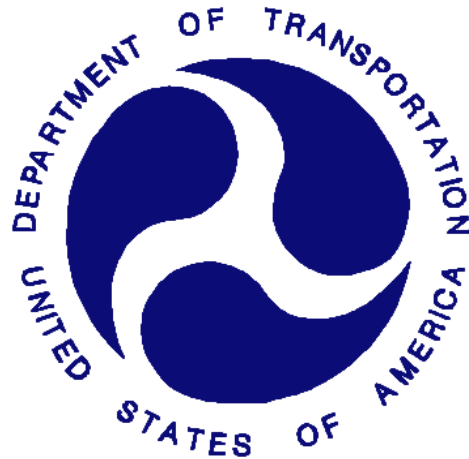


REPORT NUMBER: SINCAP-MGA-2012-086

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Moving Deformable Barrier Side Impact Test**

**TOYOTA MOTOR CORPORATION
2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
NHTSA No.: YC5104**

**MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105**



Test Date: June 19, 2012

Final Report Date: July 6, 2012

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: July 6, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

Technical Report Documentation Page

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4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback; NHTSA No.: YC5104		5. Report Date July 6, 2012																																																					
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7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer		8. Performing Organization Report No. SINCAP-MGA-2012-086																																																					
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12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered: Final Test Report June 19, 2012 to July 6, 2012																																																					
		14. Sponsoring Agency Code NVS-111																																																					
15. Supplementary Notes																																																							
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback in accordance with the specifications of the Office of Crashworthiness Standards NCAP Side Laboratory Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on June 19, 2012. The impact velocity of the Moving Deformable Barrier (MDB) was 62.3 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.4°C. The target vehicle post-test maximum crush was 257 mm at level 2. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th colspan="3">Driver ATD (ES-2re)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>111</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>44</td> <td>24</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>721</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>2039</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th colspan="3">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>199</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>63</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>4131</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>30</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td>14</td> </tr> </tbody> </table> *Proposed IARV The two 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.					Driver ATD (ES-2re)			Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	111	Maximum Thorax Rib Deflection	mm	44	24	Total Abdominal Force	N	2500	721	Pubic Symphysis Force	N	6000	2039		Passenger ATD (SID-IIs)			Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	199	Resultant Lower Spine Acceleration	Gs	82	63	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4131	Maximum Thoracic Rib Deflection	mm	38*	30	Maximum Abdomen Rib Deflection	mm	45*	14
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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2012 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test is to generate comparative side impact performance in a 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Laboratory Test Procedure dated August 2011.

SECTION 2 SUMMARY OF TEST RESULTS

A 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.3 km/h (38.7 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on June 19, 2012. Pretest and post test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS NCAP Side Laboratory Test Procedure dated August 2011. The side impact event was documented by eleven (11) cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and Redundant Head CG Triaxial Accelerometers
Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
Abdomen Forward, Middle, and Rear Y-Axis Load Cells
Lower Spine (T12) Triaxial Accelerometers
Pubic Symphysis Y-Axis Load Cell

PASSENGER ATD (SID-IIs)

Primary and Redundant Head CG Triaxial Accelerometers
Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
Abdomen Upper Rib and Lower Rib Y-Axis Displacement Potentiometers
Lower Spine (T12) Triaxial Accelerometers
Acetabulum and Iliac Wing Y-Axis Load Cells

Appendix B contains the dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

Dummy Injury readings were recorded as follows:

DUMMY INJURY VALUES

Driver ATD (ES-2re)			
Measurement Description	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	111
Maximum Thorax Rib Deflection	mm	44	24
Total Abdominal Force	N	2500	721
Pubic Symphysis Force	N	6000	2039

Passenger ATD (SID-IIs)			
Measurement Description	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	199
Resultant Lower Spine Acceleration	Gs	82	63
Total Pelvic Force	N	5525	4131
Maximum Thoracic Rib Deflection	mm	38*	30
Maximum Abdomen Rib Deflection	mm	45*	14

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other				

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

GENERAL COMMENTS

There was no valid data collected for:

Left Lower B-Post Y after 2ms

Left Mid B-Post Y after 2ms

Left Front Sill Y is questionable from 2-15ms

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

SECTION 3
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	YC5104	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Toyota	Automatic Door Locks (ADL)	Yes
Model	Prius Plug-In Hybrid	Power Window Auto-Reverse	Yes
Body Style	5-Dr Hatchback	Other Optional Feature	N/A
VIN	JTDKN3DP3C3006090	Driver Front Airbag	Yes
Body Color	Clearwater Blue Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	10 / 6	Driver Head/Torso Airbag	No
Engine Displacement (L)	1.8	Driver Torso Airbag	Yes
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	No
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	CVT	Rear Pass. Curtain Airbag	Yes
Overdrive	No	Rear Pass. Head/Torso Airbag	No
Final Drive	Front	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
All Wheel Drive (AWD)	No	Other Safety Restraint	N/A
Does owner's manual provide instruction to turn off automatic door locks?			Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation	GVWR (kg)	1842
Date of Manufacture	03/12	GAWR Front (kg)	1030
Vehicle Type	Passenger Car	GAWR Rear (kg)	987

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				370	(A)
DSC x 68.04 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW)				30	(A-B)

VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					w/lever	
Rear or Second Row			X		X		
Third Row Seat							

GENERAL TEST AND VEHICLE PARAMETER DATA

NHTSA No. YC5104
Test Date: 6/19/2012

[illegible]

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	240	230
Recommended Tire Size	P195/65R15	P195/65R15

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Yokohama	Yokohama
Tire Name	AVID	AVID
Tire Type	Passenger	Passenger
Tire Width	195	195
Aspect Ratio	65	65
Radial	Yes	Yes
Wheel Diameter	15	15
Load Index/Speed Symbol	89S	89S
Treadwear	320	320
Traction Grade	B	B
Temperature Grade	B	B
Tire Material	Rubber	Rubber

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

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	240	240	230	234
Tire Placard	kpa	240	240	230	230
Owner's Manual	kpa				
As Tested	kpa	240	240	230	230

MDB TIRE SPECIFICATIONS

	Requirement	Units	LF	RF	LR	RR
Tire Size	P205/75R15	N/A	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire	200 ± 21	kpa	220	220	220	220

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	432.7	301.2		477.6	358.0		474.5	370.1	
Right	kg	407.8	294.9		423.2	332.0		411.8	338.9	
Ratio	%	58.5	41.5		56.6	43.4		55.6	44.4	
Totals	kg	840.5	596.1	1436.6	900.8	690.0	1590.8	886.3	709.0	1595.3

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1436.6	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129.3	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	30	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1595.9	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **YES**

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Weight of Ballast, if any	0.0
Both taillights, right side mirror, right rear door panel, right rear window/motor/regulator, cargo area cover, trunk compartment, fix-a-flat and inflator, rear tonneau cover, rear bumper cover and foam.	26.7

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

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

TEST VEHICLE ATTITUDES AND CG

	Units	Fully Loaded	As Tested	Meets Requirement***
Left Front	mm	667	664	Yes
Right Front	mm	677	670	Yes
Right Rear	mm	666	670	Yes
Left Rear	mm	656	663	Yes
Vehicle CG (Aft of Front Axle)	mm	1200	1171	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	45	38	

*** The "As Tested" vehicle attitude measurements must be equal to or within ± 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well.

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	21.0	13.6	17.3
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rear- most	Mid- Fore/Aft	Forward- Most
Driver Seat	17.3	Fixed	Max	Fixed	Fixed	Fixed
	17.3	Fixed	Mid	Fixed	Fixed	Fixed
	17.3	Fixed	Min	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

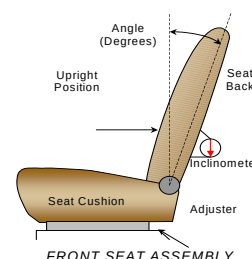
Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	260	27 (1 st as 1)	130 mm	13 th (1 st as 0)
Front Passenger Seat	260	27 (1 st as 1)	130 mm	13 th (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is fixed. The rear center and non-struck side rear outboard seat backs are also fixed.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degrees	Detent
Driver Seat w/Seated Dummy	68.1		2.1	4 th (1 st as 0)
Front Passenger Seat	66.2		1.3	4 th (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	-0.6*	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	-0.6*	Fixed
Rear Center Seat	Fixed	Fixed	-0.6*	Fixed

*Seat back was fixed, angle measured on headrest post.

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1.

	Total # of Positions	Placed in Position #
Driver Seat	4 detents (1 st as 1)	0 (uppermost as 0)
Rear Seat	Fixed	Not Applicable

HEAD RESTRAINT ADJUSTMENT

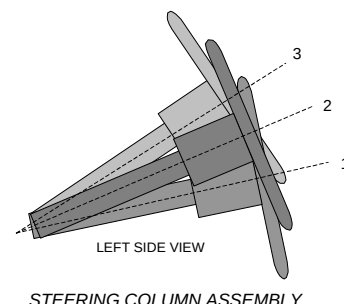
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	4	Highest
Rear Seat	Fixed	Fixed

STEERING COLUMN ADJUSTMENT

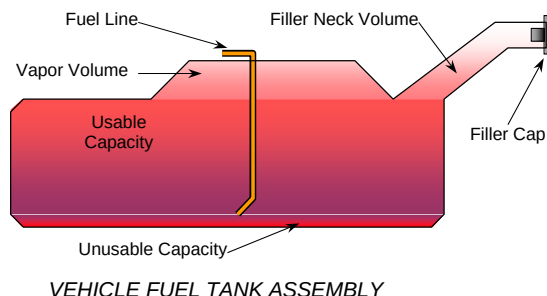
Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	67.0	135
Geometric Center, Position 2	65.8	118
Uppermost, Position 3	64.6	100
Telescoping Steering Wheel Travel		35
Test Position	65.8	118



FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler pipe.
The vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on. The fuel pipe is on the left side.



DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

FUEL TANK CAPACITY DATA

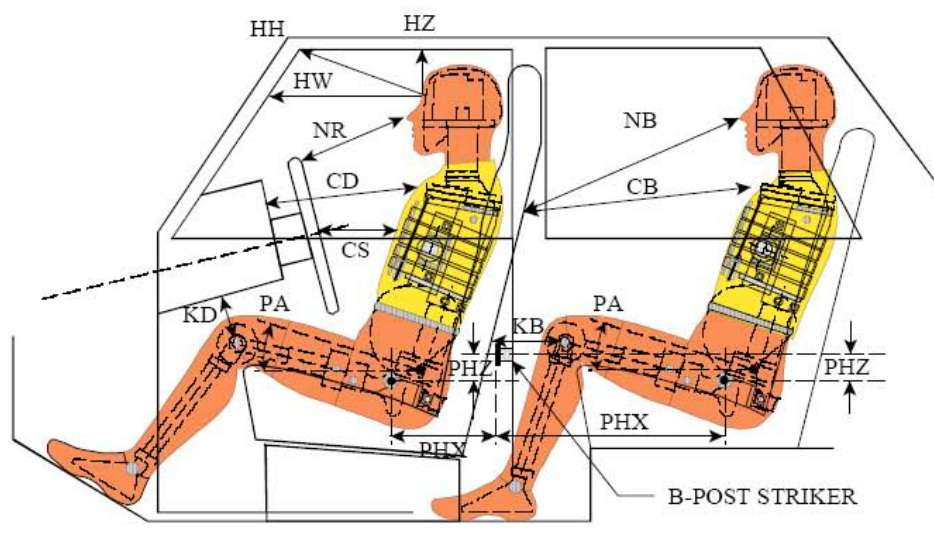
	Liters
Usable Capacity of "Standard" Tank (see Form No. 1)	40.0
Usable Capacity of "Optional" Tank (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	40.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	37.2
Actual Amount of Solvent Used	37.2
1/3 of Usable Capacity	13.3

Is the actual amount of solvent used in the test equal to 93% $\pm$ 1%
 of the Usable Capacity stated in Form No. 1? **YES**

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
Test Date: 6/19/2012



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

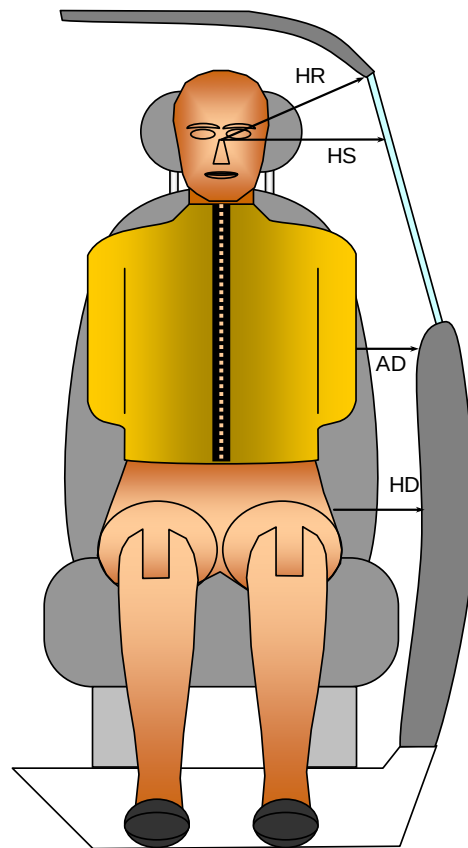
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver S/N 032		Passenger S/N 296	
			Length (mm)	Angle(°)	Length (mm)	Angle(°)
HH		Head to Header	346	11.3		
HW		Head to Windshield	621			
HZ	HZ	Head to Roof Liner	114		243	
NR	NB	Nose to Rim/Seat Back	468	24.3	561	14.0
CD	CB	Chest to Dashboard/Seat Back	818	2.0	554	11.2
CS		Chest to Steering Wheel	350	12.4		
KDL	KBL	Left Knee to Dash/Seat Back	130	35.7	322	15.8
KDR	KBR	Right Knee to Dash/Seat Back	122	34.1	325	18.9
PAX	PAX	Pelvic Tilt Angle X		24.0		22.8
	PAY	Pelvic Tilt Angle Y		-0.8		-0.5
PHX	PHX	Hip Point to Striker (X-Axis)	224		293	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	157		302	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012



FRONT VIEW OF DUMMY

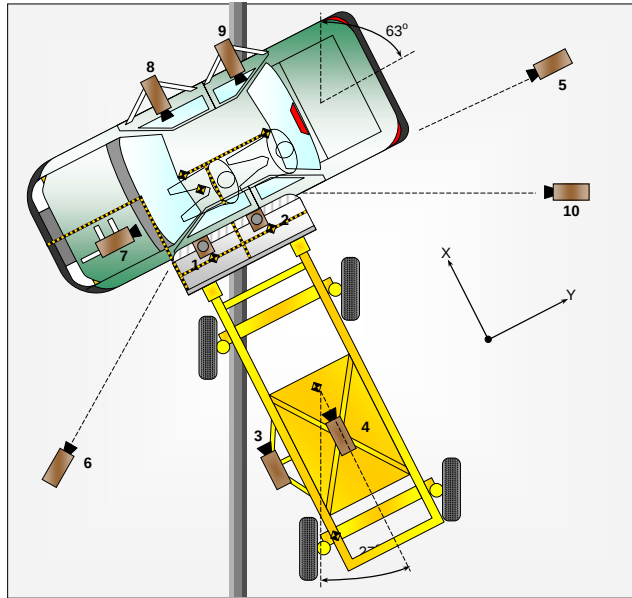
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver S/N 032	Passenger S/N 296
HR	Head to Side Header	mm	175	255
HS	Head to Side Window	mm	289	361
AD	Arm to Door	mm	89	153
HD	Hip Point to Door	mm	155	164

DATA SHEET NO. 5 CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
Test Date: 6/19/2012



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X*	Y*	Z*		
1	Overhead Overall	-170	0	-5060	14	1000
2	Overhead Close-Up	320	1150	-5060	50	1000
3	Left Impact Point (MDB)				50	See note
4	Side Overall (MDB)				16	See note
5	Rear	60	1980	-1180	24	1000
6	Left Front	3410	-4220	-1220	24	1000
7	Driver Front (OB)				16	1000
8	Driver Side (OB)				8	1000
9	Passenger Side (OB)				8	1000
10	Real Time Left Rear					30
11	Real Time Inrun					30

Reference: Impact Point projected to Ground; +X = To Front of MDB, + Y = To Right of MDB, +Z = Down

* All measurements accurate to ± 6 mm

Explain why camera(s) did not operate as intended: Cameras lost power during event.

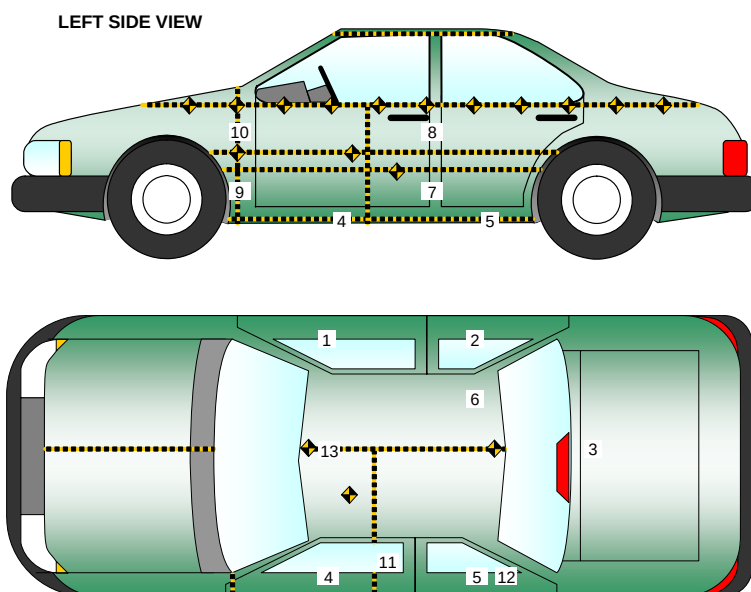
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MDB Accelerometers	5
MDB Contacts	2
Total	62

DATA SHEET NO. 6 **TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012



TEST VEHICLE ACCELEROMETER LOCATIONS

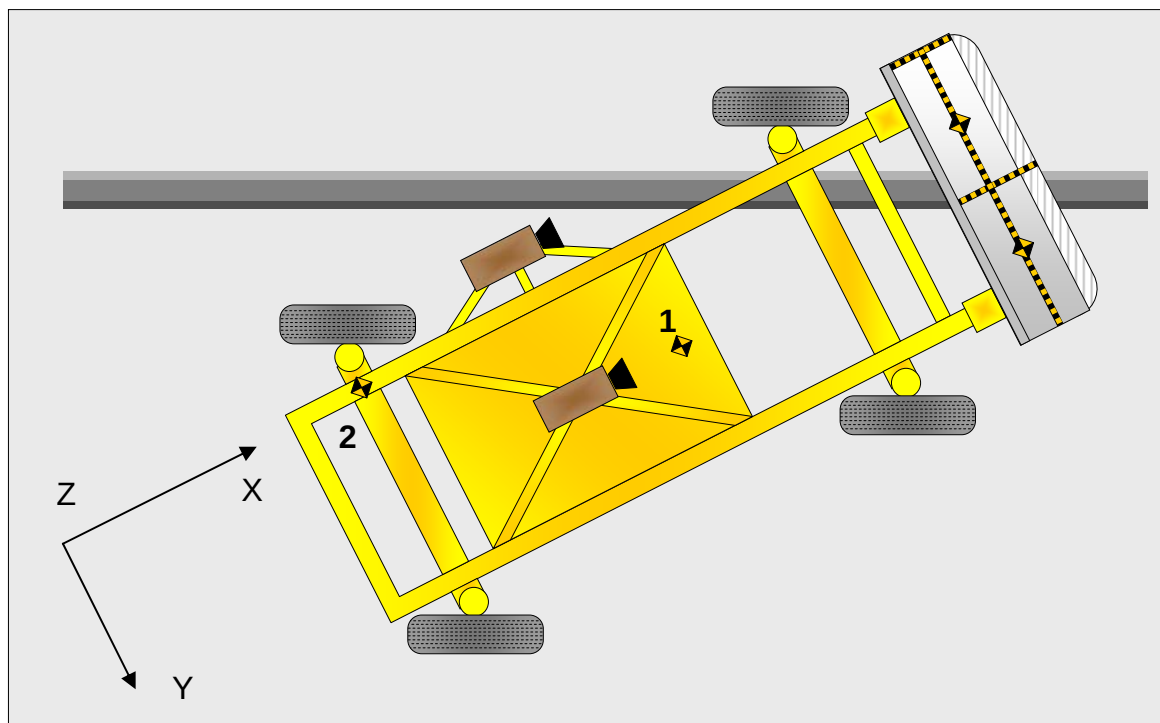
Accelerometer Location				
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2294	252	-160
2	Right Sill at Front Seat	2142	715	-165
3	Right Sill at Rear Seat	1361	711	-180
4	Left Sill at Front Door	2486	-715	-165
5	Left Sill at Rear Door	1517	-711	-180
6	Left Lower A-Post	2999	-802	-476
7	Left Middle A-Post	2995	-796	-709
8	Left Lower B-Post	1848	-726	-584
9	Left Middle B-Post	1856	-728	-794
10	Front Seat Track	2267	-560	-346
11	Rear Seat Structure	1616	-385	-260
12	Rt. Rear Occ. Compartment	1661	396	-210
13	Engine Block	3635	55	-821
14	Rear Above Axle	315	-15	-315

Reference: X – Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 7 **MDB ACCELEROMETER LOCATIONS**

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012



MDB ACCELEROMETER LOCATIONS

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

Reference: X - MDB Face (+ forward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
Test Date: 6/19/2012

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Center Headrest
Top of Head	Curtain Airbag, Headliner	Curtain Airbag, Center Headrest
Left Side of Head	Curtain Airbag, Headliner	Curtain Airbag
Back of Head	Curtain Airbag, Headliner, Headrest	Curtain Airbag, Center Headrest
Left Shoulder	Side Airbag	Door Panel
Upper Torso	Side Airbag	Seatback
Lower Torso	Side Airbag, Seatback	Door Panel
Left Hip	Door Panel	Door Panel, Seat Cushion
Left Knee	Door Panel	Door Panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	None
Side Window Damage	Left Front and Left Rear Windows Broke
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other				

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2700
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		410
Actual Impact Point (Aft of Front Axle)	mm		414
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	-4
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	-3

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
 Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheelbase of Framework Carriage	2592
CG Location aft of Front Axle	1129

MDB WEIGHTS

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

SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.3
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.3
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.4
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	26.6

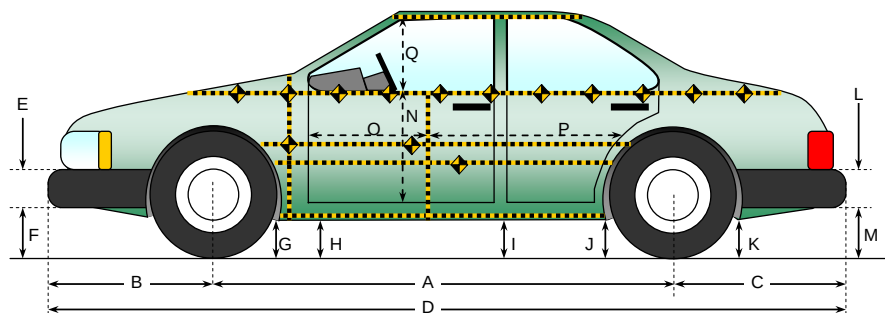
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	212
B	Top of Bumper	533	800	Right	105
C	Mid-Level	686	800	Left	103
D	Top of Stack	813	800	Left	153

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
Test Date: 6/19/2012



All measurements in (mm) with tolerance of ± 3 mm

LEFT SIDE VIEW

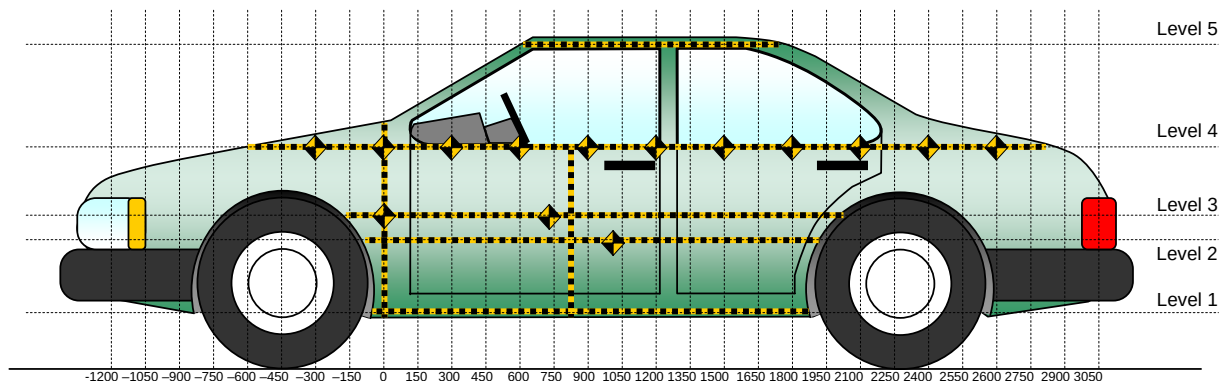
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2700	2700	0
B	Front Axle to FSOV	923	923	0
C	Rear Axle to RSOV	817	817	0
D	Total Length at Centerline	4440	4440	0
E	Front Bumper Thickness	115	115	0
F	Front Bumper Bottom to Ground	180	186	-6
G	Sill Height at Front Wheel Well	165	175	-10
H	Sill Height at Front Door Leading Edge	165	173	-8
I	Sill Height at B Pillar	162	190	-28
J1	Sill Height at Rear Wheel Well	143	150	-7
J2	Pinch Weld Height at Rear Wheel Well	164	172	-8
K	Sill Height Aft of Rear Wheel Well	228	215	13
L	Rear Bumper Thickness	132	132	0
M	Rear Bumper Bottom to Ground	334	310	24
N	Sill Height to Window Bottom Sill	758	673	85
O	Front Door Leading Edge to Impact CL	811	793	18
P	Rear Door Trailing Edge to Impact CL	1142	1132	10
Q	Front Window Opening	430	417	13
R	Right Side Length	3757	3764	-7
S	Left Side Length	3757	3732	25
T	Vehicle Width at B Post	1746	1560	186

DATA SHEET NO. 11 **TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012



All Measurements Shown in mm

LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	200	39	300
2	Occupant Hip Point	534	257	1200
3	Mid Door	611	222	1500
4	Window Sill	893	189	1500
5	Window Top	1418	14	1500

Note: The measurements are taken along the vertical impact reference line.
 Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012

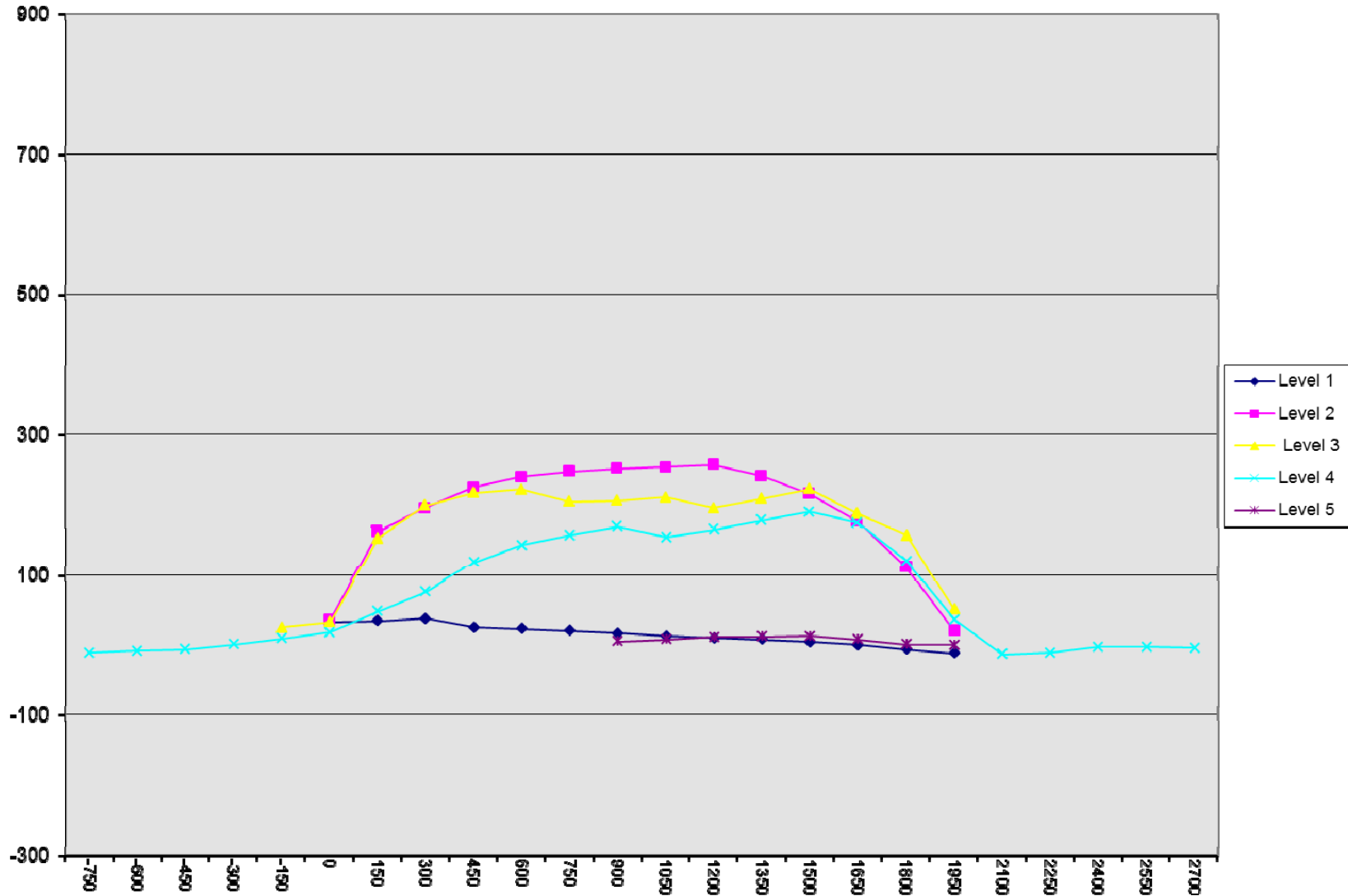
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-750				382					372					-10	
-600				346					339					-7	
-450				325					320					-5	
-300				313					315					2	
-150			223	299				249	309				26	10	
0	254	225	229	289		288	262	263	308		34	37	34	19	
150	254	228	231	279		289	390	384	328		35	162	153	49	
300	254	228	230	270		293	423	428	347		39	195	198	77	
450	255	228	229	262		281	452	445	381		26	224	216	119	
600	255	227	228	257		279	466	449	400		24	239	221	143	
750	254	227	228	252		275	474	432	409		21	247	204	157	
900	254	226	228	249	516	272	477	433	418	522	18	251	205	169	6
1050	254	226	228	248	508	268	479	438	402	517	14	253	210	154	9
1200	254	227	229	251	506	265	484	424	416	518	11	257	195	165	12
1350	255	229	230	256	506	264	470	438	433	519	9	241	208	177	13
1500	255	230	232	261	506	260	445	454	450	520	5	215	222	189	14
1650	254	232	234	266	514	255	408	421	440	523	1	176	187	174	9
1800	255	233	235	272	527	250	345	392	393	529	-5	112	157	121	2
1950	256	224	230	262	545	245	245	282	299	546	-11	21	52	37	1
2100				284					272					-12	
2250				290					280					-10	
2400				298					296					-2	
2550				308					306					-2	
2700				325					322					-3	

NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
Test Program: NCAP Side MDB Impact Test

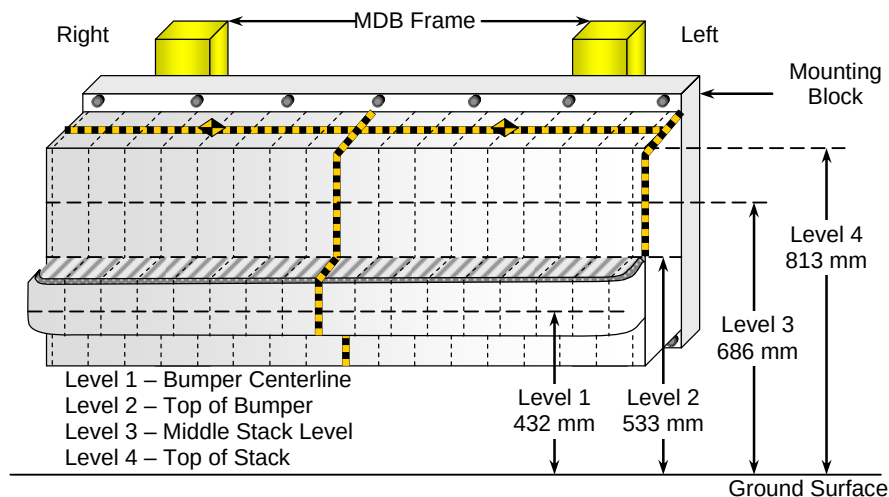
NHTSA No. YC5104
Test Date: 6/19/2012



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

NHTSA No. YC5104
 Test Date: 6/19/2012



FRONT VIEW

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center (mm)								C _L	Distance Left of Center (mm)							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
4	73	33	9	11	20	39	70	87	62	45	39	45	51	55	80	105	153
3	83	57	35	30	20	23	30	57	40	33	23	23	27	33	47	67	103
2	105	85	70	65	55	56	65	70	61	57	62	68	75	77	85	91	100
1	212	200	177	160	147	158	149	145	142	134	130	131	131	129	129	137	152

DATA SHEET NO. 13
FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side MDB Impact Test

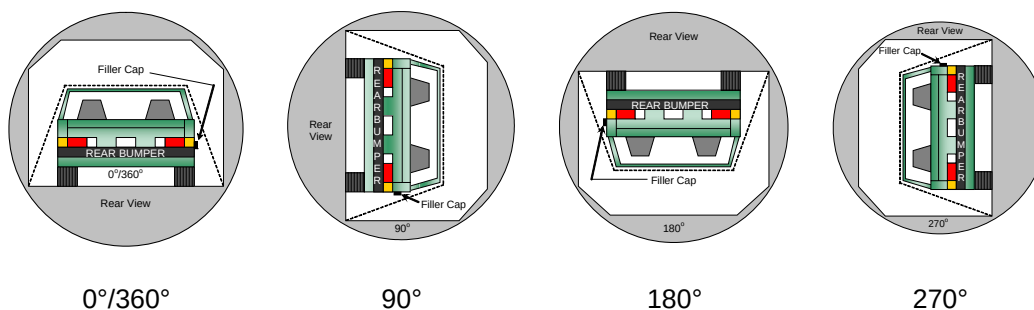
NHTSA No. YC5104
 Test Date: 6/19/2012

Test Time: 5:05 pm

Temperature: 21.4° C

- 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



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	170	300	470
90° to 180°	150	300	450
180° to 270°	132	300	432
270° to 360°	160	300	460

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

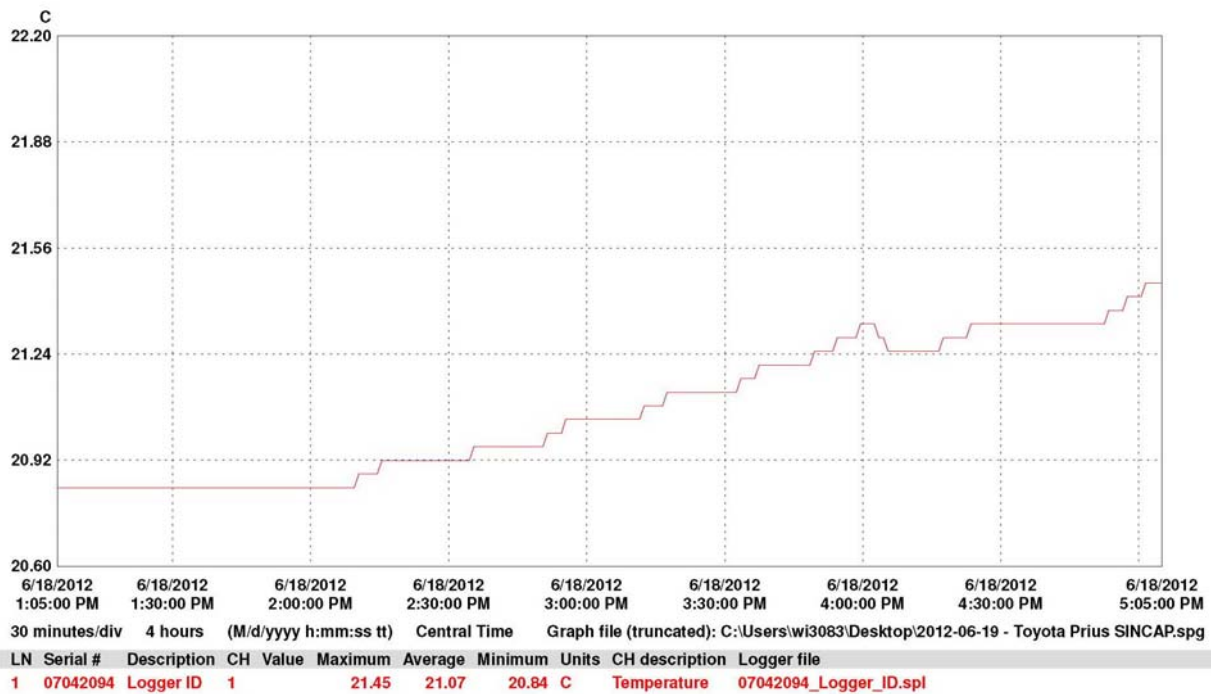
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 14 **DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA**

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5104
Test Program: NCAP Side MDB Impact Test Test Date: 6/19/2012



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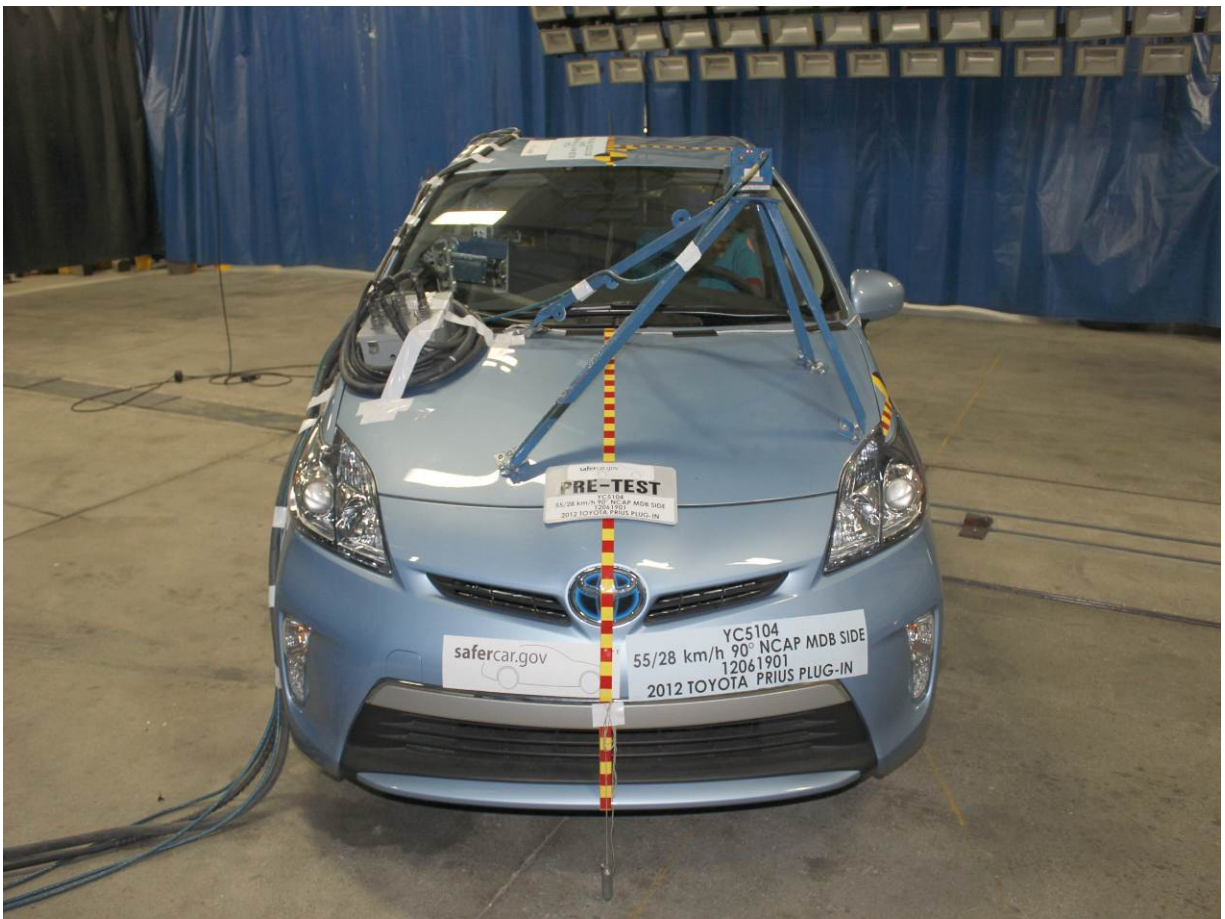
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As Delivered Right Front Three-Quarter View of Test Vehicle



As Delivered Left Rear Three-Quarter View of Test Vehicle



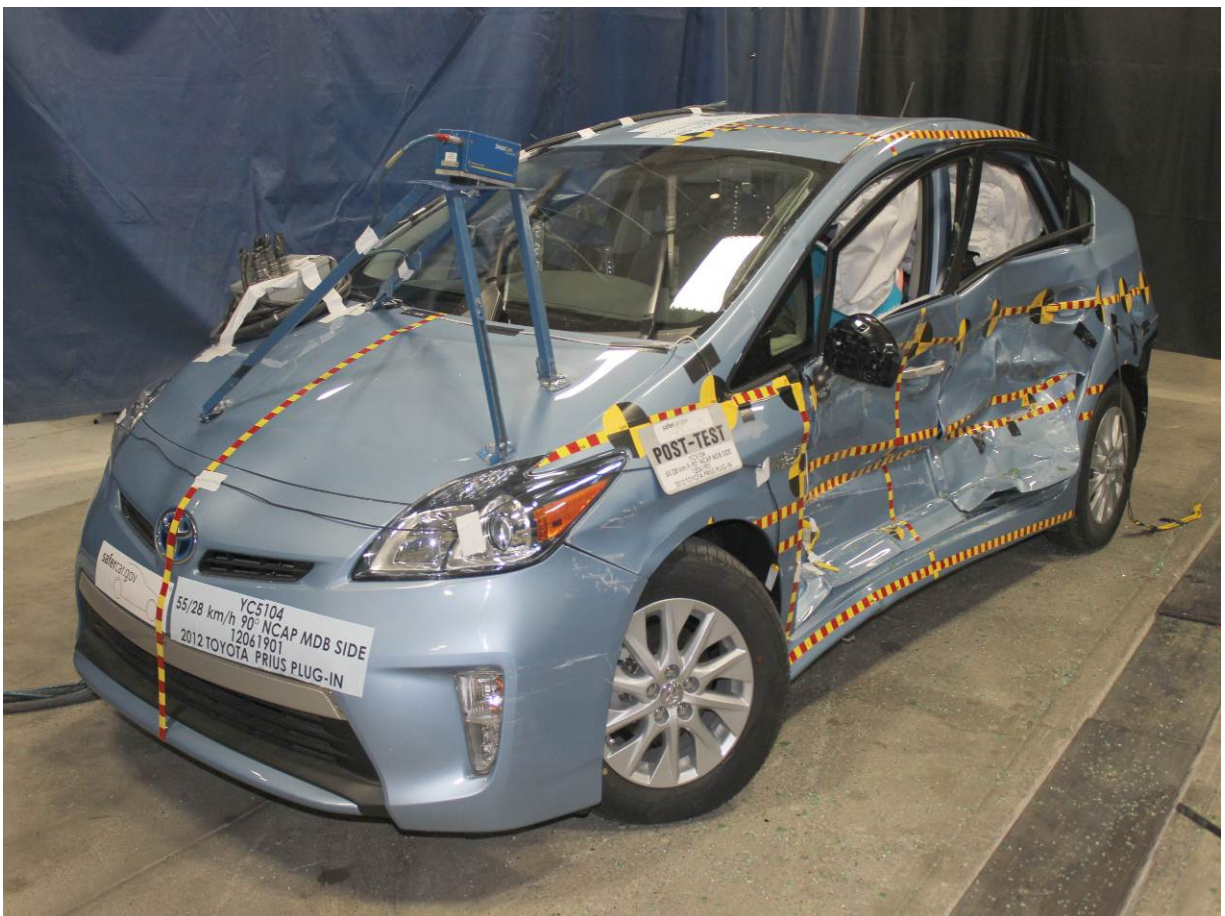
Pre-Test Frontal View of Test Vehicle



Post-Test Frontal View of Test Vehicle



Pre-Test Left Front Three-Quarter View of Test Vehicle



Post-Test Left Front Three-Quarter View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



Pre-Test Left Three-Quarter Rear View of Test Vehicle



Post-Test Left Three-Quarter Rear View of Test Vehicle



Pre-Test Rear View of Test Vehicle



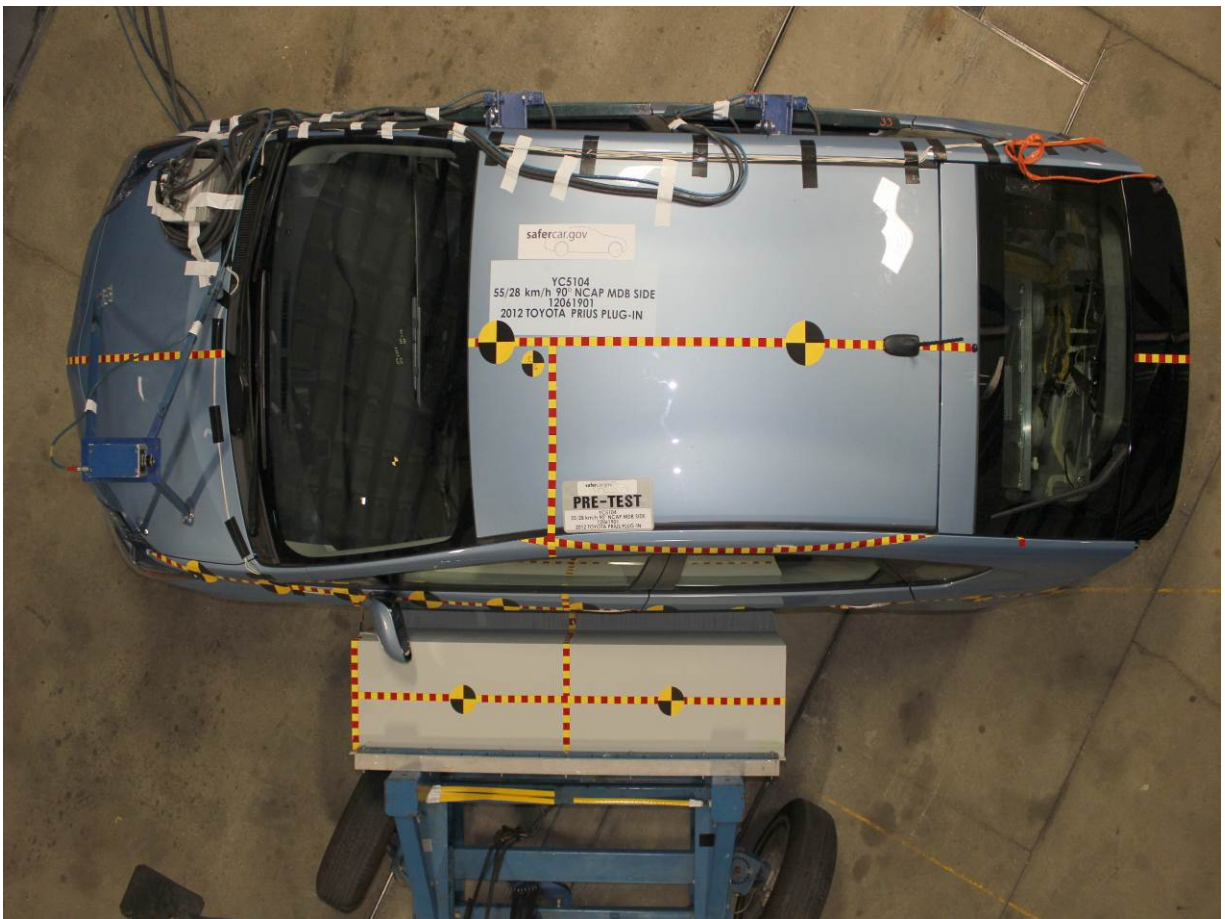
Post-Test Rear View of Test Vehicle



Pre-Test Right Side View of Test Vehicle



Post-Test Right Side View of Test Vehicle



Pre-Test Overhead View of Test Area



Post-Test Overhead View of Test Area



Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle



Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle



Pre-Test Close-Up View of Impact Point Target



Post-Test Close-Up View of Impact Point Target



Pre-Test Left Front Door Latch Close-Up



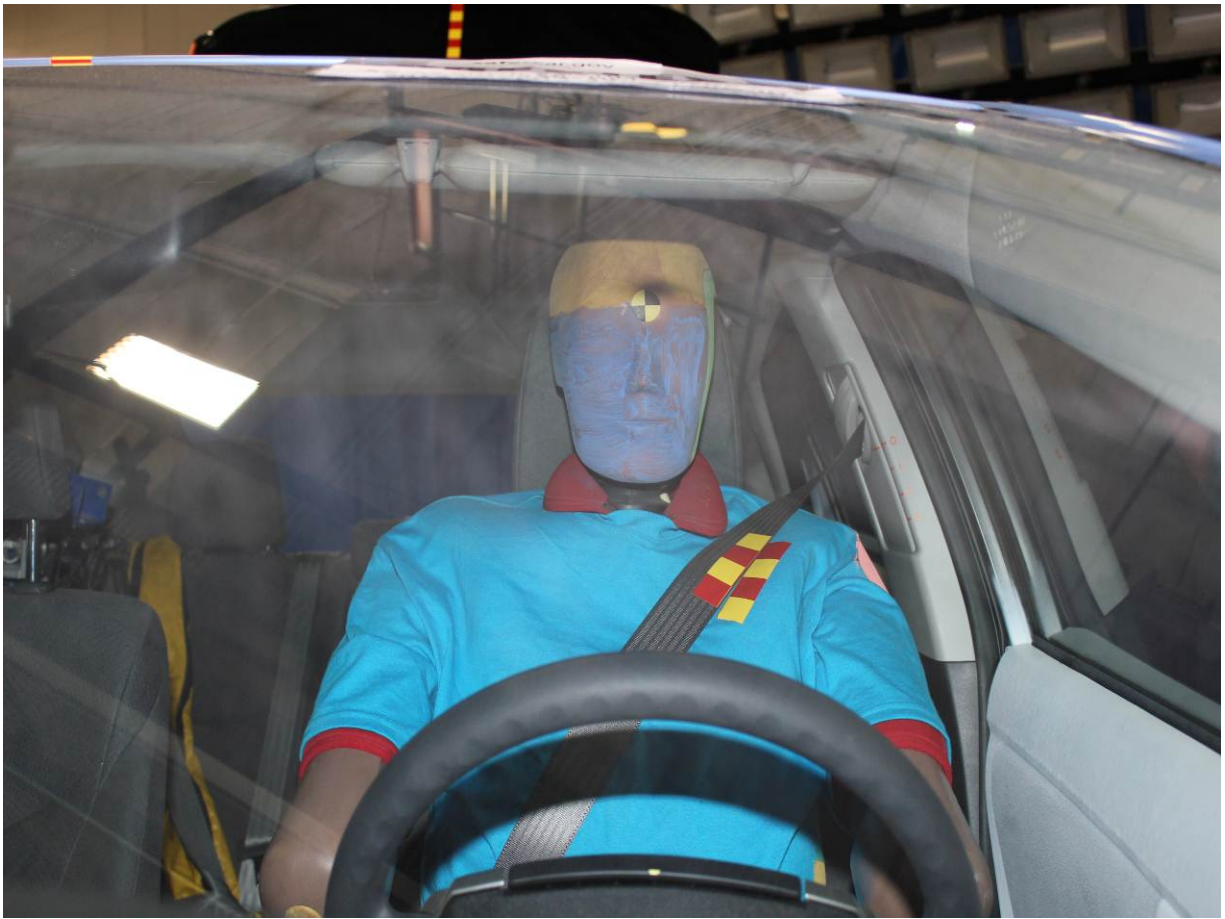
Post-Test Left Front Door Latch Close-Up



Pre-Test Left Rear Door Latch Close-Up



Post-Test Left Rear Door Latch Close-Up



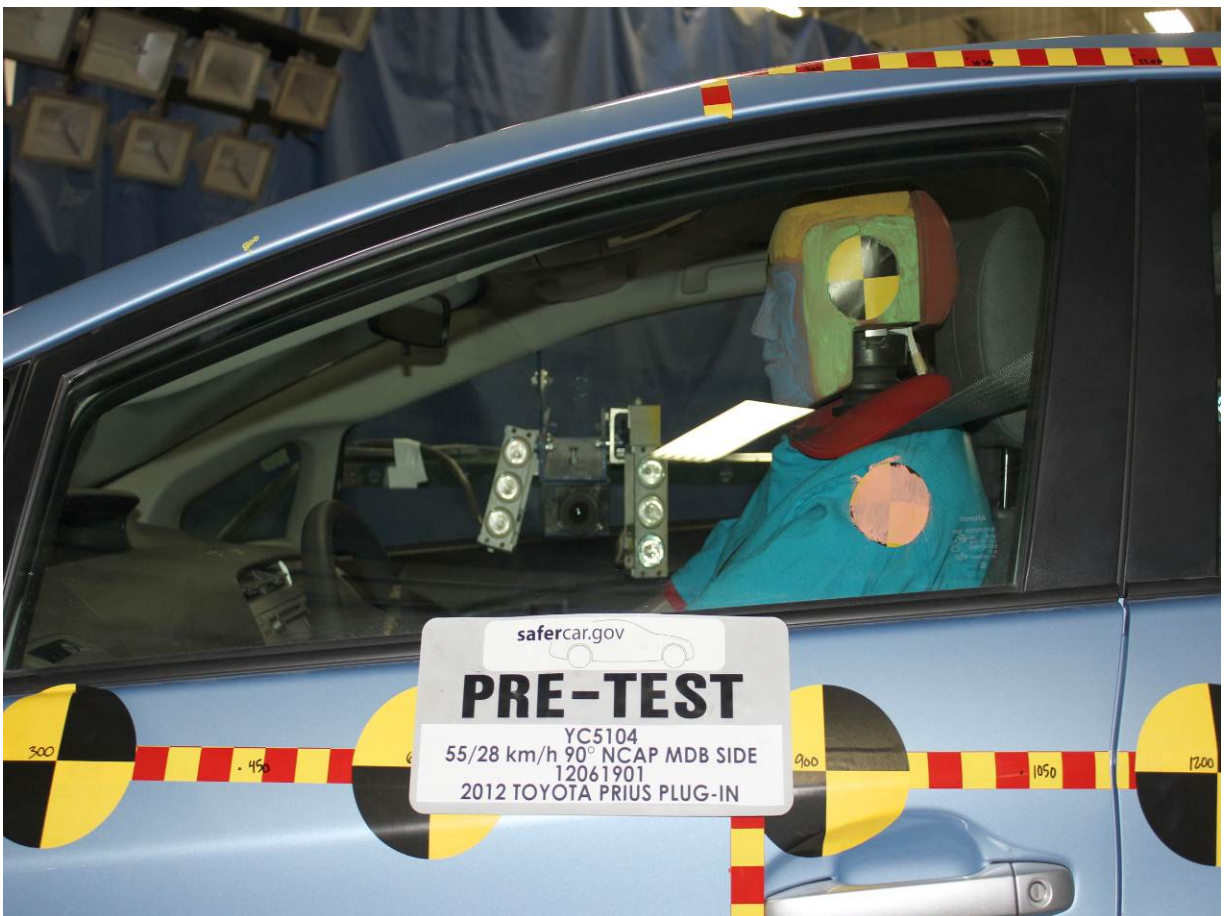
Pre-Test Front Close-Up View of Driver Dummy



Post-Test Front Close-Up View of Driver Dummy



Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking



Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



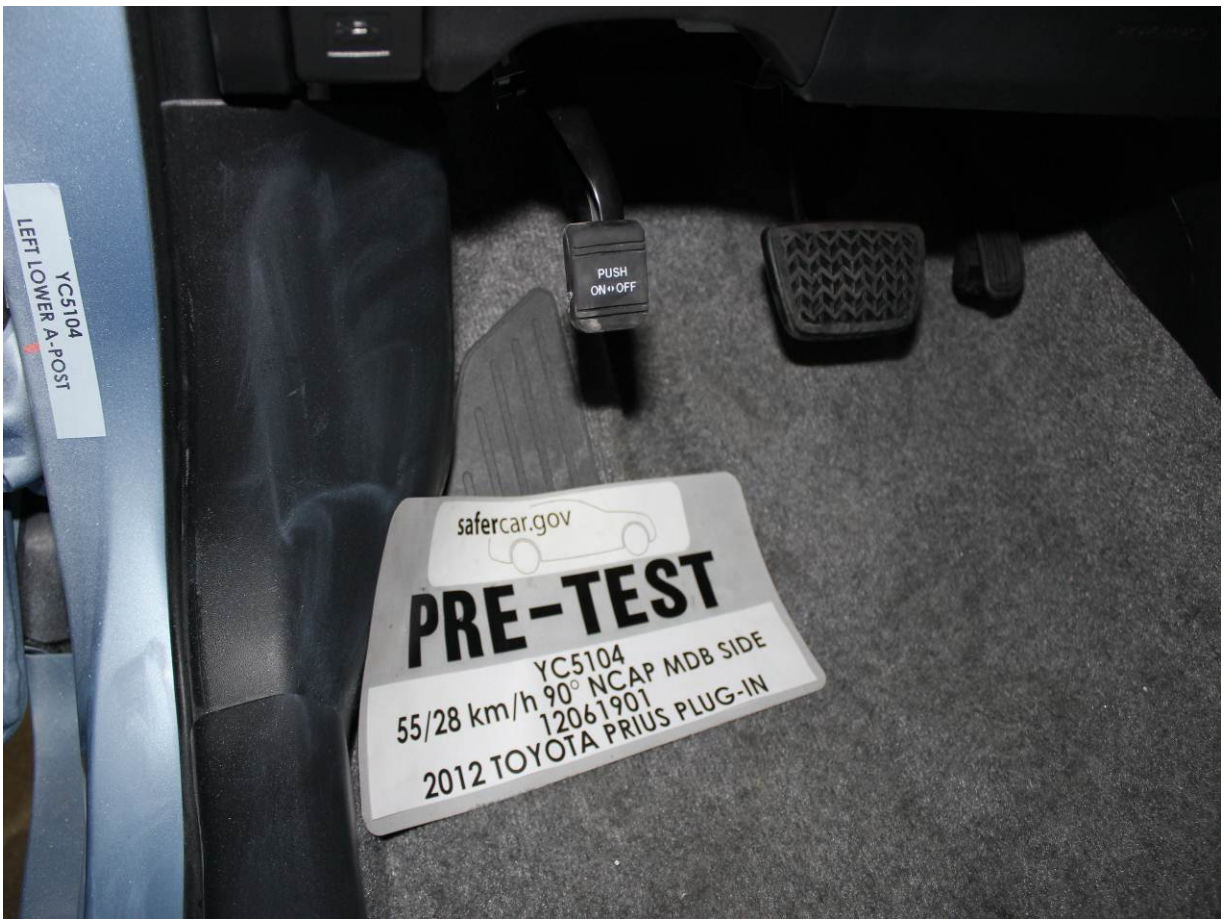
Pre-Test Placement of Driver Dummy's Feet



Pre-Test View of Belt Anchorage for Driver Dummy



Pre-Test Left Side View of Steering Wheel



Pre-Test View of Disengaged Parking Brake



Pre-Test View of Parking Brake



Pre-Test Close-Up Left Side View of Driver Seat Track



Pre-Test Close-Up Left Side View of Driver Seat Back



Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Pre-Test Driver Dummy and Door Clearance View



Post-Test Driver Dummy and Door Clearance View



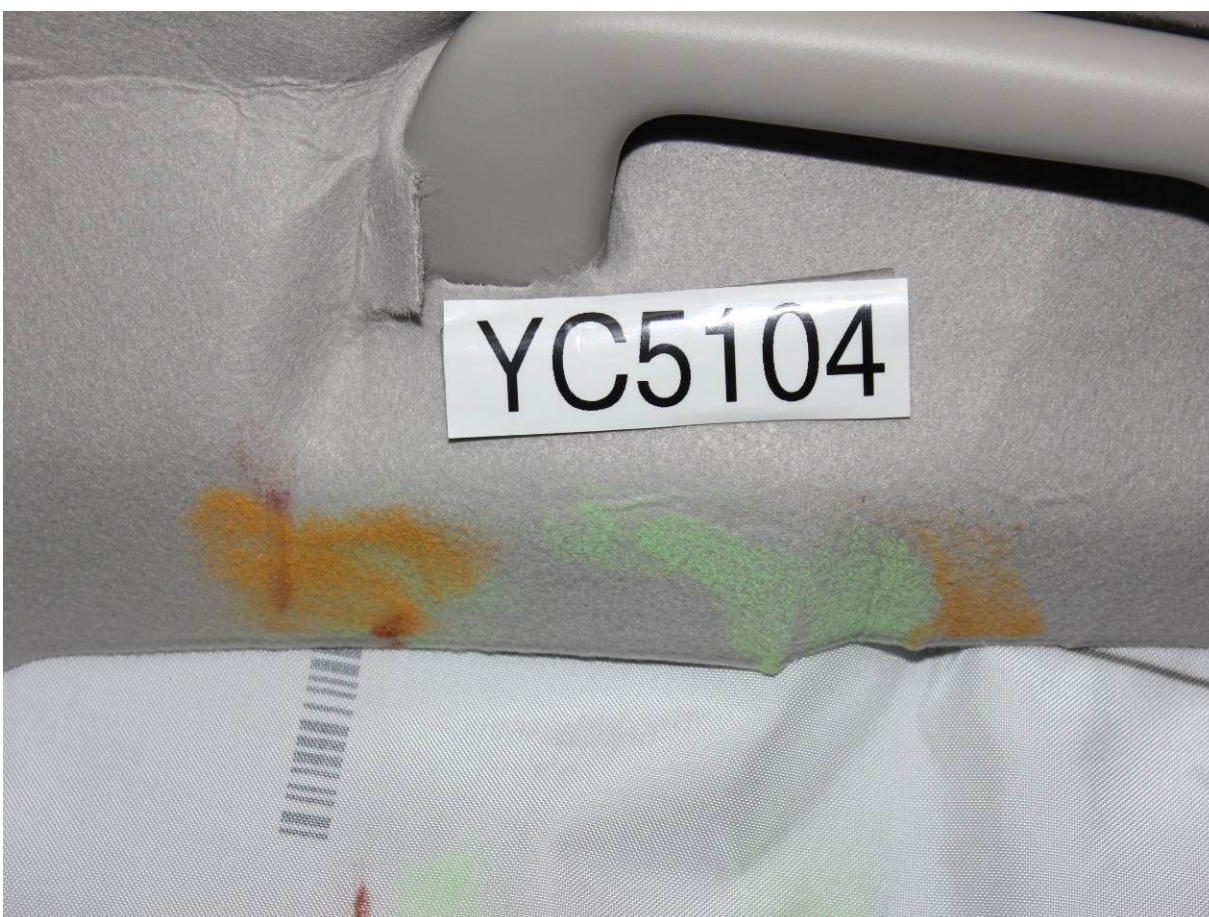
Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Pre-Test Driver Inner Door Panel View





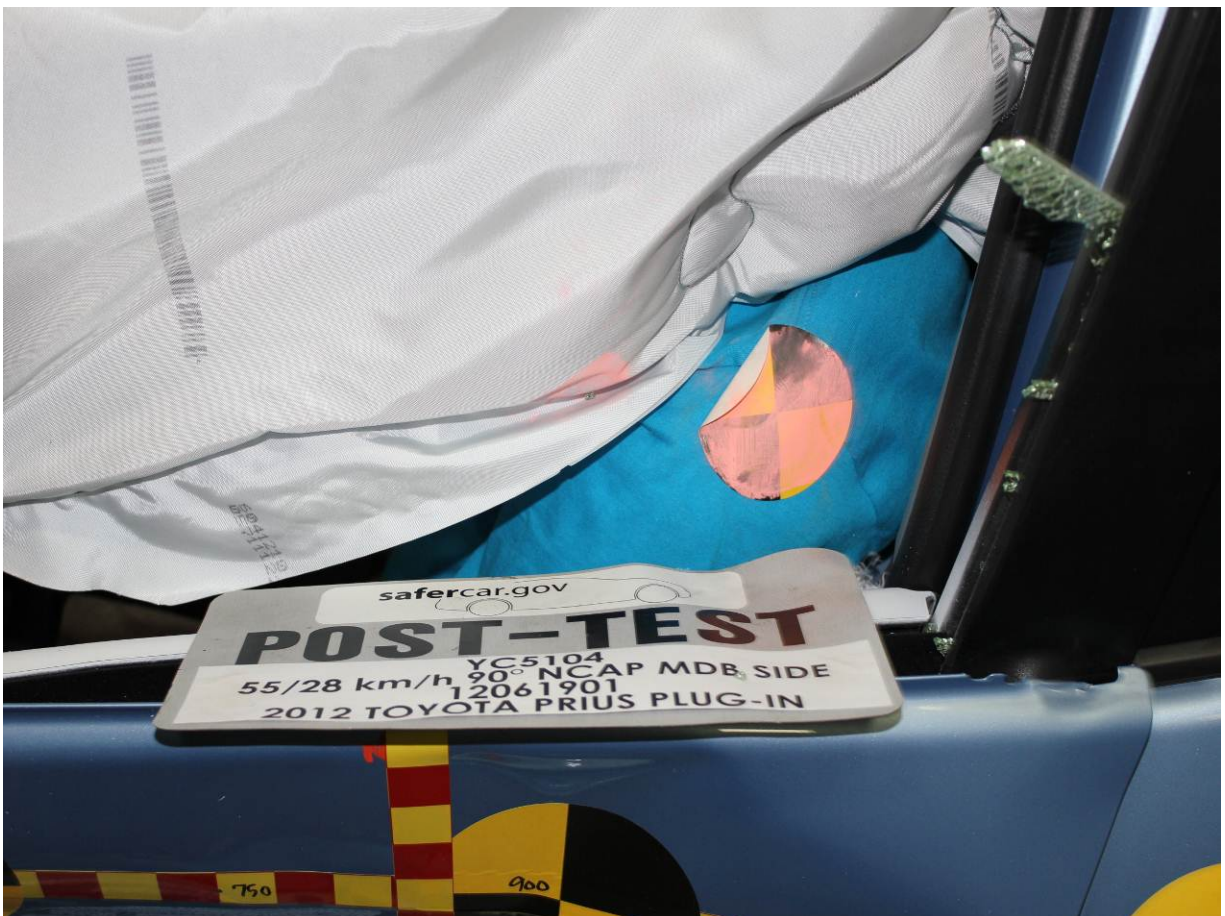
Post-Test Driver Dummy Close-up Head Contact with Vehicle Interior View



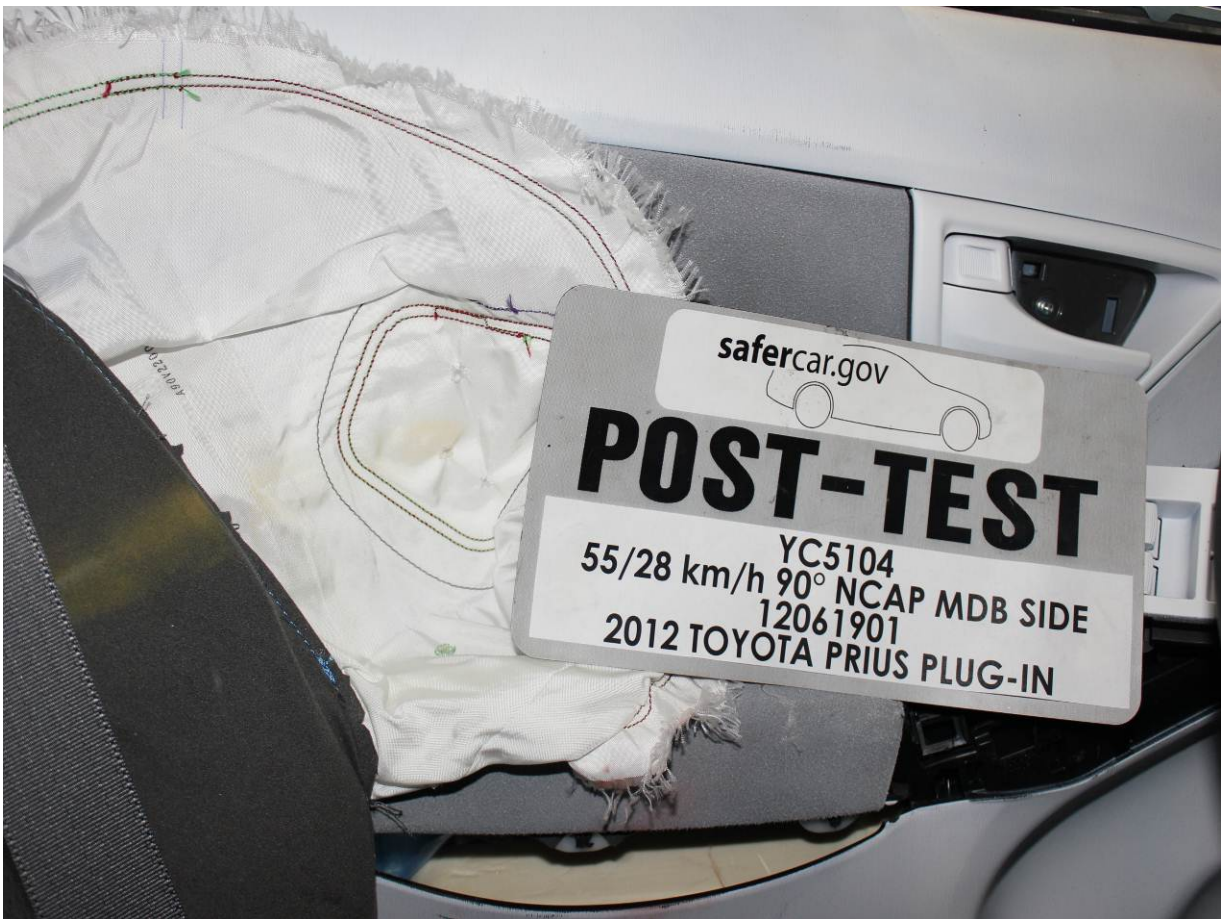
Post-Test Driver Dummy Close-up Head Contact with Side Airbag View



Post-Test Driver Dummy Close-up Torso Contact with Vehicle Interior View



Post-Test Driver Dummy Close-up Torso Contact with Side Airbag View



Post-Test Driver Dummy Close-up Torso Contact with Side Airbag View



Post-Test Driver Dummy Close-up Pelvis Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Post-Test Driver Dummy Close-up Pelvis Contact with Side Airbag View



Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking



Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



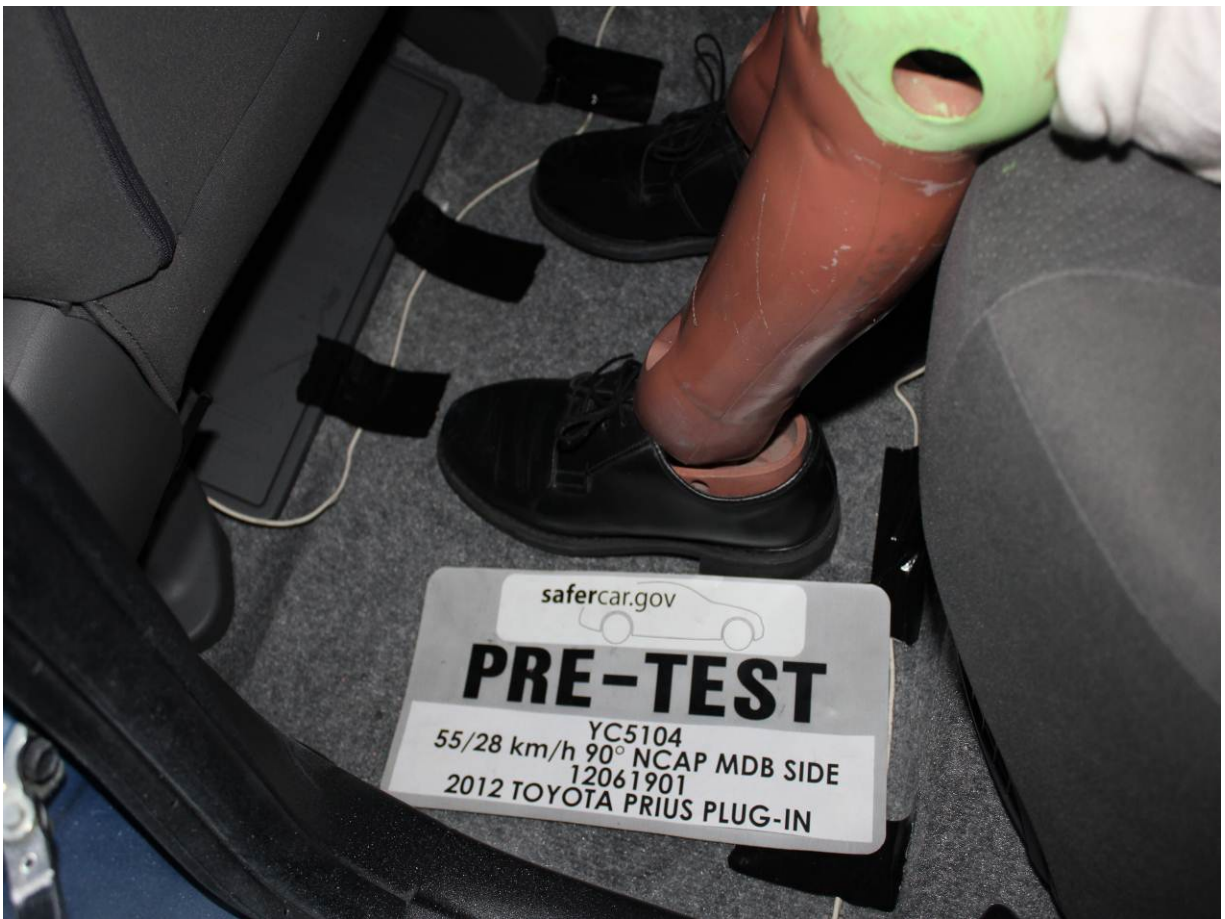
Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket



Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Pre-Test Placement of Rear Passenger Dummy's Feet



Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



Pre-Test Close-up View of Rear Passenger Seat Back or Head Restraint



Pre-Test Rear Passenger Dummy and Door Clearance View



Post-Test Rear Passenger Dummy and Door Clearance View



Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Pre-Test Rear Passenger Inner Door Panel View



Post-Test Rear Passenger Inner Door Panel View



Post-Test Rear Passenger Dummy Close-up Head Contact with Vehicle Interior View



Post-Test Rear Passenger Dummy Close-up Head Contact with Side Airbag View



Post-Test Rear Passenger Dummy Close-up Torso Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Post-Test Rear Passenger Dummy Close-up Torso Contact with Side Airbag View



Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Side Airbag View



Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Pre-Test Front View of MDB Impactor Face



Post-Test Front View of MDB Impactor Face



Pre-Test Top View of MDB Impactor Face



Post-Test Top View of MDB Impactor Face



Pre-Test Left Side View of MDB Impactor Face



Post-Test Left Side View of MDB Impactor Face



Pre-Test Right Side View of MDB Impactor Face



Post-Test Right Side View of MDB Impactor Face



Close-Up View of Vehicle's Certification Label



Close-Up View of Vehicle's Tire Information Placard or Label



Load Carrying Capacity Reduced Label

PHOTOGRAPH NOT APPLICABLE

Pre-Test Ballast View



Post-Test Primary and Redundant Speed Trap Read-Out



FMVSS No. 301 Static Rollover 0 Degrees



FMVSS No. 301 Static Rollover 90 Degrees



FMVSS No. 301 Static Rollover 180 Degrees



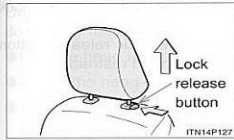
FMVSS No. 301 Static Rollover 270 Degrees



FMVSS No. 301 Static Rollover 360 Degrees



Impact Event

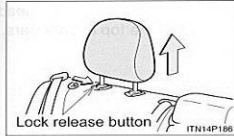
■ Removing the head restraints**Front and rear center seats**

Pull the head restraint up while pressing the lock release button.

1
Before driving

Foldable type rear outside seats

Pull the head restraint up while pressing the lock release buttons.

Non-foldable type rear outside seats

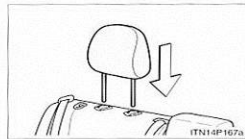
Pull the head restraint up while pressing the lock release button.

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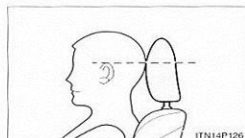
Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

■ Installing the head restraints**Front and rear center seats**

Align the head restraint with the installation holes and push it down to the lock position. Press and hold the lock release button when lowering the head restraint.

Rear outside seats

Align the head restraint with the installation holes and push it down to the lowest lock position.

■ Adjusting the height of the head restraints

Make sure that the head restraints are adjusted so that the center of the head restraint is closest to the top of your ears.

■ Adjusting the rear center seat head restraint

Always raise the head restraint one level from the stowed position when using.

154

Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

CAUTION**■ Head restraint precautions**

Observe the following precautions regarding the head restraints. Failure to do so may result in death or serious injury.

- Use the head restraints designed for each respective seat.
- Adjust the head restraints to the correct position at all times.
- After adjusting the head restraints, push down on them and make sure they are locked in position.
- Do not drive with the head restraints removed.

1
Before driving

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Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



Post-Test Driver Dummy Knee Contact with Vehicle Interior View



Post-Test Rear Passenger Dummy Knee Contact with Vehicle Interior View

APPENDIX B

DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

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Figure No. 2.	Driver Head Acceleration (Y) Primary vs. Time	B-1
Figure No. 3.	Driver Head Acceleration (Z) Primary vs. Time	B-1
Figure No. 4.	Driver Head Resultant Acceleration Primary vs. Time	B-1
Figure No. 5.	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
Figure No. 6.	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
Figure No. 7.	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-2
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Figure No. 13.	Driver Pubic Symphysis Force (Y) vs. Time	B-4
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Figure No. 23.	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-7
Figure No. 24.	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

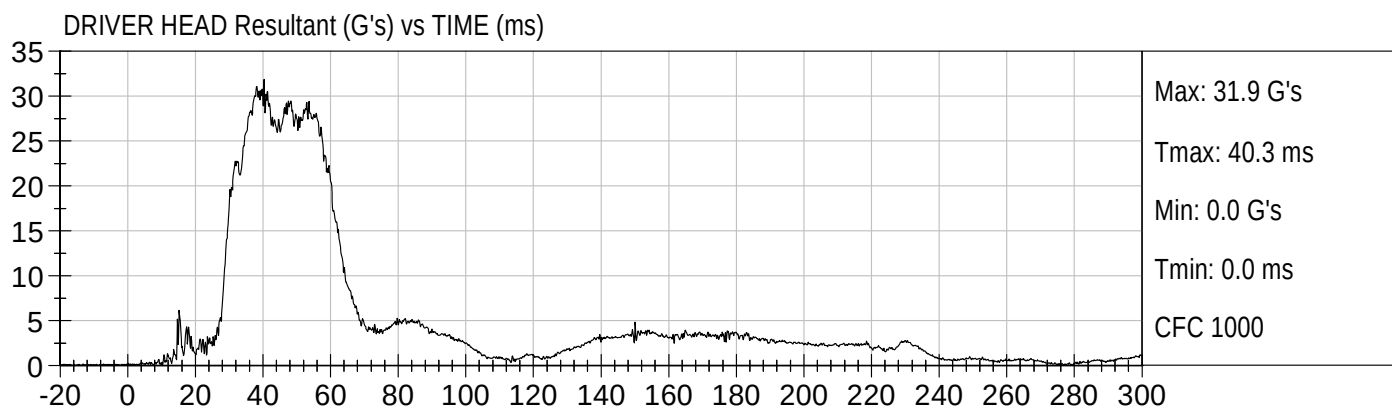
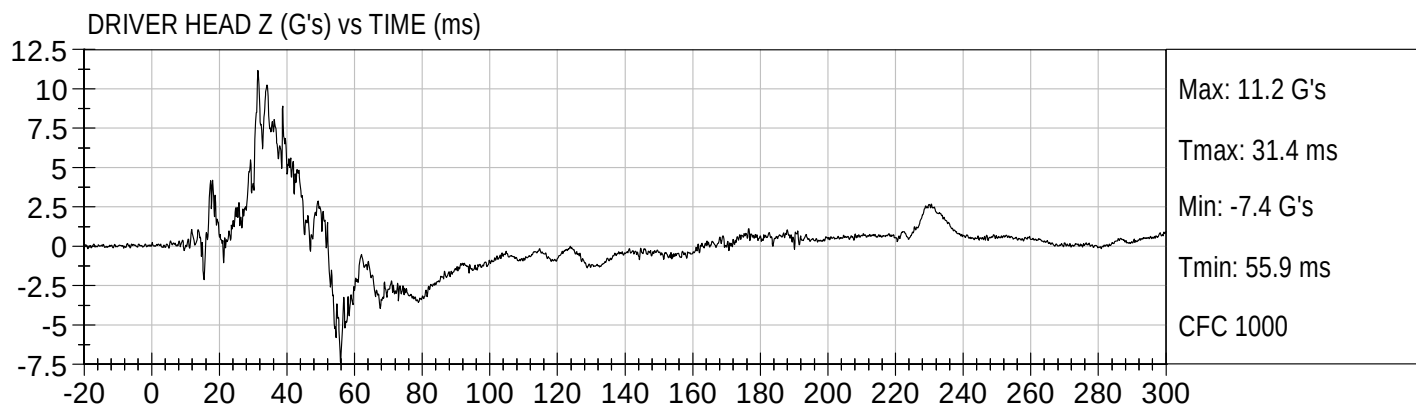
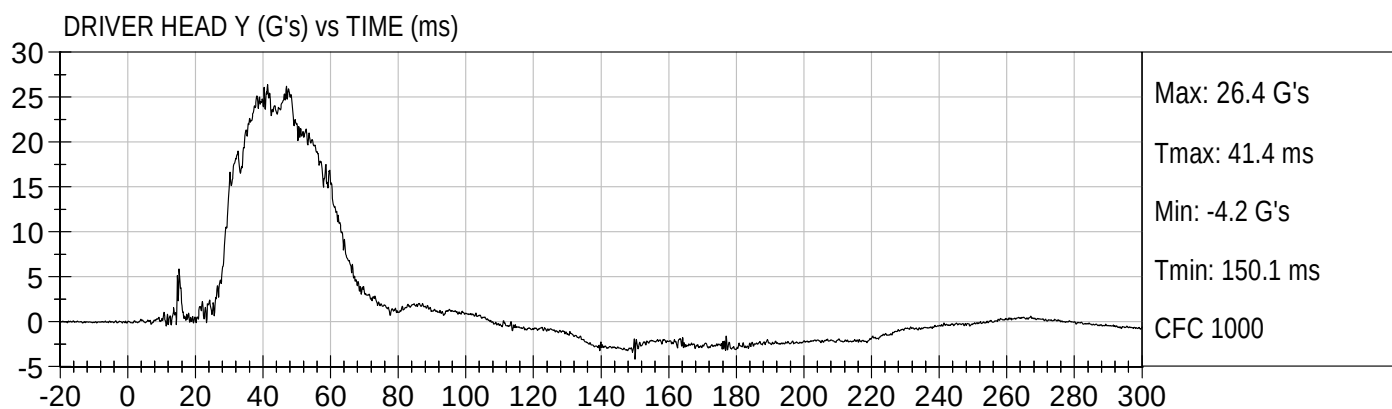
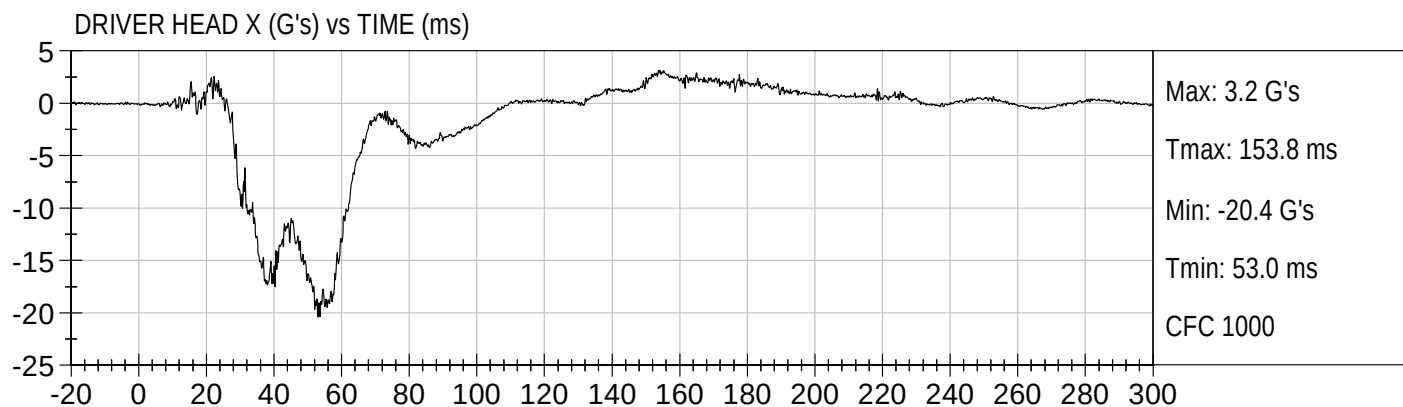
Vehicle Instrumentation Data

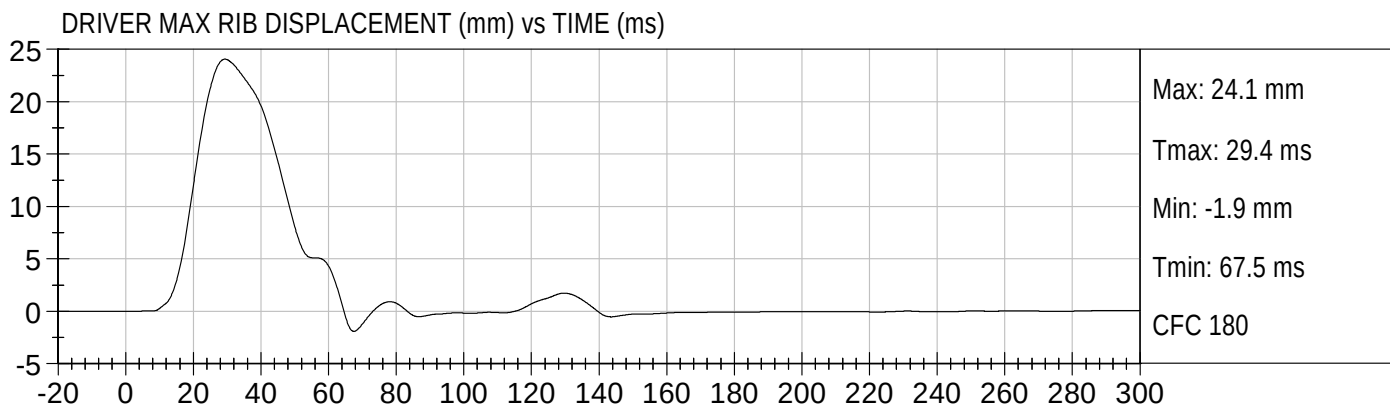
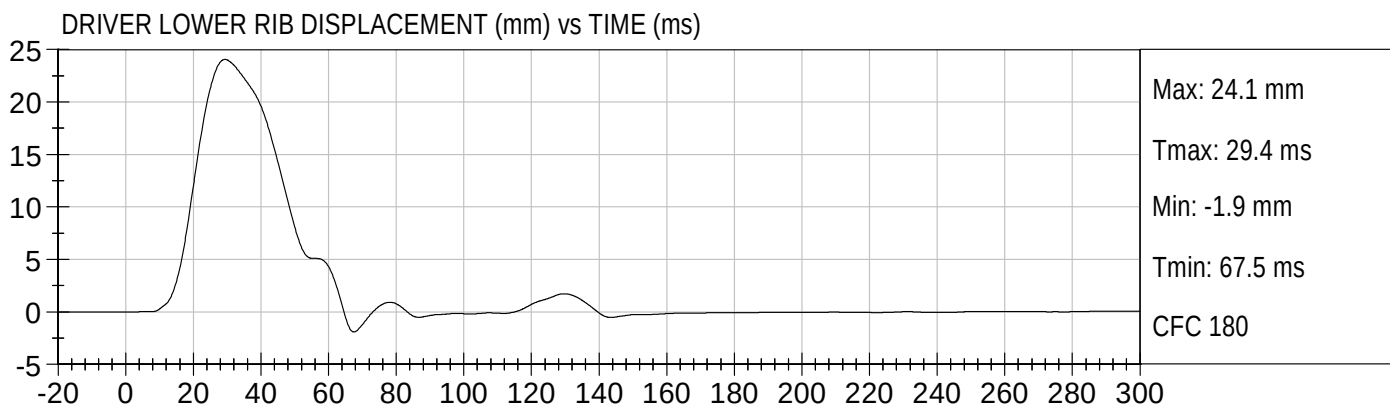
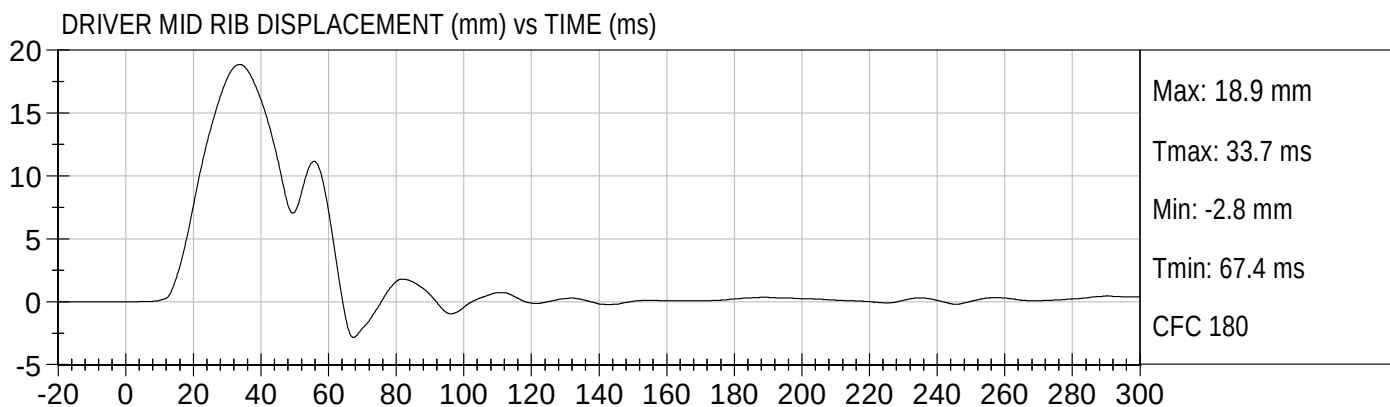
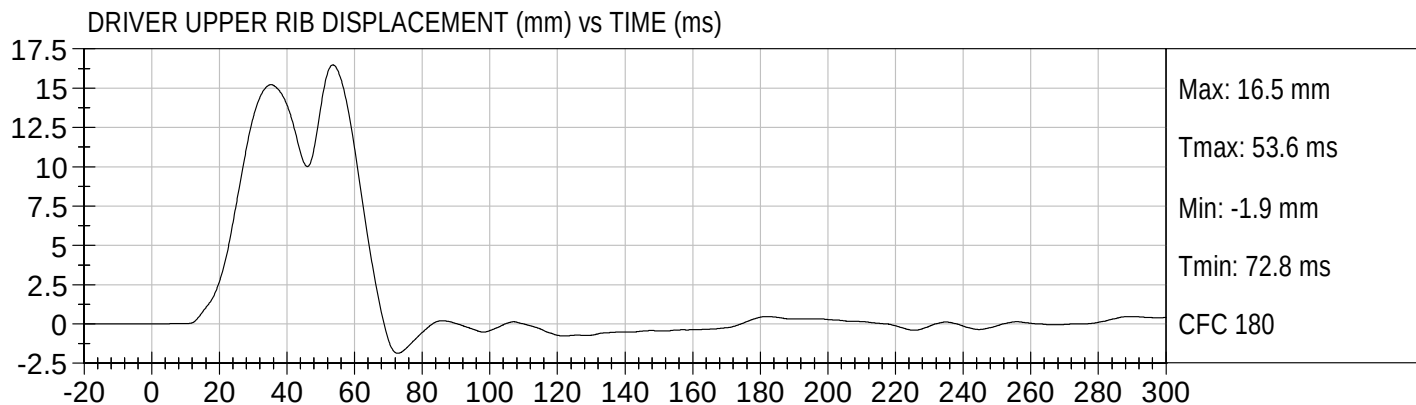
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)

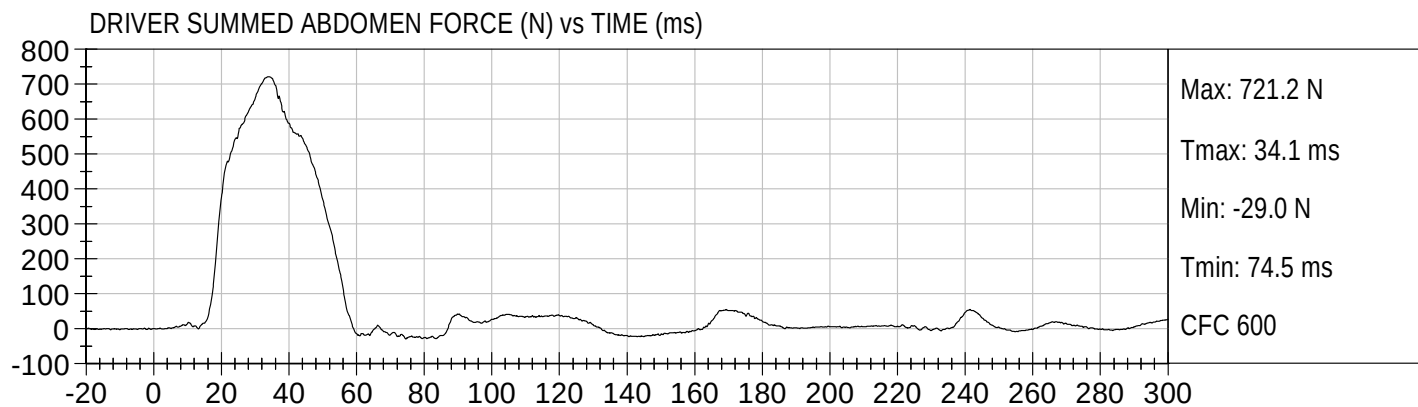
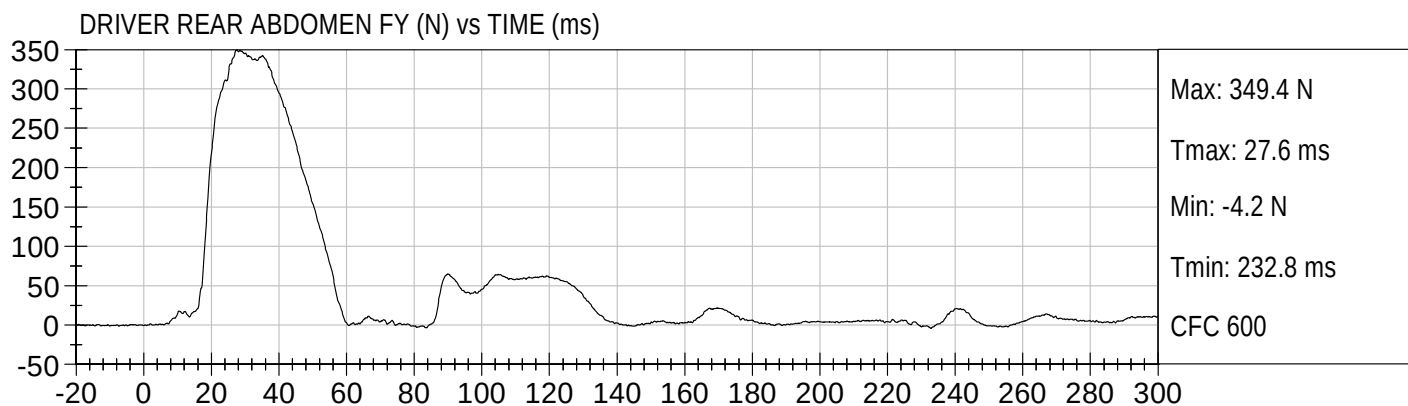
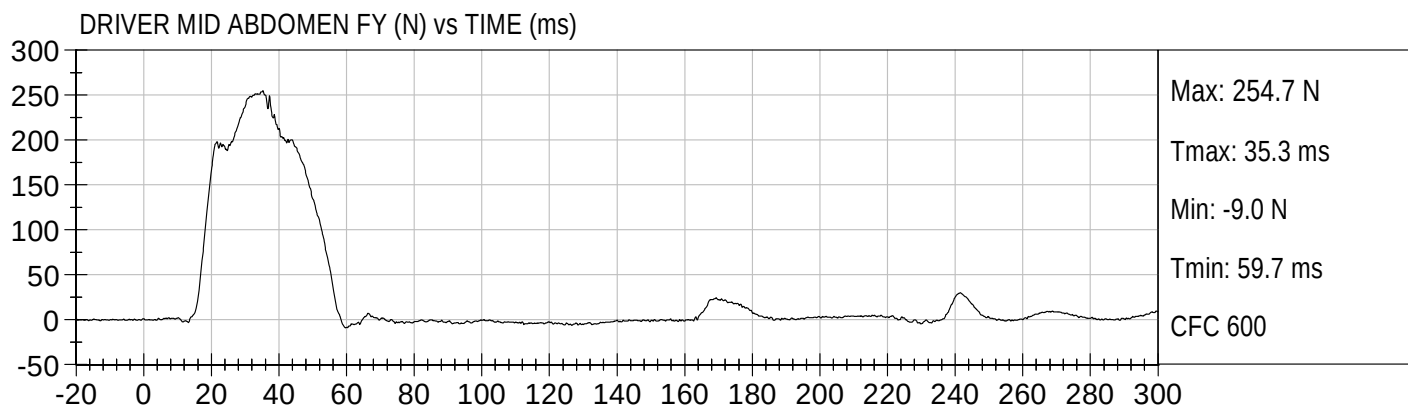
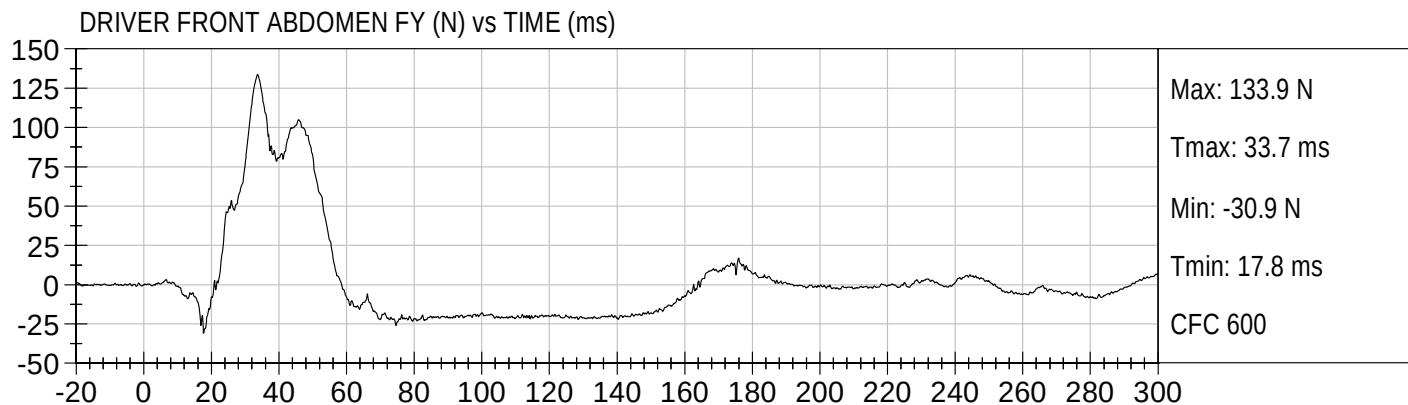
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch



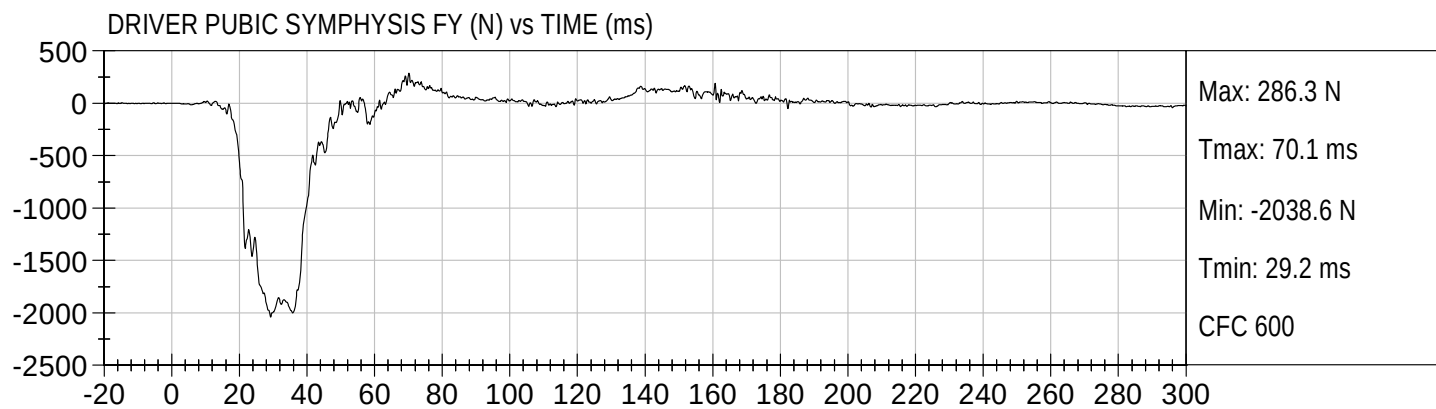


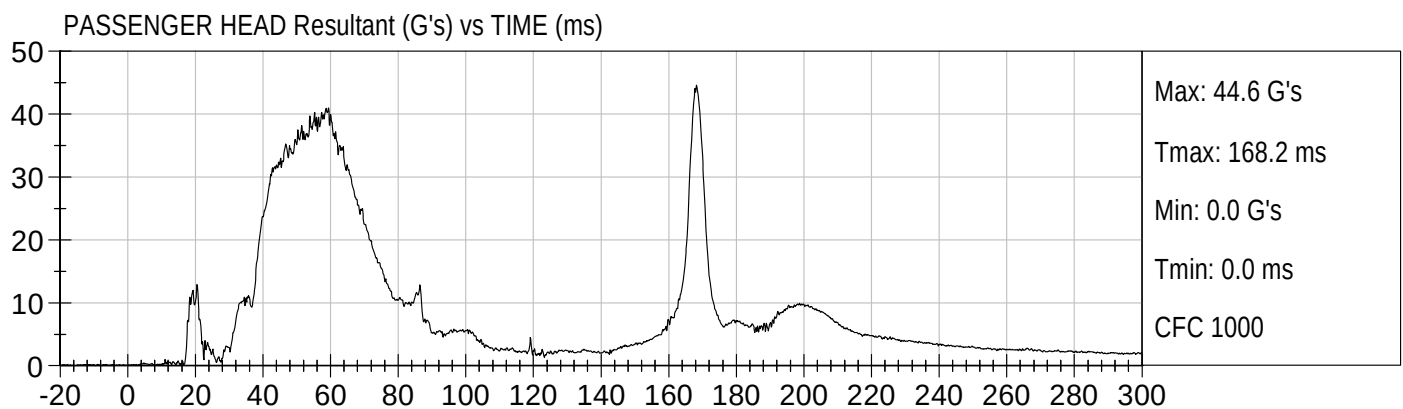
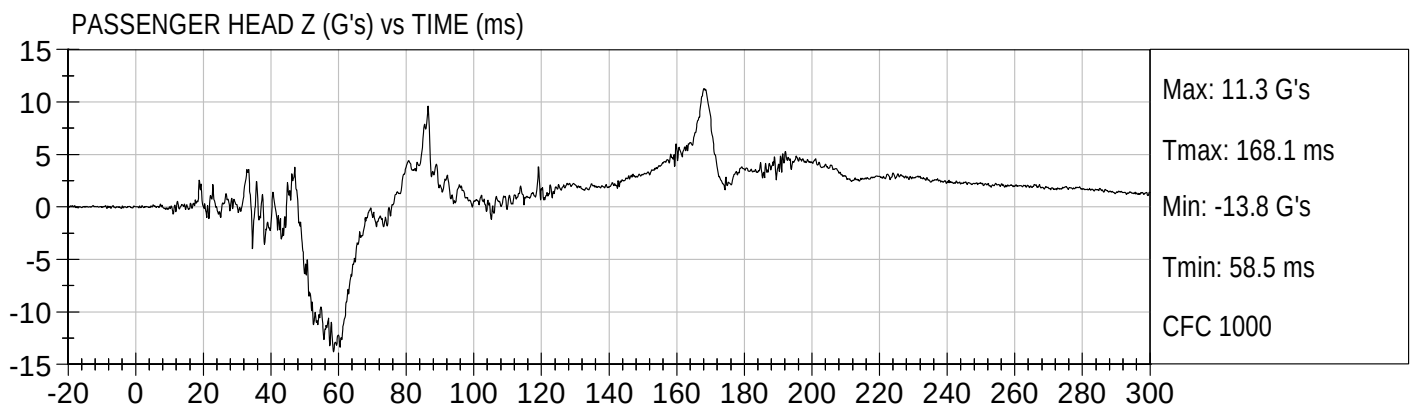
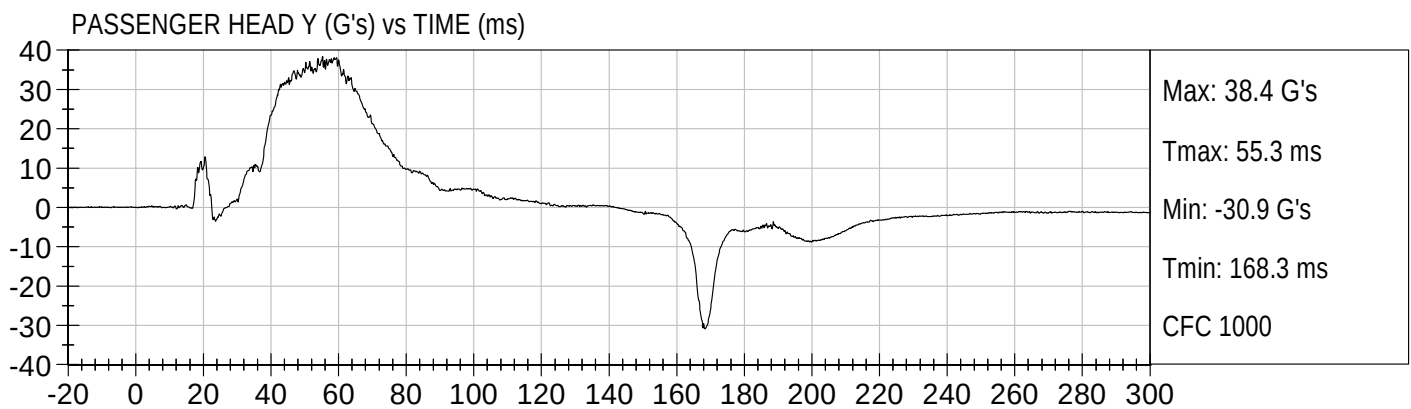
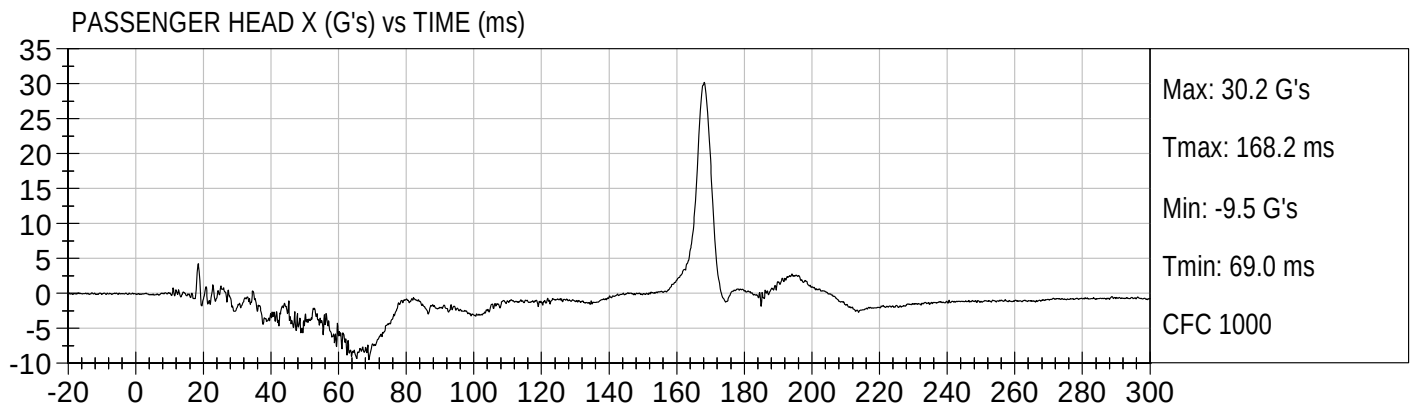


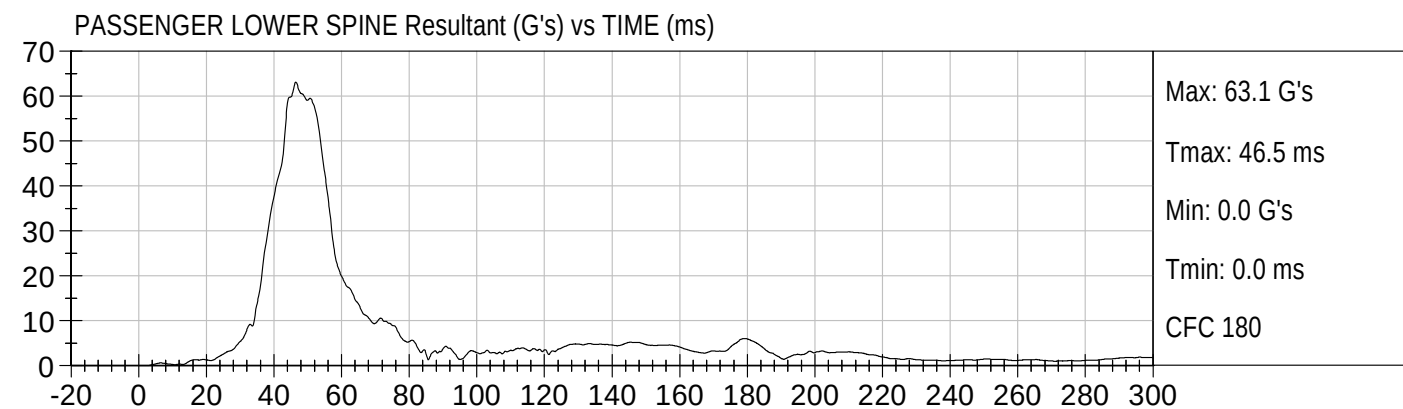
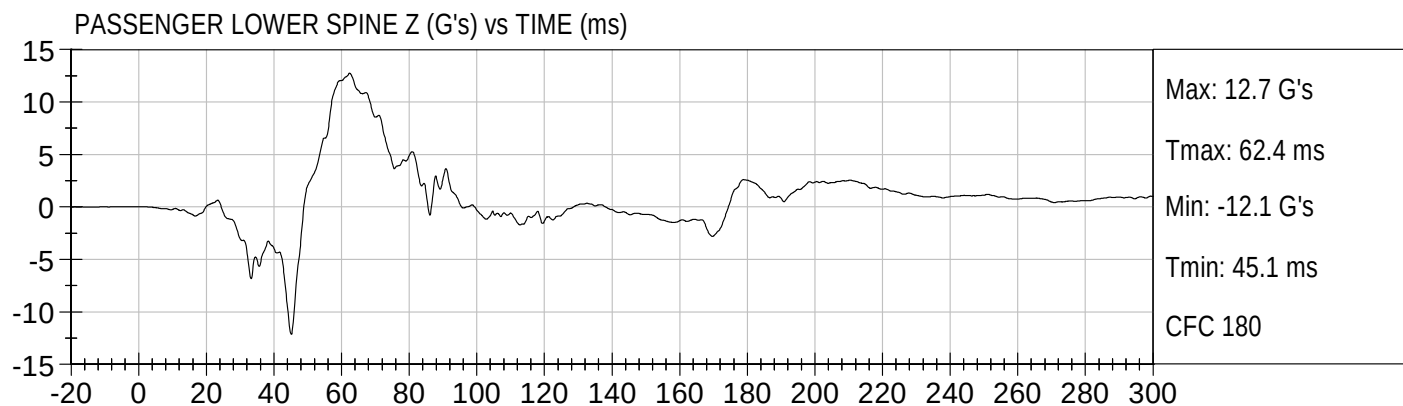
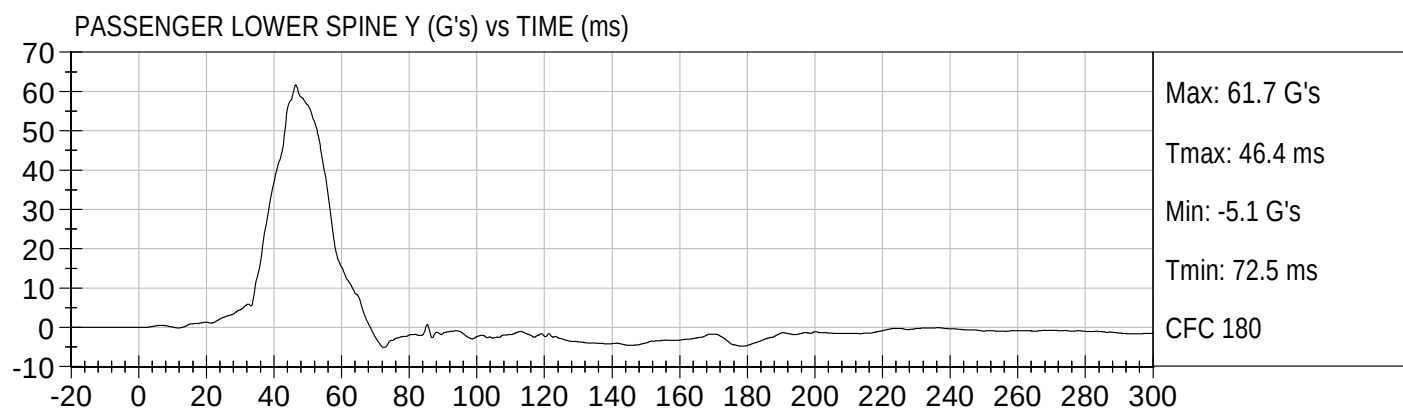
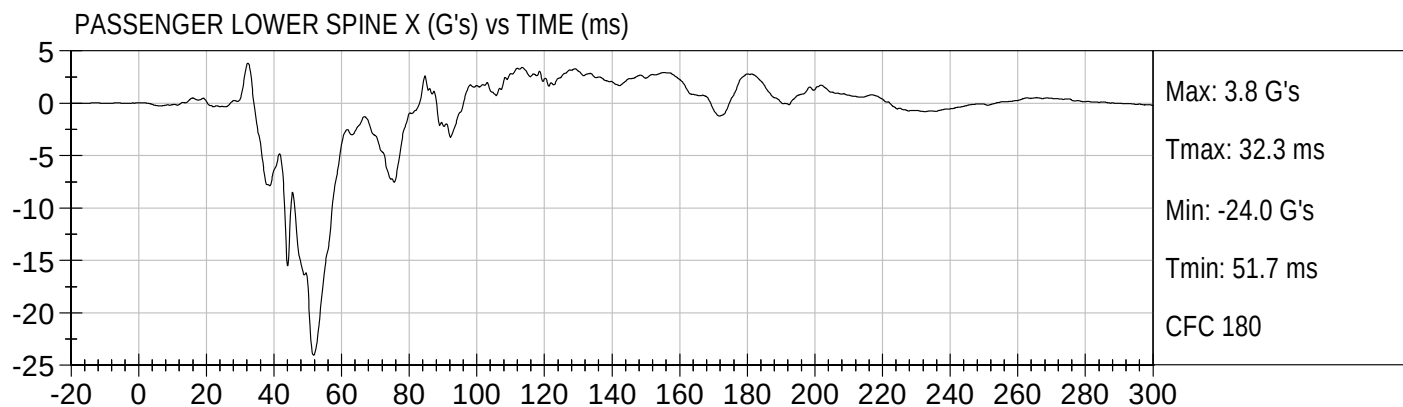


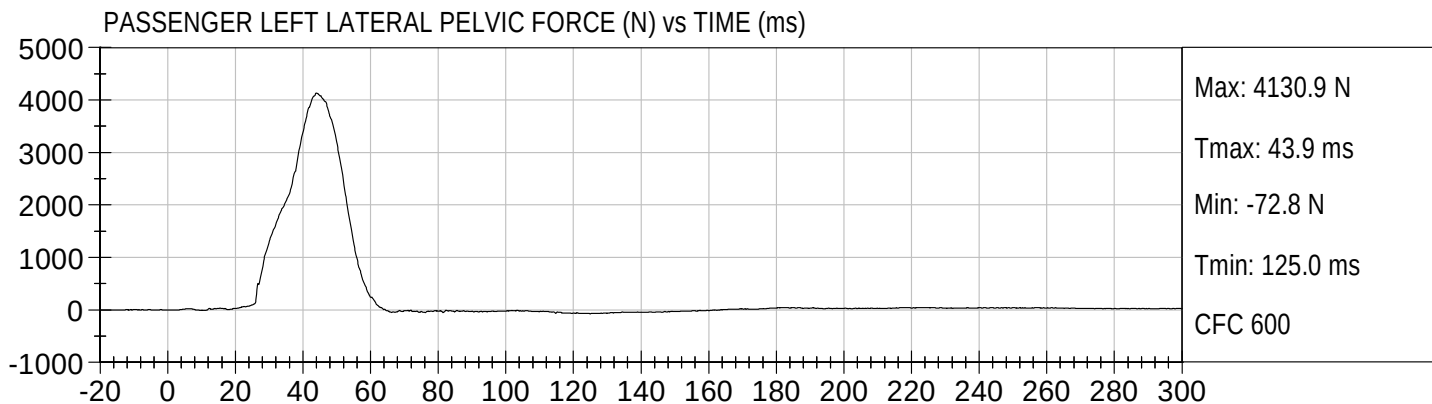
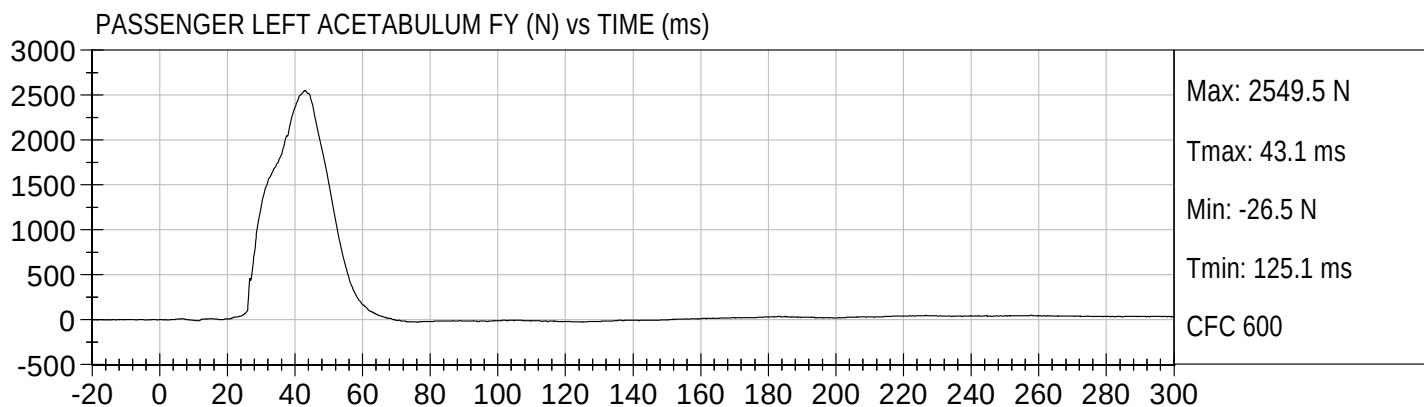
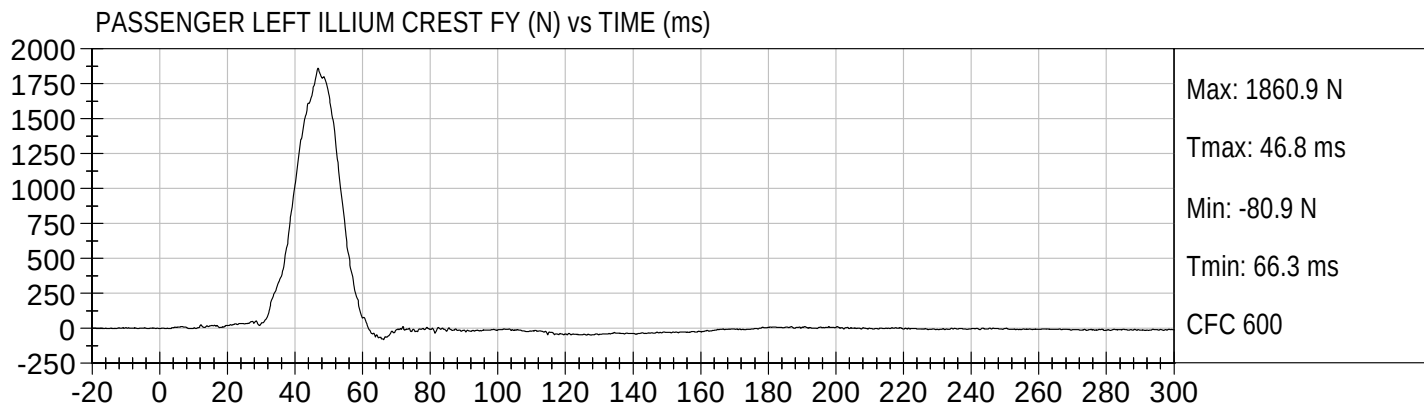
55/28 km/h 90° NCAP MDB Side Impact
2012 Toyota Prius Plug-In Hybrid - YC5104

Test Date: 06/19/2012
Speed: 38.7 mph (62.3 km/h)









APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

ES-2re External Measurements
SN: 032

No.	Name	Spec. (mm)	Result	Pass/Fail
1	Sitting Height	900 - 918	915	Pass
2	Seat to Shoulder Joint	558 - 572	568	Pass
3	Seat to Lower Face of Thoracic Spine Box	346 - 356	355	Pass
4	Seat to Hip Joint (center of bolt)	97 - 103	98	Pass
5	Sole to Seat, Sitting	333 - 451	440	Pass
6	Head Width	152 - 158	157	Pass
7	Shoulder/Arm Width	461 - 479	464	Pass
8	Thorax Width	322 - 332	323	Pass
9	Abdomen Width	273 - 287	281	Pass
10	Pelvis Lap Width	359 - 373	370	Pass
11	Head Depth	196 - 206	203	Pass
12	Thorax Depth	262 - 272	264	Pass
13	Abdomen Depth	194 - 204	196	Pass
14	Pelvis Depth	235 - 245	236	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150 - 160	151	Pass
16	Back of Buttocks to Front Knee	597 - 615	607	Pass

MGA RESEARCH CORPORATION

HEAD DROP TEST

ES-2re DUMMY

ATD Serial No: 032Test ID: D121951

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	125 to 155	151	Pass
Peak Longitudinal Acceleration	G's	+/- 15	7.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

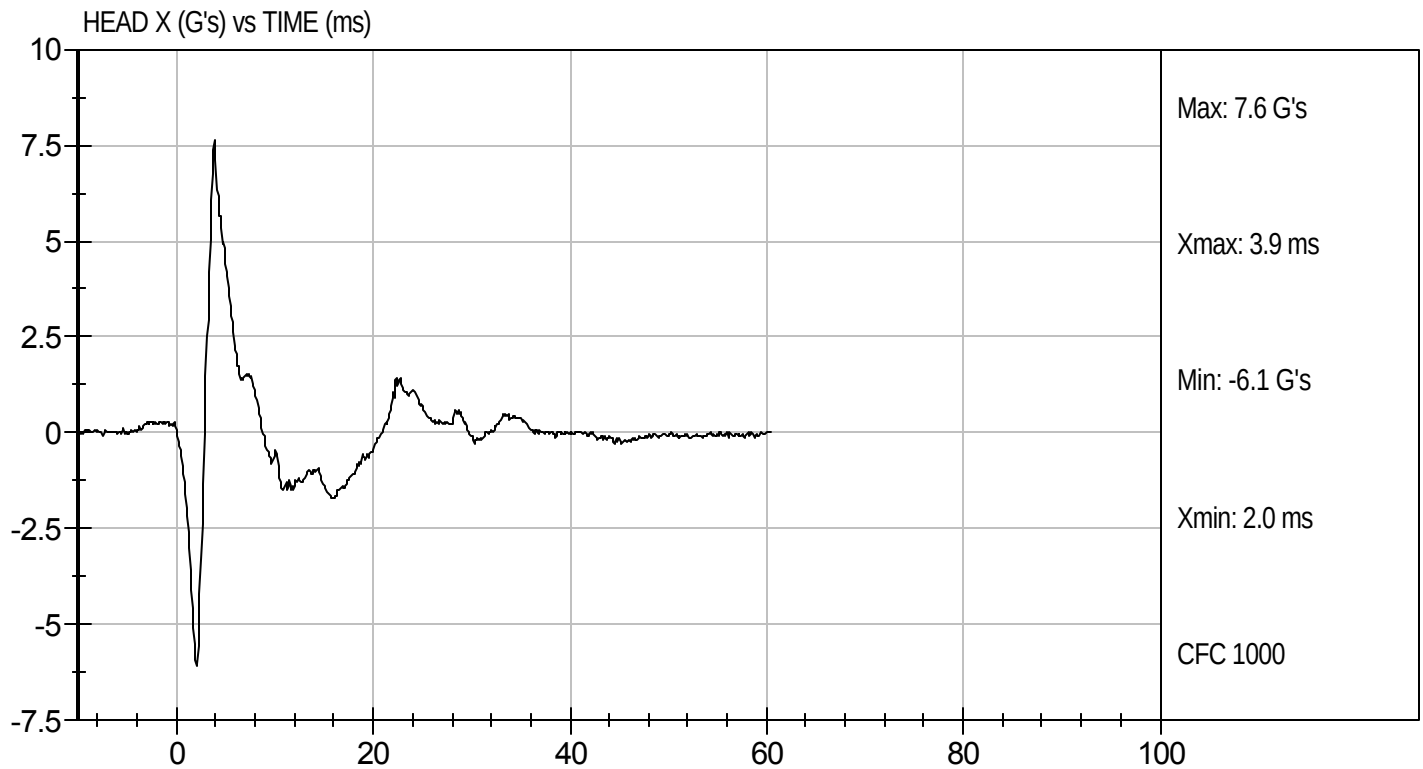
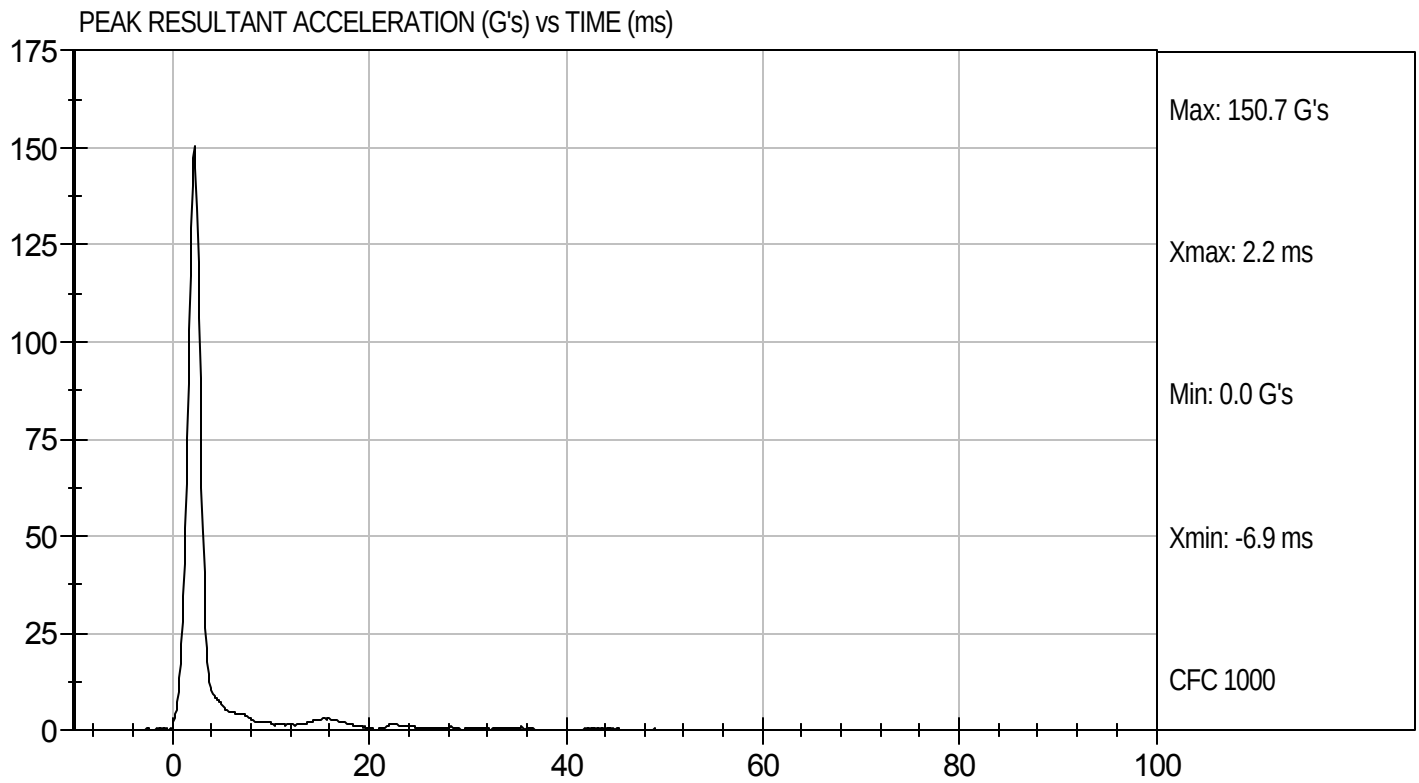
5/24/12
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D121951

Test Date: 5/24/12
Velocity: 0 ft/s, 0 m/s

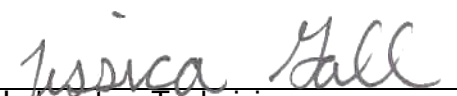


MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D121952

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	18.0 to 22.0	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Pendulum Speed		m/s	3.3 to 3.5	3.4	Pass
Pendulum Deceleration	1 ms	m/s	0.00 to -0.05	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.33	Pass
	14 ms	m/s	-3.20 to -3.70	-3.27	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	51.9	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	59.9	Pass
Head Rotation Decay Time to 0 degree		ms	53.0 to 88.0	57.5	Pass
Overall Test Results					Pass


 Laboratory Technician

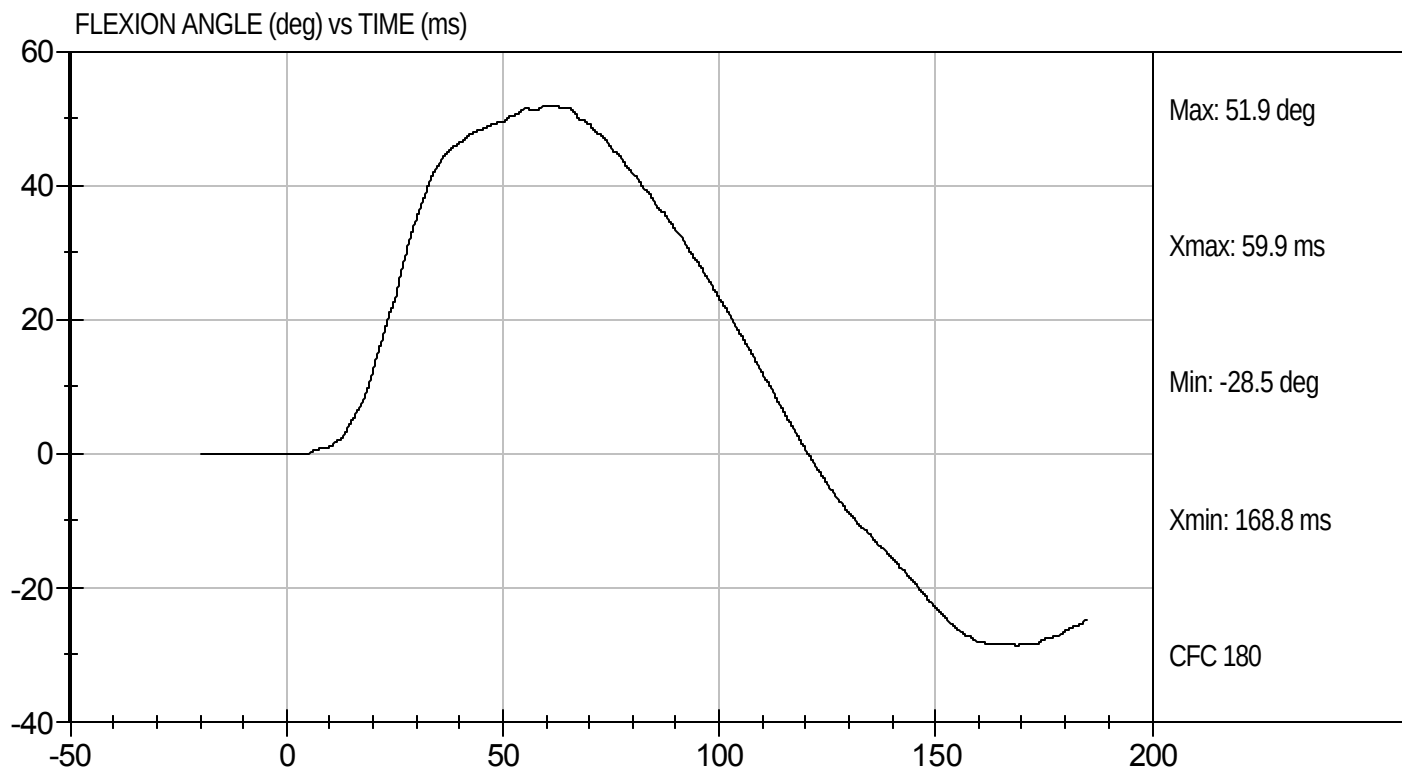
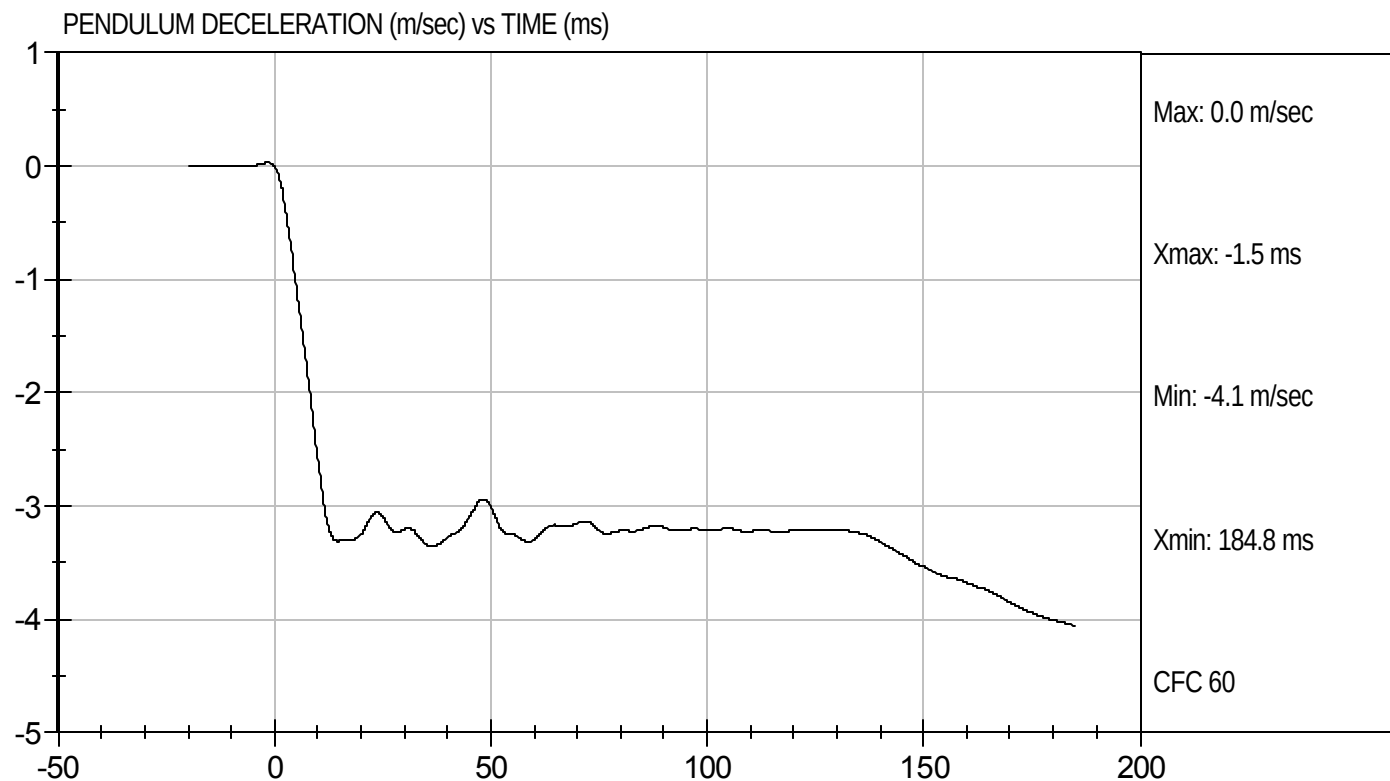
5/24/12
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D121952

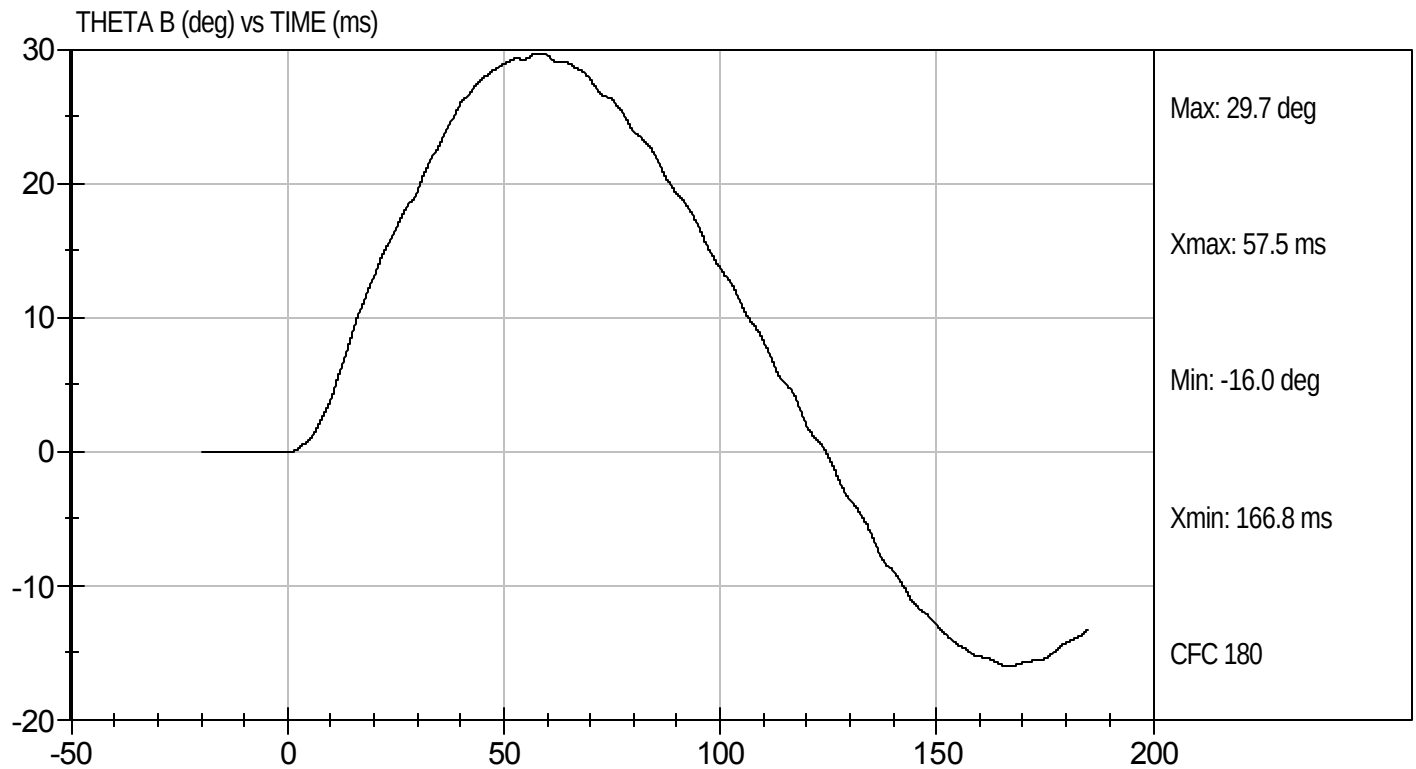
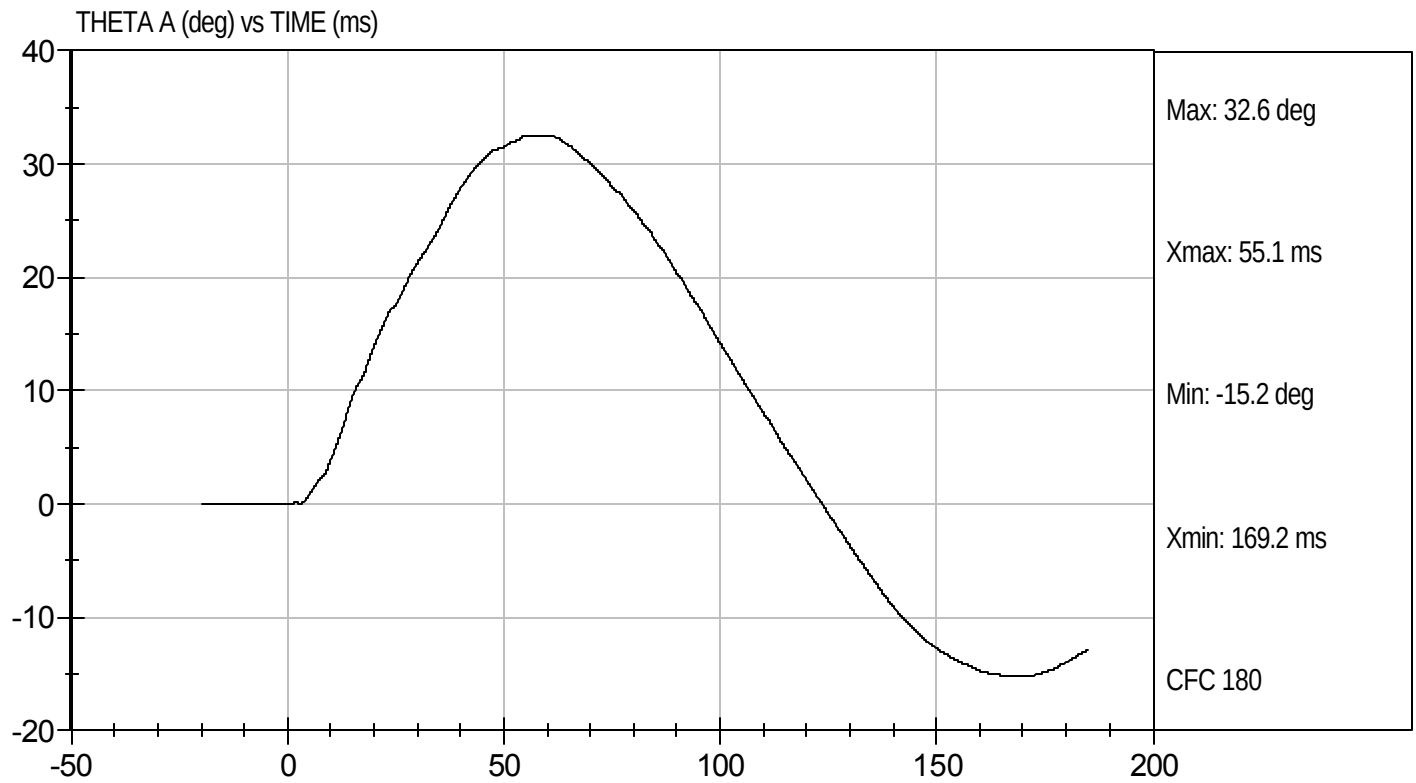
Test Date: 5/24/12
Velocity: 11.19 ft/s, 3.4 m/s





Test Desc: Neck Bending
Component ID: D121952

Test Date: 5/24/12
Velocity: 11.19 ft/s, 3.4 m/s



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D121953

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.2	Pass
Peak Shoulder Acceleration	G's	7.5 to 10.5	8.9	Pass
Time of Peak Shoulder Acceleration	ms	NA	12.9	Pass
Overall Test Results			Pass	


Laboratory Technician

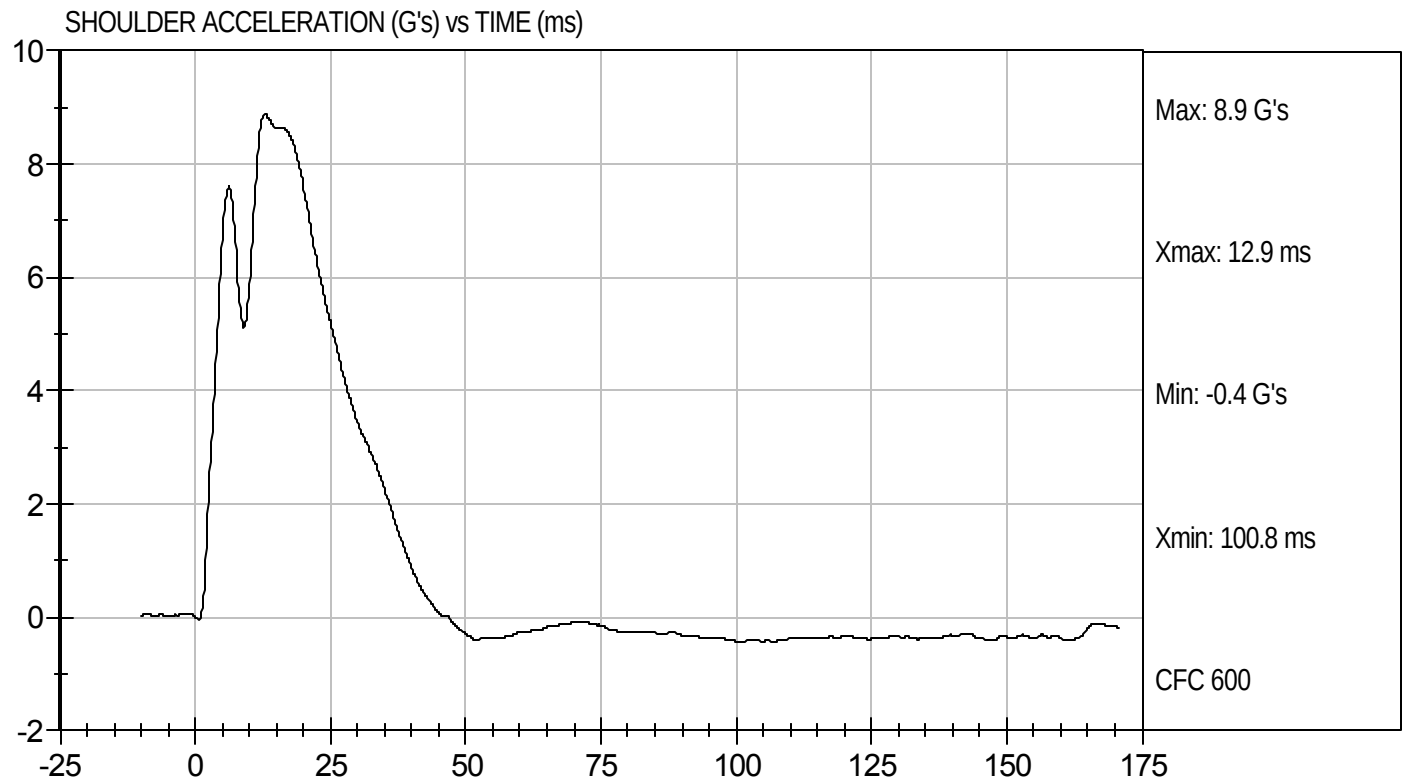
5/24/12
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D121953

Test Date: 5/24/12
Velocity: 13.88 ft/s, 4.2 m/s



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

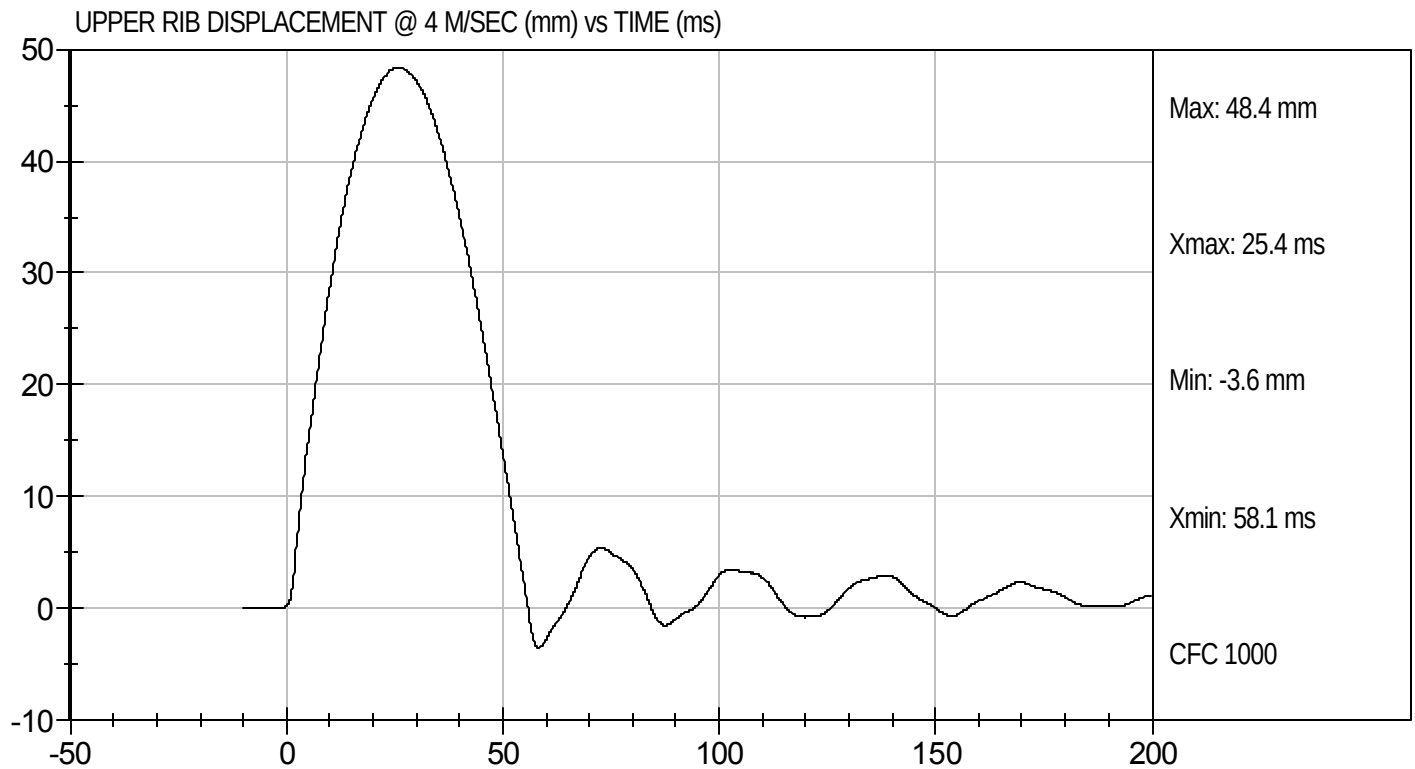
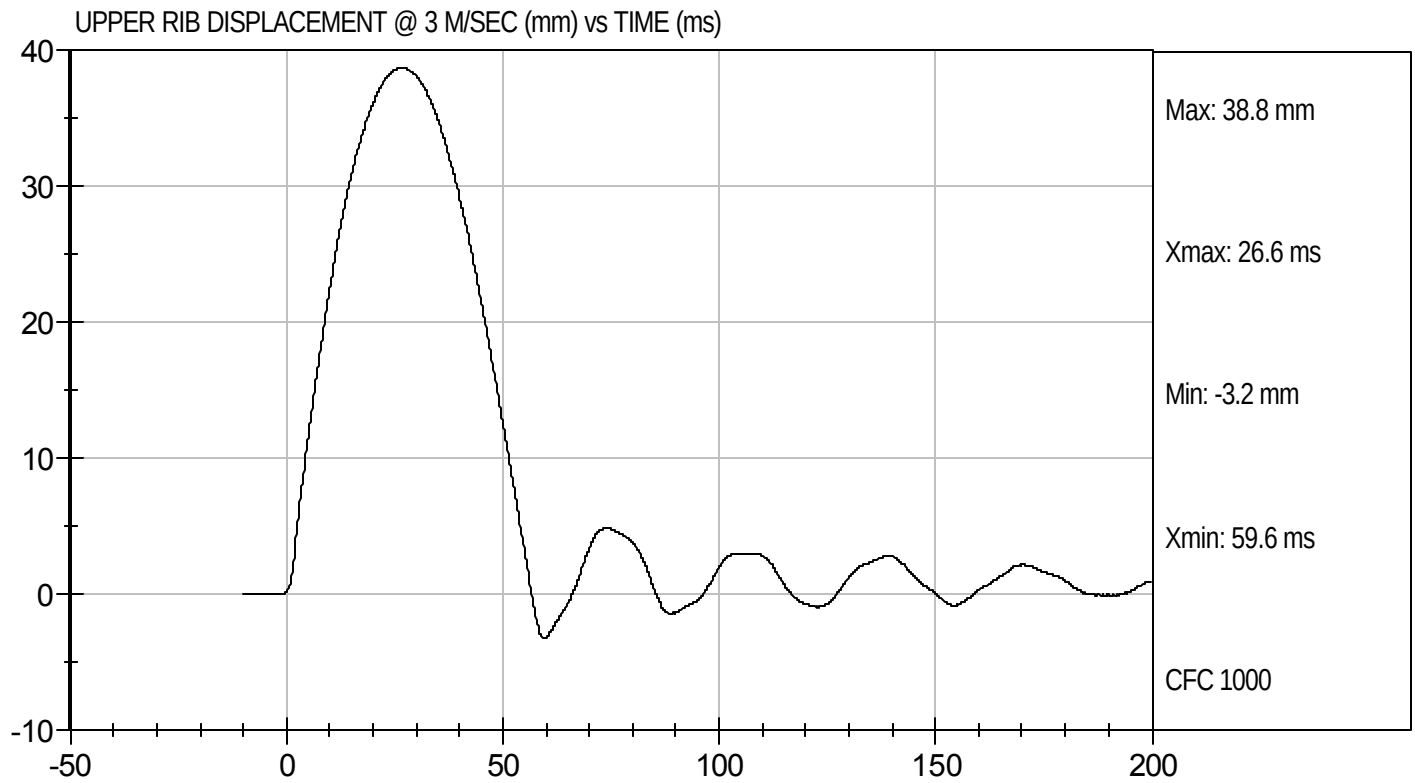
Test I.D: D121954

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.8	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.4	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

5/24/12
Test Date

David Winkelbauer
Approved By



MGA RESEARCH CORPORATION

MID RIB TEST
ES-2re DUMMY

ATD Serial No: 032

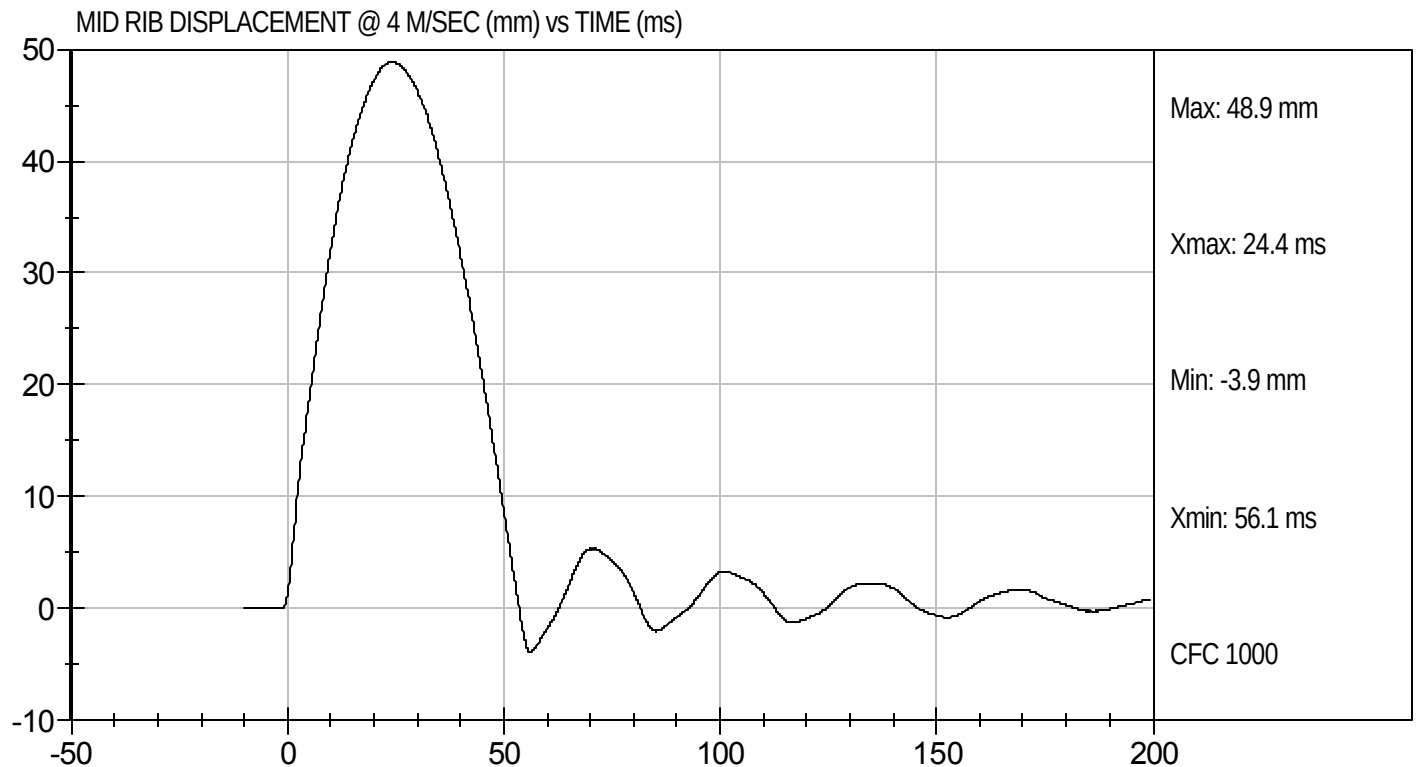
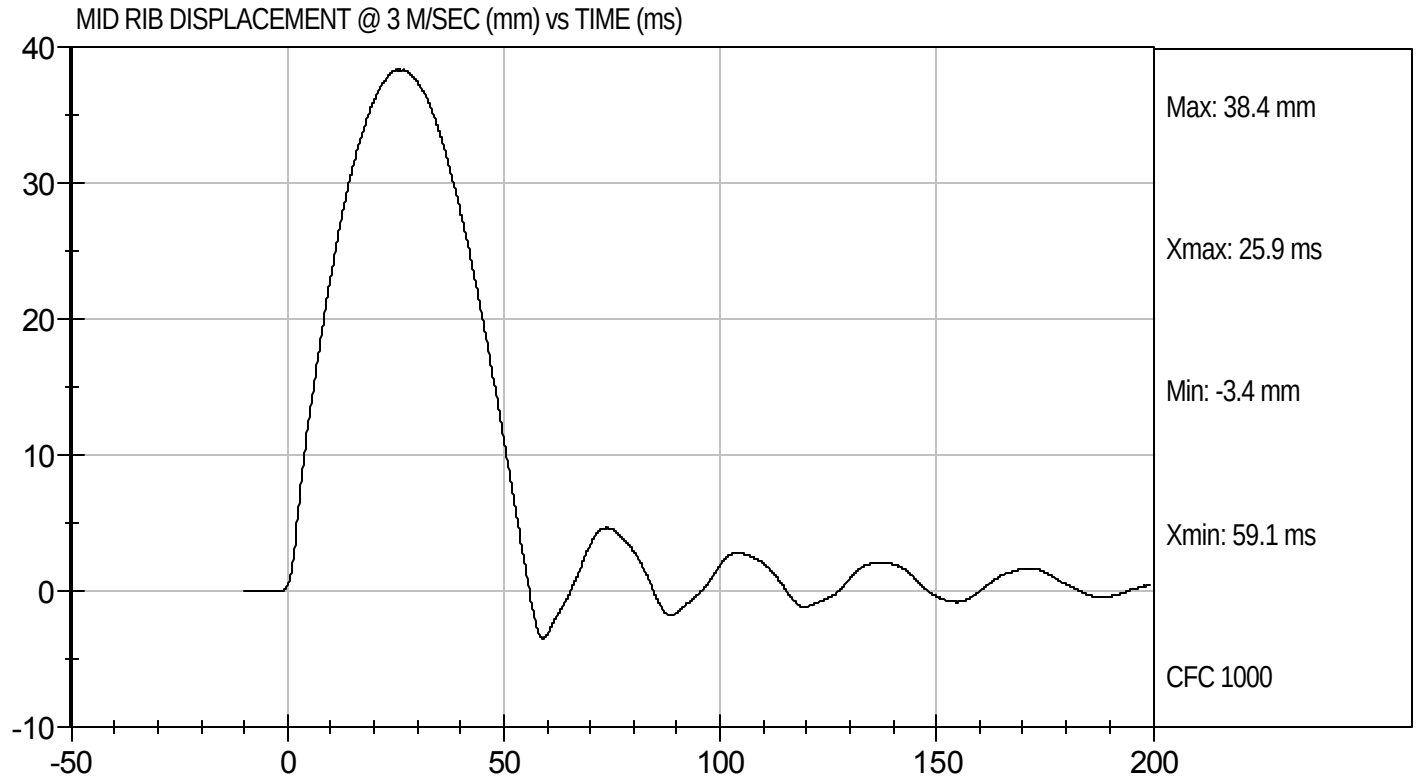
Test I.D: D121955

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.4	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.9	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

5/24/12
Test Date

David Winkelbauer
Approved By



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

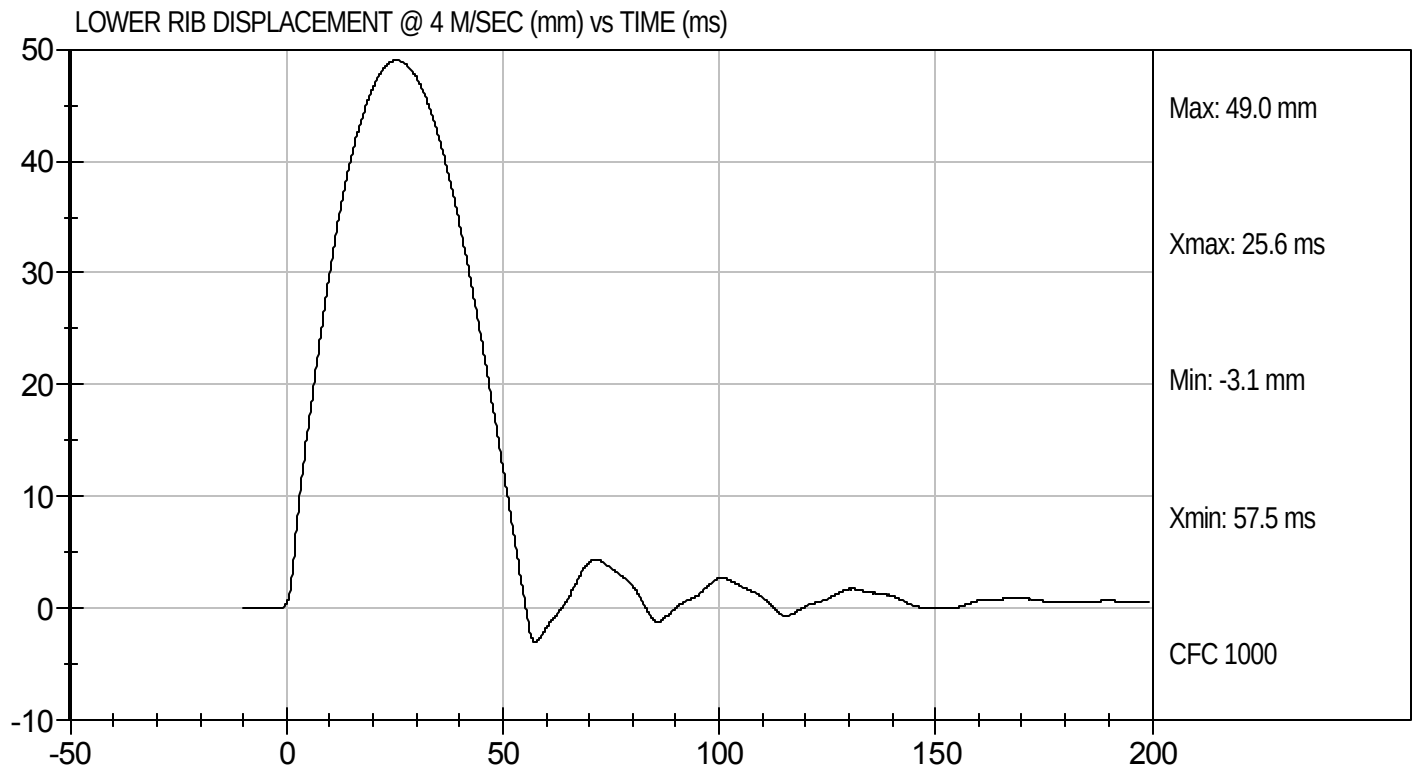
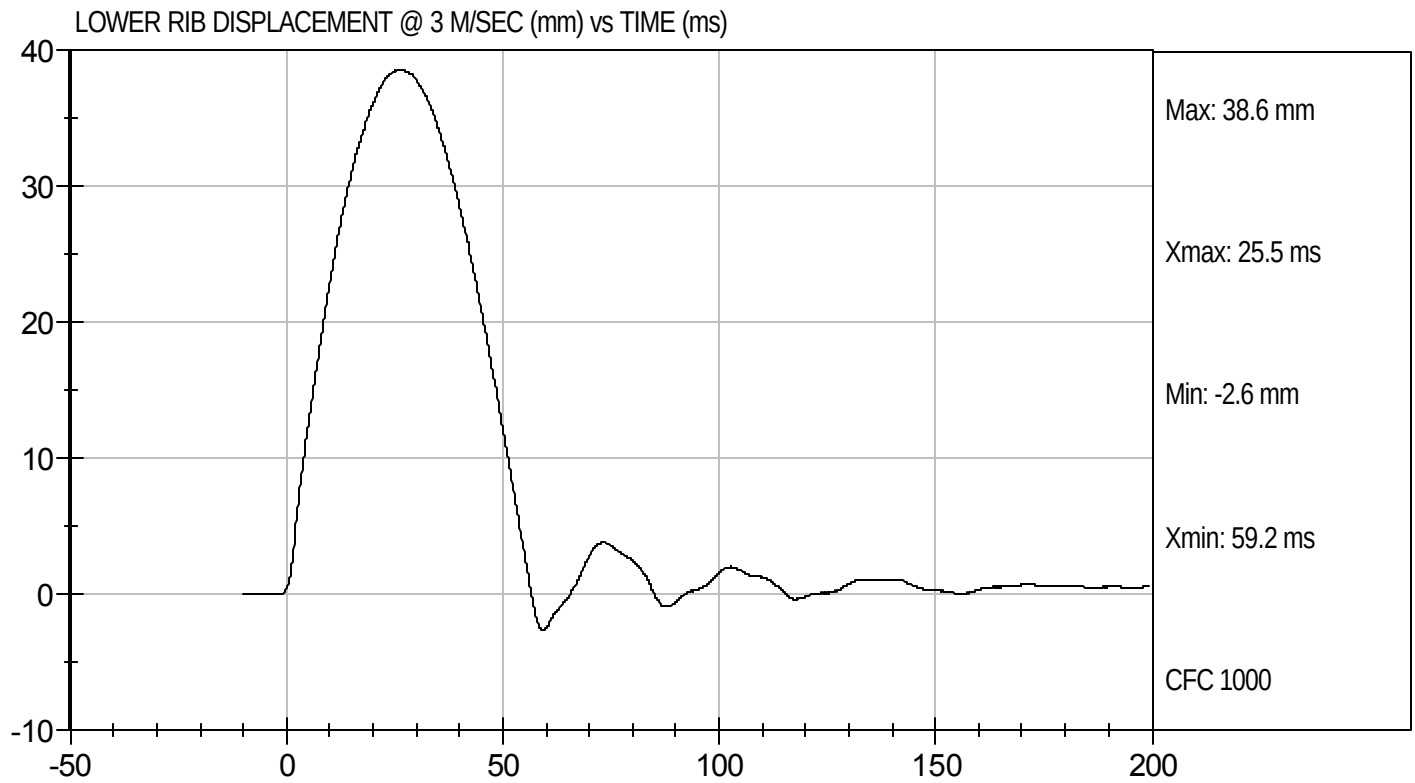
Test I.D: D121956

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.6	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	49.0	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

5/24/12
Test Date

David Winkelbauer
Approved By



MGA RESEARCH CORPORATION
FULL BODY THORAX IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D121950

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	44	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	kN	5.10 to 6.20	5.20	Pass
Upper Rib Displacement	mm	34.0 to 41.0	36.5	Pass
Middle Rib Displacement	mm	37.0 to 45.0	39.4	Pass
Lower Rib Displacement	mm	37.0 to 44.0	38.9	Pass
			Overall Test Results	Pass


Laboratory Technician

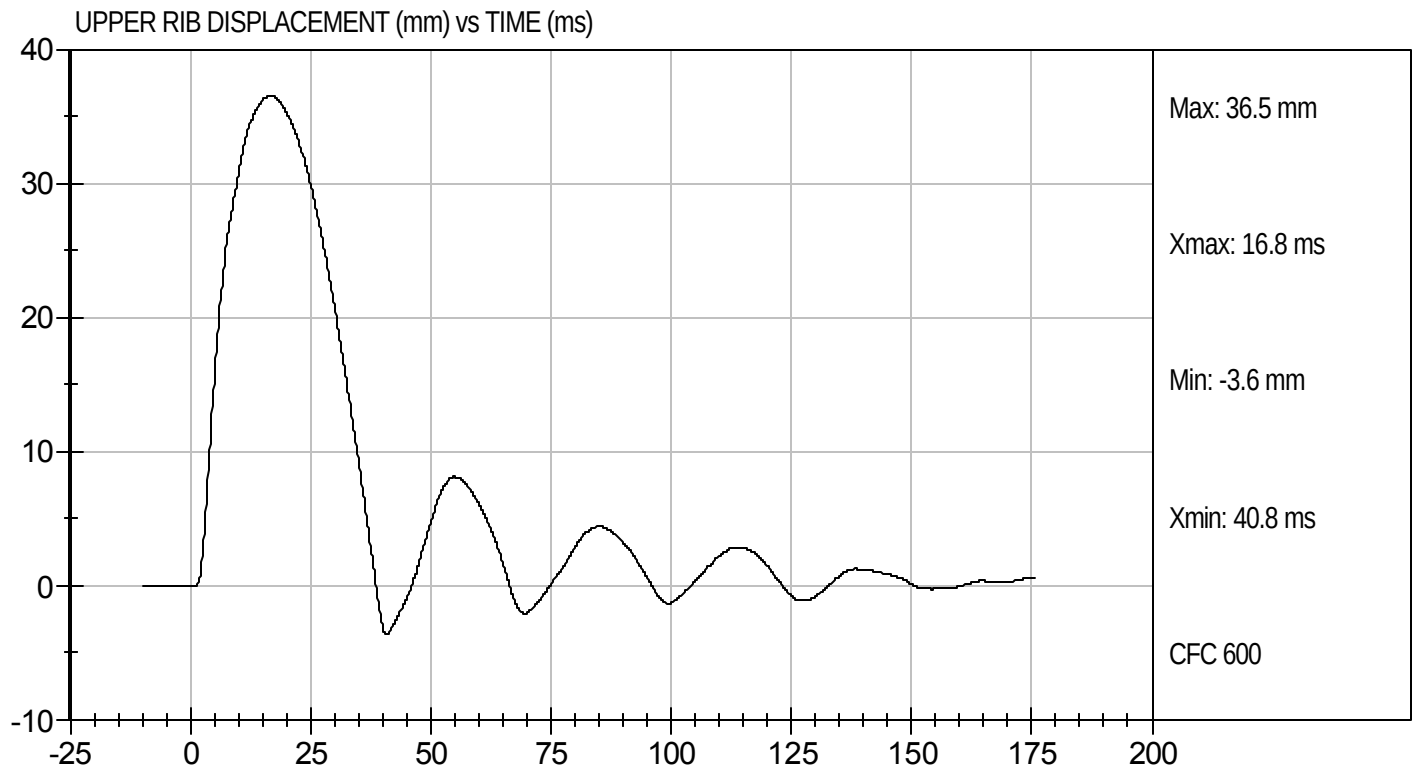
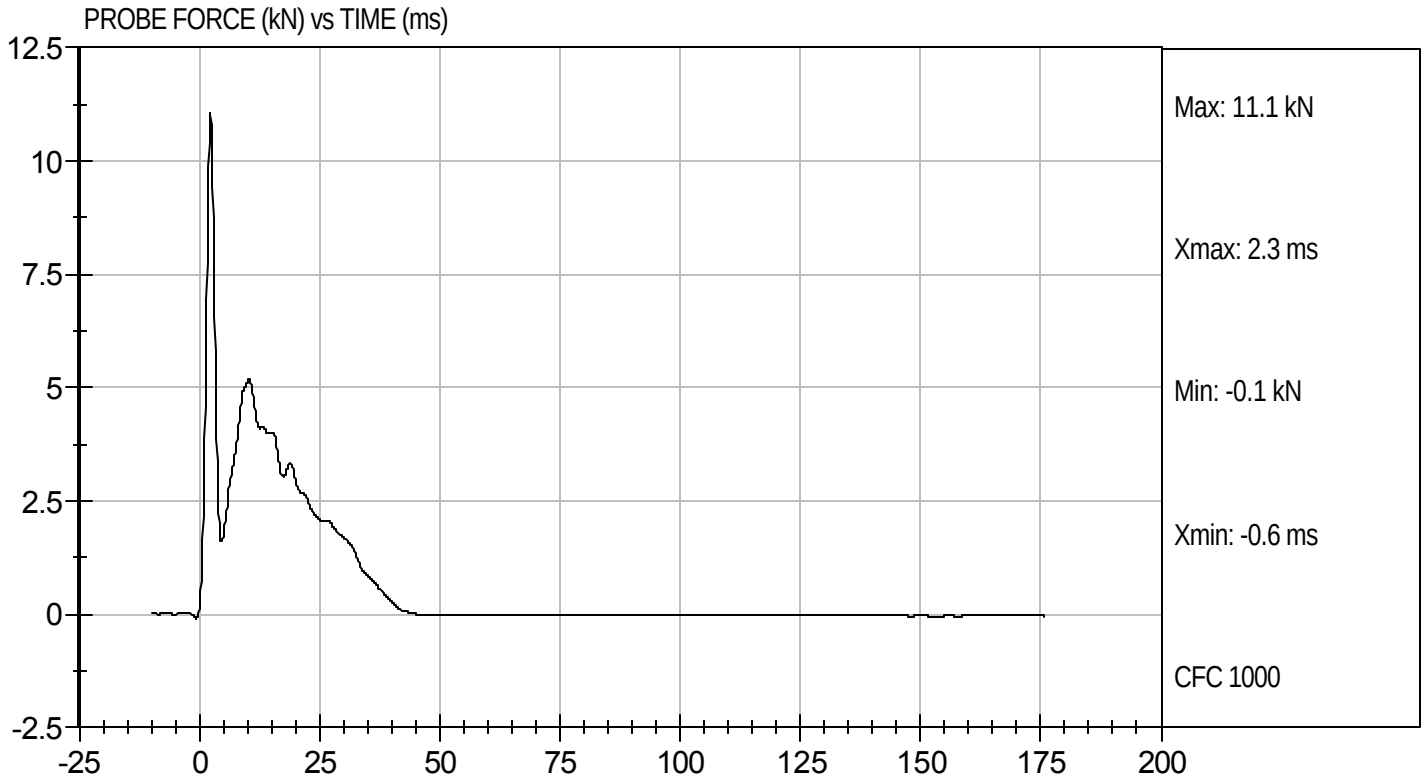
5/24/12
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D121950

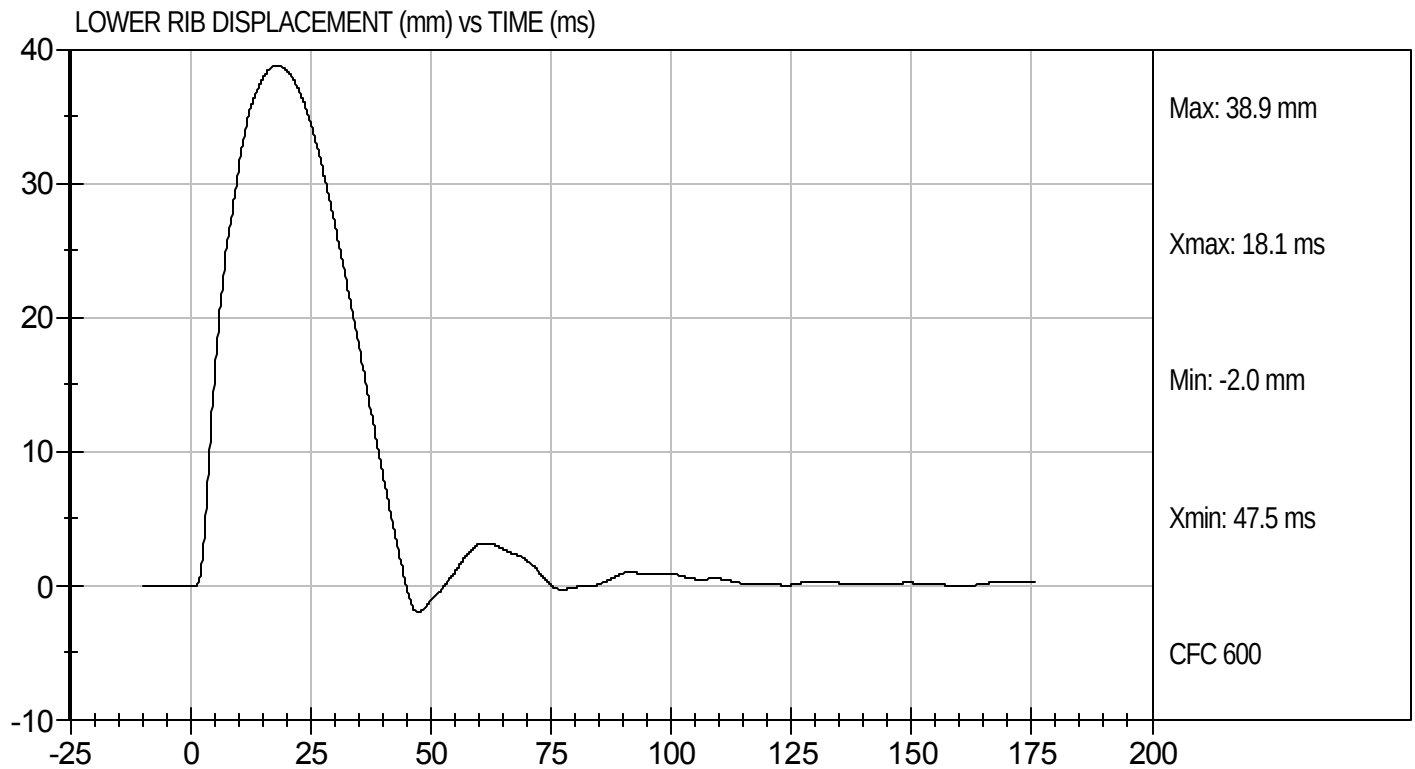
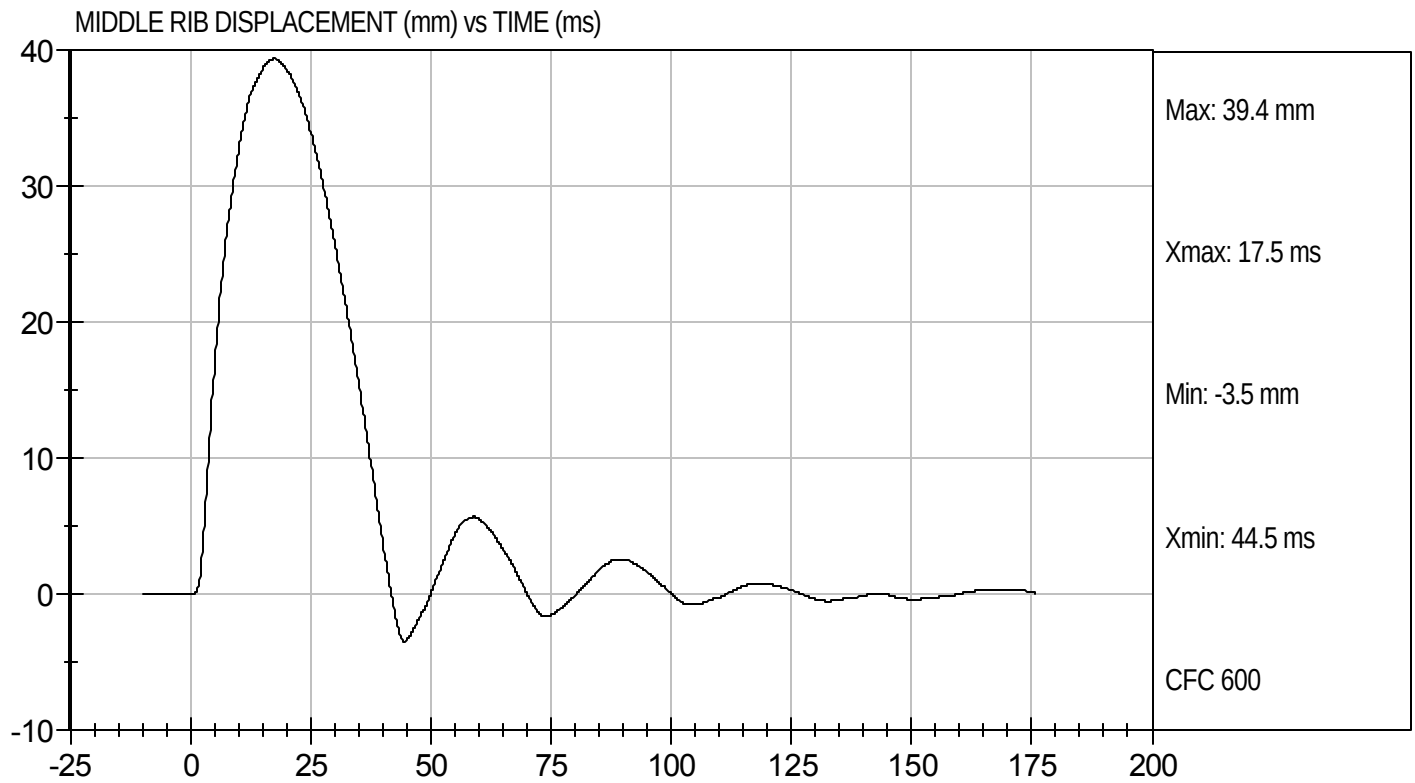
Test Date: 5/24/12
Velocity: 18.31 ft/s, 5.58 m/s





Test Desc: Thorax Impact
Component ID: D121950

Test Date: 5/24/12
Velocity: 18.31 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION

ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D121957

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Speed	m/s	3.90 to 4.10	4.10	Pass
Maximum Impact Force	kN	4.00 to 4.80	4.40	Pass
Time of Maximum Impact Force	ms	10.60 to 13.00	11.70	Pass
Maximum Total Abdomen Force	kN	2.20 to 2.70	2.39	Pass
Time of Maximum Abdomen Force	ms	10.00 to 12.30	11.10	Pass
Overall Test Results				Pass


Laboratory Technician

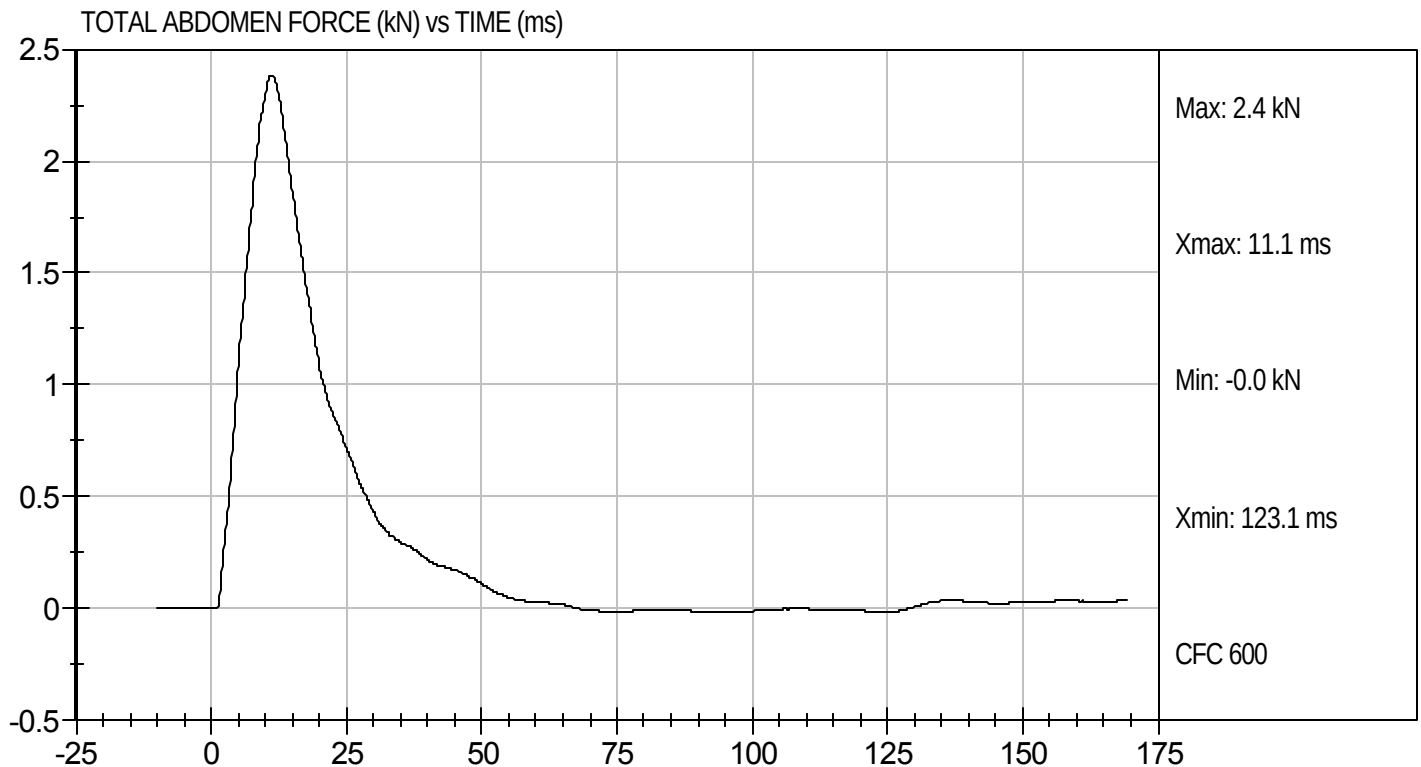
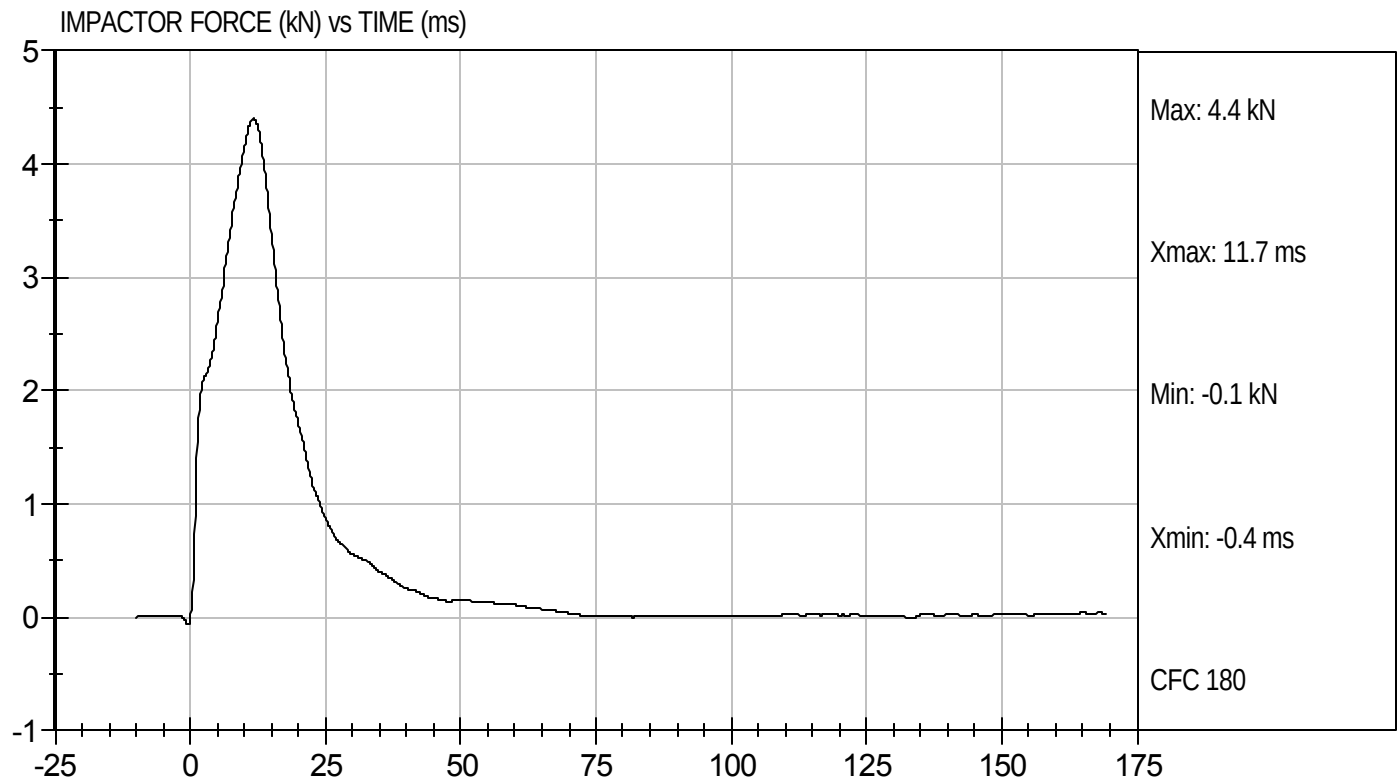
5/24/12
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D121957

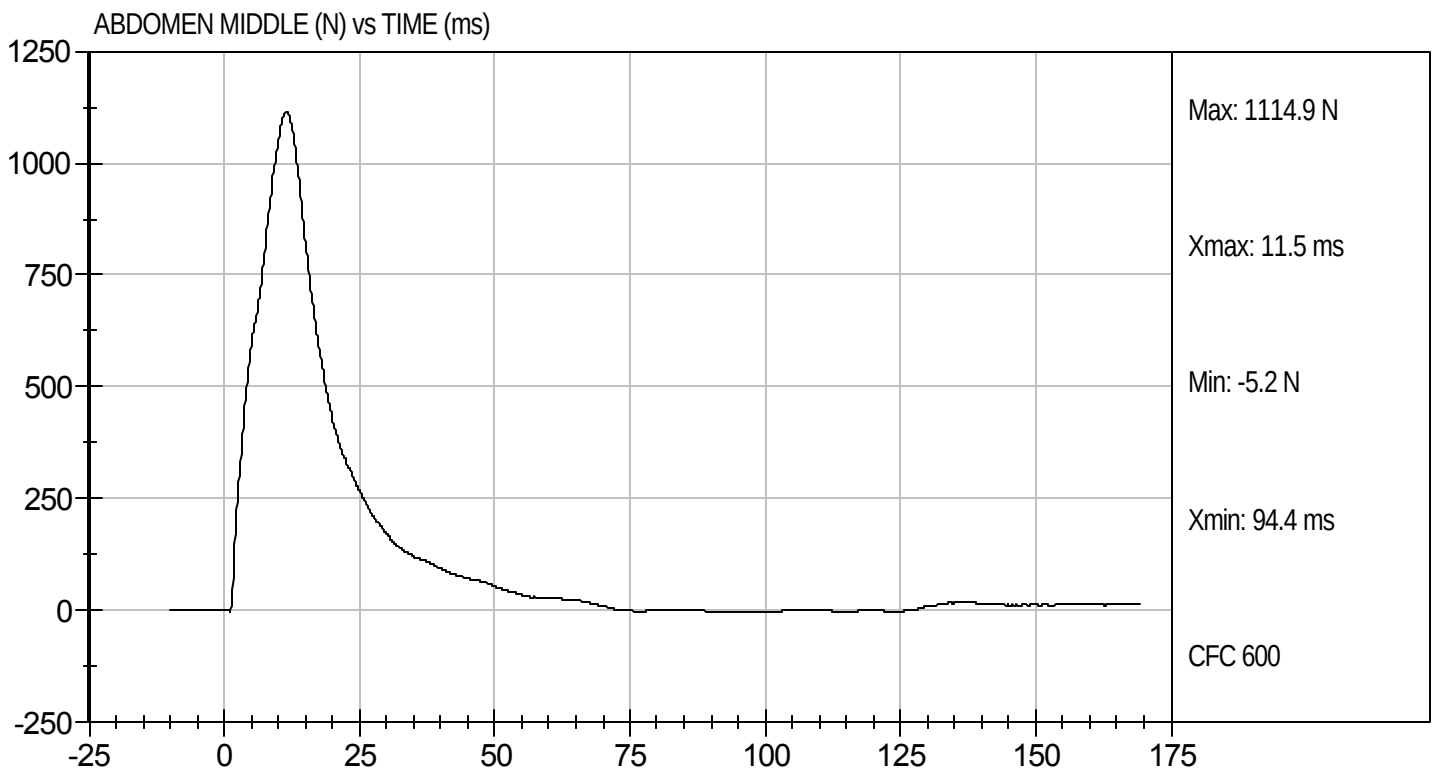
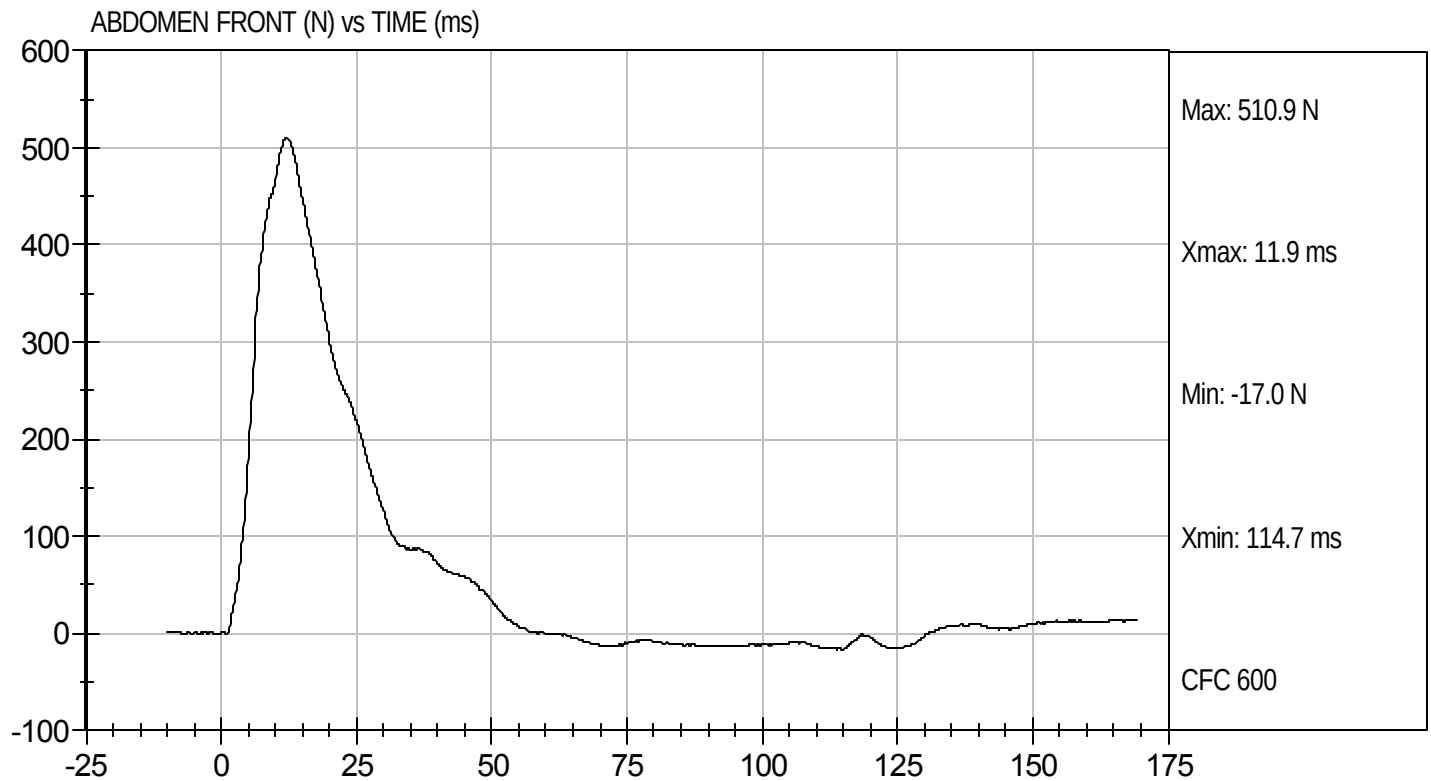
Test Date: 5/24/12
Velocity: 13.44 ft/s, 4.1 m/s





Test Desc: Abdomen Impact
Component ID: D121957

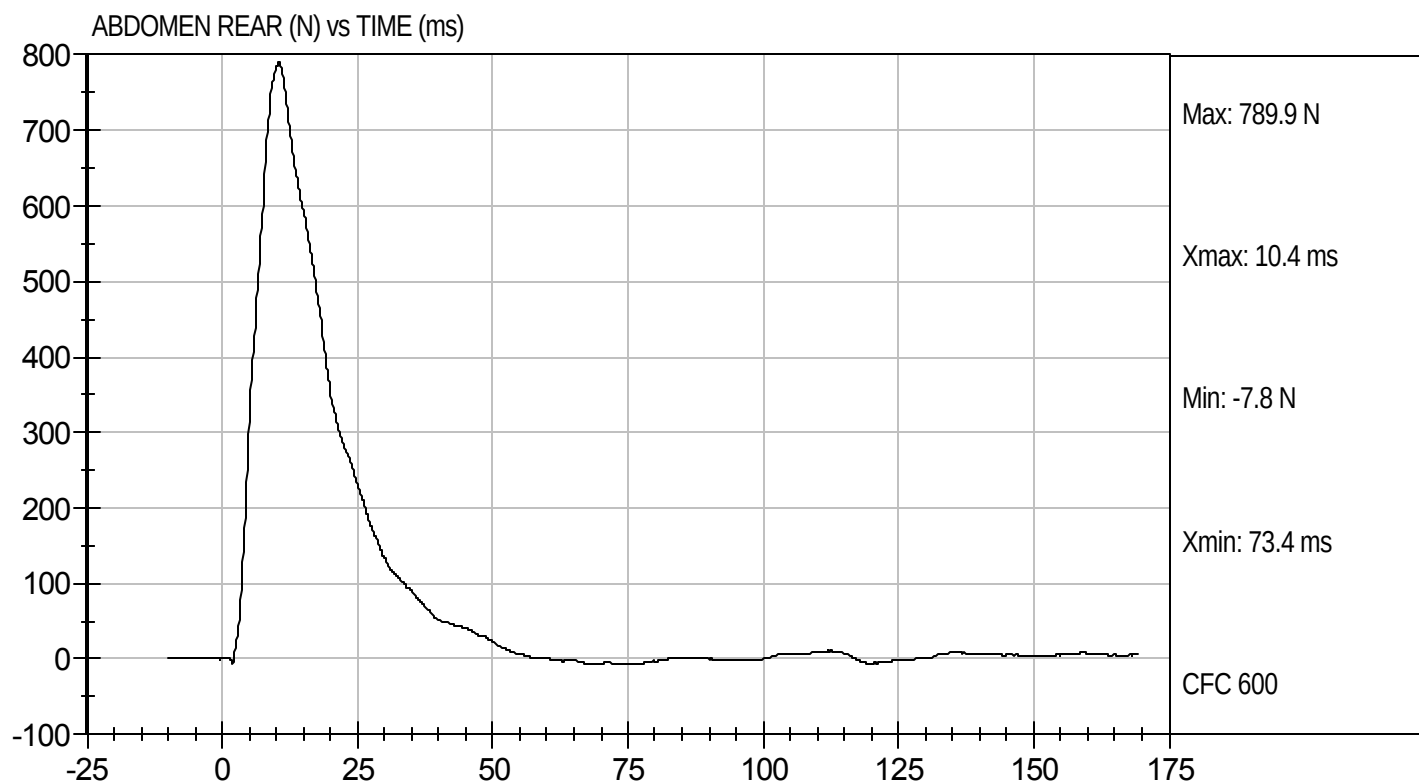
Test Date: 5/24/12
Velocity: 13.44 ft/s, 4.1 m/s





Test Desc: Abdomen Impact
Component ID: D121957

Test Date: 5/24/12
Velocity: 13.44 ft/s, 4.1 m/s

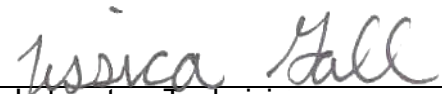


MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D121958

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.13	Pass
Pendulum Deceleration	1 ms	m/s	-0.05 to 0.00	-0.01	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.40	Pass
	27 ms	m/s	-6.50 to -5.80	-5.89	Pass
	30 ms	m/s	>= -6.5	-5.98	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	48.1	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	48.8	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	45	Pass
Overall Results					Pass


 Laboratory Technician

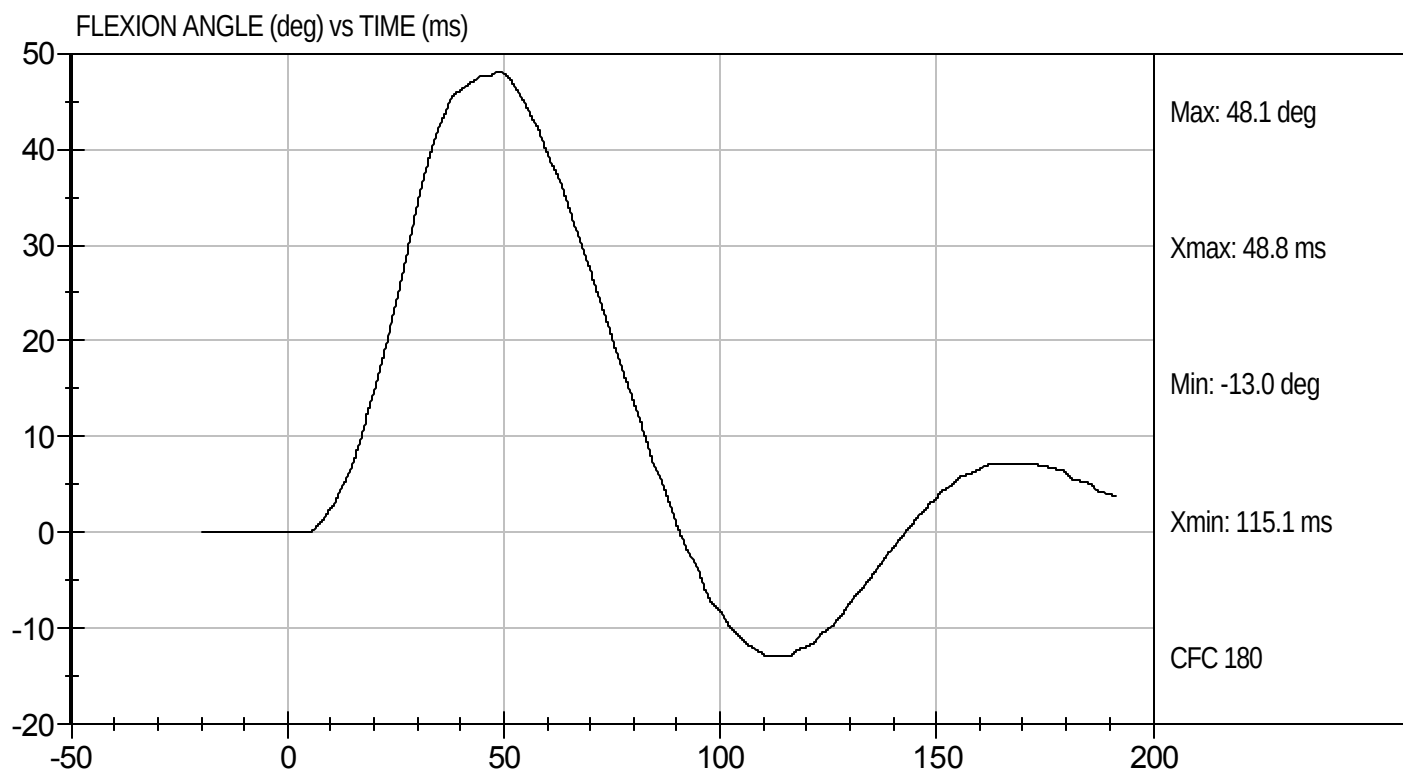
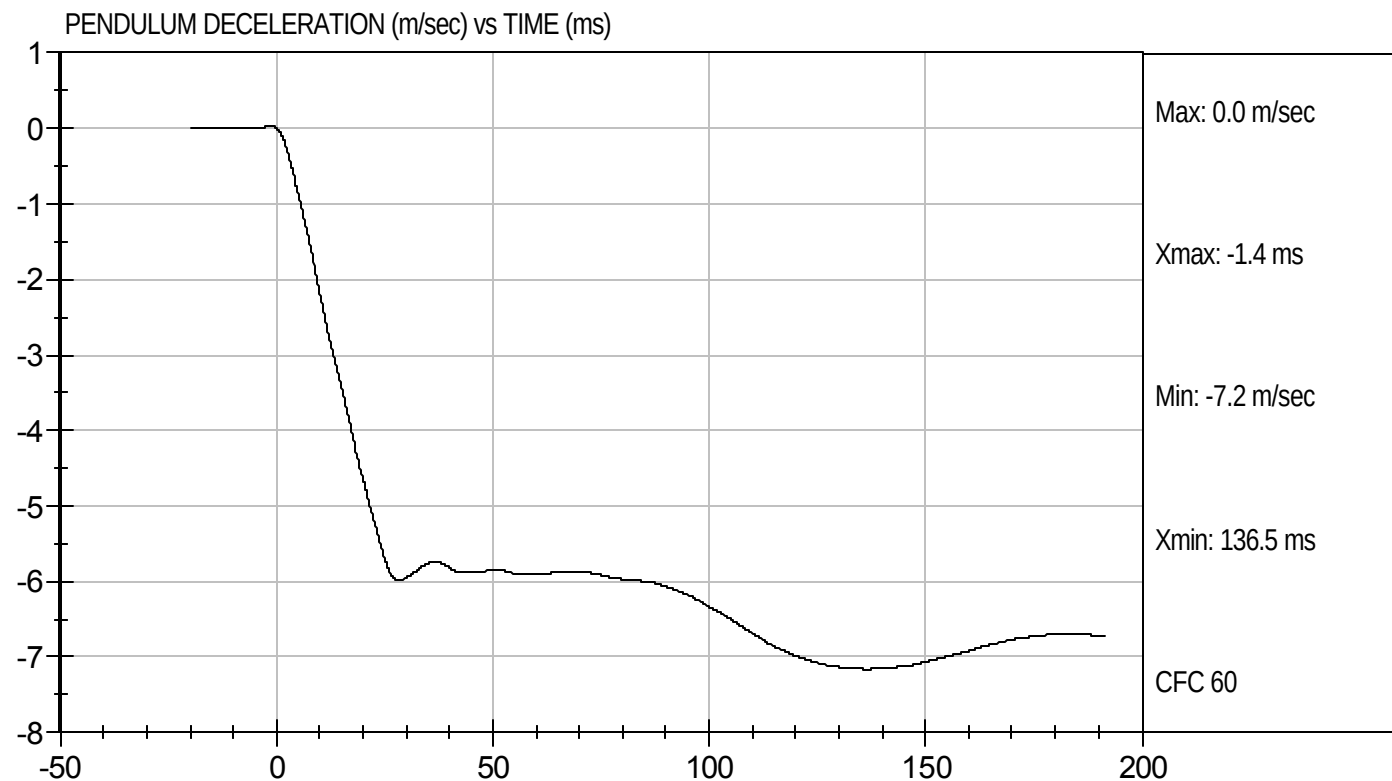
5/24/12
 Test Date


 Approved By



Test Desc: Lumbar Bending
Component ID: D121958

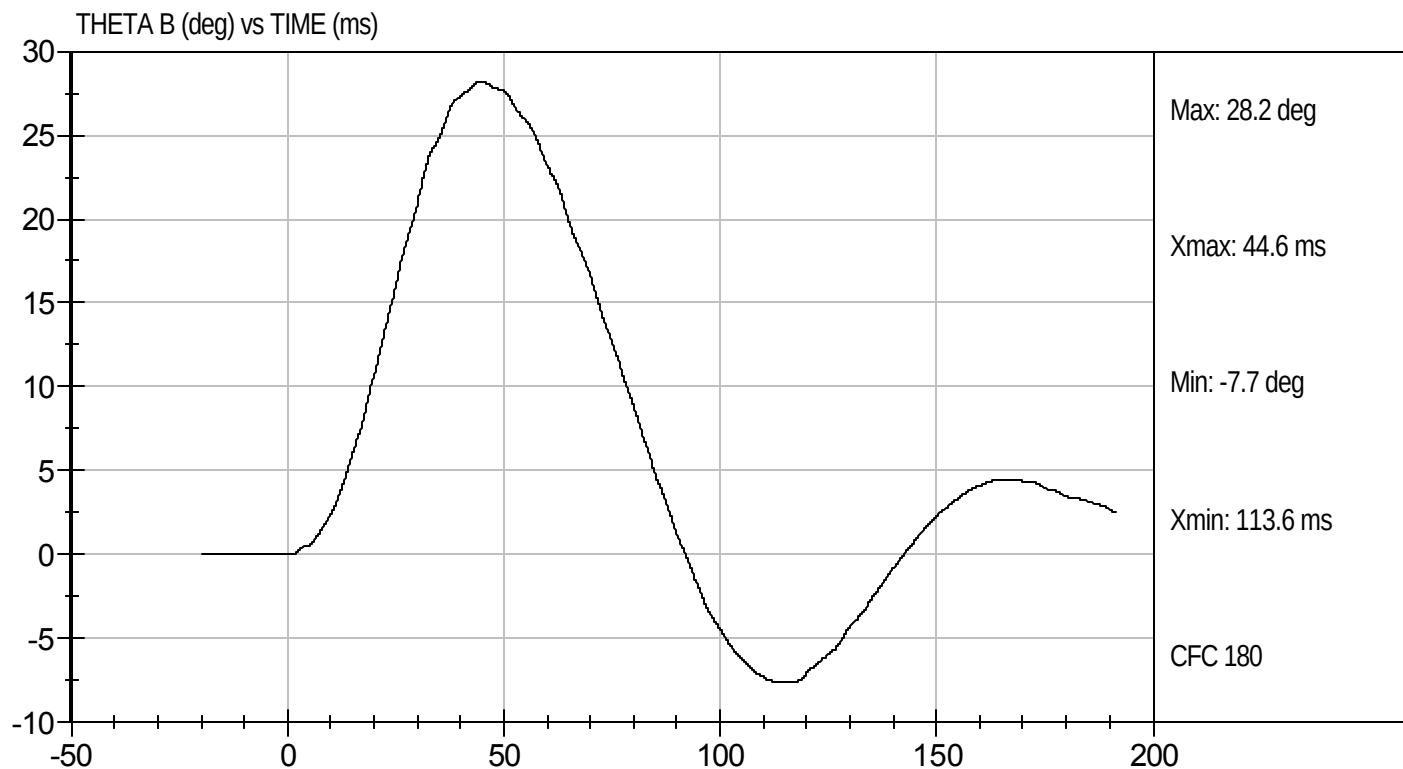
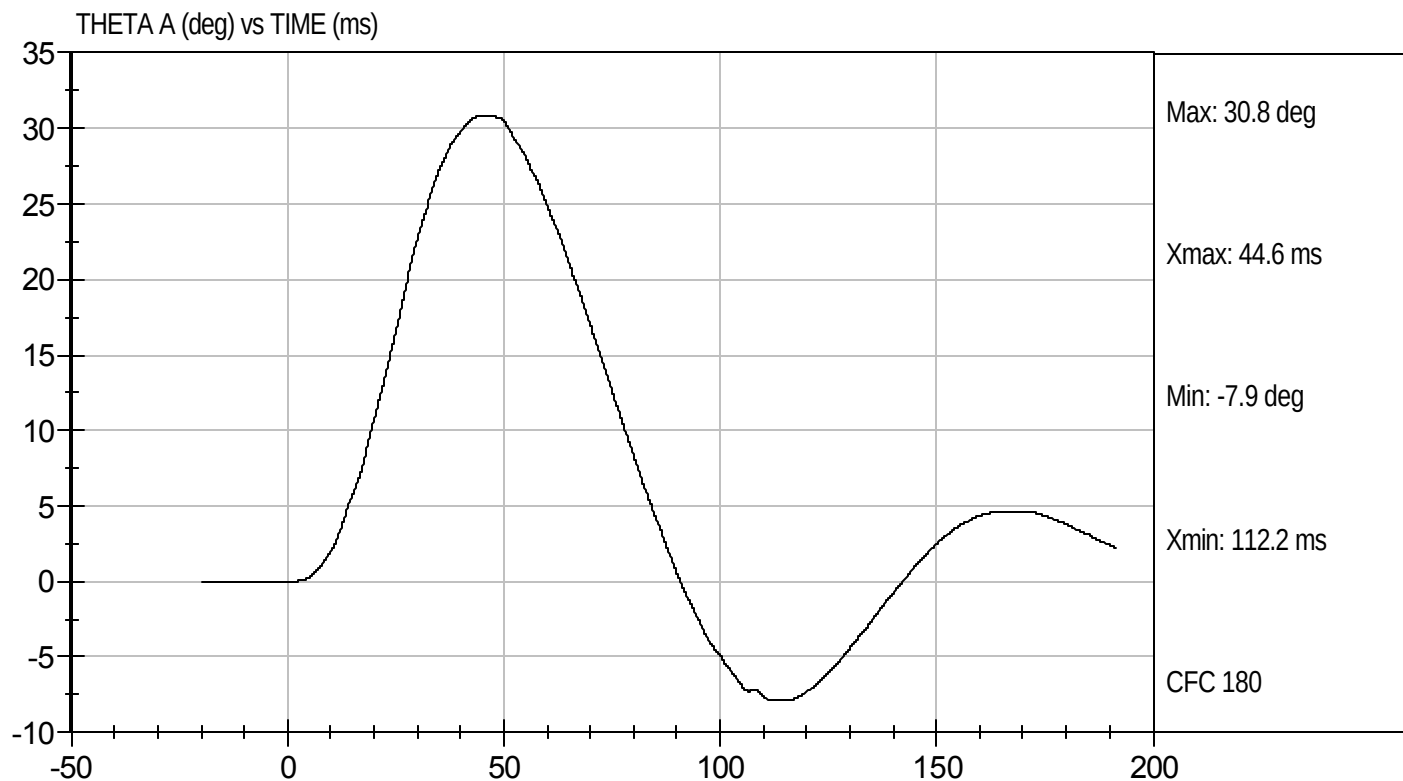
Test Date: 5/24/12
Velocity: 20.10 ft/s, 6.13 m/s





Test Desc: Lumbar Bending
Component ID: D121958

Test Date: 5/24/12
Velocity: 20.10 ft/s, 6.13 m/s



MGA RESEARCH CORPORATION

**PELVIS TEST
ES-2re DUMMY**

ATD Serial No: 032

Test I.D: D121959

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Speed	m/s	4.20 to 4.40	4.34	Pass
Maximum Impactor Force	kN	4.70 to 5.40	4.70	Pass
Time of Maximum Impactor Force	ms	11.80 to 16.10	12.50	Pass
Maximum Pubic Force	kN	1.23 to 1.59	1.30	Pass
Time of Maximum Pubic Force	ms	12.20 to 17.00	13.20	Pass
Overall Test Results				Pass


Laboratory Technician

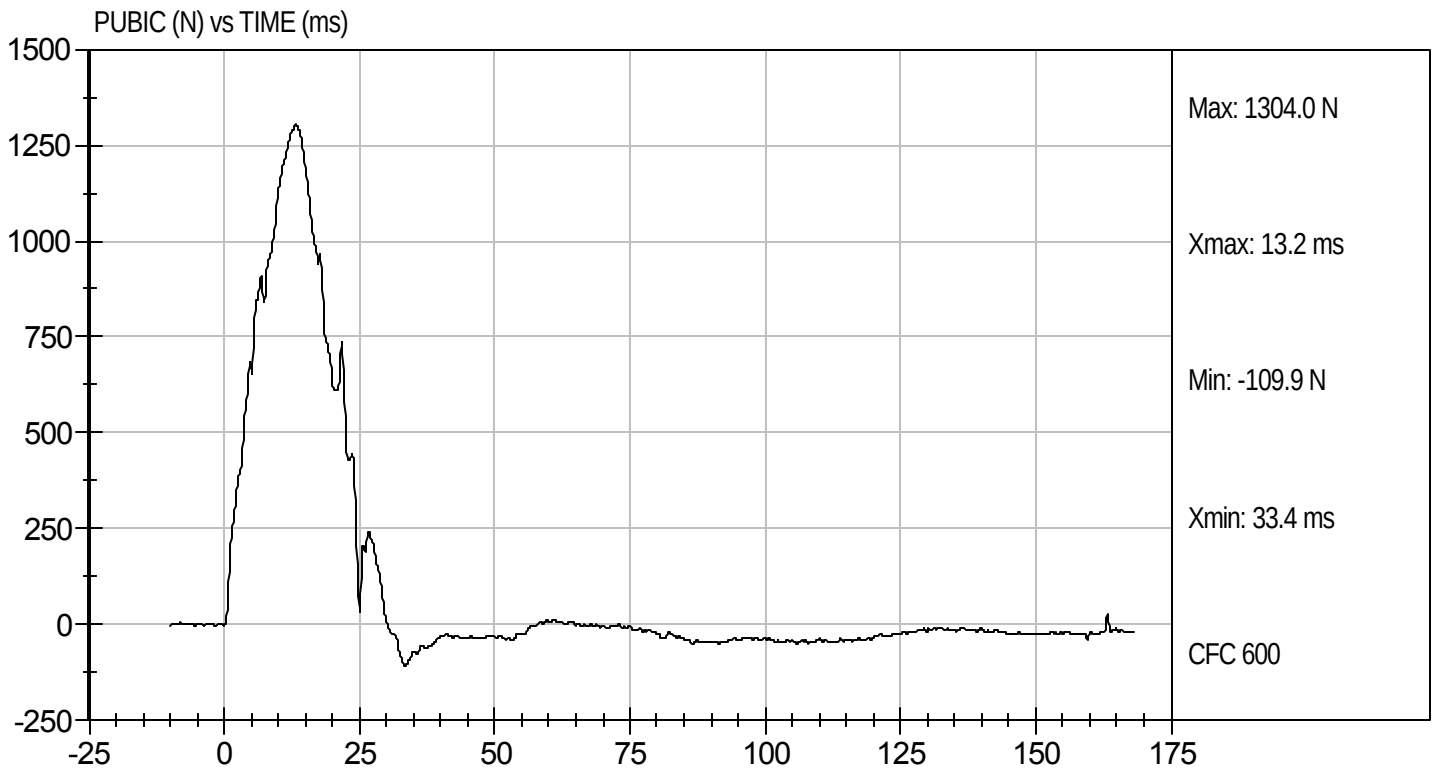
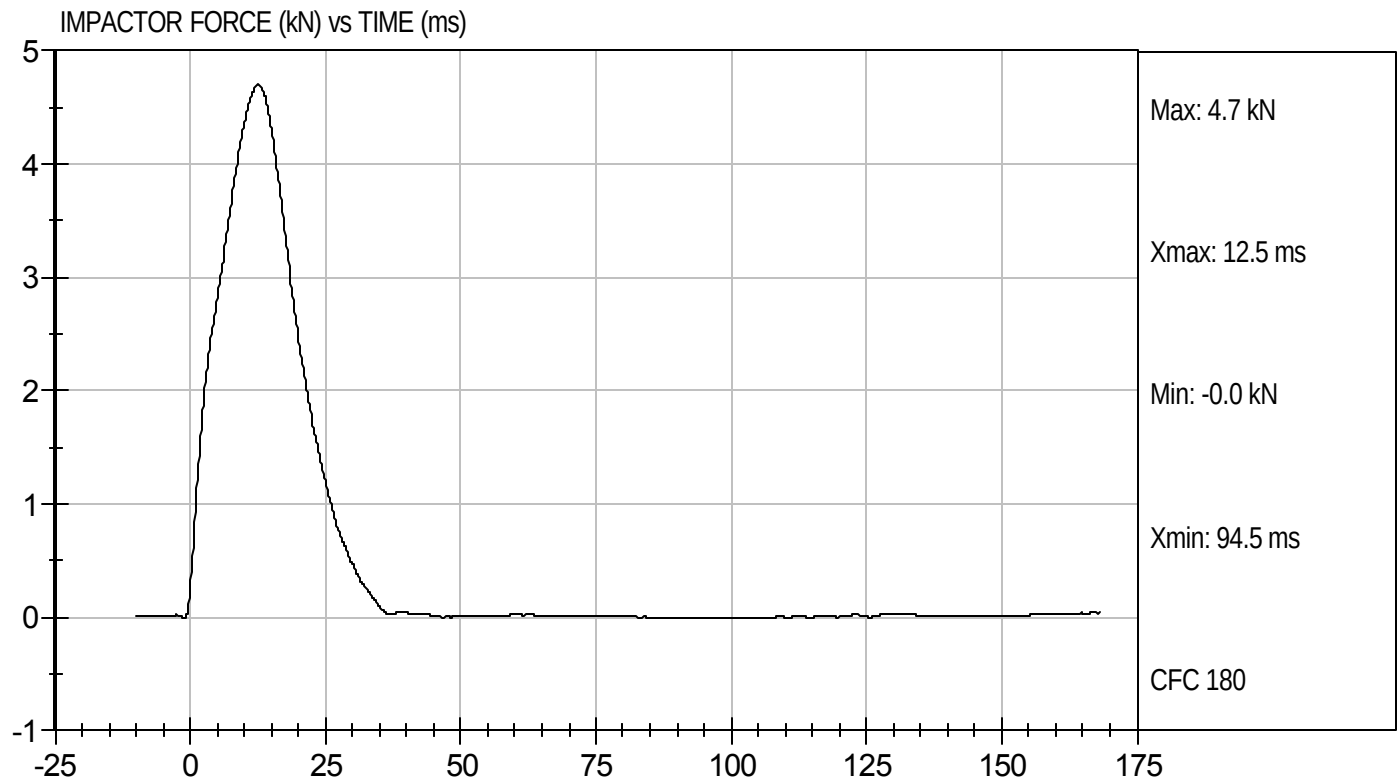
5/24/12
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D121959

Test Date: 5/24/12
Velocity: 14.24 ft/s, 4.34 m/s



MGA RESEARCH CORPORATION

HEAD DROP TEST

ES-2re DUMMY

ATD Serial No: 032Test ID: D122291

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	125 to 155	152	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-8.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

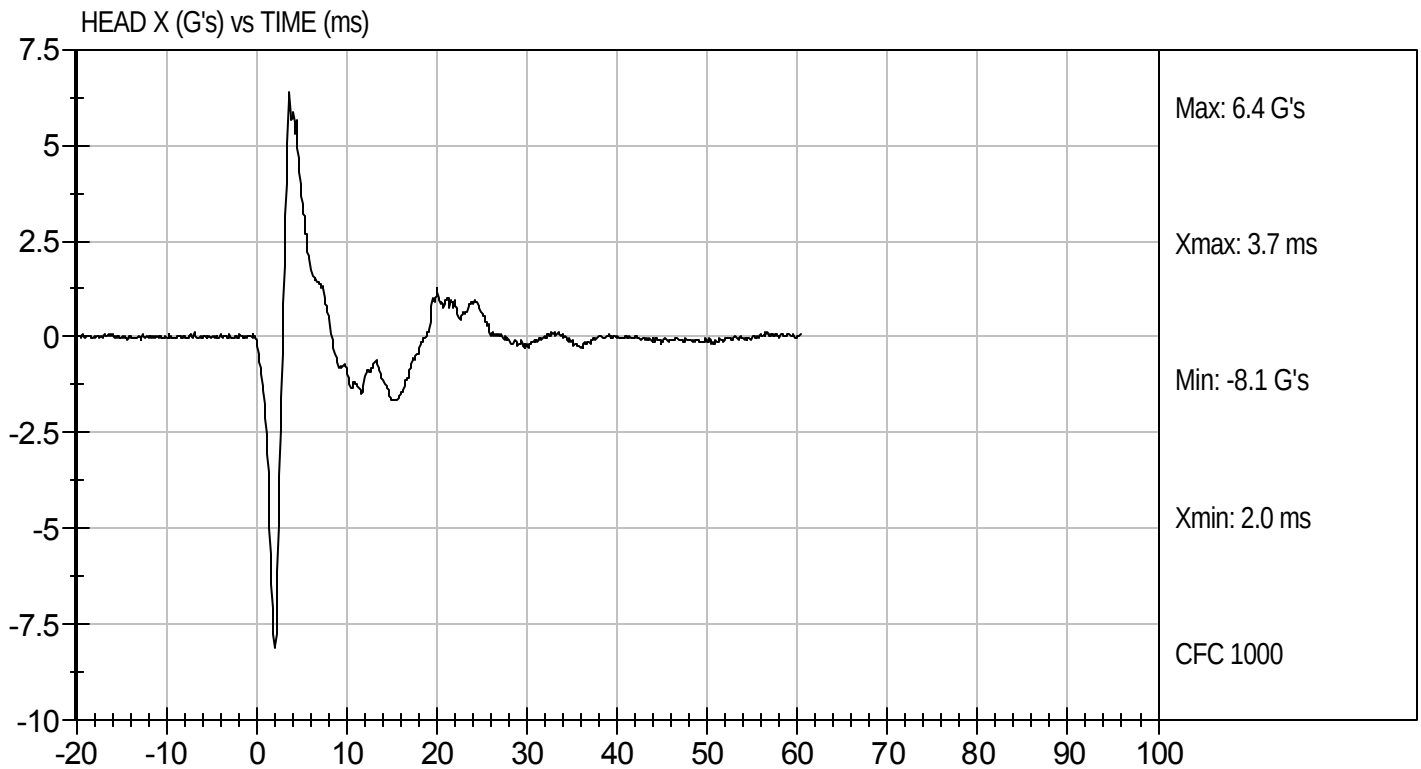
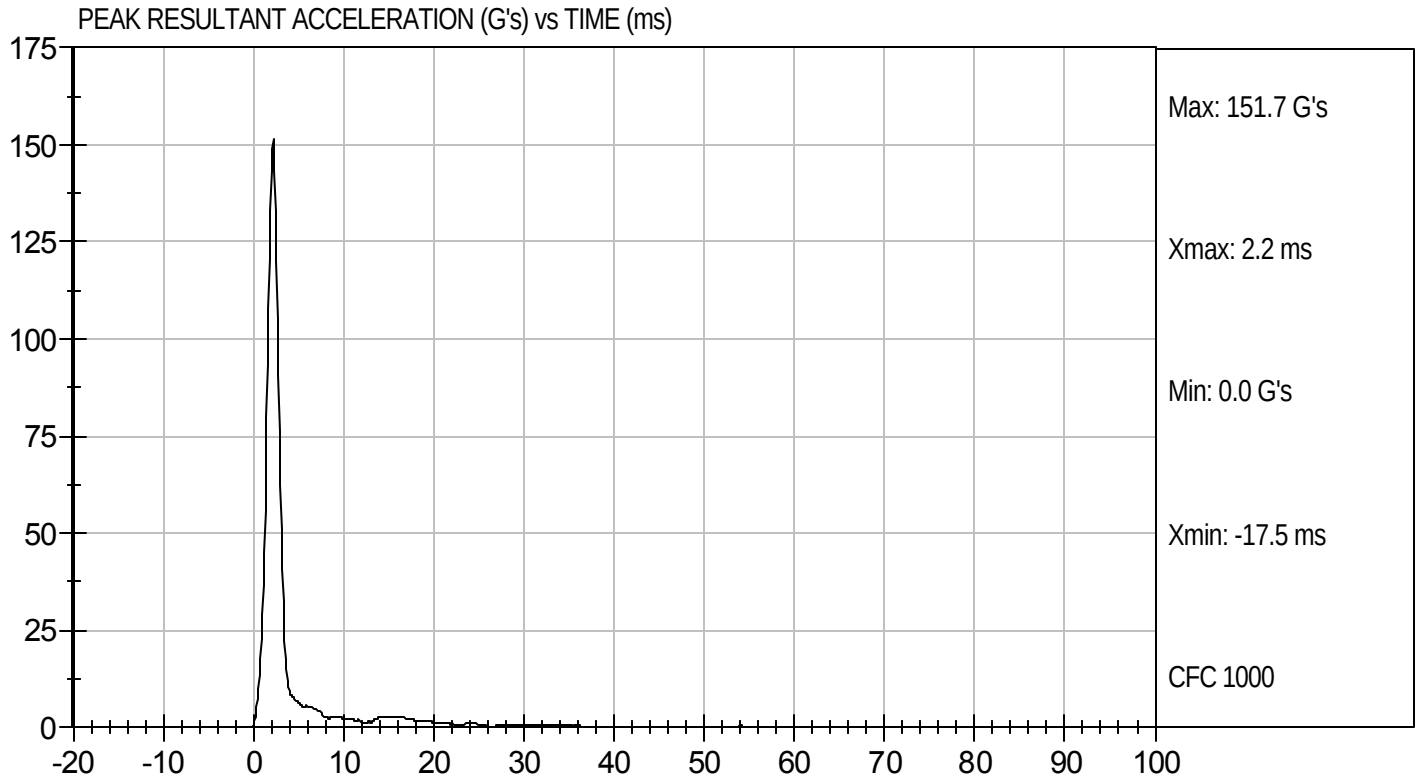
6/20/12
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D122291

Test Date: 6/20/12
Velocity: 0 ft/s, 0 m/s

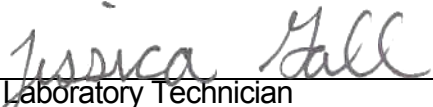


MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY

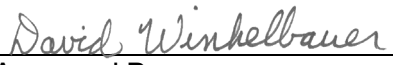
ATD Serial No: 032

Test I.D: D122292

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	18.0 to 22.0	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	49	Pass
Pendulum Speed		m/s	3.3 to 3.5	3.4	Pass
Pendulum Deceleration	1 ms	m/s	0.00 to -0.05	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.32	Pass
	14 ms	m/s	-3.20 to -3.70	-3.24	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	52.5	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	58.4	Pass
Head Rotation Decay Time to 0 degree		ms	53.0 to 88.0	55.9	Pass
Overall Test Results					Pass


 Laboratory Technician

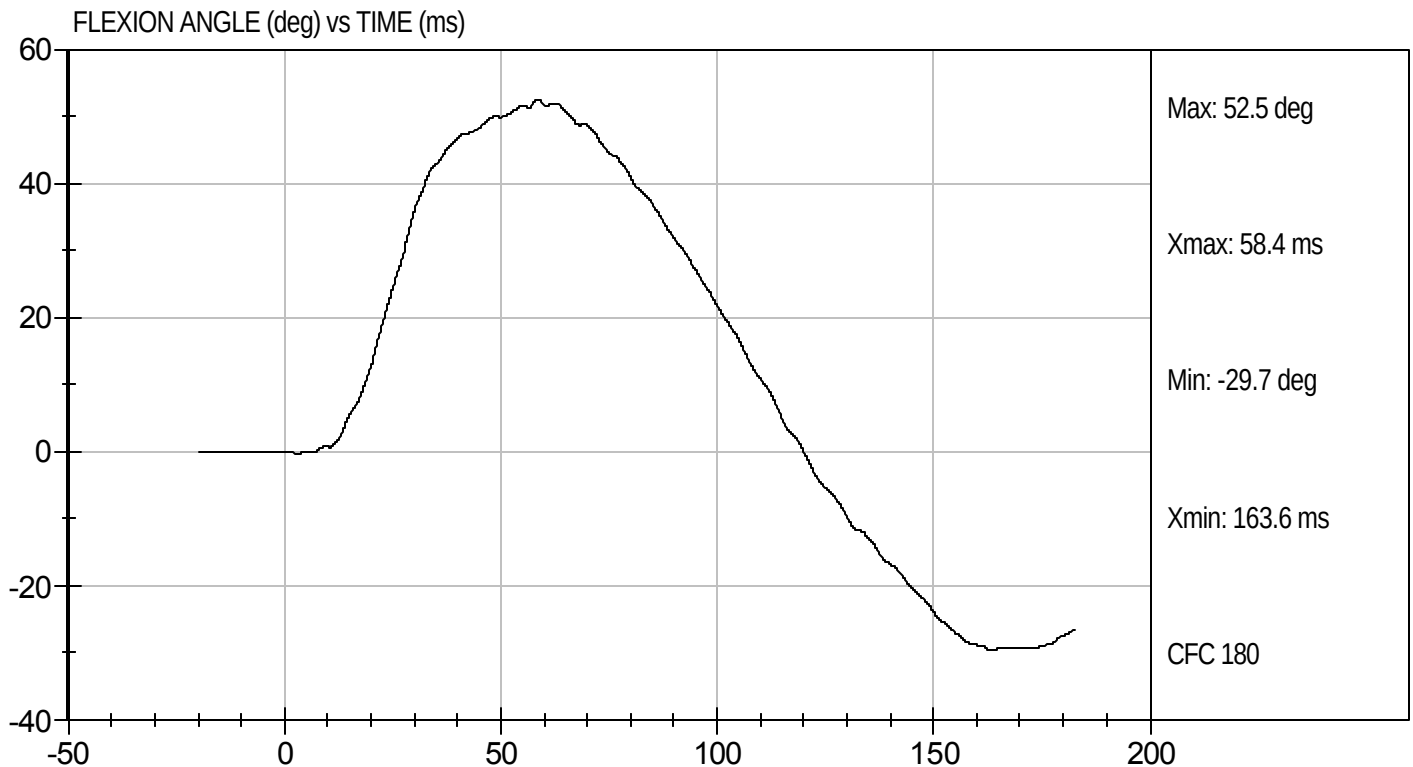
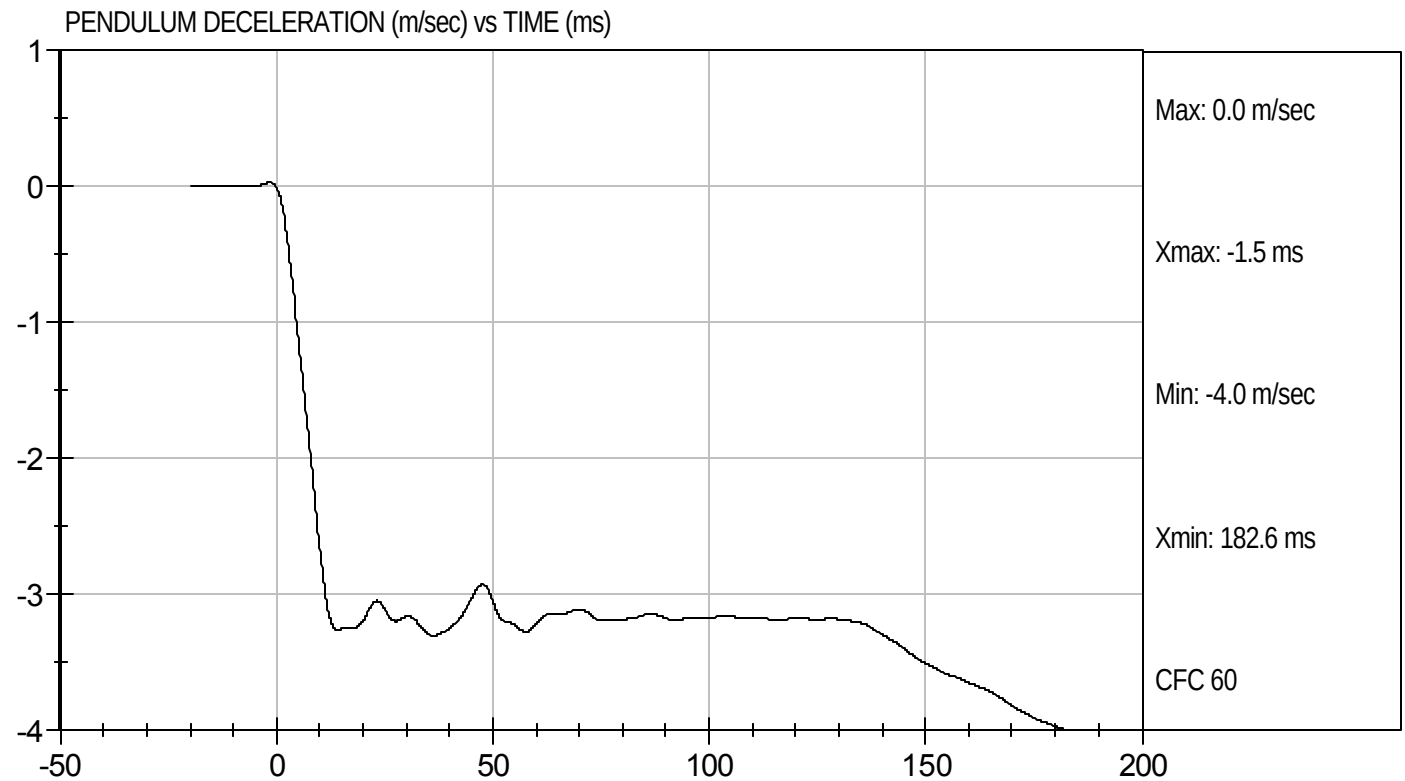
6/20/12
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D122292

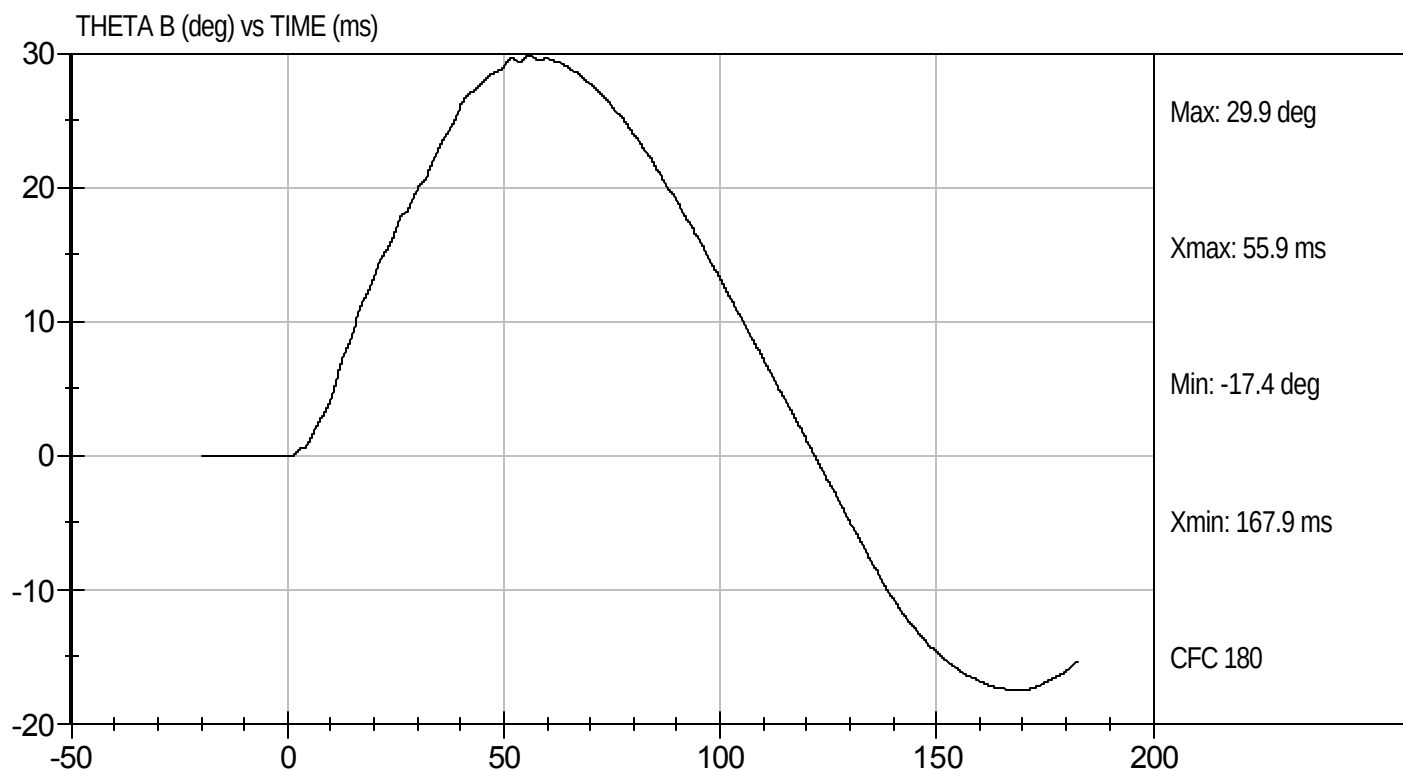
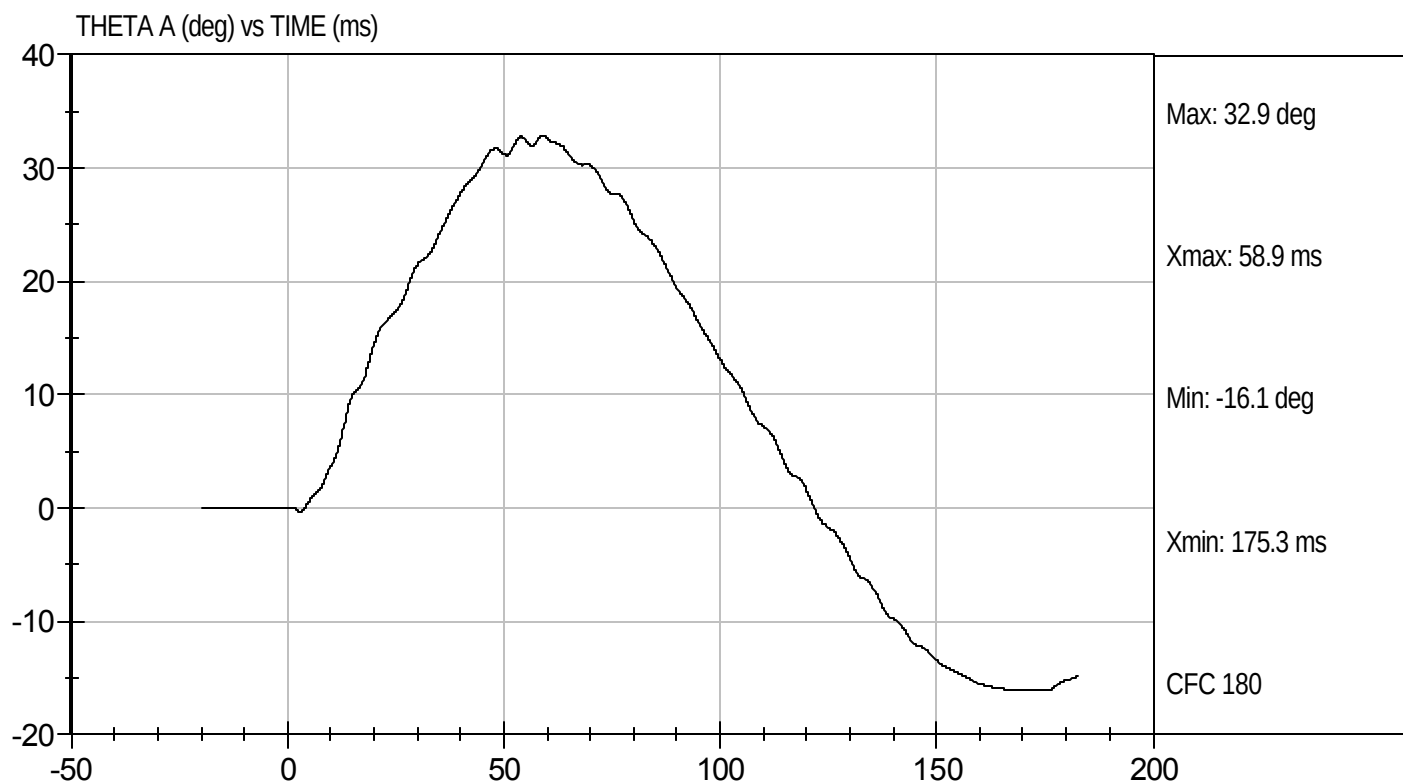
Test Date: 6/20/12
Velocity: 11.26 ft/s, 3.4 m/s





Test Desc: Neck Bending
Component ID: D122292

Test Date: 6/20/12
Velocity: 11.26 ft/s, 3.4 m/s



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D122293

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.3	Pass
Peak Shoulder Acceleration	G's	7.5 to 10.5	9.4	Pass
Time of Peak Shoulder Acceleration	ms	NA	13.5	Pass
Overall Test Results			Pass	


Laboratory Technician

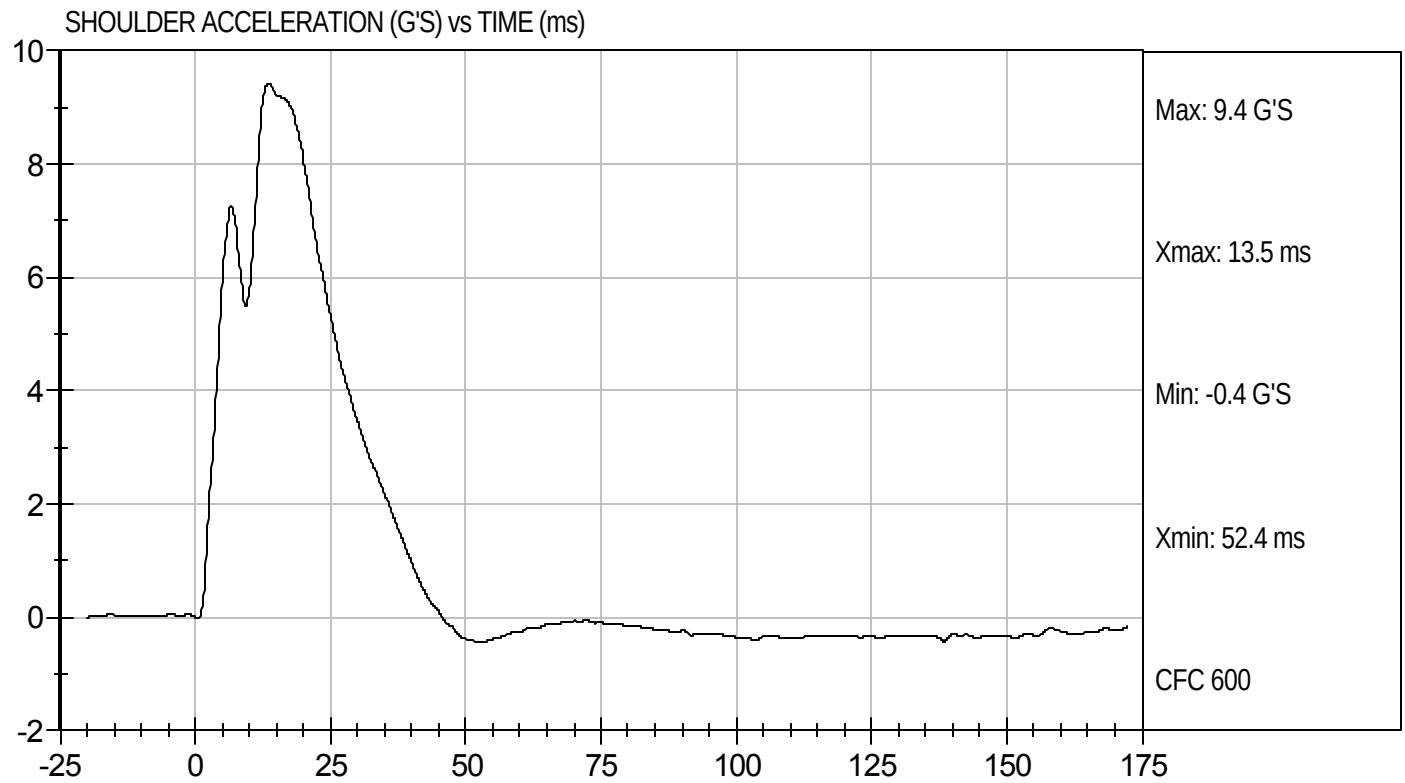
6/20/12
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D122293

Test Date: 6/20/12
Velocity: 14.24 ft/s, 4.3 m/s



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D122294

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.3	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.7	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

6/20/12
Test Date

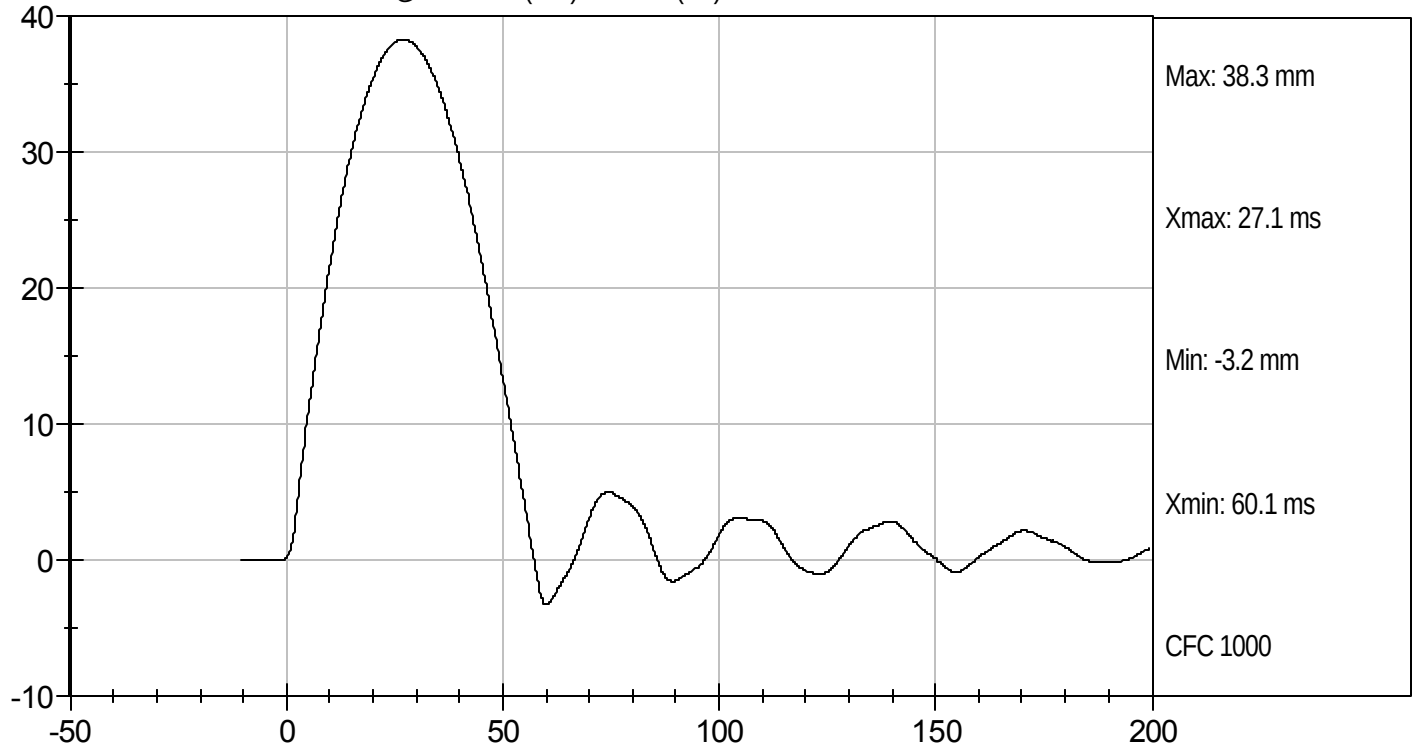
David Winkelbauer
Approved By



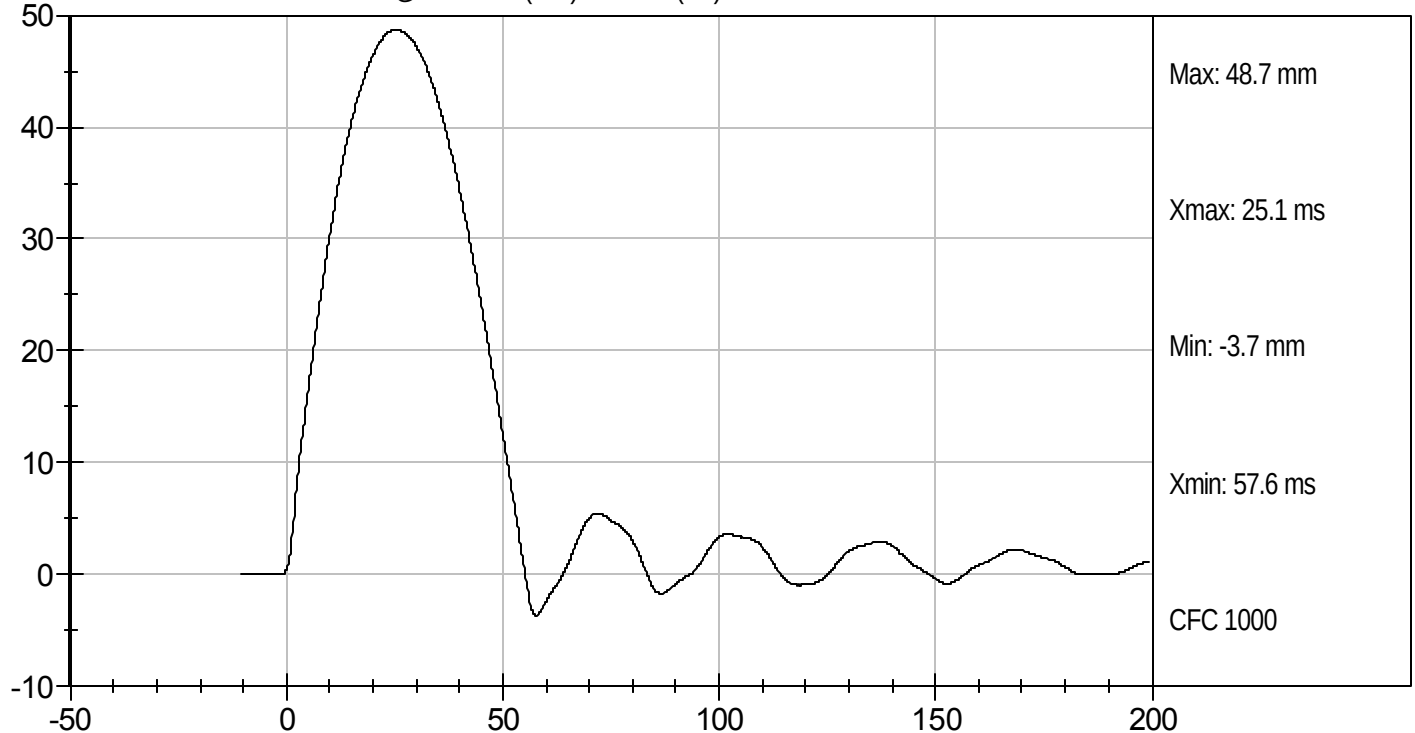
Test Desc: Rib Impact - Upper
Component ID: D122294

Test Date: 6/20/12

UPPER RIB DISPLACEMENT @ 3 M/SEC (mm) vs TIME (ms)



UPPER RIB DISPLACEMENT @ 4 M/SEC (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

MID RIB TEST
ES-2re DUMMY

ATD Serial No: 032

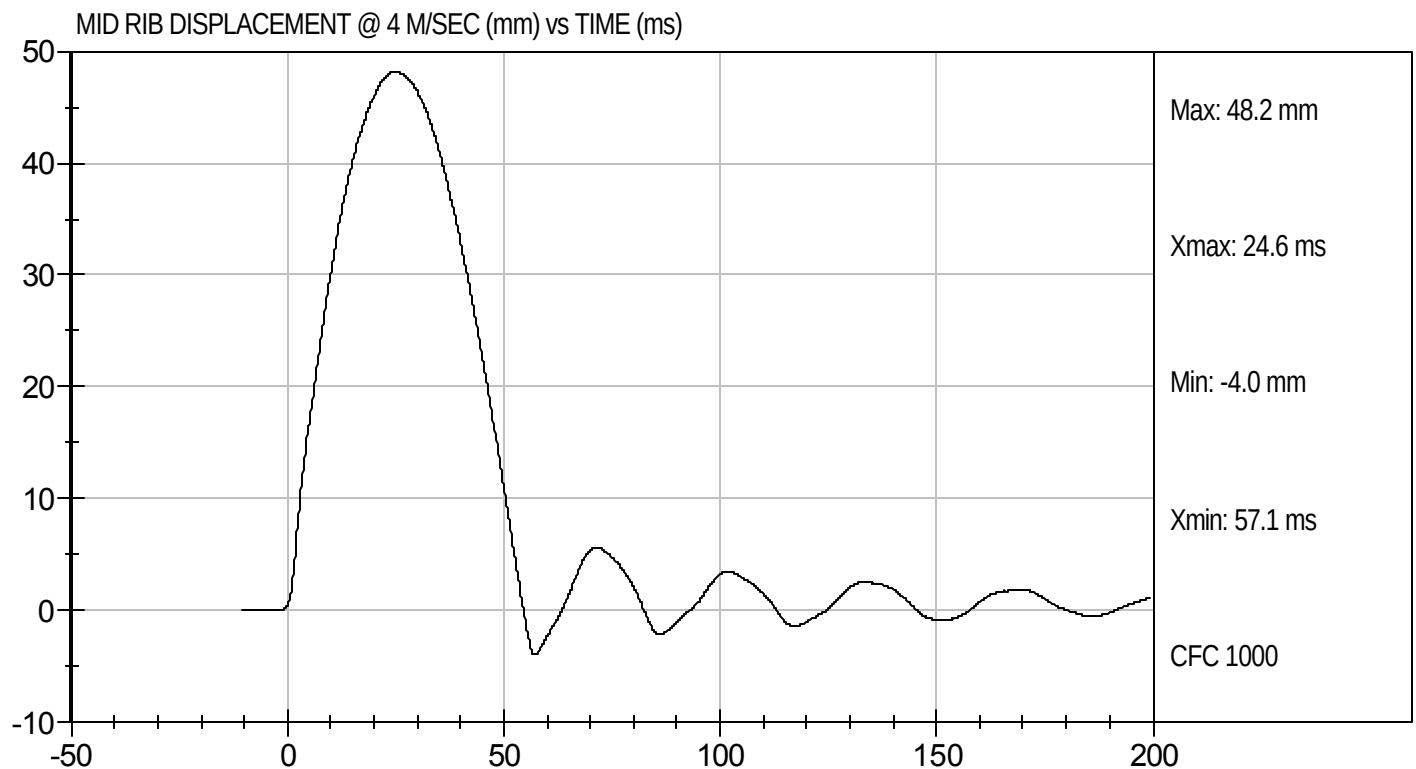
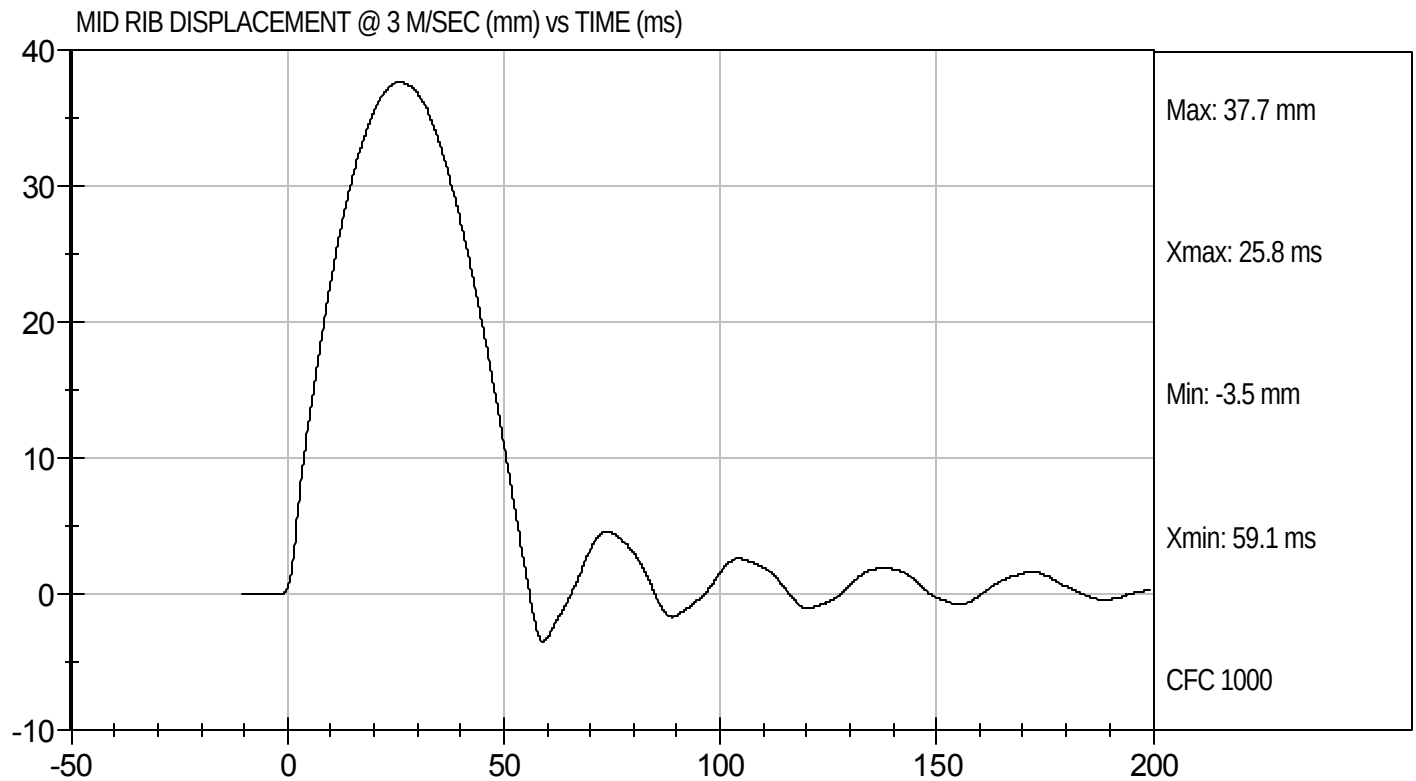
Test I.D: D122295

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.7	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.2	Pass
			Overall Test Results	Pass

Jessica Hall
Laboratory Technician

6/20/12
Test Date

David Winkelbauer
Approved By



MGA RESEARCH CORPORATION

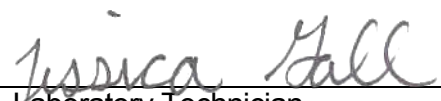
LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D122296

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.1	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	49.0	Pass
Overall Test Results			Pass	


Laboratory Technician

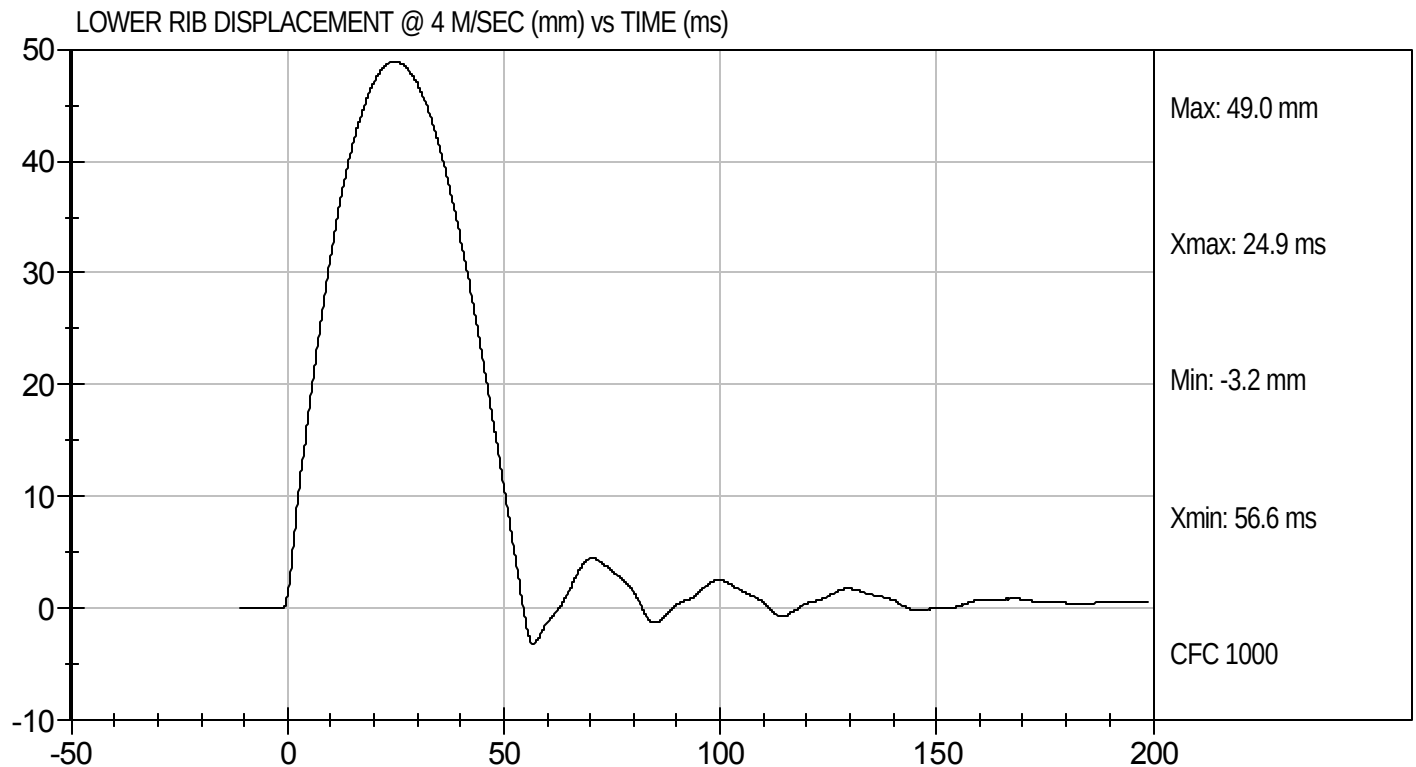
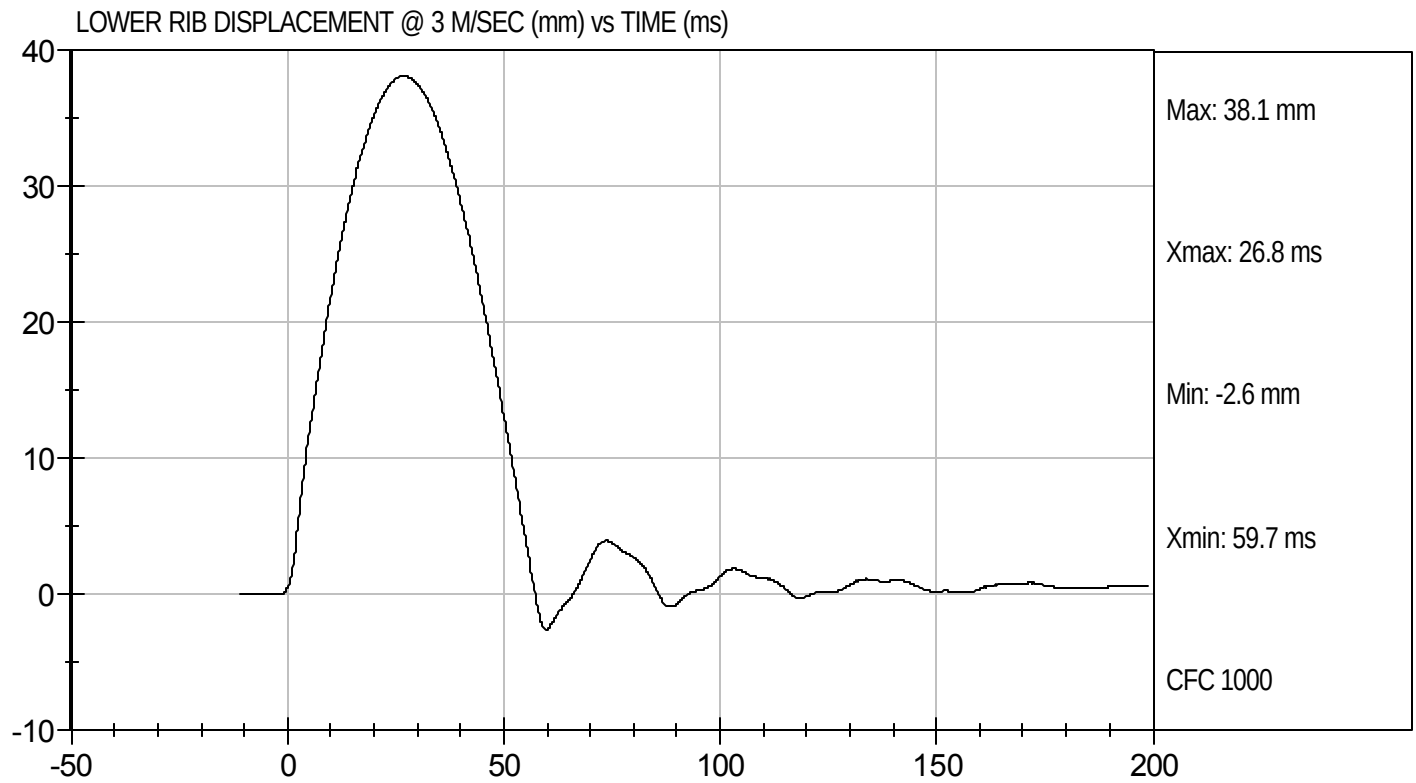
6/20/12
Test Date


Approved By



Test Desc: Rib Impact - Lower
Component ID: D122296

Test Date: 6/20/12



MGA RESEARCH CORPORATION
FULL BODY THORAX IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D122290

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	kN	5.10 to 6.20	5.12	Pass
Upper Rib Displacement	mm	34.0 to 41.0	36.7	Pass
Middle Rib Displacement	mm	37.0 to 45.0	39.6	Pass
Lower Rib Displacement	mm	37.0 to 44.0	39.2	Pass
			Overall Test Results	Pass


Laboratory Technician

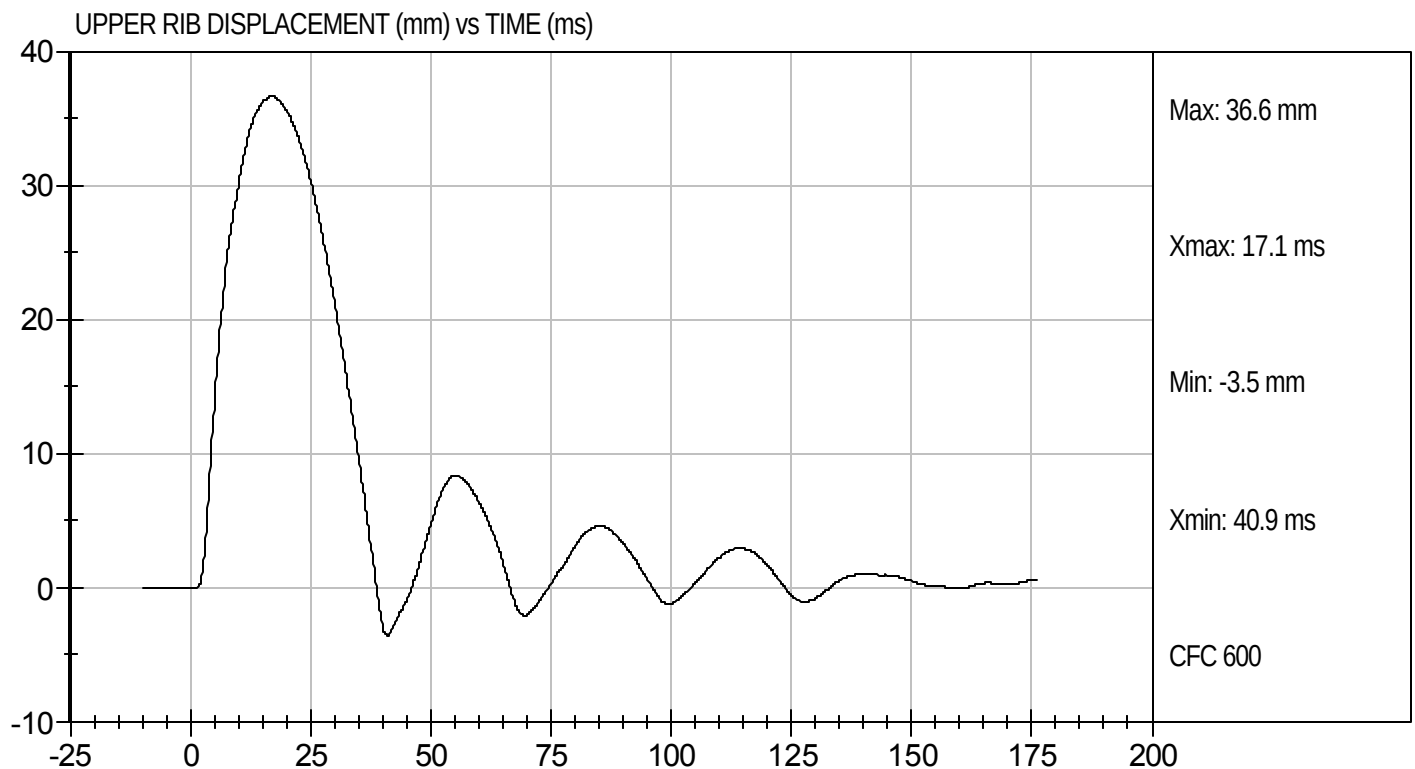
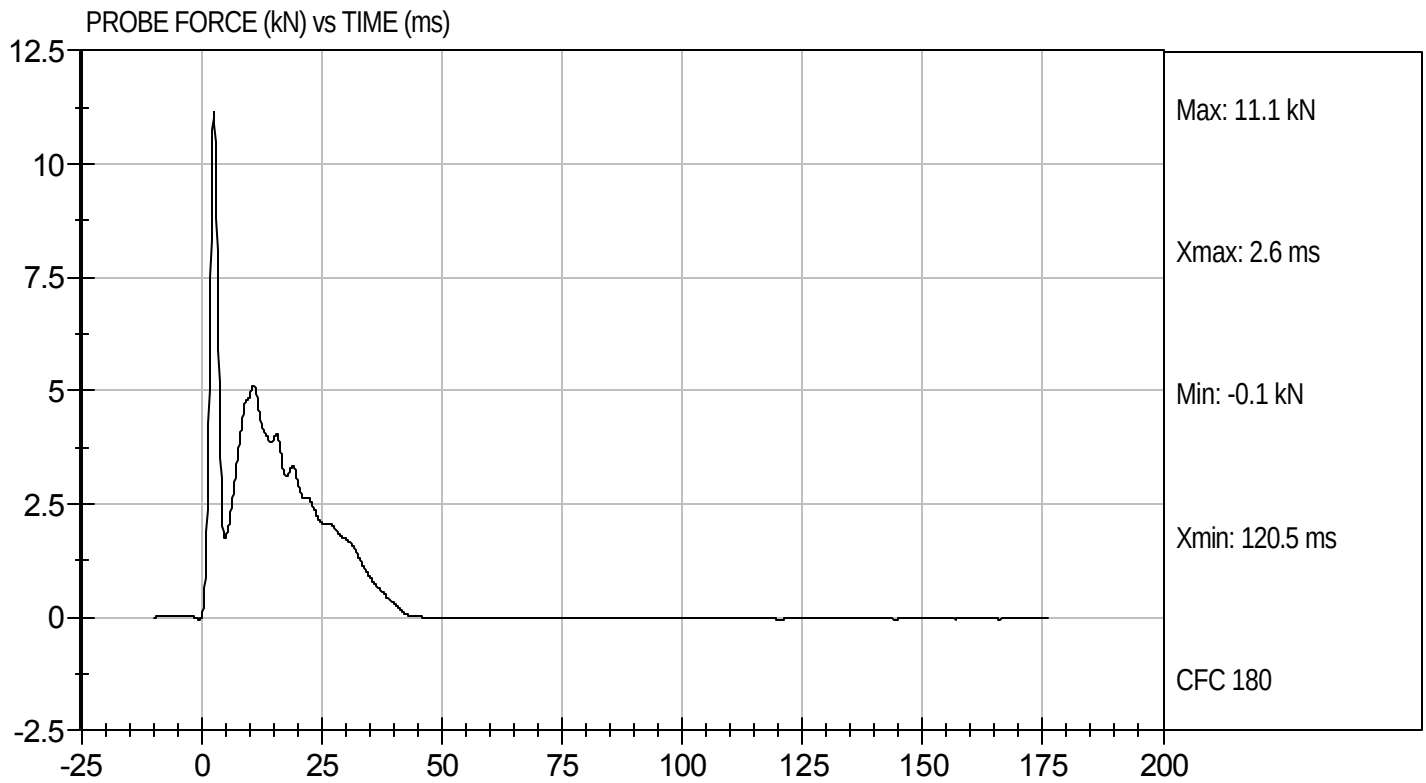
6/20/12
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D122290

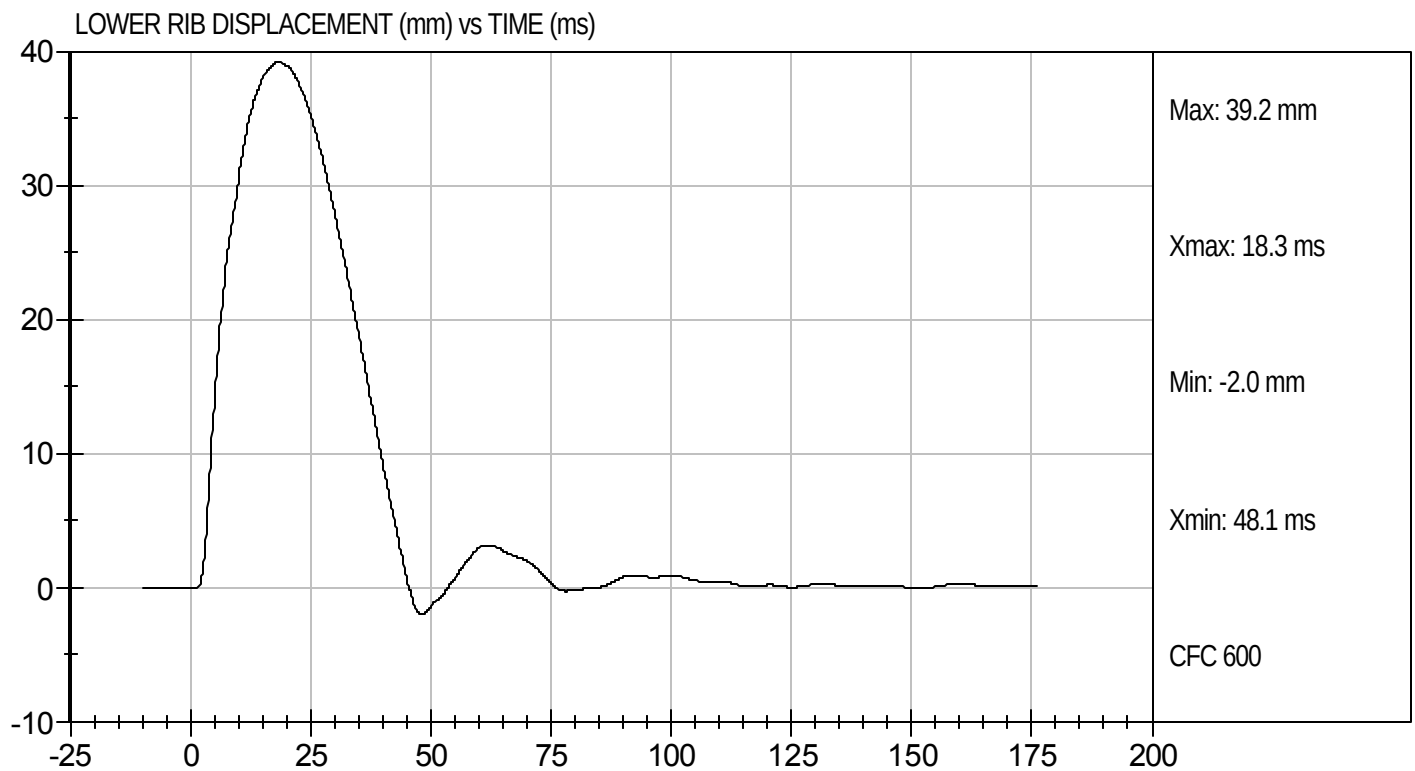
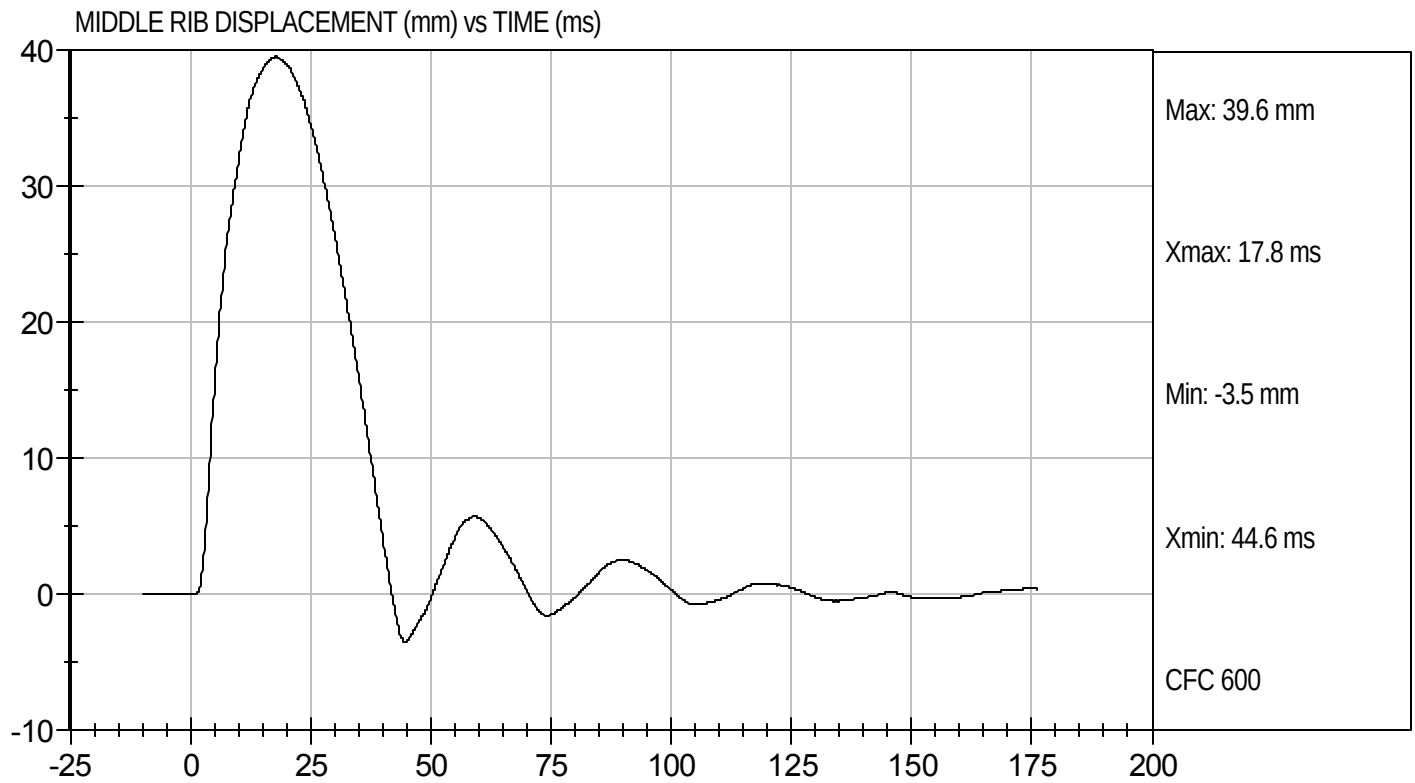
Test Date: 6/20/12
Velocity: 18.31 ft/s, 5.58 m/s





Test Desc: Thorax Impact
Component ID: D122290

Test Date: 6/20/12
Velocity: 18.31 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION

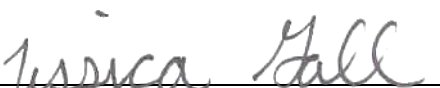
ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D122297

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	3.90 to 4.10	4.06	Pass
Maximum Impact Force	kN	4.00 to 4.80	4.34	Pass
Time of Maximum Impact Force	ms	10.60 to 13.00	12.10	Pass
Maximum Total Abdomen Force	kN	2.20 to 2.70	2.48	Pass
Time of Maximum Abdomen Force	ms	10.00 to 12.30	11.20	Pass
Overall Test Results				Pass


Laboratory Technician

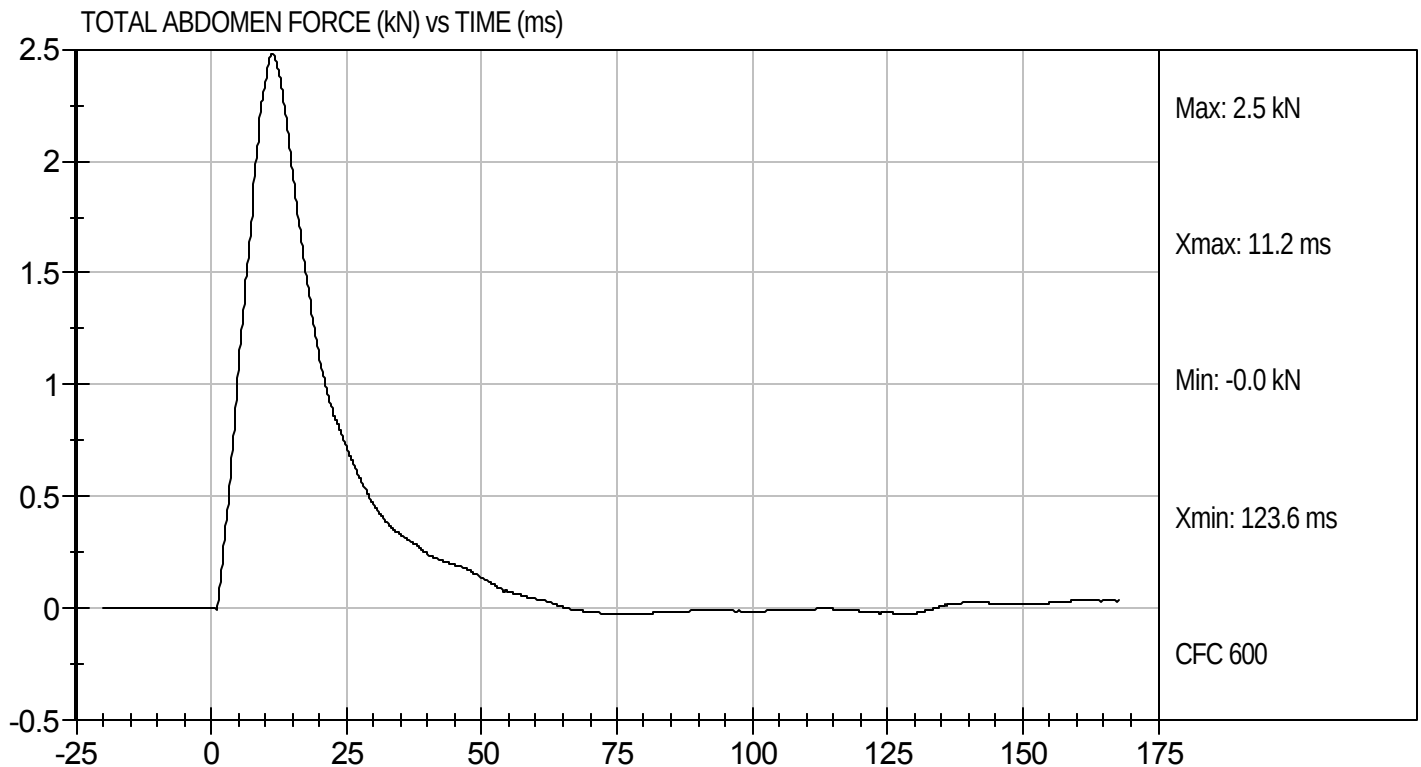
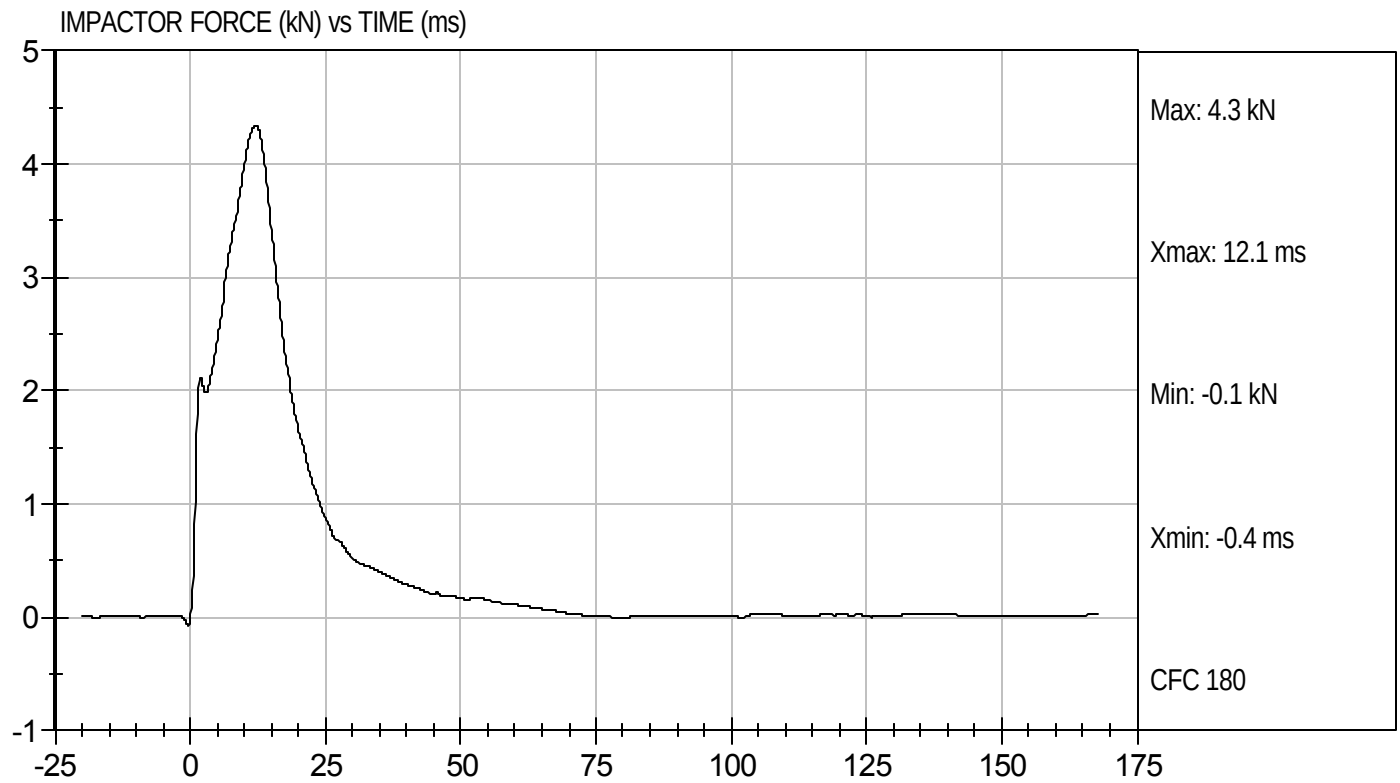
6/20/12
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D122297

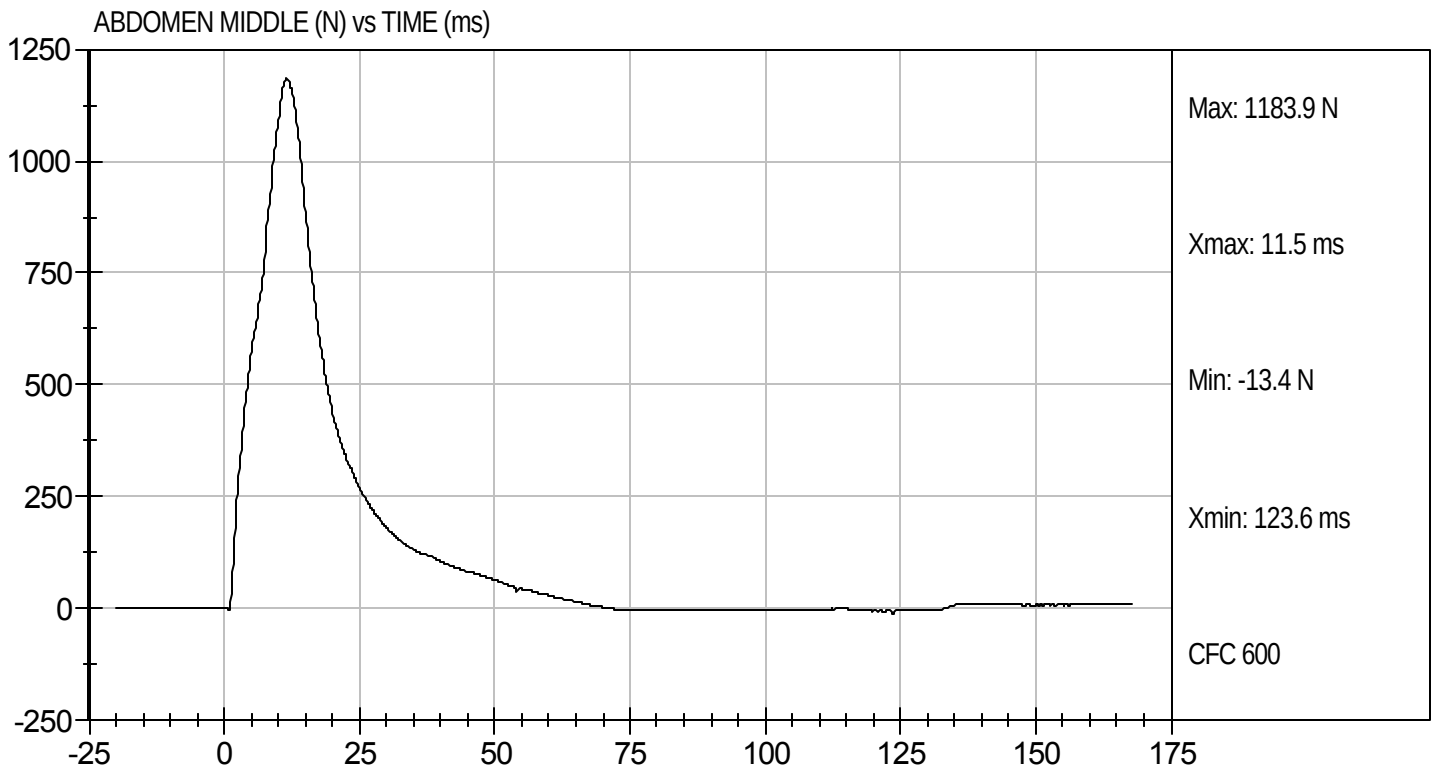
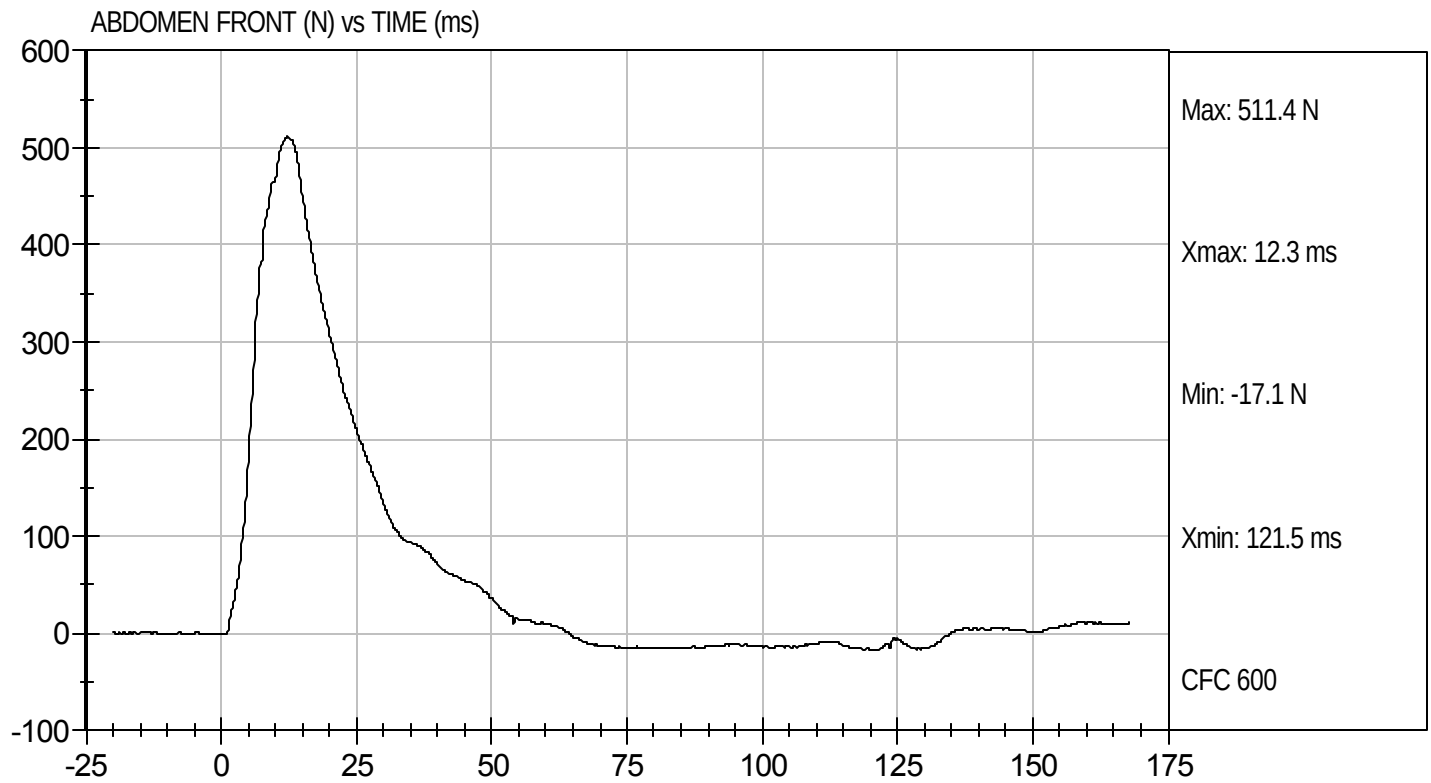
Test Date: 6/20/12
Velocity: 13.33 ft/s, 4.06 m/s





Test Desc: Abdomen Impact
Component ID: D122297

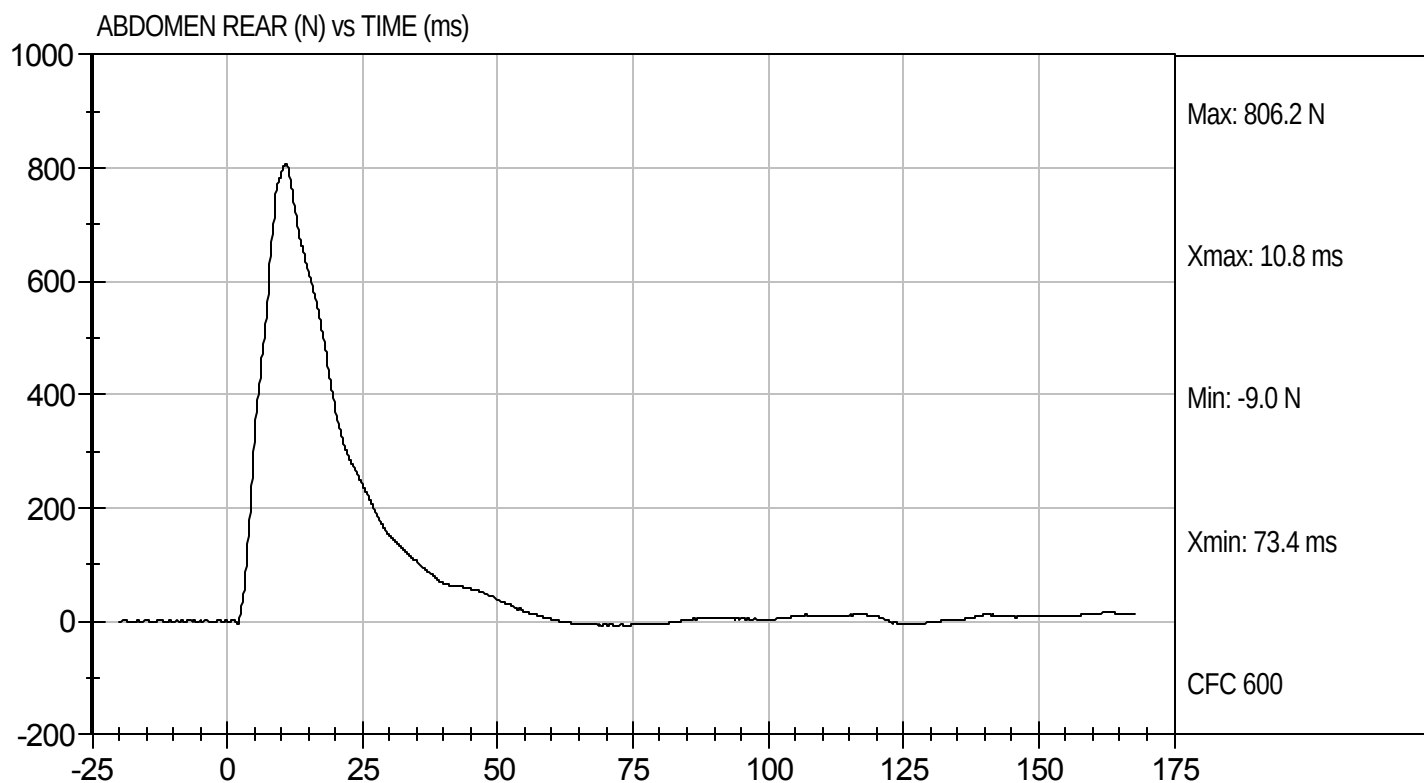
Test Date: 6/20/12
Velocity: 13.33 ft/s, 4.06 m/s





Test Desc: Abdomen Impact
Component ID: D122297

Test Date: 6/20/12
Velocity: 13.33 ft/s, 4.06 m/s

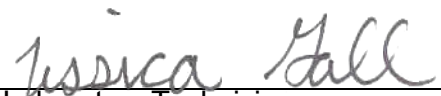


MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D122298

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	49	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Deceleration	1 ms	m/s	-0.05 to 0.00	-0.00	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.42	Pass
	27 ms	m/s	-6.50 to -5.80	-5.89	Pass
	30 ms	m/s	>= -6.5	-5.77	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	50.1	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	45.7	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	43	Pass
Overall Results					Pass


 Laboratory Technician

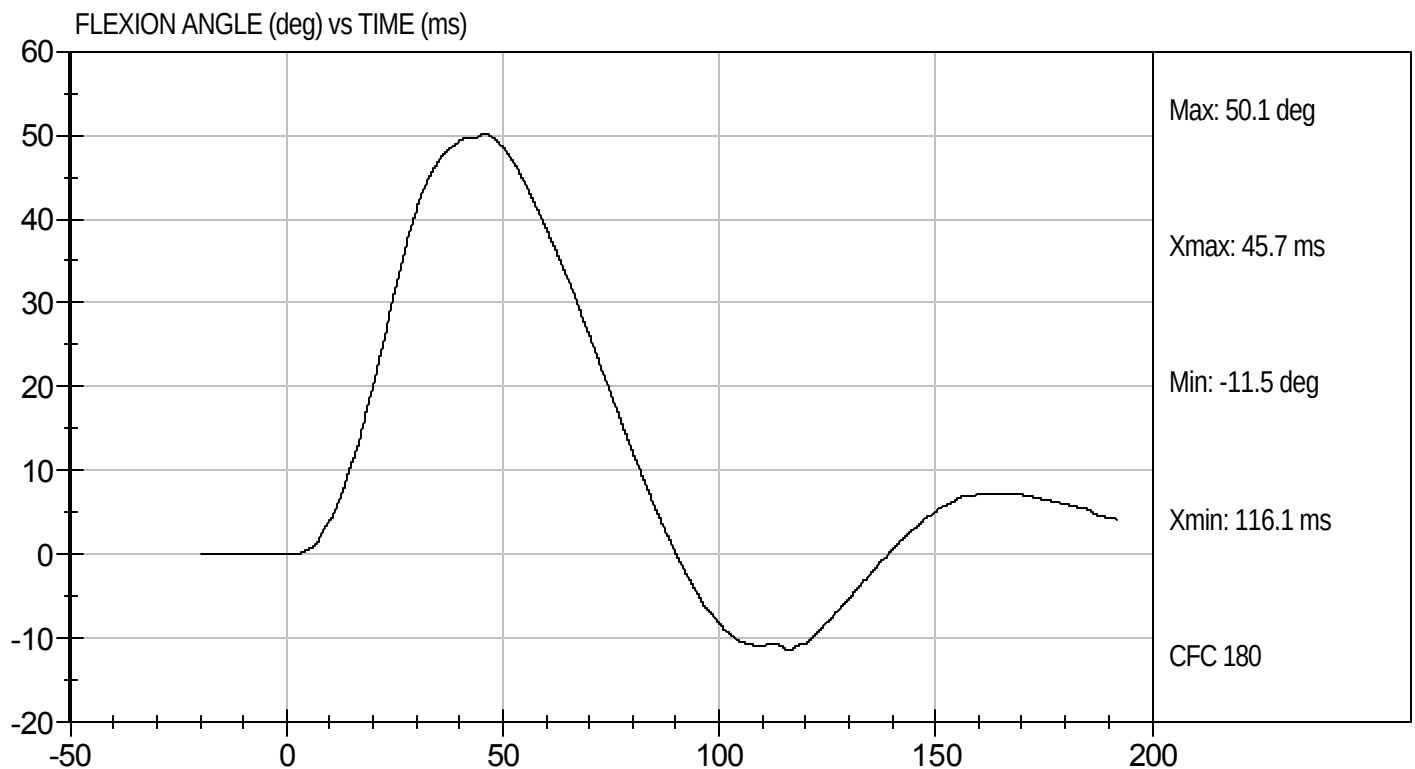
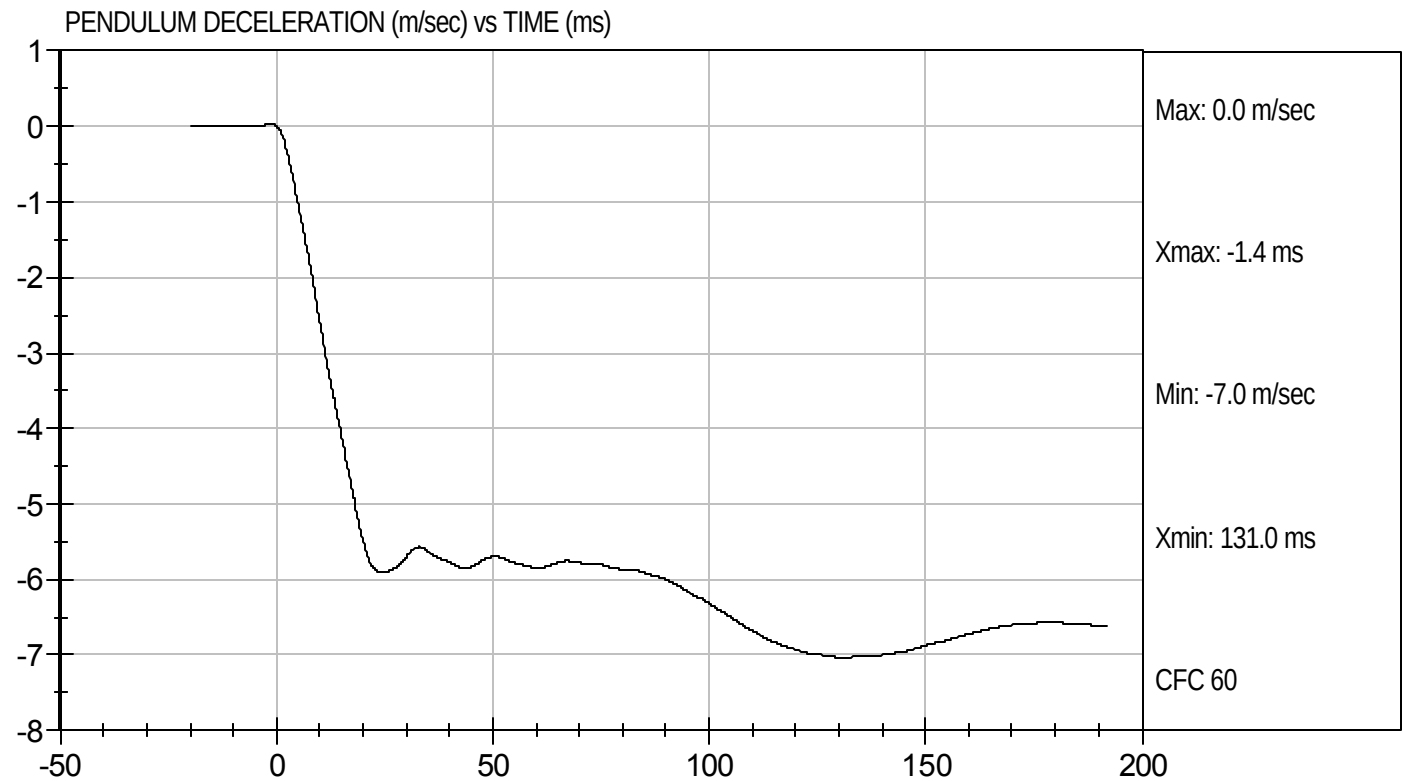
6/20/12
 Test Date


 Approved By



Test Desc: Lumbar Bending
Component ID: D122298

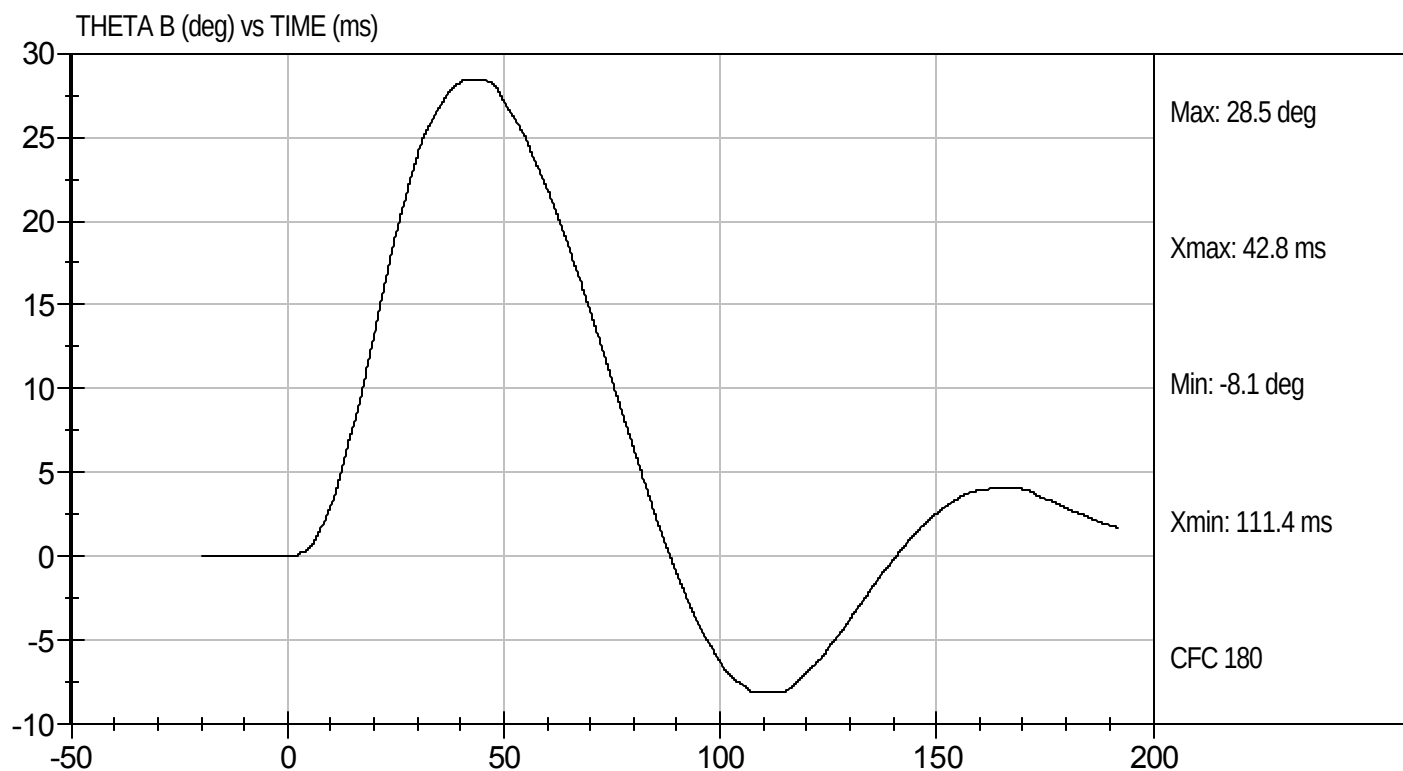
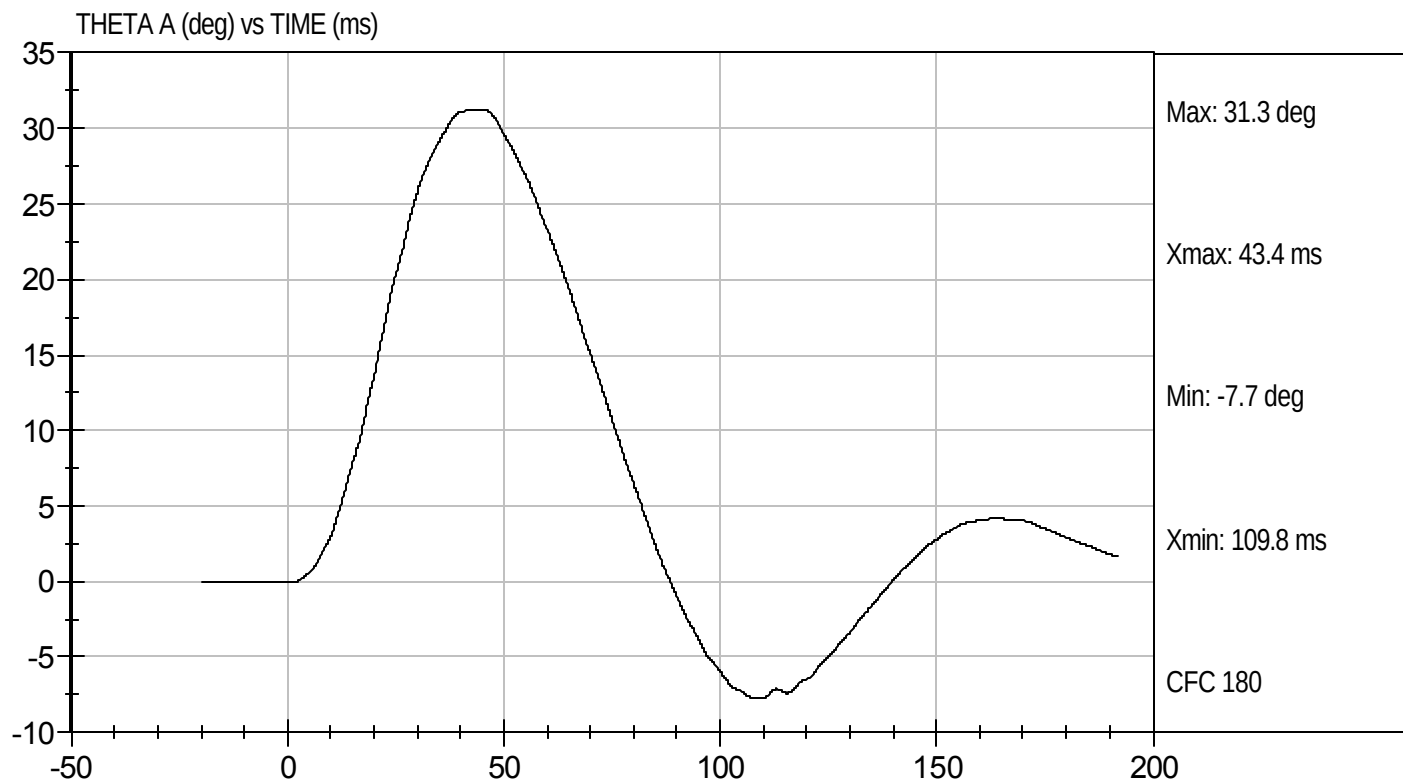
Test Date: 6/20/12
Velocity: 20.08 ft/s, 6.12 m/s





Test Desc: Lumbar Bending
Component ID: D122298

Test Date: 6/20/12
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION

**PELVIS TEST
ES-2re DUMMY**

ATD Serial No: 032

Test I.D: D122299

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	4.20 to 4.40	4.27	Pass
Maximum Impactor Force	kN	4.70 to 5.40	4.72	Pass
Time of Maximum Impactor Force	ms	11.80 to 16.10	13.00	Pass
Maximum Pubic Force	kN	1.23 to 1.59	1.33	Pass
Time of Maximum Pubic Force	ms	12.20 to 17.00	13.70	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

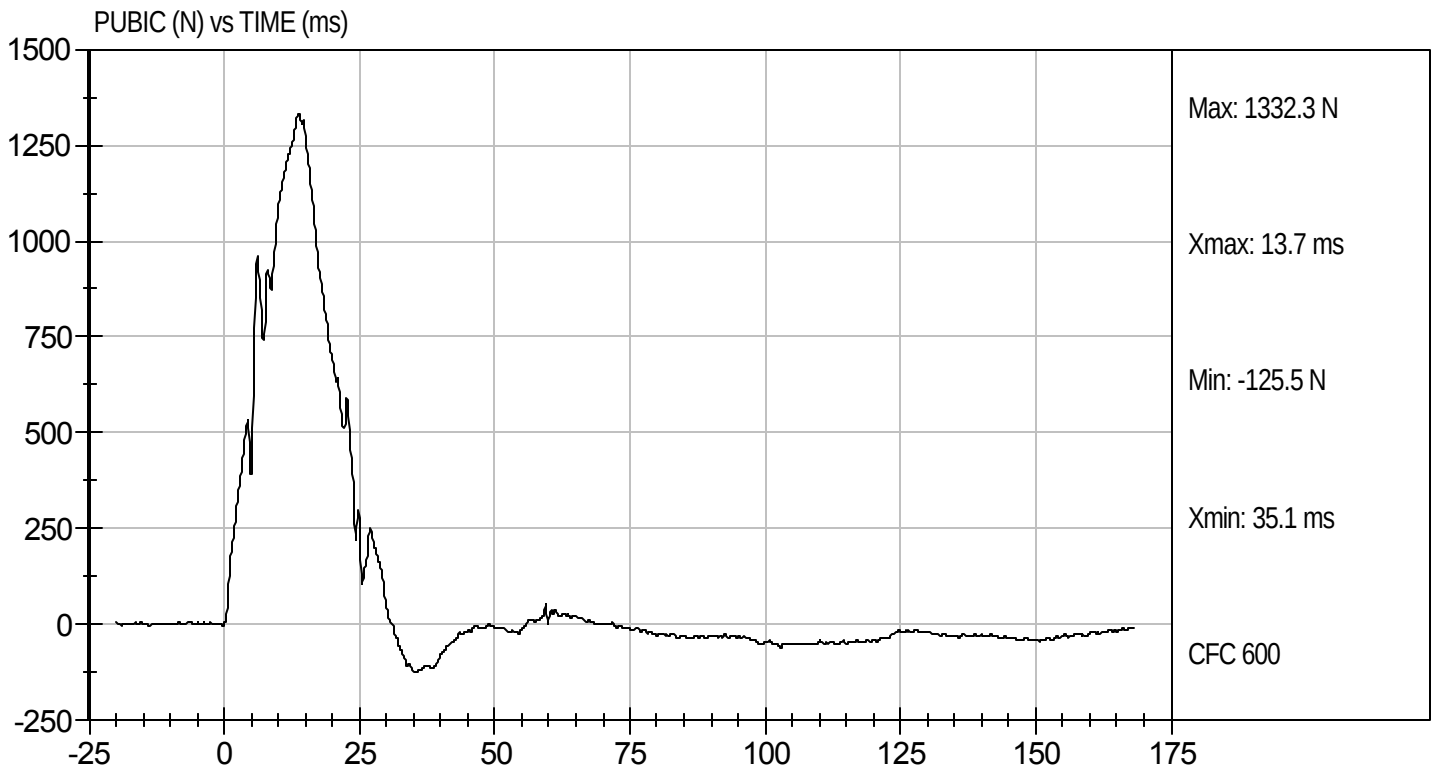
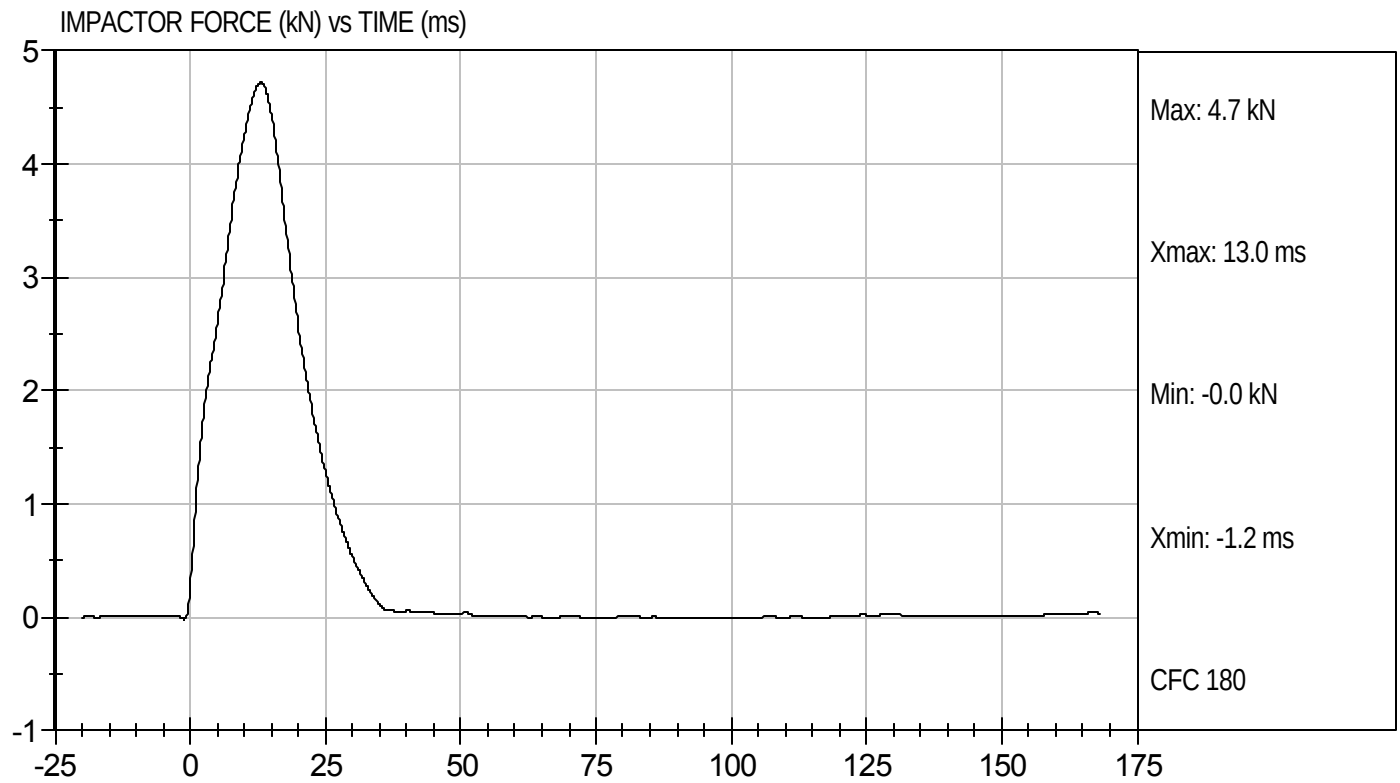
6/20/12
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D122299

Test Date: 6/20/12
Velocity: 14.00 ft/s, 4.27 m/s



SID-IIsD External Measurements
SN: 296

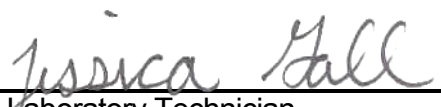
No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	784	Pass
B	Shoulder Pivot Height	437 - 453	442	Pass
C	H-point Height	79 - 89	83	Pass
D	H-point from Seatback	141 - 151	145	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	121	Pass
G	Head Breadth	140 - 148	142	Pass
H	Head Back from Backline	40 - 46	45	Pass
I	Head Depth	178 - 188	180	Pass
J	Head Circumference	541 - 551	548	Pass
K	Buttock to Knee Length	514 - 540	535	Pass
L	Popliteal Height	343 - 369	358	Pass
M	Knee Pivot to Floor Height	392 - 409	404	Pass
N	Buttock Popliteal Length	416 - 442	435	Pass
O	Chest Depth w/o Jacket	195 - 211	206	Pass
P	Foot Length	216 - 232	219	Pass
Q	Hip Breadth (w/ pelvic plugs)	313 - 323	316	Pass
R	Arm Length	249 - 259	250	Pass
S	Knee Joint to Seatback	477 - 493	481	Pass
V	Shoulder Width	341 - 357	346	Pass
W	Foot Width	78 - 94	85	Pass
Y	Chest Circumference w/ jacket	851 - 881	870	Pass
Z	Waist Circumference	761 - 791	772	Pass

MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-Its BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D121941

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Peak Resultant Acceleration	G's	115 to 137	127	Pass
Peak Longitudinal Acceleration	G's	+/- 15	4.3	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass



Laboratory Technician

5/24/12
Test Date

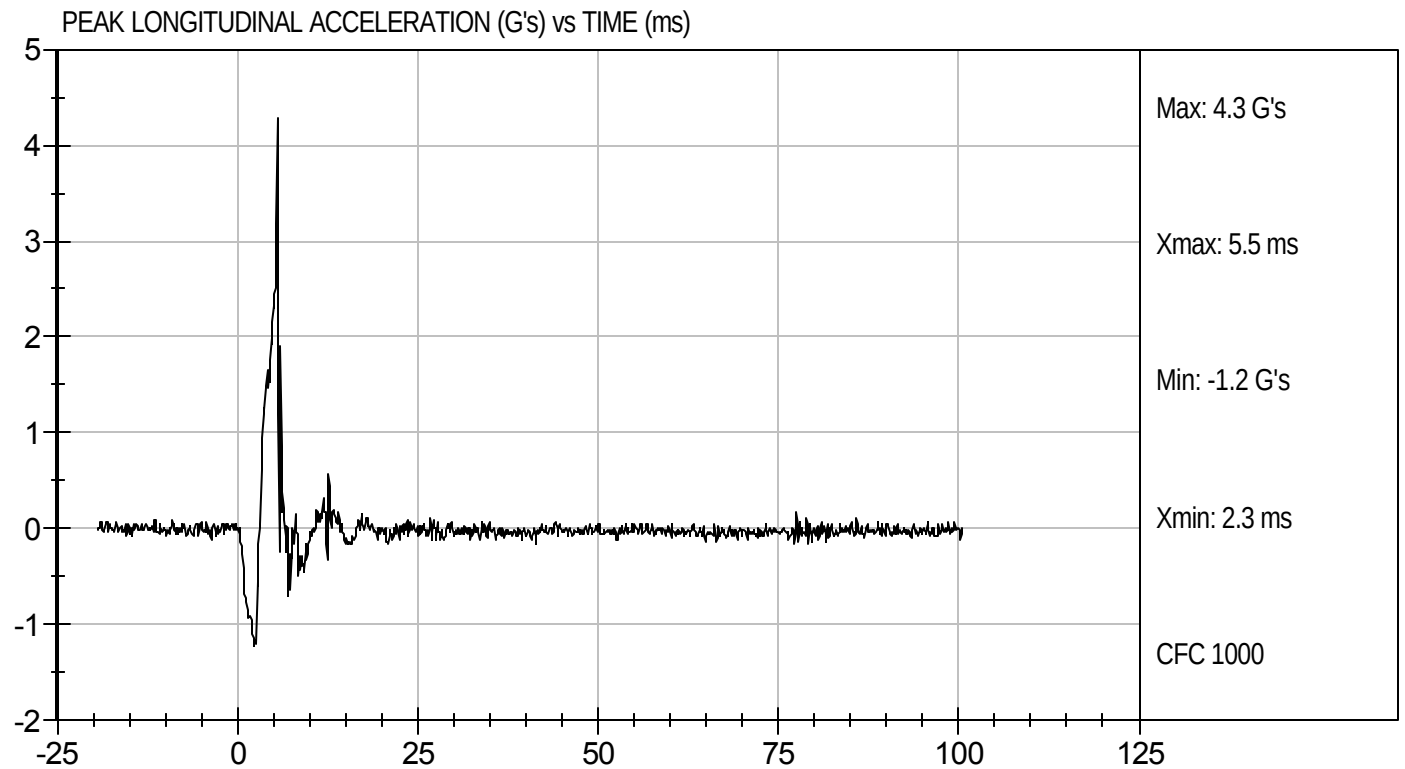
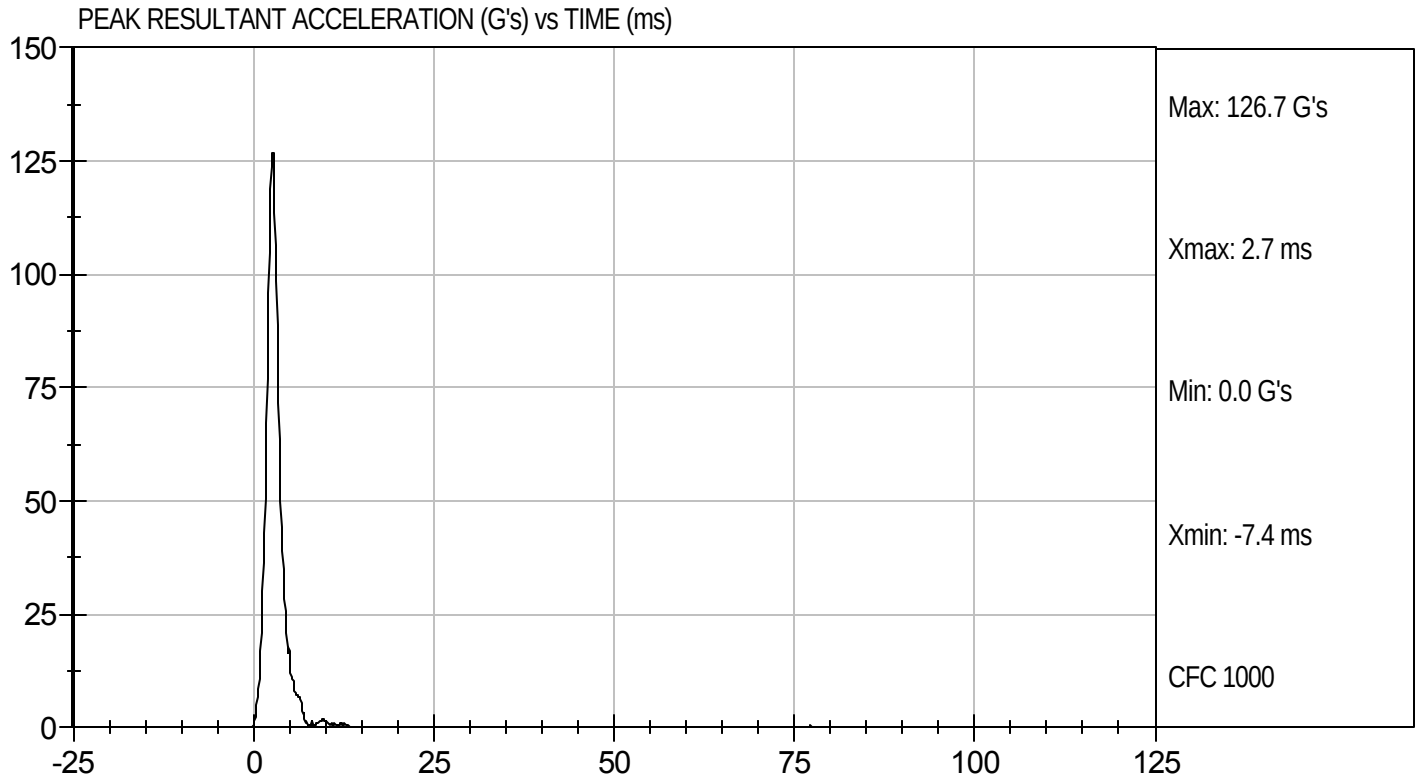


Approved By



Test Desc: Head Drop
Component ID: D121941

Test Date: 5/24/12
Velocity: 0 ft/s, 0 m/s

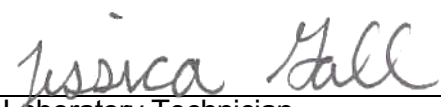


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D121942

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.5	Pass
Humidity		%	10 to 70	44	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.48	Pass
	15 ms	m/s	3.30 to 4.10	3.48	Pass
	20 ms	m/s	4.40 to 5.40	4.58	Pass
	25 ms	m/s	5.40 to 6.10	5.43	Pass
	25-100 ms	m/s	5.50 to 6.20	5.52	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	62	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-38	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	115	Pass
Overall Test Results				Pass	


 Laboratory Technician

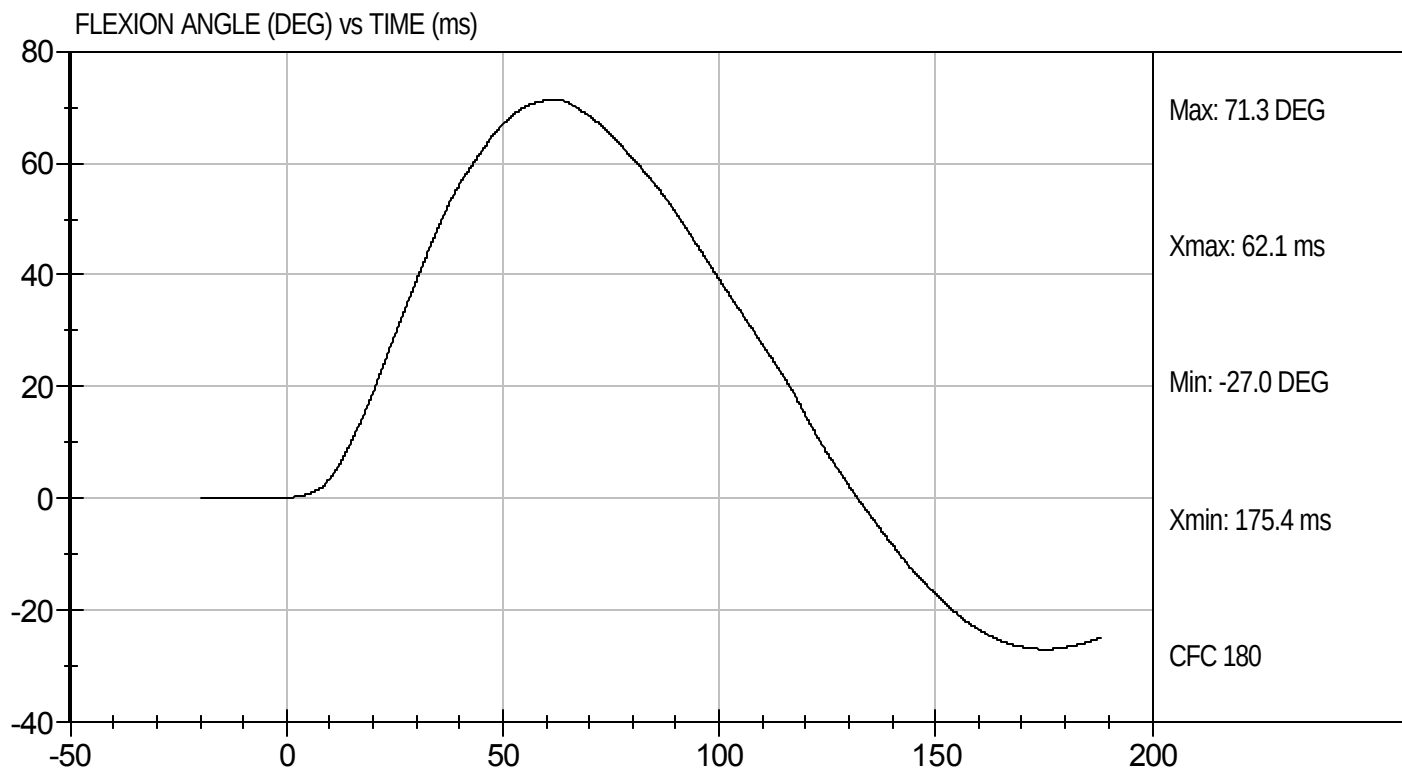
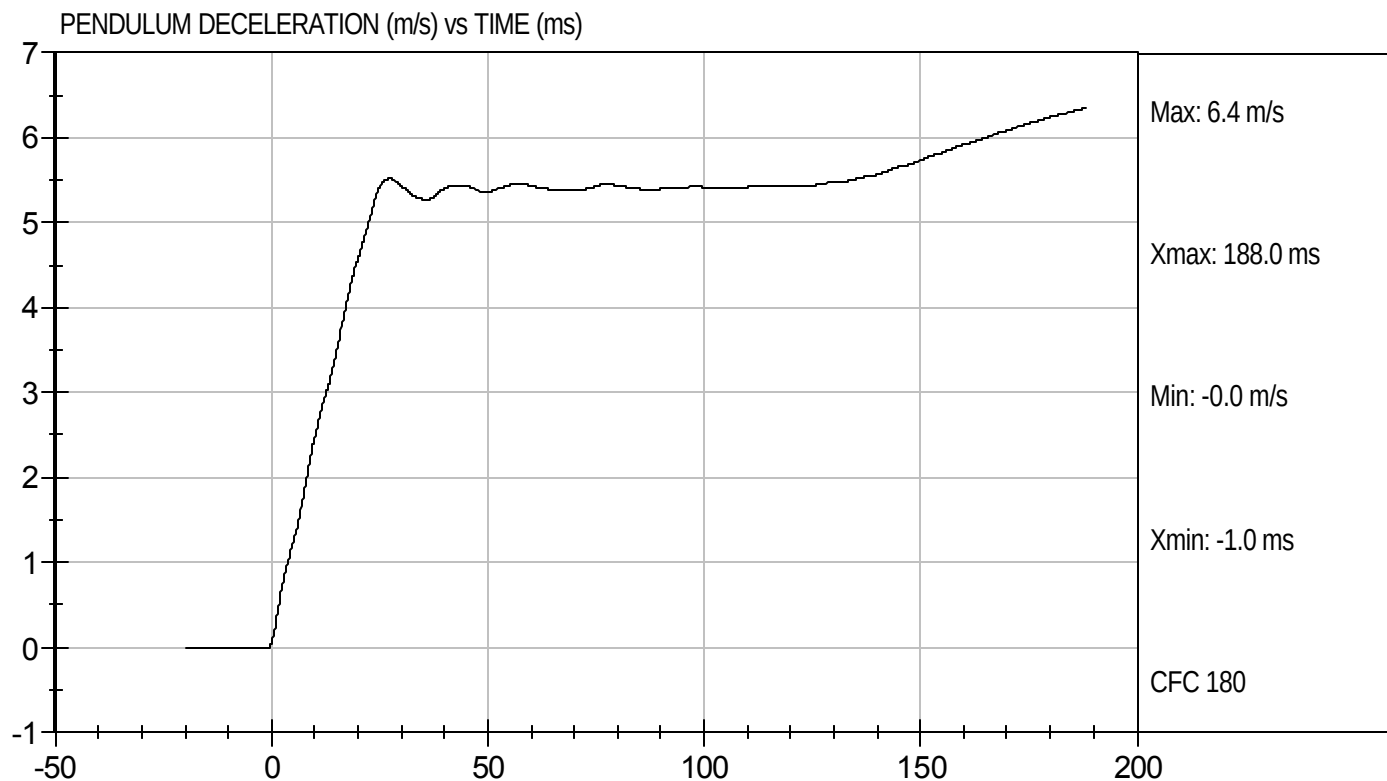
5/24/12
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D121942

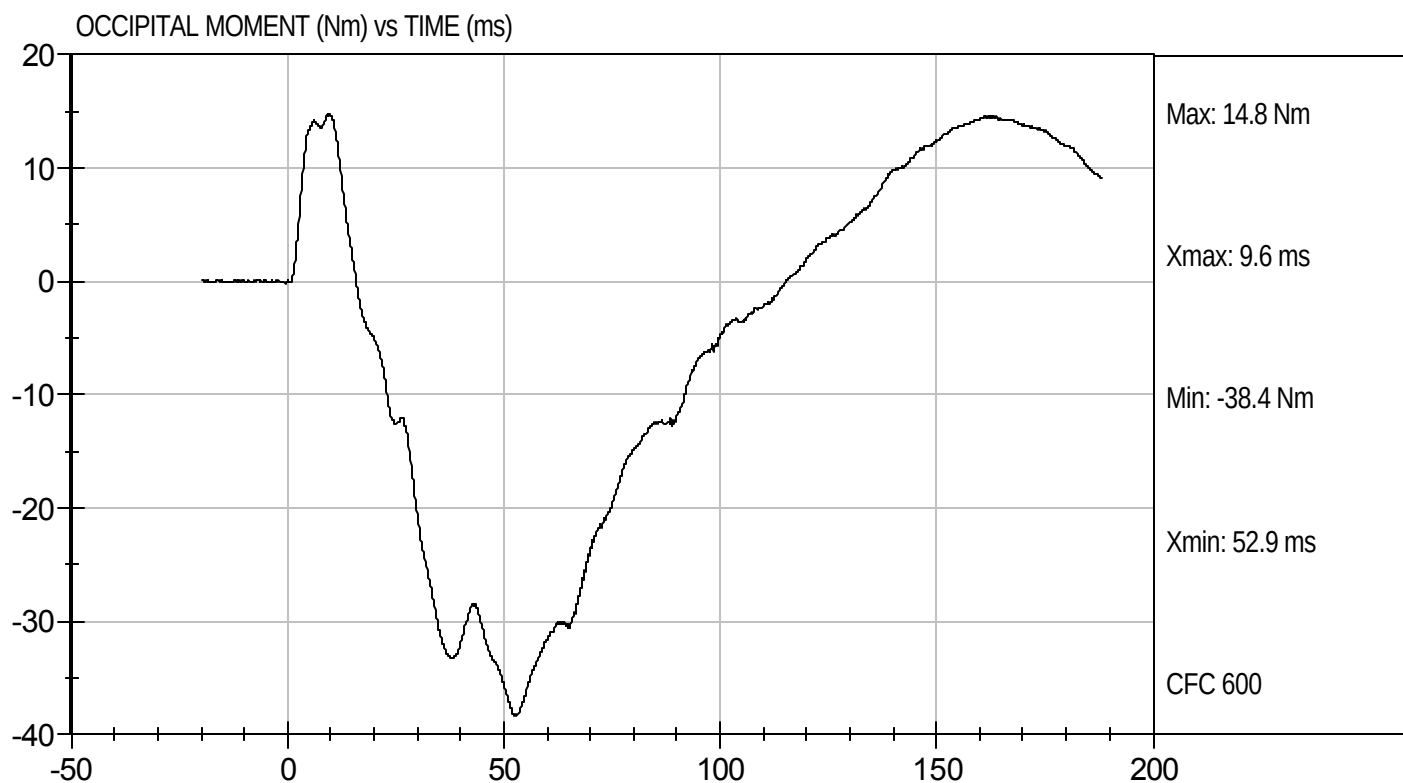
Test Date: 5/24/12
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D121942

Test Date: 5/24/12
Velocity: 18.32 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-Its BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D121943

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	36	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	30	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass


Laboratory Technician

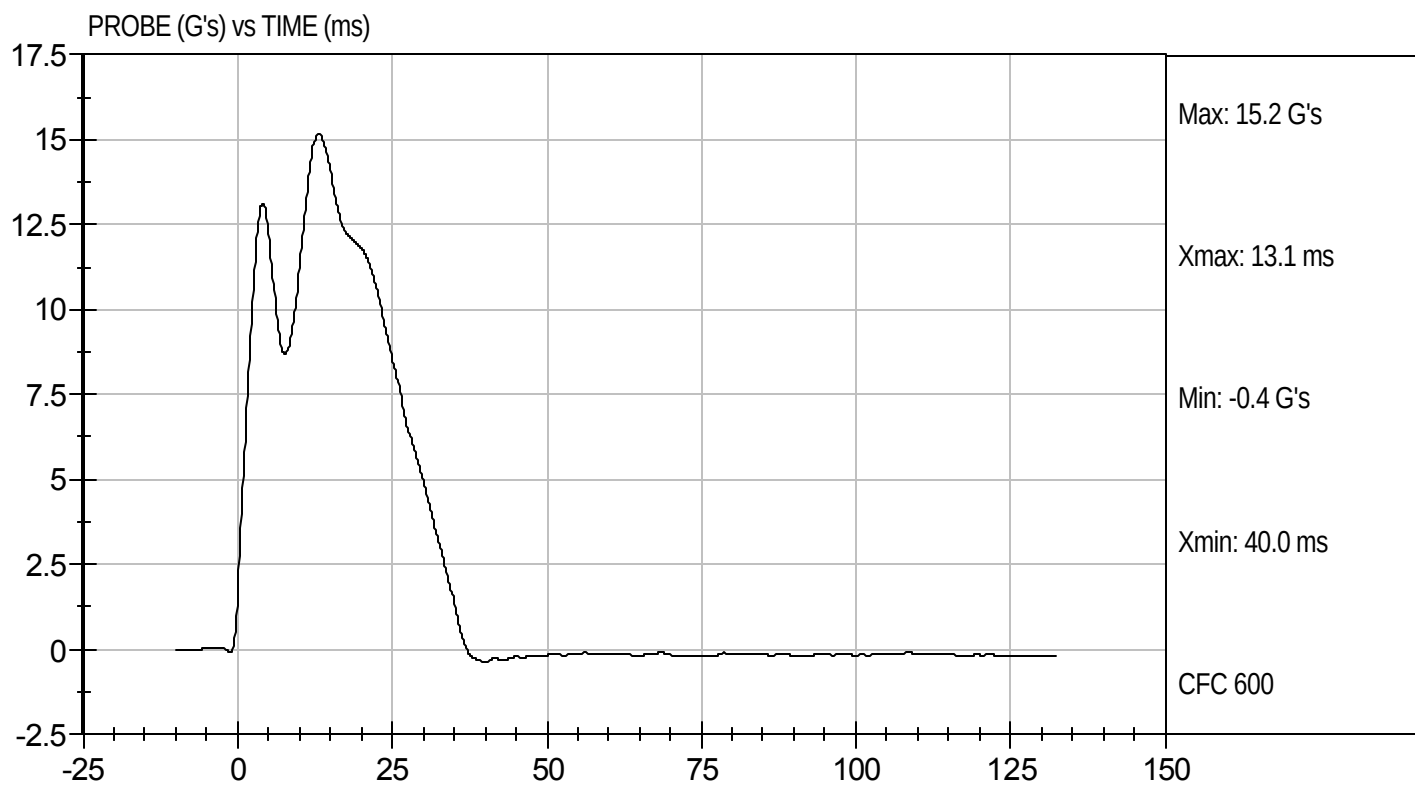
5/24/12
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D121943

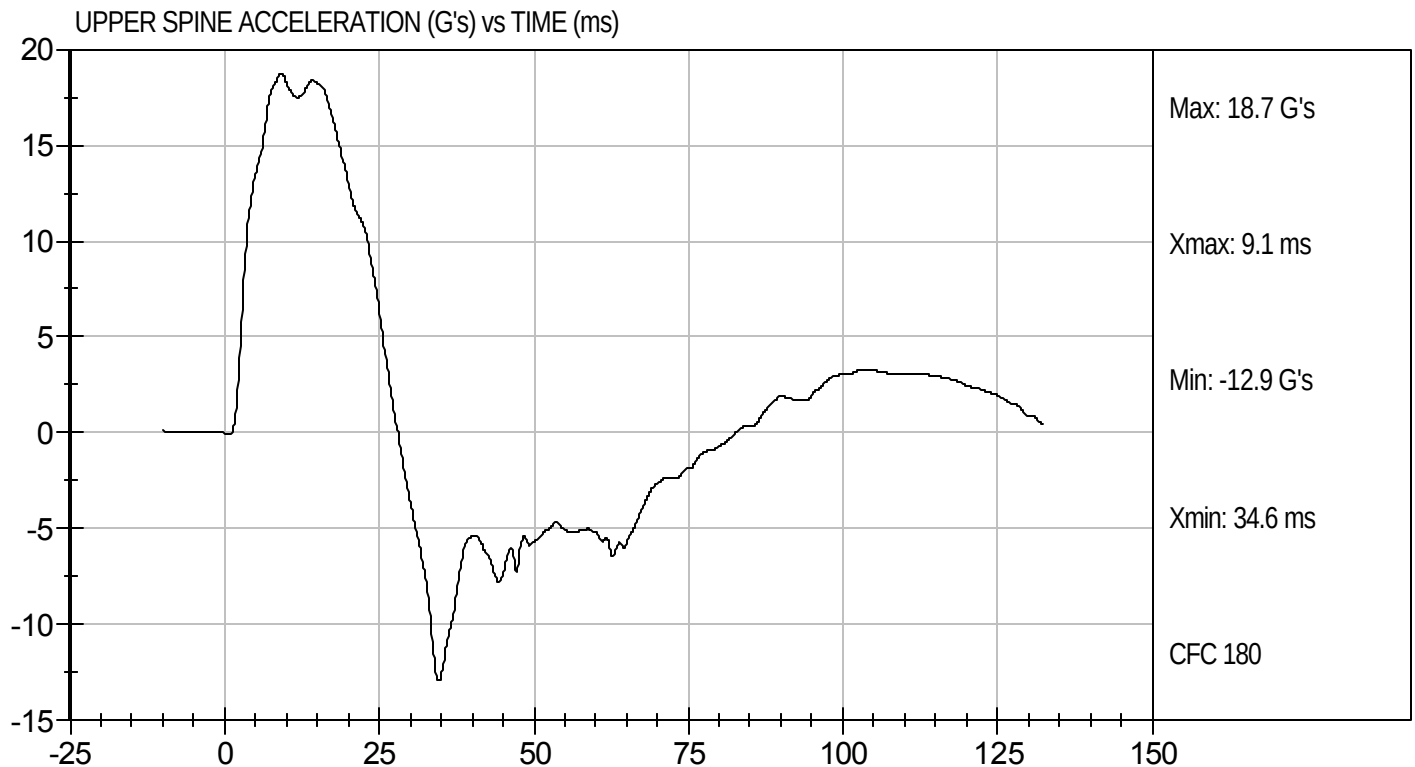
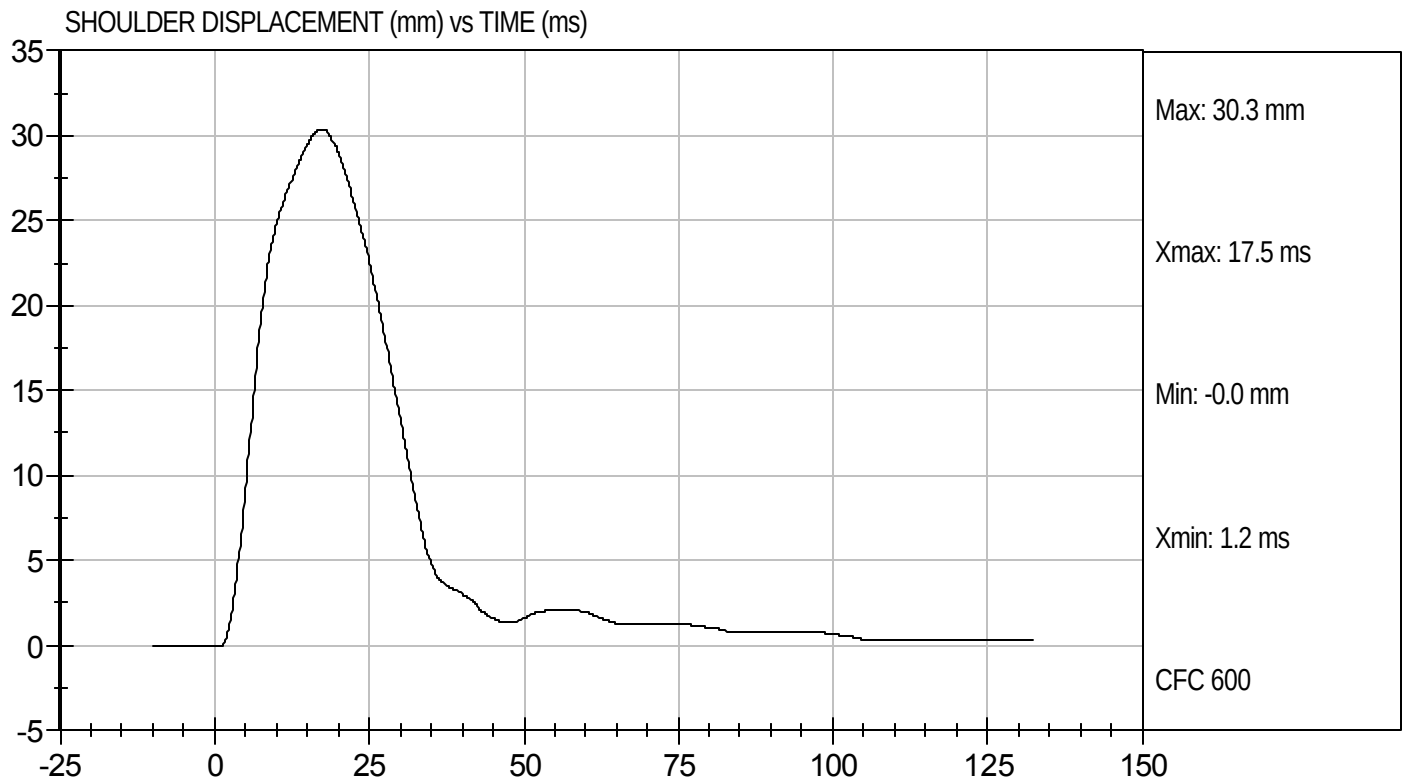
Test Date: 5/24/12
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Shoulder Impact
Component ID: D121943

Test Date: 5/24/12
Velocity: 14.25 ft/s, 4.34 m/s



MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D121944

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	31	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle Rib Displacement	mm	30 to 36	32	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	29	Pass
Overall Test Results			Pass	


Laboratory Technician

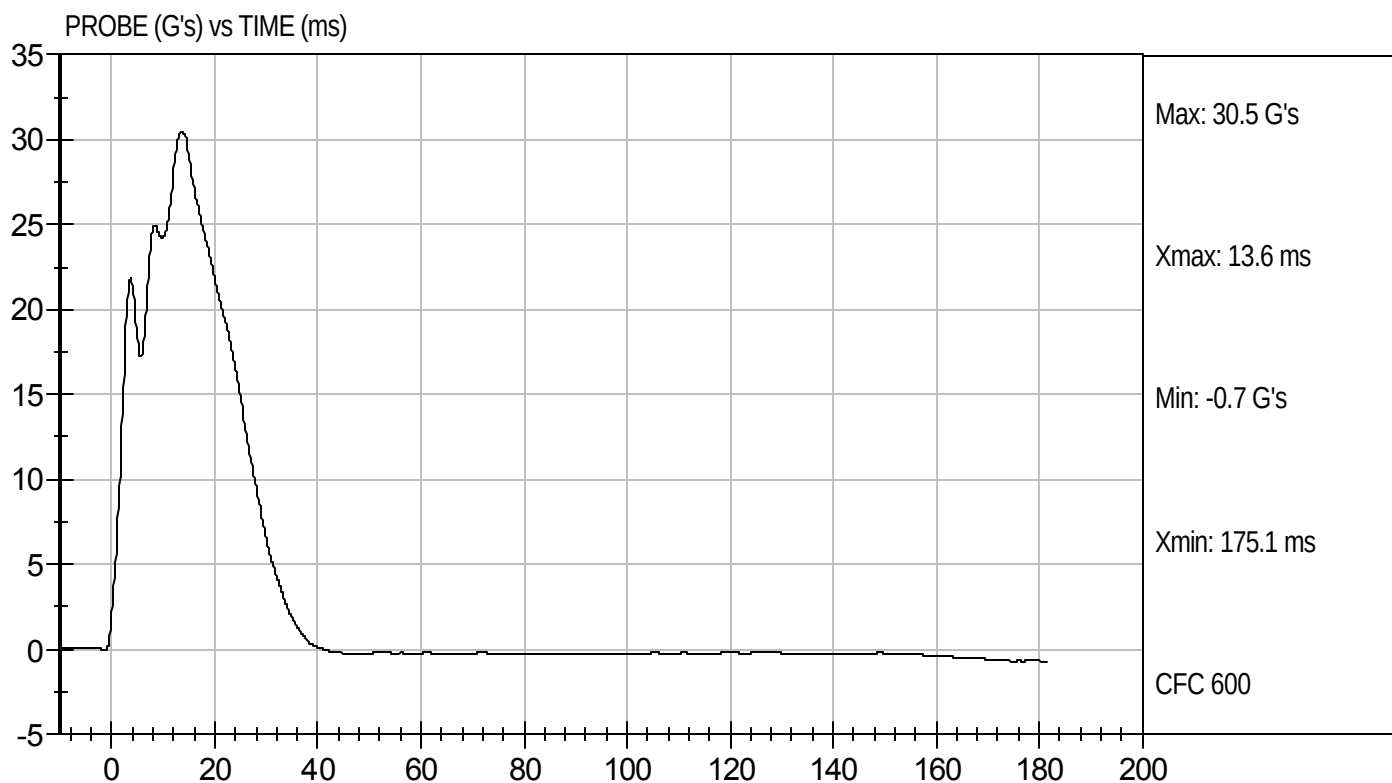
5/24/12
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D121944

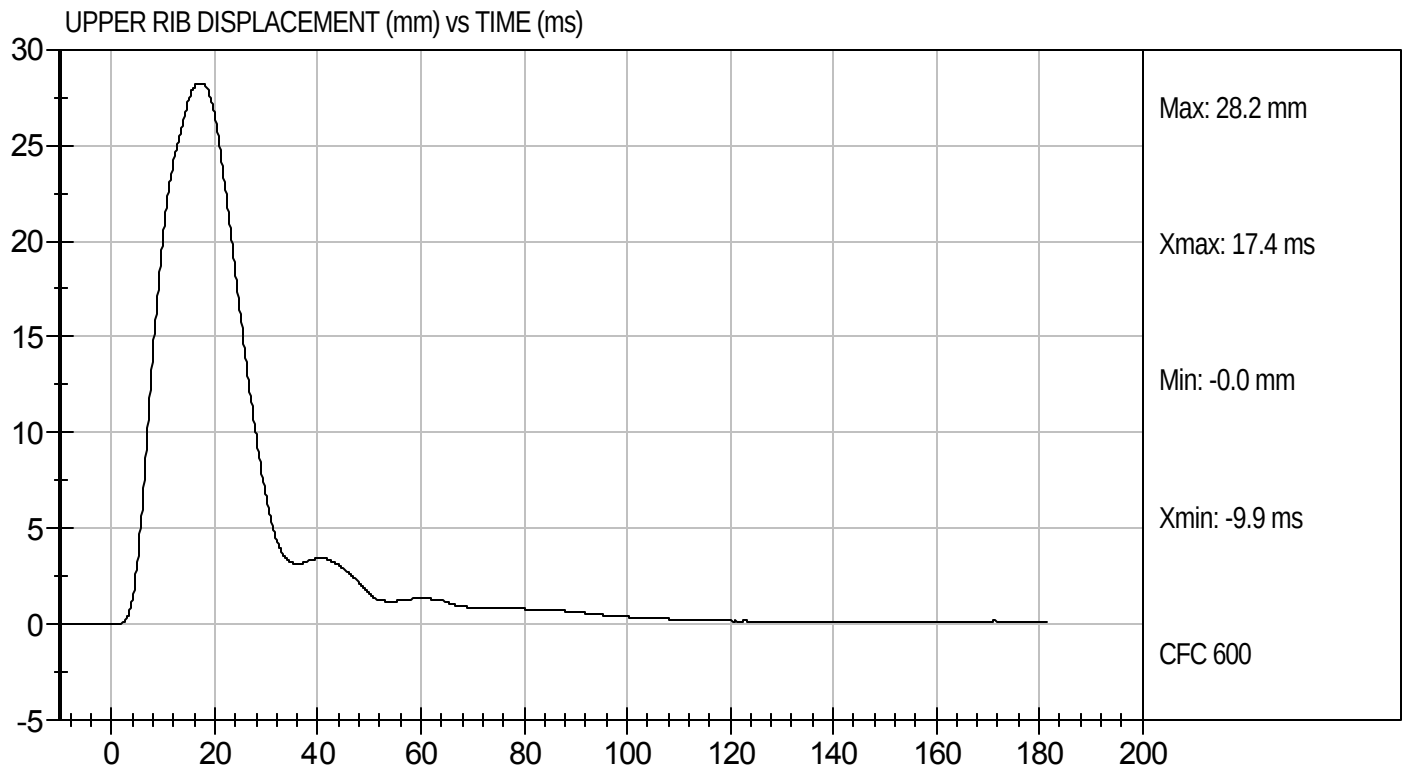
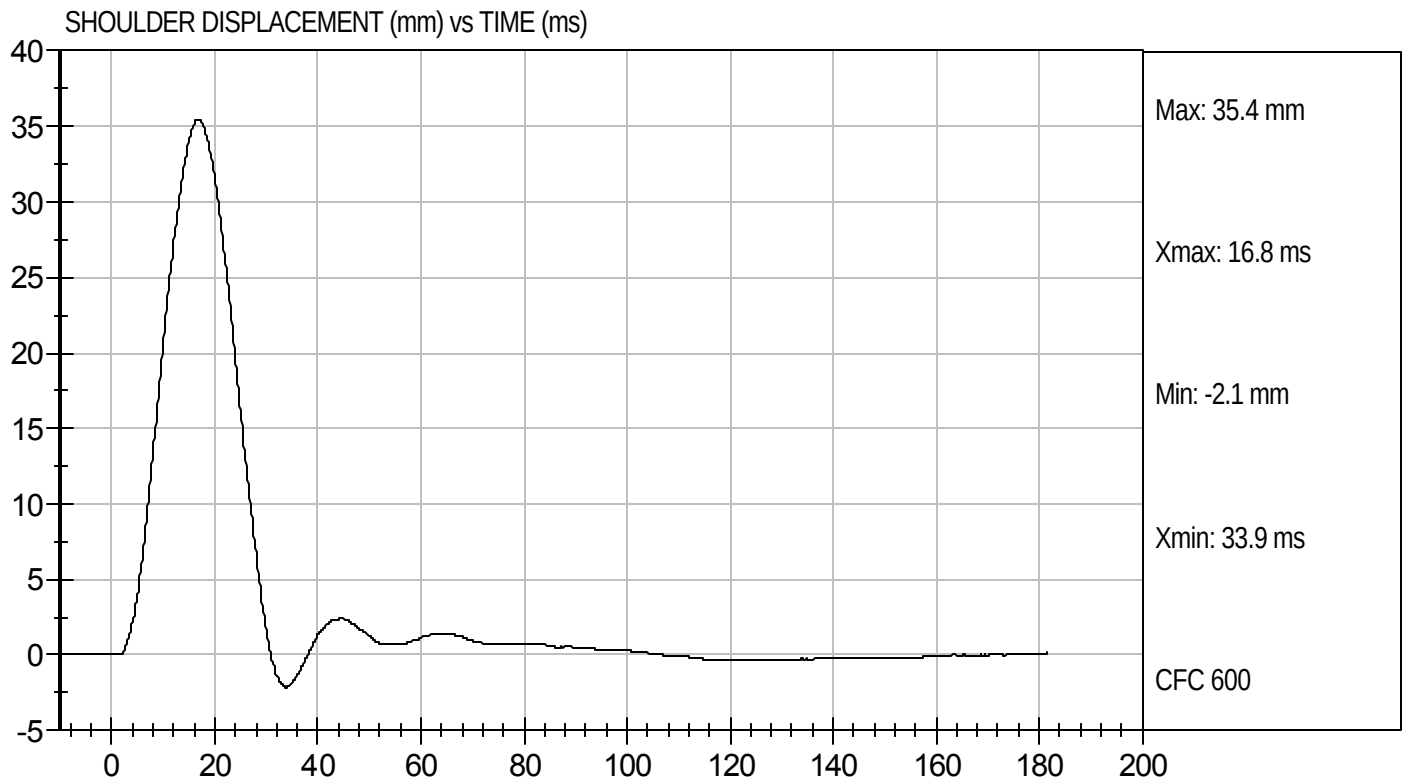
Test Date: 5/24/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D121944

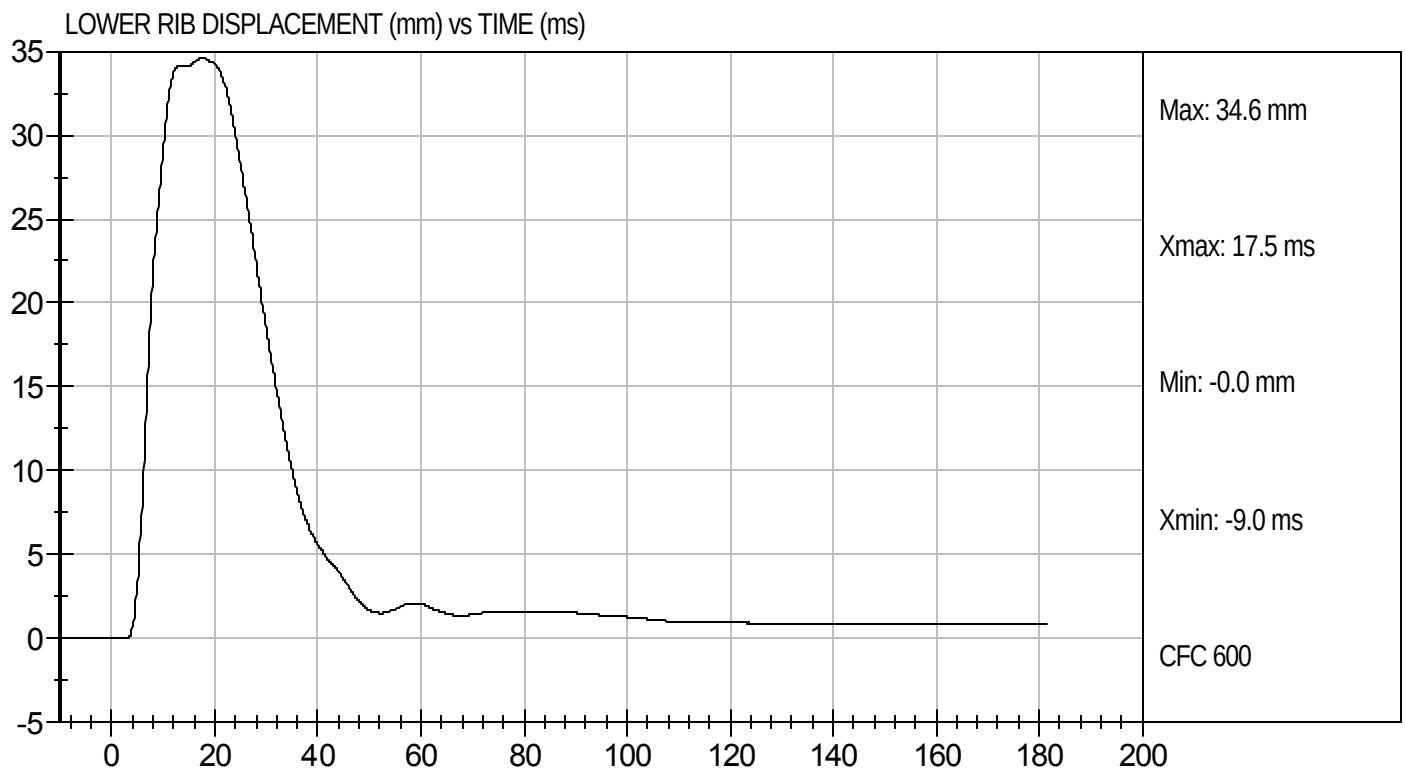
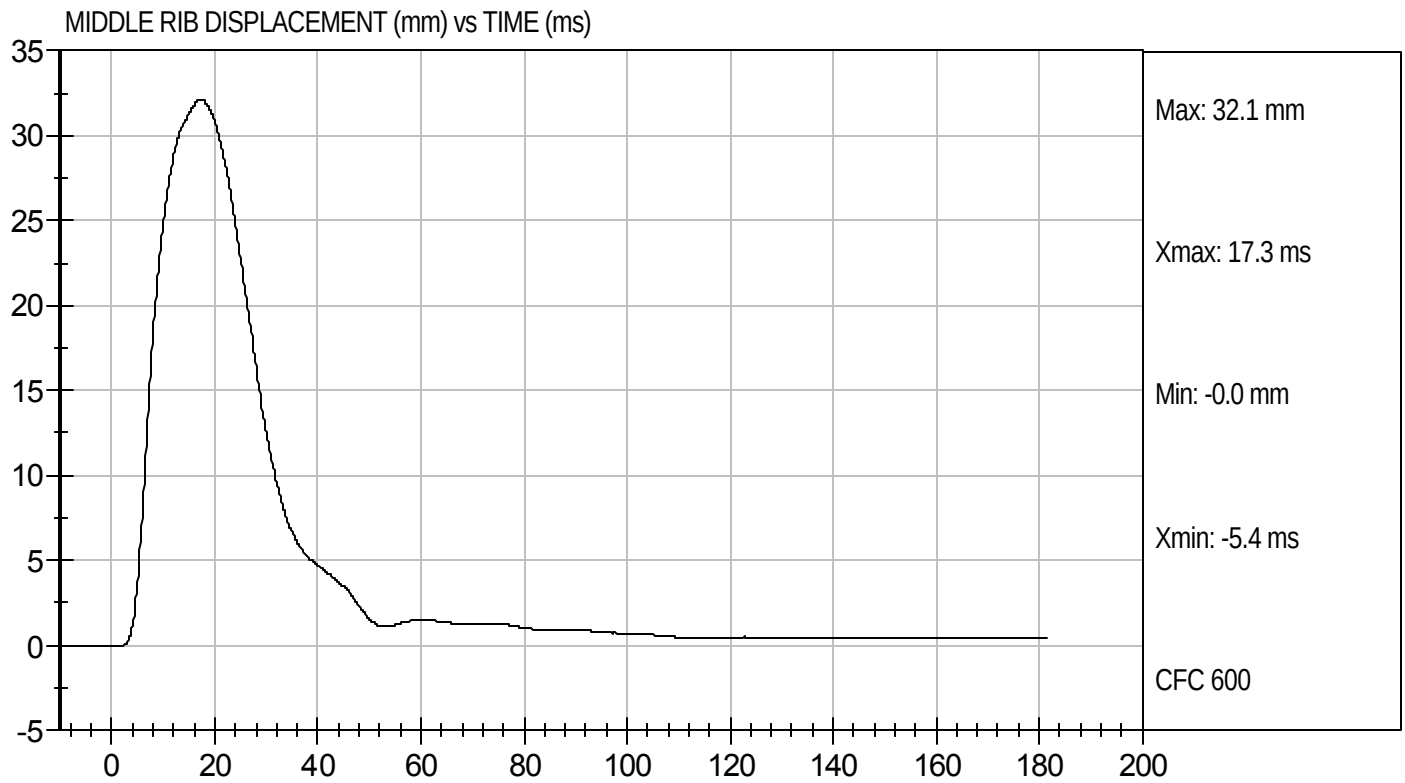
Test Date: 5/24/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D121944

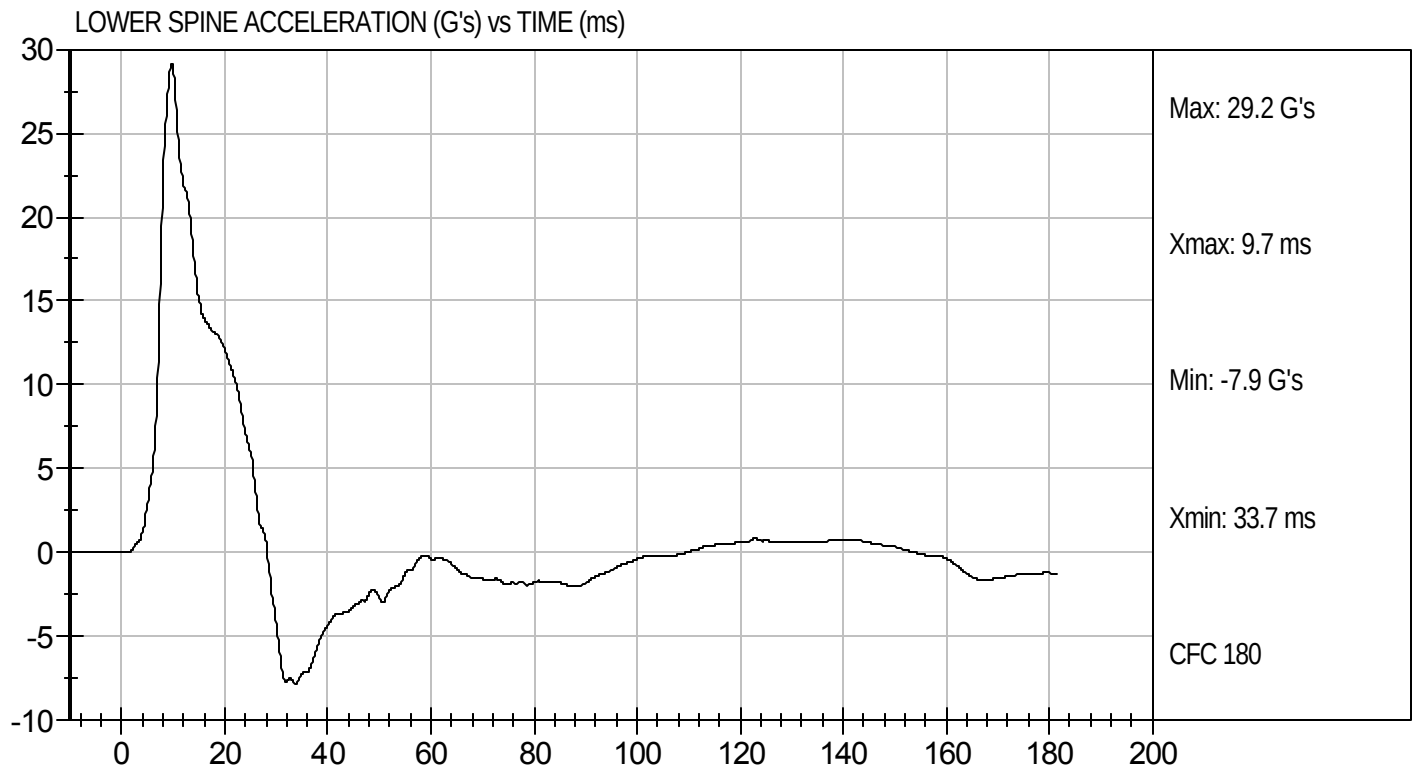
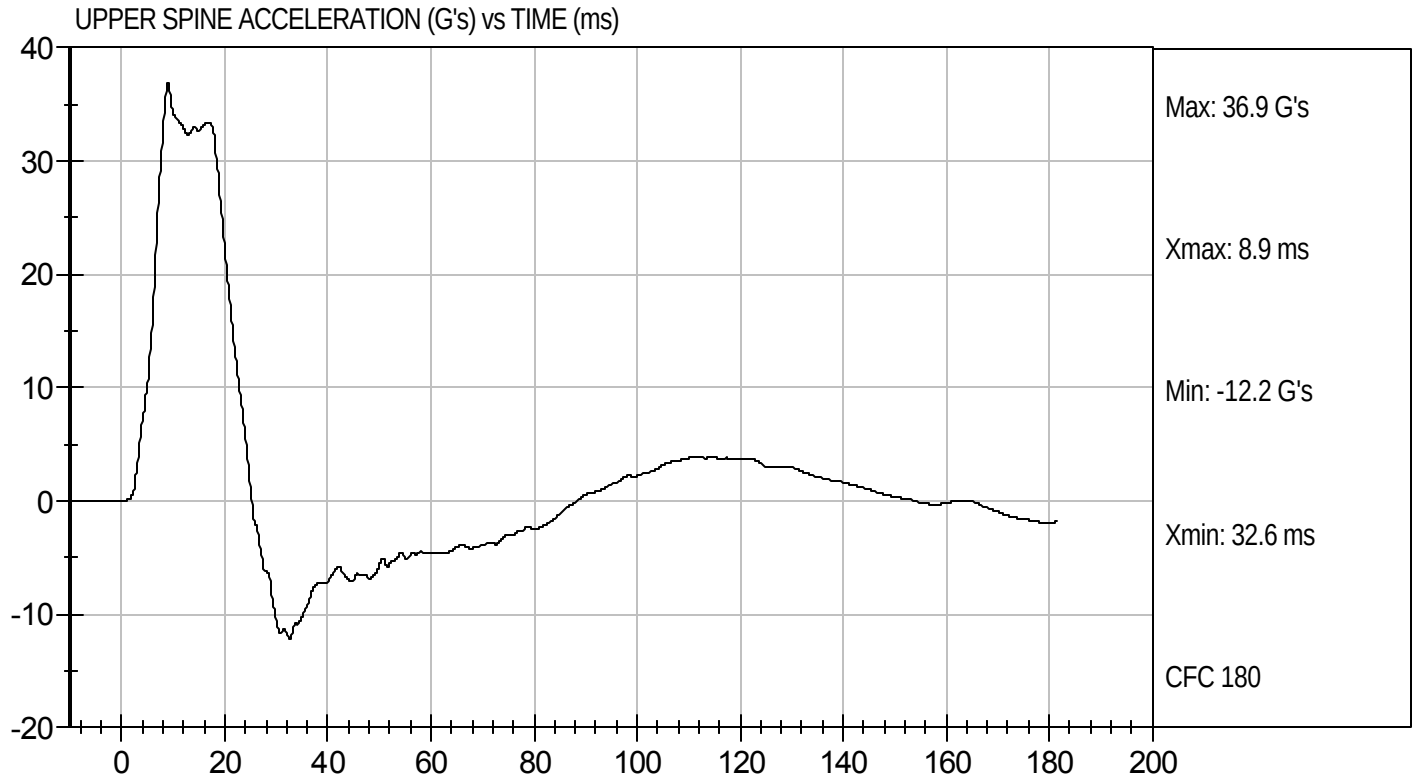
Test Date: 5/24/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D121944

Test Date: 5/24/12
Velocity: 22.22 ft/s, 6.77 m/s

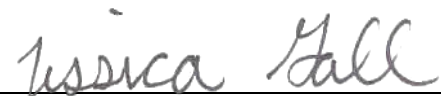


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D121945

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Peak Impactor Force	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	38	Pass
Middle Rib Displacement	mm	39 to 45	43	Pass
Lower Rib Displacement	mm	35 to 43	39	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	8	Pass
Overall Test Results			Pass	


Laboratory Technician

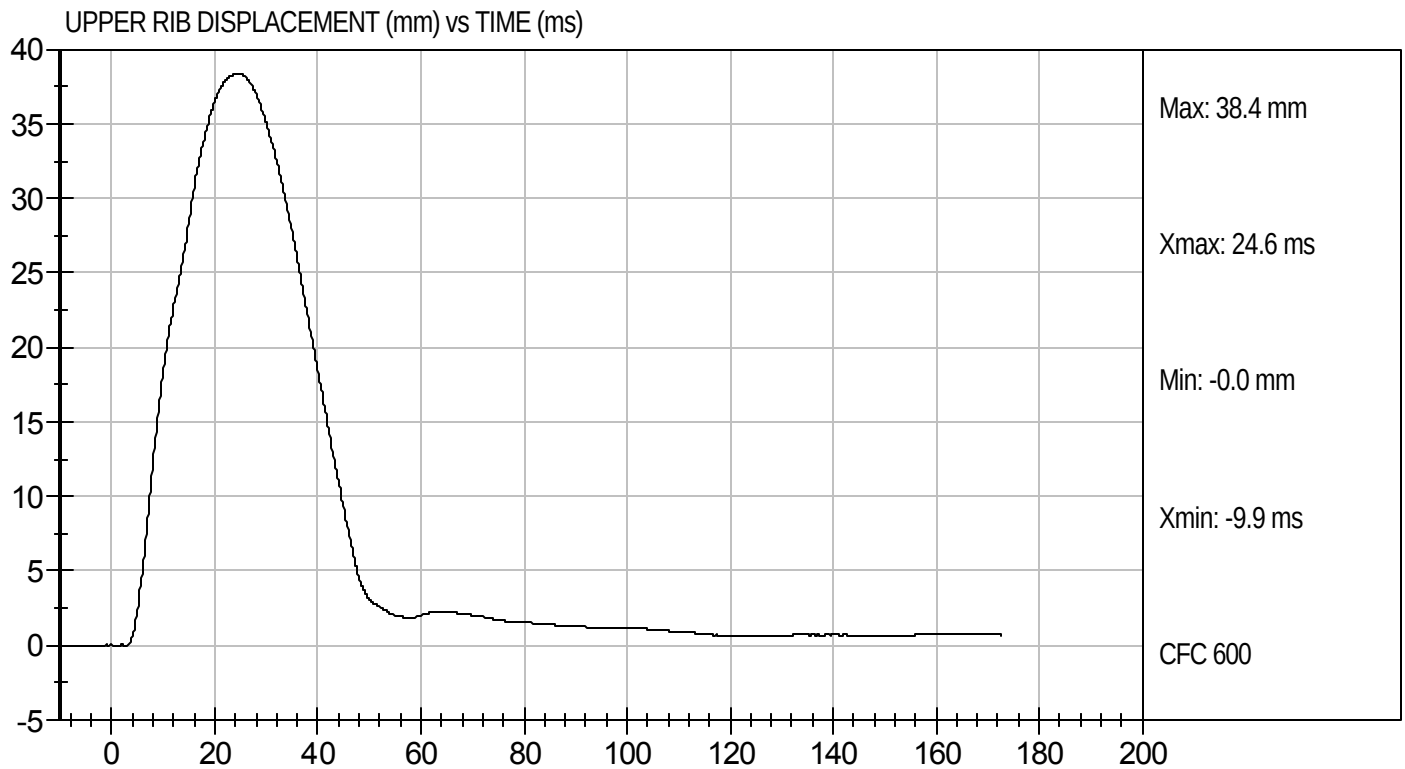
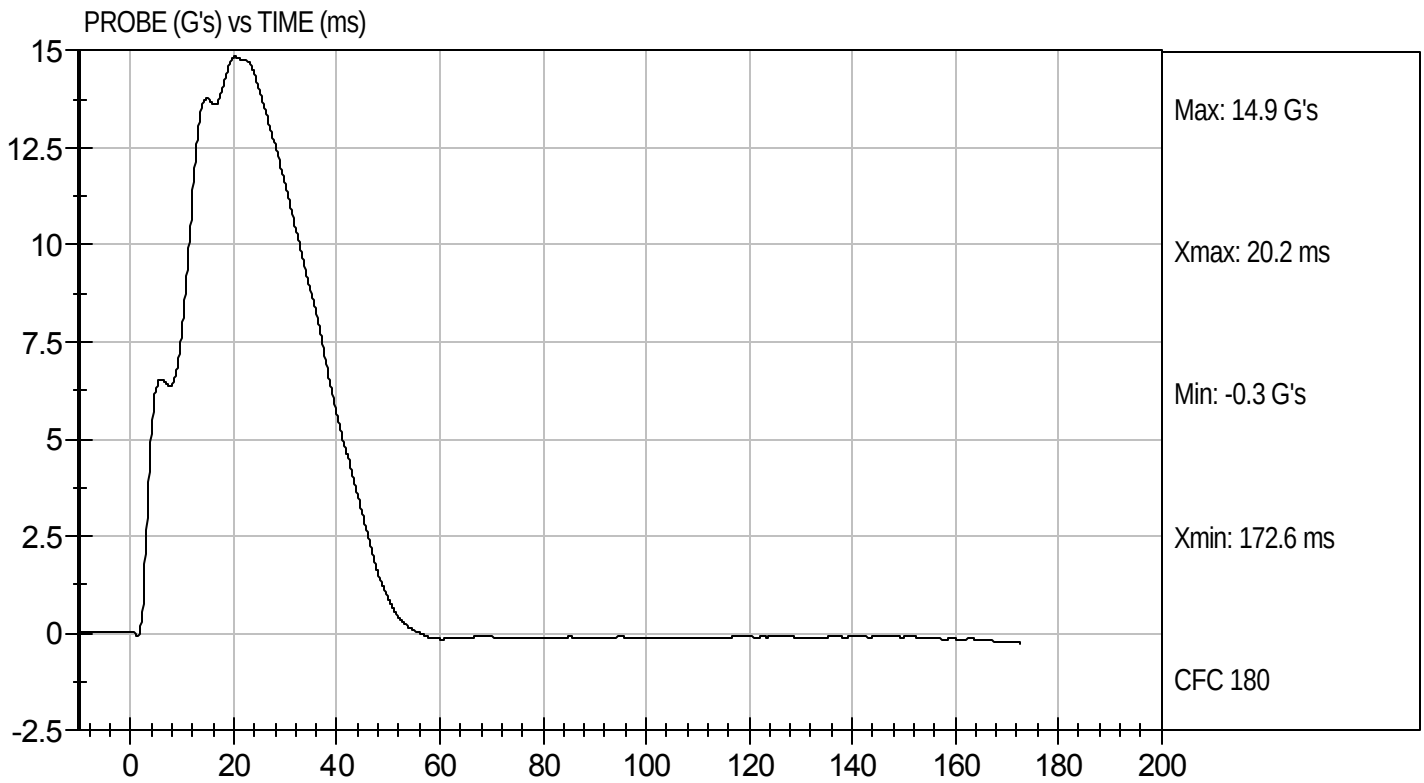
5/24/12
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D121945

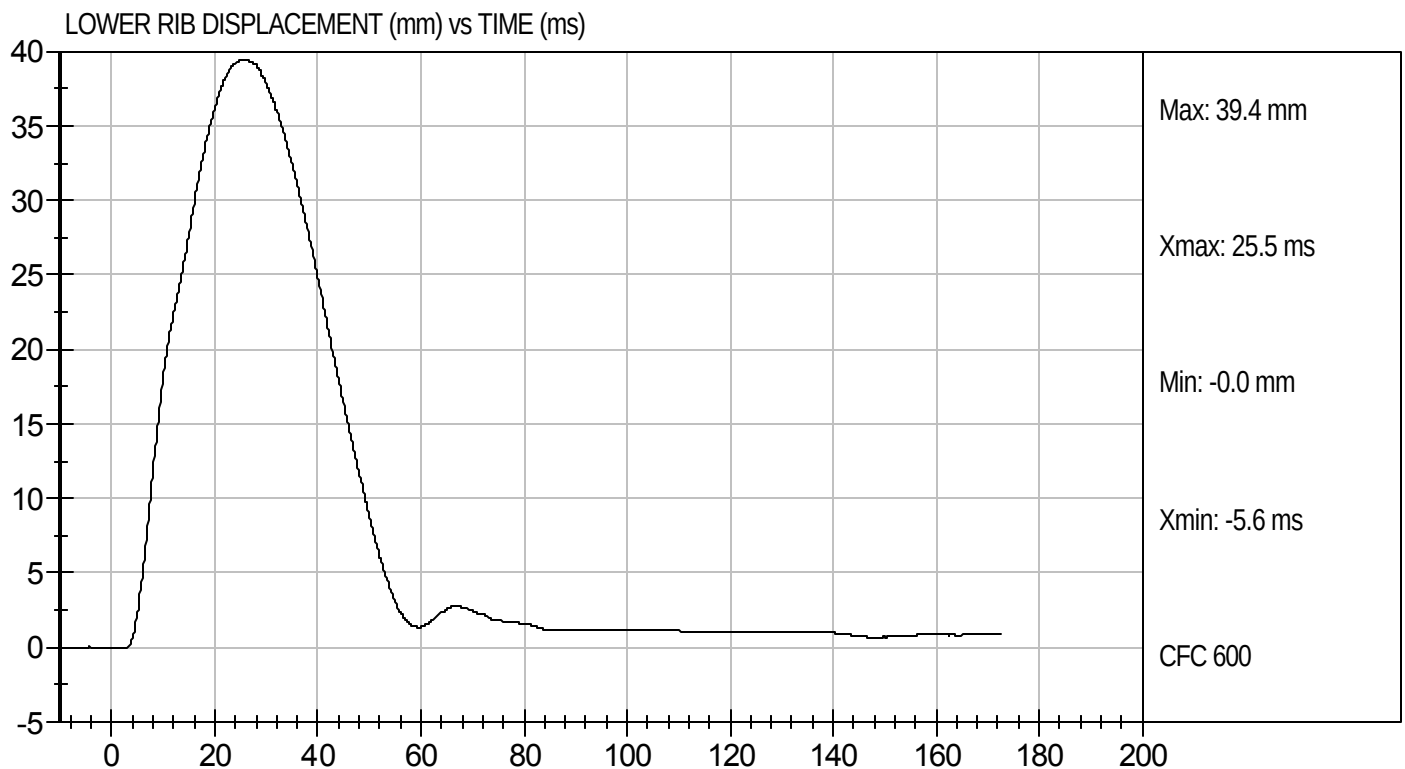
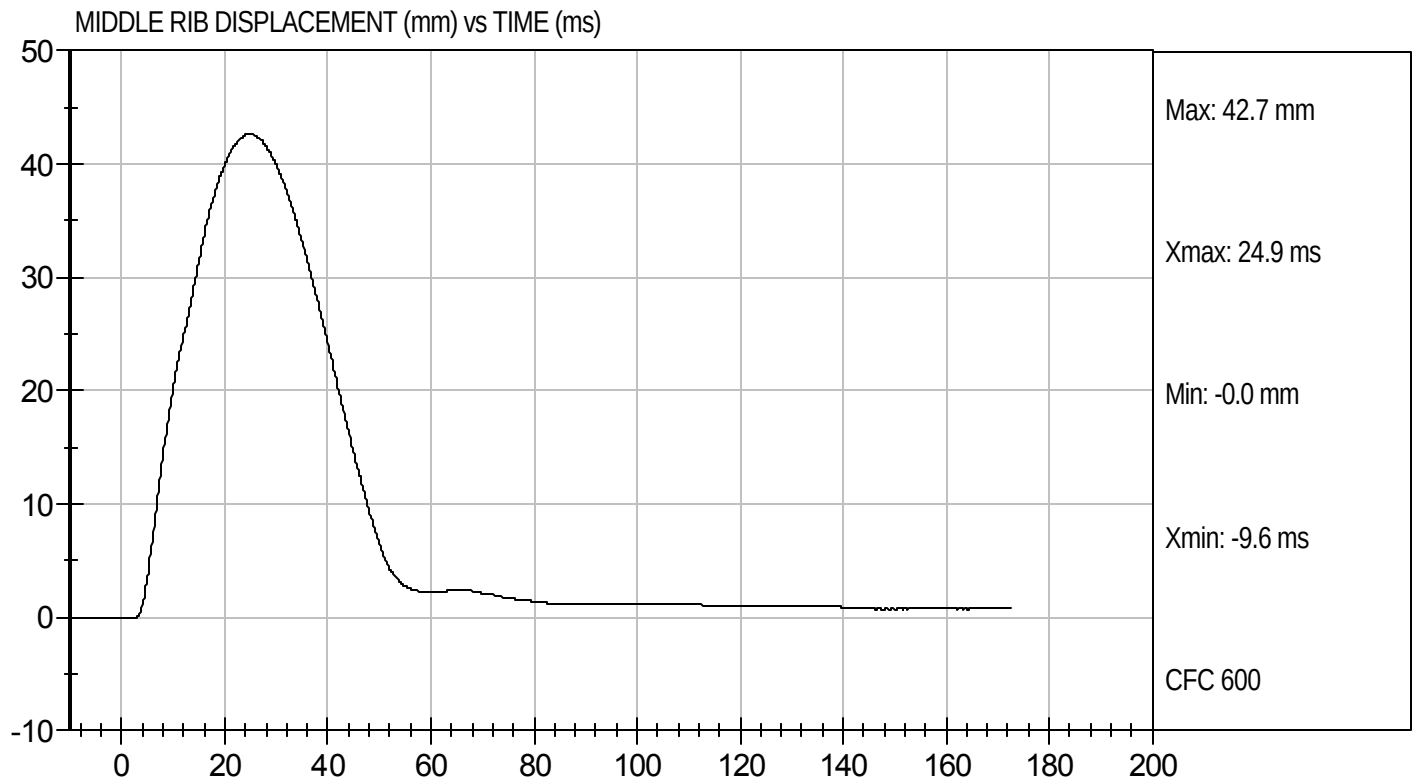
Test Date: 5/24/12
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Thorax Without Arm
Component ID: D121945

Test Date: 5/24/12
Velocity: 14.12 ft/s, 4.30 m/s

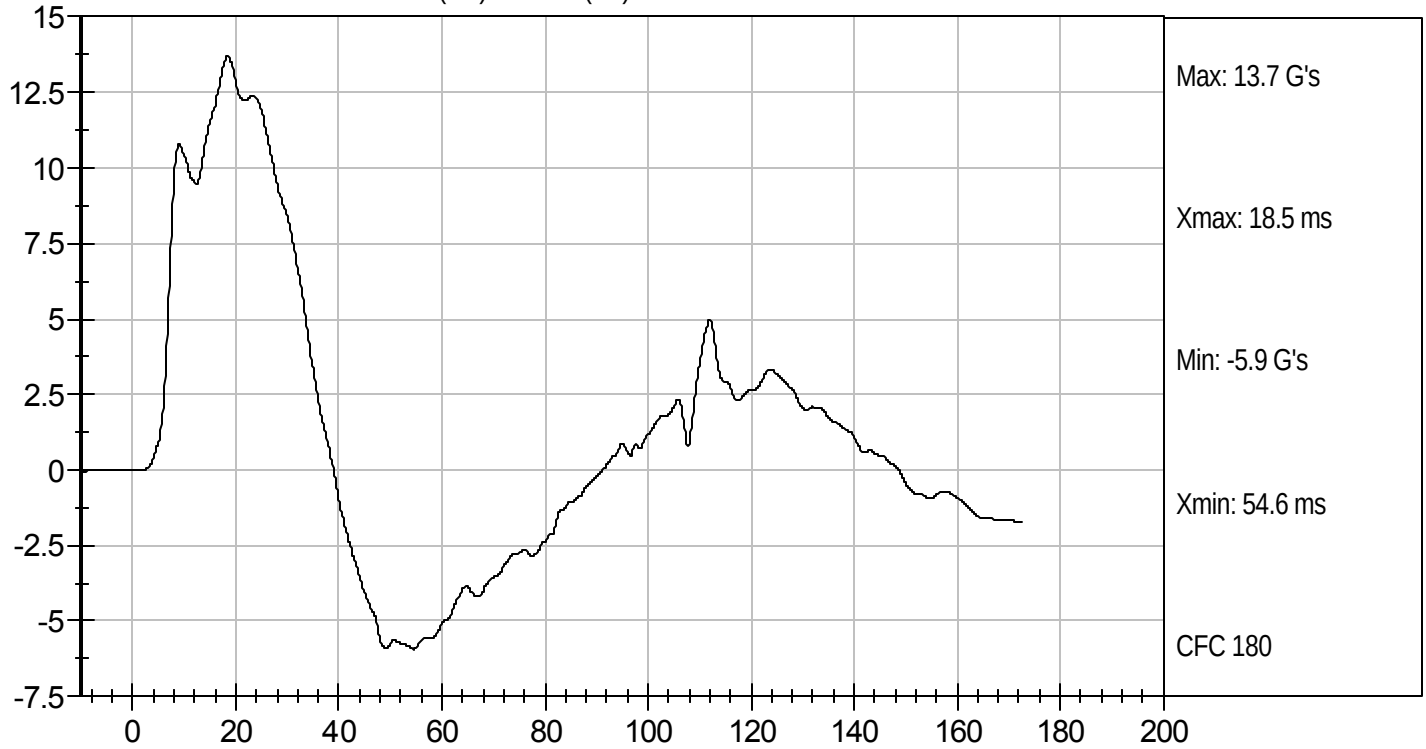




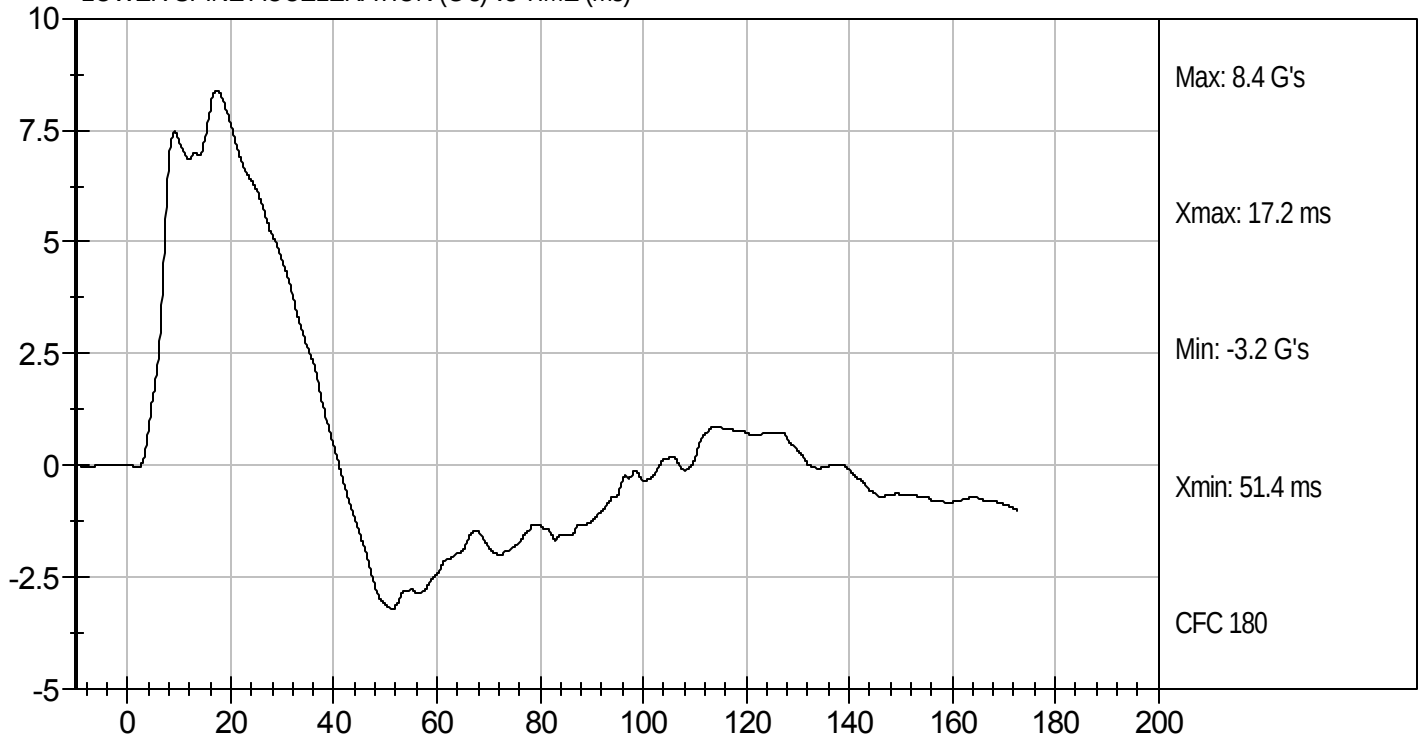
Test Desc: Thorax Without Arm
Component ID: D121945

Test Date: 5/24/12
Velocity: 14.12 ft/s, 4.30 m/s

UPPER SPINE ACCELERATION (G's) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION
ABDOMINAL IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D121946

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	42	Pass
Lower Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

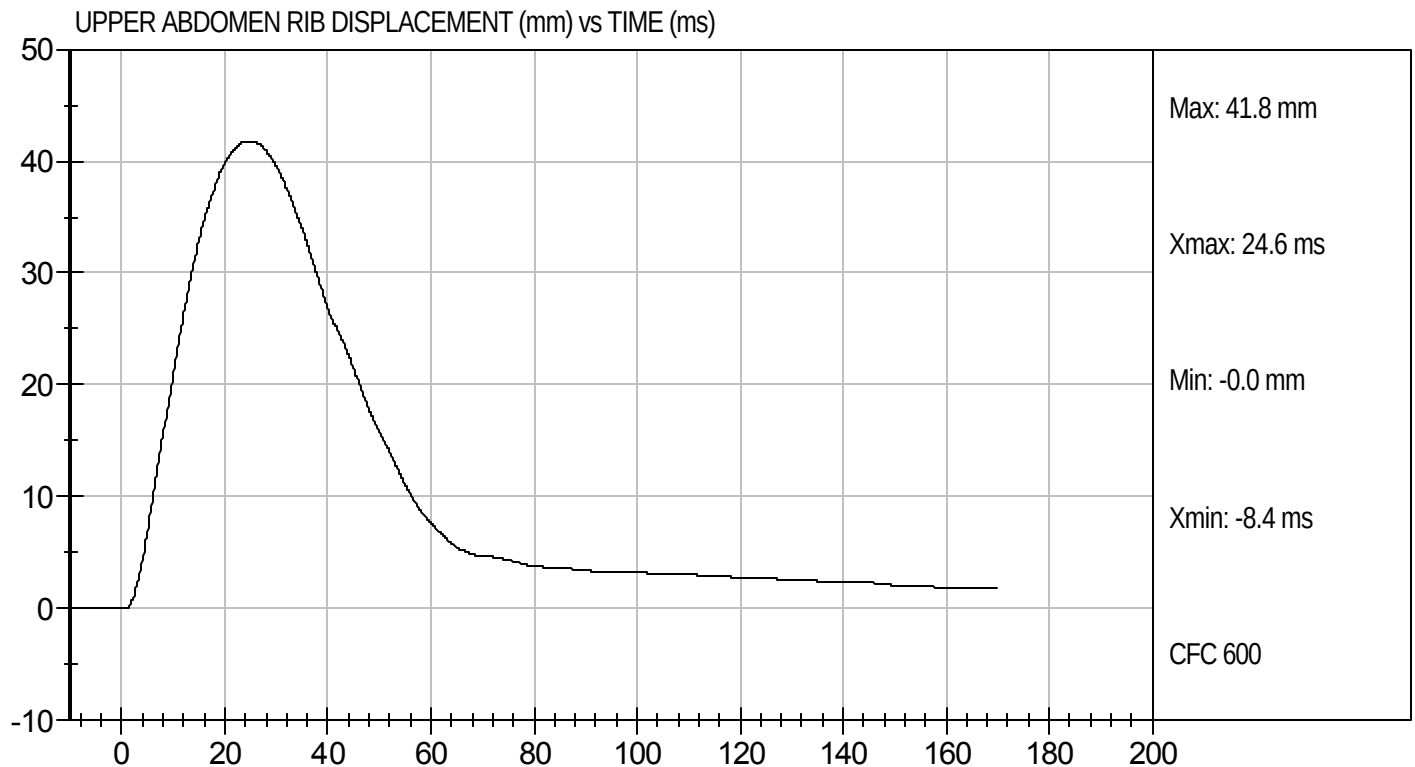
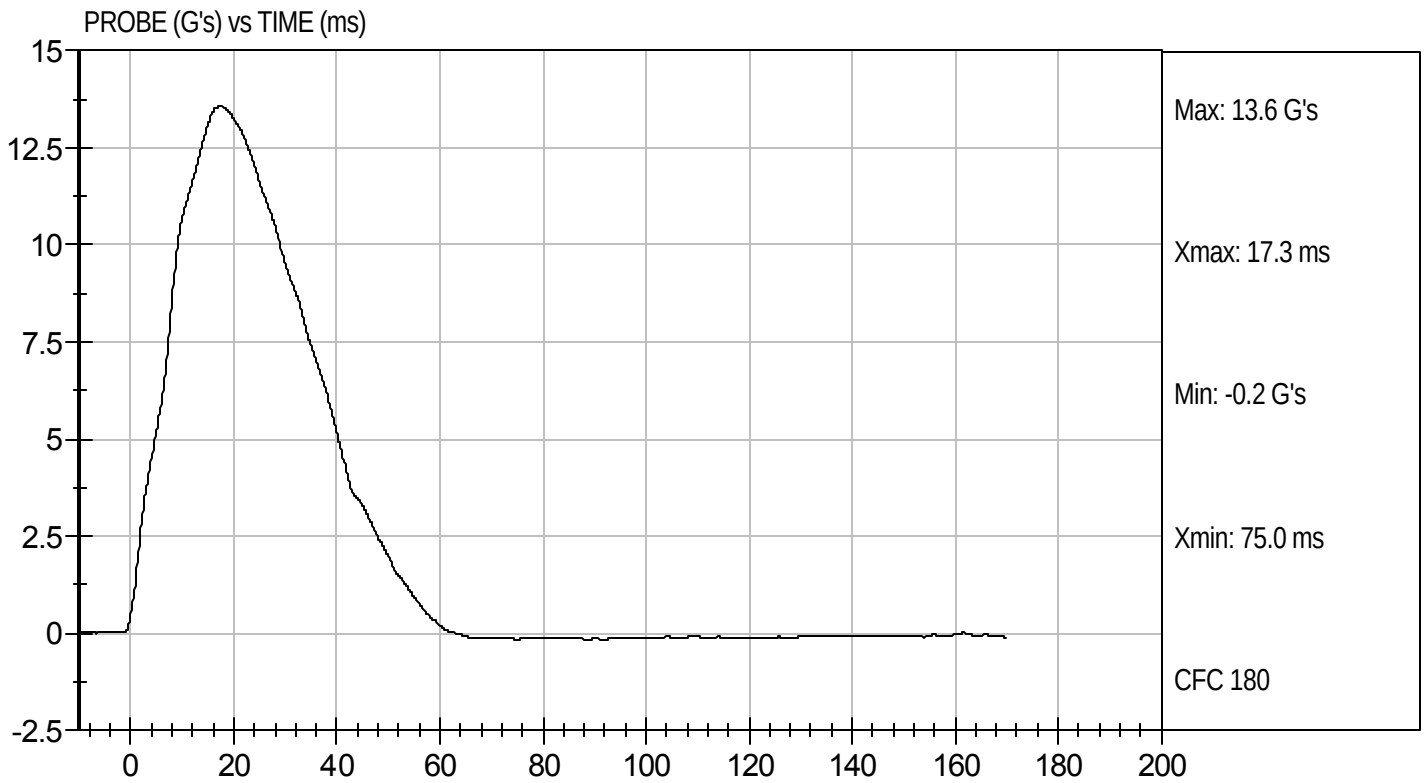
5/24/12
Test Date

David Winkelbauer
Approved By



Test Desc: Abdomen Impact
Component ID: D121946

Test Date: 5/24/12
Velocity: 14.25 ft/s, 4.34 m/s

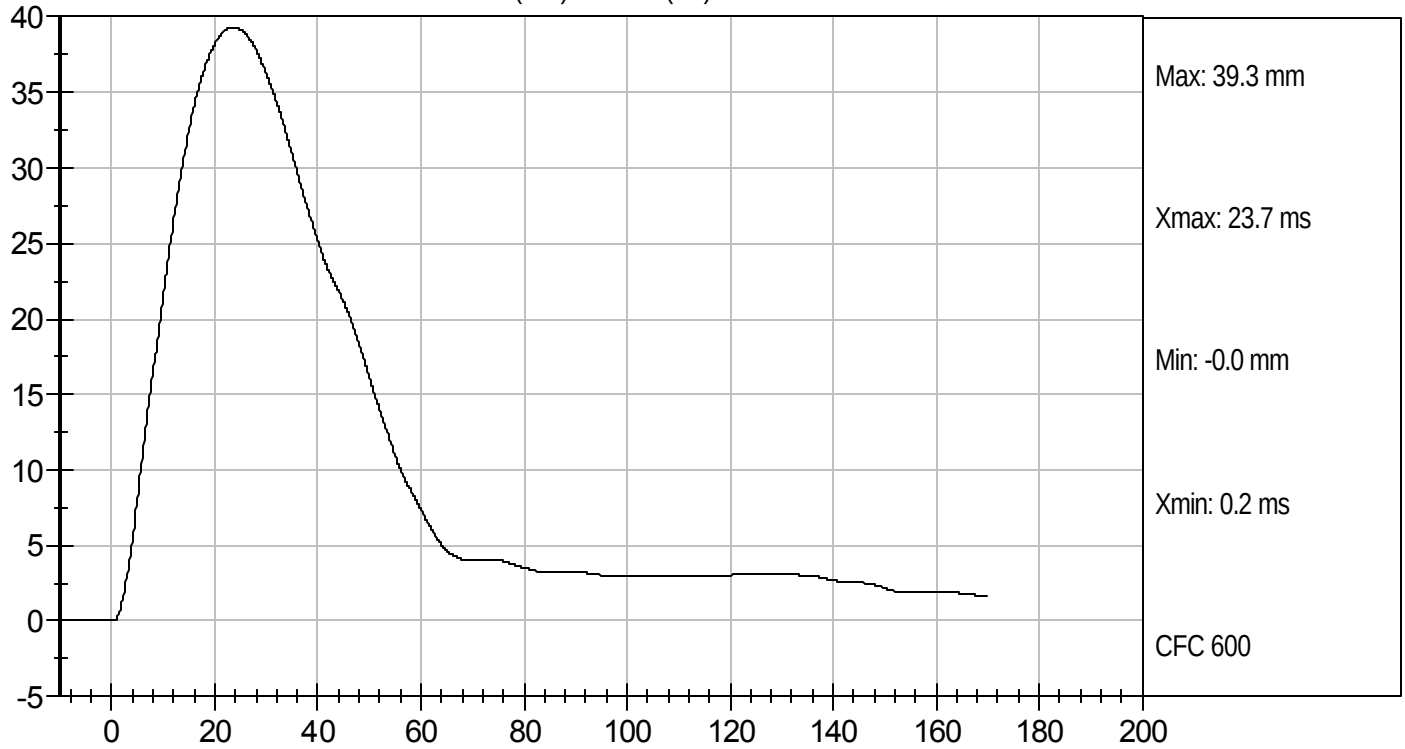




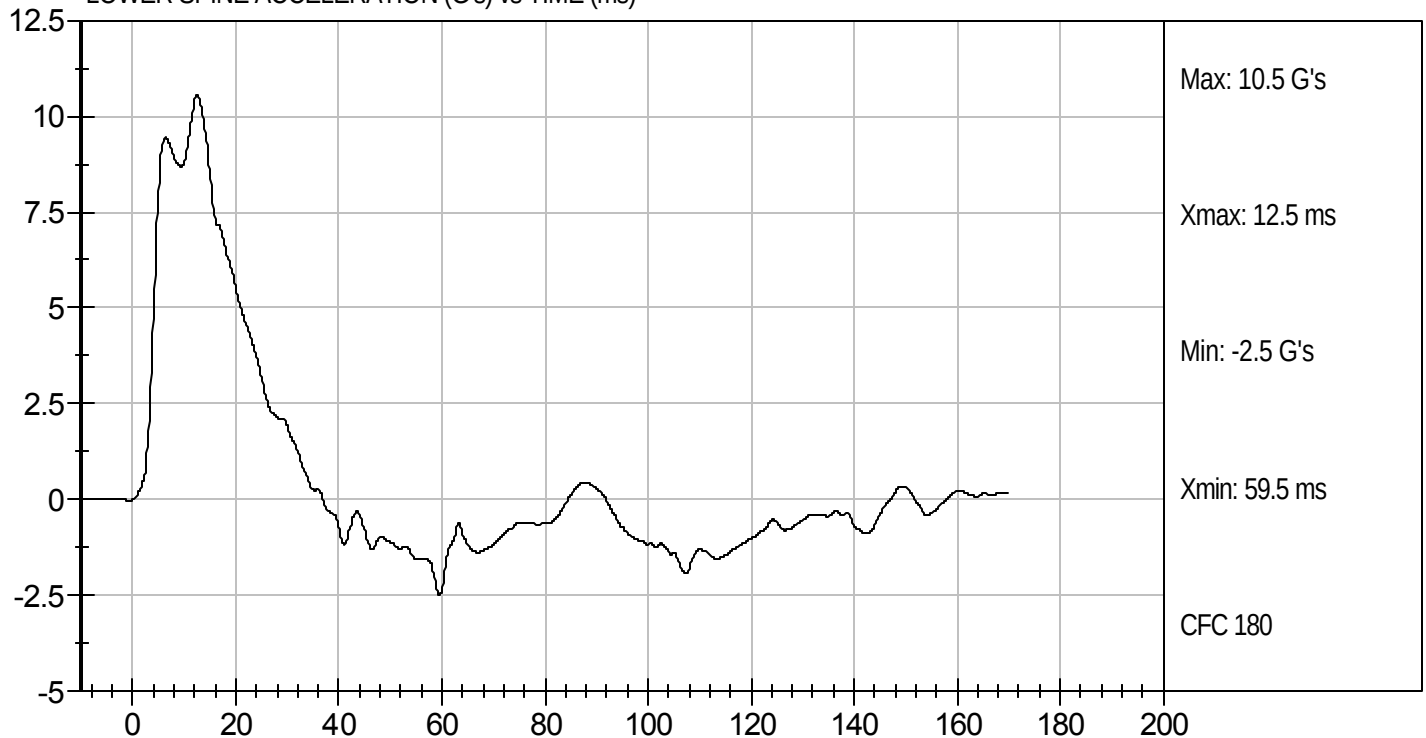
Test Desc: Abdomen Impact
Component ID: D121946

Test Date: 5/24/12
Velocity: 14.25 ft/s, 4.34 m/s

LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION
PELVIS IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D121947

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	43	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	38	Pass
Peak Acetabulum Force	N	3600 to 4300	4075	Pass
Overall Test Results			Pass	


Laboratory Technician

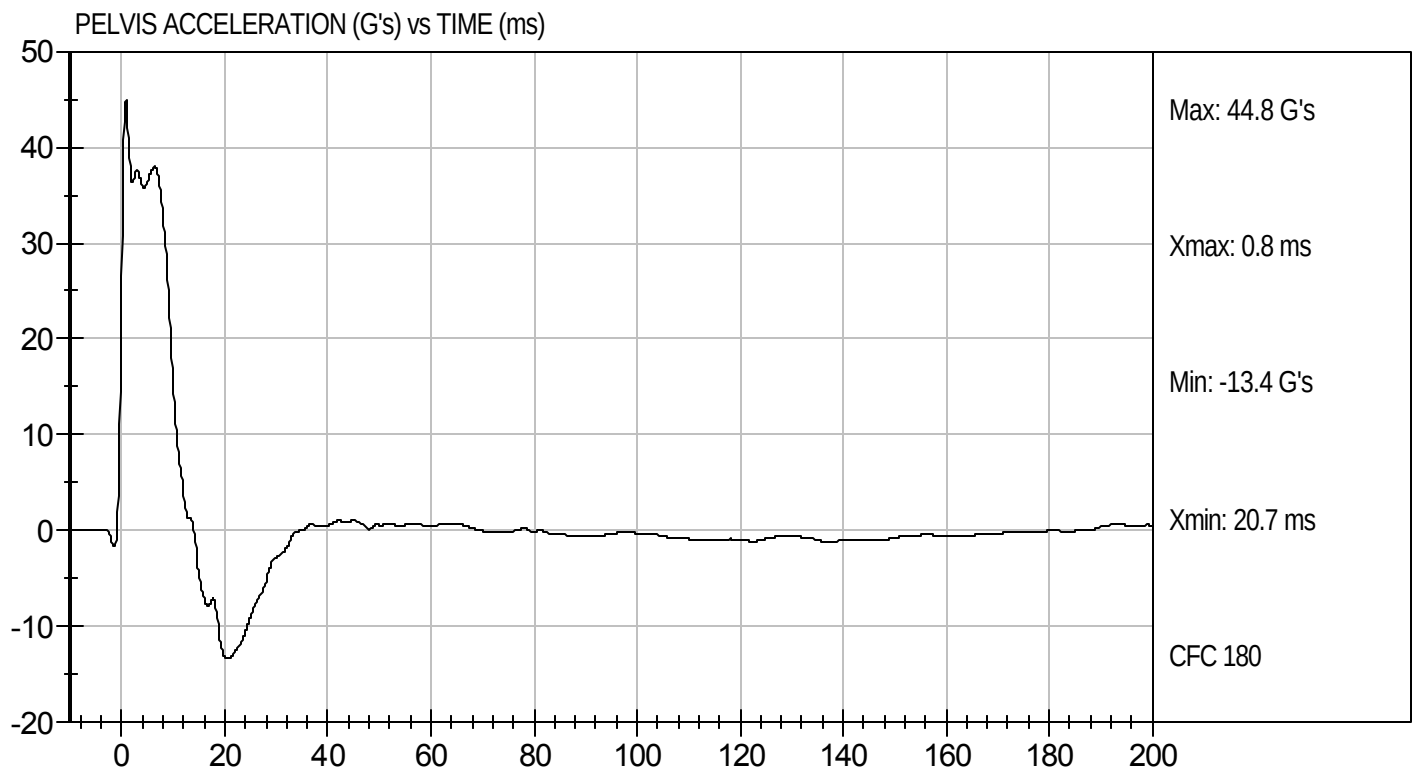
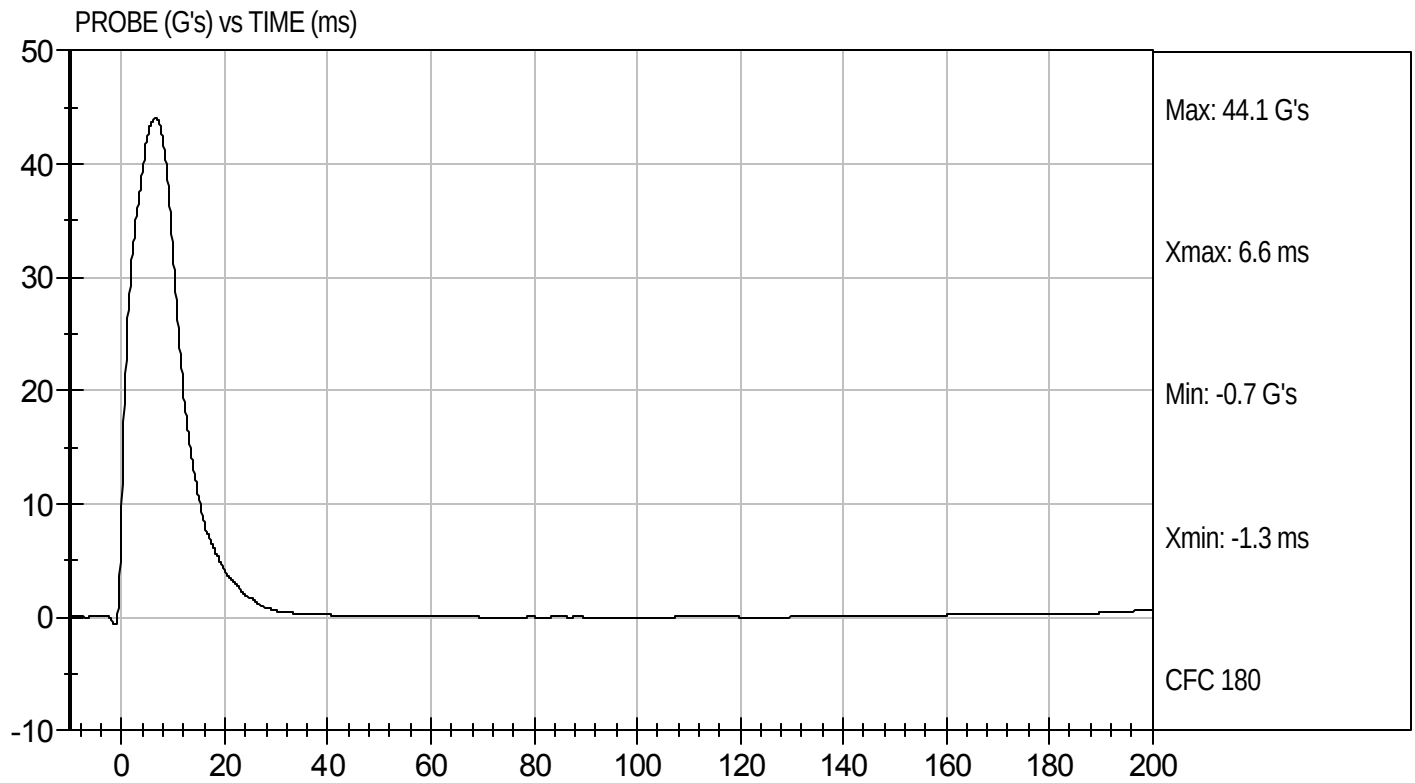
5/24/12
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D121947

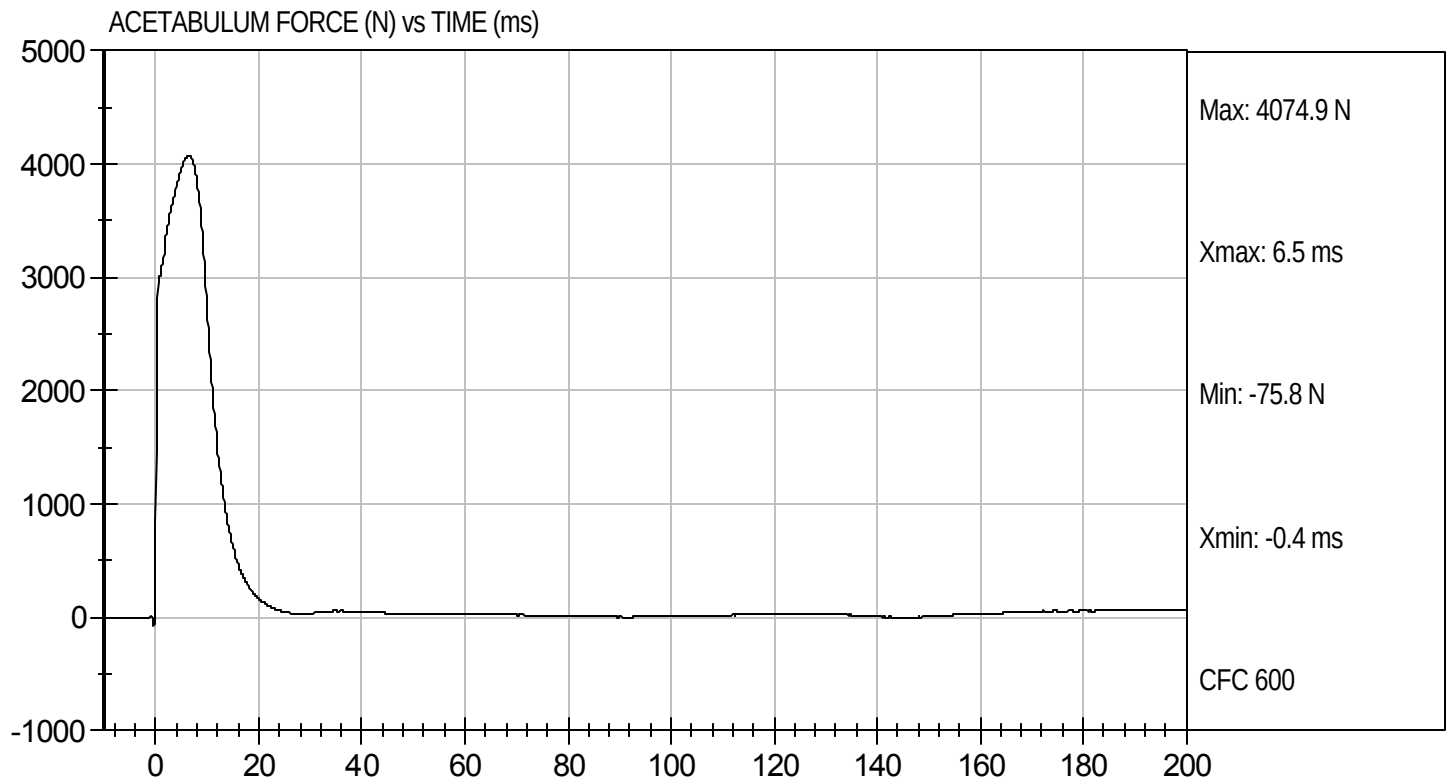
Test Date: 5/24/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D121947

Test Date: 5/24/12
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D121948

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	43	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Peak Impactor Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	33	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4631	Pass
Overall Test Results			Pass	


Laboratory Technician

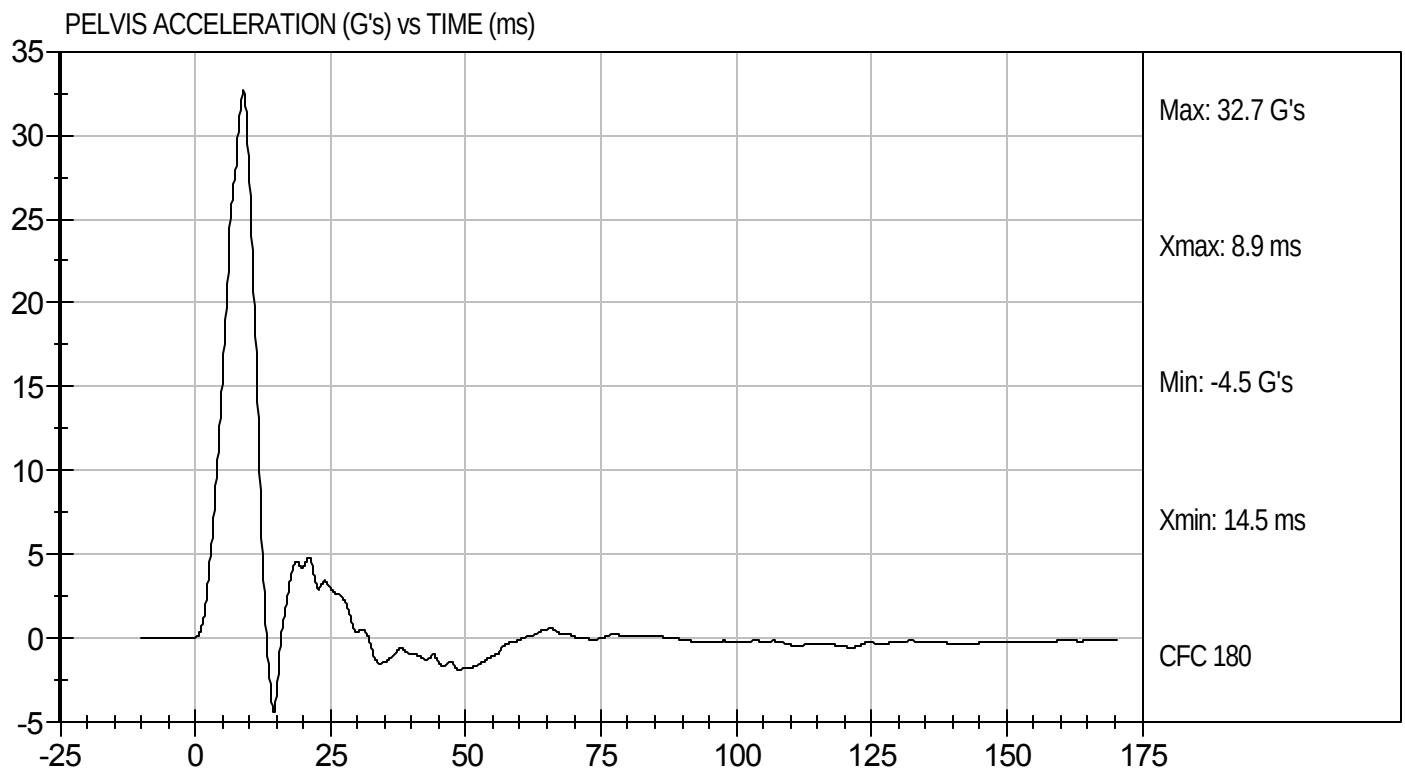
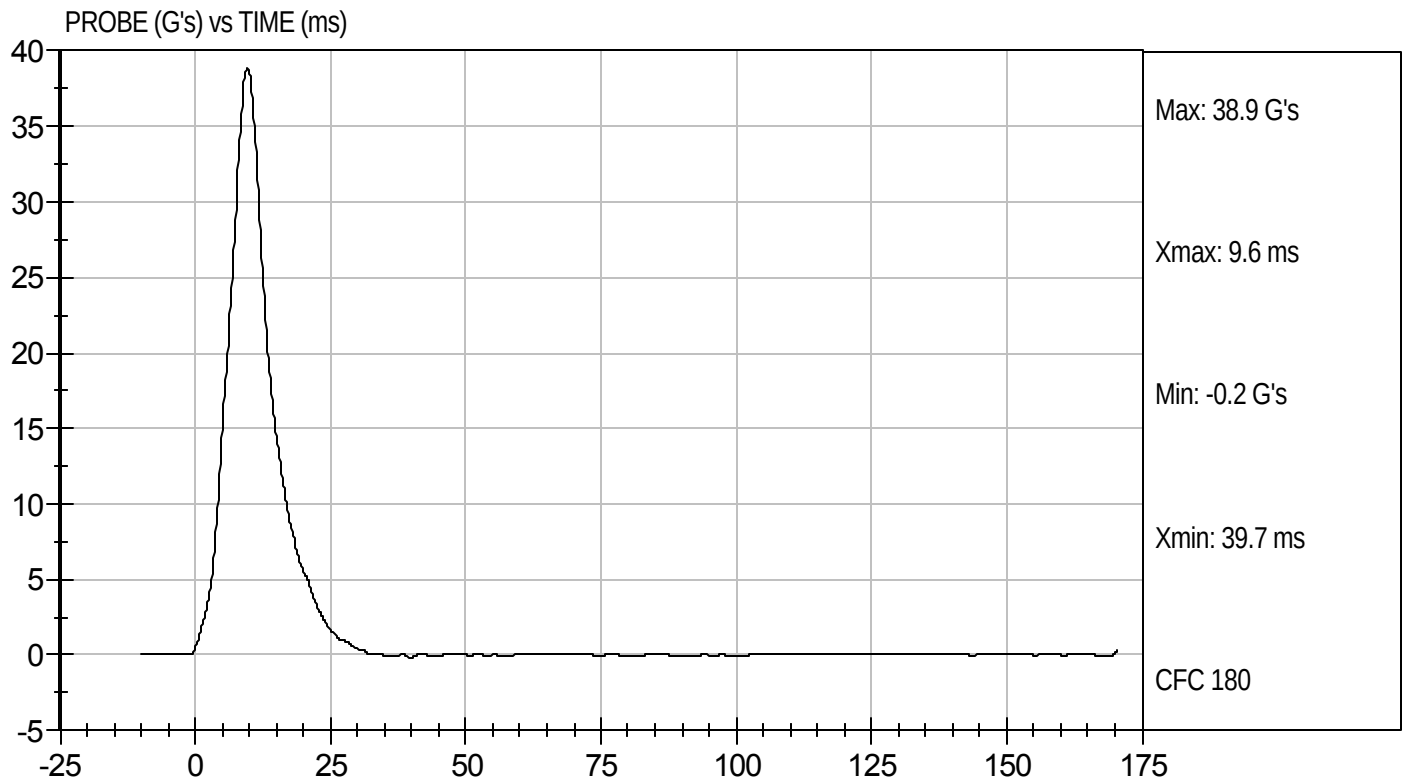
5/24/12
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D121948

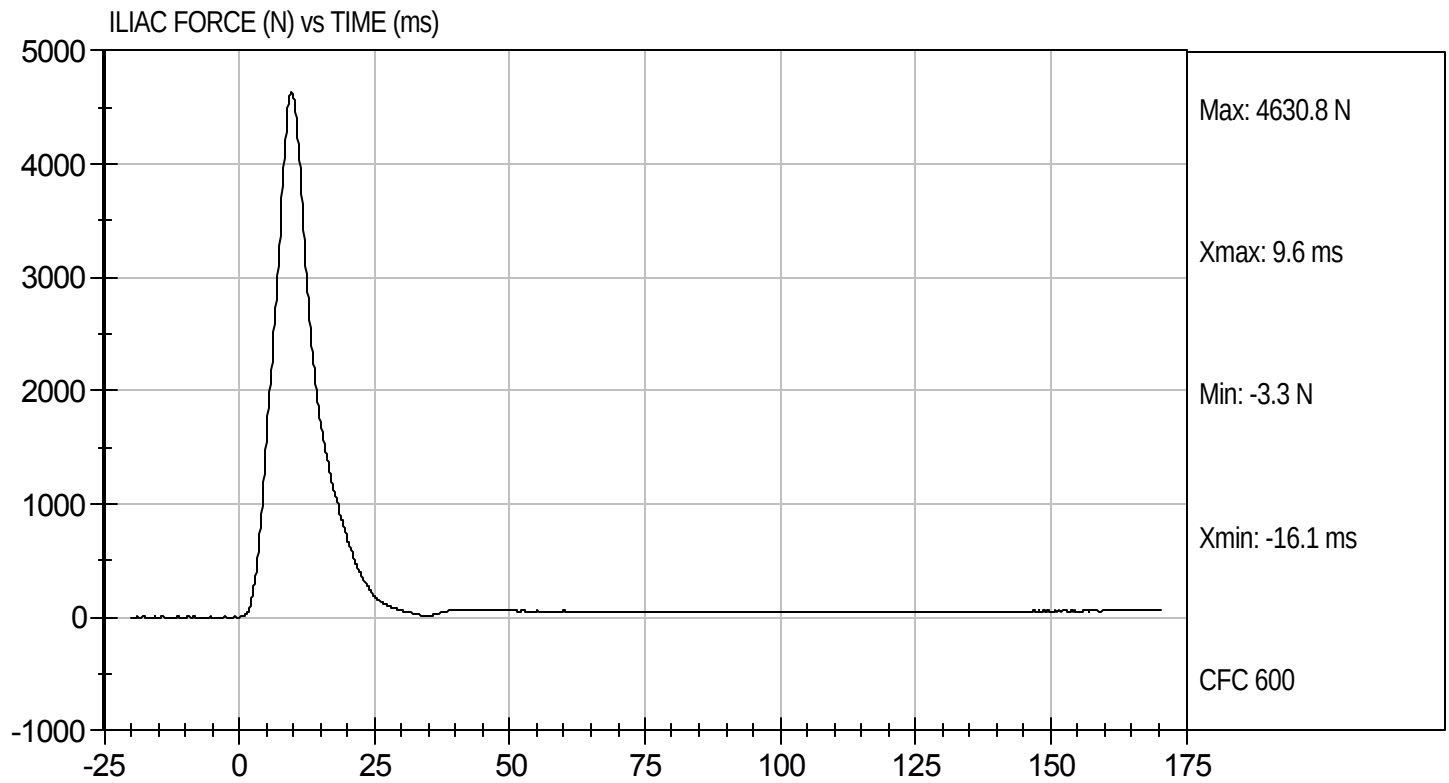
Test Date: 5/24/12
Velocity: 13.89 ft/s, 4.23 m/s





Test Desc: Iliac Impact
Component ID: D121948

Test Date: 5/24/12
Velocity: 13.89 ft/s, 4.23 m/s



MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-Its BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D122281

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	115 to 137	126	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-2.9	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

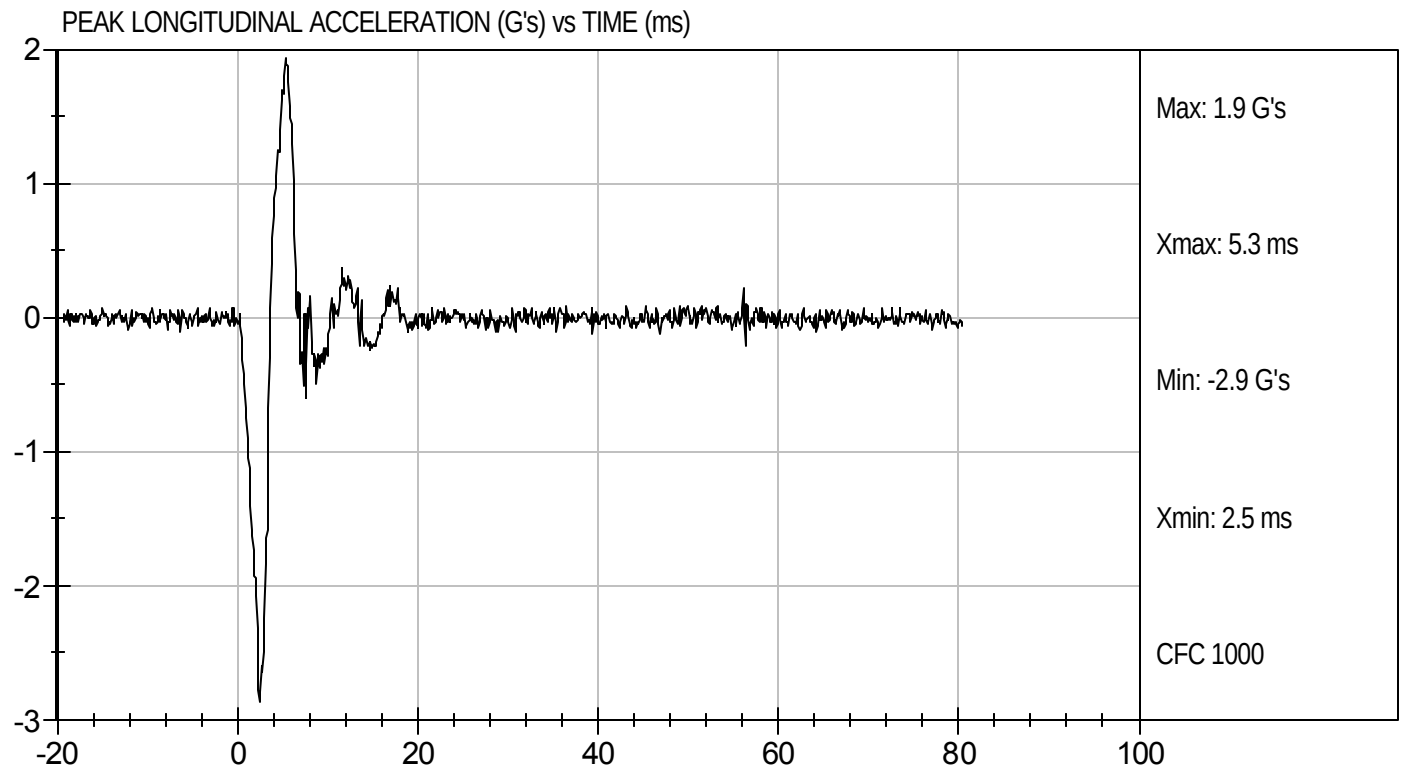
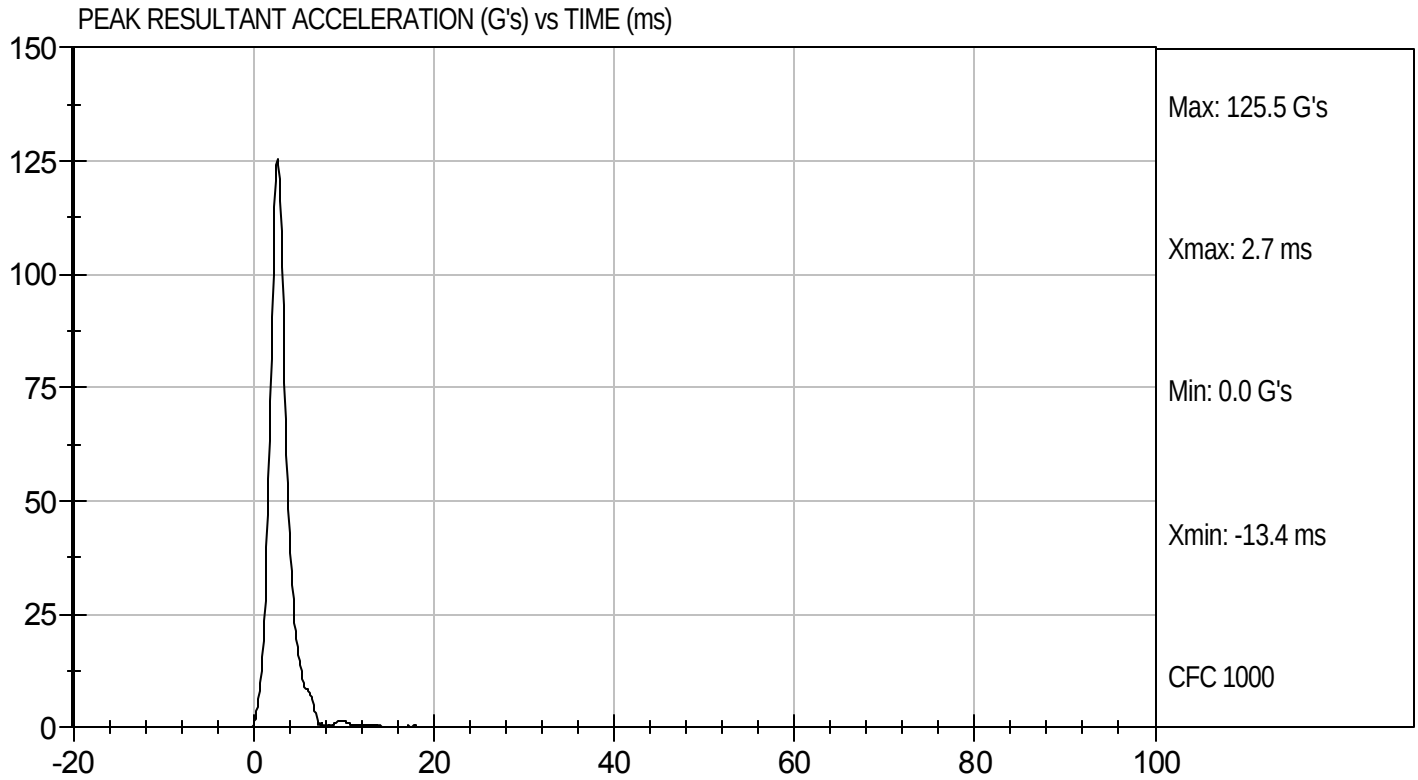
6/20/12
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D122281

Test Date: 6/20/12
Velocity: 0 ft/s, 0 m/s

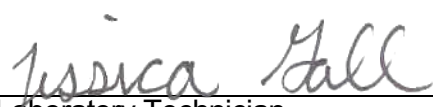


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D122282

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.9	Pass
Humidity		%	10 to 70	49	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.61	Pass
	15 ms	m/s	3.30 to 4.10	3.64	Pass
	20 ms	m/s	4.40 to 5.40	4.83	Pass
	25 ms	m/s	5.40 to 6.10	5.51	Pass
	25-100 ms	m/s	5.50 to 6.20	5.53	Pass
Maximum D-Plane Rotation		deg	71 to 81	73	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	62	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-40	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	116	Pass
Overall Test Results				Pass	


 Laboratory Technician

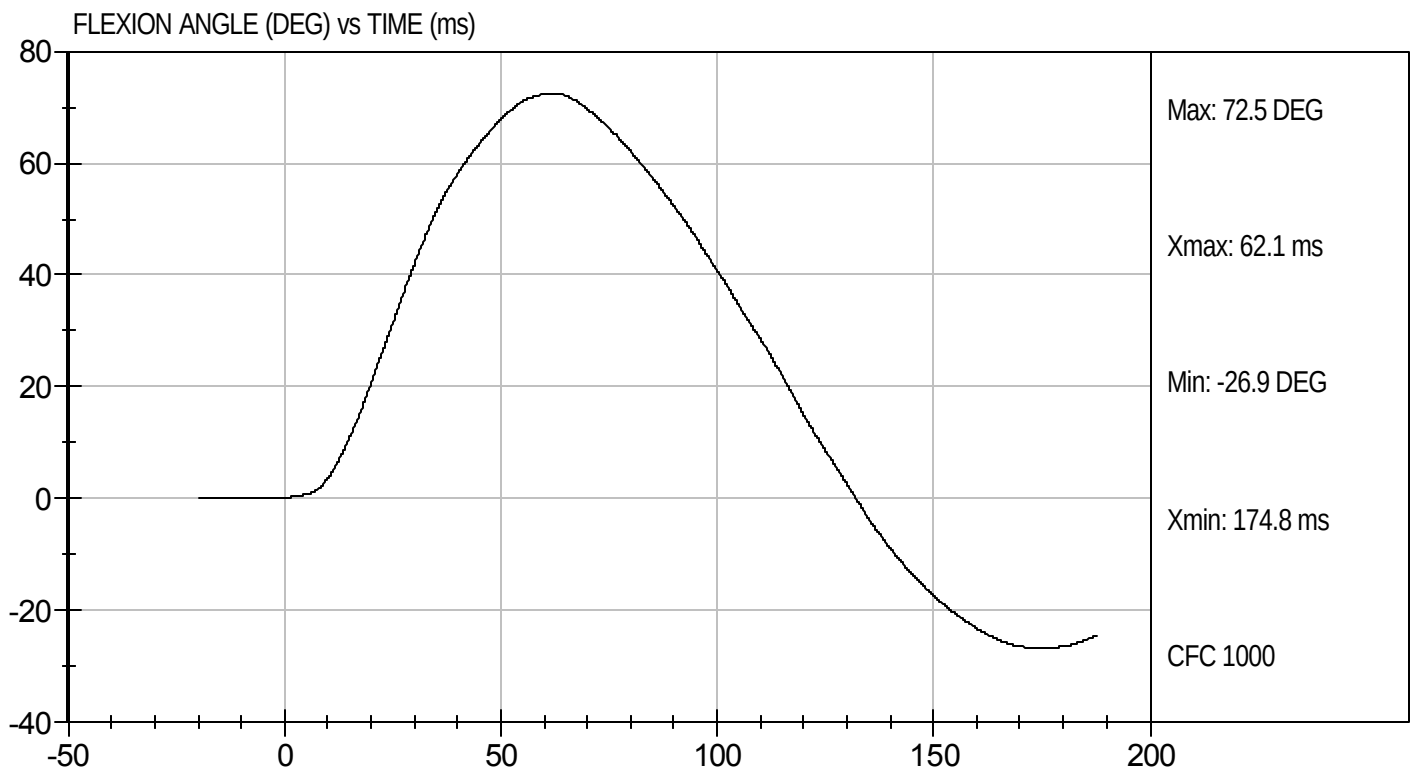
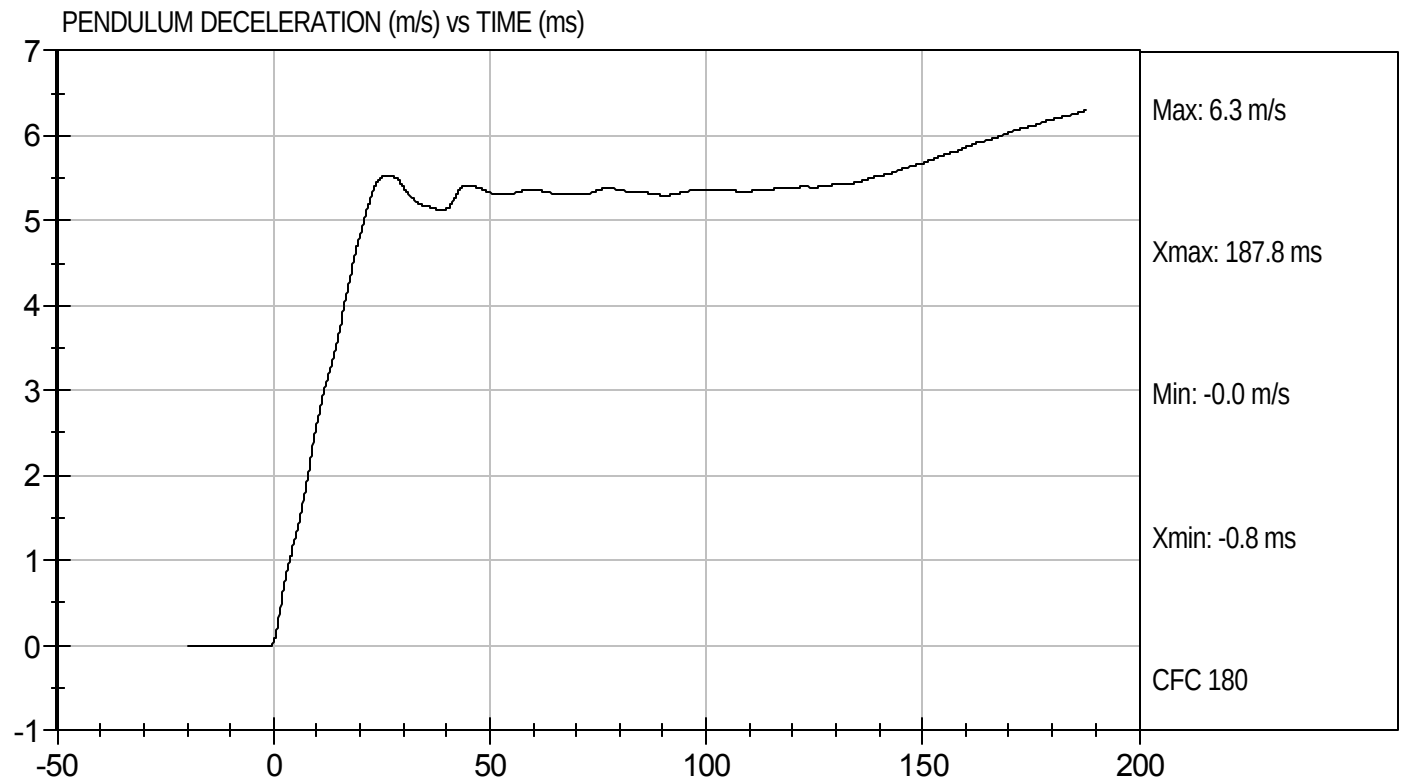
6/20/12
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D122282

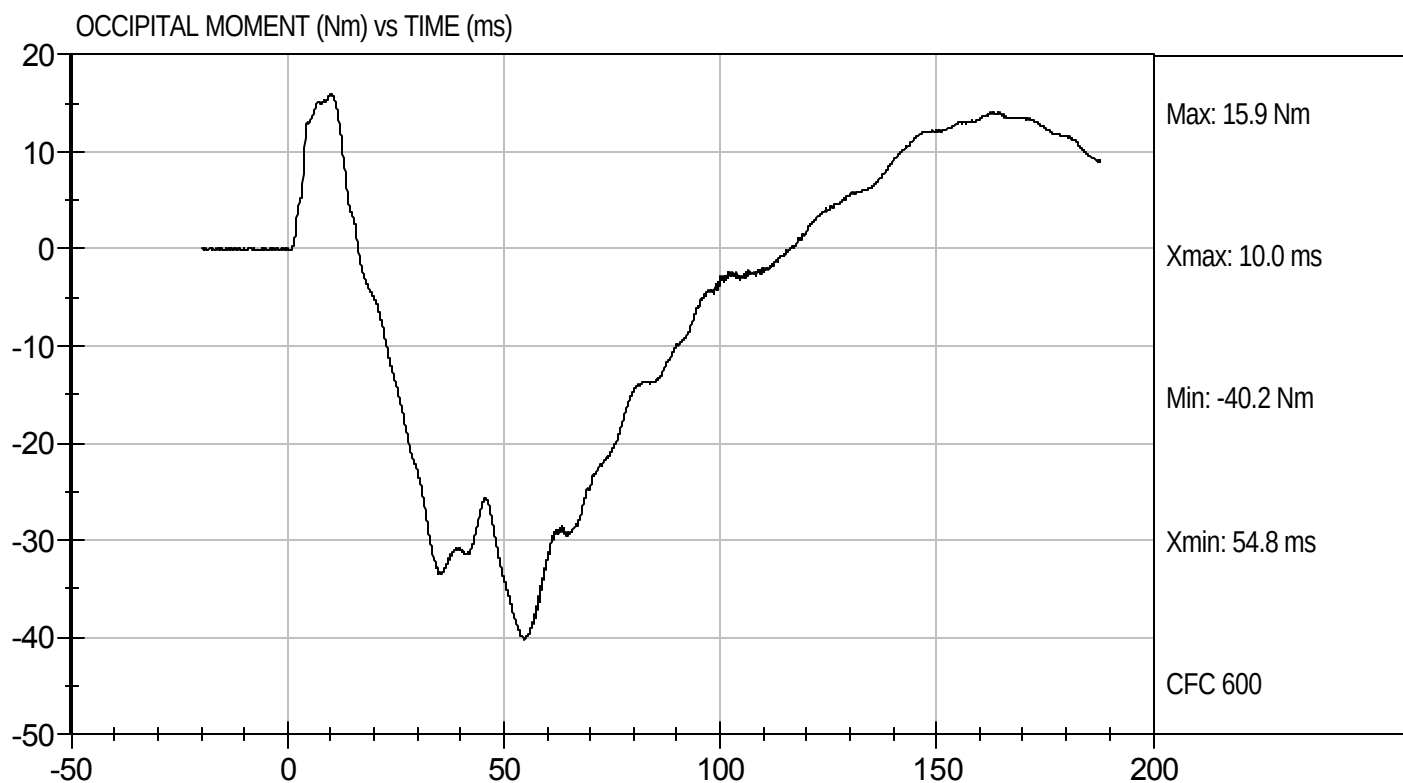
Test Date: 6/20/12
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D122282

Test Date: 6/20/12
Velocity: 18.32 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-11s BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D122283

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	52	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	30	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

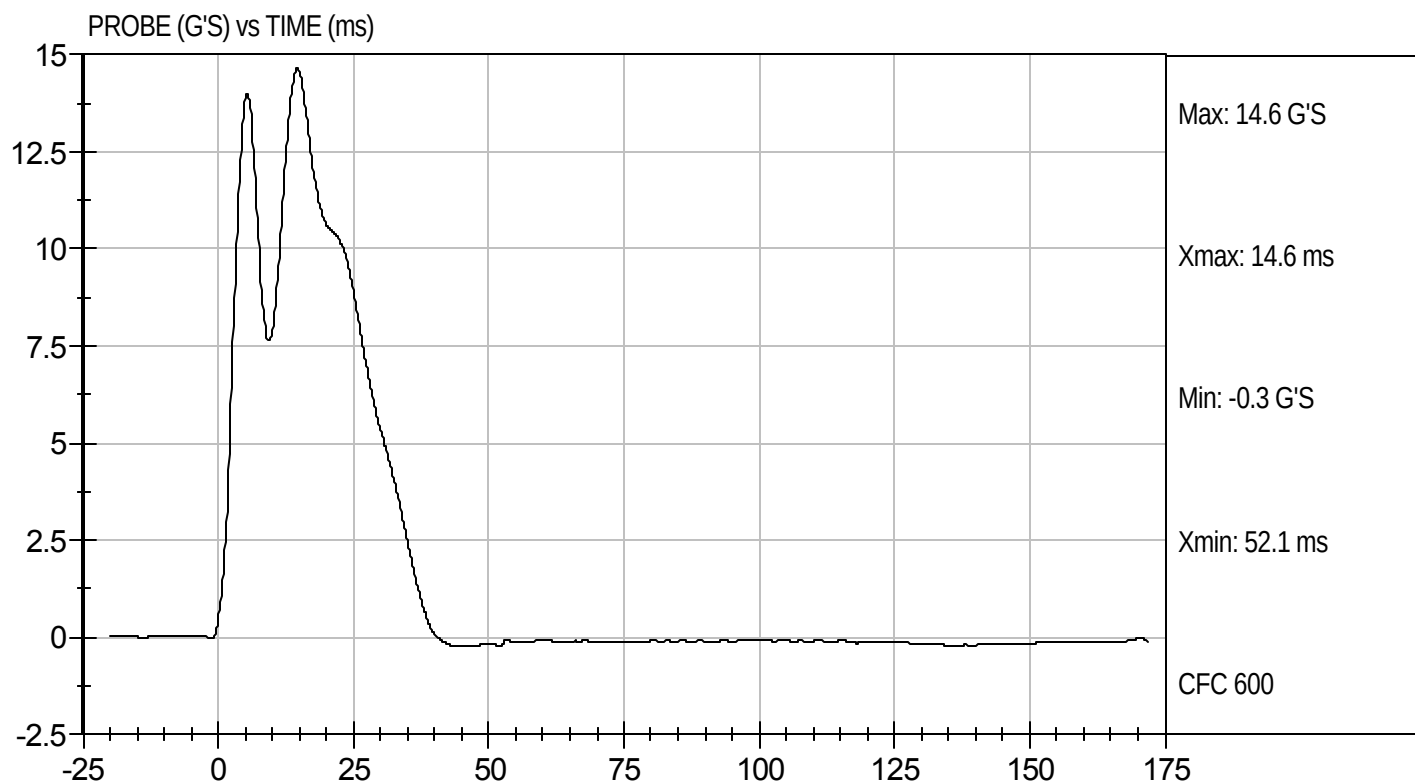
6/19/12
Test Date

David Winkelbauer
Approved By



Test Desc: Shoulder Impact
Component ID: D122283

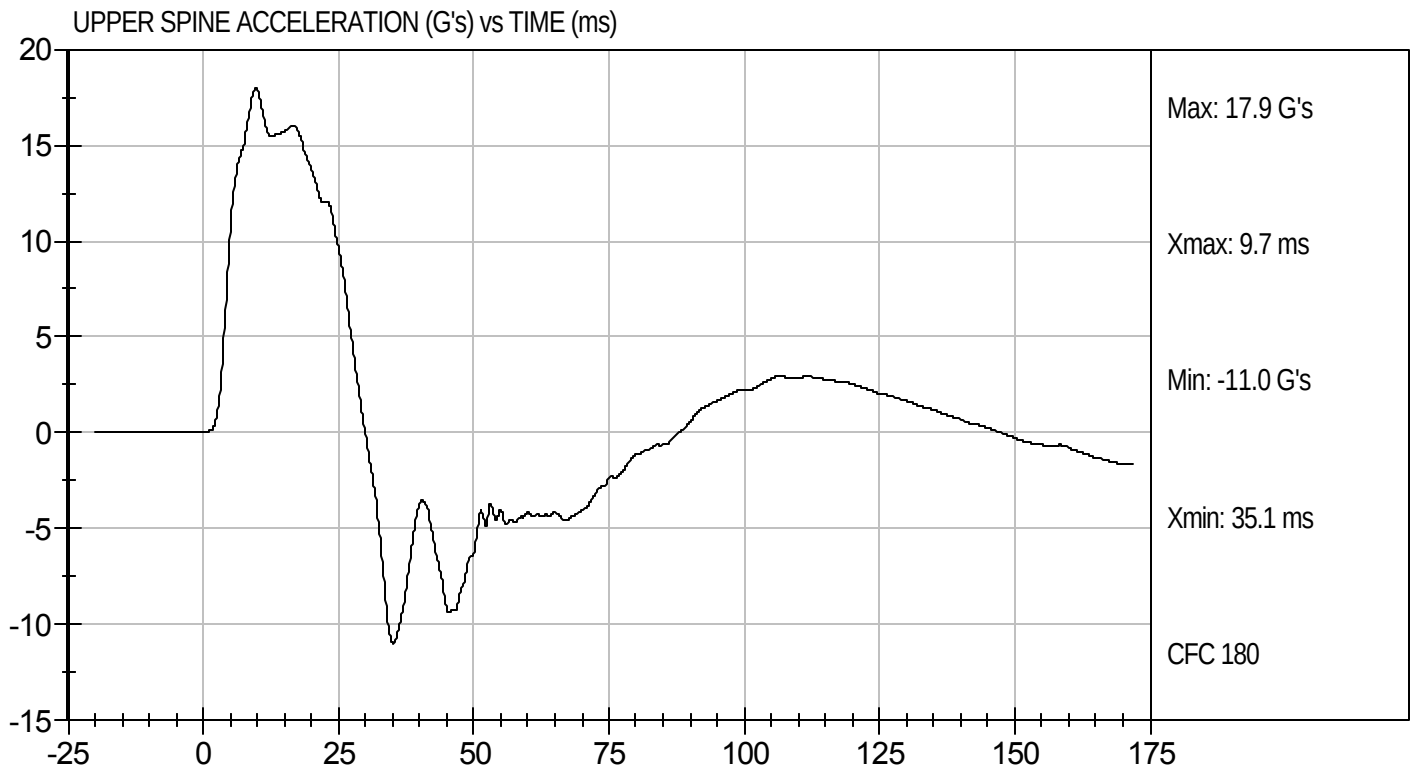
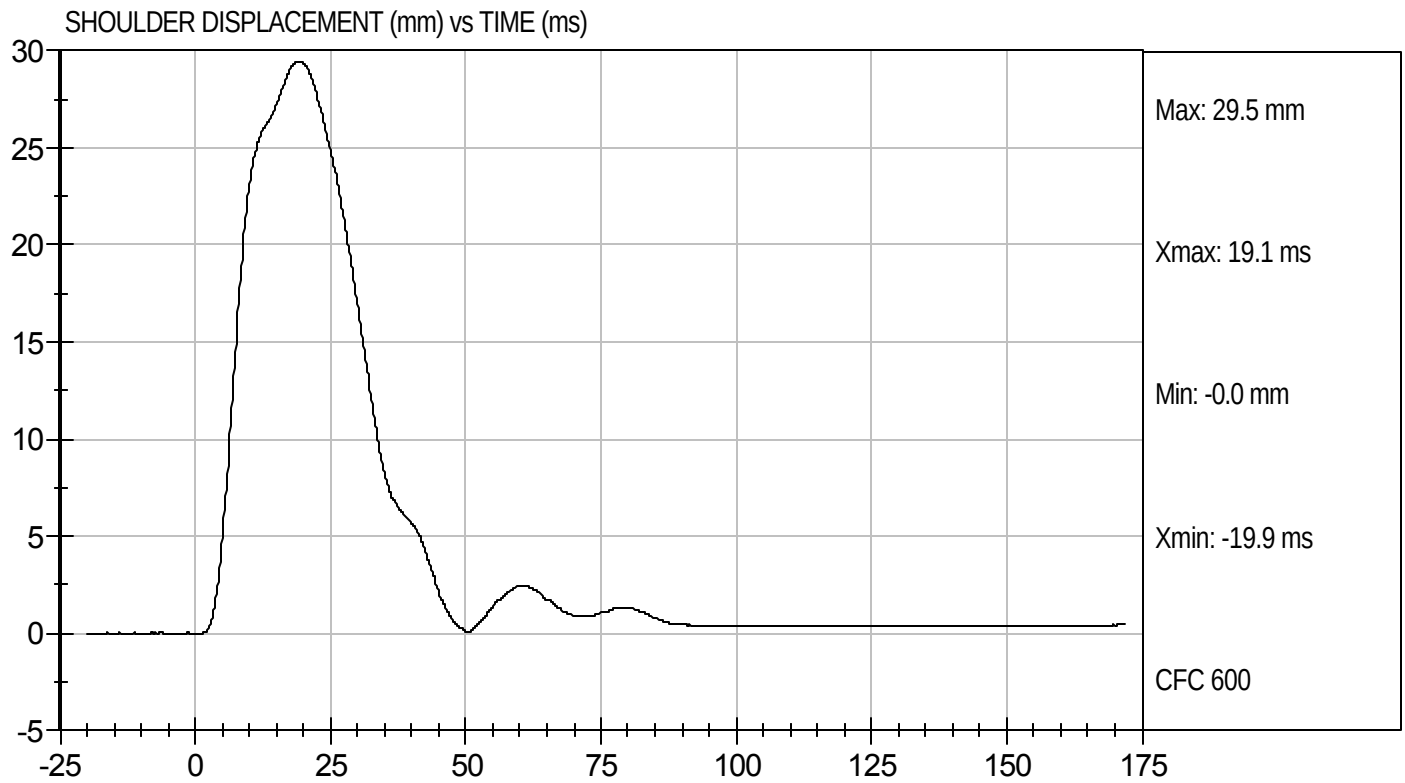
Test Date: 6/19/12
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Shoulder Impact
Component ID: D122283

Test Date: 6/19/12
Velocity: 14.25 ft/s, 4.34 m/s



MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D122284

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	31	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle Rib Displacement	mm	30 to 36	33	Pass
Lower Rib Displacement	mm	32 to 38	36	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	36	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results			Pass	


Laboratory Technician

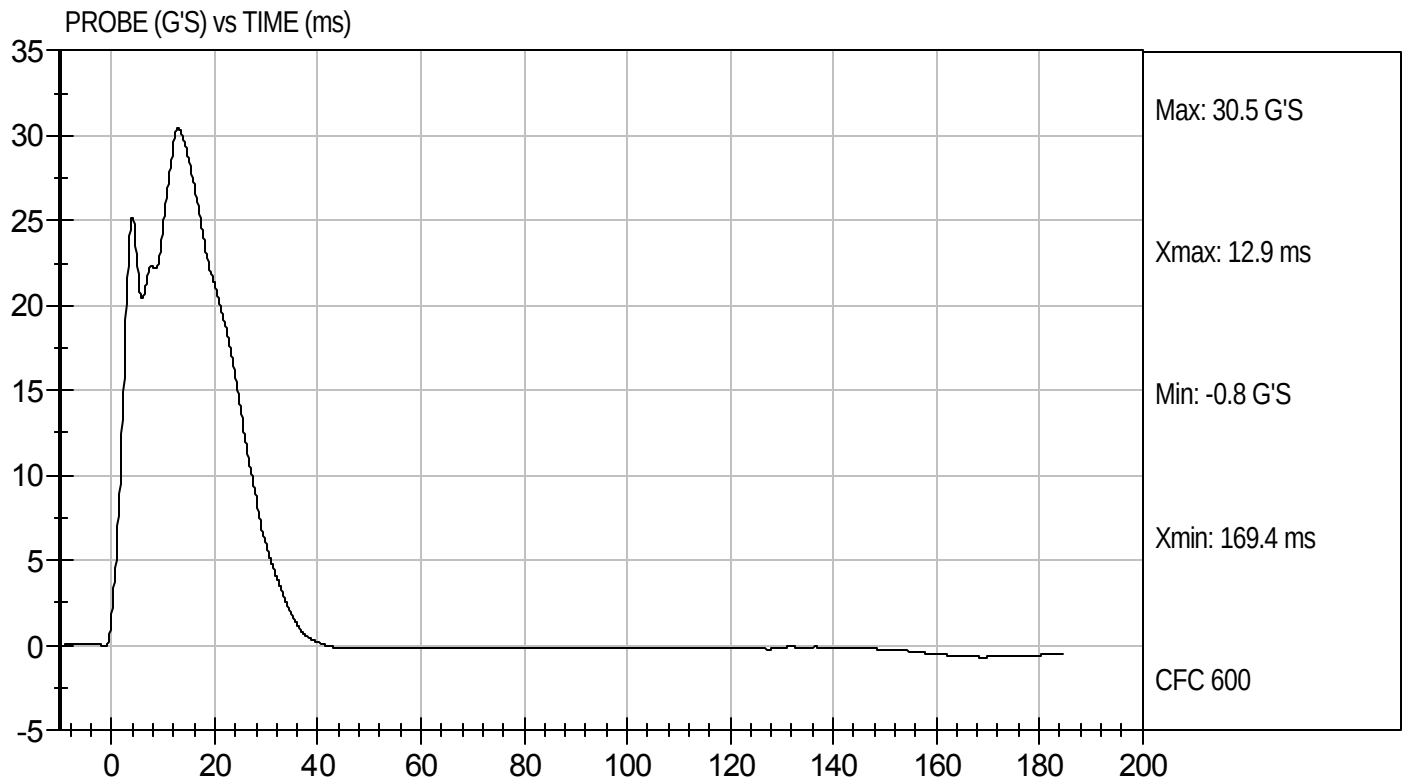
6/20/12
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D122284

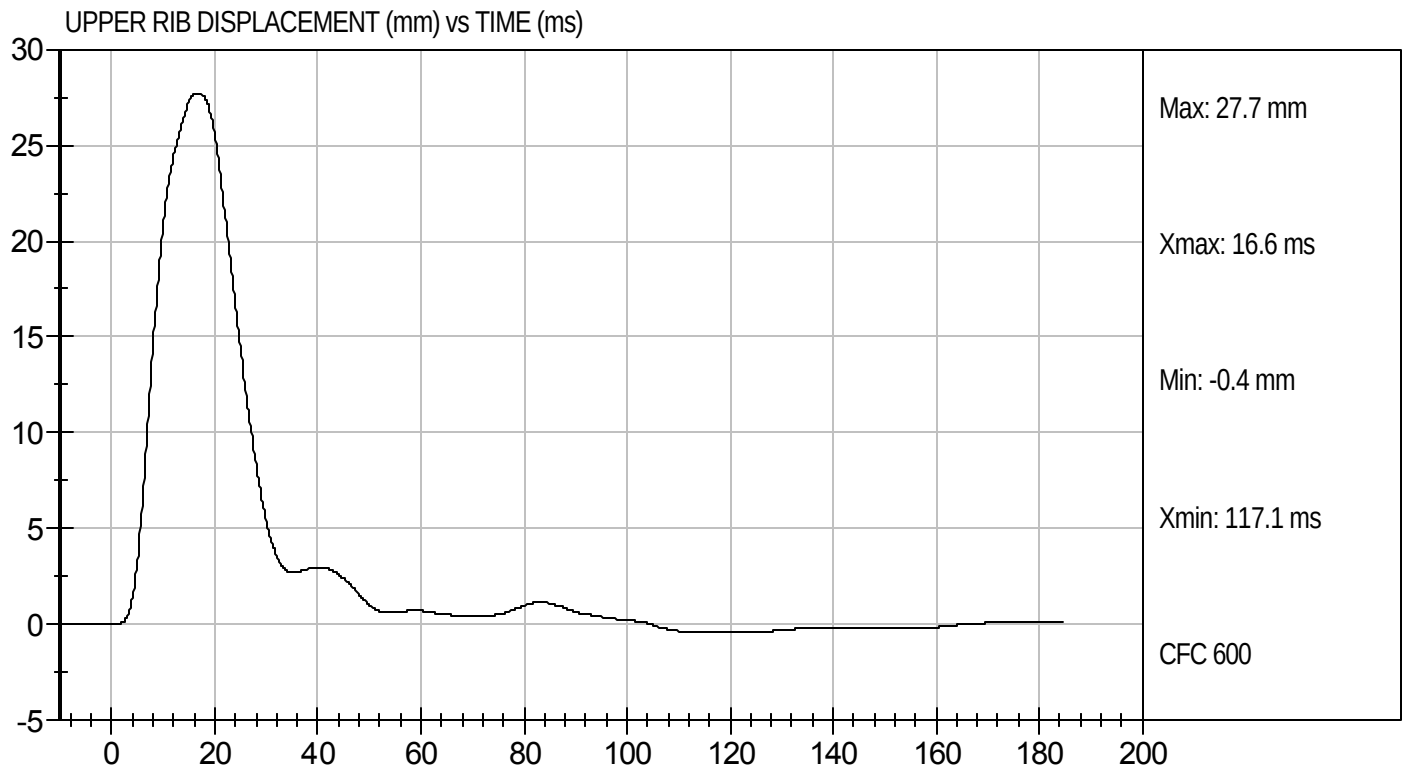
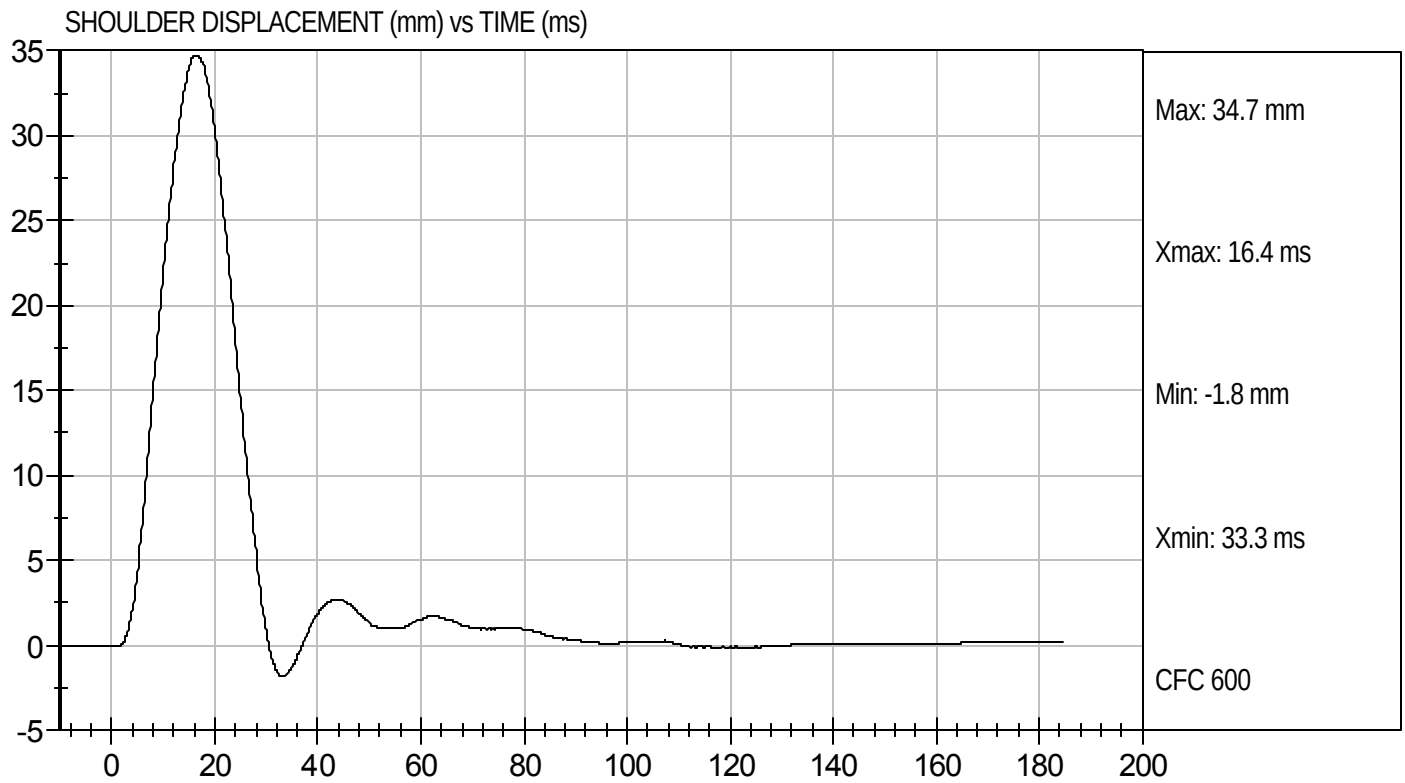
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D122284

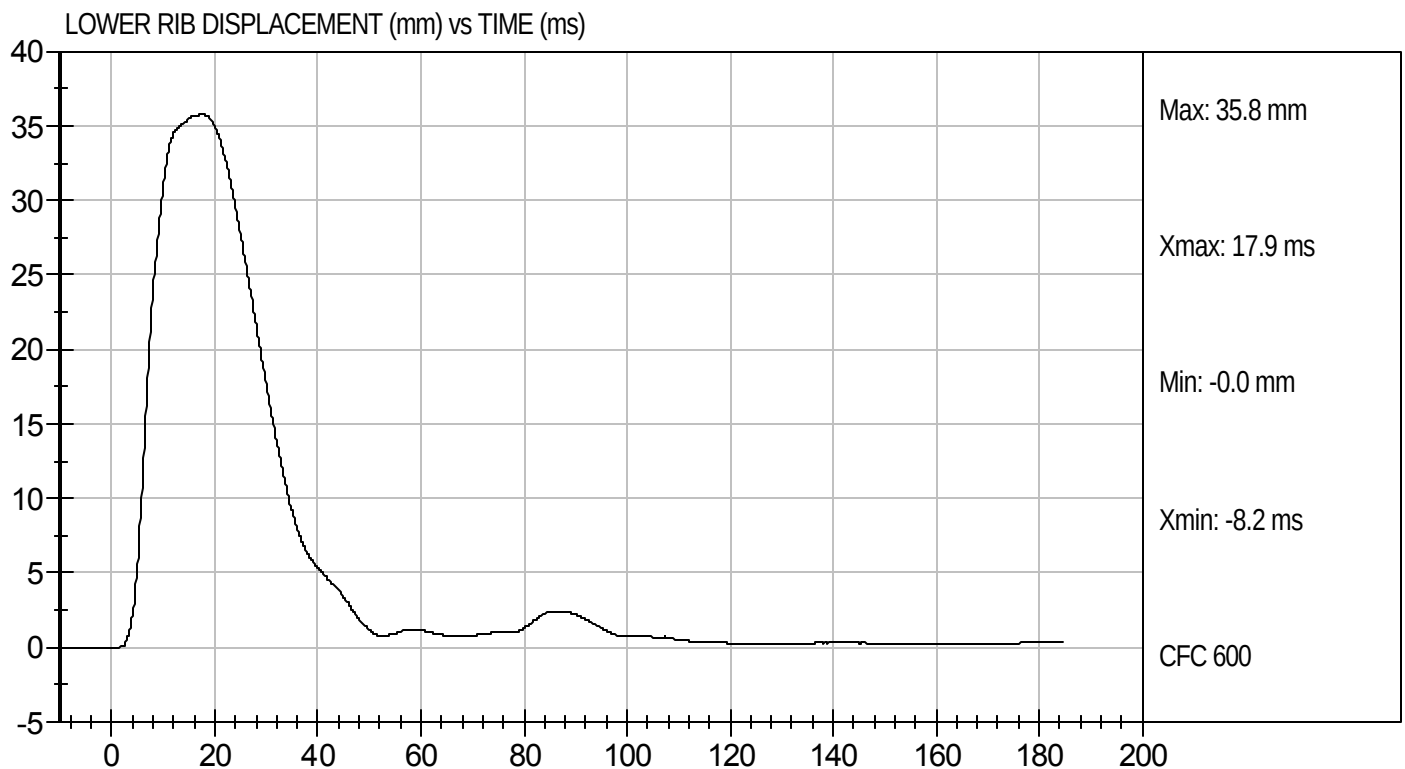
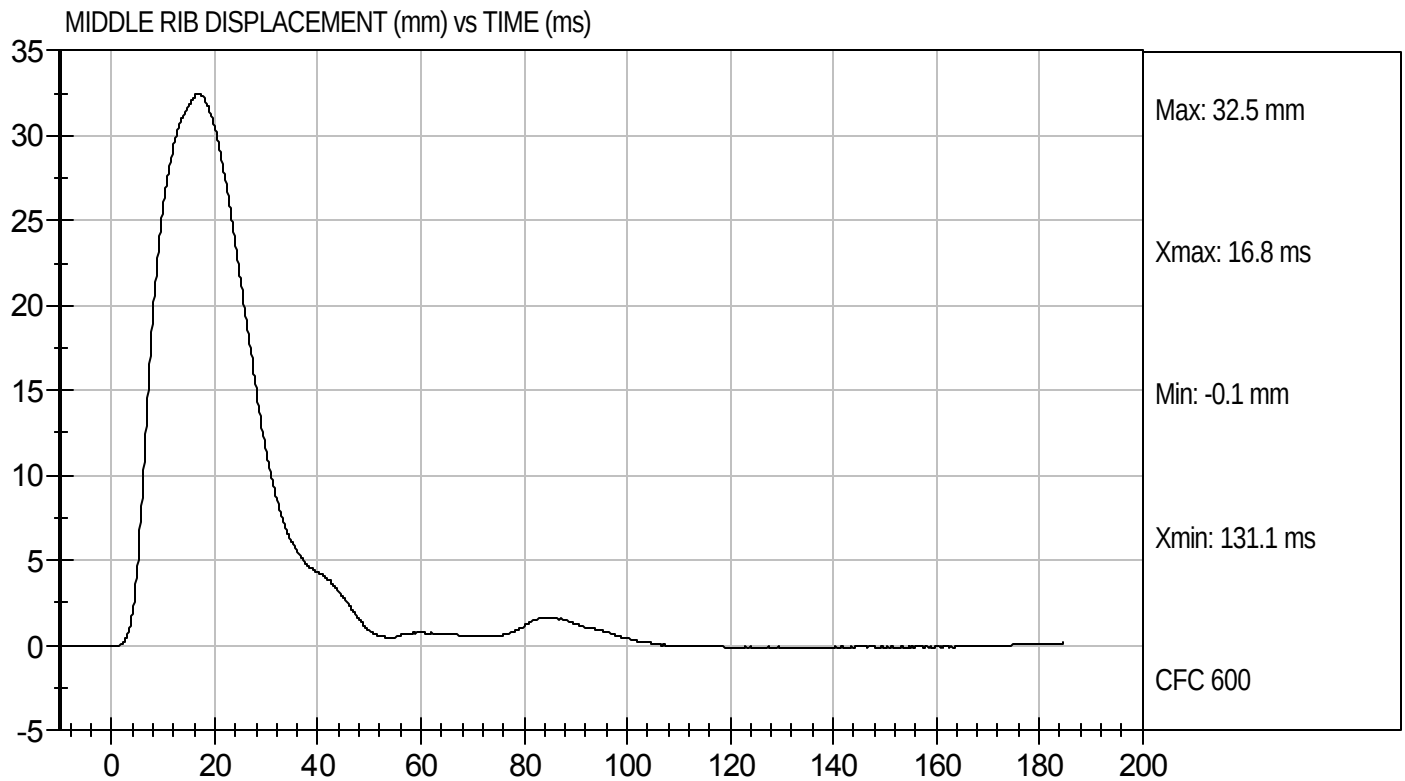
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D122284

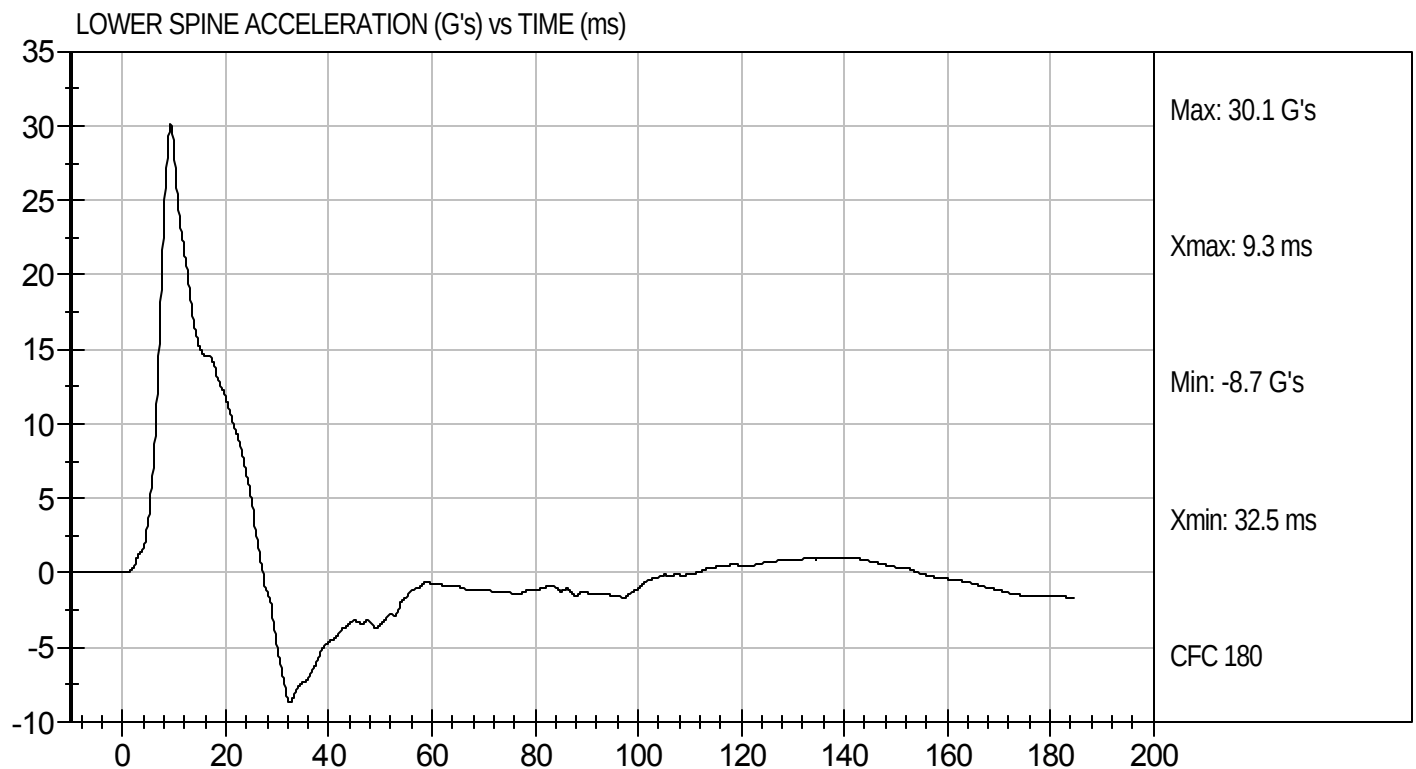
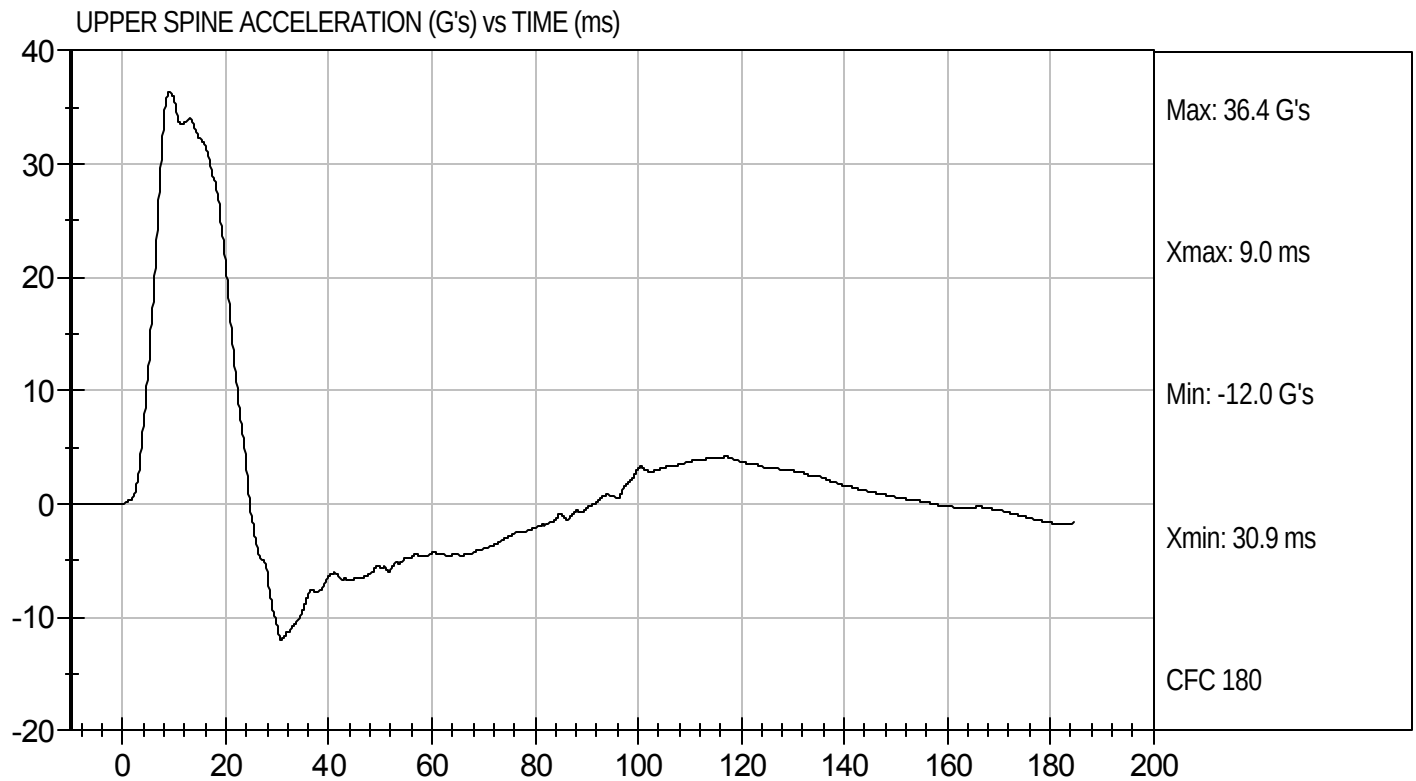
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D122284

Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D122285

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Force	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	35	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	42	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	13	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
Overall Test Results			Pass	


Laboratory Technician

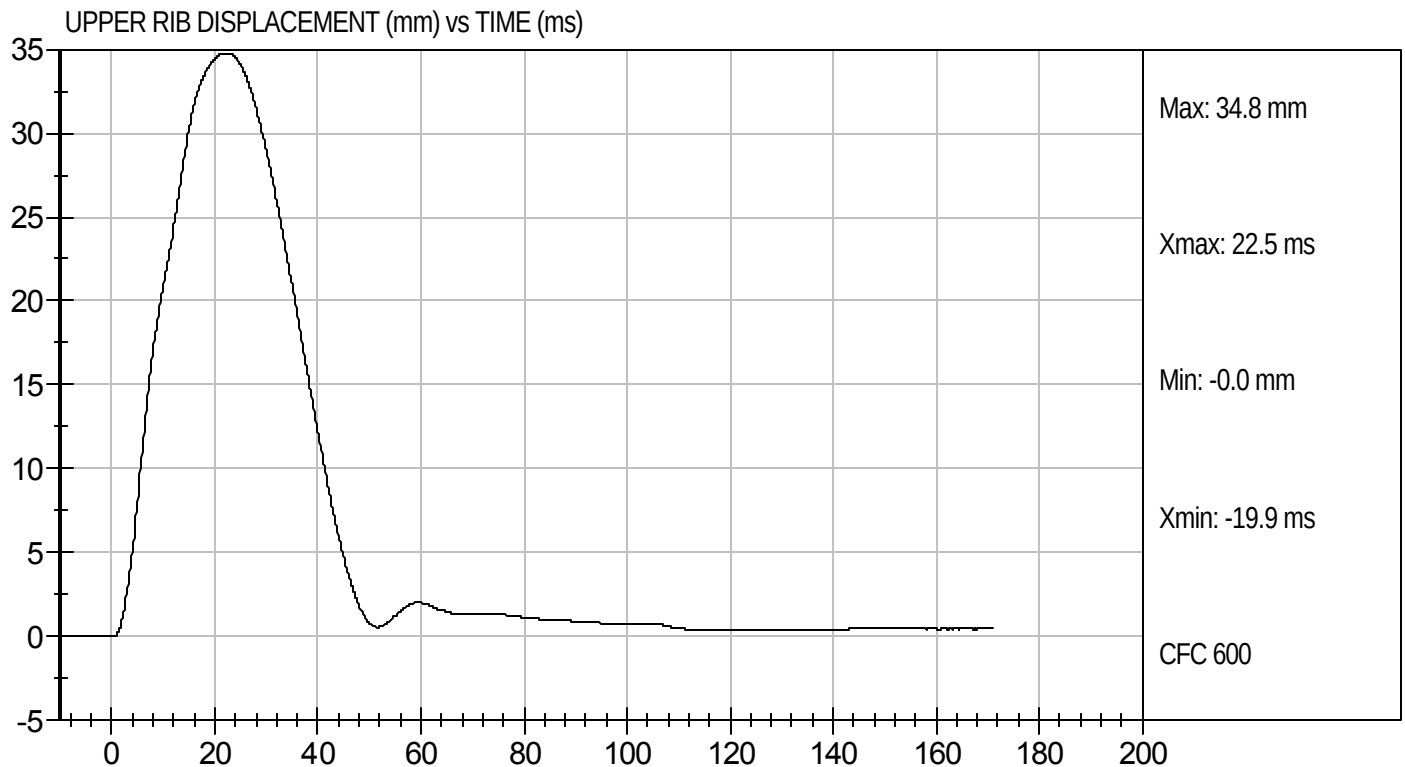
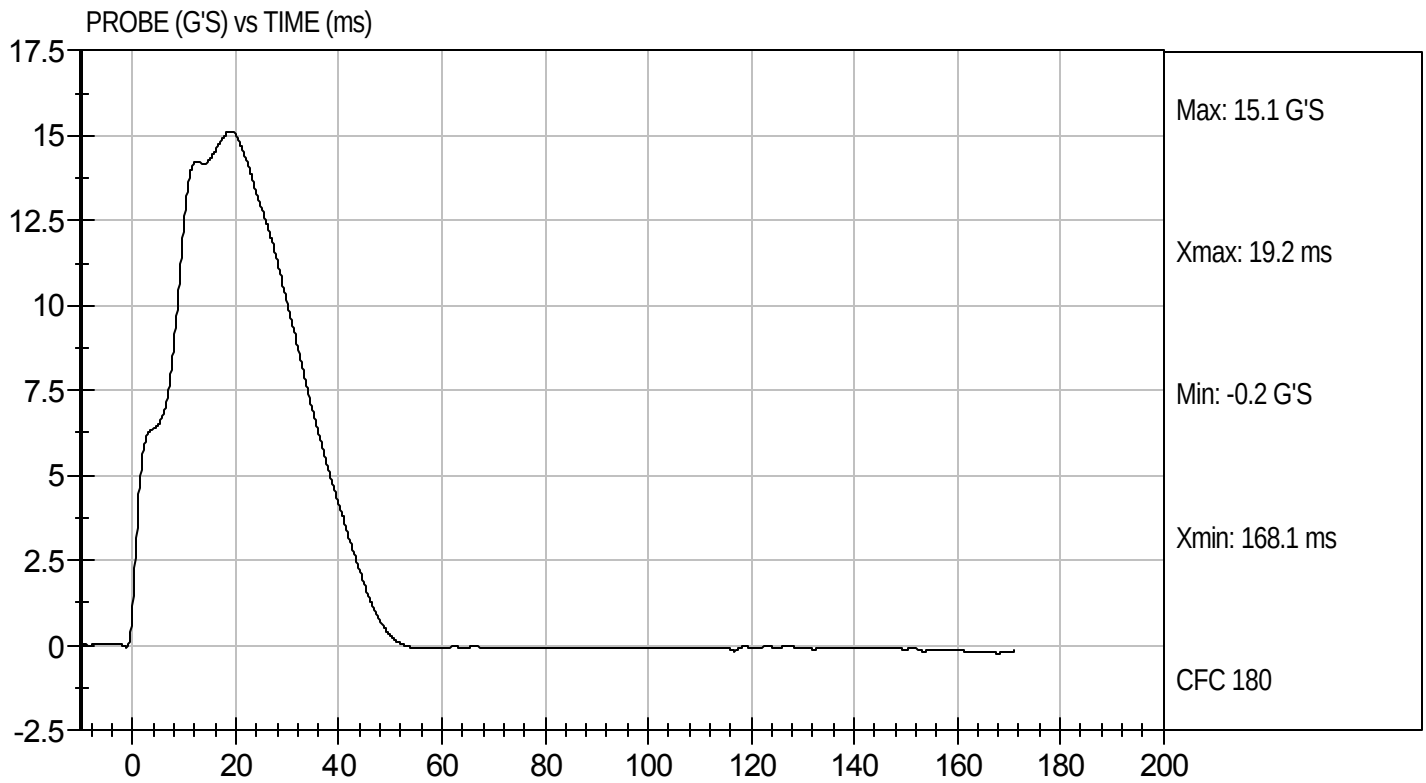
6/20/12
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D122285

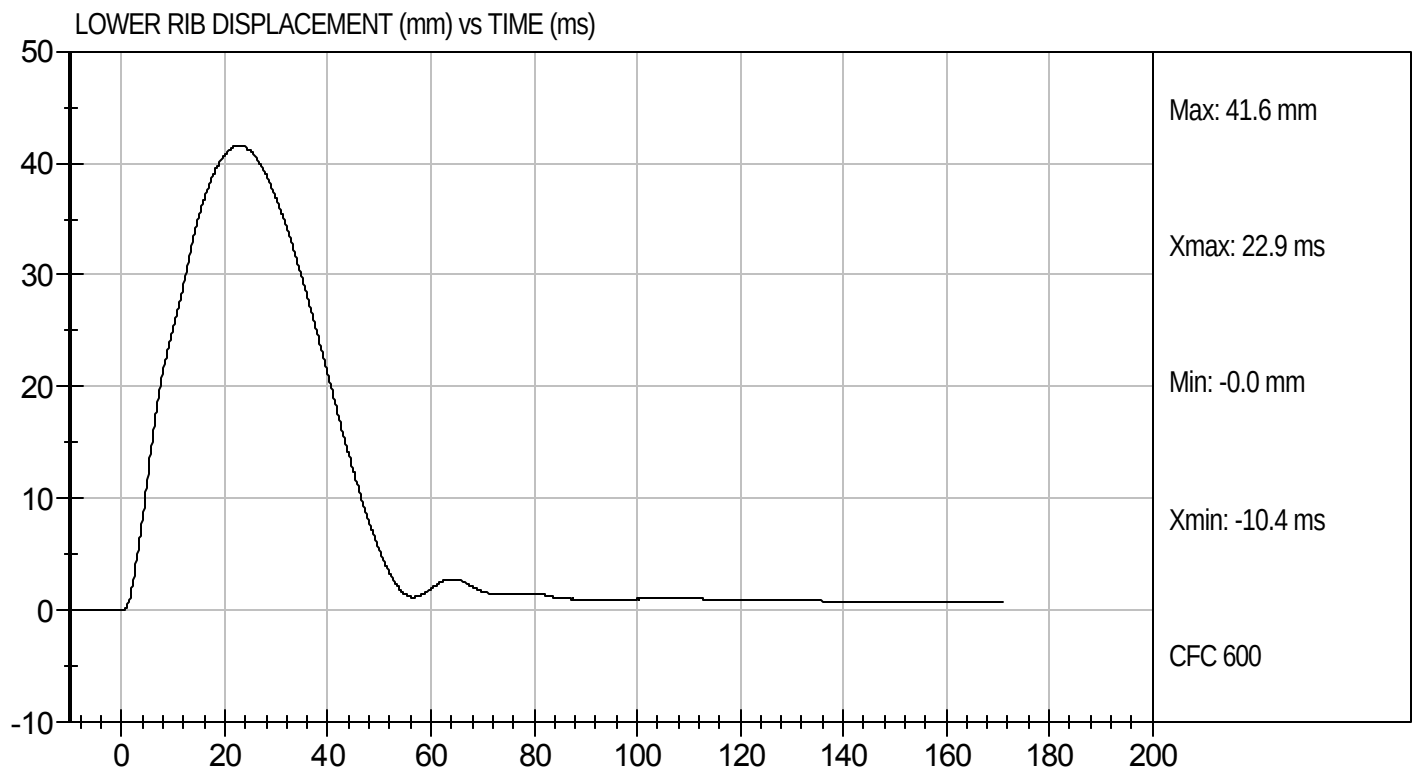
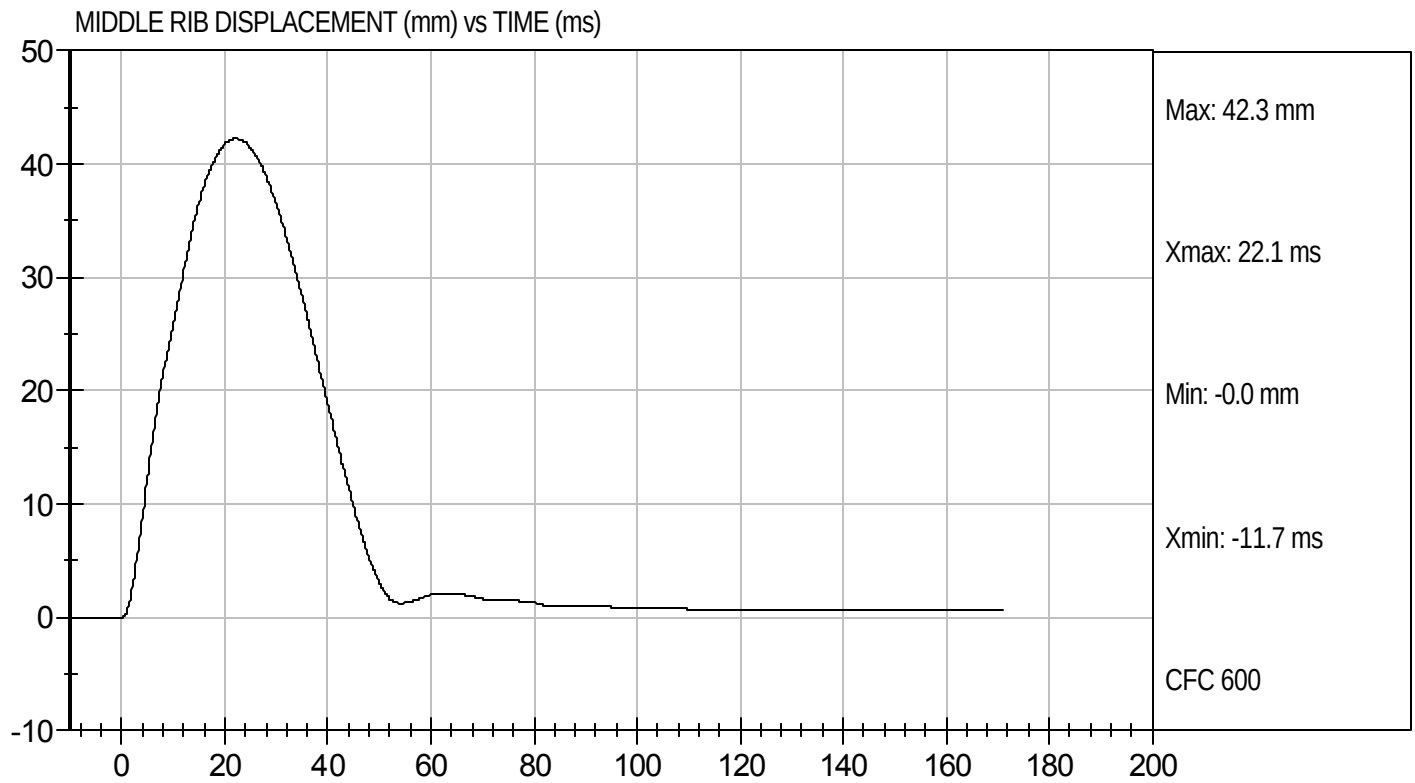
Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Thorax Without Arm
Component ID: D122285

Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s

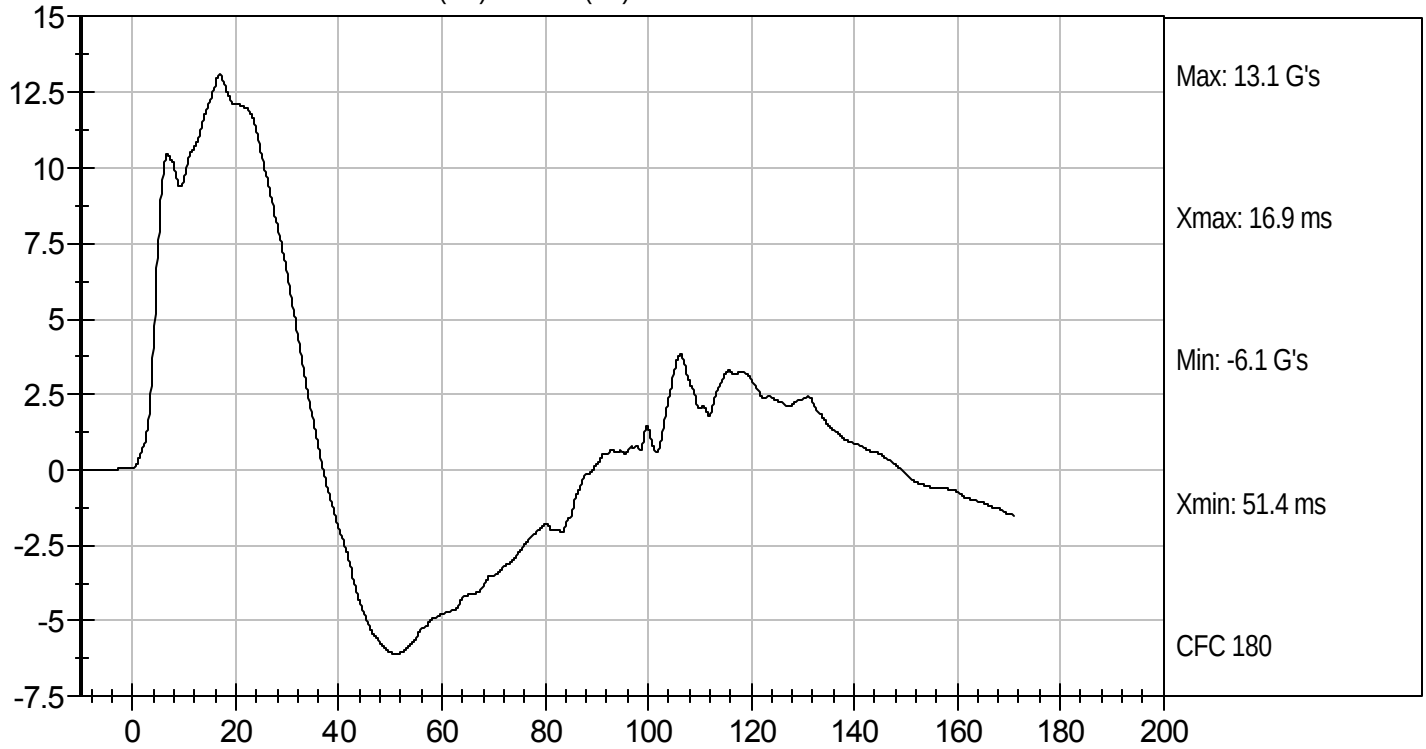




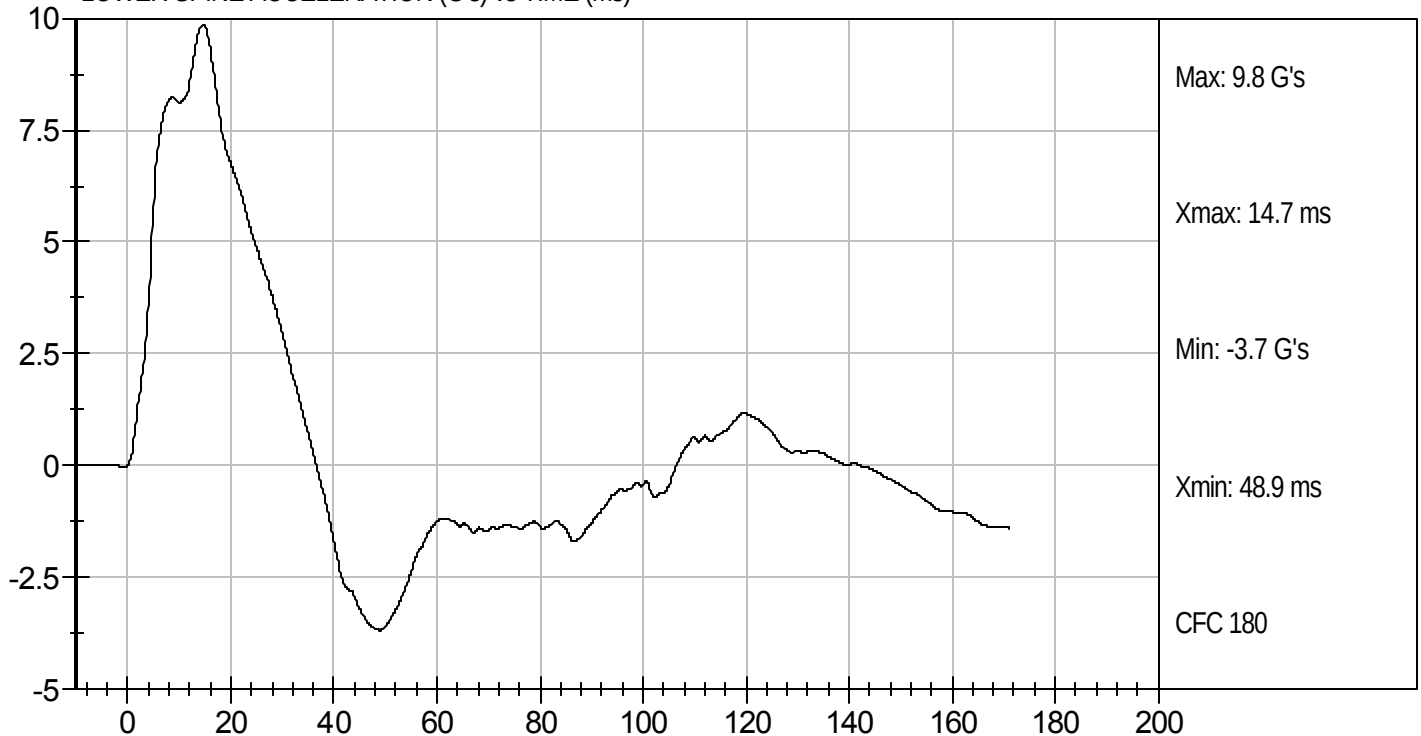
Test Desc: Thorax Without Arm
Component ID: D122285

Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s

UPPER SPINE ACCELERATION (G's) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION
ABDOMINAL IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D122286

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	50	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	12 to 16	13	Pass
Upper Rib Displacement	mm	36 to 47	42	Pass
Lower Rib Displacement	mm	33 to 44	40	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results			Pass	


Laboratory Technician

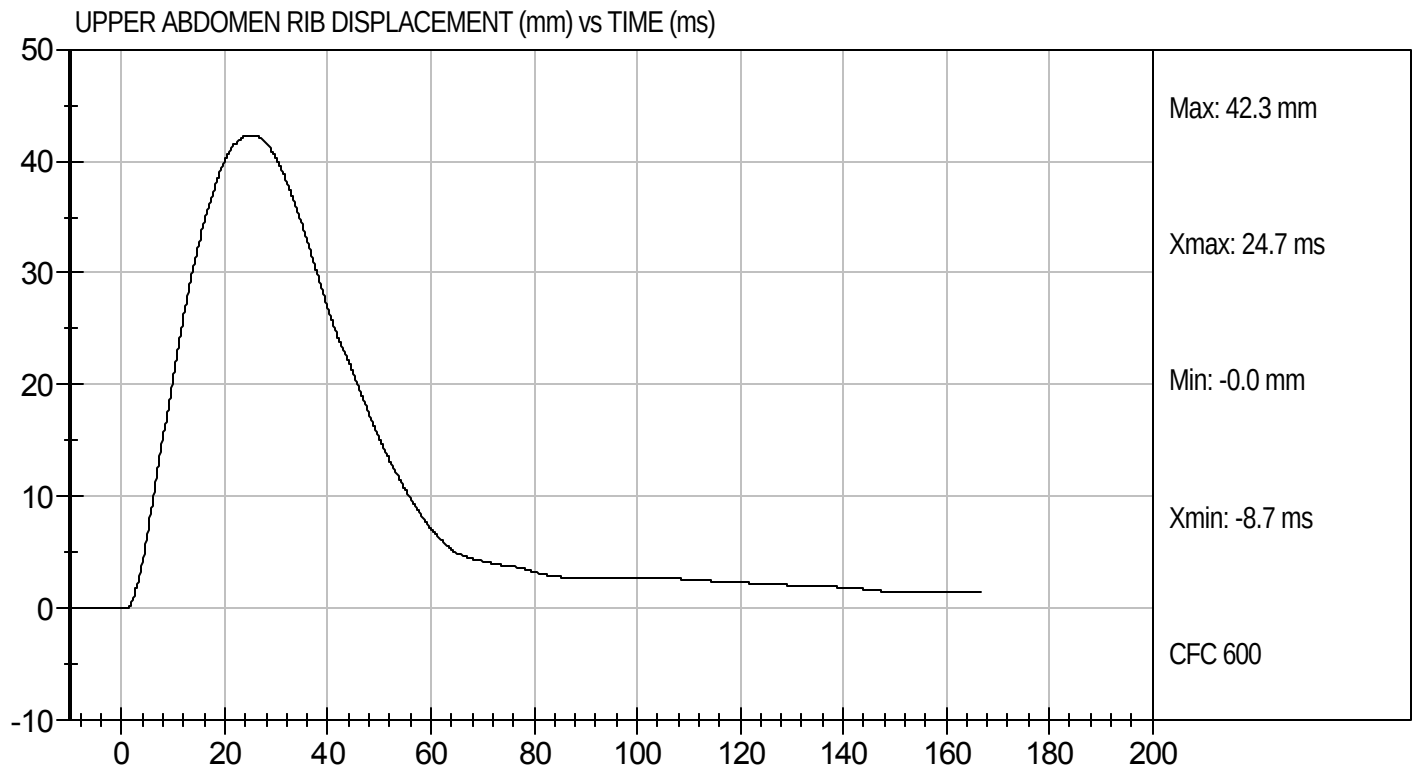
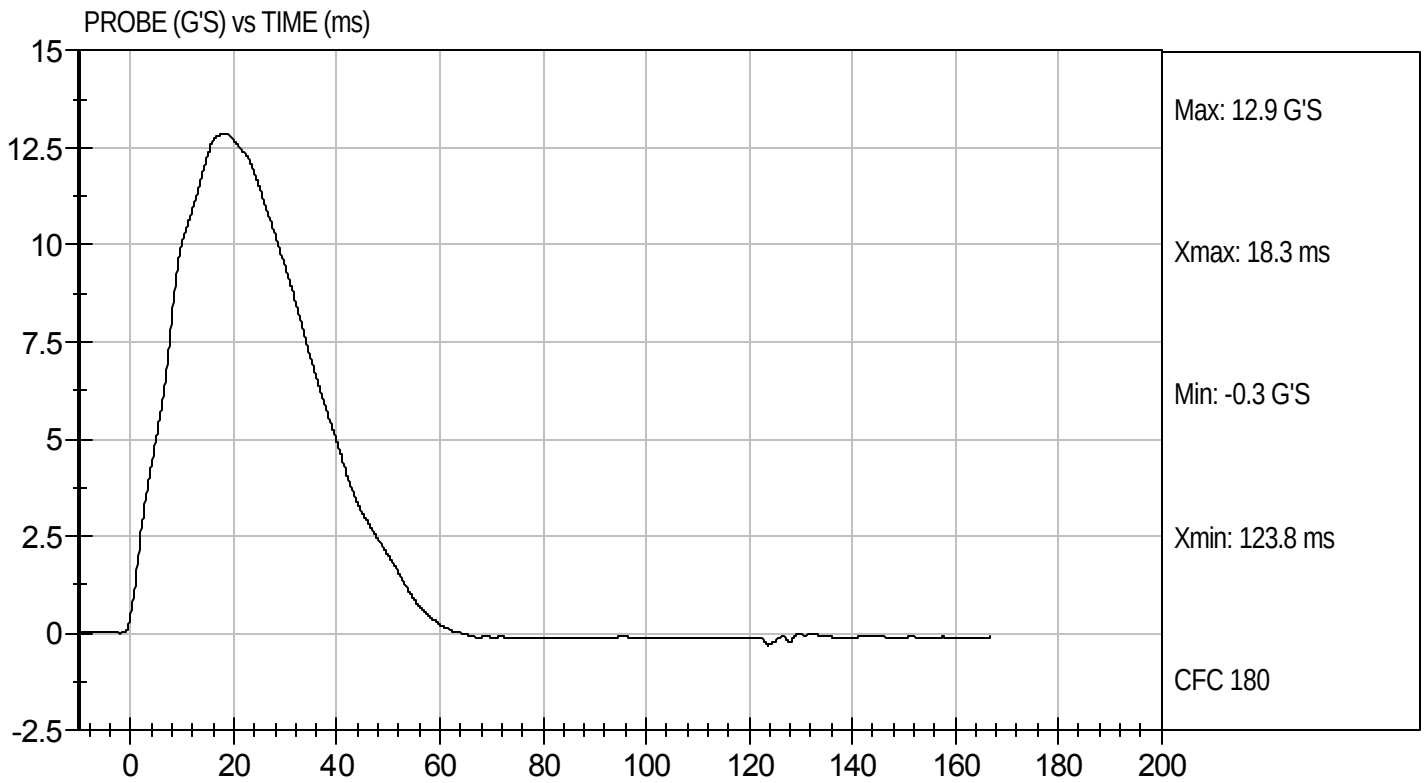
6/20/12
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D122286

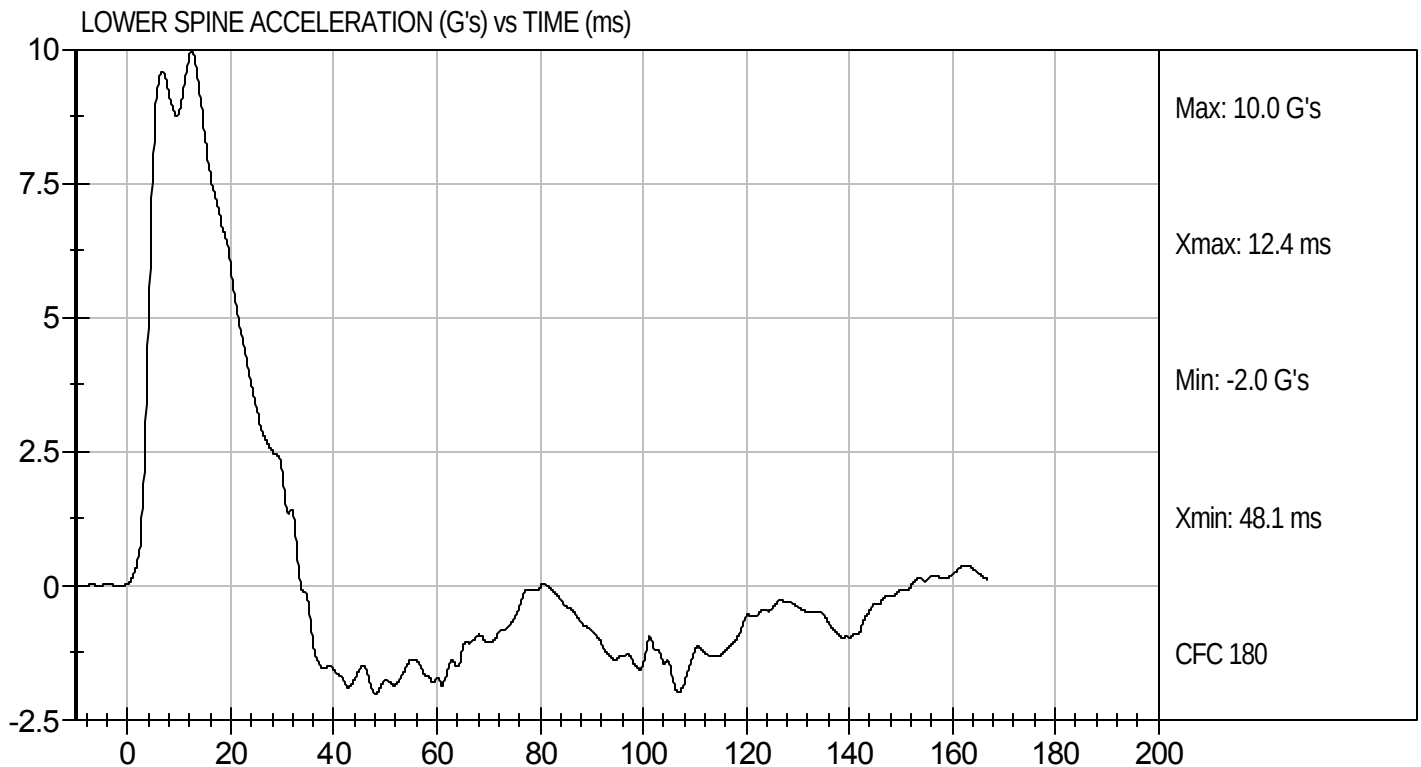
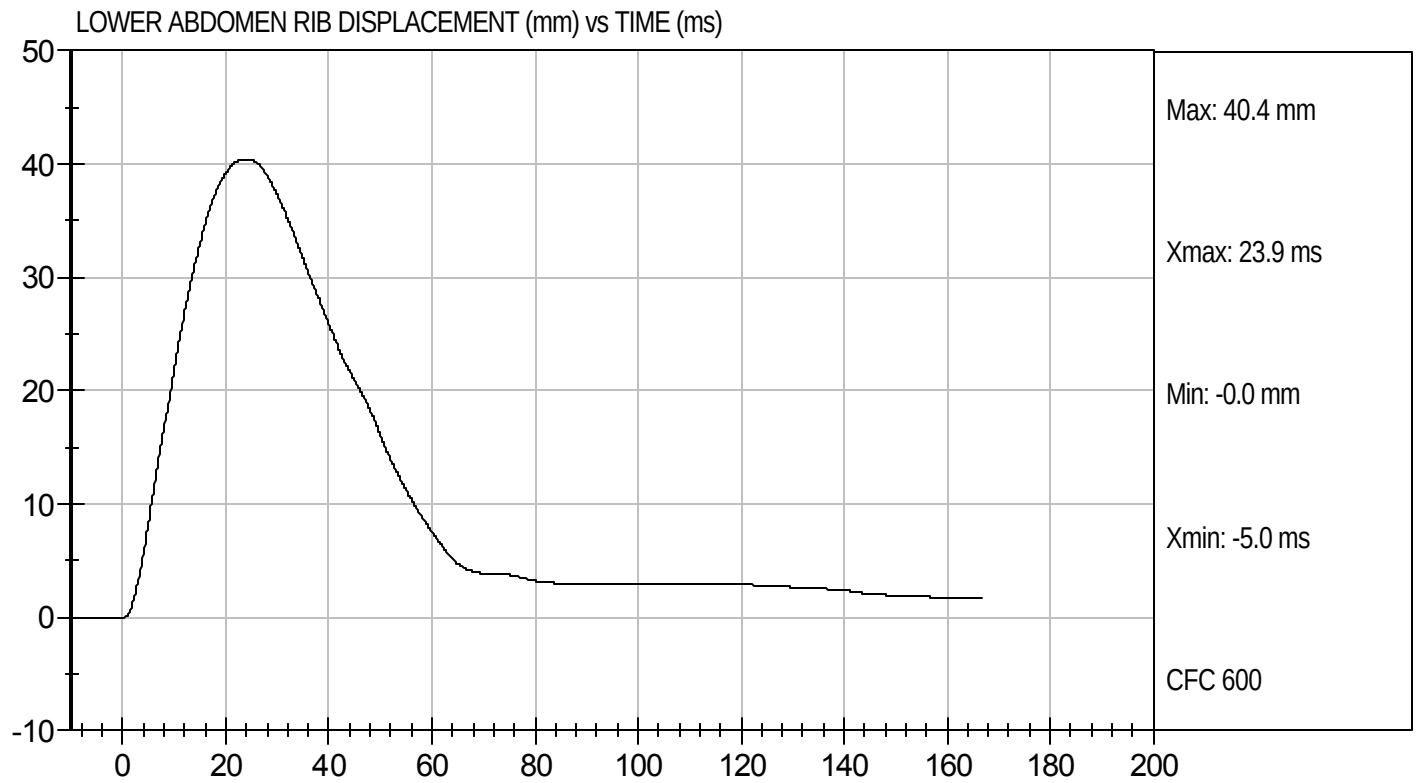
Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Abdomen Impact
Component ID: D122286

Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s



MGA RESEARCH CORPORATION
PELVIS IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D122287

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	50	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	43	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	42	Pass
Peak Acetabulum Force	N	3600 to 4300	3983	Pass
Overall Test Results				Pass


Laboratory Technician

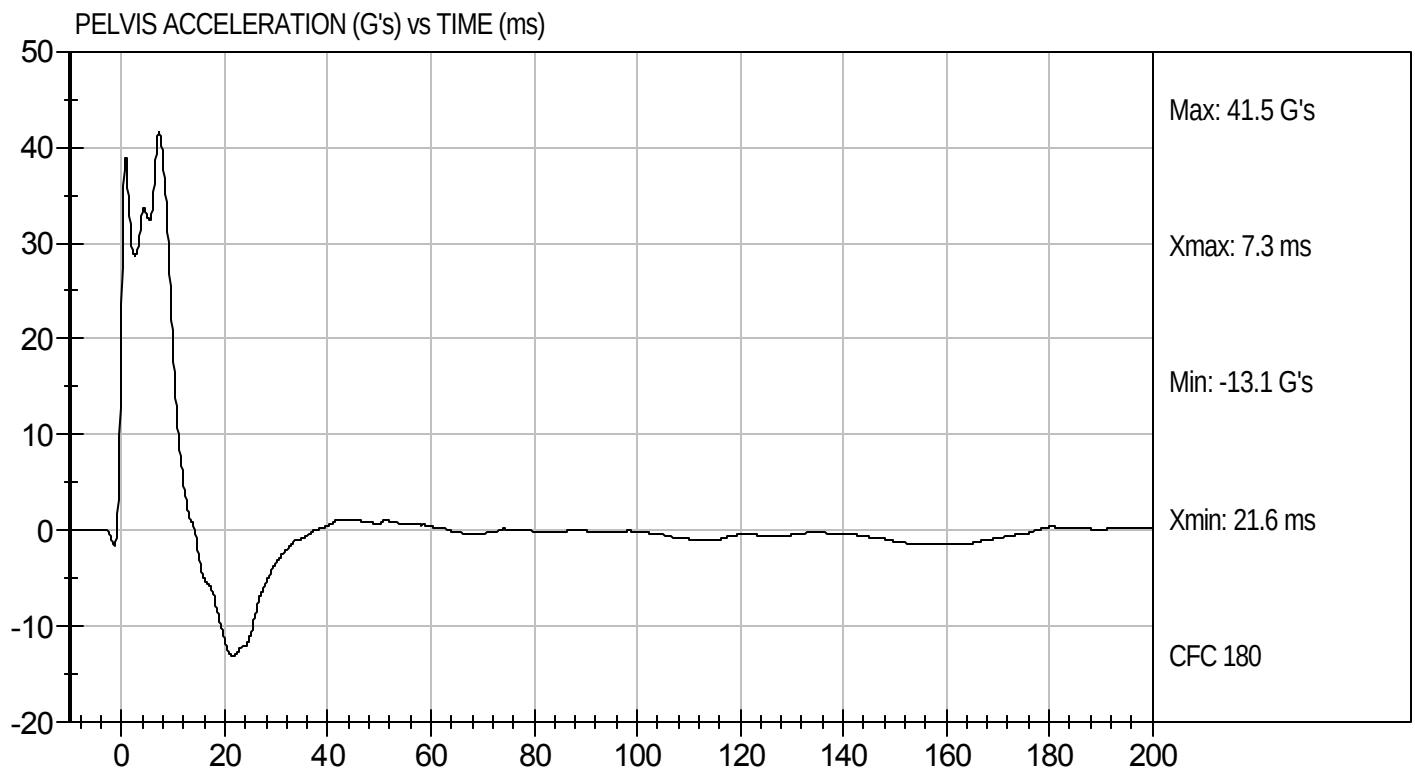
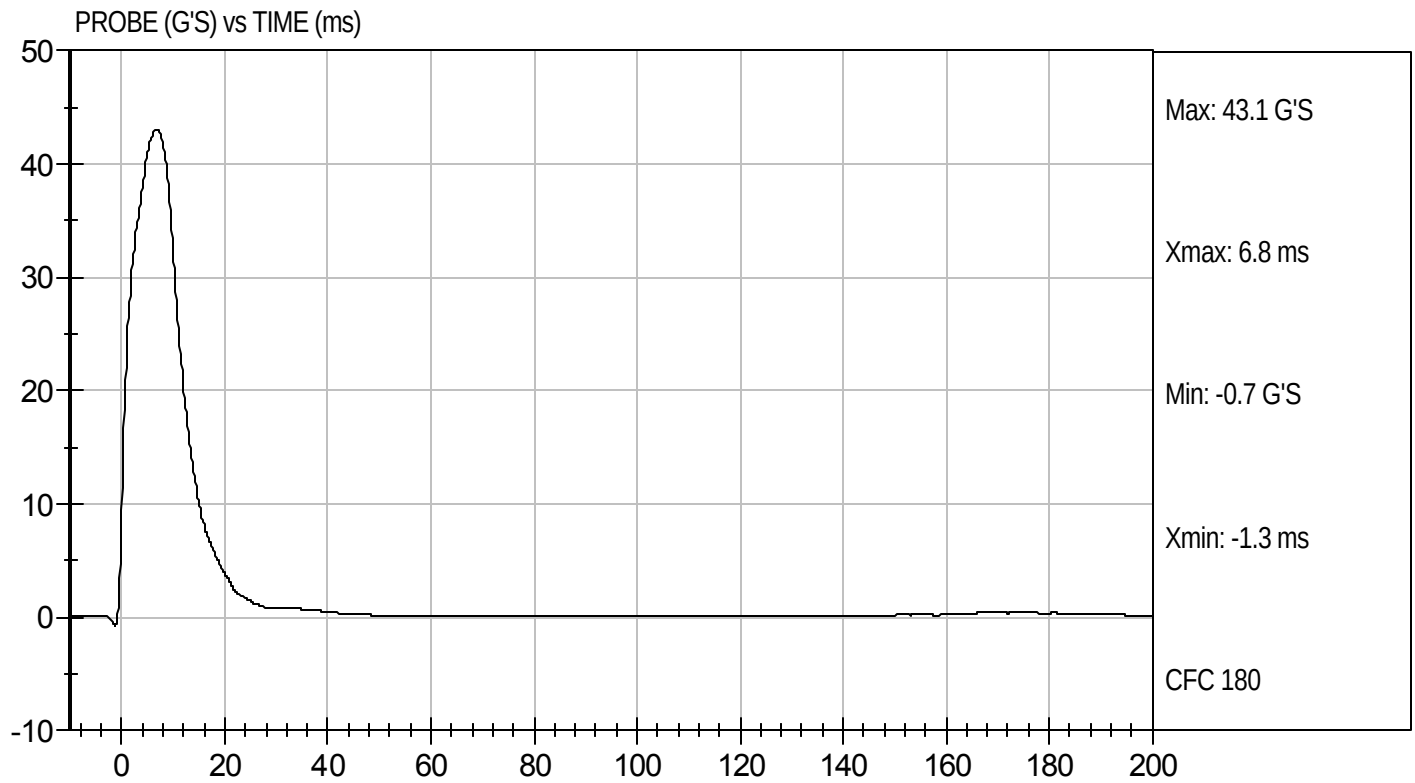
6/20/12
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D122287

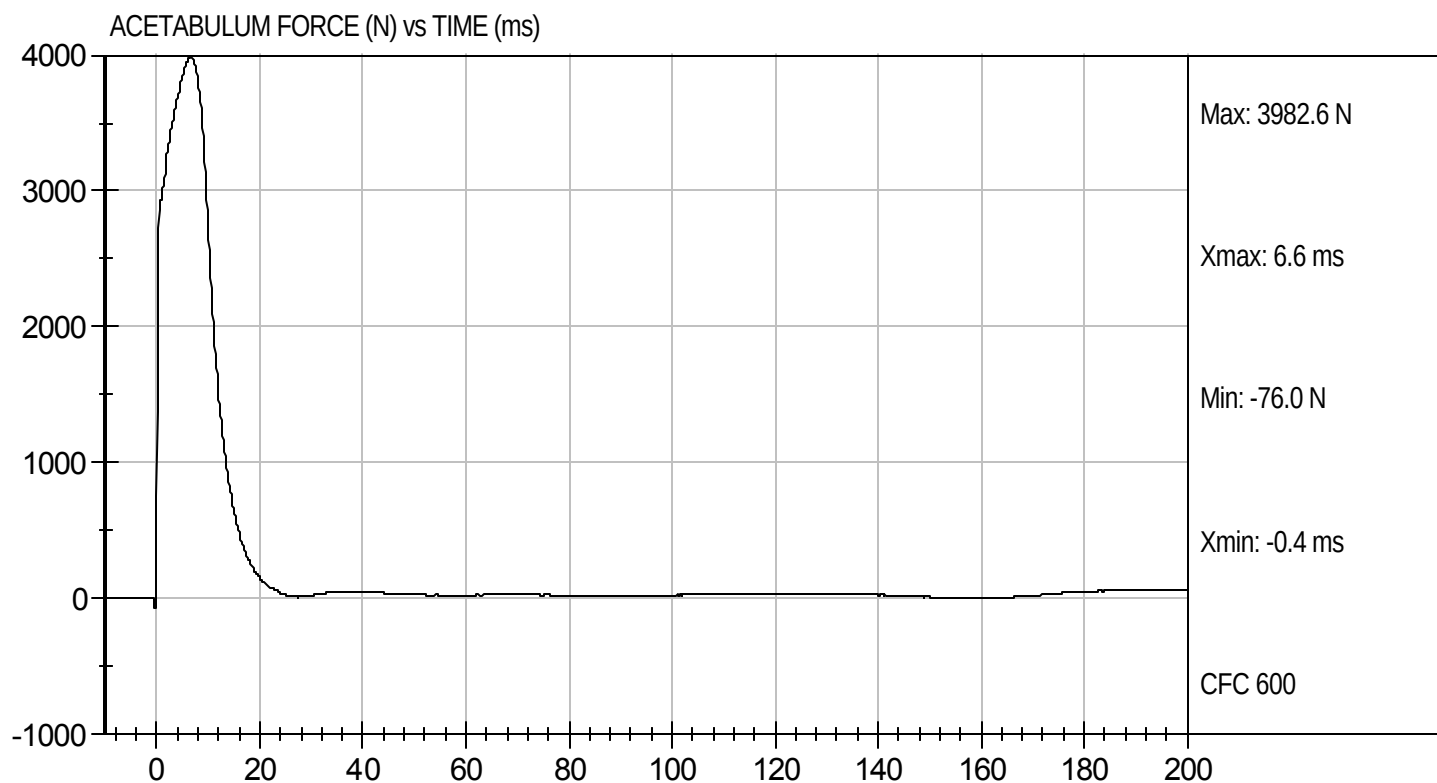
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D122287

Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D122288

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	50	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4615	Pass
Overall Test Results			Pass	


Laboratory Technician

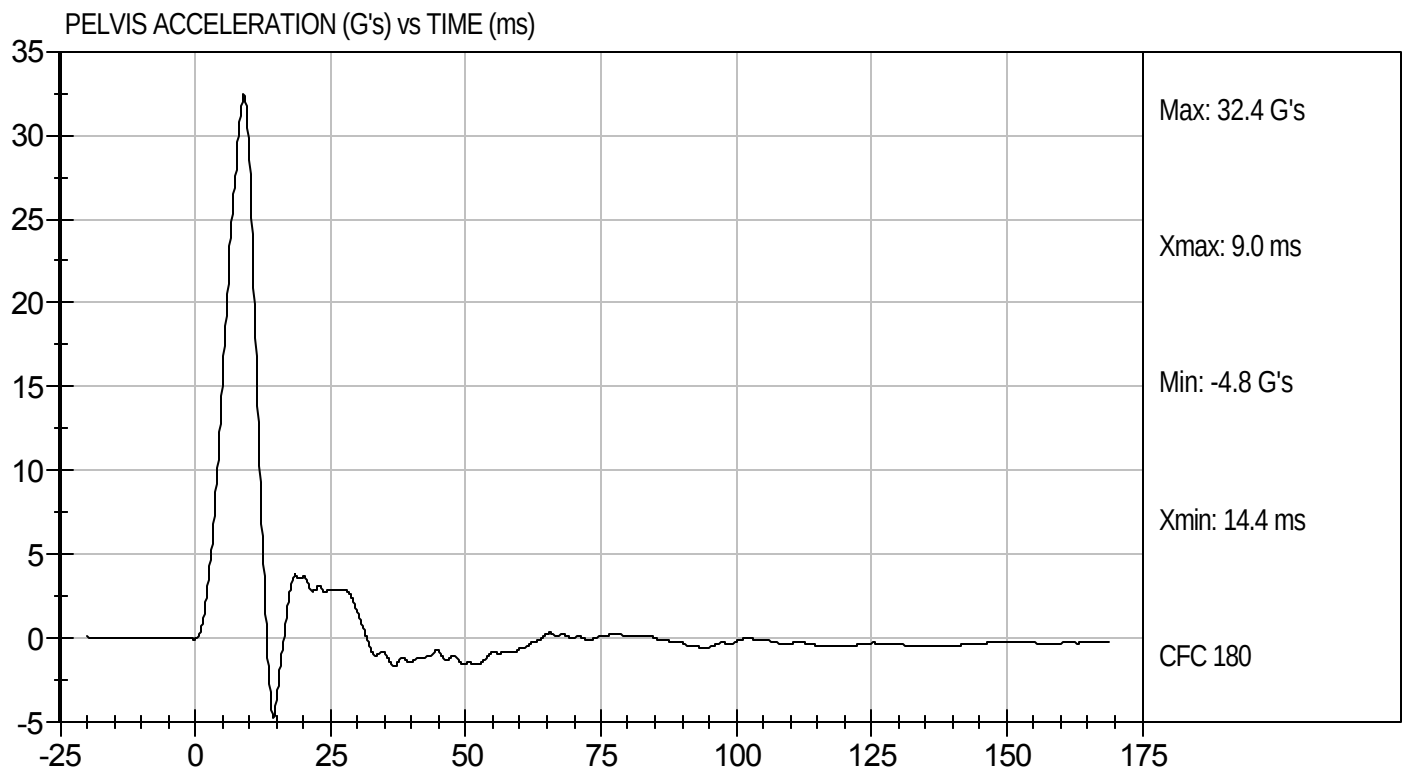
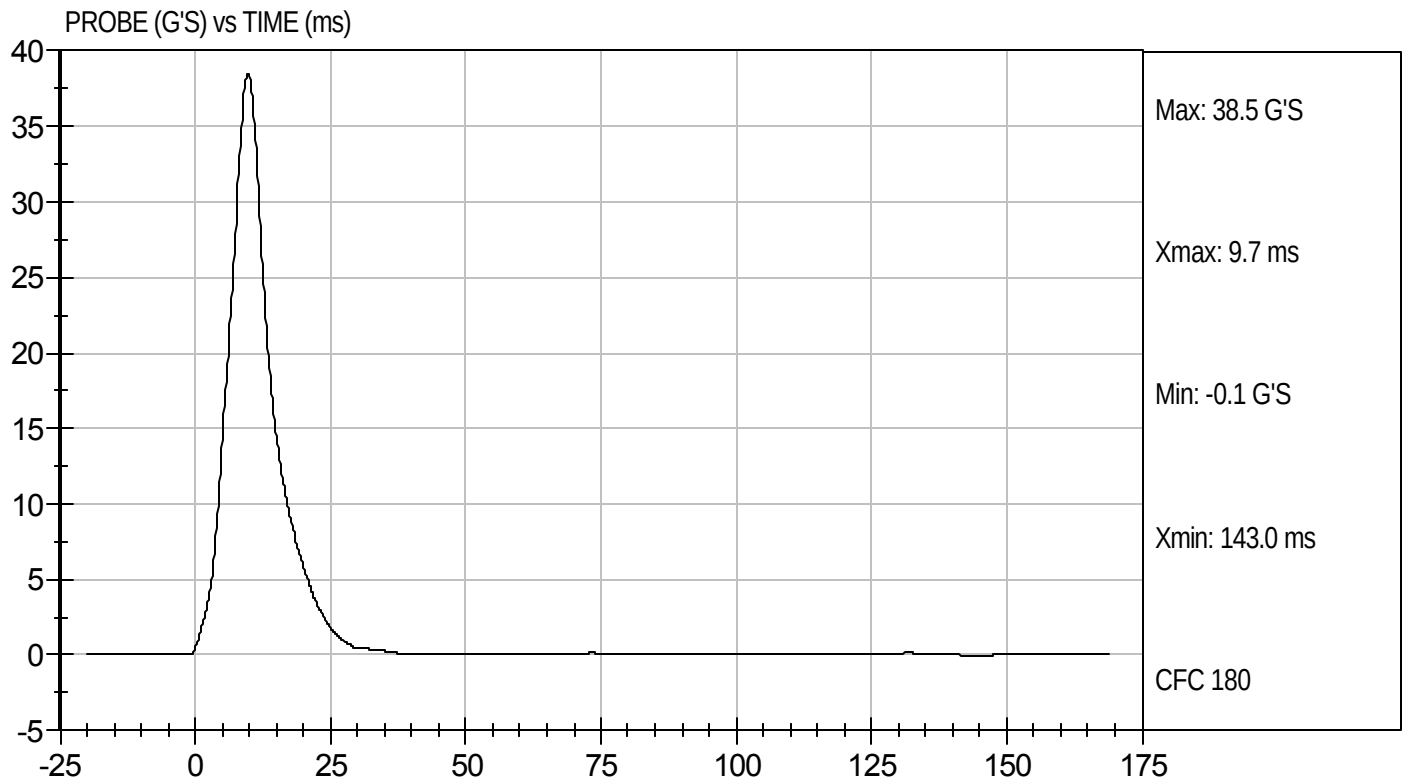
6/20/12
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D122288

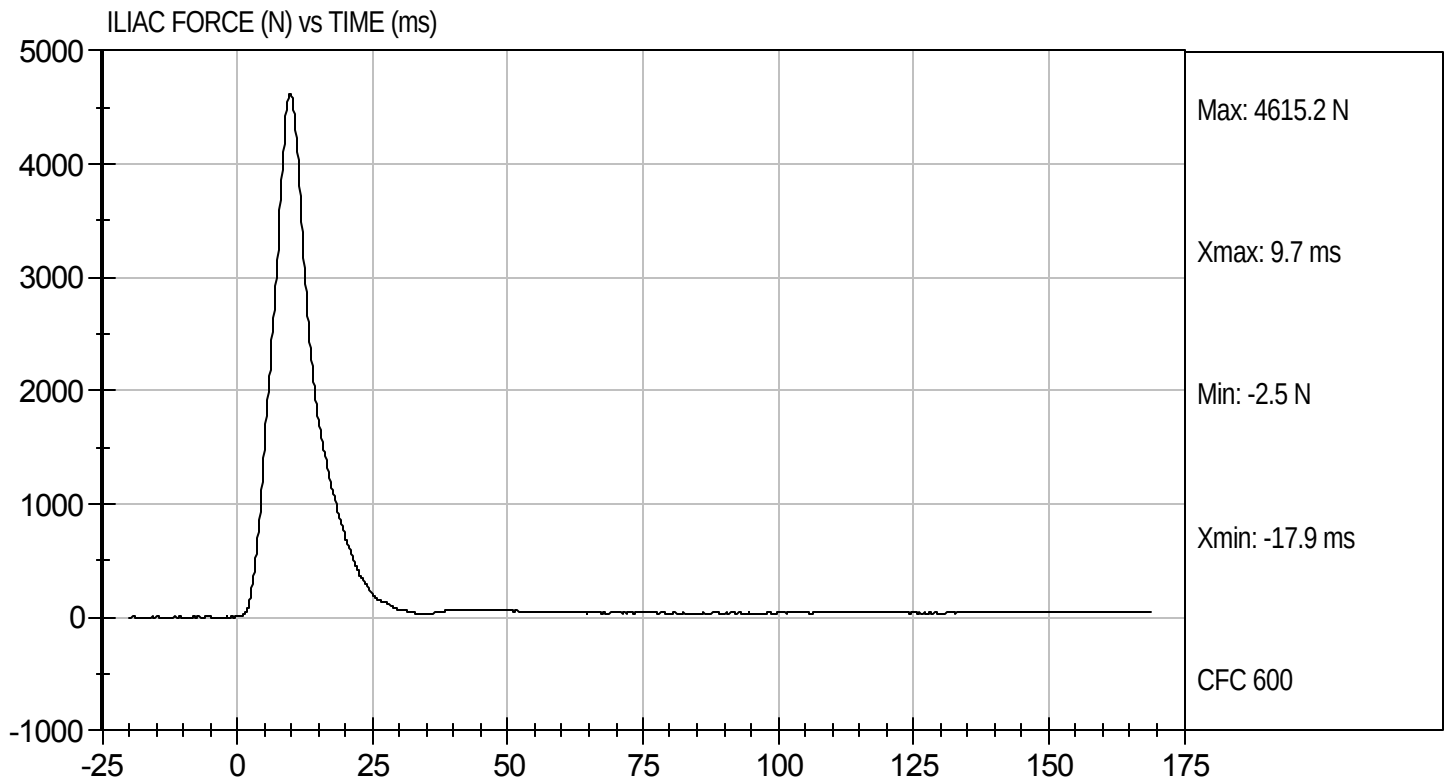
Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Iliac Impact
Component ID: D122288

Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N 032		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers		X	P66592	Endevco	04/23/12
		Y	P66593	Endevco	04/23/12
		Z	P66594	Endevco	04/23/12
Head Accelerometers		Xr	P66595	Endevco	04/23/12
		Yr	P66596	Endevco	04/23/12
		Zr	P66597	Endevco	04/23/12
Thorax Rib Displacement Potentiometers	Upper	Y	G176	Honeywell	04/25/12
	Middle	Y	G169	Honeywell	04/25/12
	Lower	Y	G164	Honeywell	04/25/12
Abdomen Load Cells	Forward	Y	ABG1532	Denton	01/03/12
	Middle	Y	ABG1534	Denton	01/03/12
	Rear	Y	ABG1535	Denton	01/03/12
Lower Spine Accelerometers (T12)		X	P37344	Endevco	04/23/12
		Y	P73747	Endevco	04/23/12
		Z	P73748	Endevco	04/23/12
Pubic Symphysis Load Cell		Y	PG461	Denton	01/03/12

Table 2 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N 296			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers			X	P66535	Endevco	04/12/12
			Y	P66536	Endevco	04/12/12
			Z	P66537	Endevco	04/12/12
Head Accelerometers			X	P66638	Endevco	04/12/12
			Y	P66640	Endevco	04/12/12
			Z	P66674	Endevco	04/12/12
Displacement Potentiometers	Thoracic Rib	Upper	Y	G012	Servo	04/27/12
		Middle	Y	G1163	FTSS	04/27/12
		Lower	Y	G1158	FTSS	04/27/12
	Abdominal Rib	Upper	Y	G1146	FTSS	04/27/12
		Lower	Y	G1126	FTSS	04/27/12
Lower Spine Accelerometers (T12)			X	P66668	Endevco	04/23/12
			Y	P66862	Endevco	04/23/12
			Z	P67590	Endevco	04/23/12
Acetabulum Load Cell			Y	ACG268	Denton	01/11/12
Iliac Wing Load Cell			Y	IWG282	Denton	12/23/11
Pelvis Plug (struck side)				49074	FTSS	12/07/11
Pelvis Plug (non-struck side)				49072	FTSS	12/07/11

Table 3 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P63258	Endevco	04/23/12
Vehicle Center of Gravity	Y	P63256	Endevco	04/23/12
Vehicle Center of Gravity	Z	P63257	Endevco	04/23/12
Right Sill at Front Seat	X	P63552	Endevco	02/10/12
Right Sill at Front Seat	Y	P63551	Endevco	02/10/12
Right Sill at Front Seat	Z	P63553	Endevco	02/10/12
Right Sill at Rear Seat	X	P59401	Endevco	06/14/12
Right Sill at Rear Seat	Y	P59402	Endevco	06/14/12
Right Sill at Rear Seat	Z	P59403	Endevco	06/14/12
Left Sill at Front Door	Y	P59659	Endevco	06/14/12
Left Sill at Rear Door	Y	P63550	Endevco	03/13/12
Left A-Post Lower	Y	P49487	Endevco	03/13/12
Left A-Post Middle	Y	P59251	Endevco	06/12/12
Left B-Post Lower	Y	P59283	Endevco	01/12/12
Left B-Post Middle	Y	P59639	Endevco	06/12/12
Front Seat Track	Y	P49520	Endevco	03/13/12
Rear Seat Track or Structure	Y	P63226	Endevco	06/12/12
Right Rear Occ. Compartment	Y	P63399	Endevco	03/13/12
Engine Block	X	P63533	Endevco	01/12/12
Engine Block	Y	P59289	Endevco	03/14/12
Rear Floorpan Above Axle	X	P59266	Endevco	04/23/12
Rear Floorpan Above Axle	Y	P59265	Endevco	04/23/12
Rear Floorpan Above Axle	Z	P59264	Endevco	04/23/12

Table 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P59379	Endevco	06/12/12
MDB Center of Gravity	Y	P59380	Endevco	06/12/12
MDB Center of Gravity	Z	P59381	Endevco	06/12/12
Left Frame at Rear Axle Centerline	X	P59279	Endevco	06/12/12
Left Frame at Rear Axle Centerline	Y	P59280	Endevco	06/12/12