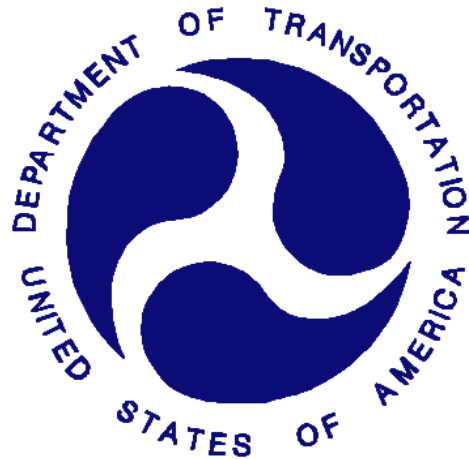


REPORT NUMBER: SPNCAP-MGA-2012-087

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test**

**TOYOTA MOTOR CORPORATION
2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
NHTSA No.: YC5105**

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



Test Date: June 20, 2012

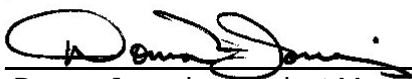
Final Report Date: July 6, 2012

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

1. Report No. SPNCAP-MGA-2012-087		2. Government Accession No.		3. Recipient's Catalog No.																												
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback, NHTSA No.: YC5105				5. Report Date July 6, 2012																												
				6. Performing Organization Code MGA																												
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer				8. Performing Organization Report No. SPNCAP-MGA-2012-087																												
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105				10. Work Unit No.																												
				11. Contract or Grant No. DTNH22-09-D-00124																												
12. Sponsoring Agency Name and Address United States Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590				13. Type of Report and Period Covered: Final Test Report June 20, 2012 to July 6, 2012																												
				14. Sponsoring Agency Code NVS-111																												
15. Supplementary Notes																																
16. Abstract A 32.2 km/h (20 mph), 75° oblique impact Side NCAP 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 Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on June 20, 2012. The impact velocity was 32.1 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.9°C. The test vehicle post-test maximum crush was 356 mm at level 2. The test vehicle's performance was as follows: <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs)</th> </tr> <tr> <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>271</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>58</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>4076</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>30</td> </tr> </tbody> </table> * Proposed IARV The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.						Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	271	Resultant Lower Spine Acceleration	Gs	82	58	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4076	Maximum Thoracic Rib Deflection	mm	38*	30	Maximum Abdomen Rib Deflection	mm	45*	30
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19. Security Classification of Report Unclassified	20. Security Classification of Page Unclassified	21. No. of Pages 134		22. Price																												

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SECTION 1

TEST PURPOSE AND PROCEDURE

This 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 Pole Laboratory Test Procedure, dated August 2011.

SECTION 2 SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.1 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin, on June 20, 2012. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure dated August 2011. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

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.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	271
Resultant Lower Spine Acceleration	Gs	82	58
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4076
Maximum Thoracic Rib Deflection	mm	38*	30
Maximum Abdomen Rib Deflection	mm	45*	30

*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:

- Vehicle CG X after 20ms

- Vehicle CG Y after 20ms

- Vehicle CG Z after 20ms

- Left Floor Sill Y after 5ms

- Right Roof Y after 45ms

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

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback NHTSA No. YC5105
 Test Program: NCAP Side Pole Impact Test Test Date: 6/20/2012

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	YC5105	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	JTDKN3DP1C3006105	Driver Front Airbag	Yes
Body Color	Winter Gray Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	5 / 3	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)

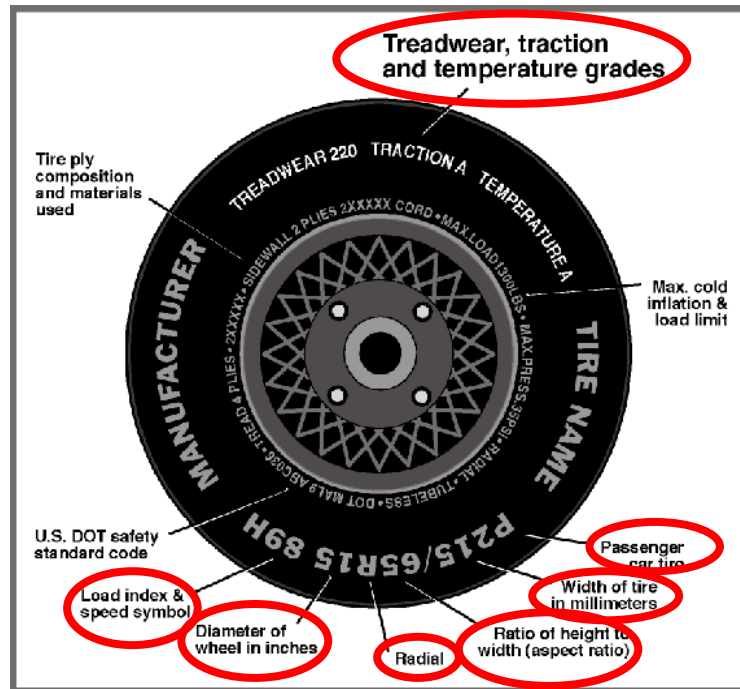
VEHICLE SEAT TYPE

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							

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

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

NHTSA No. YC5105
 Test Date: 6/20/2012



TIRE PLACARD INFORMATION

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

TIRE SIDEWALL INFORMATION

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
 Test Program: NCAP Side Pole Impact Test

NHTSA No. YC5105
 Test Date: 6/20/2012

TEST PRESSURES

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	431.8	307.5		460.9	332.9		456.8	336.5	
Right	kg	406.9	295.3		413.2	311.7		412.3	318.0	
Ratio	%	58.2	41.8		57.6	42.4		57.0	43.0	
Totals	kg	838.7	602.8	1441.5	874.1	644.6	1518.7	869.1	654.5	1523.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1441.5	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	30	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1523.7	(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
Left/right taillight, rear bumper cover/foam, trunk floor panels/storage tray, inflator and sealant, passenger front/rear sill covers, right rear speaker/retractor/window/motor, rear and right front headrests, right rear door panel/c-pillar cover.	38.1

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	deg	0.0	0.1	0.2	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	0.0	0.0	0.2	Yes
Front Bumper Angle (left-to-right)**	deg	-0.4	-0.4	-0.5	Yes
Rear Bumper Angle (left-to-right)**	deg	-0.4	-0.4	-0.4	Yes
Vehicle CG (Aft of Front Axle)	mm	1129	1146	1160	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	20	34	31	

*ND=Nose Down (-), NU=Nose Up (+) ** LD=Left Down (-), LU=Left Up (+)

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements.

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
 Test Program: NCAP Side Pole Impact Test

NHTSA No. YC5105
 Test Date: 6/20/2012

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the forward-most, mid-height, 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	7.4	0.0	3.7
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	3.7	Fixed	Max	Fixed	Fixed	Fixed
	3.7	Fixed	Mid	Fixed	Fixed	Fixed
	3.7	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
 Test Program: NCAP Side Pole Impact Test

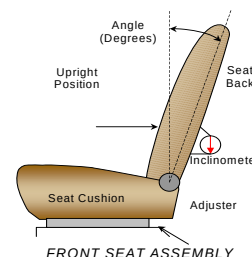
NHTSA No. YC5105
 Test Date: 6/20/2012

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)	0	0 (1 st as 0)
Front Passenger Seat	260	27 (1 st as 1)	0	0 (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 such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1 for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degrees	Detent
Driver Seat w/Seated Dummy	49.6		-6.0	0 (1 st as 0)
Front Passenger Seat	50.4		-6.9	0 (1 st as 0)
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 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 (1 st as 1)	0 (uppermost as 0)

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	4	Lowest

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

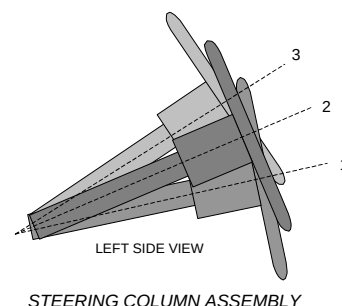
Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. YC5105
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STEERING COLUMN ADJUSTMENT

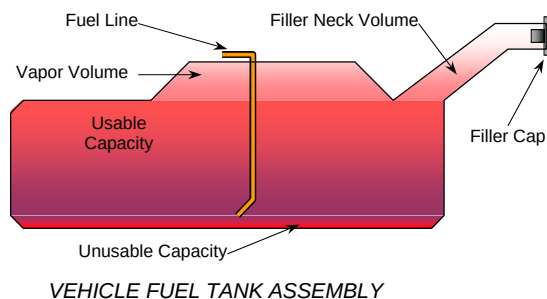
Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	67.4	138
Geometric Center, Position 2	65.9	119
Uppermost, Position 3	64.4	100
Telescoping Steering Wheel Travel		38
Test Position	65.9	119



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.



FUEL TANK CAPACITY DATA

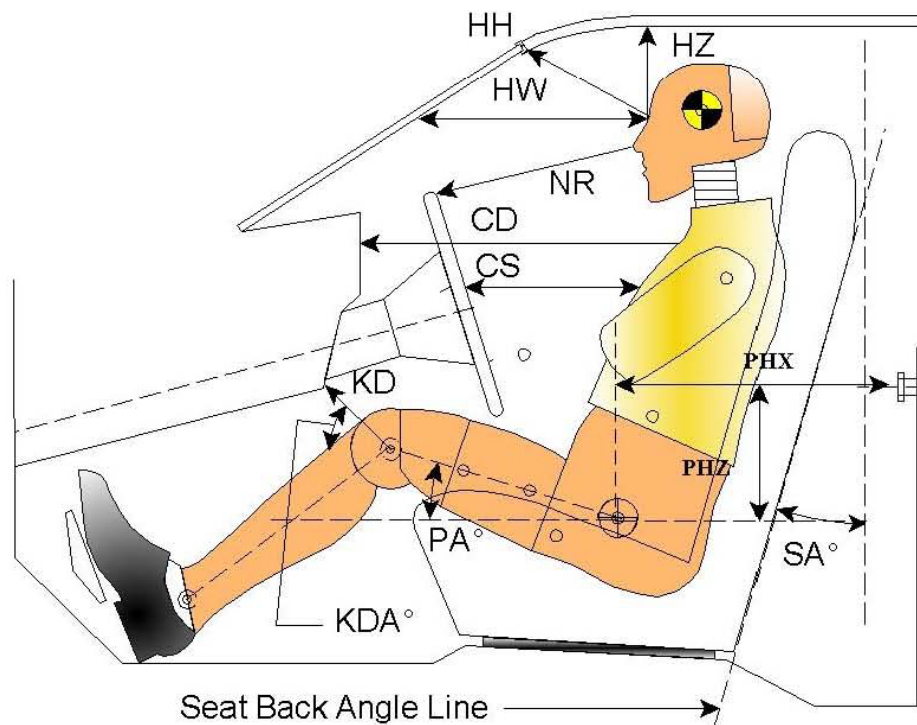
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	40.0
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	40.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	37.2
Actual Amount of Solvent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

NHTSA No. YC5105
 Test Date: 6/20/2012



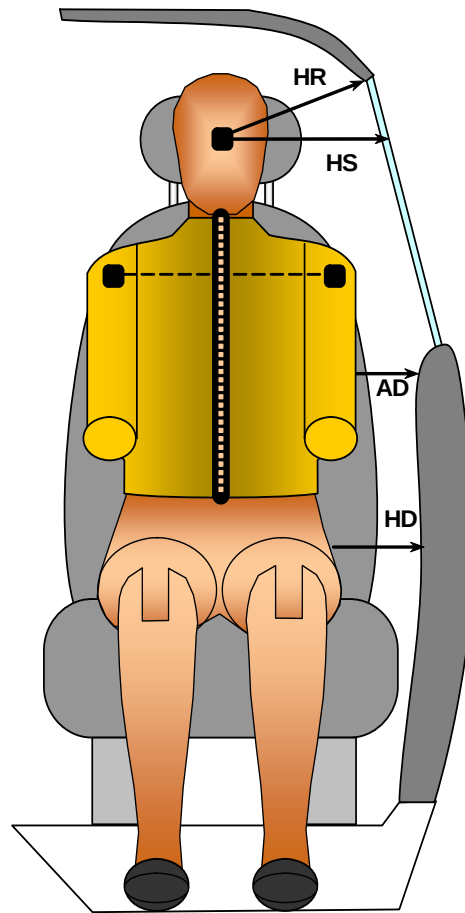
LEFT SIDE VIEW

Code	Measurement Description	Driver S/N 306	
		Length (mm)	Angle (°)
HH	Head to Header	210	
HW	Head to Windshield	620	
HZ	Head to Roof Liner	163	
NR	Nose to Rim	227	
CD	Chest to Dashboard	662	
CS	Chest to Steering Wheel	163	
KDL/KDAL°	Left Knee to Dash	87	47.6
KDR/KDAR°	Right Knee to Dash	76	40.8
PAX°	Pelvic Tilt Angle (X-Axis)		21.8
PAY°	Pelvic Tilt Angle (Y-Axis)		-0.3
PHX	Hip Point to Striker (X-Axis)	378	
PHZ	Hip Point to Striker (Z-Axis)	151	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

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

NHTSA No. YC5105
 Test Date: 6/20/2012



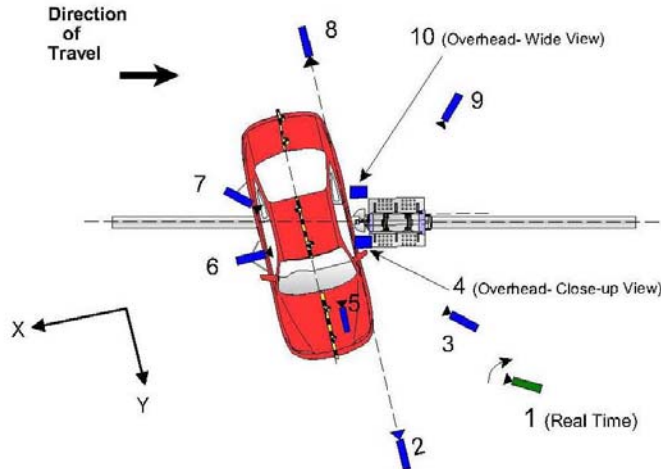
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver S/N 306
		Length (mm)
HR	Head to Side Header	234
HS	Head to Side Window	353
AD	Arm to Door	144
HD	Hip Point to Door	152

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

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

NHTSA No. YC5105
 Test Date: 6/20/2012



Reference: (from Point of Impact for X and Y; from Ground for Z):
 +X = Forward of Impact, + Y = Right of Impact, +Z = Down

Camera No.	View	Coordinates (mm)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real-Time Pan View					30
2	Front Ground Level	40	5320	-1510	24	1000
3	Impact Side 45° Forward	-2080	5320	-1510	20	1000
4	Overhead Closeup	50	0	-4520	50	1000
5	Onboard – Driver Front				16	
6	Onboard – Driver Side				8	
7	Onboard – Driver Rear				8	
8	Rear Ground Level	40	-5440	-1540	24	1000
9	Impact Side 45° Rearward	-3610	-3070	-1600	20	1000
10	Overhead Wide View	260	0	-4610	14	1000
11	Real-Time Dummy Front View					30

* All measurements accurate to ± 6 mm

Note: Vehicle was at a 15° angle to the rigid pole.

Explain why camera(s) did not operate as intended: Not Applicable

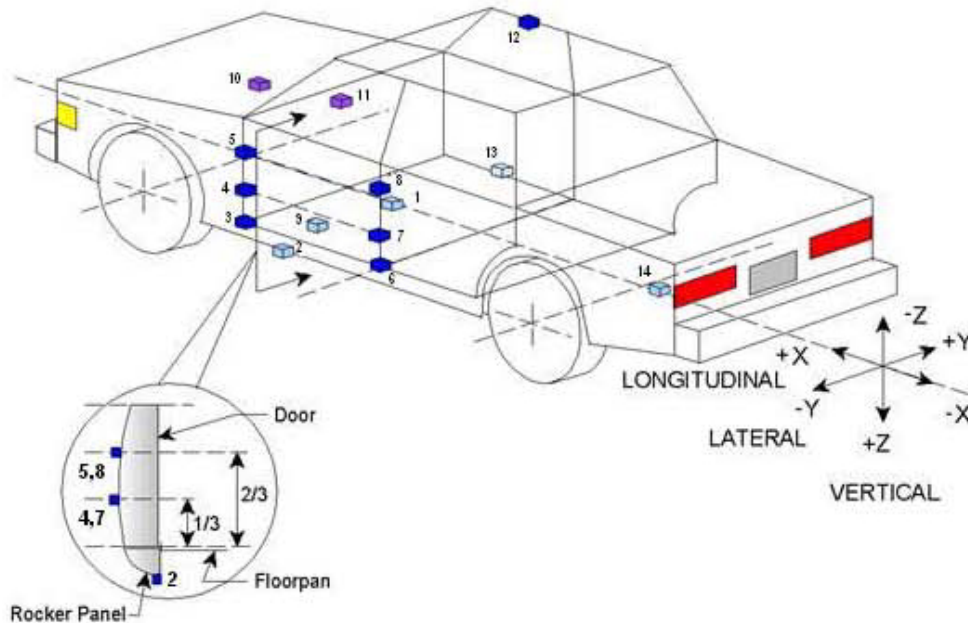
INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER DATA

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

NHTSA No. YC5105
 Test Date: 6/20/2012



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2278	252	-170
2	Left Floor Sill	2598	-707	-174
3	A Pillar Sill	2982	-712	-172
4	A Pillar Low	2998	-800	-468
5	A Pillar Mid	3033	-803	-675
6	B Pillar Sill	1901	-712	-188
7	B Pillar Low	1902	-703	-587
8	B Pillar Mid	1902	-706	-794
9	Driver Seat Track	2304	-554	-370
10	Engine Top	3706	50	-830
11	Firewall	3587	0	-75
12	Right Roof	1863	510	-1500
13	Right Floor Sill	2590	707	-192
14	Rear Floorpan	317	-20	-328

Reference:

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

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

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

NHTSA No. YC5105
Test Date: 6/20/2012



254 mm Diameter Rigid Pole

Load Cell Locations	
ID	Height From Impact Surface (mm)
1	182
2	470
3	698
4	986
5	1212
6	1641
7	1854
8	2053

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

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

NHTSA No. YC5105
Test Date: 6/20/2012

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Headrest
Left Shoulder	Side Airbag, Seatback
Upper Torso	Seatback
Lower Torso	Side Airbag, Seatback, Door Panel
Left Hip	Seat Cushion, Door Panel
Left Knee	None

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	Cracked
Side Window Damage	Left Front Window 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 Pole Impact Test

NHTSA No. YC5105
 Test Date: 6/20/2012

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				

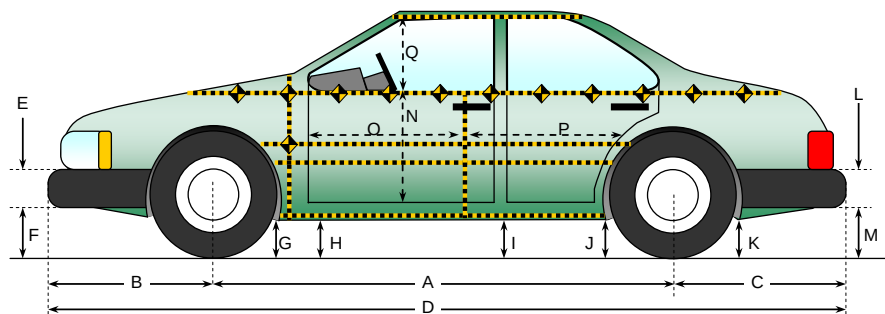
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1047
Actual Impact Point (Aft of Front Axle)	mm		1049
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	-2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.1
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.2

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

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

NHTSA No. YC5105
 Test Date: 6/20/2012



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

LEFT SIDE VIEW

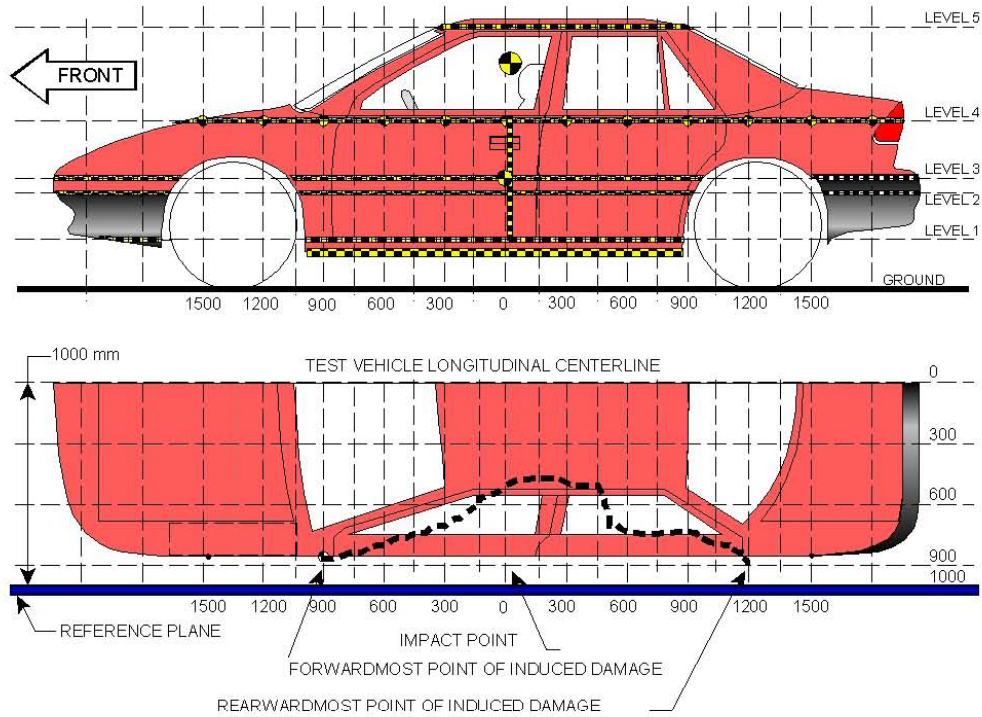
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2700	2605	95
B	Front Axle to FSOV	923	923	0
C	Rear Axle to RSOV	817	817	0
D	Total Vehicle Length at Centerline	4440	4345	95
E	Front Bumper Thickness	115	115	0
F	Front Bumper Bottom to Ground	221	251	-30
G	Sill Height at Front Wheel Well	170	160	10
H	Sill Height at Front Door Leading Edge	170	162	8
I	Sill Height at B Pillar	172	193	-21
J1	Sill Height at Rear Wheel Well	158	170	-12
J2	Pinch Weld Height at Rear Wheel Well	175	188	-13
K	Sill Height Aft of Rear Wheel Well	246	249	-3
L	Rear Bumper Thickness	132	132	0
M	Rear Bumper Bottom to Ground	357	348	9
N	Sill Height to Bottom of Front Window Sill	748	760	-12
O	Front Door Leading Edge to Impact CL	607	606	1
P	Rear Door Trailing Edge to Impact CL	1347	1380	-33
Q	Front Window Opening	372	368	4
R	Right Side Length	3757	3774	-17
S	Left Side Length	3757	3623	134
T	Vehicle Width at B-Pillars	1746	1667	79

DATA SHEET NO. 10 **VEHICLE EXTERIOR CRUSH MEASUREMENTS**

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

NHTSA No. YC5105
 Test Date: 6/20/2012



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

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground (mm)
1	Sill Top	210
2	Occupant Hip Point	585
3	Mid Door	627
4	Window Sill	908
5	Window Top	1395

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

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

NHTSA No. YC5105
 Test Date: 6/20/2012

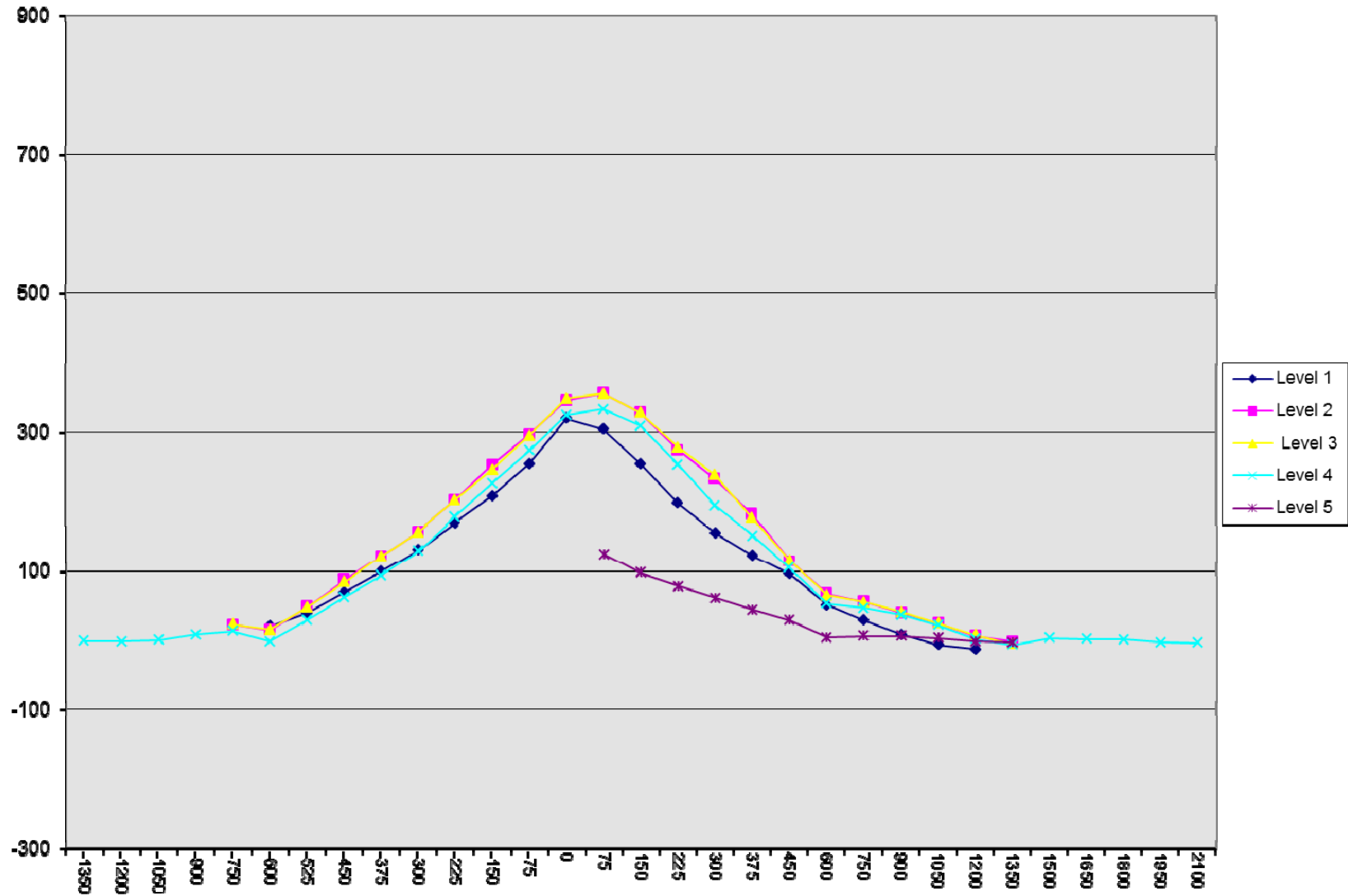
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1350				377					378					1	
-1200				343					343					0	
-1050				324					326					2	
-900				311					321					10	
-750		227	228	298			251	253	313			24	25	15	
-600	258	231	233	289		280	247	250	289		22	16	17	0	
-525	257	232	234	286		298	282	283	317		41	50	49	31	
-450	258	232	234	282		328	320	319	345		70	88	85	63	
-375	258	232	234	276		358	354	356	370		100	122	122	94	
-300	259	231	233	274		390	388	390	404		131	157	157	130	
-225	259	230	232	270		429	432	434	448		170	202	202	178	
-150	258	230	231	266		466	483	477	492		208	253	246	226	
-75	258	230	231	264		512	526	526	537		254	296	295	273	
0	257	230	231	262		576	575	579	586		319	345	348	324	
75	258	230	231	260	535	562	586	586	593	660	304	356	355	333	125
150	258	229	230	258	527	512	557	558	567	625	254	328	328	309	98
225	257	229	230	257	520	454	503	508	510	599	197	274	278	253	79
300	257	229	230	256	513	412	461	468	450	575	155	232	238	194	62
375	257	229	230	254	512	380	411	406	406	557	123	182	176	152	45
450	256	229	230	253	509	352	344	346	358	539	96	115	116	105	30
600	256	231	232	255	508	308	299	298	309	514	52	68	66	54	6
750	257	232	233	260	505	287	289	289	308	513	30	57	56	48	8
900	257	233	234	265	507	267	274	276	303	515	10	41	42	38	8
1050	254	235	237	270	516	249	261	263	293	521	-5	26	26	23	5
1200	249	235	238	266	526	235	243	247	270	526	-11	8	9	4	0
1350		226	229	267	550		226	226	262	549		0	-3	-5	-1
1500				290					295					5	
1650				296					300					4	
1800				304					307					3	
1950				317					316					-1	
2100				333					331					-2	

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. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy's head.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

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

NHTSA No. YC5105
Test Date: 6/20/2012



DATA SHEET NO. 11
FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

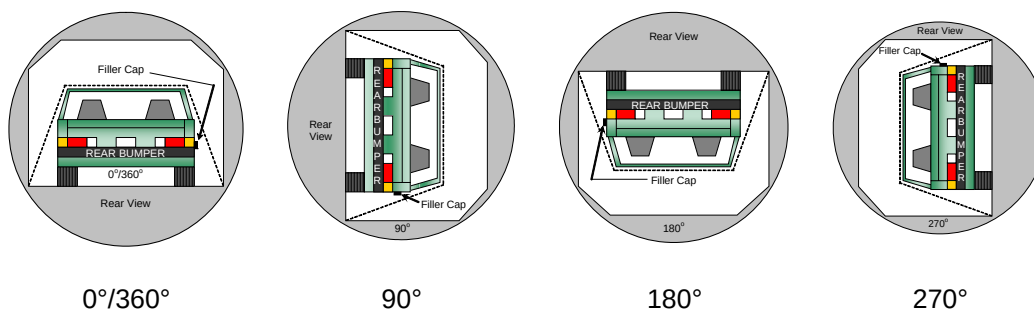
Test Vehicle: 2012 Toyota Prius Plug-In Hybrid 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. YC5105
 Test Date: 6/20/2012

Test Time: 10:11 am Temperature: 21.9° 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°	160	300	460
90° to 180°	141	300	441
180° to 270°	136	300	436
270° to 360°	166	300	466

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

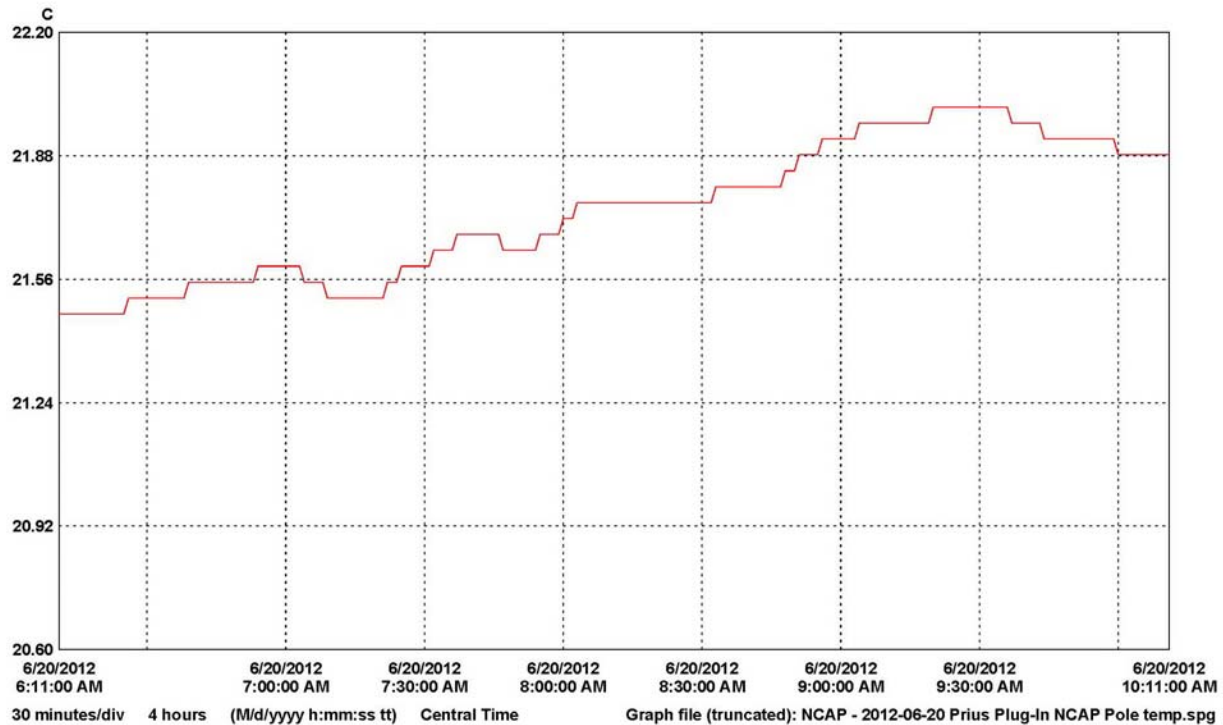
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 12 **DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA**

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

NHTSA No. YC5105
 Test Date: 6/20/2012



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	12032257	LoggerID	1		22.01	21.74	21.47	C	Temperature	12032257_LoggerID.spl

APPENDIX A
PHOTOGRAPHS

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As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



Pre-Test Frontal View of Test Vehicle



Post-Test Frontal View of Test Vehicle



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



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



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



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



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



Post-Test Overhead View of Test Area



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



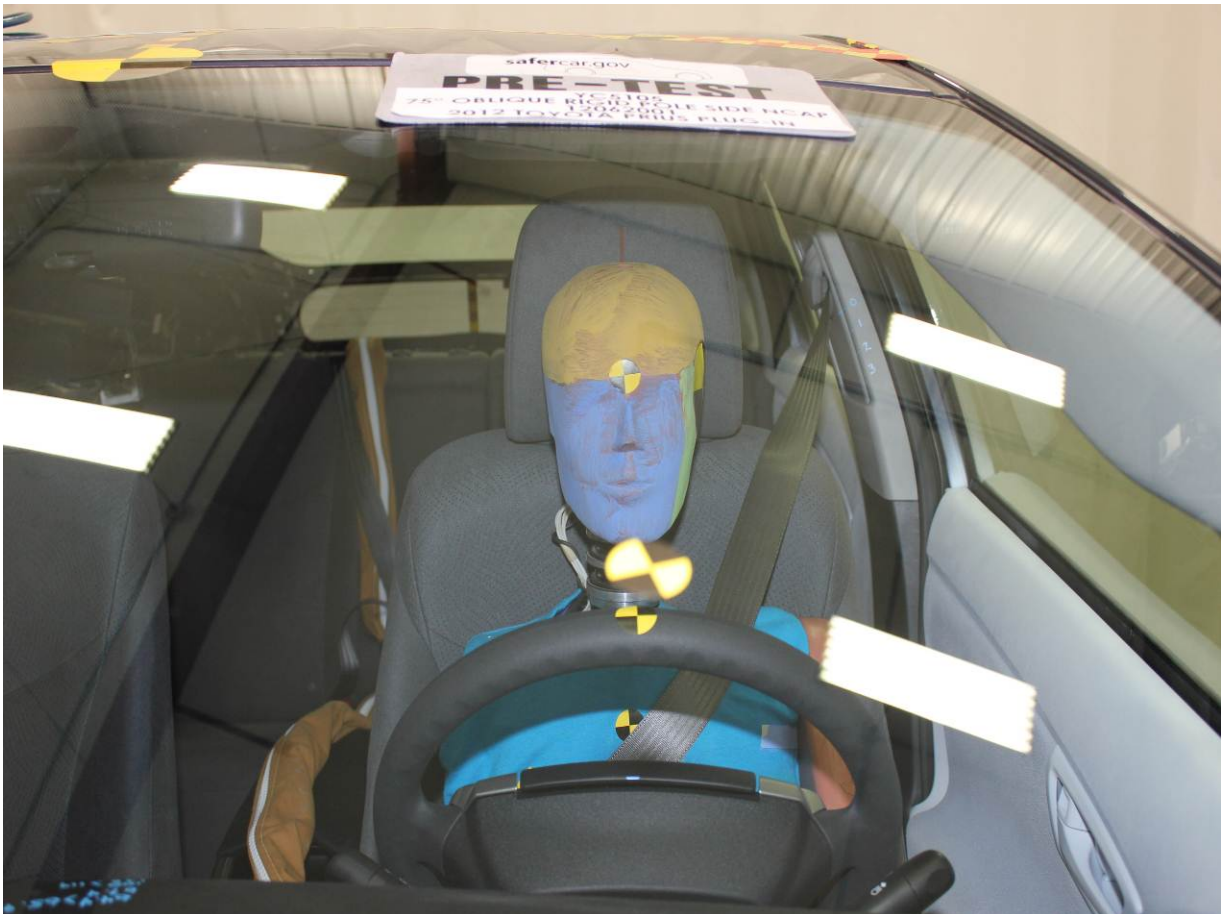
Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



Pre-Test Close-Up View of Impact Point Target



Post-Test Close-Up View of Impact Point Target Showing Impact Location



Pre-Test Front Close-Up View of Dummy Head and Chest



Post-Test Front Close-Up View of Dummy



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



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



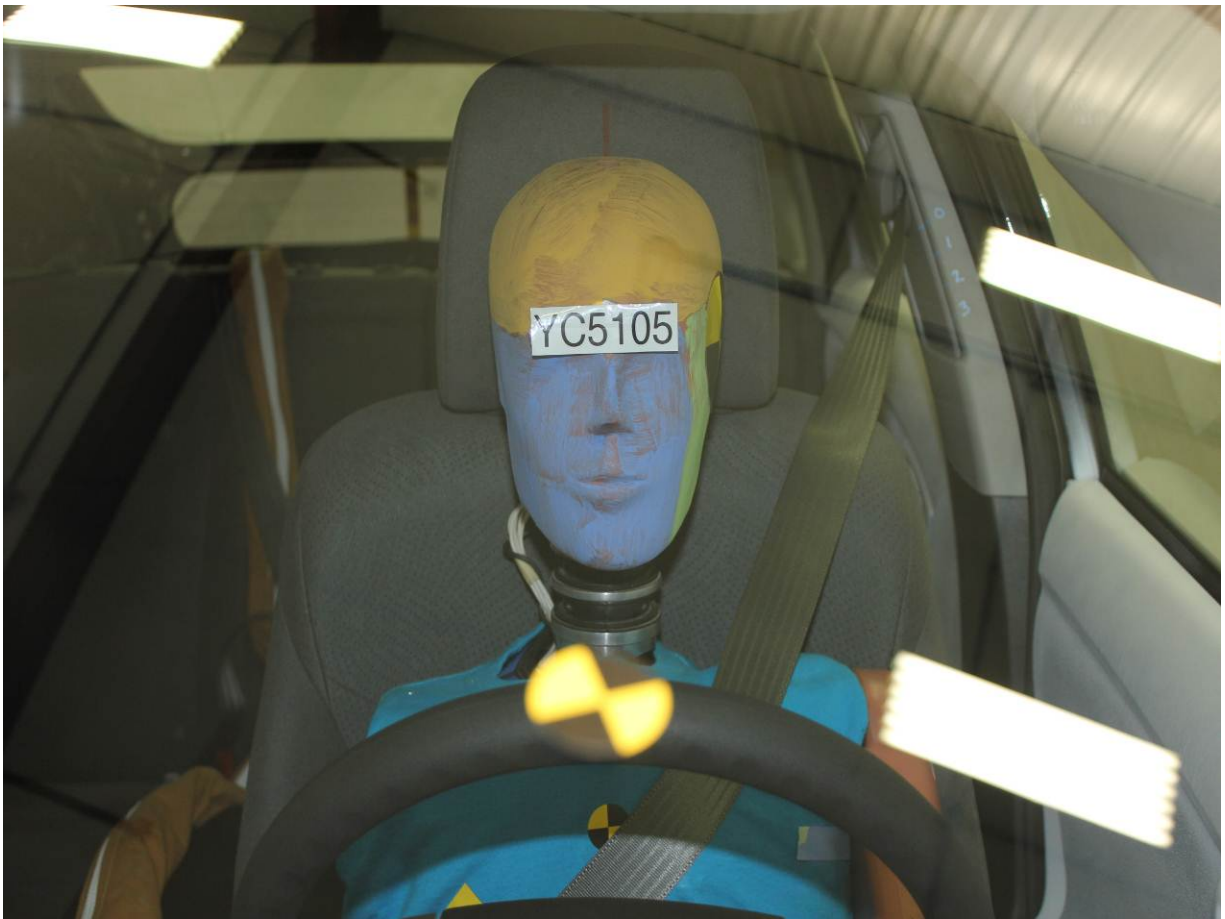
Post-Test Left Side View of Dummy Shoulder and Door Top View



Pre-Test Front View of Seat Back Prior to Dummy Positioning



Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Front View of Seat Pan Prior to Dummy Positioning



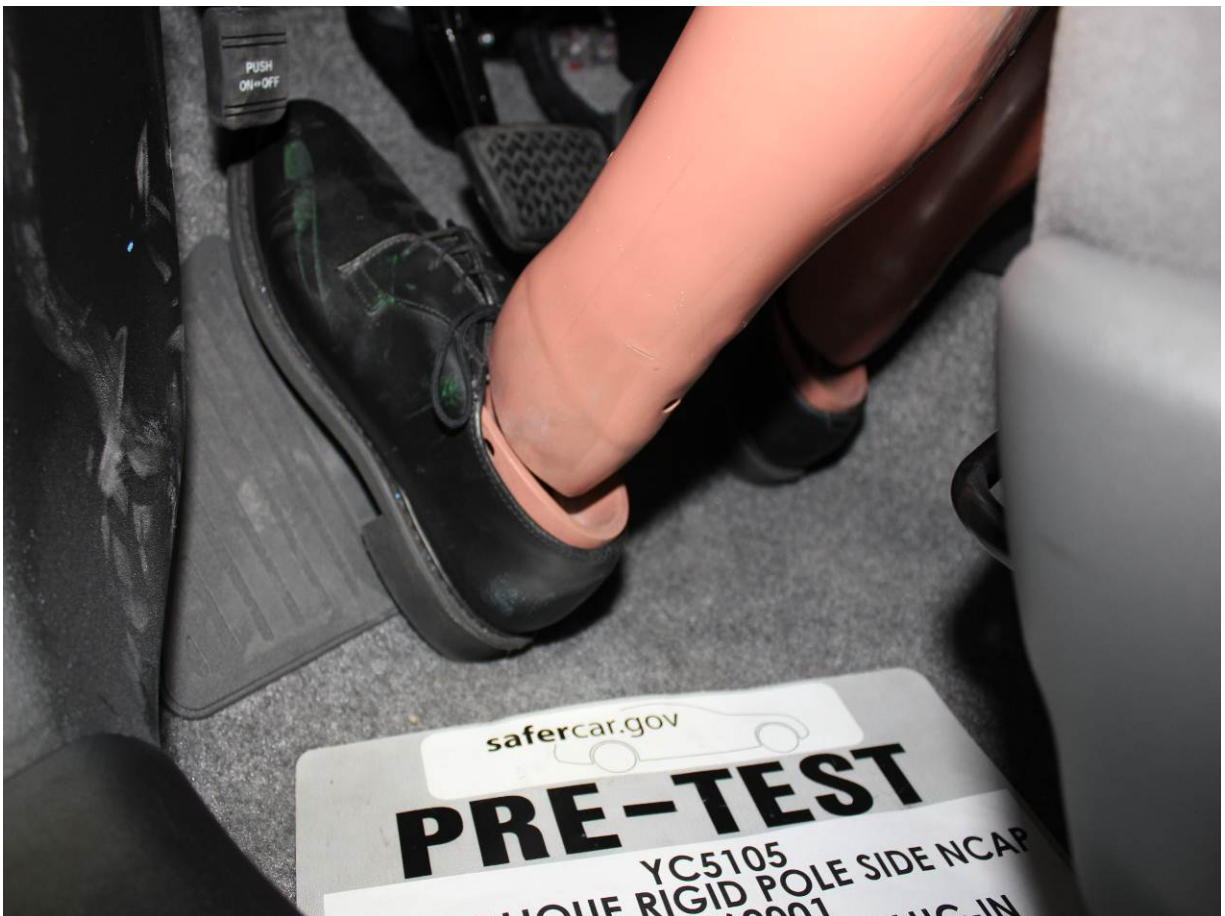
Pre-Test Overhead View of Dummy Thighs on Seat Pan



Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket



Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



Pre-Test Placement of Dummy's Feet



Pre-Test View of Belt Anchorage for 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 Dummy and Door Clearance View



Post-Test Dummy and Door Clearance View



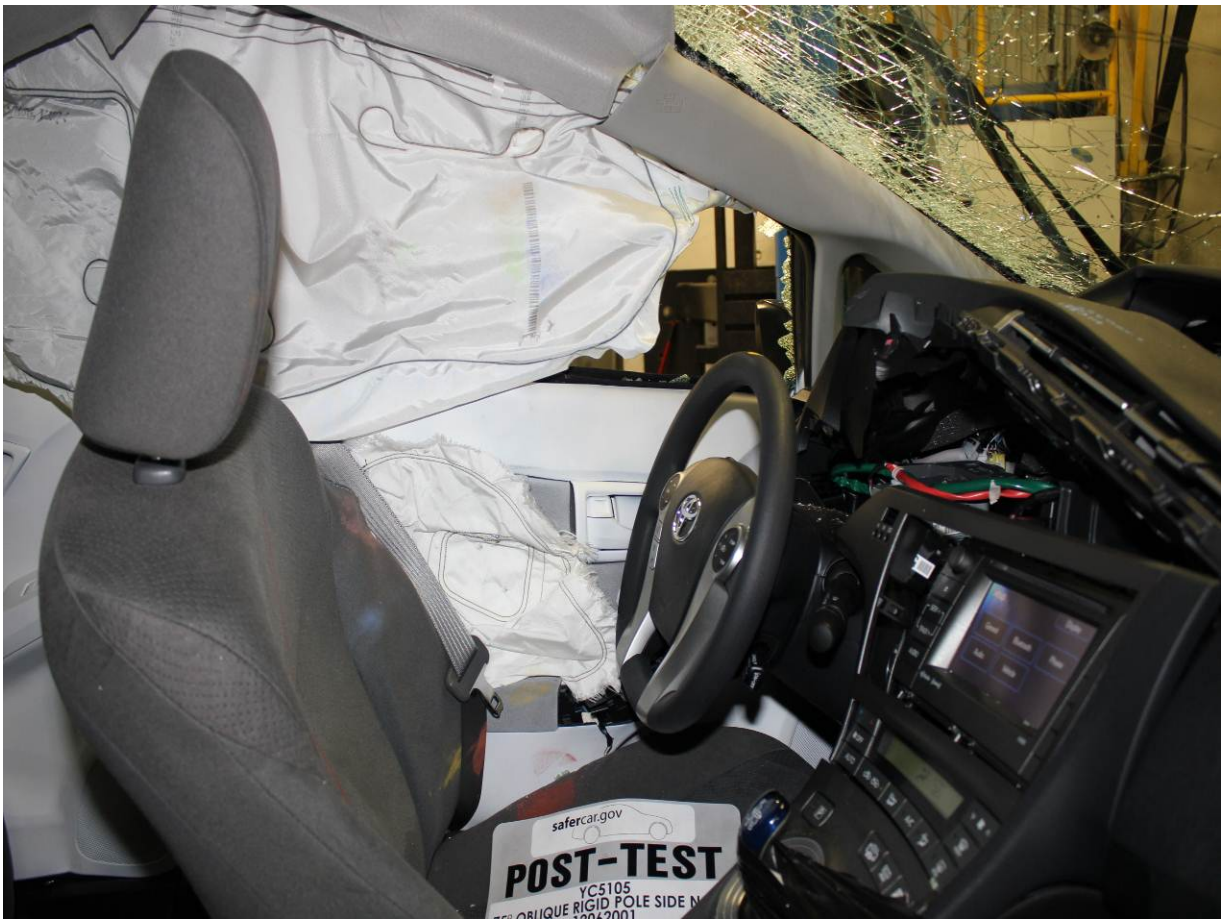
Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



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



Pre-Test Inner Door Panel View



Post-Test Inner Door Panel View Showing Dummy Contact Location

PHOTOGRAPH NOT APPLICABLE

Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Post-Test Dummy Close-Up Head Contact with Side Air Bag View



Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Post-Test Dummy Close-Up Torso Contact with Side Air Bag View



Post-Test Dummy Close-Up Torso Contact with Side Air Bag View



Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Post-Test Dummy Close-Up Pelvis Contact with Side Air Bag View



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



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



Close-Up View of Vehicle's Certification Label



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



Load Carrying Capacity Reduced Label



Pre-Test Pole Barrier Front View



Post-Test Pole Barrier Front View



Pre-Test Pole Barrier Side View



Post-Test Pole Barrier Side View

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

PHOTOGRAPH NOT AVAILABLE

FMVSS No. 301 Static Rollover 360 Degrees



Impact Event

TOYOTA
moving forward

DESC: **PRIUS Plug-in** 2WD 5 DOOR SDN
VIN: **JTDKN3DP1C3006105**
YR/MDL: 2012/1235A
CLR: WINTER GRAY METALLIC/FB10 (08V1/10)
PORT/PLANT: Newark, NJ RAILHEAD:

STANDARD EQUIPMENT

MECHANICAL & PERFORMANCE

- Hybrid Synergy Drive, Enhanced AT-92EV
- 1.8L DOHC 16V VVT-i 4-Cylinder Engine
- 4.4 kWh Li-Ion Battery, EV/ECO/Power Modes
- 15" Alloy Wheels, P180S1815 Tires
- Electric Power Steering (EPS)
- 4-Wheel Disc Brakes / Front Ind Suspension

SAFETY & CONVENIENCE

- Star Safety System: VSC, TRAC, ABS, Elect Brake-Force Distribution, Brake Assist(SA) & Smart Stop Technology (SST)
- Dr & Fr Pass Advanced Airbag System
- Dr & Fr Pass Seat Mounted Side Airbags
- Side Curtain Airbags & Dr Knee Airbag
- Dr & Fr Passenger Active Headrests
- LATCH(Low Anchor & Tethers for Children) for Outboard Rear Seating Positions Only
- 3 Door Smart Key Sys, Remote Keyless Entry
- Eng Immobil, Tire Press Alert & Repair Sys

EXTERIOR

- Rt Side, Plug-In Badge/Blue Tint Hddings
- Illum Charging Port w/ Indicator Light
- Haloogen Headlamps w/Auto-On, LED DRLs
- Cin-Keyless Pwr Htd Folding Outside Mirrs
- Front Variable & Rear Intermittent Wiper

INTERIOR

- Push Button Start, Touch Tracer Display
- Multi-Info Disp w/Battery & Trip Info
- Display Audio w/Navigation & Estuar
- 6.1" Touch-Screen w/Backup Cam, AM/FM/CD w/MP3/WMA, 6 Spkrs, SXM Radio w/90-Day Trial, HD Radio/Aux/USB & Bluetooth
- Auto Climate Ctrl Sys w/Remote A/C Sys
- Fabric/Trimmed Heated Front Sds w/4-Way Adj Driver's Seat & 4-Way Adj Pass Seat
- Tilt/Telescopic Steering Whl w/Controls
- Cruise Control, Instant MPG Indicator
- Cntr Console w/Armrest/Storage, 2 Fr Cup Holders, Overhead Console w/Map Lamps
- 60/40 Split Fold-Down Rear Bench Seat w/ Fold-Down Cntr Armrest & Adj Headrests
- Power Locks & Auto Up/Down Power Windows
- 120V Charge Cable & 2 Front Pwr Outlets
- ***Full Tank of Gas***

MANUFACTURER'S SUGGESTED RETAIL PRICE \$32,000.00

OPTIONAL EQUIPMENT

FE 50 State Emissions

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated
Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Crash	Driver Passenger	Not Rated
Frontal	Not Rated	Not Rated
Side	Not Rated	Not Rated
Rollover	Not Rated	Not Rated

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4235

EPA DOT Fuel Economy and Environment

Fuel Economy Midsize Cars range from 12 to 30 MPGe. The best vehicle rates 30 MPGe.

Electricity + Gasoline
Charge Time: 1.5 hours (240V)

95 MPGe 0.2 gallons per mile
combined city/highway

Gasoline Only
50 MPG 2.0 gallons per 100 miles
combined city/highway

You save \$7,600
in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,000

Fuel Economy & Greenhouse Gas Rating (gasoline only) Smog Rating (gasoline only)

The vehicle emits 133 grams CO2 per mile. The best emits 100 grams per mile (gasoline only). Producing and delivering fuel and electricity also create emissions. Learn more at fuelconomy.gov

Actual results may vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The best gas mileage is 22 MPGe and costs \$12,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.70 per gallon and \$0.12 per kWh. This is an actual fuel economy. MPGe is miles per gallon in urban equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculate personalized estimates for your vehicle.

DELIVERY PROCESSING AND HANDLING FEE 760.00

TOTAL \$32,760.00

The New Vehicle Limited Warranty provides 3-year/50,000-mile coverage for vehicle body-specific hybrid components. 5-year/100,000-mile battery coverage. 5-year/100,000-mile powertrain coverage. 3-year/unlimited-mile corrosion perforation coverage. Some components may have longer coverage under California emissions warranty applicable in CA, CT, HI, IL, IN, MD, MI, MN, NY, OH, PA, RI, VT, WA. See Warranty and Maintenance Guide for details. An extended service contract may be available for the vehicle. Ask dealer for details. Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Gasoline, gasoline and 120V home, applicable federal, state and local taxes and dealer and distributor-related options and accessories are not included in the manufacturer's suggested retail price. Toyota Care, which covers basic factory warranty and maintenance for five years or 50,000 miles, whichever occurs first, is included as part of the sales price of the vehicle for qualifying buyers. See participating dealer for vehicle title and ownership details.

Get more info on this Toyota. Just snap and text this tag.

Message and data rates may apply.

Dealer Name / Address: 19035
TOYOTA OF WALDORF
2000 CHAIN HIGHWAY
WALDORF MD 20601

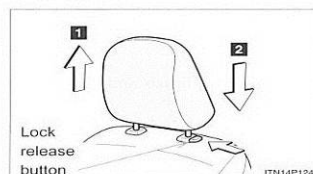
Ship to:

Monroney Label

1-5. Adjustable components (seats, mirrors, steering wheel) Head restraints

Head restraints are provided for all seats.

Front seats



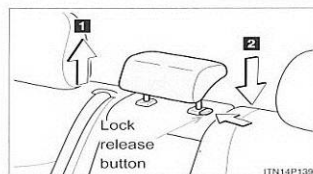
1 Up

Pull the head restraints up.

2 Down

Push and hold the lock release button when lowering the head restraint.

Rear center seat

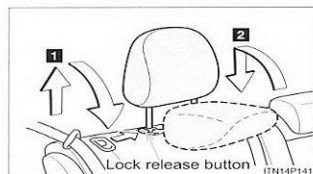


1 Up

2 Down

Pull up or push down the head restraint while pressing the lock release button.

Foldable type rear outside seats

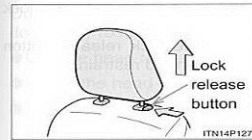


1 To fold

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

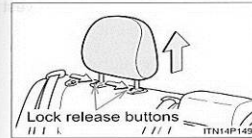
2 To use

Lift up and push down the head restraint to the lowest lock position.

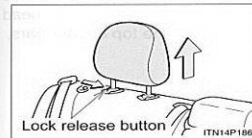
■ Removing the head restraints**Front and rear center seats**

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.

153

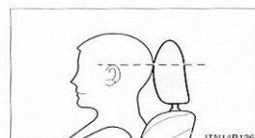
Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

■ 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

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

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

		<u>Page No.</u>
Figure No. 1.	Driver Head Acceleration (X) Primary vs. Time	B-1
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 Primary Acceleration vs. Time	B-1
Figure No. 5.	Driver Lower Spine T12 Acceleration (X) vs. Time	B-2
Figure No. 6.	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-2
Figure No. 7.	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-2
Figure No. 8.	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-2
Figure No. 9.	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-3
Figure No. 10.	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-3
Figure No. 11.	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-3

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 Dummy Instrumentation Data

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

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)

Vehicle Center of Gravity Acceleration (Y)

Vehicle Center of Gravity Acceleration (Z)

Left Floor Sill Acceleration (Y)

Left A-Pillar Sill Acceleration (Y)

Left Lower A-Pillar Acceleration (Y)

Left Mid A-Pillar Acceleration (Y)

Left B-Pillar Sill Acceleration (Y)

Left Lower B-Pillar Acceleration (Y)

Left Mid B-Pillar Acceleration (Y)

Driver Seat Track at Dummy Hip Point Acceleration (Y)

Engine Top Acceleration (X)

Engine Top Acceleration (Y)

Firewall Center Acceleration (Y)

Right Roof at Vertical Impact Reference Line Acceleration (Y)

Right Sill at Vertical Impact Reference Line Acceleration (Y)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)

Load Cell Pole Barrier #2 Force (Y)

Load Cell Pole Barrier #3 Force (Y)

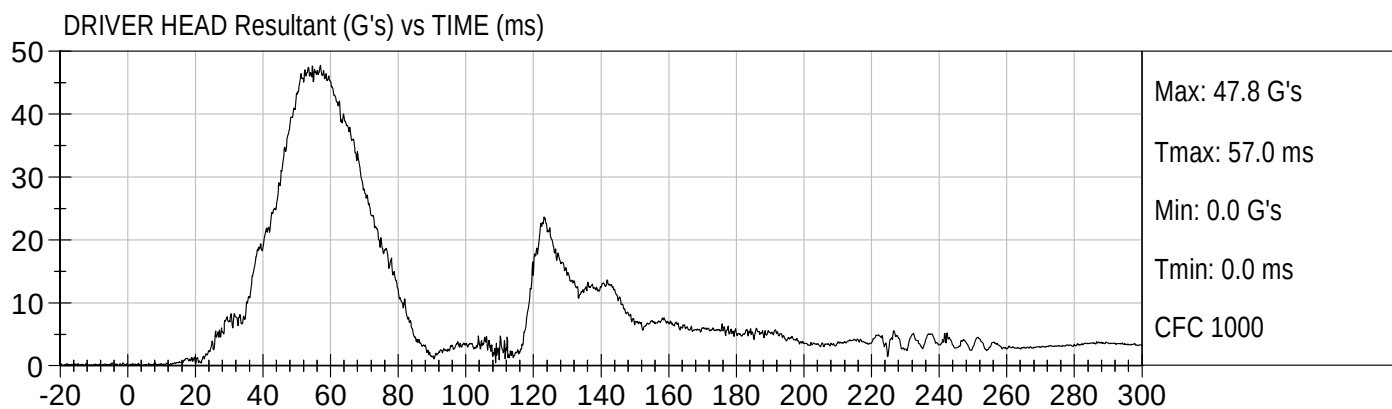
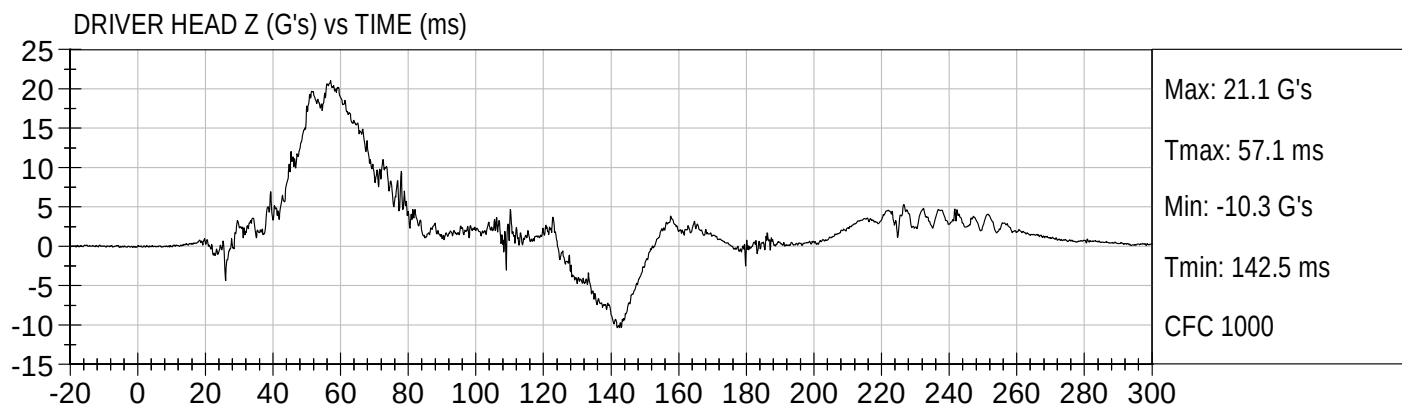
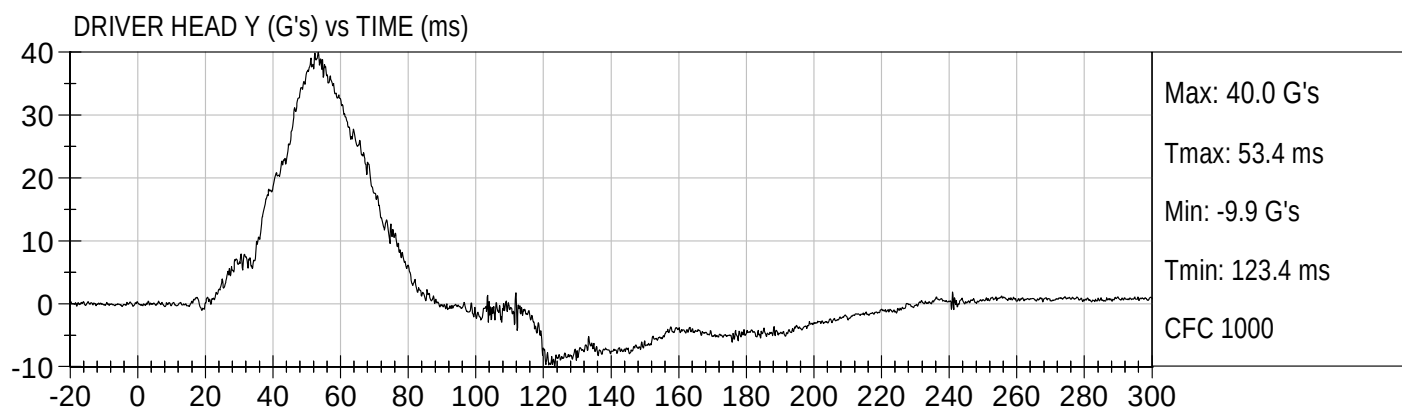
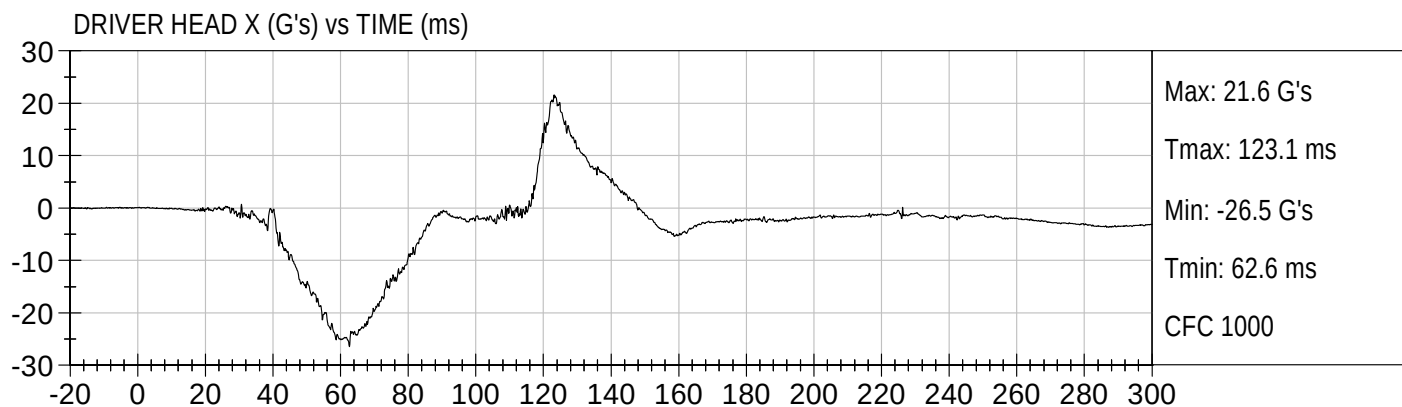
Load Cell Pole Barrier #4 Force (Y)

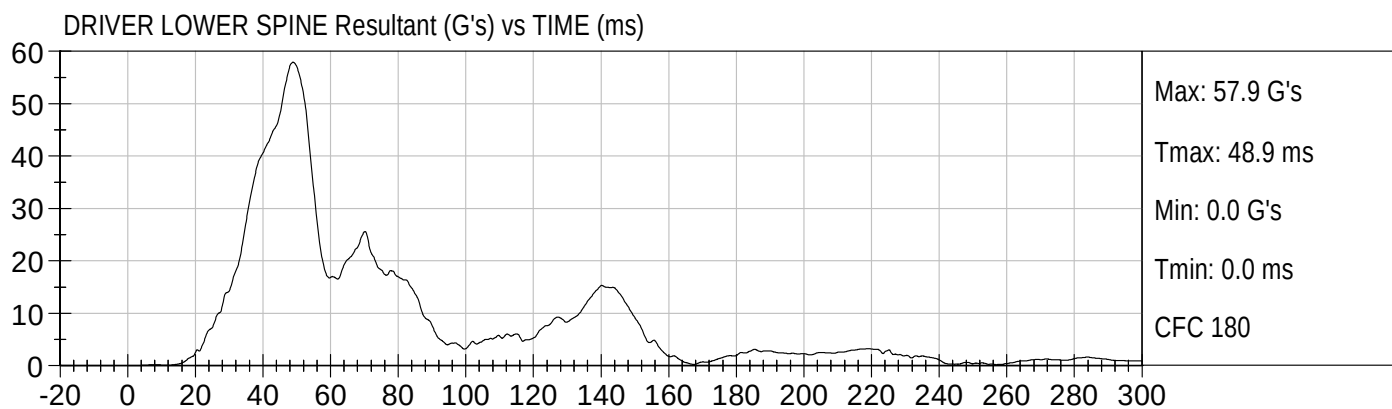
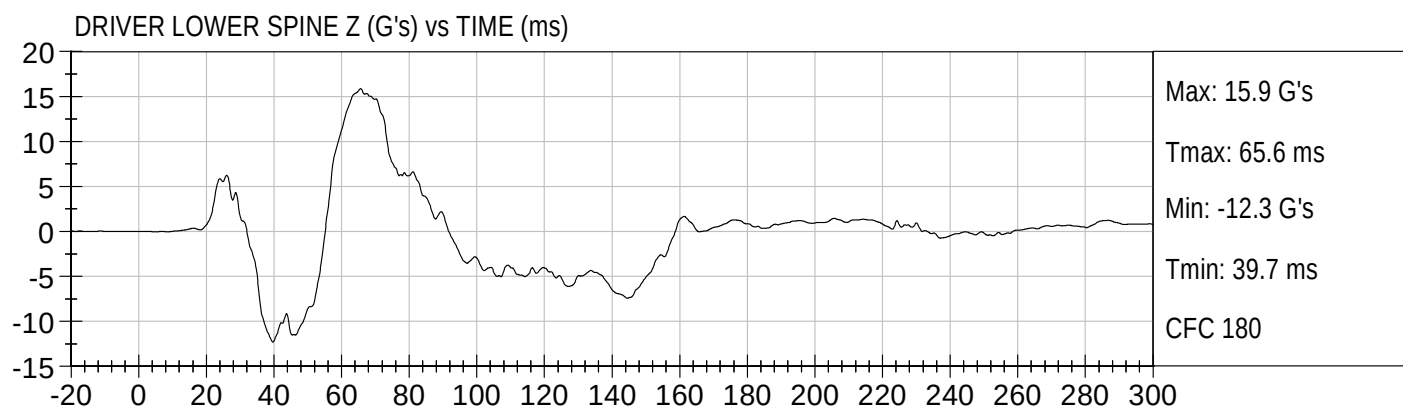
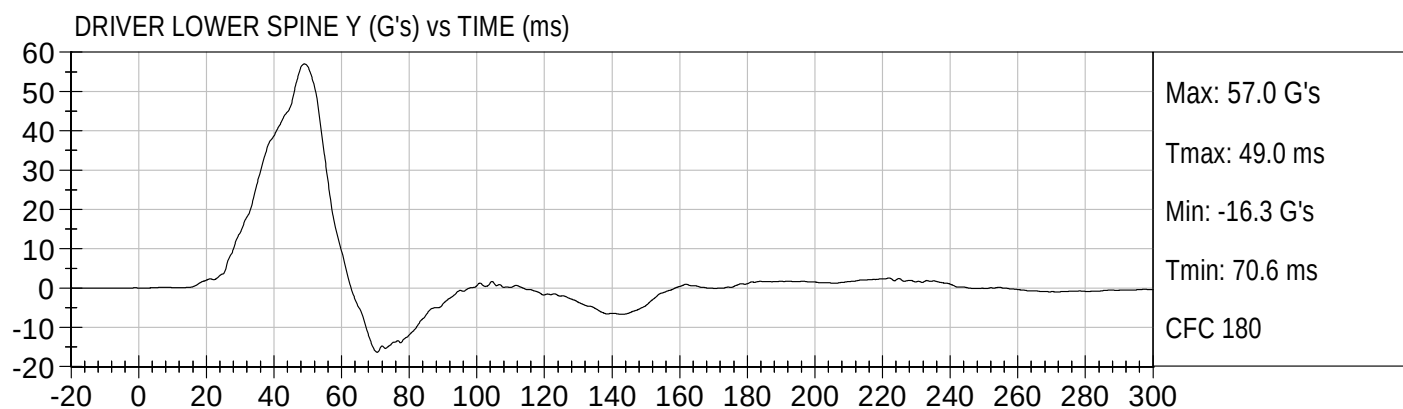
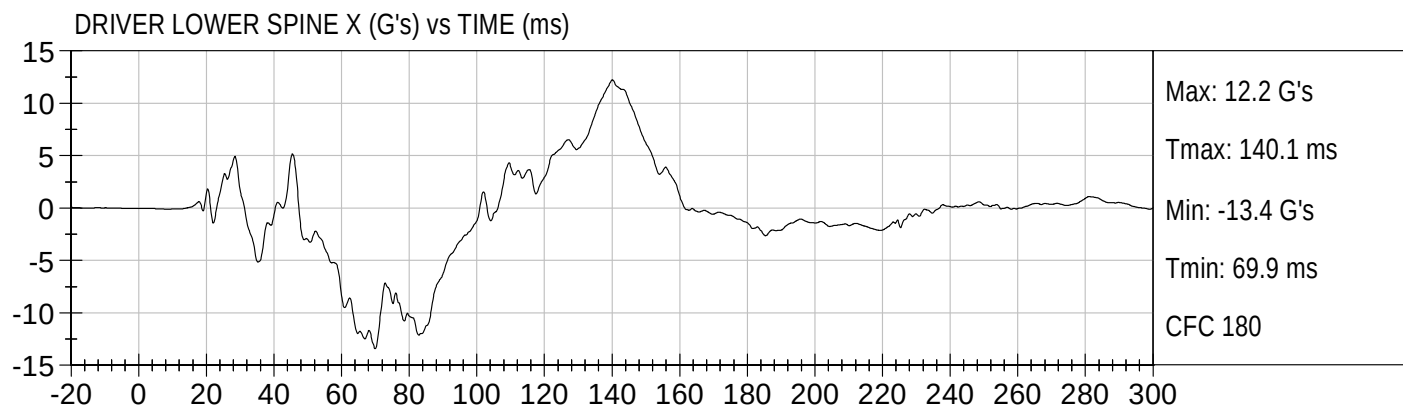
Load Cell Pole Barrier #5 Force (Y)

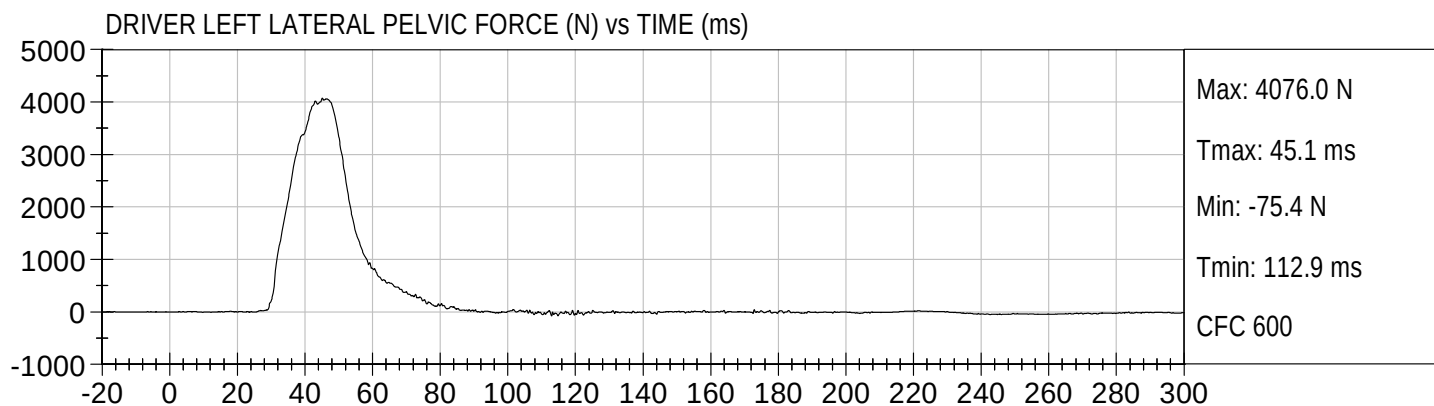
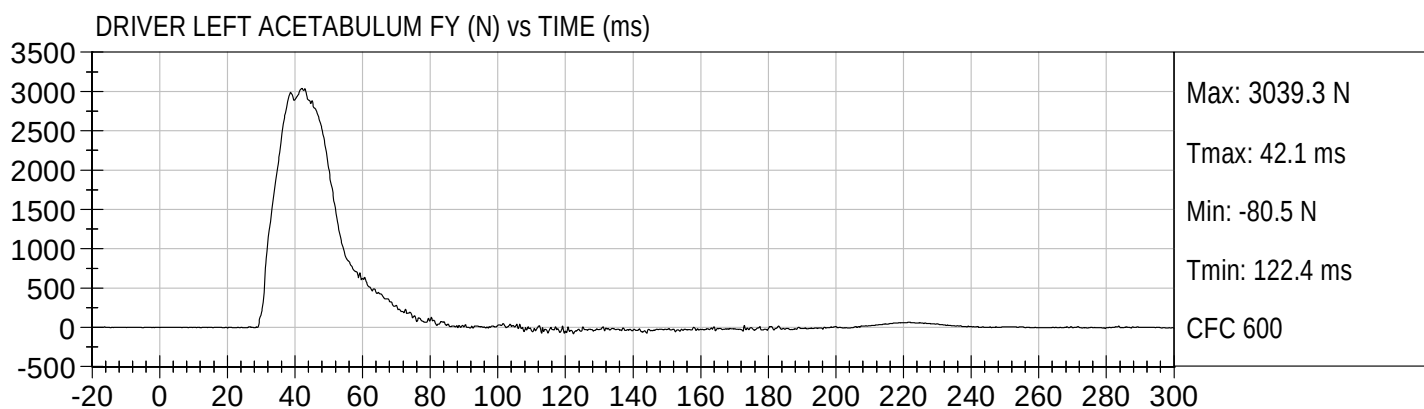
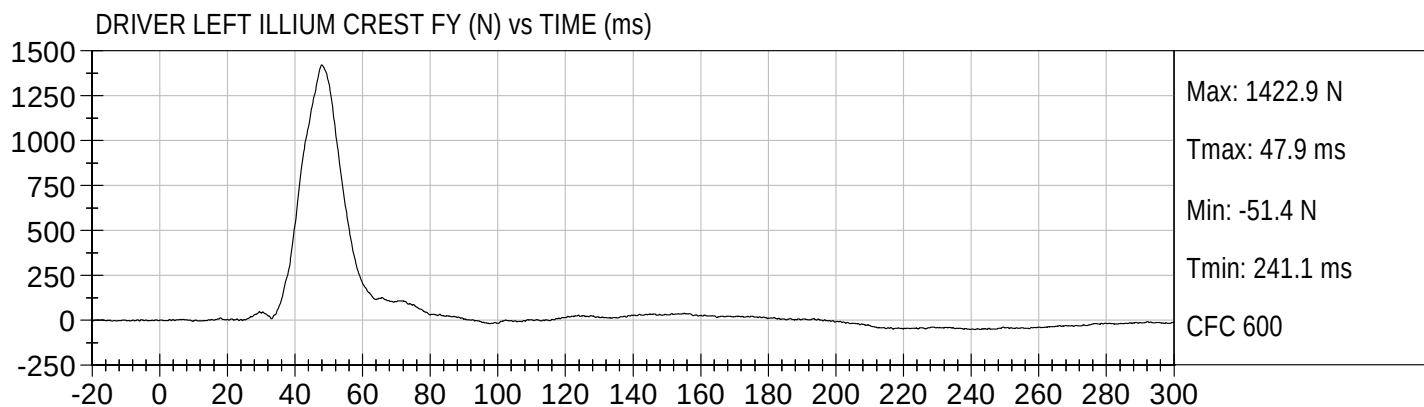
Load Cell Pole Barrier #6 Force (Y)

Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)







APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SID-IIsD External Measurements
SN: 306

No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148	141	Pass
H	Head Back from Backline	40 - 46	45	Pass
I	Head Depth	178 - 188	182	Pass
J	Head Circumference	541 - 551	550	Pass
K	Buttock to Knee Length	514 - 540	538	Pass
L	Popliteal Height	343 - 369	349	Pass
M	Knee Pivot to Floor Height	392 - 409	394	Pass
N	Buttock Popliteal Length	416 - 442	435	Pass
O	Chest Depth w/o Jacket	195 - 211	198	Pass
P	Foot Length	216 - 232	222	Pass
Q	Hip Breadth (w/ pelvic plugs)	313 - 323	317	Pass
R	Arm Length	249 - 259	250	Pass
S	Knee Joint to Seatback	477 - 493	483	Pass
V	Shoulder Width	341 - 357	351	Pass
W	Foot Width	78 - 94	82	Pass
Y	Chest Circumference w/ jacket	851 - 881	863	Pass
Z	Waist Circumference	761 - 791	782	Pass

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

ATD Serial No: 306

Test ID: D121911

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	36	Pass
Peak Resultant Acceleration	G's	115 to 137	130	Pass
Peak Longitudinal Acceleration	G's	+/- 15	9.4	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass



Laboratory Technician

5/22/12
Test Date

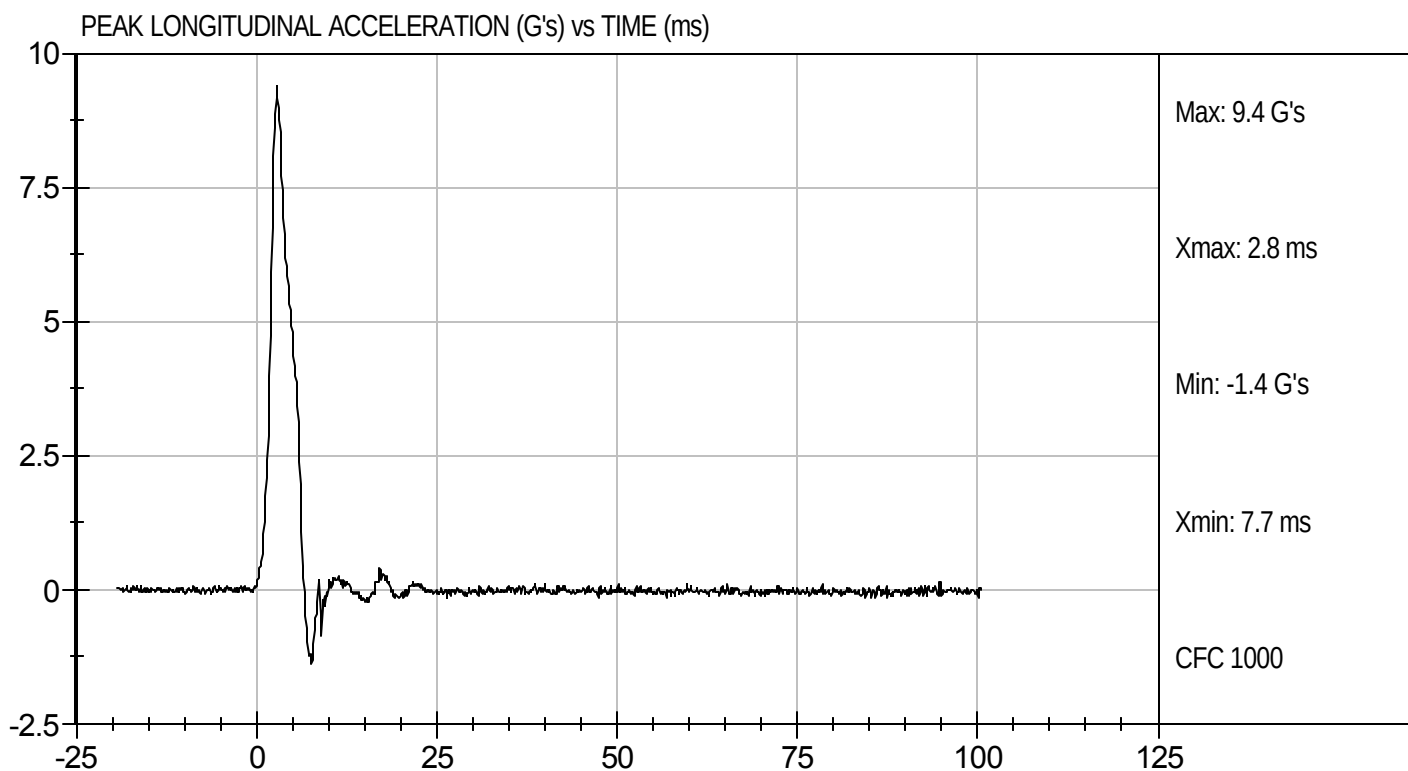
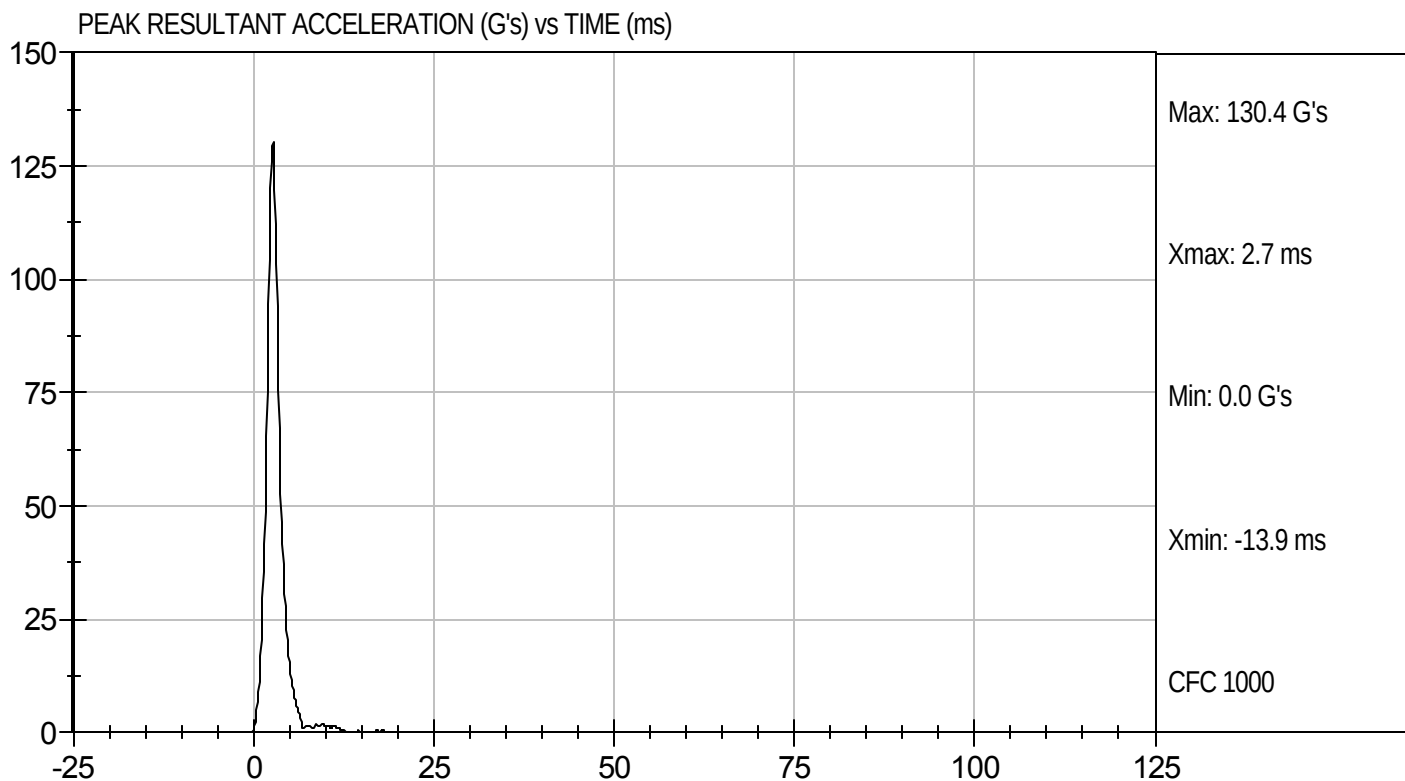


Approved By



Test Desc: Head Drop
Component ID: D121911

Test Date: 5/22/12
Velocity: 0 ft/s, 0 m/s

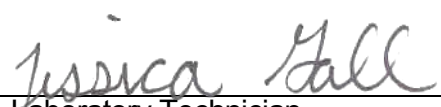


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D121912

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.9	Pass
Humidity		%	10 to 70	35	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.72	Pass
	15 ms	m/s	3.30 to 4.10	3.94	Pass
	20 ms	m/s	4.40 to 5.40	5.22	Pass
	25 ms	m/s	5.40 to 6.10	5.53	Pass
	25-100 ms	m/s	5.50 to 6.20	5.54	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	60	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-41	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	114	Pass
Overall Test Results				Pass	


 Laboratory Technician

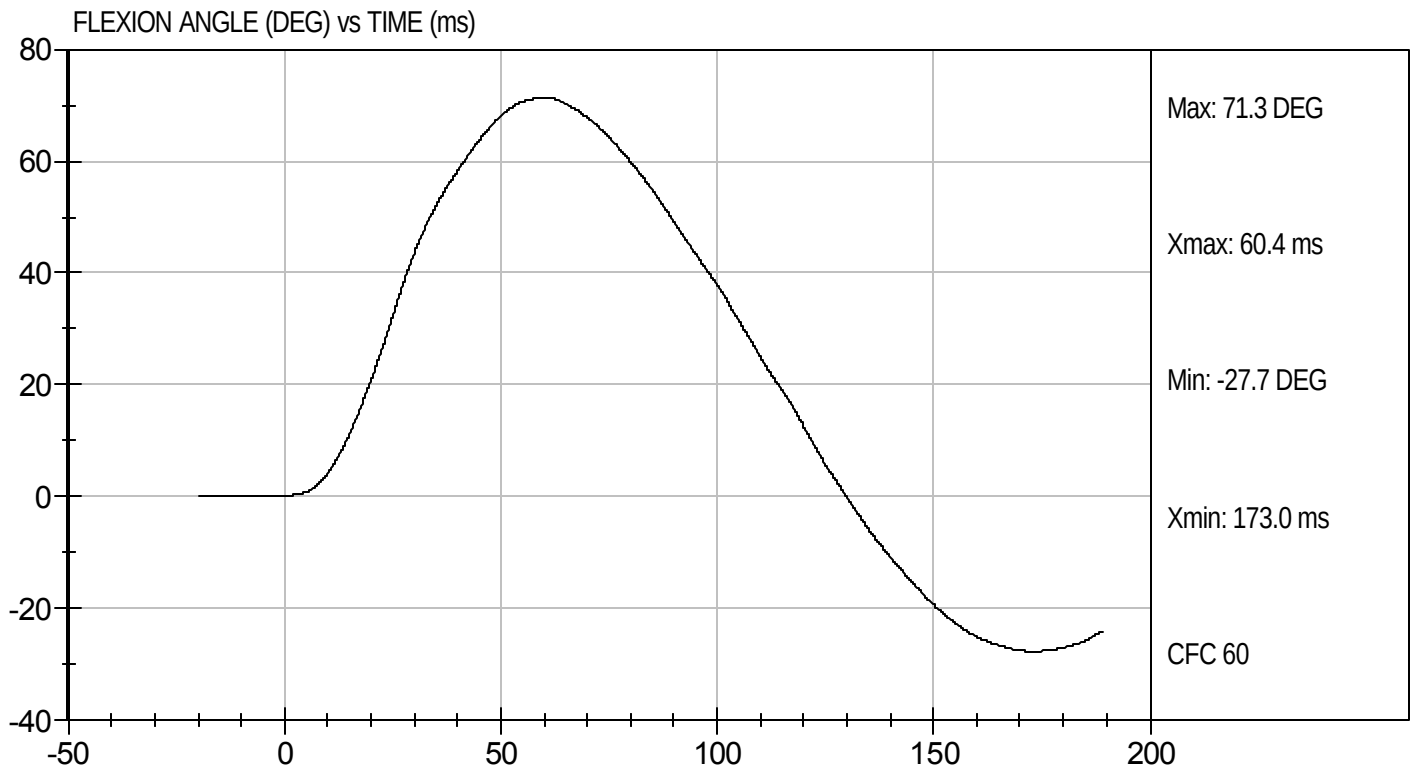
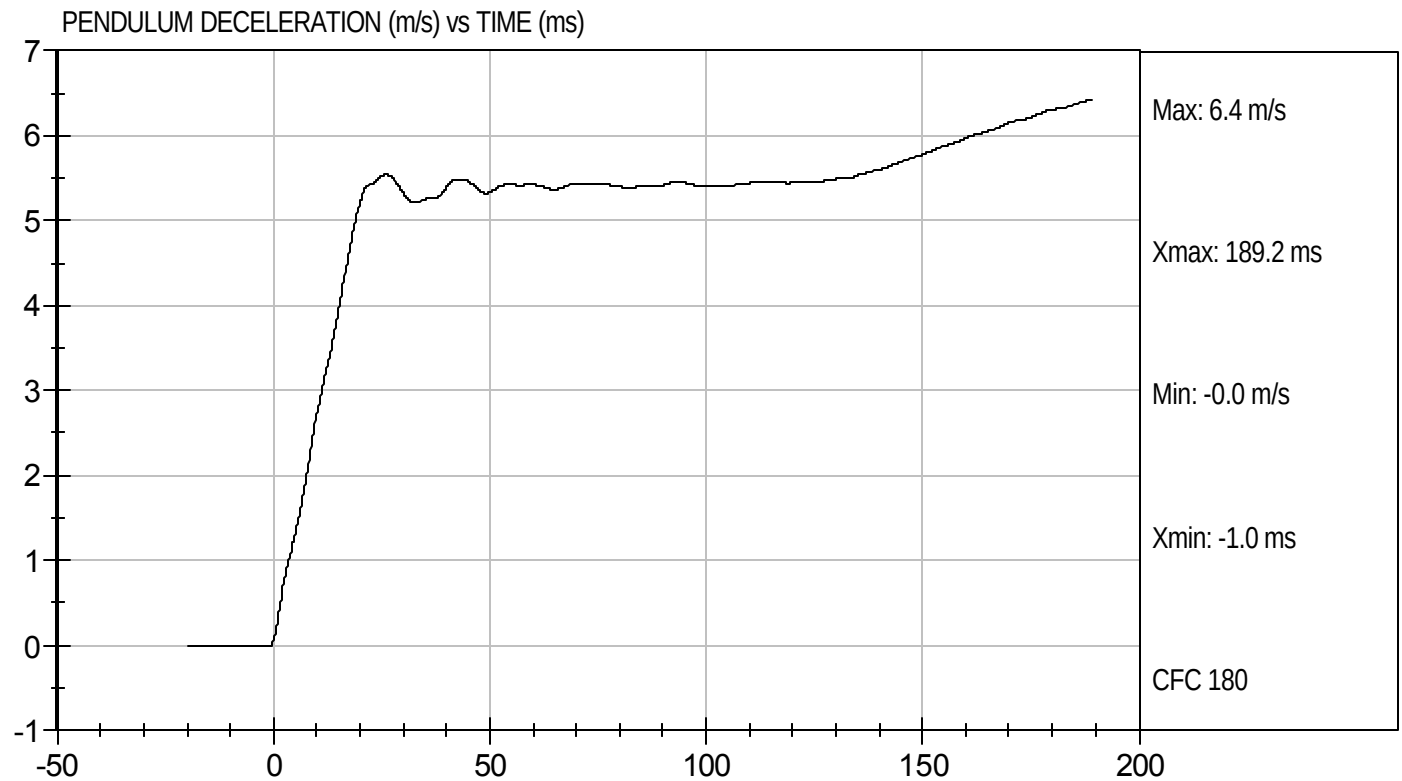
5/22/12
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D121912

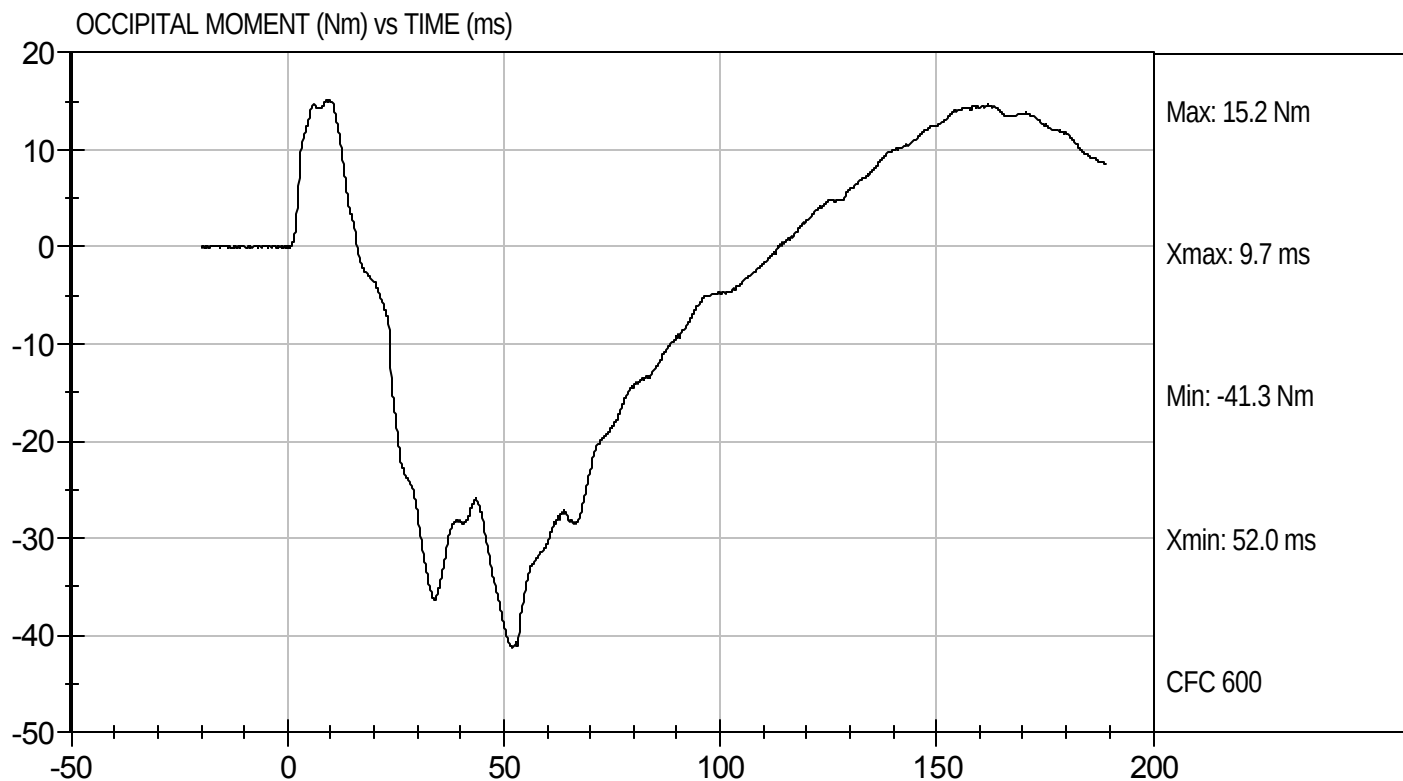
Test Date: 5/22/12
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D121912

Test Date: 5/22/12
Velocity: 18.32 ft/s, 5.58 m/s



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

ATD Serial No: 306

Test ID: D121913

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	35	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	28	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results			Pass	


Laboratory Technician

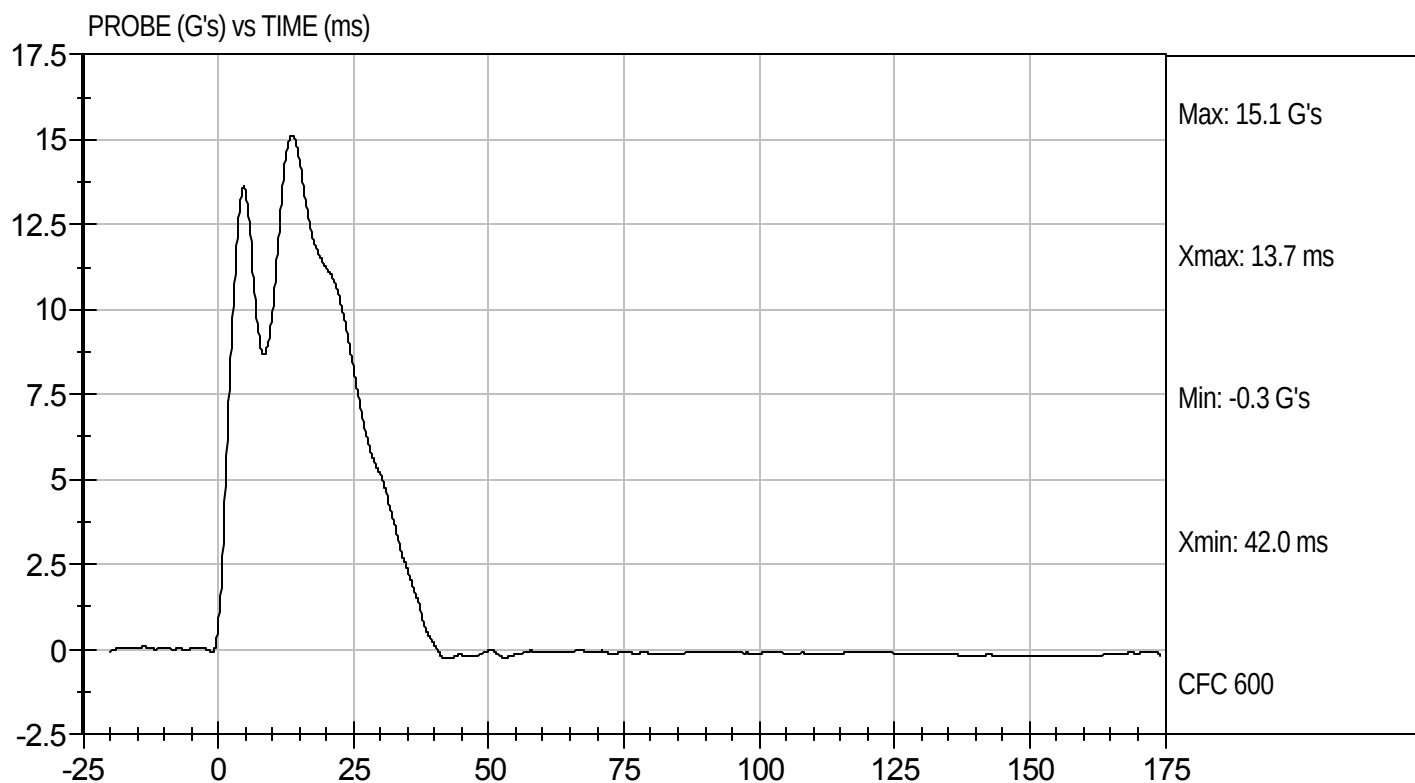
5/22/12
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D121913

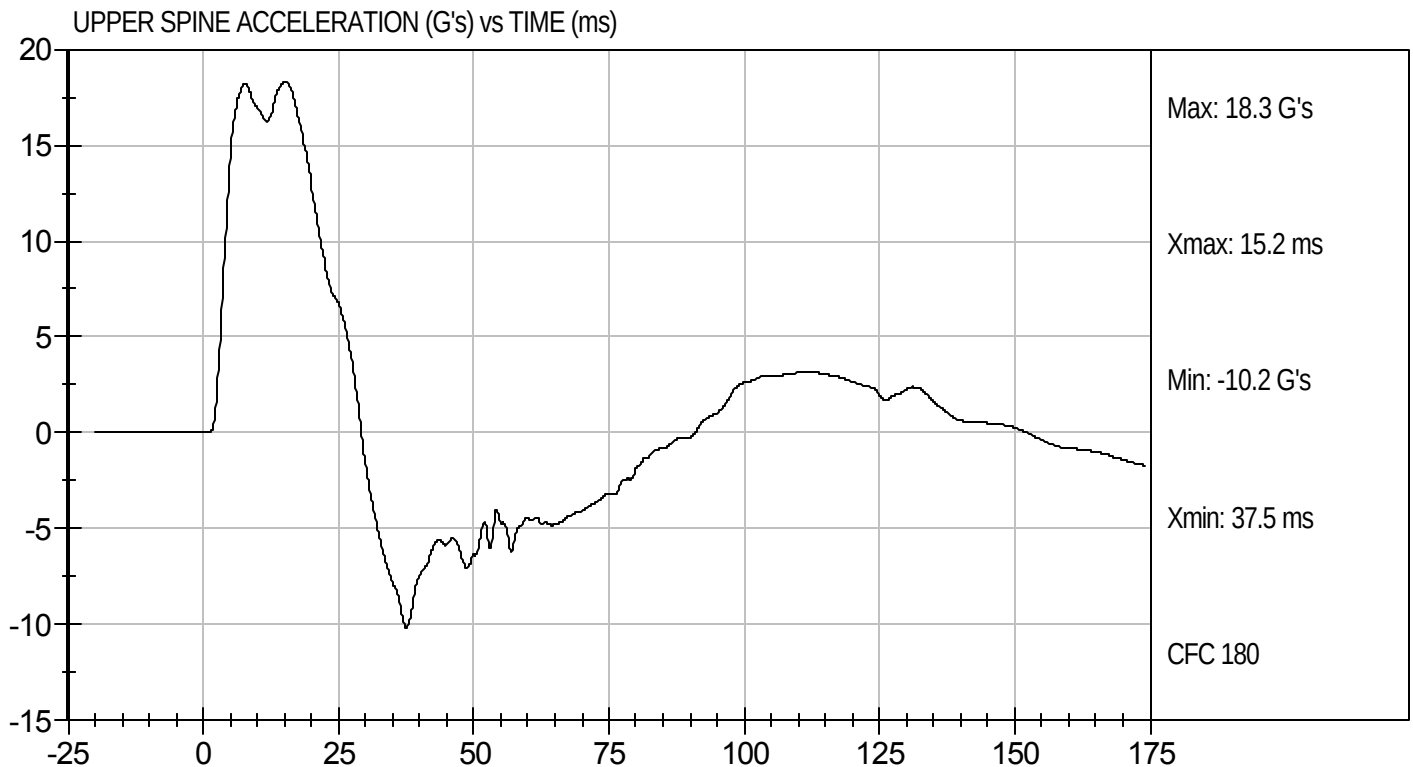
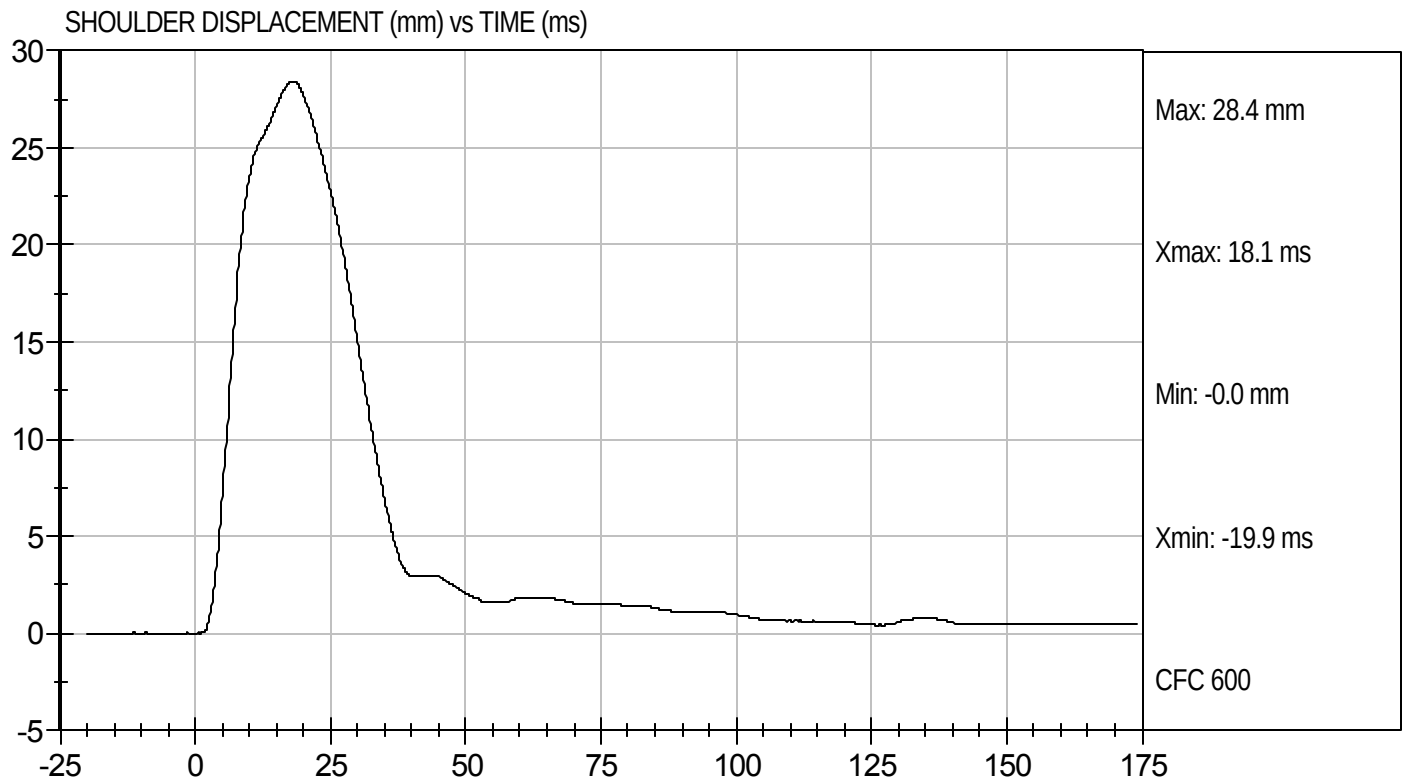
Test Date: 5/22/12
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Shoulder Impact
Component ID: D121913

Test Date: 5/22/12
Velocity: 14.36 ft/s, 4.38 m/s



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

ATD Serial No: 306

Test I.D: D121914

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	34	Pass
Shoulder Displacement	mm	31 to 40	31	Pass
Upper Rib Displacement	mm	25 to 32	26	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	40	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
Overall Test Results				Pass


Laboratory Technician

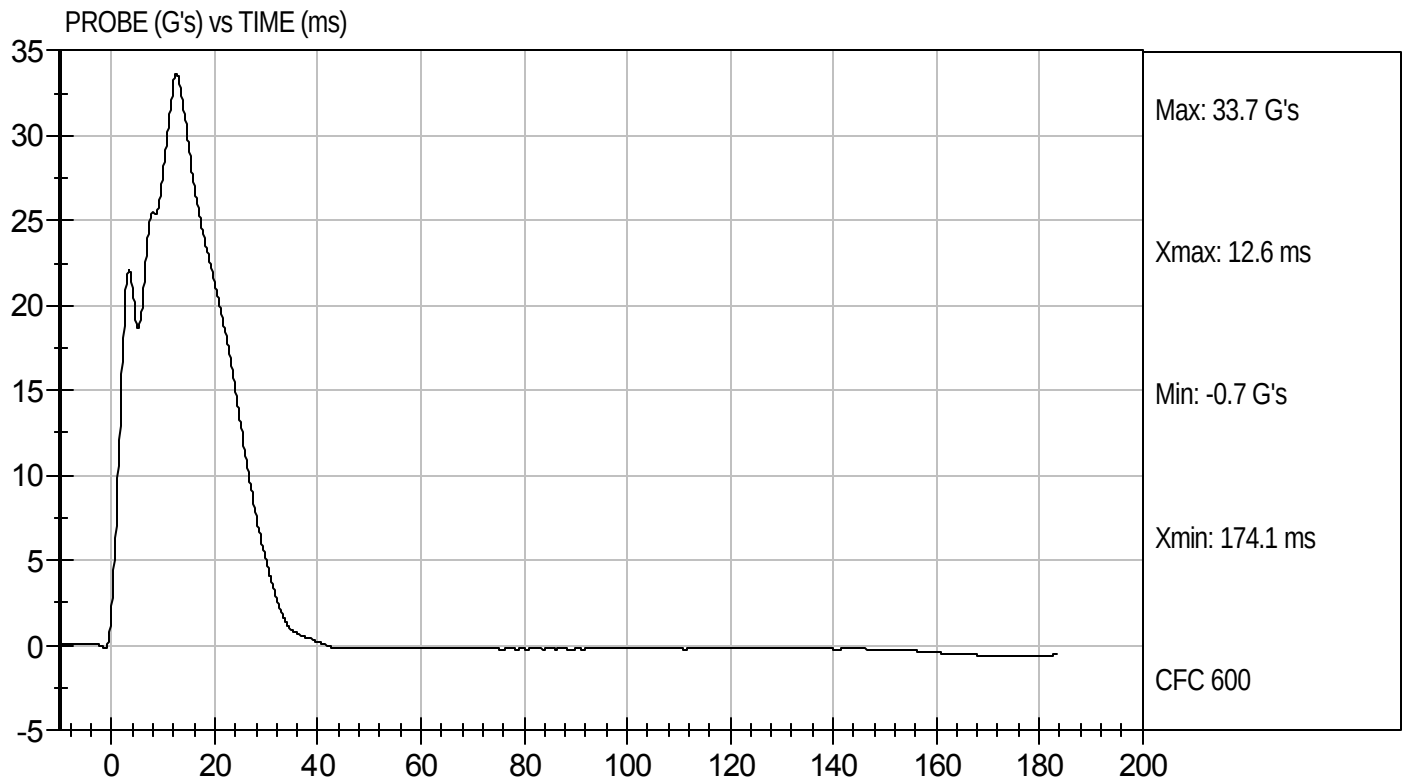
5/23/12
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D121914

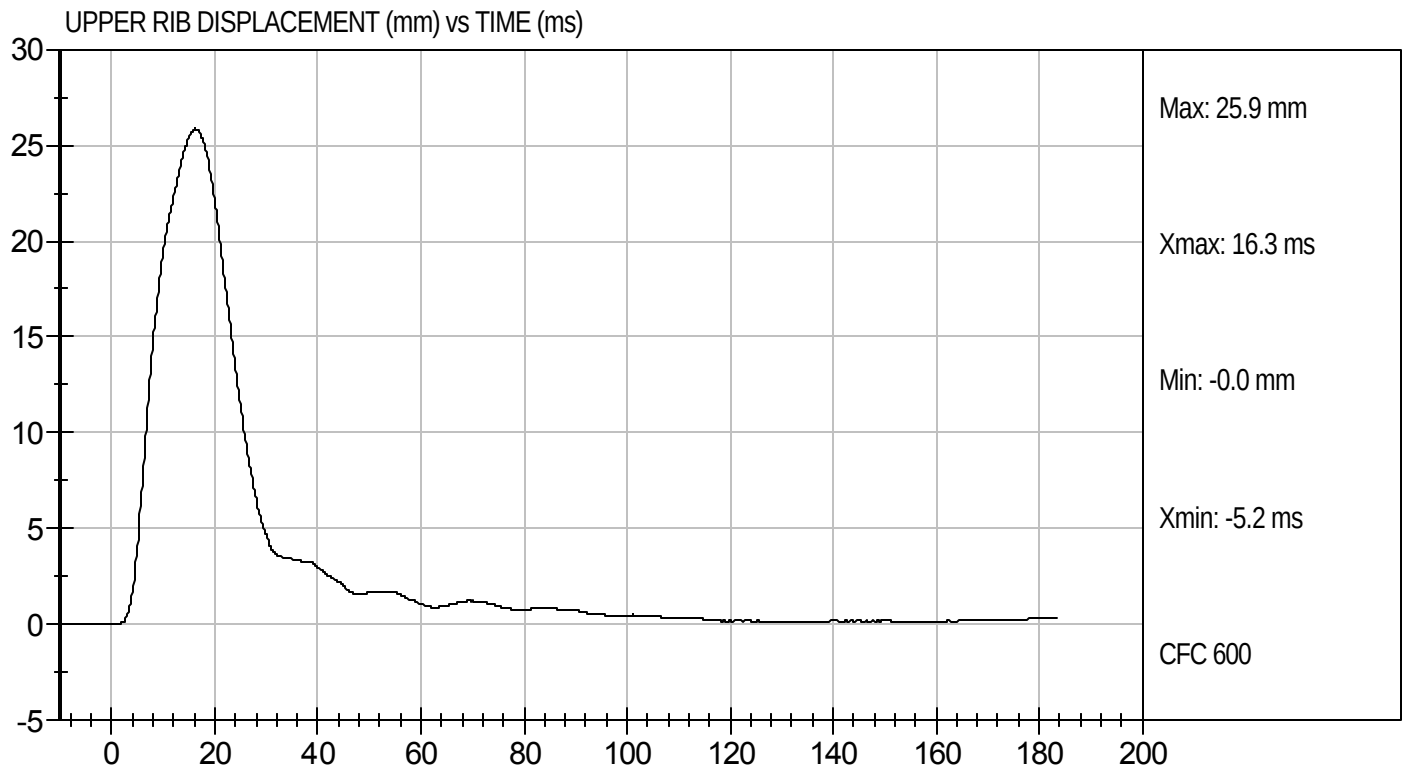
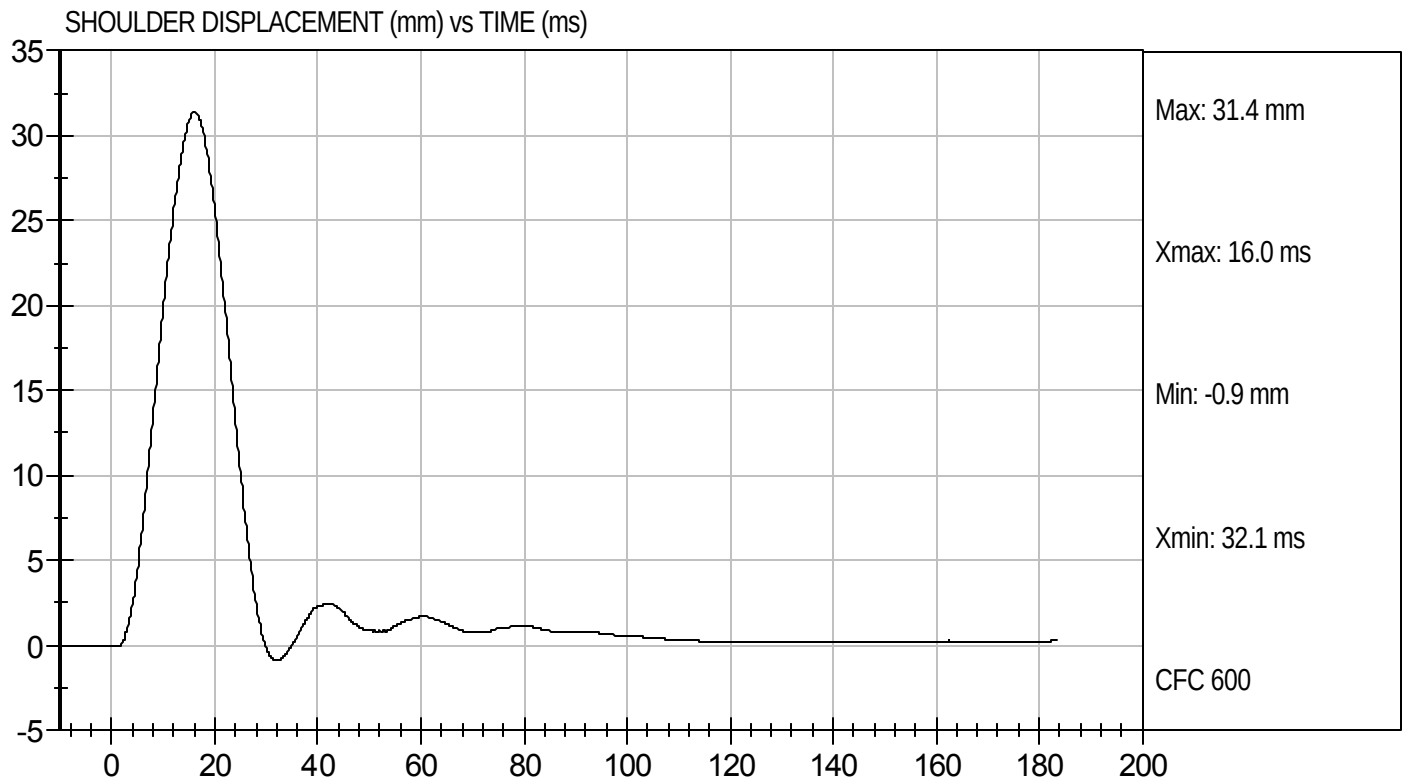
Test Date: 5/23/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D121914

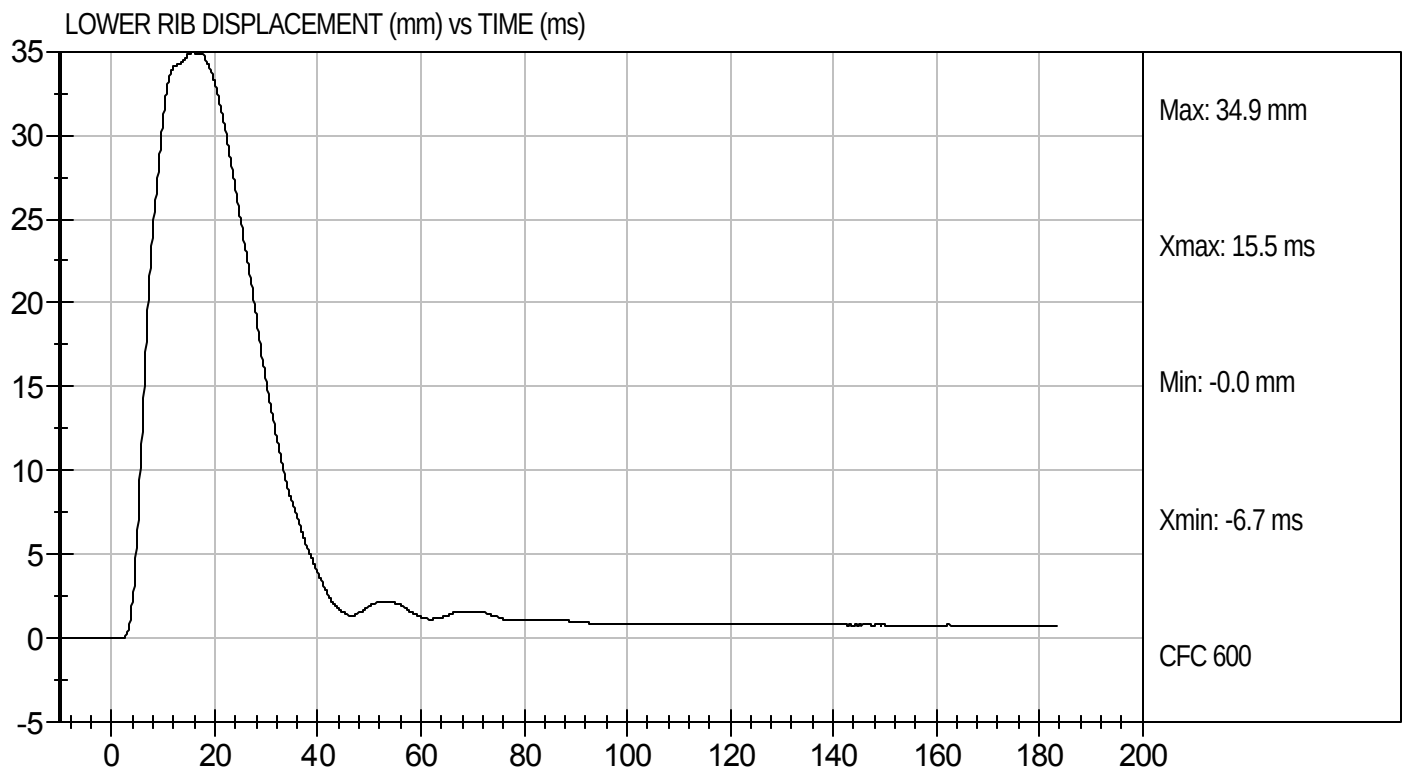
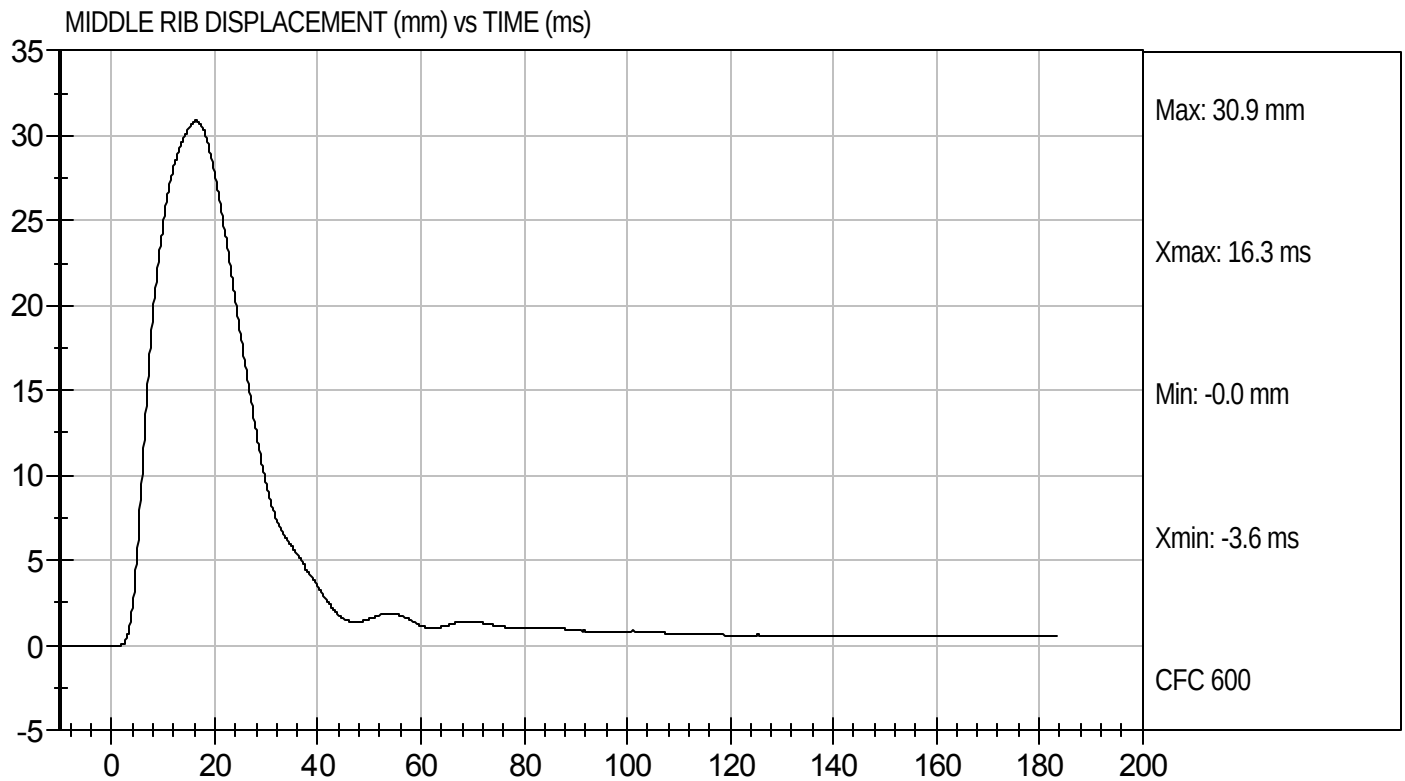
Test Date: 5/23/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D121914

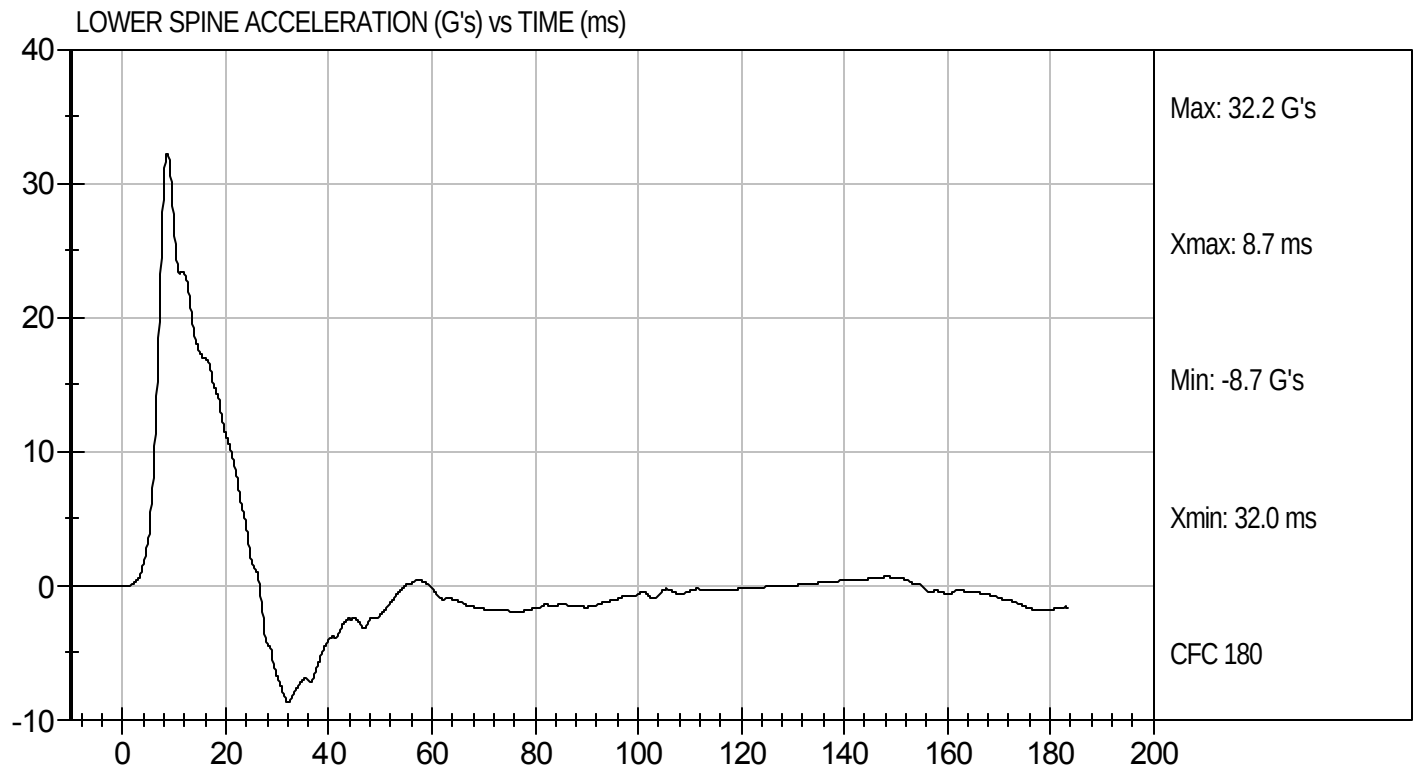
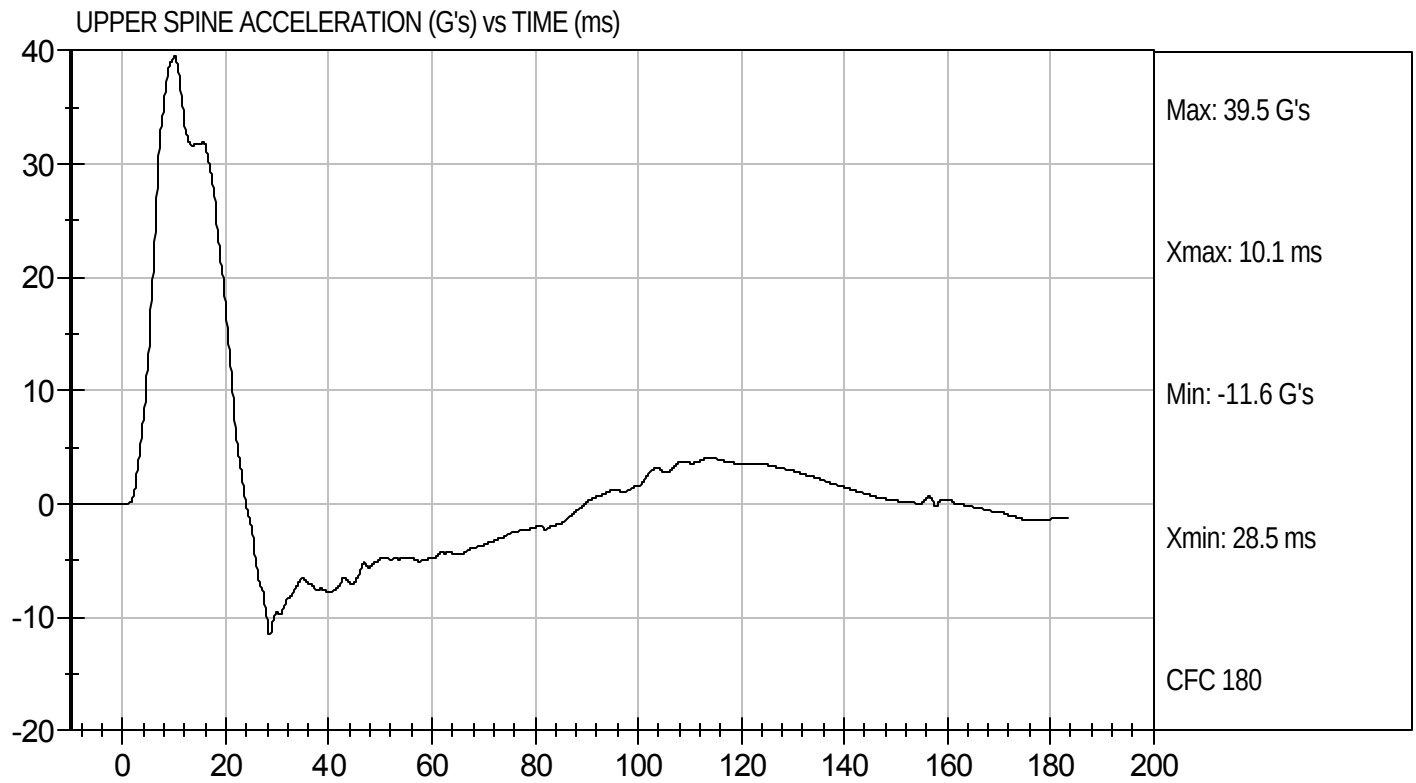
Test Date: 5/23/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D121914

Test Date: 5/23/12
Velocity: 22.22 ft/s, 6.77 m/s

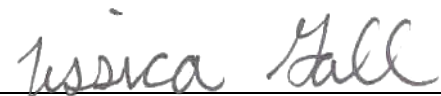


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D121915

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Force	G's	14 to 18	16	Pass
Upper Rib Displacement	mm	32 to 40	34	Pass
Middle Rib Displacement	mm	39 to 45	41	Pass
Lower Rib Displacement	mm	35 to 43	42	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results			Pass	


Laboratory Technician

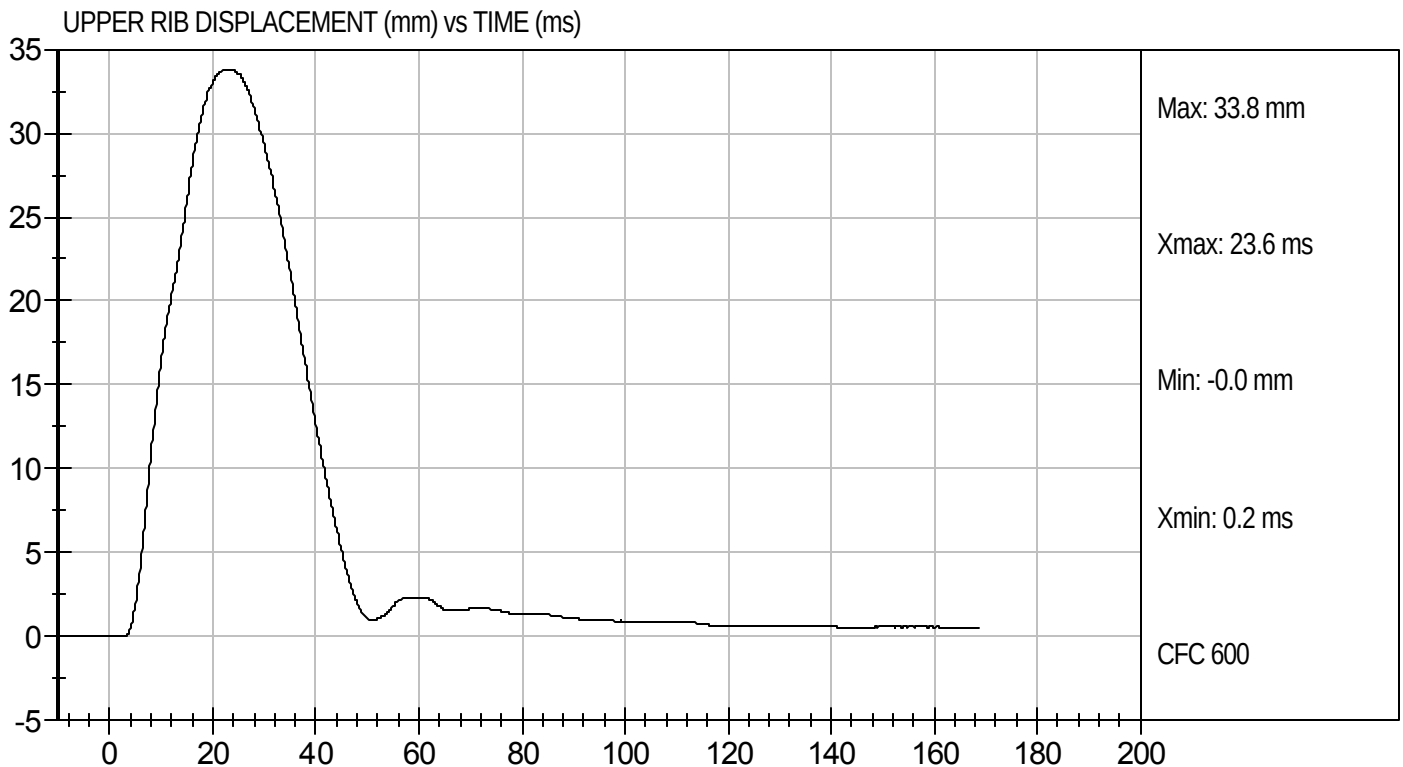
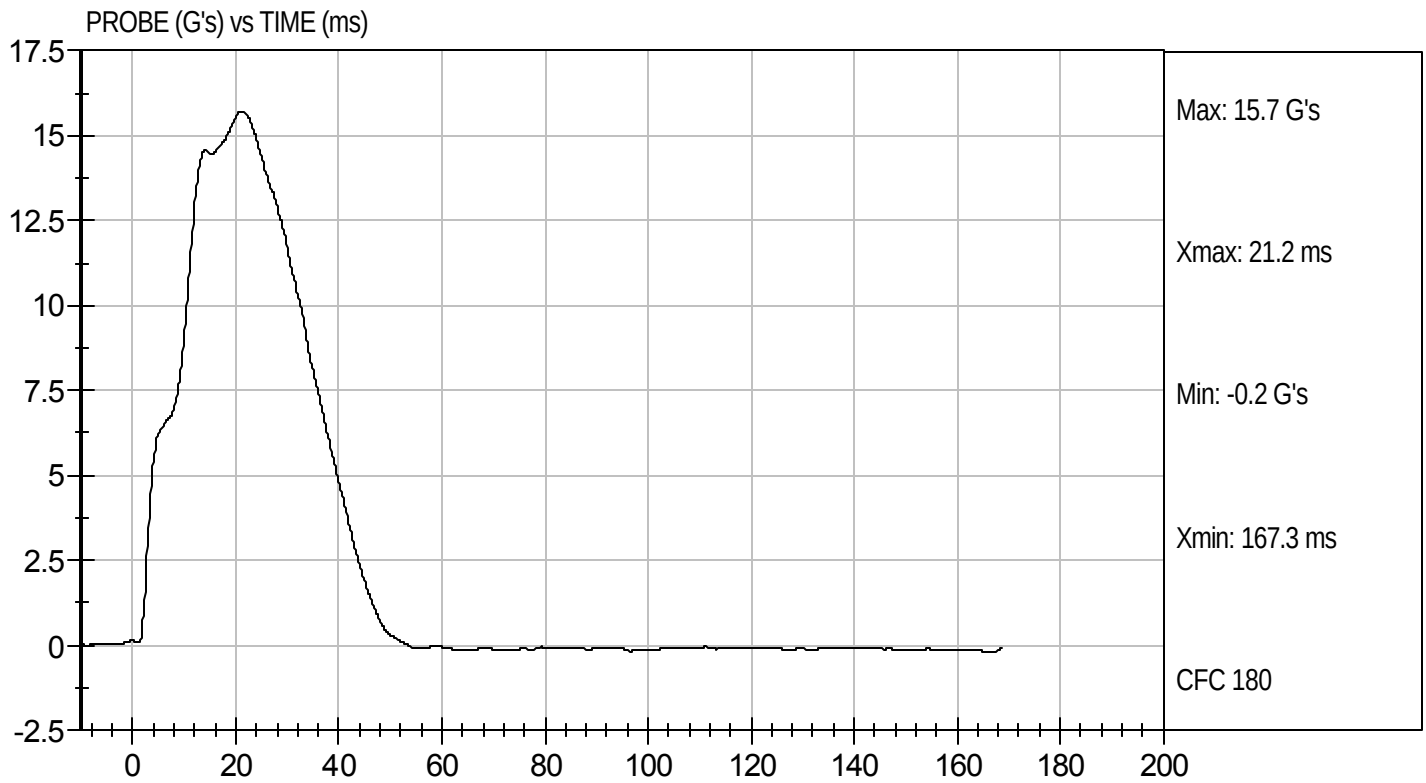
5/22/12
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D121915

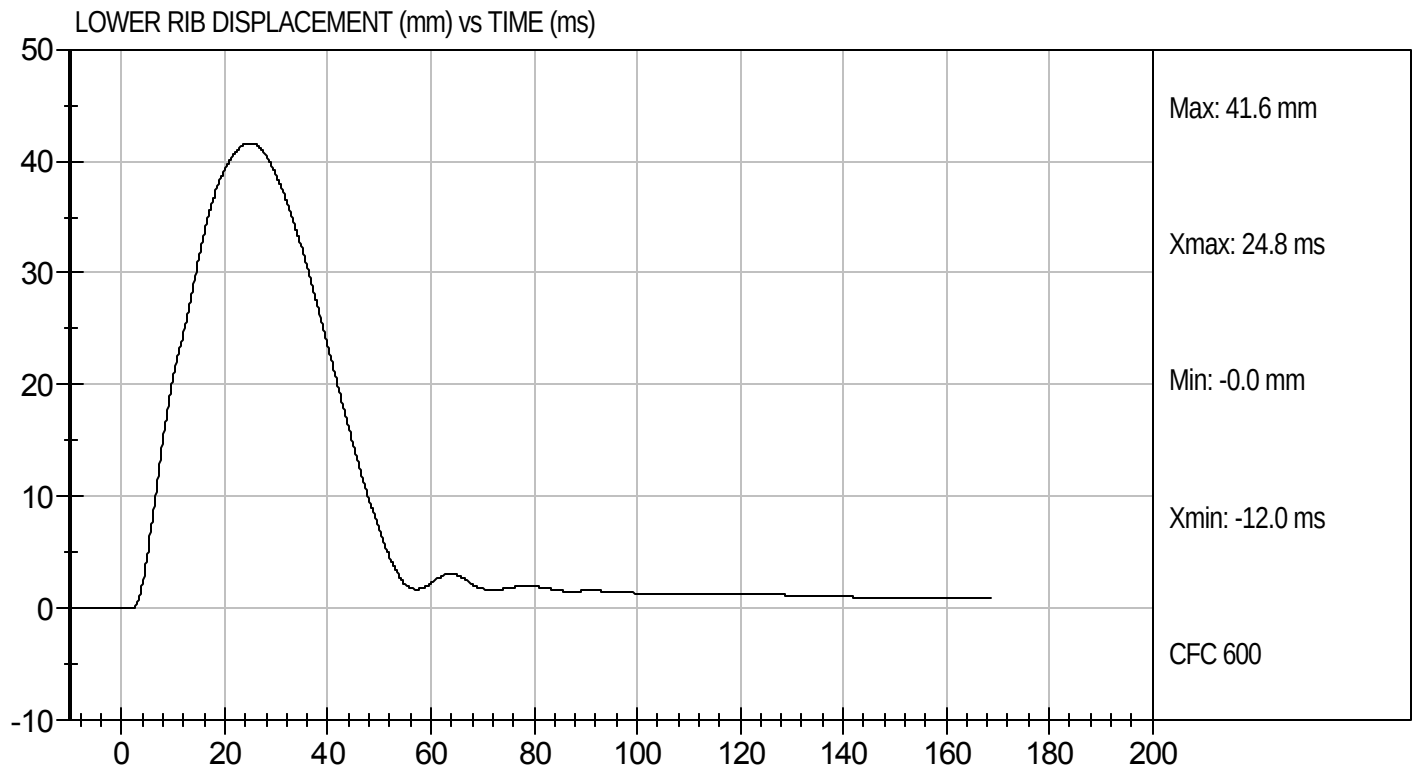
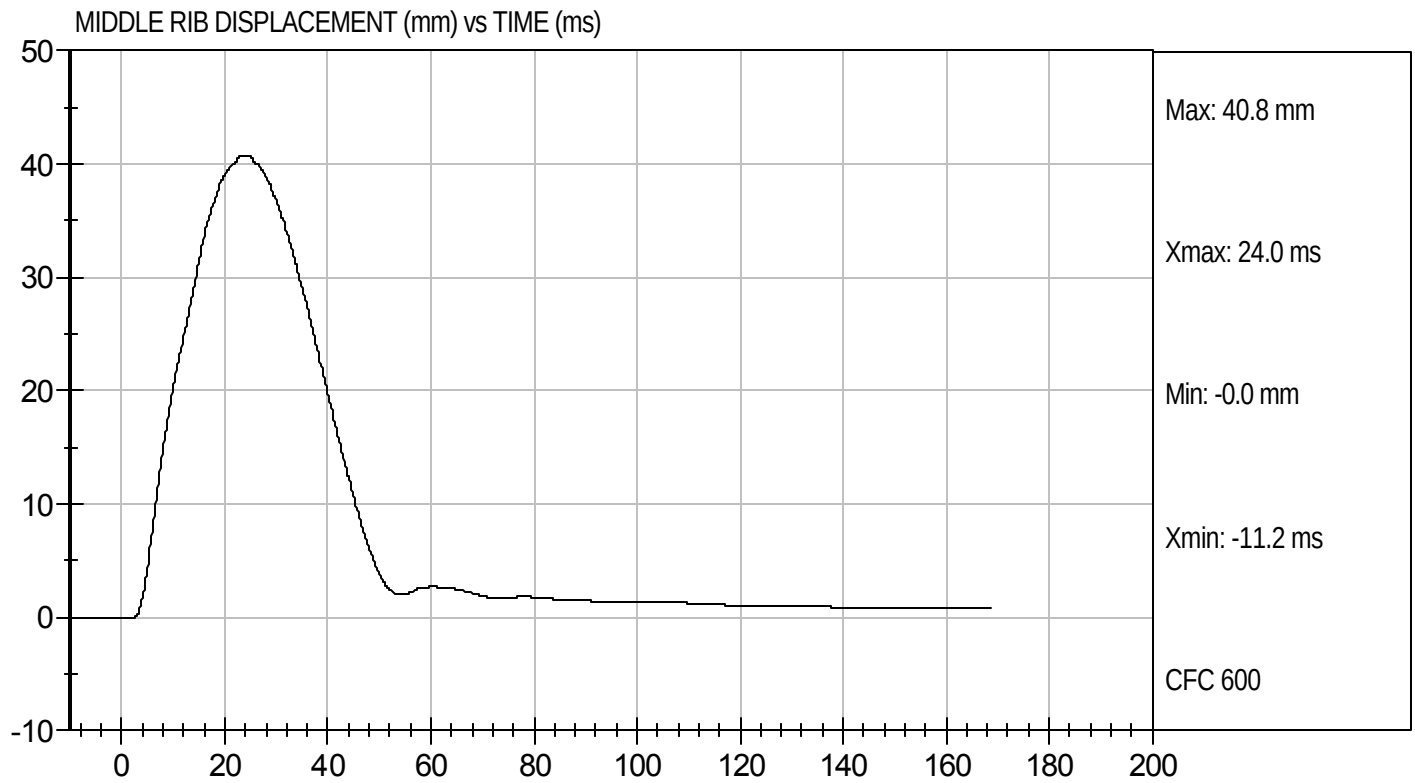
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Velocity: 14.01 ft/s, 4.27 m/s





Test Desc: Thorax Without Arm
Component ID: D121915

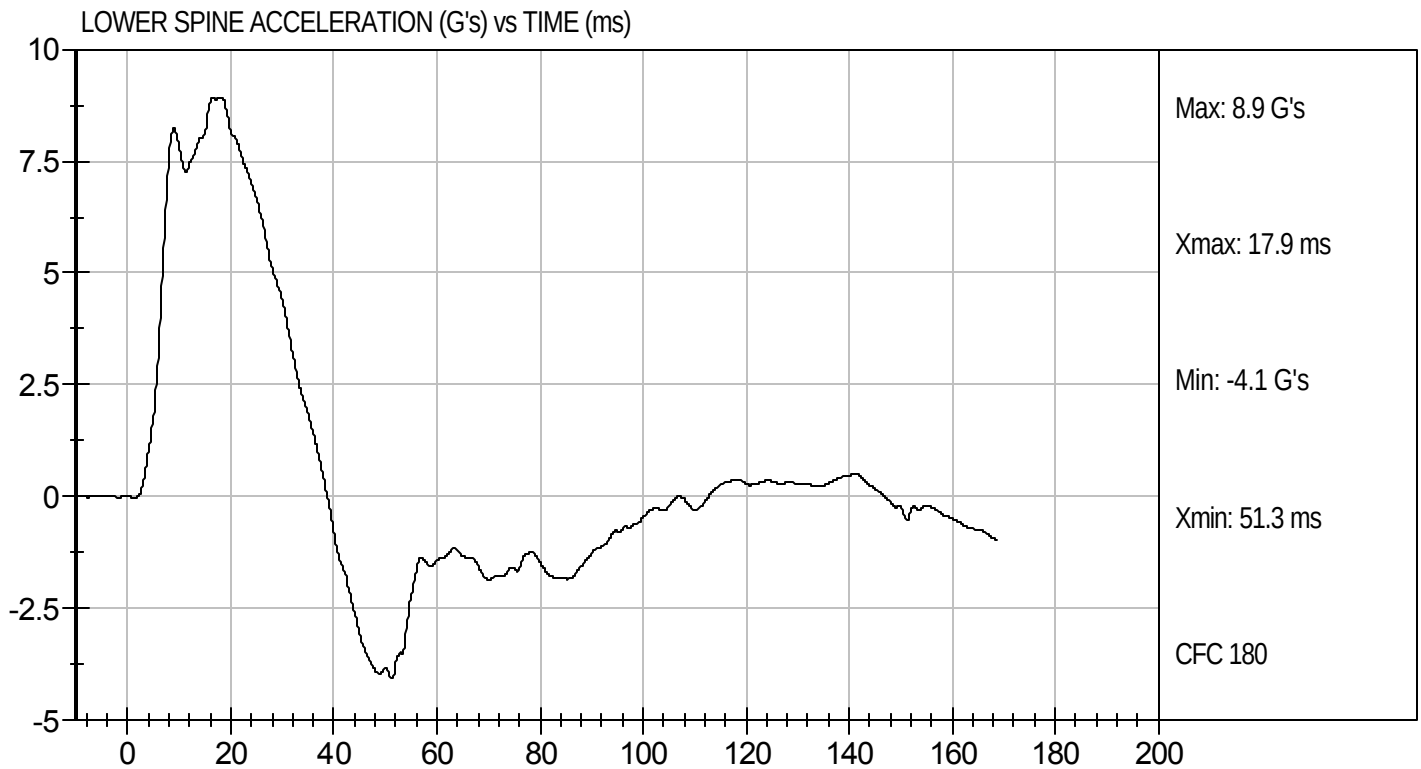
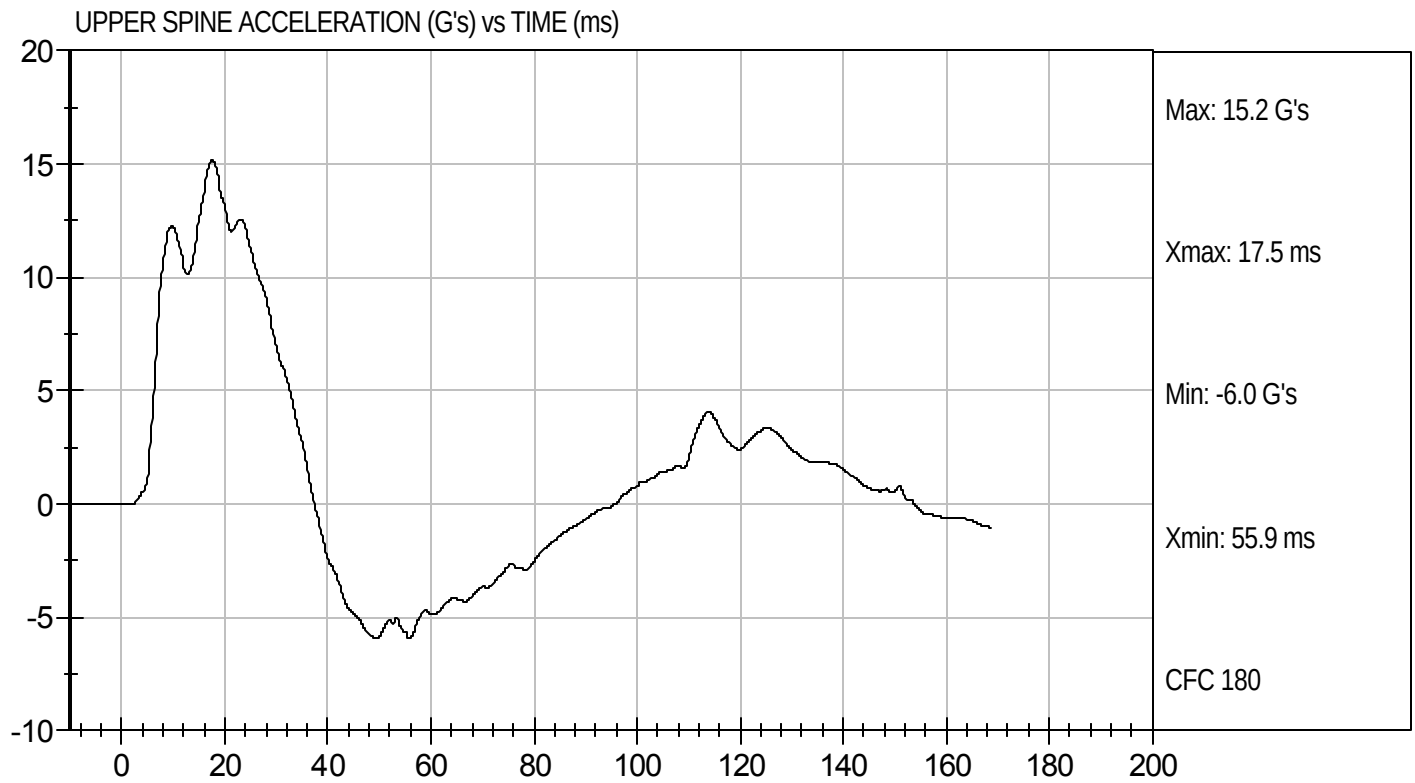
Test Date: 5/22/12
Velocity: 14.01 ft/s, 4.27 m/s





Test Desc: Thorax Without Arm
Component ID: D121915

Test Date: 5/22/12
Velocity: 14.01 ft/s, 4.27 m/s



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

ATD Serial No: 306

Test I.D: D121916

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	37	Pass
Lower Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results			Pass	


Laboratory Technician

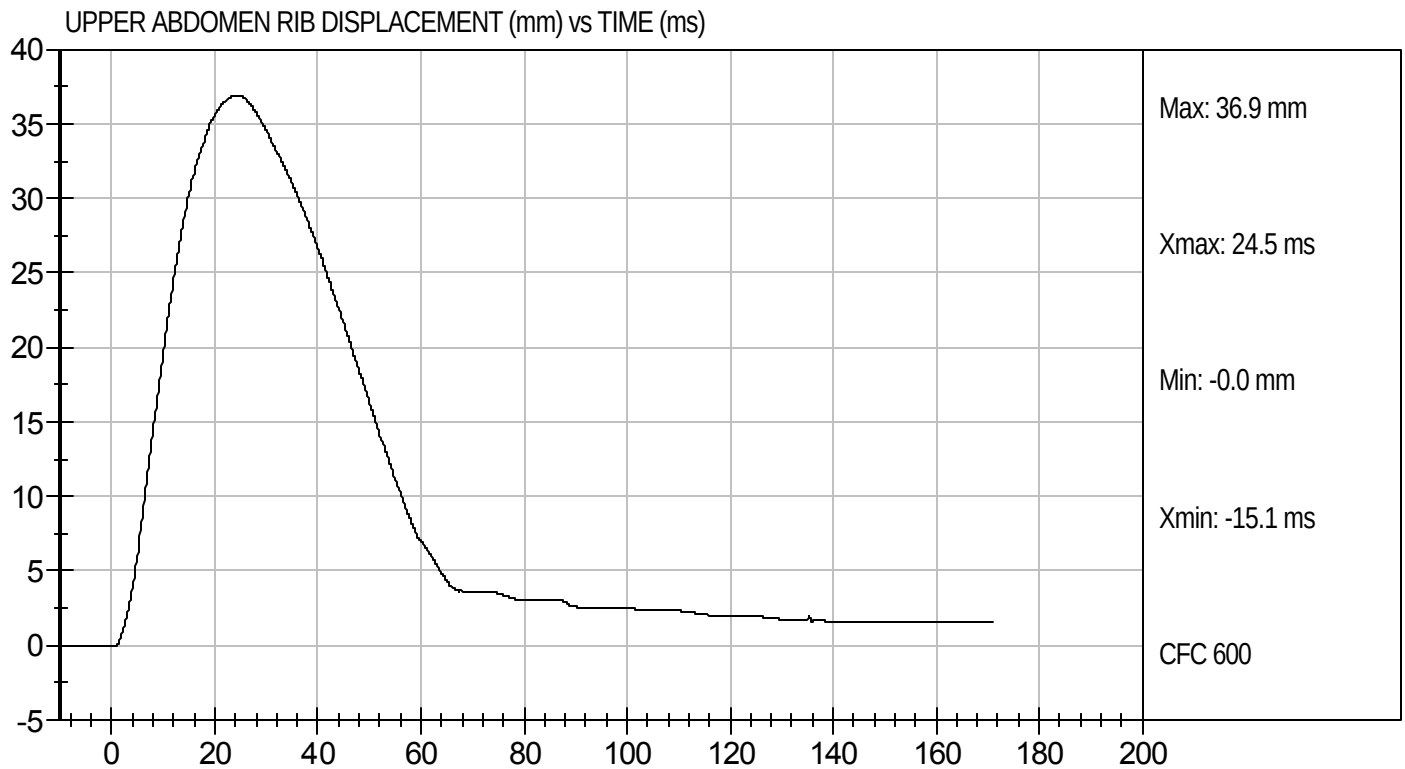
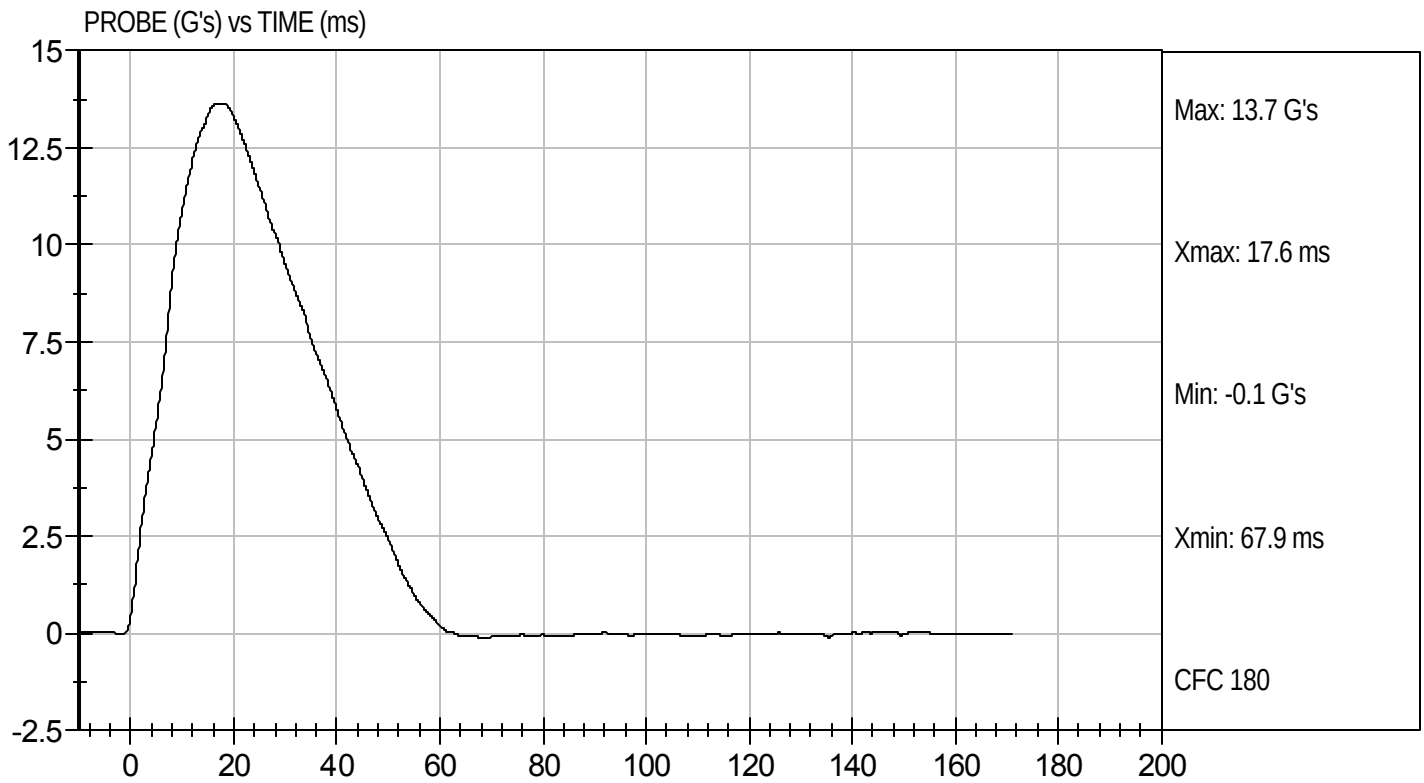
5/22/12
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D121916

Test Date: 5/22/12
Velocity: 14.12 ft/s, 4.30 m/s

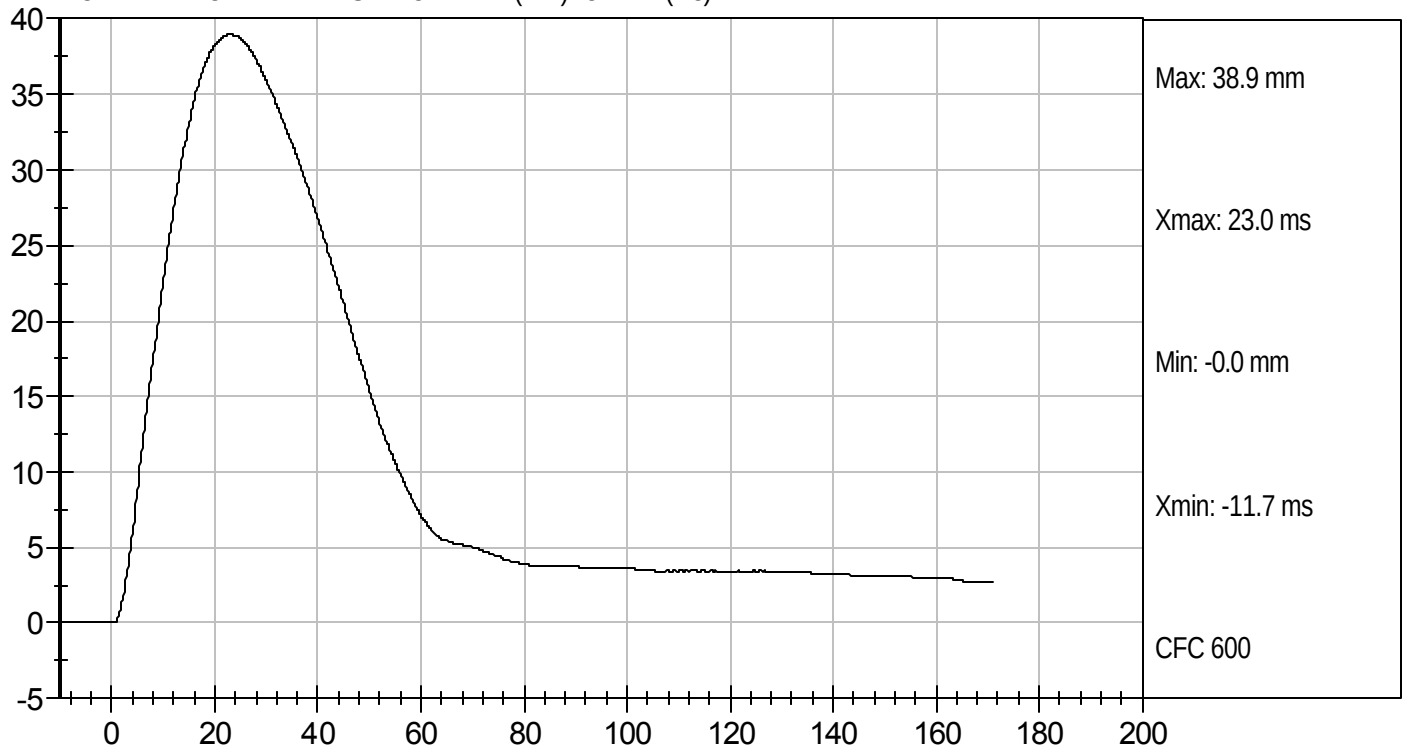




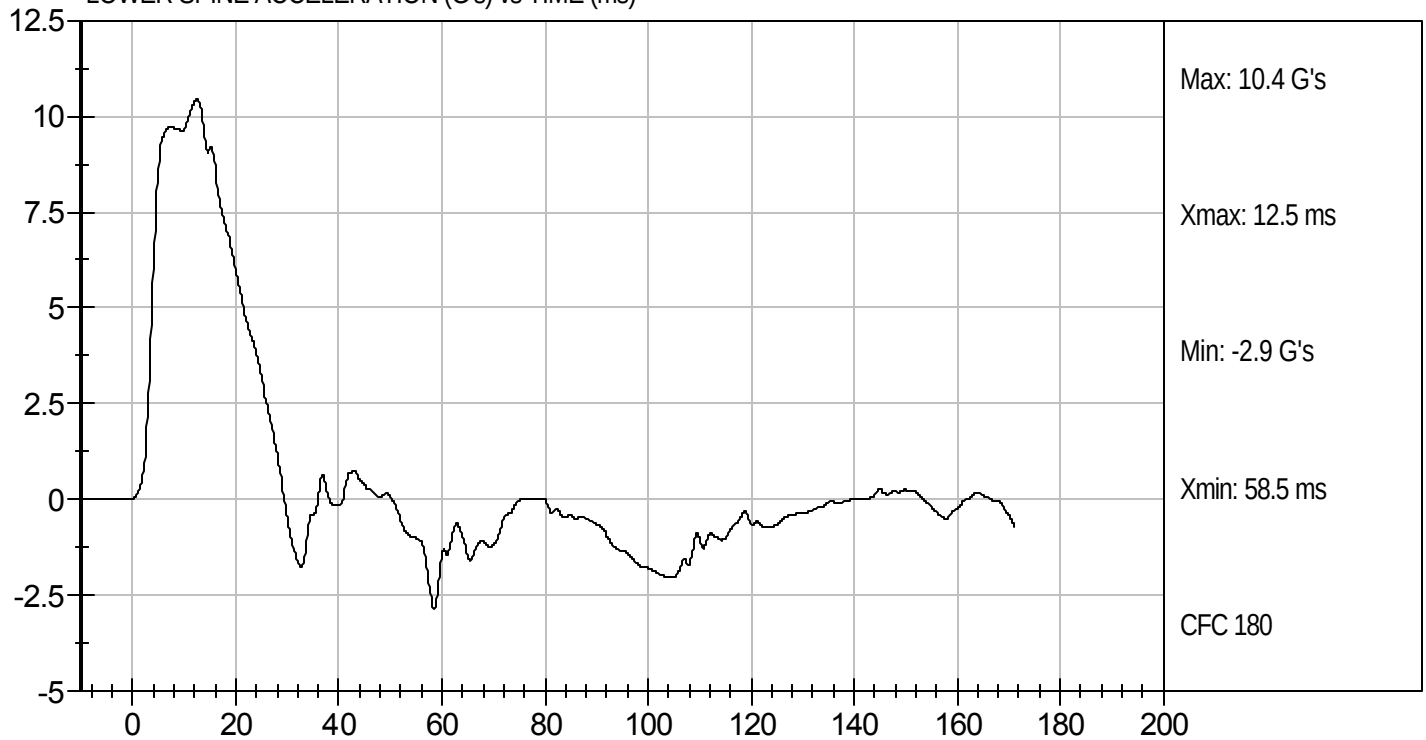
Test Desc: Abdomen Impact
Component ID: D121916

Test Date: 5/22/12
Velocity: 14.12 ft/s, 4.30 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: 306

Test I.D: D121917

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	6.60 to 6.80	6.70	Pass
Peak Impactor Acceleration	G's	38 to 47	45	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	4094	Pass
Overall Test Results				Pass


Laboratory Technician

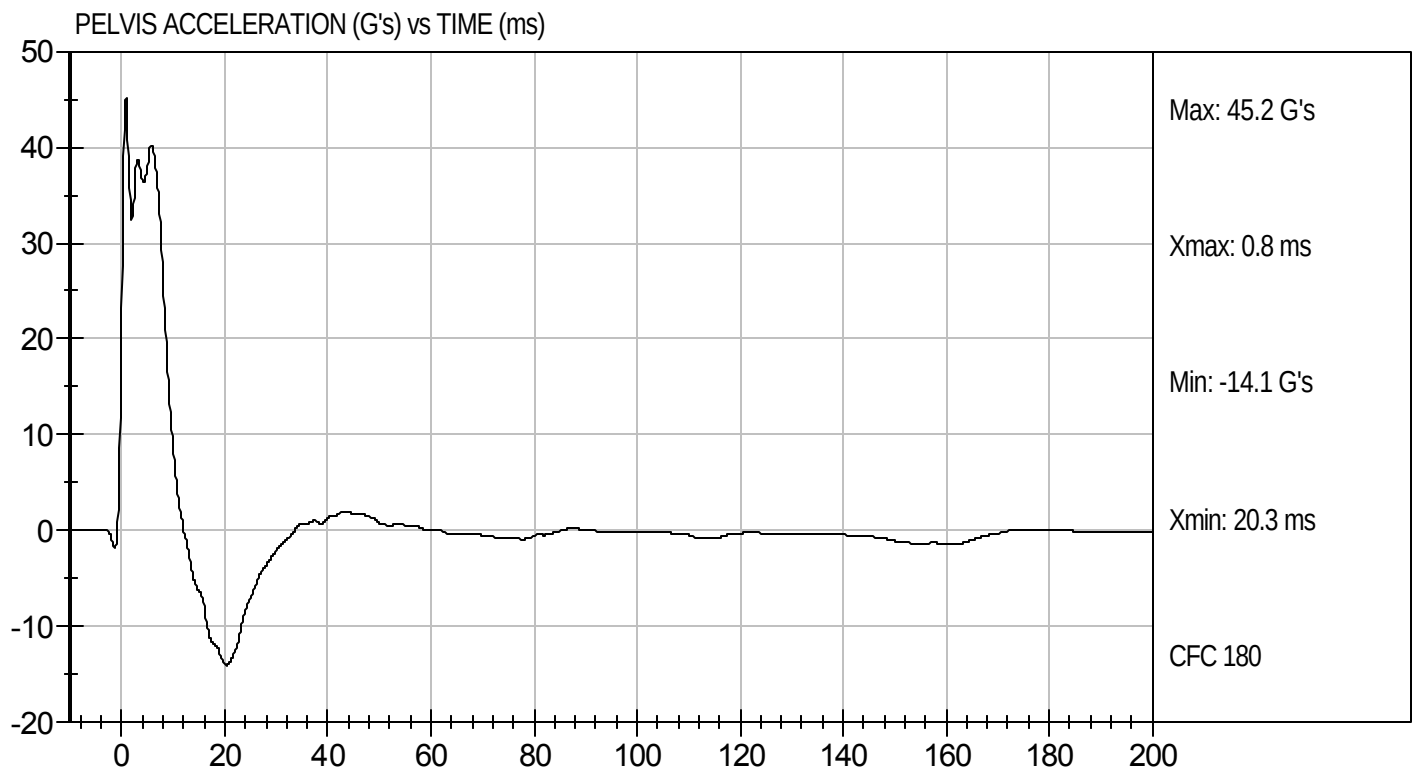
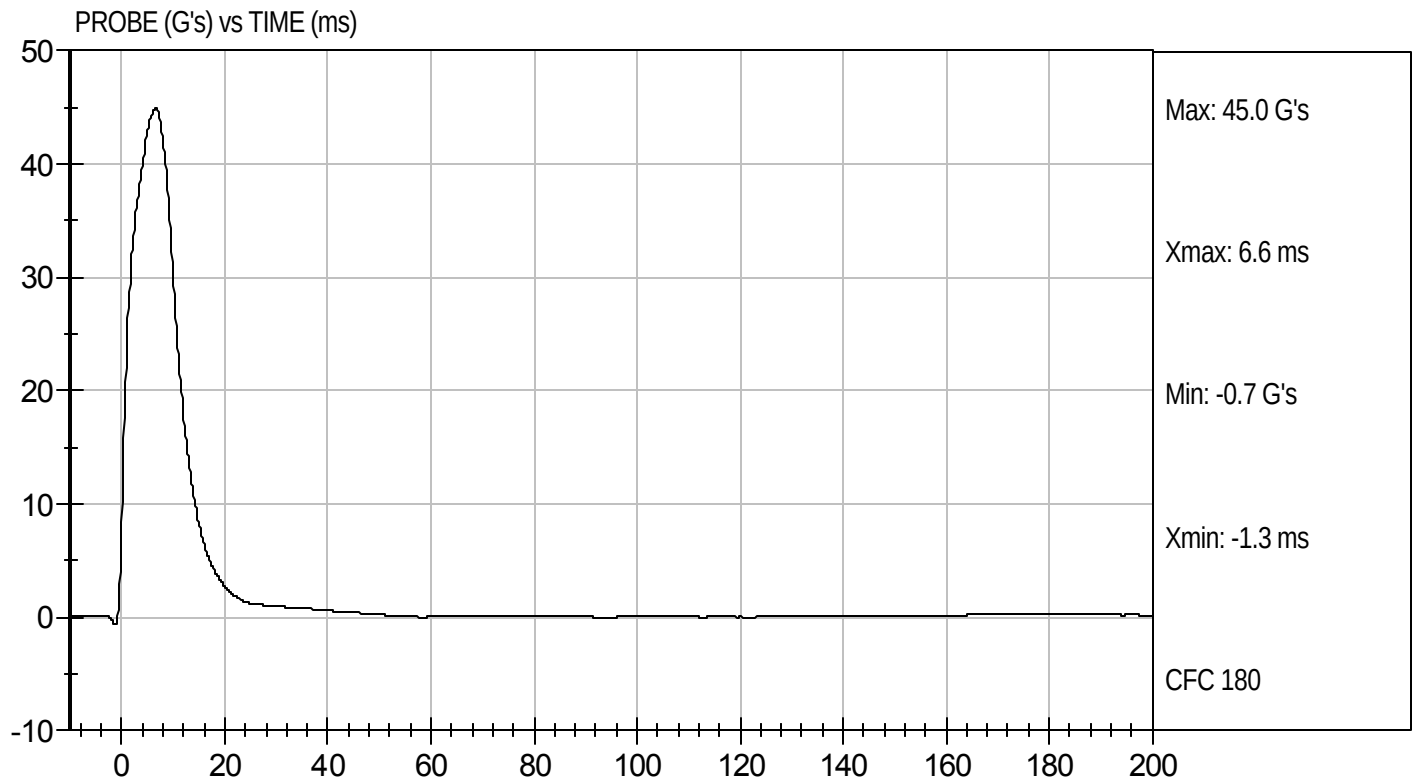
5/23/12
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D121917

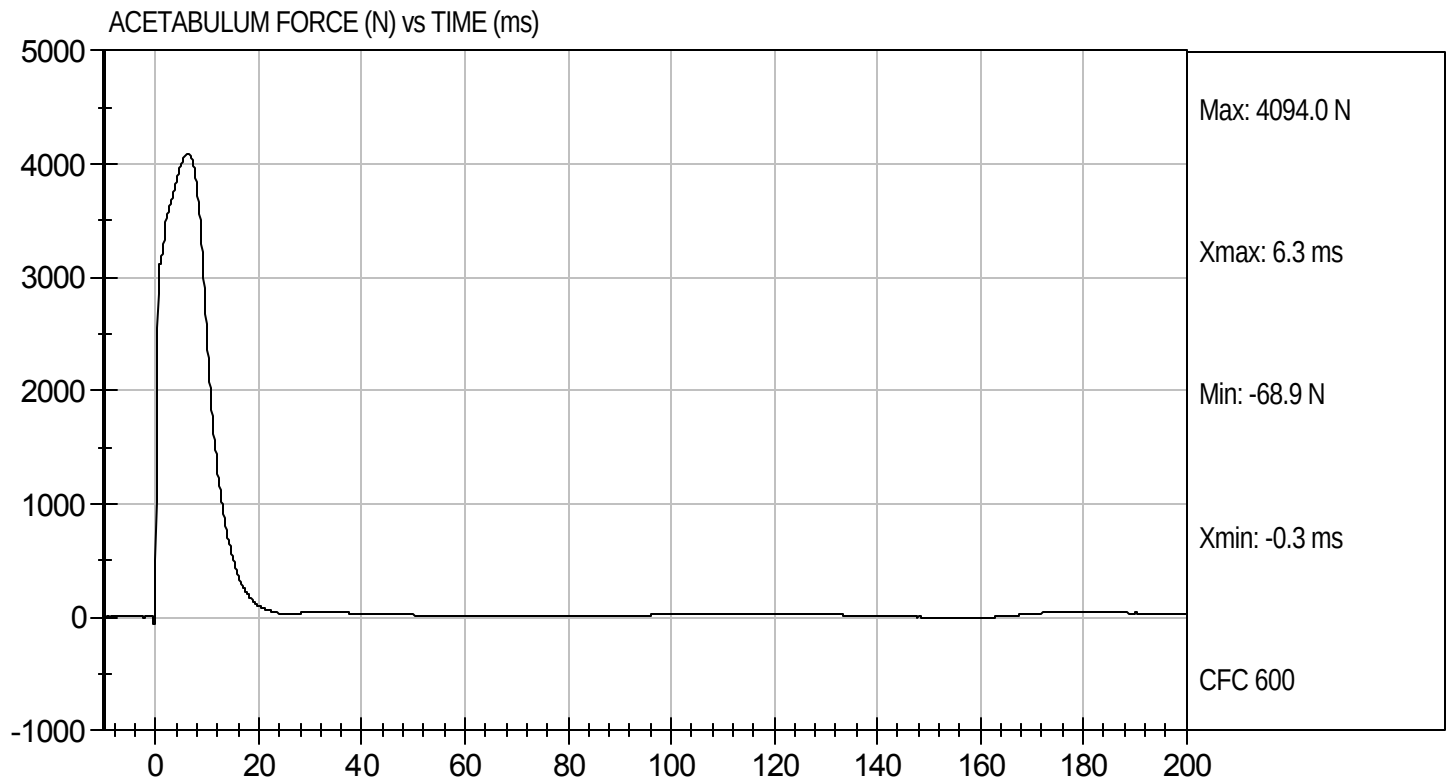
Test Date: 5/23/12
Velocity: 21.99 ft/s, 6.70 m/s





Test Desc: Pelvis Impact
Component ID: D121917

Test Date: 5/23/12
Velocity: 21.99 ft/s, 6.70 m/s

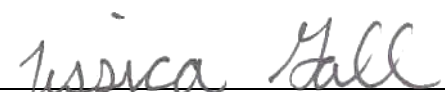


MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D121918

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	38	Pass
Pelvis Y Acceleration	G's	28 to 39	30	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4459	Pass
Overall Test Results				Pass


Laboratory Technician

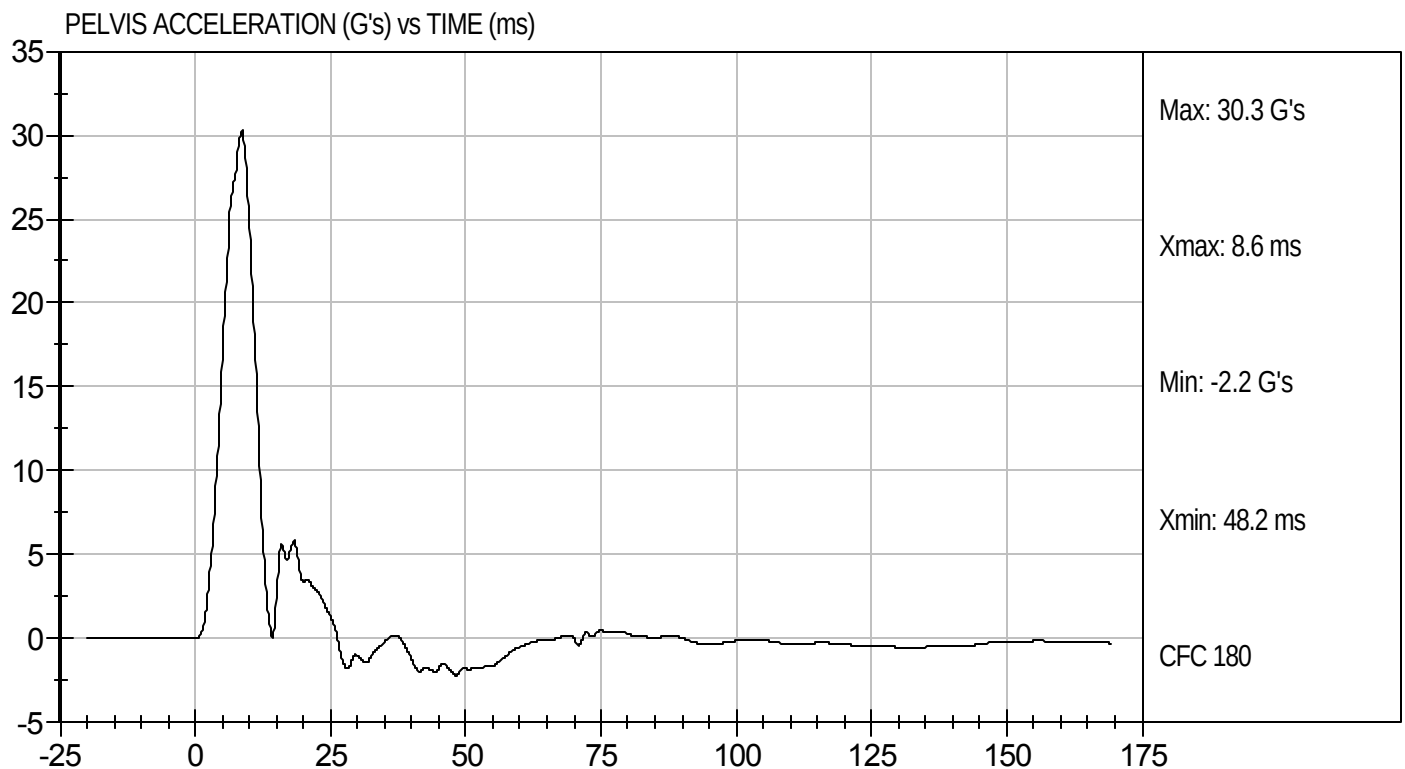
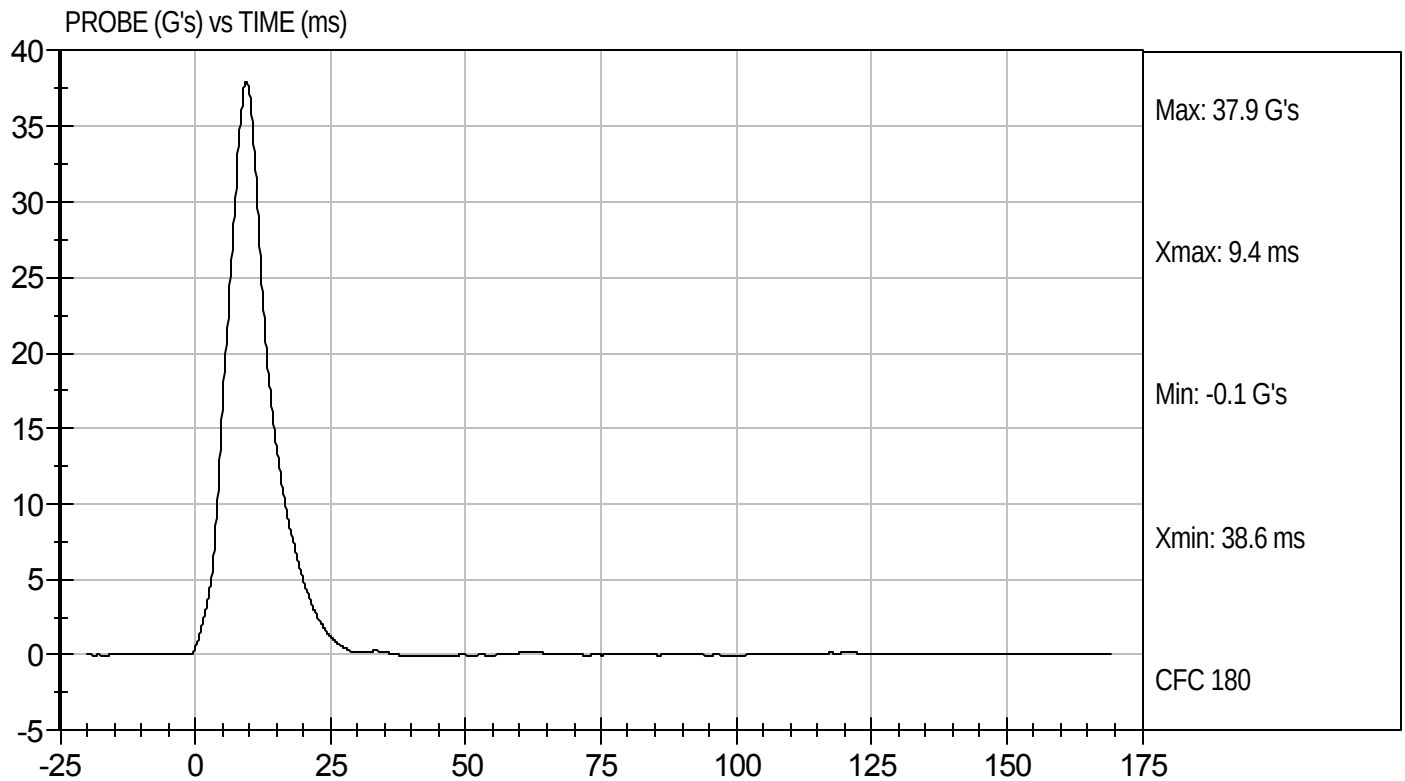
5/23/12
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D121918

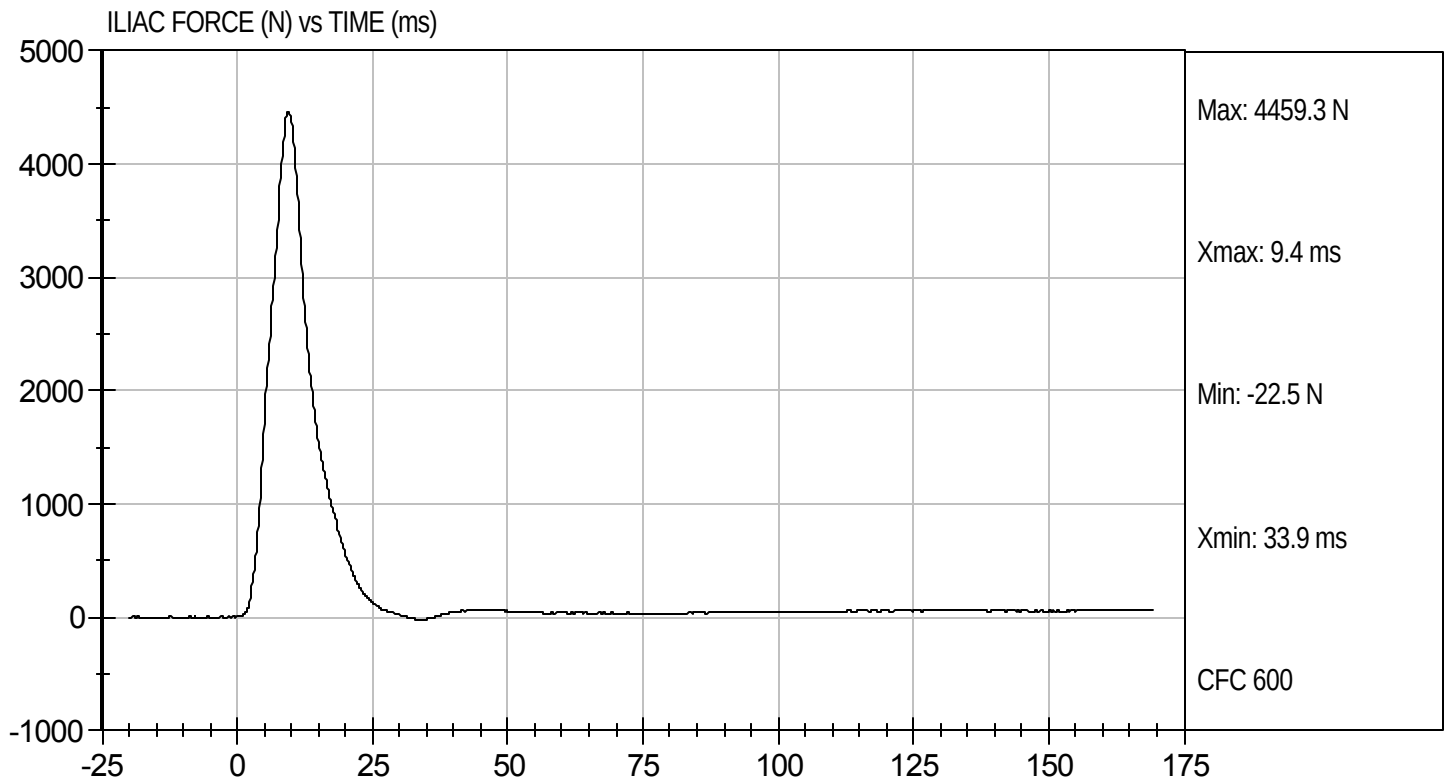
Test Date: 5/23/12
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D121918

Test Date: 5/23/12
Velocity: 14.36 ft/s, 4.38 m/s



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

ATD Serial No: 306

Test ID: D122301

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	50	Pass
Peak Resultant Acceleration	G's	115 to 137	122	Pass
Peak Longitudinal Acceleration	G's	+/- 15	2.5	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

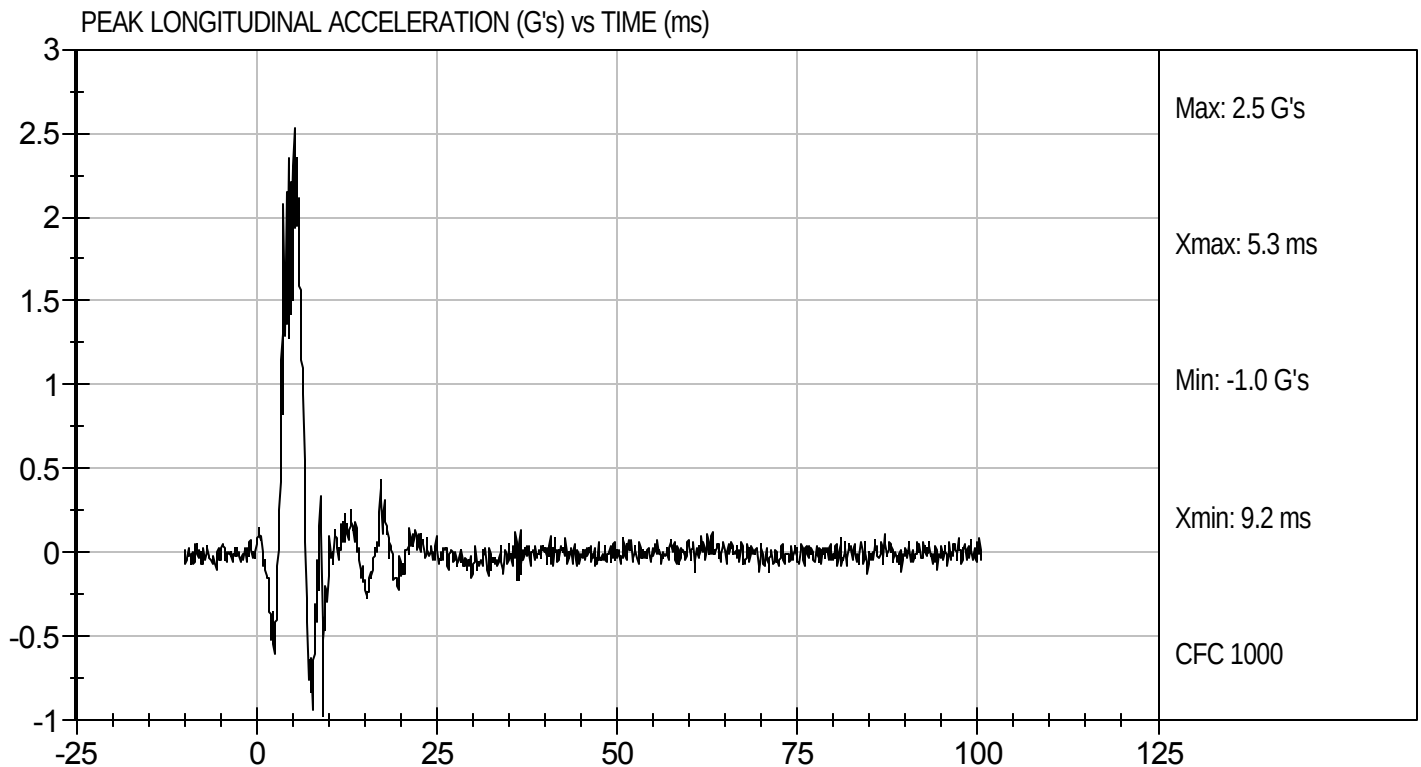
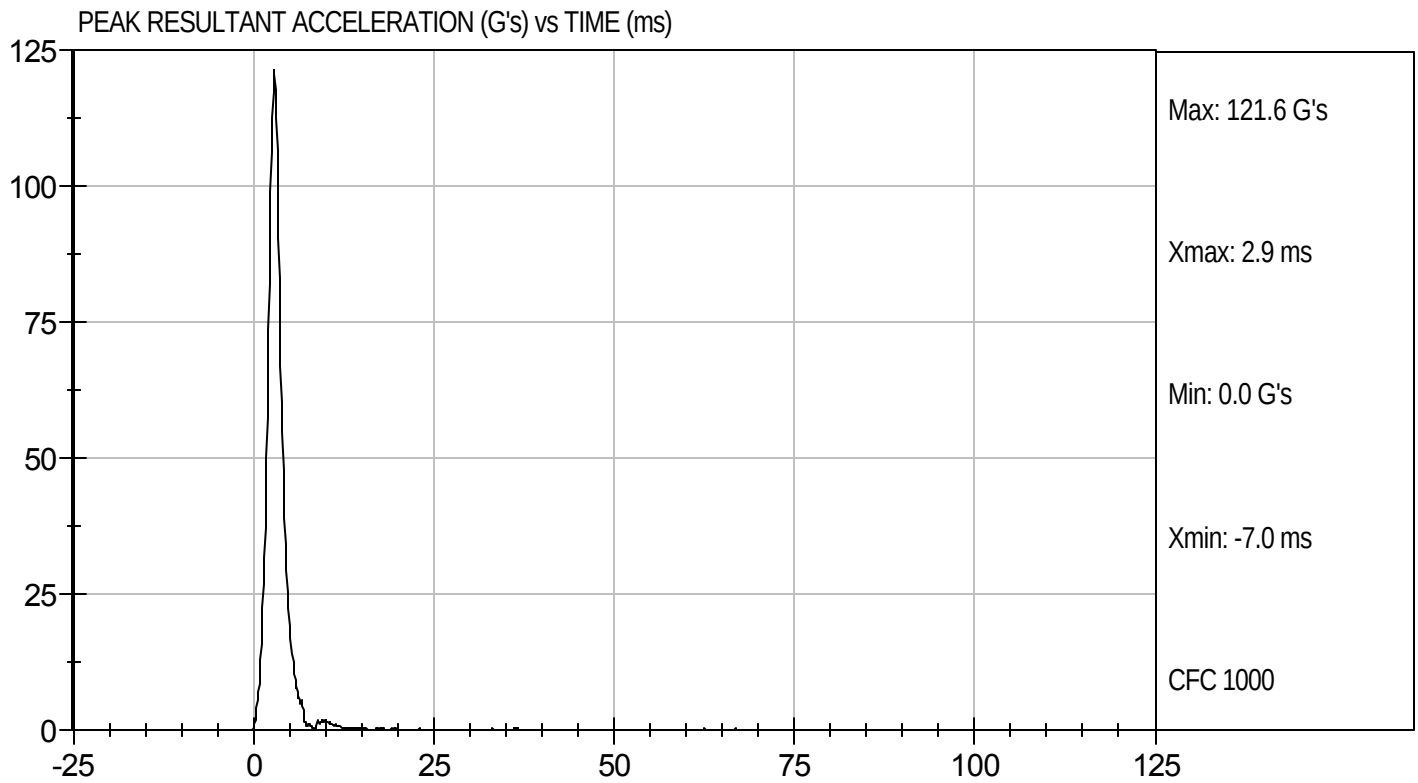
6/20/12
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D122301

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

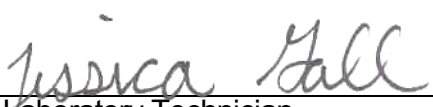


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D.: D122302

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.1	Pass
Humidity		%	10 to 70	50	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.78	Pass
	15 ms	m/s	3.30 to 4.10	3.94	Pass
	20 ms	m/s	4.40 to 5.40	5.26	Pass
	25 ms	m/s	5.40 to 6.10	5.57	Pass
	25-100 ms	m/s	5.50 to 6.20	5.59	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	59	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-41	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	114	Pass
Overall Test Results				Pass	


 Laboratory Technician

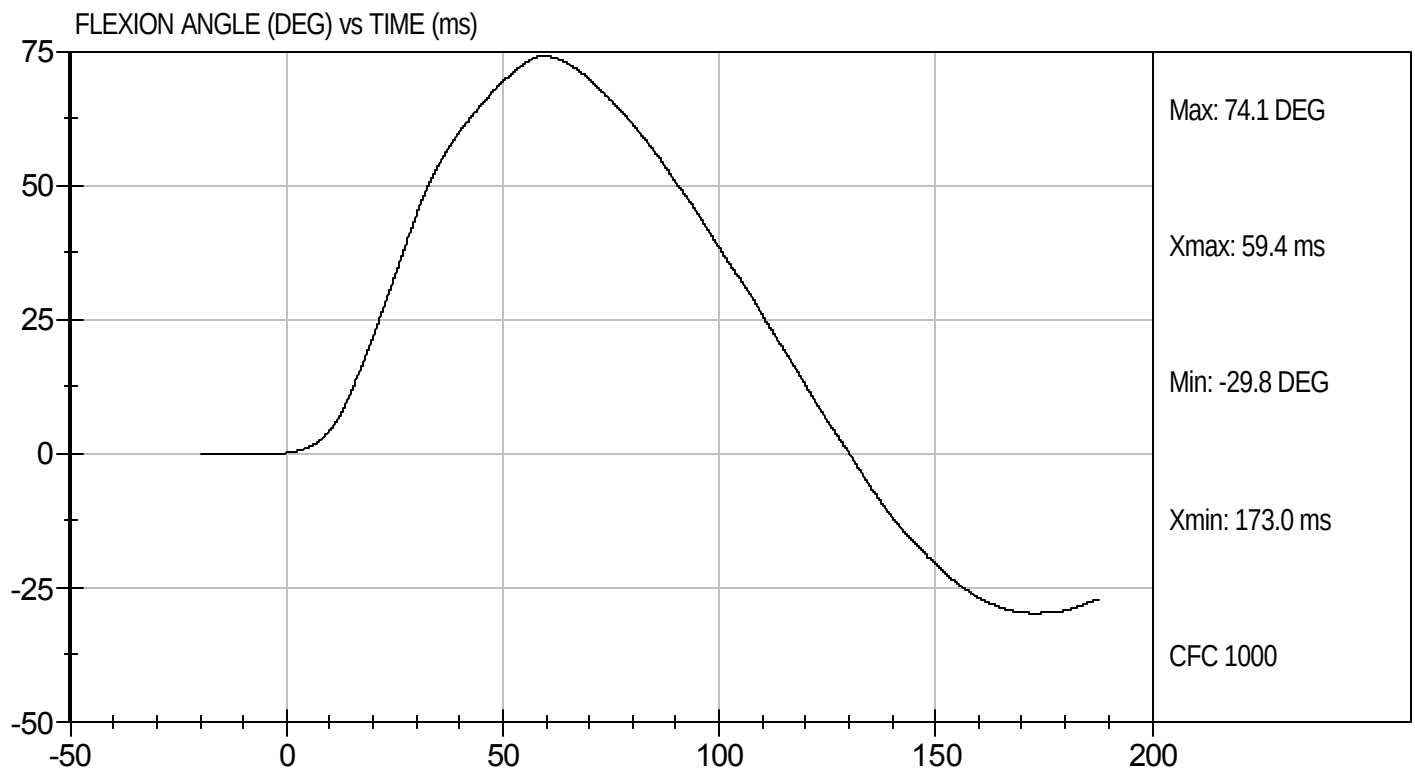
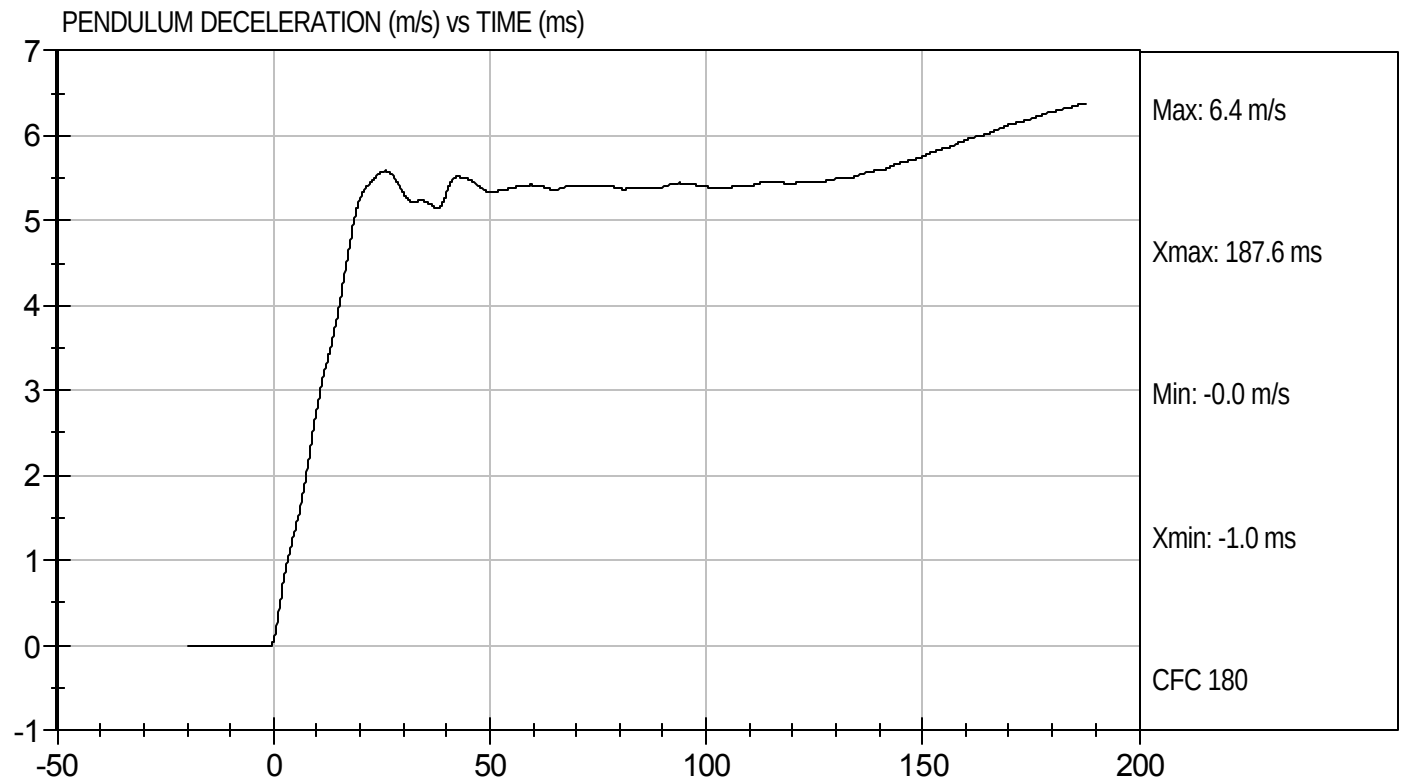
6/20/12
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D122302

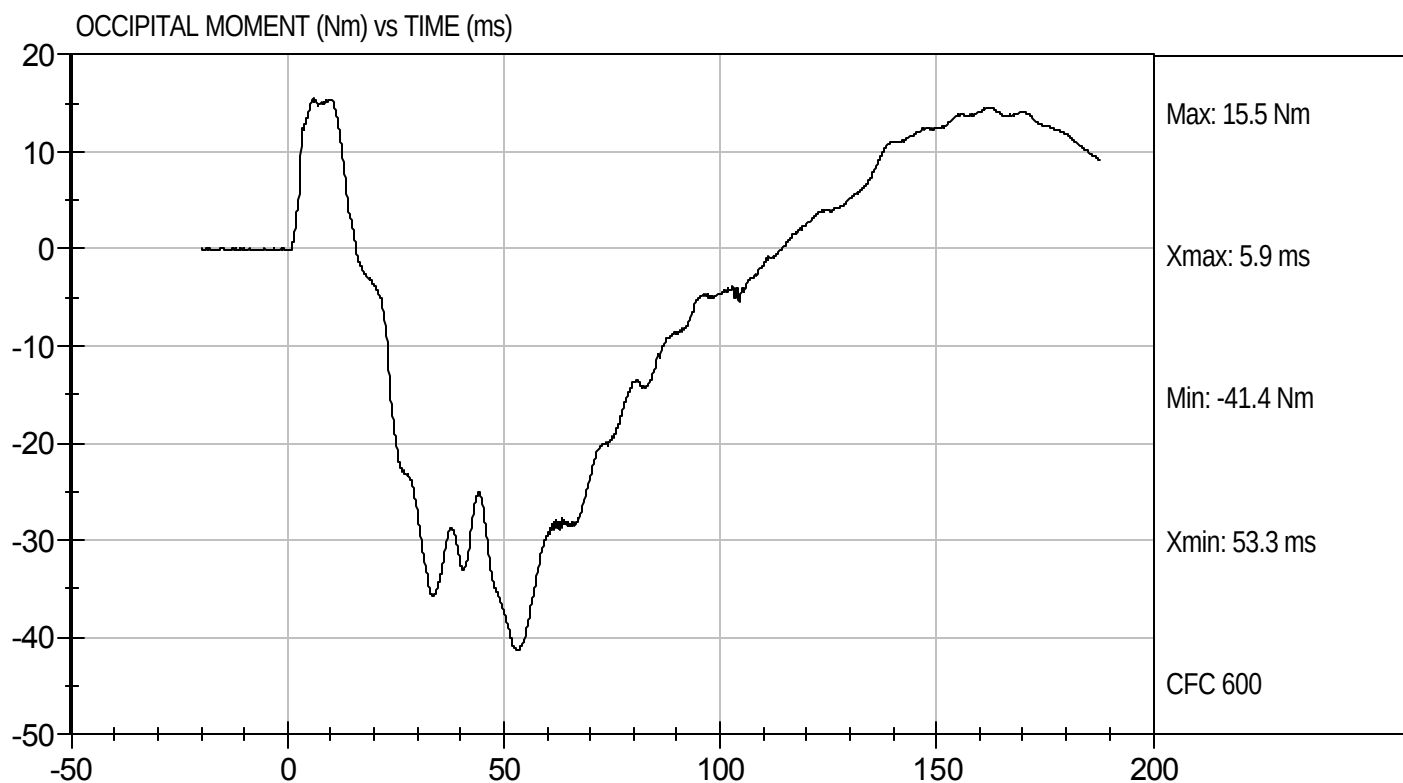
Test Date: 6/20/12
Velocity: 18.31 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D122302

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



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

ATD Serial No: 306

Test ID: D122303

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	55	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	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	

Jessica Gall
Laboratory Technician

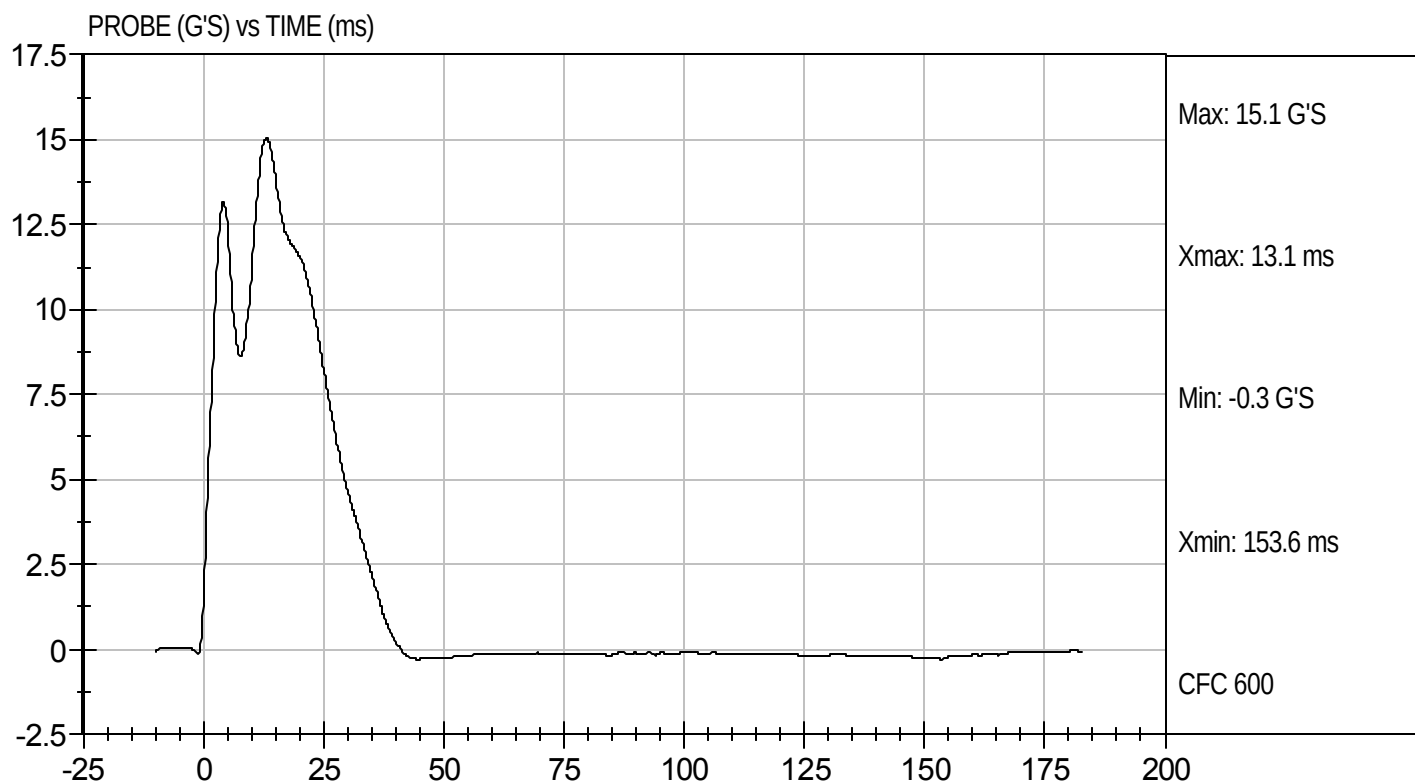
6/20/12
Test Date

David Winkelbauer
Approved By



Test Desc: Shoulder Impact
Component ID: D122303

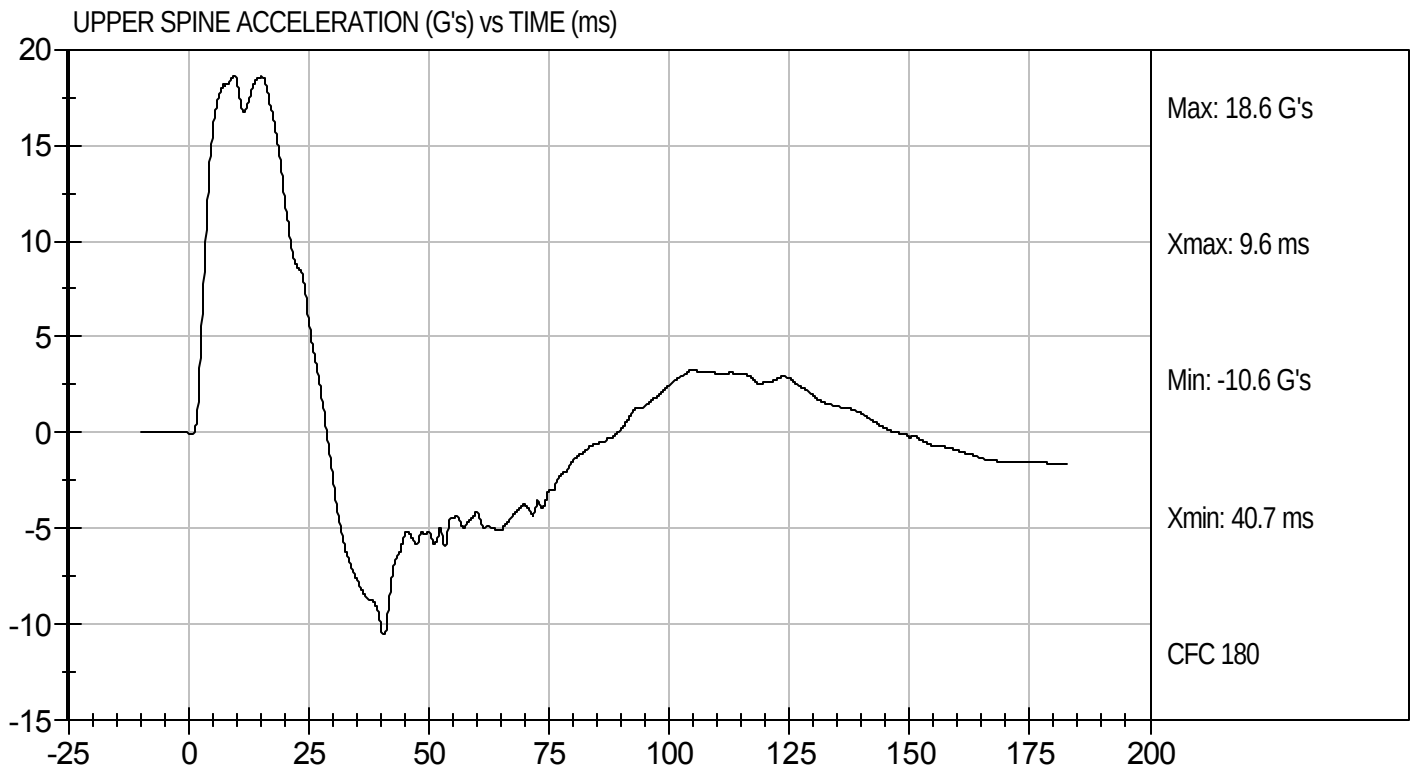
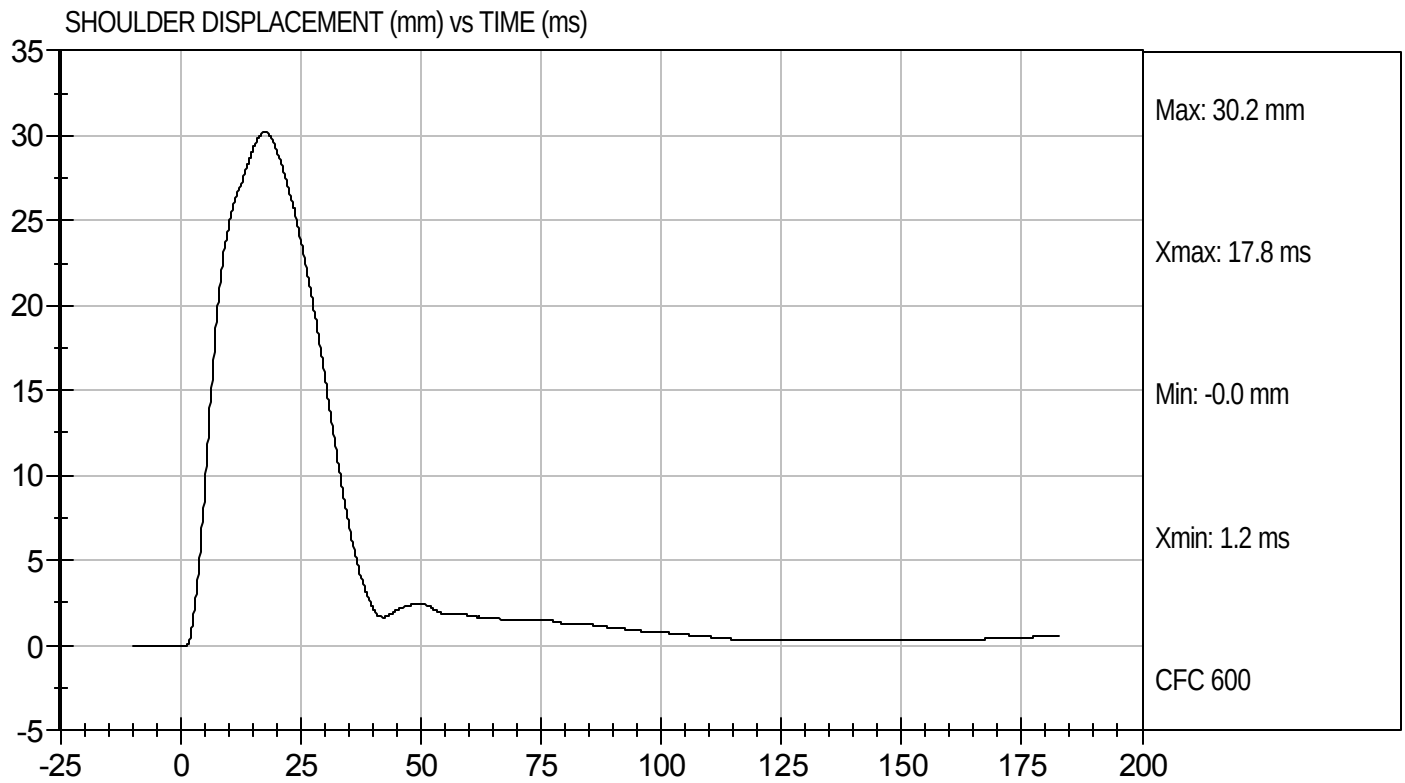
Test Date: 6/20/12
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Shoulder Impact
Component ID: D122303

Test Date: 6/20/12
Velocity: 14.12 ft/s, 4.30 m/s

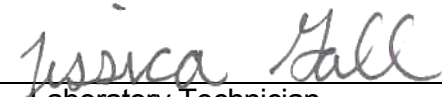


MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D122304

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	56	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	32	Pass
Shoulder Displacement	mm	31 to 40	32	Pass
Upper Rib Displacement	mm	25 to 32	27	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	40	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results			Pass	


Laboratory Technician

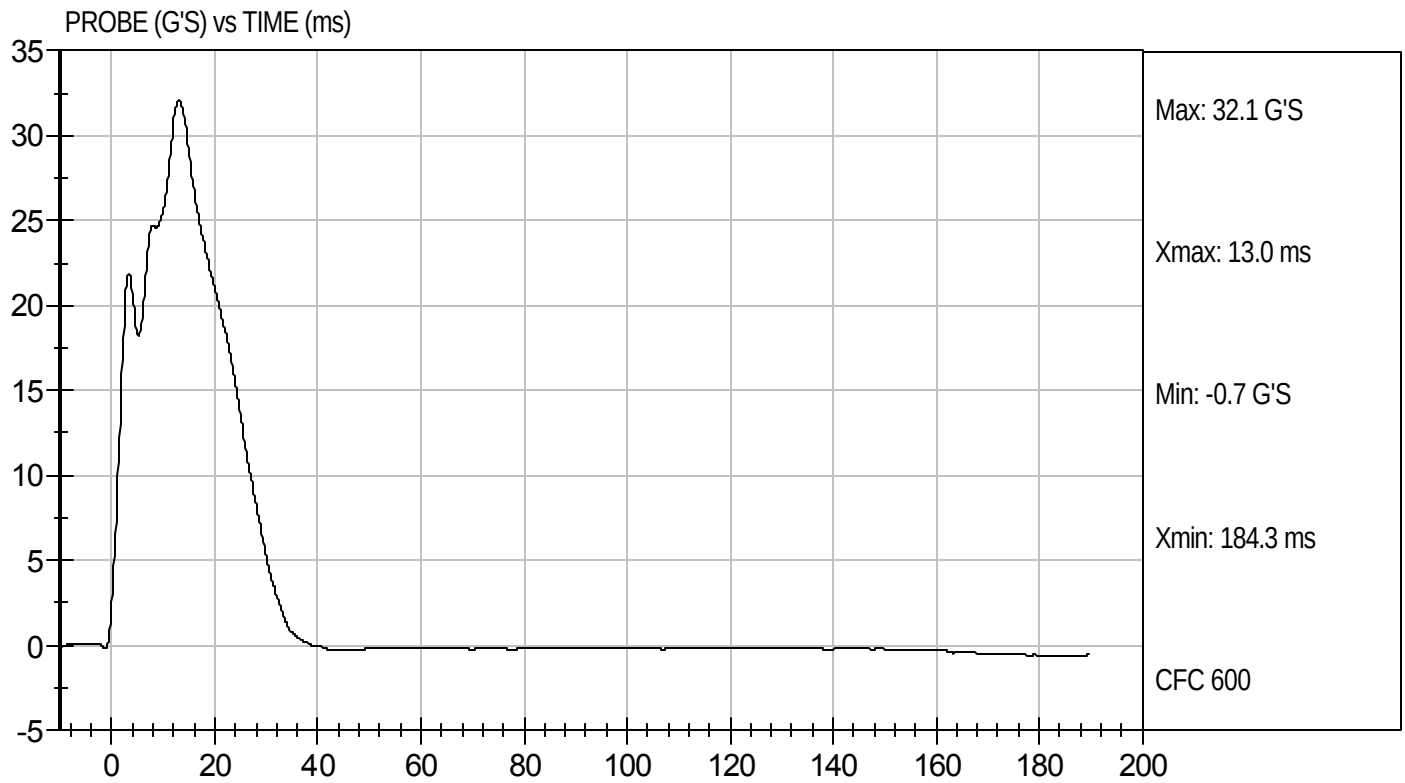
6/20/12
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D122304

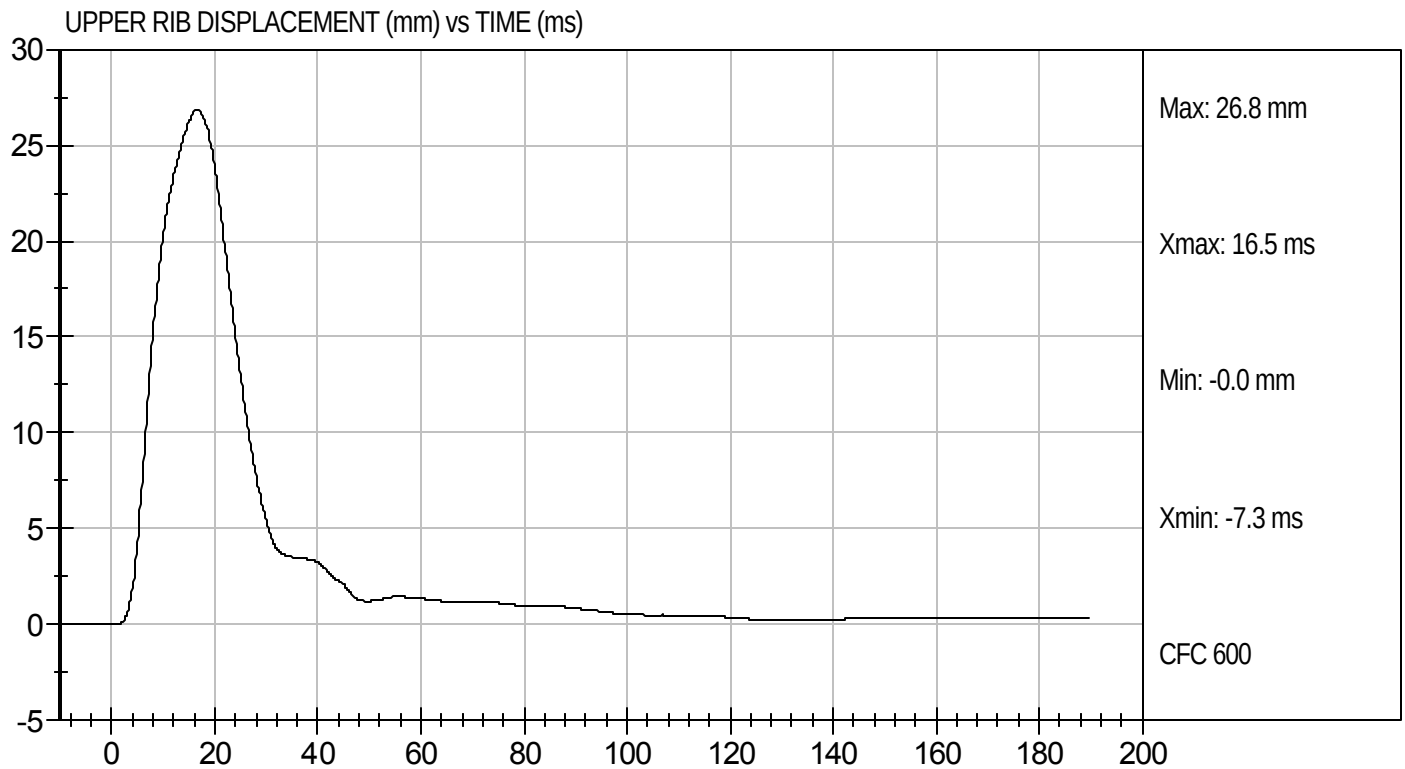
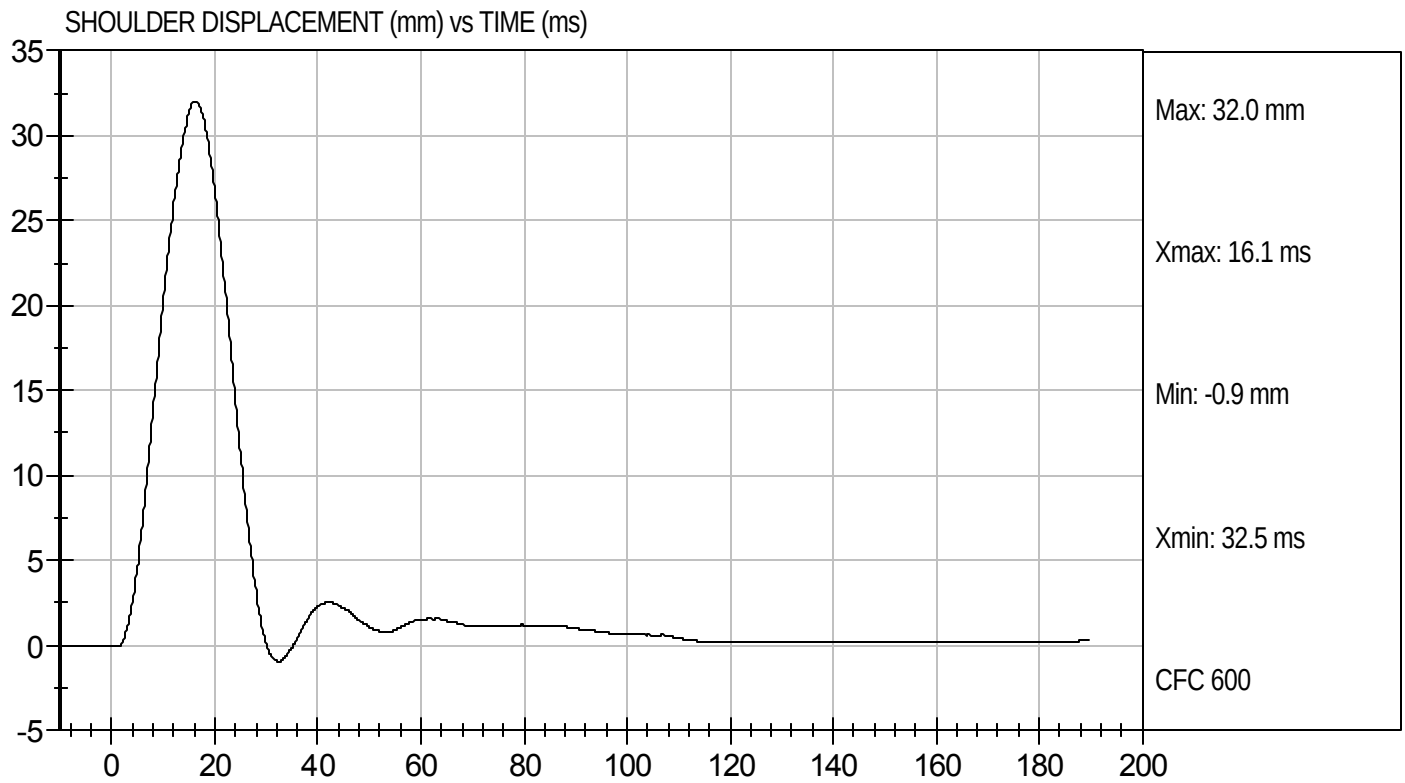
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D122304

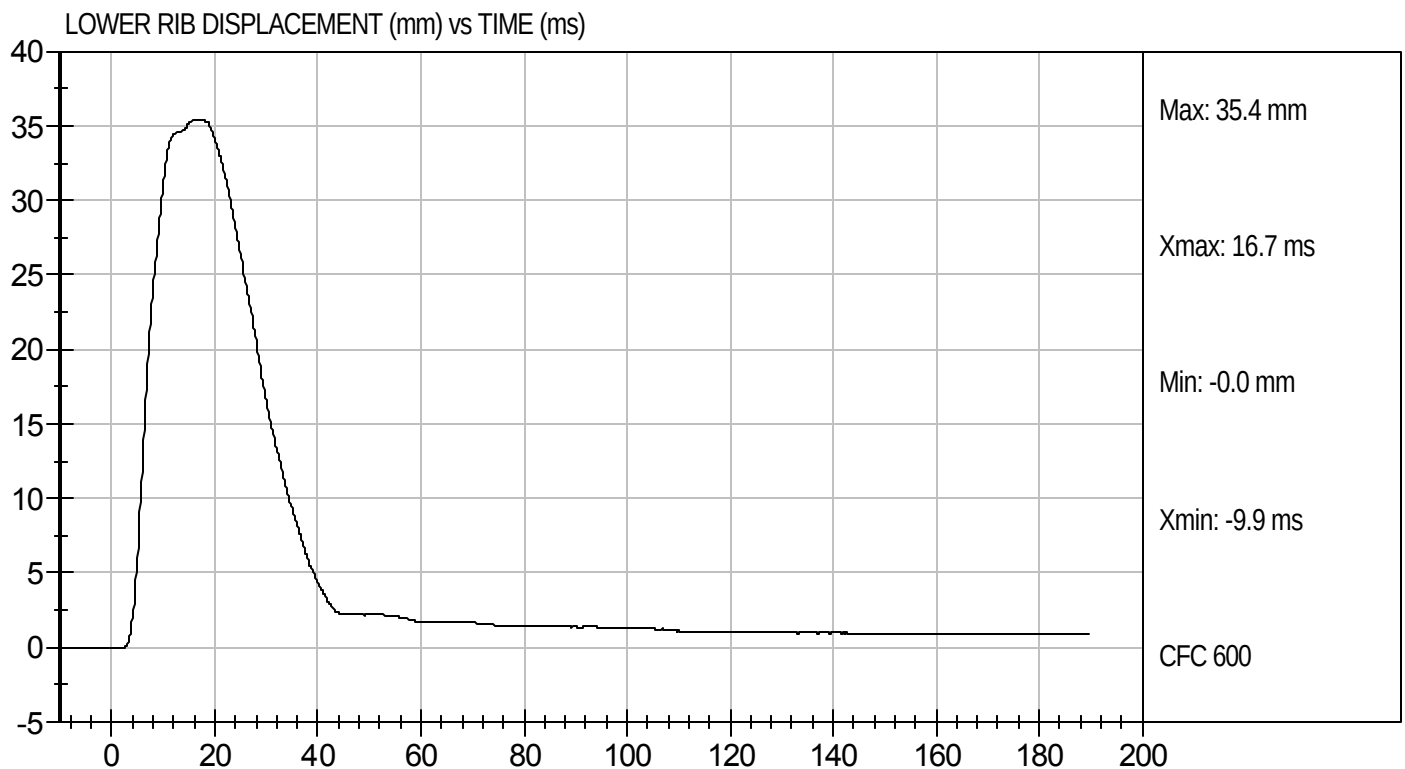
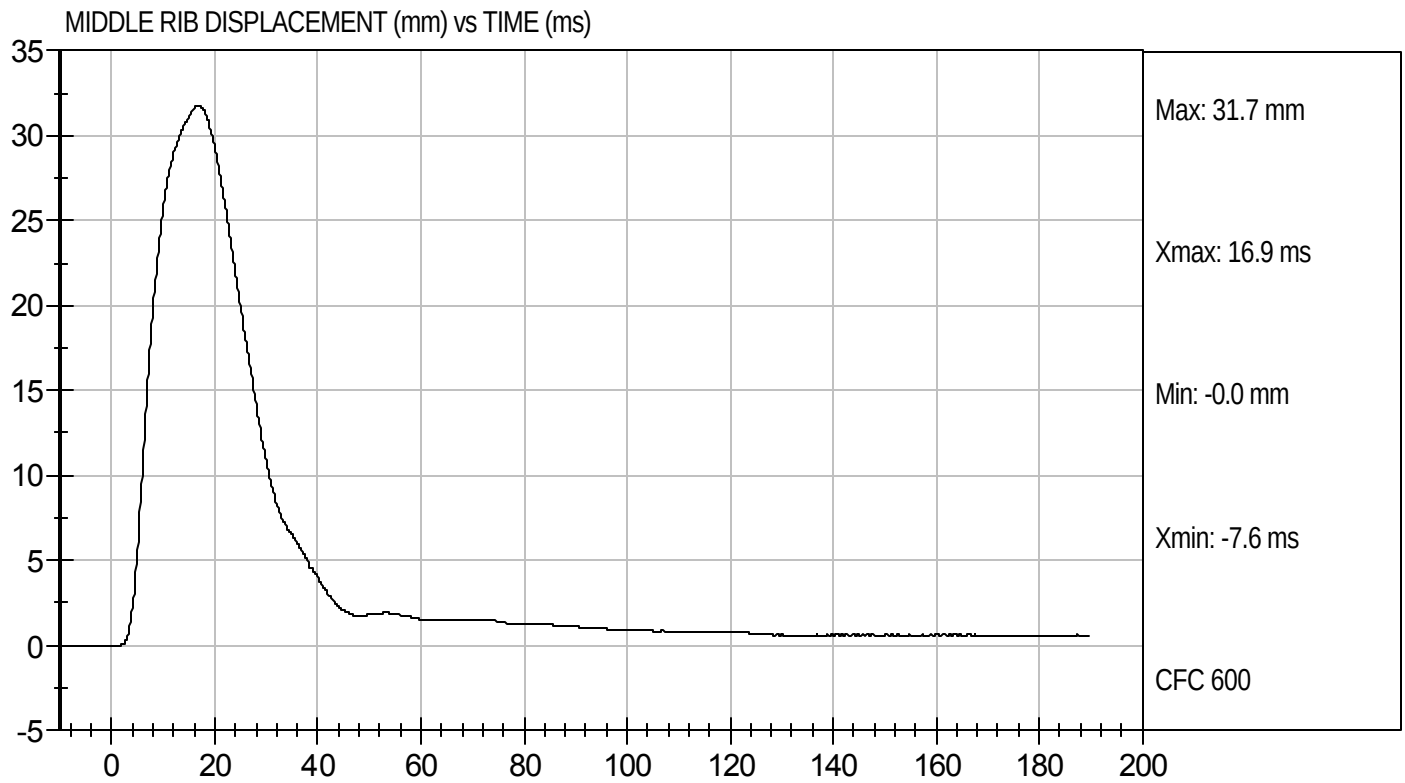
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D122304

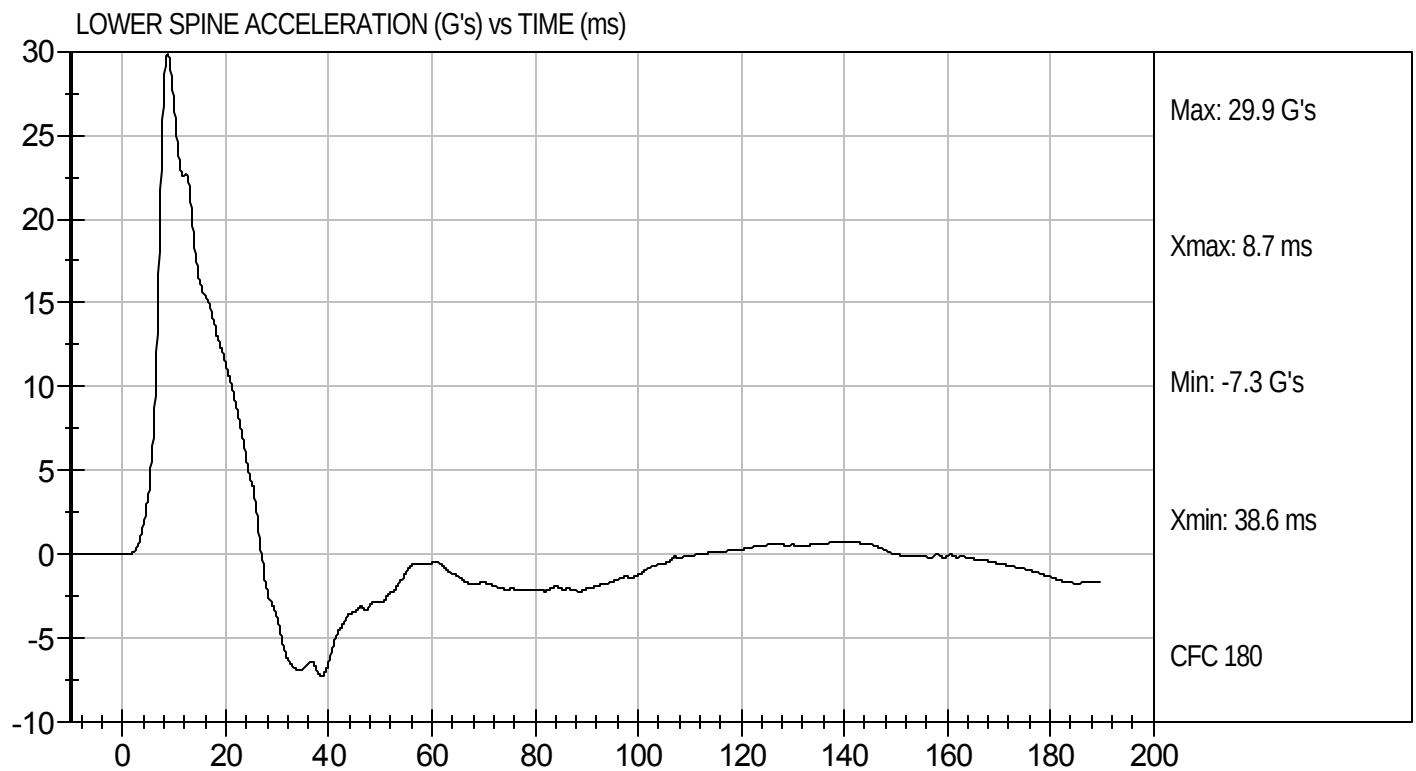
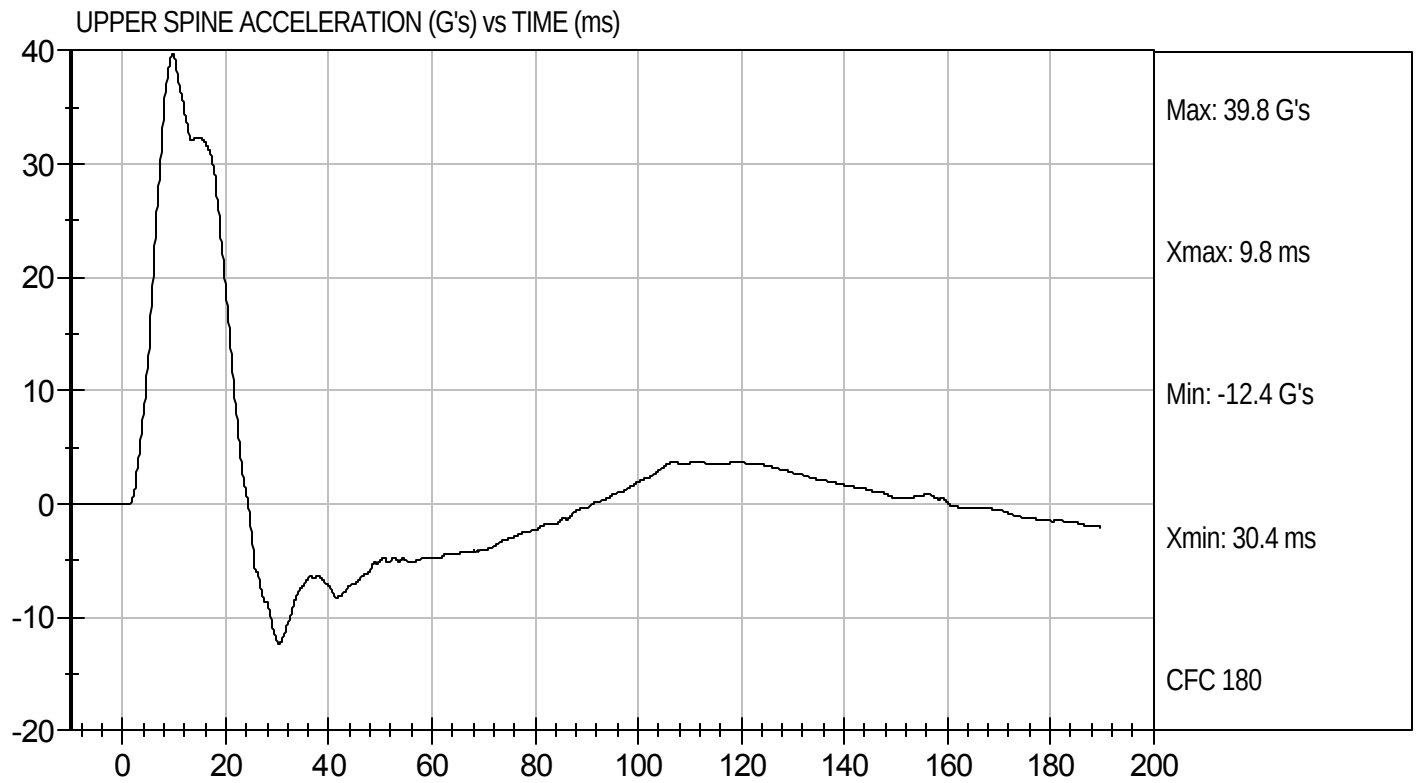
Test Date: 6/20/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D122304

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: 306

Test I.D: D122305

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	56	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	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	41	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results			Pass	


Laboratory Technician

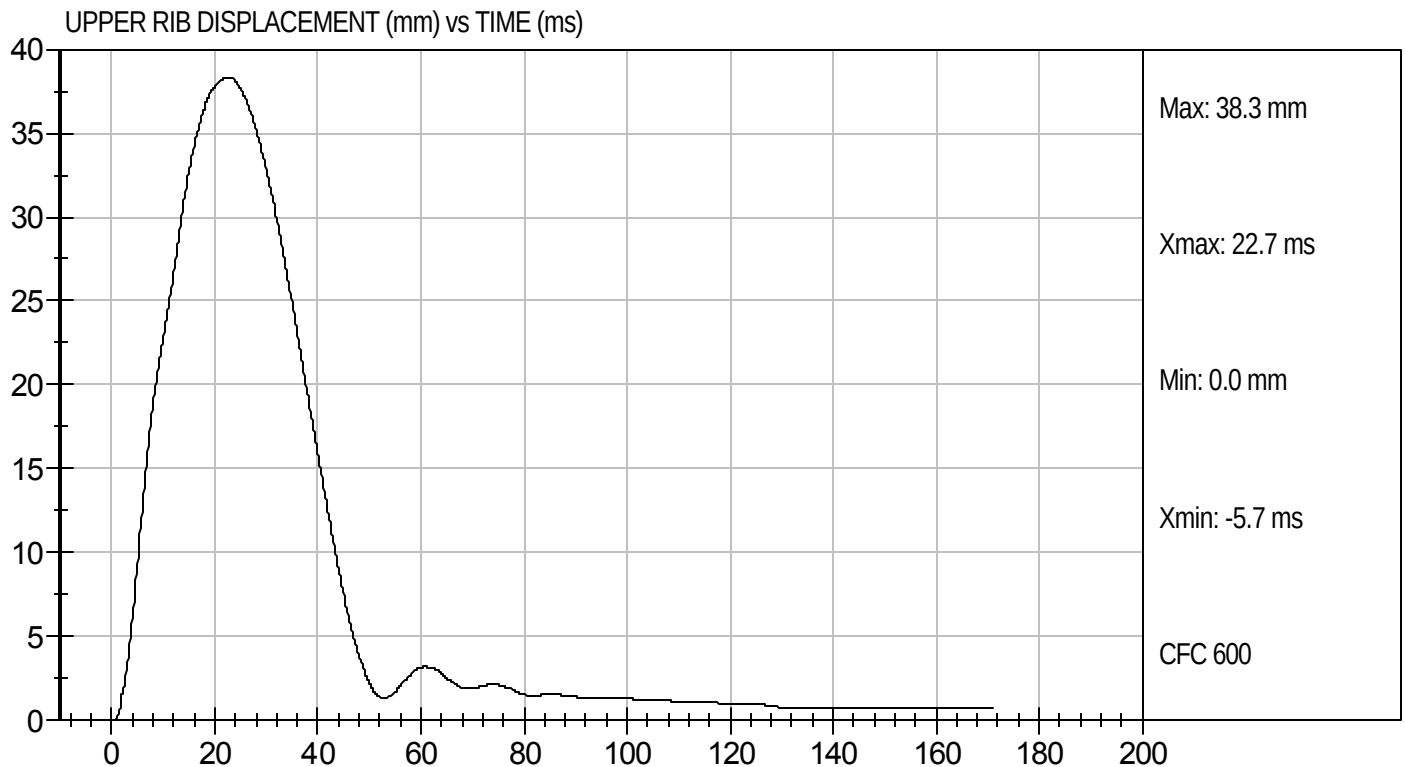
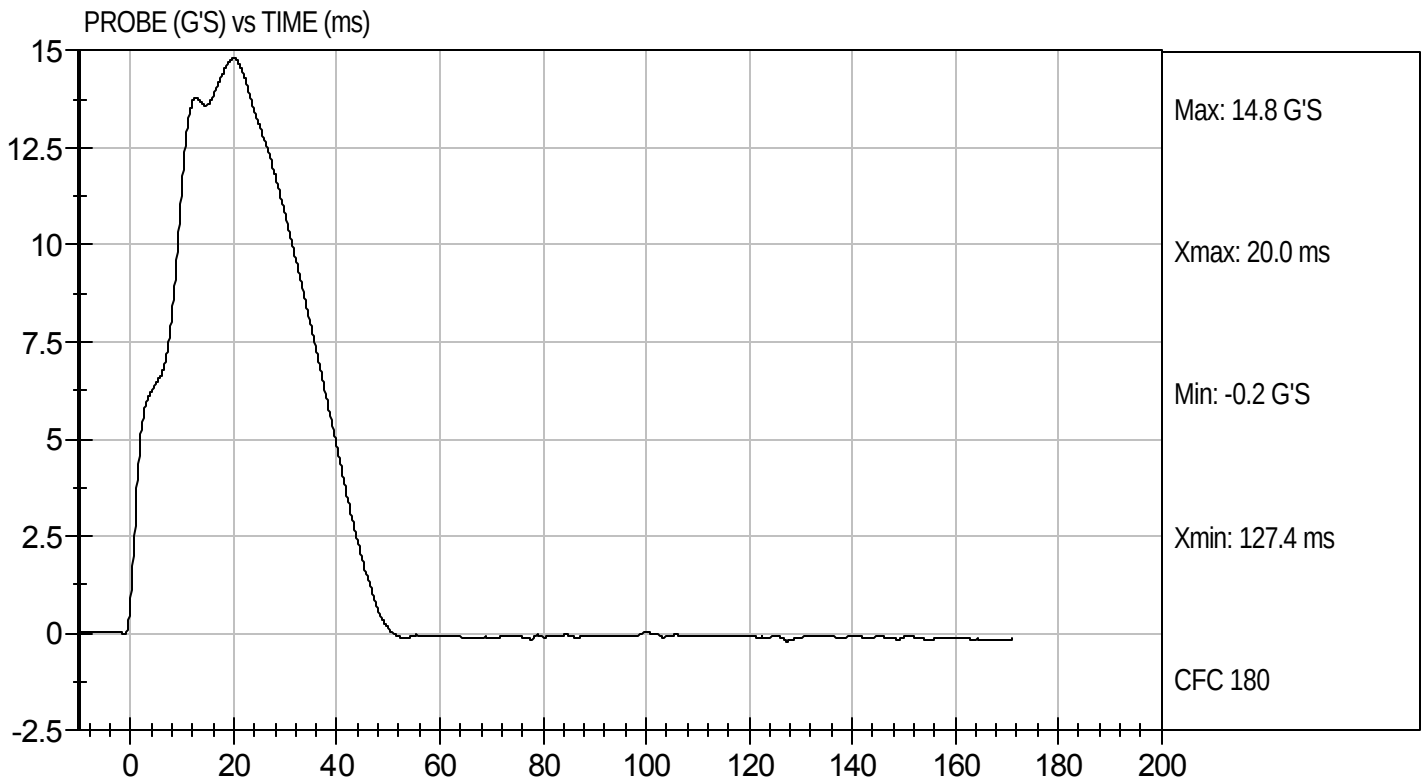
6/20/12
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D122305

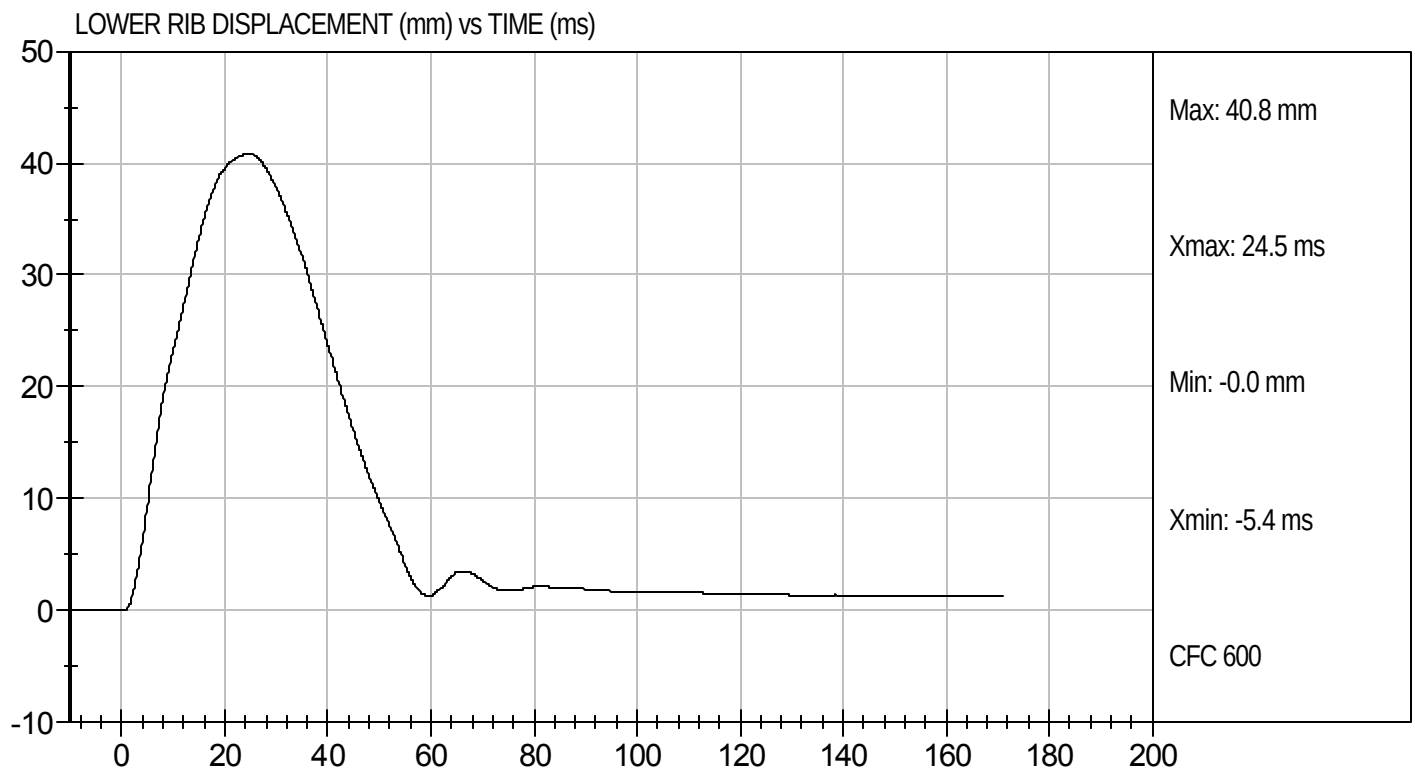
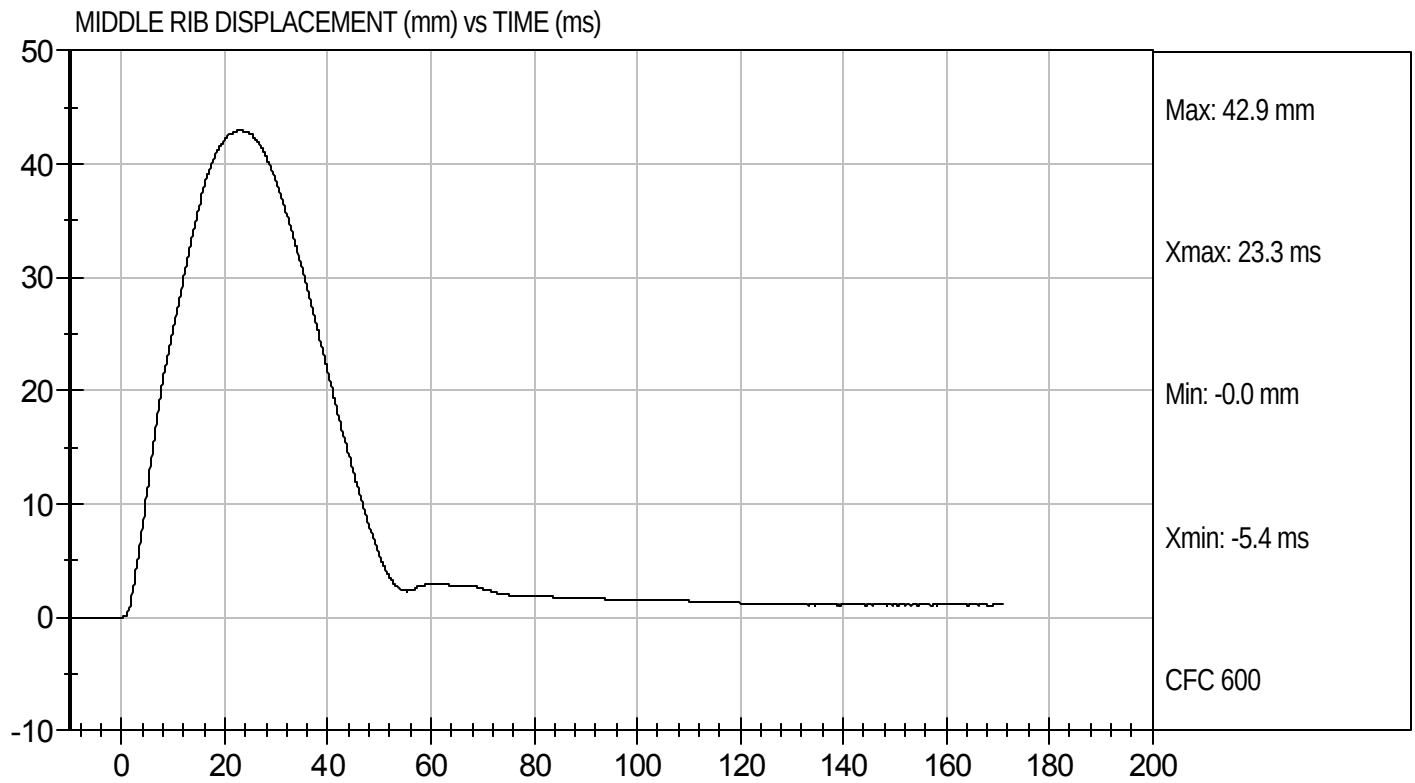
Test Date: 6/20/12
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Thorax Without Arm
Component ID: D122305

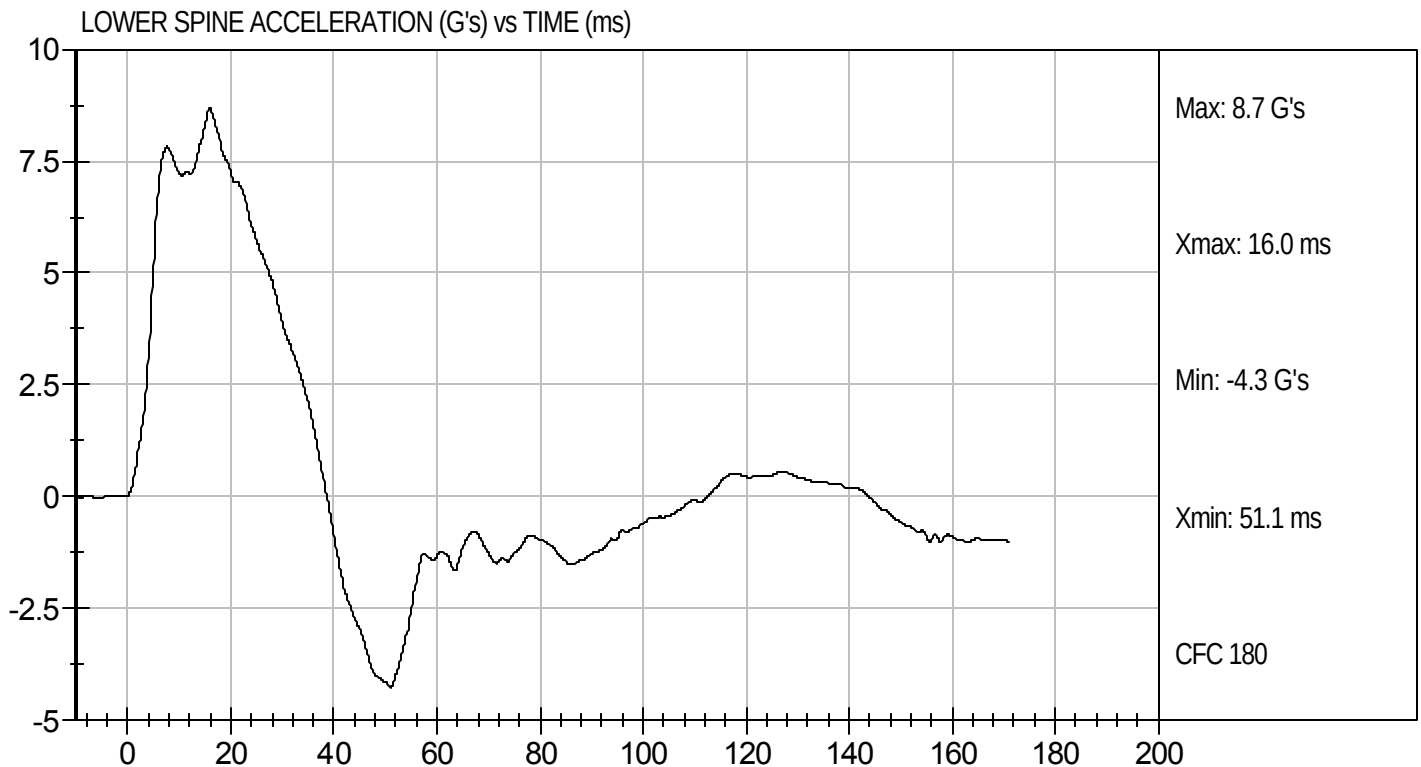
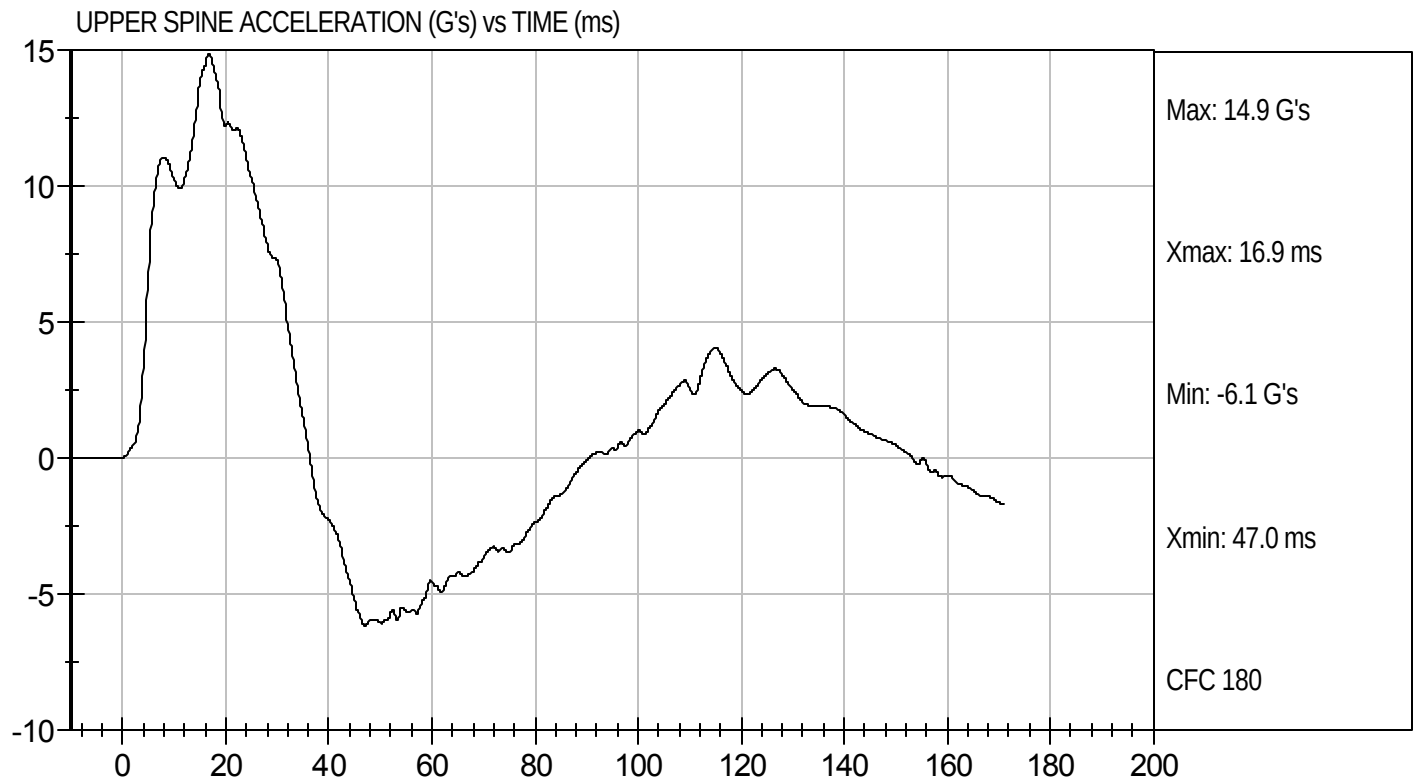
Test Date: 6/20/12
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Thorax Without Arm
Component ID: D122305

Test Date: 6/20/12
Velocity: 14.37 ft/s, 4.38 m/s



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

ATD Serial No: 306

Test I.D: D122306

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	56	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	38	Pass
Lower Rib Displacement	mm	33 to 44	41	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
			Overall Test Results	Pass


Laboratory Technician

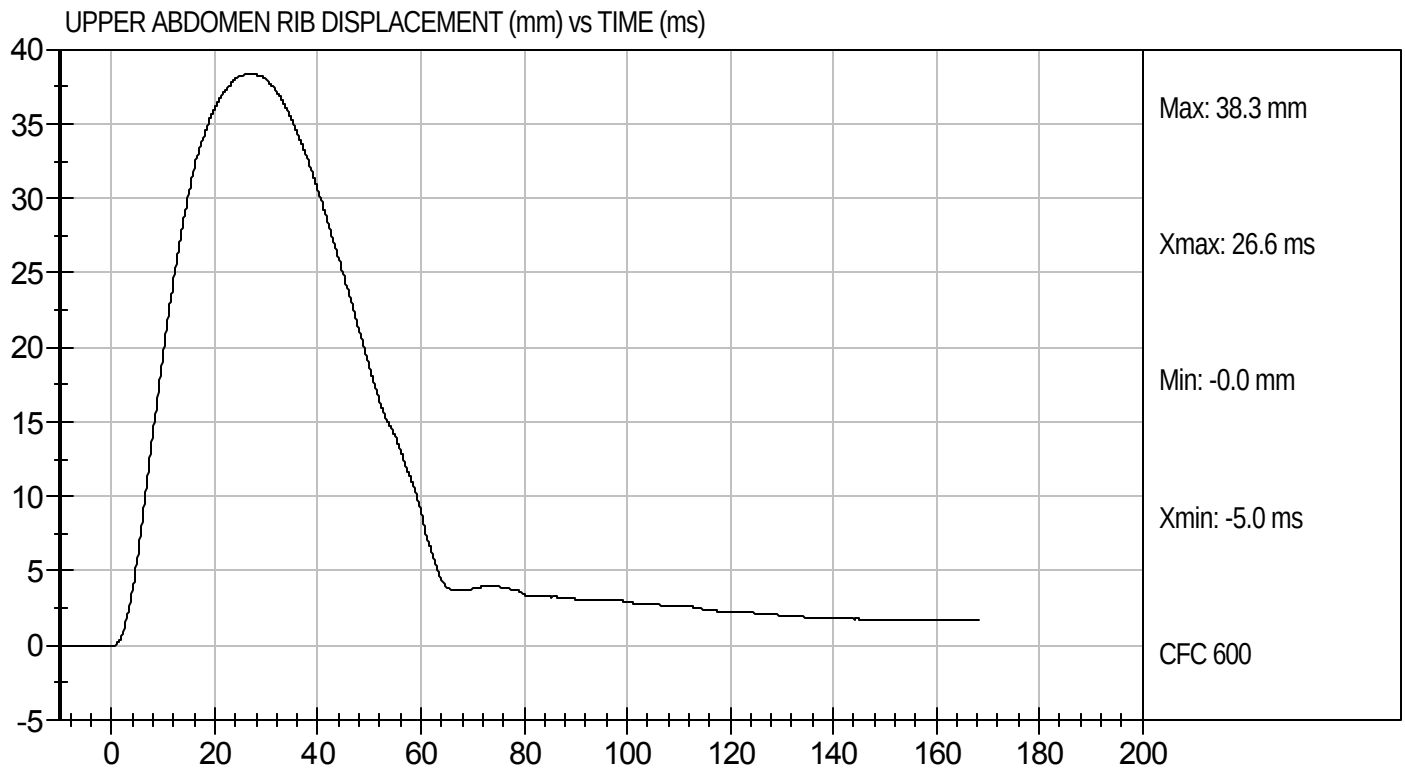
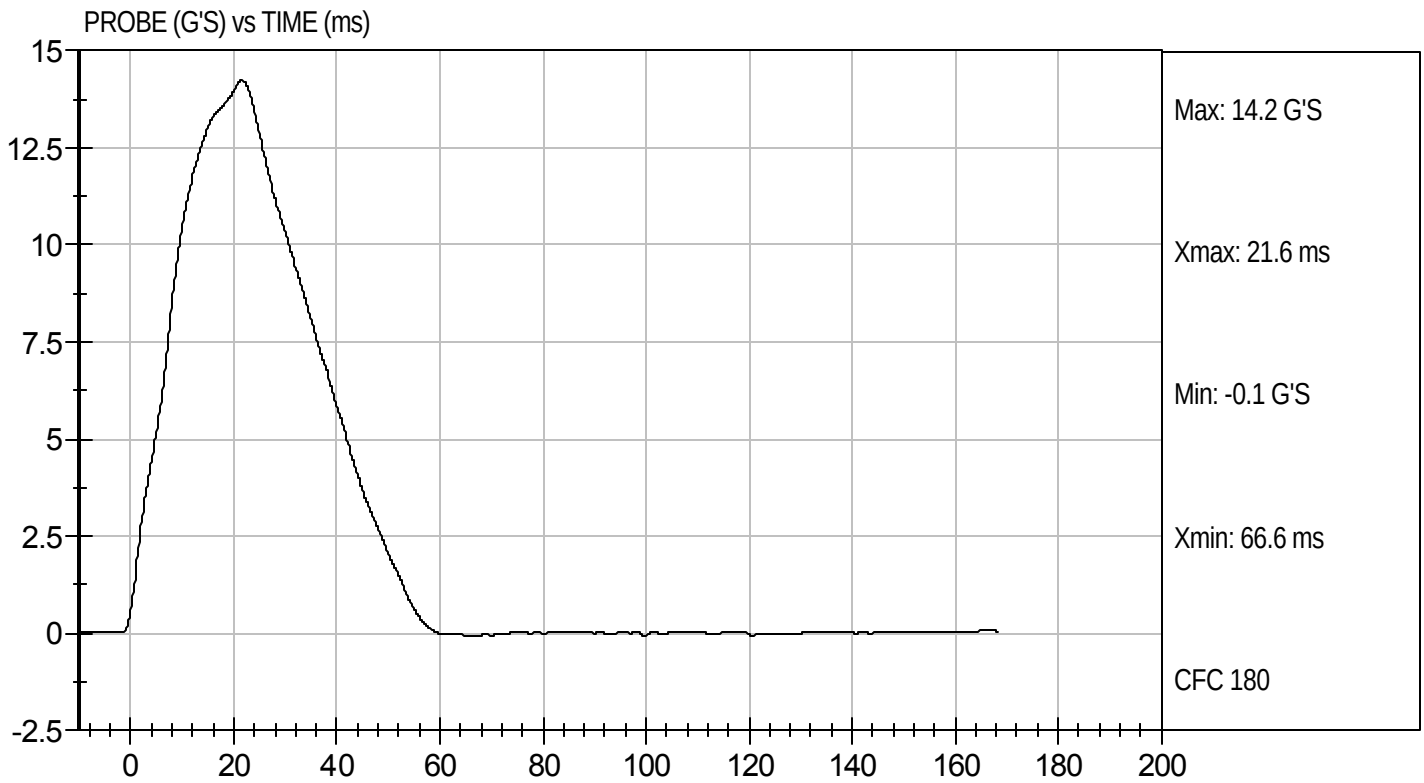
6/20/12
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D122306

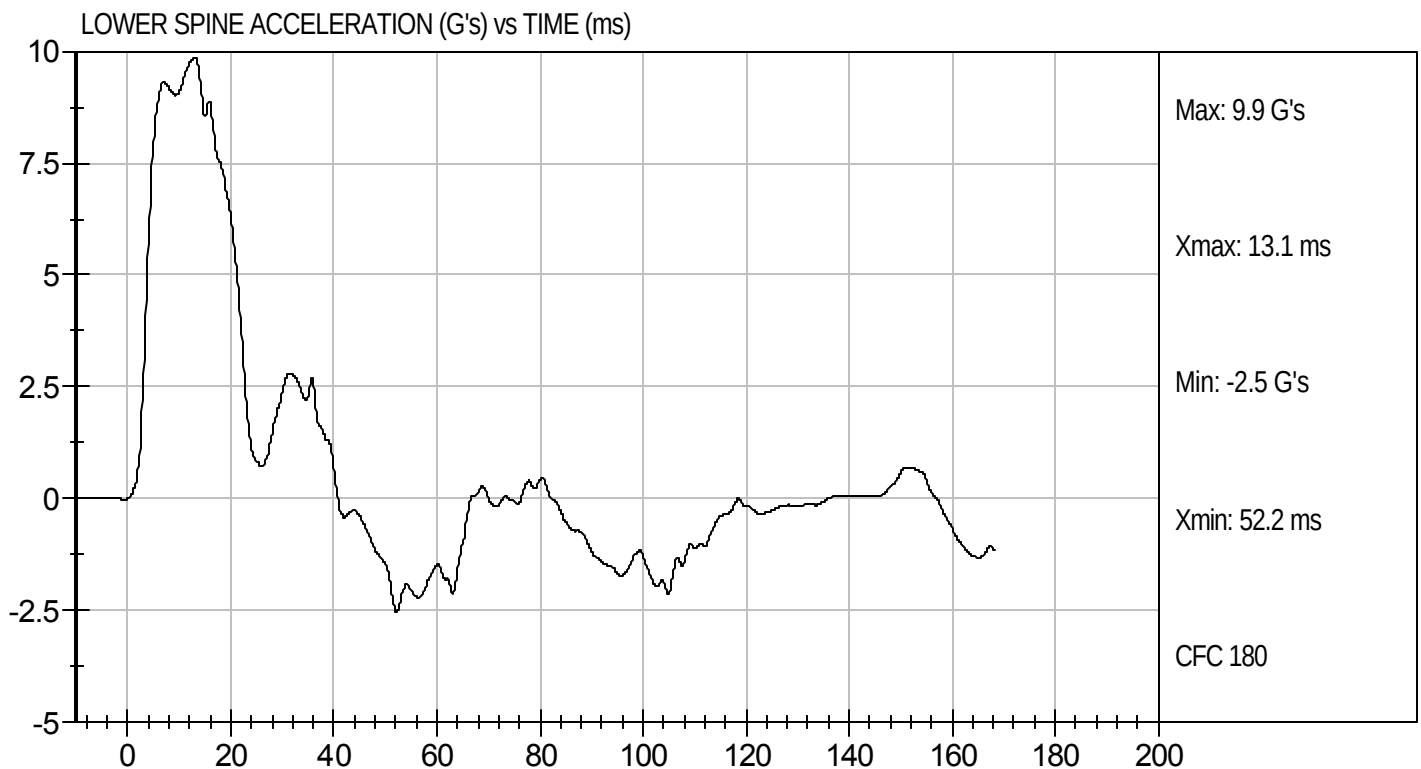
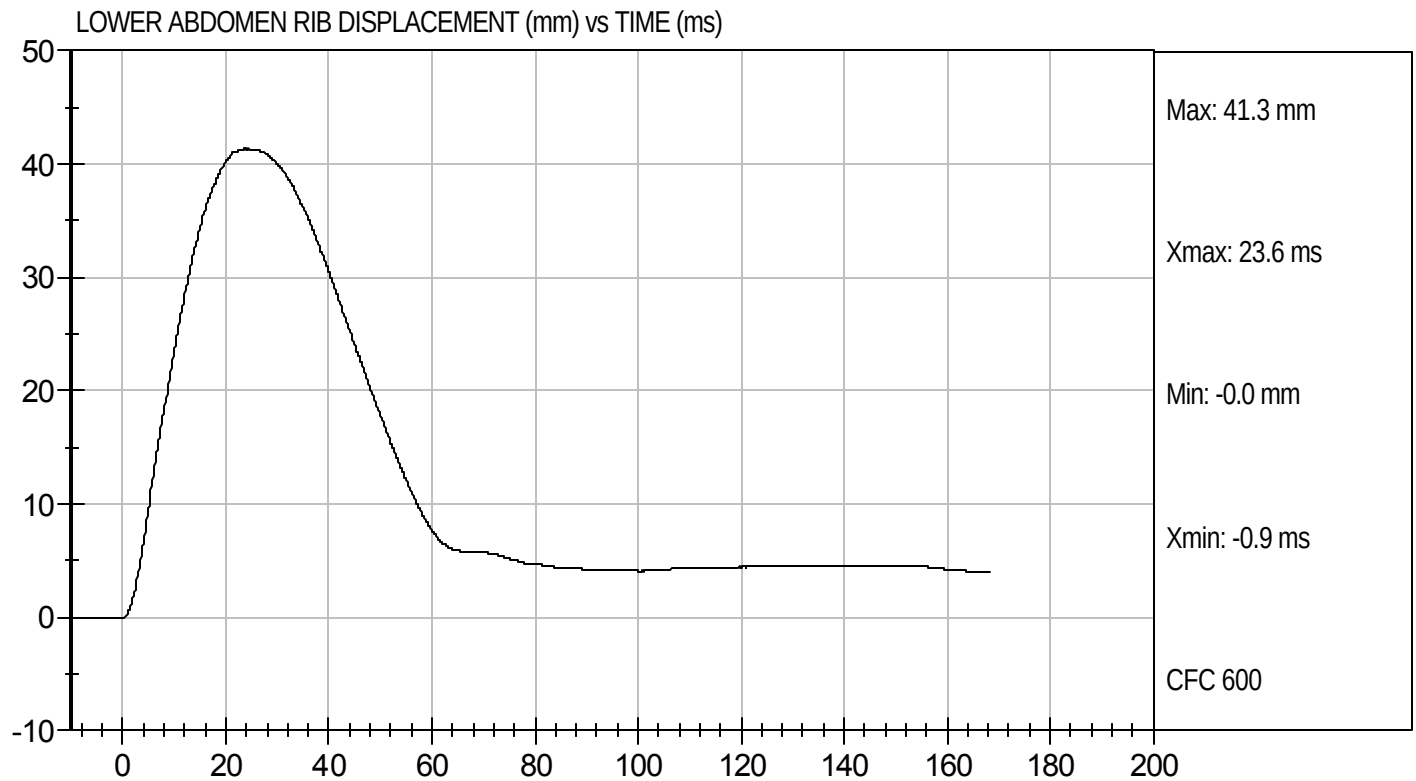
Test Date: 6/20/12
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Abdomen Impact
Component ID: D122306

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: 306

Test I.D: D122307

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	45	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4017	Pass
Overall Test Results				Pass


Laboratory Technician

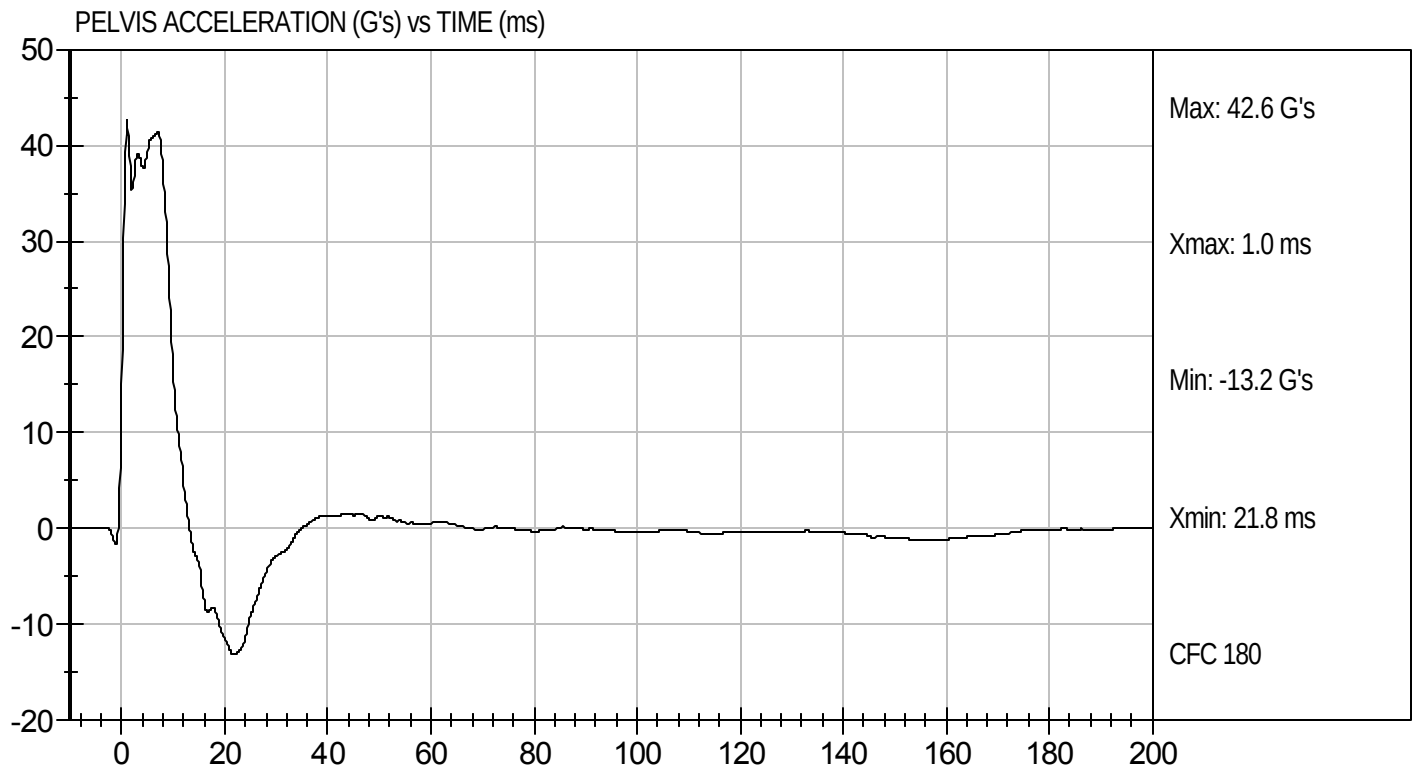
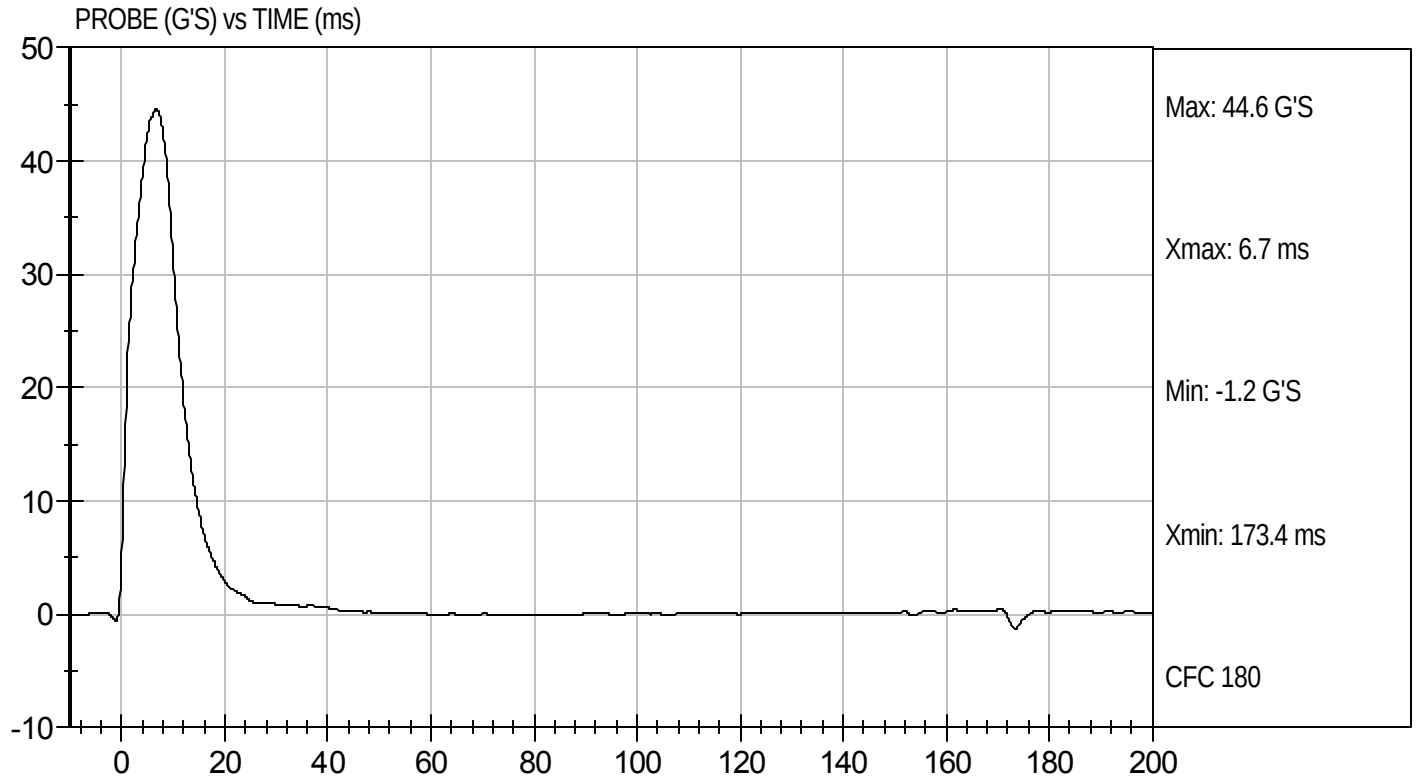
6/21/12
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D122307

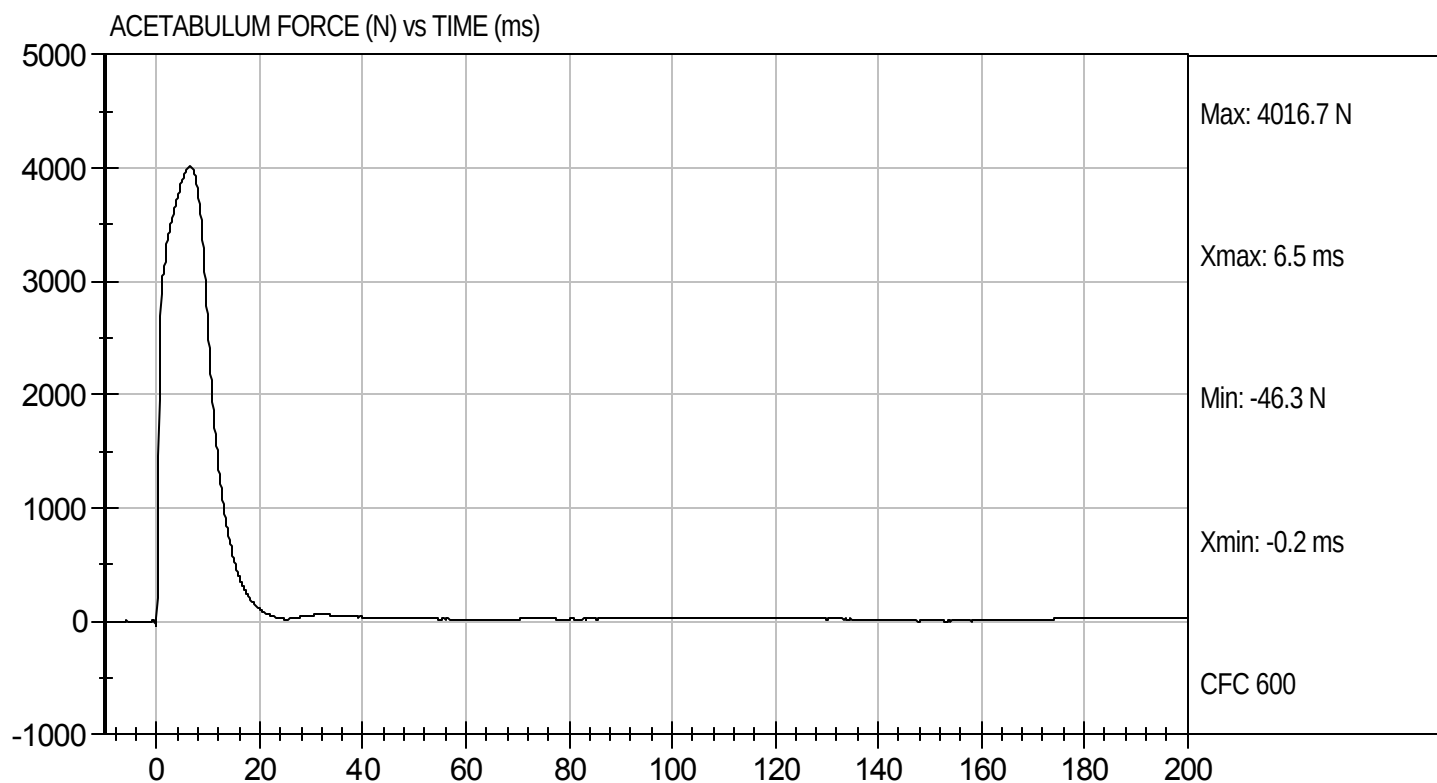
Test Date: 6/21/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D122307

Test Date: 6/21/12
Velocity: 22.22 ft/s, 6.77 m/s



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

ATD Serial No: 306

Test I.D: D122308

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	38	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4485	Pass
Overall Test Results			Pass	


Laboratory Technician

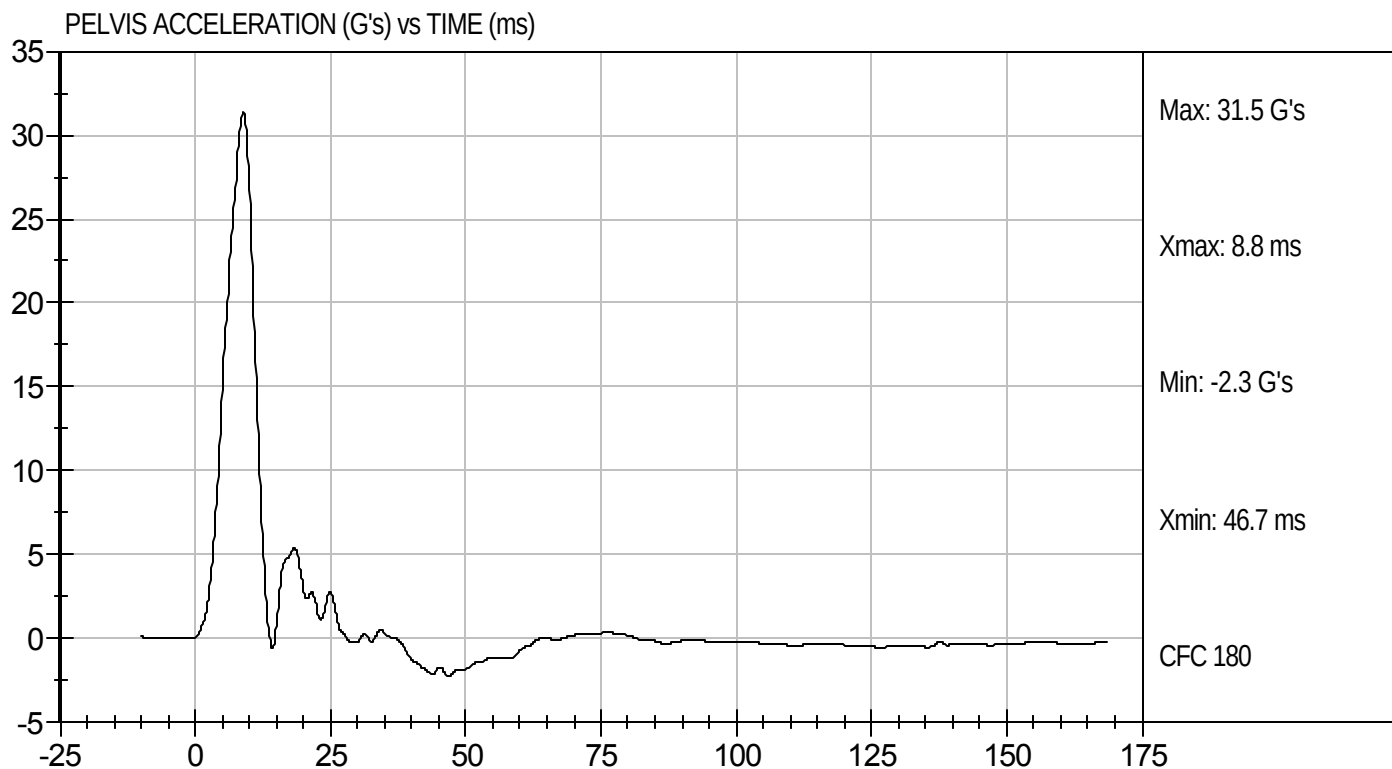
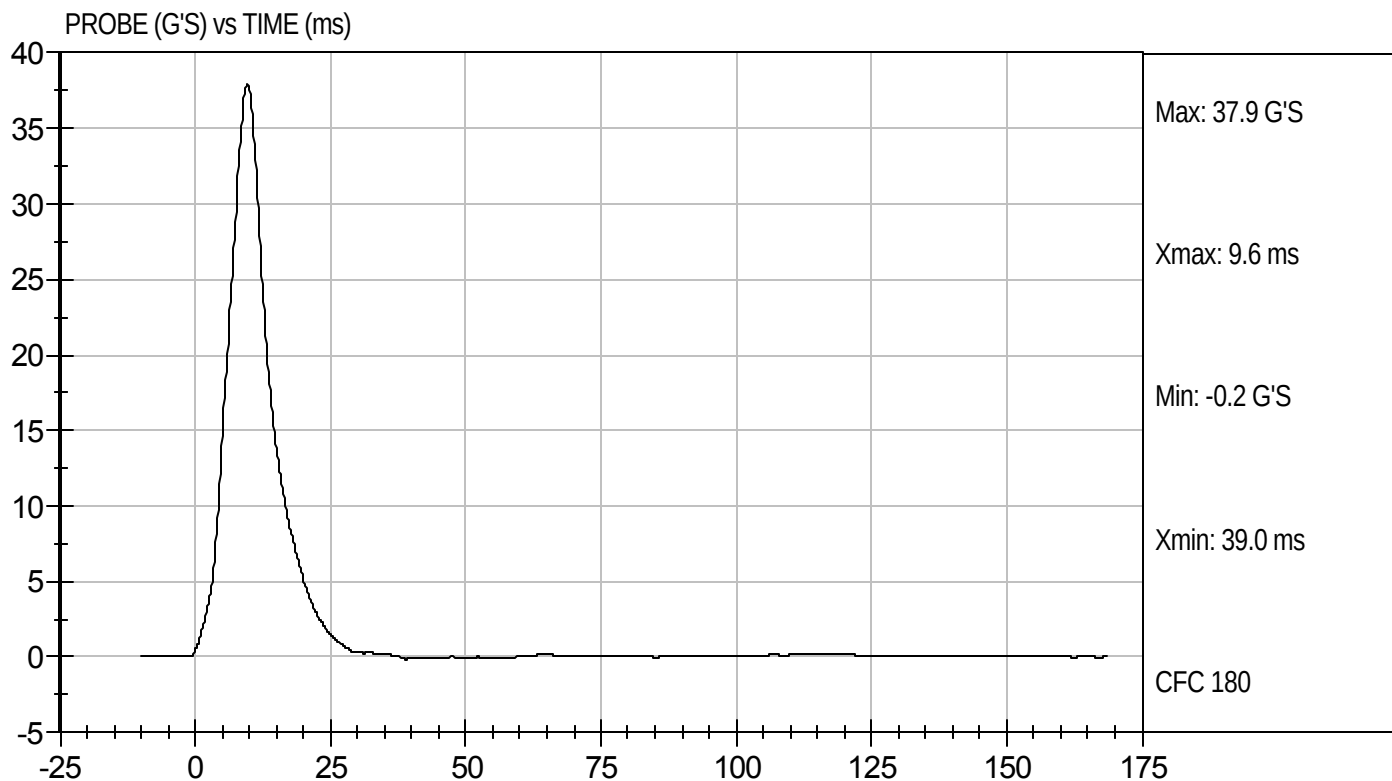
6/21/12
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D122308

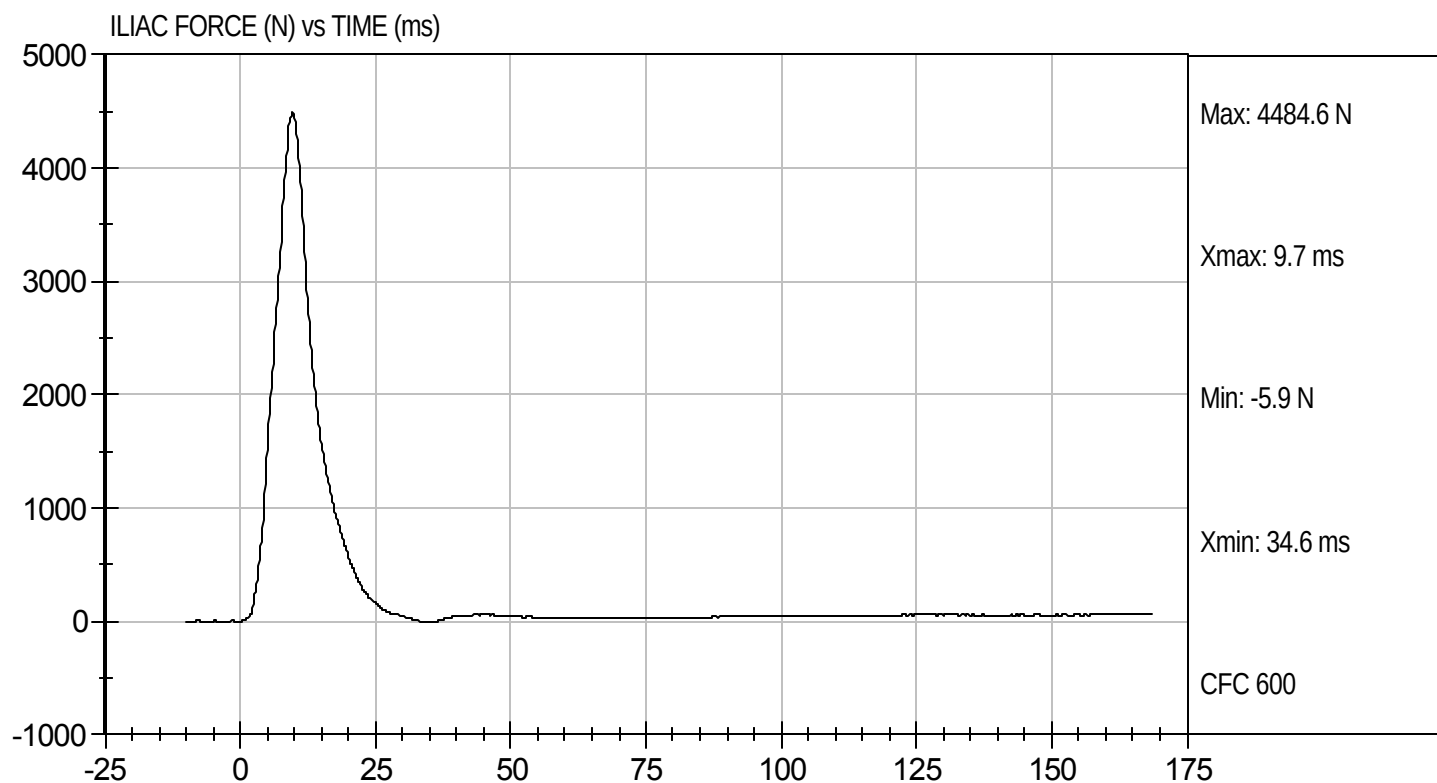
Test Date: 6/21/12
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D122308

Test Date: 6/21/12
Velocity: 14.37 ft/s, 4.38 m/s



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation

			SID-IIs S/N 306			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers			X	P67884	Endevco	05/23/12
			Y	P67886	Endevco	05/23/12
			Z	P67887	Endevco	05/23/12
Head Accelerometers			Xr	P67888	Endevco	05/23/12
			Yr	P67889	Endevco	05/23/12
			Zr	P67890	Endevco	05/23/12
Displacement Potentiometers	Thoracic Rib	Upper	Y	G1187	FTSS	05/23/12
		Middle	Y	G1261	FTSS	05/23/12
		Lower	Y	G1270	FTSS	05/23/12
	Abdominal Rib	Upper	Y	G1287	FTSS	05/23/12
		Lower	Y	G1304	FTSS	05/23/12
Lower Spine Accelerometers (T12)			X	P67508	Endevco	05/23/12
			Y	P67510	Endevco	05/23/12
			Z	P67511	Endevco	05/23/12
Acetabulum Load Cell			Y	ACG111	FTSS	05/09/12
Iliac Wing Load Cell			Y	IWG226	FTSS	05/14/12
Pelvis Plug (struck side)				49184	FTSS	12/08/11
Pelvis Plug (non-struck side)				49042	FTSS	12/07/11

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P63267	Endevco	06/12/12
Vehicle Center of Gravity	Y	P63265	Endevco	06/12/12
Vehicle Center of Gravity	Z	P63266	Endevco	06/12/12
Left Floor Sill	Y	P52278	Endevco	01/12/12
A-Pillar Sill	Y	P63510	Endevco	06/12/12
A-Pillar Low	Y	P38350	Endevco	01/12/12
A-Pillar Mid	Y	P55690	Endevco	06/12/12
B-Pillar Sill	Y	P59325	Endevco	06/12/12
B-Pillar Low	Y	P63538	Endevco	06/12/12
B-Pillar Mid	V	P47853	Endevco	06/12/12
Driver Seat	Y	P59275	Endevco	05/02/12
Engine Top	X	P63492	Endevco	06/12/12
Engine Top	Y	P63491	Endevco	06/12/12
Firewall	Y	P63495	Endevco	01/13/12
Right Roof	Y	P48166	Endevco	06/12/12
Right Floor Sill	Y	P55688	Endevco	06/12/12
Rear Floorpan	X	P63330	Endevco	02/10/12
Rear Floorpan	Y	P63329	Endevco	02/10/12

Table 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DG6277	FTSS	09/15/11
Load Cell 2	DG6278	FTSS	09/15/11
Load Cell 3	DG6279	FTSS	09/15/11
Load Cell 4	DG6280	FTSS	09/15/11
Load Cell 5	DG6281	FTSS	09/15/11
Load Cell 6	DG6283	FTSS	09/15/11
Load Cell 7	DG6284	FTSS	09/15/11
Load Cell 8	DG6582	FTSS	09/15/11