

REPORT NUMBER: NCAPSIDE-MGA-2006-007

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**HYUNDAI MOTOR COMPANY
2006 HYUNDAI ACCENT GLS
NHTSA NUMBER: M60503**

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



Test Date: January 17, 2006

Report Date: February 24, 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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Date: 2/24/06

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16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 2006 Hyundai Accent GLS 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 17, 2006. The impact velocity of the Moving Deformable Barrier (MDB) was 62.1 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 345 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;">44.4</td> <td style="text-align: center;">101.4</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">43.1</td> <td style="text-align: center;">99.7</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">76.5</td> <td style="text-align: center;">77.2</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">60.5</td> <td style="text-align: center;">89.3</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">78.0</td> <td style="text-align: center;">89.8</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">361.8</td> <td style="text-align: center;">438.9</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	44.4	101.4	Left Lower Rib (LLR) Accel., g	43.1	99.7	Lower Spine (T ₁₂) Accel., g	76.5	77.2	Thoracic Trauma Index (TTI)	60.5	89.3	Pelvis (PEV) Accel., g	78.0	89.8	HIC	361.8	438.9
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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, 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' 2006 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 2006 Hyundai Accent GLS manufactured by Hyundai Motor Company.

TEST PROCEDURE

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

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

SECTION 2

SUMMARY OF NCAP SIDE IMPACT TEST

A model year 2006 Hyundai Accent GLS 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 62.1 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 1377.1 kg and the test weight of the MDB was 1360.8 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on January 17, 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 345 mm at level 2, 1050 mm rearward of the left vertical impact point. The driver and passenger SID/HIIIs, Serial Nos. 904 and 271 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	361.8	31.4	54.2	60.5	78.0
Passenger	438.9	43.1	63.9	89.3	89.8

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Information	Left Front (Driver)		Left Rear (Passenger)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	None	
Side Torso Airbag	Yes	Yes	None	
Head Airbag	None		None	
Curtain Airbag	Yes	Yes	Yes	Yes

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

TEST NOTES

The following channels did not collect any valid data:

Driver Neck FX after 20ms

Driver Seat Track Y after 10ms

Vehicle CG X after 60ms

Vehicle CG Y after 60ms

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

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

TEST VEHICLE INFORMATION

Make	Hyundai
Model	Accent GLS
Body Style	Sedan
NHTSA No.	M60503
VIN	KMHCHN46C96U006965
Color	White
Delivery Date	01/06
Odometer Reading (mile)	39
Dealer	Boucher Hyundai
Transmission	Automatic
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	1.6
Engine Placement	Lateral
Automatic Door Locks (ADL)	No
Owner's Manual Details Instructions on Disabling ADLs	NA

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Hyundai Motor Company, Korea
Date of Manufacture	NOV/03/05

GVWR (kg)	1650
GAWR Front (kg)	870
GAWR Rear (kg)	850

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				385
Cargo Wt. (RCLW) (kg)				44.9

DATA SHEET NO. 1 (continued)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2006 Hyundai Accent GLSNHTSA No. M60503Test Program: NCAP Side ImpactTest Date: 01/17/06**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	375.0	218.3		420.5	310.7	
Right	kg	366.0	217.2		368.3	277.6	
Ratio	%	63.0	37.0		57.3	42.7	
Totals	kg	741.0	435.5	1176.5	788.8	588.3	1377.1

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1176.5
Weight of 2 P572E ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	44.9
Calculated Vehicle Target Weight (TVTW)	kg	1382.9

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

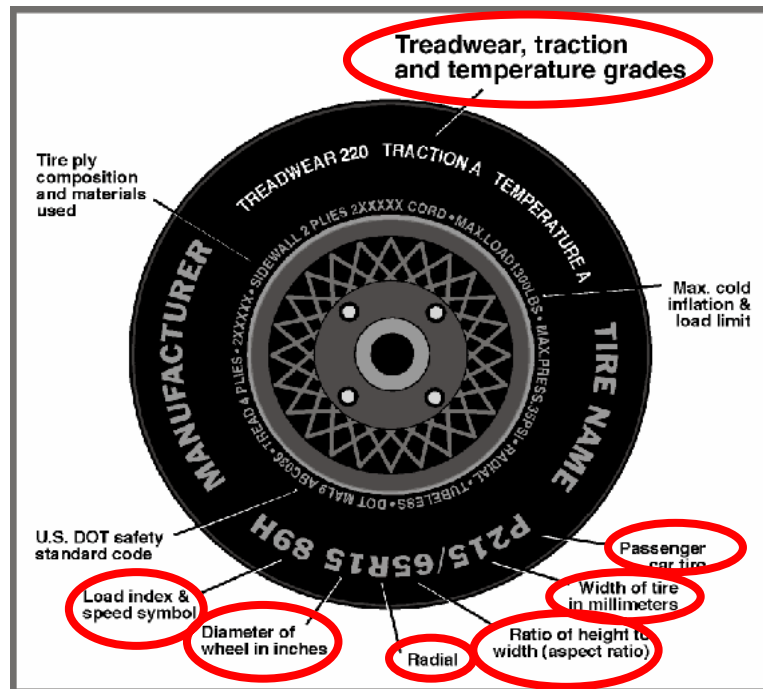
Weight of Ballast in Cargo Area: 0.0 kg**TEST VEHICLE ATTITUDES AND CG**

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	644	650	649	649	924
As Tested	mm	624	642	602	612	1066
Fully Loaded	mm	624	640	602	612	

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2495
Target Impact Point Aft of Front Axle	mm	308
Actual Impact Point Aft of Front Axle	mm	312

DATA SHEET NO. 2
TEST VEHICLE TIRE INFORMATION



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	210	210
Cold / Test Pressure (kPa)	210	210
Recommended Tire Size	185/65R14	185/65R14
Tire Size on Vehicle	185/65R14	185/65R14
Tire Manufacturer	Kumho	Kumho
Tire Name	Solus HP4	Solus HP4
Tire Type	P	P
Tire Width (mm)	185	185
Ratio of Height to Width (aspect ratio)	65	65
Radial	R	R
Wheel Diameter	14	14
Load Index & Speed Symbol	85H	85H
Treadwear	440	440
Traction Grade	AA	AA
Temperature Grade	A	A

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

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

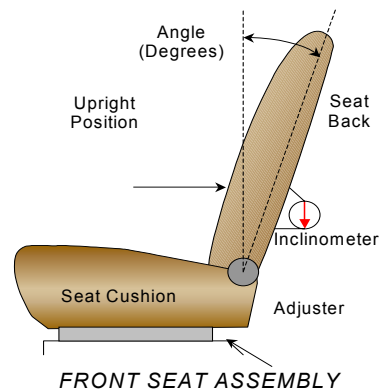
NHTSA No. M60503
 Test Date: 01/17/06

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle.

Driver seat back angle: 12.8° on headrest post
(5th detent of 29 detents)

Passenger seat back angle: non adjustable

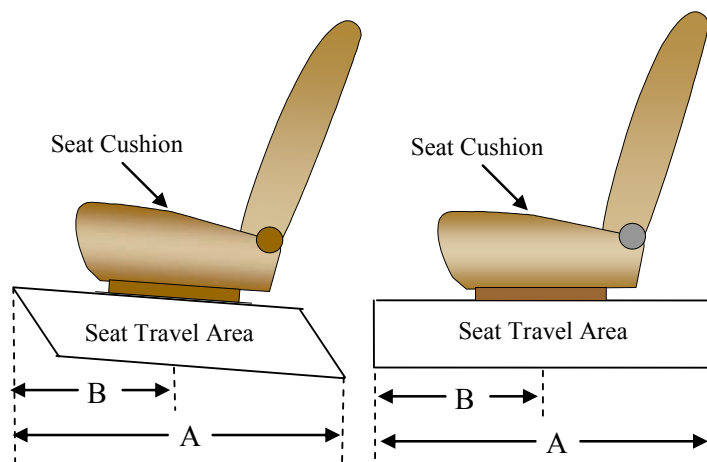


SEAT FORE/AFT POSITIONS

Forward-most measurements and rearward-most measurements should be taken from the bottom of the seat cushion (including the plastic base if applicable).

SEAT FORE/AFT POSITIONS		
	Total Fore/Aft Travel	Placed in position #
Driver Seat	22 detents	11 th detent *
Rear Seat	non adjustable	non adjustable

* forward-most detent defined as 0



DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

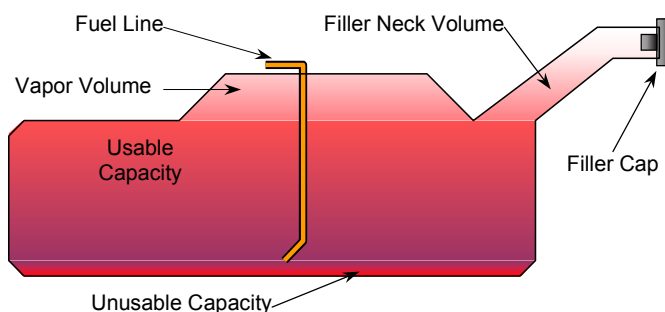
Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	45.0
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	41.4 – 42.3
Actual Amount of Solvent used	41.5
1/3 of Usable Capacity	15.0

The vehicle is equipped with electric fuel pump.
 The pump operates normally when the vehicles electrical system is activated.

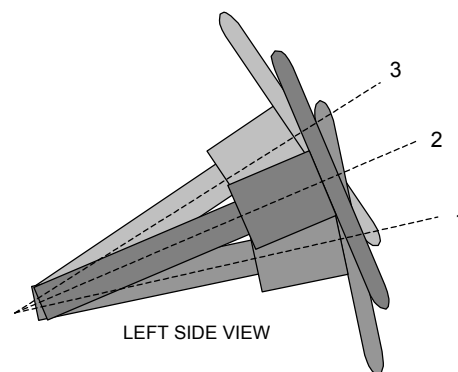


VEHICLE FUEL TANK ASSEMBLY

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.

	Degrees
Lowermost position No. 1	22.3
Geometric center position No. 2	24.4
Uppermost position No. 3	26.4



STEERING COLUMN ASSEMBLY

DATA SHEET NO. 4**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2006 Hyundai Accent GLSNHTSA No. M60503Test Program: NCAP Side ImpactTest Date: 01/17/06**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	62.1
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	4 mm right
Vertical Offset	mm	+/-20	7 mm up

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

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID HIII / 904	SID HIII / 271
Head Contact	Curtain Airbag, Headliner, Headrest	Headliner, Curtain Airbag, Headrest
Upper Torso Contact	Side Airbag	Door Panel
Lower Torso Contact	Door Panel	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 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	Left Front Driver and Left Rear Passenger Window Broke
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

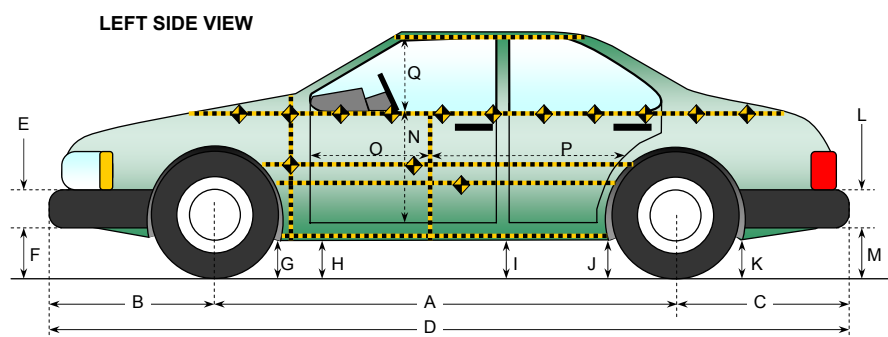
Restraint Type	Occupant Location 01		Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	None	
Side Airbag	Yes	Yes	None	
Head Airbag	None		None	
Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes		None	
Seat Belt Load Limiter	Yes		None	

DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06



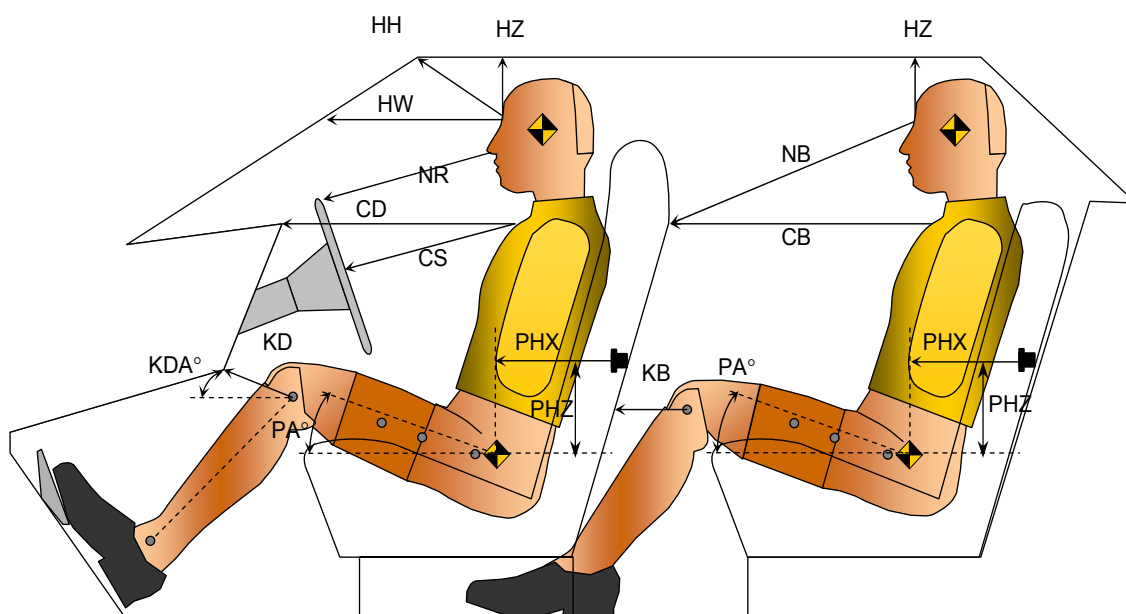
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2495	2493	2
B	Front Axle to FSOV	934	935	-1
C	Rear Axle to RSOV	1039	1040	-1
D	Total Length at Centerline	4468	4468	0
E	Front Bumper Thickness	95	95	0
F	Front Bumper Bottom to Ground	394	410	-16
G	Sill Height at Front Wheel Well	168	230	-62
H	Sill Height at Front Door Leading Edge	165	225	-60
I	Sill Height at "B" Pillar	163	235	-72
J1	Sill Height at Rear Wheel Well	155	176	-21
J2	Pinch Weld Height at Rear Wheel Well	166	178	-12
K	Sill Height Aft of Rear Wheel Well	209	216	-7
L	Rear Bumper Thickness	178	178	0
M	Rear Bumper Bottom to Ground	368	384	-16
N	Sill Height to Window Bottom Sill	711	580	131
O	Front Door Leading Edge to Impact CL	796	788	8
P	Rear Door Trailing Edge to Impact CL	1131	1024	107
Q	Front Window Opening	379	362	17
R	Right Side Length	3580	3591	-11
S	Left Side Length	3581	3523	58
T	Vehicle Width at "B" Post	1802	1678	124

DATA SHEET NO. 7
SID/HII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

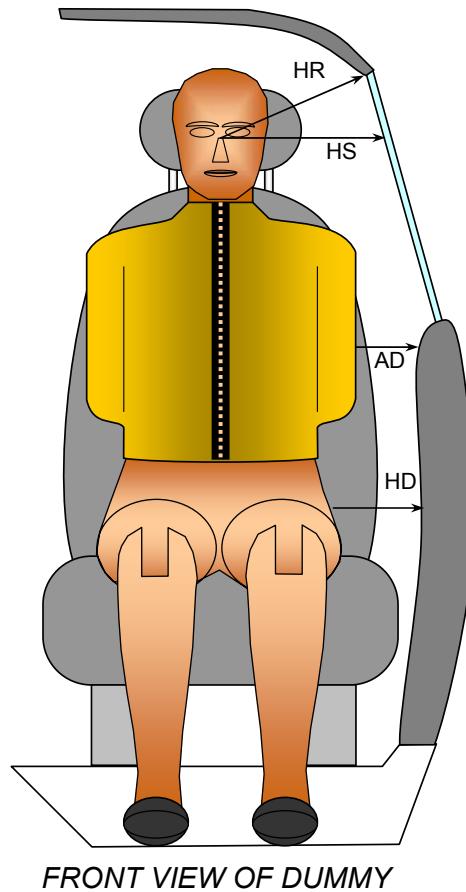


Driver Code	Pass. Code	Measurement Description	Driver S/N 904		Passenger S/N 271	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	368			
HW		Head to Windshield	633			
HZ	HZ	Head to Roof	171		128	
NR	NB	Nose to Rim/Nose to Seatback	496		536	
CD	CB	Chest to Dash or Seatback	551		471	
CS		Chest to Steering Wheel	376			
KDL	KBL	Left Knee to Dash or Seatback	171	9.9	168	25.5
KDR	KBR	Right Knee to Dash or Seatback	171	25.7	167	26.6
PA	PA	Pelvic Angle		24.2		24.8
PHX	PHX	H-Point to Striker (X-Axis)	204		244	
PHZ	PHZ	H-Point to Striker (Z-Axis)	165		227	

DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

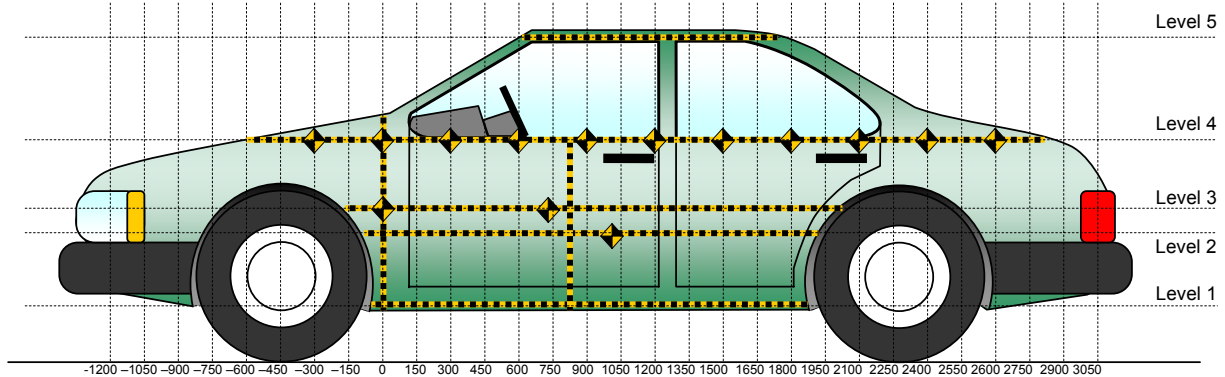


Code	Measurement Description	Units	Driver S/N 904	Passenger S/N 271
HR	Head to Side Header	mm	198	162
HS	Head to Side Window	mm	322	287
AD	Arm to Door	mm	105	41
HD	H-Point to Door	mm	142	137

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

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06



All Measurements Shown in mm

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	45	1350	1375
4	Window Sill	213	1200	935
3	Mid Door	299	900	615
2	Occupant H-Point	345	1050	494
1	Sill Top	185	1350	255
	Maximum Penetration	345		

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-600				381					349					-32	
-450				363					345					-18	
-300				351					346					-5	
-150			249	345				330	358				81	13	
0		255	260	338			438	368	369			183	108	31	
150	305	264	262	335		404	561	498	387		99	297	236	52	
300	304	263	260	338		448	572	509	422		144	309	249	84	
450	302	263	258	333		455	583	526	480		153	320	268	147	
600	300	262	258	333		462	591	532	510		162	329	274	177	
750	300	260	256	334		468	597	539	515		168	337	283	181	
900	300	260	256	335	546	470	602	555	522	552	170	342	299	187	6
1050	300	260	255	335	543	471	605	545	528	563	171	345	290	193	20
1200	301	260	255	337	545	474	494	497	550	580	173	234	242	213	35
1350	301	261	257	337	545	486	503	500	548	590	185	242	243	211	45
1500	302	263	258	342	547	441	490	505	542	578	139	227	247	200	31
1650	303	264	260	346	545	401	469	486	539	568	98	205	226	193	23
1800	306	266	262	350	547	373	409	440	456	556	67	143	178	106	9
1950			262	355	557			295	381	554			33	26	-3
2100			252	359				294	376				42	17	
2250			256	367				280	371				24	4	
2400			279	379				293	382				14	3	
2550			304	395				310	393				6	-2	
2700			330	420				332	411				2	-9	
2850															

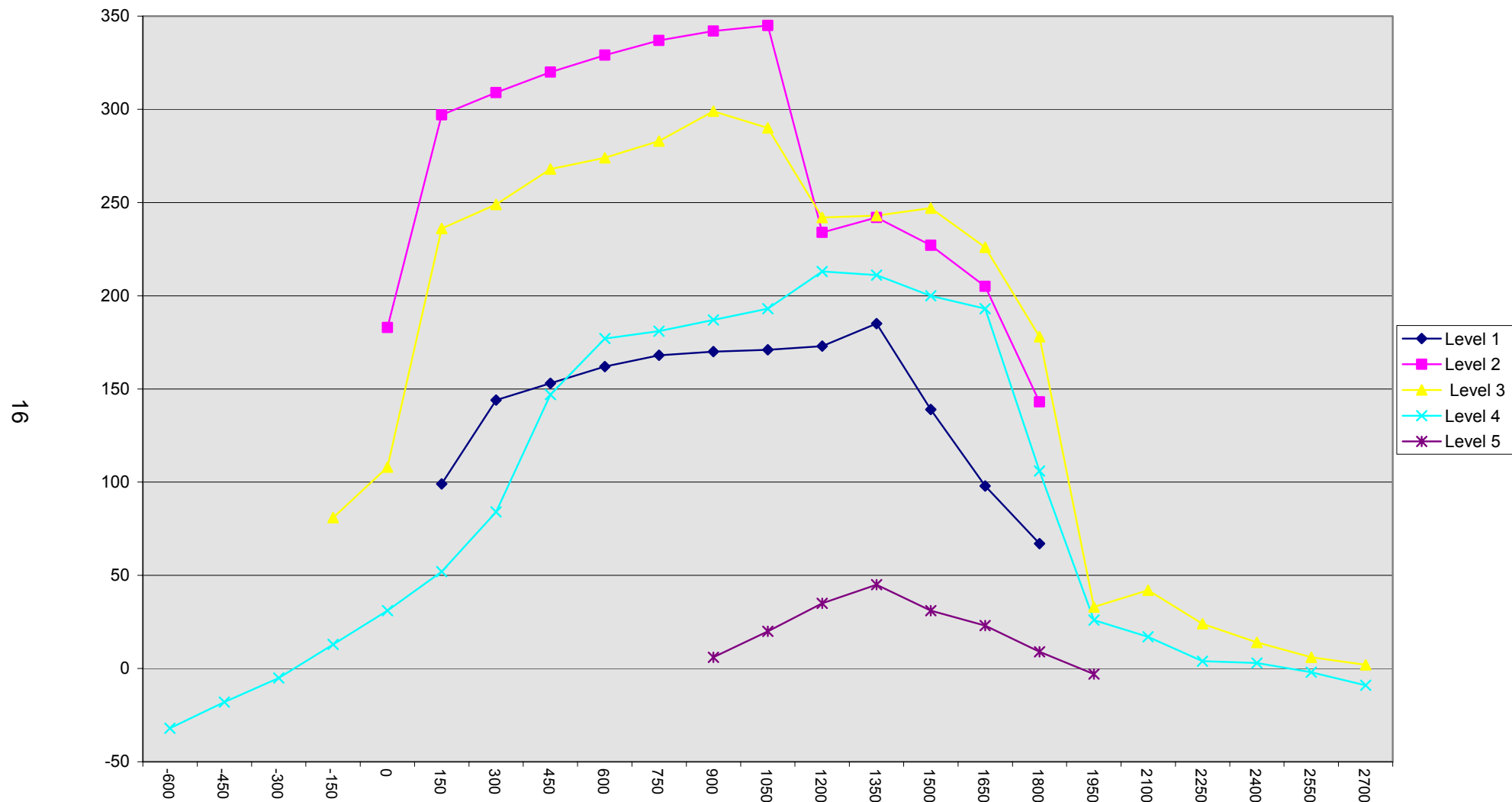
Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

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

Test Vehicle: 2006 Hyundai Accent GLS
Test Program: NCAP Side Impact

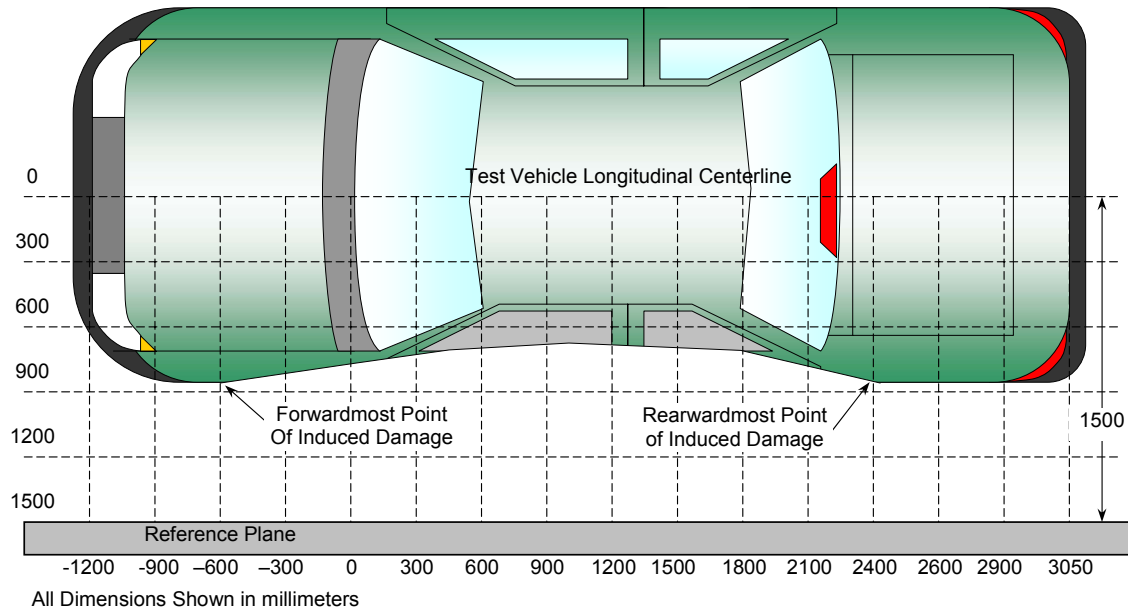
NHTSA No. M60503
Test Date: 01/17/06



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06



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	3	330	332	2
2	2112	3	259	300	41
3	1429	4	340	540	200
4	780	2	260	597	337
5	178	2	264	563	299
6	-450	4	363	345	-18

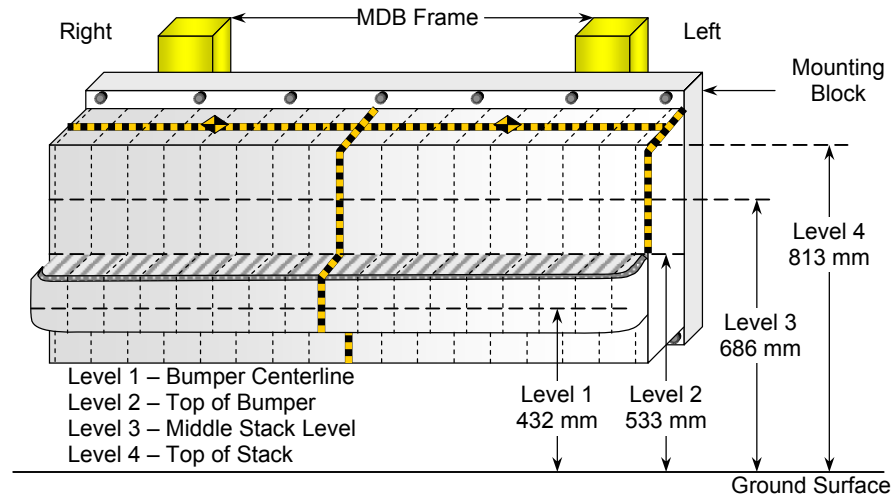
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06



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	99	75	55	45	43	49	51	55	57	60	65	69	75	80	89	104	104
2	45	26	8	5	10	13	13	20	22	29	27	39	43	46	48	60	68
3	13	-9	-5	-4	-1	6	11	6	5	6	6	9	13	15	24	75	101
4	43	-6	-9	-6	-2	9	27	26	16	7	10	14	23	38	77	128	176

All Dimensions in mm

DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS

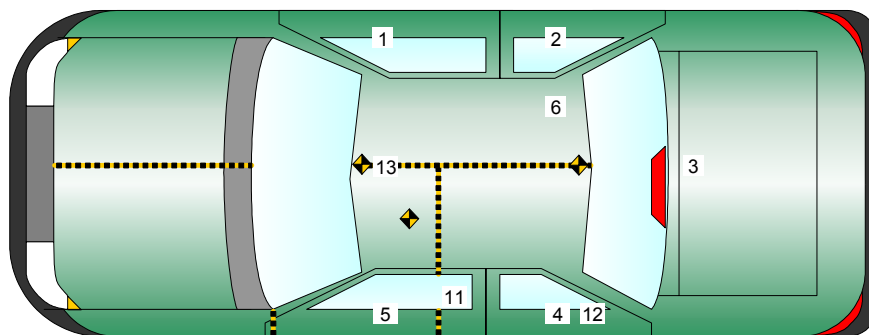
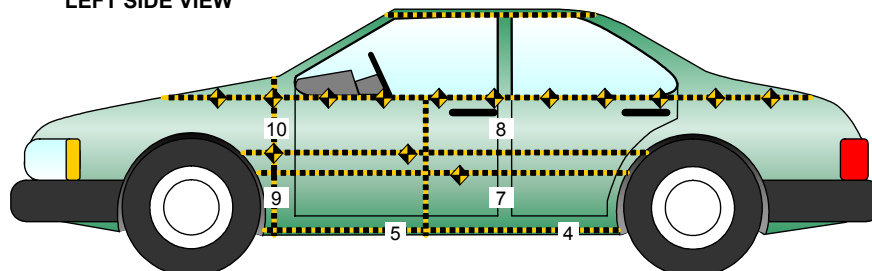
Test Vehicle: 2006 Hyundai Accent GLS

NHTSA No. M60503

Test Program: NCAP Side Impact

Test Date: 01/17/06

LEFT SIDE VIEW



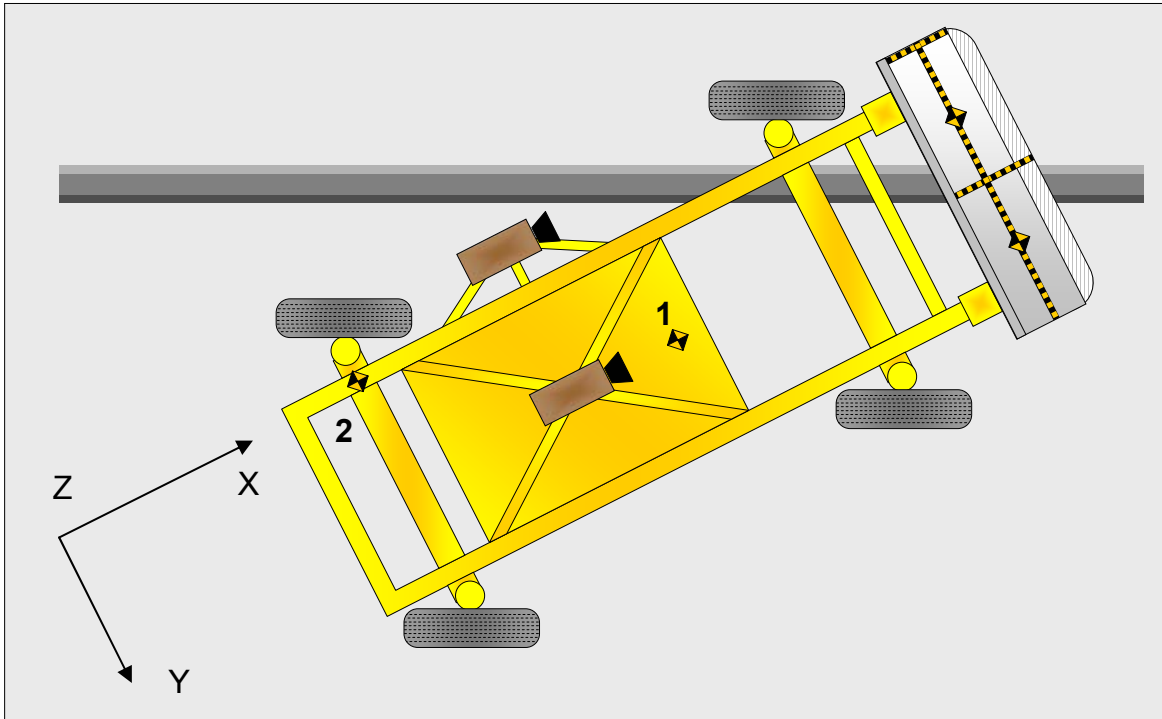
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2476	684	209
2	Right Sill at Rear Seat	1591	684	218
3	Rear Floorpan Above Axle	804	-98	304
4	Left Sill at Rear Door	1605	-684	225
5	Left Sill at Front Door	2522	-684	210
6	Rear Occupant Compartment	1679	368	326
7	Left Lower B-Post	1855	-704	370
8	Left Middle B-Post	1888	-707	877
9	Left Lower A-Post	2935	-802	410
10	Left Middle A-Post	2928	-786	888
11	Front Seat Track			
12	Rear Seat Track or Structure			
13	Vehicle CG	2151	0	340

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: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06



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: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

	Elements	Pre-Test (mm)
1	Total Length	4468
2	Total Width	1802
3	Bumper Top Height	497
4	Bumper Bottom Height	422
5	Longitudinal Member Top Height	417
6	Distance between Longitudinal Members	876
7	Longitudinal Member Width	79
8	Engine Top Height	776
9	Engine Bottom Height	189
10	Engine and gearbox width	544
11	Front bumper-engine distance	434
12	Front shock absorber fixing height	838
13	Bonnet leading edge height	712
14	Front shock absorber fixing width	1100
15	Front bumper – front axle distance	934
16	Front axle – a pillar distance	502
17	A-pillar – B-pillar distance	981
18	B-Pillar – rear axle distance	1032
19	B-pillar – C-pillar distance	946
20	Roof sill bottom height	1309
21	Roof sill top height	1445
22	Floor sill bottom height	159
23	Floor sill top height	333

DATA SHEET NO. 16

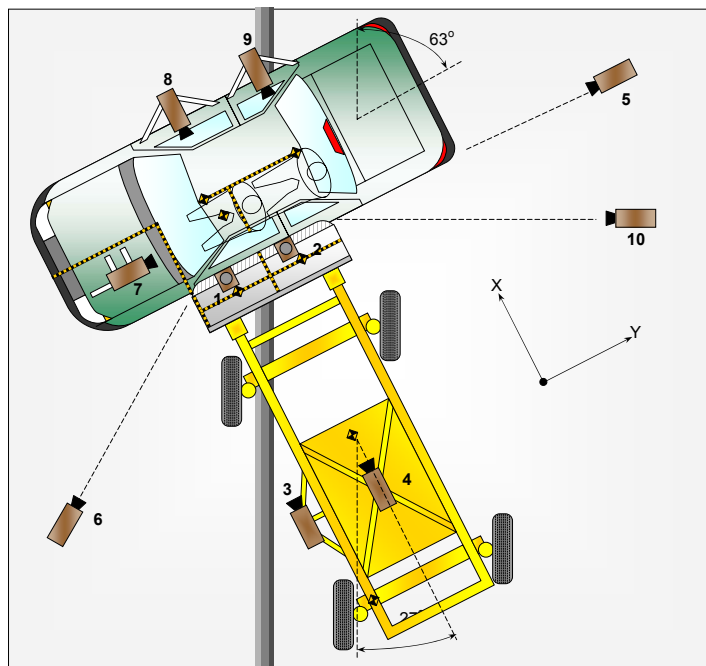
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2006 Hyundai Accent GLS

NHTSA No. M60503

Test Program: NCAP Side Impact

Test Date: 01/17/06



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Close-up	740	35	4840	50	1000
2	Overhead Overall	105	-130	5460	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	-1770	8000	1320	35	1000
6	Left Side, Ground Level, Overall	1875	-4200	1220	24	1000
7	Vehicle Onboard Front SID/HIII, Front				12.5	500
8	Vehicle Onboard Front SID/HIII, Side				8	500
9	Vehicle Onboard Rear SID/HIII, Side				8	500
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: 2006 Hyundai Accent GLS
 Test Program: NCAP Side Impact

NHTSA No. M60503
 Test Date: 01/17/06

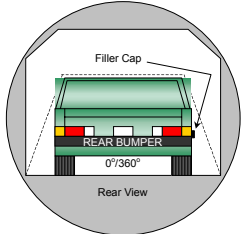
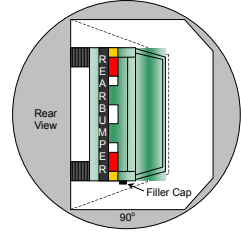
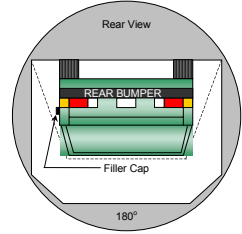
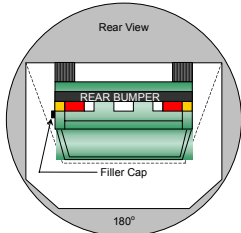
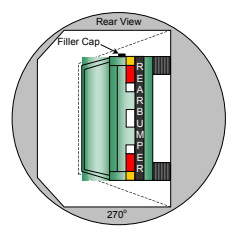
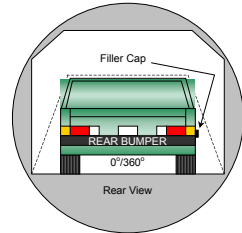
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 11:12 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°	164	300	First 5	0
90° to 180°	155	300	First 5	0
180° to 270°	135	300	First 5	0
270° to 360°	155	300	First 5	0

APPENDIX A
PHOTOGRAPHS

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



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



Manufacturer's Label



Tire Placard



Pre-Test Front View



Post-Test Front View



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



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



Pre-Test Left Side View



Post-Test Left Side View



Pre-Test Left Rear 3/4 View



Post-Test Left Rear 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 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 Front Door



Post-Test Left Front Door



Pre-Test Left Rear Door



Post-Test Left Rear Door



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



Pre-Test Front View of Deformable Barrier



Post-Test Front View of Deformable Barrier



Pre-Test Top View of Deformable Barrier



Post-Test Top View of Deformable Barrier



Pre-Test Right Side View of Deformable Barrier



Post-Test Right Side View of Deformable Barrier



Pre-Test Left Side View of Deformable Barrier



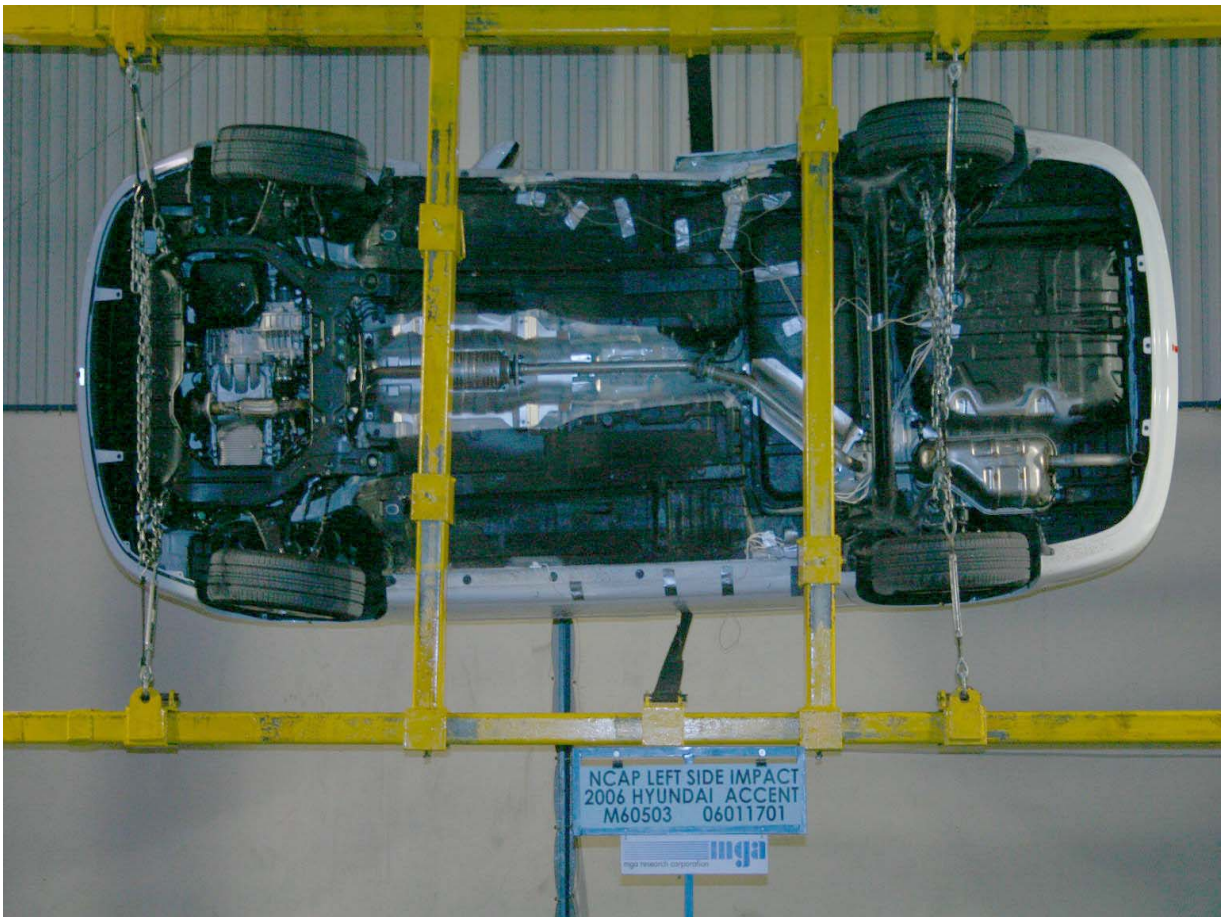
Post-Test Left Side View of Deformable Barrier



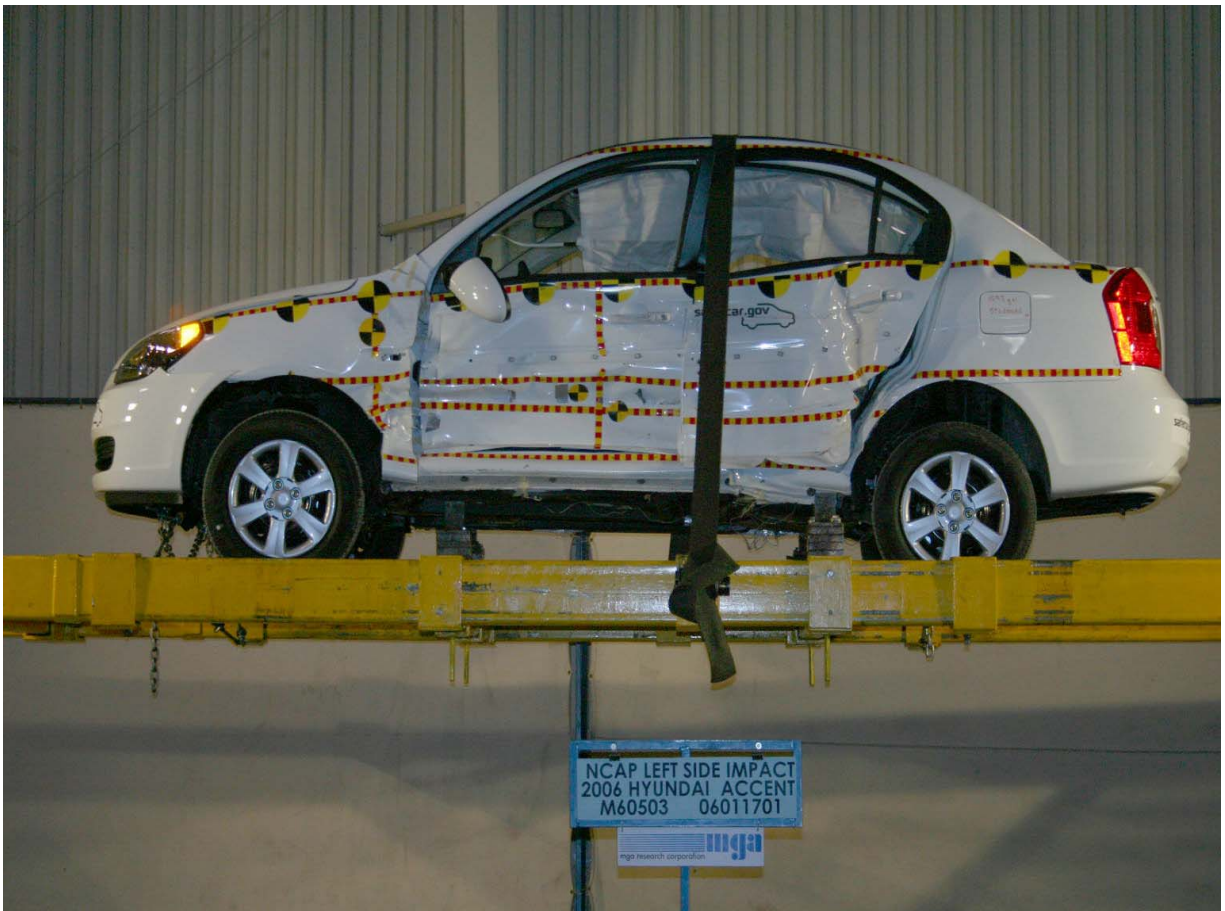
Vehicle on Rollover Device (90 Degrees)



Vehicle on Rollover Device (180 Degrees)



Vehicle on Rollover Device (270 Degrees)



Vehicle on Rollover Device (360 Degrees)



Vehicle Impact



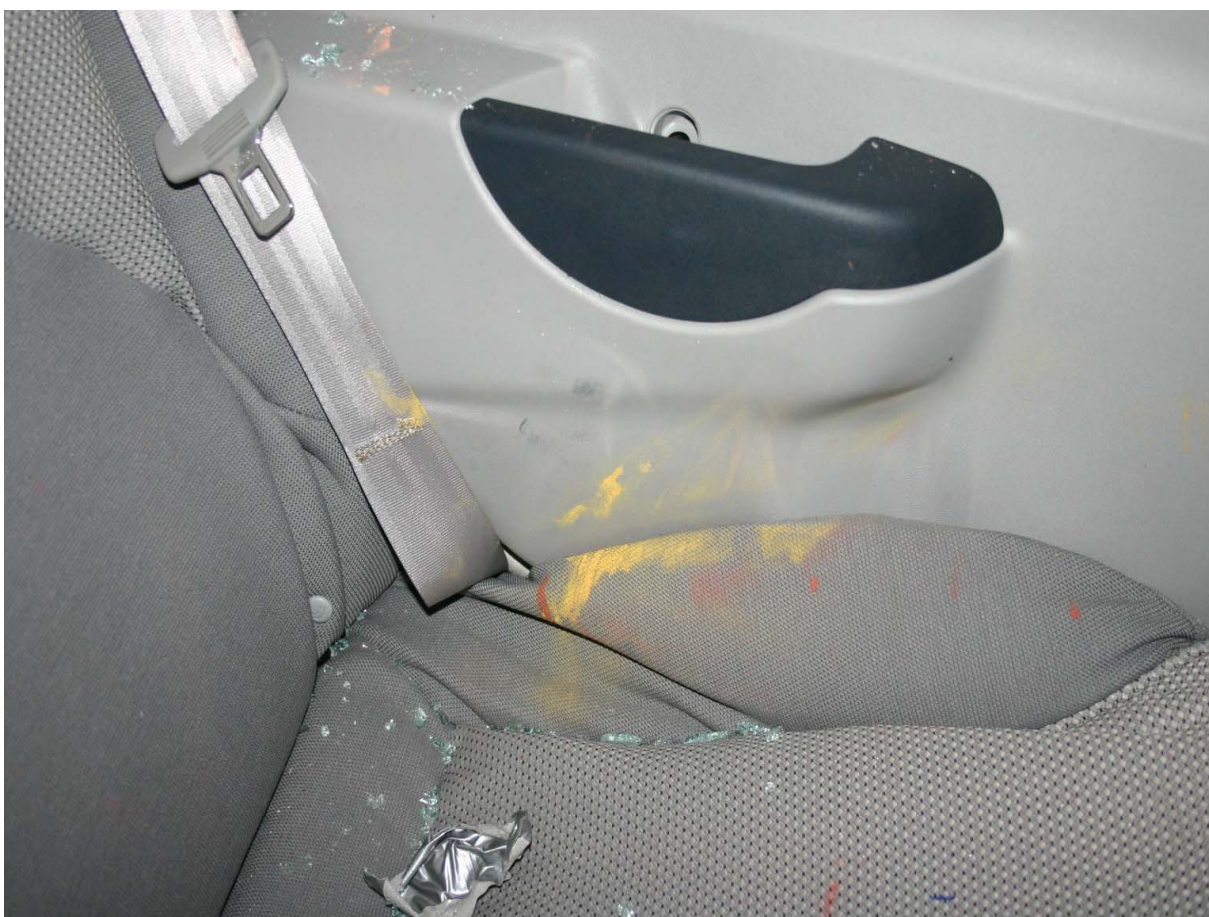
Post-Test Driver Dummy Head Contact



Post-Test Driver Dummy Torso Contact



Post-Test Passenger Dummy Head Contact



Post-Test Passenger Dummy Torso Contact



Pre-Test Driver Door Interior



Post-Test Driver Door Interior



Pre-Test Passenger Door Interior



Post-Test Passenger Door Interior

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

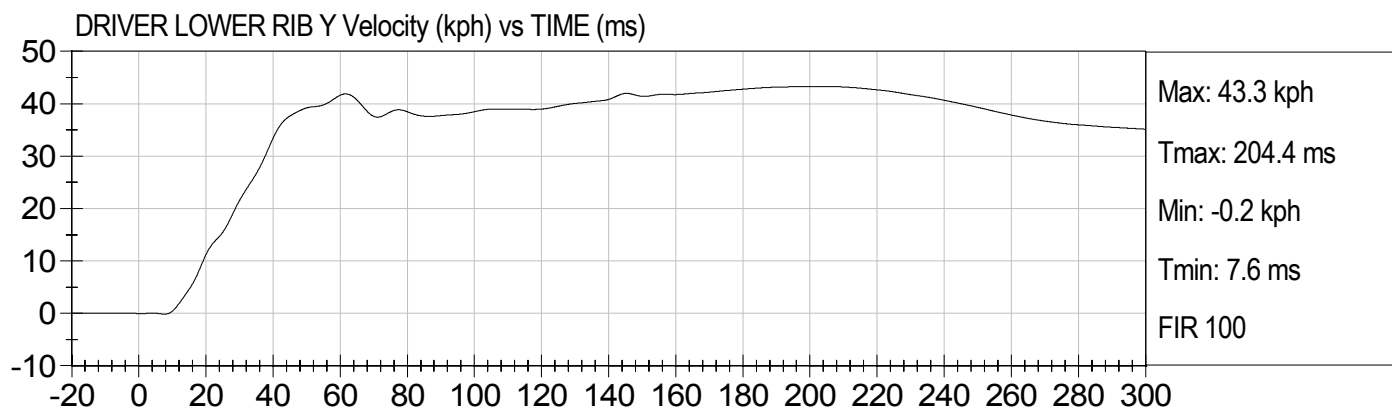
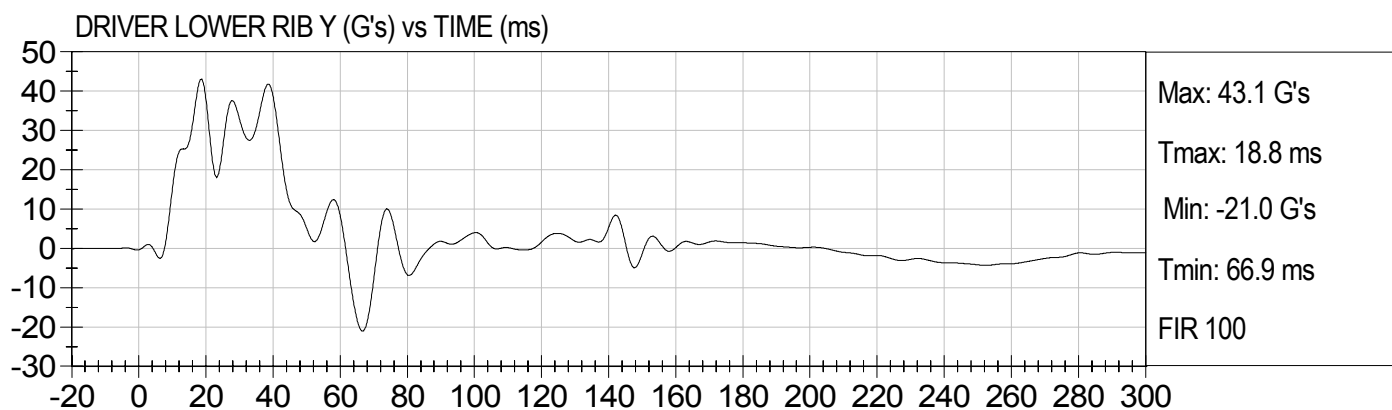
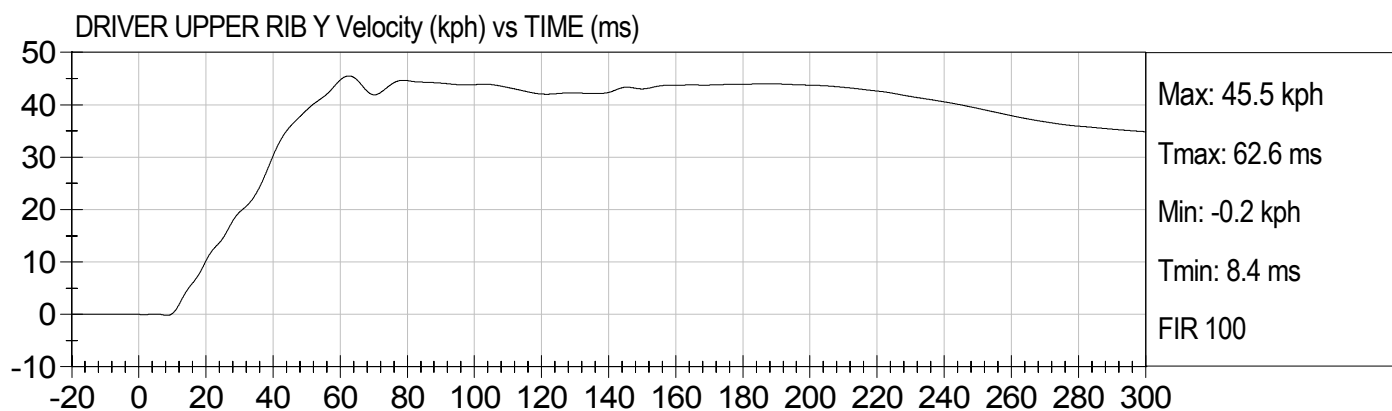
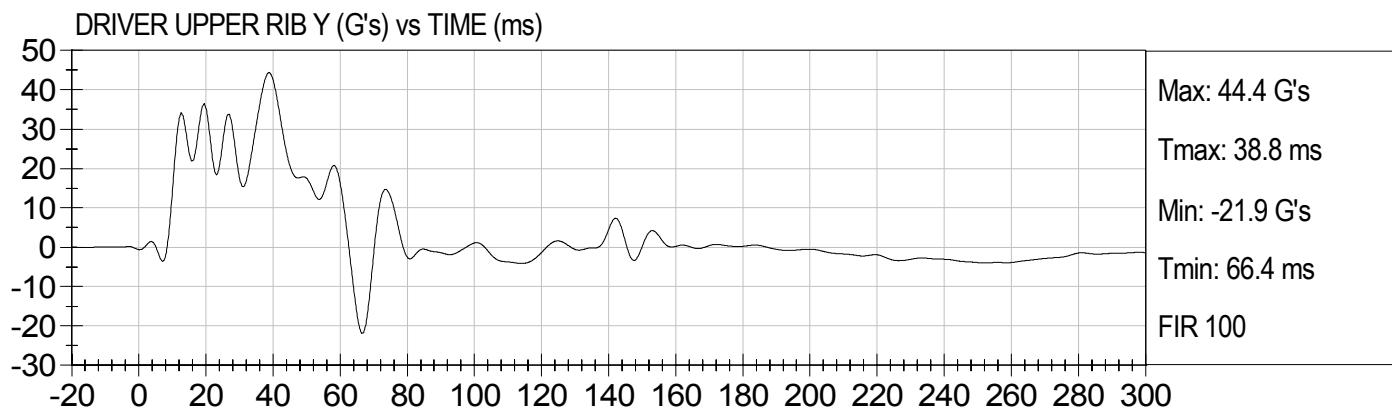
Driver Upper Neck Force Y

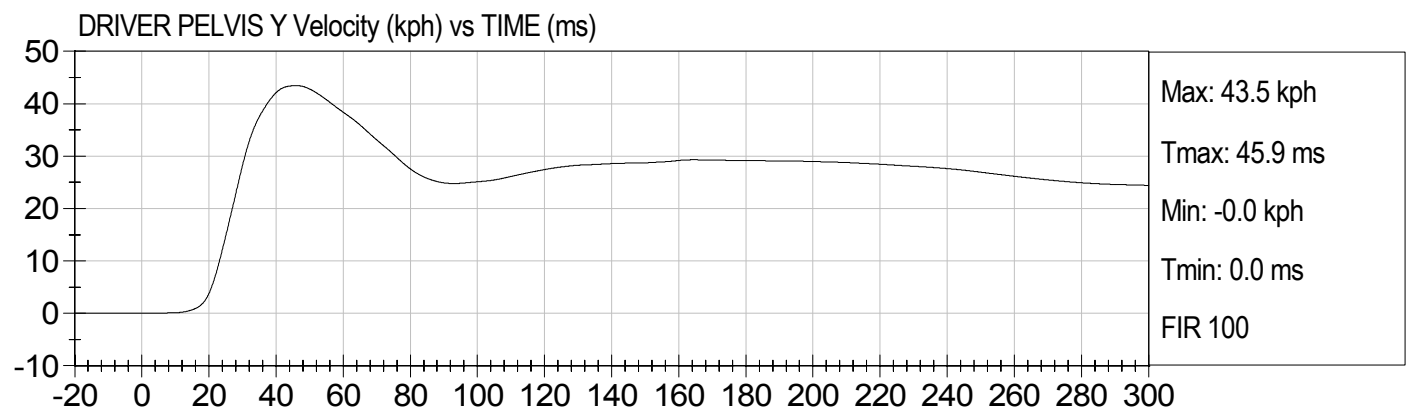
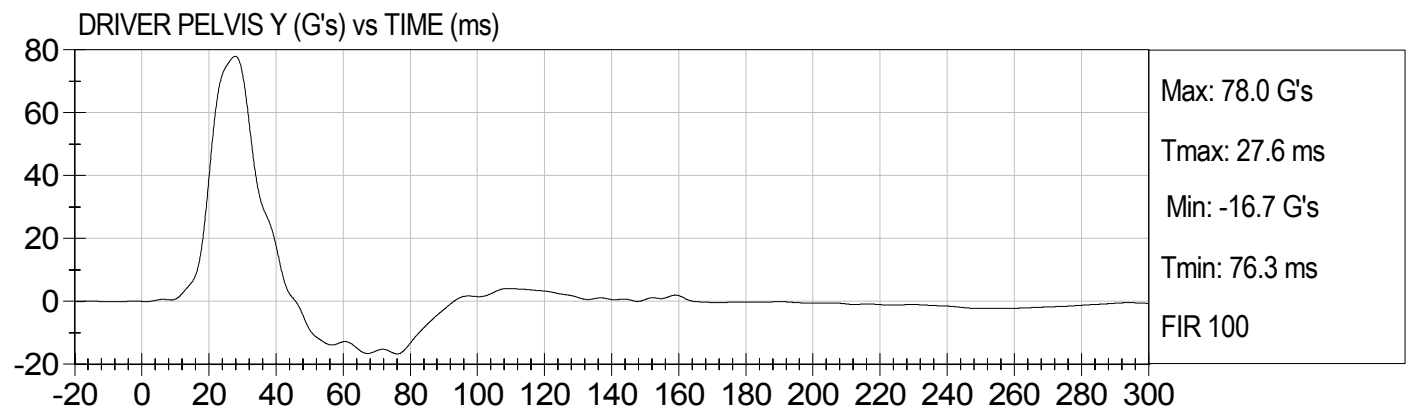
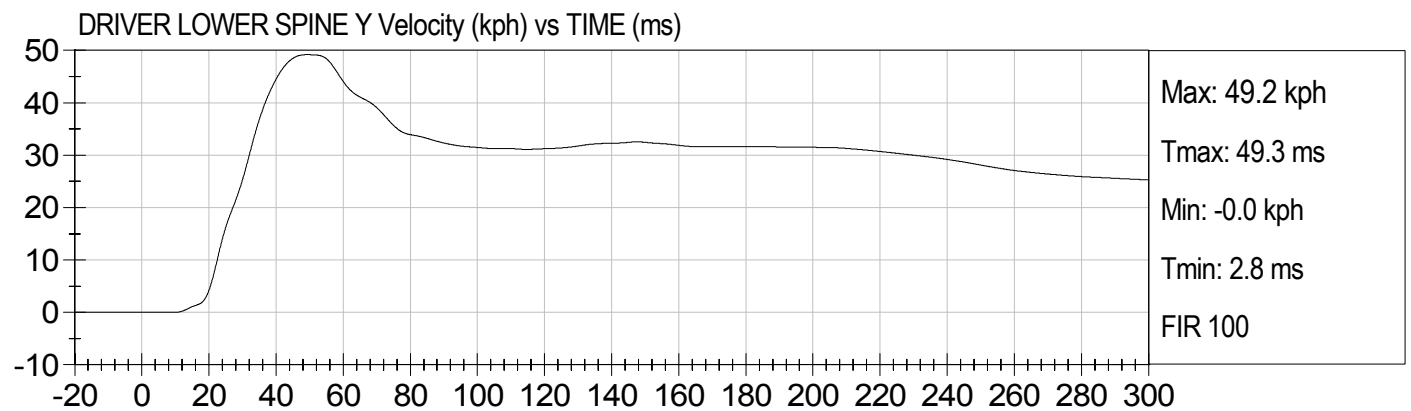
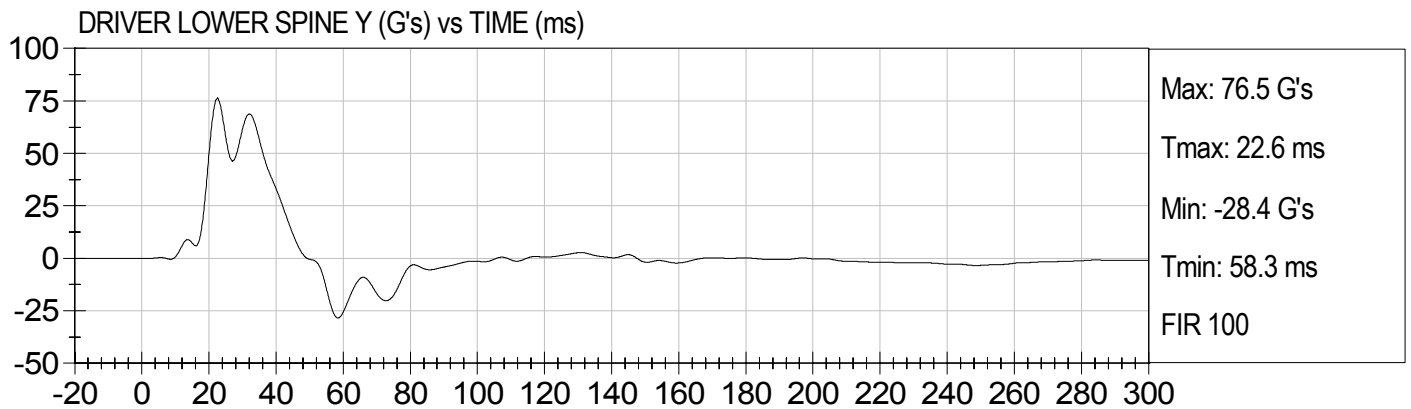
Driver Upper Neck Force Z

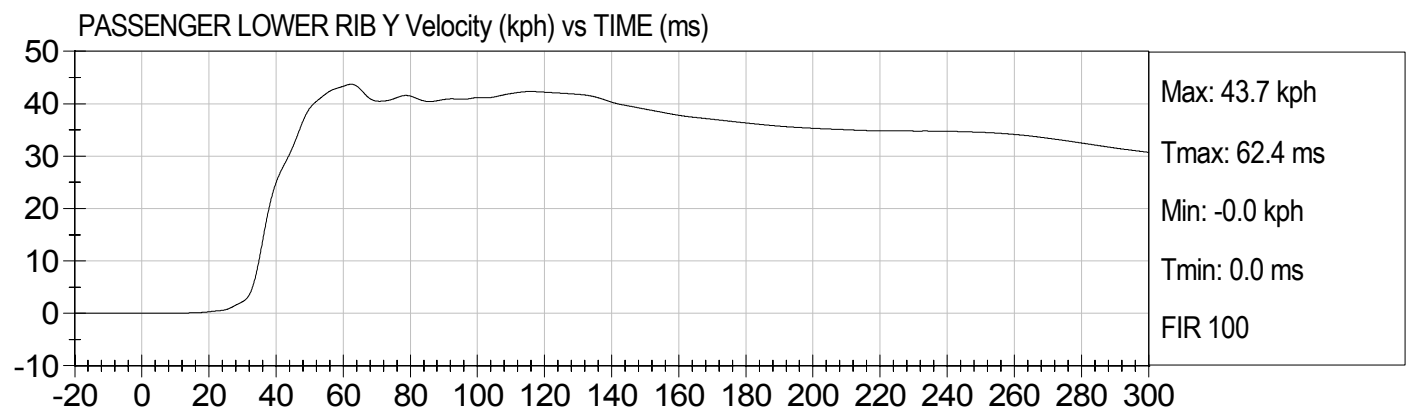
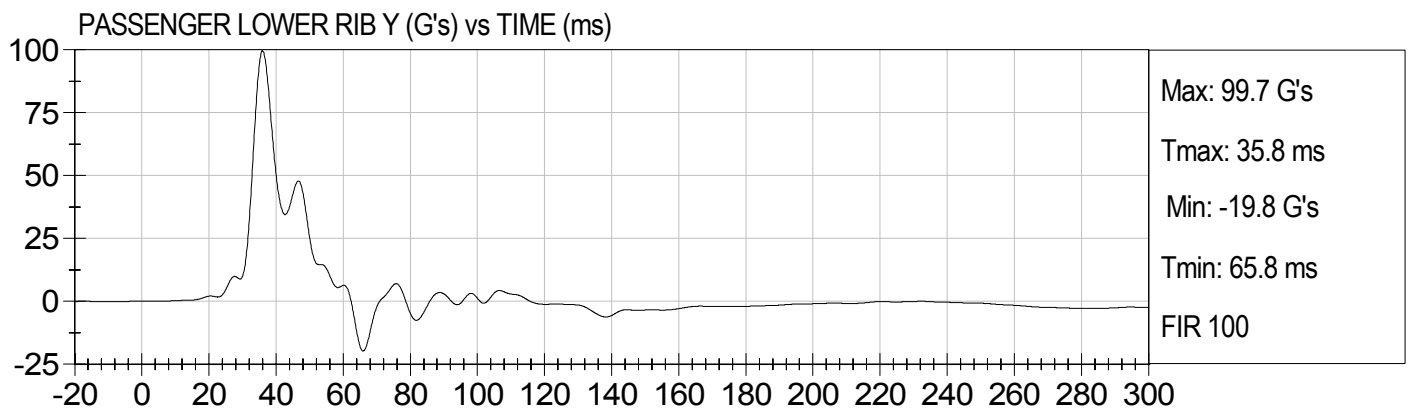
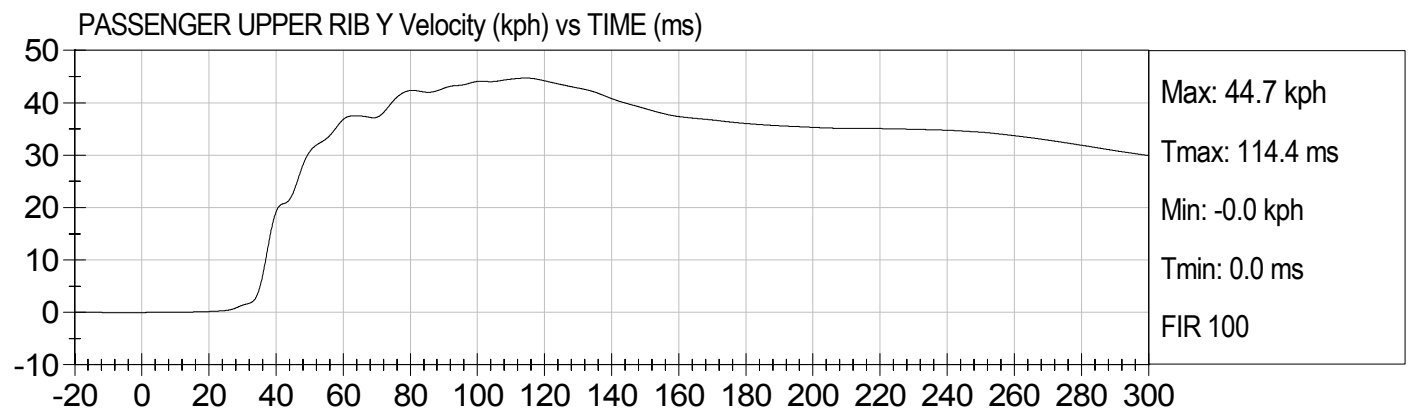
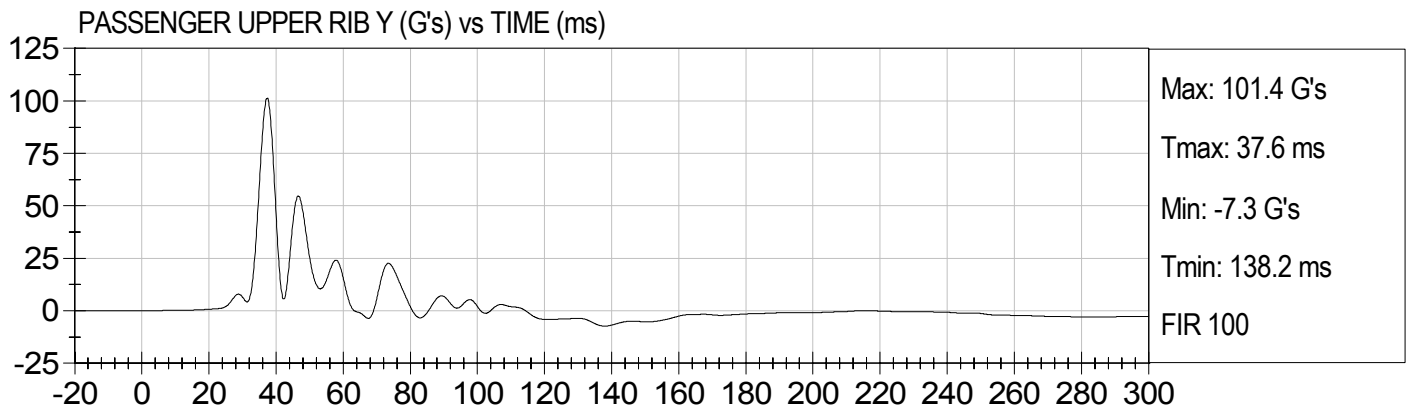
Driver Upper Neck Moment X

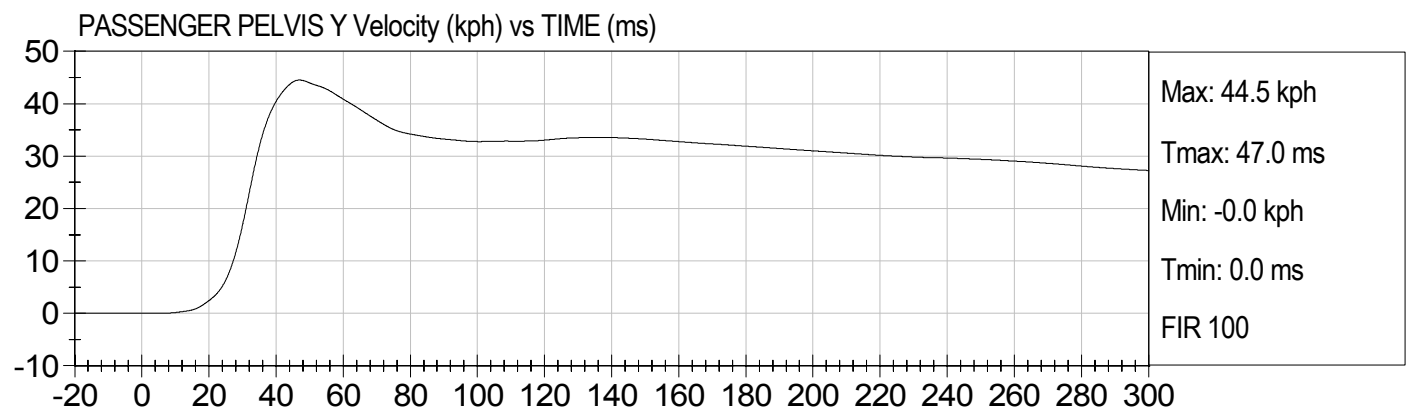
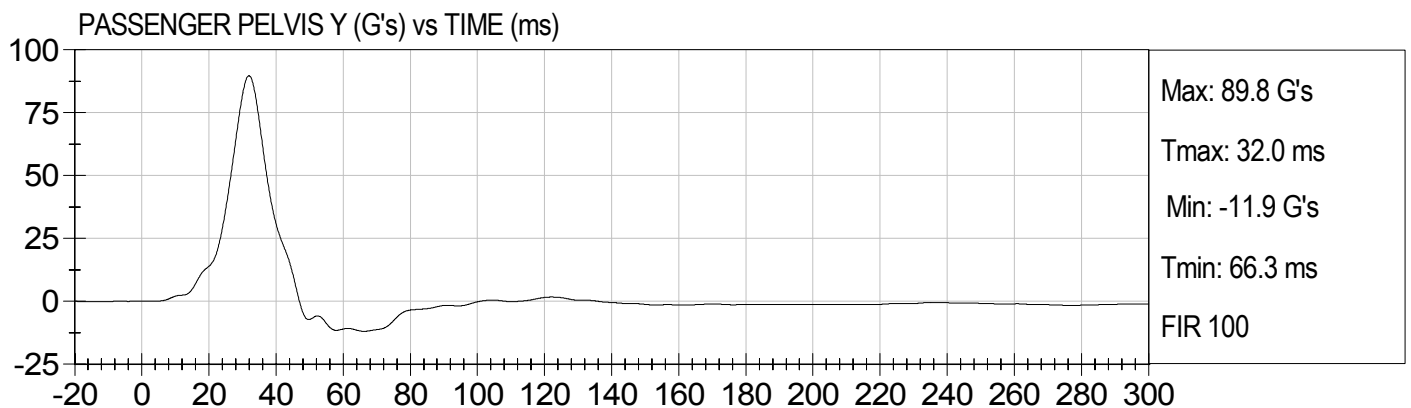
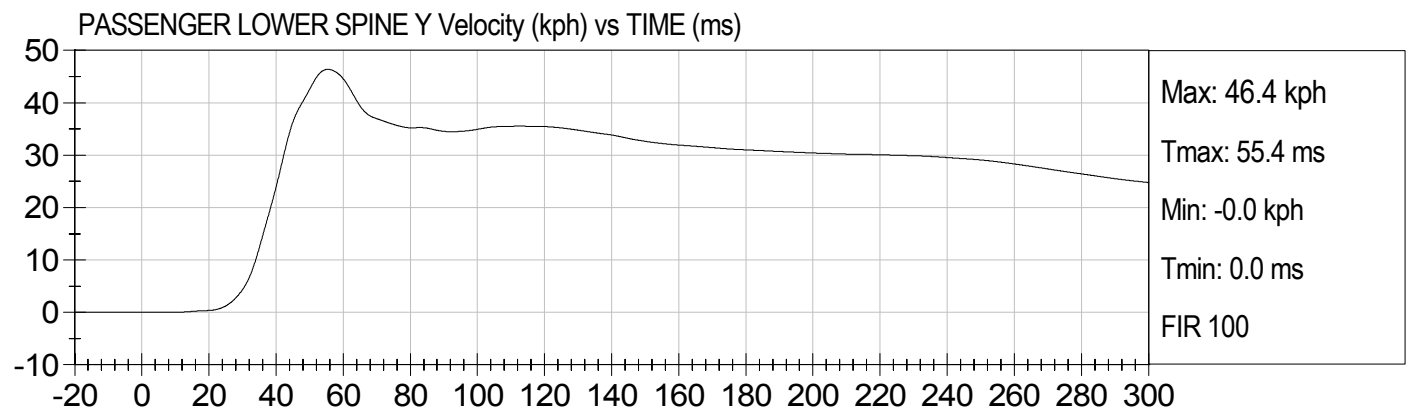
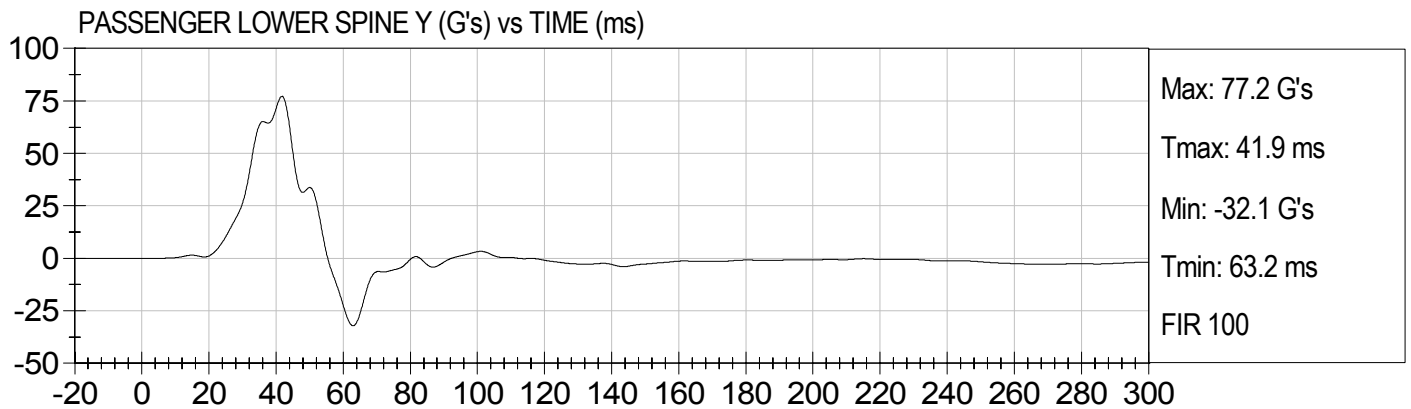
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head 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: 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: D0607

Tested Parameter	Units	Specification	Result	Pass/Fail
SH - Seated Height	mm	889 - 909	903	Pass
RH - Rib Height	mm	501 - 521	509	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	525	Pass
SW - Knee Pivot to Floor	mm	490 - 505	500	Pass
HW - Hip Width	mm	356 - 391	368	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

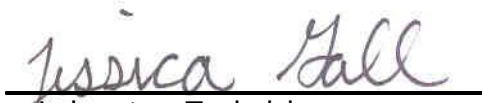
1/06/2006
Test Date

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

ATD Serial No: 904

Test I.D: D06071

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	19	Pass
Peak Resultant Acceleration	G's	120 to 150	143	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-10	Pass
Overall Test Results				Pass


Laboratory Technician

01/06/2006

Test Date


Approved By



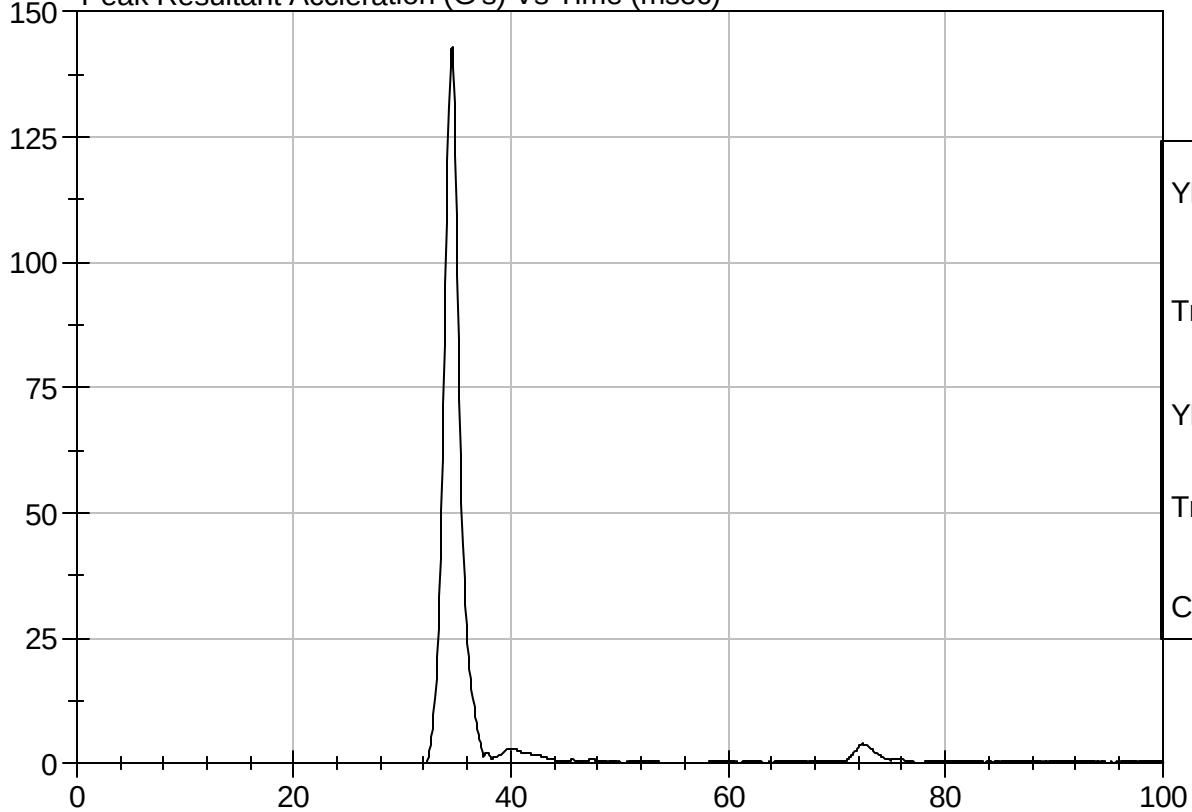
Test Description: Head Drop

Test Date: 01/06/2006

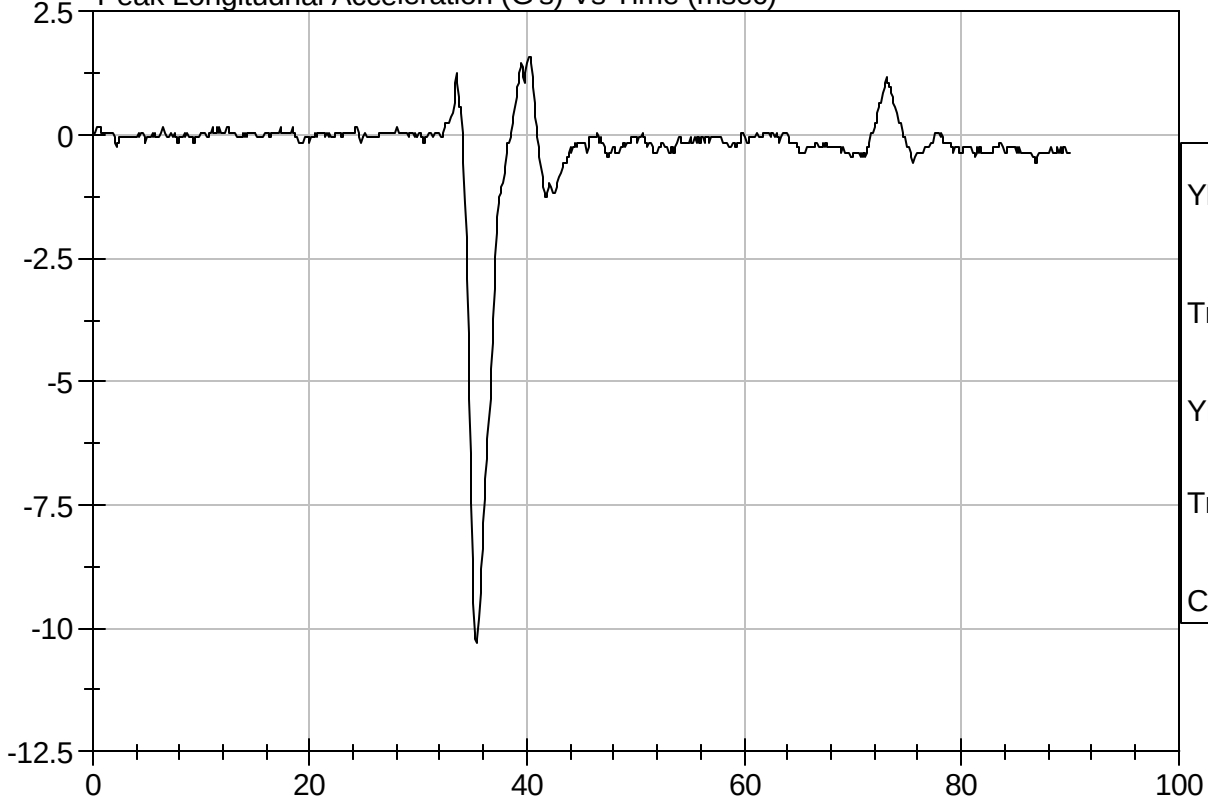
Component: D06071

Speed: 0 ft/s, 0.00 m/s

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



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

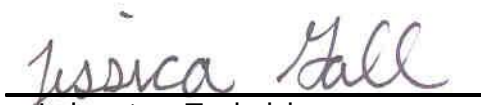


SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 904

Test I.D: D06072

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Velocity	m/s	4.22 - 4.31	4.23	Pass
Upper Rib	G's	37 - 46	38	Pass
Lower Rib	G's	37 - 46	38	Pass
Lower Spine	G's	15 - 22	22	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

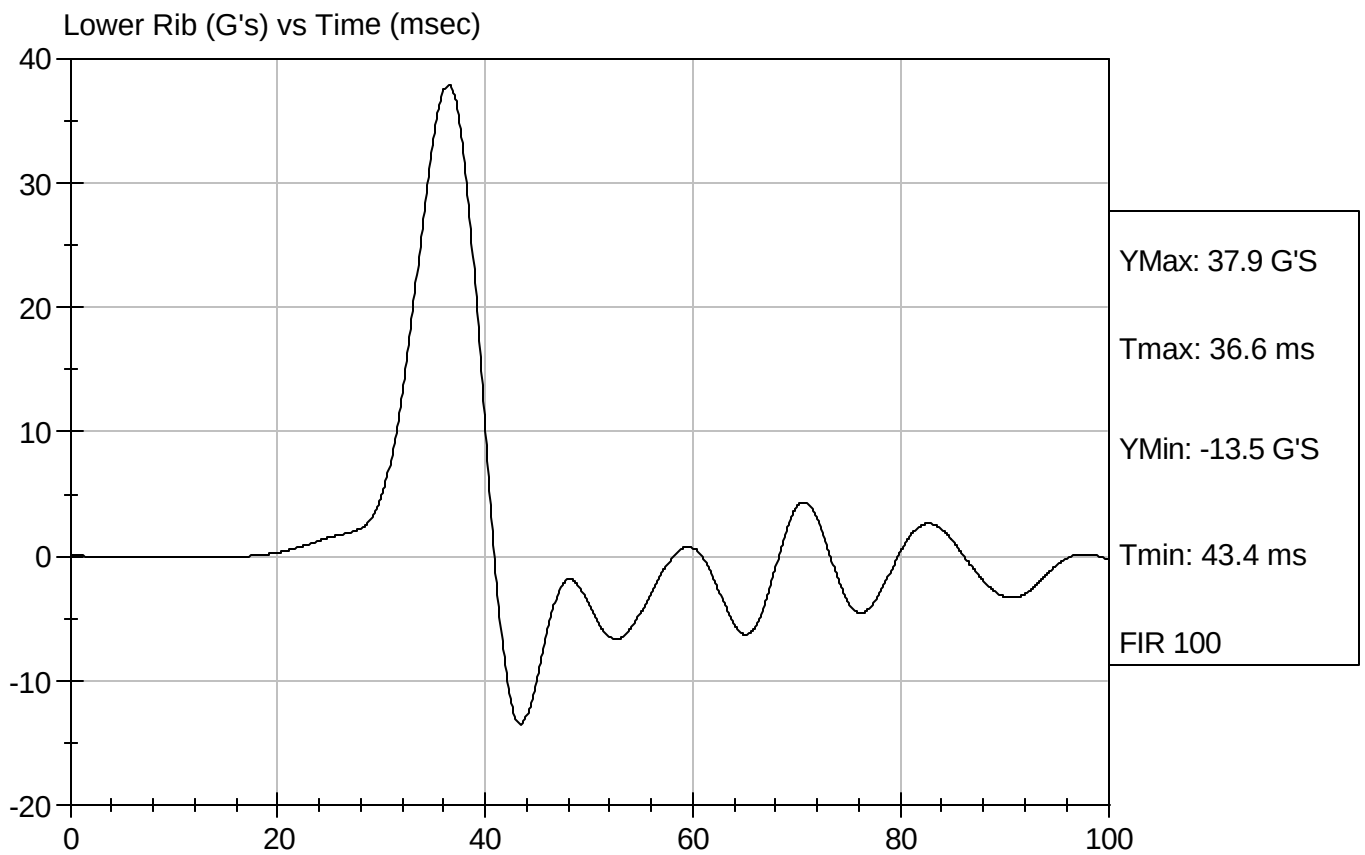
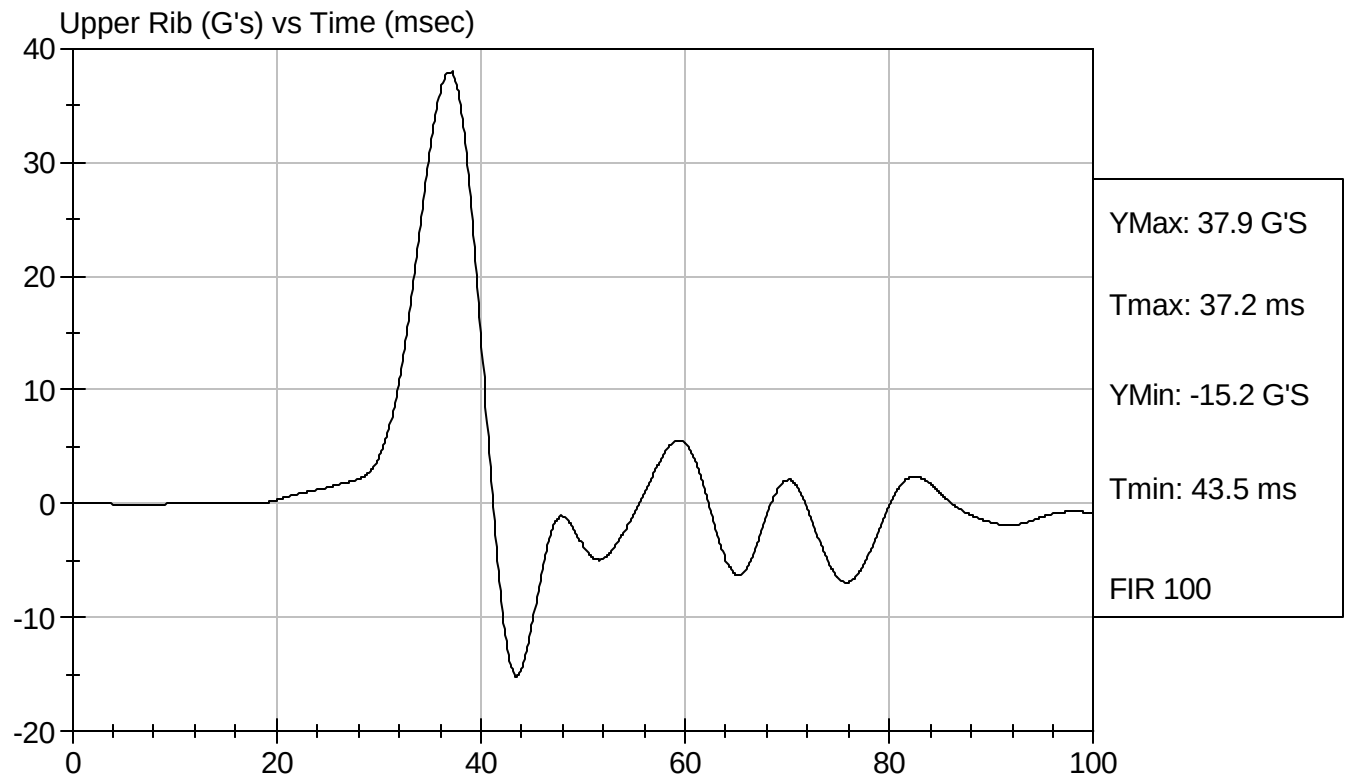
01/06/2006

Test Date



Test Desc: Thorax Impact
Component ID: D06072

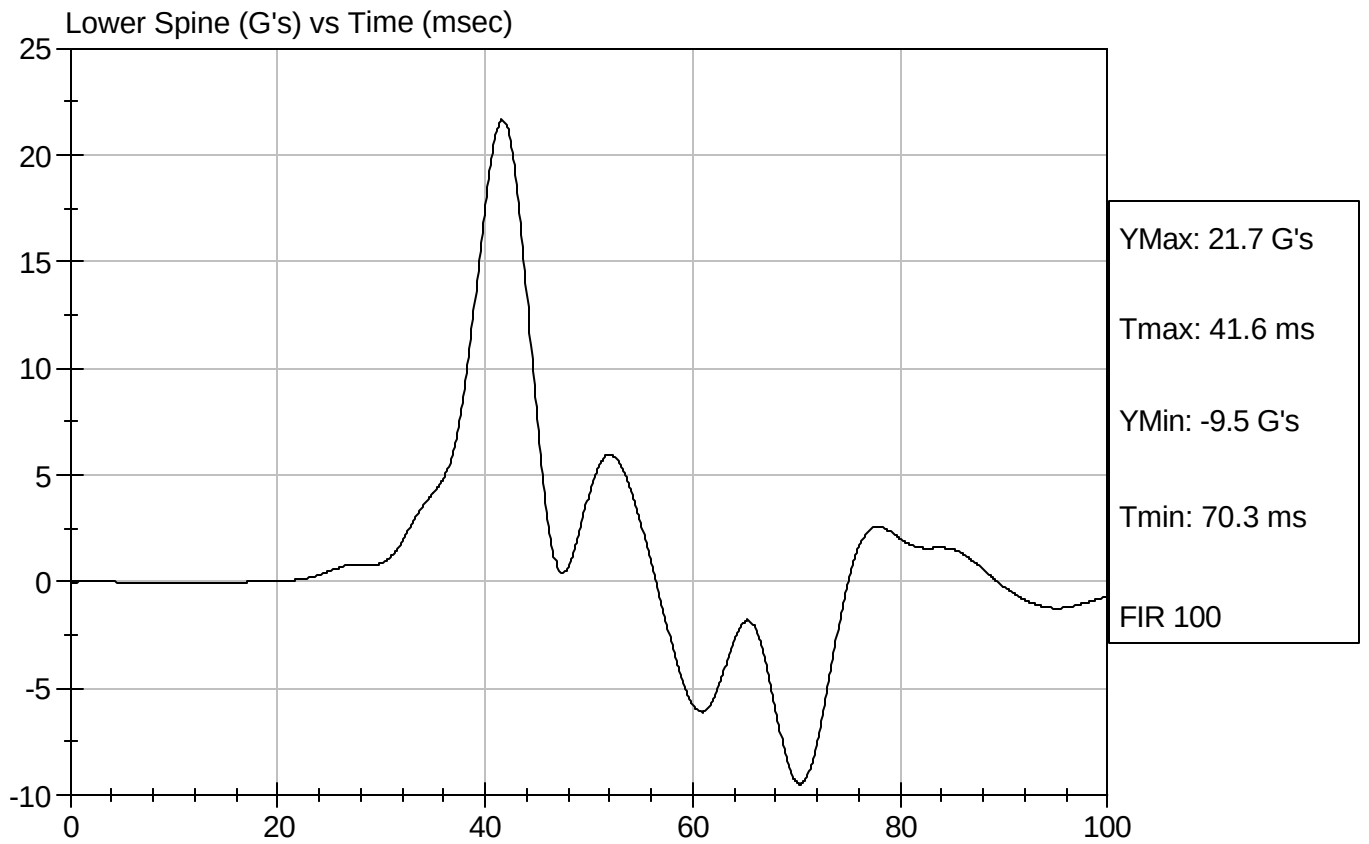
Test Date: 01/06/2006
Speed: 13.87 ft/sec, 4.23 m/sec





Test Desc: Thorax Impact
Component ID: D06072

Test Date: 01/06/2006
Speed: 13.87 ft/sec, 4.23 m/sec

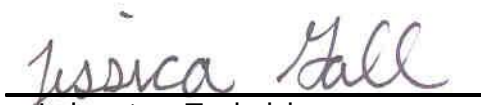


SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 904

Test I.D: D06073

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Velocity	m/s	4.27 - 4.33	4.28	Pass
Pelvis Acceleration	G's	40 - 60	44	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

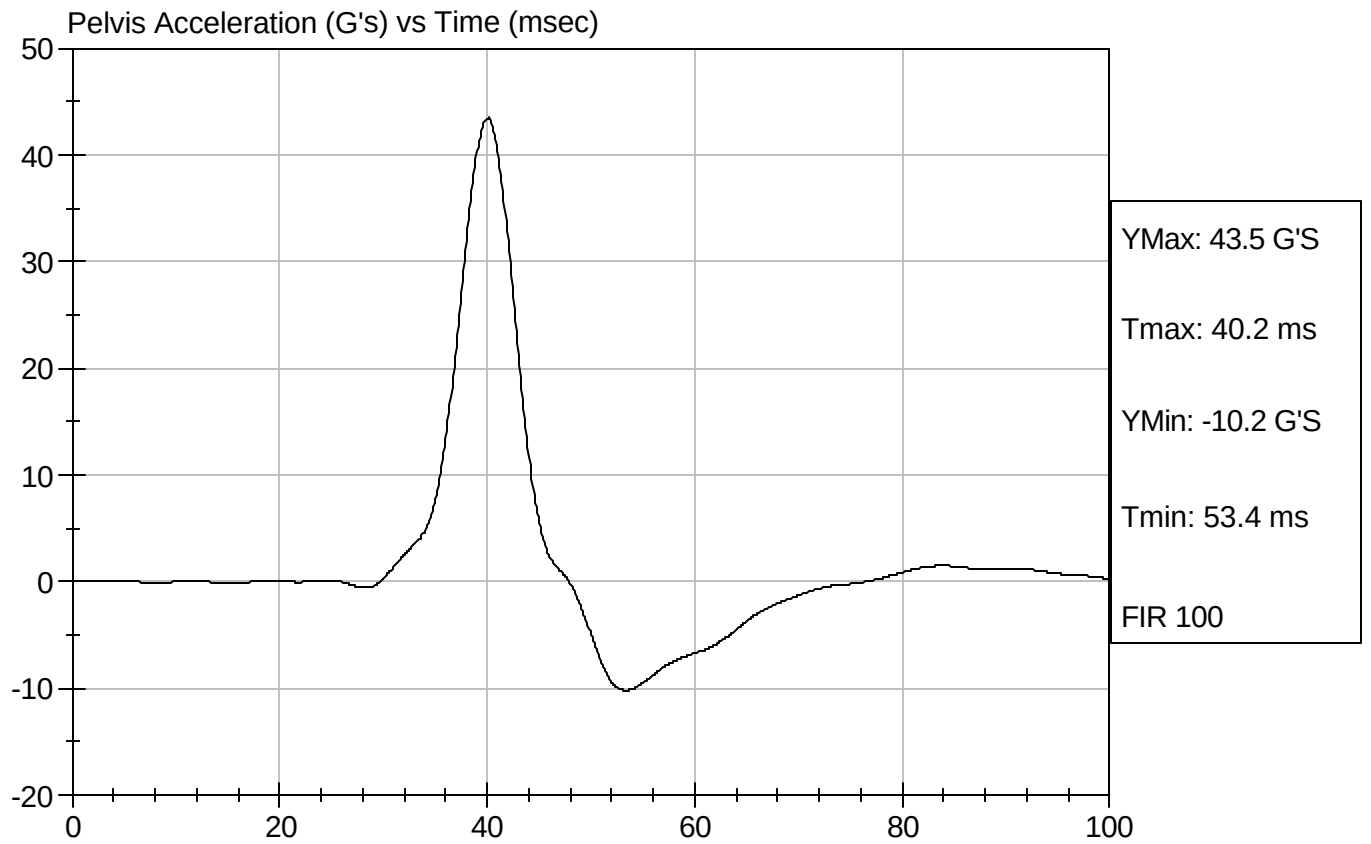
01/06/2006

Test Date



Test Desc: Pelvis Impact
Component ID: D06073

Test Date: 01/06/2006
Speed: 14.04 ft/sec, 4.28 m/sec



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

ATD Serial No: 904

Test I.D: D06074

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 12.7 mm	N	104 -162	142	Pass
Force At 19 mm	N	163 - 222	199	Pass
Force At 25.4 mm	N	222 - 280	266	Pass
Force At 33 mm	N	325 - 391	370	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

01/06/2006
Test Date

David Winkelbauer
Approved By

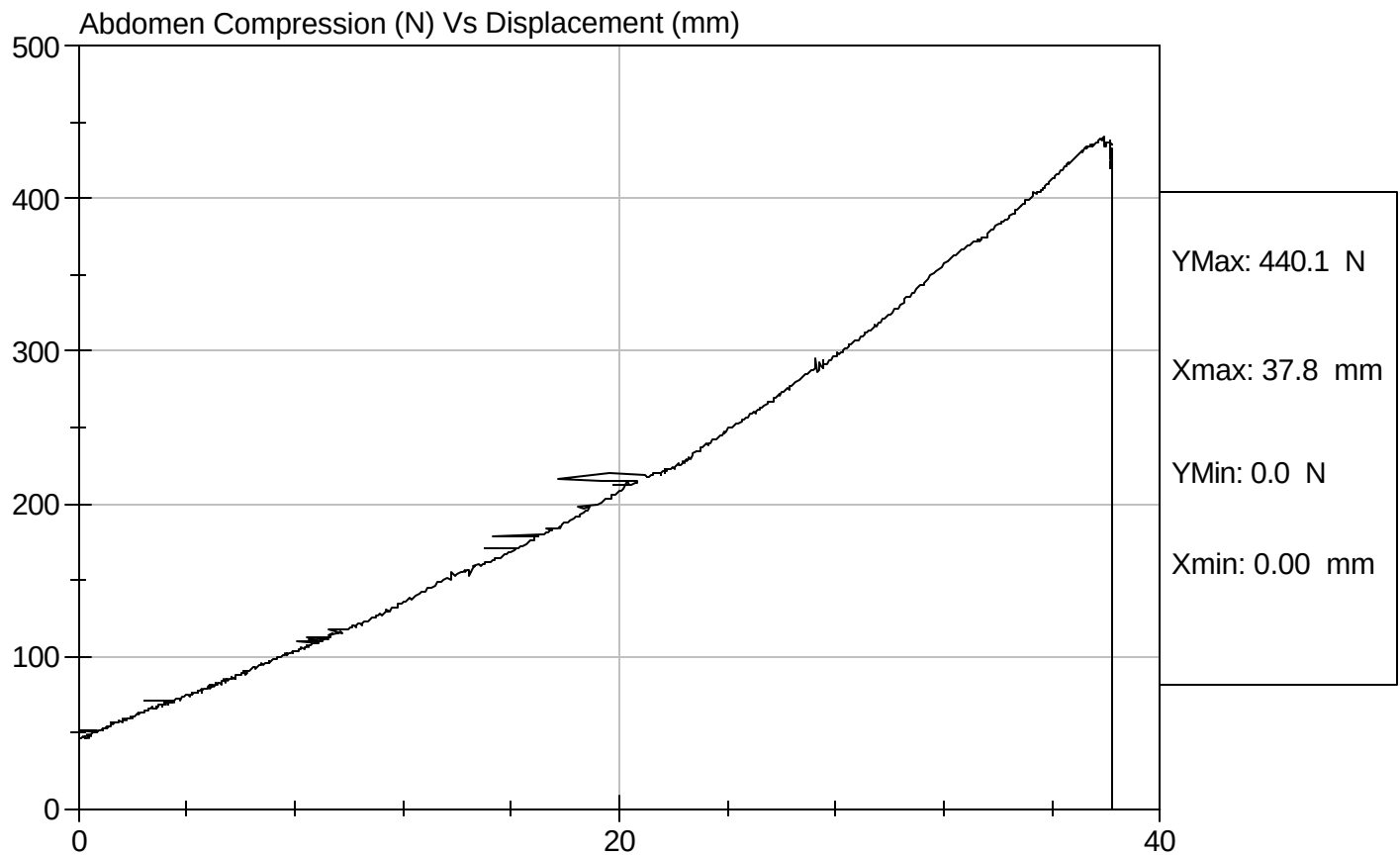


Test Description: Abdomen Compression

Test Date: 01/06/2006

Component: D06074

Speed: 0 ft/sec, 0 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 904

Test I.D: D06075

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.4	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	147.2	Pass
Force At 30 deg	N	151.2 - 204.6	191.4	Pass
Force At 40 deg	N	204.6 - 258.0	250.4	Pass
Return Angle	Deg	12 Maximum	1	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

David Winkelbauer
Approved By

01/06/2006
Test Date

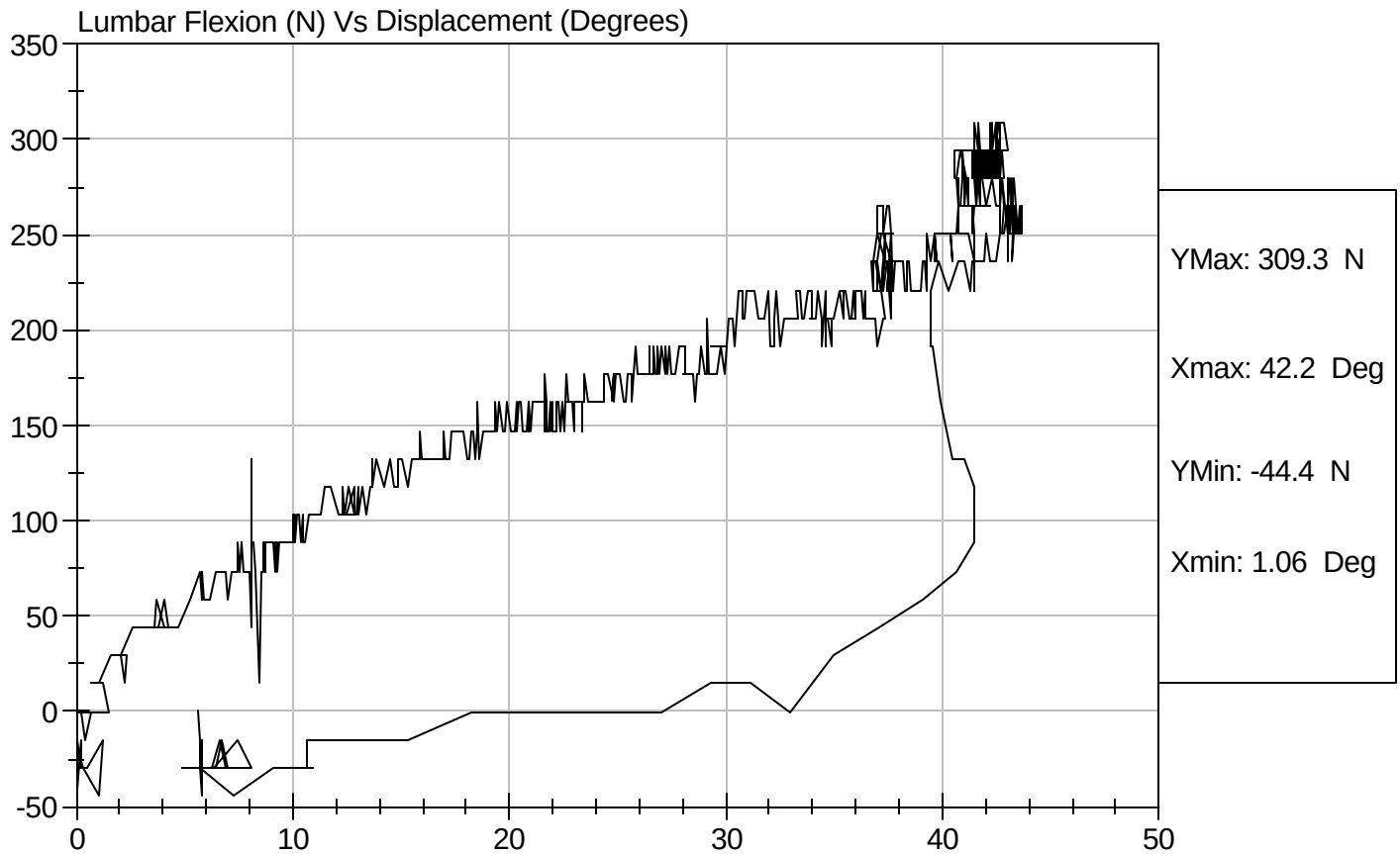


Test Description: Lumbar Flexion

Test Date: 01/06/2006

Component: D06075

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: D06079

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Impact Velocity		m/s	6.89 to 7.13	7.09	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.31	Pass
	20 msec	m/s	4.12 to 5.10	4.54	Pass
	30 msec	m/s	5.73 to 7.01	6.19	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.22	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	71	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	60	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	76	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

01/06/2006

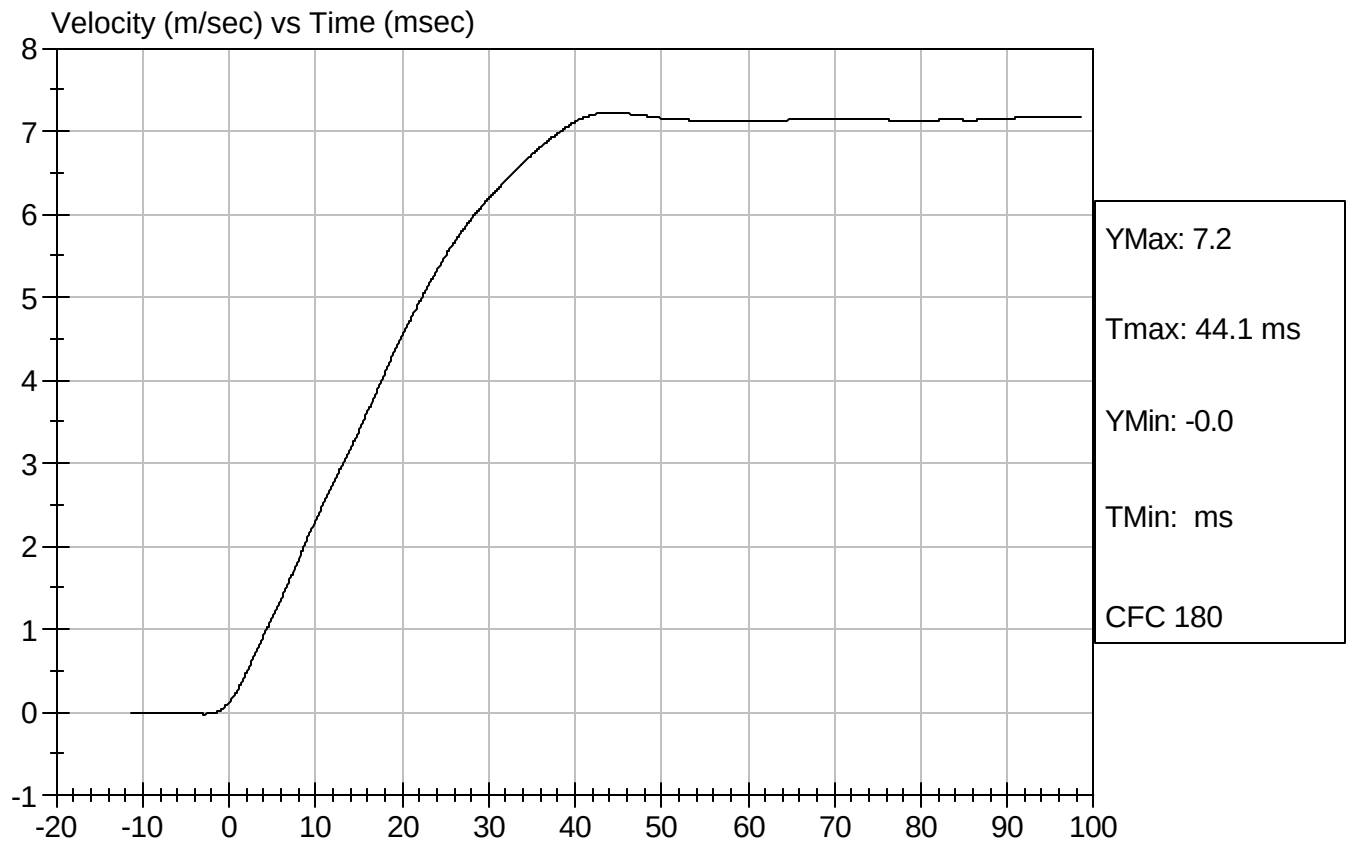
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D06079

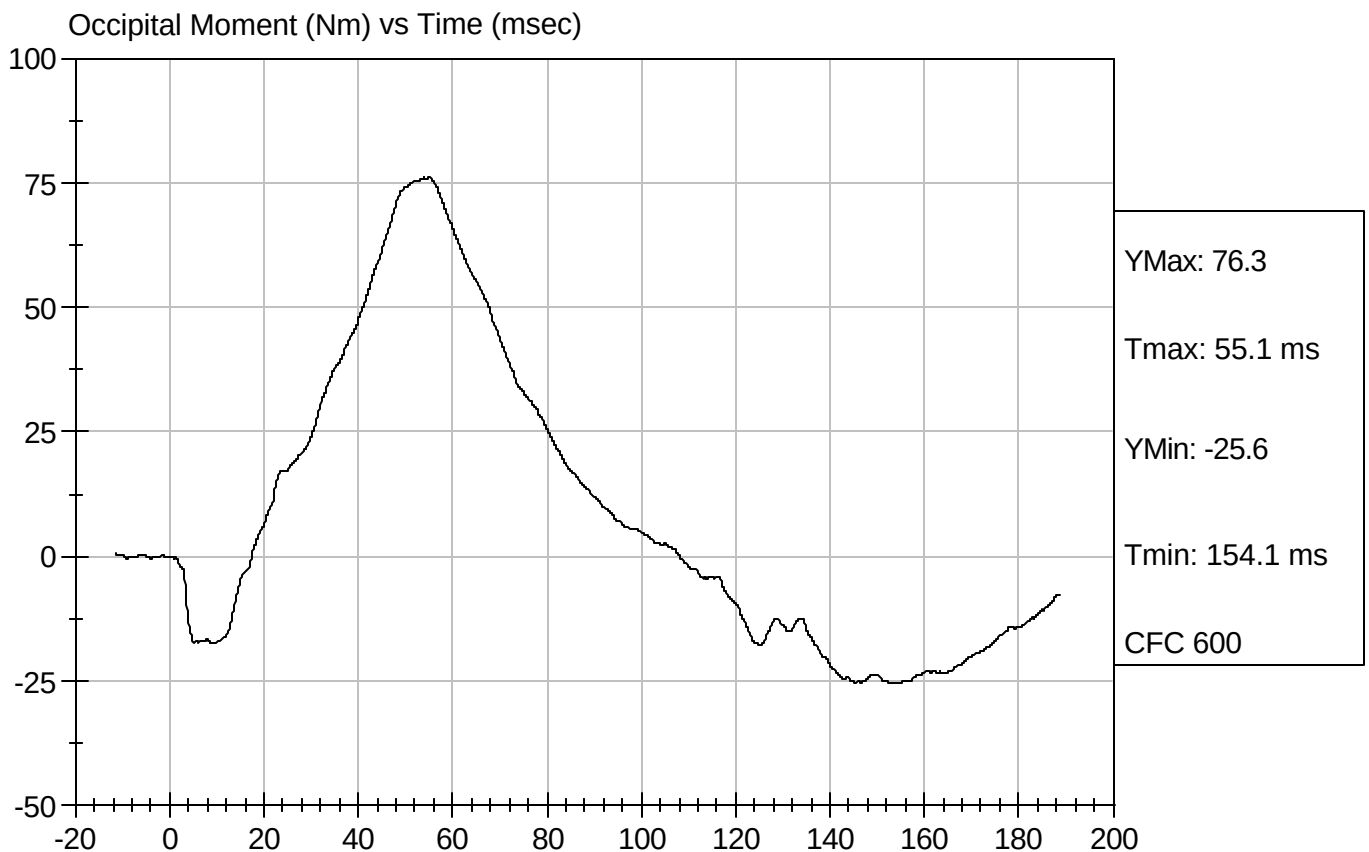
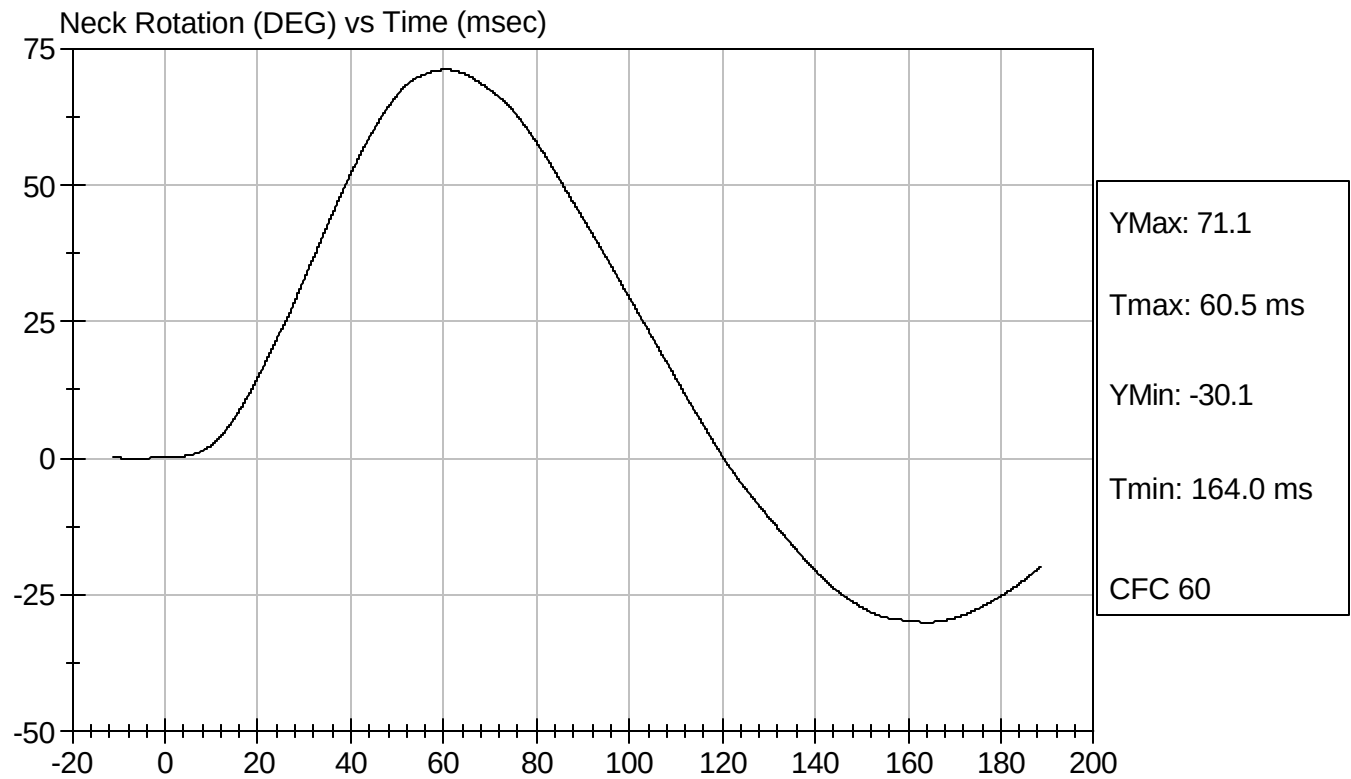
Test Date: 01/06/2006
Speed: 23.27 ft/sec, 7.09 m/sec





Test Desc: Neck Bending
Component ID: D06079

Test Date: 01/06/2006
Speed: 23.27 ft/sec, 7.09 m/sec



Calibration Test Results Summary

Dummy Serial Number: 904

Post-Test Calibration

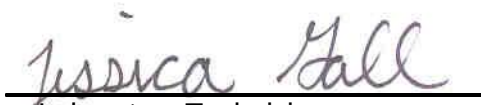
External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis 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: D06161

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.4	Pass
Laboratory Relative Humidity	%	10 to 70	14	Pass
Peak Resultant Acceleration	G's	120 to 150	144	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-11	Pass
Overall Test Results				Pass


Laboratory Technician

01/18/2006

Test Date


Approved By



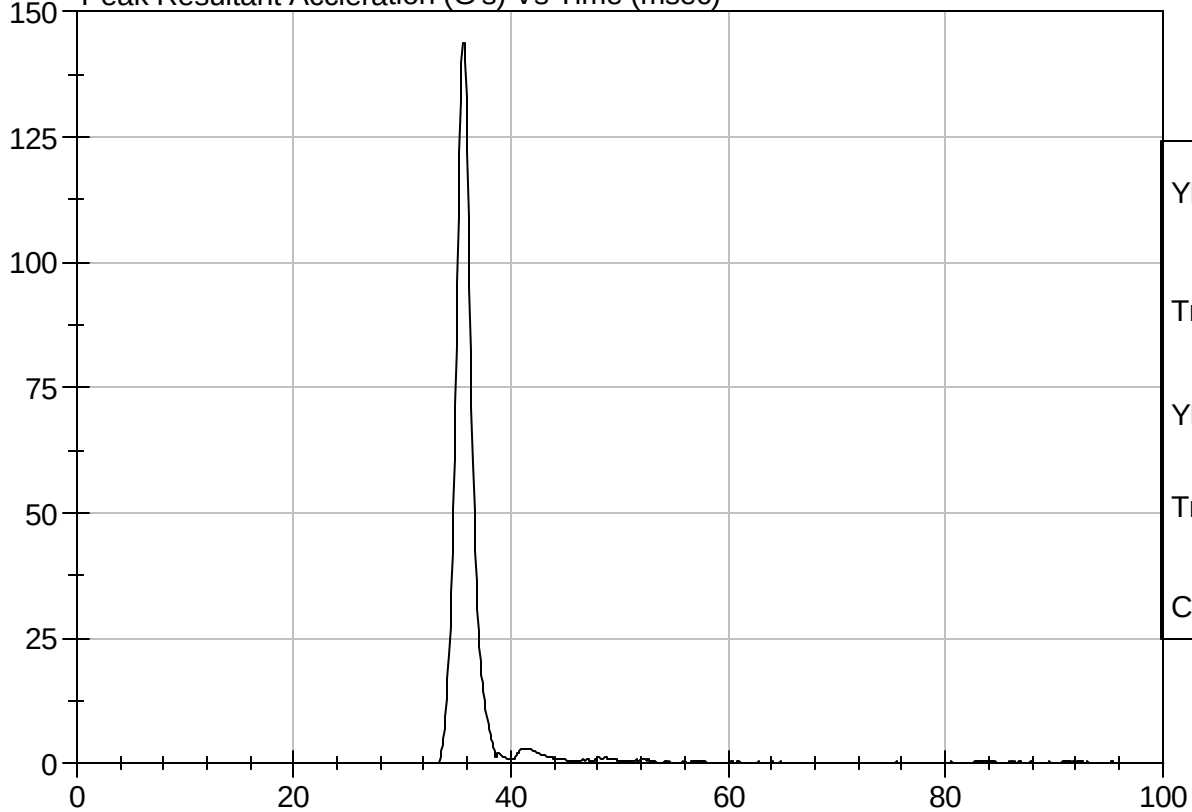
Test Description: Head Drop

Test Date: 01/18/2006

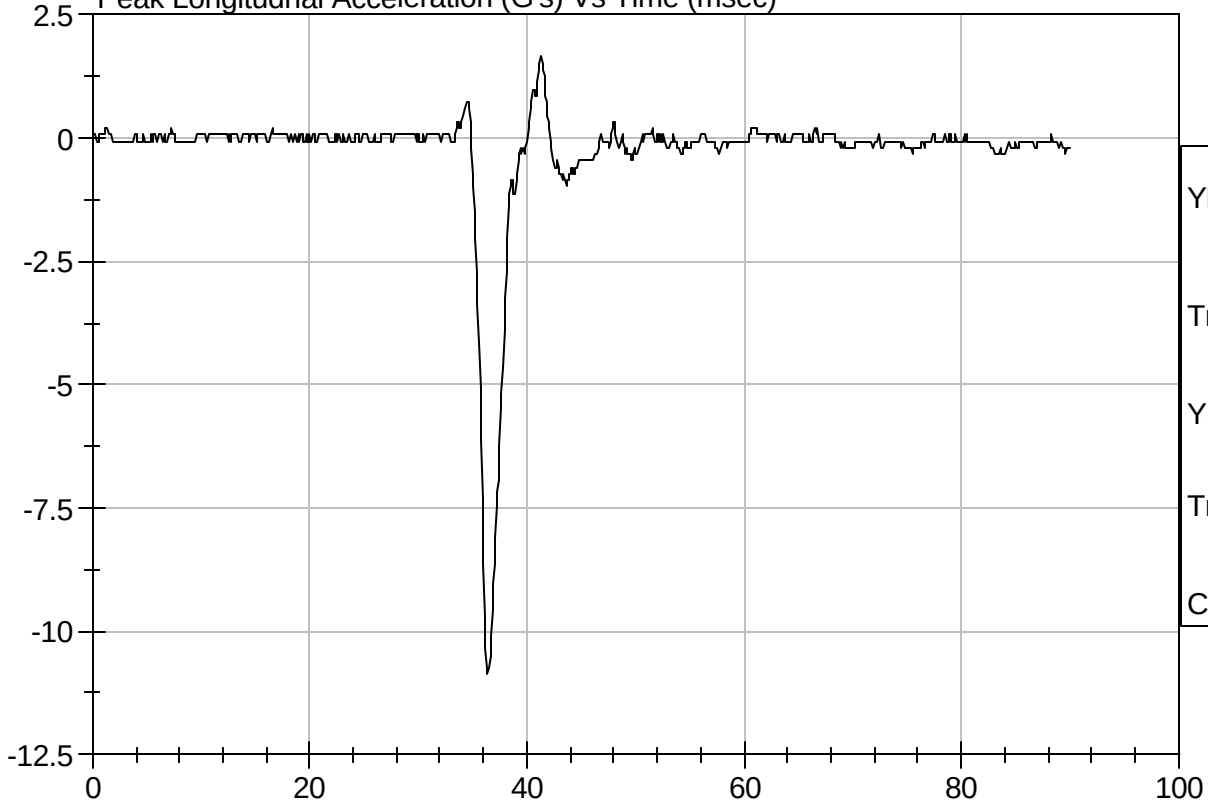
Component: D06161

Speed: 0 ft/s, 0.00 m/s

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



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

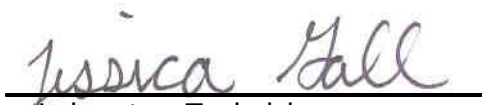


SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 904

Test I.D: D06162

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/s	4.22 - 4.31	4.23	Pass
Upper Rib	G's	37 - 46	39	Pass
Lower Rib	G's	37 - 46	37	Pass
Lower Spine	G's	15 - 22	22	Pass
Overall Test Results				Pass


Laboratory Technician

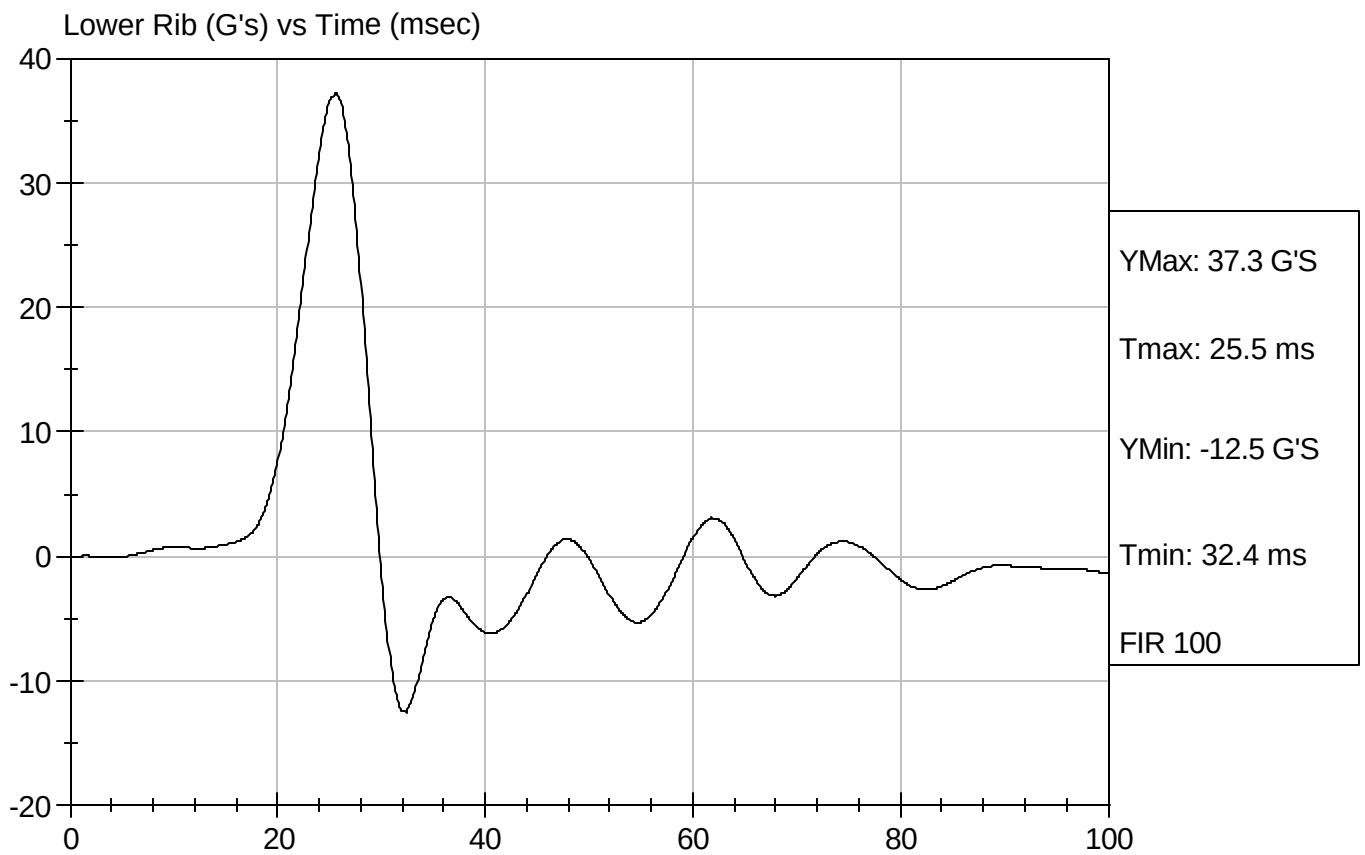
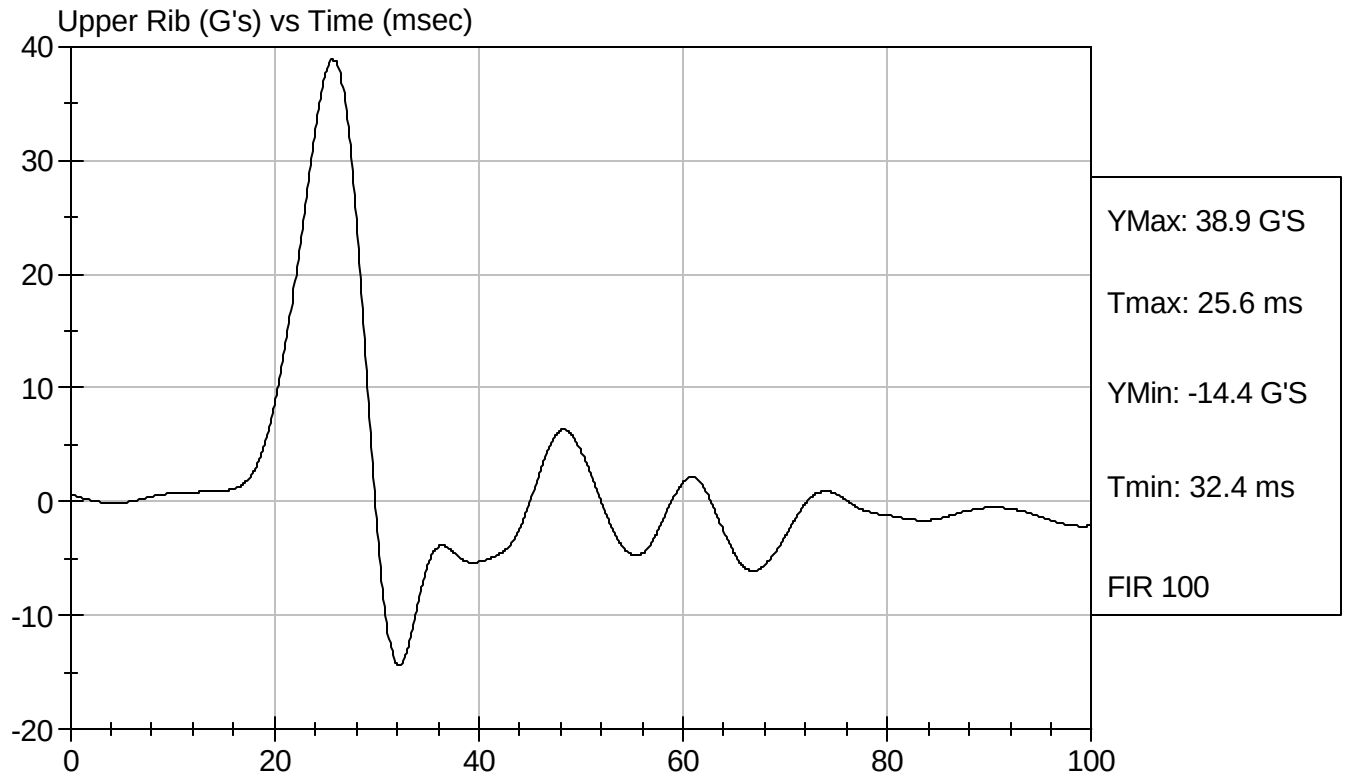

Approved By

01/17/2006
Test Date



Test Desc: Thorax Impact
Component ID: D06162

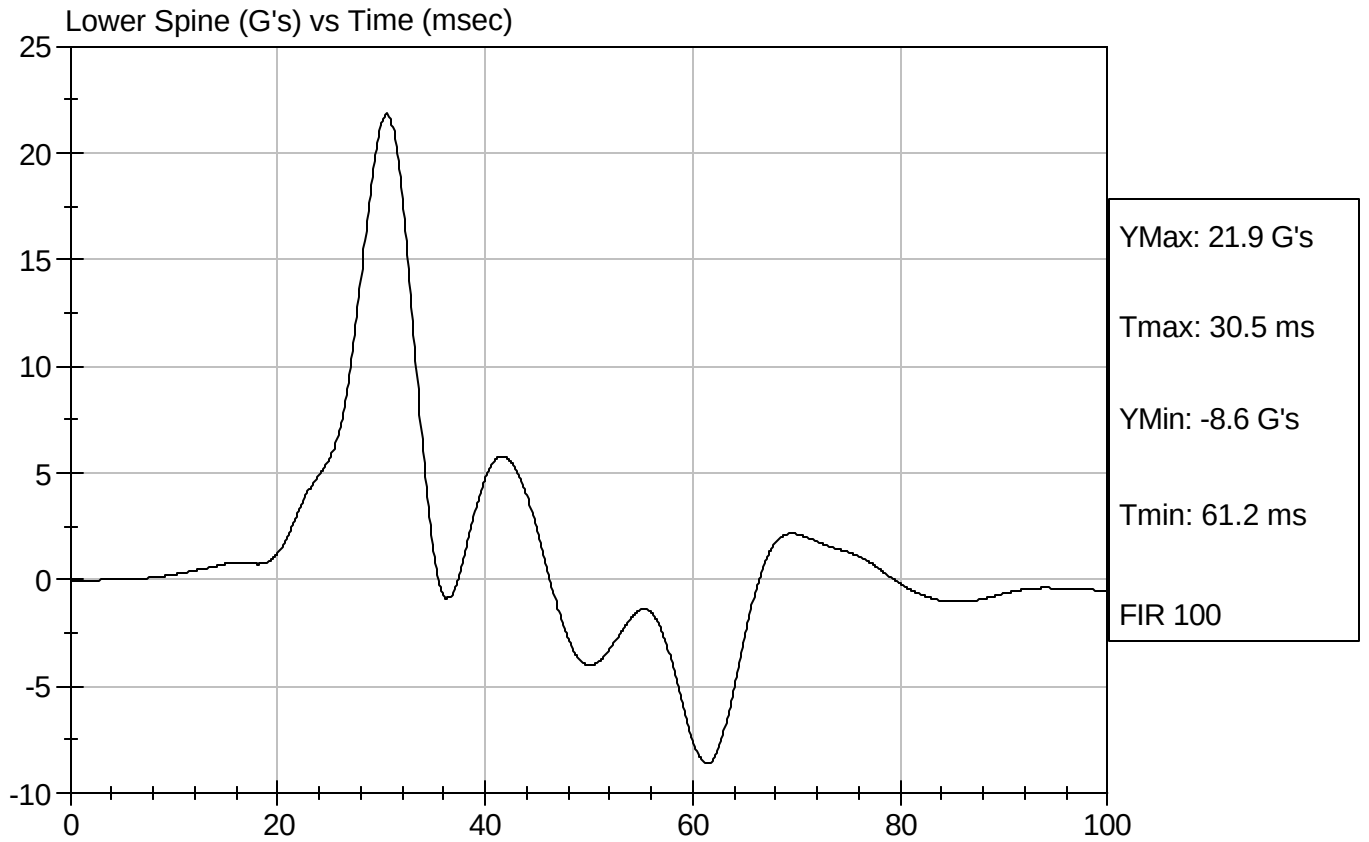
Test Date: 01/17/2006
Speed: 13.89 ft/sec, 4.23 m/sec





Test Desc: Thorax Impact
Component ID: D06162

Test Date: 01/17/2006
Speed: 13.89 ft/sec, 4.23 m/sec

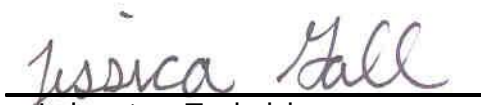


SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 904

Test I.D: D06163

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


Laboratory Technician

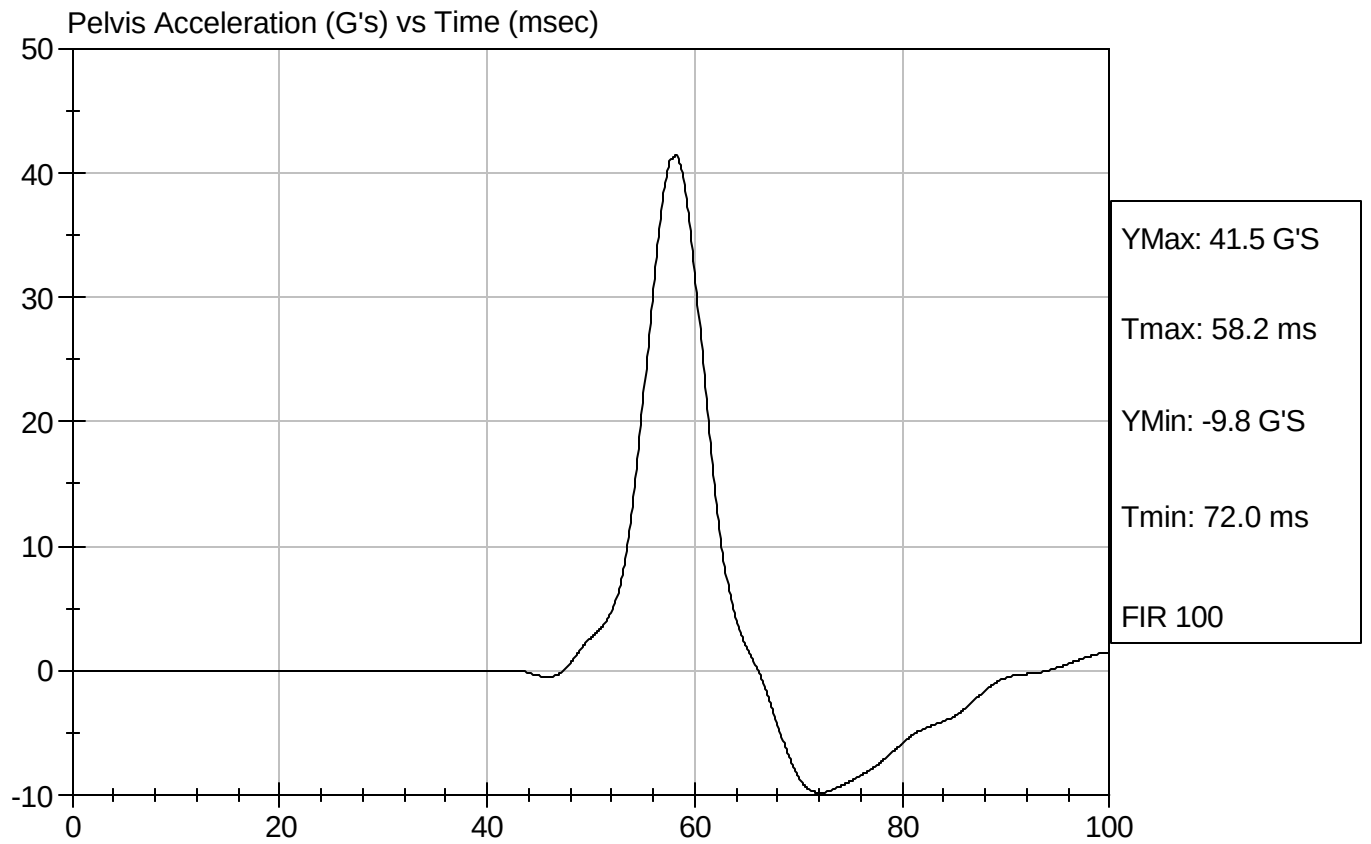

Approved By

01/17/2006
Test Date



Test Desc: Pelvis Impact
Component ID: D06163

Test Date: 01/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec

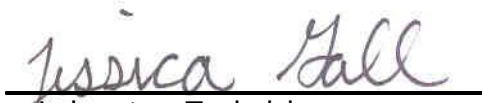


SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 904

Test I.D: D06164

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.5	Pass
Laboratory Relative Humidity	%	10 to 70	14	Pass
Force At 12.7 mm	N	104 -162	136	Pass
Force At 19 mm	N	163 - 222	189	Pass
Force At 25.4 mm	N	222 - 280	257	Pass
Force At 33 mm	N	325 - 391	353	Pass
Overall Test Results				Pass


Laboratory Technician

01/18/2006

Test Date


Approved By

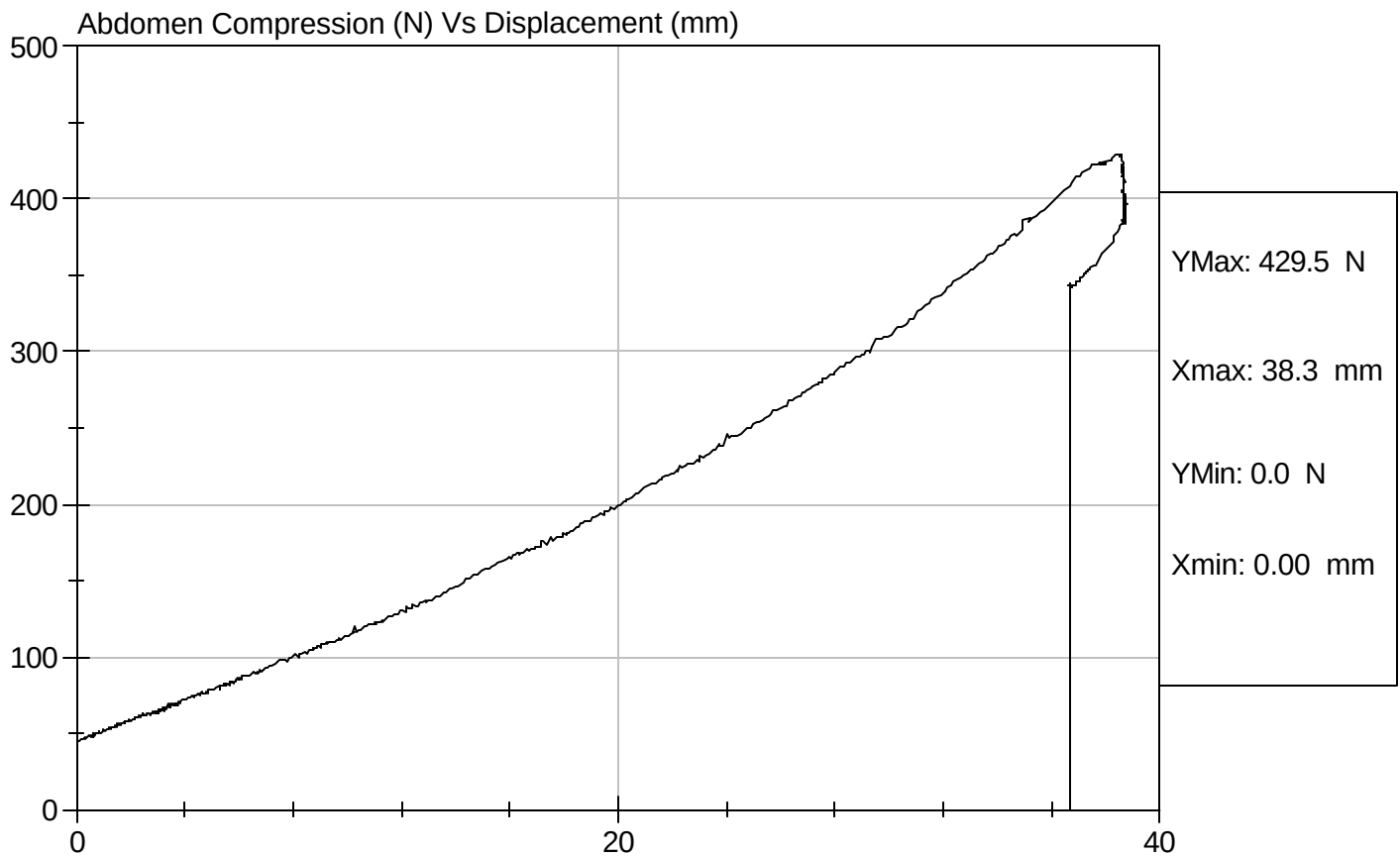


Test Description: Abdomen Compression

Test Date: 01/18/2006

Component: D06164

Speed: 0 ft/sec, 0 m/sec

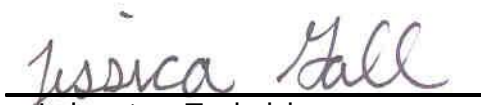


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 904

Test I.D: D06165

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	14	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	107.4	Pass
Force At 30 deg	N	151.2 - 204.6	181.1	Pass
Force At 40 deg	N	204.6 - 258.0	225.3	Pass
Return Angle	Deg	12 Maximum	4	Pass
			Overall Test Results	Pass


Laboratory Technician


Approved By

01/18/2006

Test Date

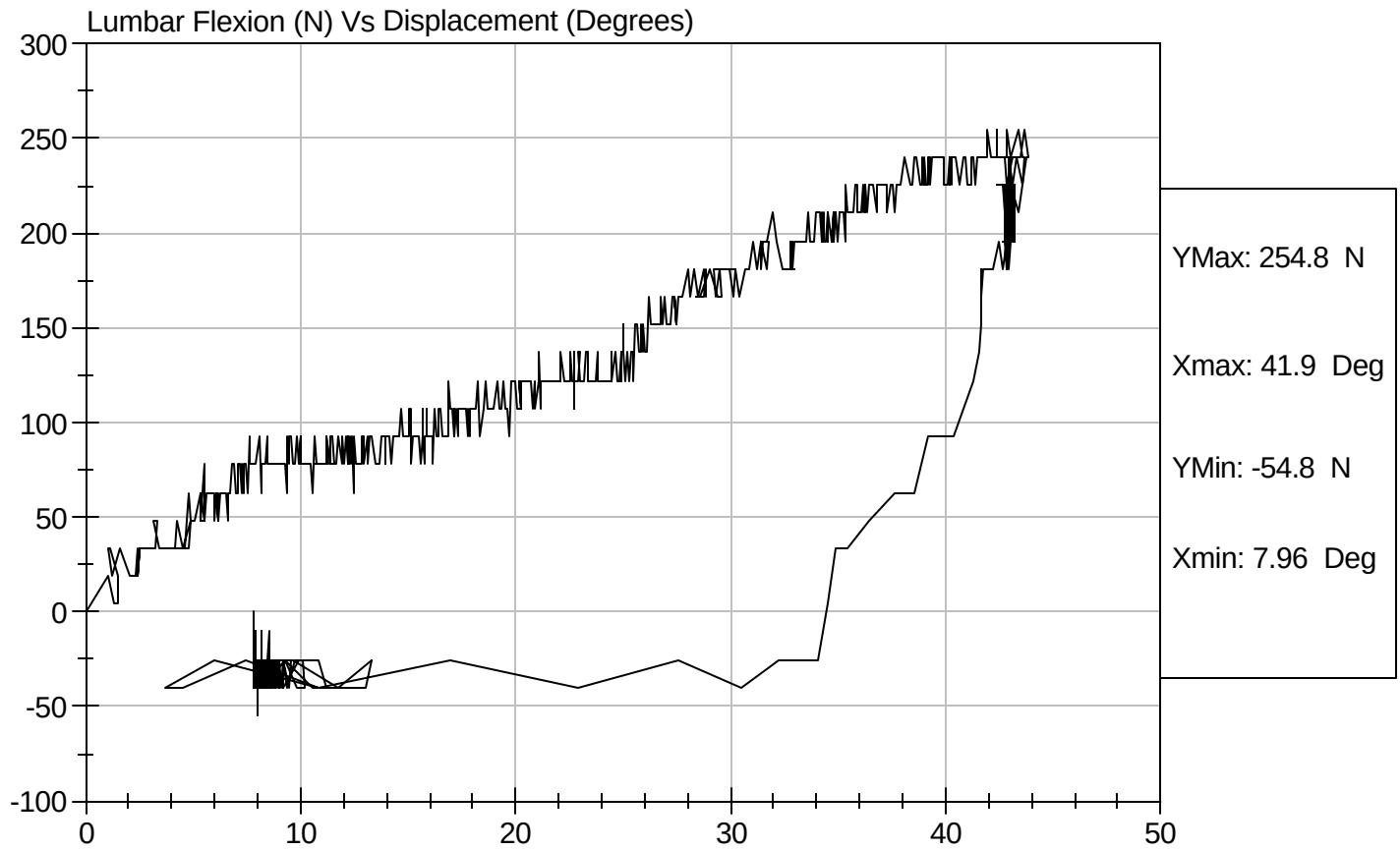


Test Description: Lumbar Flexion

Test Date: 01/18/2006

Component: D06165

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 271

Test I.D: D06169

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	14	Pass
Impact Velocity		m/s	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.38	Pass
	20 msec	m/s	4.12 to 5.10	4.73	Pass
	30 msec	m/s	5.73 to 7.01	6.66	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	59	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	76	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	61	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	15	Pass


 Laboratory Technician

01/18/2006

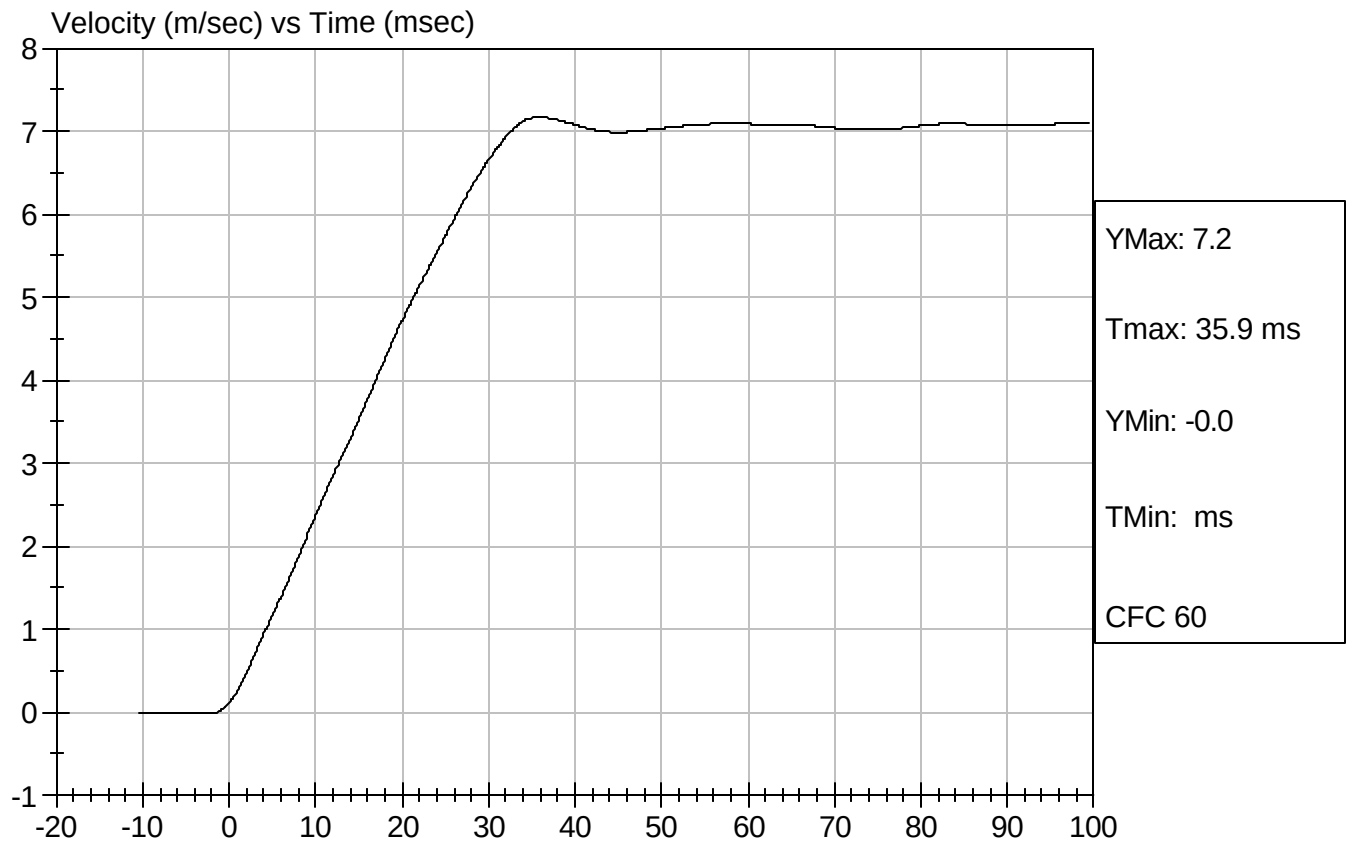
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D06169

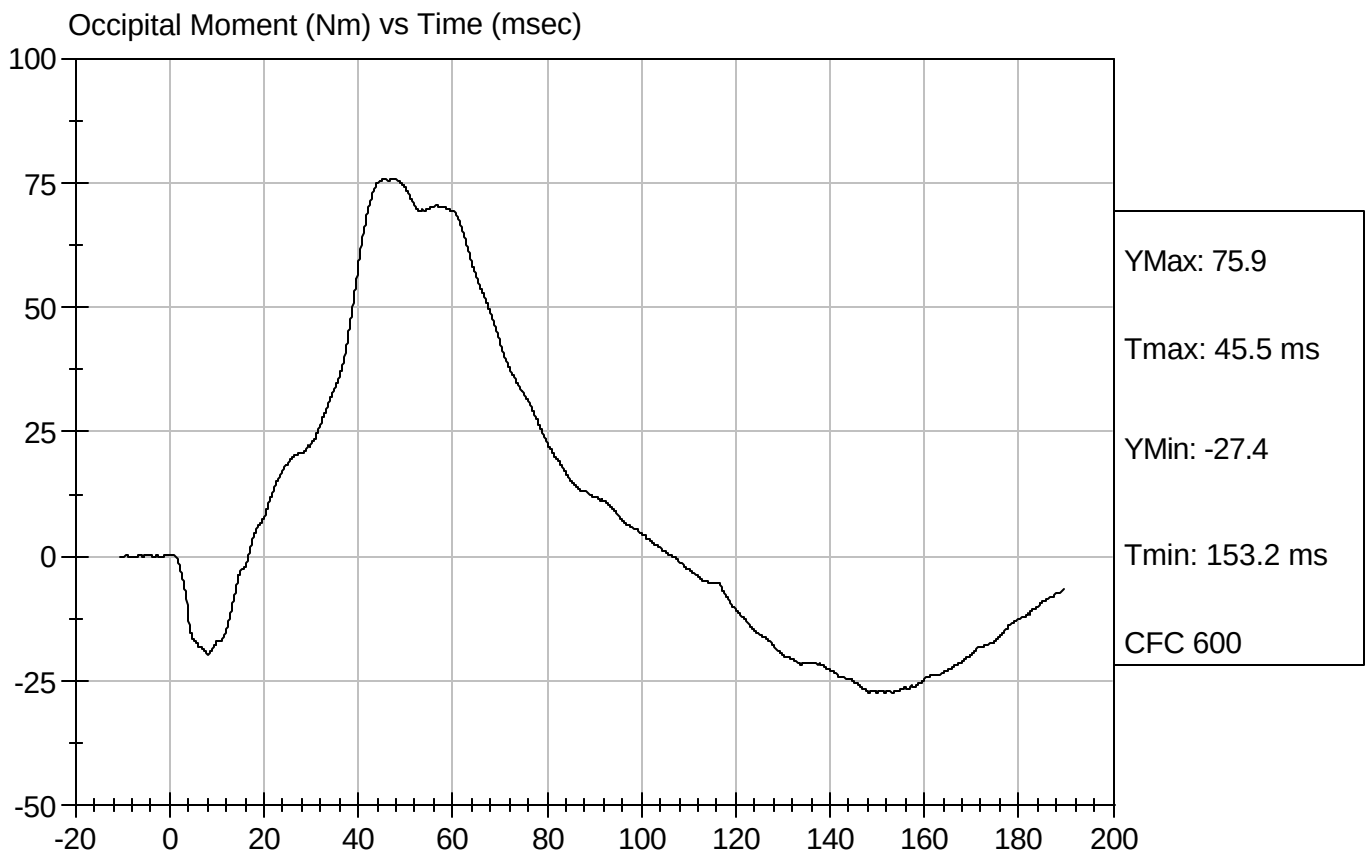
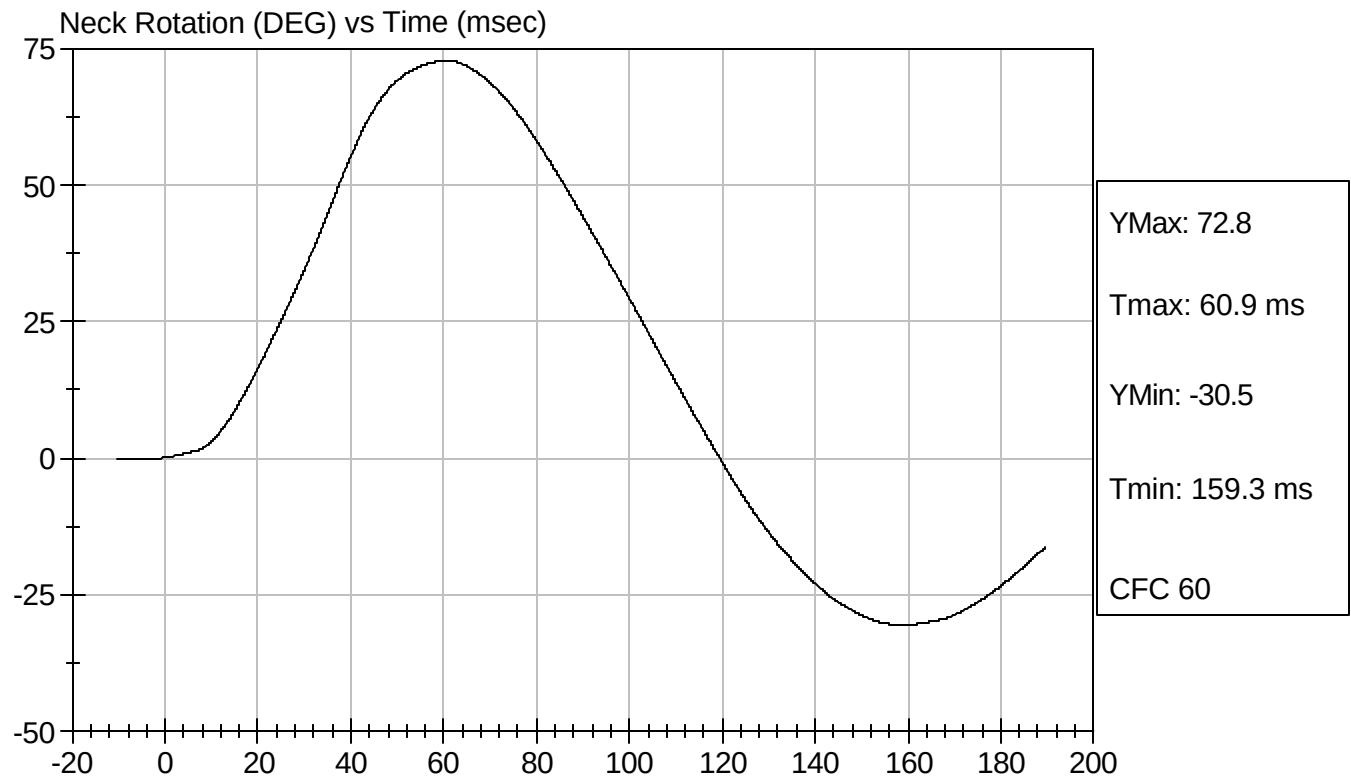
Test Date: 01/18/2006
Speed: 23.3 ft/sec, 7.10 m/sec





Test Desc: Neck Bending
Component ID: D06169

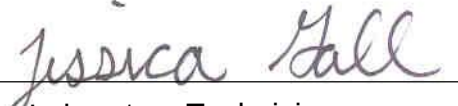
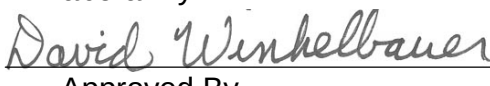
Test Date: 01/18/2006
Speed: 23.3 ft/sec, 7.10 m/sec



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


Laboratory Technician

Approved By

01/18/2006

Test Date

CERTIFICATION DATA

Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Pre-Test Calibration

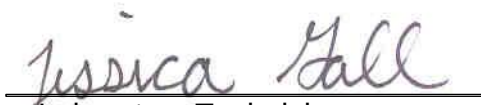
External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis 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: D0606

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


 Laboratory Technician


 Approved By

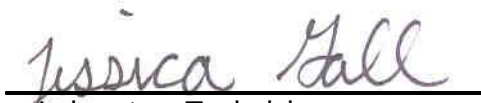
1/06/2006
 Test Date

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

ATD Serial No: 271

Test I.D: D06061

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Peak Resultant Acceleration	G's	120 to 150	144	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-8	Pass
Overall Test Results				Pass


Laboratory Technician

01/06/2006

Test Date


Approved By



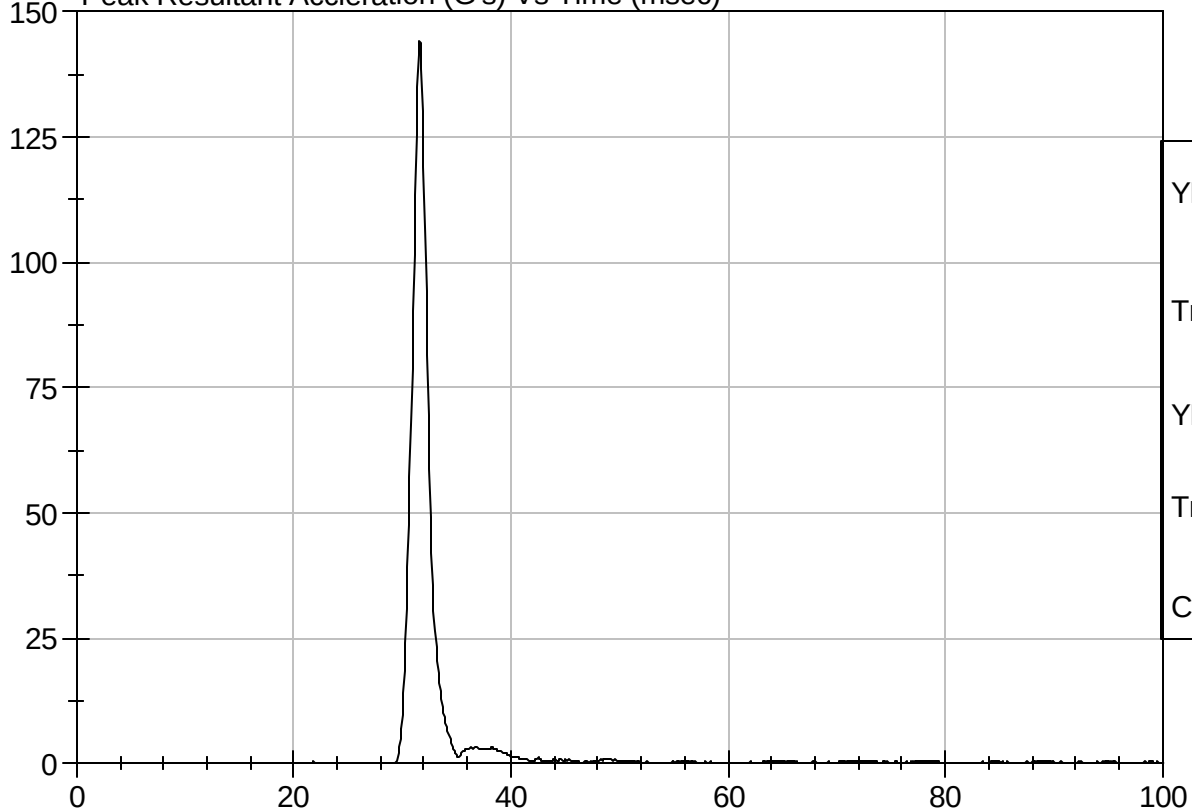
Test Description: Head Drop

Test Date: 01/06/2006

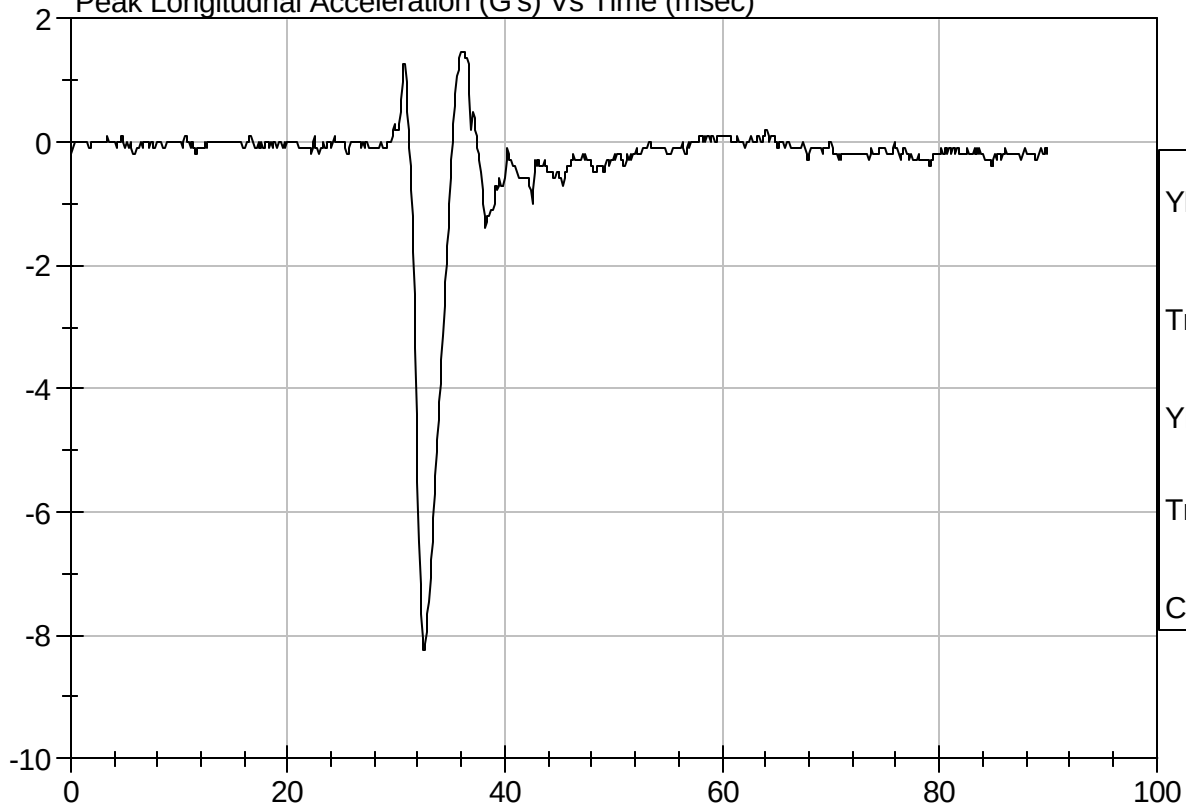
Component: D06061

Speed: 0 ft/s, 0.00 m/s

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



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

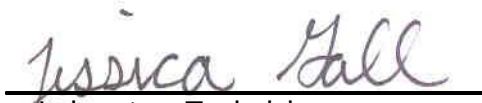


SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 271

Test I.D: D06062

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Velocity	m/s	4.22 - 4.31	4.29	Pass
Upper Rib	G's	37 - 46	46	Pass
Lower Rib	G's	37 - 46	45	Pass
Lower Spine	G's	15 - 22	20	Pass
Overall Test Results				Pass


Laboratory Technician

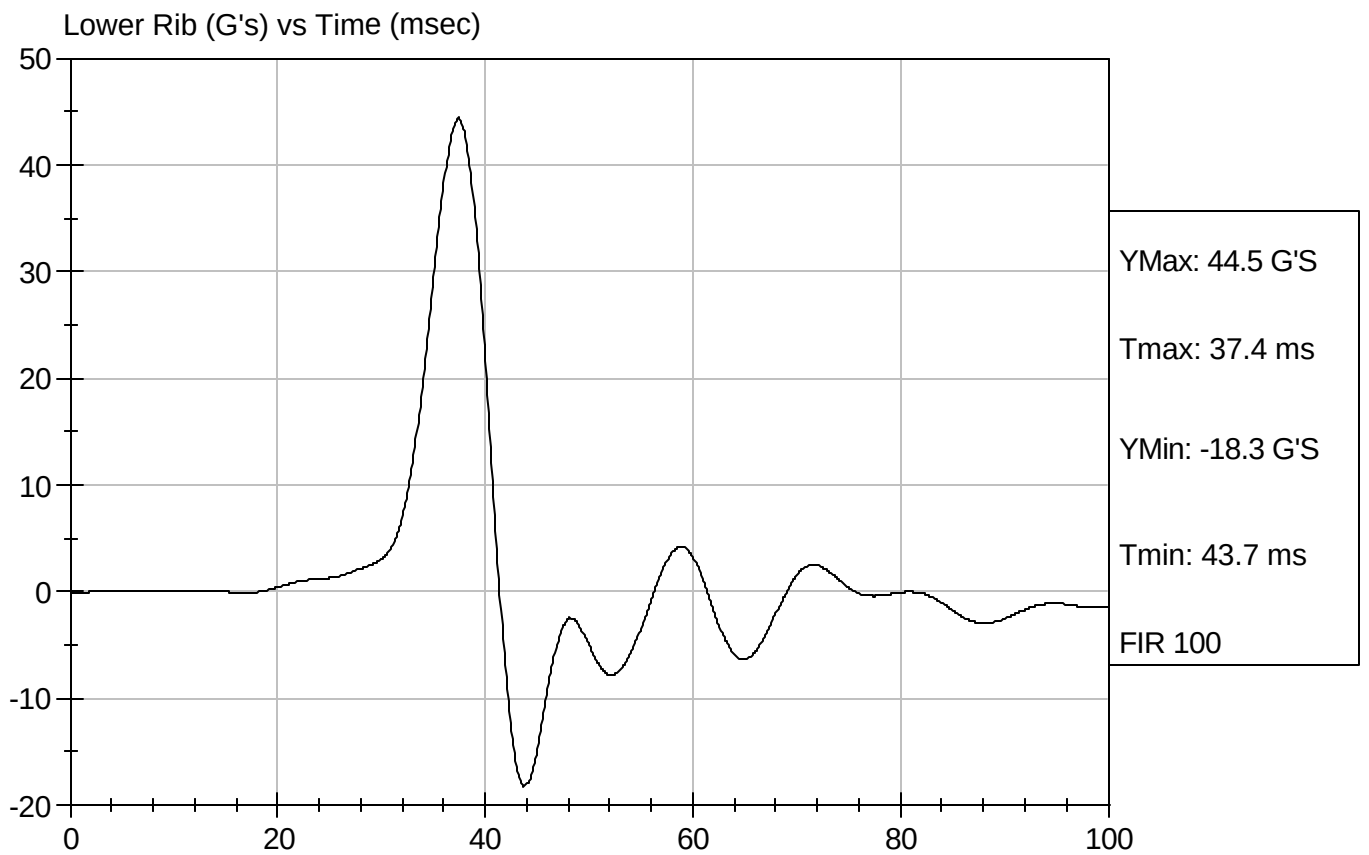
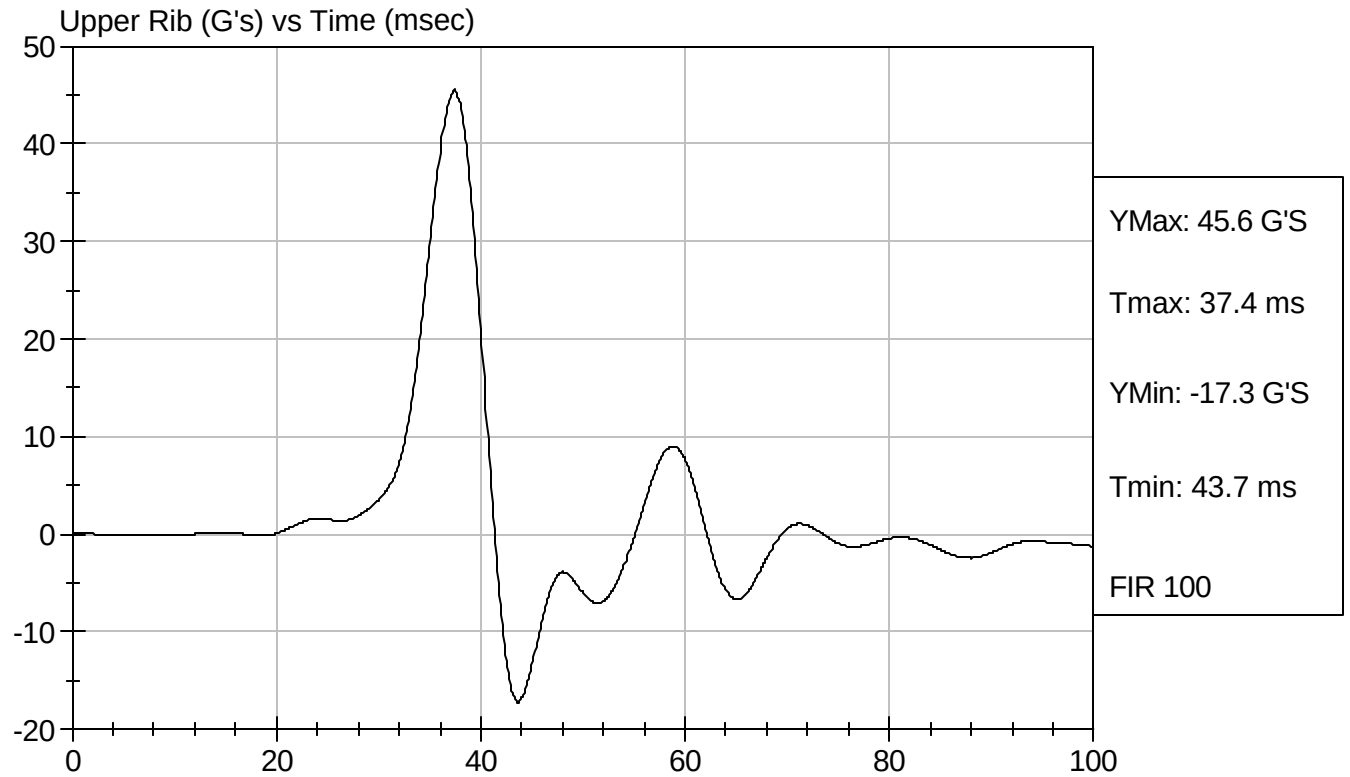

Approved By

01/06/2006
Test Date



Test Desc: Thorax Impact
Component ID: D06062

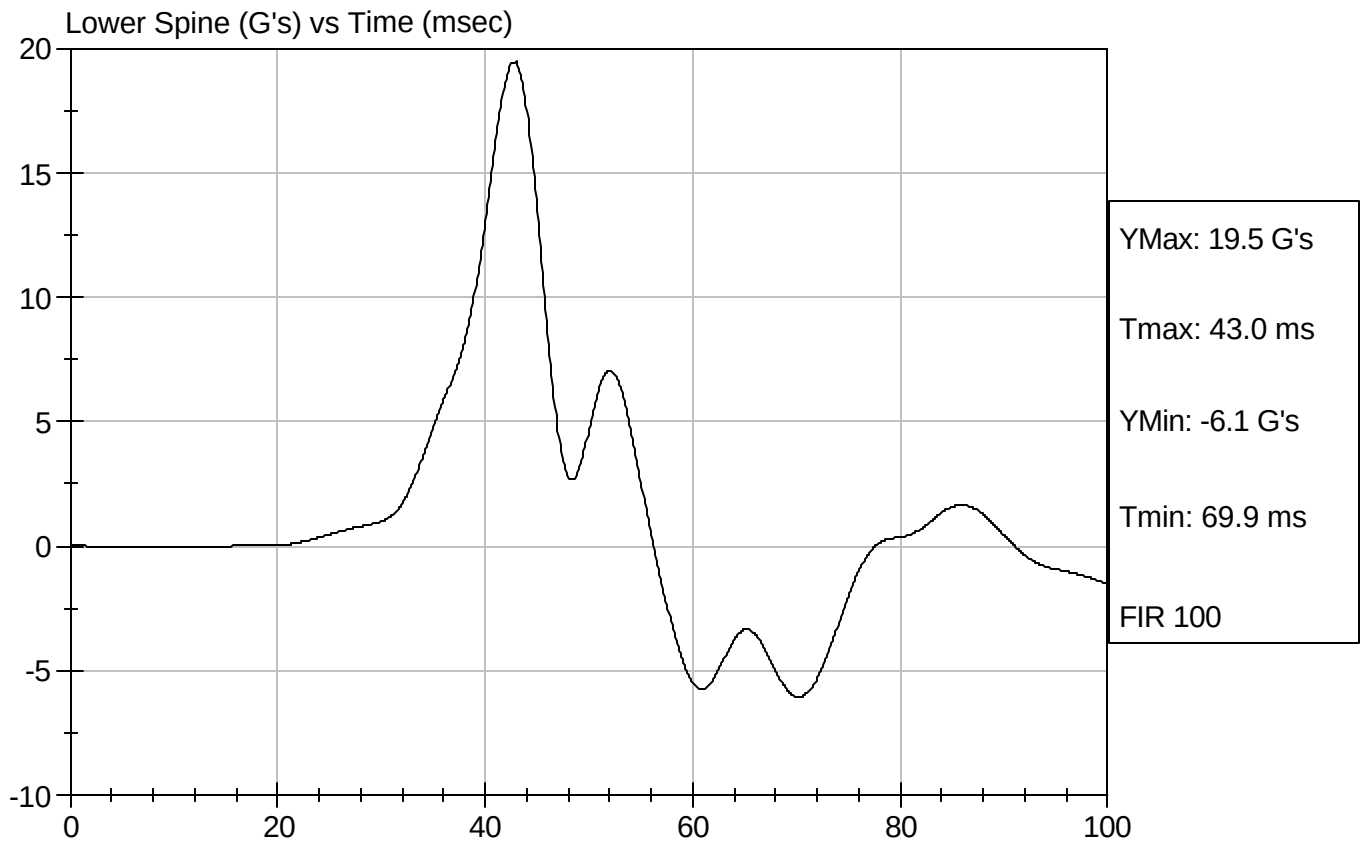
Test Date: 01/06/2006
Speed: 14.07 ft/sec, 4.29 m/sec





Test Desc: Thorax Impact
Component ID: D06062

Test Date: 01/06/2006
Speed: 14.07 ft/sec, 4.29 m/sec

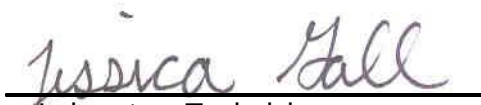


SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 779

Test I.D: D06063

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	19	Pass
Probe Velocity	m/s	4.27 - 4.33	4.29	Pass
Pelvis Acceleration	G's	40 - 60	45	Pass
			Overall Test Results	Pass


Laboratory Technician

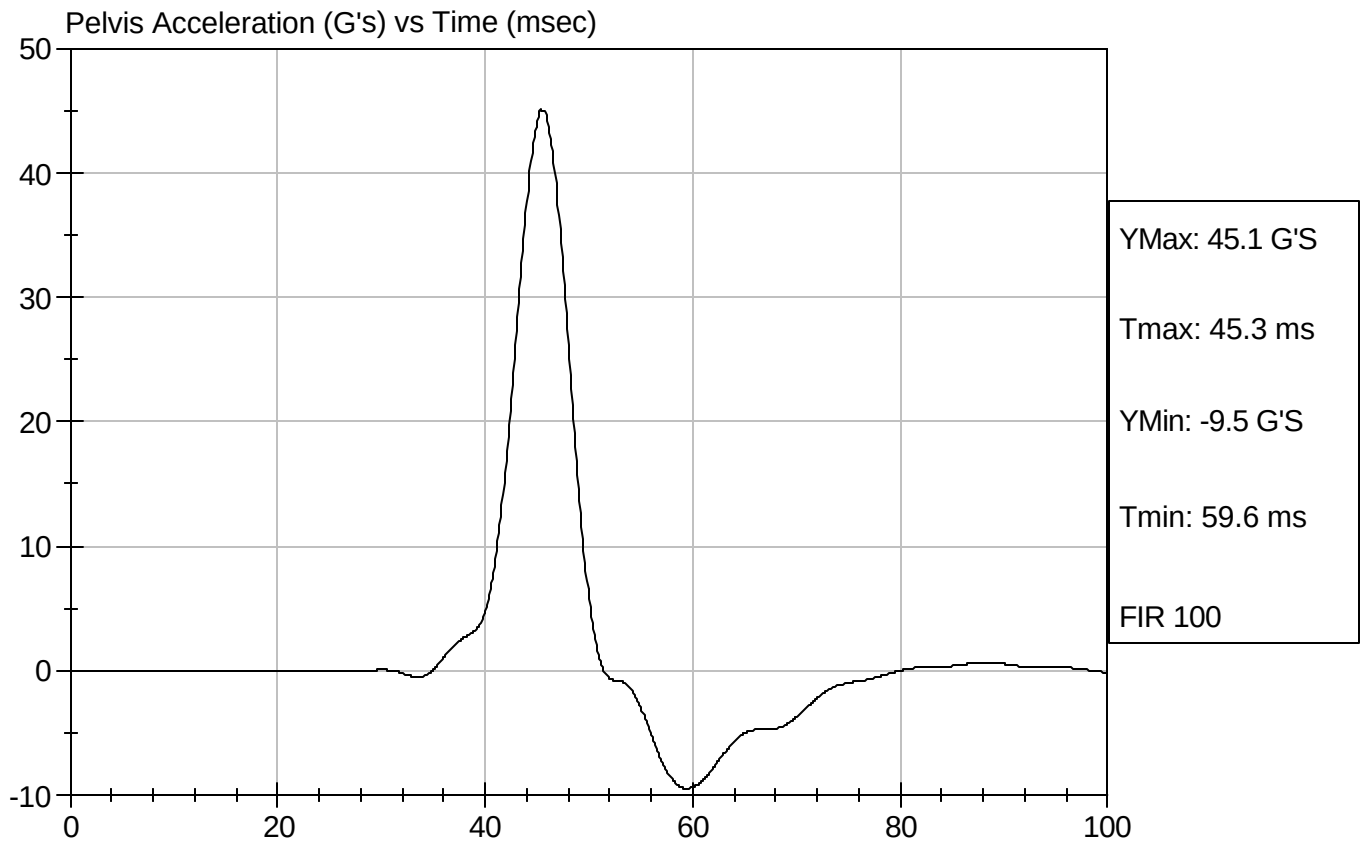

Approved By

01/06/2006
Test Date



Test Desc: Pelvis Impact
Component ID: D06063

Test Date: 01/06/2006
Speed: 14.0777 ft/sec, 4.29 m/sec

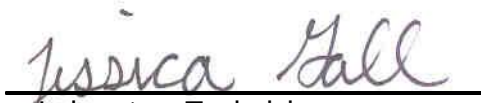


SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 271

Test I.D: D06064

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 12.7 mm	N	104 -162	147	Pass
Force At 19 mm	N	163 - 222	204	Pass
Force At 25.4 mm	N	222 - 280	272	Pass
Force At 33 mm	N	325 - 391	0	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

01/06/2006

Test Date

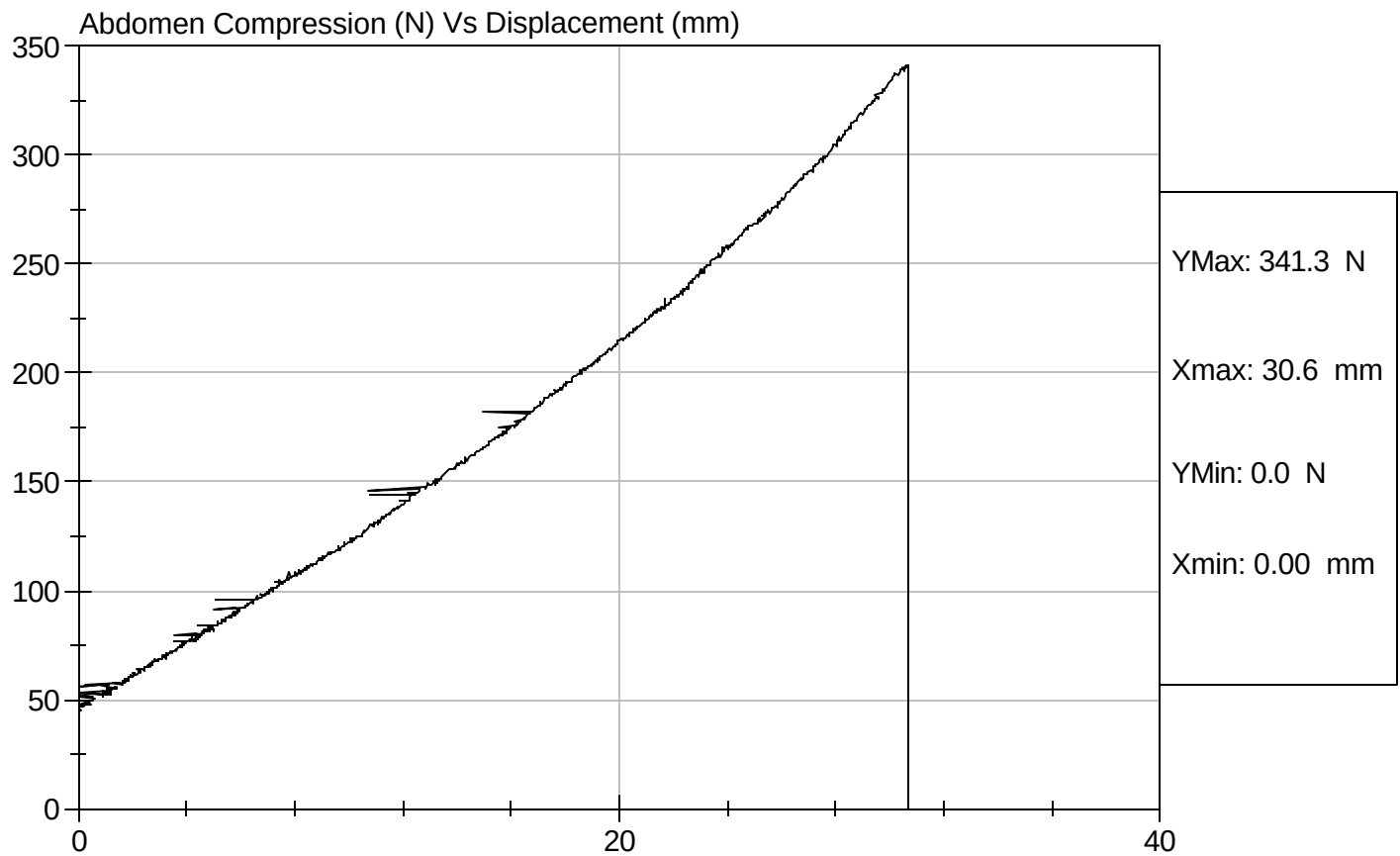


Test Description: Abdomen Compression

Test Date: 01/06/2006

Component: D06064

Speed: 0 ft/sec, 0 m/sec

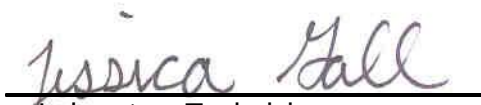


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 271

Test I.D: D06065

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.5	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	117.5	Pass
Force At 30 deg	N	151.2 - 204.6	161.8	Pass
Force At 40 deg	N	204.6 - 258.0	220.7	Pass
Return Angle	Deg	12 Maximum	1	Pass
Overall Test Results			Pass	


Laboratory Technician


Approved By

01/06/2006

Test Date

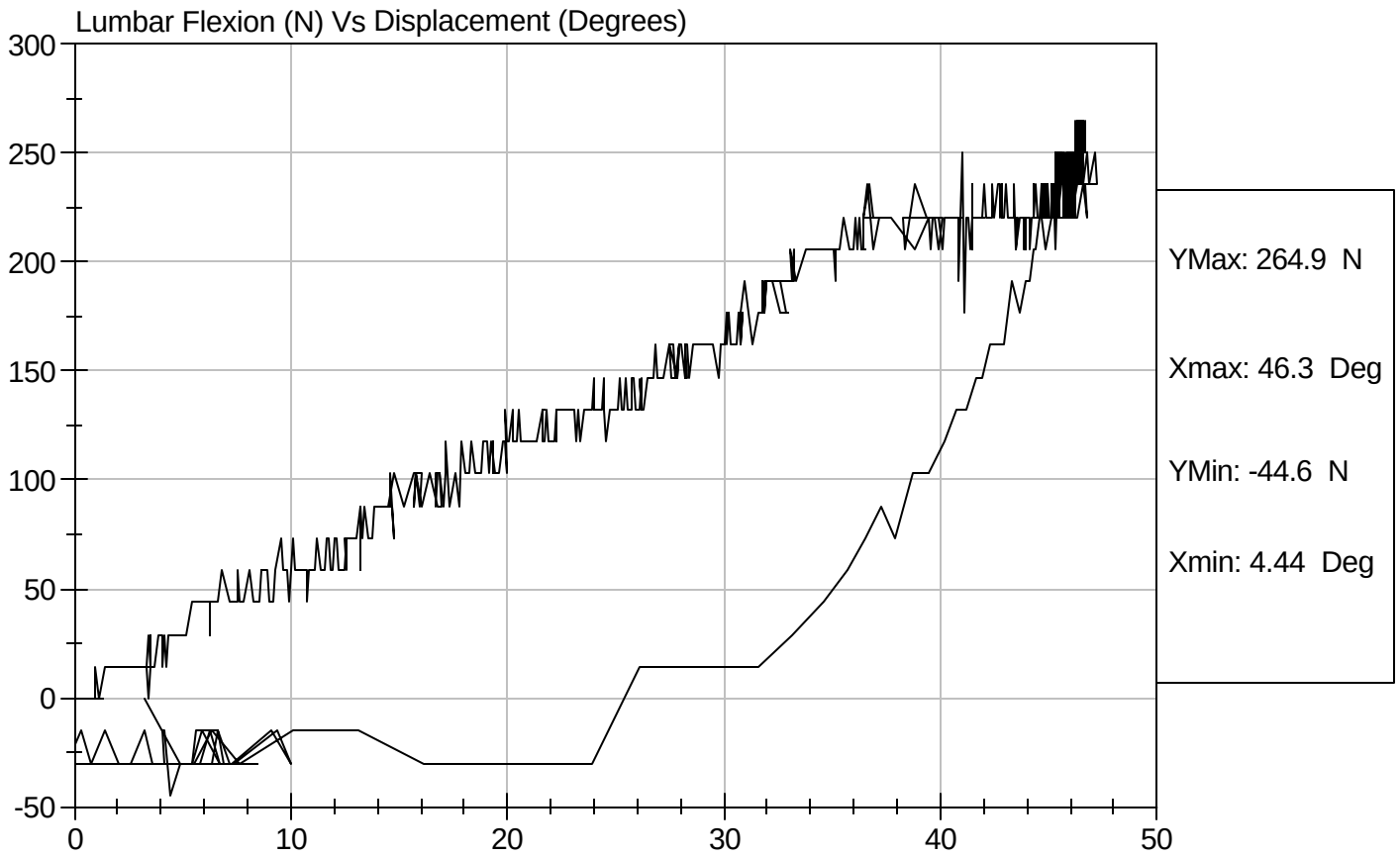


Test Description: Lumbar Flexion

Test Date: 01/06/2006

Component: D06065

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 271

Test I.D: D06069

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Impact Velocity		m/s	6.89 to 7.13	6.91	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.43	Pass
	20 msec	m/s	4.12 to 5.10	4.74	Pass
	30 msec	m/s	5.73 to 7.01	6.67	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.17	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	76	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	61	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	79	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	60	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	13	Pass


 Laboratory Technician

01/06/2006

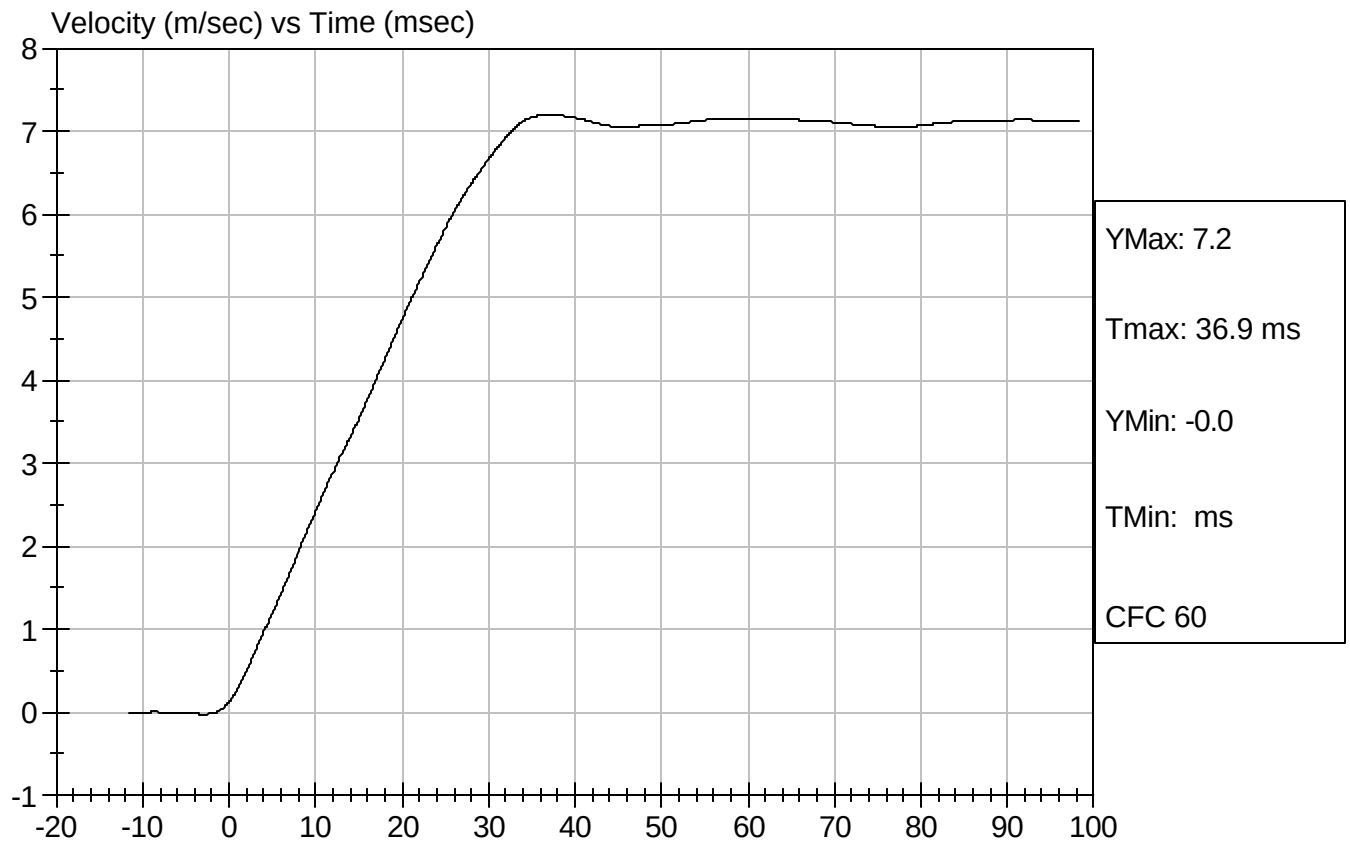
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D06069

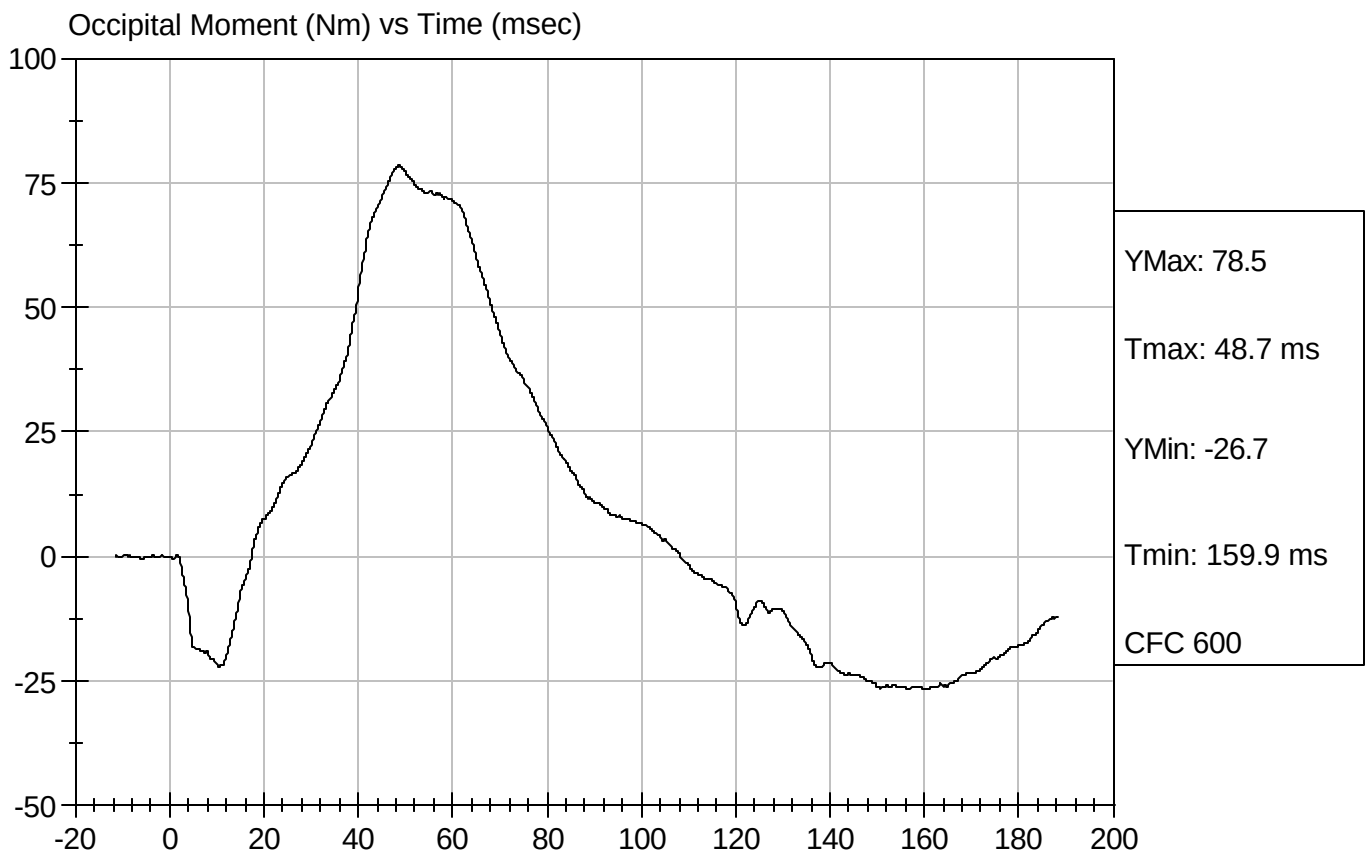
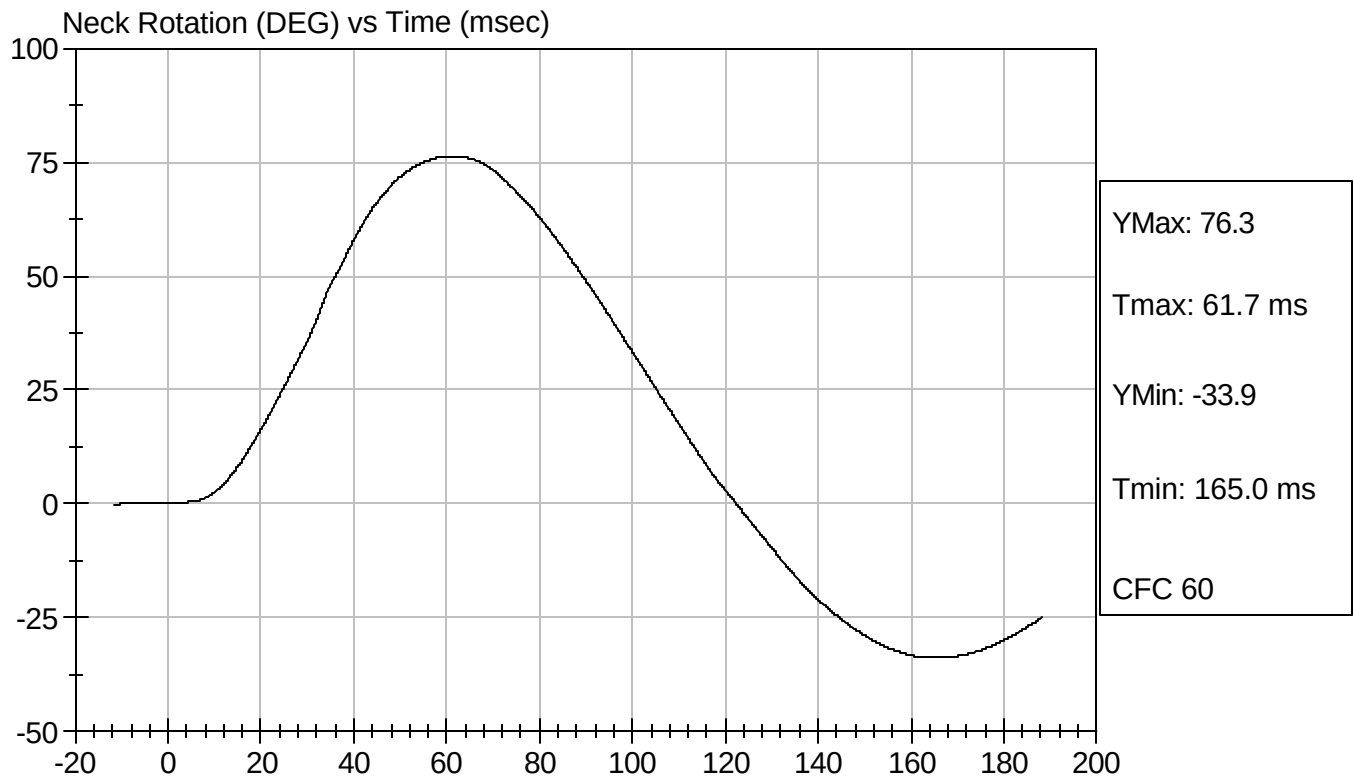
Test Date: 01/06/2006
Speed: 22.68 ft/sec, 6.91 m/sec





Test Desc: Neck Bending
Component ID: D06069

Test Date: 01/06/2006
Speed: 22.68 ft/sec, 6.91 m/sec



Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

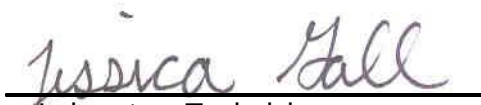
External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis 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 Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration (Lateral)

ATD Serial No: 271

Test I.D: D06151

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	23	Pass
Peak Resultant Acceleration	G's	120 to 150	139	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	7	Pass
Overall Test Results				Pass


Laboratory Technician

01/17/2006

Test Date


Approved By



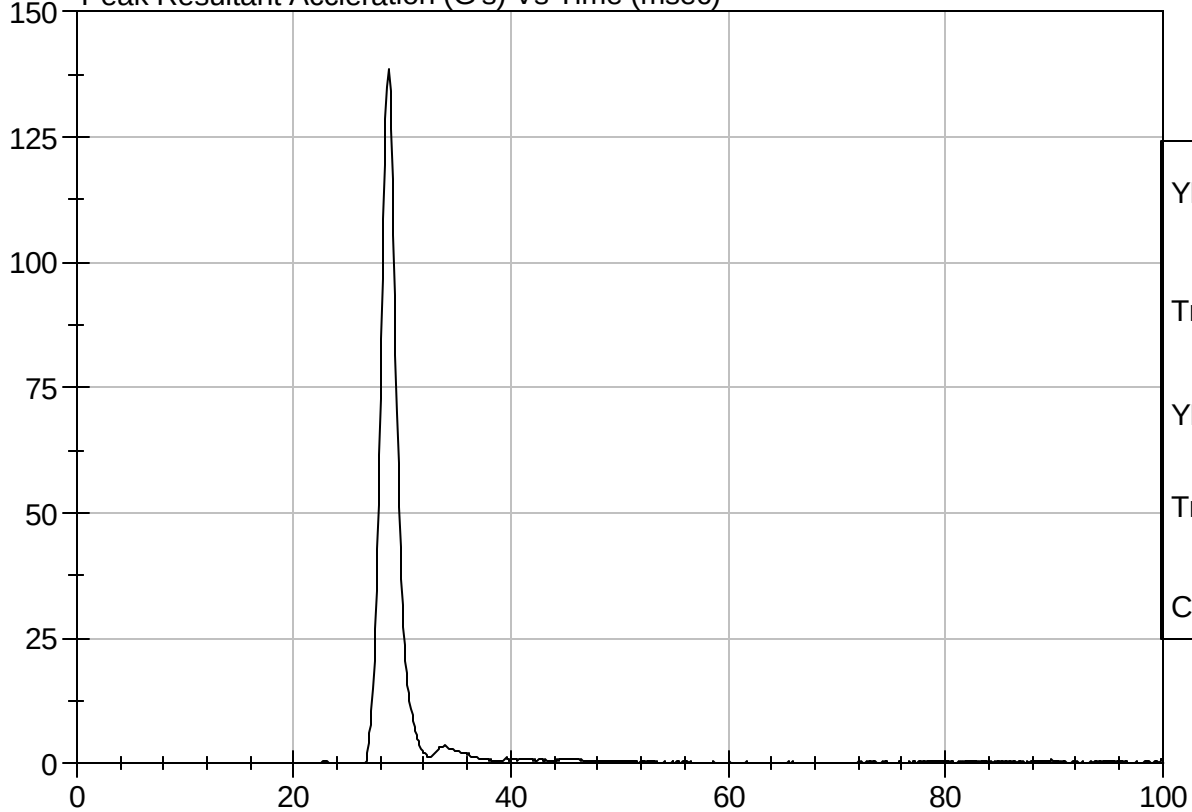
Test Description: Head Drop

Test Date: 01/17/2006

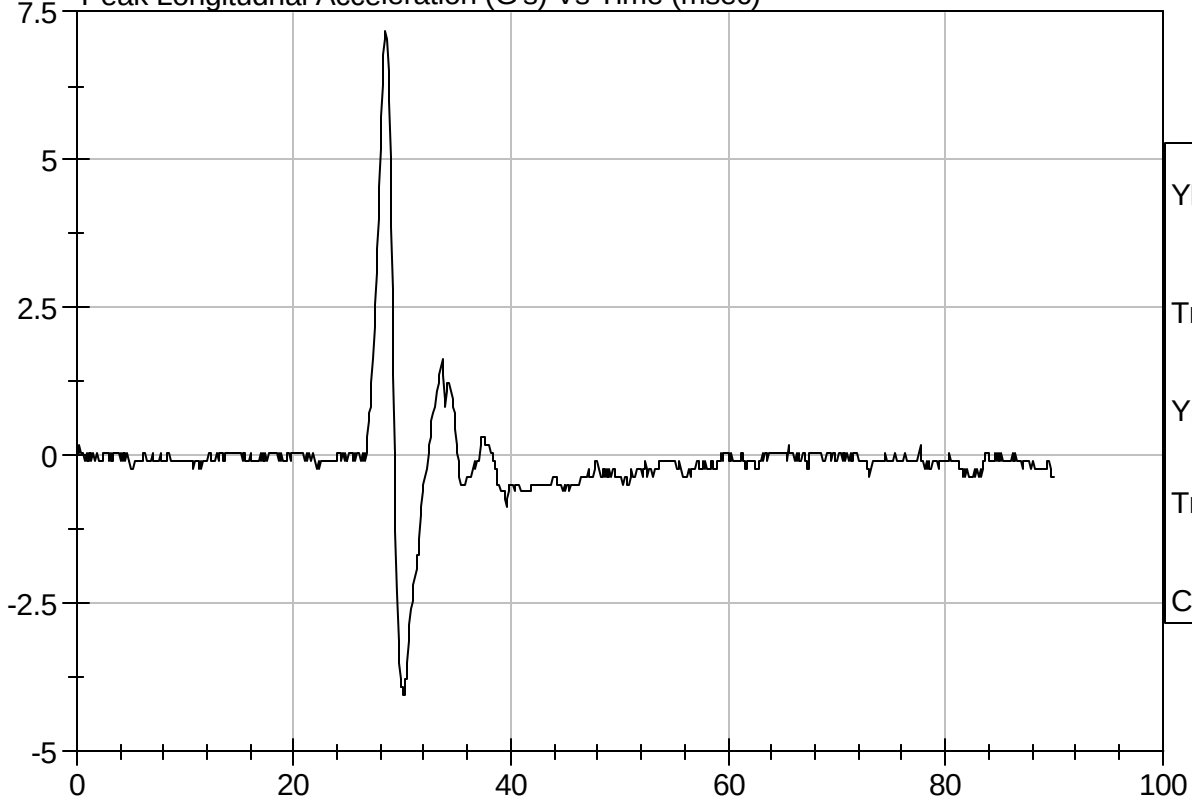
Component: D06151

Speed: 0 ft/s, 0.00 m/s

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



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

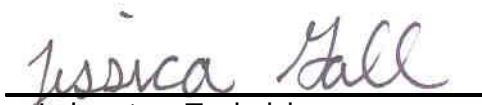


SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 271

Test I.D: D06152

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	42	Pass
Lower Rib	G's	37 - 46	41	Pass
Lower Spine	G's	15 - 22	19	Pass
Overall Test Results				Pass


Laboratory Technician

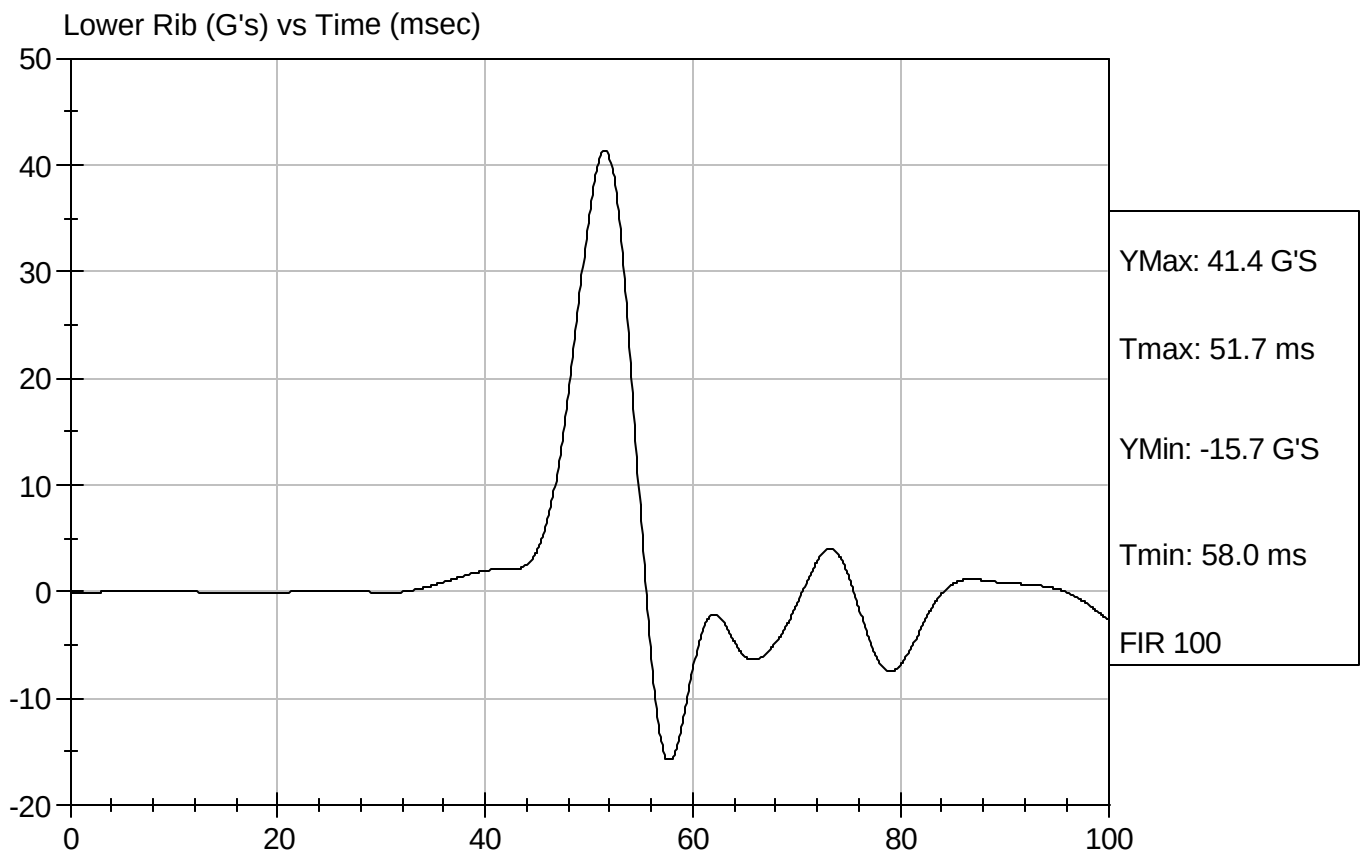
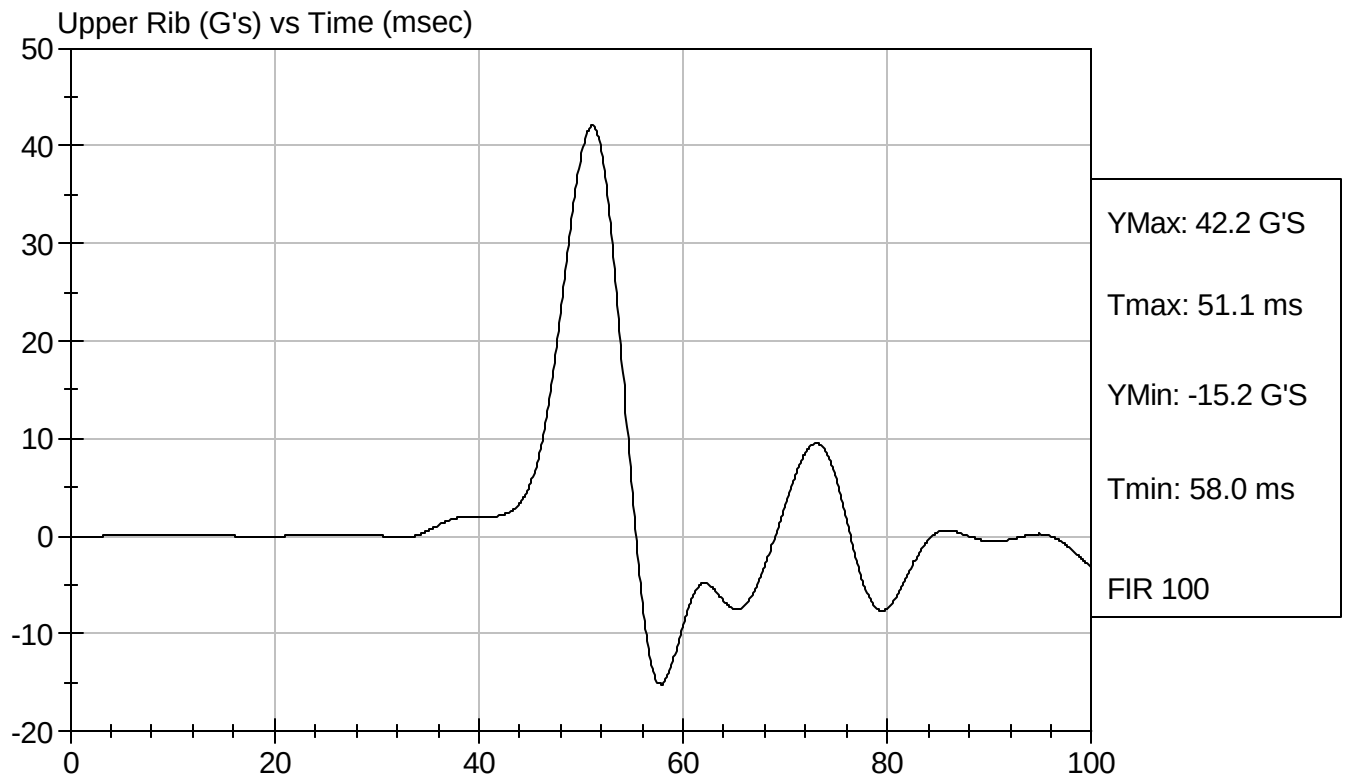

Approved By

01/17/2006
Test Date



Test Desc: Thorax Impact
Component ID: D06152

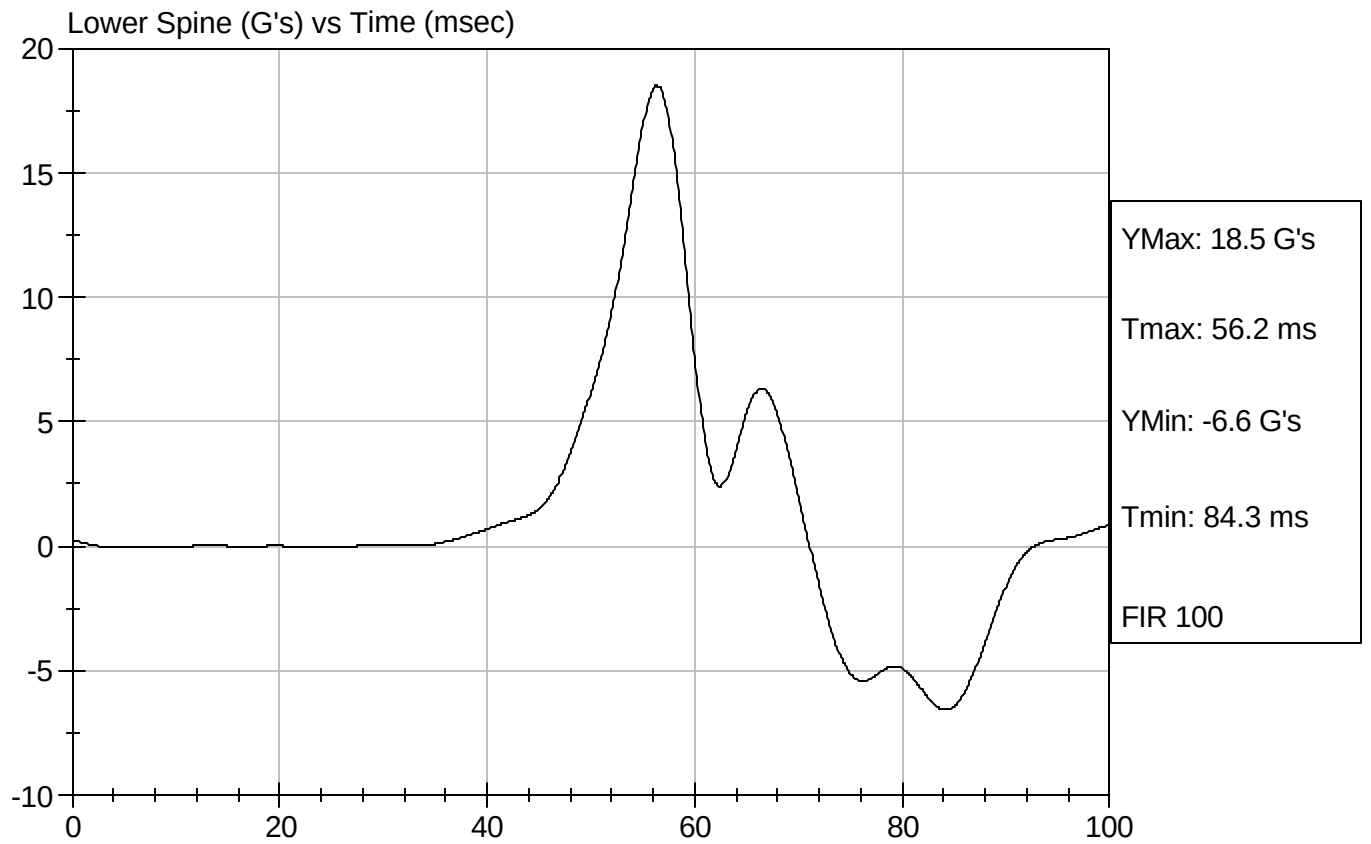
Test Date: 01/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D06152

Test Date: 01/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec

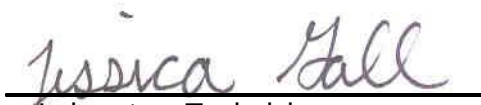


SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 475

Test I.D: D06153

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	41	Pass
			Overall Test Results	Pass


Laboratory Technician

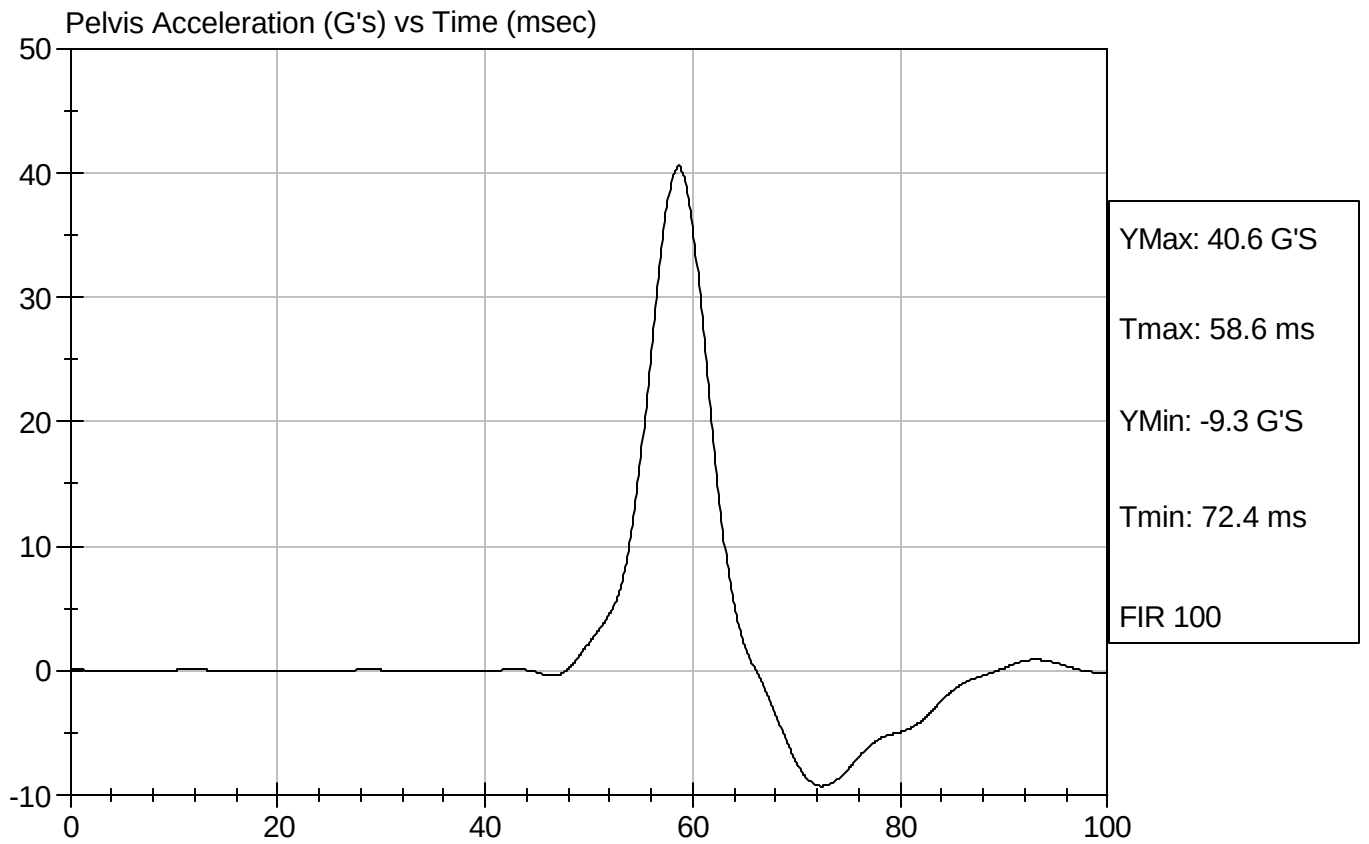

Approved By

01/17/2006
Test Date



Test Desc: Pelvis Impact
Component ID: D06153

Test Date: 01/17/2006
Speed: 14.11 ft/sec, 4.30 m/sec

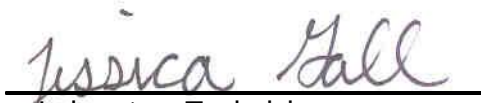


SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 271

Test I.D: D06154

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.4	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Force At 12.7 mm	N	104 -162	143	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	386	Pass
			Overall Test Results	Pass


Laboratory Technician

01/18/2006

Test Date


Approved By

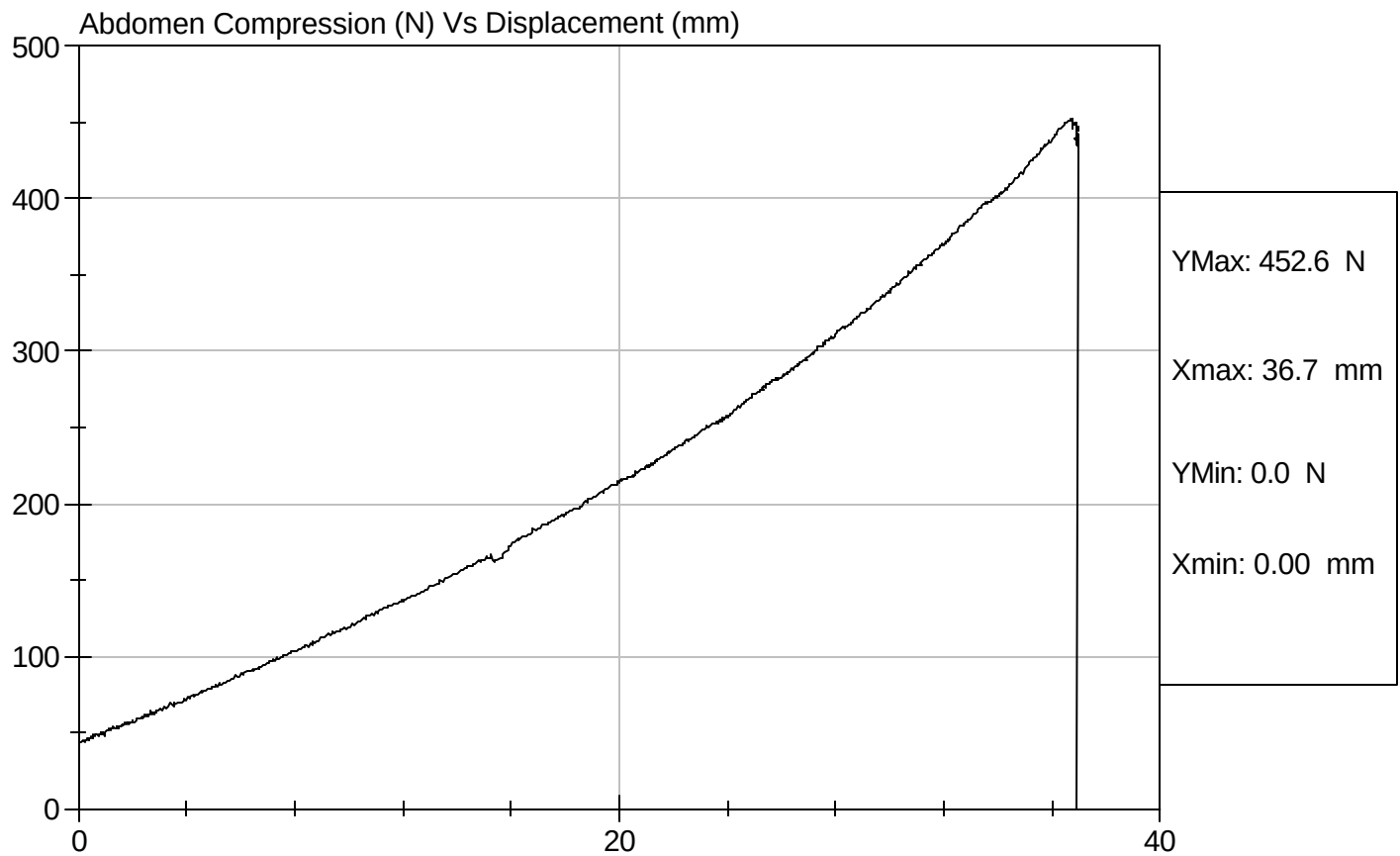


Test Description: Abdomen Compression

Test Date: 01/18/2006

Component: D06154

Speed: 0 ft/sec, 0 m/sec

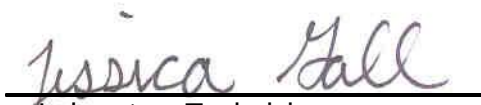


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 271

Test I.D: D06155

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	116.5	Pass
Force At 30 deg	N	151.2 - 204.6	160.7	Pass
Force At 40 deg	N	204.6 - 258.0	204.9	Pass
Return Angle	Deg	12 Maximum	4	Pass
Overall Test Results			Pass	


Laboratory Technician


Approved By

01/17/2006

Test Date

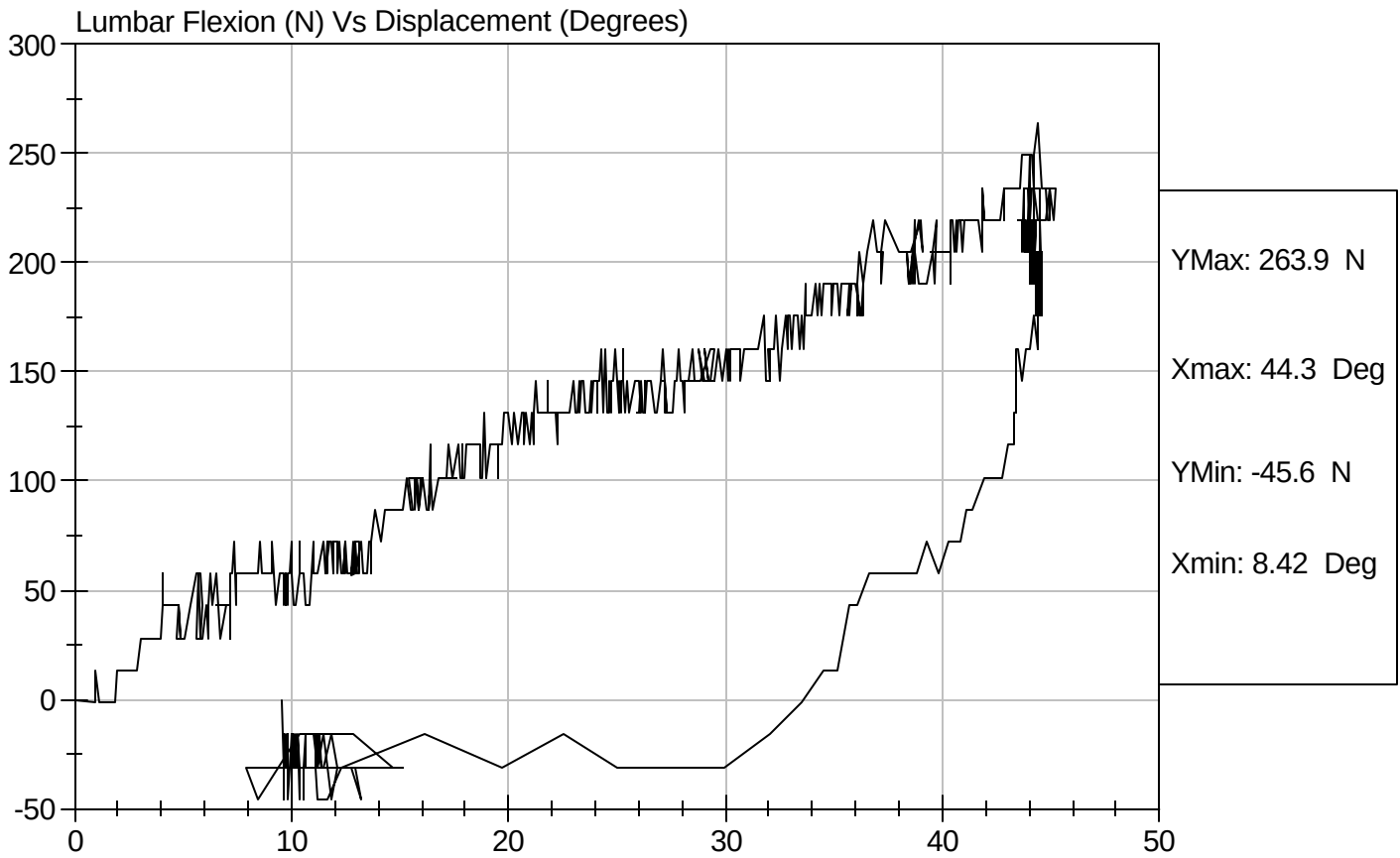


Test Description: Lumbar Flexion

Test Date: 01/17/2006

Component: D06155

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 271

Test I.D: D06159

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	14	Pass
Impact Velocity		m/s	6.89 to 7.13	7.07	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.42	Pass
	20 msec	m/s	4.12 to 5.10	4.79	Pass
	30 msec	m/s	5.73 to 7.01	6.59	Pass
	40 to 70 msec	m/s	6.27 to 7.64	6.97	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	74	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	60	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	76	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	59	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	12	Pass


 Laboratory Technician

01/18/2006

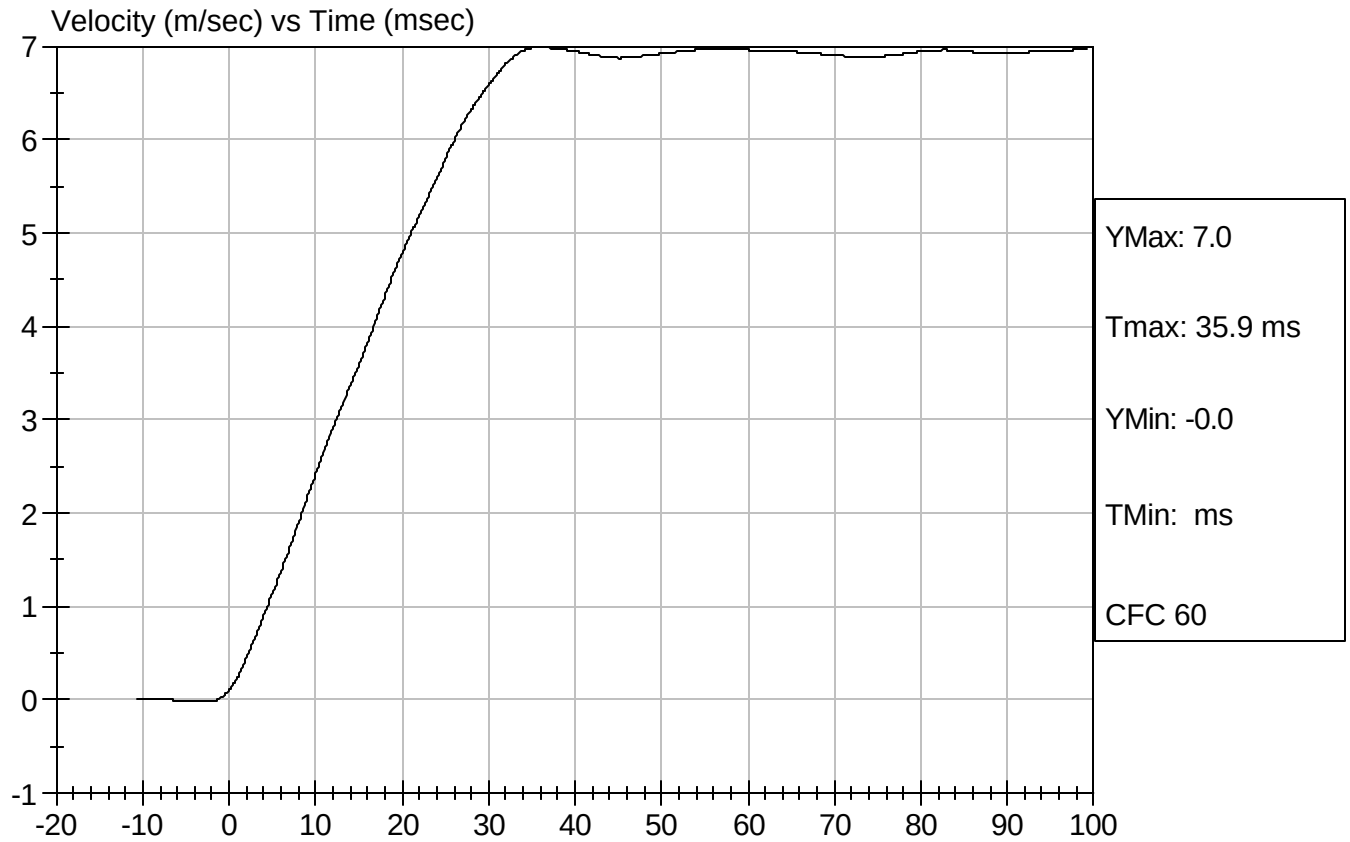
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D06159

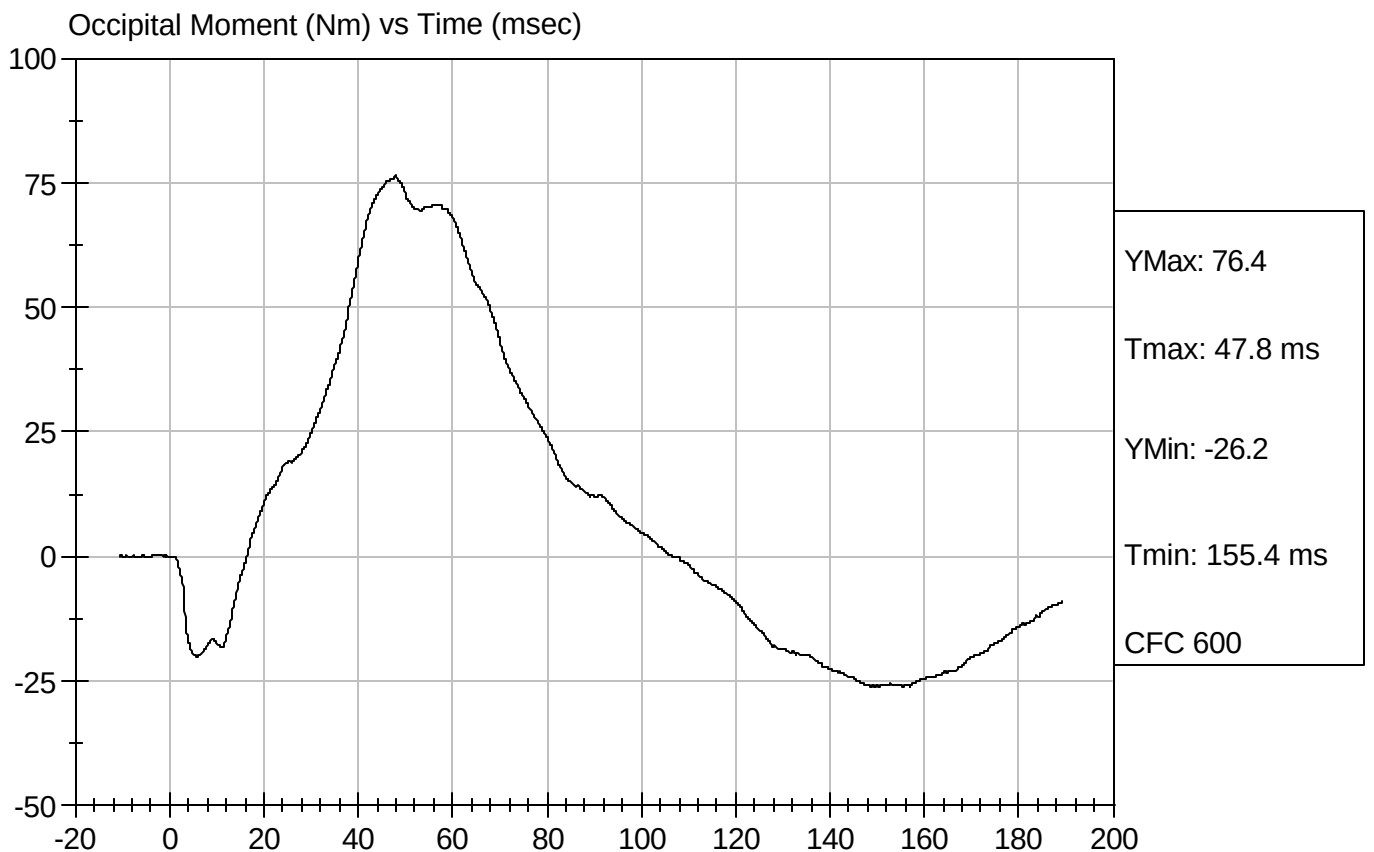
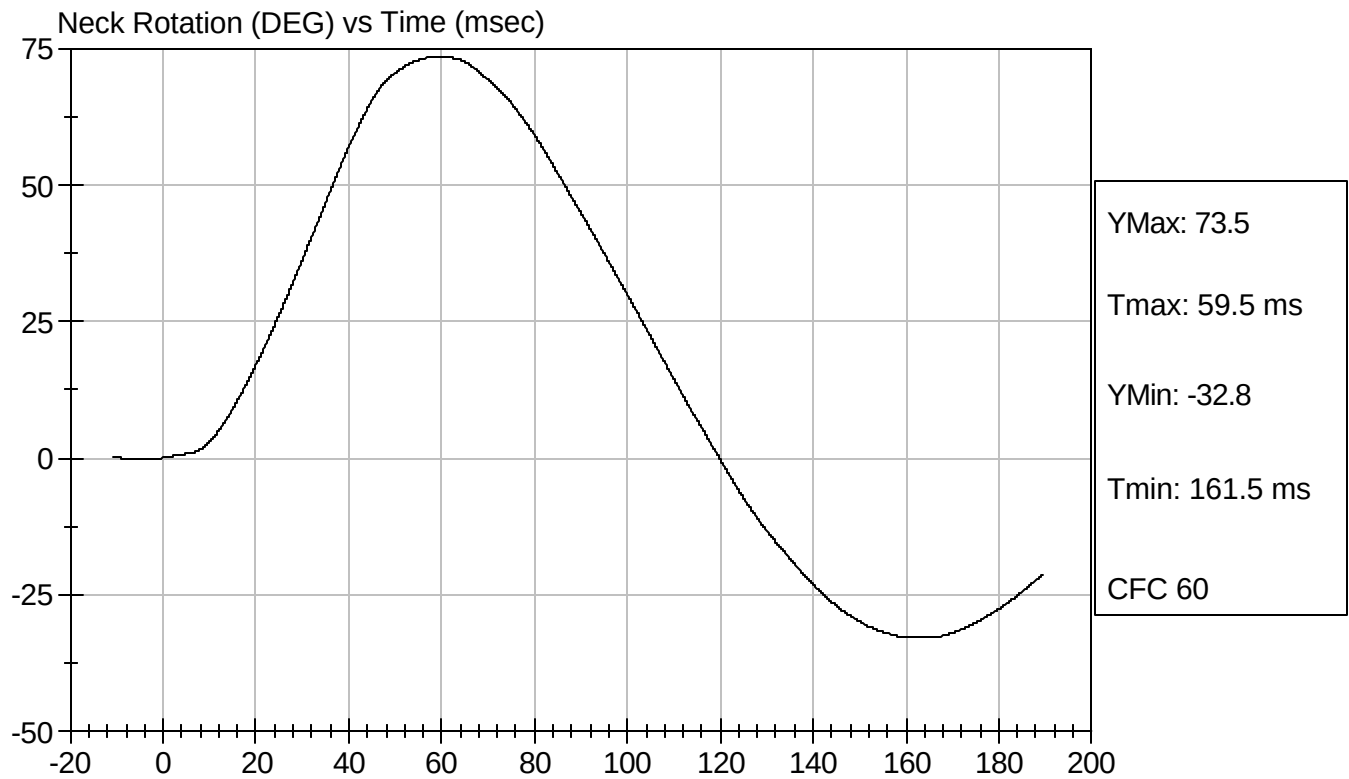
Test Date: 01/18/2006
Speed: 23.21 ft/sec, 7.07 m/sec





Test Desc: Neck Bending
Component ID: D06159

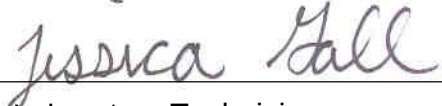
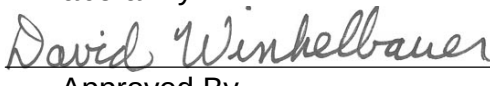
Test Date: 01/18/2006
Speed: 23.21 ft/sec, 7.07 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No: 271

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


Laboratory Technician

Approved By

01/18/2006

Test Date