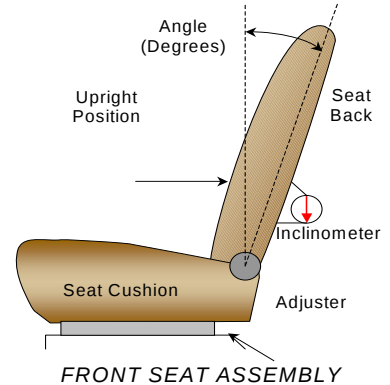
DATA SHEET NO. 3 **TEST VEHICLE INFORMATION**

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows:
 The seat back angle for driver seat at forward-most locking position or forward stop is -9 degrees, and test position is 3 degrees at the head restraint stay at the notch.

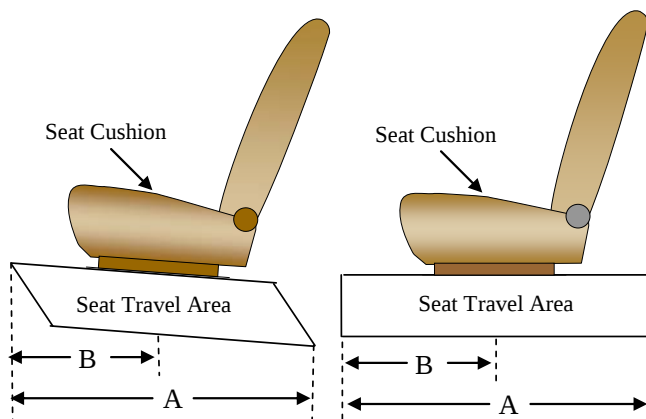


Driver seat back angle: 3.0 degrees at the headrest post

Passenger seat back angle: fixed

SEAT FORE/AFT POSITIONS

	Total Fore/Aft Travel	Placed in position #
Driver Seat	296 mm	148 mm
Rear Seat	Fixed	Fixed



DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

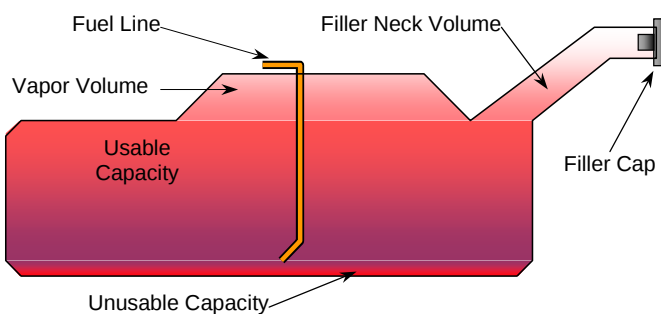
Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
Test Program: NCAP Side Impact

NHTSA No. XA0501
Test Date: 1/12/2010

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	62.8
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	57.8 to 59.0
Actual Amount of Solvent used	58.3
1/3 of Usable Capacity	20.9

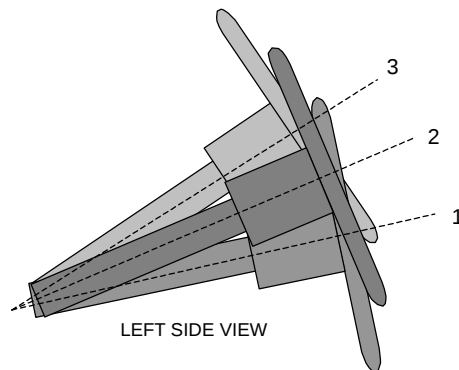
The test vehicle is equipped with an electric fuel pump. Push the engine switch twice without depressing the brake pedal. (Ignition switch position "ON").



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITION

	Fore/Aft (mm)	Degrees
Lowermost position No. 1	280	69.0
Geometric center position No. 2	255	66.5
Uppermost position No. 3	230	64.0

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

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

MDB SPECIFICATIONS

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

MDB WEIGHTS

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

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.0
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.6
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	14 forward
Vertical Offset	mm	+/-20	5 down

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

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID HIII / 271	SID HIII / 272
Head Contact	Curtain Airbag, Headrest	Curtain Airbag, Side Header, Headrest
Upper Torso Contact	Side Airbag	Side Airbag
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	Struck side door was unlocked; Non-struck side door was unlocked	Struck side door was unlocked; Non-struck side door was unlocked
Left Side Door Opening	Door remained closed and latched	Door remained closed and latched
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	None
Other Notable Effects	None

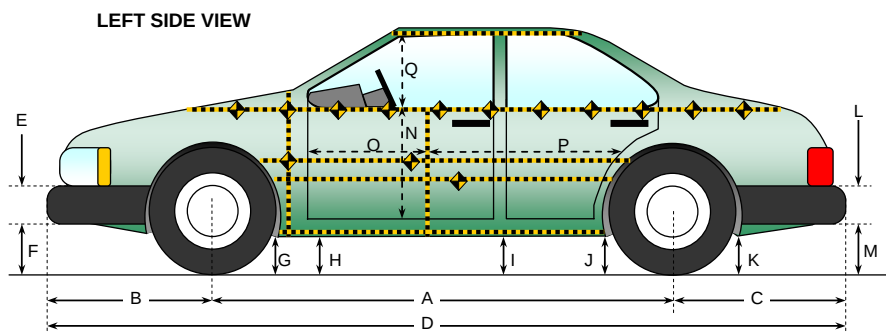
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

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

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



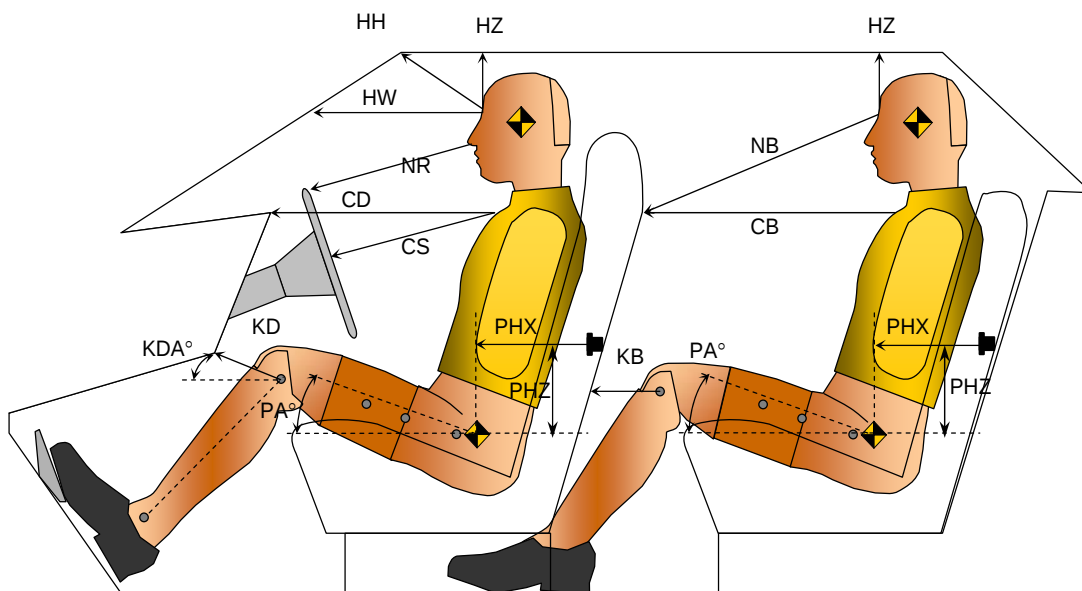
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2702	2701	1
B	Front Axle to FSOV	941	941	0
C	Rear Axle to RSOV	1001	1002	-1
D	Total Length at Centerline	4644	4644	0
E	Front Bumper Thickness	115	115	0
F	Front Bumper Bottom to Ground	268	275	-7
G	Sill Height at Front Wheel Well	161	165	-4
H	Sill Height at Front Door Leading Edge	164	169	-5
I	Sill Height at "B" Pillar	168	161	7
J1	Sill Height at Rear Wheel Well	162	162	0
J2	Pinch Weld Height at Rear Wheel Well	163	159	4
K	Sill Height Aft of Rear Wheel Well	224	214	10
L	Rear Bumper Thickness	120	120	0
M	Rear Bumper Bottom to Ground	281	268	13
N	Sill Height to Window Bottom Sill	726	611	115
O	Front Door Leading Edge to Impact CL	798	758	40
P	Rear Door Trailing Edge to Impact CL	1127	1092	35
Q	Front Window Opening	373	373	0
R	Right Side Length	3461	3461	0
S	Left Side Length	3461	3439	22
T	Vehicle Width at "B" Post	1794	1570	224

DATA SHEET NO. 7
SID/HII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

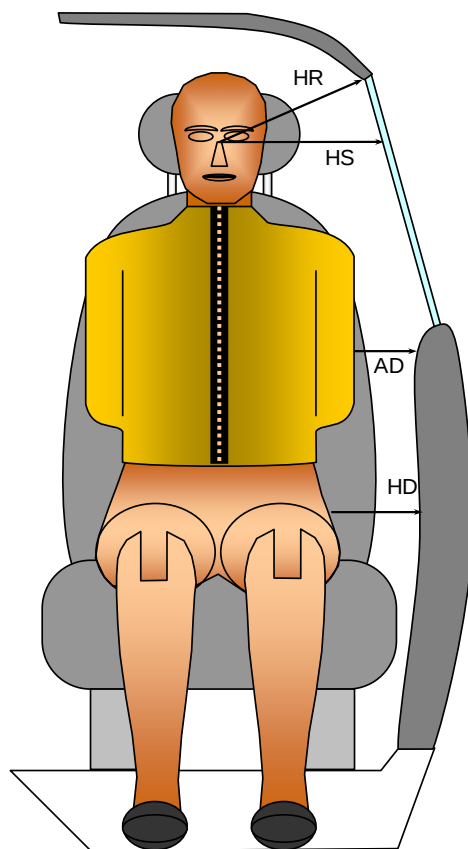


Driver Code	Pass. Code	Measurement Description	Driver S/N 271		Passenger S/N 272	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	442			
HW		Head to Windshield	629			
HZ	HZ	Head to Roof	121		133	
NR	NB	Nose to Rim/Nose to Seatback	475		614	
CD	CB	Chest to Dash or Seatback	553		518	
CS		Chest to Steering Wheel	346			
KDL	KBL	Left Knee to Dash or Seatback	186	25.3	217	21.6
KDR	KBR	Right Knee to Dash or Seatback	153	20.6	206	21.3
PA	PA	Pelvic Angle		23.9		24.3
PHX	PHX	H-Point to Striker (X-Axis)	236		261	
PHZ	PHZ	H-Point to Striker (Z-Axis)	225		288	

DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



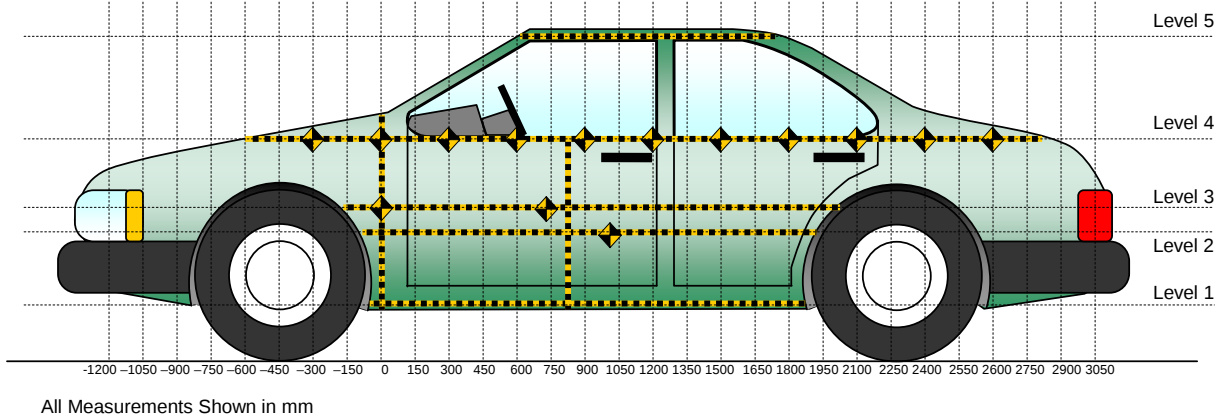
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 271	Passenger S/N 272
HR	Head to Side Header	mm	186	185
HS	Head to Side Window / C-Post Trim	mm	313	210
AD	Arm to Door	mm	95	115
HD	H-Point to Door	mm	146	190

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
Test Program: NCAP Side Impact

NHTSA No. XA0501
Test Date: 1/12/2010



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	29	1800	1354
4	Window Sill	93	1350	972
3	Mid Door	225	1500	643
2	Occupant H-Point	215	1500	522
1	Sill Top	36	1200	261
	Maximum Penetration	225		

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
0	235	197	210	308		239	238	247	316		4	41	37	8	
150	240	219	216	304		253	356	345	331		13	137	129	27	
300	241	219	214	297		255	391	408	340		14	172	194	43	
450	238	217	213	299		257	393	423	336		19	176	210	37	
600	236	216	210	296	487	259	394	433	350	499	23	178	223	54	12
750	236	215	209	297	479	263	412	429	356	496	27	197	220	59	17
900	235	214	207	294	476	266	417	428	366	430	31	203	221	72	-46
1050	233	214	207	294	476	269	411	416	367	441	36	197	209	73	-35
1200	234	214	205	295	476	270	407	399	377	453	36	193	194	82	-23
1350	237	215	207	298	479	270	430	415	391	492	33	215	208	93	13
1500	240	217	209	300	483	269	432	434	371	469	29	215	225	71	-14
1650	241	219	211	305	489	269	428	426	357	444	28	209	215	52	-45
1800	239	215	212	310	494	261	377	404	334	523	22	162	192	24	29
1950		197	196	317	501		235	293	306	513		38	97	-11	12
2100				324	521				280	531				-44	10
2250				335					351					16	
2400				351					362					11	
2550				373					381					8	
2700				399					403					4	

Reference plane is parallel to test vehicle longitudinal centerline.

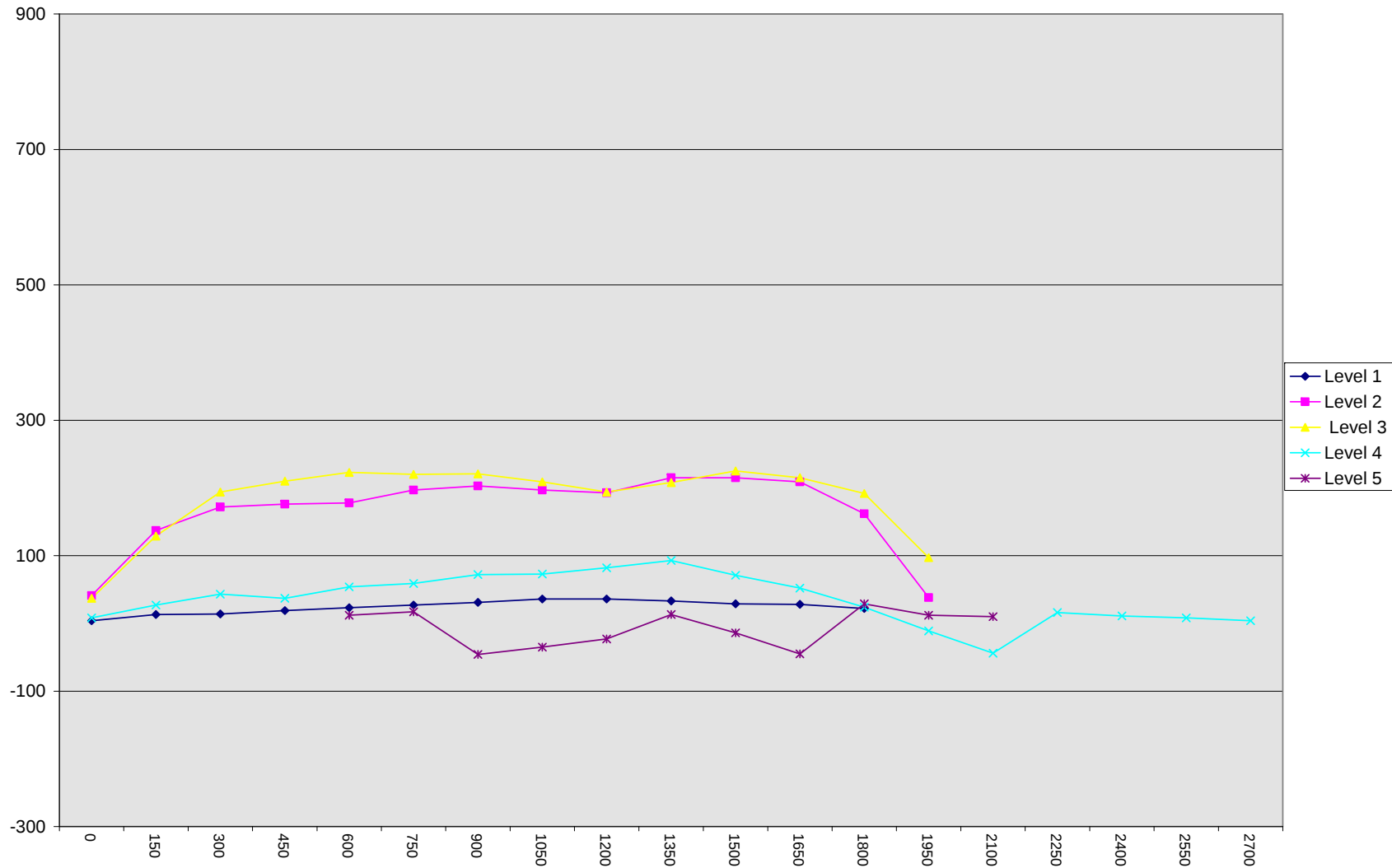
Given dimensions = Reference plane to car body

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

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
Test Program: NCAP Side Impact

NHTSA No. XA0501
Test Date: 1/12/2010

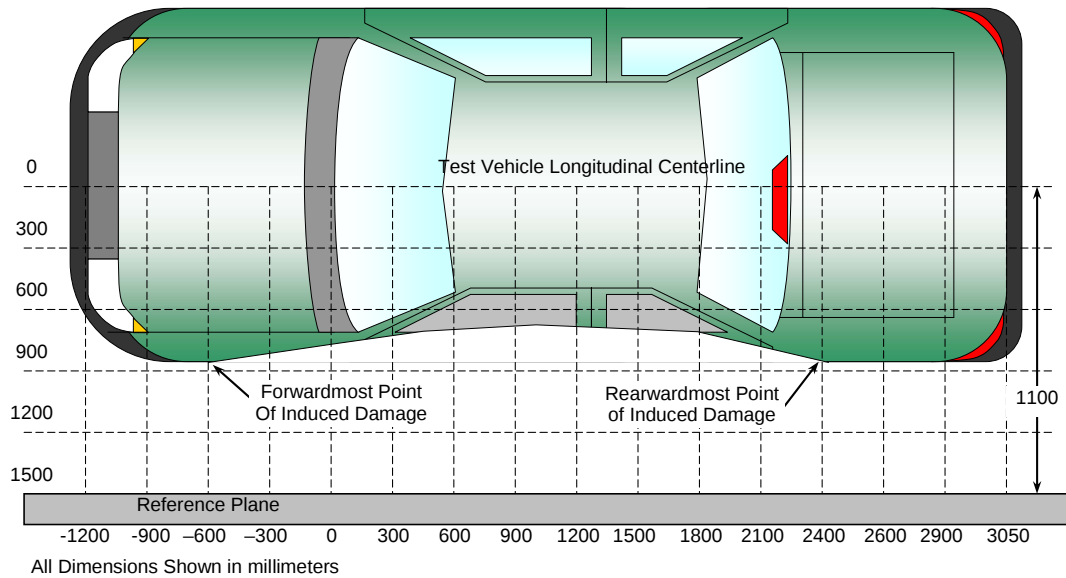
16



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



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	399	403	4
2	2378	4	351	362	11
3	1772	2	212	424	212
4	1169	2	205	409	204
5	573	3	210	428	218
6	0	4	308	316	8

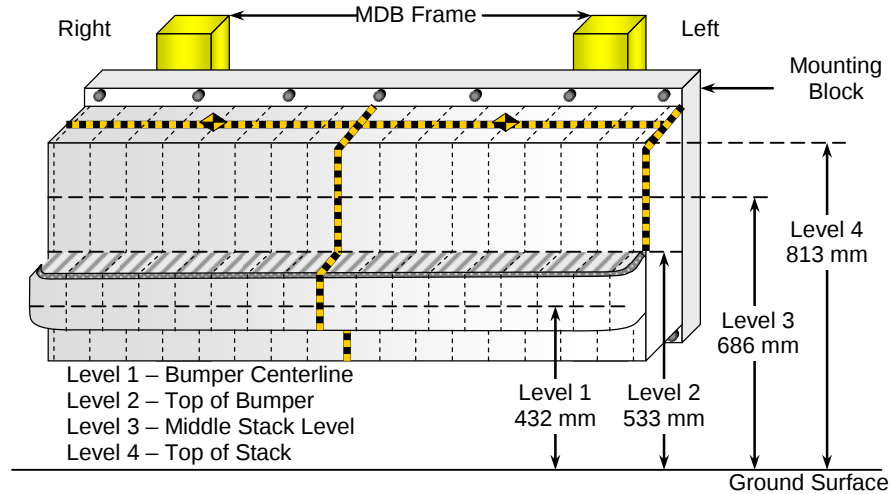
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



DEFORMABLE BARRIER STATIC CRUSH

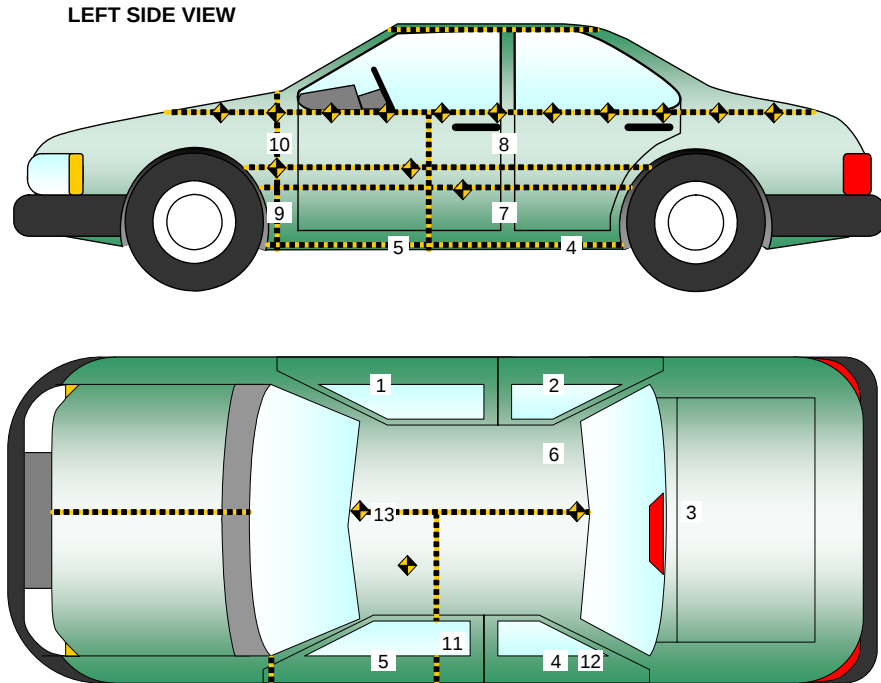
Stack Level	Distance Right of Center								C _L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	169	168	176	182	190	191	195	202	197	190	191	197	198	205	210	230	236
2	81	83	84	84	83	81	90	88	90	95	104	107	110	115	118	125	136
3	57	35	26	29	46	66	80	53	36	31	32	28	37	49	61	73	136
4	86	59	44	41	58	100	97	86	63	55	49	47	55	63	77	97	158

All Dimensions in mm

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



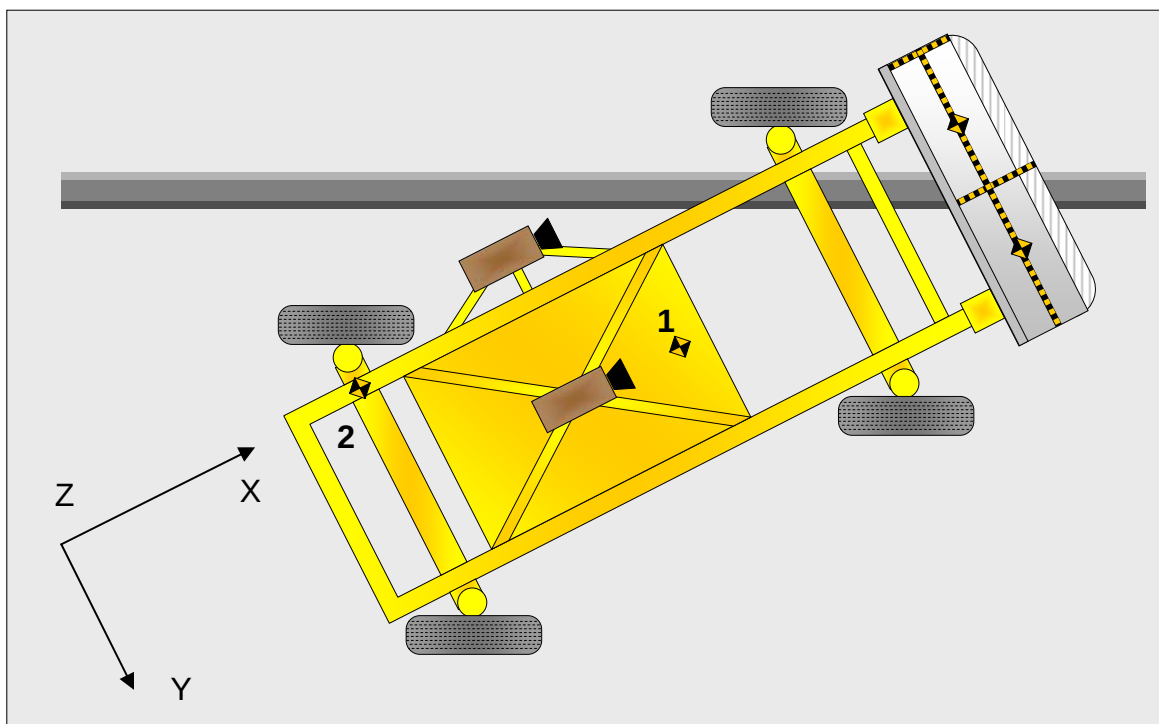
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2632	732	-205
2	Right Sill at Rear Seat	1520	736	-209
3	Rear Floorpan Above Axle	1095	0	-515
4	Left Sill at Rear Door	1515	-736	-210
5	Left Sill at Front Door	2629	-732	-205
6	Rear Occupant Compartment	1793	336	-386
7	Left Lower B-Post	2031	-738	-499
8	Left Middle B-Post	2115	-709	-777
9	Left Lower A-Post	3115	-724	-503
10	Left Middle A-Post	3178	-824	-782
11	Front Seat Track	2199	-560	-530
12	Rear Seat Track or Structure			
13	Vehicle CG	2473	0	-327

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

DATA SHEET NO. 14
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



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

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

DATA SHEET NO. 15
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
Test Program: NCAP Side Impact

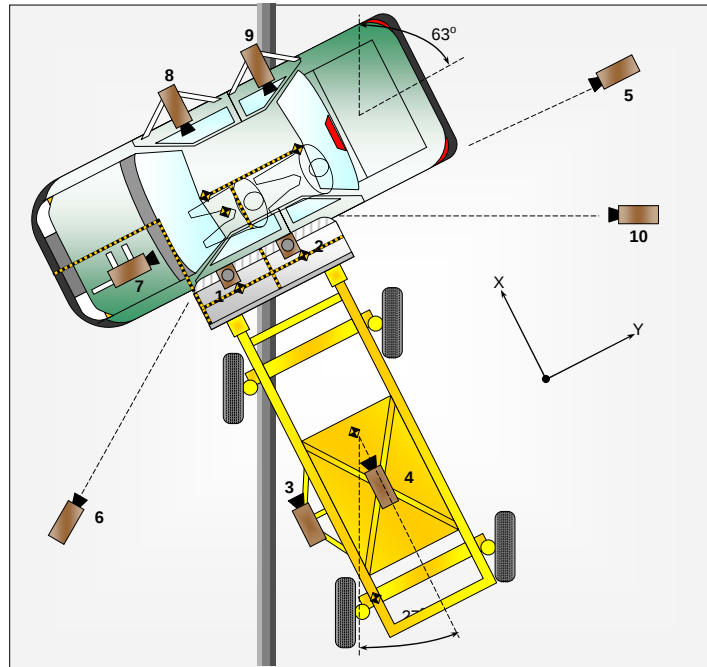
NHTSA No. XA0501
Test Date: 1/12/2010

	Elements	Pre-Test (mm)
1	Total Length	4644
2	Total Width	1794
3	Bumper Top Height	542
4	Bumper Bottom Height	426
5	Longitudinal Member Top Height	580
6	Distance between Longitudinal Members	895
7	Longitudinal Member Width	90
8	Engine Top Height	822
9	Engine Bottom Height	162
10	Engine and gearbox width	825
11	Front bumper-engine distance	540
12	Front shock absorber fixing height	900
13	Bonnet leading edge height	787
14	Front shock absorber fixing width	1160
15	Front bumper – front axle distance	941
16	Front axle – a pillar distance	452
17	A-pillar – B-pillar distance	1130
18	B-Pillar – rear axle distance	1128
19	B-pillar – C-pillar distance	690
20	Roof sill bottom height	1270
21	Roof sill top height	1420
22	Floor sill bottom height	202
23	Floor sill top height	345

DATA SHEET NO. 16
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Close-up	-545	-235	-5055	50	1000
2	Overhead Overall	620	1245	-5050	14	1000
3	MDB Onboard, Impact Point Close-up				50	
4	MDB Onboard, Centerline of Impact				16	
5	Right Side, Ground Level, Overall	20	7170	-1250	24	1000
6	Left Side, Ground Level, Overall	-1455	-5230	-1245	24	1000
7	Vehicle Onboard Front SID/HIII, Front				12.5	1000
8	Vehicle Onboard Front SID/HIII, Side				8	1000
9	Vehicle Onboard Rear SID/HIII, Side				8	1000
10	Real Time Coverage				13	24

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

DATA SHEET NO. 17
SUMMARY OF FMVSS 301 DATA

Test Vehicle: 2010 Suzuki Kizashi SLS 4-Dr Sedan
 Test Program: NCAP Side Impact

NHTSA No. XA0501
 Test Date: 1/12/2010

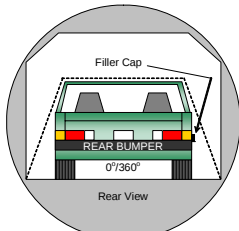
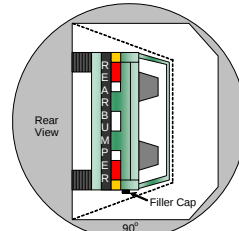
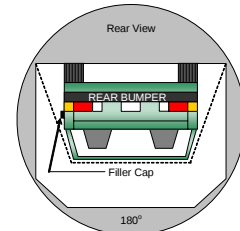
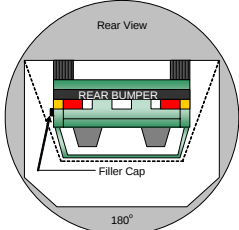
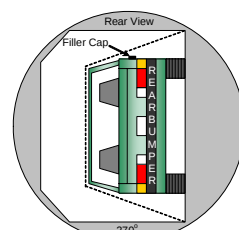
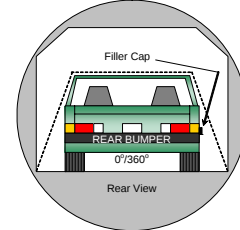
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 11:45 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°	114	300	First 5	0
90° to 180°	112	300	First 5	0
180° to 270°	105	300	First 5	0
270° to 360°	113	300	First 5	0

APPENDIX A
PHOTOGRAPHS

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



Left 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 ¾ View



Post-Test Left Rear ¾ View



Pre-Test Rear View



Post-Test Rear View



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



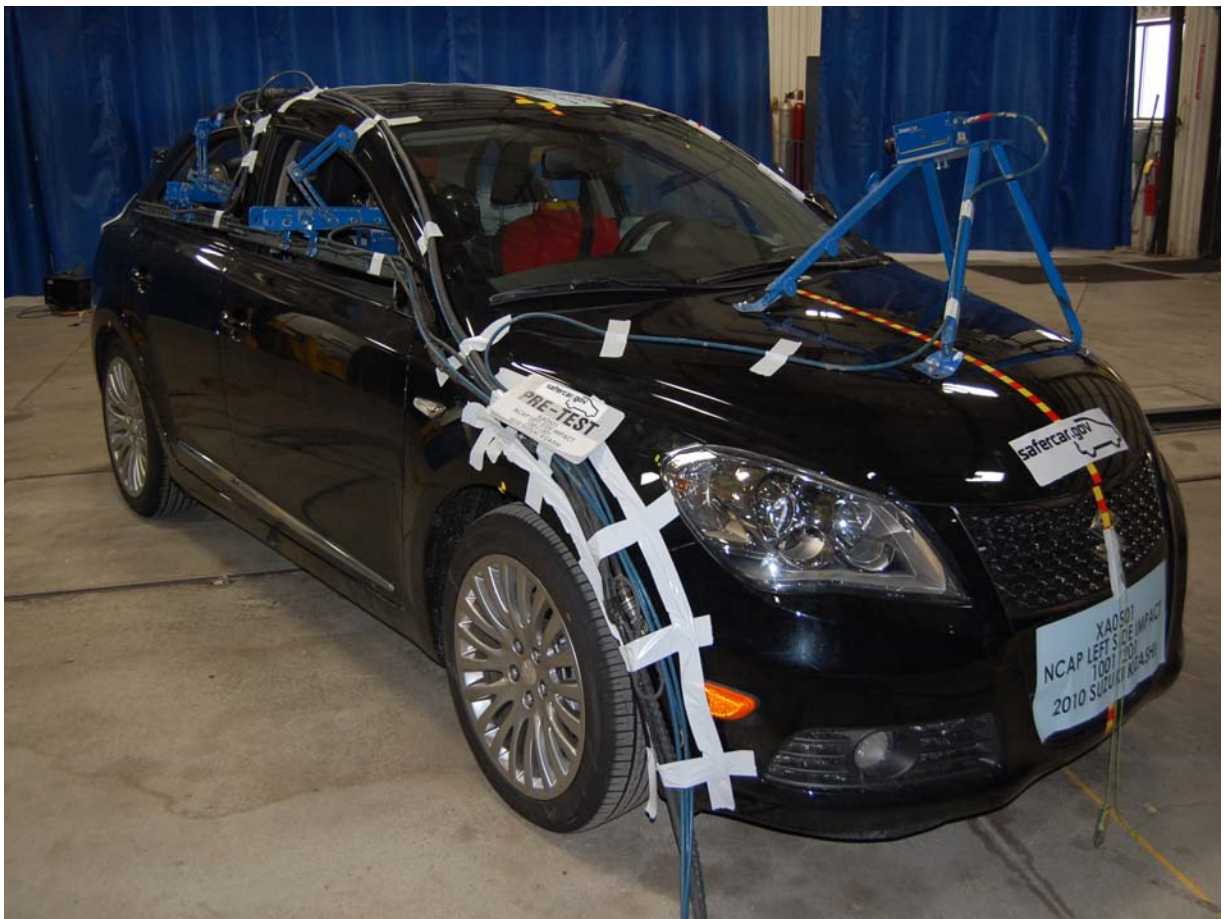
Post-Test Right Rear $\frac{3}{4}$ View



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 Left Impact Point



Post-Test Left Impact Point



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



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



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



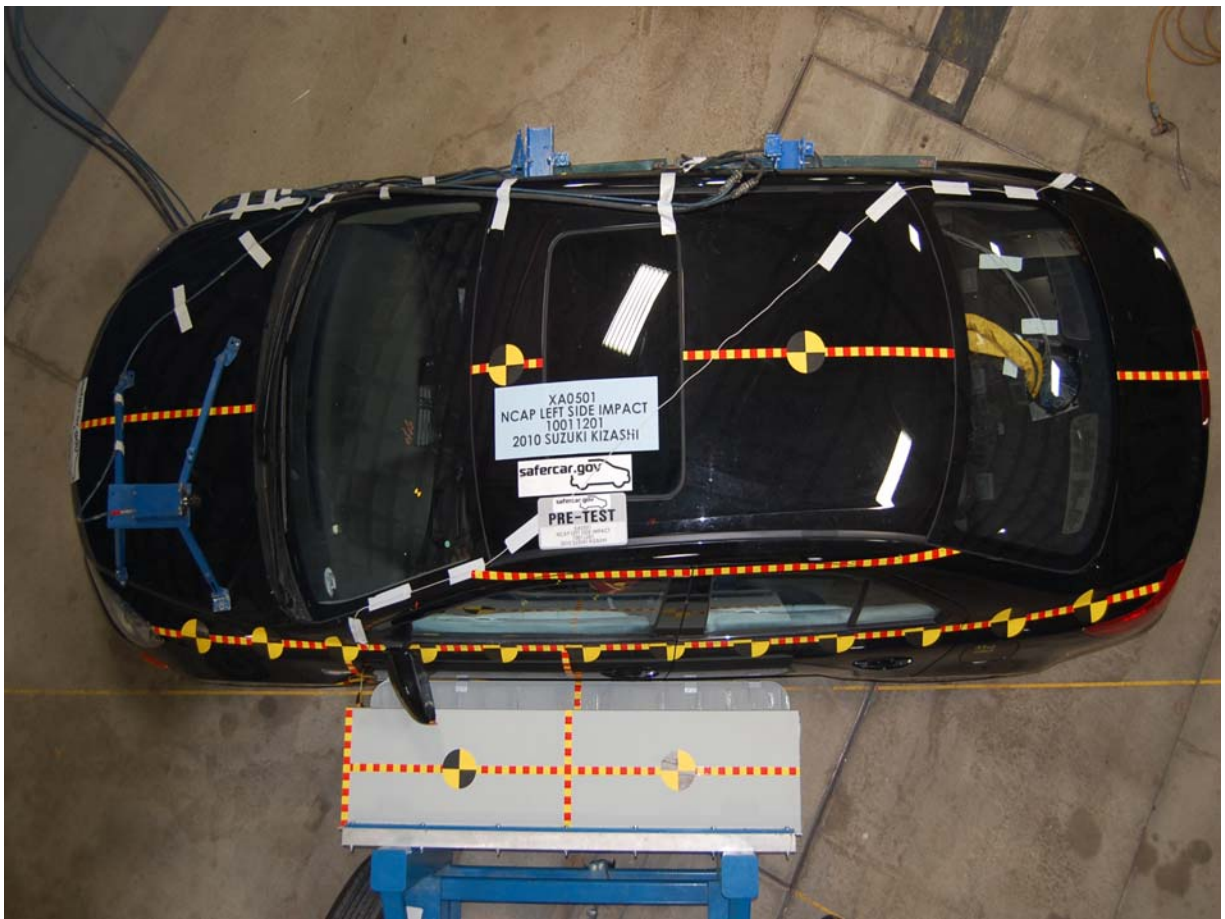
Post-Test Rear $\frac{3}{4}$ View of Left Side Doors



Pre-Test Left Side Impact Close-up



Post-Test Left Side Impact Close-up



Pre-Test Overhead View



Post-Test Overhead View



Pre-Test Overhead Close-up View



Post-Test Overhead Close-up View



Pre-Test Driver Dummy (Door Open)



Pre-Test Driver Dummy Clearance From Door



Post-Test Driver Dummy Clearance From Door



Pre-Test Driver Dummy (Through Window)



Post-Test Driver Dummy (Through Window)



Pre-Test Driver Dummy Right Side View



Post-Test Driver Dummy Right Side View



Pre-Test Passenger Dummy (Door Open)



Pre-Test Passenger Dummy Clearance From Door



Post-Test Passenger Dummy Clearance From Door



Pre-Test Passenger Dummy (Through Window)



Post-Test Passenger Dummy (Through Window)



Pre-Test Passenger Dummy Right Side View



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



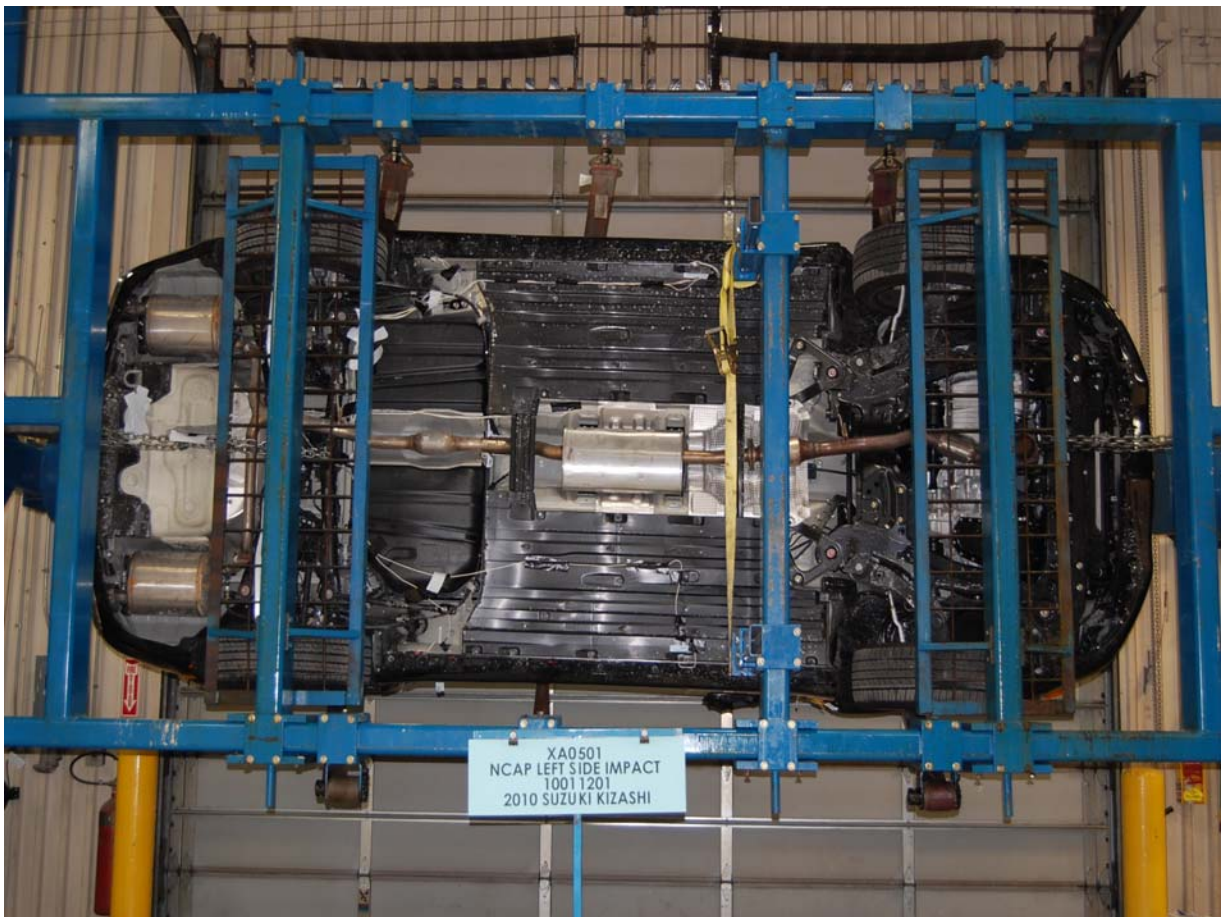
Post-Test Right Side View of Deformable Barrier



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 View



Post-Test Driver Dummy Head Contact View (headrest)



Post-Test Driver Dummy Torso Contact



Post-Test Driver Dummy Contact



Post-Test Passenger Dummy Head Contact View



Post-Test Passenger Dummy Upper Torso Contact



Post-Test Passenger Dummy Lower Torso Contact



Post-Test Passenger Dummy Contact

APPENDIX B
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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

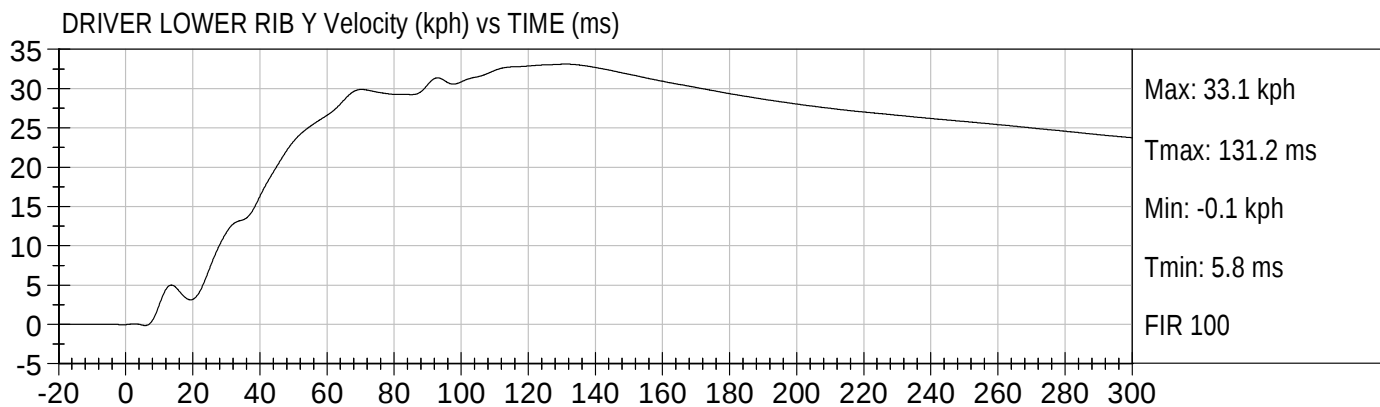
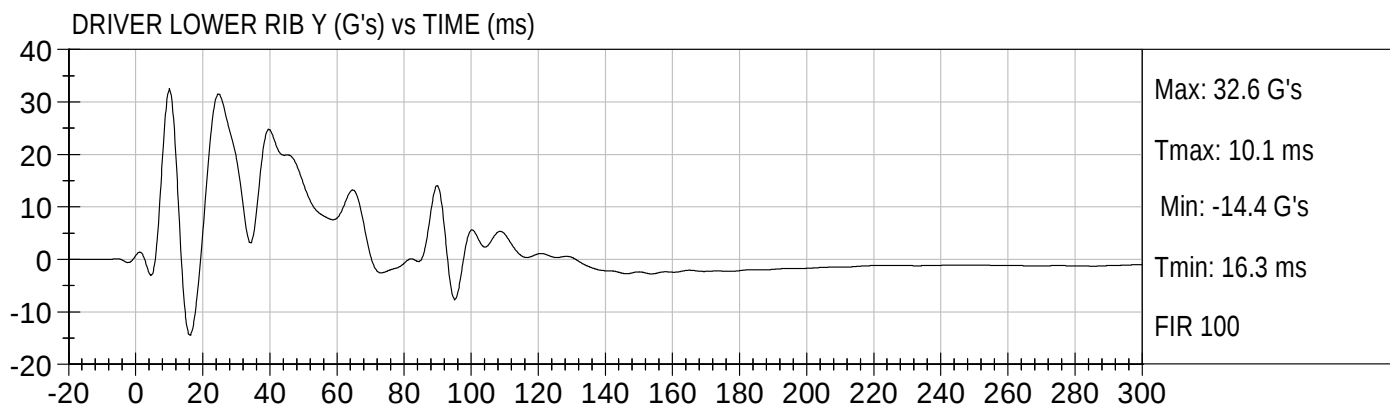
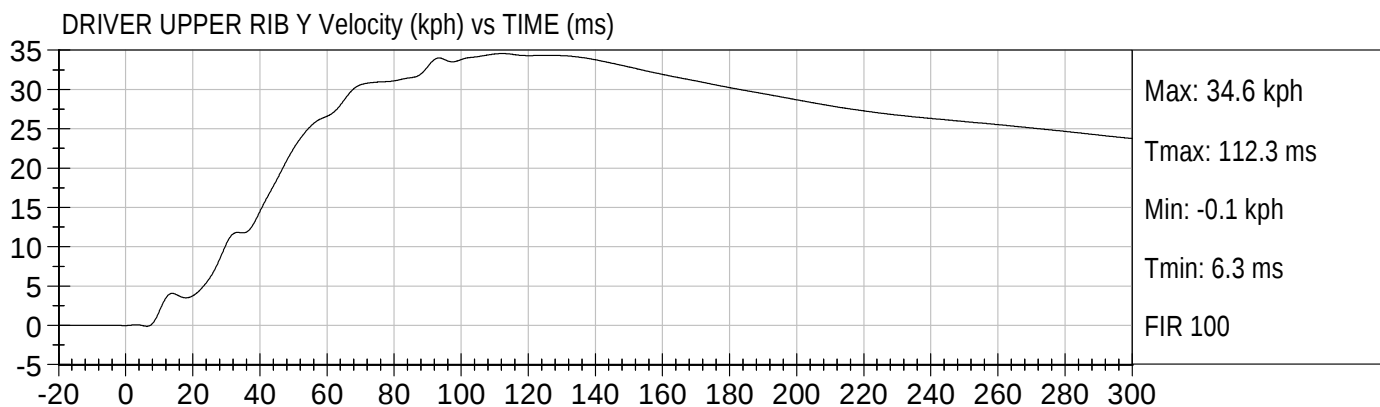
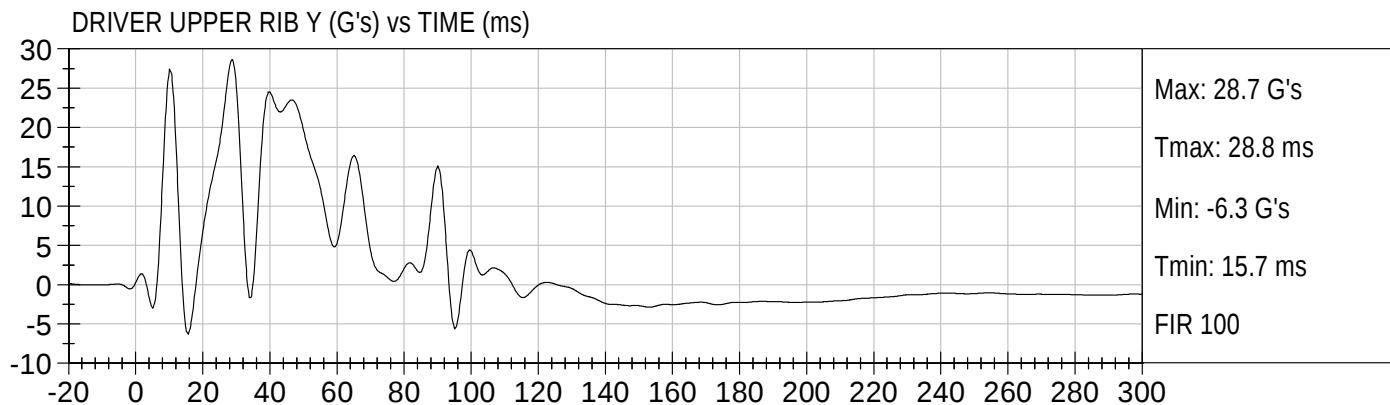
Driver Upper Neck Force Y

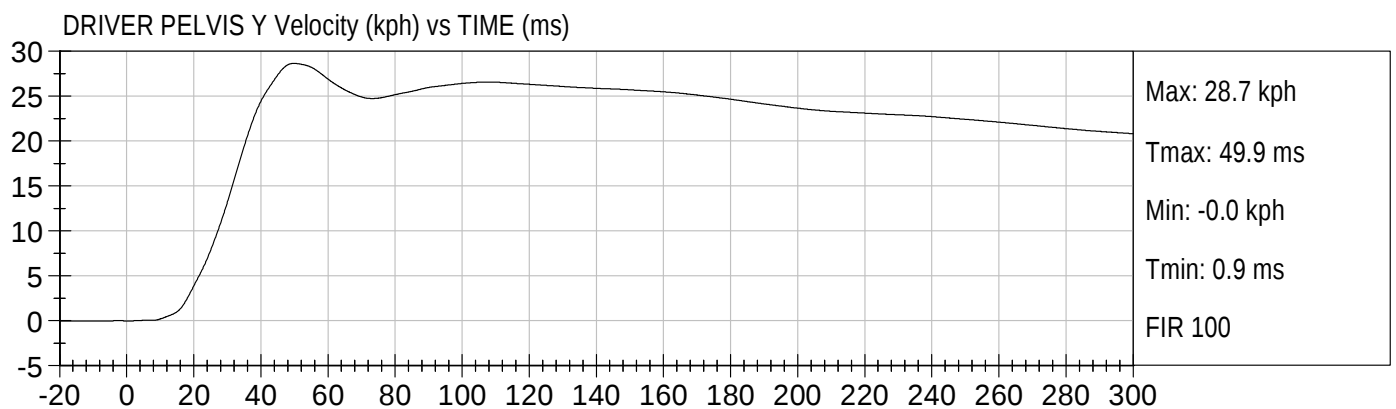
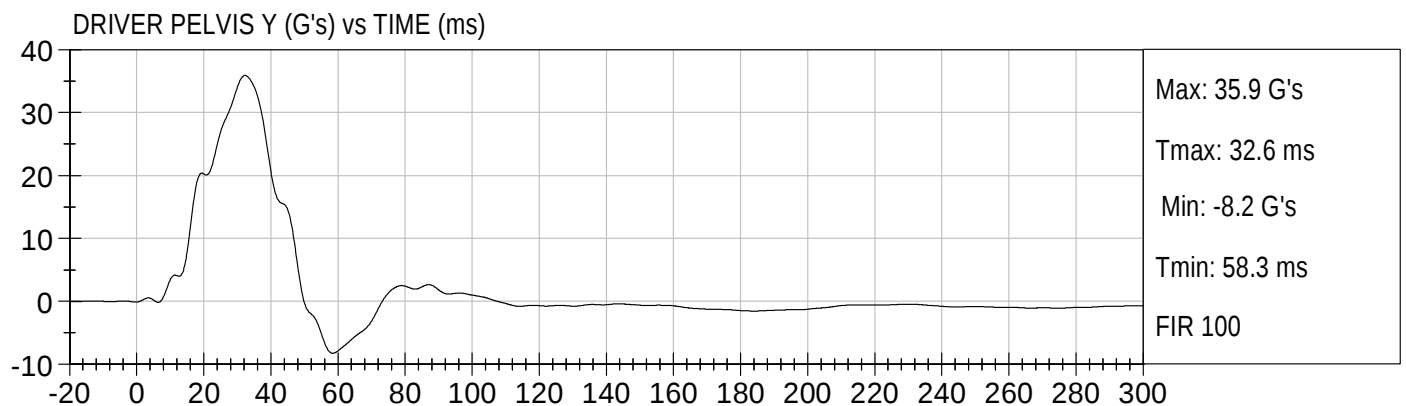
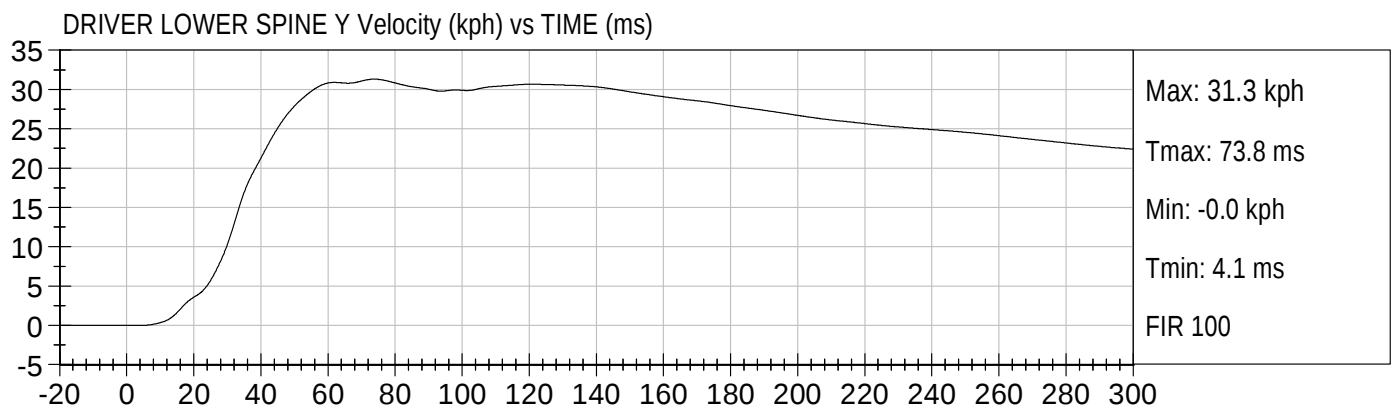
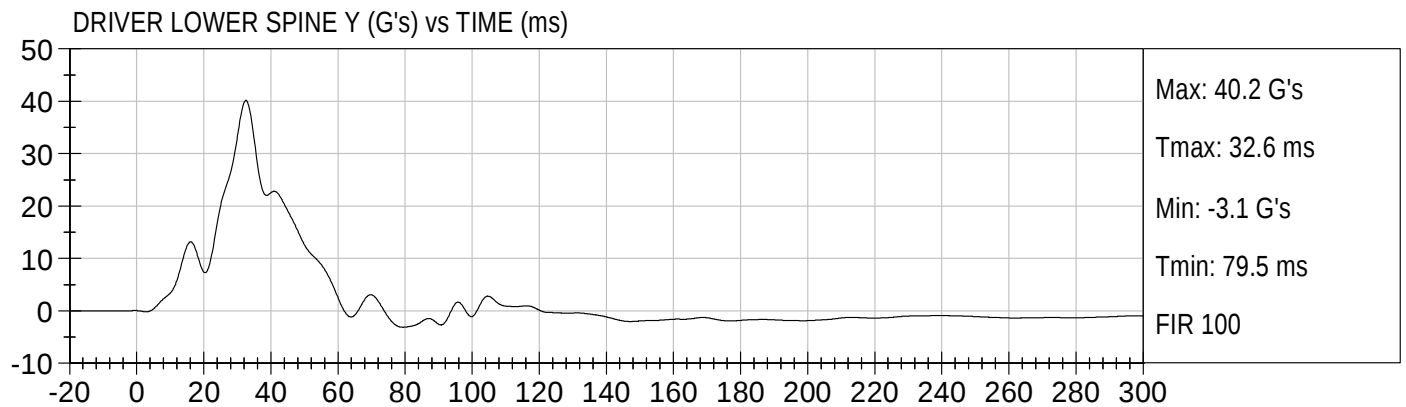
Driver Upper Neck Force Z

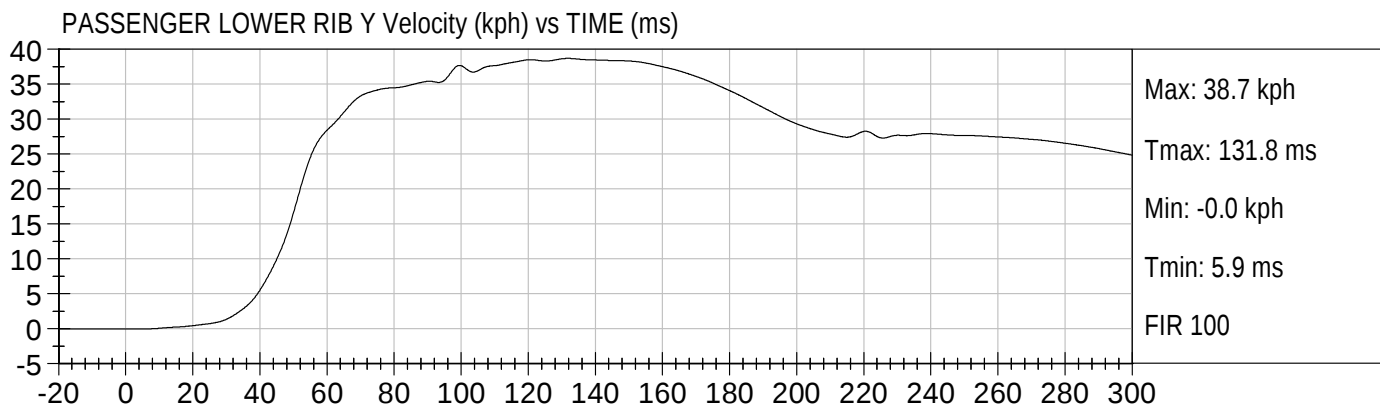
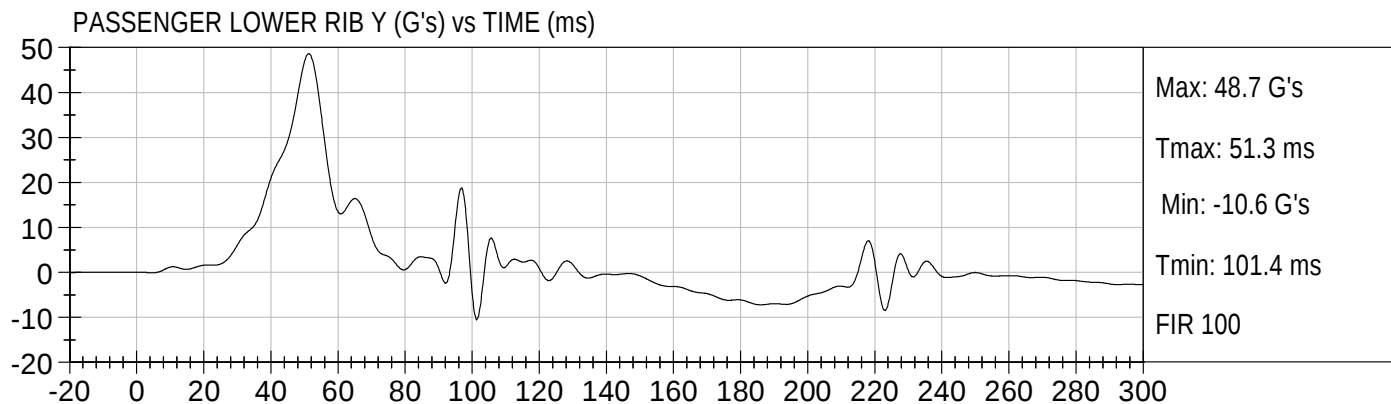
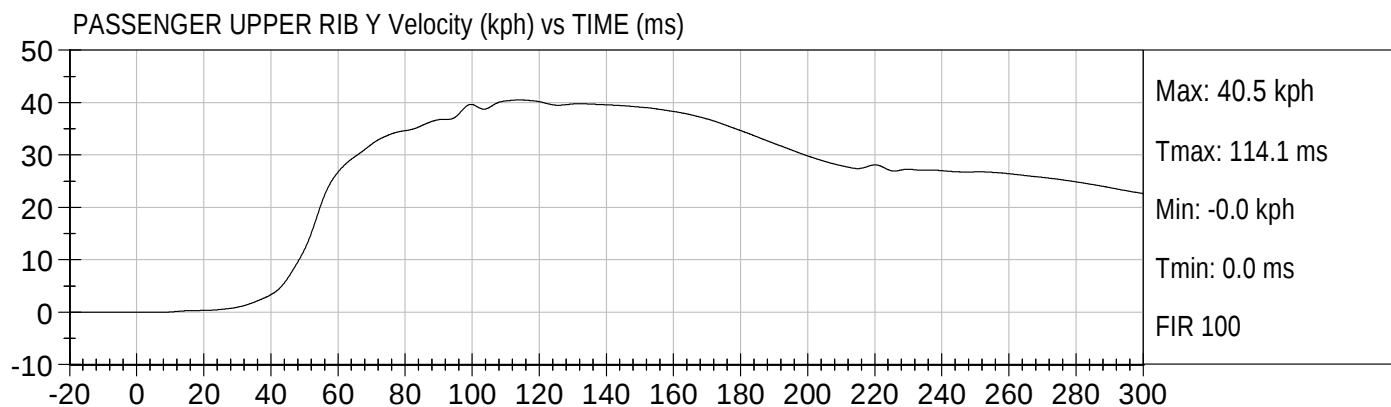
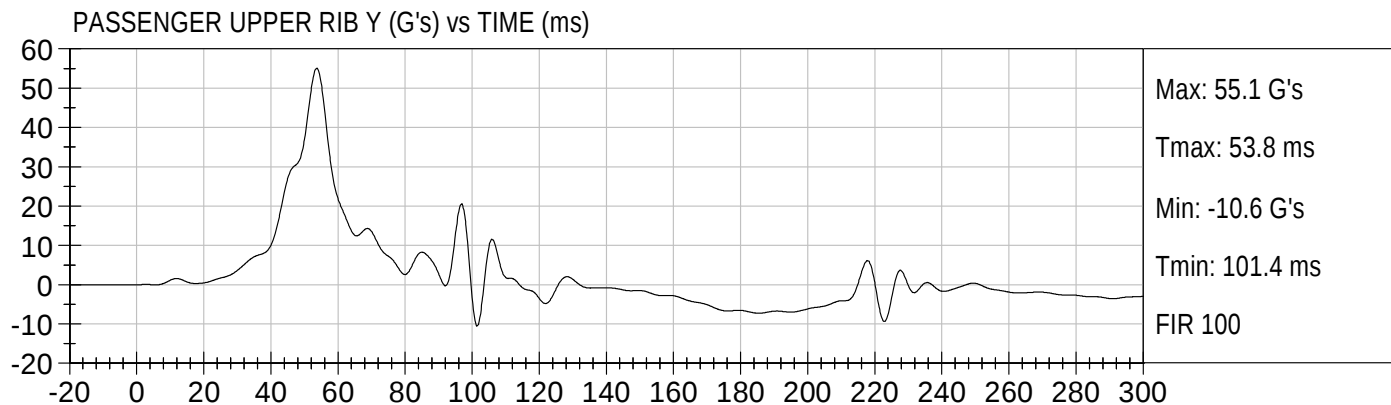
Driver Upper Neck Moment X

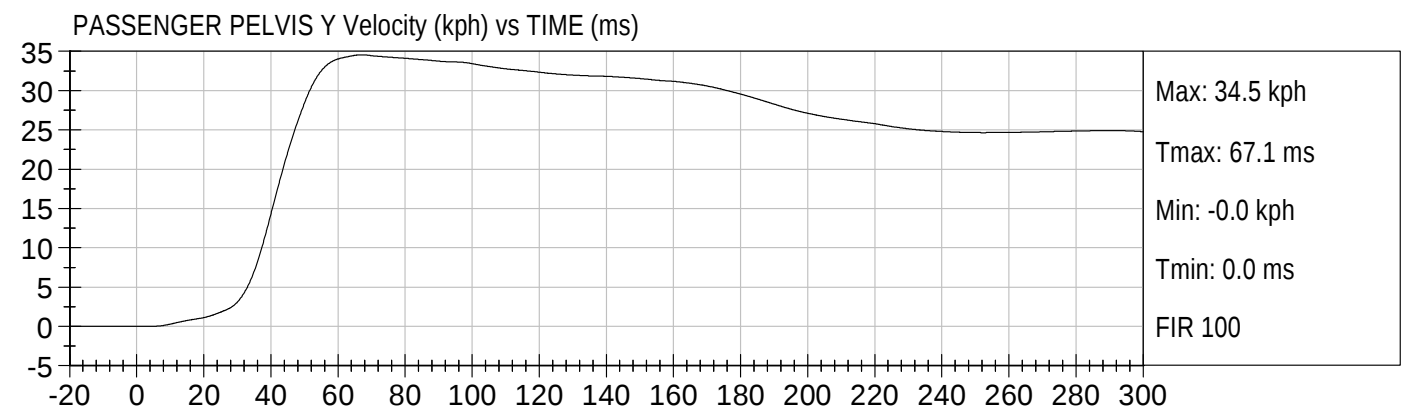
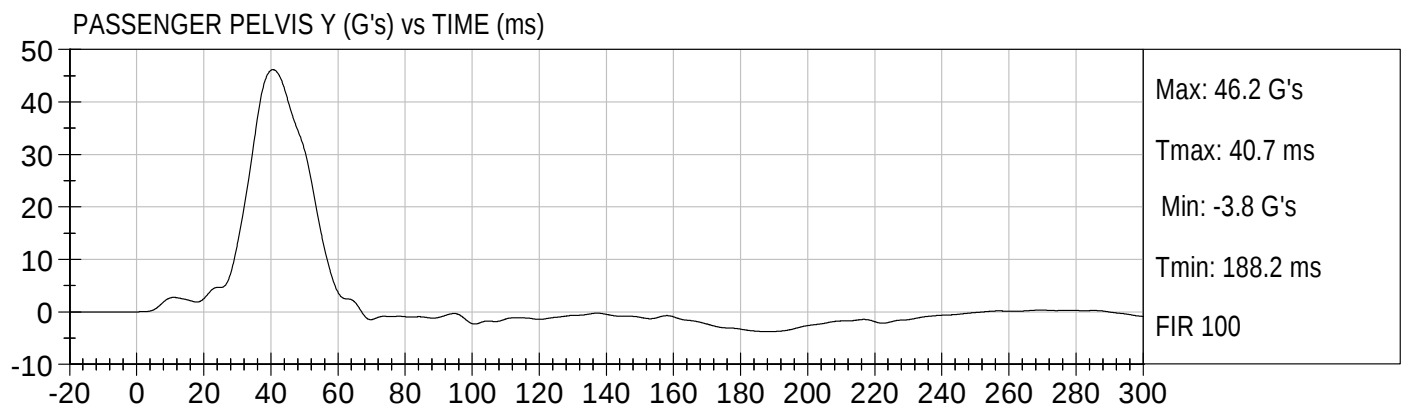
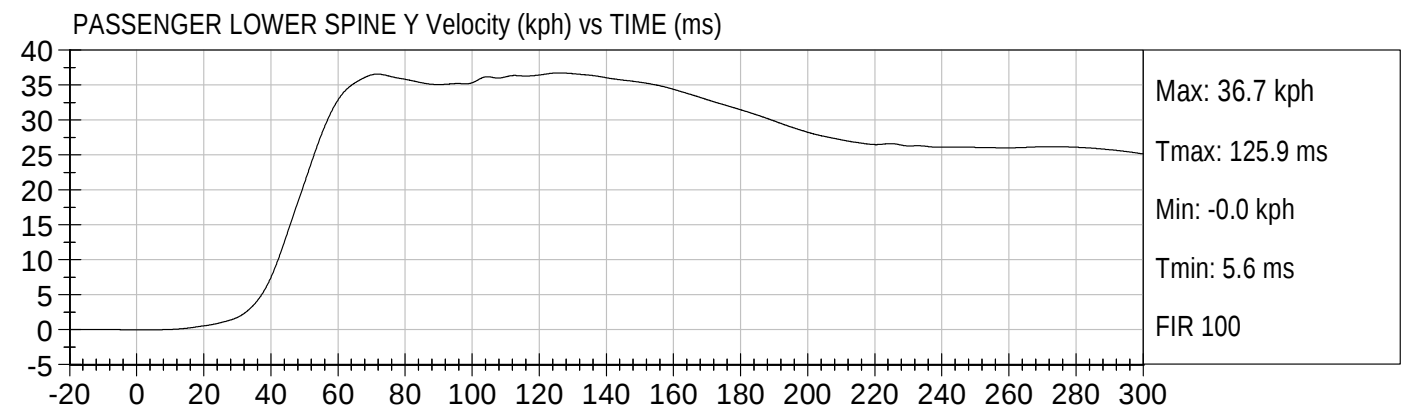
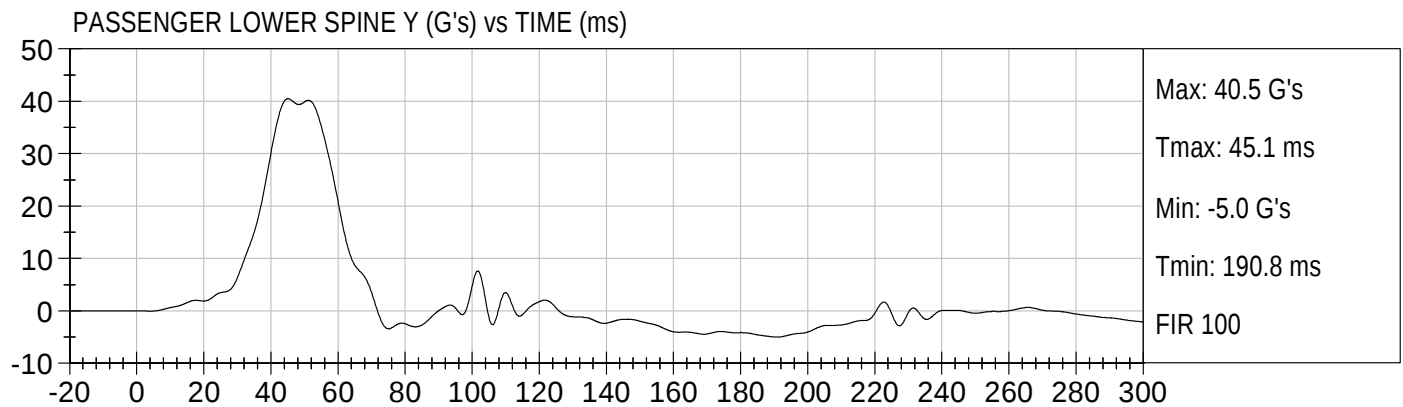
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head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









APPENDIX C
DUMMY CALIBRATION DATA

CERTIFICATION DATA

Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Pre-Test Calibration

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

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 271

Test I.D: D1002

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

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

1/08/2010
Test Date

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

ATD Serial No: 271

Test I.D: D10021

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	19	Pass
Peak Resultant Acceleration	G's	120 to 150	143	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-5.4	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

1/8/10
Test Date

David Winkelbauer
Approved By



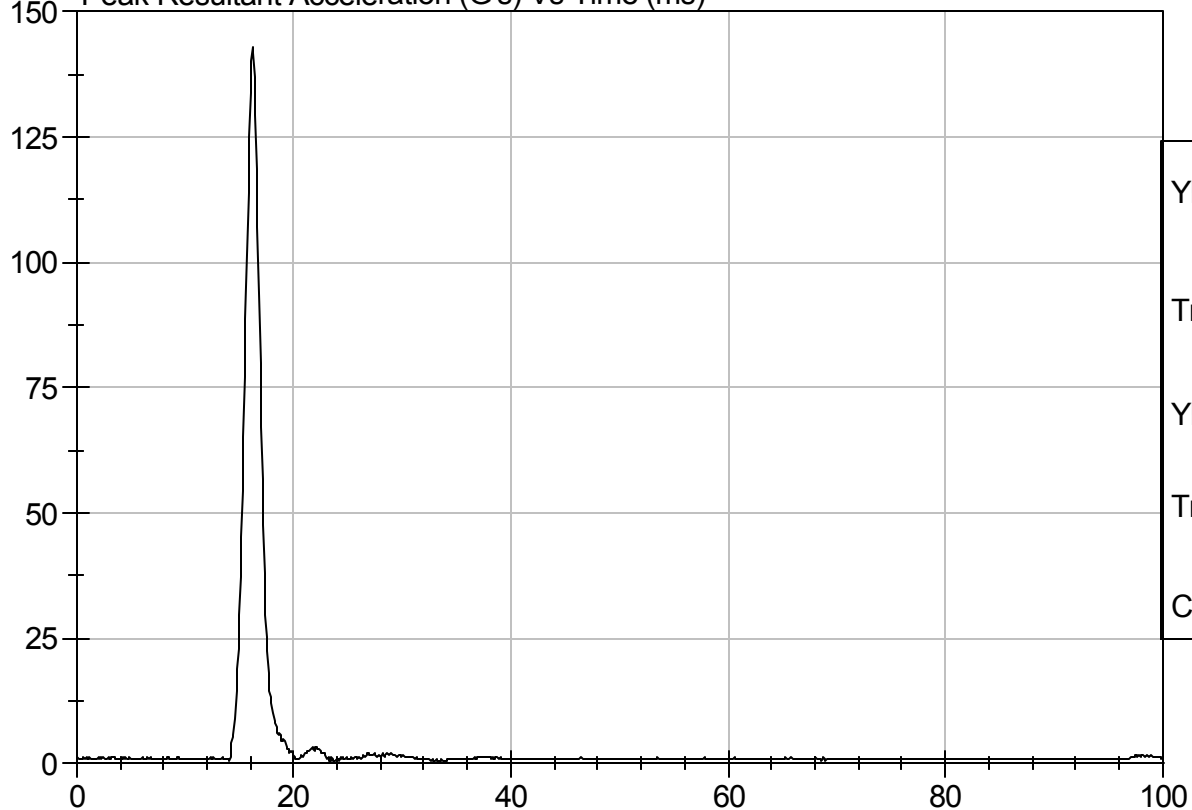
Test Description: Head Drop

Test Date: 1/8/10

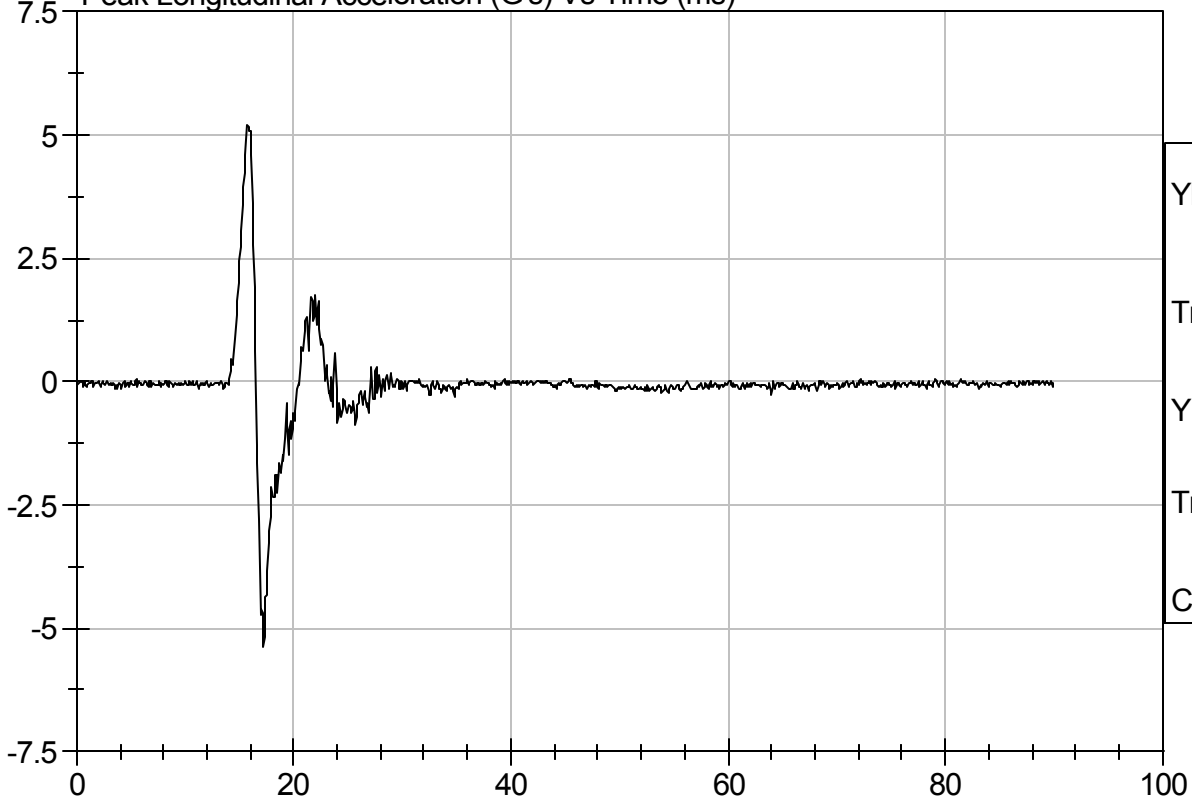
Component: D10021

Speed: 0 ft/s, 0 m/s

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



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

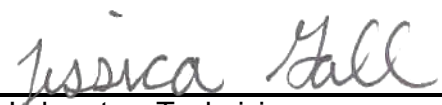


SID/HIII Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 271

Test I.D: D10022

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	20	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

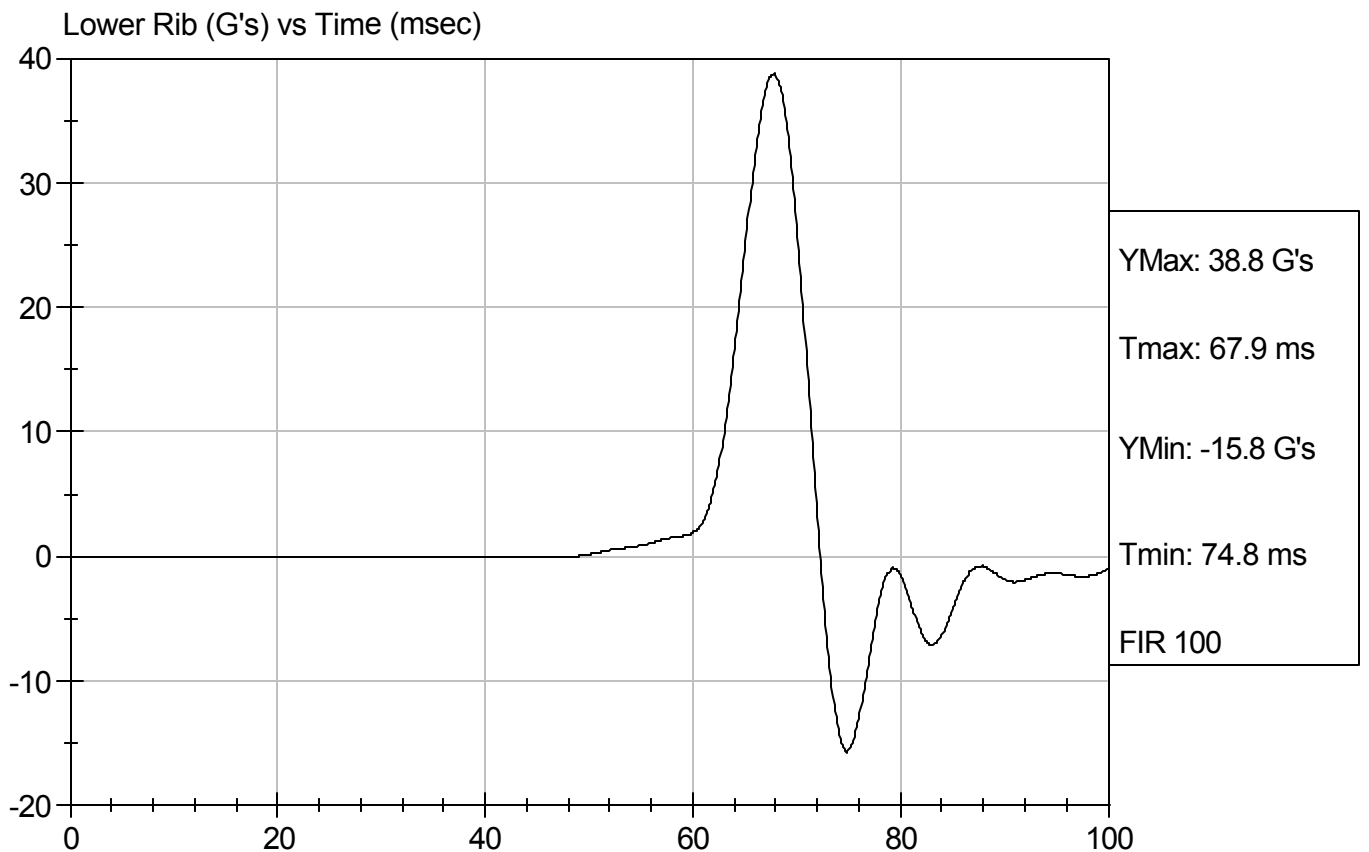
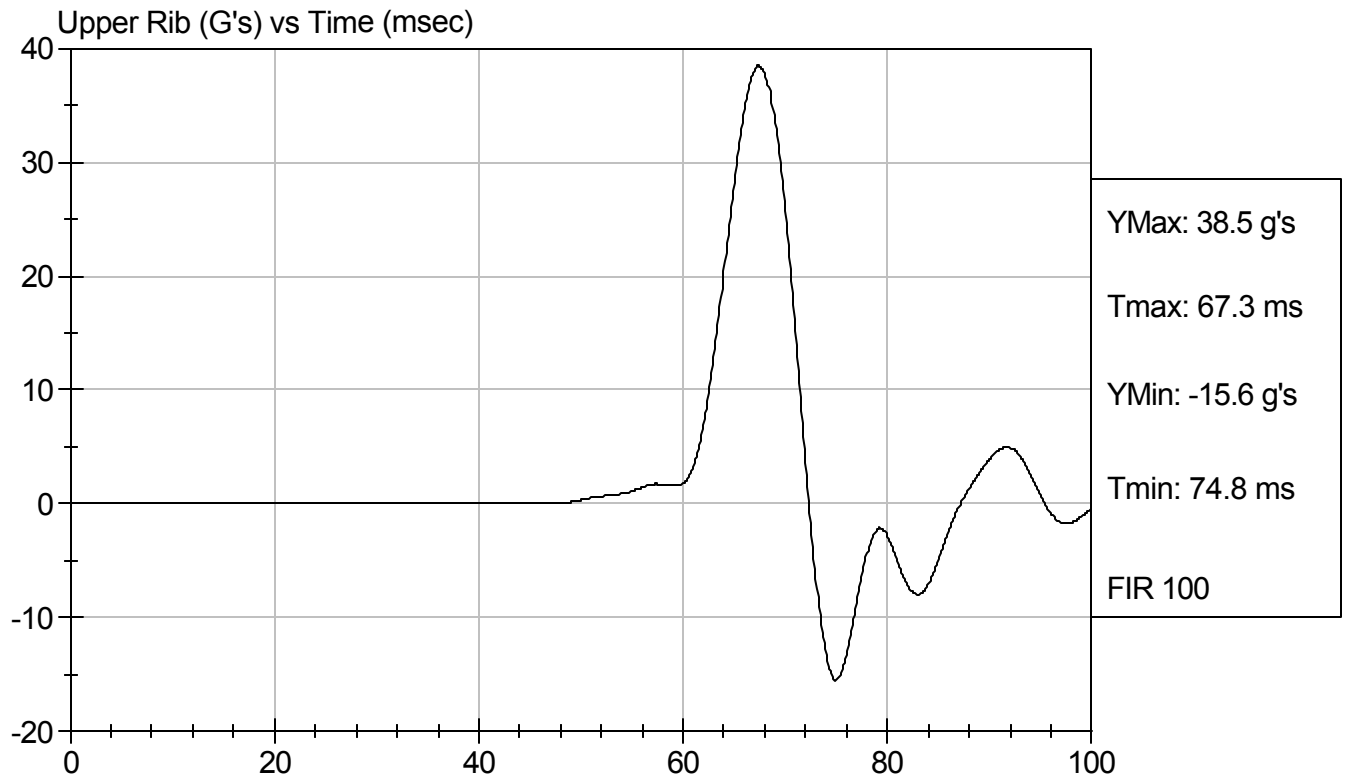

Approved By

1/7/10
Test Date



Test Desc: Thorax Impact
Component ID: D10022

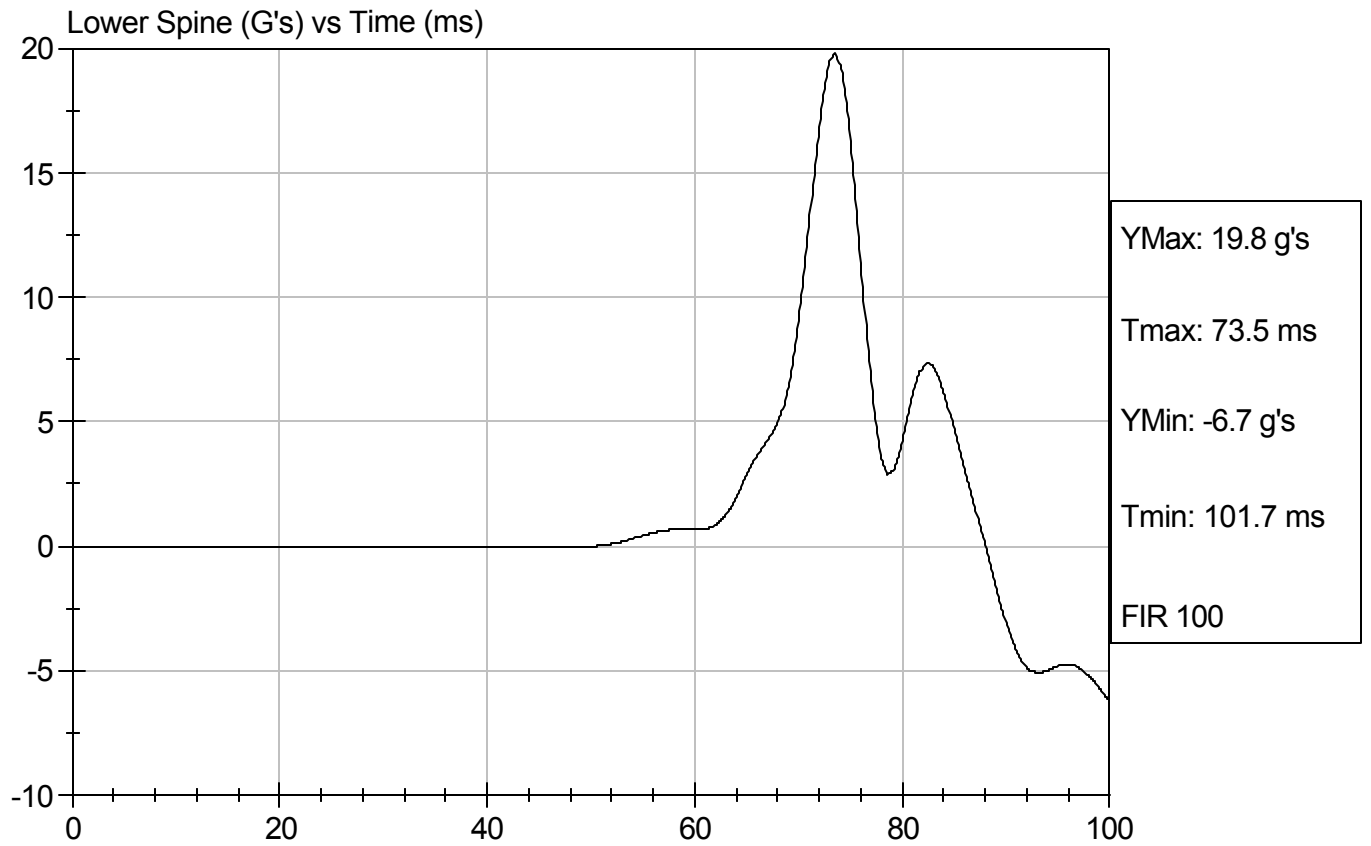
Test Date: 1/7/10
Speed: 14.12 ft/s, 4.30 m/s





Test Desc: Thorax Impact
Component ID: D10022

Test Date: 1/7/10
Speed: 14.12 ft/s, 4.30 m/s



SID/HIII Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Test

ATD Serial No: 271

Test I.D: D10023

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	20	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	44	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

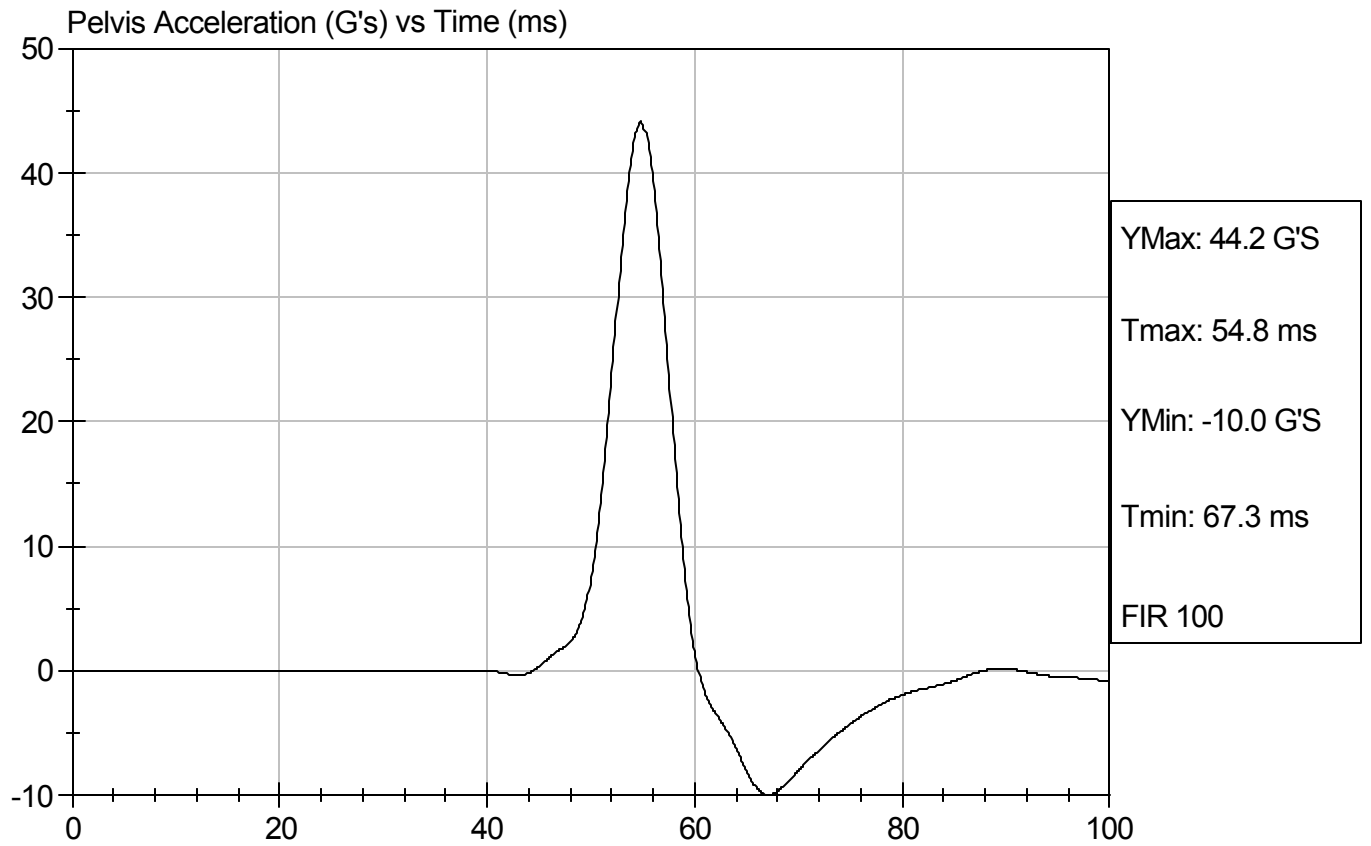
David Winkelbauer
Approved By

1/7/10
Test Date



Test Desc: Pelvis Impact
Component ID: D10023

Test Date: 1/7/10
Speed: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 271

Test I.D: D10024

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 12.7 mm	N	104 -162	139	Pass
Force At 19 mm	N	163 - 222	199	Pass
Force At 25.4 mm	N	222 - 280	268	Pass
Force At 33 mm	N	325 - 391	366	Pass
Overall Test Results			Pass	

Jessica Gall
Laboratory Technician

David Winkelbauer
Approved By

1/8/10
Test Date

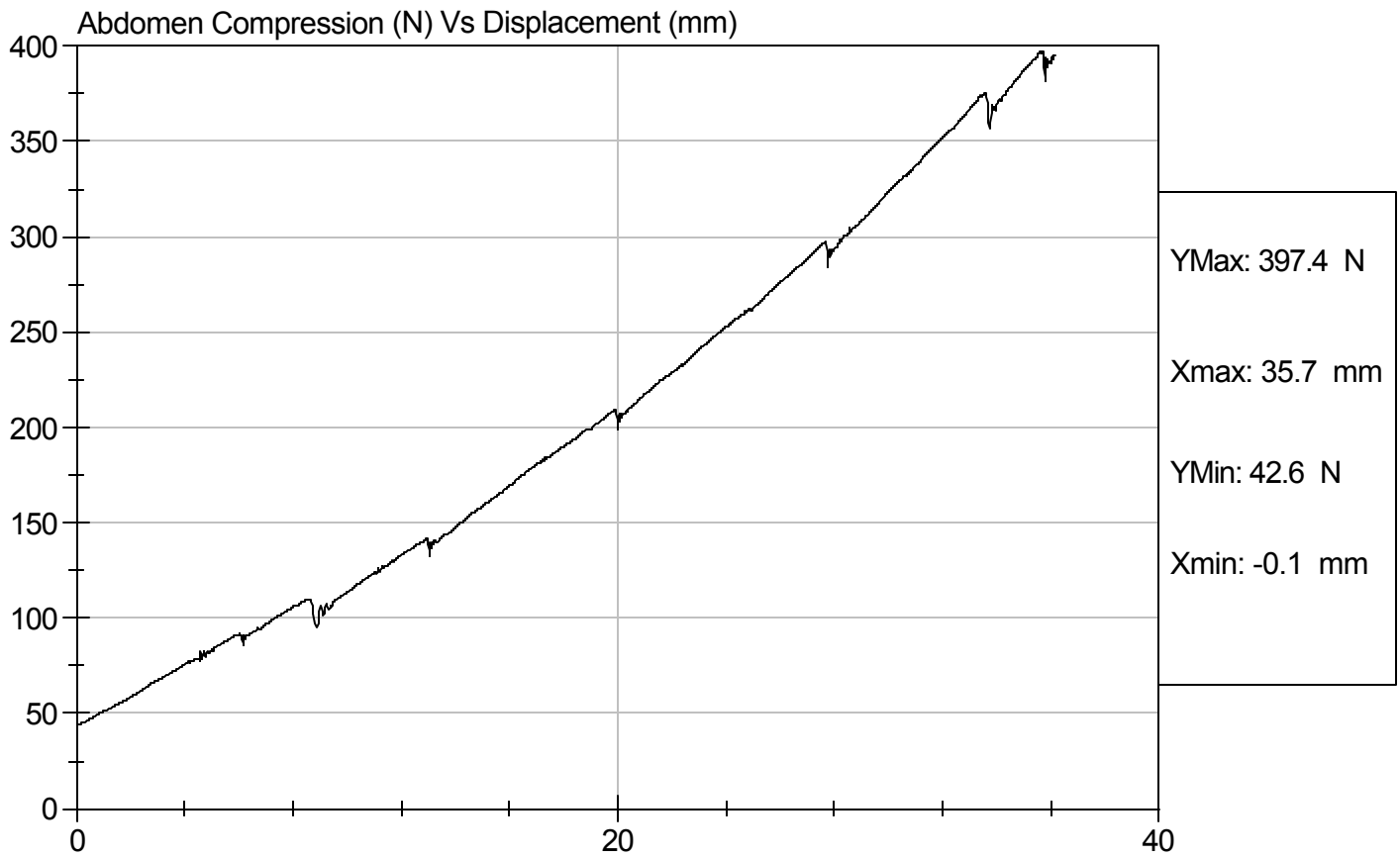


Test Description: Abdomen Compression

Test Date: 1/8/10

Component: D10024

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 271

Test I.D: D10025

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	117.4	Pass
Force At 30 deg	N	151.2 - 204.6	164.8	Pass
Force At 40 deg	N	204.6 - 258.0	242.6	Pass
Return Angle	Deg	12 Maximum	6	Pass
Overall Test Results			Pass	

Jessica Gall
Laboratory Technician

1/8/10
Test Date

David Winkelbauer
Approved By

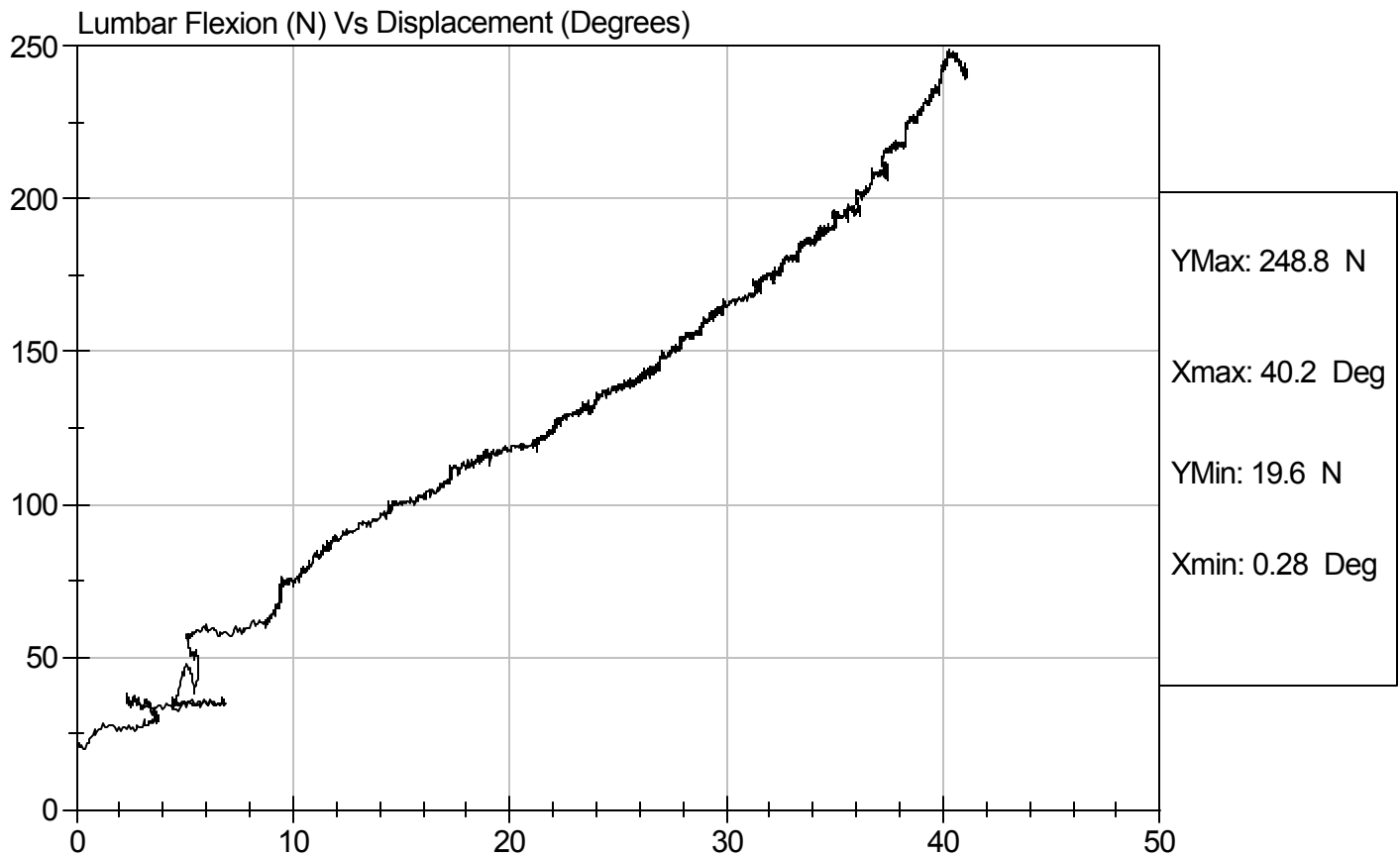


Test Description: Lumbar Flexion

Test Date: 1/8/10

Component: D10025

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 271

Test I.D: D10029

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	m/s	1.96 to 2.55	2.38	Pass
	20 ms	m/s	4.12 to 5.10	4.57	Pass
	30 ms	m/s	5.73 to 7.01	6.29	Pass
	40 to 70 ms	m/s	6.27 to 7.64	6.92	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	73	Pass
Head Rotation Peak to Zero - Decay Time		ms	58 to 67	61.4	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	78	Pass
Mx Peak To Zero - Decay Time		ms	49 to 64	53	Pass
Mx Peak to Max. Head Rotation		ms	2 to 16	9	Pass


 Laboratory Technician

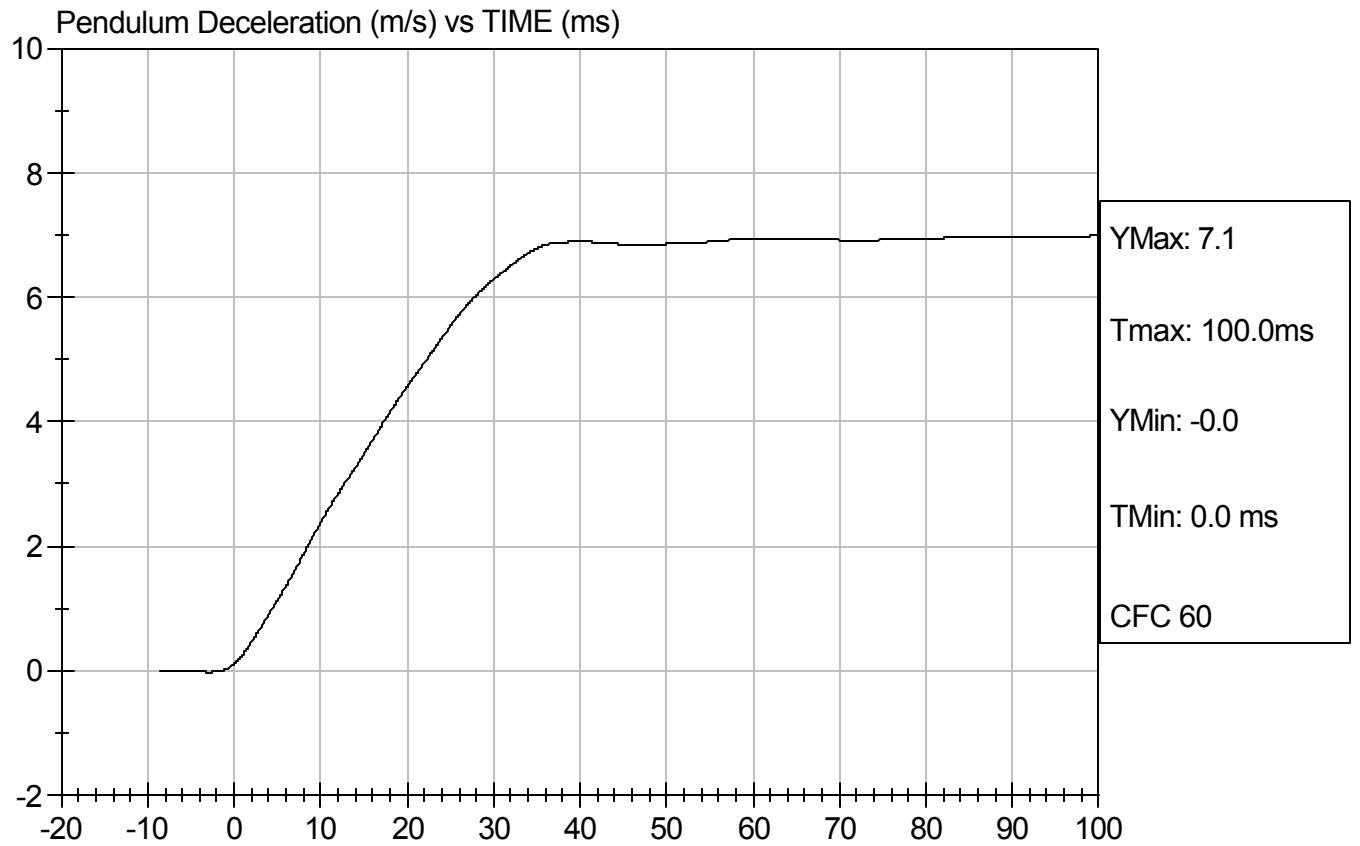

 Approved By

1/8/10
 Test Date



Test Desc: Neck Bending
Component ID: D10029

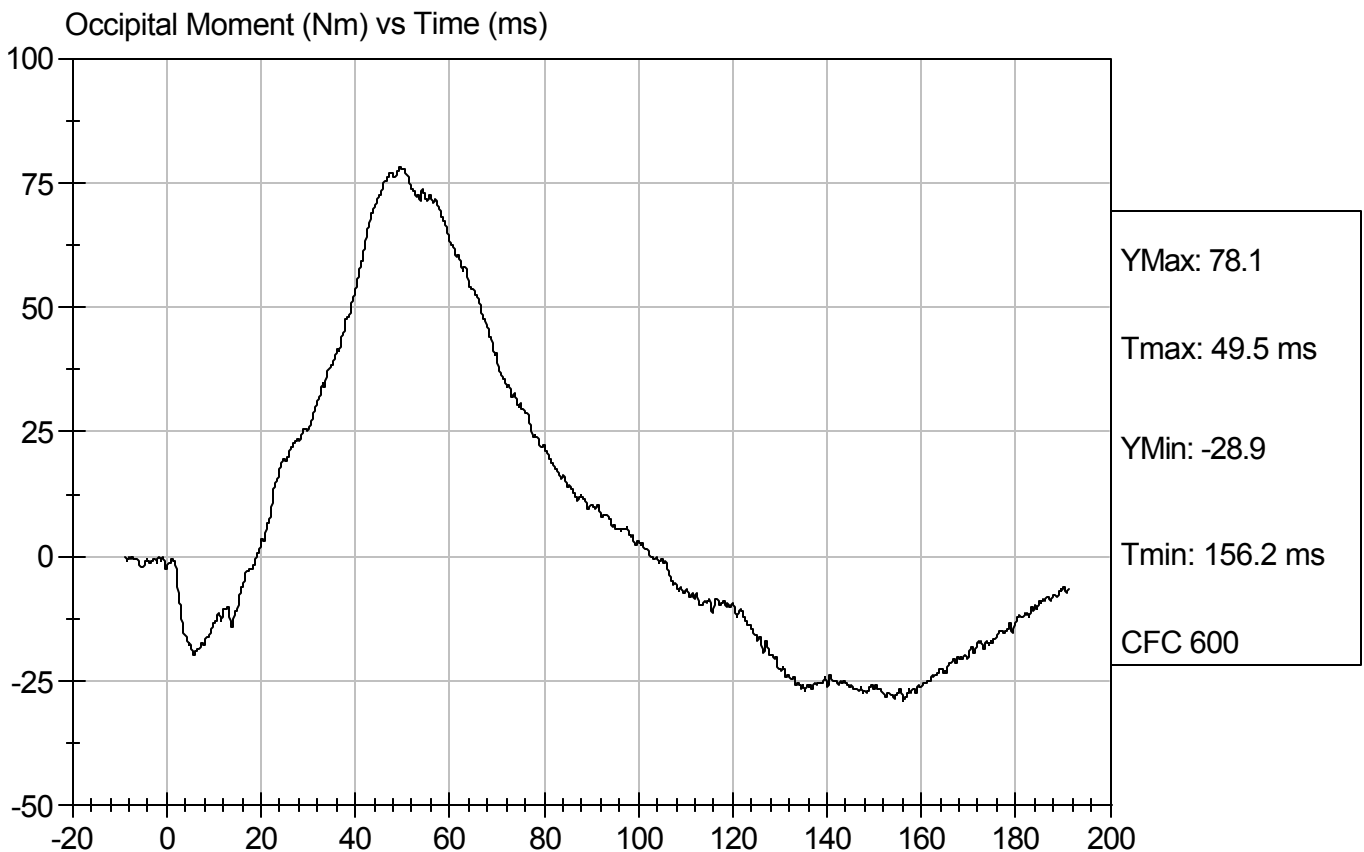
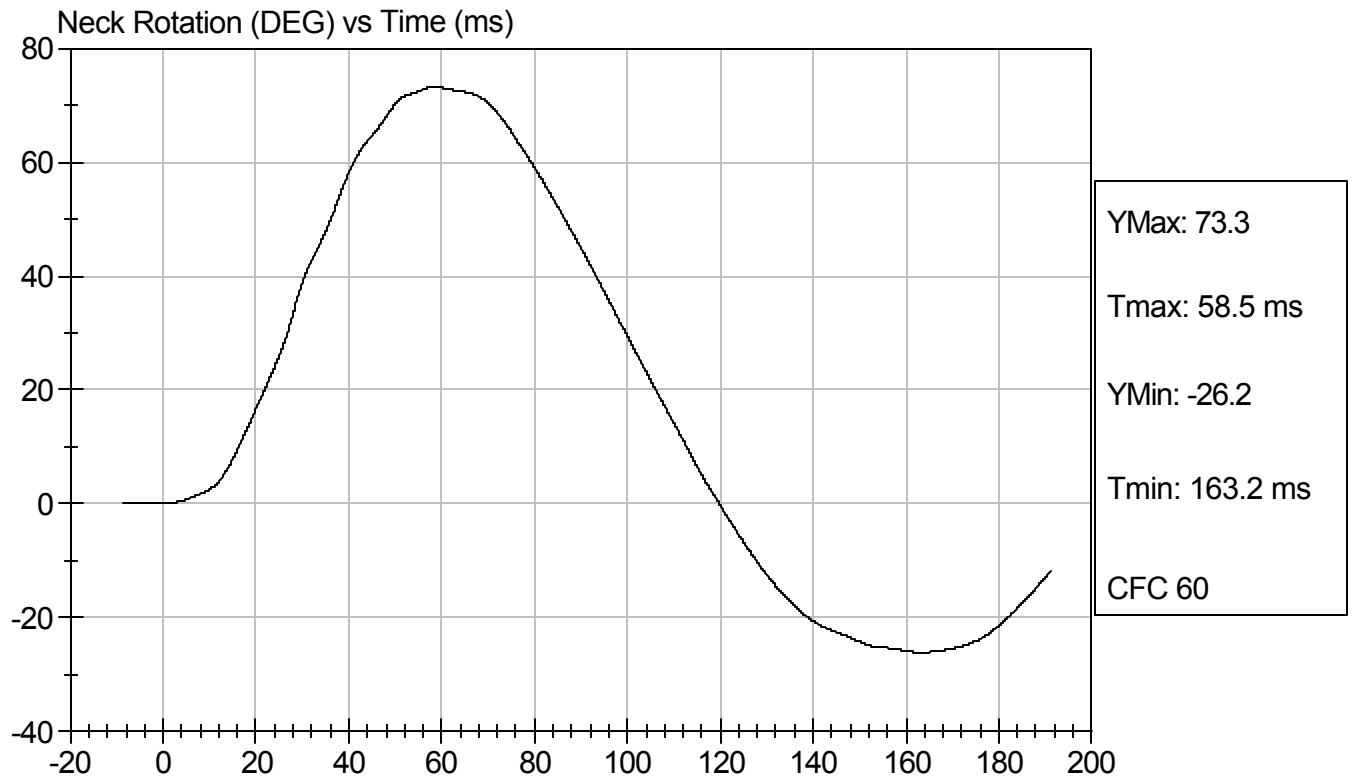
Test Date: 1/8/10
Speed: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Bending
Component ID: D10029

Test Date: 1/8/10
Speed: 23.15 ft/s, 7.06 m/s



Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

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

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

ATD Serial No: 271

Test I.D: D10061

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	18	Pass
Peak Resultant Acceleration	G's	120 to 150	137	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	6.8	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

1/13/10
Test Date

David Winkelbauer
Approved By



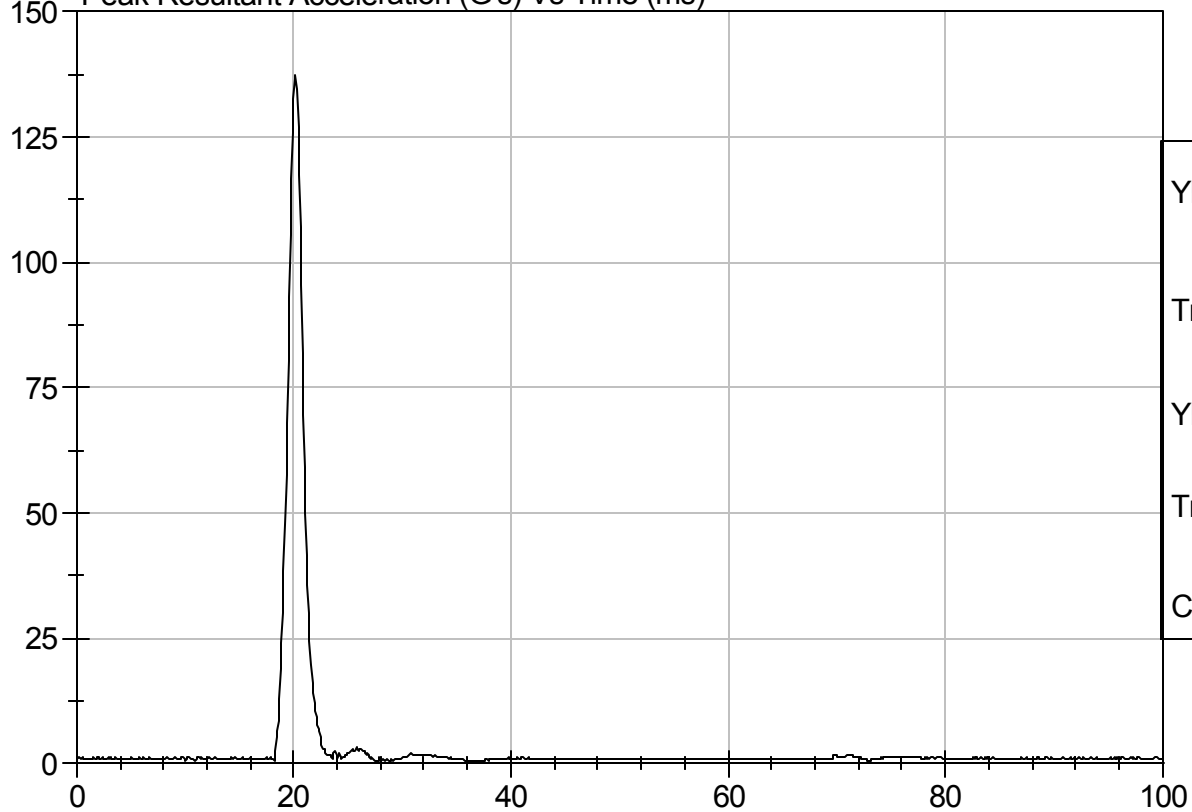
Test Description: Head Drop

Test Date: 1/13/10

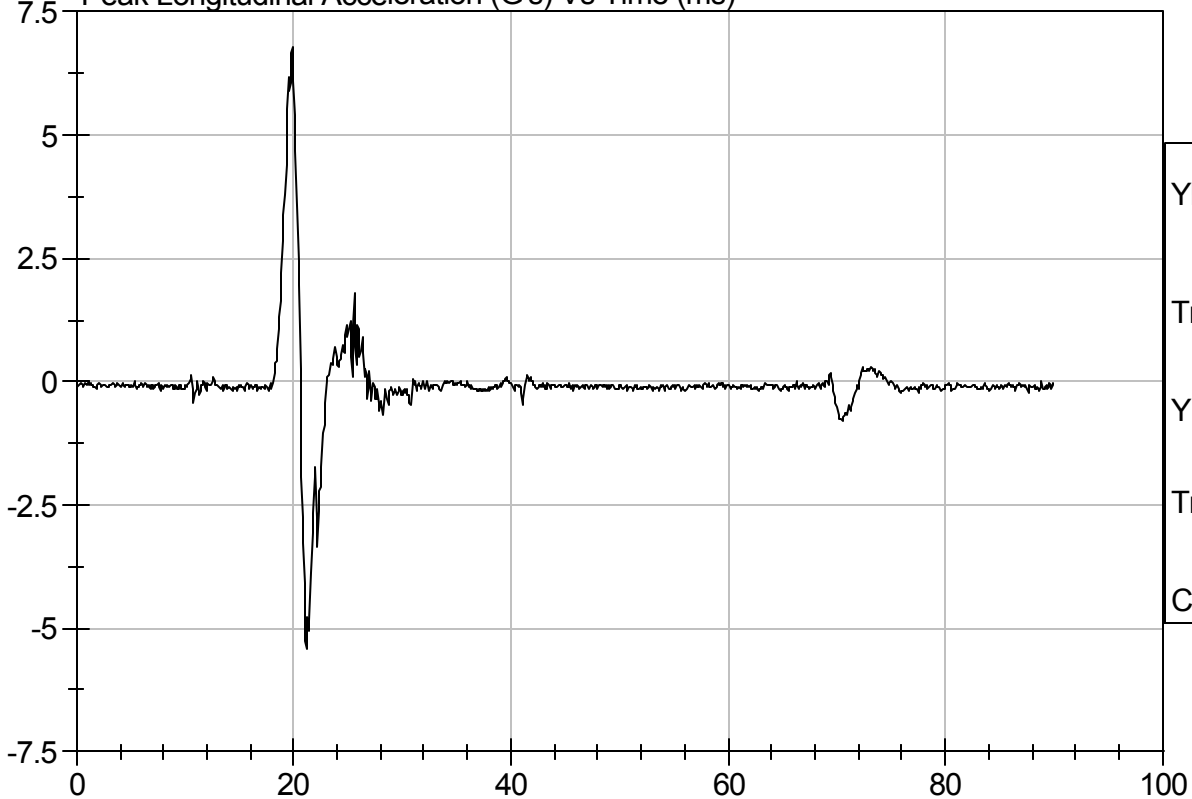
Component: D10061

Speed: 0 ft/s, 0 m/s

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



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



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

ATD Serial No: 271

Test I.D: D10062

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	17	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	19	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

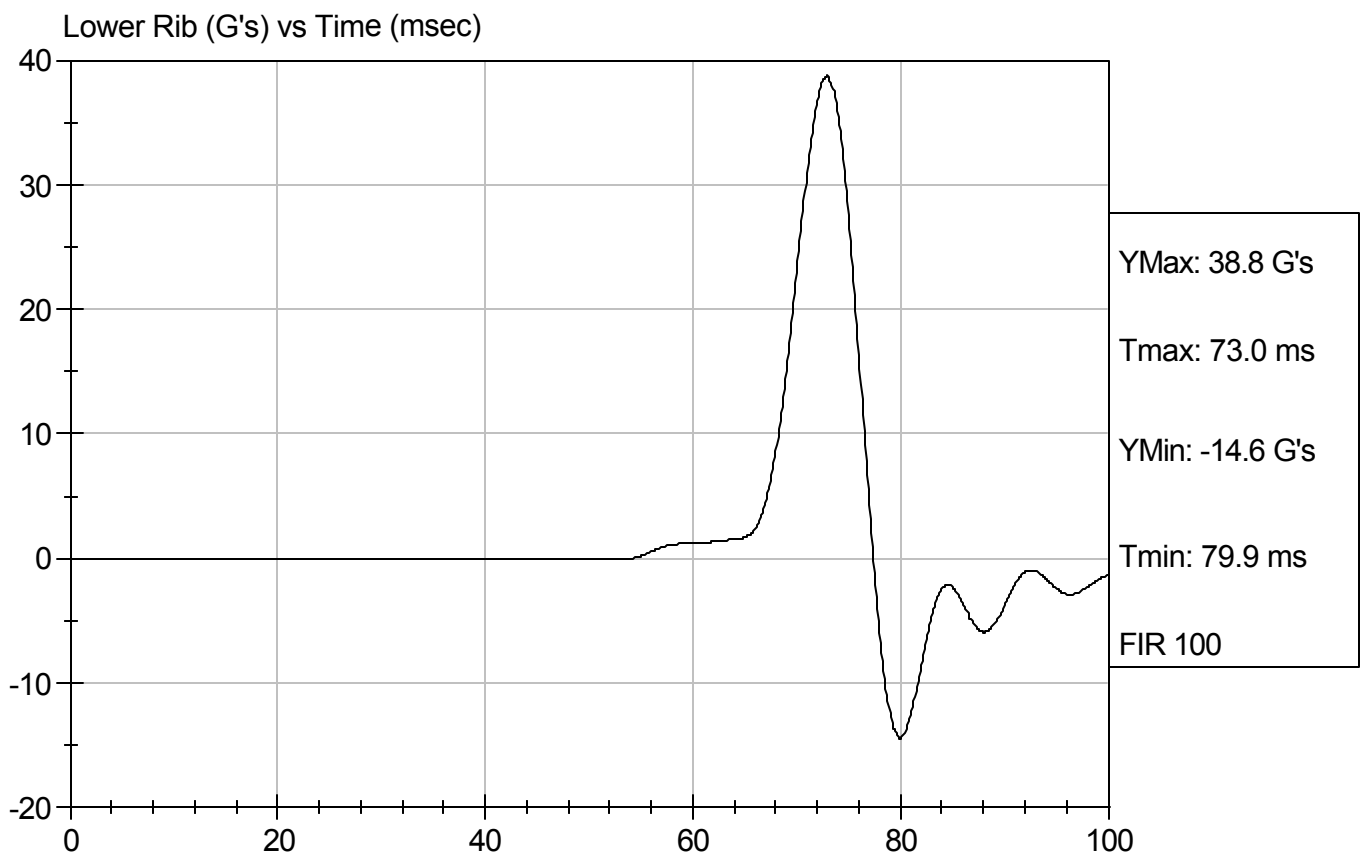
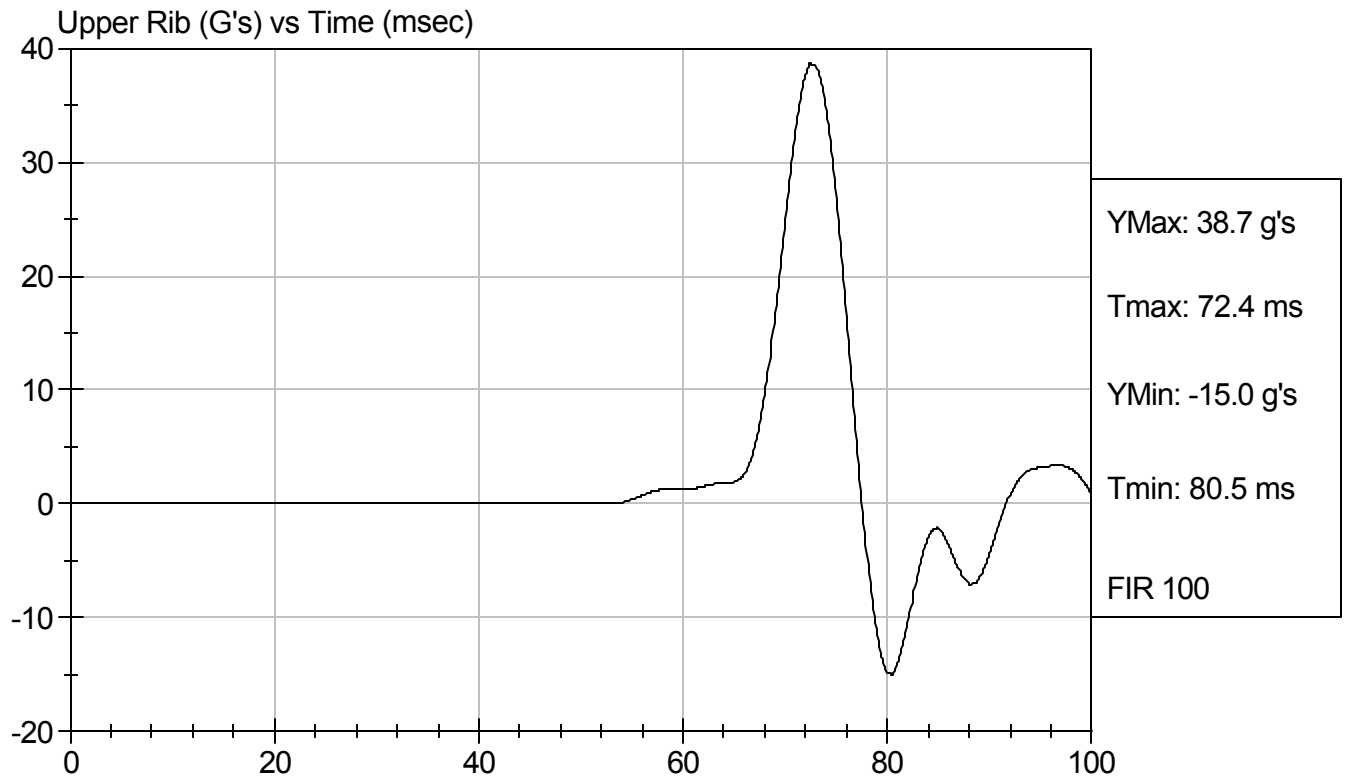
David Winkelbauer
Approved By

1/13/10
Test Date



Test Desc: Thorax Impact
Component ID: D10062

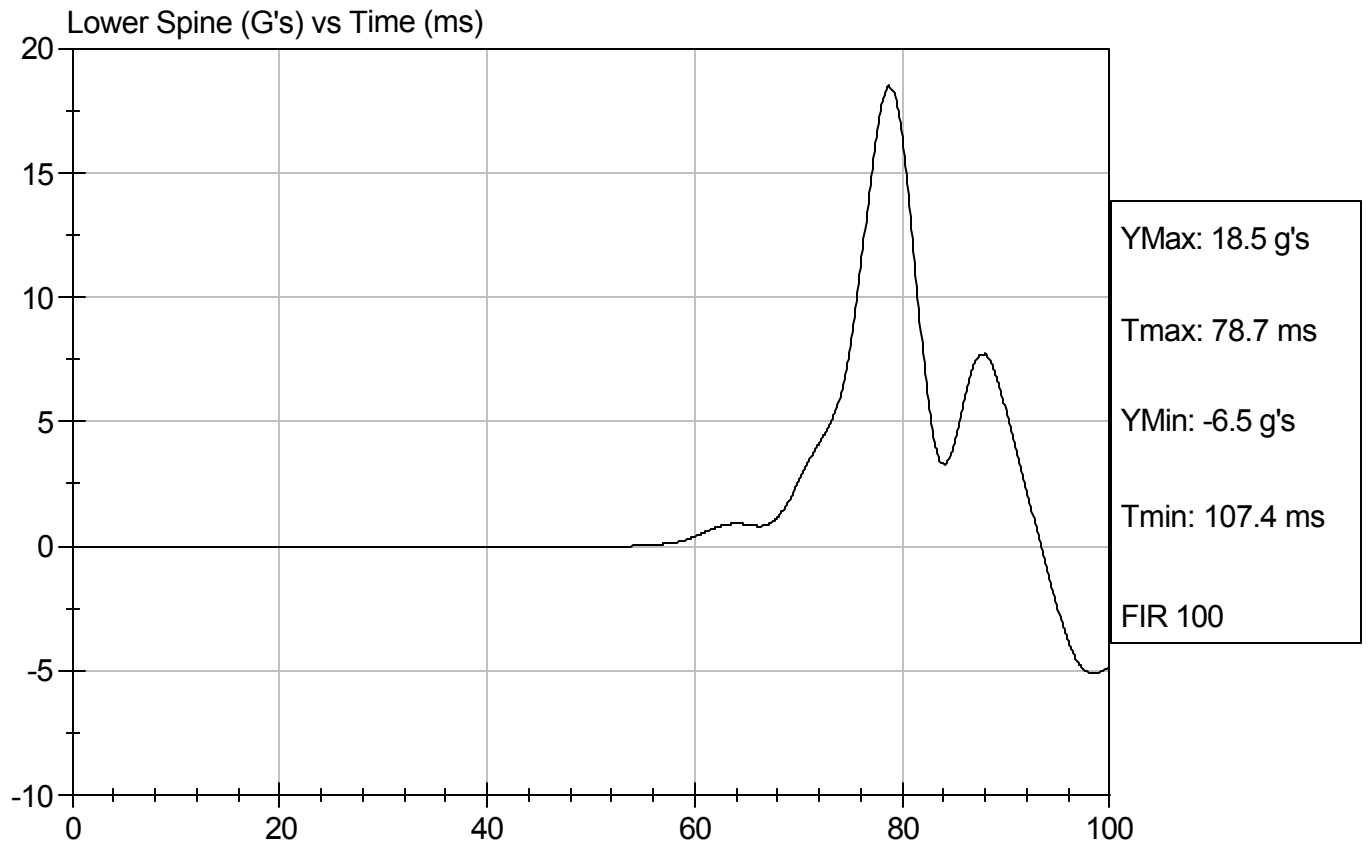
Test Date: 1/13/10
Speed: 14.12 ft/s, 4.30 m/s





Test Desc: Thorax Impact
Component ID: D10062

Test Date: 1/13/10
Speed: 14.12 ft/s, 4.30 m/s



SID/HIII Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Test

ATD Serial No: 271

Test I.D: D10063

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	17	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	44	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

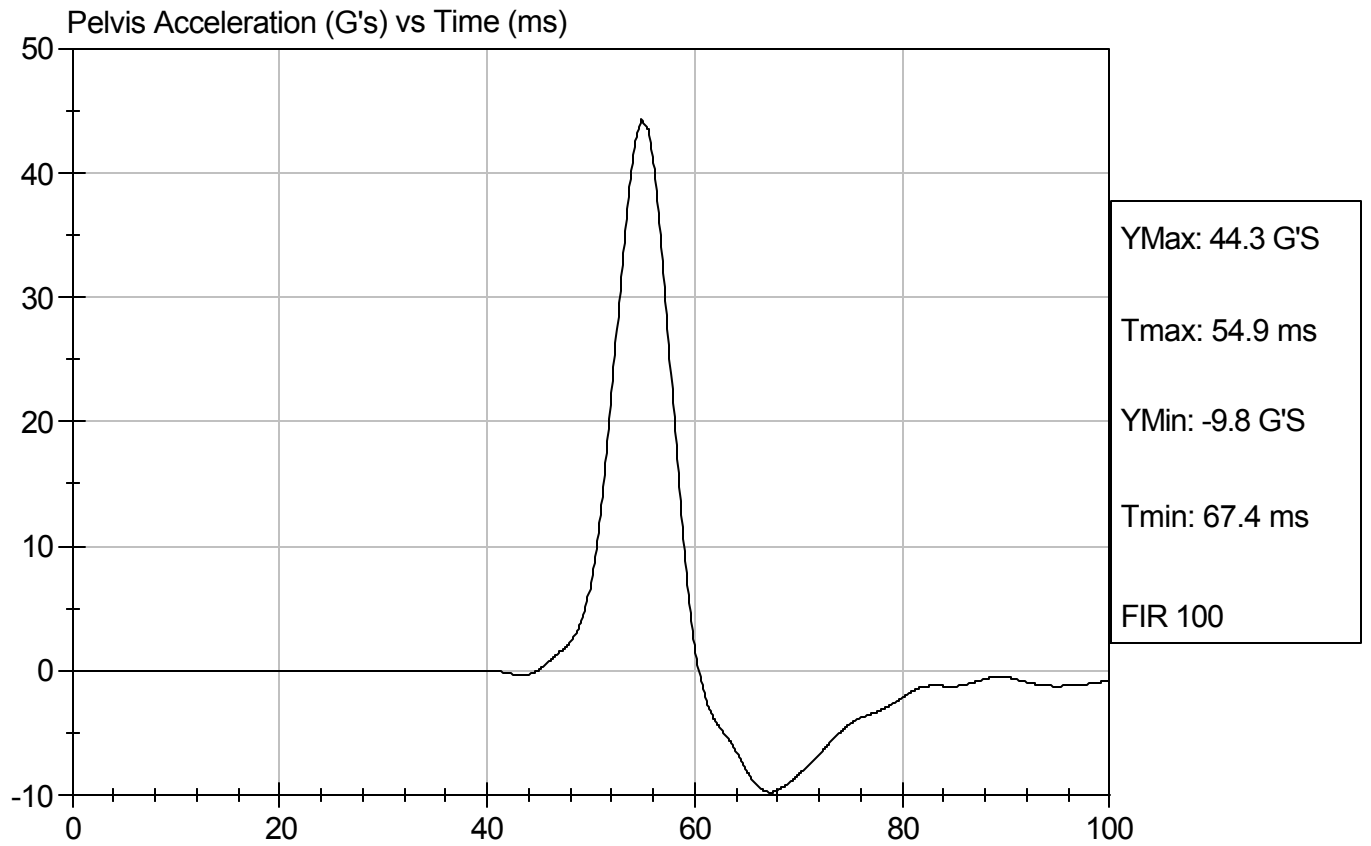
David Winkelbauer
Approved By

1/13/10
Test Date



Test Desc: Pelvis Impact
Component ID: D10063

Test Date: 1/13/10
Speed: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 271

Test I.D: D10064

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Force At 12.7 mm	N	104 -162	139	Pass
Force At 19 mm	N	163 - 222	203	Pass
Force At 25.4 mm	N	222 - 280	278	Pass
Force At 33 mm	N	325 - 391	387	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

1/13/10
Test Date

David Winkelbauer
Approved By

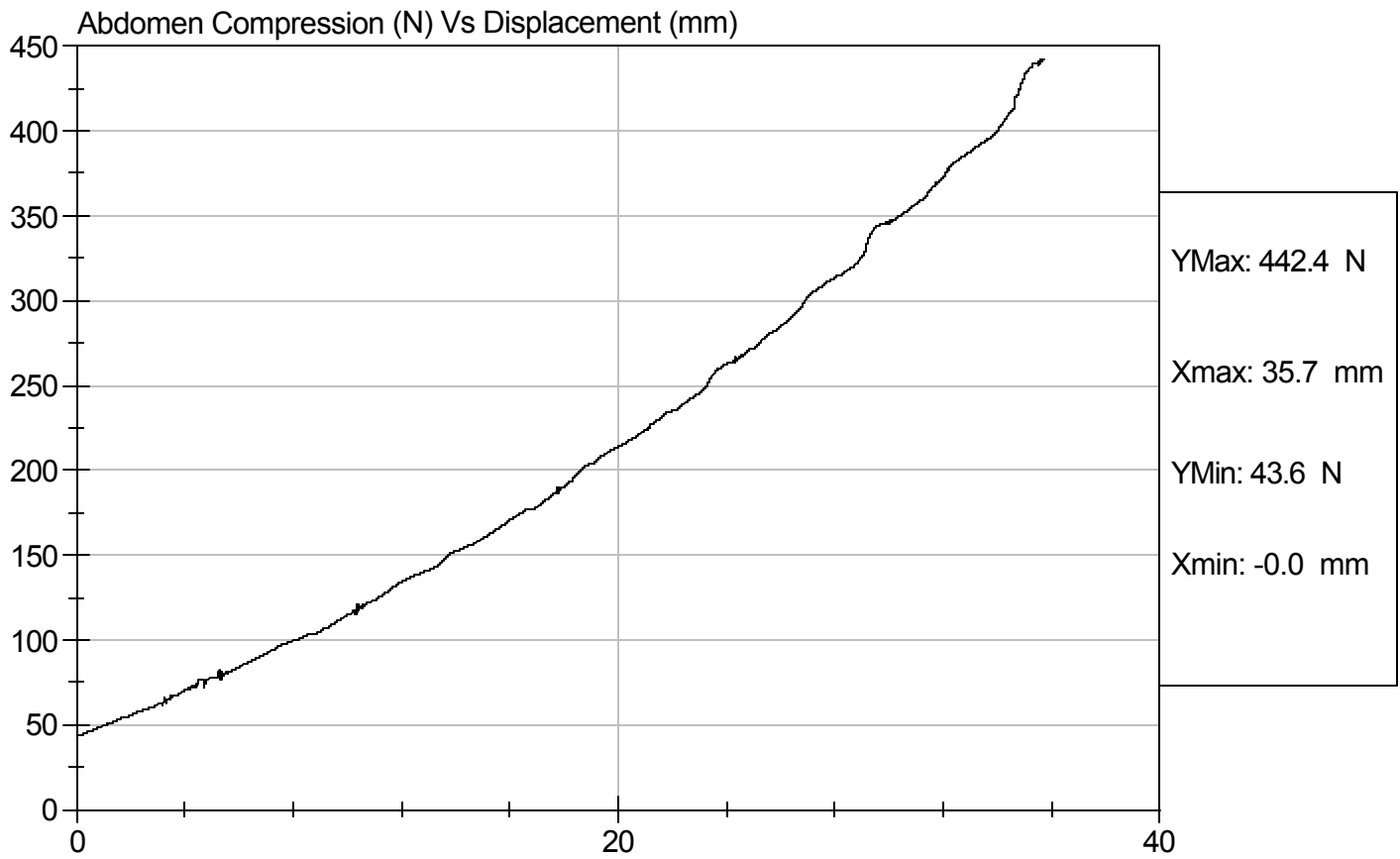


Test Description: Abdomen Compression

Test Date: 1/13/10

Component: D10064

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 271

Test I.D: D10065

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	125.5	Pass
Force At 30 deg	N	151.2 - 204.6	191.9	Pass
Force At 40 deg	N	204.6 - 258.0	257.0	Pass
Return Angle	Deg	12 Maximum	5	Pass
Overall Test Results			Pass	


Laboratory Technician


Approved By

1/13/10
Test Date

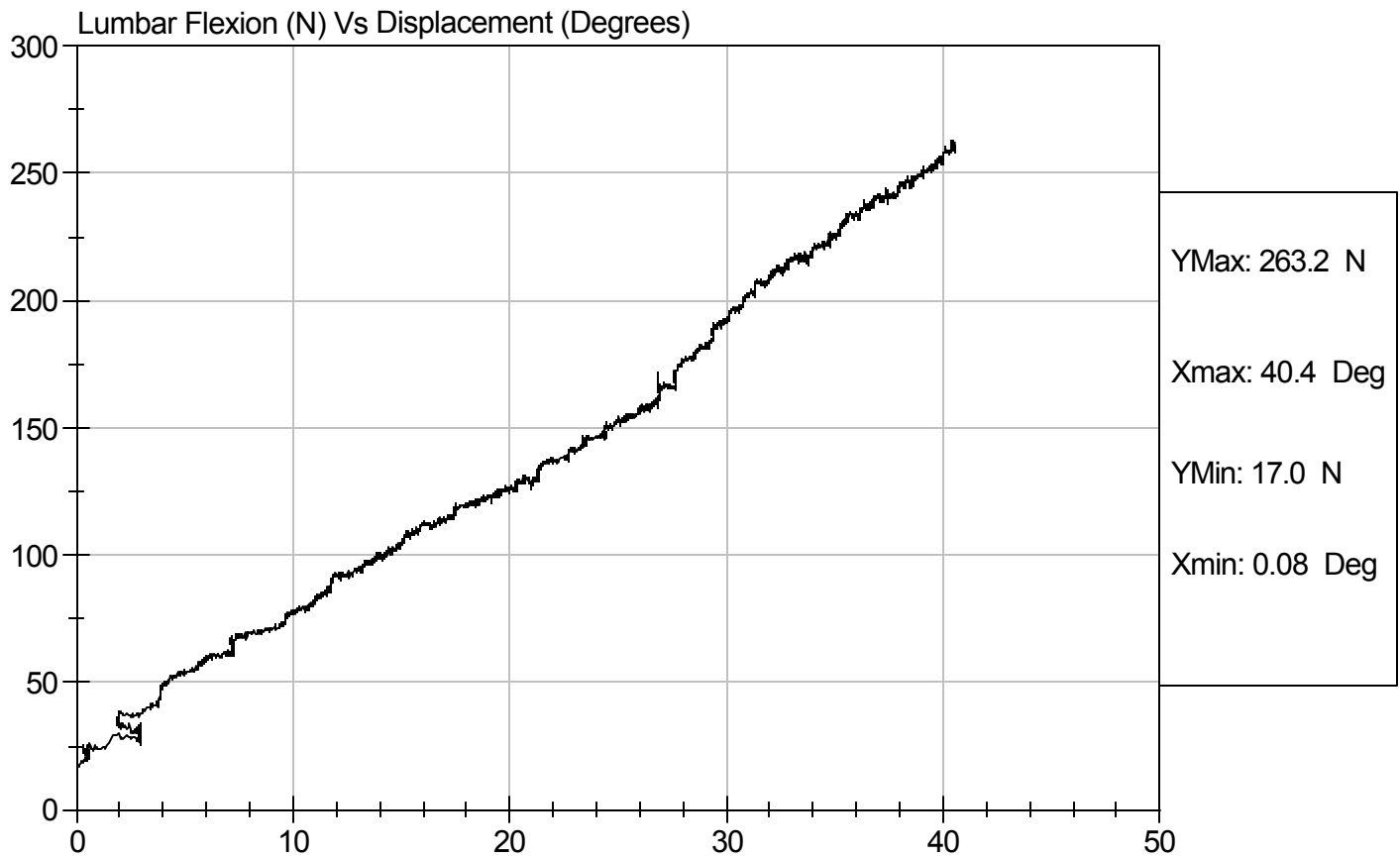


Test Description: Lumbar Flexion

Test Date: 1/13/10

Component: D10065

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 271

Test I.D: D10069

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	18	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	m/s	1.96 to 2.55	2.11	Pass
	20 ms	m/s	4.12 to 5.10	4.41	Pass
	30 ms	m/s	5.73 to 7.01	6.29	Pass
	40 to 70 ms	m/s	6.27 to 7.64	6.86	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	74	Pass
Head Rotation Peak to Zero - Decay Time		ms	58 to 67	63	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	76	Pass
Mx Peak To Zero - Decay Time		ms	49 to 64	50	Pass
Mx Peak to Max. Head Rotation		ms	2 to 16	2	Pass


 Laboratory Technician

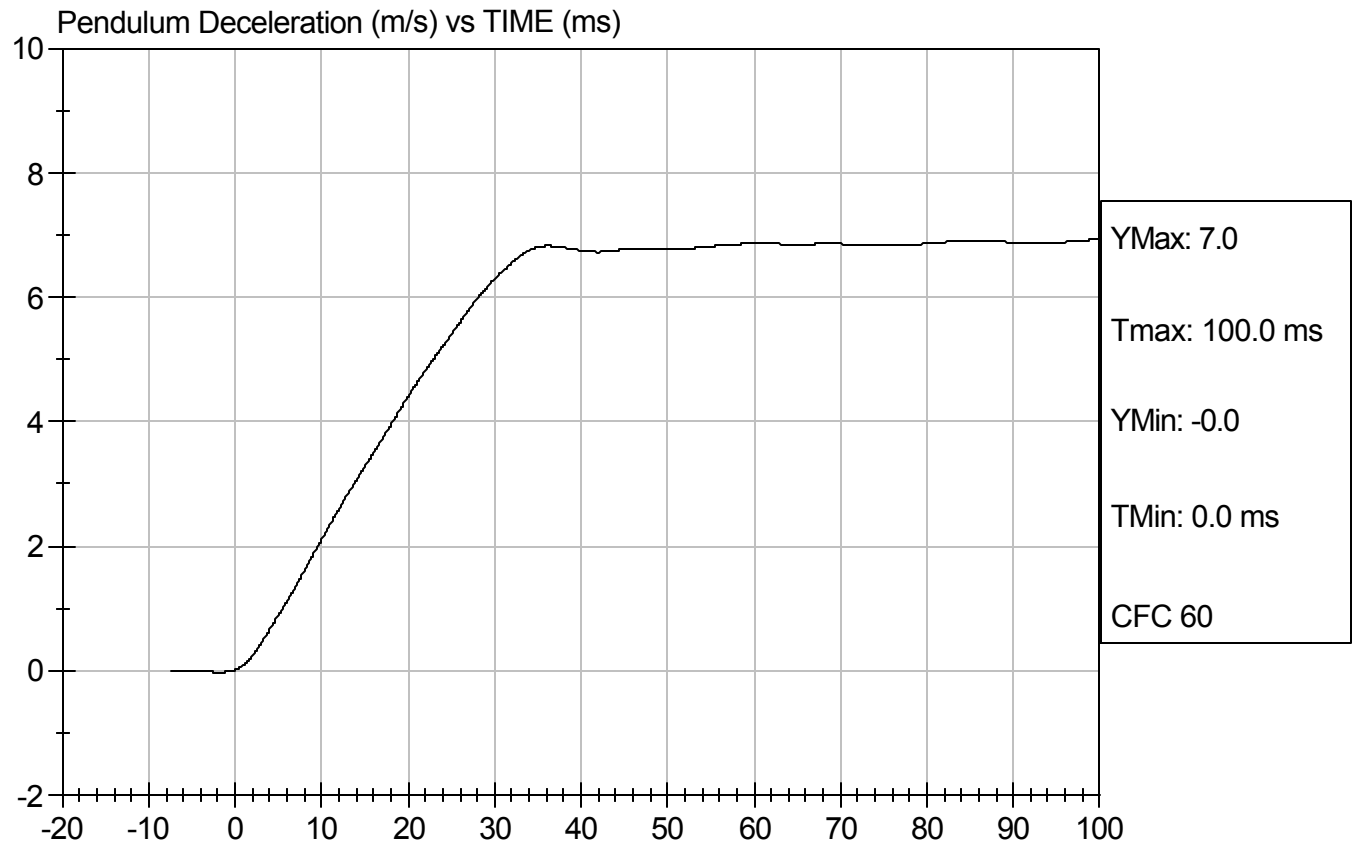

 Approved By

1/13/10
 Test Date



Test Desc: Neck Bending
Component ID: D10069

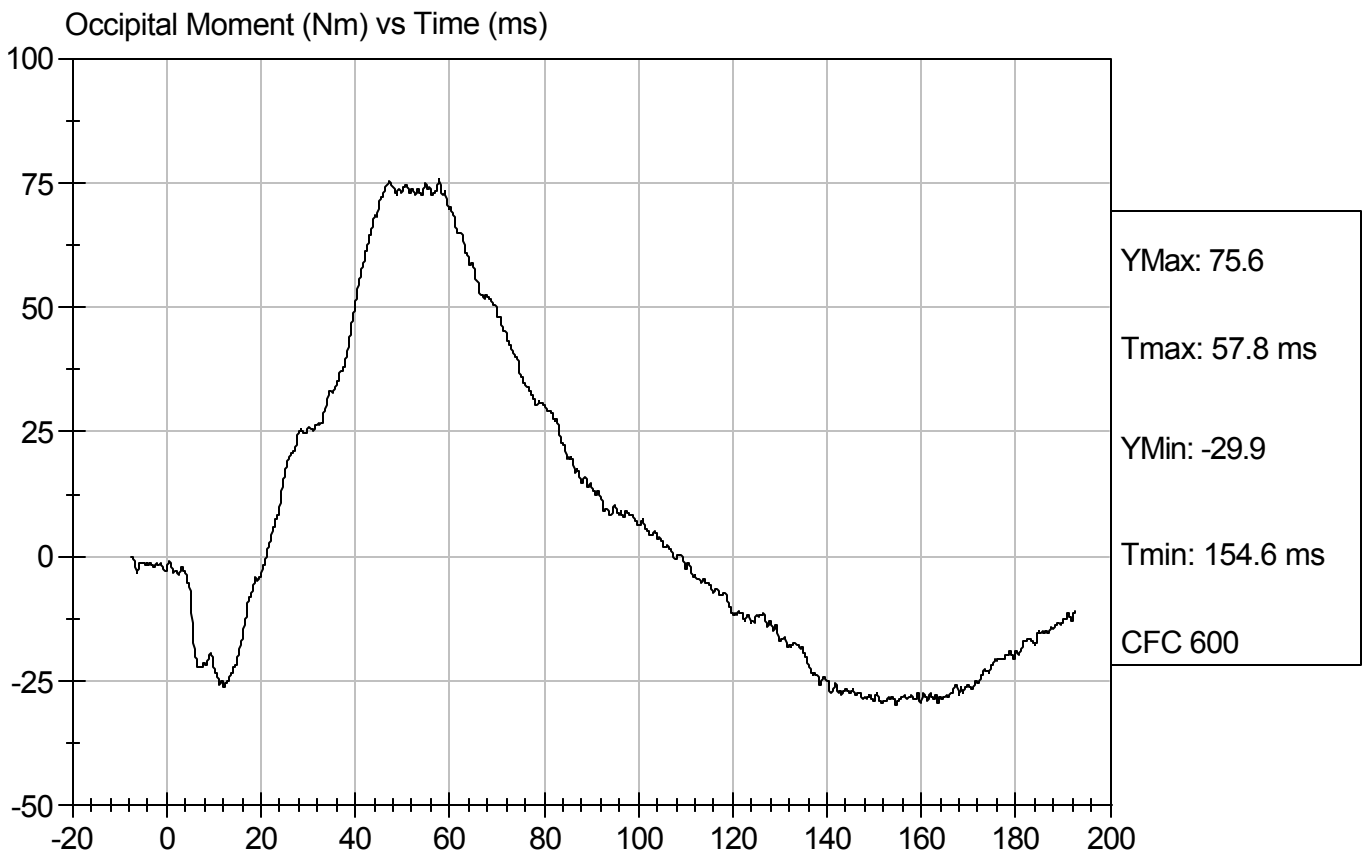
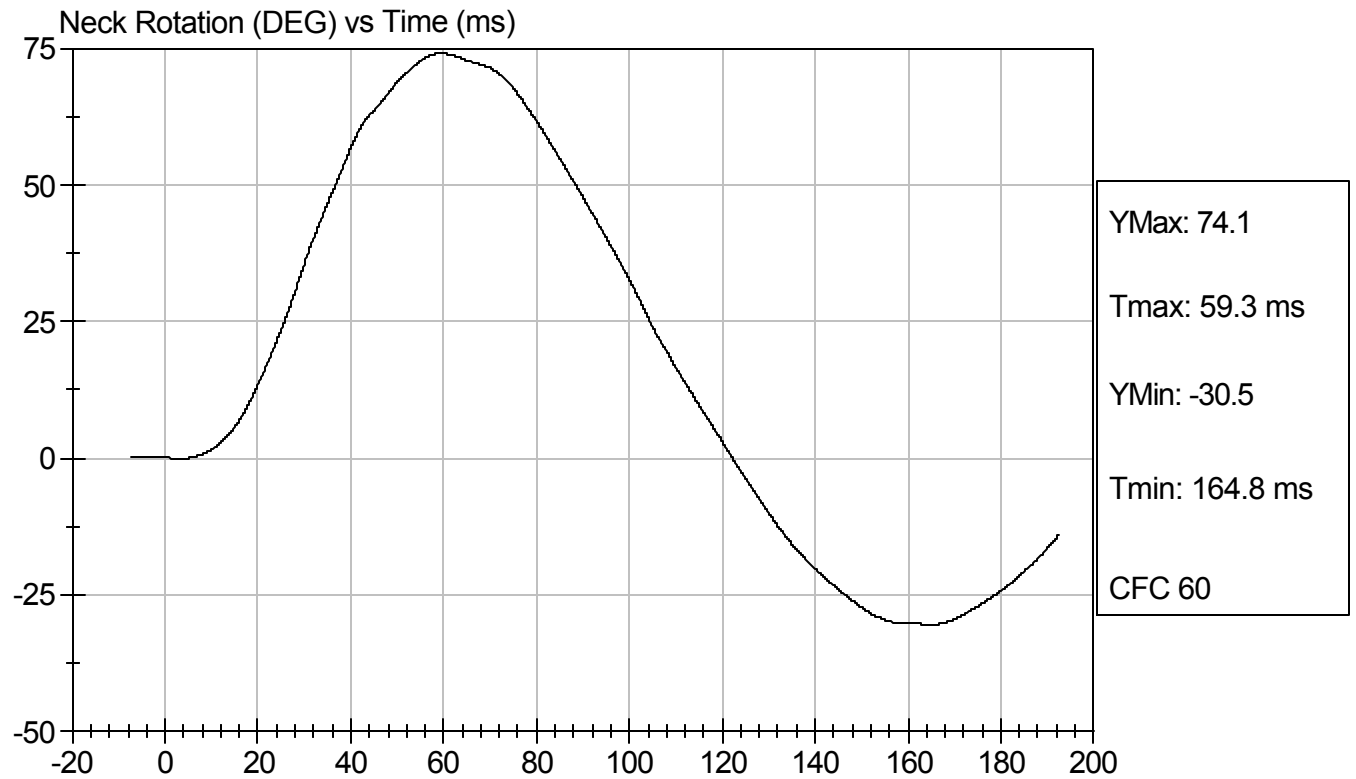
Test Date: 1/13/10
Speed: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Bending
Component ID: D10069

Test Date: 1/13/10
Speed: 23.15 ft/s, 7.06 m/s



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No: 271

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

Jessica Hall
Laboratory Technician
David Winkelbauer
Approved By

1/13/2010
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 Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 272

Test I.D: D1003

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

1/08/2010
Test Date

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

ATD Serial No: 272

Test I.D: D10031

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	19	Pass
Peak Resultant Acceleration	G's	120 to 150	138	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-9.0	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

1/8/10
Test Date

David Winkelbauer
Approved By



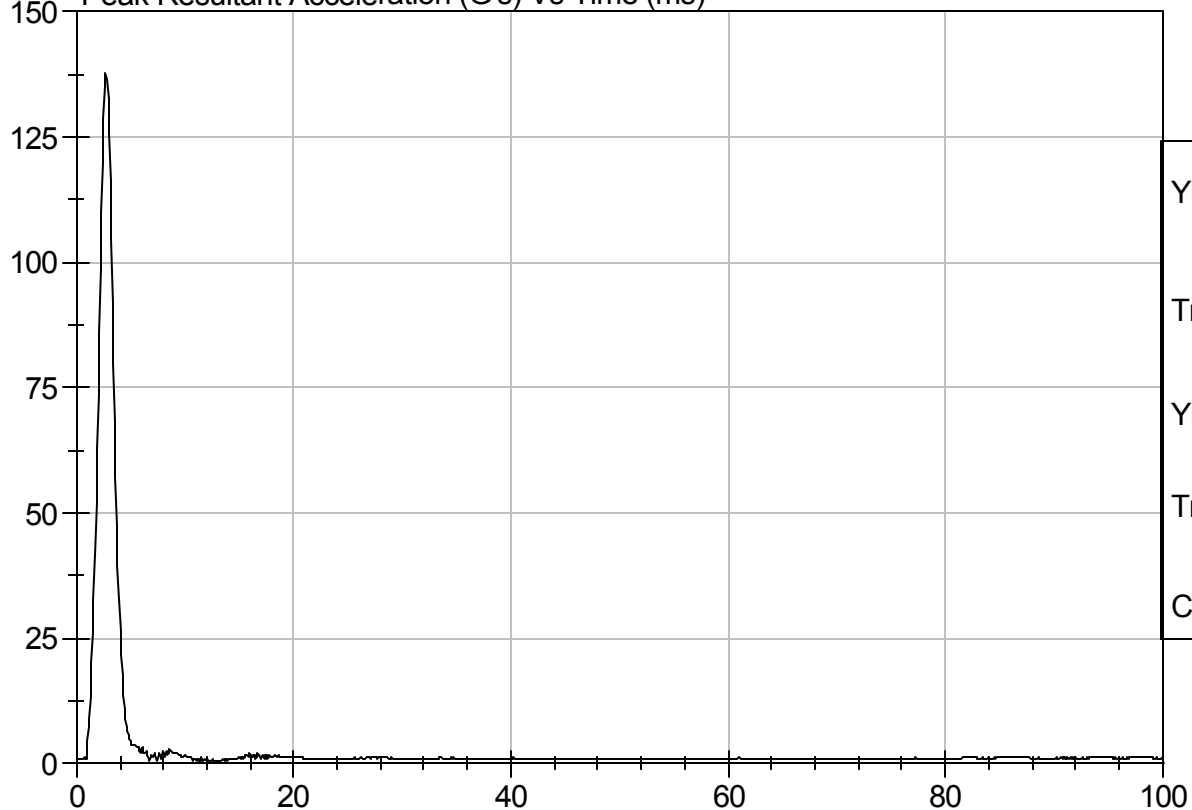
Test Description: Head Drop

Test Date: 1/8/10

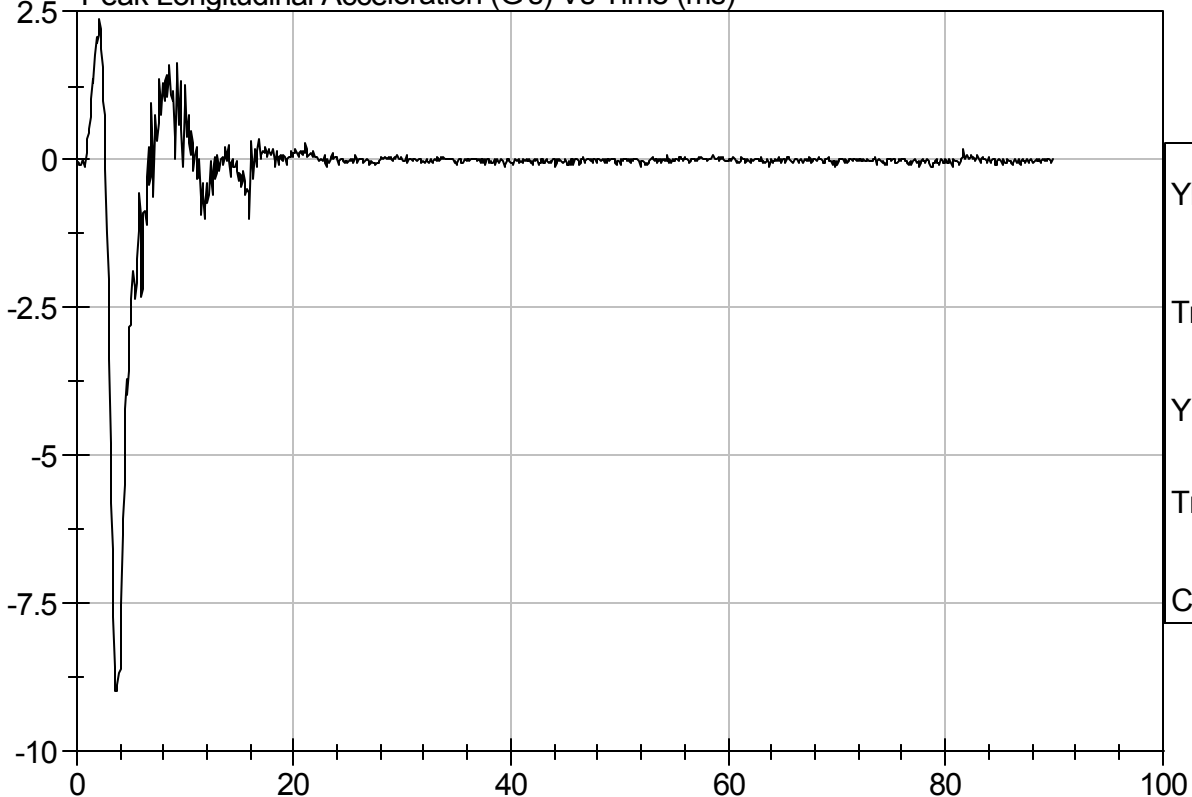
Component: D10031

Speed: 0 ft/s, 0 m/s

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



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

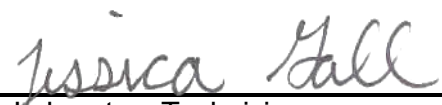


SID/HIII Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 272

Test I.D: D10032

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Velocity	m/s	4.22 - 4.31	4.27	Pass
Upper Rib	G's	37 - 46	41	Pass
Lower Rib	G's	37 - 46	39	Pass
Lower Spine	G's	15 - 22	20	Pass
Overall Test Results				Pass


Laboratory Technician

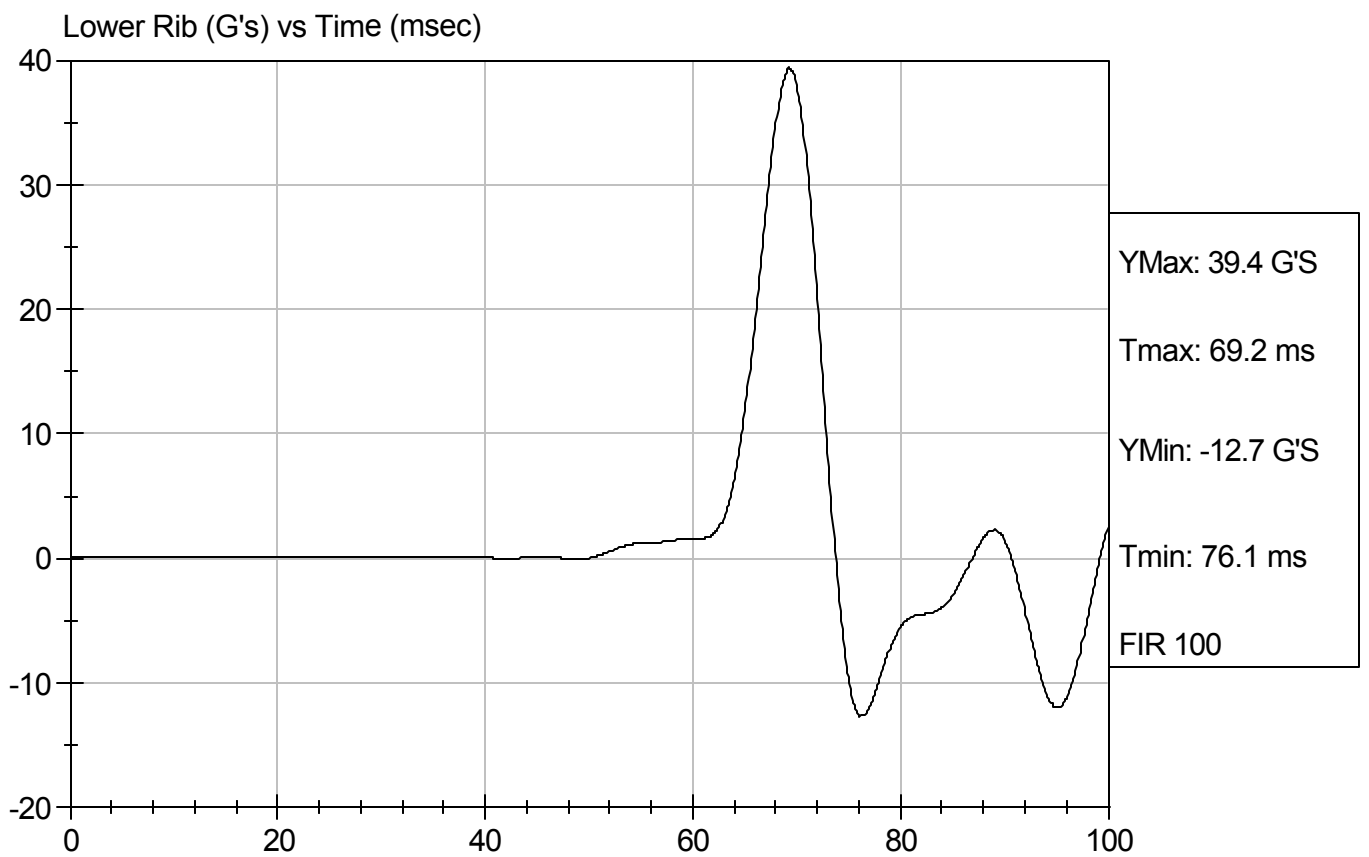
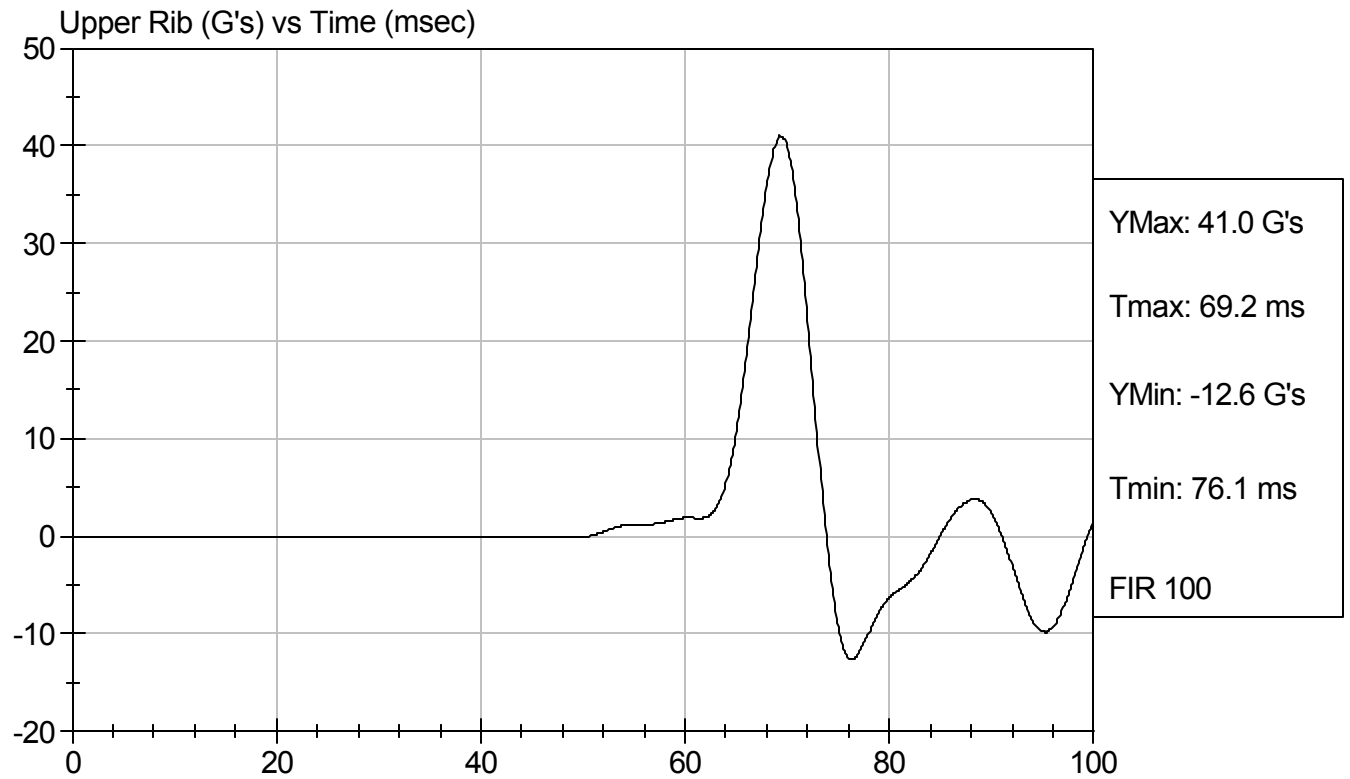

Approved By

1/7/10
Test Date



Test Desc: Thorax Impact
Component ID: D10032

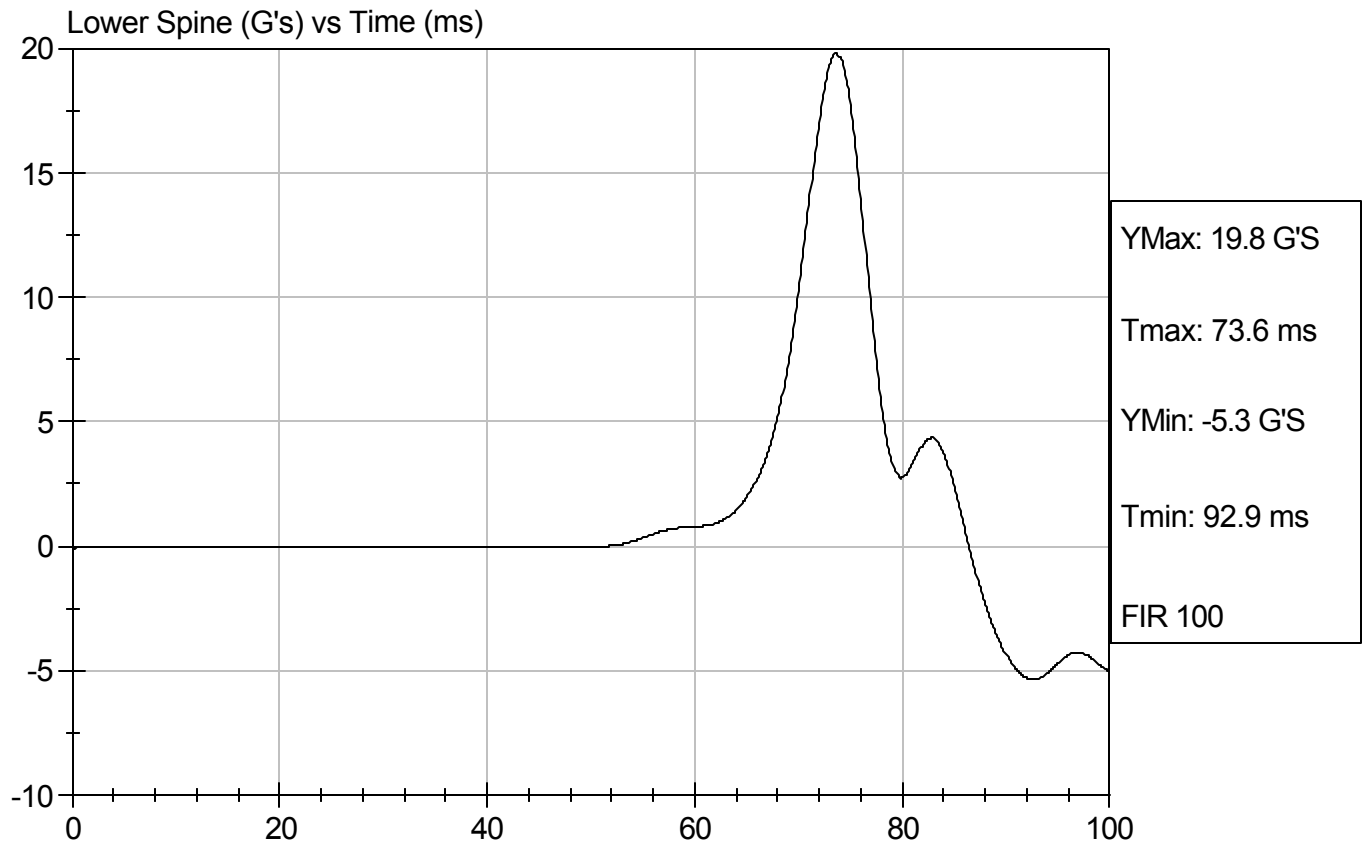
Test Date: 1/7/10
Speed: 14.00 ft/s, 4.27 m/s





Test Desc: Thorax Impact
Component ID: D10032

Test Date: 1/7/10
Speed: 14.00 ft/s, 4.27 m/s



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

ATD Serial No: 272

Test I.D: D10033

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	20	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	42	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

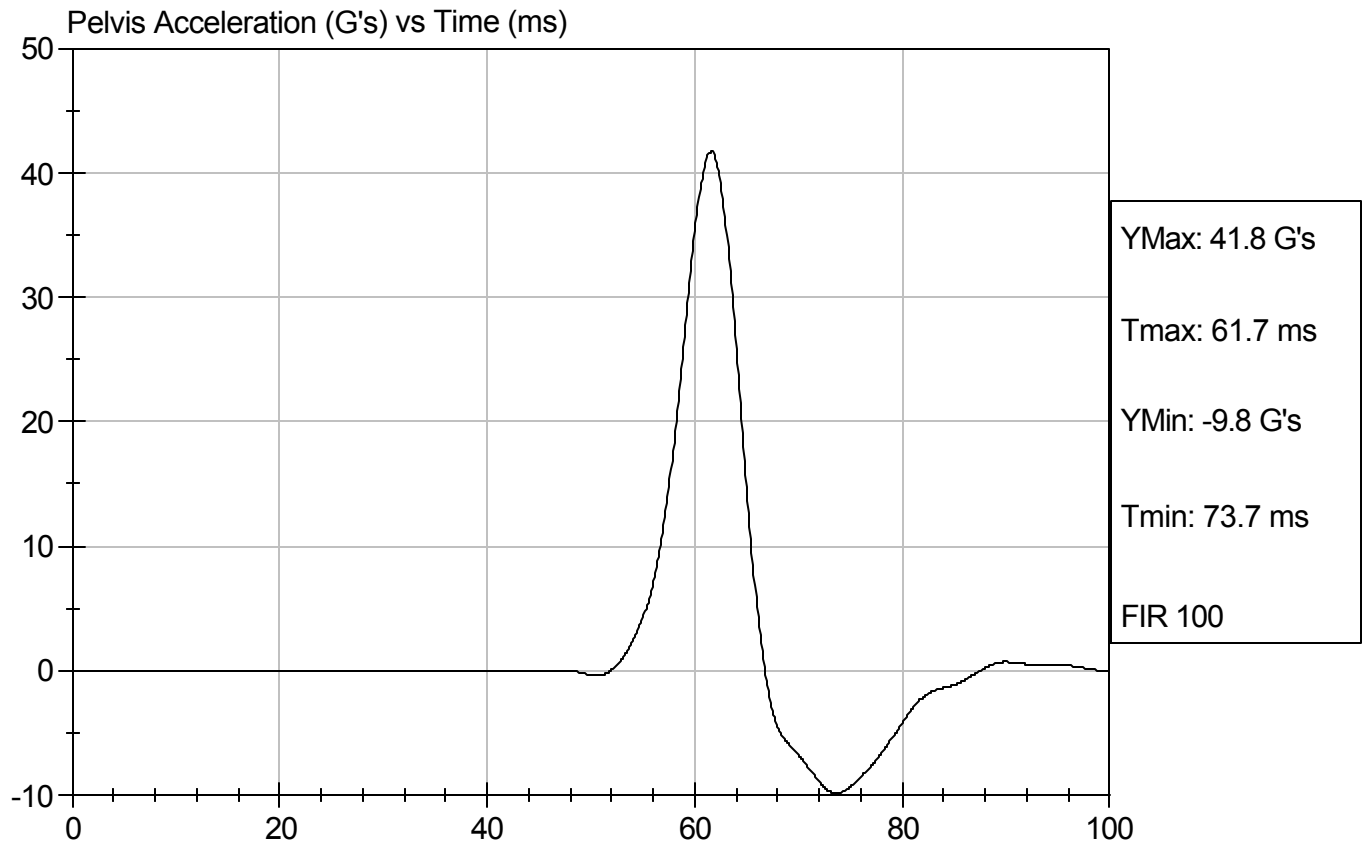
1/7/10
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D10033

Test Date: 1/7/10
Speed: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 272

Test I.D: D10034

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 12.7 mm	N	104 -162	126	Pass
Force At 19 mm	N	163 - 222	182	Pass
Force At 25.4 mm	N	222 - 280	248	Pass
Force At 33 mm	N	325 - 391	338	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

1/8/10
Test Date

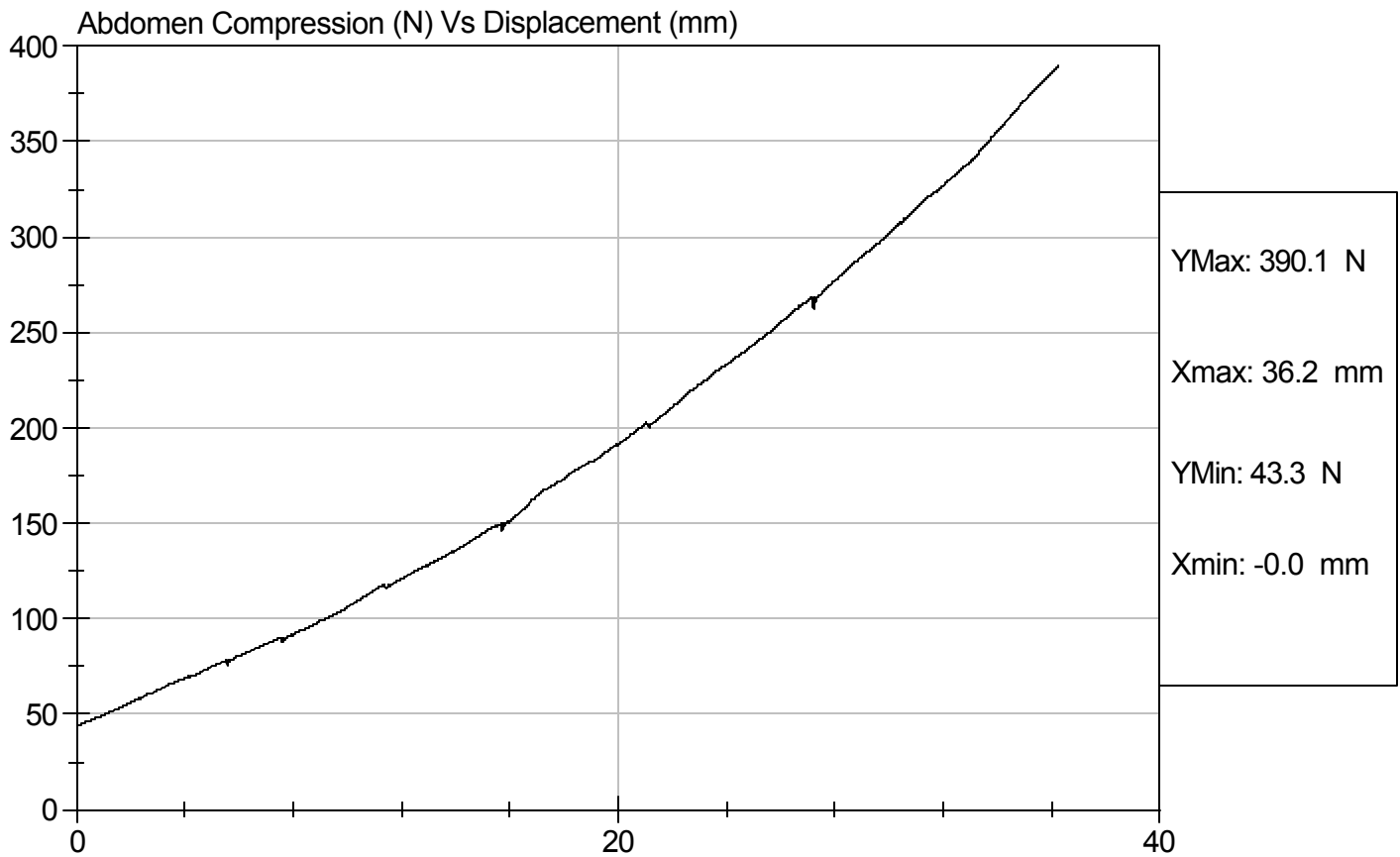


Test Description: Abdomen Compression

Test Date: 1/8/10

Component: D10034

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 272

Test I.D: D10035

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	142.9	Pass
Force At 30 deg	N	151.2 - 204.6	185.7	Pass
Force At 40 deg	N	204.6 - 258.0	212.9	Pass
Return Angle	Deg	12 Maximum	5	Pass
Overall Test Results			Pass	


Laboratory Technician


Approved By

1/8/10
Test Date

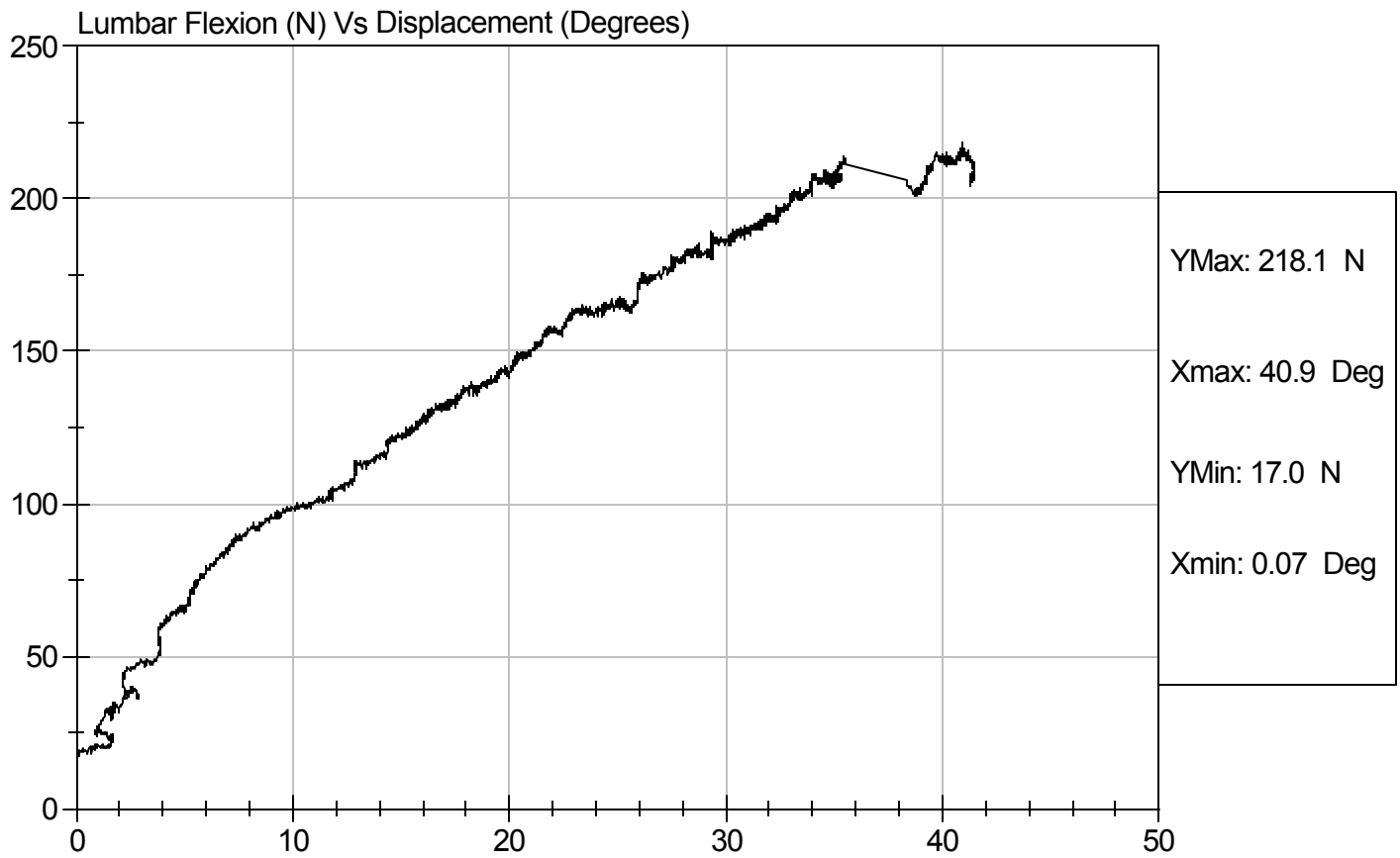


Test Description: Lumbar Flexion

Test Date: 1/8/10

Component: D10035

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 272

Test I.D: D10039

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	m/s	1.96 to 2.55	2.35	Pass
	20 ms	m/s	4.12 to 5.10	4.48	Pass
	30 ms	m/s	5.73 to 7.01	6.22	Pass
	40 to 70 ms	m/s	6.27 to 7.64	6.89	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	74	Pass
Head Rotation Peak to Zero - Decay Time		ms	58 to 67	67	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	77	Pass
Mx Peak To Zero - Decay Time		ms	49 to 64	54	Pass
Mx Peak to Max. Head Rotation		ms	2 to 16	13	Pass


 Laboratory Technician

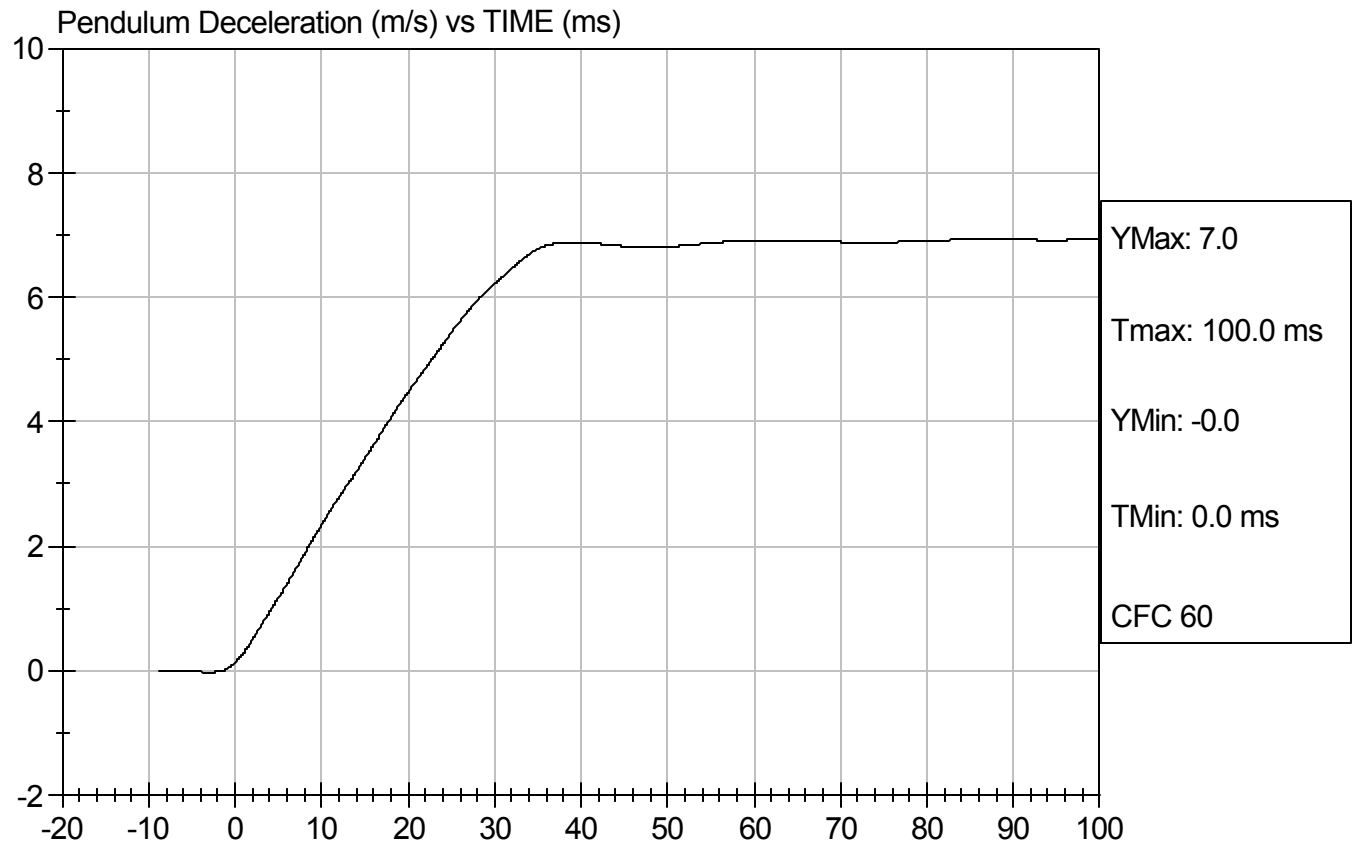

 Approved By

1/8/10
 Test Date



Test Desc: Neck Bending
Component ID: D10039

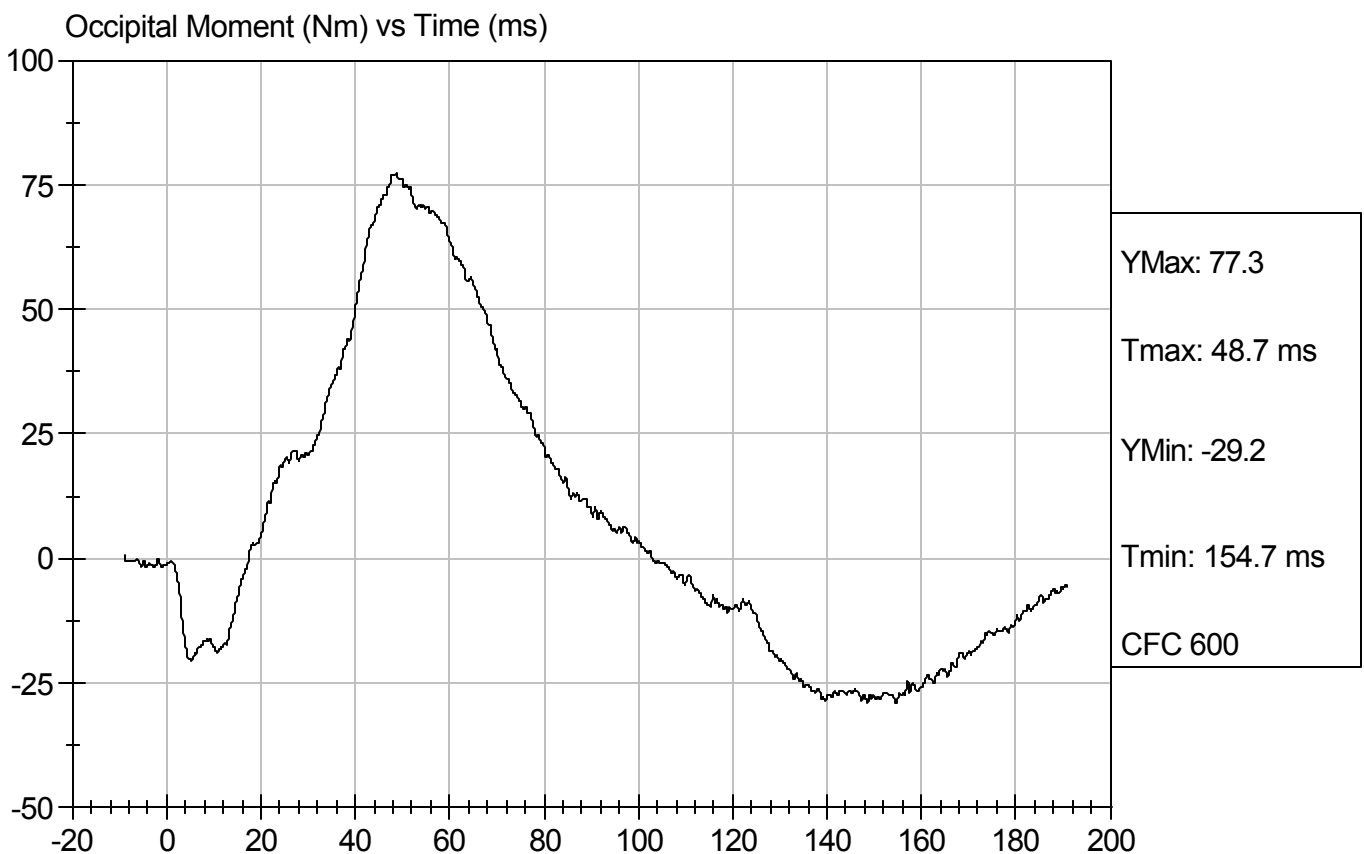
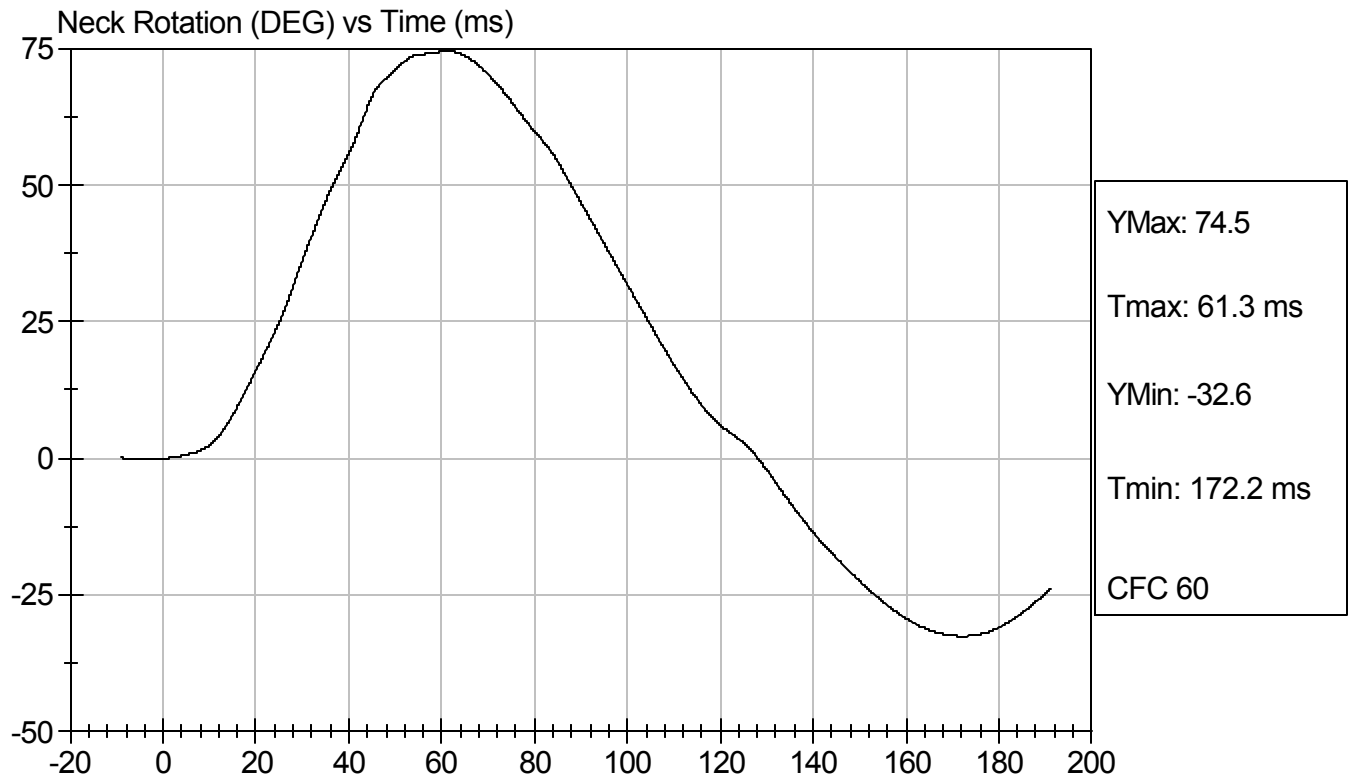
Test Date: 1/8/10
Speed: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Bending
Component ID: D10039

Test Date: 1/8/10
Speed: 23.15 ft/s, 7.06 m/s



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: D10071

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	18	Pass
Peak Resultant Acceleration	G's	120 to 150	131	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	9.1	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

1/13/10
Test Date



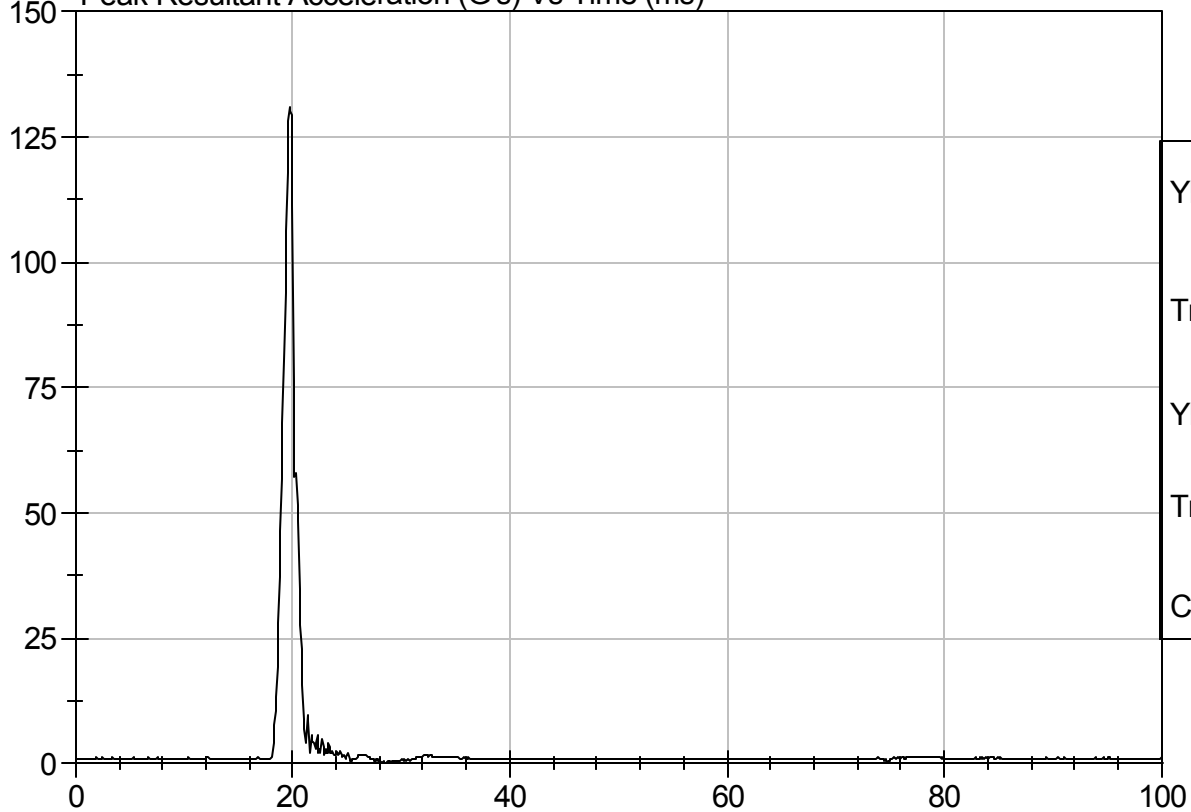
Test Description: Head Drop

Test Date: 1/13/10

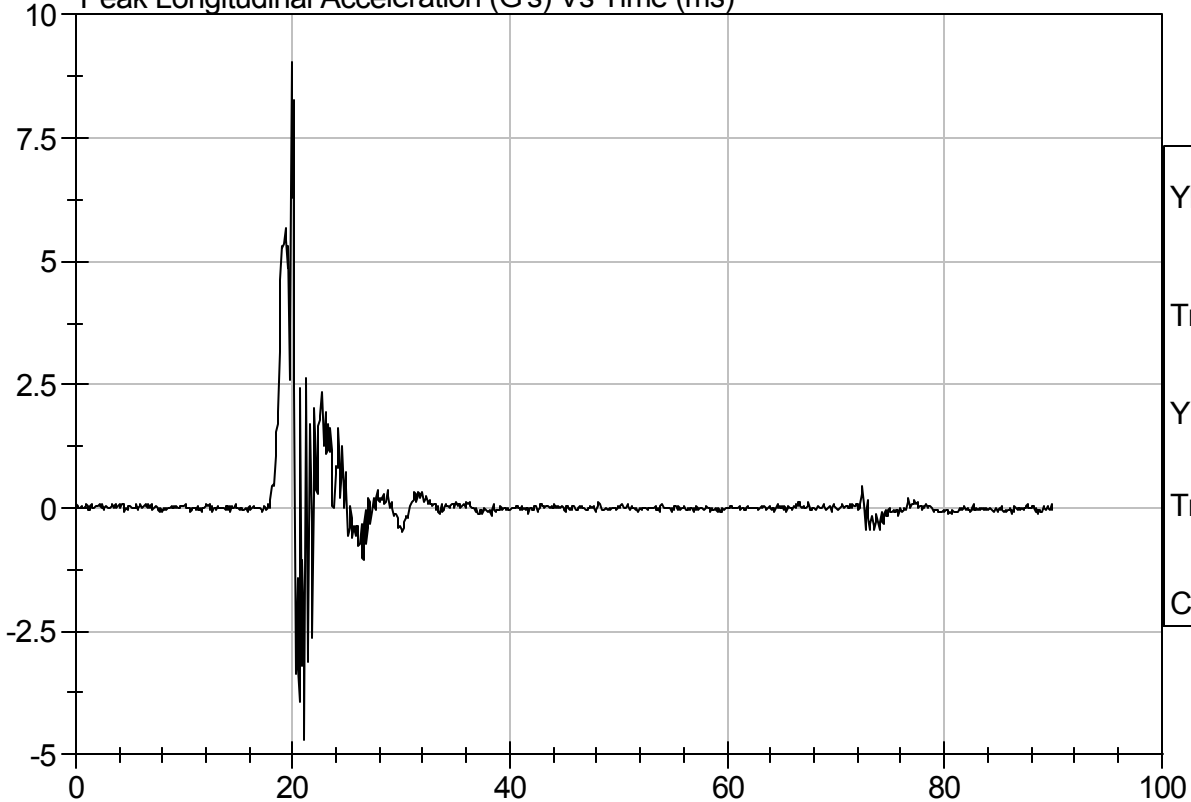
Component: D10071

Speed: 0 ft/s, 0 m/s

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



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



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

ATD Serial No: 272

Test I.D: D10072

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	18	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

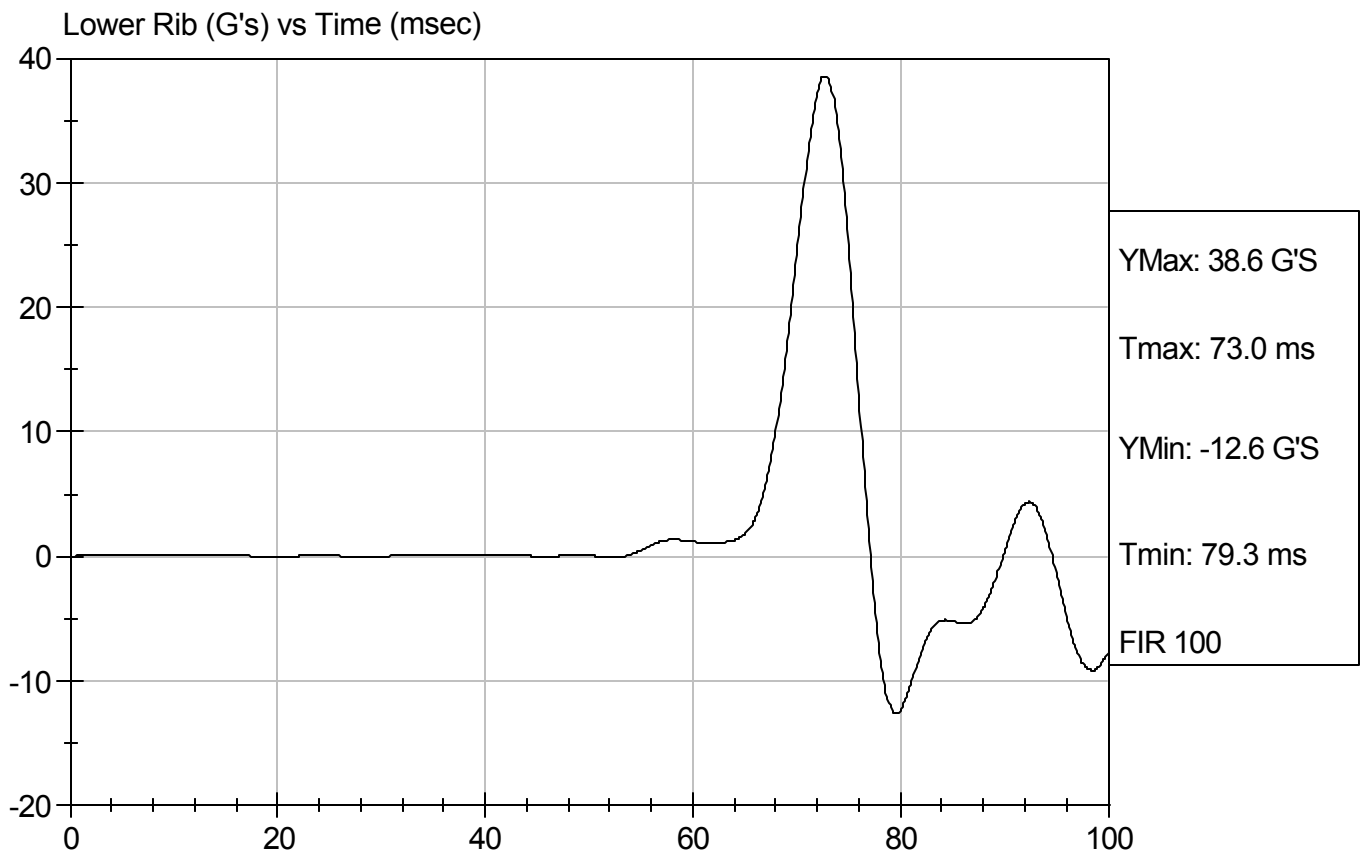
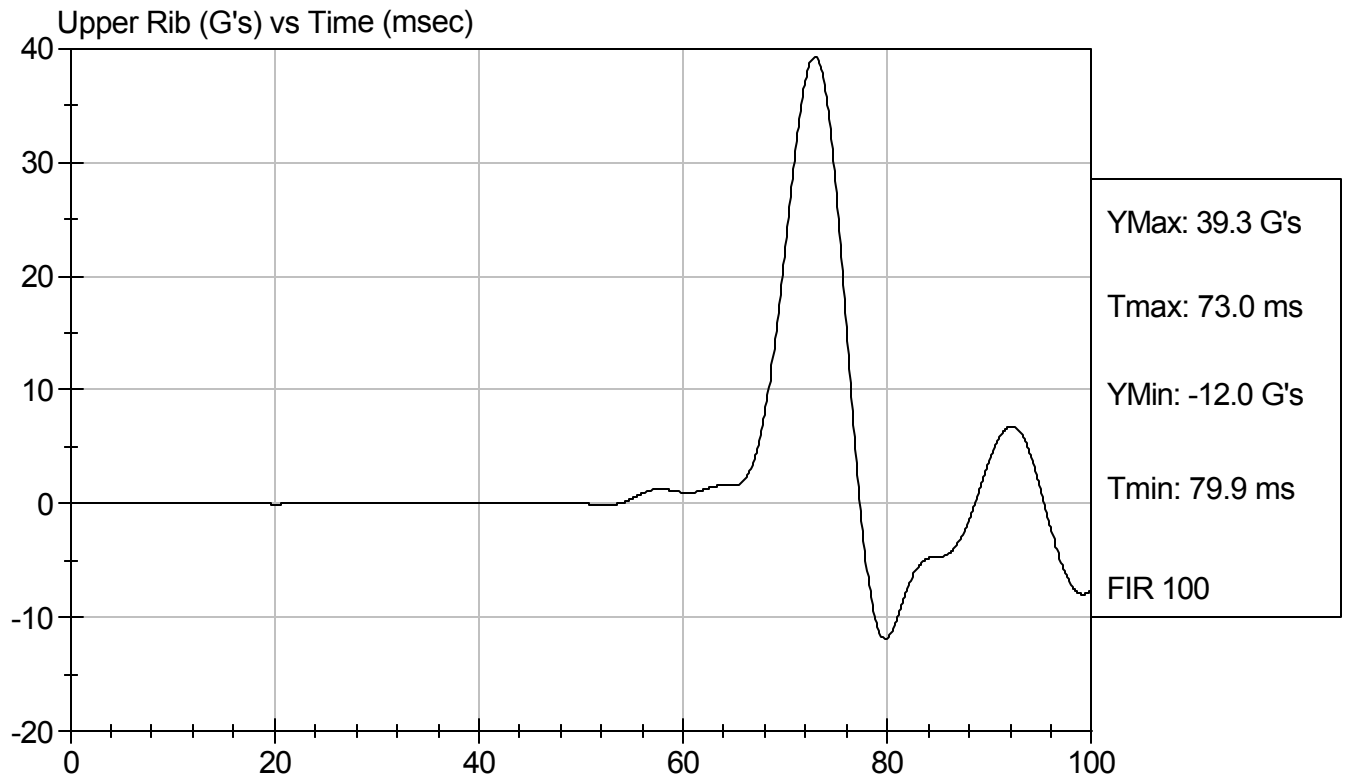
David Winkelbauer
Approved By

1/13/10
Test Date



Test Desc: Thorax Impact
Component ID: D10072

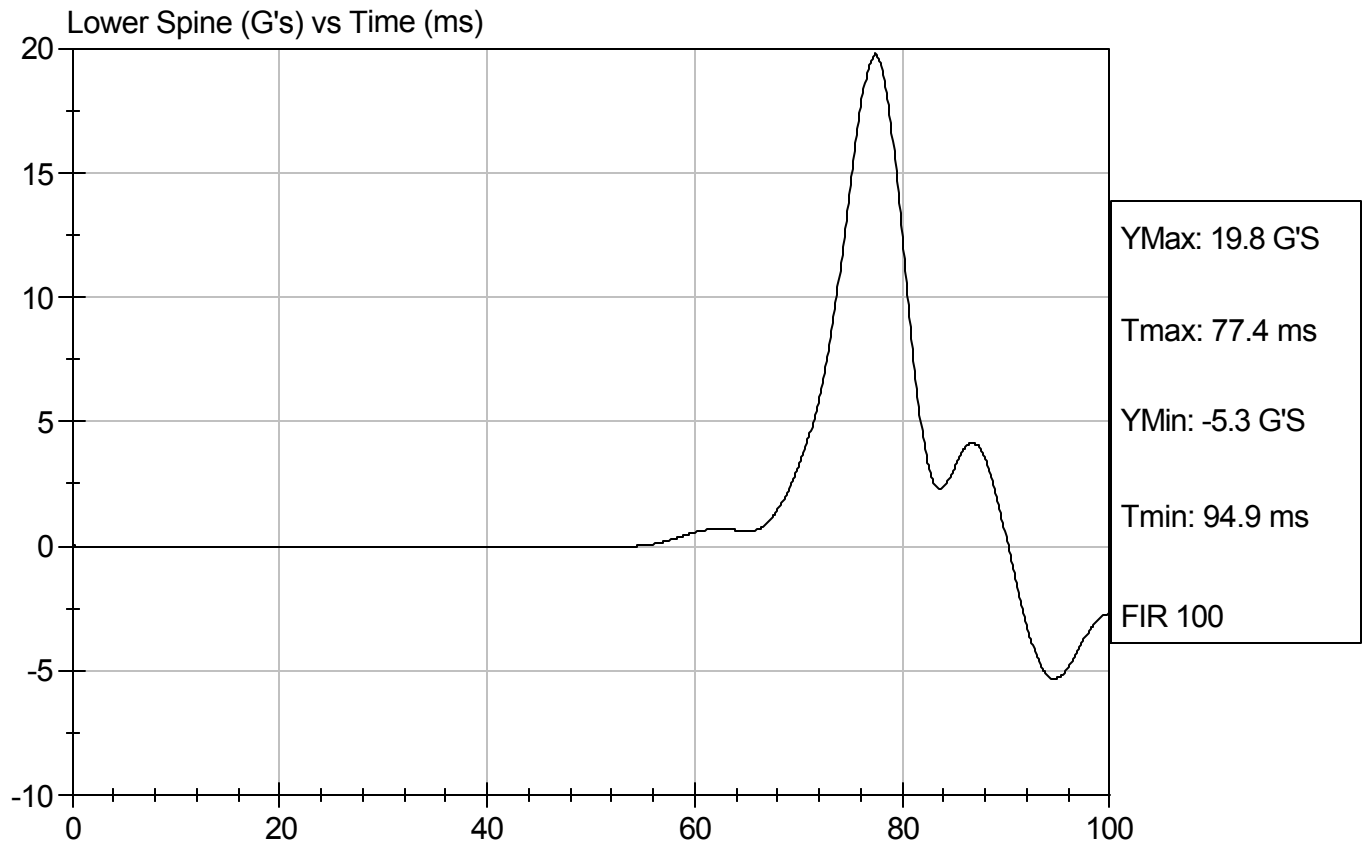
Test Date: 1/13/10
Speed: 14.12 ft/s, 4.30 m/s





Test Desc: Thorax Impact
Component ID: D10072

Test Date: 1/13/10
Speed: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 272

Test I.D: D10073

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	18	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	42	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

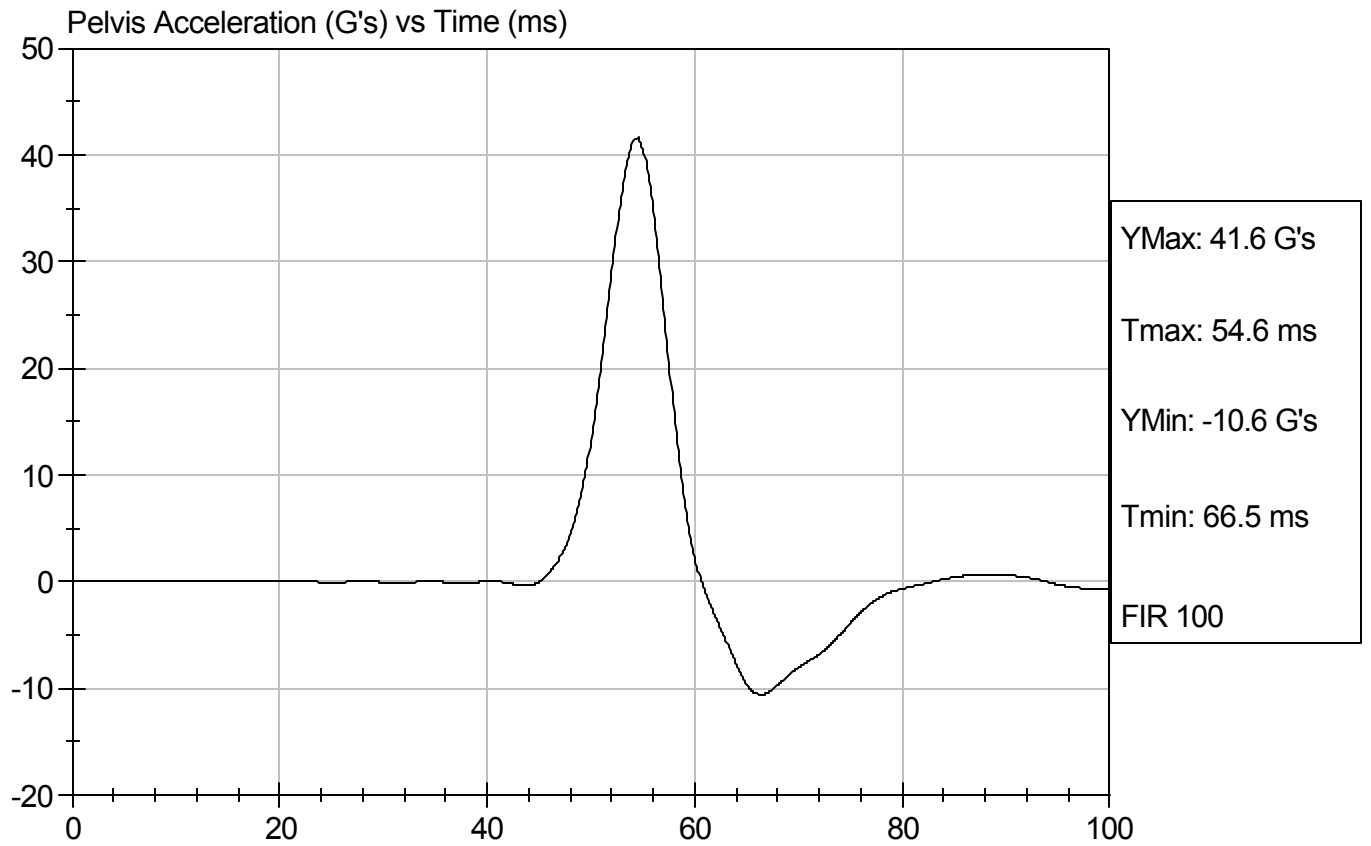
1/13/10
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D10073

Test Date: 1/13/10
Speed: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 272

Test I.D: D10074

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Force At 12.7 mm	N	104 -162	126	Pass
Force At 19 mm	N	163 - 222	179	Pass
Force At 25.4 mm	N	222 - 280	242	Pass
Force At 33 mm	N	325 - 391	330	Pass
Overall Test Results			Pass	


Laboratory Technician


Approved By

1/13/10
Test Date

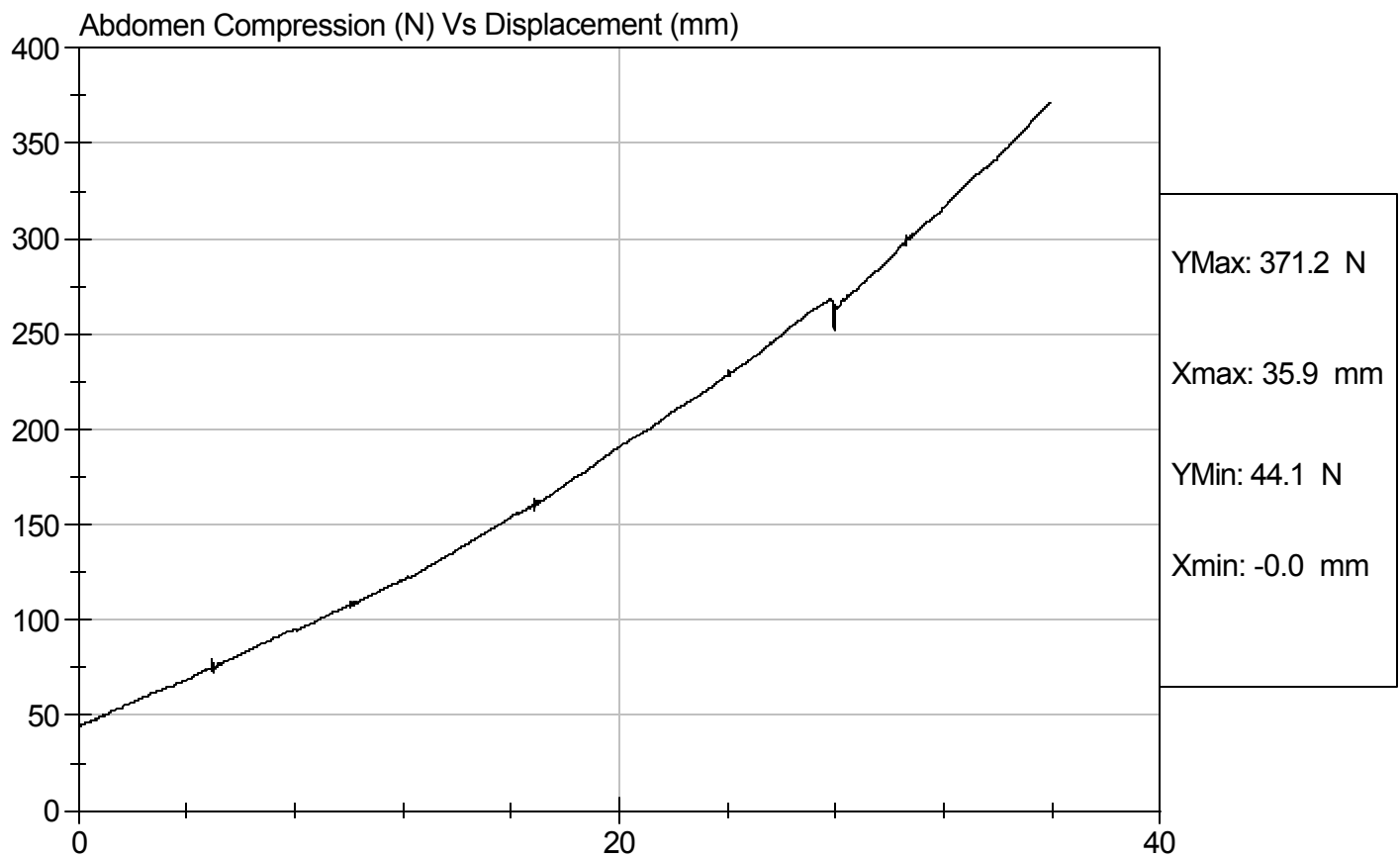


Test Description: Abdomen Compression

Test Date: 1/13/10

Component: D10074

Speed: 0 ft/s, 0 m/s

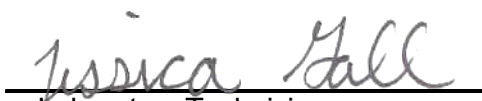


SID/HIII Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 272

Test I.D: D10075

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	139.0	Pass
Force At 30 deg	N	151.2 - 204.6	177.5	Pass
Force At 40 deg	N	204.6 - 258.0	221.3	Pass
Return Angle	Deg	12 Maximum	2	Pass
			Overall Test Results	Pass


Laboratory Technician


Approved By

1/13/10
Test Date

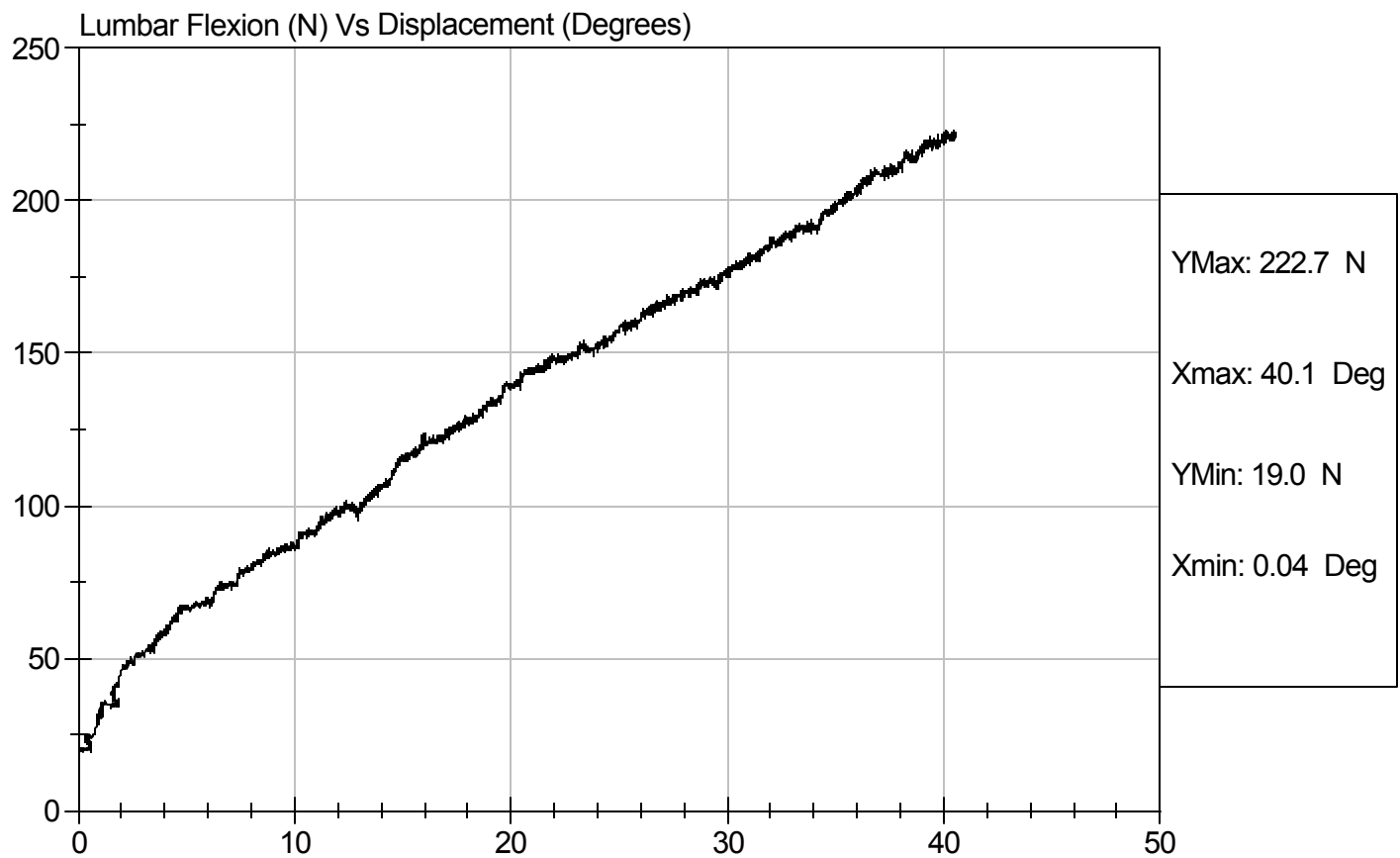


Test Description: Lumbar Flexion

Test Date: 1/13/10

Component: D10075

Speed: 0 ft/s, 0 m/s



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

ATD Serial No: 272

Test I.D: D10079

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	18	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	m/s	1.96 to 2.55	2.39	Pass
	20 ms	m/s	4.12 to 5.10	4.69	Pass
	30 ms	m/s	5.73 to 7.01	6.47	Pass
	40 to 70 ms	m/s	6.27 to 7.64	6.77	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	73	Pass
Head Rotation Peak to Zero - Decay Time		ms	58 to 67	58	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	73	Pass
Mx Peak To Zero - Decay Time		ms	49 to 64	56	Pass
Mx Peak to Max. Head Rotation		ms	2 to 16	15	Pass


 Laboratory Technician


 Approved By

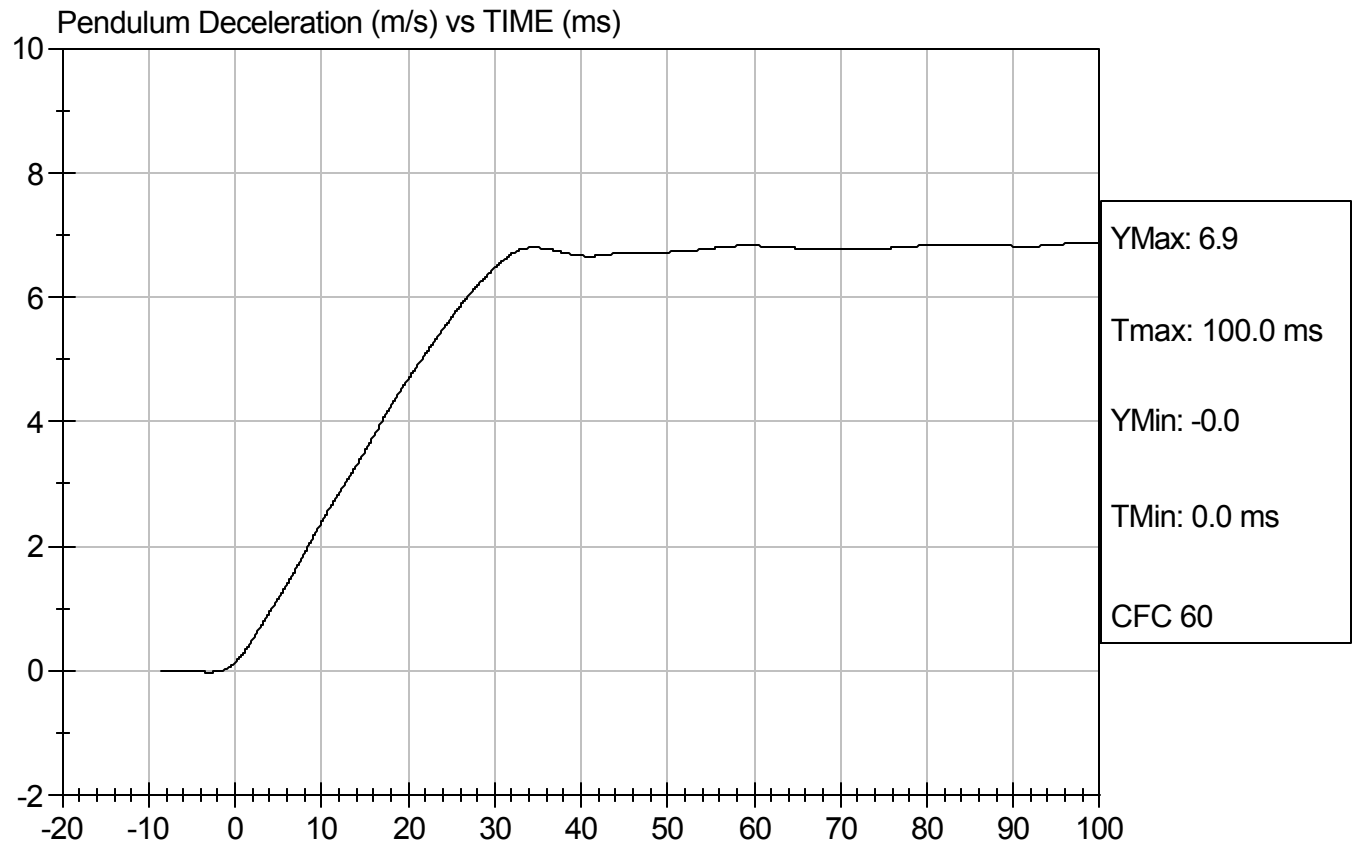
1/13/10

Test Date



Test Desc: Neck Bending
Component ID: D10079

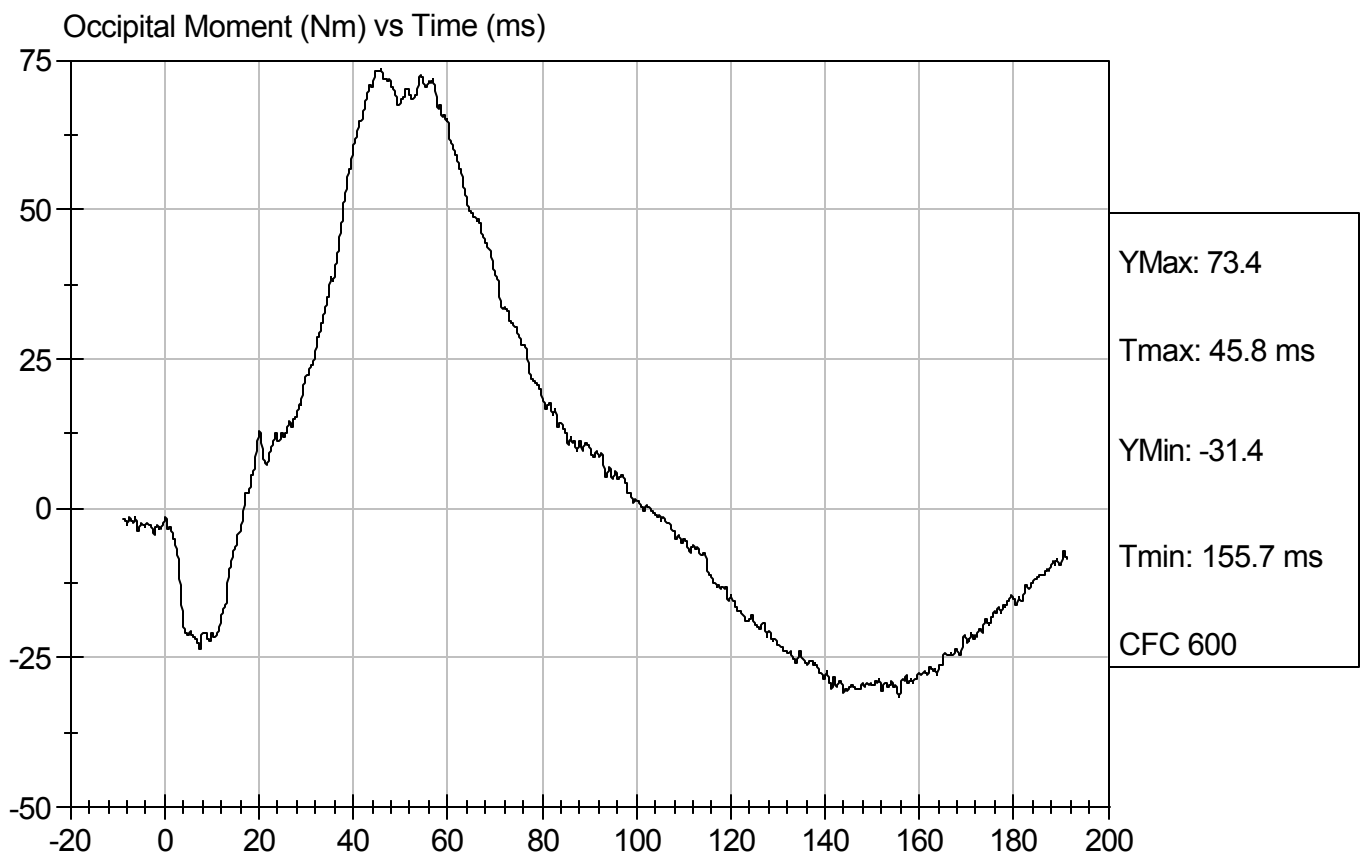
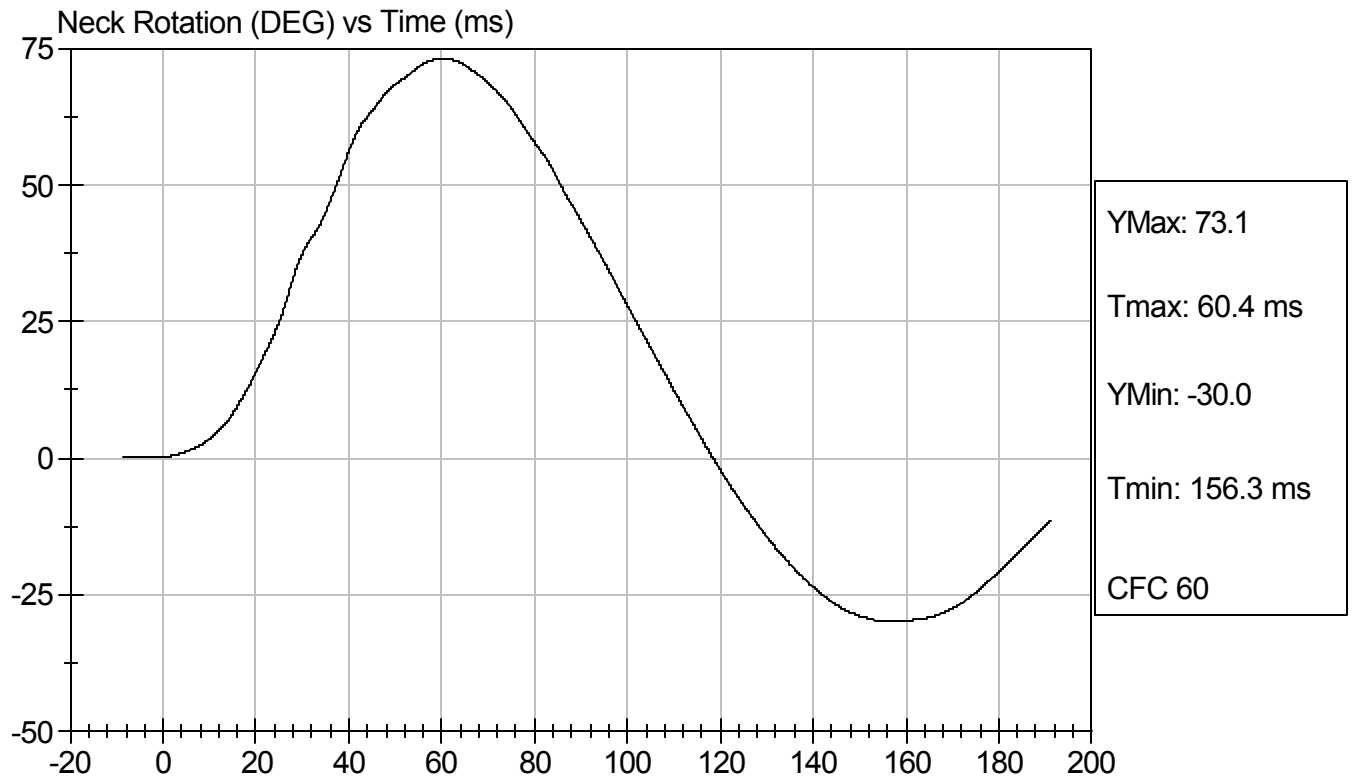
Test Date: 1/13/10
Speed: 23.148 ft/s, 7.06 m/s





Test Desc: Neck Bending
Component ID: D10079

Test Date: 1/13/10
Speed: 23.148 ft/s, 7.06 m/s



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

Jessica Hall
Laboratory Technician
David Winkelbauer
Approved By

1/13/2010
Test Date