

REPORT NUMBER: NCAPSIDE-MGA-2006-011

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**TOYOTA MOTOR CORPORATION
2007 TOYOTA FJ CRUISER 4X4
NHTSA NUMBER: M75105**

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



Test Date: May 22, 2006

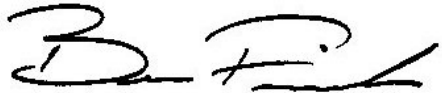
Report Date: June 23, 2006

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: 6/23/06

Technical Report Documentation Page

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16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 2007 Toyota FJ Cruiser 4x4 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 May 22, 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 224 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;">24.9</td> <td style="text-align: center;">25.8</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">31.0</td> <td style="text-align: center;">24.7</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">33.9</td> <td style="text-align: center;">26.5</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">32</td> <td style="text-align: center;">26</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">62.2</td> <td style="text-align: center;">15.1</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">73</td> <td style="text-align: center;">459</td> </tr> </tbody> </table>					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	24.9	25.8	Left Lower Rib (LLR) Accel., g	31.0	24.7	Lower Spine (T ₁₂) Accel., g	33.9	26.5	Thoracic Trauma Index (TTI)	32	26	Pelvis (PEV) Accel., g	62.2	15.1	HIC	73	459
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The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.																								
17. Key Words New Car Assessment Program (NCAP) Side Impact Side Impact Hybrid III Dummy (SID/HIII) Occupant Side Impact Protection		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NPO-230) 400 Seventh Street, S.W. Washington, D.C. 20590																						
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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY' 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 2007 Toyota FJ Cruiser 4x4 manufactured by Toyota 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 2007 Toyota FJ Cruiser 4x4 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 2241.7 kg and the test weight of the MDB was 1360.8 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on May 22, 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 nineteen (19) 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 224 mm at level 2, 1200 mm rearward of the left vertical impact point. The driver and passenger SID/HIIIs, Serial Nos. 272 and 904 respectively, were calibrated just prior to this test.

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

The occupant data is summarized below:

ATD position	HIC	T ¹	T ²	TTI (G's)	Peak Pelvis (G's)
Driver	73	54.0	90.0	32	62.2
Passenger	459	68.2	74.9	26	15.1

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Information	Left Front (Driver)		Left Rear (Passenger)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes	None	
Side Torso Airbag	None		None	
Head Airbag	None		None	
Curtain Airbag	None		None	

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

TEST NOTES

No valid data was collected for the following:

Passenger Neck Moment Y – after 150 msec.

Left Front Sill Y – 18 msec.

Left Rear Sill Y – 18 msec.

The driver door had an 6-8 inch opening at the door/window top.

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

TEST VEHICLE INFORMATION

Make	Toyota
Model	FJ Cruiser
Body Style	SUV
NHTSA No.	M75105
VIN	JTEBU11F570012317
Color	White/Blue
Delivery Date	5/12/06
Odometer Reading (mile)	35
Dealer	Wilde Toyota
Transmission	Manual
Final Drive	4WD
Number of Cylinders	6
Engine Displacement (L)	4.0
Engine Placement	Longitudinal
Automatic Door Locks (ADL)	No
Owner's Manual Details Instructions on Disabling ADLs	N/A

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation
Date of Manufacture	03/06

GVWR (kg)	2525
GAWR Front (kg)	1180
GAWR Rear (kg)	1380

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				540
Cargo Wt. (RCLW) (kg)				200

DATA SHEET NO. 1 (continued)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2007 Toyota FJ Cruiser 4x4NHTSA No. M75105Test Program: NCAP Side ImpactTest Date: 5/22/2006**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	553.4	458.1		597.4	583.3	
Right	kg	493.5	447.3		499.4	561.6	
Ratio	%	53.6	46.4		48.9	51.1	
Totals	kg	1046.9	905.4	1952.3	1096.8	1144.9	2241.7

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1952.3
Weight of 2 P572M ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	136.1
Calculated Vehicle Target Weight (TVTW)	kg	2249.9

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

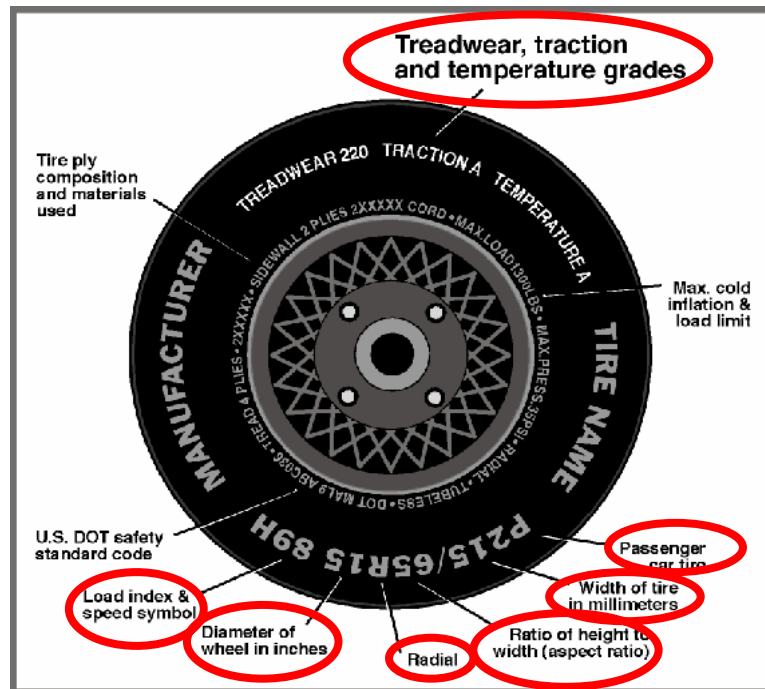
Weight of Ballast in Cargo Area: 34.0 kg**TEST VEHICLE ATTITUDES AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	887	897	926	936	1248
As Tested	mm	897	878	885	903	1374
Fully Loaded	mm	877	898	879	903	

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2690
Target Impact Point Aft of Front Axle	mm	405
Actual Impact Point Aft of Front Axle	mm	390

DATA SHEET NO. 2
TEST VEHICLE TIRE INFORMATION



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold / Test Pressure (kPa)	220	220
Recommended Tire Size	P265/70R17	P265/70R17
Tire Size on Vehicle	P265/70R17	P265/70R17
Tire Manufacturer	Dunlop	Dunlop
Tire Name	AT20 Grand Trek	AT20 Grand Trek
Tire Type	M + S	M + S
Tire Width (mm)	265	265
Ratio of Height to Width (aspect ratio)	70	70
Radial	R	R
Wheel Diameter	17	17
Load Index & Speed Symbol	113S	113S
Treadwear	300	300
Traction Grade	B	B
Temperature Grade	B	B

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

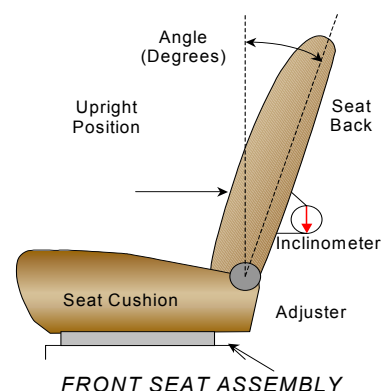
NHTSA No. M75105
 Test Date: 5/22/2006

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: The driver seatback is placed in the 4th detent, forward-most detent defined as zero. The passenger seatback has no adjustable mechanism.

Driver seat back angle: 4th detent, 1st as zero

Passenger seat back angle: non adjustable

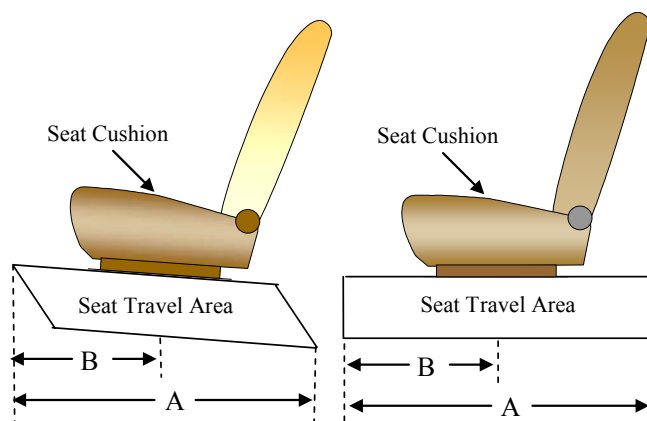


SEAT FORE/AFT POSITIONS

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	17 detents	7 th detent, 1 st as zero
Rear Seat	non adjustable	non adjustable



DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

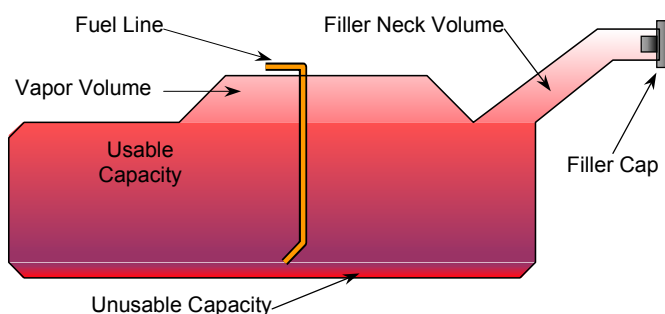
Test Vehicle: 2007 Toyota FJ Cruiser 4x4
Test Program: NCAP Side Impact

NHTSA No. M75105
Test Date: 5/22/2006

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	71.9
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	66.1 – 67.6
Actual Amount of Solvent used	67.6
1/3 of Usable Capacity	24.0

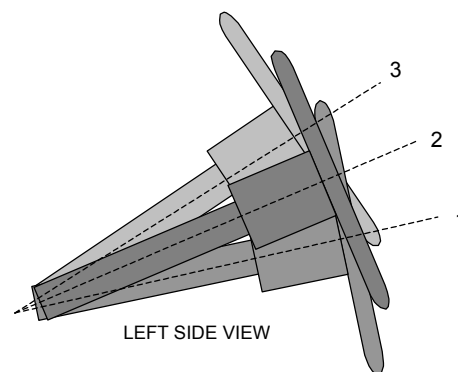
The vehicle is equipped with electric fuel pump.
The fuel pump will pump fuel when the ignition is on.



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

	Fore/Aft (mm)	Degrees
Lowermost position No. 1		20.4
Geometric center position No. 2		26.3
Uppermost position No. 3		35.5

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

MDB SPECIFICATIONS

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

MDB WEIGHTS

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

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.1
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	89.9

POST TEST OBSERVATIONS
MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	15 left
Vertical Offset	mm	+/-20	1 up

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID HIII / 272	SID HIII / 904
Head Contact	Headrest	Side Header, Headrest, RRP Headrest
Upper Torso Contact	Door Panel	Door Panel
Lower Torso Contact	Door Panel	C-Pillar
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	None
Other Notable Effects	The driver door had an 6-8 inch opening at the door/window top.

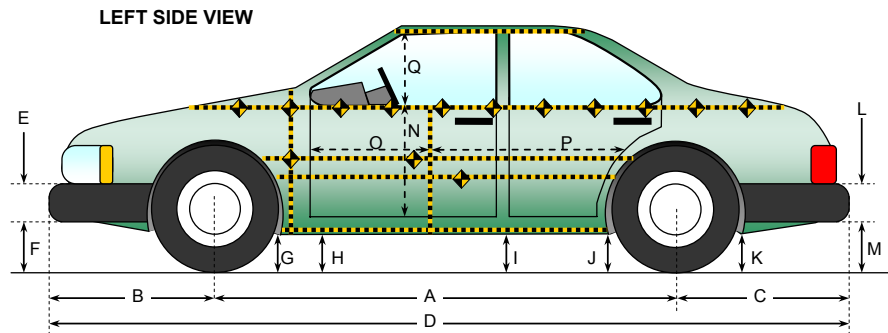
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Occupant Location 01		Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	Yes	None	
Side Torso Airbag	None		None	
Head Airbag	None		None	
Curtain Airbag	None		None	
Seat Belt Pretensioner	Yes		None	
Seat Belt Load Limiter	Yes		None	

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



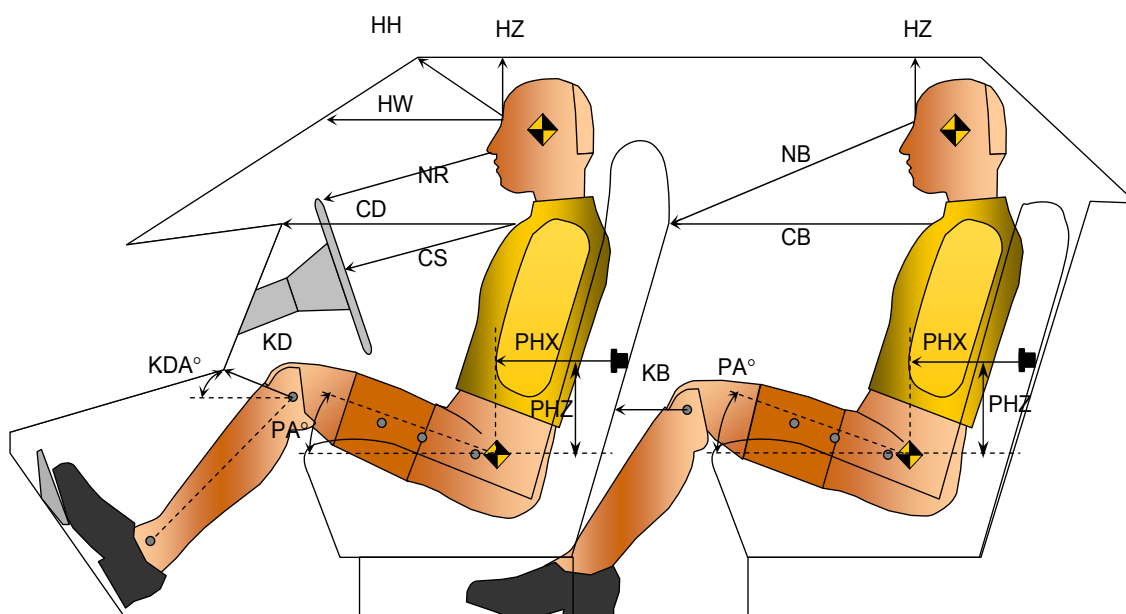
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2690	2687	3
B	Front Axle to FSOV	891	889	2
C	Rear Axle to RSOV	965	990	-25
D	Total Length at Centerline	4546	4566	-20
E	Front Bumper Thickness	276	276	0
F	Front Bumper Bottom to Ground	502	542	-40
G	Sill Height at Front Wheel Well	417	452	-35
H	Sill Height at Front Door Leading Edge	415	427	-12
I	Sill Height at "B" Pillar	417	411	6
J1	Sill Height at Rear Wheel Well	417	400	17
J2	Pinch Weld Height at Rear Wheel Well	412	395	17
K	Sill Height Aft of Rear Wheel Well	447	376	71
L	Rear Bumper Thickness	176	176	0
M	Rear Bumper Bottom to Ground	391	305	86
N	Sill Height to Window Bottom Sill	776	740	36
O	Front Door Leading Edge to Impact CL	682	676	6
P	Rear Door Trailing Edge to Impact CL	961	934	27
Q	Front Window Opening	425	425	0
R	Right Side Length	3580	3580	0
S	Left Side Length	3581	3535	46
T	Vehicle Width at "B" Post	1856	1736	120

DATA SHEET NO. 7
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

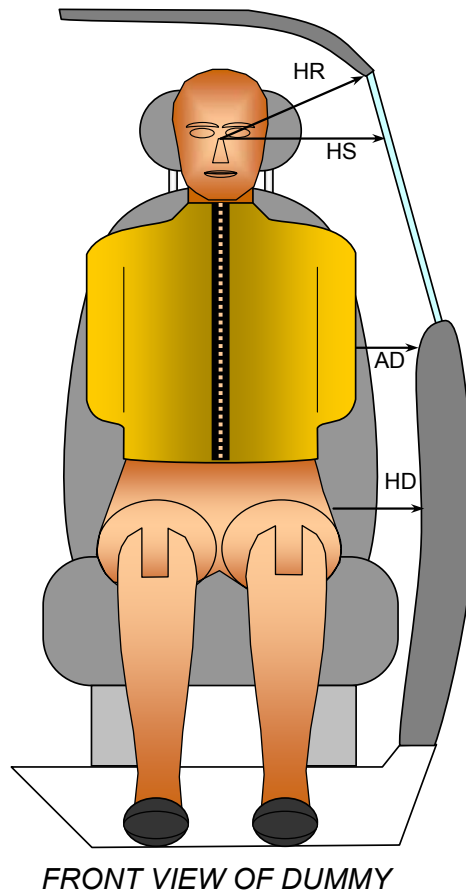


Driver Code	Pass. Code	Measurement Description	Driver S/N 272		Passenger S/N 904	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	870			
HW		Head to Windshield	849			
HZ	HZ	Head to Roof	238		201	
NR	NB	Nose to Rim/Nose to Seatback	436		572	
CD	CB	Chest to Dash or Seatback	497		499	
CS		Chest to Steering Wheel	317			
KDL	KBL	Left Knee to Dash or Seatback	135	44.9	157	44.5
KDR	KBR	Right Knee to Dash or Seatback	132	39.1	147	50.0
PA	PA	Pelvic Angle		24.6		23.8
PHX	PHX	H-Point to Striker (X-Axis)	305		554	
PHZ	PHZ	H-Point to Striker (Z-Axis)	203		309	

DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

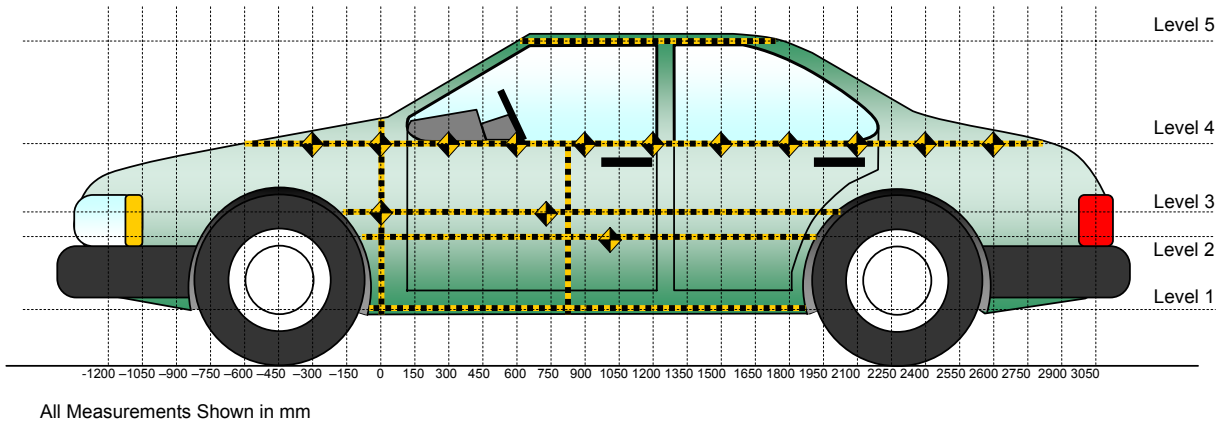


Code	Measurement Description	Units	Driver S/N 272	Passenger S/N 904
HR	Head to Side Header	mm	241	202
HS	Head to Side Window	mm	364	229
AD	Arm to Door	mm	132	117
HD	H-Point to Door	mm	140	132

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



LEFT SIDE VIEW

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

Level	Measurement Description	Maximum Exterior Static Crush	Distance From Impact	Height Above Ground
5	Window	16	1950	1693
4	Window Sill	80	1350	1225
3	Mid Door	188	1200	877
2	Occupant H-Point	224	1200	757
1	Sill Top	180	1200	456
	Maximum Penetration	224		

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900				366					354					-12	
-750				330					330					0	
-600				313					316					3	
-450				305					308					3	
-300				298					303					5	
-150				291					298					7	
0			201	282				267	299				66	17	
150	251	206	199	246		408	326	268	262		157	120	69	16	
300	246	200	193	243	403	403	379	320	218	414	157	179	127	-25	11
450	245	195	187		386	405	379	319		400	160	184	132		14
600	241	191	181	233	385	408	376	311	232	396	167	185	130	-1	11
750	240	187	178	230	383	411	369	316	244	394	171	182	138	14	11
900	239	184	174	228	381	414	386	334	257	392	175	202	160	29	11
1050	241	184	173	228	380	419	388	356	271	391	178	204	183	43	11
1200	241	184	172	224	378	421	408	360	282	389	180	224	188	58	11
1350	245	186	174	226	378	423	401	362	306	389	178	215	188	80	11
1500	246	190	178	218	378	426	404	338	290	390	180	214	160	72	12
1650	251	195	182	224	379	399	350	330	281	391	148	155	148	57	12
1800		203	187	222	381		310	281	270	392		107	94	48	11
1950				225	386				277	402				52	16
2100				232	391				269	402				37	11
2250				239	398				260	402				21	4
2400				249	411				258	415				9	4
2550				258	424				266	428				8	4
2700				271	441				276	445				5	4

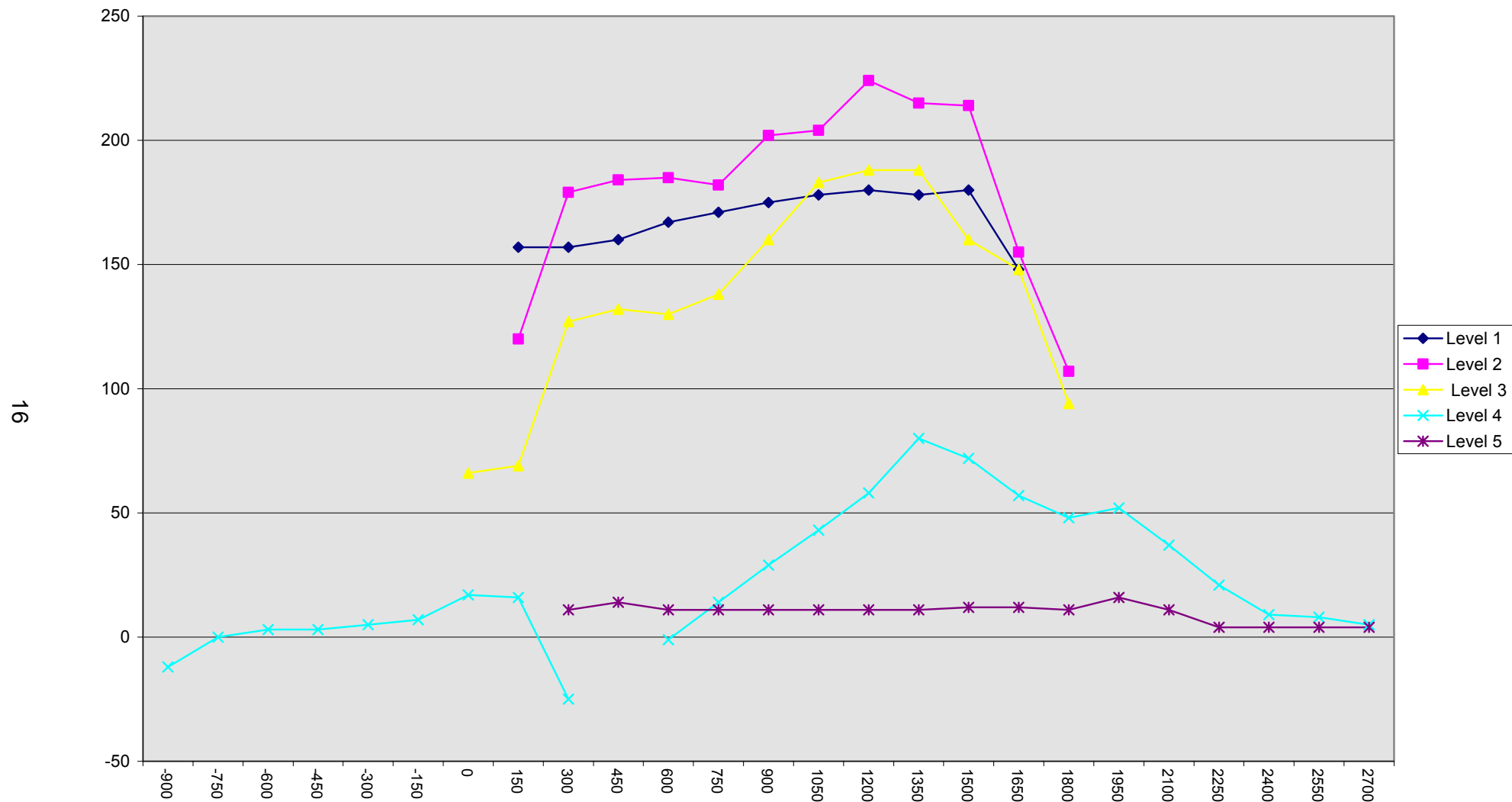
Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

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

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
Test Program: NCAP Side Impact

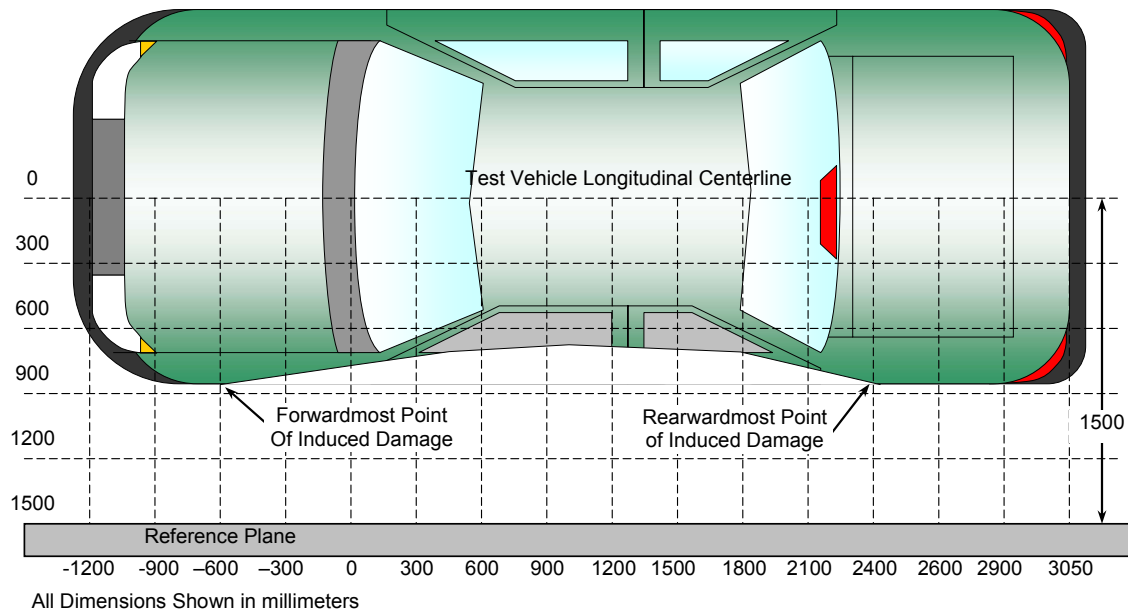
NHTSA No. M75105
Test Date: 5/22/2006



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	2700	4	271	276	5
2	2014	4	229	274	45
3	1300	2	185	407	222
4	602	2	191	376	185
5	-67	4	287	305	18
6	-750	4	330	330	0

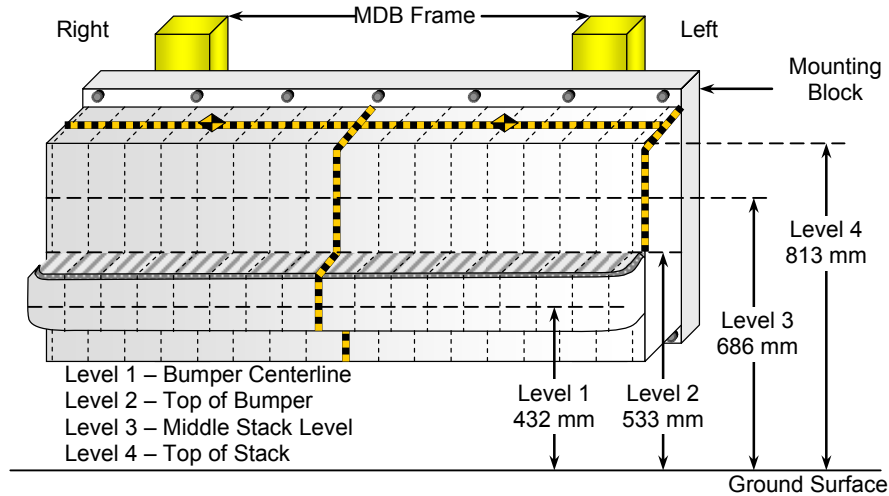
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



DEFORMABLE BARRIER STATIC CRUSH

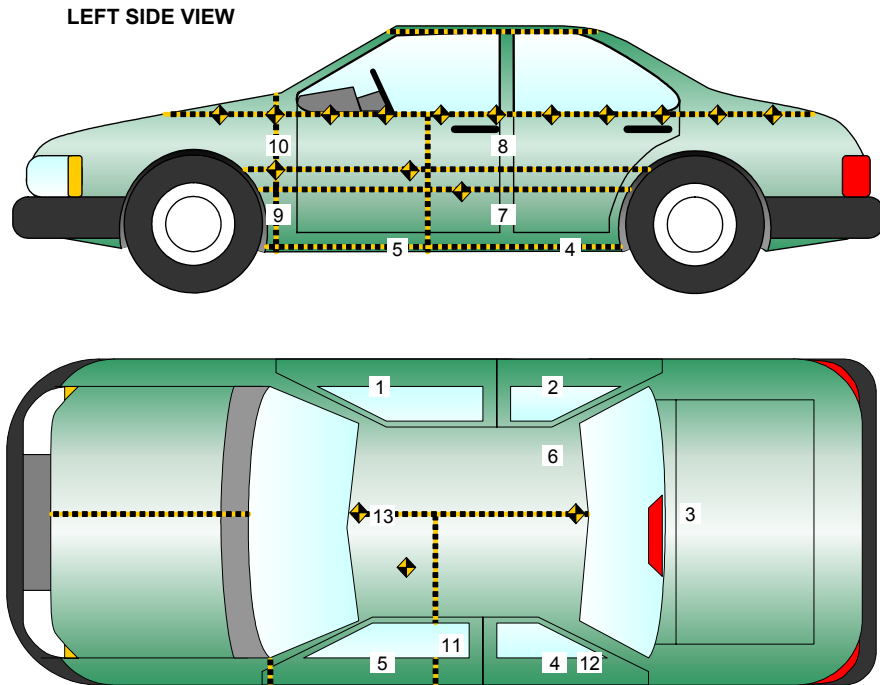
Stack Level	Distance Right of Center								C _L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	239	247	228	202	197	191	193	195	195	201	202	207	209	208	215	212	230
2	208	241	206	190	189	215	208	210	210	215	225	223	231	241	240	242	240
3	261	264	233	187	178	210	189	168	153	158	162	166	166	177	185	196	237
4	311	287	257	201	212	217	176	170	165	166	166	161	172	177	186	206	262

All Dimensions in mm

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



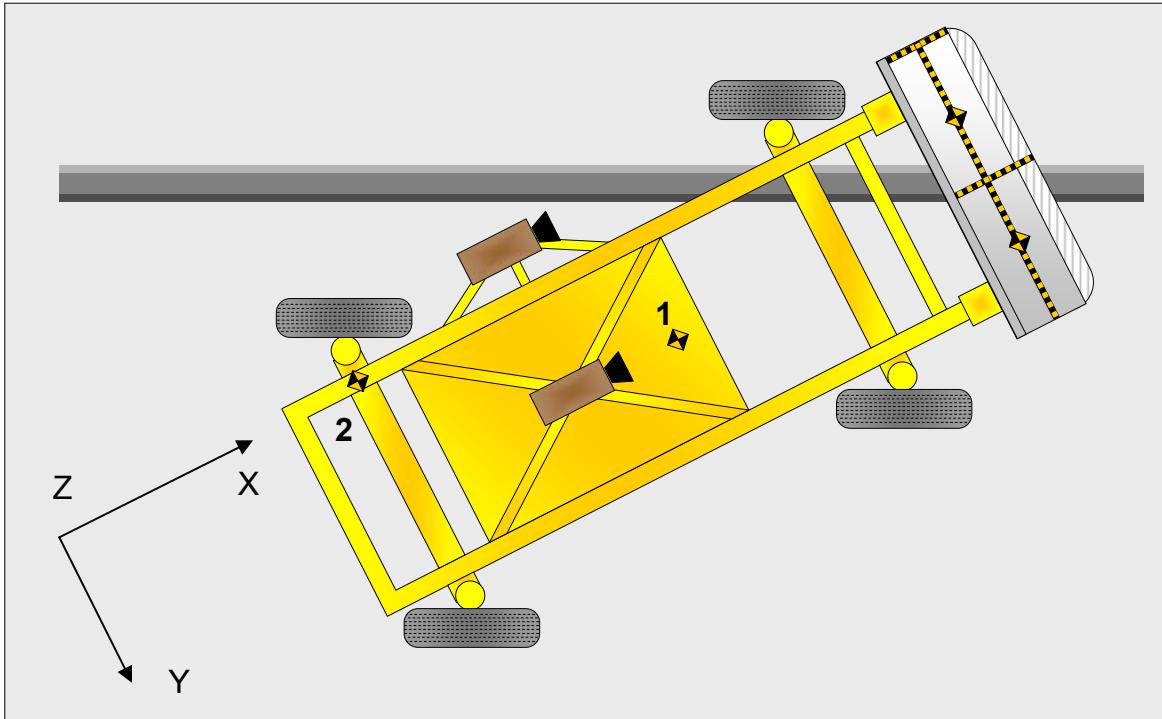
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2563	760	446
2	Right Sill at Rear Seat	1482	760	454
3	Rear Floorpan Above Axle	1030	0	745
4	Left Sill at Rear Door	1475	-760	435
5	Left Sill at Front Door	2562	-760	430
6	Rear Occupant Compartment	1733	350	640
7	Left Lower B-Post	2023	-640	532
8	Left Middle B-Post			
9	Left Lower A-Post	3019	-778	790
10	Left Middle A-Post	3007	-834	1035
11	Front Seat Track	1393	-570	620
12	Rear Seat Track or Structure			
13	Vehicle CG	2312	0	628

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

DATA SHEET NO. 14
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



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

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

DATA SHEET NO. 15
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
Test Program: NCAP Side Impact

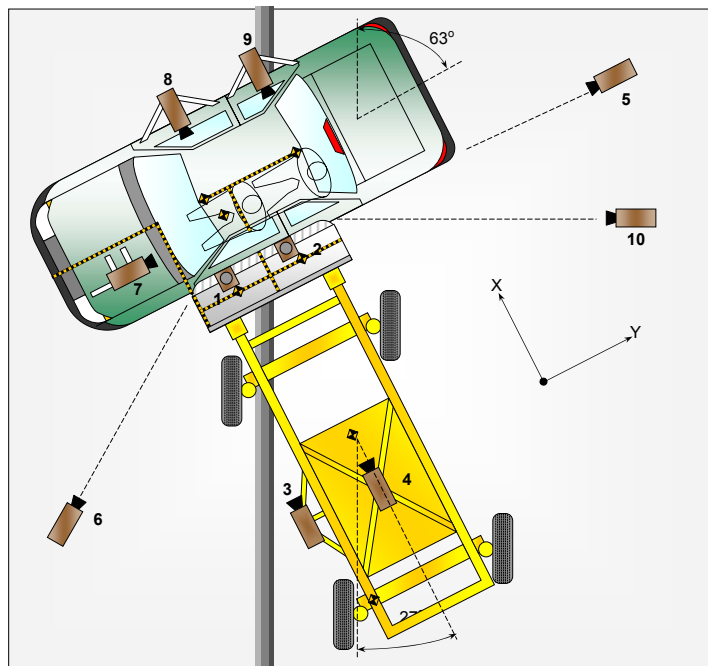
NHTSA No. M75105
Test Date: 5/22/2006

	Elements	Pre-Test (mm)
1	Total Length	4546
2	Total Width	1856
3	Bumper Top Height	797
4	Bumper Bottom Height	485
5	Longitudinal Member Top Height	579
6	Distance between Longitudinal Members	871
7	Longitudinal Member Width	55
8	Engine Top Height	1165
9	Engine Bottom Height	422
10	Engine and gearbox width	630
11	Front bumper-engine distance	645
12	Front shock absorber fixing height	859
13	Bonnet leading edge height	1063
14	Front shock absorber fixing width	1034
15	Front bumper – front axle distance	653
16	Front axle – a pillar distance	644
17	A-pillar – B-pillar distance	1025
18	B-Pillar – rear axle distance	1045
19	B-pillar – C-pillar distance	603
20	Roof sill bottom height	1685
21	Roof sill top height	1756
22	Floor sill bottom height	442
23	Floor sill top height	533

DATA SHEET NO. 16
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Close-up	755	-65	4840	50	1000
2	Overhead Overall	-700	1045	4840	14	1000
3	MDB Onboard, Impact Point Close-up				50	1000
4	MDB Onboard, Centerline of Impact				25	1000
5	Right Side, Ground Level, Overall	-2300	5930	1445	24	1000
6	Left Side, Ground Level, Overall	1875	-4090	1480	24	1000
7	Vehicle Onboard Front SID/HIII, Front				16	1000
8	Vehicle Onboard Front SID/HIII, Side				8	1000
9	Vehicle Onboard Rear SID/HIII, Side				10	1000
10	Real Time Coverage				13	24

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

DATA SHEET NO. 17
SUMMARY OF FMVSS 301 DATA

Test Vehicle: 2007 Toyota FJ Cruiser 4x4
 Test Program: NCAP Side Impact

NHTSA No. M75105
 Test Date: 5/22/2006

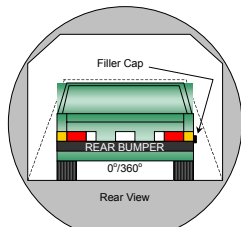
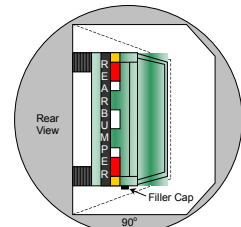
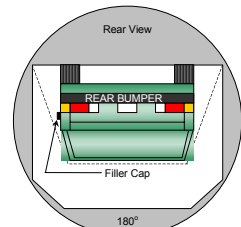
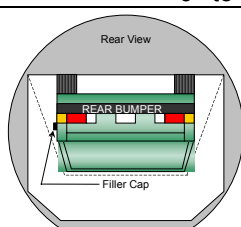
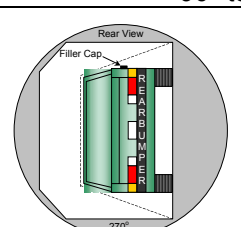
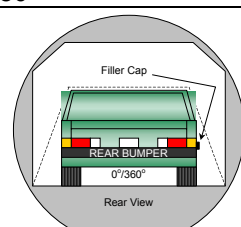
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 11:38 am

Stoddard Solvent Spillage Measurements

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

FMVSS 301 STATIC ROLLOVER DATA

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

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage Collection Time (min)	Spillage (oz.)
0° to 90°	118	300	First 5	0
90° to 180°	116	300	First 5	0
180° to 270°	112	300	First 5	0
270° to 360°	115	300	First 5	0

APPENDIX A
PHOTOGRAPHS

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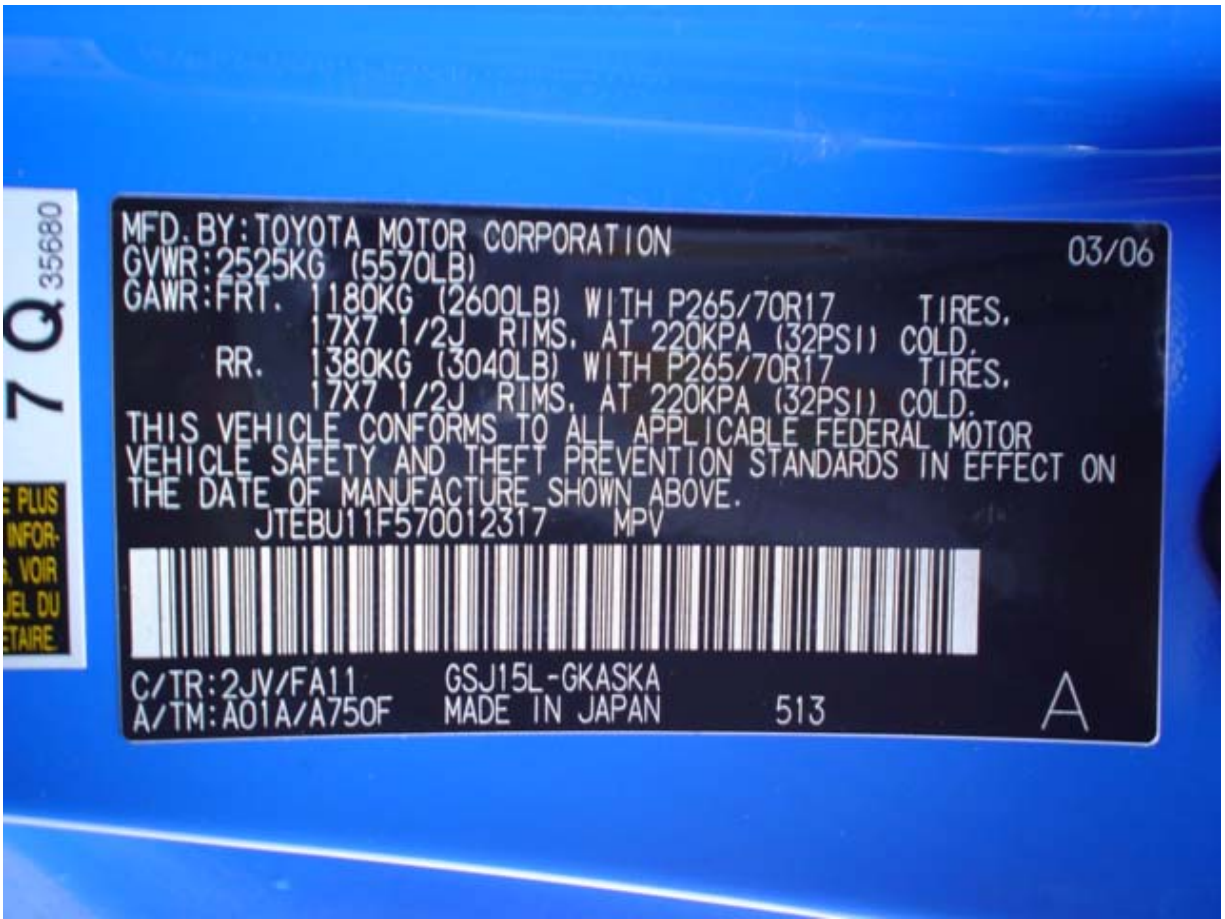
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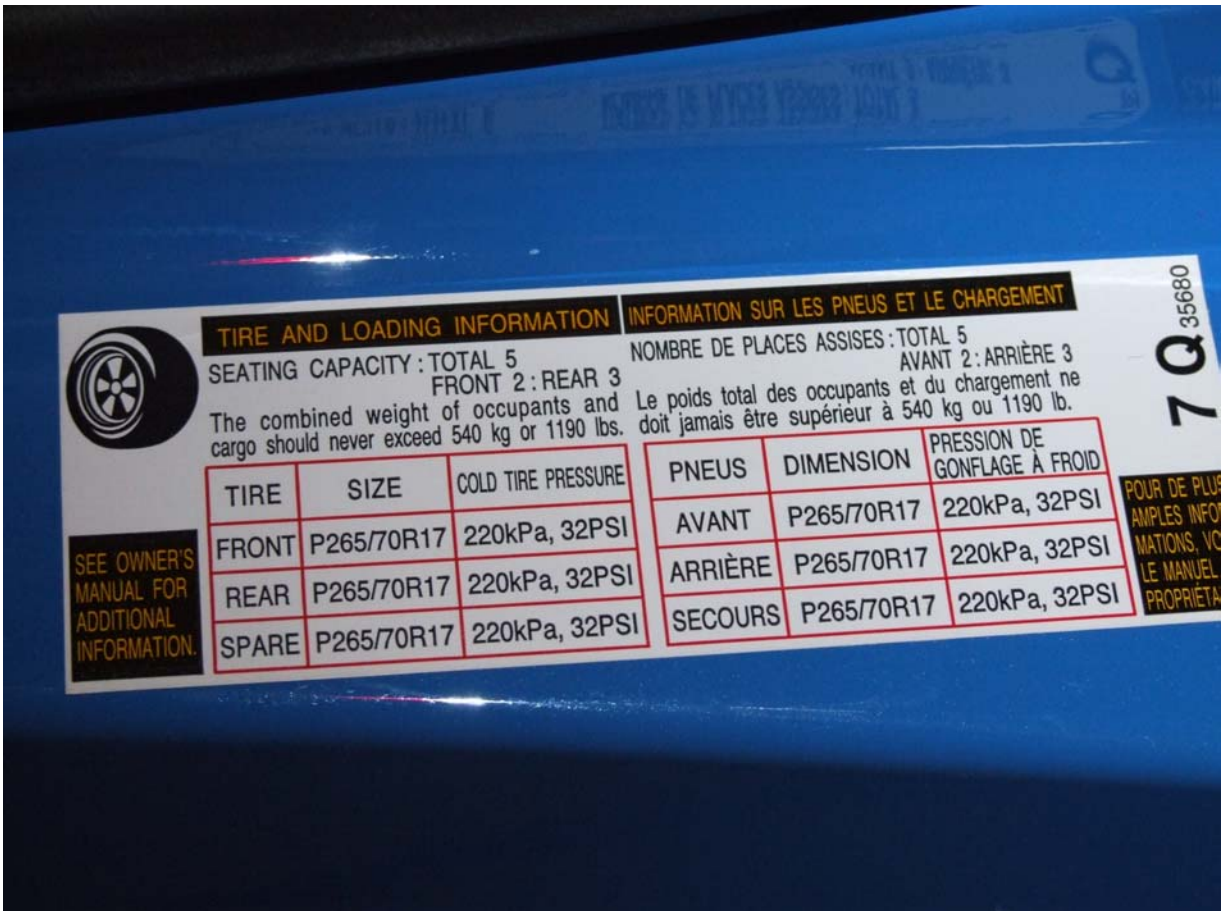
Left Front $\frac{3}{4}$ View, As Received



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



Manufacturer's Label



Tire Placard



Pre-Test Front View



Post-Test Front View



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



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



Pre-Test Left Side View



Post-Test Left Side View



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



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



Pre-Test Rear View



Post-Test Rear View



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



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



Pre-Test Right Side View



Post-Test Right Side View



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



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



Pre-Test Overhead View



Post-Test Overhead View



Pre-Test Overhead Close-up View



Post-Test Overhead Close-up View



Pre-Test Left Impact Point



Post-Test Left Impact Point



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



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



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



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



Pre-Test Left Side Impact Close-up



Post-Test Left Side Impact Close-up



Pre-Test Driver Dummy (Door Open)



Pre-Test Driver Dummy (Through Window)



Post-Test Driver Dummy (Through Window)



Pre-Test Driver Dummy Clearance From Door



Post-Test Driver Dummy Clearance From Door



Pre-Test Driver Dummy Right Side View



Post-Test Driver Dummy Right Side View



Pre-Test Passenger Dummy (Door Open)



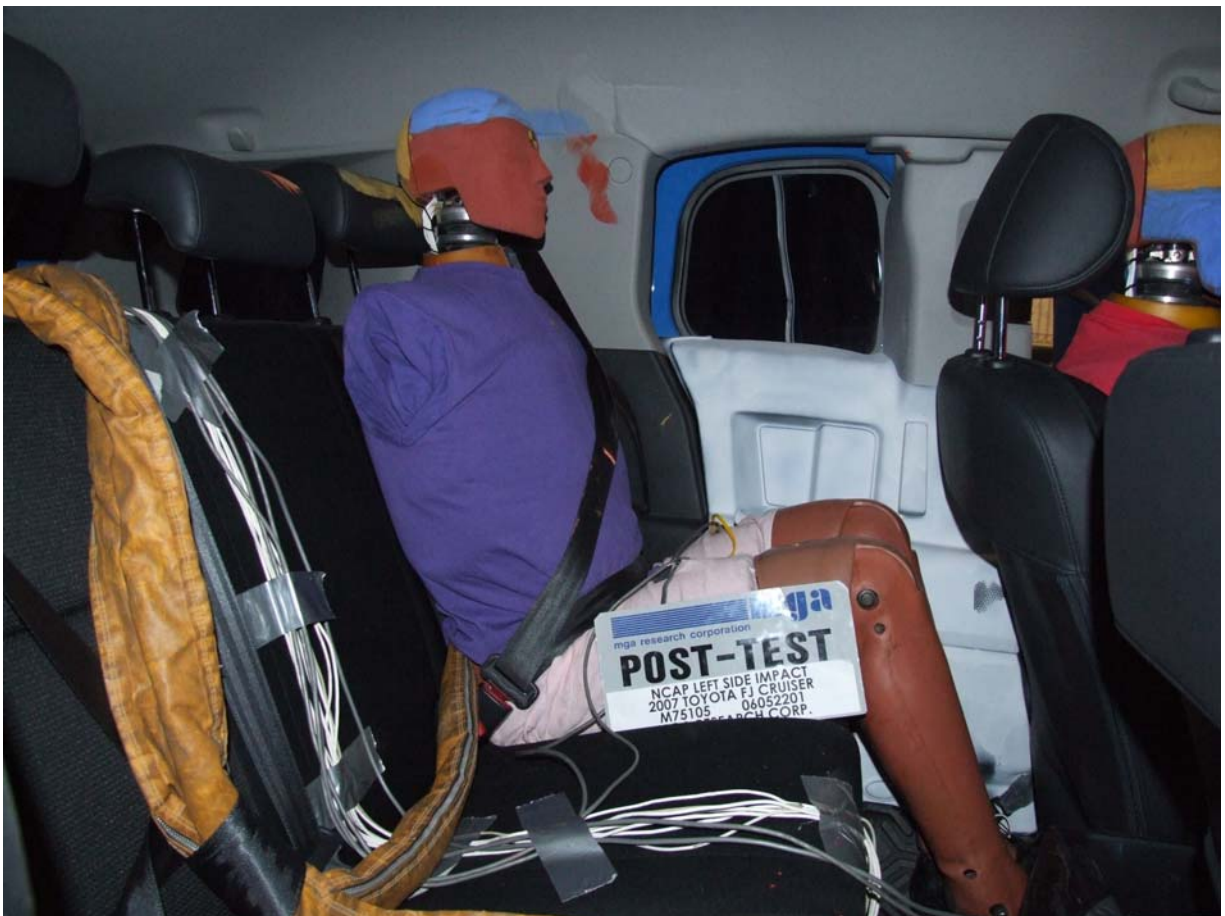
Pre-Test Passenger Dummy Clearance From Door



Post-Test Passenger Dummy Clearance From Door



Pre-Test Passenger Dummy Right Side View



Post-Test Passenger Dummy Right Side View



Post-Test Front View of Deformable Barrier



Pre-Test Top View of Deformable Barrier



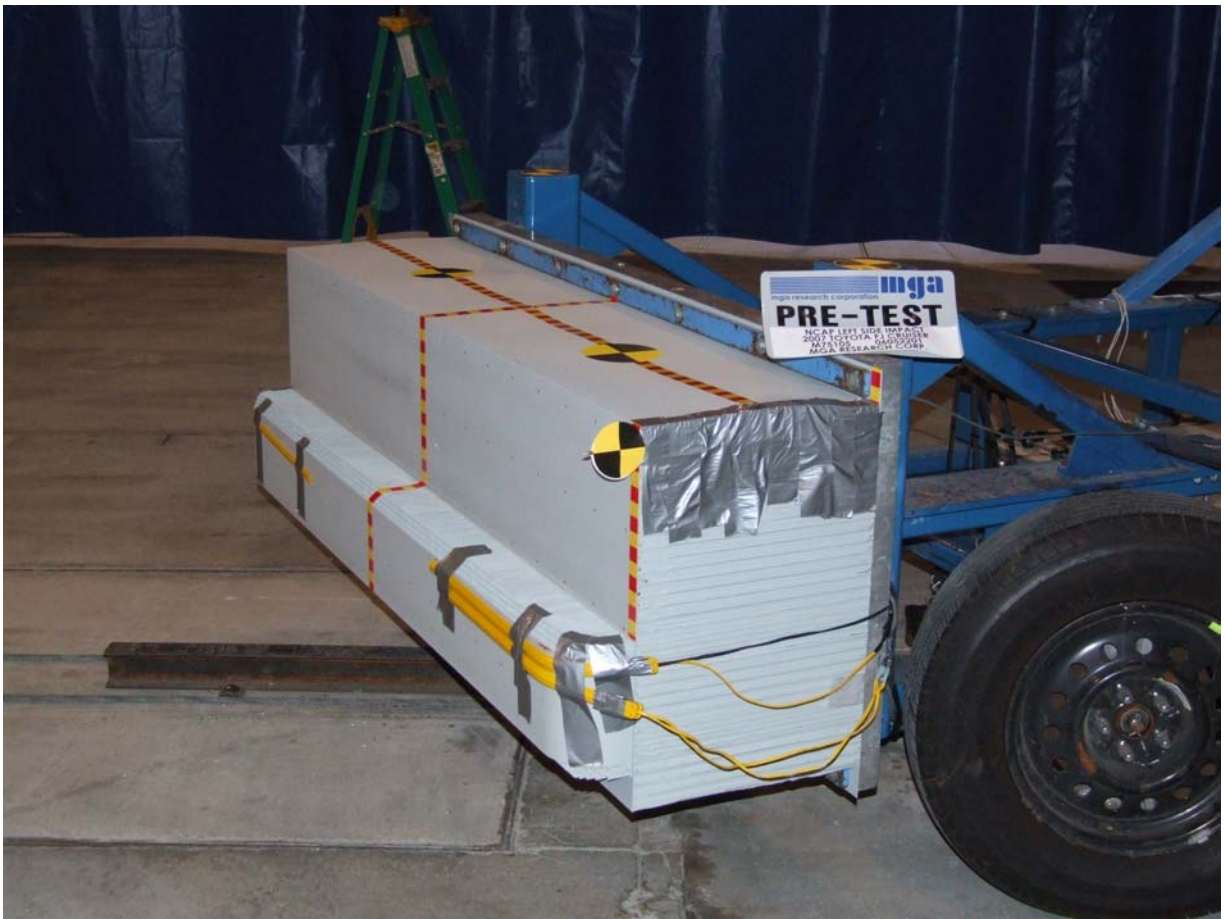
Post-Test Top View of Deformable Barrier



Pre-Test Right Side View of Deformable Barrier



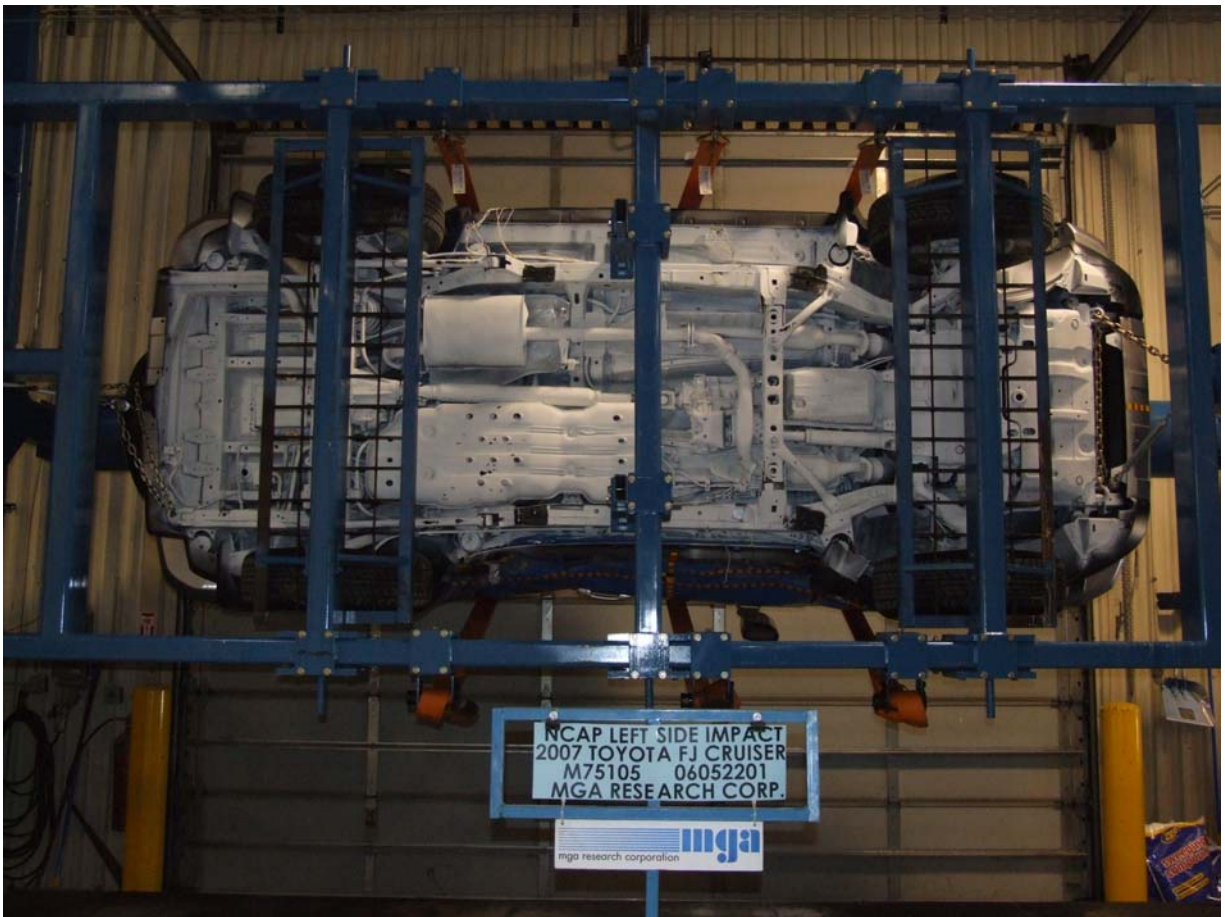
Post-Test Right Side View of Deformable Barrier



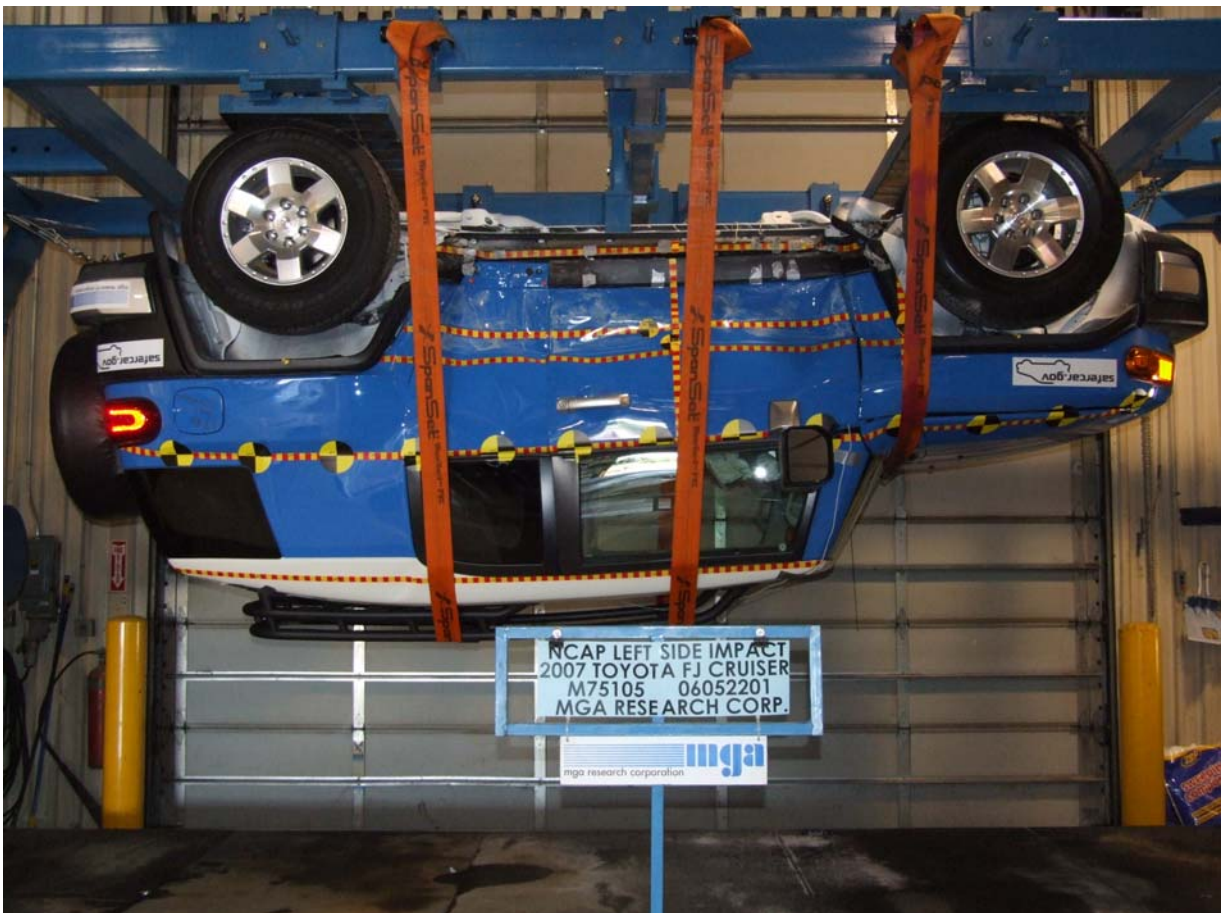
Pre-Test Left Side View of Deformable Barrier



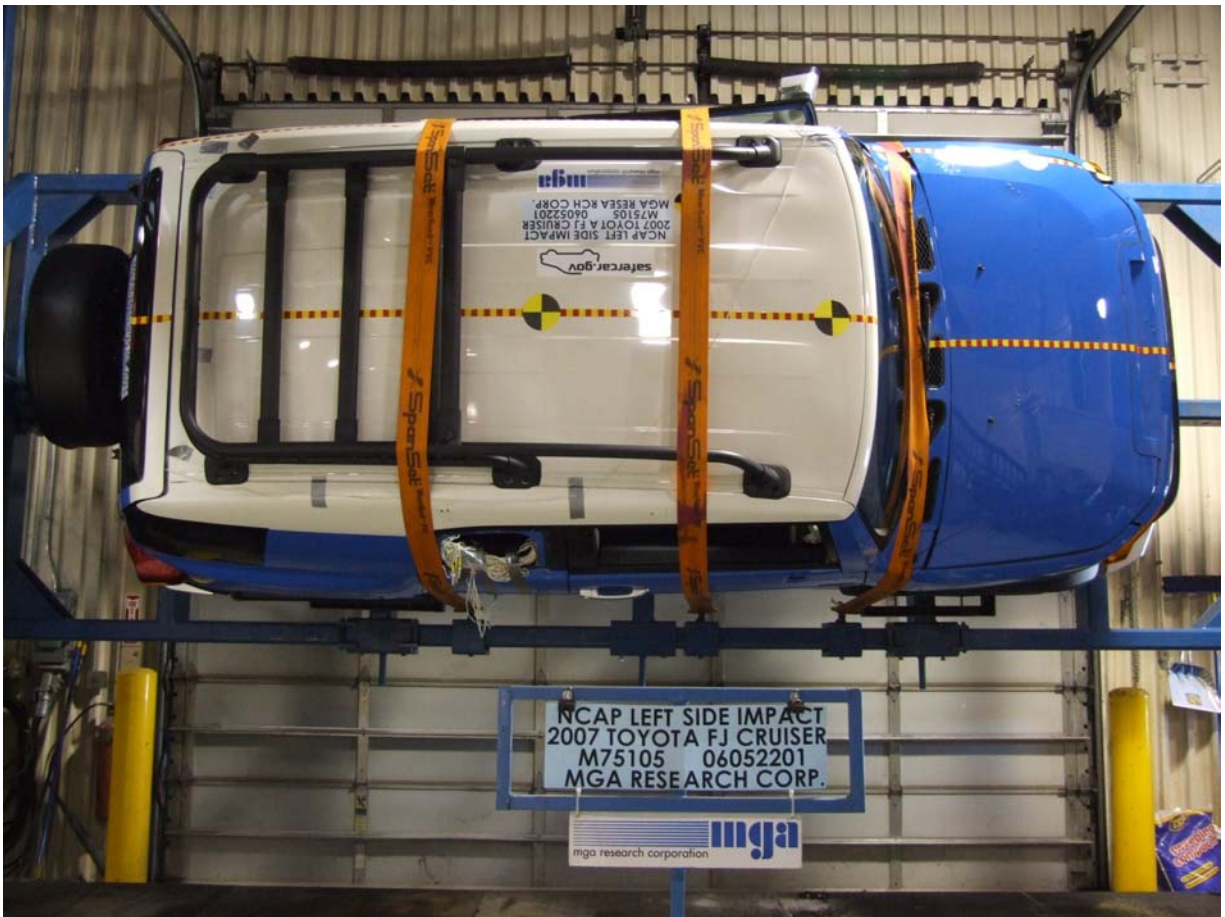
Post-Test Left Side View of Deformable Barrier



Vehicle on Rollover Device (90 Degrees)



Vehicle on Rollover Device (180 Degrees)



Vehicle on Rollover Device (270 Degrees)



Vehicle on Rollover Device (360 Degrees)



100,00 ms • 22 May 2006 11:52 • T0: 21 • 1,000 fps • Frame: 121

Vehicle Impact



Post-Test Driver Dummy Head Contact



Post-Test Driver Dummy Torso Contact



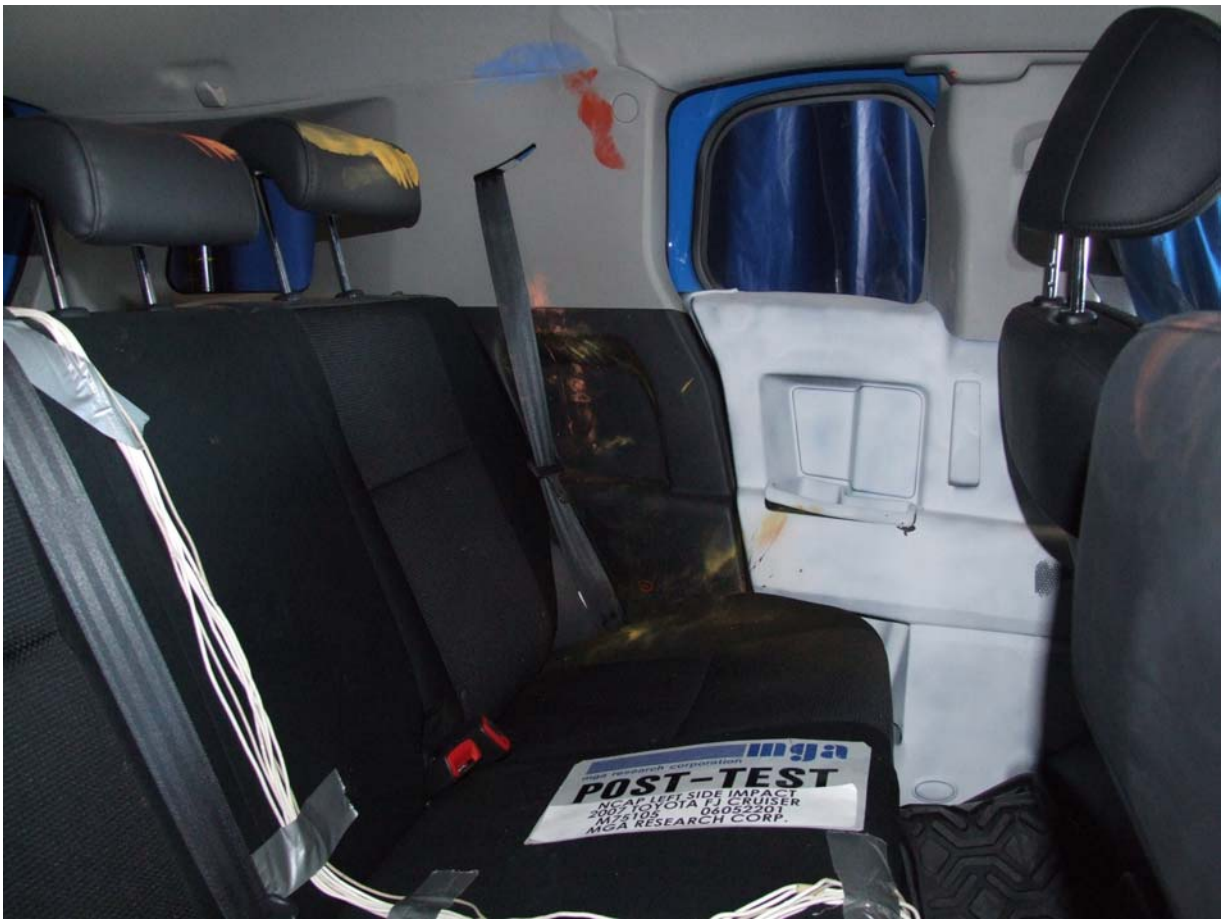
Post-Test Driver Dummy Contact



Post-Test Passenger Dummy Head Contact



Post-Test Passenger Dummy Torso Contact



Post-Test Passenger Dummy Contact

APPENDIX B
SID/HIII RESPONSE DATA TRACES

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

Driver Head X Primary

Driver Head Y Primary

Driver Head Z Primary

Driver Head X Redundant

Driver Head Y Redundant

Driver Head Z Redundant

Driver Upper Neck Force X

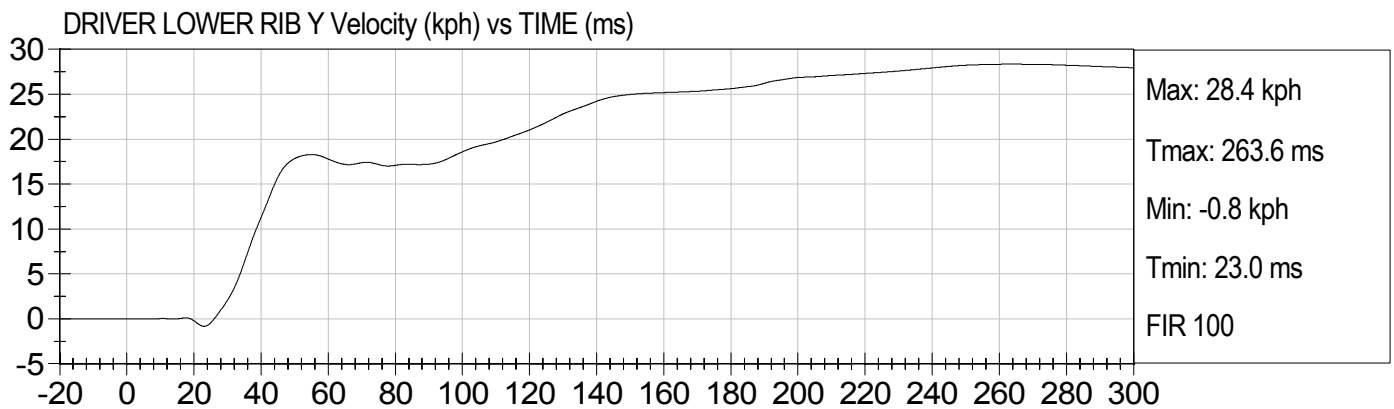
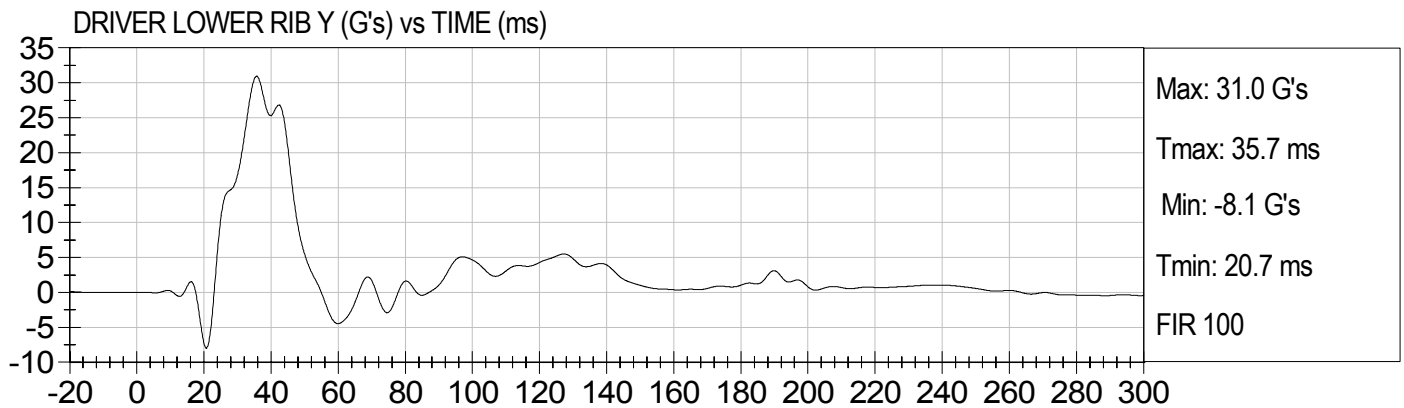
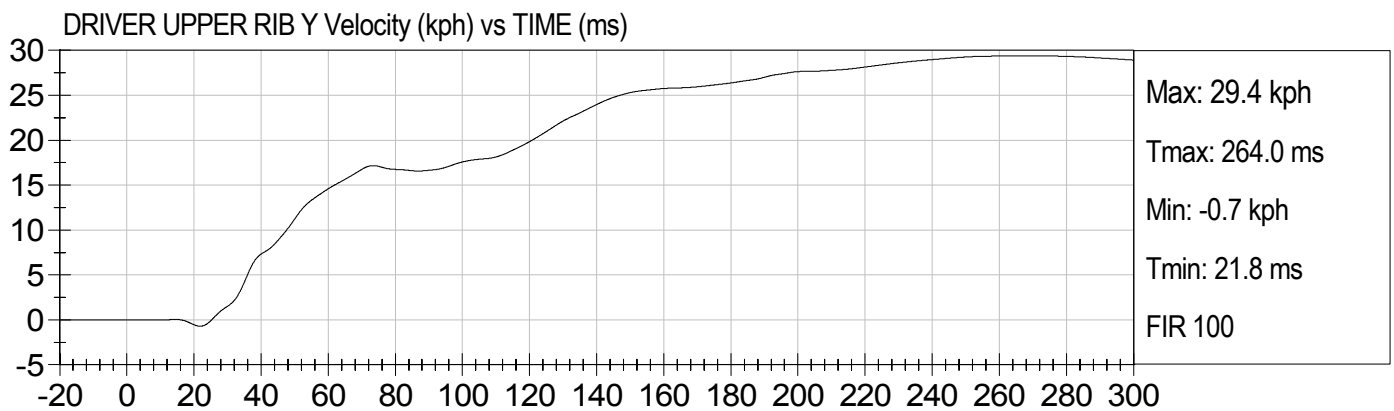
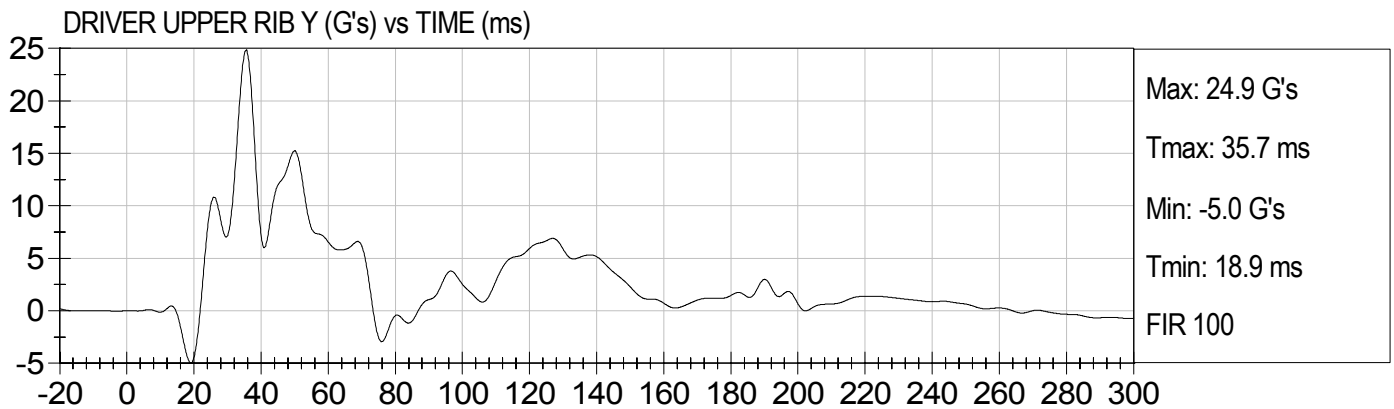
Driver Upper Neck Force Y

Driver Upper Neck Force Z

Driver Upper Neck Moment X

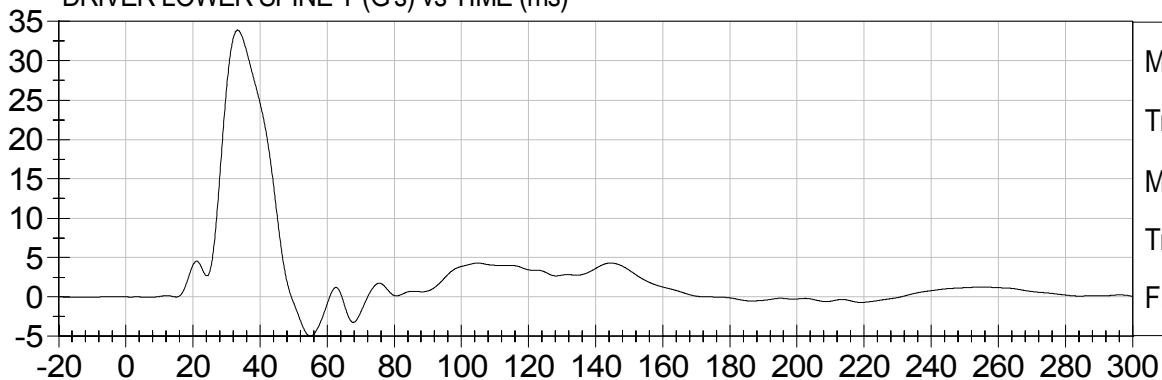
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
Passenger Thorax Contact
Passenger Pelvis Contact
Vehicle Right Sill at Front Seat X
Vehicle Right Sill at Front Seat Y
Vehicle Right Sill at Front Seat Z
Vehicle Right Sill at Rear Seat X
Vehicle Right Sill at Rear Seat Y
Vehicle Right Sill at Rear Seat Z

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



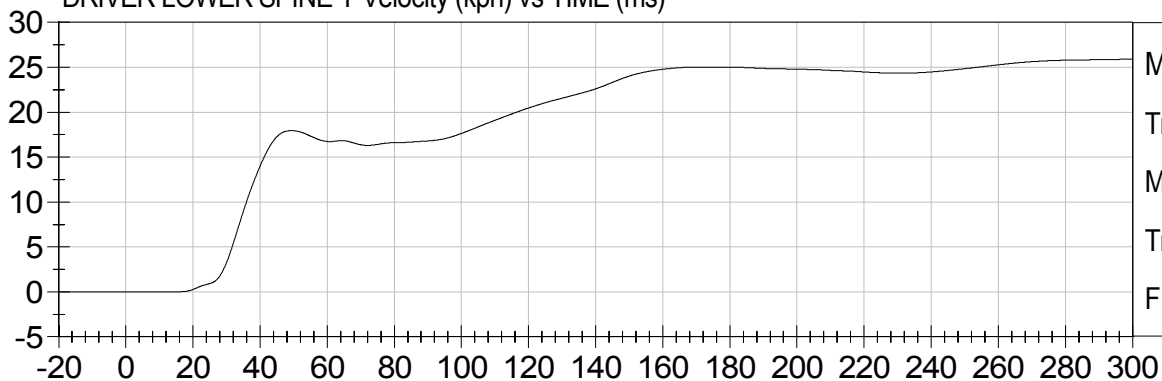


DRIVER LOWER SPINE Y (G's) vs TIME (ms)



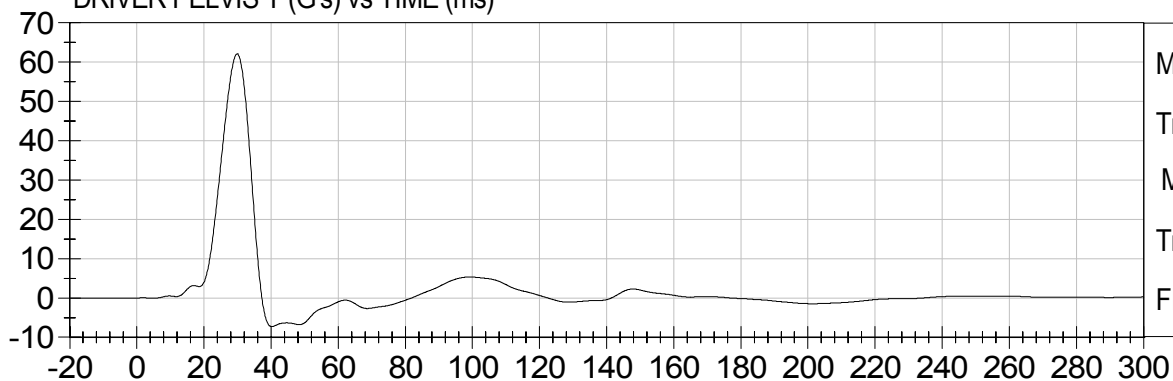
Max: 33.9 G's
Tmax: 33.2 ms
Min: -5.0 G's
Tmin: 55.1 ms
FIR 100

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



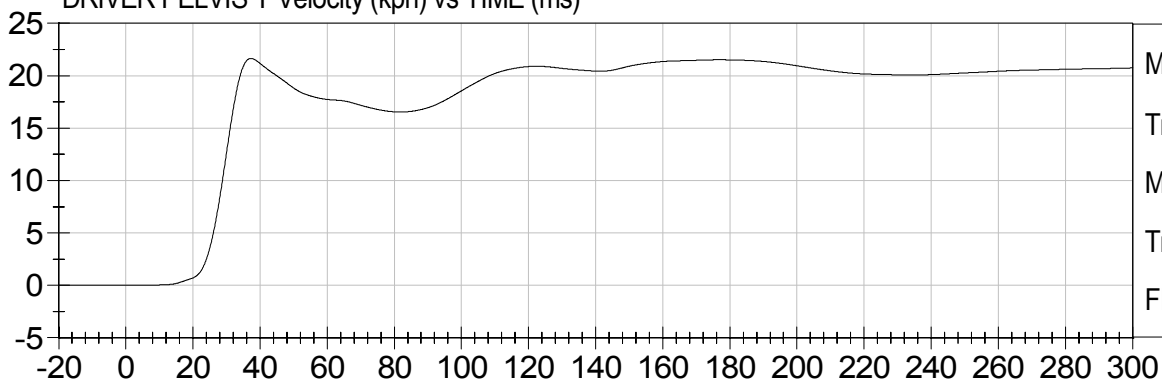
Max: 25.9 kph
Tmax: 300.0 ms
Min: -0.0 kph
Tmin: 8.9 ms
FIR 100

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

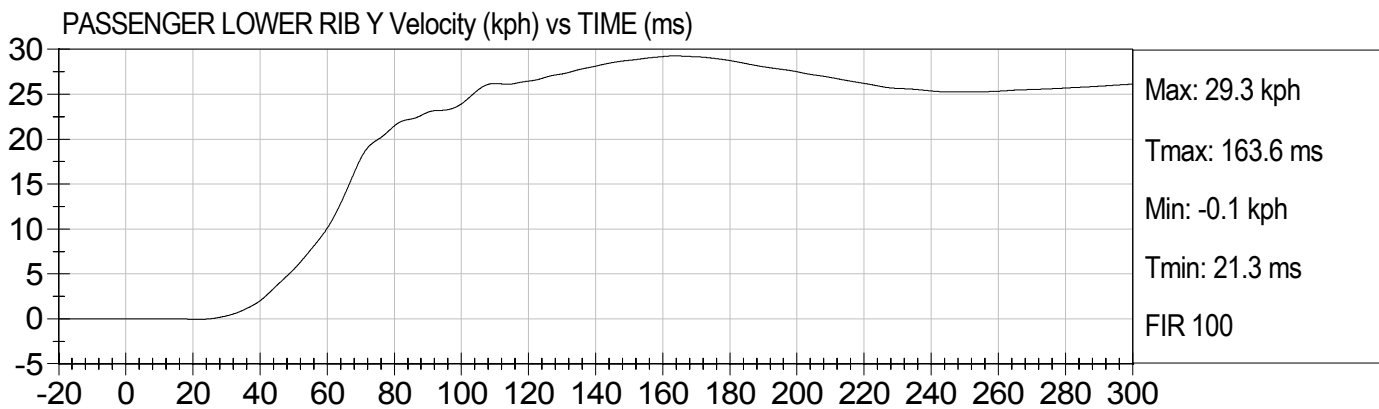
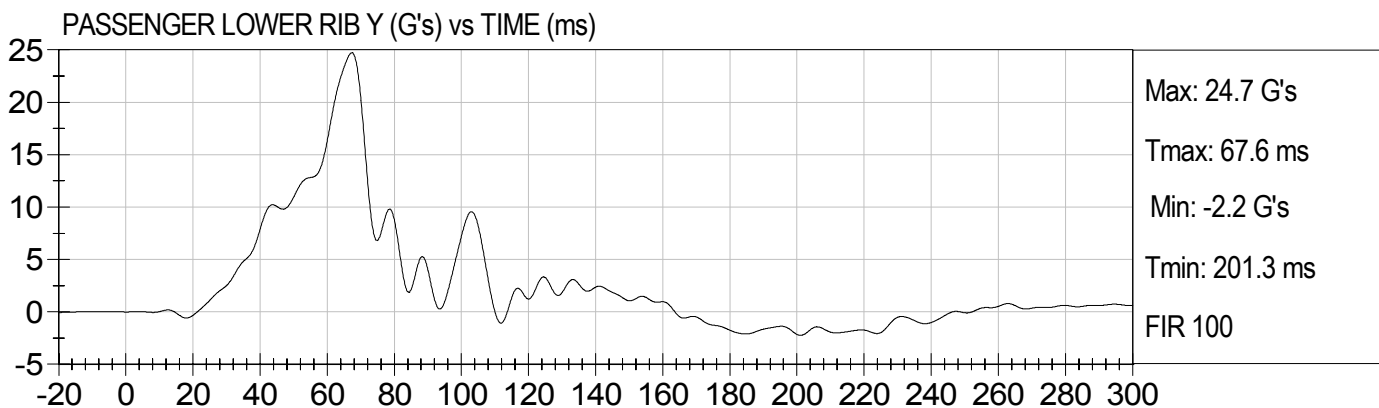
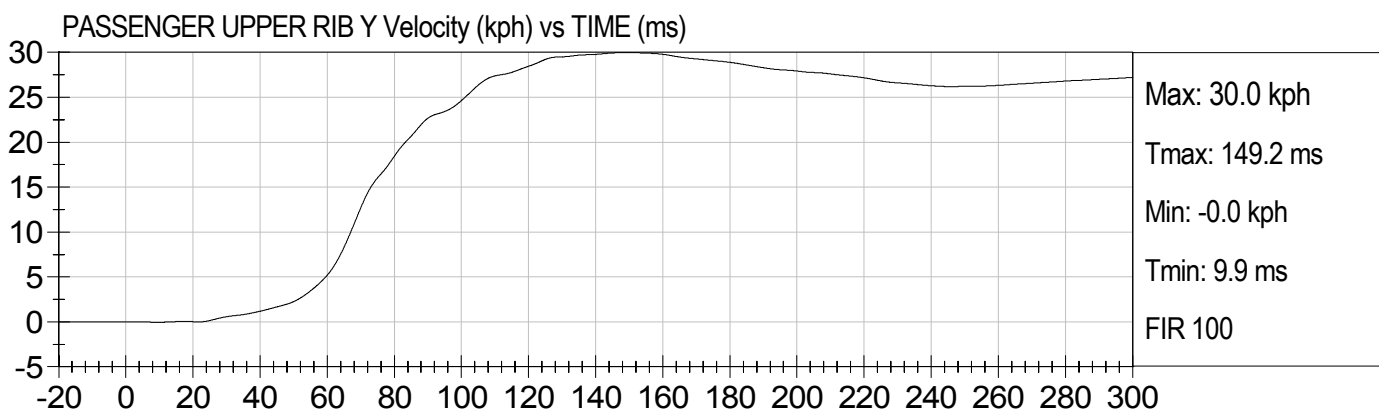
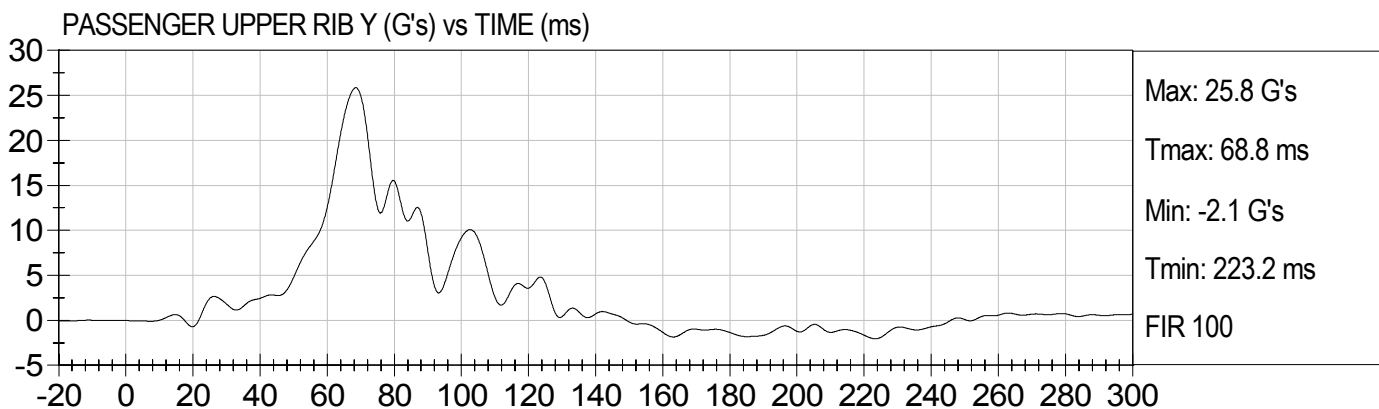


Max: 62.2 G's
Tmax: 30.1 ms
Min: -7.3 G's
Tmin: 40.1 ms
FIR 100

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

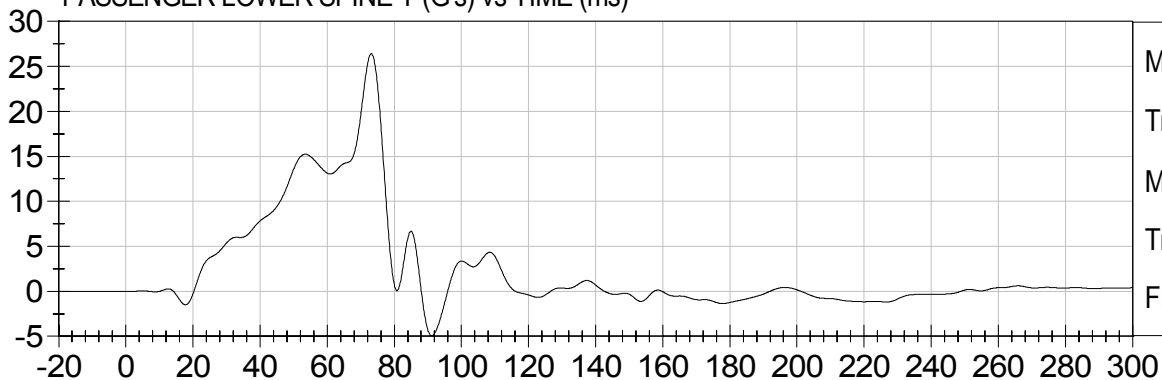


Max: 21.7 kph
Tmax: 37.3 ms
Min: -0.0 kph
Tmin: 6.2 ms
FIR 100

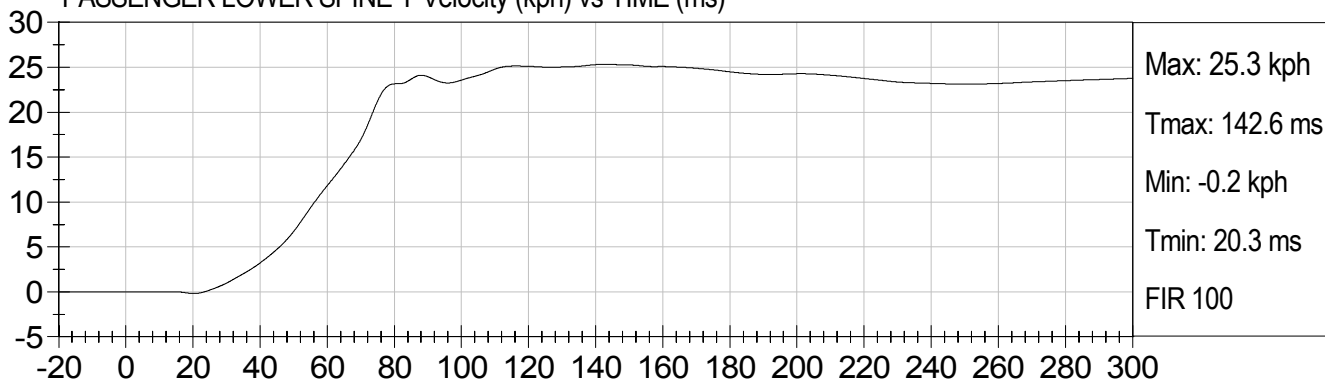




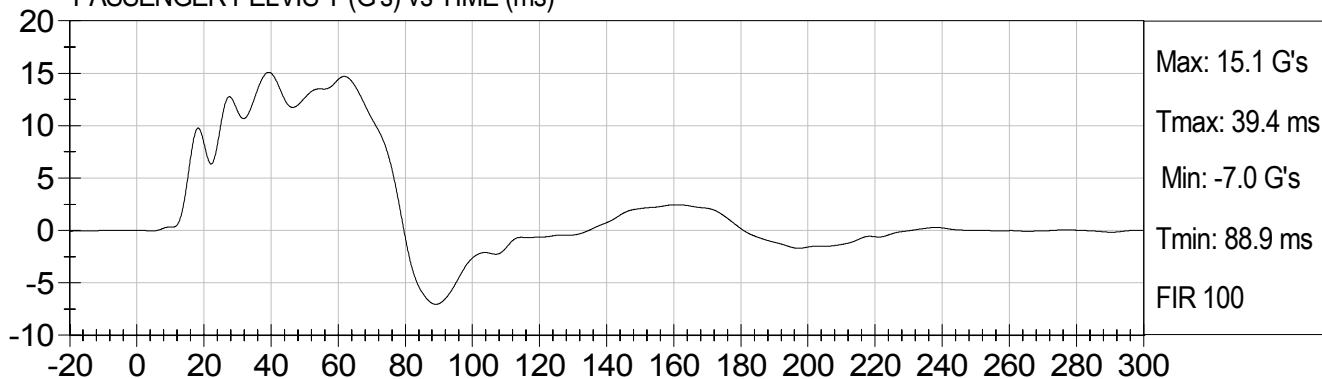
PASSENGER LOWER SPINE Y (G's) vs TIME (ms)



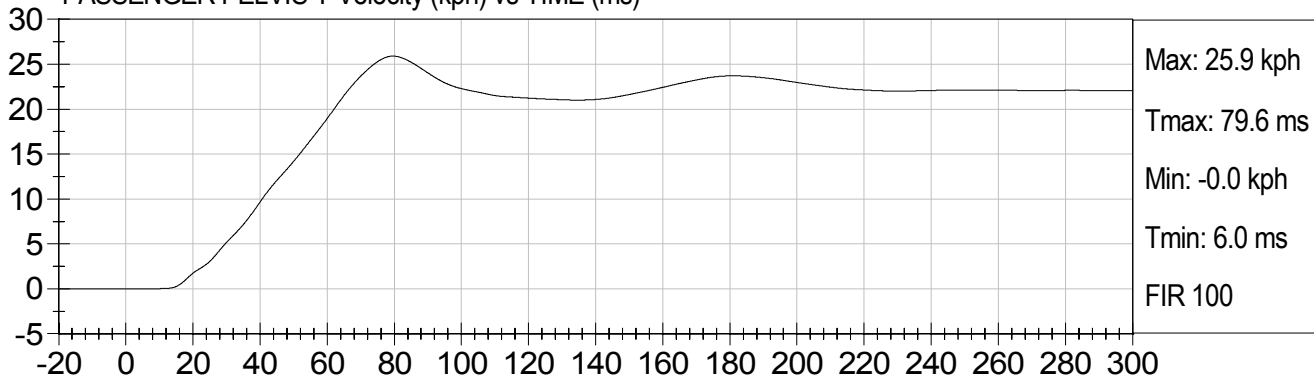
PASSENGER LOWER SPINE Y Velocity (kph) vs TIME (ms)



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



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



APPENDIX C
DUMMY CALIBRATION DATA

CERTIFICATION DATA

Dummy Serial Number: 272

Calibration Test Results Summary

Dummy Serial Number: 272

Pre-Test Calibration

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

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 272

Test I.D: D06125

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


Laboratory Technician

05/09/2006

Test Date


Approved By

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

ATD Serial No: 272

Test I.D: D061361

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	44	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	-6	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/15/2006

Test Date

David Winkelbauer
Approved By



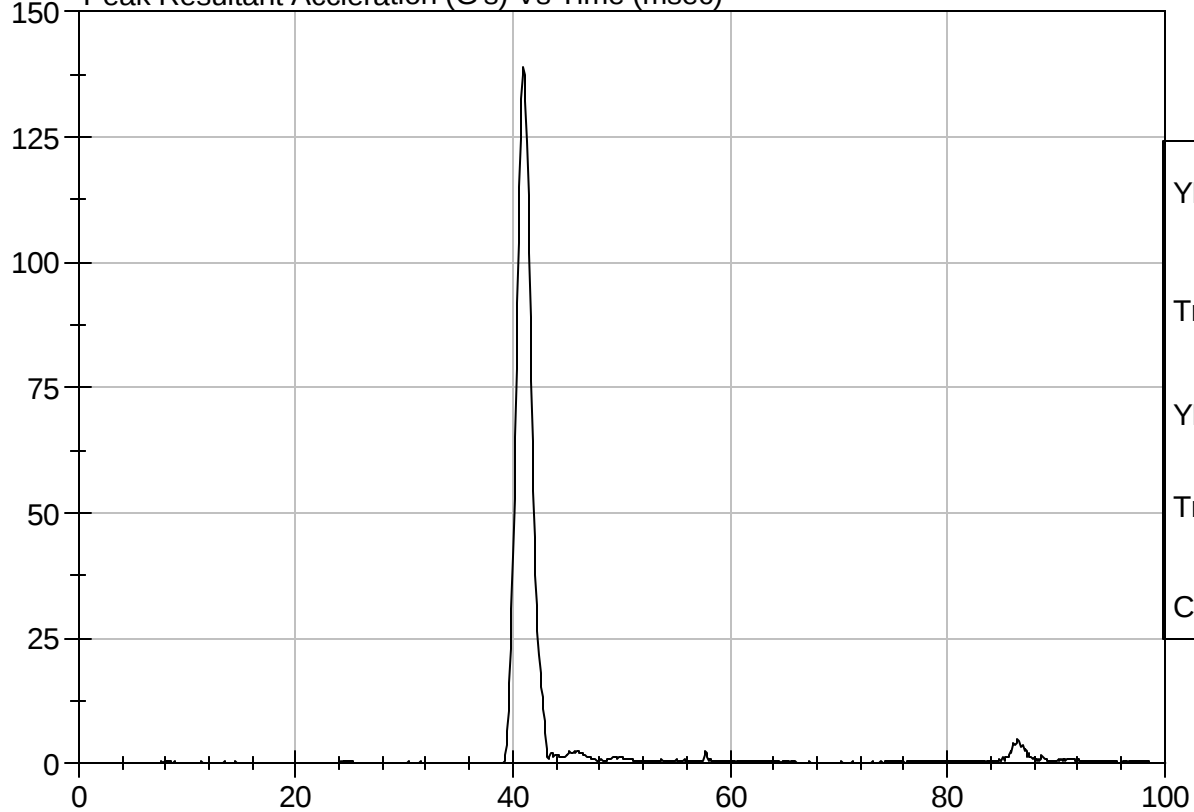
Test Description: Head Drop

Test Date: 05/15/2006

Component: D061361

Speed: 0 ft/s, 0.00 m/s

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



YMax: 139.1 G

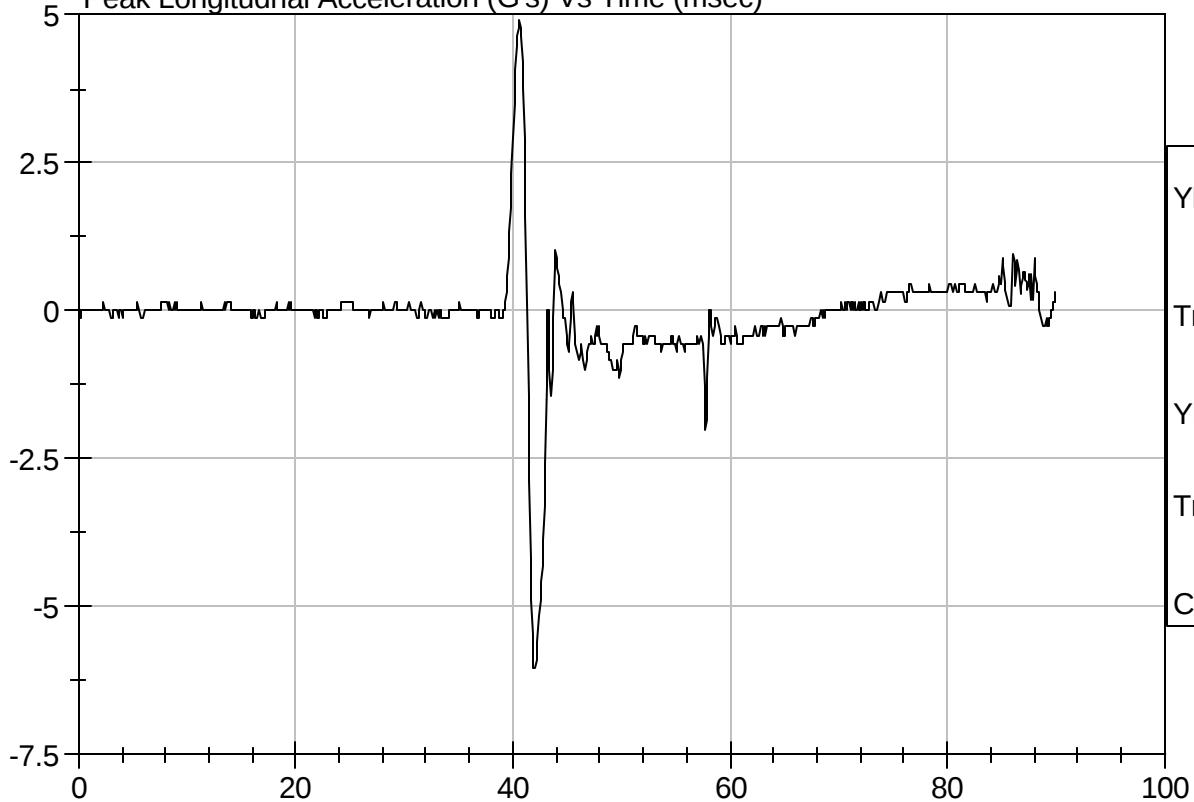
Tmax: 41.0 ms

YMin: 0.0 G

Tmin: 0.5 ms

CFC 1000

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



YMax: 4.9 G

Tmax: 40.6 ms

YMin: -6.0 G

Tmin: 41.9 ms

CFC 1000

SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 272

Test I.D: D061362

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	43	Pass
Lower Rib	G's	37 - 46	42	Pass
Lower Spine	G's	15 - 22	21	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/15/2006

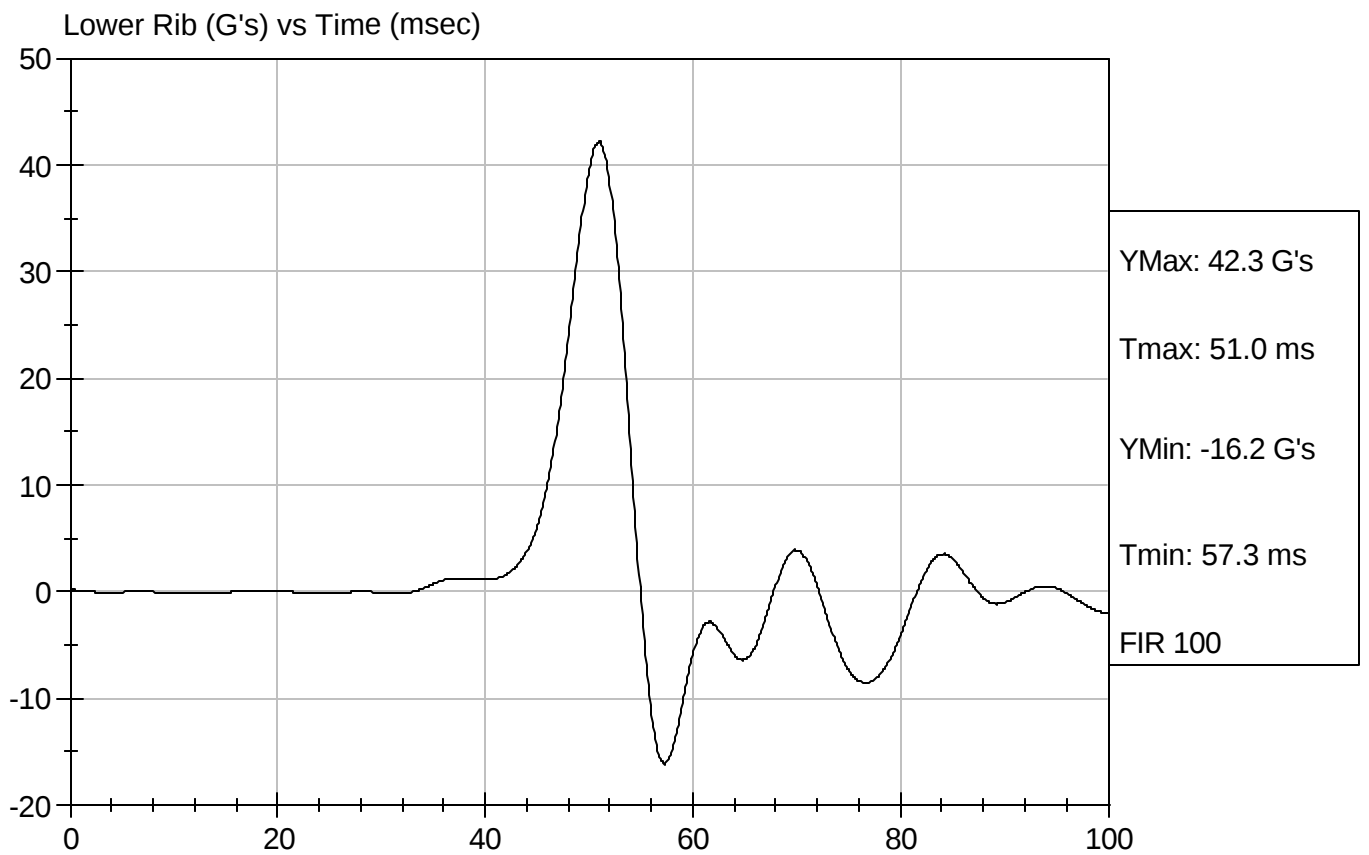
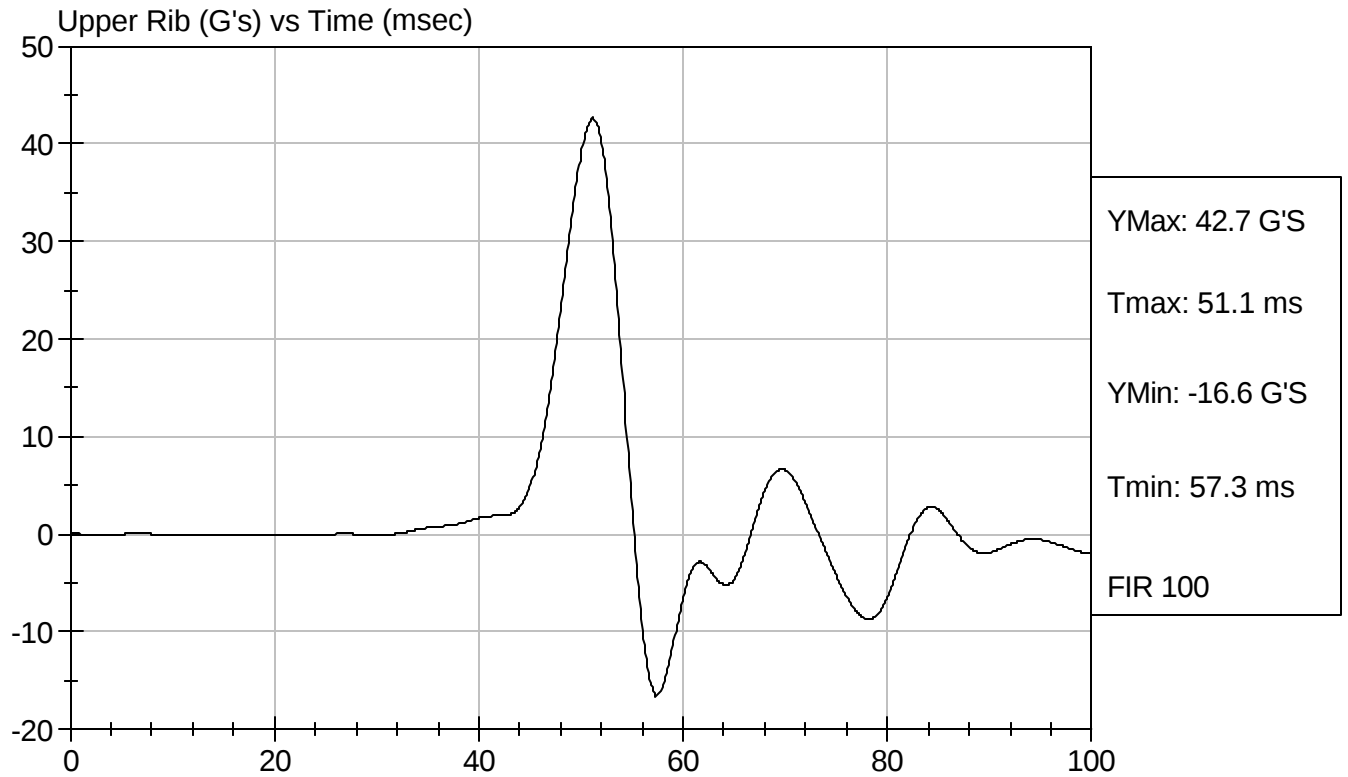
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D061362

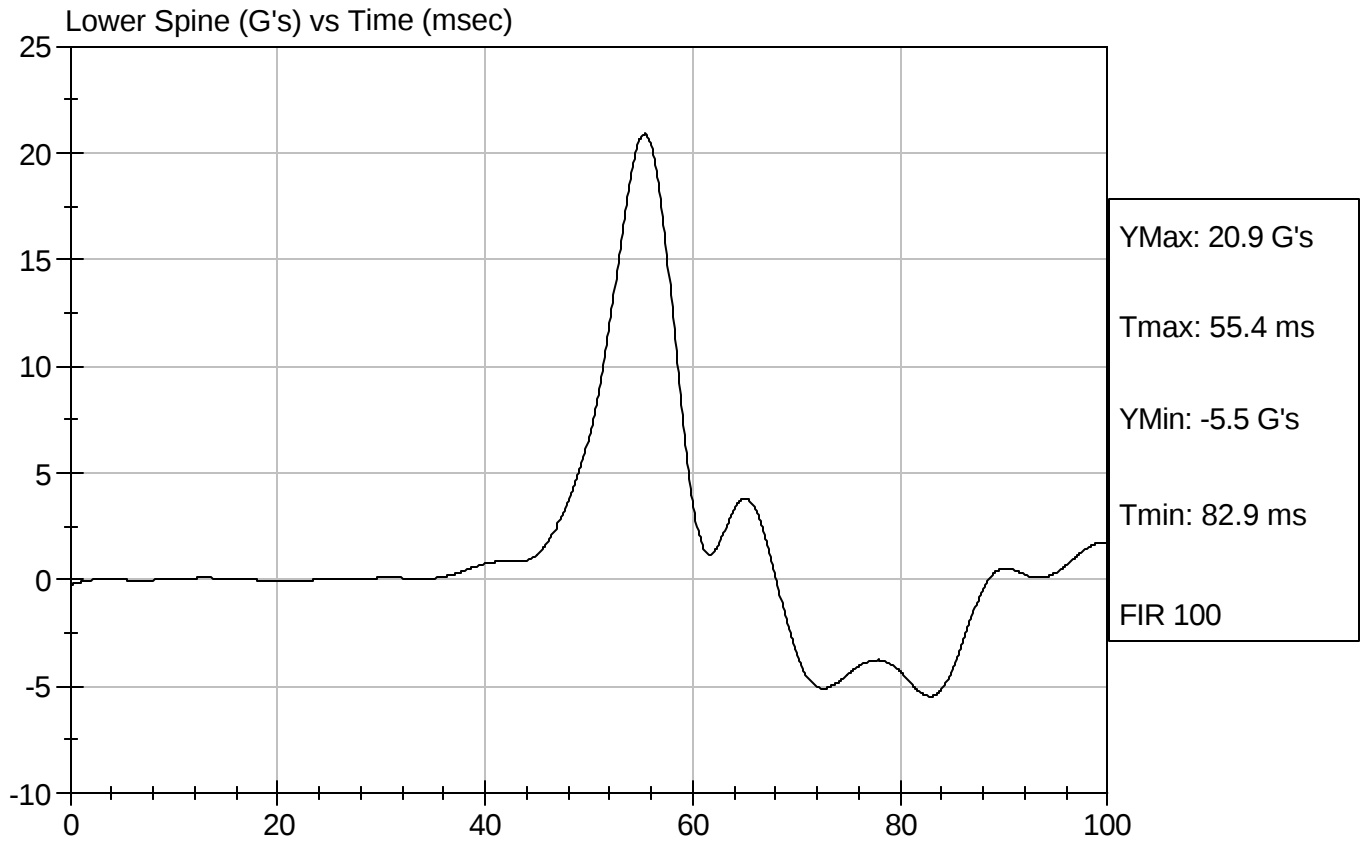
Test Date: 05/15/2006
Speed: 14.12 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D061362

Test Date: 05/15/2006
Speed: 14.12 ft/sec, 4.30 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 272

Test I.D: D061363

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	43	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	41	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

05/15/2006

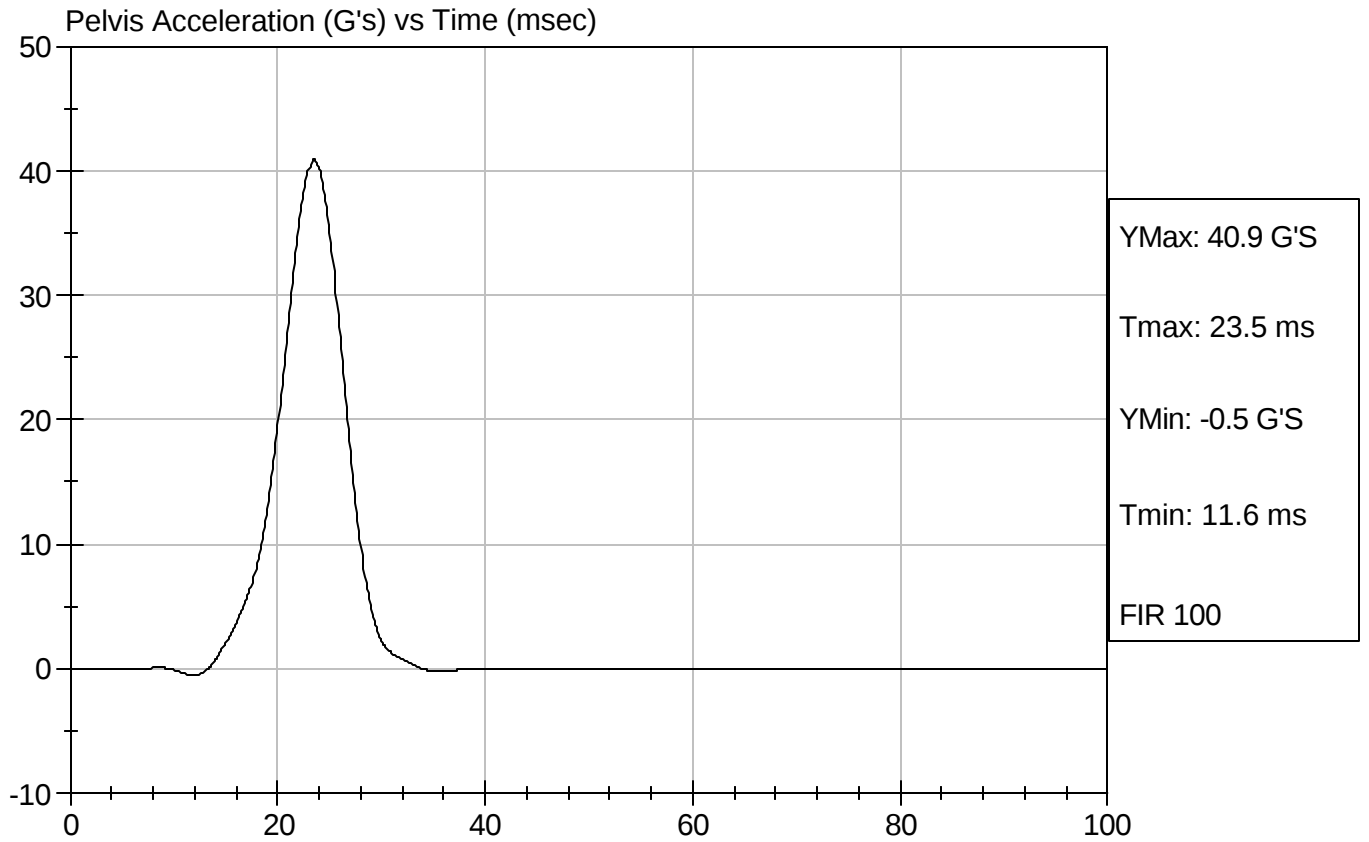
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D061363

Test Date: 05/15/2006
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: 272

Test I.D: D061364

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Force At 12.7 mm	N	104 -162	138	Pass
Force At 19 mm	N	163 - 222	194	Pass
Force At 25.4 mm	N	222 - 280	264	Pass
Force At 33 mm	N	325 - 391	377	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/16/2006

Test Date

David Winkelbauer
Approved By

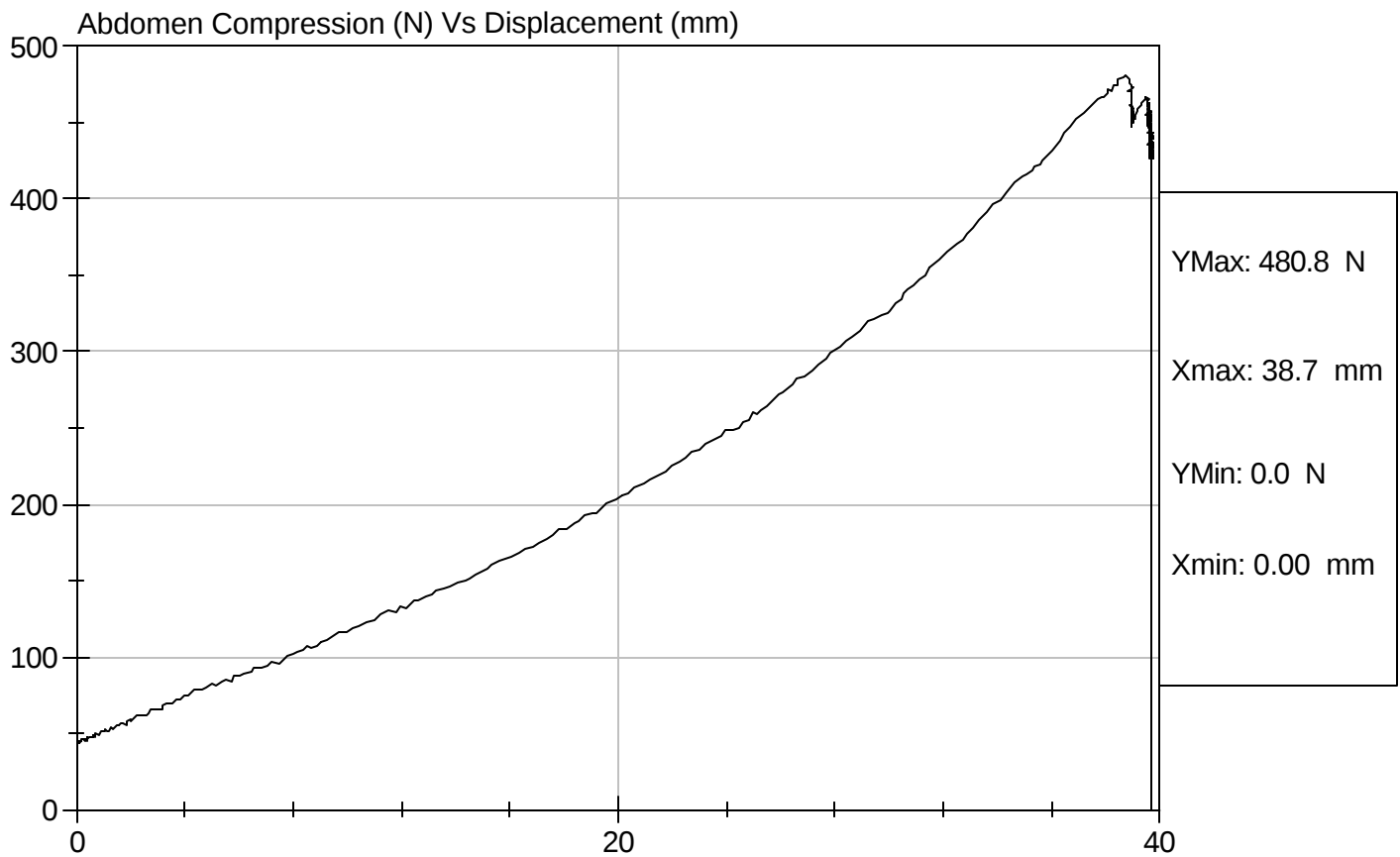


Test Description: Abdomen Compression

Test Date: 05/16/2006

Component: D061364

Speed: 0 ft/sec, 0 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 272

Test I.D: D061365

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	124.8	Pass
Force At 30 deg	N	151.2 - 204.6	166.2	Pass
Force At 40 deg	N	204.6 - 258.0	224.1	Pass
Return Angle	Deg	12 Maximum	6	Pass
Overall Test Results			Pass	


Laboratory Technician

05/16/2006

Test Date


Approved By

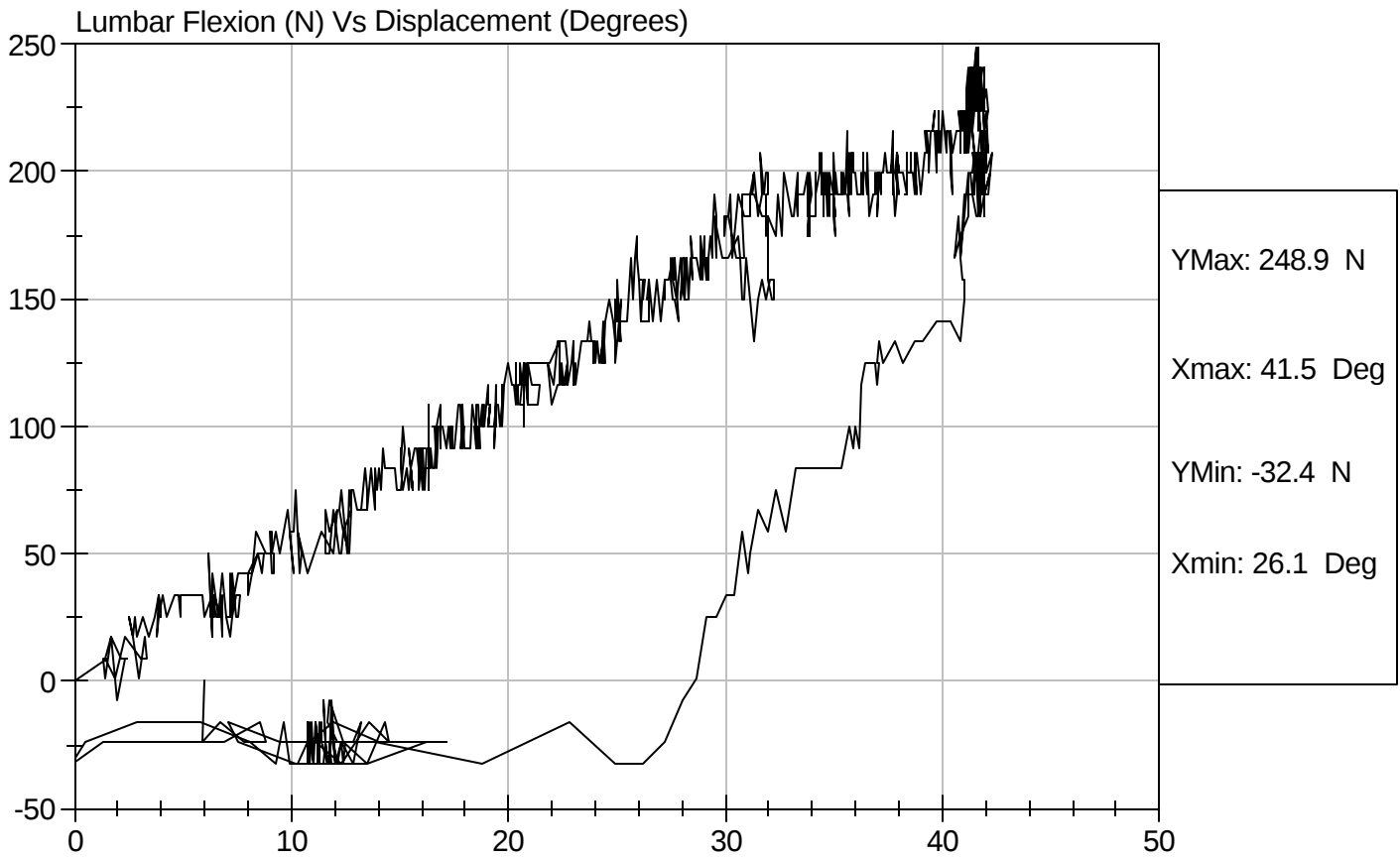


Test Description: Lumbar Flexion

Test Date: 05/16/2006

Component: D061365

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 272

Test I.D: D061369

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Impact Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.22	Pass
	20 msec	m/s	4.12 to 5.10	4.30	Pass
	30 msec	m/s	5.73 to 7.01	5.96	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.20	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	72	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	54	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	7	Pass


 Laboratory Technician

05/16/2006

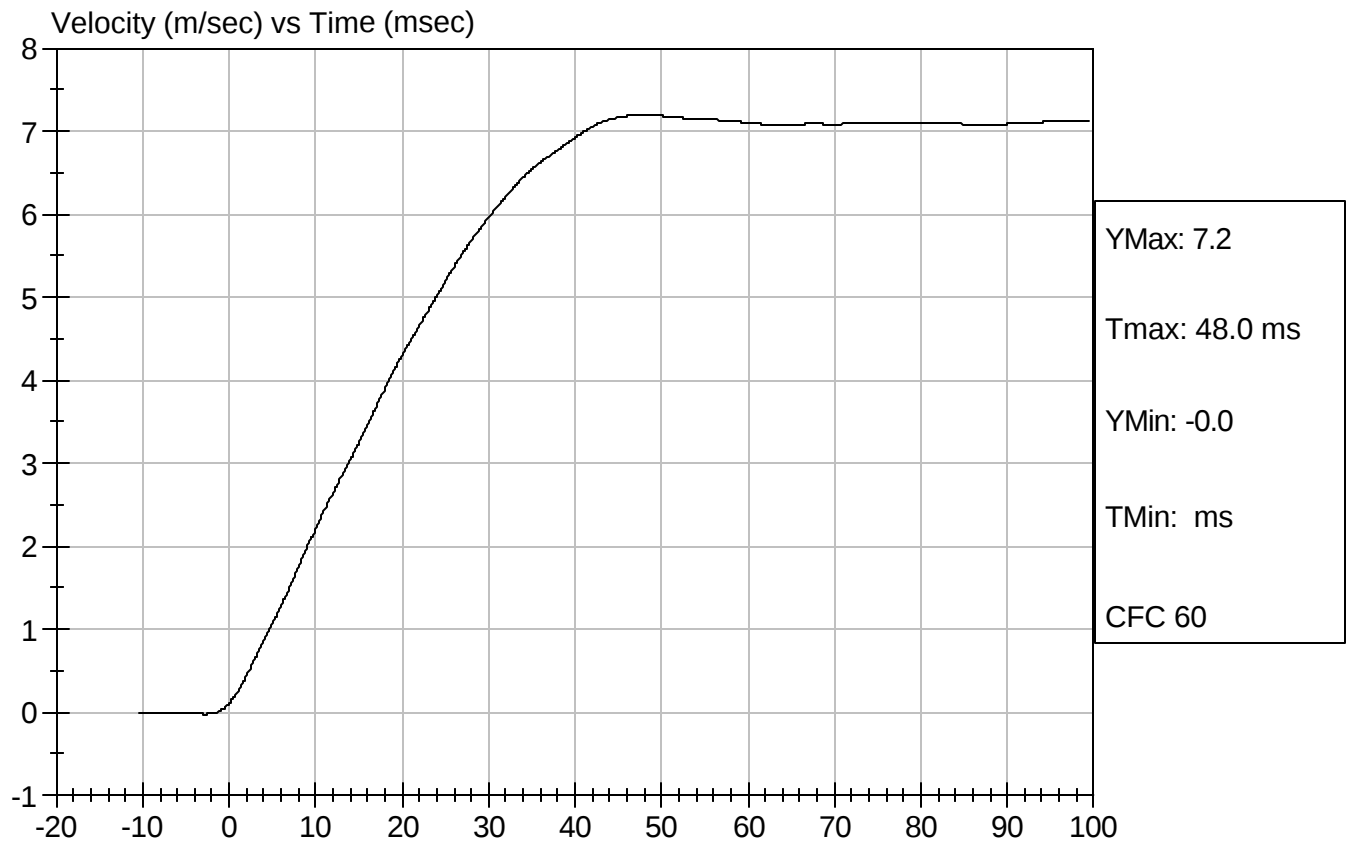
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D061369

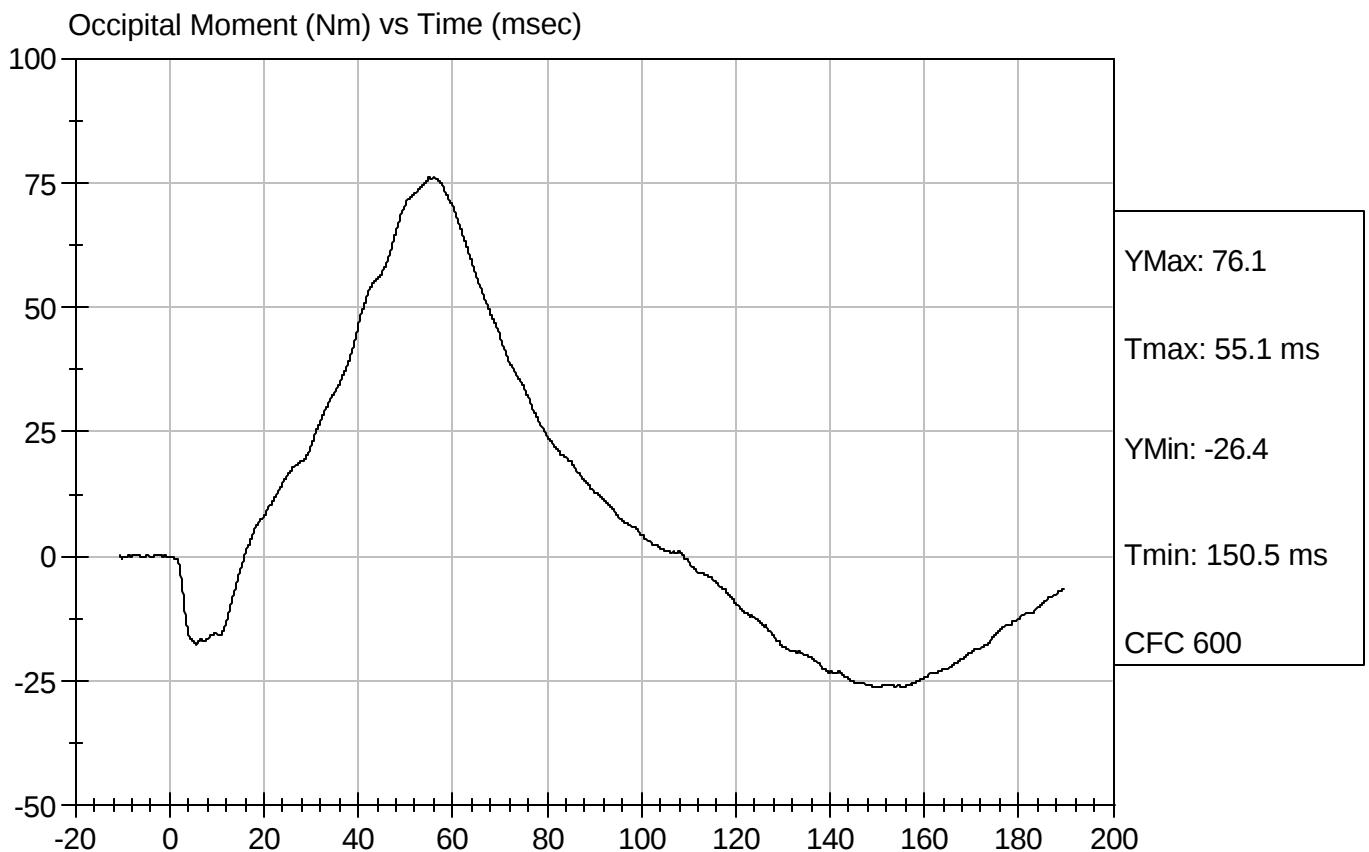
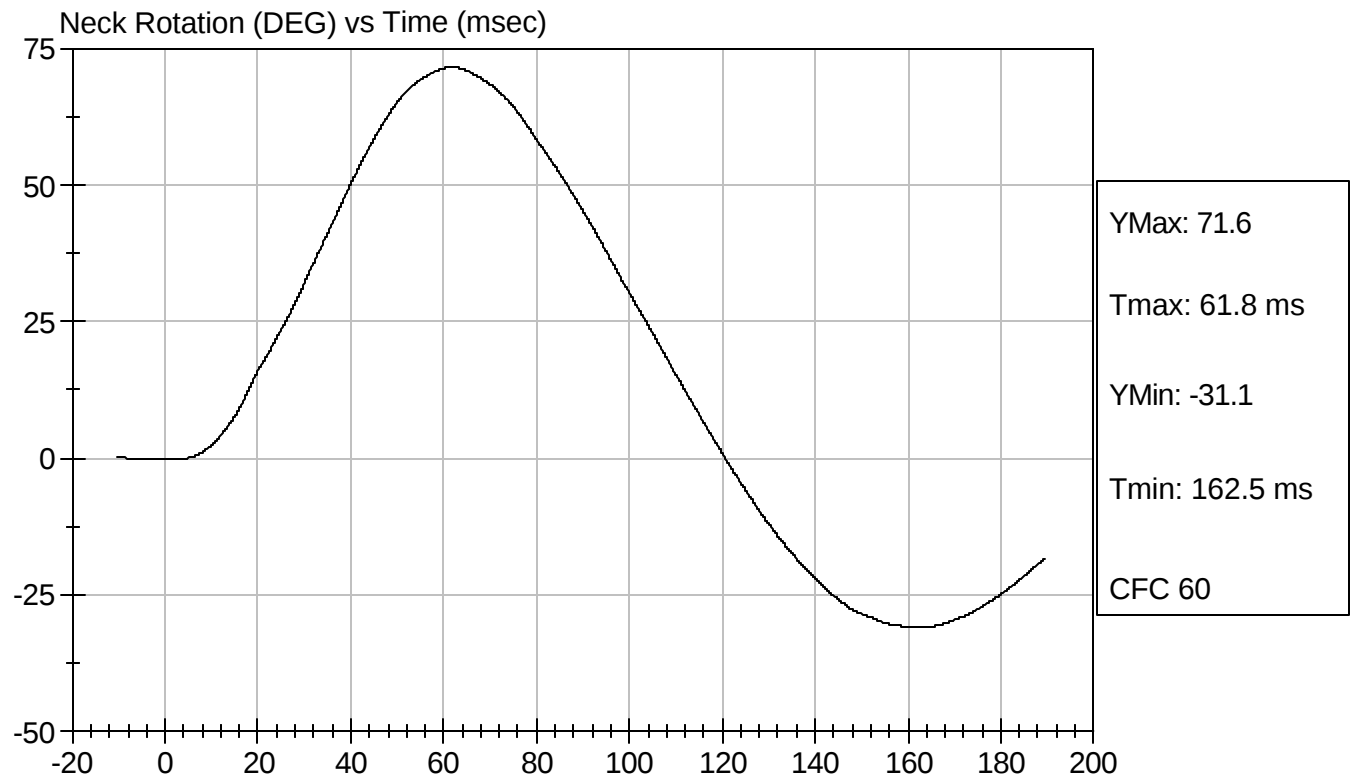
Test Date: 05/16/2006
Speed: 23.13 ft/sec, 7.05 m/sec





Test Desc: Neck Bending
Component ID: D061369

Test Date: 05/16/2006
Speed: 23.13 ft/sec, 7.05 m/sec



Calibration Test Results Summary

Dummy Serial Number: 272

Post-Test Calibration

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

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

ATD Serial No: 272

Test I.D: D061471

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	30	Pass
Peak Resultant Acceleration	G's	120 to 150	126	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	5	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/23/2006

Test Date

David Winkelbauer
Approved By



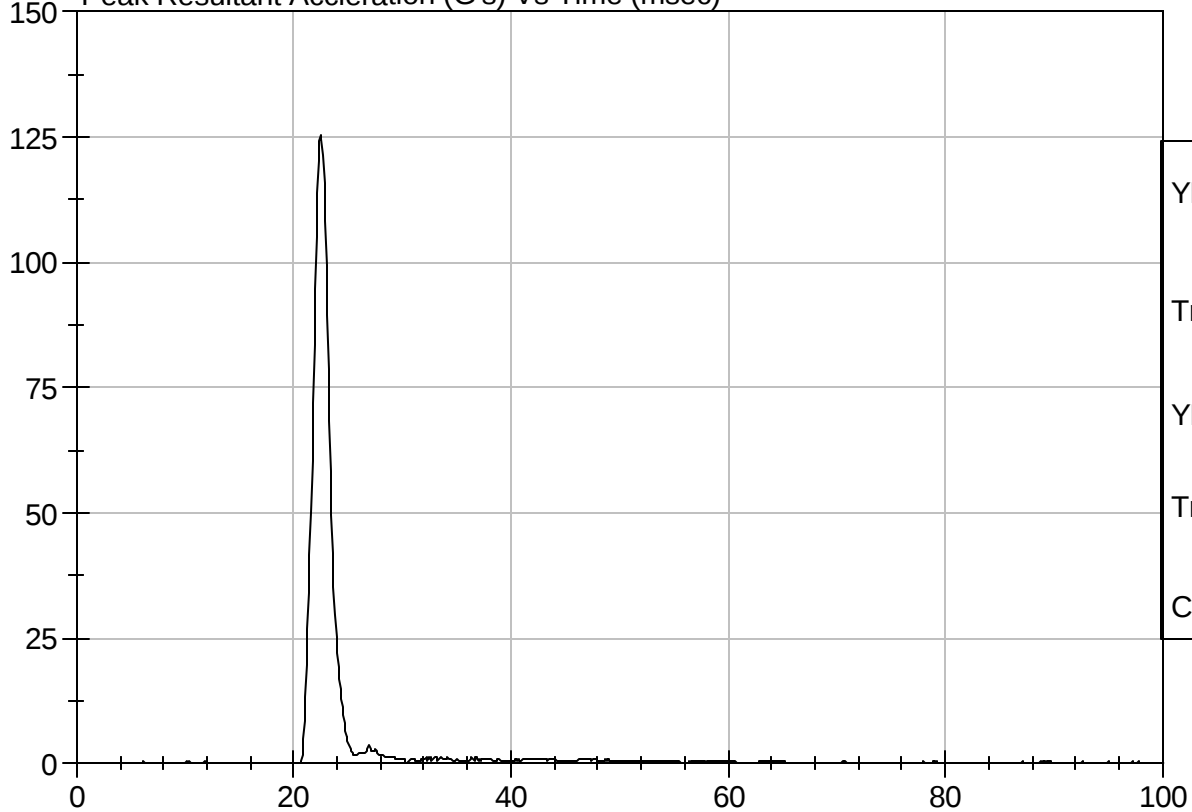
Test Description: Head Drop

Test Date: 05/23/2006

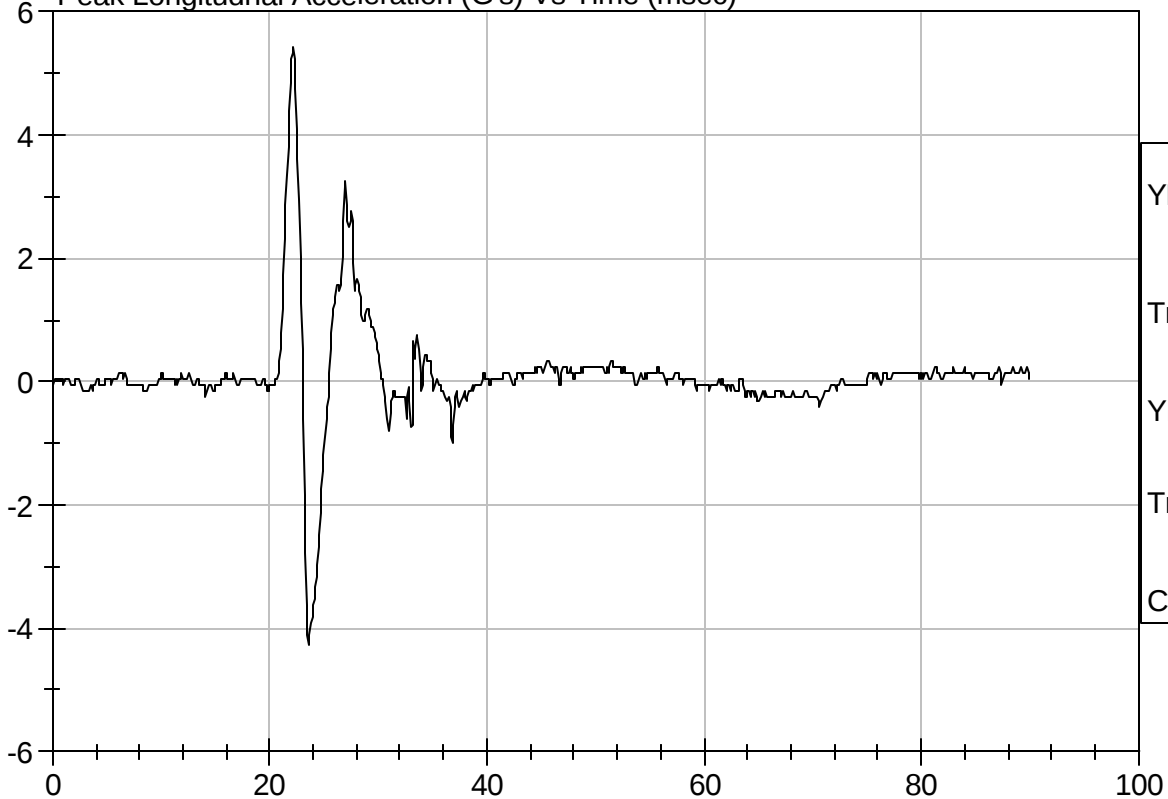
Component: D061471

Speed: 0 ft/s, 0.00 m/s

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



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



SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Test

ATD Serial No: 272

Test I.D: D061472

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Velocity	m/s	4.22 - 4.31	4.29	Pass
Upper Rib	G's	37 - 46	40	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

05/23/2006

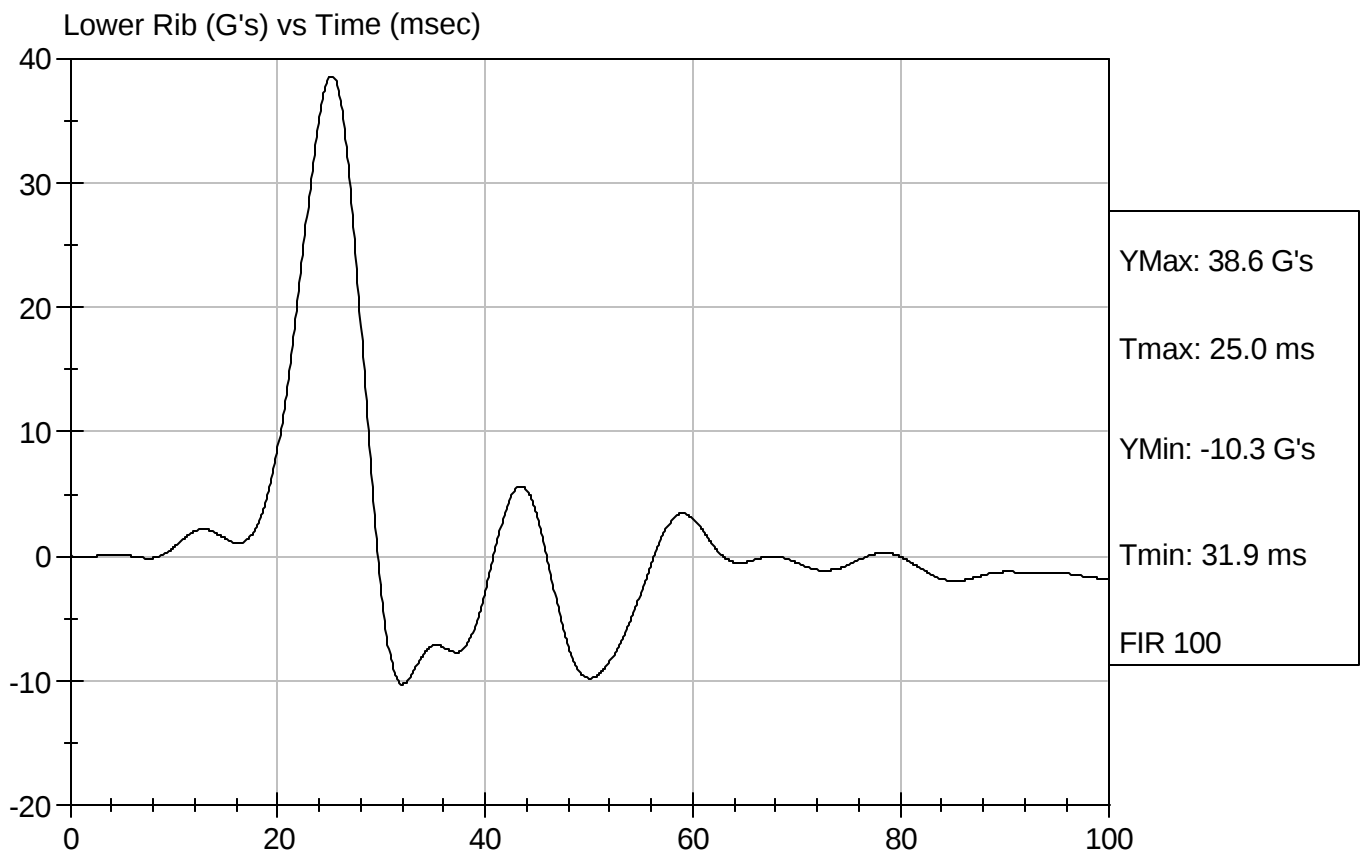
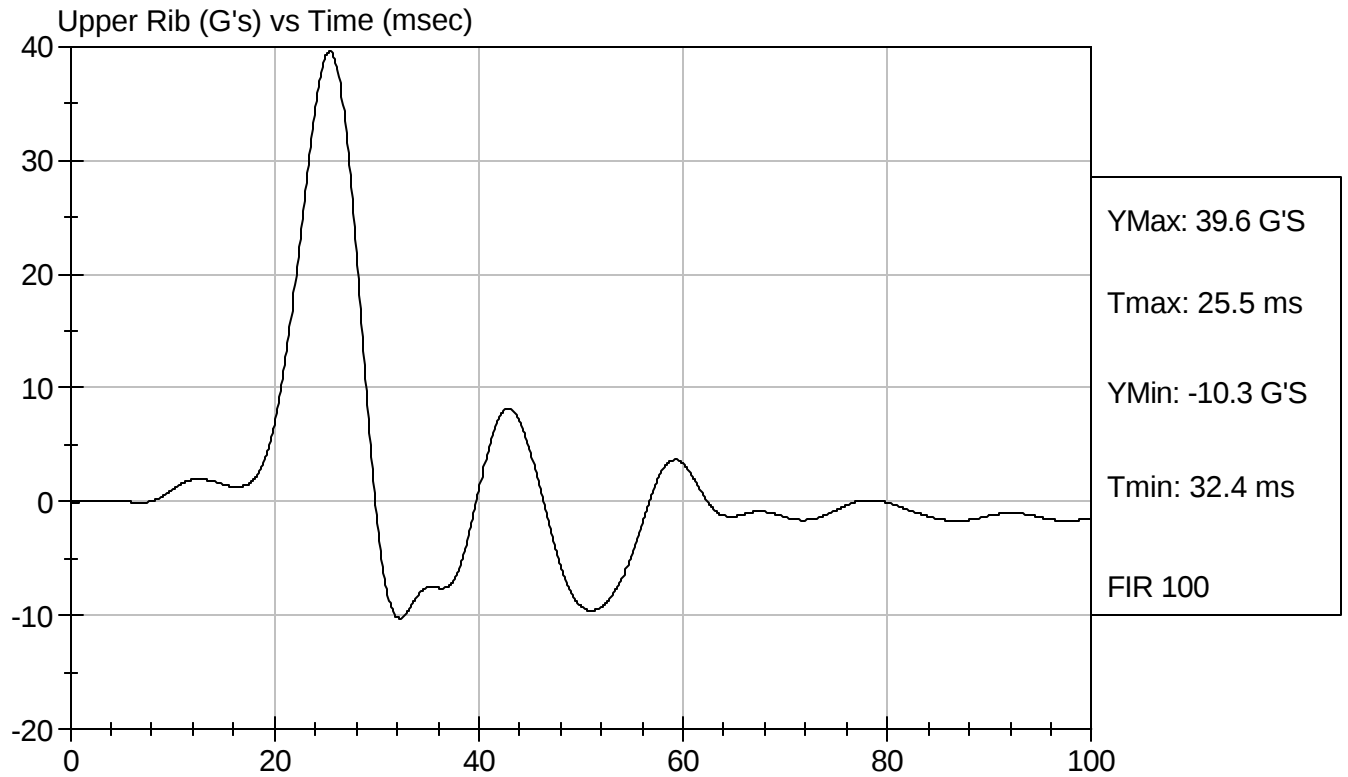
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D061472

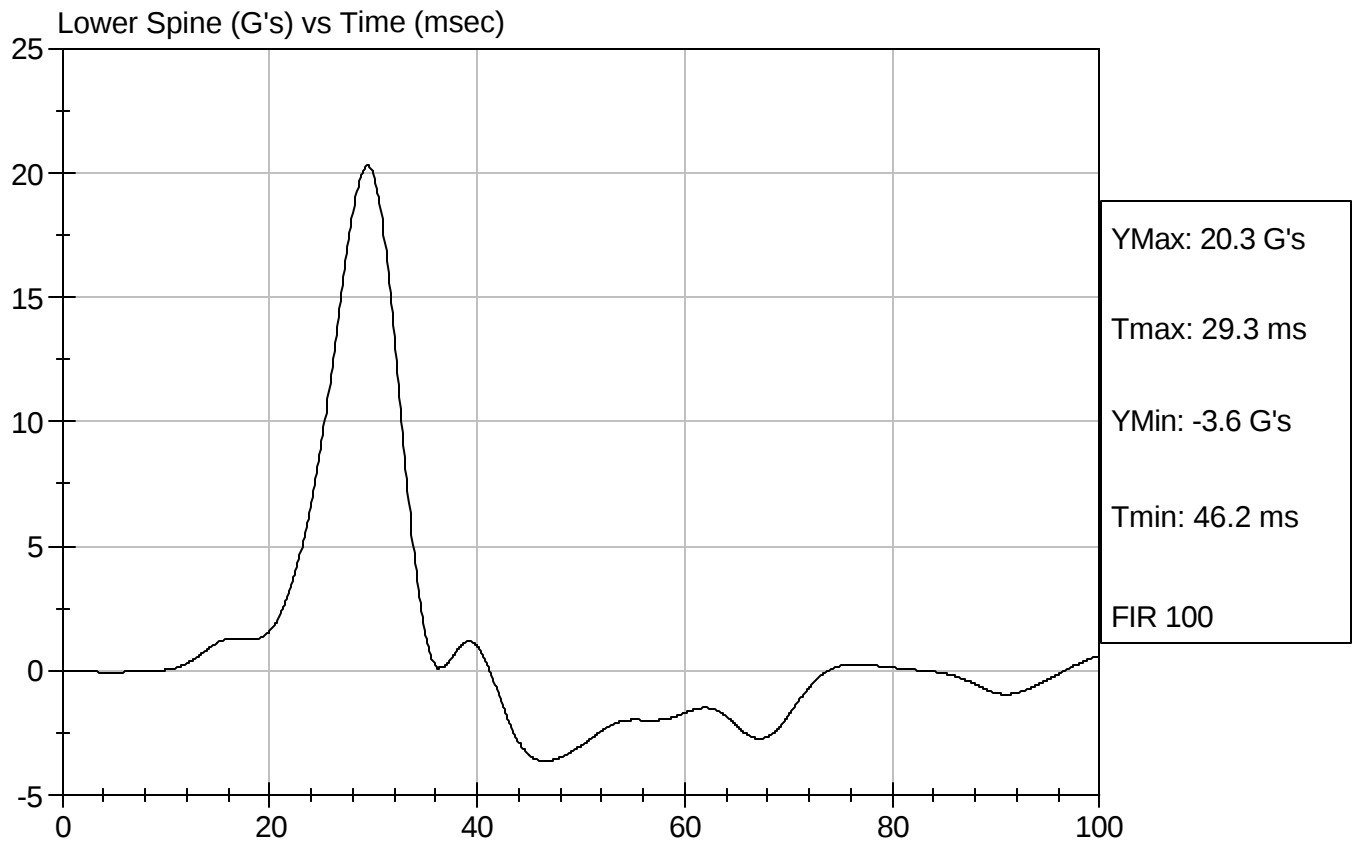
Test Date: 05/23/2006
Speed: 14.07 ft/sec, 4.29 m/sec





Test Desc: Thorax Impact
Component ID: D061472

Test Date: 05/23/2006
Speed: 14.07 ft/sec, 4.29 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 272

Test I.D: D061473

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	29	Pass
Probe Velocity	m/s	4.27 - 4.33	4.31	Pass
Pelvis Acceleration	G's	40 - 60	42	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

05/23/2006

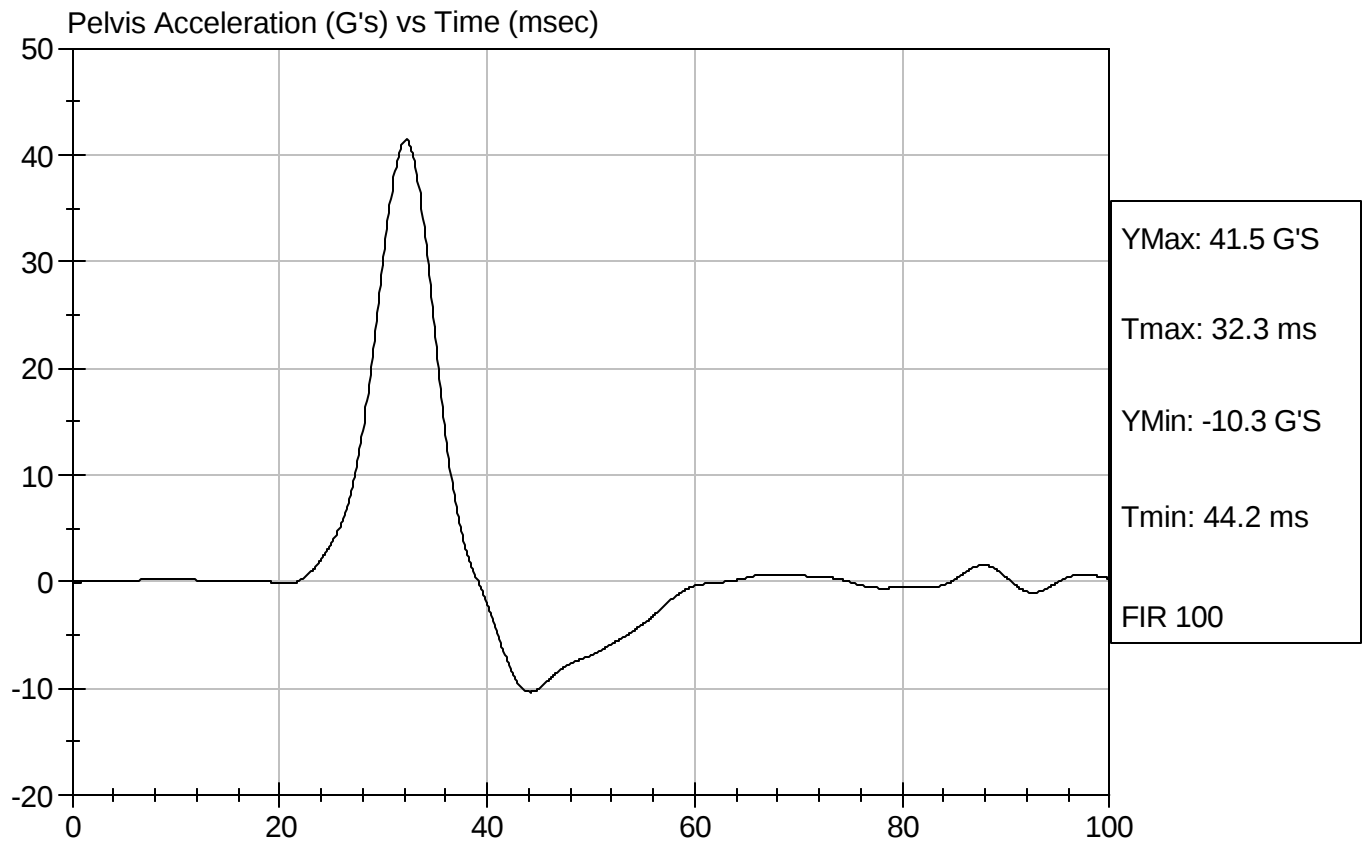
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D061473

Test Date: 05/23/2006
Speed: 14.14 ft/sec, 4.31 m/sec



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

ATD Serial No: 272

Test I.D: D061474

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Force At 12.7 mm	N	104 -162	138	Pass
Force At 19 mm	N	163 - 222	195	Pass
Force At 25.4 mm	N	222 - 280	265	Pass
Force At 33 mm	N	325 - 391	368	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/23/2006

Test Date

David Winkelbauer
Approved By

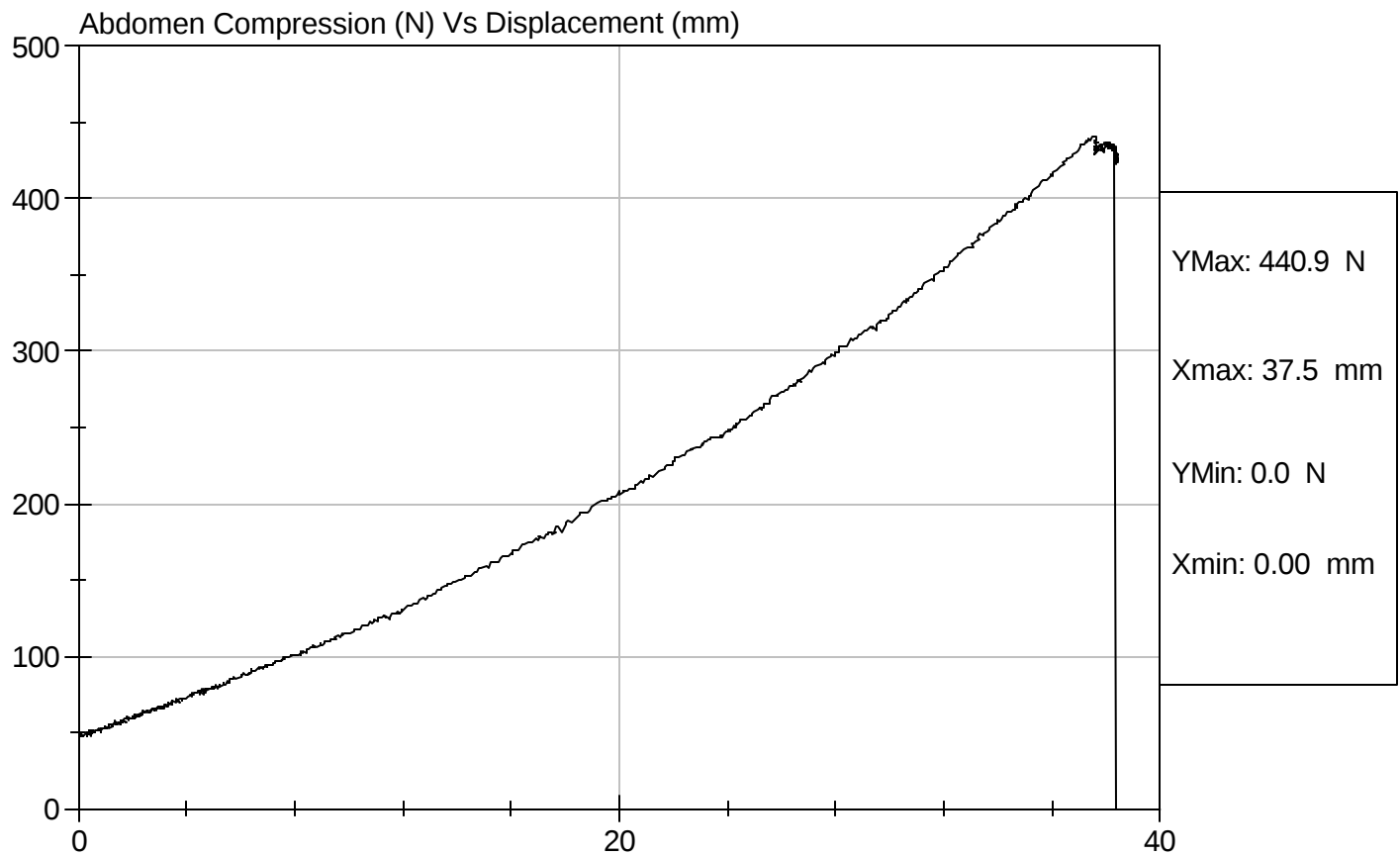


Test Description: Abdomen Compression

Test Date: 05/23/2006

Component: D061474

Speed: 0 ft/sec, 0 m/sec

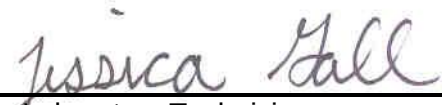


SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 272

Test I.D: D061475

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	109.4	Pass
Force At 30 deg	N	151.2 - 204.6	167.4	Pass
Force At 40 deg	N	204.6 - 258.0	225.3	Pass
Return Angle	Deg	12 Maximum	5	Pass
Overall Test Results			Pass	


Laboratory Technician

05/23/2006

Test Date


Approved By

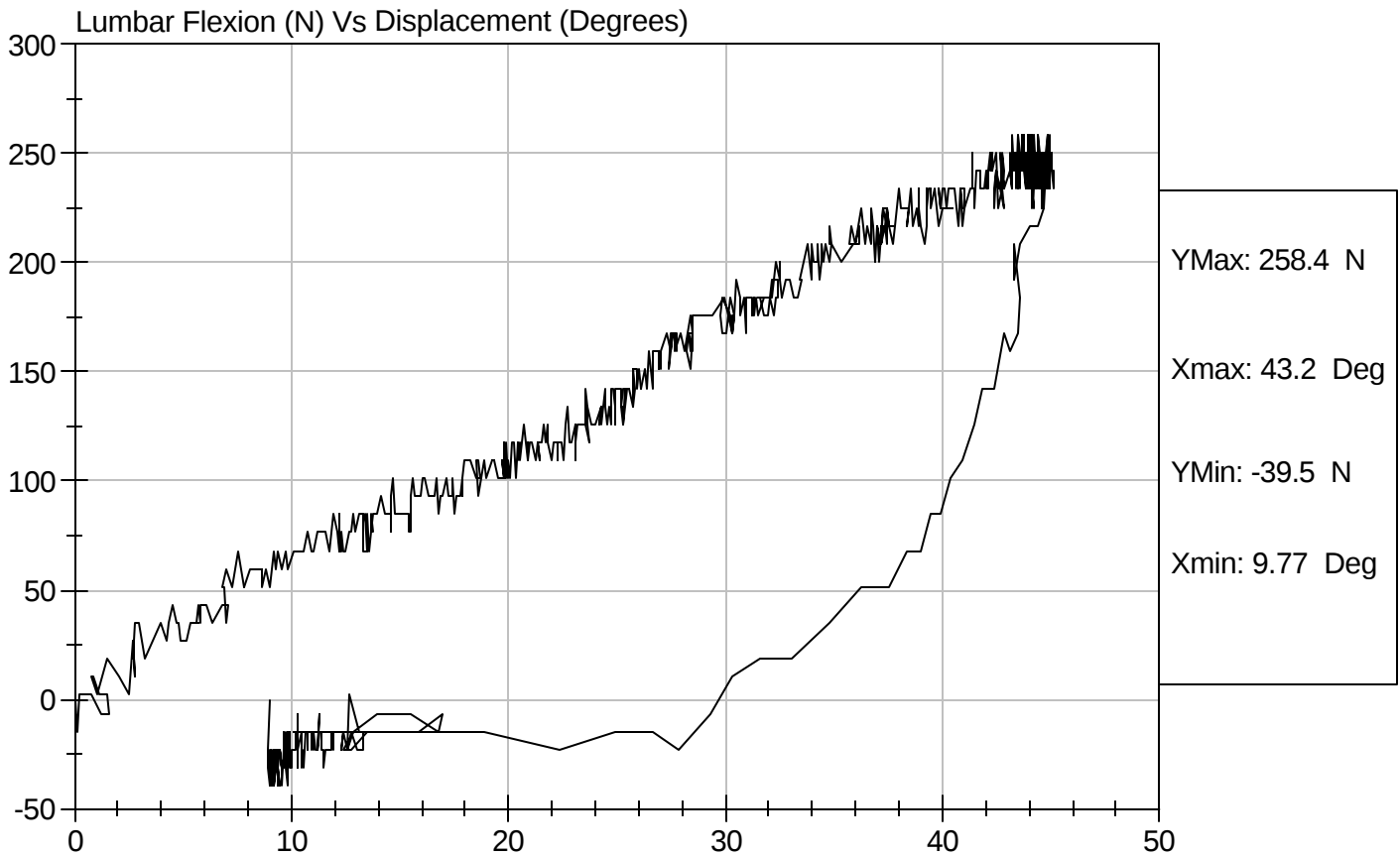


Test Description: Lumbar Flexion

Test Date: 05/23/2006

Component: D061475

Speed: 0 ft/sec, 0 m/sec



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

ATD Serial No: 272

Test I.D: D061479

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Impact Velocity		m/s	6.89 to 7.13	7.11	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.25	Pass
	20 msec	m/s	4.12 to 5.10	4.35	Pass
	30 msec	m/s	5.73 to 7.01	6.00	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.15	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	75	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	53	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	5	Pass


 Laboratory Technician

05/23/2006

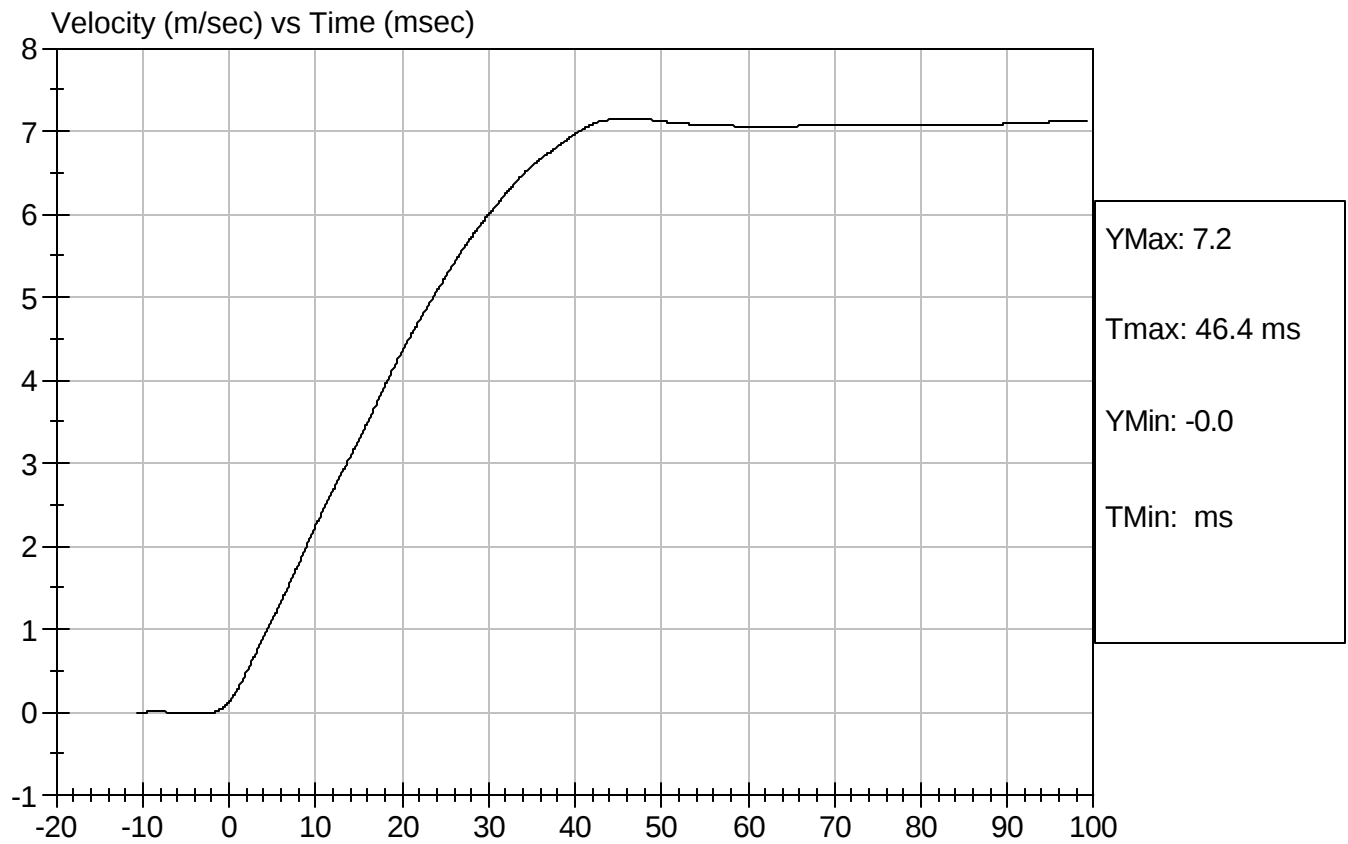
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D061479

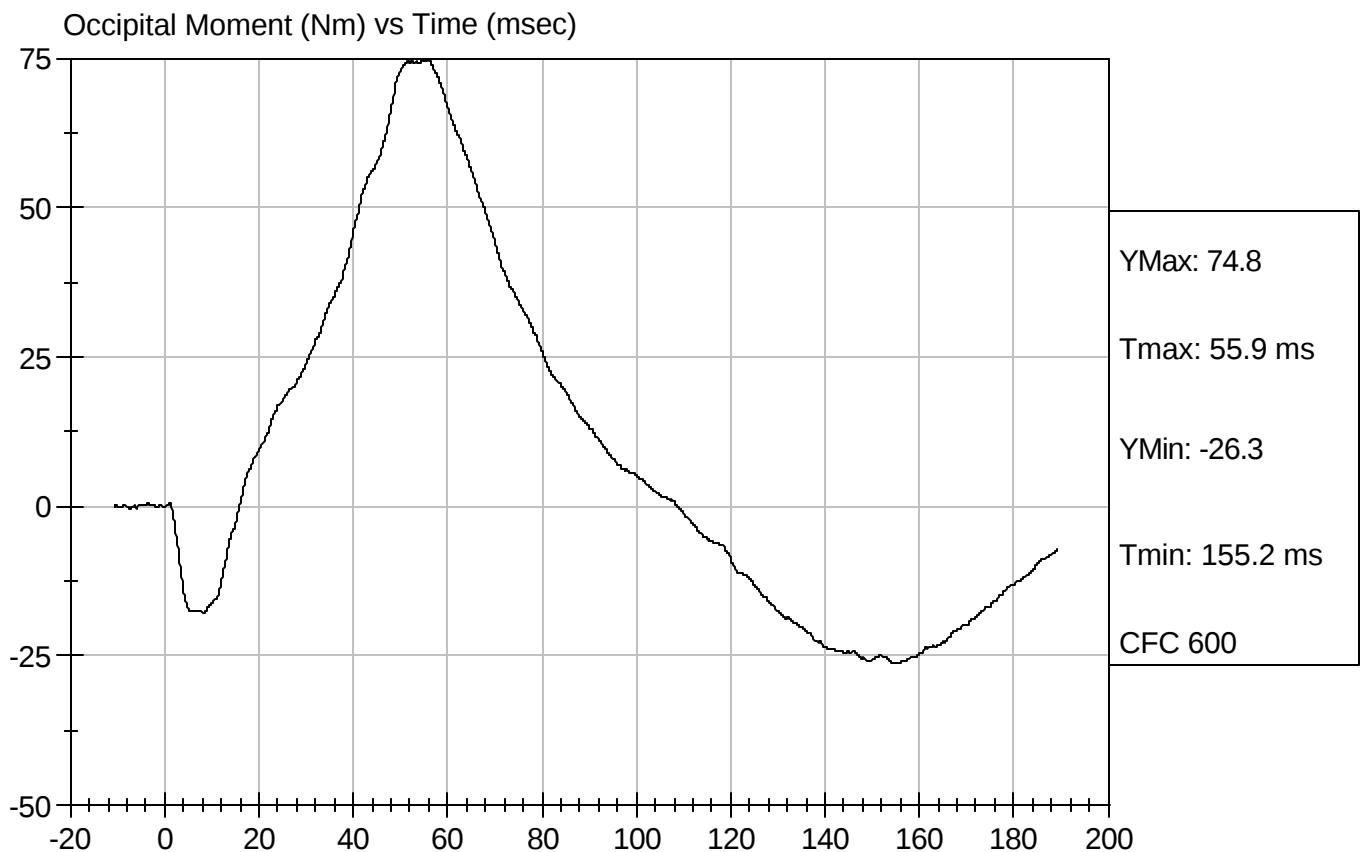
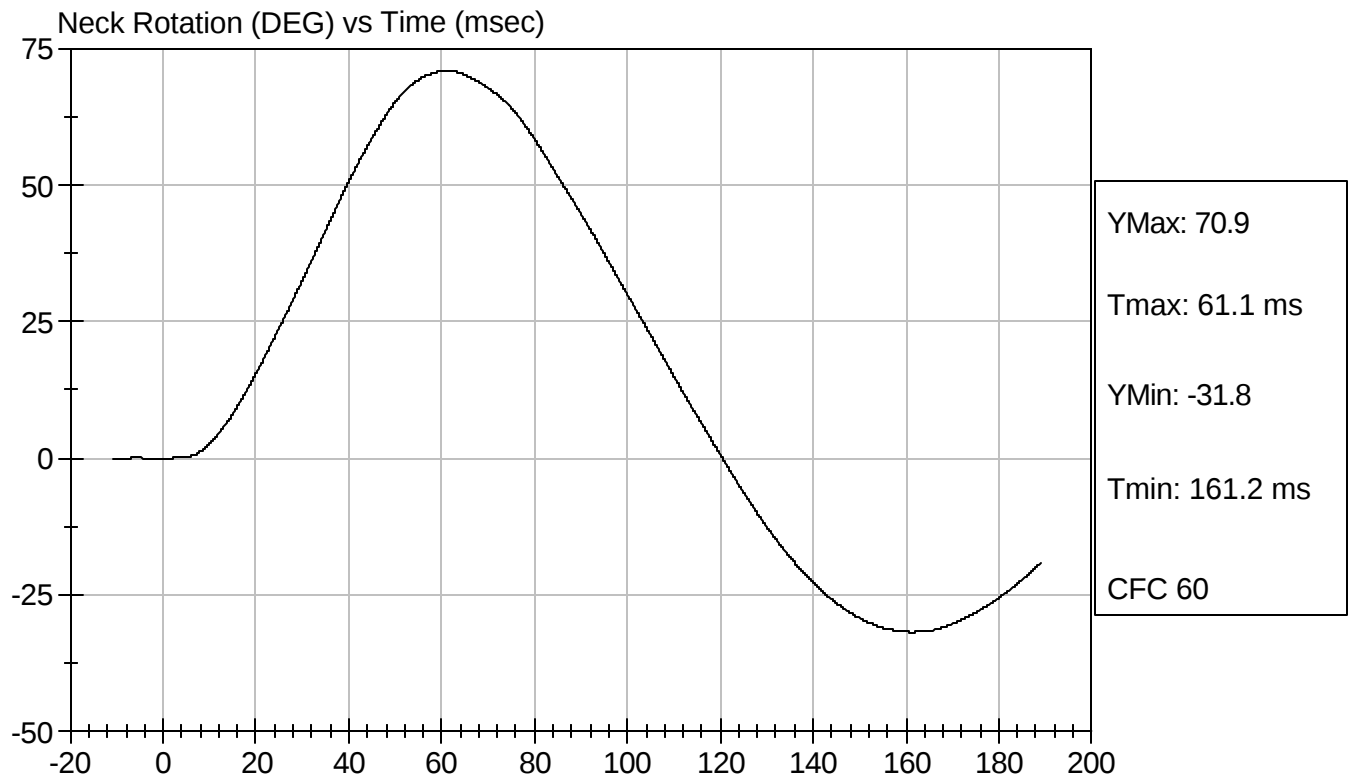
Test Date: 05/23/2006
Speed: 23.33 ft/sec, 7.11 m/sec





Test Desc: Neck Bending
Component ID: D061479

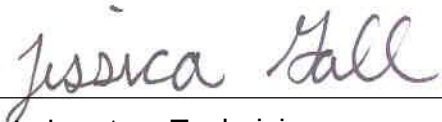
Test Date: 05/23/2006
Speed: 23.33 ft/sec, 7.11 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No: 272

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


Laboratory Technician

Approved By

05/23/2006

Test Date

CERTIFICATION DATA

Dummy Serial Number: 904

Calibration Test Results Summary

Dummy Serial Number: 904

Pre-Test Calibration

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

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No: 904

Test I.D: D06126

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

Jessica Hall
Laboratory Technician

05/09/2006
Test Date

David Winkelbauer
Approved By

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

ATD Serial No: 904

Test I.D: D061371

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	120 to 150	141	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-8	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/15/2006

Test Date

David Winkelbauer
Approved By



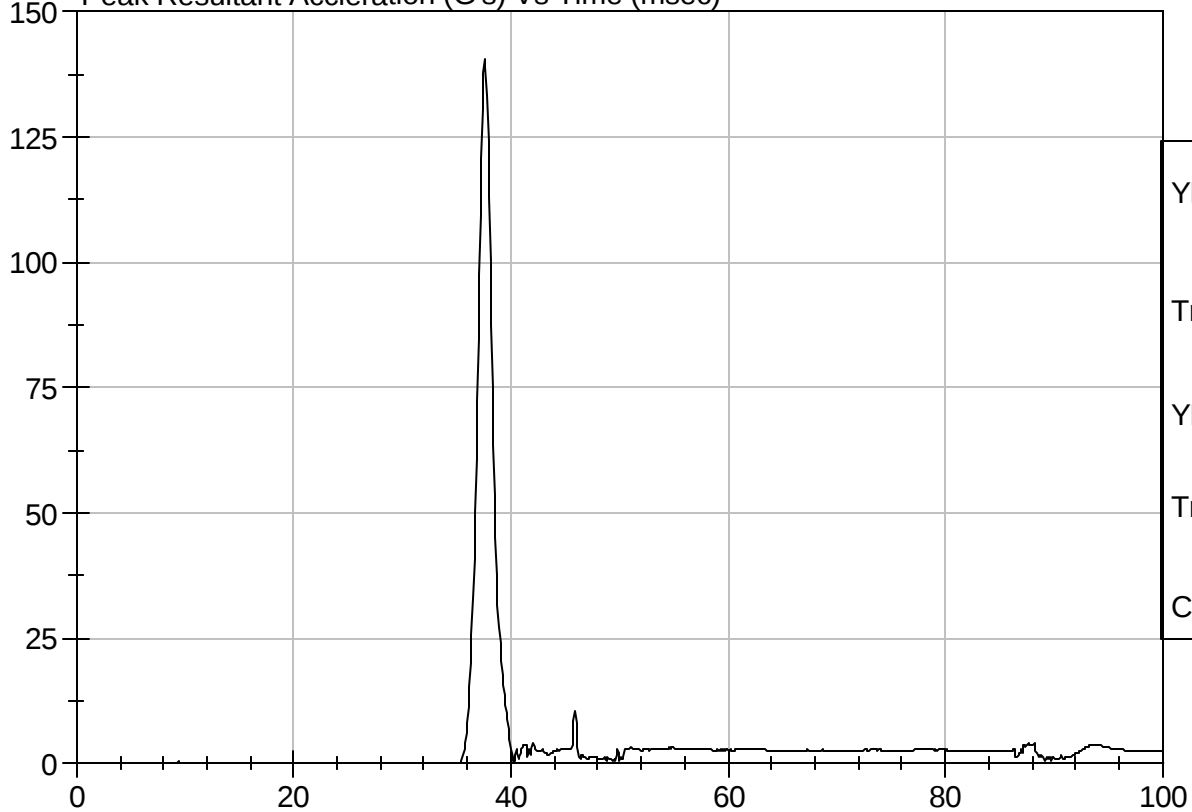
Test Description: Head Drop

Test Date: 05/15/2006

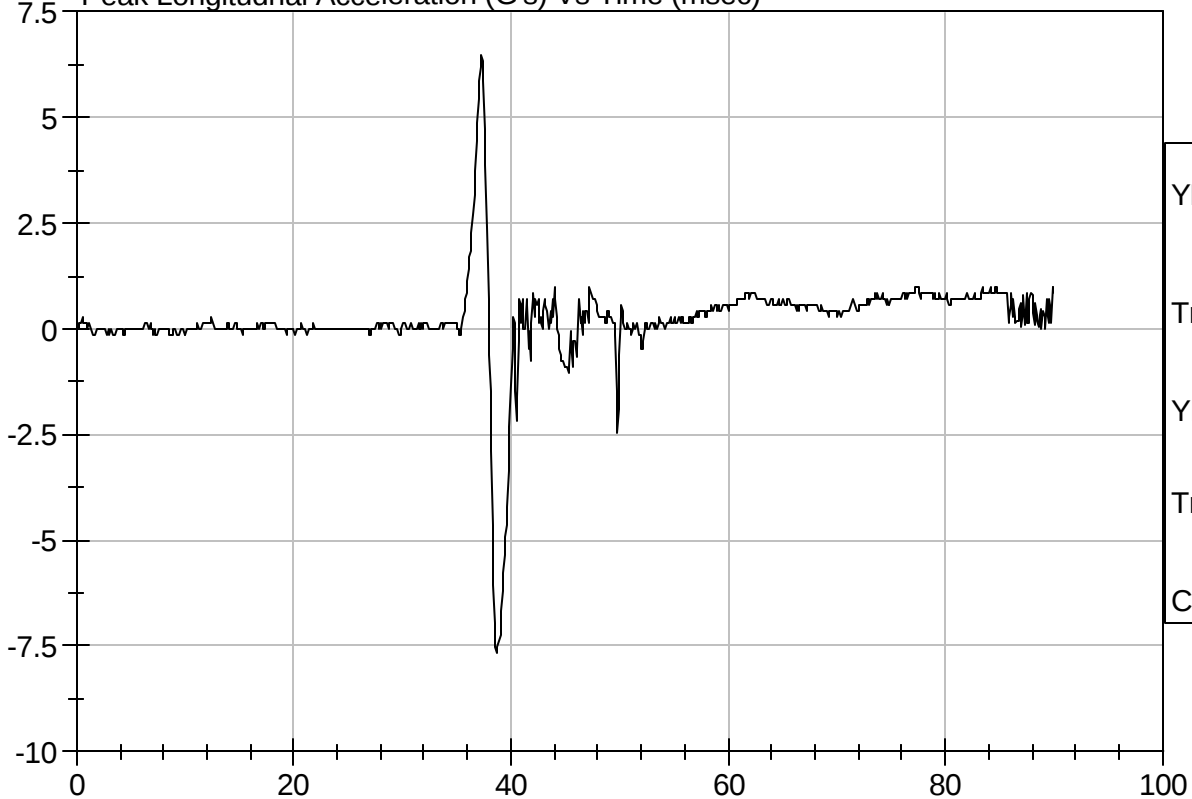
Component: D061371

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: D061372

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	4.22 - 4.31	4.30	Pass
Upper Rib	G's	37 - 46	41	Pass
Lower Rib	G's	37 - 46	40	Pass
Lower Spine	G's	15 - 22	21	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/15/2006

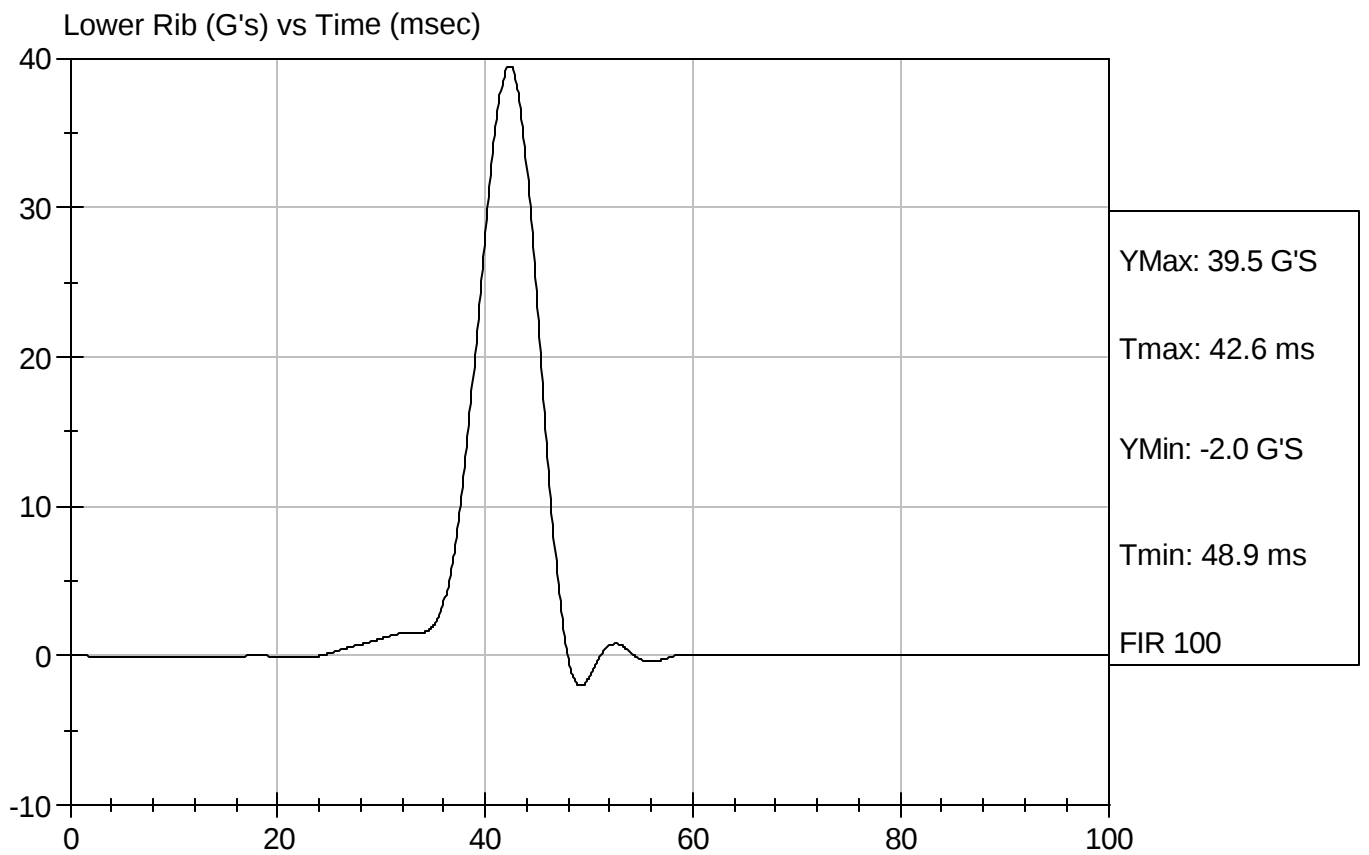
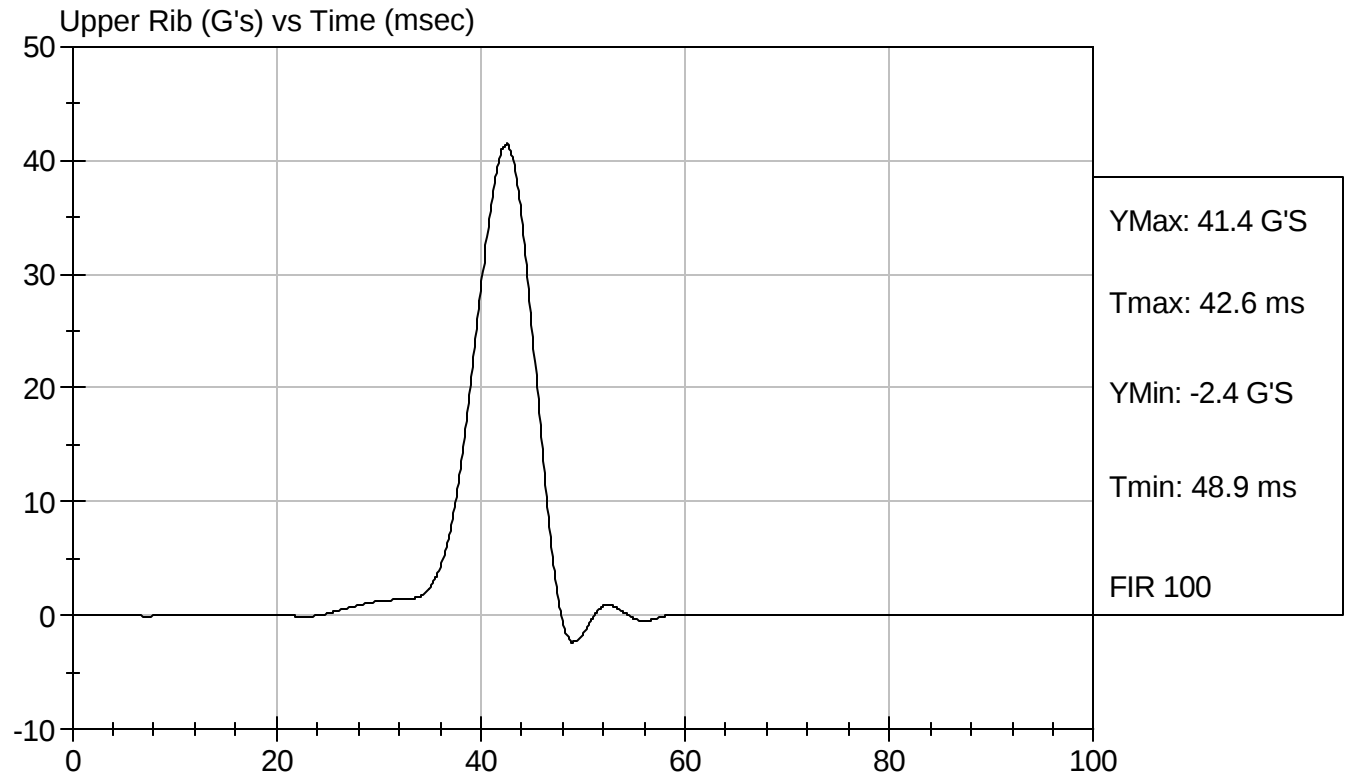
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D061372

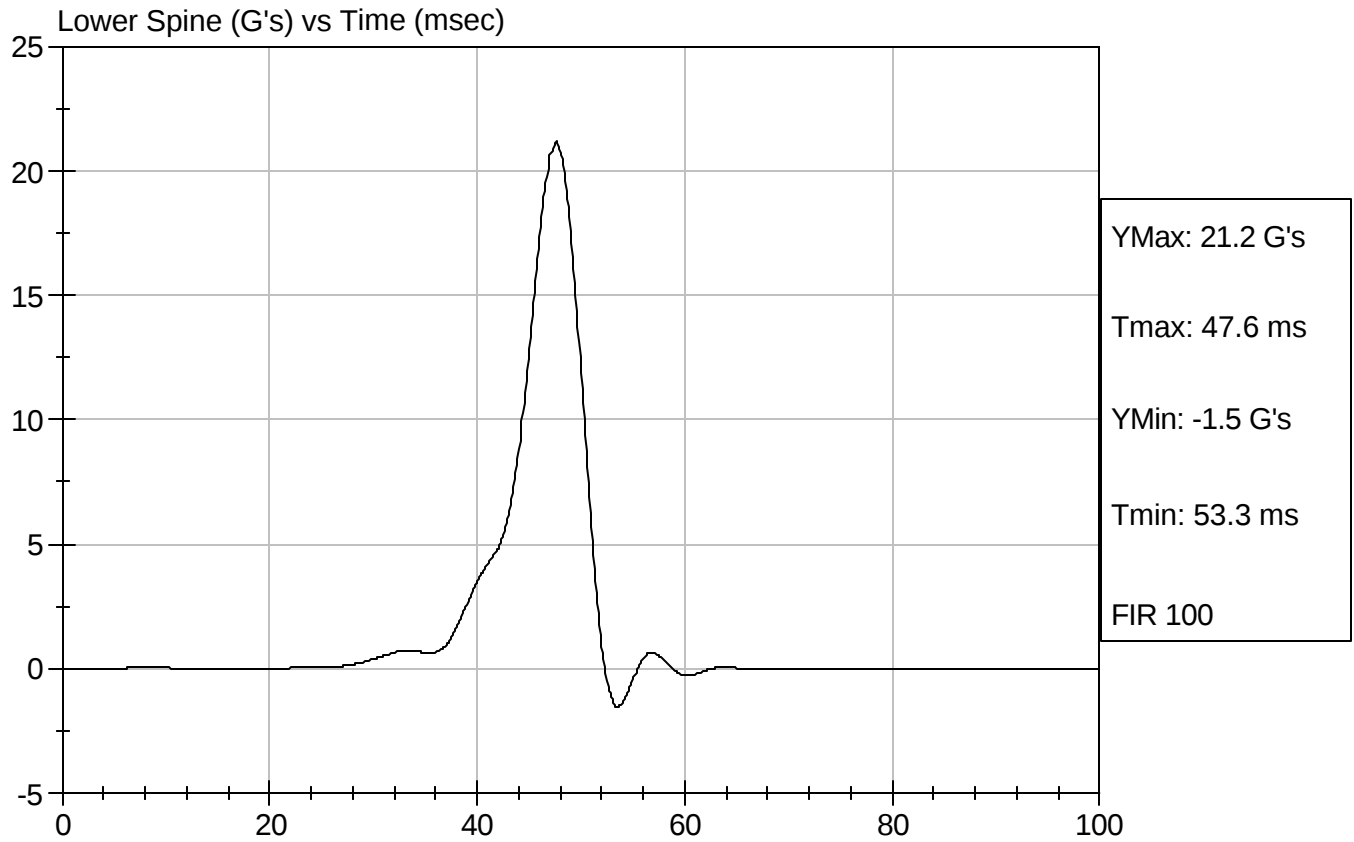
Test Date: 05/15/2006
Speed: 14.12 ft/sec, 4.30 m/sec





Test Desc: Thorax Impact
Component ID: D061372

Test Date: 05/15/2006
Speed: 14.12 ft/sec, 4.30 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 904

Test I.D: D061373

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	4.27 - 4.33	4.32	Pass
Pelvis Acceleration	G's	40 - 60	49	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/15/2006

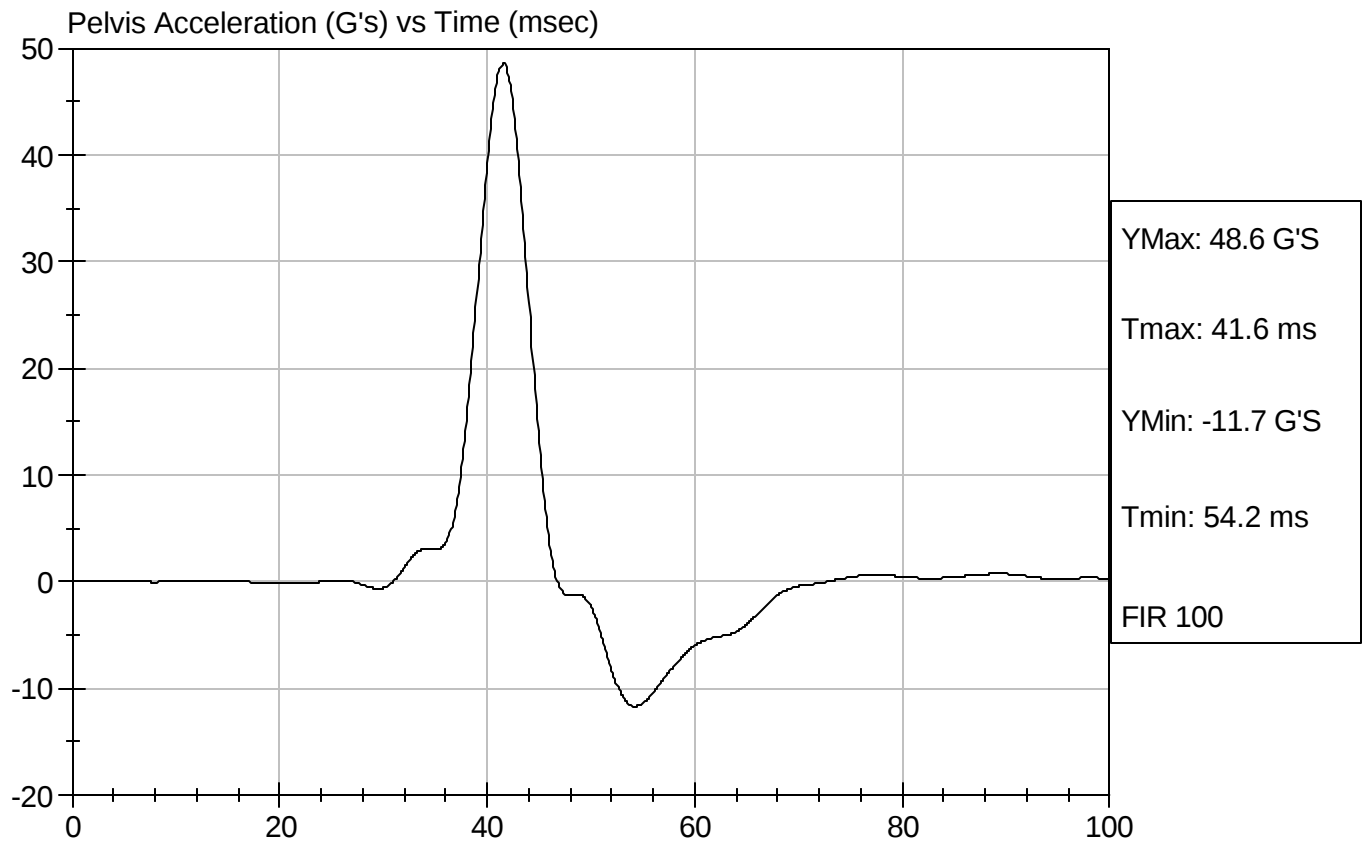
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D061373

Test Date: 05/15/2006
Speed: 14.17 ft/sec, 4.32 m/sec



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

ATD Serial No: 904

Test I.D: D061374

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Force At 12.7 mm	N	104 -162	142	Pass
Force At 19 mm	N	163 - 222	198	Pass
Force At 25.4 mm	N	222 - 280	266	Pass
Force At 33 mm	N	325 - 391	364	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/16/2006
Test Date

David Winkelbauer
Approved By

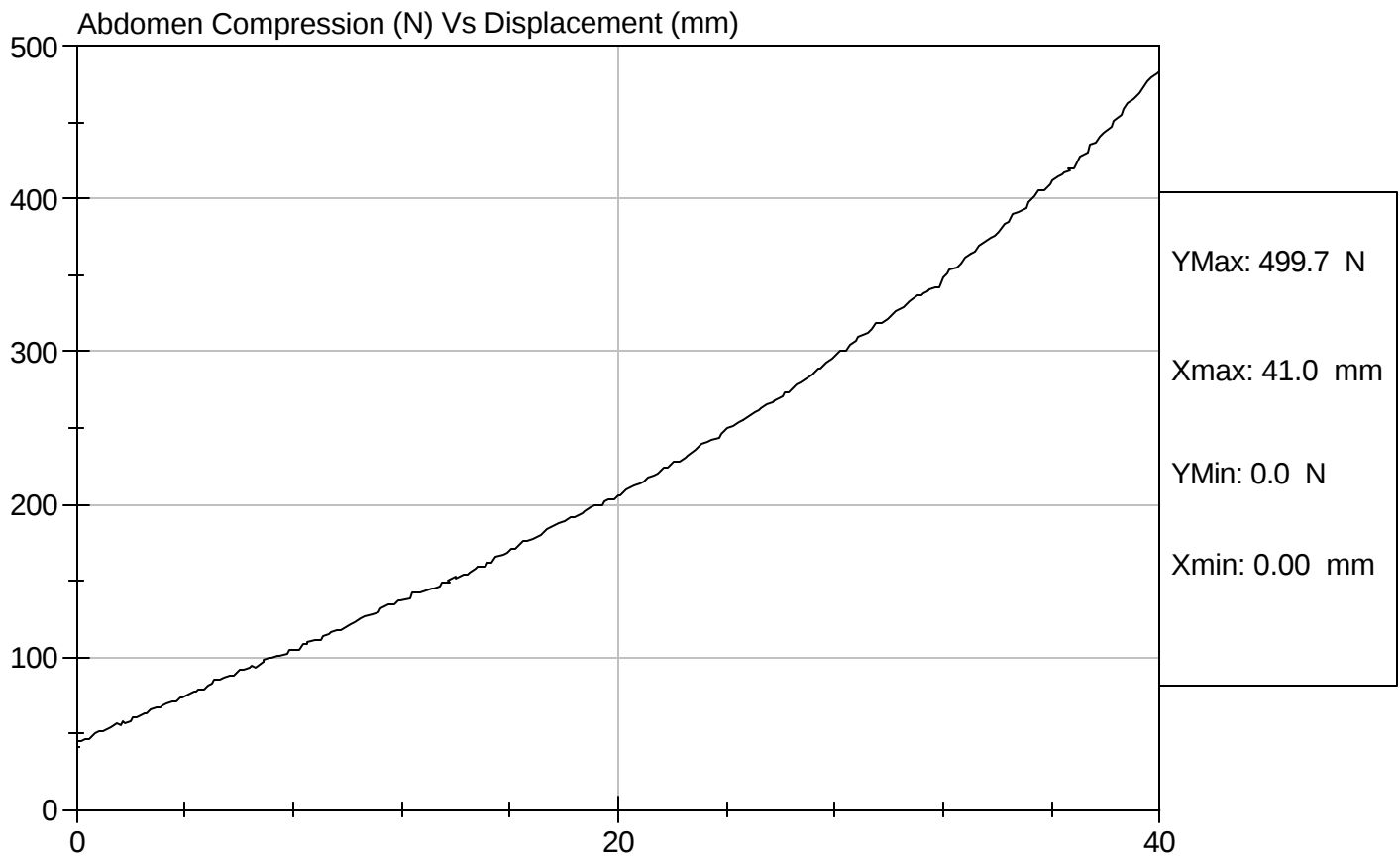


Test Description: Abdomen Compression

Test Date: 05/16/2006

Component: D061374

Speed: 0 ft/sec, 0 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 904

Test I.D: D061375

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	106.2	Pass
Force At 30 deg	N	151.2 - 204.6	164.1	Pass
Force At 40 deg	N	204.6 - 258.0	205.4	Pass
Return Angle	Deg	12 Maximum	6	Pass
			Overall Test Results	Pass


Laboratory Technician

05/16/2006

Test Date


Approved By

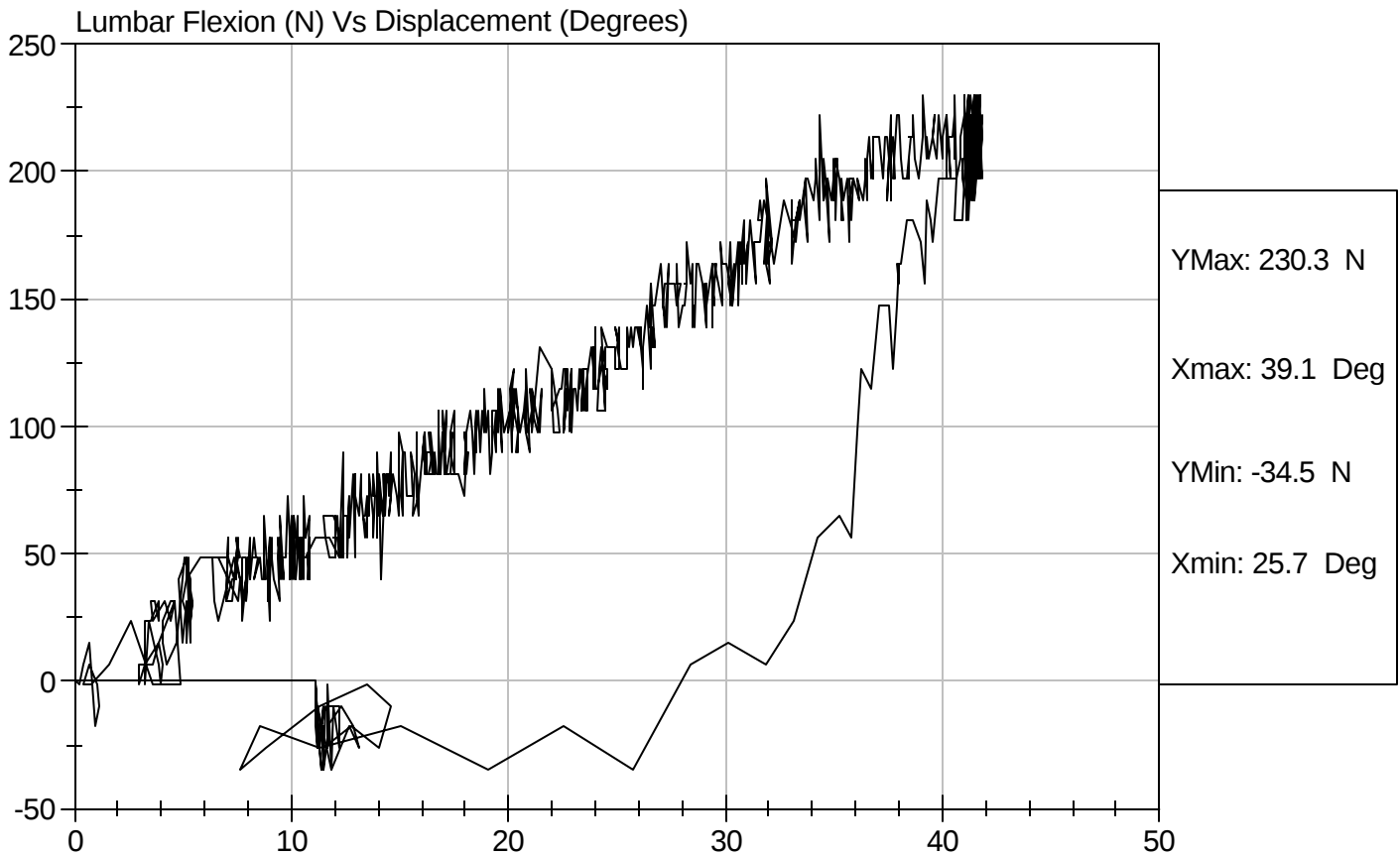


Test Description: Lumbar Flexion

Test Date: 05/16/2006

Component: D061375

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: D061379

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.28	Pass
	20 msec	m/s	4.12 to 5.10	4.48	Pass
	30 msec	m/s	5.73 to 7.01	6.22	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.21	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	78	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	58	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	11	Pass


 Laboratory Technician

05/16/2006

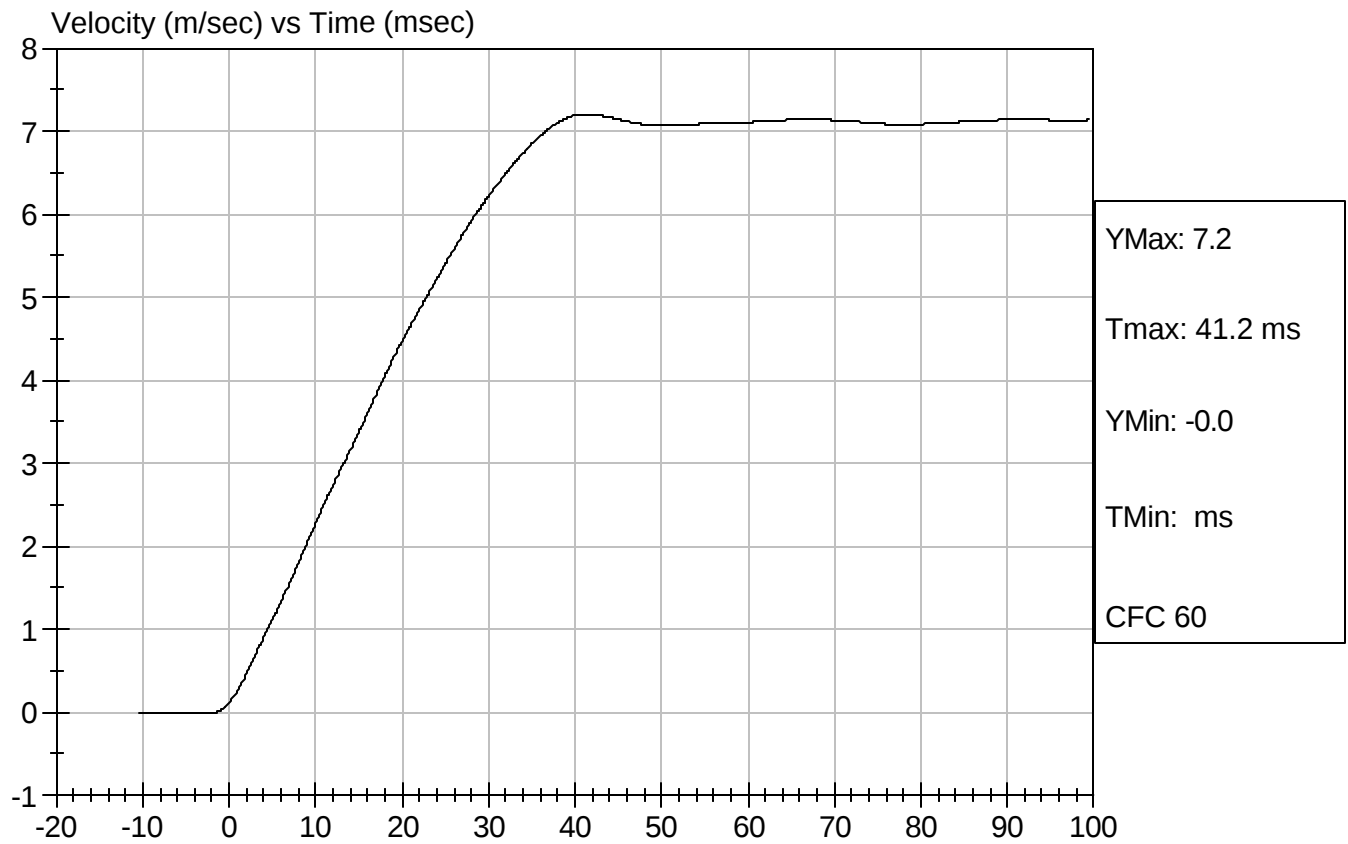
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D061379

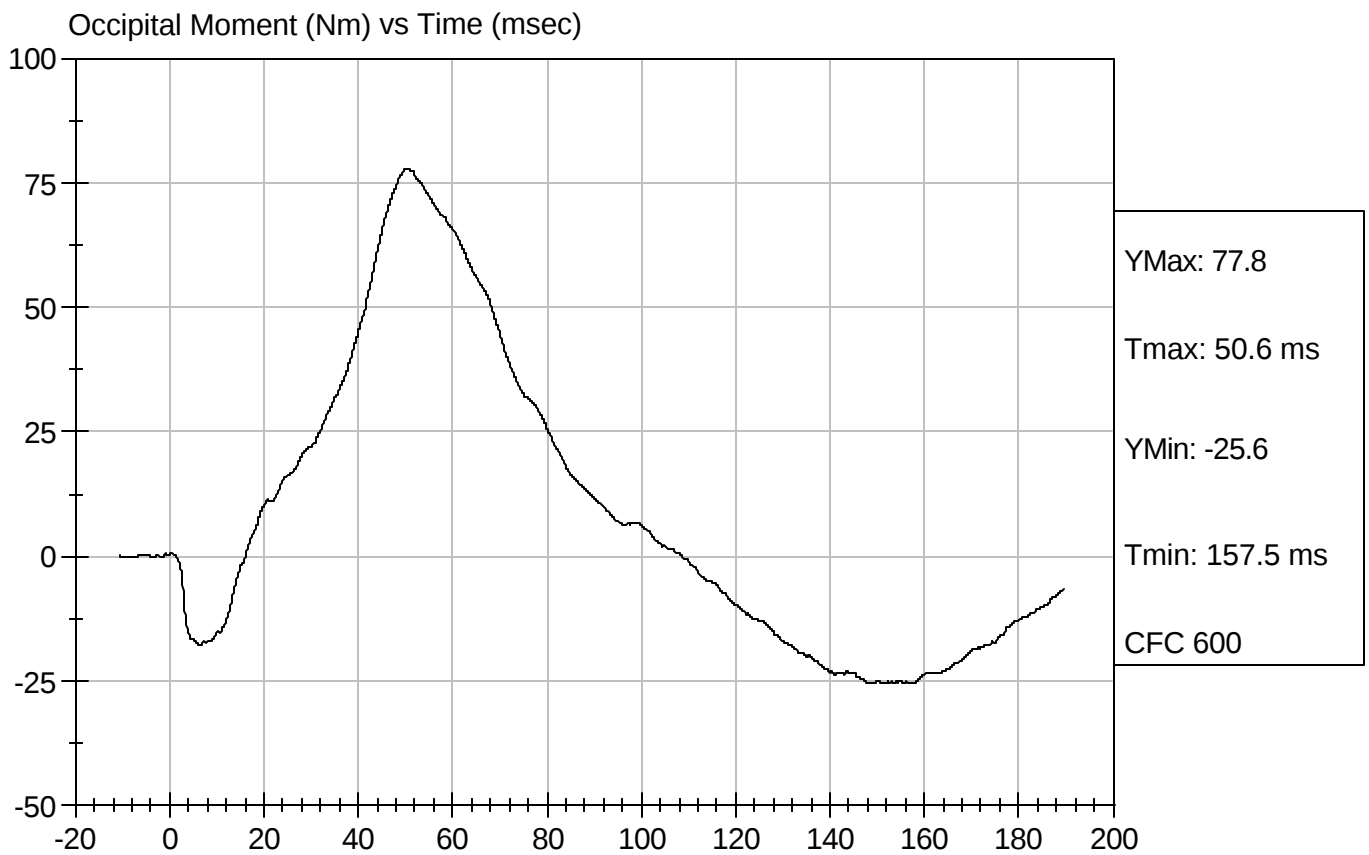
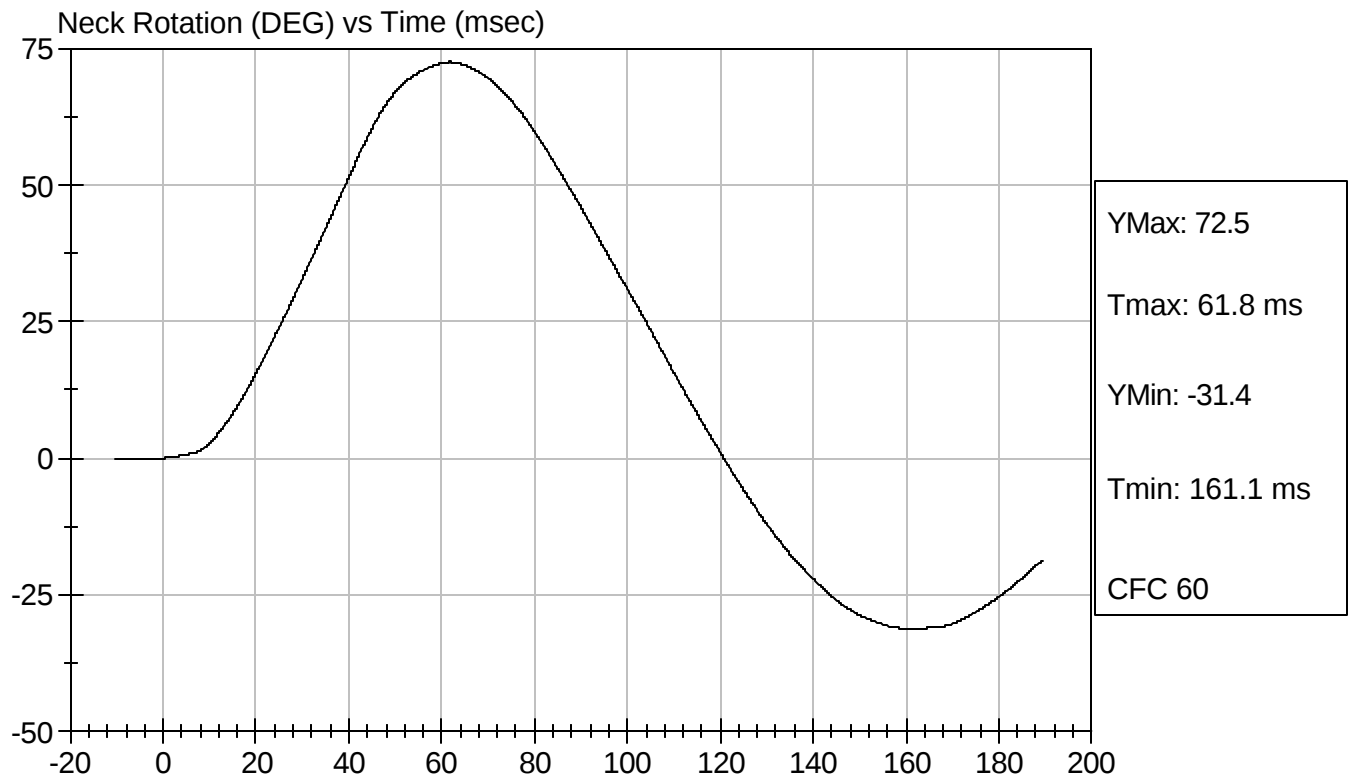
Test Date: 05/16/2006
Speed: 23.15 ft/sec, 7.06 m/sec





Test Desc: Neck Bending
Component ID: D061379

Test Date: 05/16/2006
Speed: 23.15 ft/sec, 7.06 m/sec



Calibration Test Results Summary

Dummy Serial Number: 904

Post-Test Calibration

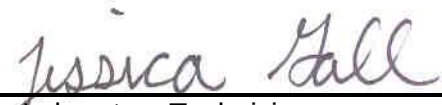
External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all pendulum test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis 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: D061481

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	29	Pass
Peak Resultant Acceleration	G's	120 to 150	133	Pass
Is Resultant Curve Unimodal?	Yes/No	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-9	Pass
Overall Test Results				Pass


Laboratory Technician

05/23/2006

Test Date


Approved By



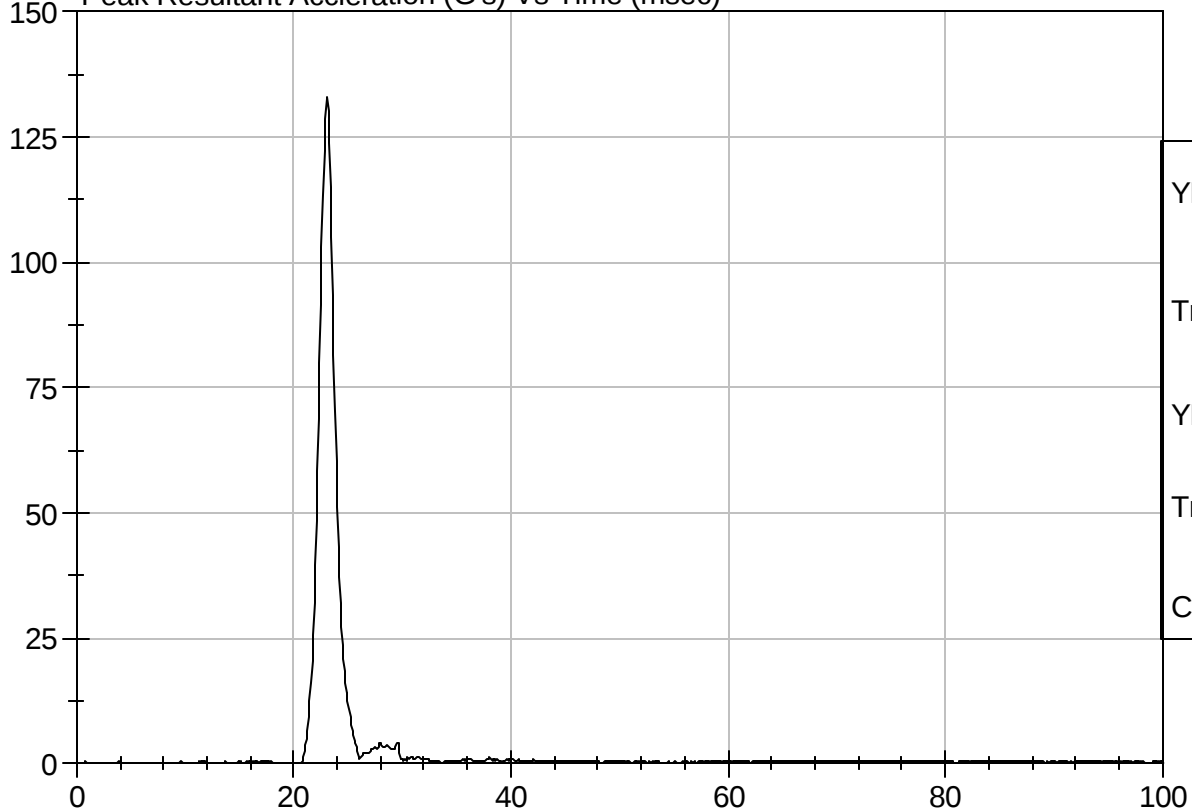
Test Description: Head Drop

Test Date: 05/23/2006

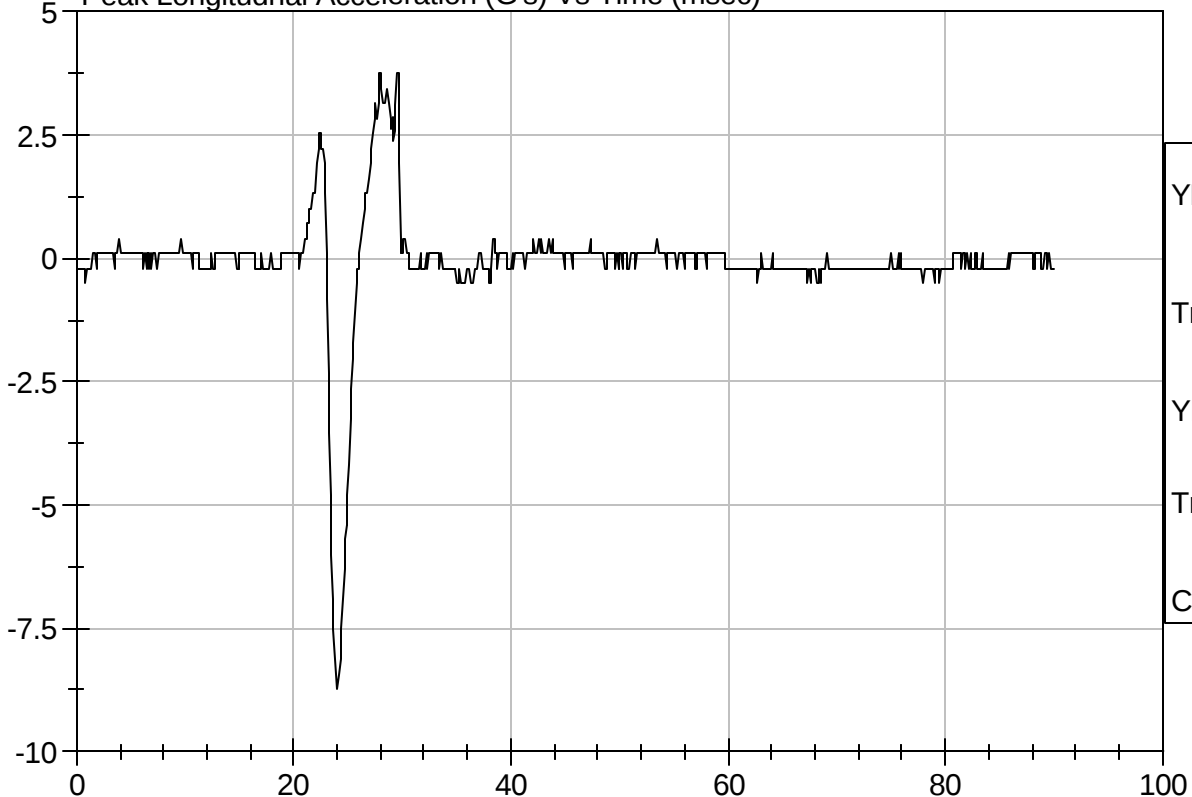
Component: D061481

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: D061482

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Probe Velocity	m/s	4.22 - 4.31	4.29	Pass
Upper Rib	G's	37 - 46	44	Pass
Lower Rib	G's	37 - 46	41	Pass
Lower Spine	G's	15 - 22	21	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/23/2006

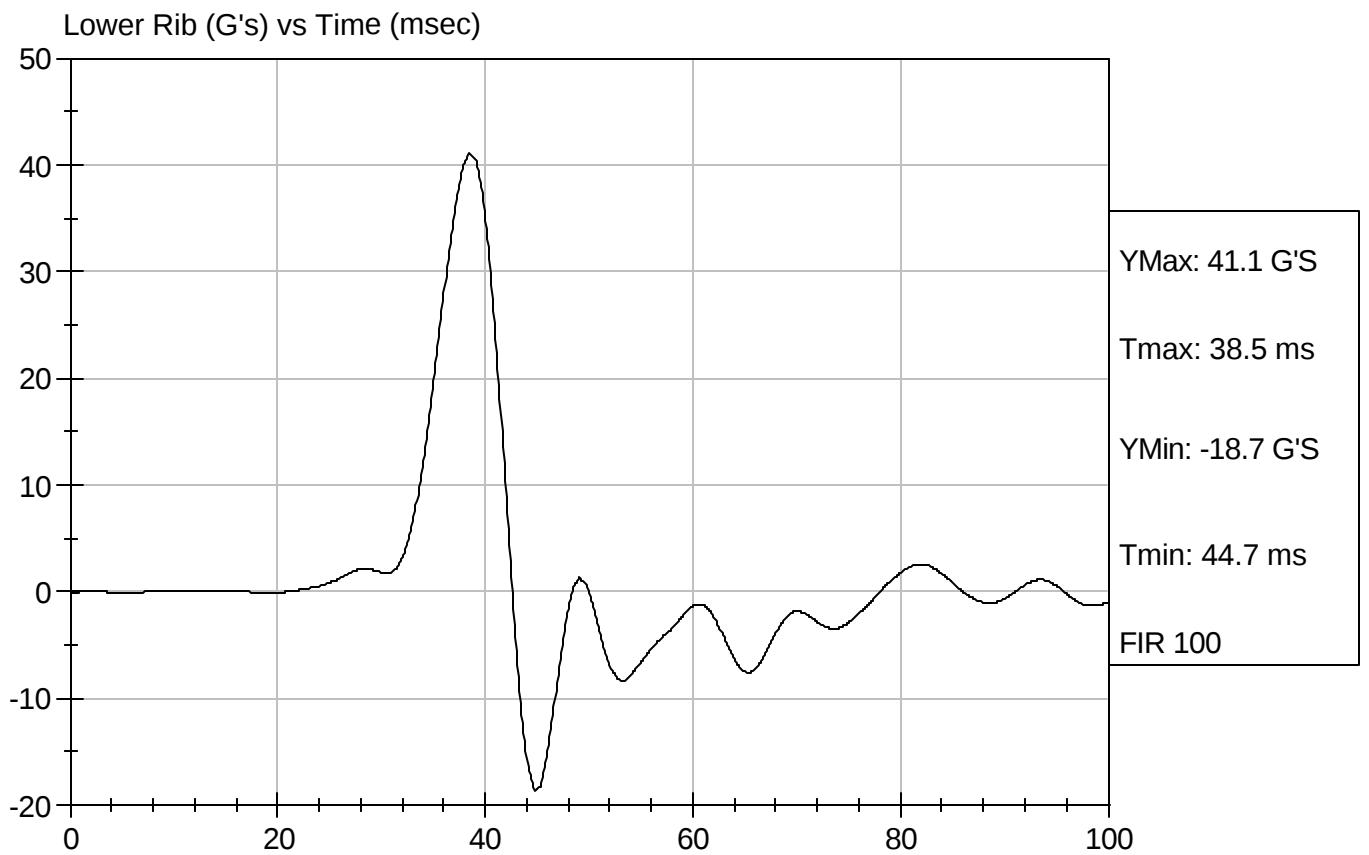
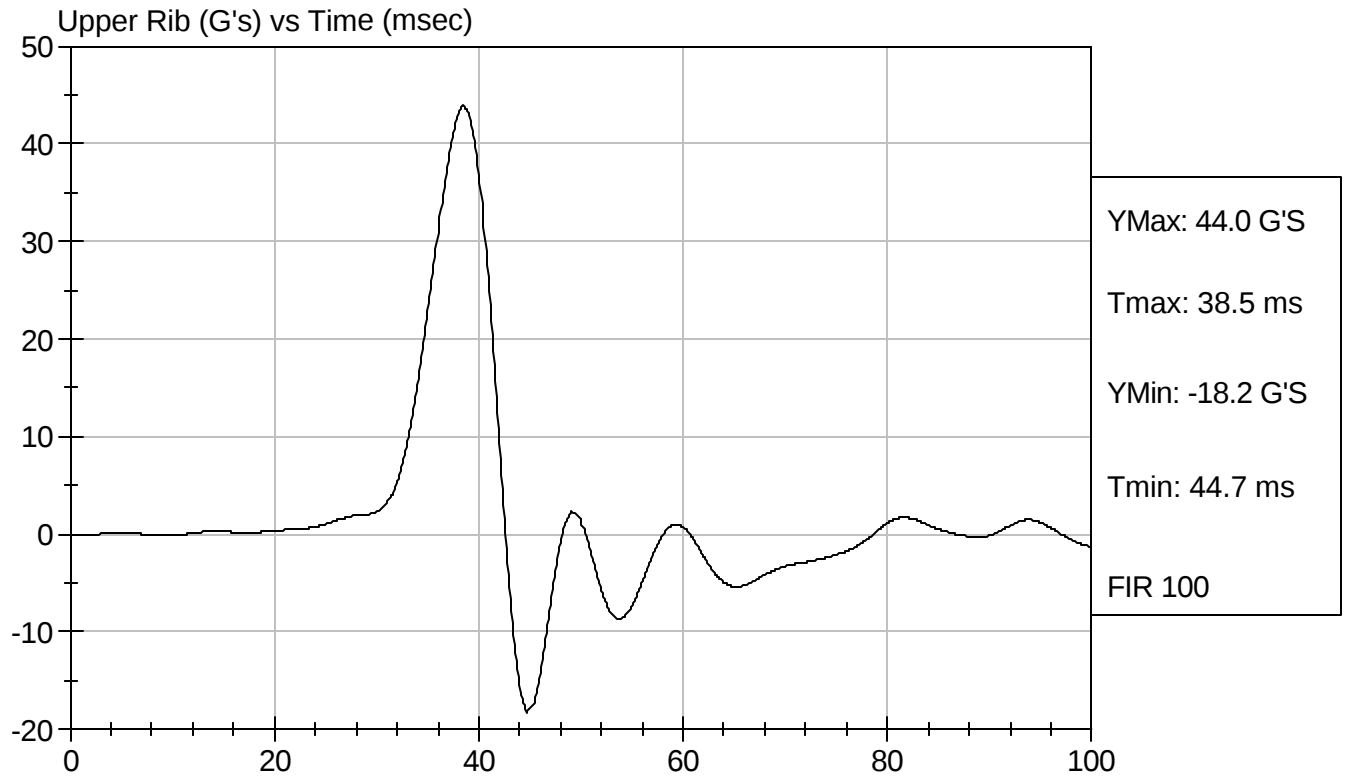
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Impact
Component ID: D061482

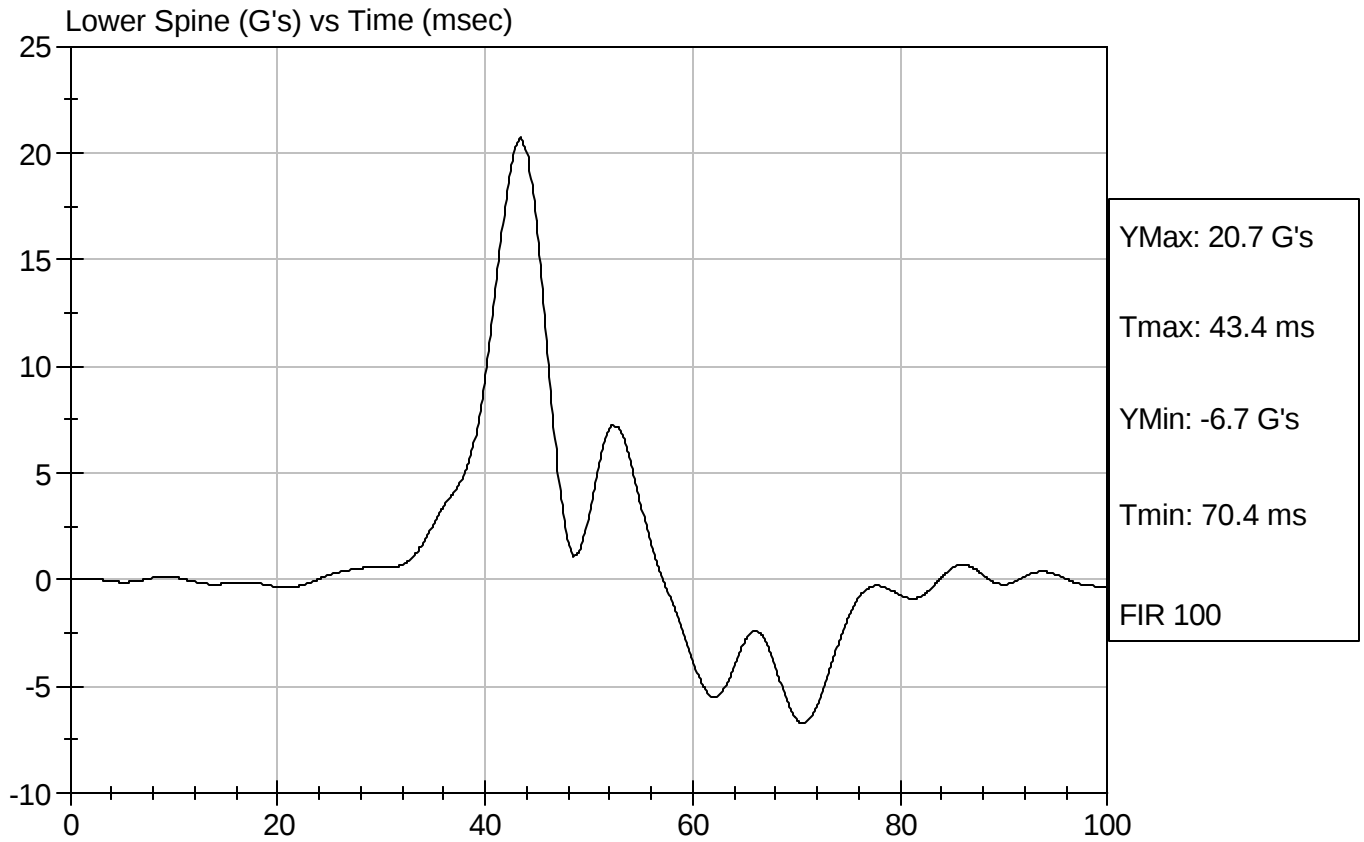
Test Date: 05/23/2006
Speed: 14.09 ft/sec, 4.29 m/sec





Test Desc: Thorax Impact
Component ID: D061482

Test Date: 05/23/2006
Speed: 14.09 ft/sec, 4.29 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Test

ATD Serial No: 904

Test I.D: D061483

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Probe Velocity	m/s	4.27 - 4.33	4.31	Pass
Pelvis Acceleration	G's	40 - 60	42	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

05/23/2006

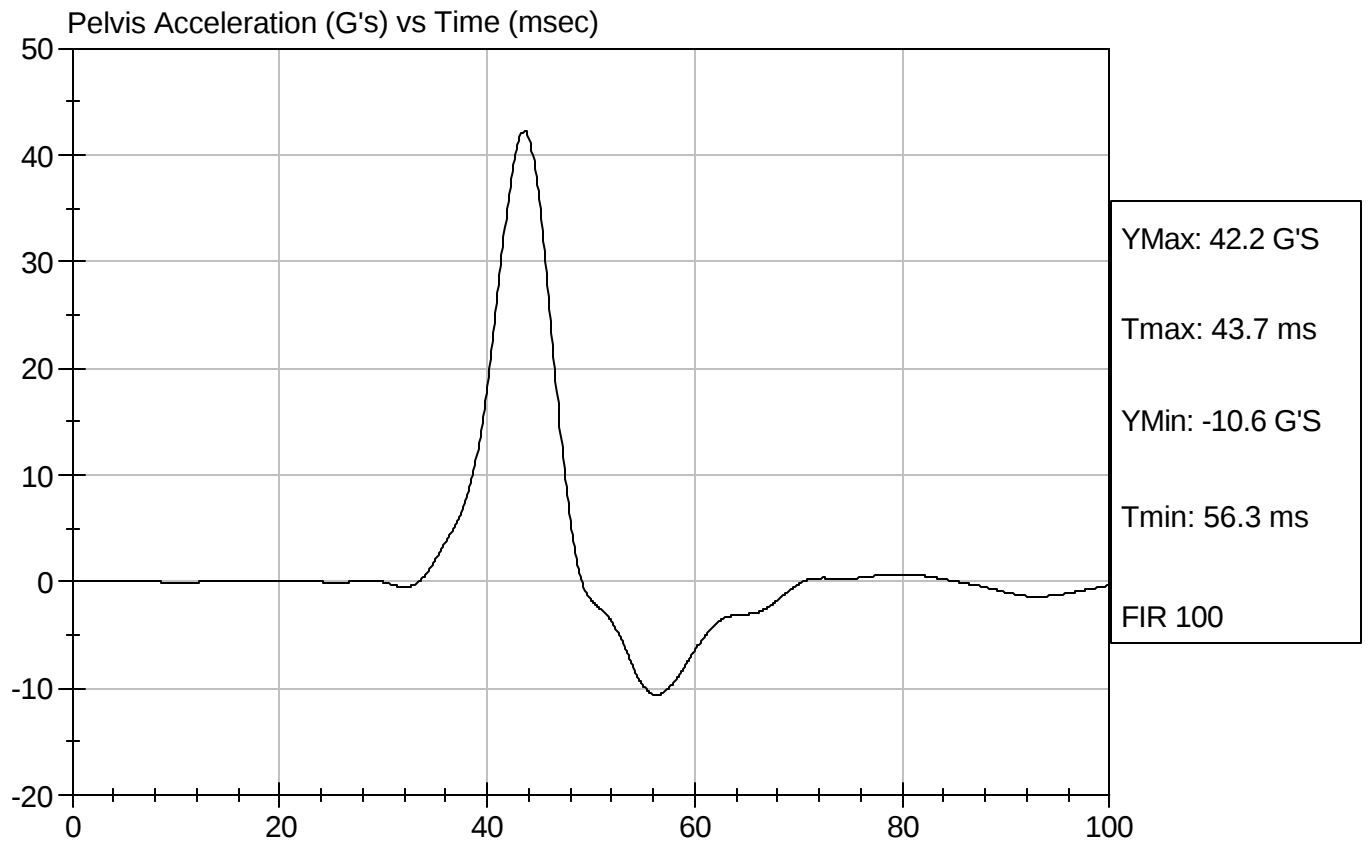
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D061483

Test Date: 05/23/2006
Speed: 14.13 ft/sec, 4.31 m/sec



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

ATD Serial No: 904

Test I.D: D061484

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Force At 12.7 mm	N	104 -162	140	Pass
Force At 19 mm	N	163 - 222	201	Pass
Force At 25.4 mm	N	222 - 280	263	Pass
Force At 33 mm	N	325 - 391	363	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/23/2006
Test Date

David Winkelbauer
Approved By

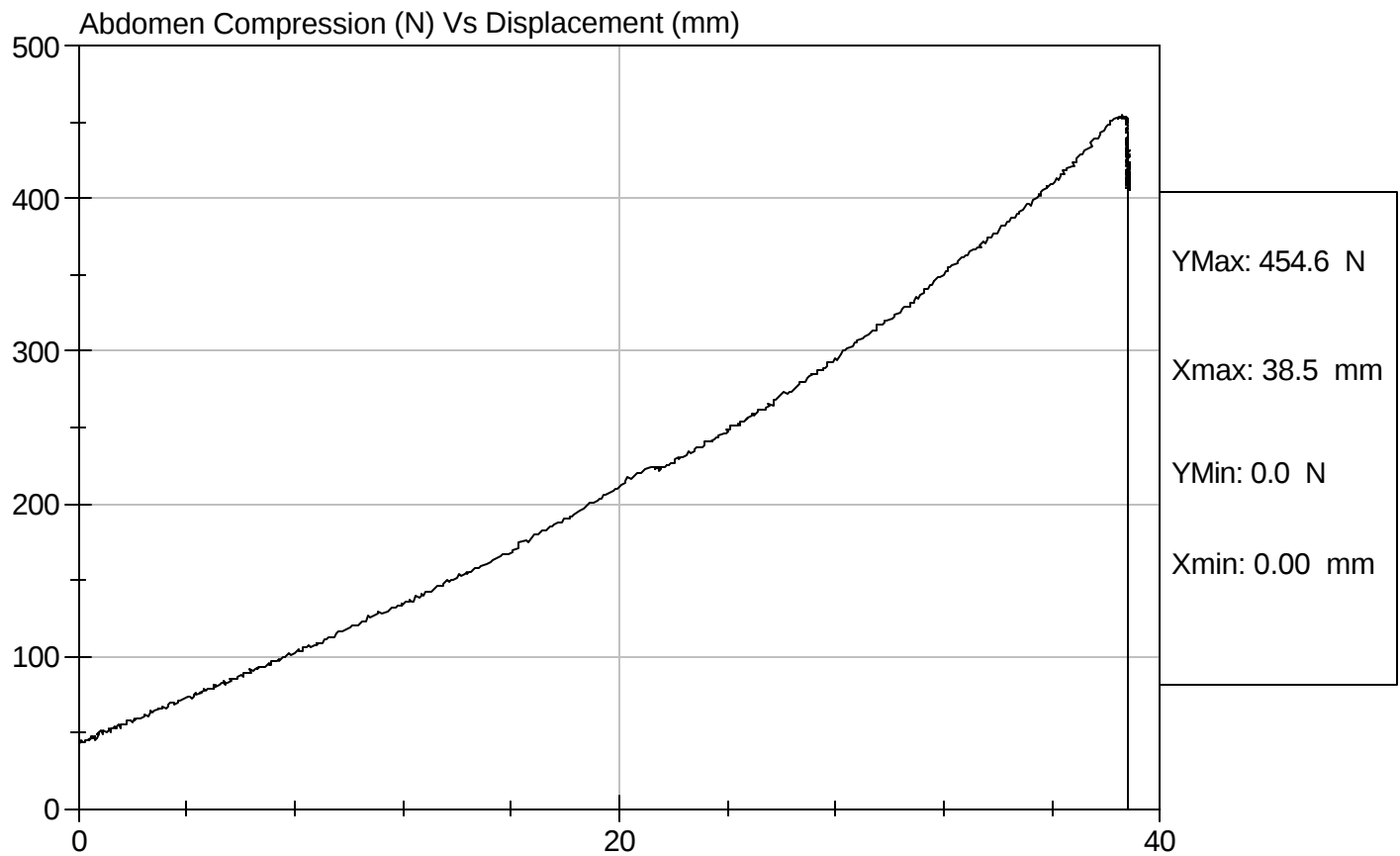


Test Description: Abdomen Compression

Test Date: 05/23/2006

Component: D061484

Speed: 0 ft/sec, 0 m/sec



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No: 904

Test I.D: D061485

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force At 0 deg	N	0 - 26.7	0.0	Pass
Force At 20 deg	N	97.9 - 151.2	125.4	Pass
Force At 30 deg	N	151.2 - 204.6	175.0	Pass
Force At 40 deg	N	204.6 - 258.0	241.2	Pass
Return Angle	Deg	12 Maximum	6	Pass
Overall Test Results			Pass	


Laboratory Technician

05/23/2006

Test Date


Approved By

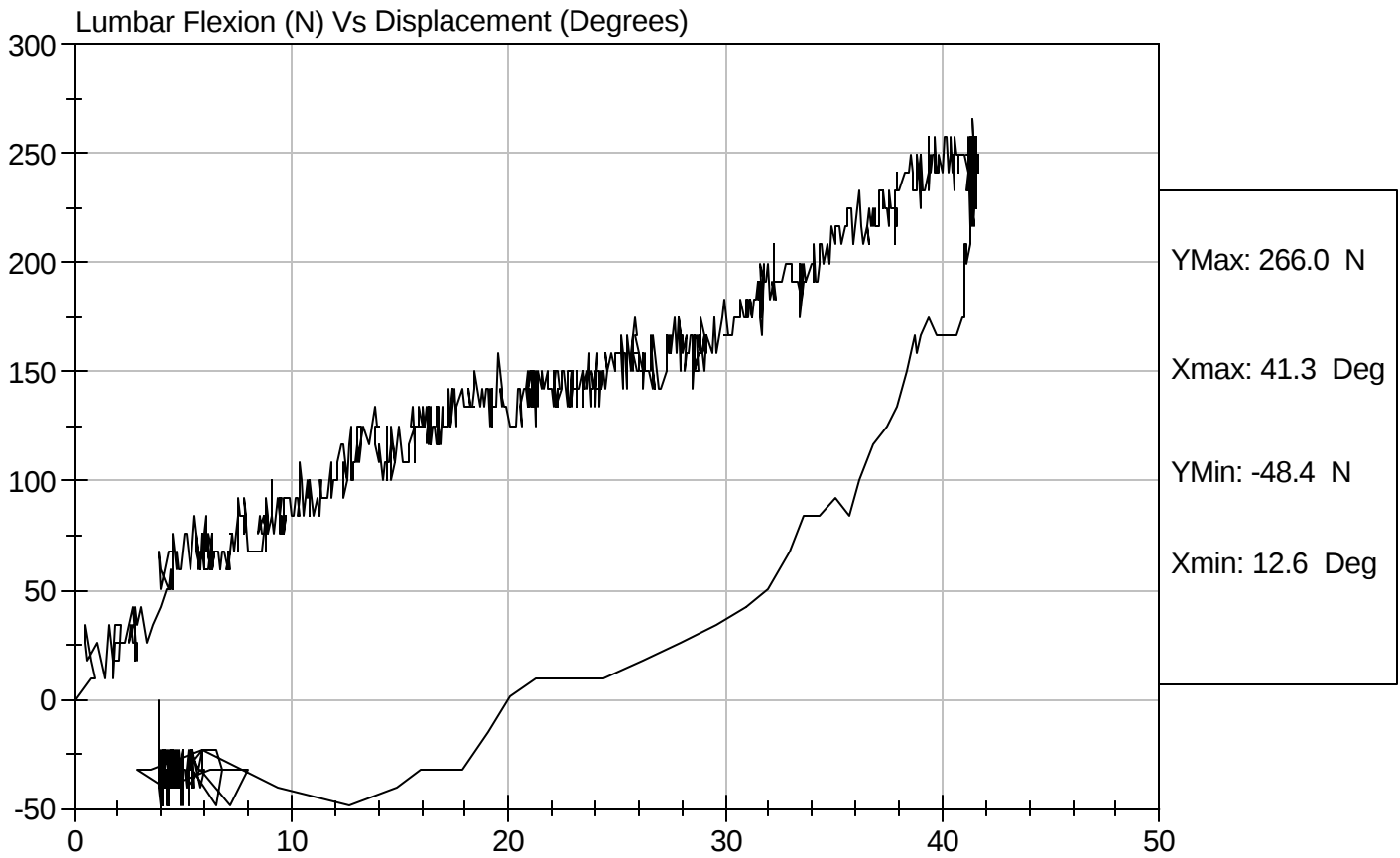


Test Description: Lumbar Flexion

Test Date: 05/23/2006

Component: D061485

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: D061489

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	31	Pass
Impact Velocity		m/s	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.33	Pass
	20 msec	m/s	4.12 to 5.10	4.52	Pass
	30 msec	m/s	5.73 to 7.01	6.20	Pass
	40 to 70 msec	m/s	6.27 to 7.64	7.26	Pass
Midsagittal Plane Max Rotation		deg	66 to 82	72	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	59	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	78	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	56	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	9	Pass


 Laboratory Technician

05/23/2006

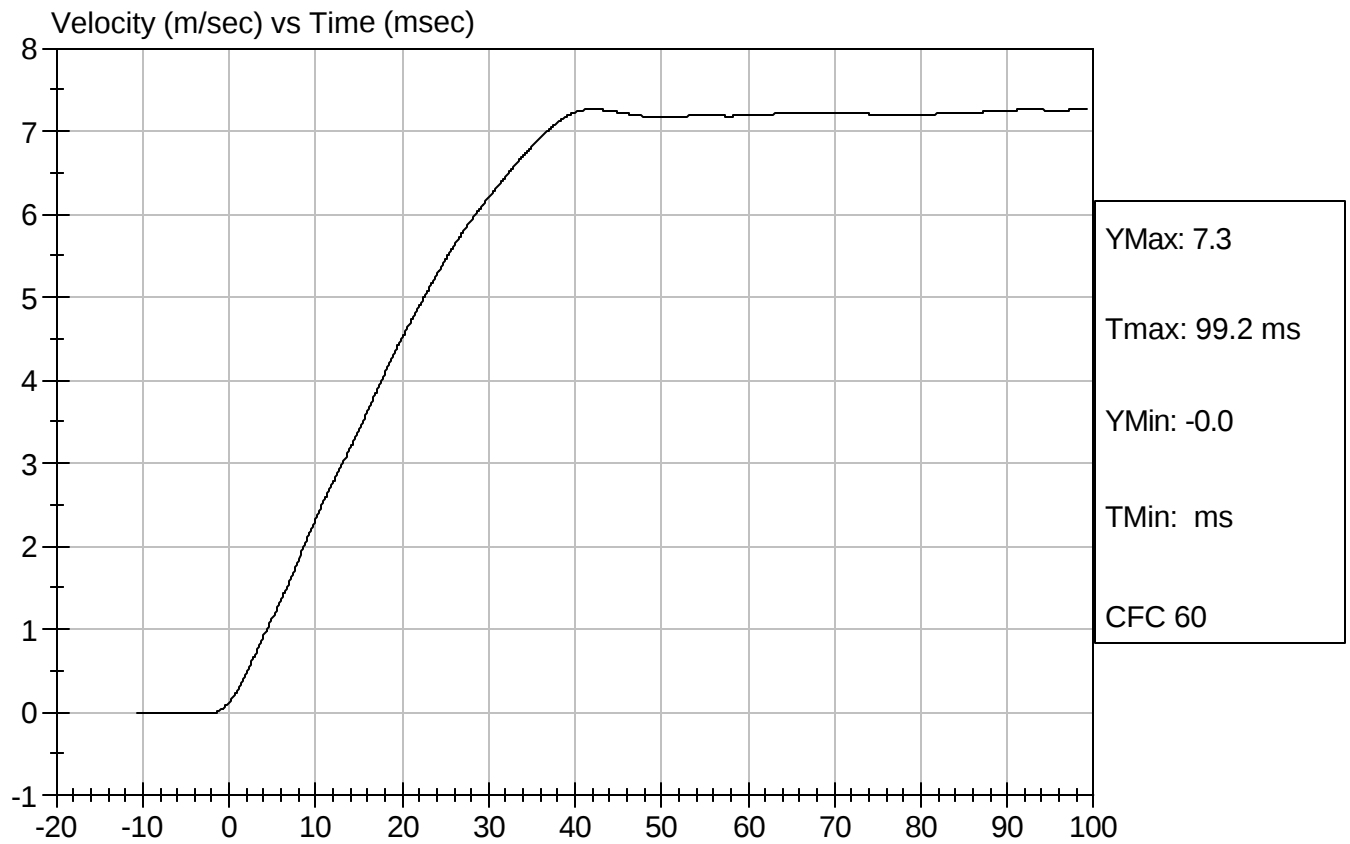
Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D061489

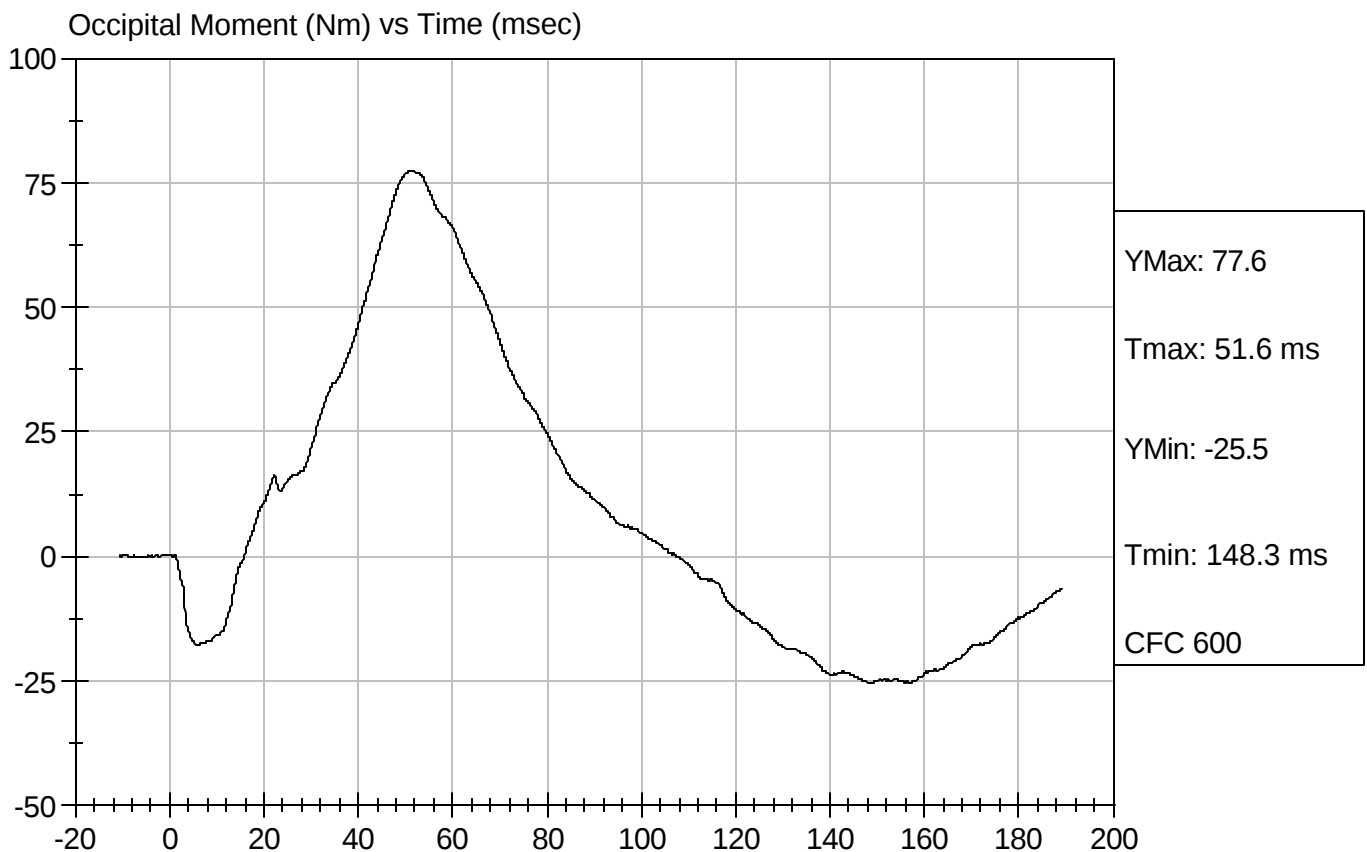
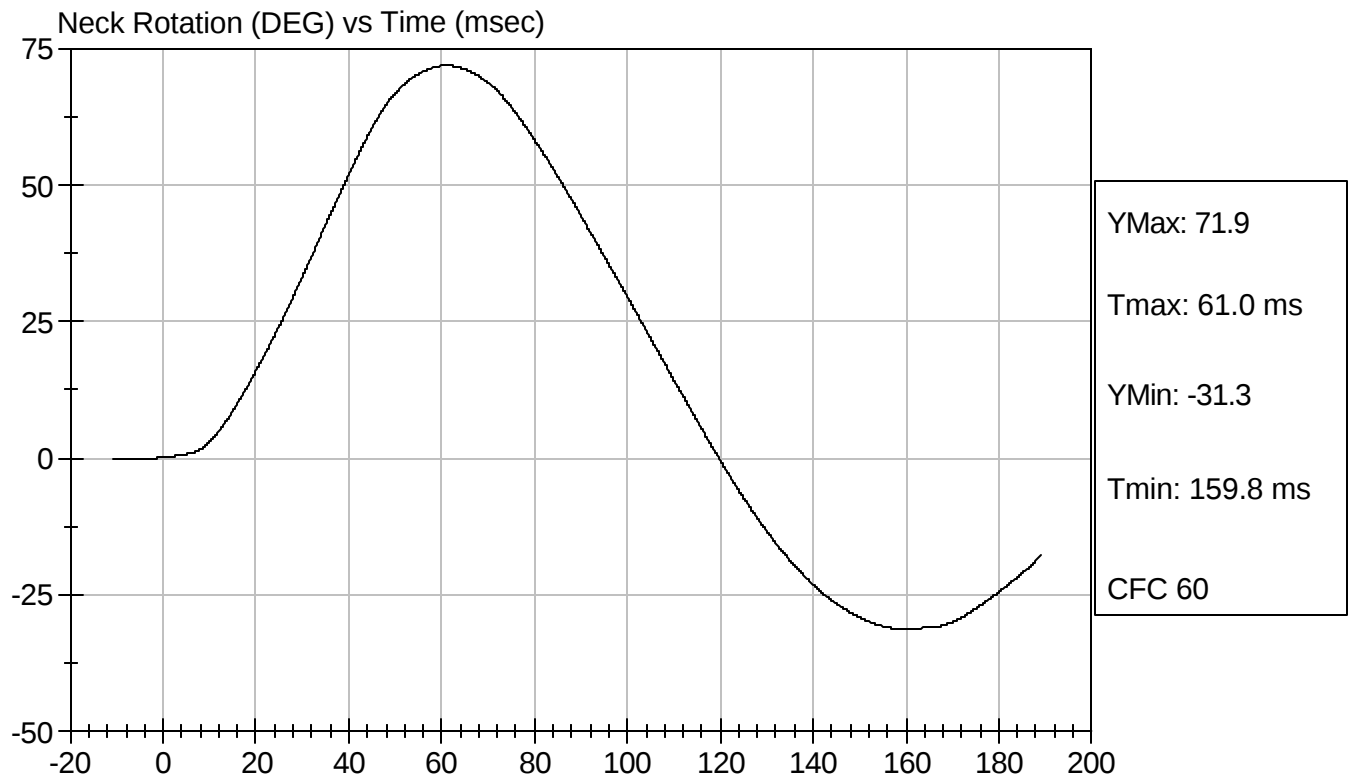
Test Date: 05/23/2006
Speed: 23.30 ft/sec, 7.10 m/sec





Test Desc: Neck Bending
Component ID: D061489

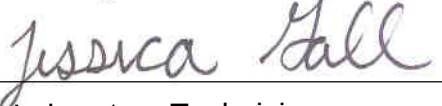
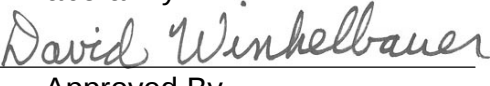
Test Date: 05/23/2006
Speed: 23.30 ft/sec, 7.10 m/sec



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

05/23/2006

Test Date