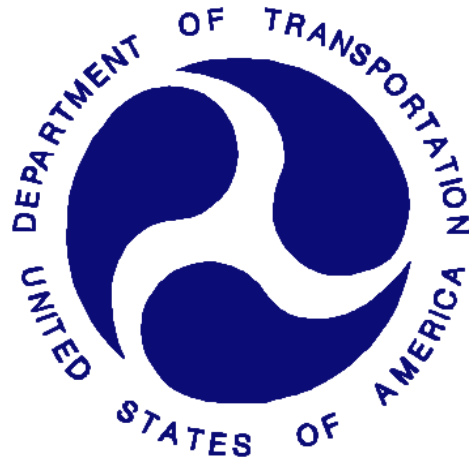


REPORT NUMBER: SPNCAP-MGA-2012-037

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

**KIA MOTORS MANUFACTURING GEORGIA, INC. FOR HYUNDAI MOTOR COMPANY
2012 Hyundai Santa Fe GLS FWD SUV
NHTSA No.: MC0514**

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



Test Date: December 12, 2011

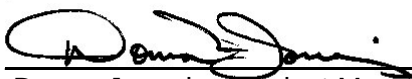
Final Report Date: February 10, 2012

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: February 10, 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-2012-037		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 Hyundai Santa Fe GLS FWD SUV, NHTSA No.: MC0514				5. Report Date February 10, 2012																												
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7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer				8. Performing Organization Report No. SPNCAP-MGA-2012-037																												
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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 December 12, 2011 to February 10, 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 Hyundai Santa Fe GLS FWD SUV 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 December 12, 2011. The impact velocity was 32.0 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.5°C. The test vehicle post-test maximum crush was 372 mm at level 3. 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>228</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>52</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>3256</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>16</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td>29</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	228	Resultant Lower Spine Acceleration	Gs	82	52	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3256	Maximum Thoracic Rib Deflection	mm	38*	16	Maximum Abdomen Rib Deflection	mm	45*	29
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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 Hyundai Santa Fe GLS FWD SUV. 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 Hyundai Santa Fe GLS FWD SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.0 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin, on December 12, 2011. 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	228
Resultant Lower Spine Acceleration	Gs	82	52
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3256
Maximum Thoracic Rib Deflection	mm	38*	16
Maximum Abdomen Rib Deflection	mm	45*	29

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No			
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Abdomen/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	

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 A-Post Y after 7 msec.

Left Mid A-Post Y after 33 msec.

Left A-Post @ Sill Y is questionable from 8-12 msec.

Left Mid A-Post Y is questionable from 9-11 msec.

Left Mid B-Post Y is questionable from 12-18 msec.

Driver Seat Track Y is questionable from 26-37 msec.

The windshield retention was 87.5% on the right side and 60.5% on the left side for a total retention of 74%

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 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC0514	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Hyundai	Automatic Door Locks (ADL)	Yes
Model	Santa Fe	Power Window Auto-Reverse	Yes
Body Style	MPV	Other Optional Feature	N/A
VIN	5XYZG3AB6CG103782	Driver Front Airbag	Yes
Body Color	Moonstone Silver	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	171 / 106	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.4	Driver Torso Airbag	No
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	6	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	Front	Rear Pass. Torso Airbag	No
Roof Rack	Yes	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?			No

DATA FROM CERTIFICATION LABEL

Manufactured By	Kia Motors Manufacturing Georgia, Inc. for Hyundai Motor Company	GVWR (kg)	2230
Date of Manufacture	SEP/01/11	GAWR Front (kg)	1350
Vehicle Type	MPV	GAWR Rear (kg)	1450

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	(A)
Capacity Weight (VCW) (kg)				420	(B)
DSC x 68.04 kg				340	(A-B)
Rated Cargo and Luggage Weight (RCLW)				80	

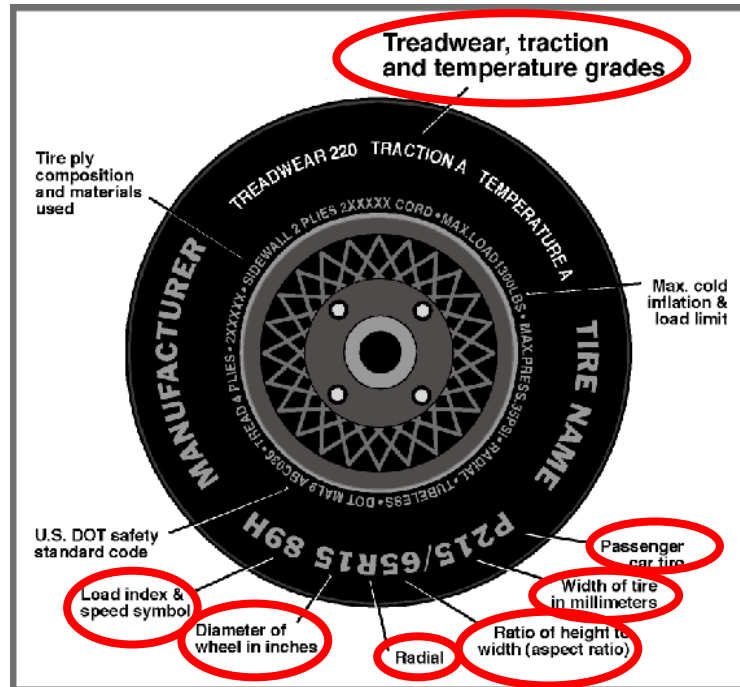
VEHICLE SEAT TYPE

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			w/lever	
Third Row Seat							

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

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	230	230
Recommended Tire Size	P235/65R17	P235/65R17

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	P235/65R17	P235/65R17
Tire Manufacturer	KUMHO	KUMHO
Tire Name	SOLUS	SOLUS
Tire Type	Passenger	Passenger
Tire Width	235	235
Aspect Ratio	65	65
Radial	Yes	Yes
Wheel Diameter	17	17
Load Index/Speed Symbol	103T	103T
Treadwear	500	500
Traction Grade	A	A
Temperature Grade	A	A
Tire Material	Rubber	Rubber

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

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	230	230	230	230
Tire Placard	kpa	230	230	230	230
Owner's Manual	kpa				
As Tested	kpa	230	230	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	488.1	365.1		500.3	422.8		506.7	425.0	
Right	kg	485.4	352.9		492.2	402.7		488.1	403.7	
Ratio	%	57.6	42.4		54.6	45.4		54.6	45.4	
Totals	kg	973.5	718.0	1691.5	992.5	825.5	1818.0	994.8	828.7	1823.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1691.5	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	80	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1823.7	(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	34.0
Right tail light, right side mirror, cargo holder, trunk carpet, jack & tools.	24.0

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	deg	-0.3	0.2	0.3	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	0.0	0.2	0.3	Yes
Front Bumper Angle (left-to-right)**	deg	-0.6	-0.6	-0.7	Yes
Rear Bumper Angle (left-to-right)**	deg	-0.4	-0.4	-0.5	Yes
Vehicle CG (Aft of Front Axle)	mm	1146	1226	1227	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	7	12	17	

*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 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011

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	15.7	11.1	13.4
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	13.4	Fixed	Max	Fixed	Fixed	Fixed
	13.4	Fixed	Mid	Fixed	Fixed	Fixed
	13.4	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 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

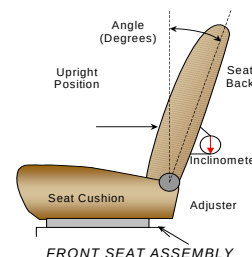
NHTSA No. MC0514
 Test Date: 12/12/2011

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	240	24 (1 st as 0)	0	0 (1 st as 0)
Front Passenger Seat	240	24 (1 st as 0)	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	72.2		0.8	8 th (1 st as 0)
Front Passenger Seat	72.0		1.0	7 th (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	35.9		5.0	6 th (1 st as 0)
Non-Struck Side Rear Seat	35.9		4.8	6 th (1 st as 0)
Rear Center Seat	35.9		5.0	6 th (1 st as 0)

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	3 (1 st as 0)	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	5	Lowest

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

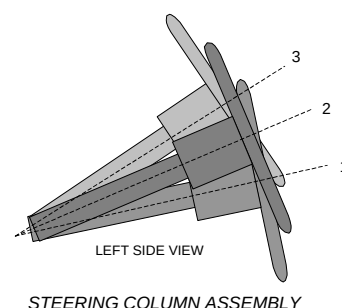
Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011

STEERING COLUMN ADJUSTMENT

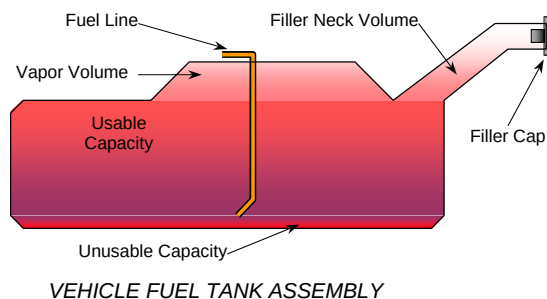
Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	68.8	260
Geometric Center, Position 2	61.8	245
Uppermost, Position 3	54.8	230
Telescoping Steering Wheel Travel		30
Test Position	61.8	245



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 will pump fuel when the key is in the "ON" position. The fuel pipe is on the left side.



FUEL TANK CAPACITY DATA

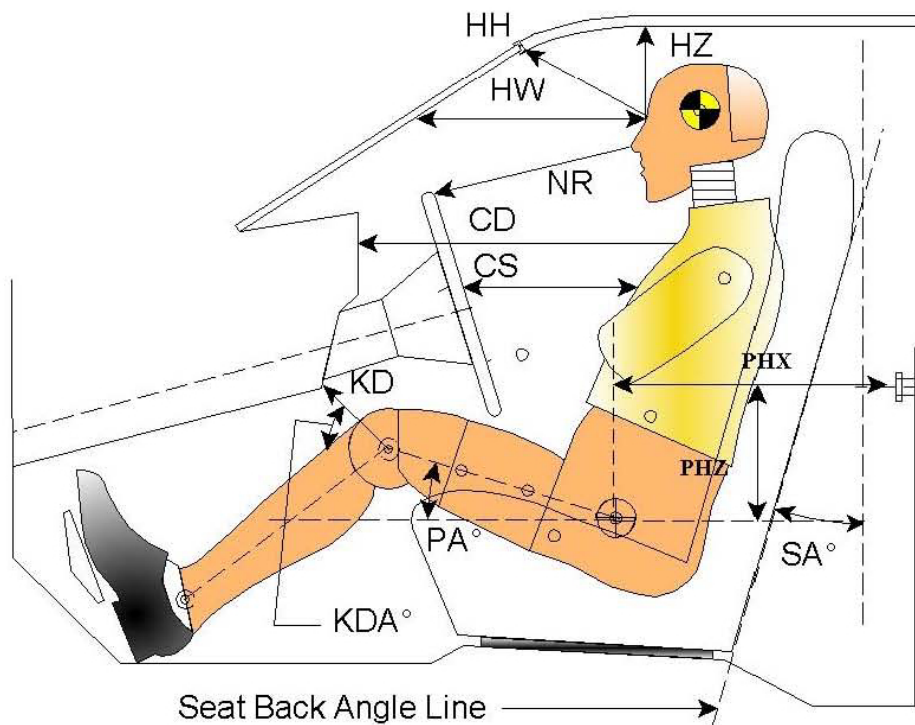
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	70.0
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	68.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	65.1
Actual Amount of Solvent Used	65.1
1/3 of Usable Capacity	23.3

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 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011



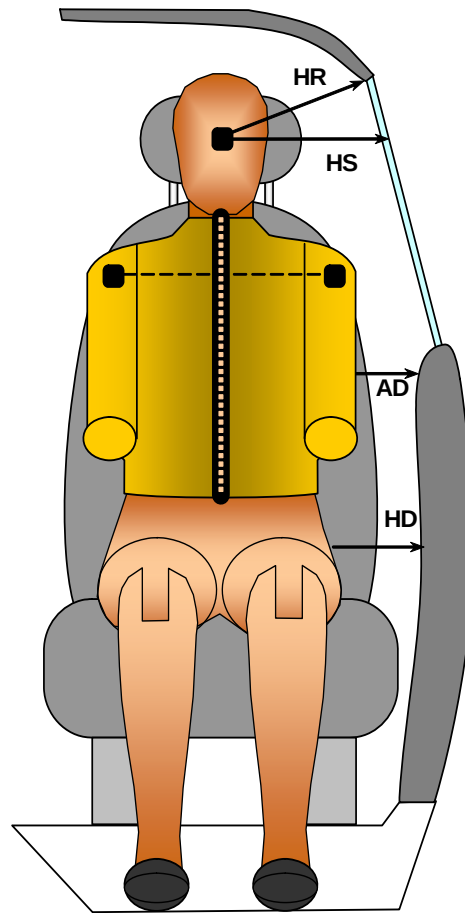
LEFT SIDE VIEW

Code	Measurement Description	Driver S/N 296	
		Length (mm)	Angle (°)
HH	Head to Header	206	
HW	Head to Windshield	445	
HZ	Head to Roof Liner	160	
NR	Nose to Rim	224	
CD	Chest to Dashboard	381	
CS	Chest to Steering Wheel	146	
KDL/KDAL°	Left Knee to Dash	88	40.9
KDR/KDAR°	Right Knee to Dash	84	34.1
PAX°	Pelvic Tilt Angle (X-Axis)		18.3
PAY°	Pelvic Tilt Angle (Y-Axis)		-0.7
PHX	Hip Point to Striker (X-Axis)	371	
PHZ	Hip Point to Striker (Z-Axis)	124	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011



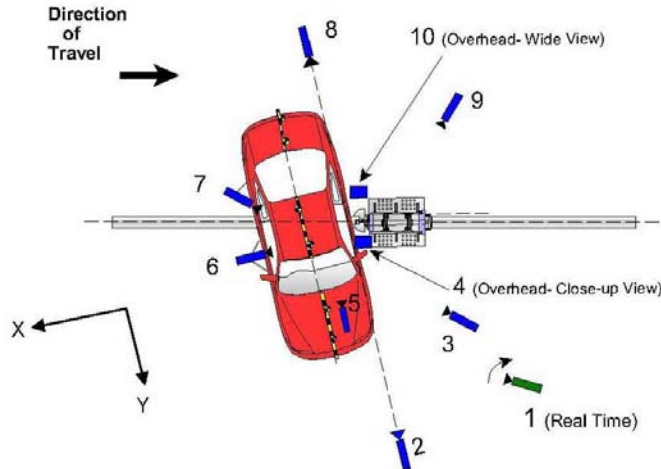
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver S/N 296
		Length (mm)
HR	Head to Side Header	245
HS	Head to Side Window	366
AD	Arm to Door	156
HD	Hip Point to Door	170

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011



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	-50	6310	-1830	24	1000
3	Impact Side 45° Forward	-2680	5420	-1930	20	1000
4	Overhead Closeup	190	0	-4420	50	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-70	-6810	-1830	24	1000
9	Impact Side 45° Rearward	-4410	-4050	-1950	20	1000
10	Overhead Wide View	340	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

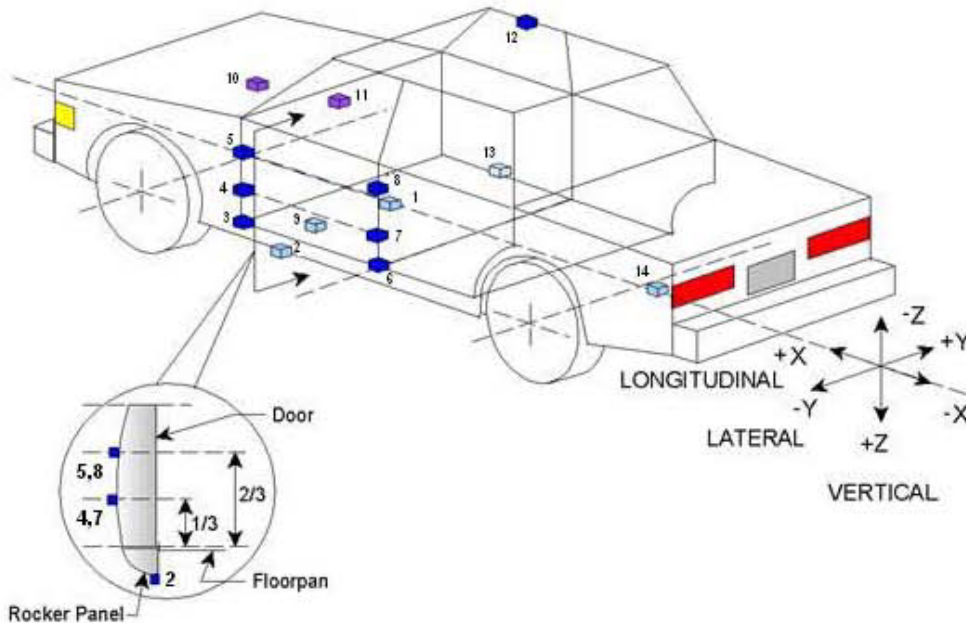
INSTRUMENTATION

	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 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2645	0	-479
2	Left Floor Sill	2825	-756	-294
3	A Pillar Sill	3170	-754	-292
4	A Pillar Low	3100	-697	-669
5	A Pillar Mid	3160	-804	-910
6	B Pillar Sill	2115	-753	-290
7	B Pillar Low	2125	-734	-700
8	B Pillar Mid	2132	-729	-968
9	Driver Seat Track	2459	-596	-545
10	Engine Top	3910	25	-899
11	Firewall	3575	0	-1006
12	Right Roof	2035	586	-1694
13	Right Floor Sill	2800	756	-296
14	Rear Floorpan	249	0	-584

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 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011



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 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver SID-IIs Dummy
Face	None
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag, Headrest
Back of Head	Curtain Airbag, Headrest, Seatback
Left Shoulder	Side Airbag, Seatback
Upper Torso	Side Airbag
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag, Door Panel
Left Knee	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	Cracked
Side Window Damage	Left Front Window Broke
Other Notable Effects	Windshield Retention – See Page 3, Test Notes

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

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No			
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Abdomen/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	

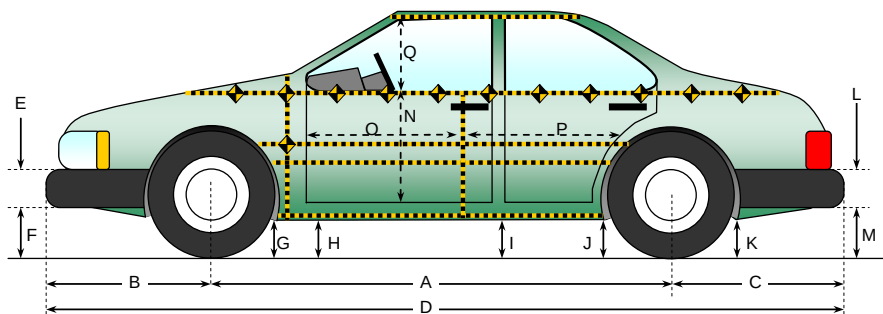
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1068
Actual Impact Point (Aft of Front Axle)	mm		1076
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	-8
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	32.0
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.1

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

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011



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

LEFT SIDE VIEW

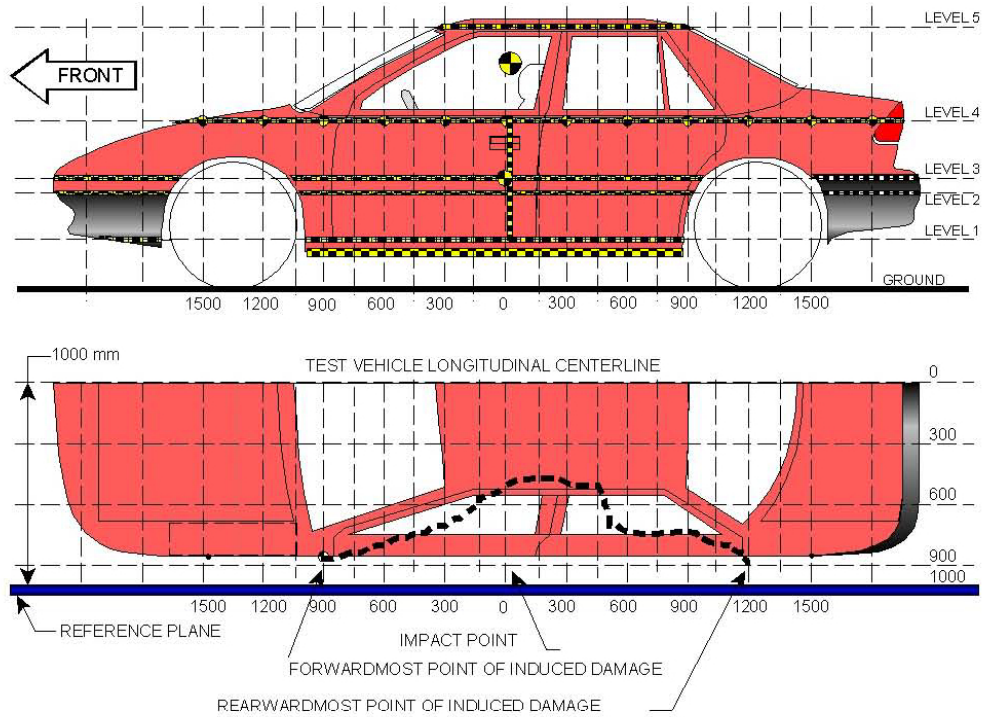
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2700	2600	100
B	Front Axle to FSOV	961	961	0
C	Rear Axle to RSOV	995	993	2
D	Total Vehicle Length at Centerline	4656	4554	102
E	Front Bumper Thickness	95	95	0
F	Front Bumper Bottom to Ground	363	350	13
G	Sill Height at Front Wheel Well	278	269	9
H	Sill Height at Front Door Leading Edge	292	277	15
I	Sill Height at B Pillar	282	301	-19
J1	Sill Height at Rear Wheel Well	275	299	-24
J2	Pinch Weld Height at Rear Wheel Well	276	297	-21
K	Sill Height Aft of Rear Wheel Well	312	345	-33
L	Rear Bumper Thickness	120	120	0
M	Rear Bumper Bottom to Ground	460	358	102
N	Sill Height to Bottom of Front Window Sill	750	747	3
O	Front Door Leading Edge to Impact CL	615	608	7
P	Rear Door Trailing Edge to Impact CL	1282	1290	-8
Q	Front Window Opening	454	422	32
R	Right Side Length	3484	3491	-7
S	Left Side Length	3484	3341	143
T	Vehicle Width at B-Pillars	1846	1731	115

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

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011



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	375
2	Mid Door	750
3	Occupant Hip Point	780
4	Window Sill	1095
5	Window Top	1595

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

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011

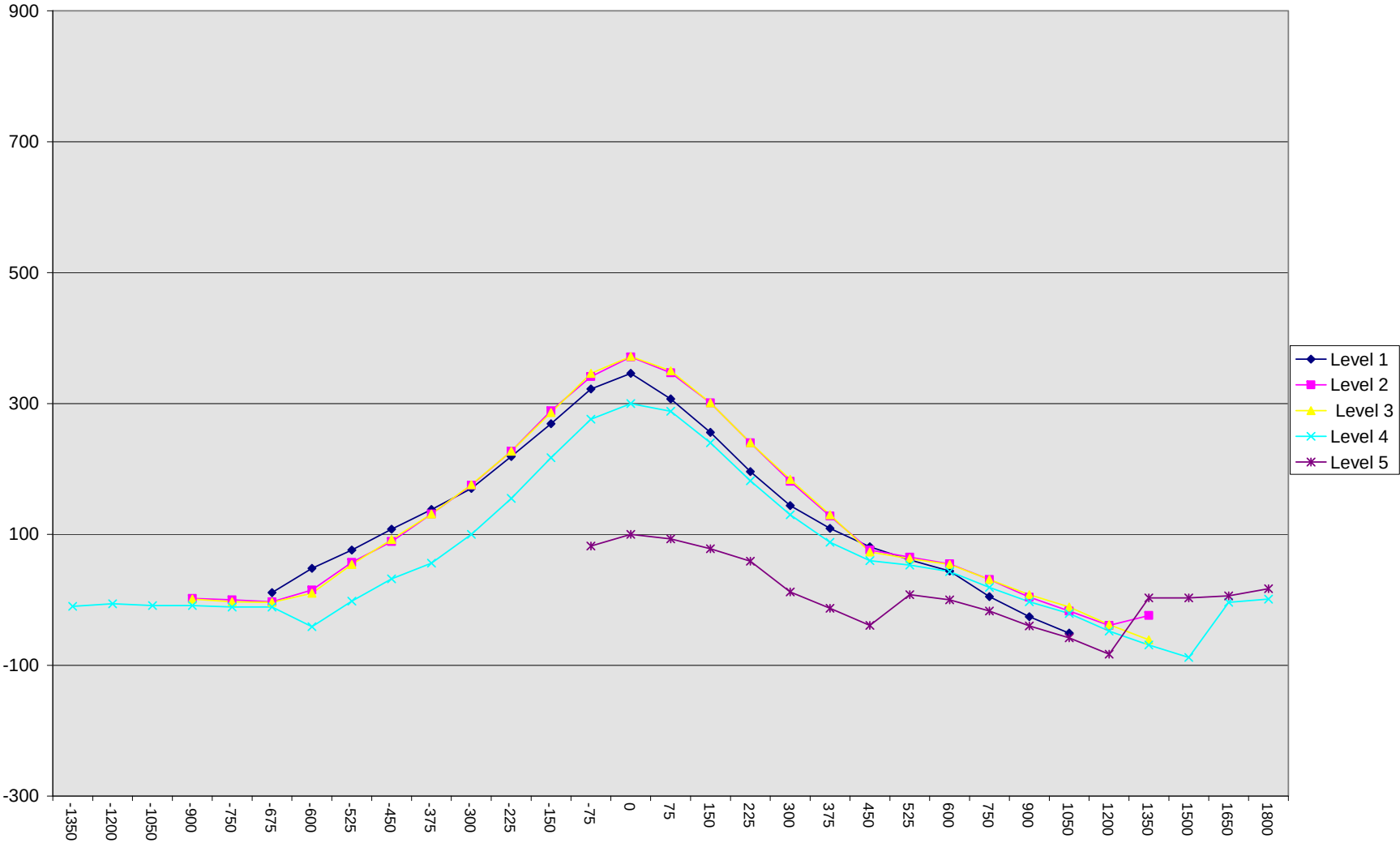
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1350				298					288					-10	
-1200				283					277					-6	
-1050				273					264					-9	
-900		166	164	264			168	165	255			2	1	-9	
-750		166	169	262			166	166	251			0	-3	-11	
-675	216	173	173	260		227	170	169	249		11	-3	-4	-11	
-600	215	176	176	262		263	191	186	221		48	15	10	-41	
-525	217	179	178	262		293	236	232	260		76	57	54	-2	
-450	217	180	179	260		325	269	271	292		108	89	92	32	
-375	217	180	179	259		355	311	310	315		138	131	131	56	
-300	216	180	179	254		386	355	355	354		170	175	176	100	
-225	215	181	180	251		434	408	407	406		219	227	227	155	
-150	215	182	180	249		484	471	466	466		269	289	286	217	
-75	214	183	180	246	486	536	524	526	522	568	322	341	346	276	82
0	214	184	181	244	473	560	555	553	544	573	346	371	372	300	100
75	214	184	181	239	458	521	531	531	527	551	307	347	350	288	93
150	214	184	182	237	451	470	485	483	477	529	256	301	301	240	78
225	214	185	183	234	449	410	425	423	416	508	196	240	240	182	59
300	214	186	183	232	450	358	367	367	362	462	144	181	184	130	12
375	214	186	183	228	448	323	314	313	316	435	109	128	130	88	-13
450	214	187	185	229	448	295	263	258	289	409	81	76	73	60	-39
525	214	189	186	226	446	275	254	249	279	454	61	65	63	53	8
600	214	190	187	225	445	258	245	241	268	445	44	55	54	43	0
750	215	191	189	221	444	220	222	220	240	427	5	31	31	19	-17
900	215	190	188	221	444	189	194	196	218	404	-26	4	8	-3	-40
1050	217	186	183	219	443	166	169	172	198	385	-51	-17	-11	-21	-58
1200		174	176	213	443		135	138	165	360		-39	-38	-48	-83
1350		167	165	208	445		143	104	139	448		-24	-61	-69	3
1500				205	447				117	450				-88	3
1650				205	452				201	458				-4	6
1800				207	454				208	471				1	17

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 Hyundai Santa Fe GLS FWD SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
Test Date: 12/12/2011



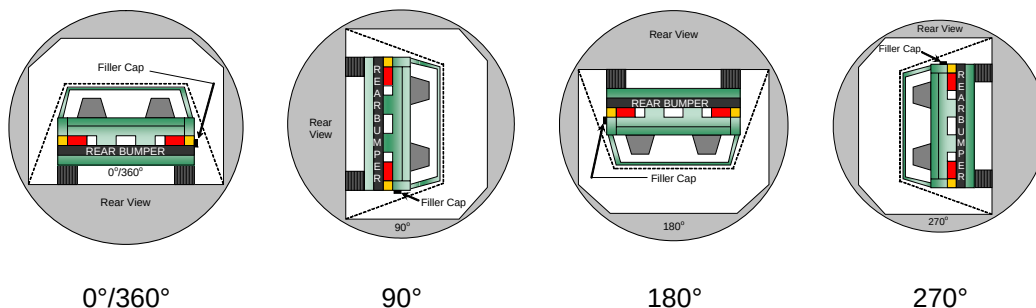
DATA SHEET NO. 11
FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2012 Hyundai Santa Fe GLS FWD SUV NHTSA No. MC0514
 Test Program: NCAP Side Pole Impact Test Test Date: 12/12/2011

Test Time: 10:40 am Temperature: 21.5° 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°	117	300	417
90° to 180°	113	300	413
180° to 270°	110	300	410
270° to 360°	116	300	416

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

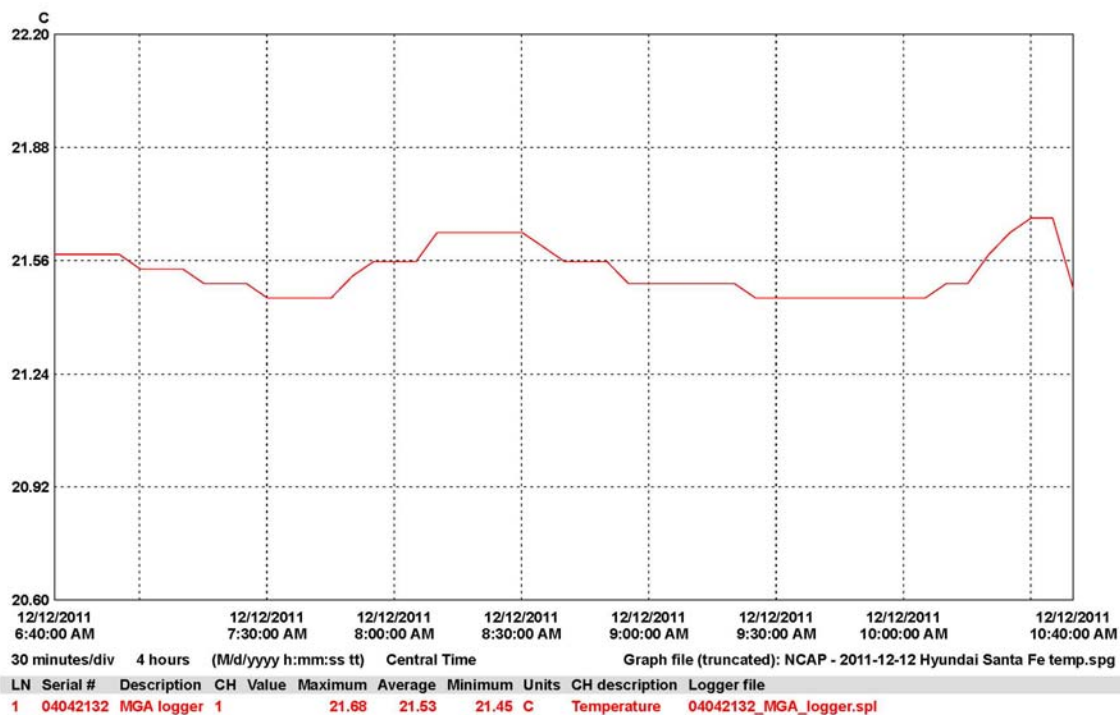
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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 Hyundai Santa Fe GLS FWD SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MC0514
 Test Date: 12/12/2011



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



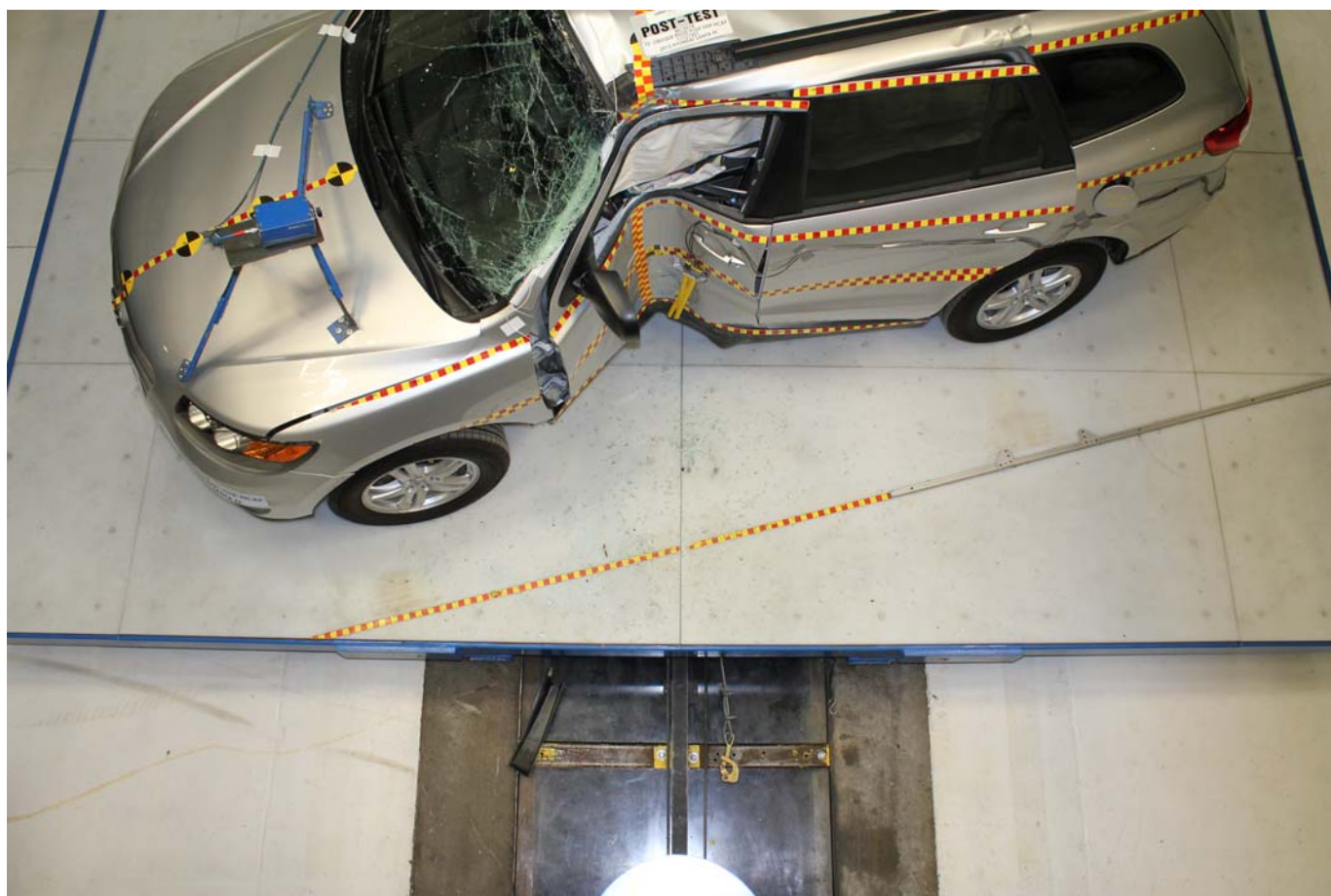
Pre-Test Right Side View of Test Vehicle



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



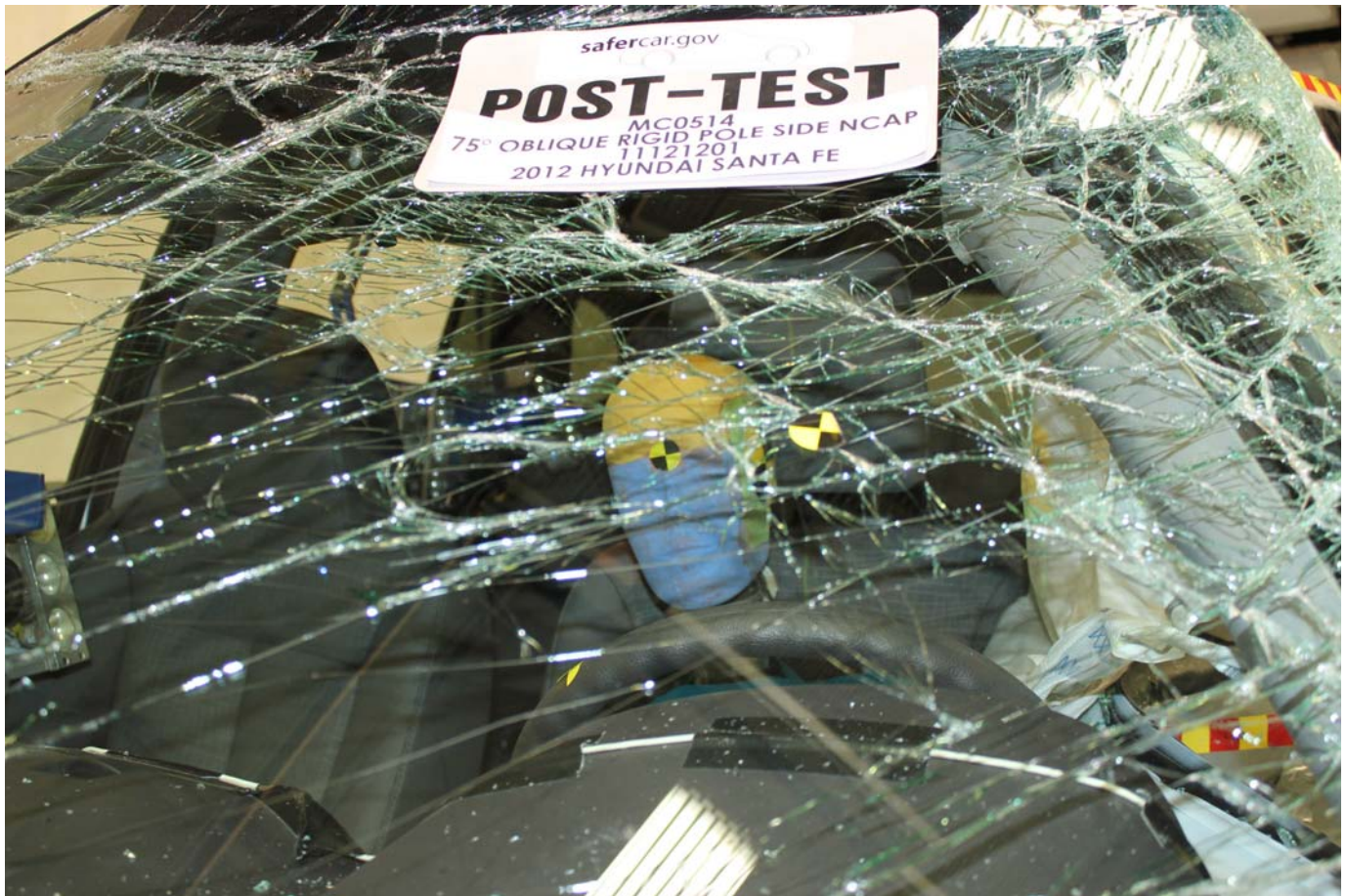
Pre-Test Close-Up View of Impact Point Target



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



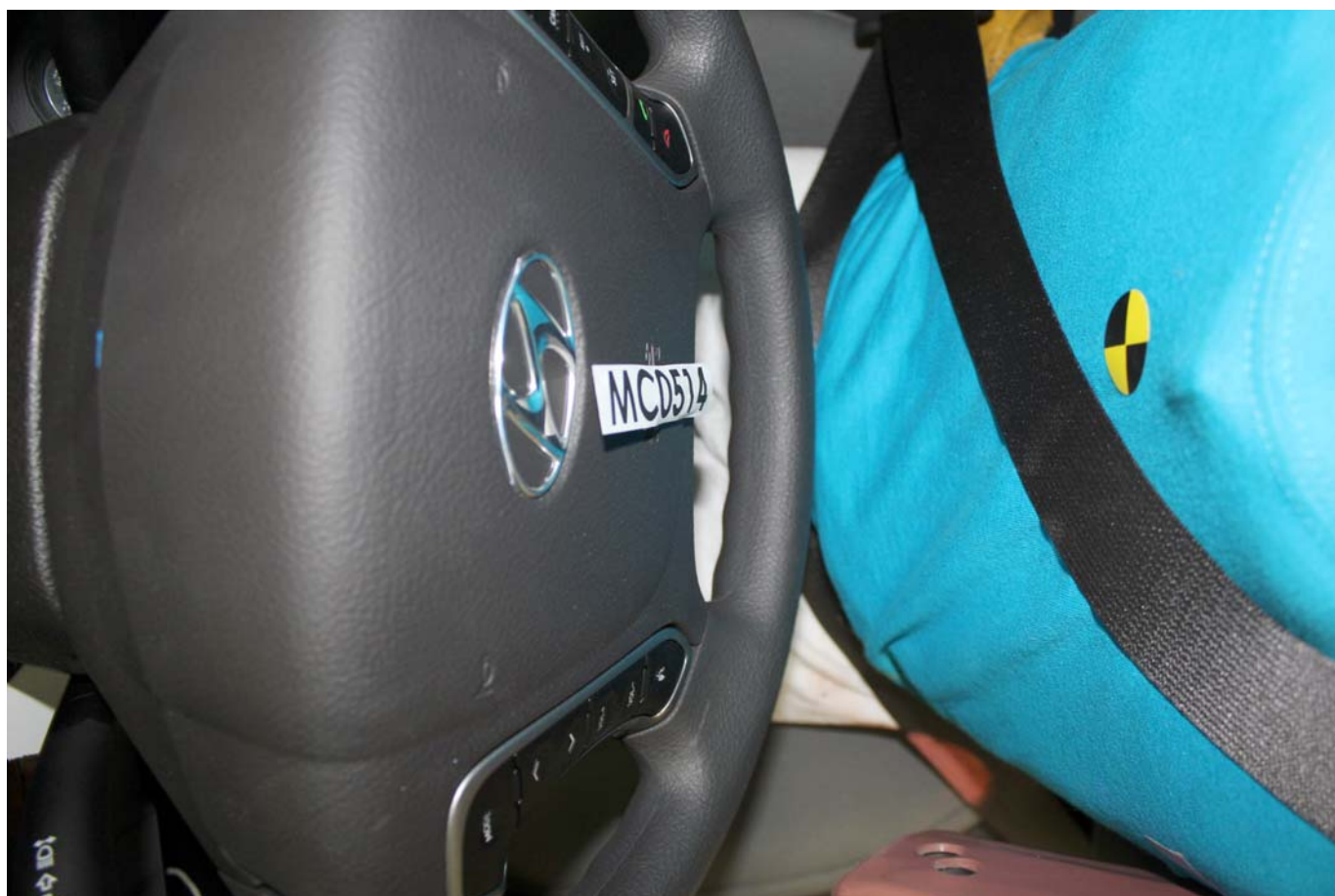
Pre-Test Front View of Seat Back Prior to Dummy Positioning



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



Pre-Test Front 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



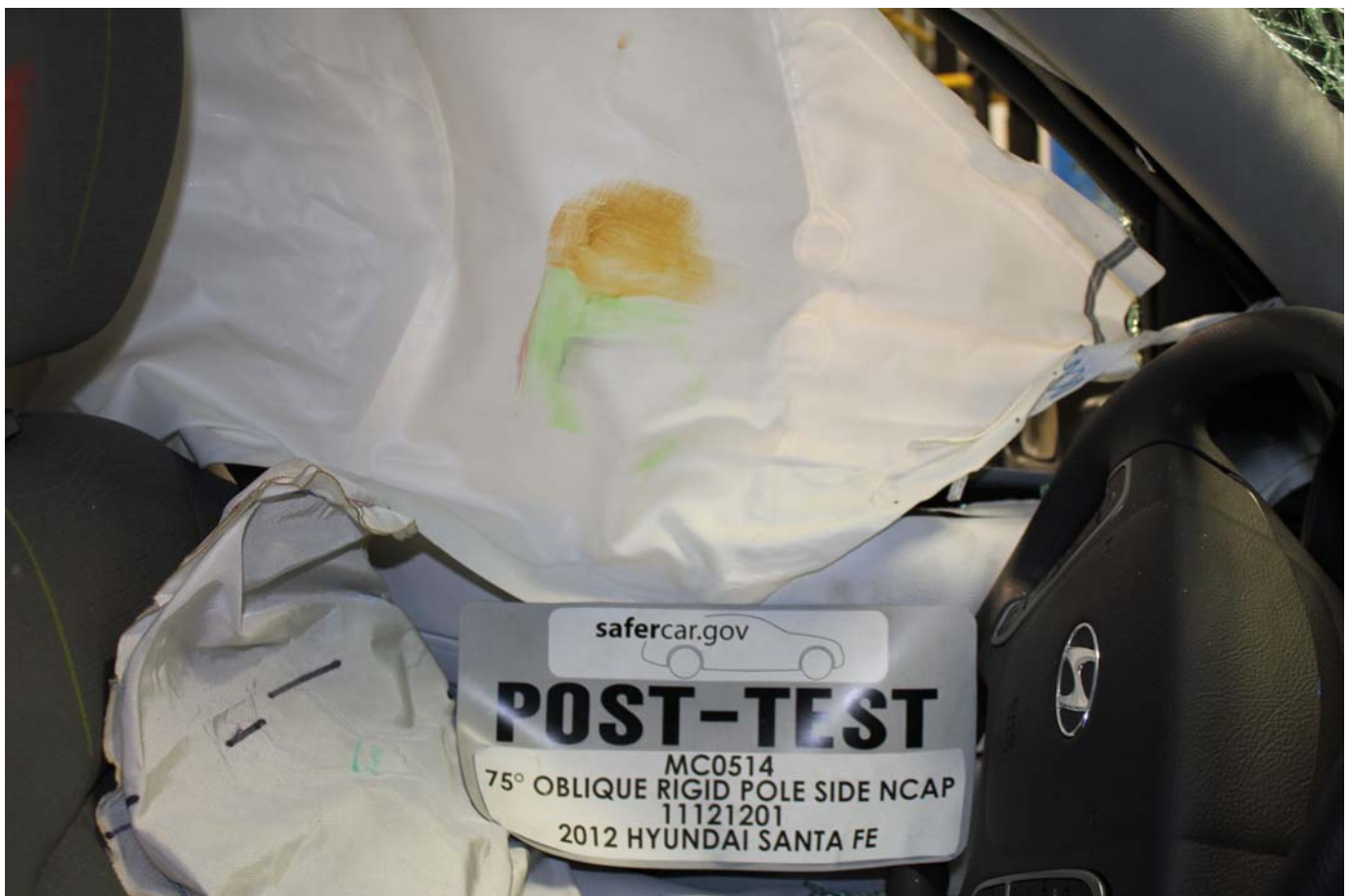
Pre-Test Inner Door Panel View



Post-Test Inner Door Panel View Showing Dummy Contact Location



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



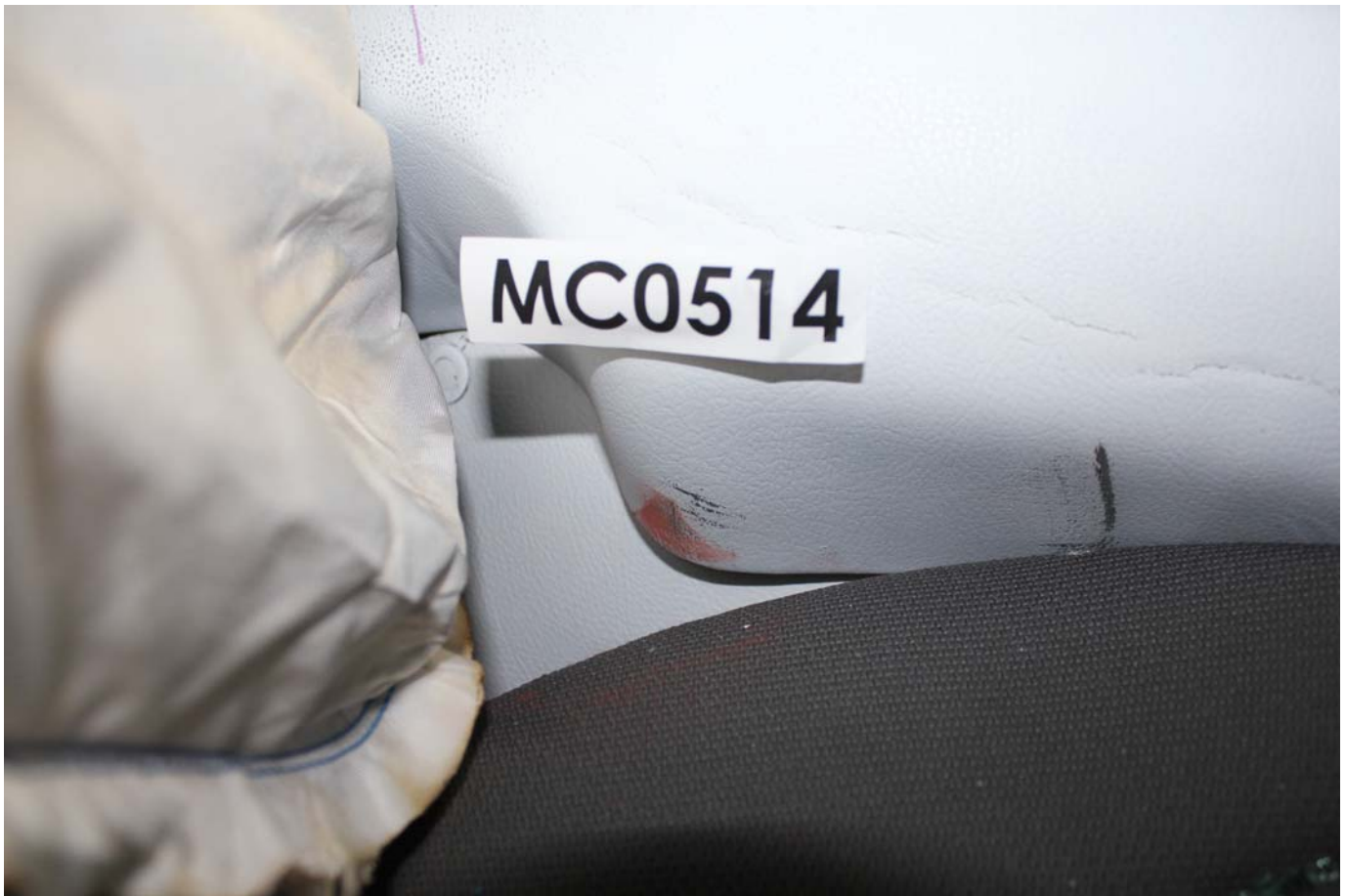
Post-Test Dummy Close-Up Head Contact with Side Air Bag View



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



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



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



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



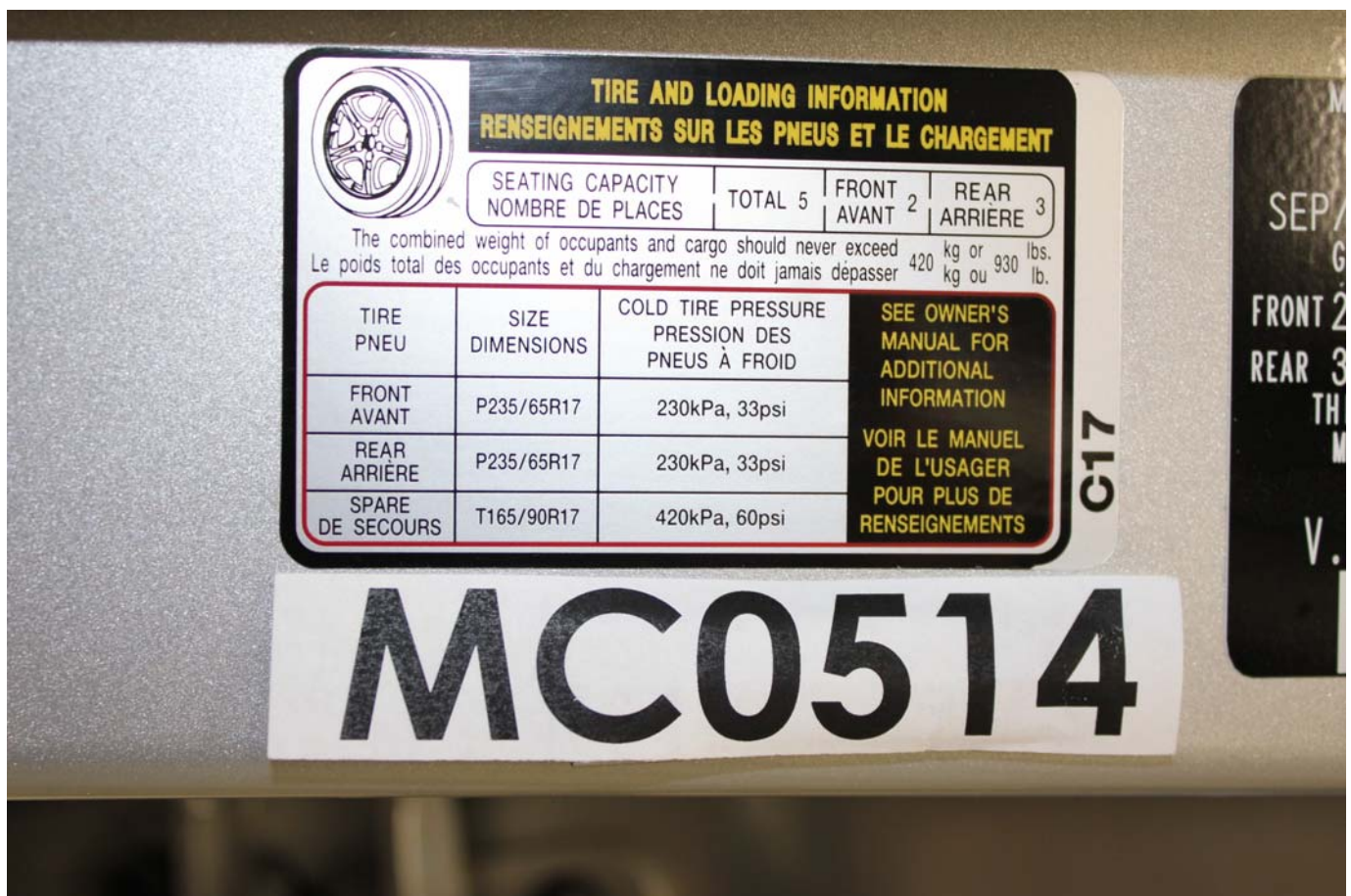
Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



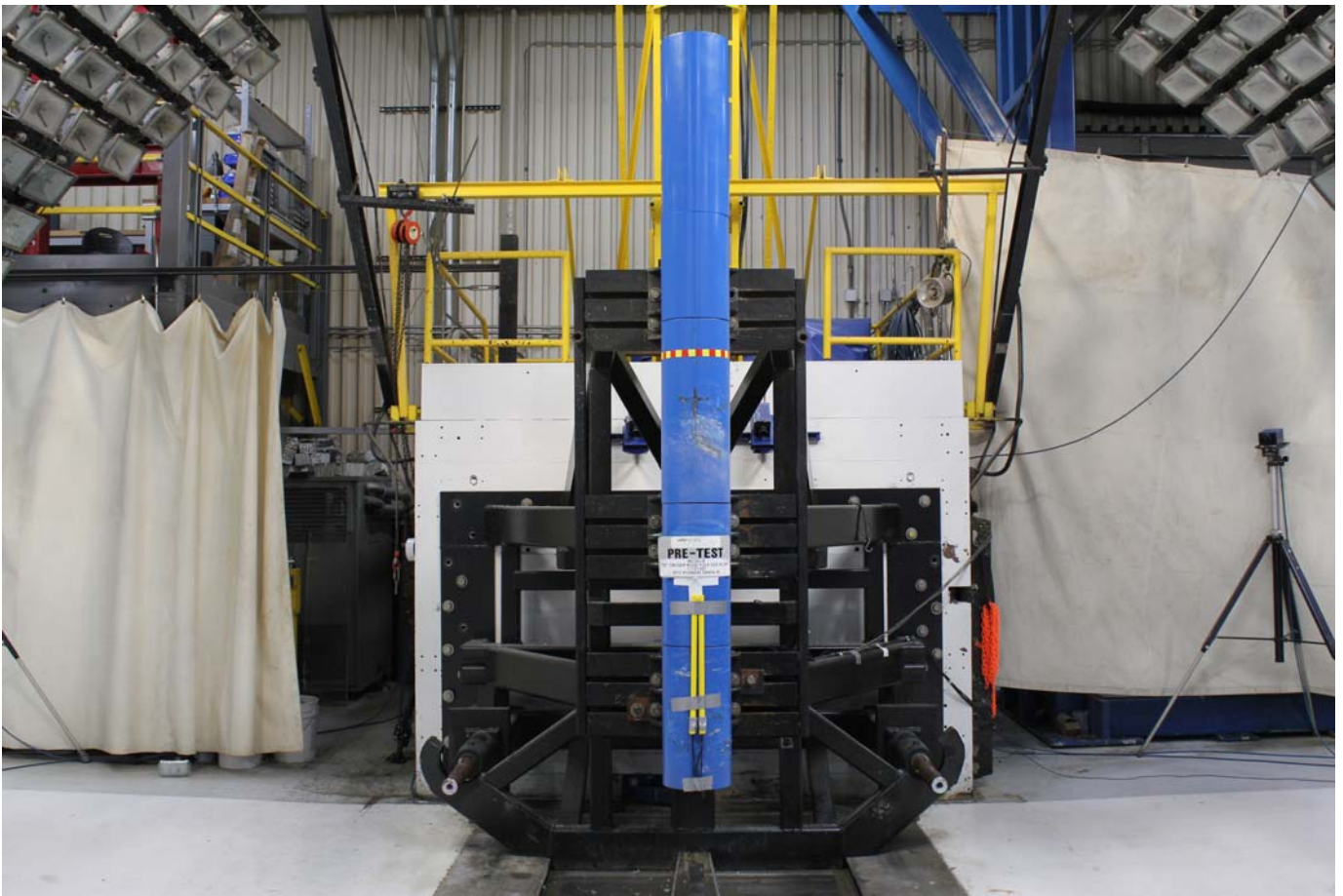
Post-Test View of Fuel Filler Cap or Fuel Filler Neck



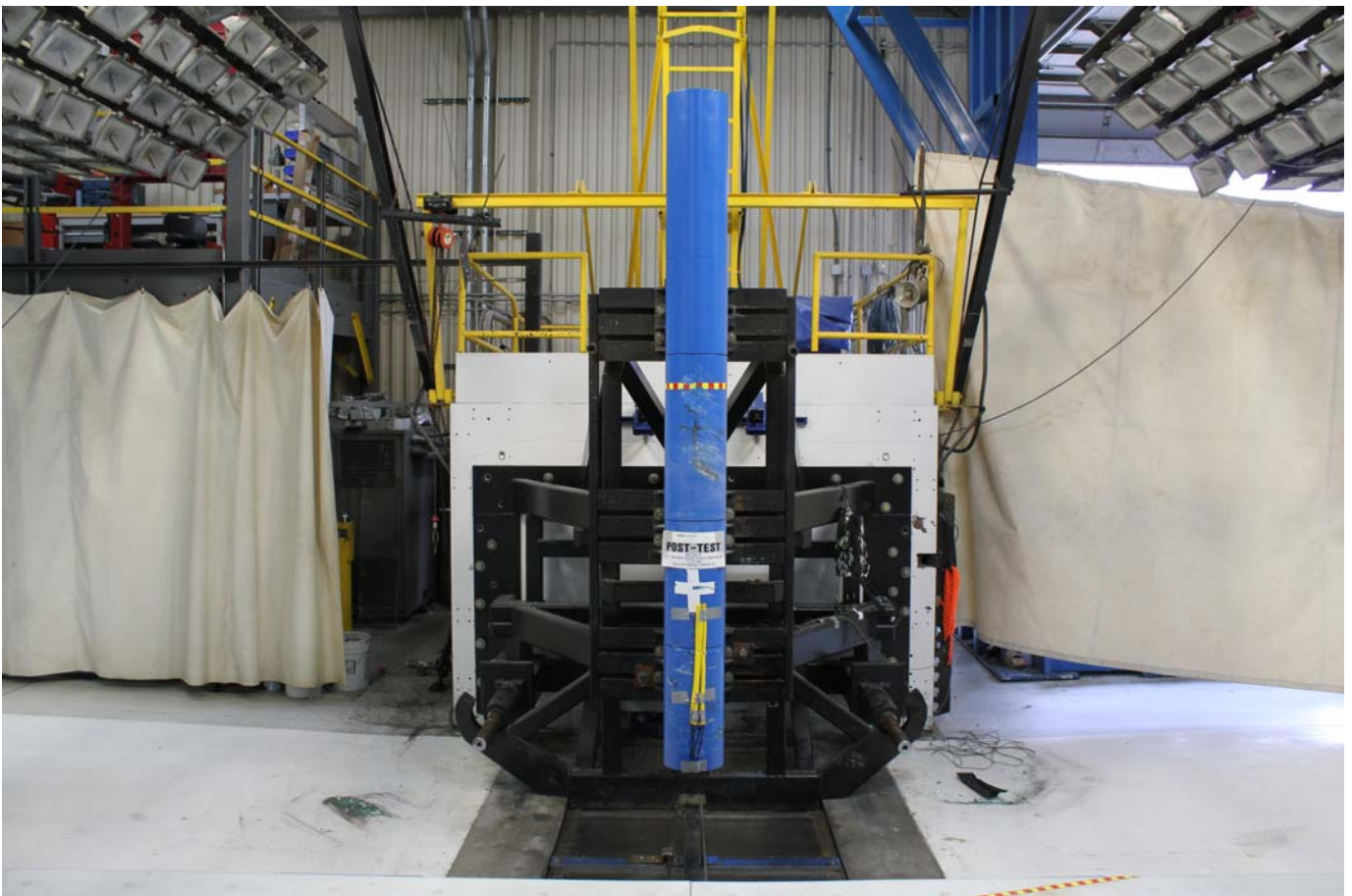
Close-Up View of Vehicle's Certification Label



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



Pre-Test Pole Barrier Front View



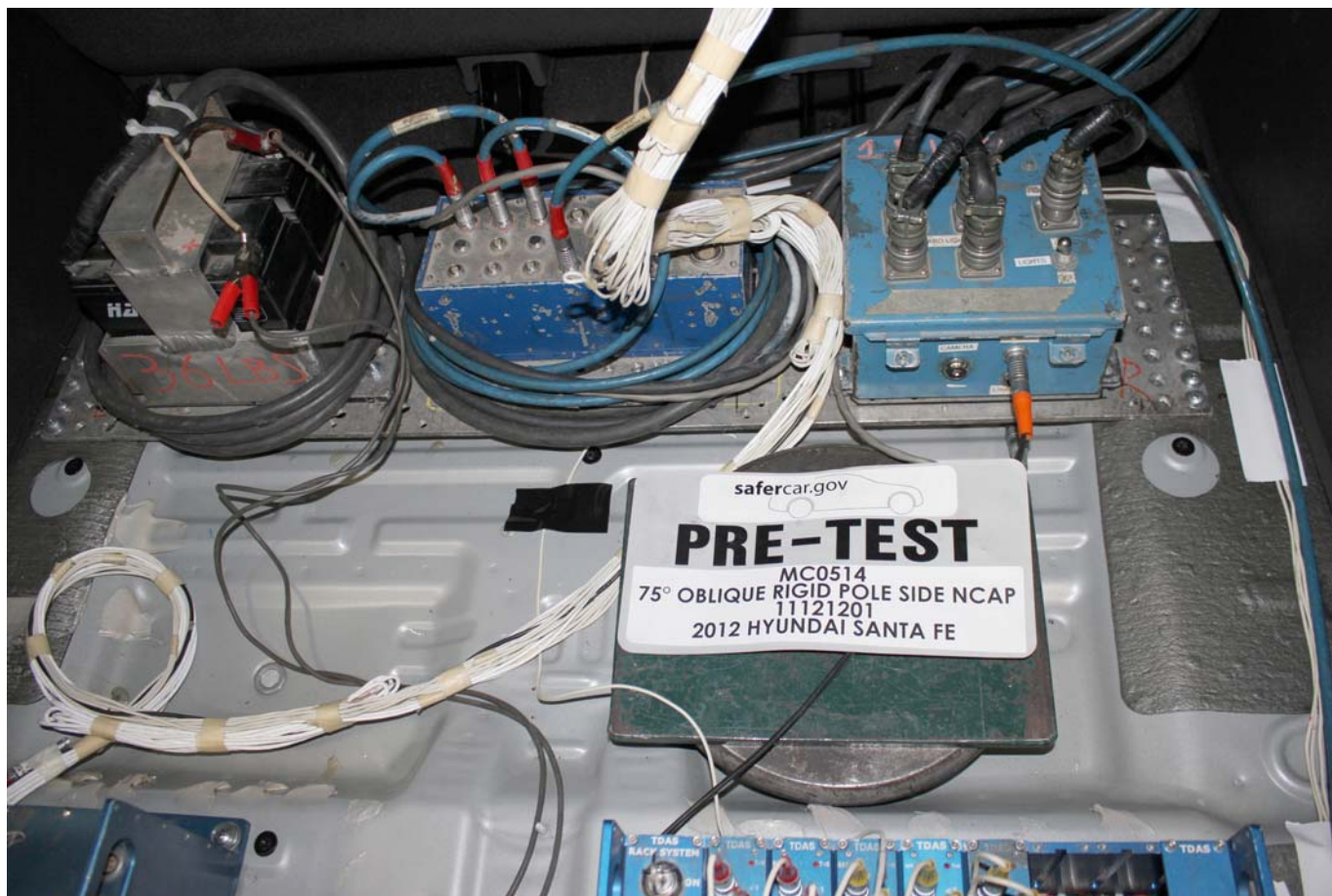
Post-Test Pole Barrier Front View



Pre-Test Pole Barrier Side View



Post-Test Pole Barrier Side View



Pre-Test Ballast View



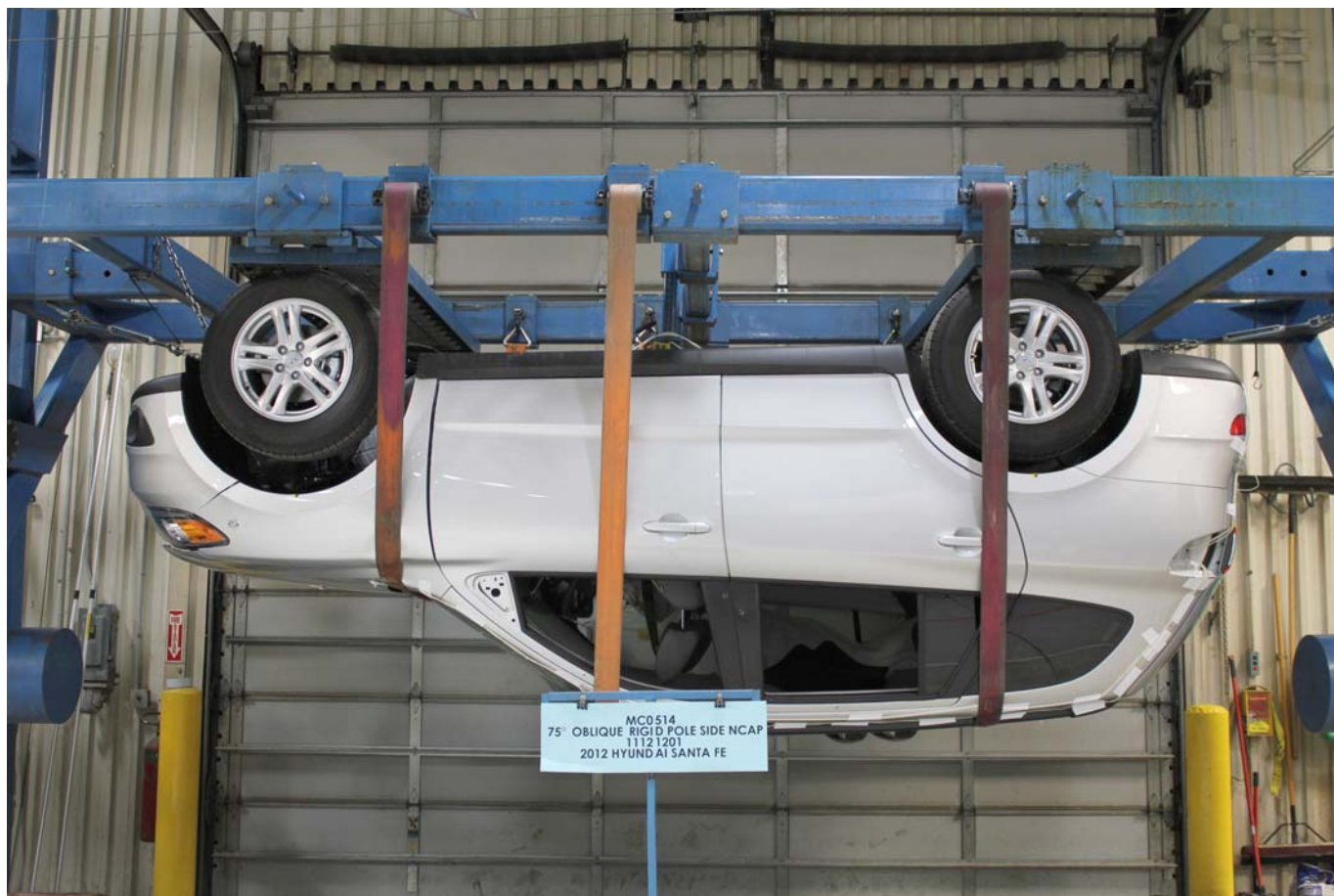
Post-Test Primary and Redundant Speed Trap Read-Out



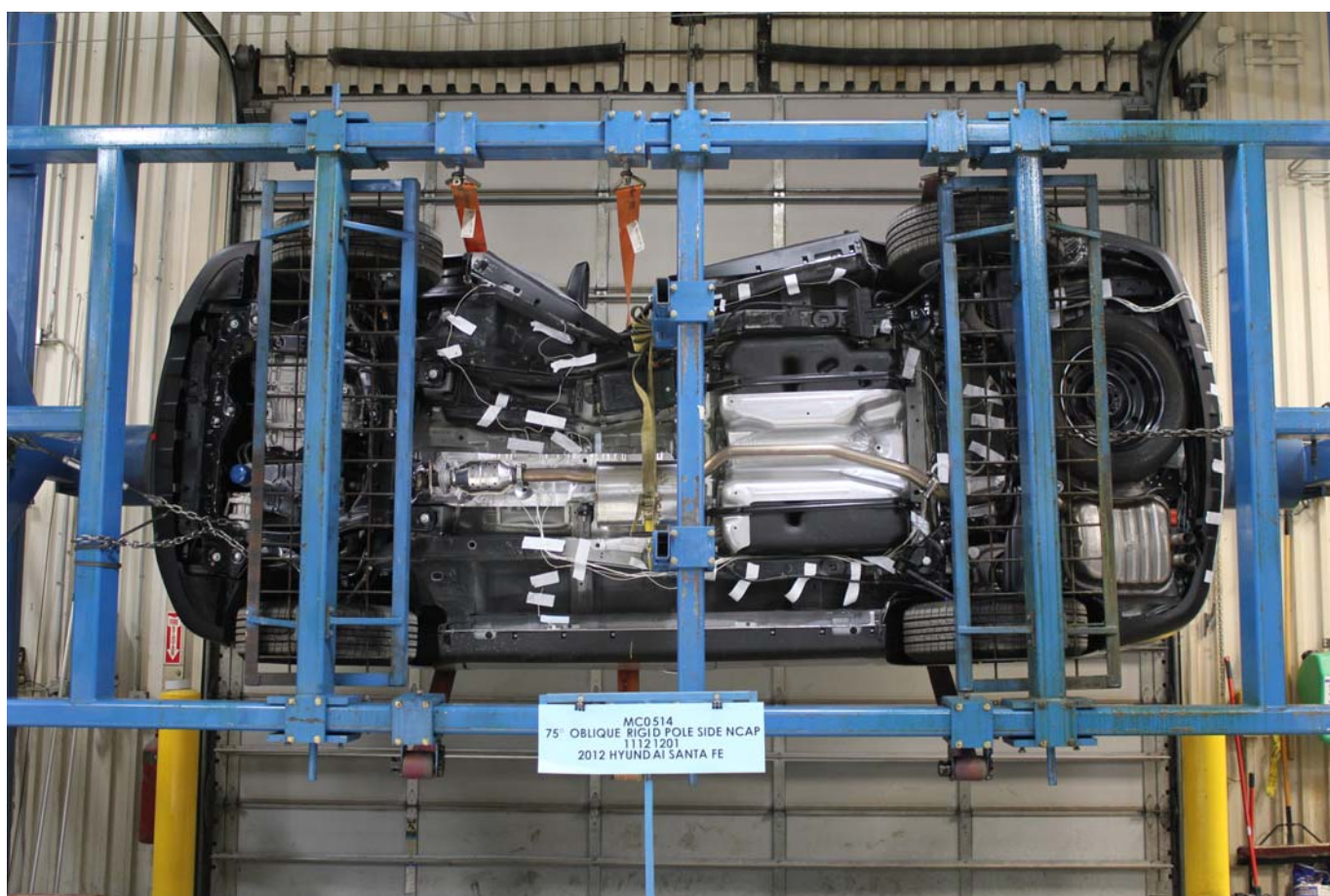
FMVSS No. 301 Static Rollover 0 Degrees



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



HYUNDAI 2012 SANTA FE GLS FWD

Santa Fe is a highly rated crossover with
award winning safety, style, & refinement

Q13168



SOLD TO: IL077

GROSSINGER HYUNDAI
6747 N. LINCOLN AVENUE
LINCOLNWOOD IL 60712

SHIPPED TO: IL077

VIN: 5XYZG3AB6CG103782

MODEL: 62422F45

ENGINE: G4KEBK356220

PORT OF ENTRY: WP

EXTERIOR COLOR: MOONSTONE SILVER

INTERIOR COLOR: GRAY

MODE OF TRANSPORT: TRUCK

ACCESSORY WEIGHT: 14 lbs.

EMISSIONS: This vehicle is certified to meet
emission requirements in all 50 states.

Manufacturer's suggested retail price includes manufacturer's
recommended pre-delivery service. Gasoline license and title fees,
state and local taxes and dealer installed options and accessories
are not included in the manufacturer's suggested retail price.

This label has been affixed to this vehicle by
Hyundai Motor America, pursuant to the requirements
of 15 U.S.C. 1251 et seq which prohibits its removal
or alteration prior to delivery to the ultimate purchaser.

PART CONTENT INFORMATION

FOR VEHICLES IN THIS COUNTRY: U.S./CANADIAN PARTS CONTENT: 55 %
MAJOR SOURCES OF FOREIGN PARTS CONTENT: Korea 45 %

Note: Parts content does not include final assembly, distribution, or other non-parts costs.

FOR THIS VEHICLE: FINAL ASSEMBLY POINT: West Point, Georgia U.S.

COUNTRY OF ORIGIN: ENGINE: Korea TRANSMISSION: U.S.A.

EPA Fuel Economy Estimates

CITY MPG

20

Expected range
for most drivers
16 to 24 MPG

Estimated
Annual Fuel Cost

\$ 2414.00

based on 15,000 miles
at \$3.70 per gallon

Combined Fuel Economy

This Vehicle
23

10 32
All SUVs

HIGHWAY MPG

28

Expected range
for most drivers
23 to 33 MPG

Your actual
mileage will vary
depending on how you
drive and maintain
your vehicle

See the Free Fuel Economy Guide at dealers or www.fueleconomy.gov

STANDARD FEATURES:

AMERICA'S BEST WARRANTY

*5-year/100,000-mile New Vehicle Warranty
*10-year/100,000-mile Powertrain Warranty
*7-year/Unlimited-mile Anti-perforation Warranty
*5-year/Unlimited-mile Roadside Assistance
*Limited warranties, see dealer for details

ADVANCED SAFETY TECHNOLOGY

*Electronic Stability Control w/ Traction Control System
*ABS w/ Electronic Brake-Force Distribution & Brake Assist
*Advanced Front Seat Airbag System
*Front Side-Impact Airbags
*Side Curtain Airbags with Rollover Sensors
*Tire Pressure Monitor System
*Active Front Head Restraints

POWERTRAIN TECHNOLOGY

*2.4L DOHC 16-Valve 4-cylinder Engine
*6-Spd Automatic Transmission w/ SHIFTRONIC® Shift Function
*Front Wheel Drive
*Downhill Brake Control
*17" Alloy Wheels w/ Low Rolling Resistance Tires

COMFORT & CONVENIENCE

*Air Conditioning w/ Cabin Air Filter
*AM/FM/CD/MP3 Audio System w/ iPod/iUSB/Aux Input Jacks
*XM Satellite Radio w/90 Day Trial; Not Available in AK & HI
*Integrated Bluetooth® Hands-Free Phone System
*Steering-Wheel-Mounted Audio & Cruise Controls
*Tilt-and-Telescopic Steering Wheel
*Premium Seat Cloth

DRIVER SEAT ADJUSTABLE LUMBAR SUPPORT

*60/40 Split Folding Rear Seat with Auto-Fold Head Restraints
*Keyless Entry System with Alarm
*Black Manual-Folding Heated Power Mirrors
*Power Door & Luggage Locks
*Multi-Function Trip Computer
*Power Windows with Driver's Auto Up / Down
*Front Solar Glass and Rear Privacy Glass
*Roof Rack Side Rails
*Rear Wiper with Washer
*Full Tank of Gas

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Manufacturer's Suggested Retail Price:

\$23,225.00

ADDED FEATURES:

*Carpeted Floor Mats
*Cargo Net
*First Aid Kit
*Power Cable
*Roof Rack Cross Rails

\$125.00
\$50.00
\$25.00
\$35.00
\$195.00

Inland Freight & Handling:

\$810.00

Total Price:

\$24,465.00

GOVERNMENT SAFETY RATINGS

Frontal Crash Driver Passenger Not Rated
Star ratings based on the risk of injury in a frontal impact.
Frontal ratings should ONLY be compared to other vehicles of
similar size and weight.

Side Crash Front seat Not Rated
Rear seat Not Rated
Star ratings based on the risk of injury in a side impact.

Rollover ★★★★★
Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.

Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or 1-888-327-4236

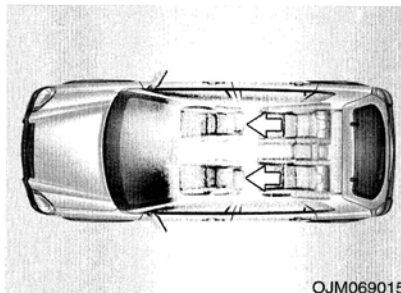
Monroney Label

Safety systems of your vehicle



Lumbar support (for driver's seat, if equipped)

The lumbar support can be adjusted by
pressing the button.



C010104CFD

Headrest

The driver's and front passenger's seats
are equipped with a headrest for the
occupant's safety and comfort.

The headrest not only provides comfort
for the driver and front passenger, but
also helps to protect the head and neck
in the event of a collision.

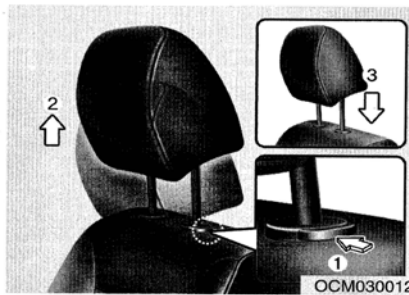
WARNING

- For maximum effectiveness in case of an accident, the headrest should be adjusted so the middle of the headrest is at the same height as the center of gravity of an occupant's head. Generally, the center of gravity of most people's head is similar with the height of the top of their eyes. Also, adjust the headrest as close to your head as possible. For this reason, the use of a cushion that holds the body away from the seatback is not recommended.
- Do not operate the vehicle with the headrests removed as severe injury to the occupants may occur in the event of an accident. Headrests may provide protection against neck injuries when properly adjusted.
- Do not adjust the headrest position of the driver's seat while the vehicle is in motion.



Adjusting the height up and down

To raise the headrest, pull it up to the desired position (1). To lower the headrest, push and hold the release button (2) on the headrest support and lower the headrest to the desired position (3).



Removal and installation

To remove the headrest, raise it as far as it can go then press the release button (1) while pulling upward (2).

To reinstall the headrest, put the headrest poles (3) into the holes while pressing the release button (1). Then adjust it to the appropriate height.

⚠ WARNING

Make sure the headrest locks in position after adjusting it to properly protect the occupants.



Active headrest (if equipped)

The active headrest is designed to move forward and upward during a rear impact. This helps prevent the driver's and front passenger's heads from moving backward and thus helps minimize neck injuries.

⚠ WARNING

A gap between the seat and the headrest release button may appear when sitting on the seat or when you push or pull the seat. Be careful not to get your finger caught in the gap.

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)

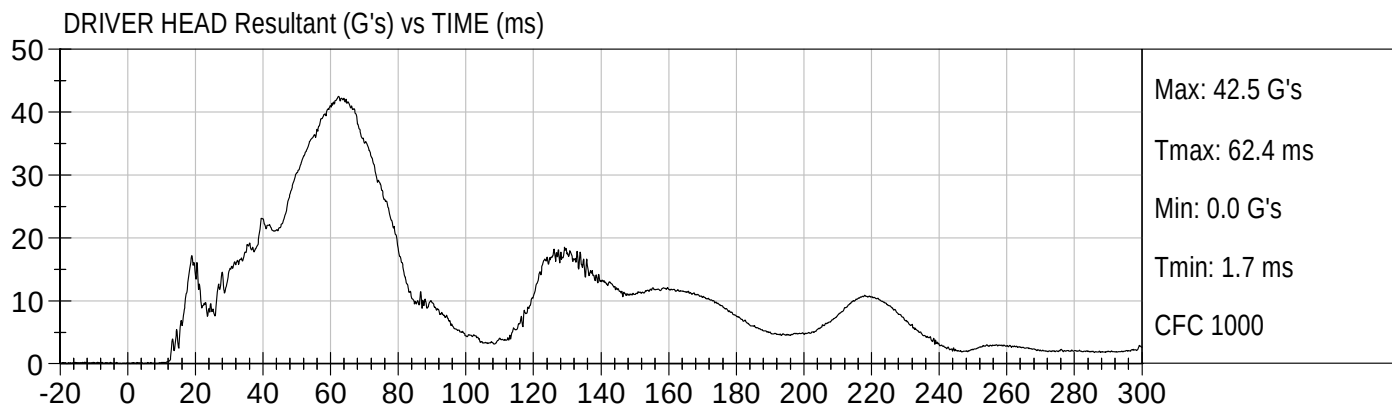
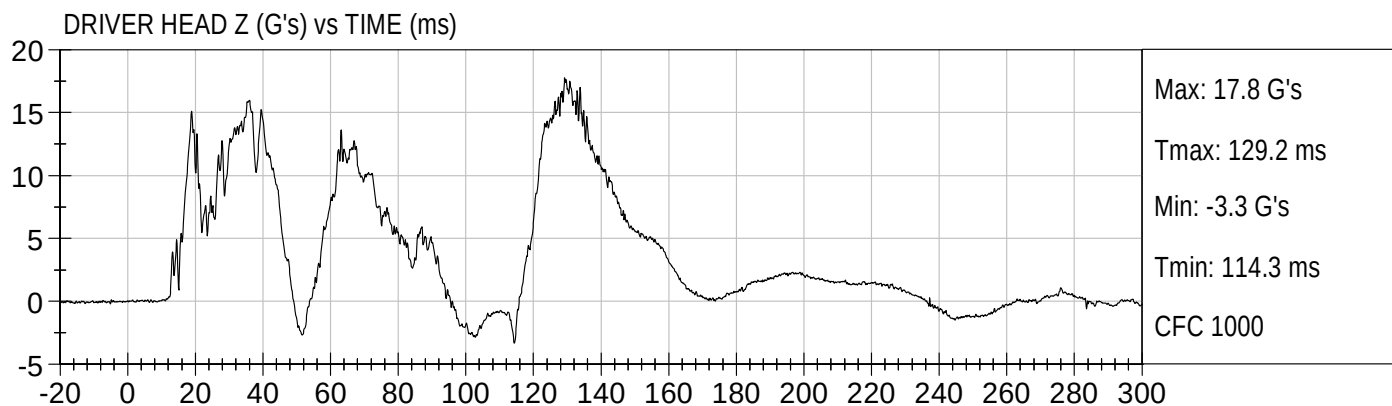
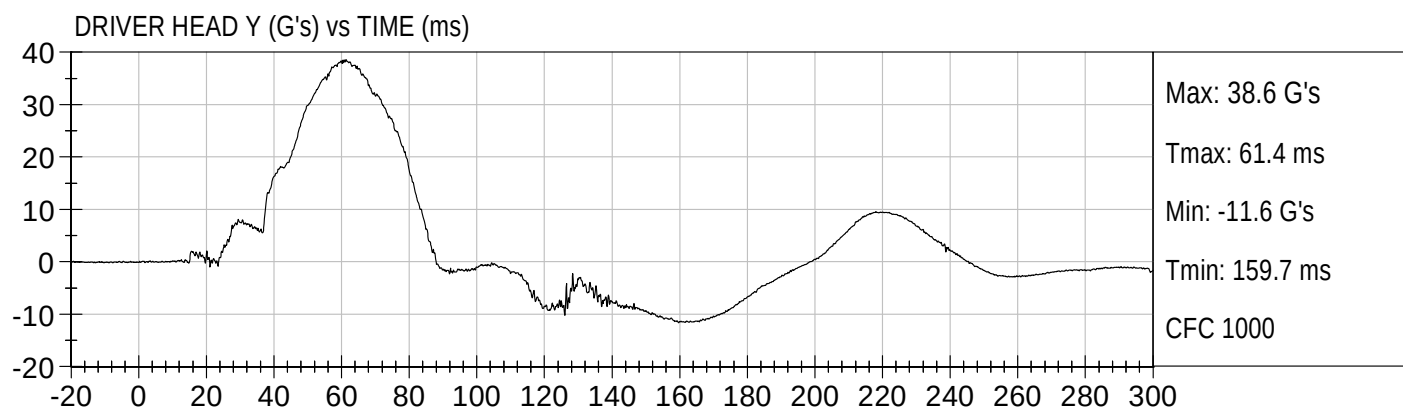
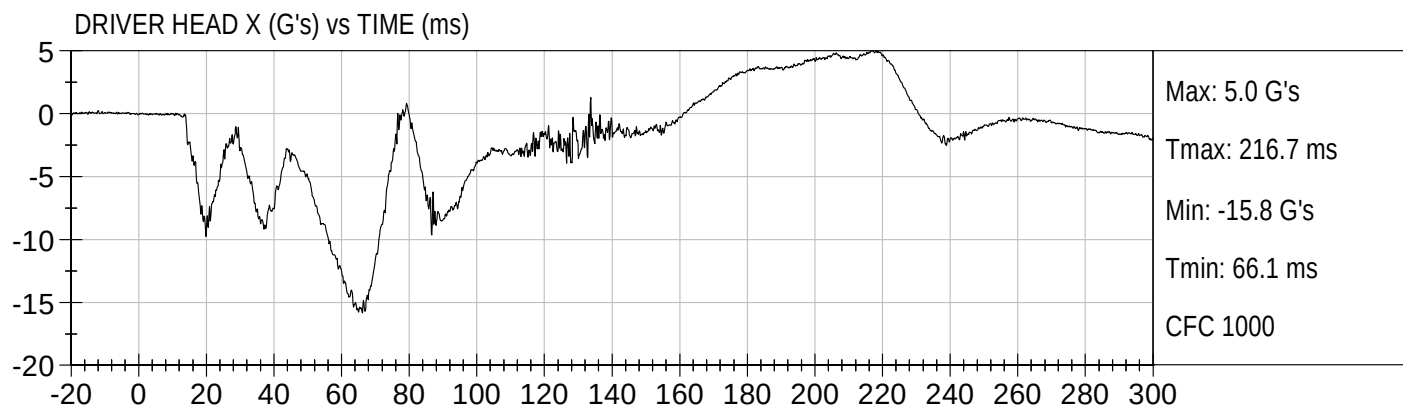
Load Cell Pole Barrier #4 Force (Y)

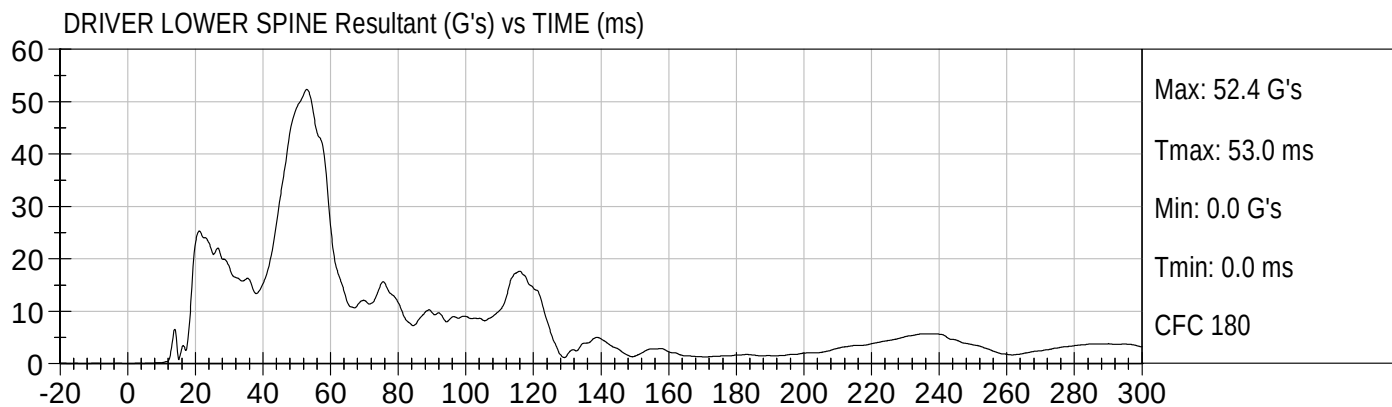
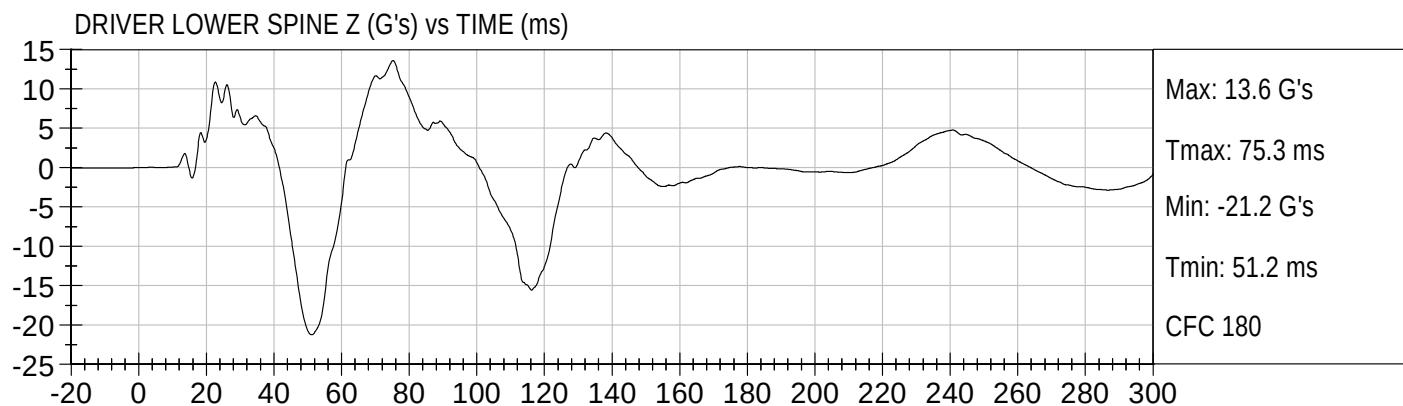
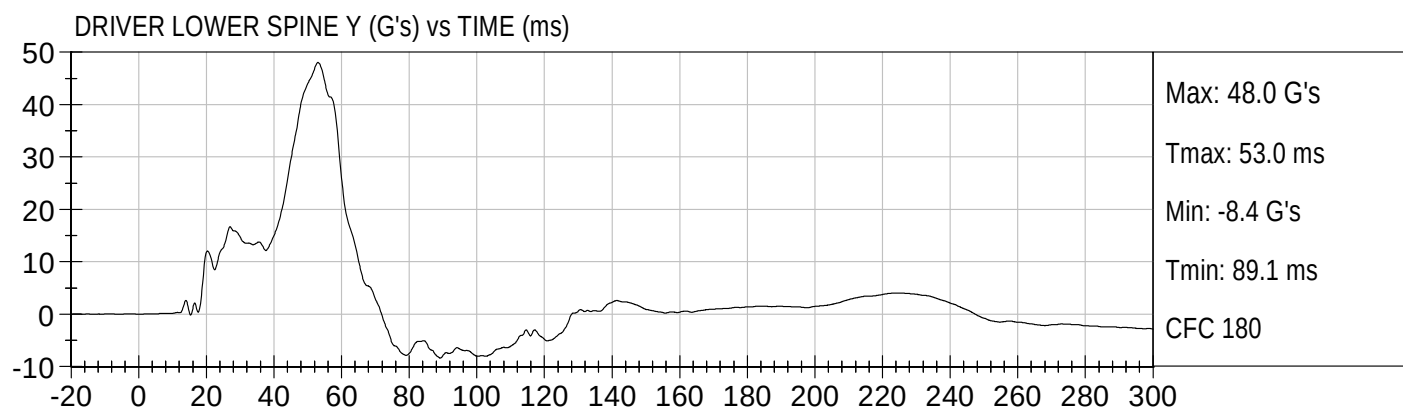
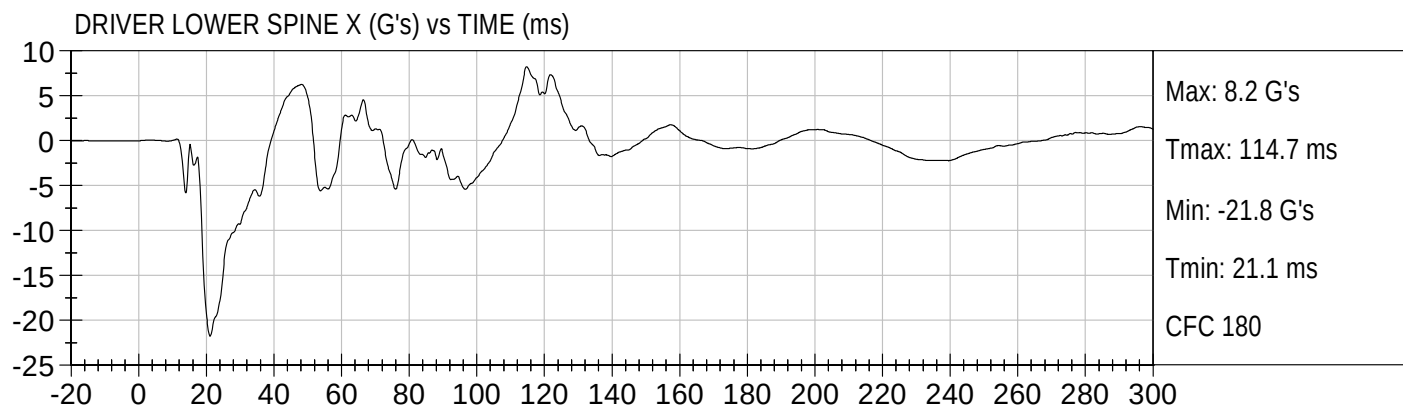
Load Cell Pole Barrier #5 Force (Y)

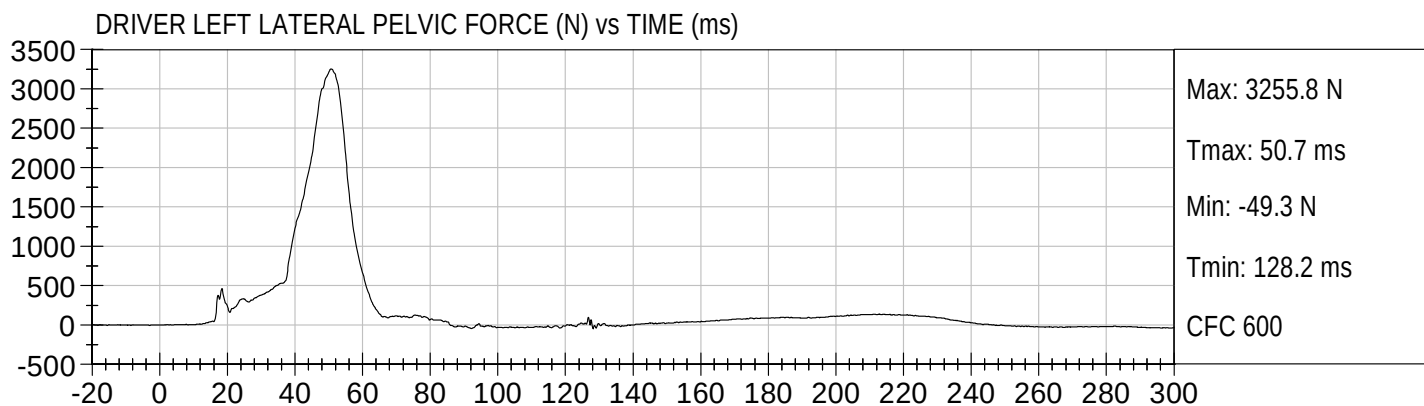
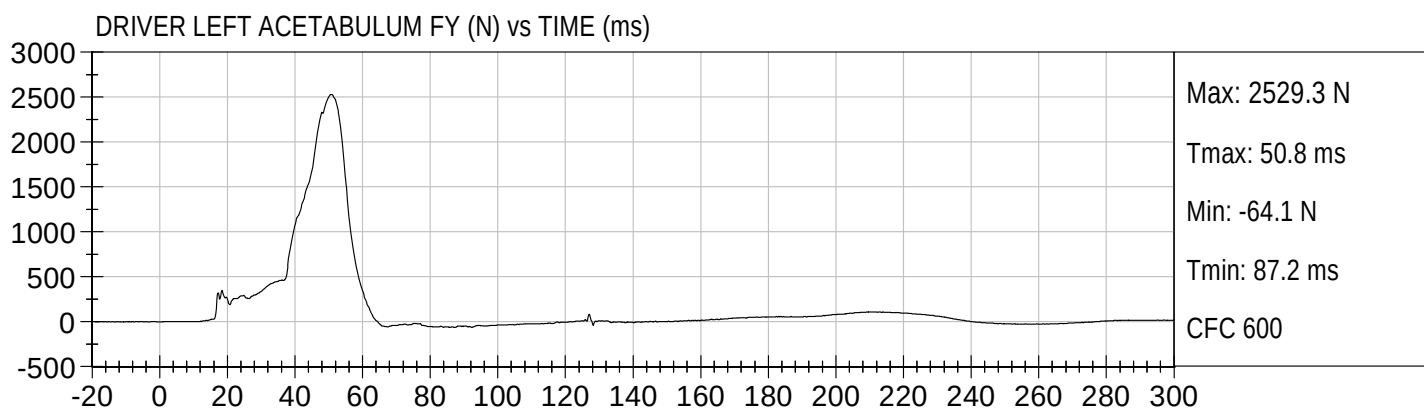
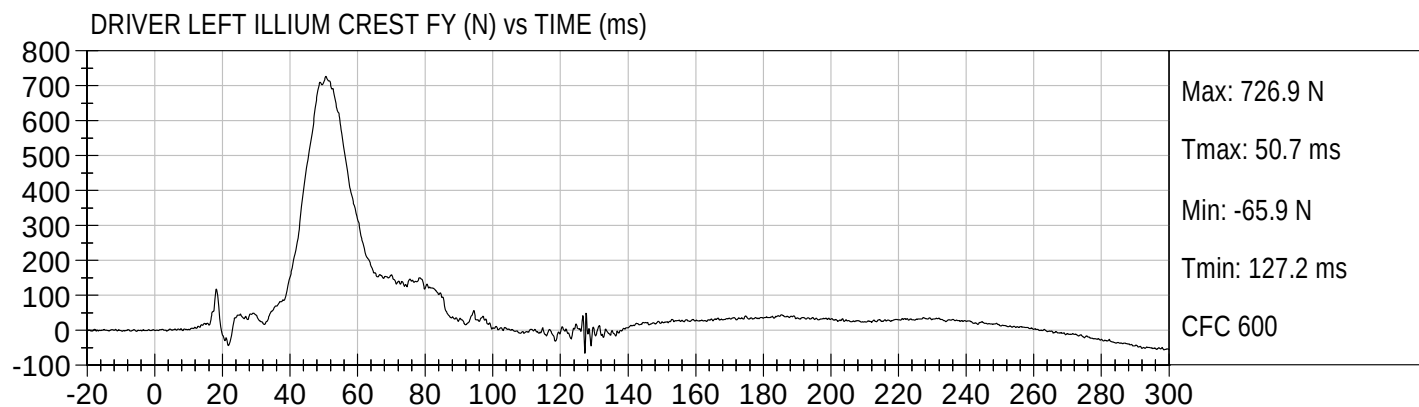
Load Cell Pole Barrier #6 Force (Y)

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: 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: D114071

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	29	Pass
Peak Resultant Acceleration	G's	115 to 137	127	Pass
Peak Lateral Acceleration	G's	+/- 15	-2.1	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

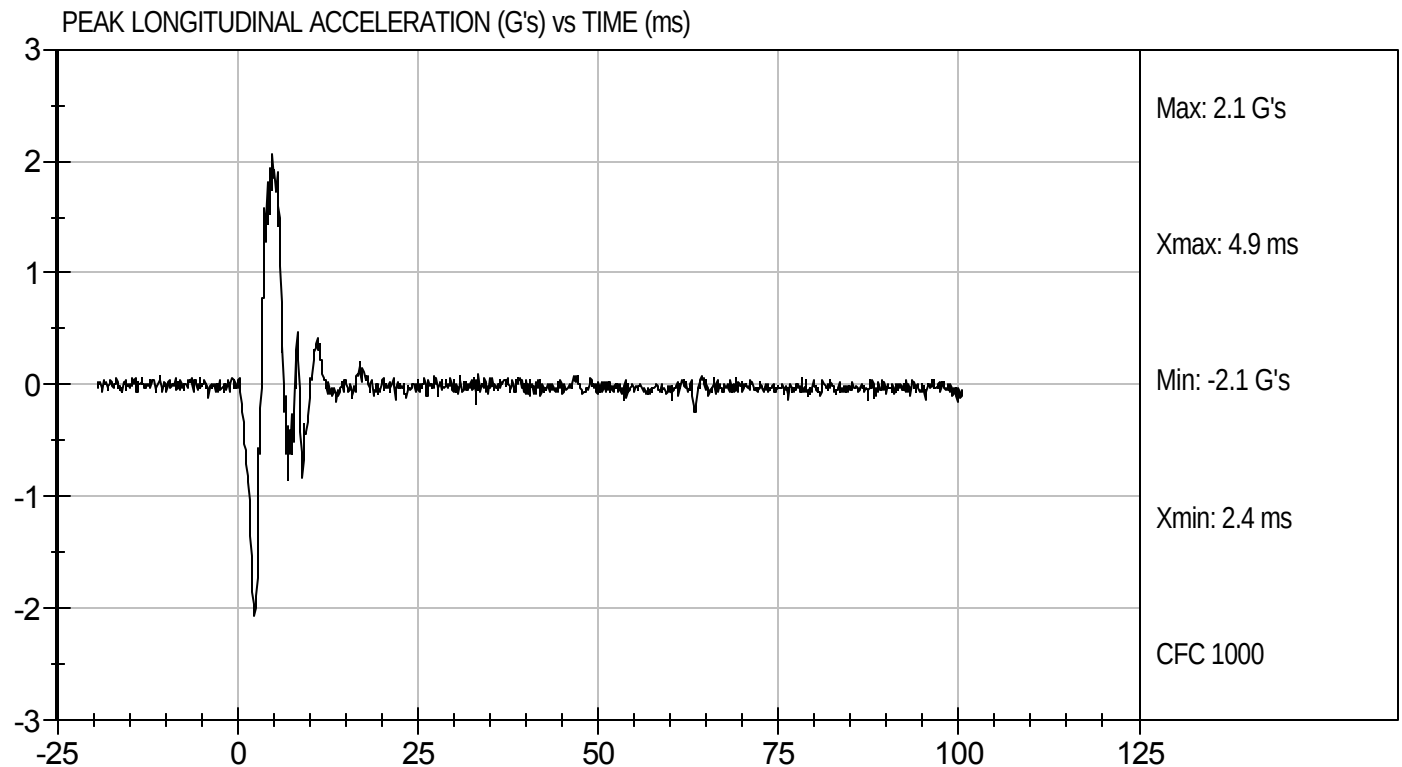
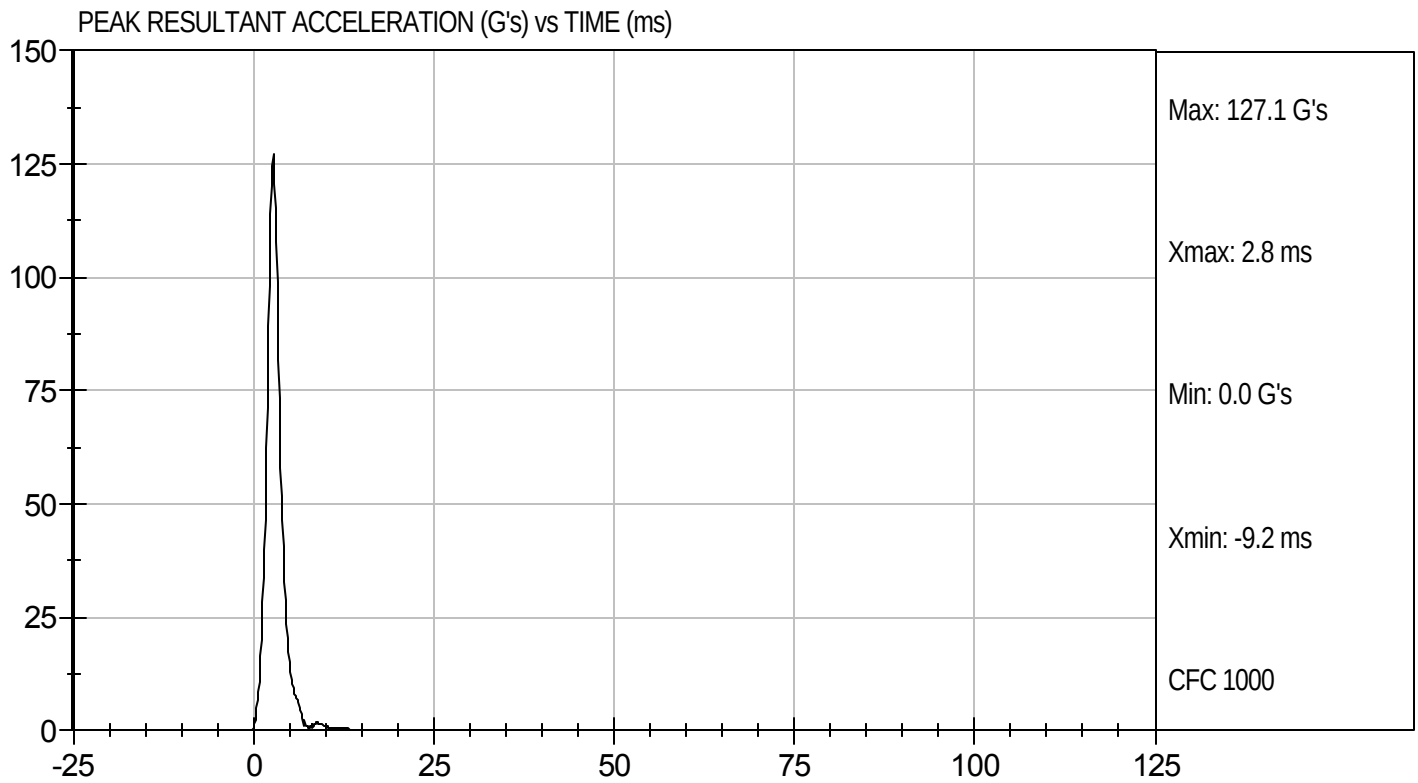
12/5/11
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D114071

Test Date: 12/5/11
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.: D114072

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.7	Pass
Humidity		%	10 to 70	22	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.53	Pass
	15 ms	m/s	3.30 to 4.10	3.65	Pass
	20 ms	m/s	4.40 to 5.40	4.83	Pass
	25 ms	m/s	5.40 to 6.10	5.50	Pass
	25-100 ms	m/s	5.50 to 6.20	5.61	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	58	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-43	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	116	Pass
Overall Test Results				Pass	

Jessica Hall
Laboratory Technician

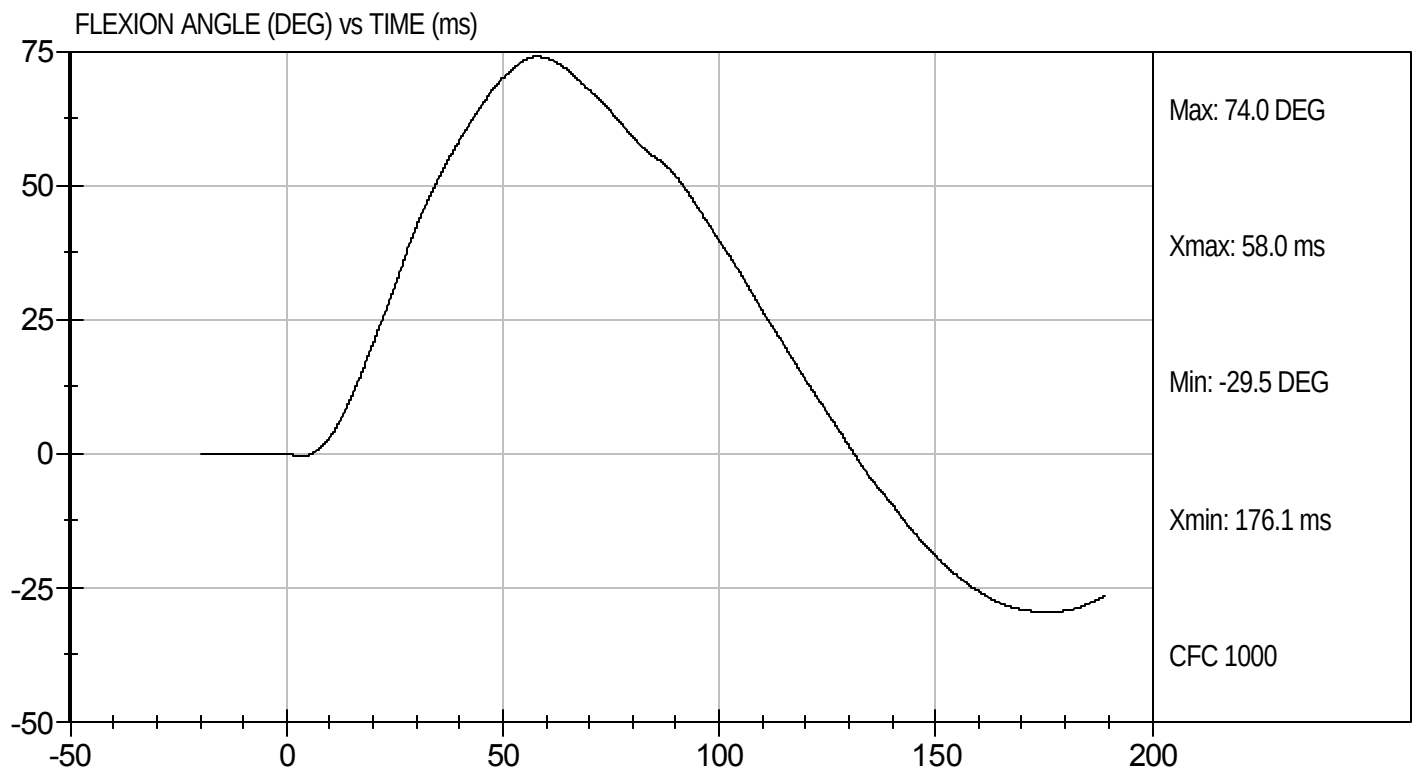
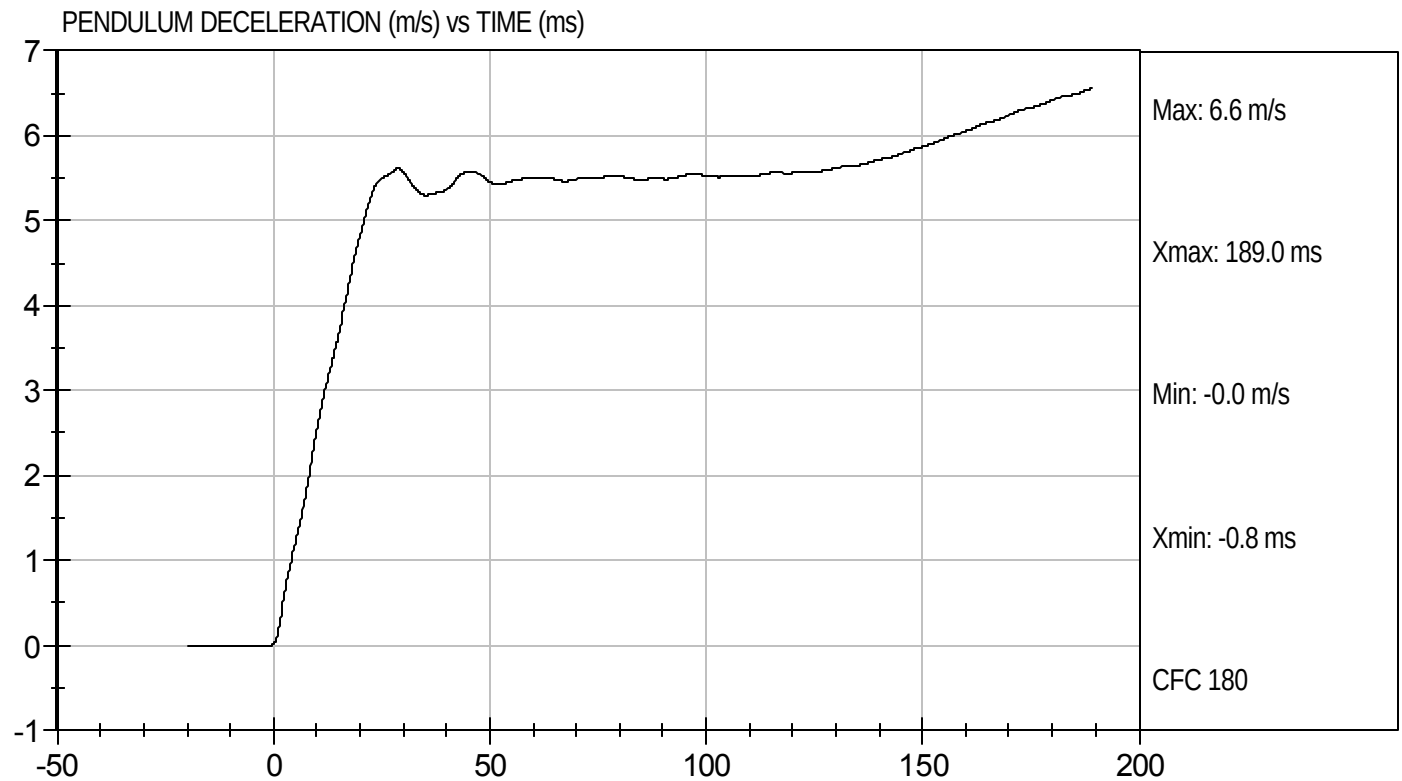
12/6/11
Test Date

David Winkelbauer
Approved By



Test Desc: Neck Bending
Component ID: D114072

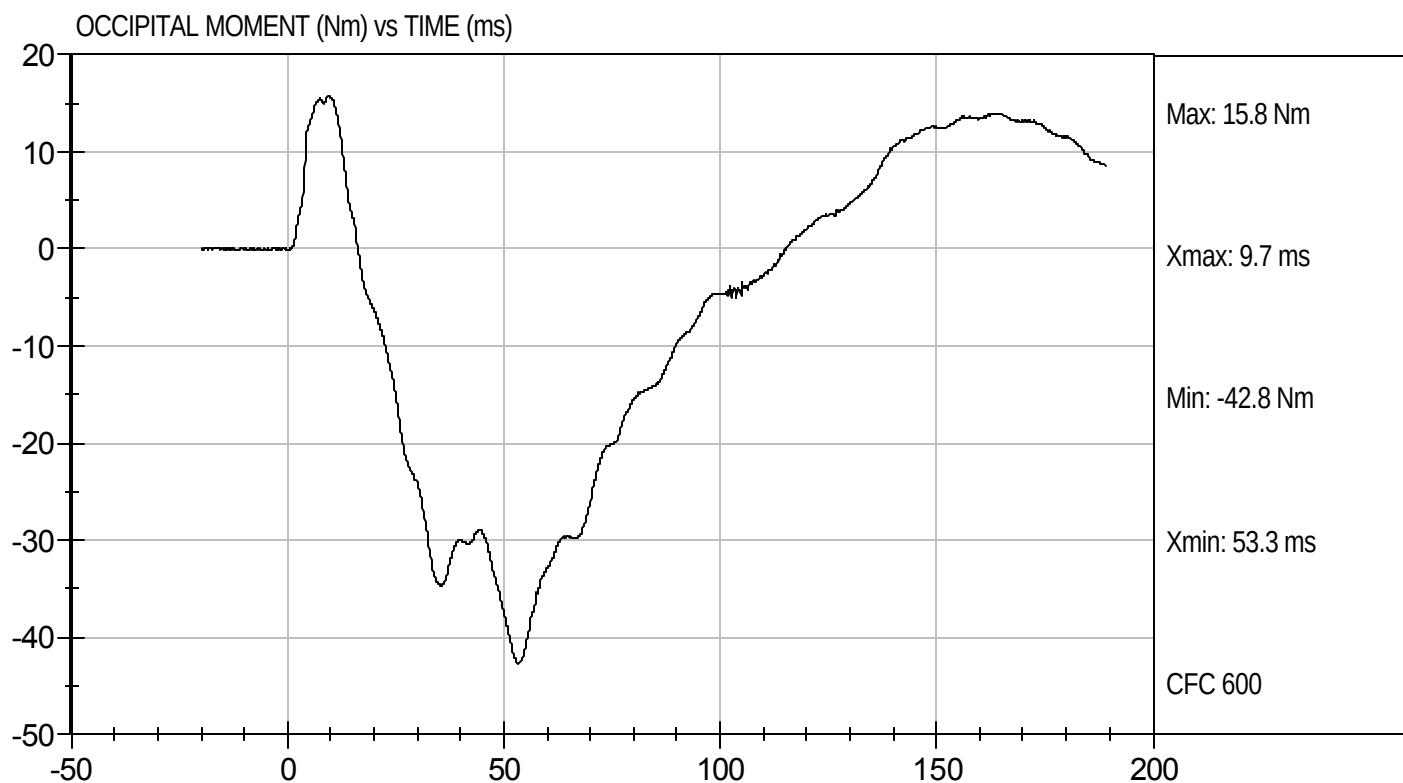
Test Date: 12/6/11
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D114072

Test Date: 12/6/11
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: D114073

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	22	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	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results			Pass	


Laboratory Technician

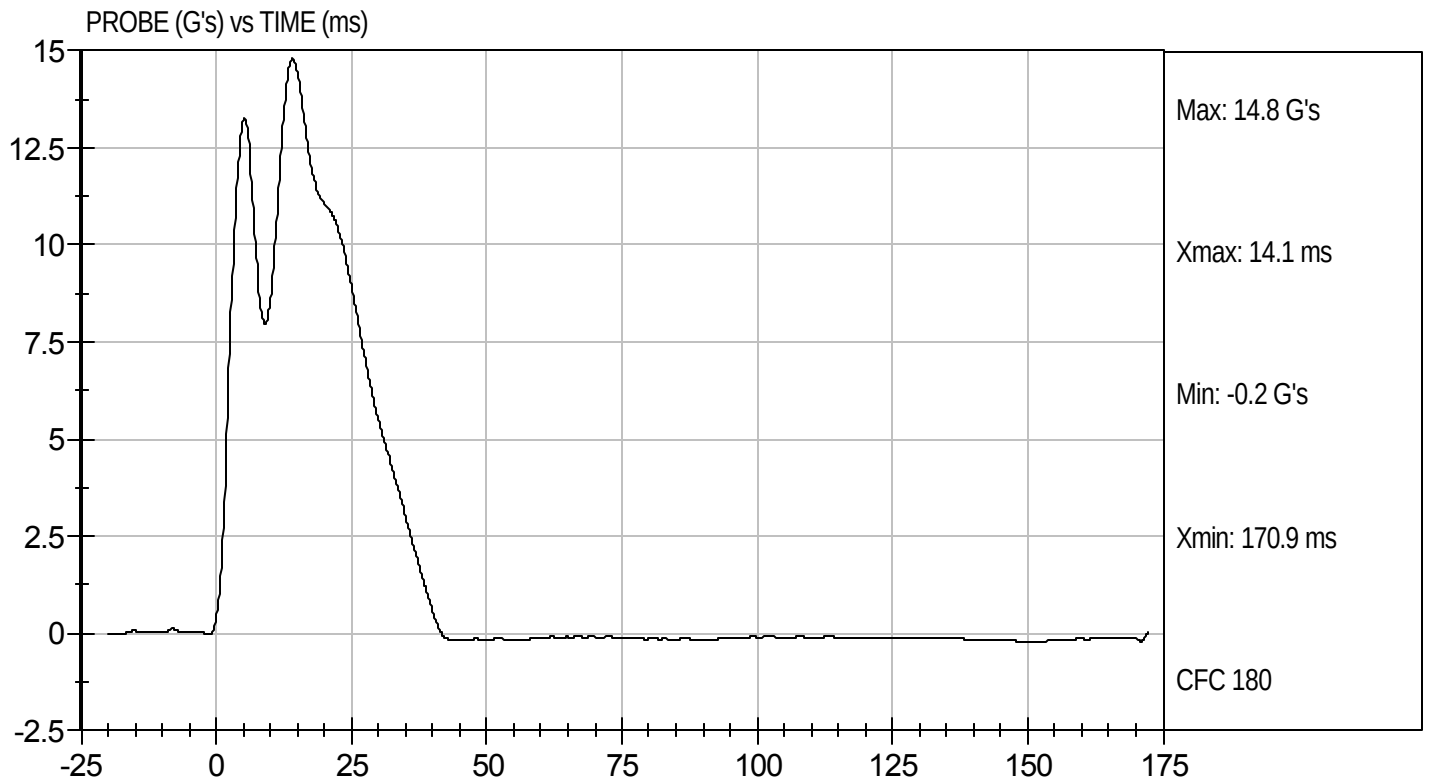
12/6/11
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D114073

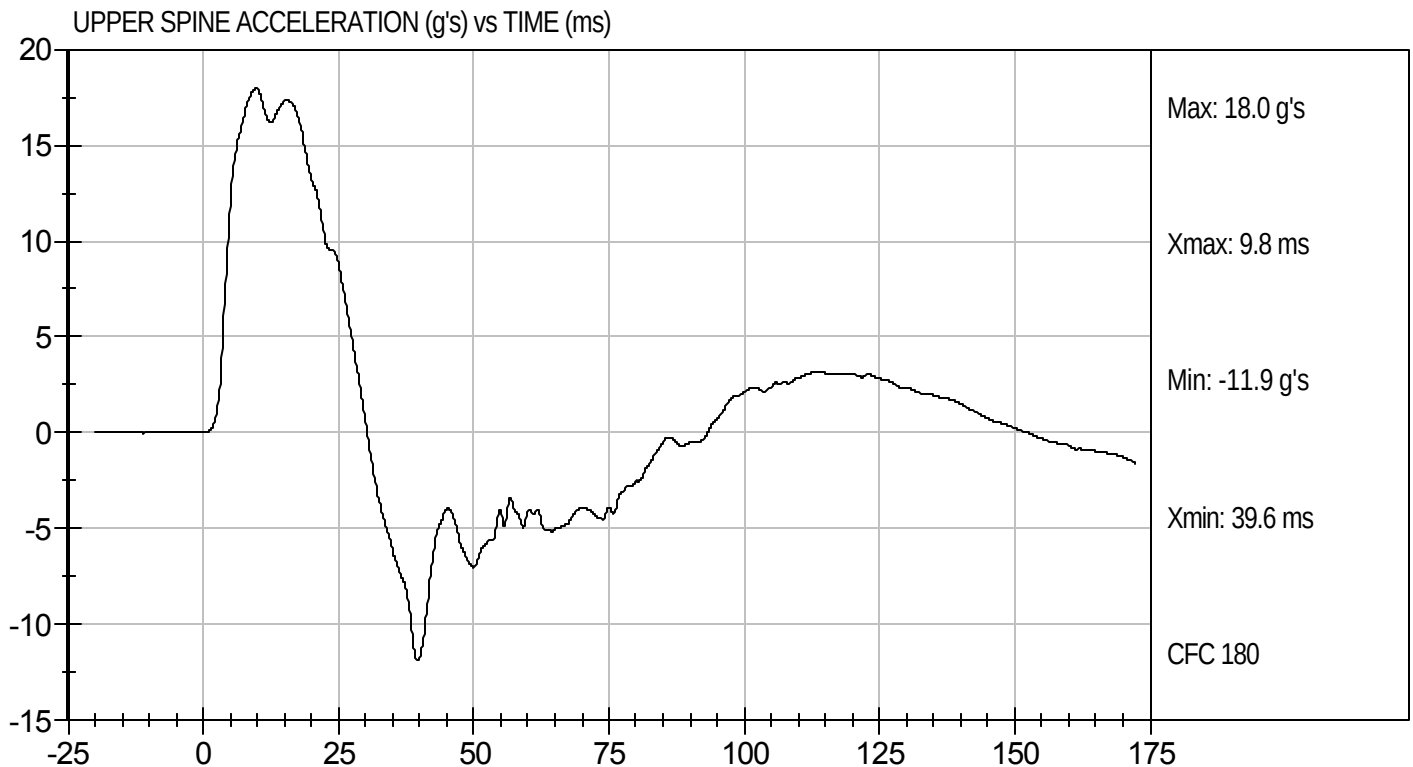
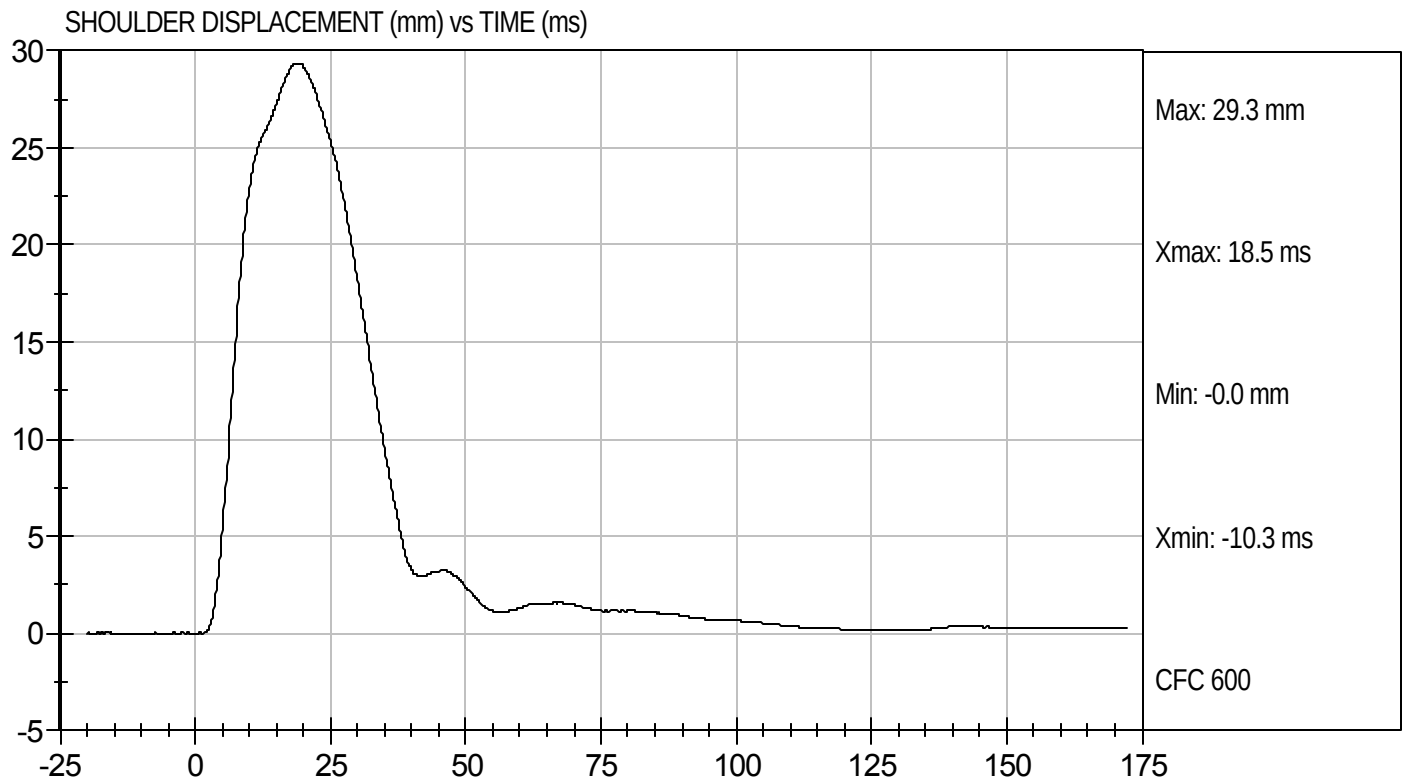
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Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Shoulder Impact
Component ID: D114073

Test Date: 12/6/11
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: 296

Test I.D: D114074

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	22	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	35	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
Overall Test Results			Pass	


Laboratory Technician

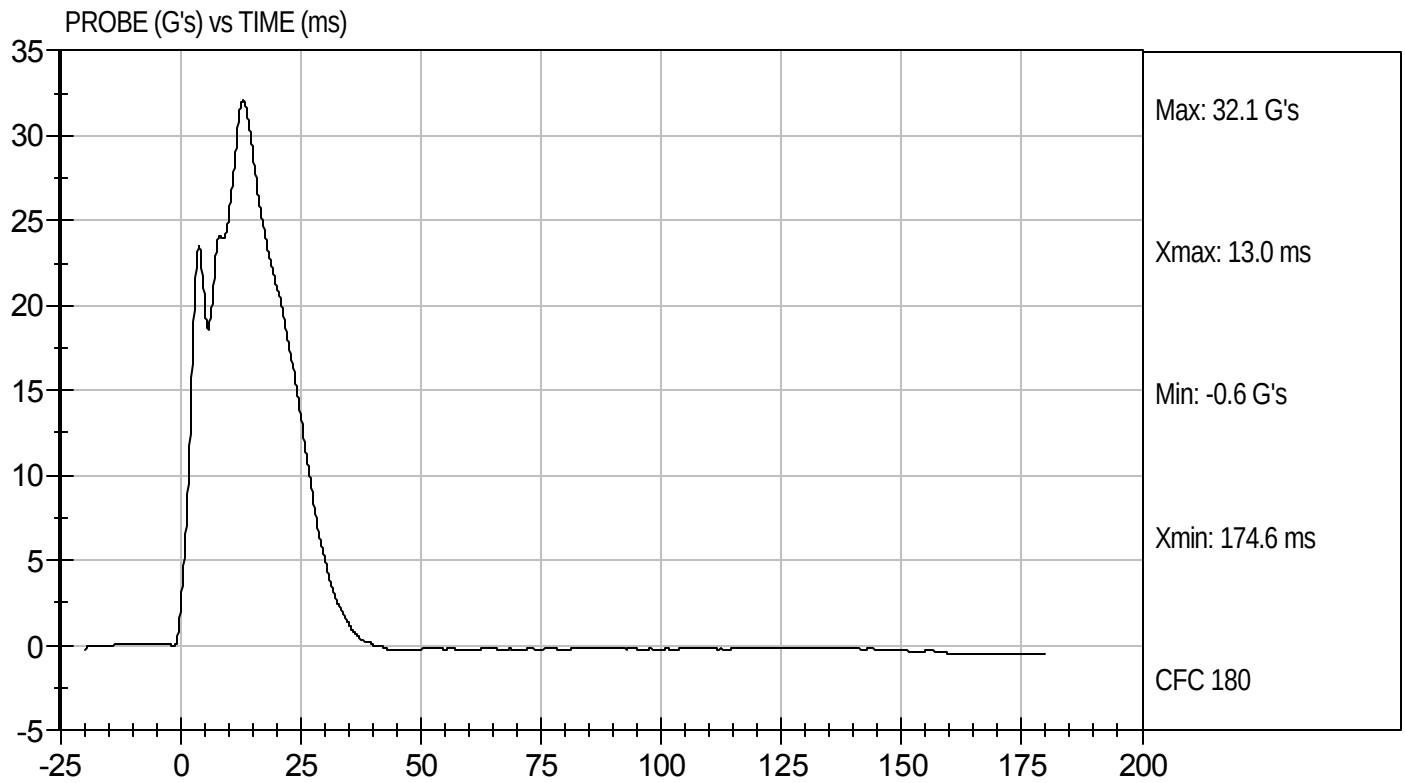
12/6/11
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D114074

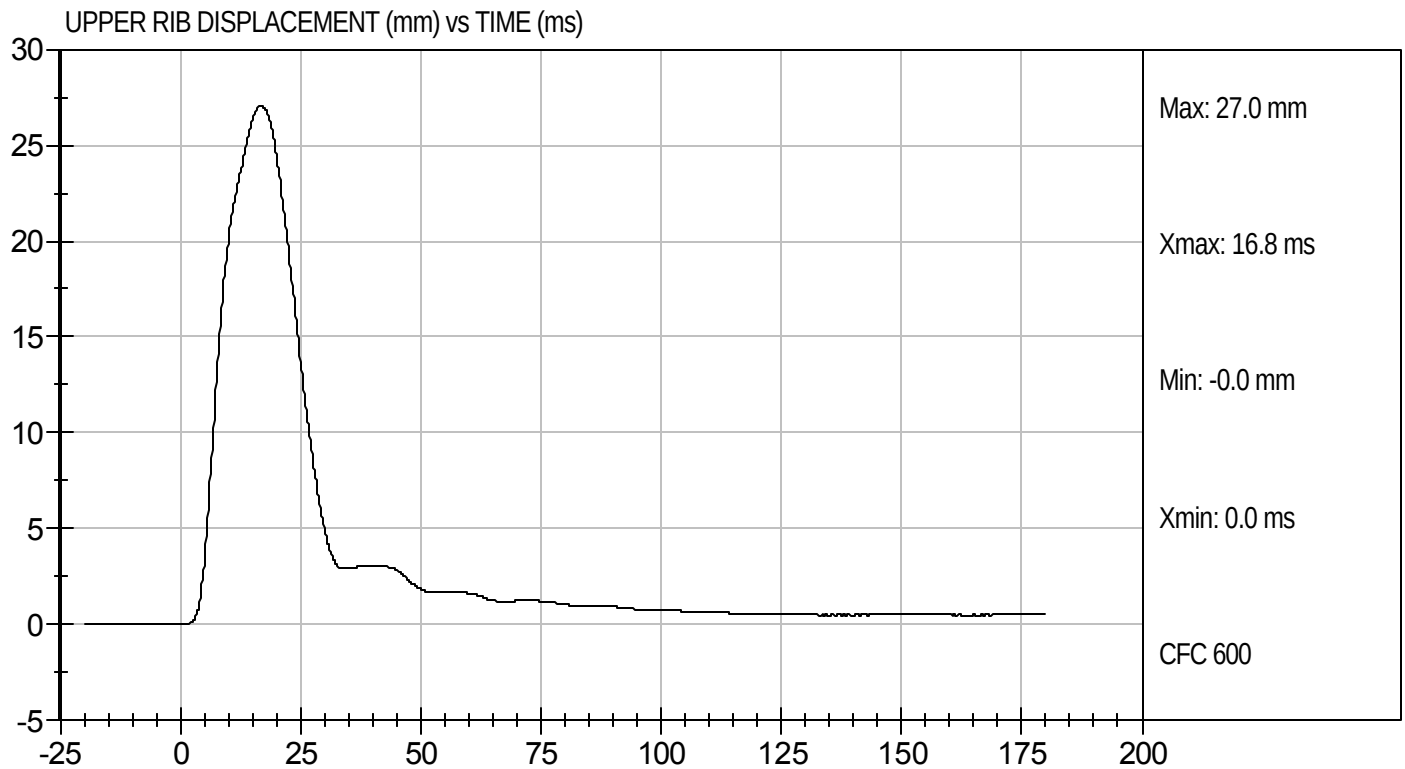
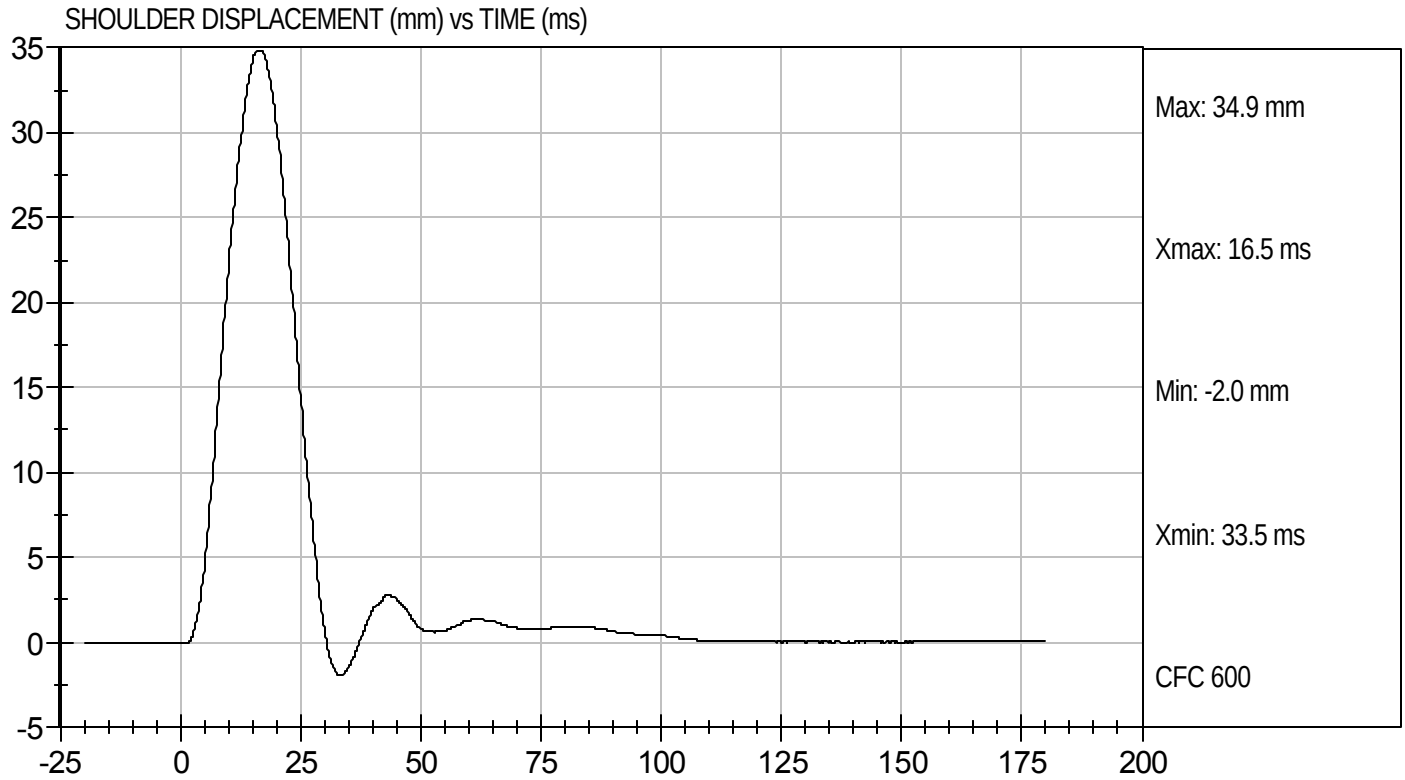
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Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D114074

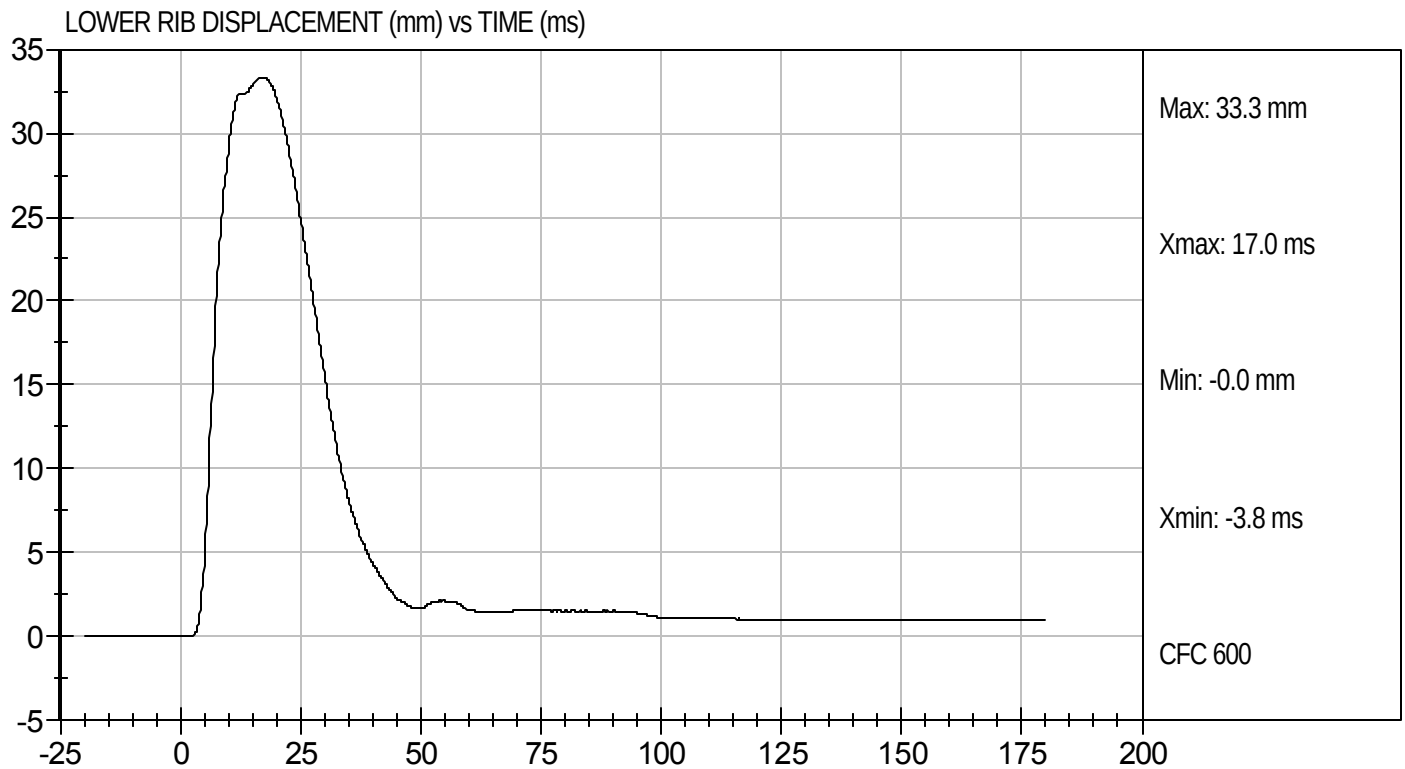
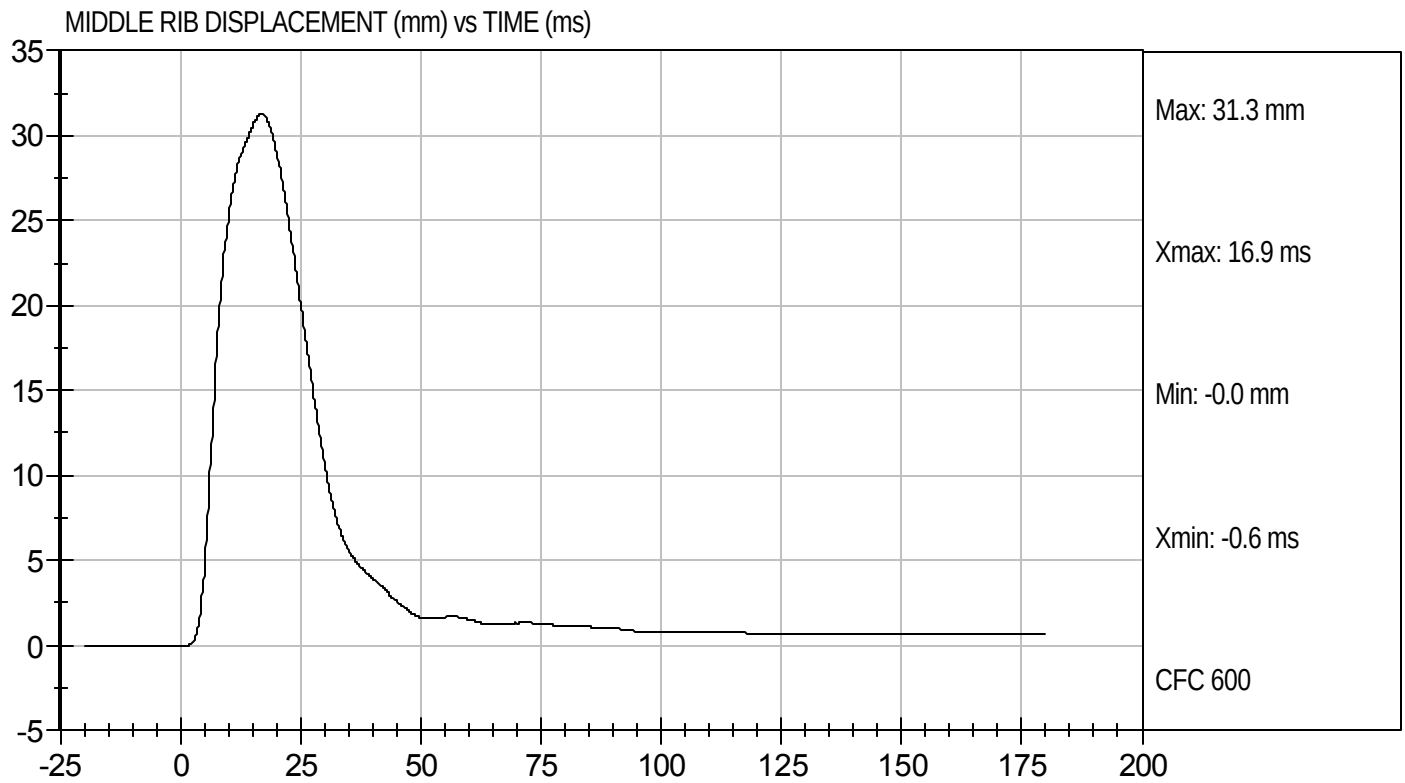
Test Date: 12/6/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D114074

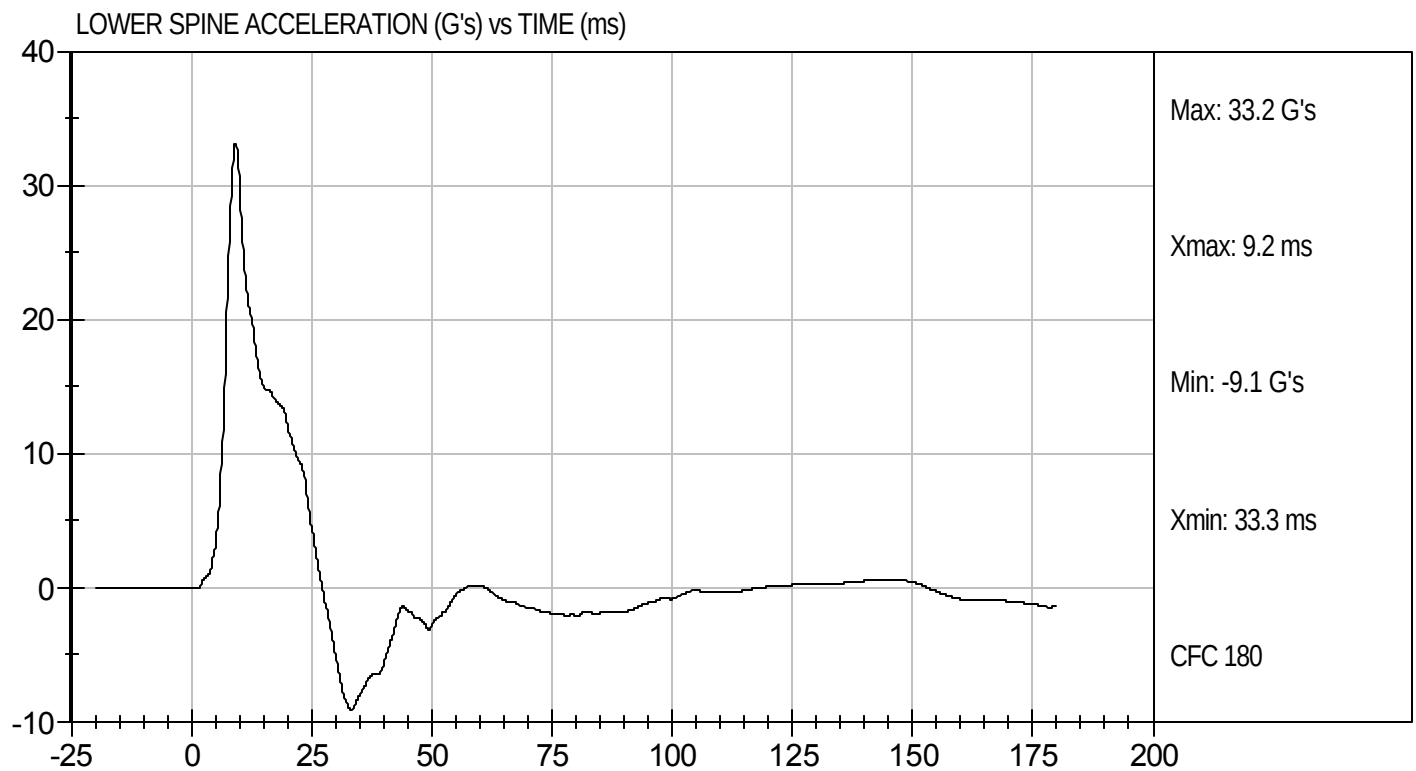
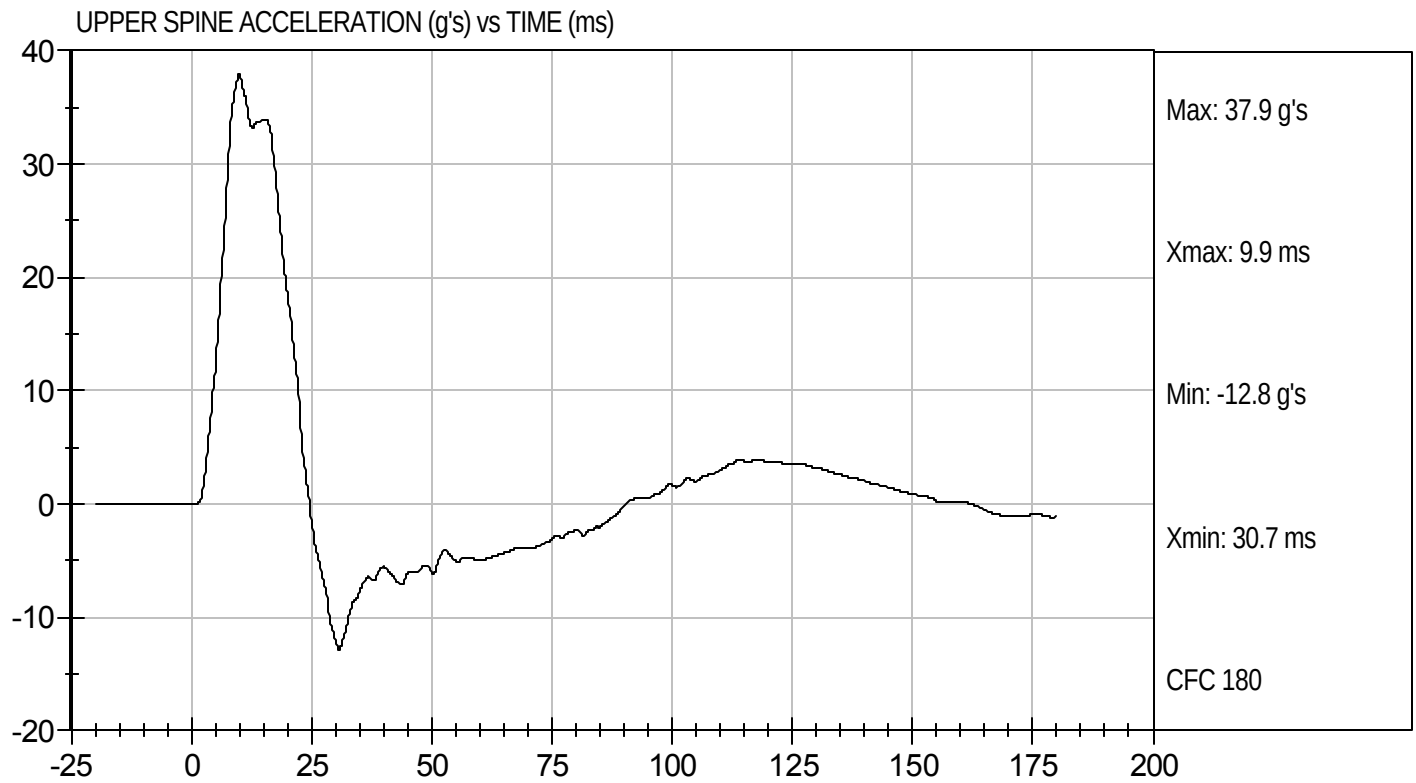
Test Date: 12/6/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D114074

Test Date: 12/6/11
Velocity: 22.2 ft/s, 6.77 m/s

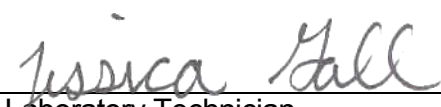


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D114075

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	22	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Force	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	37	Pass
Middle Rib Displacement	mm	39 to 45	41	Pass
Lower Rib Displacement	mm	35 to 43	38	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass


Laboratory Technician

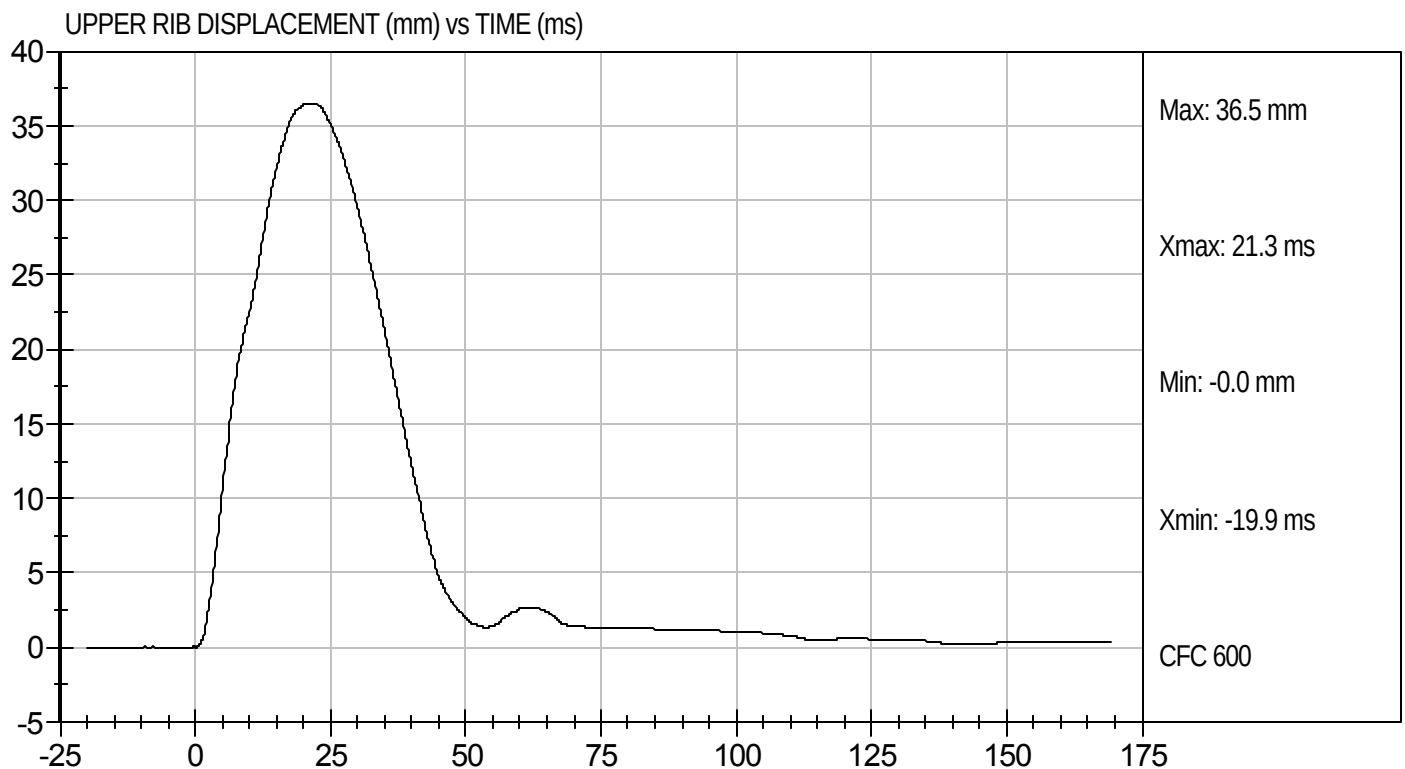
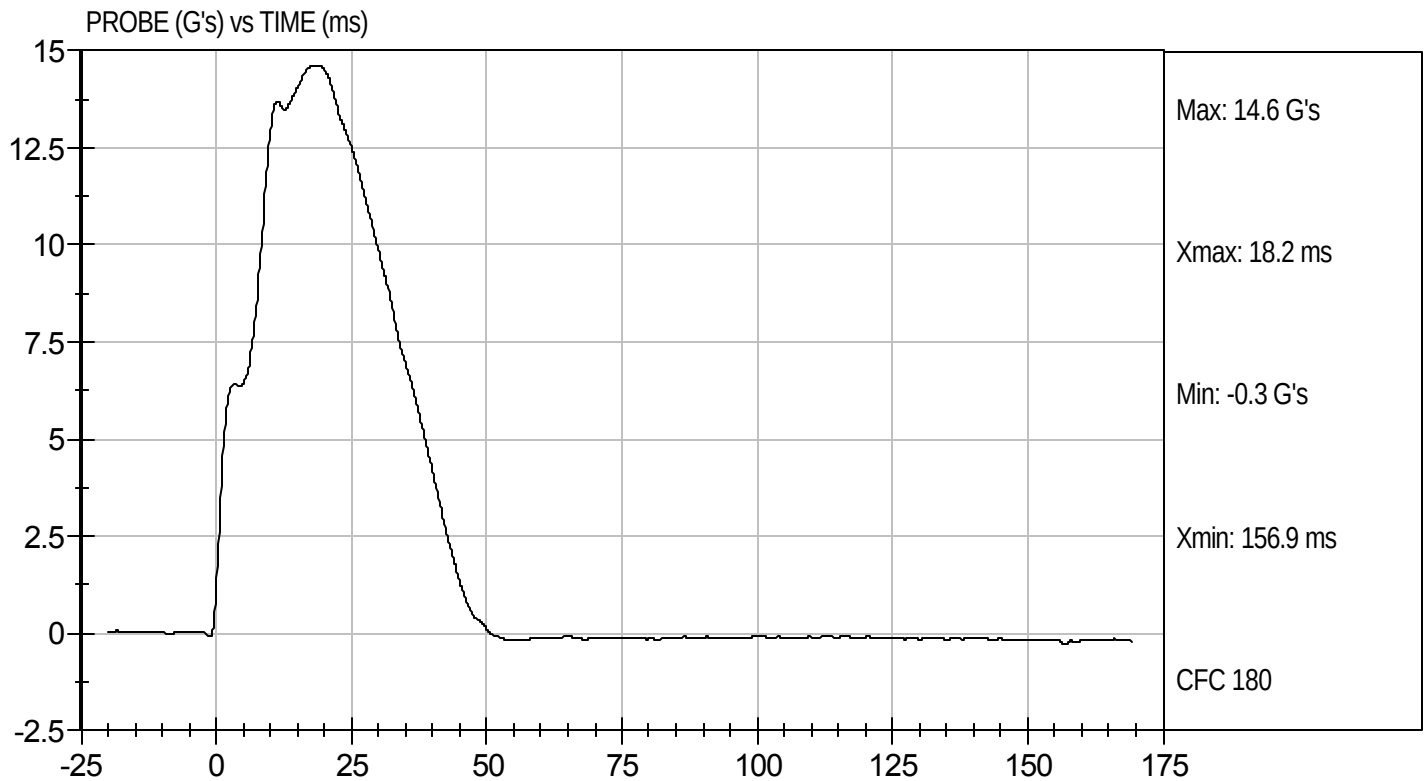
12/6/11
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D114075

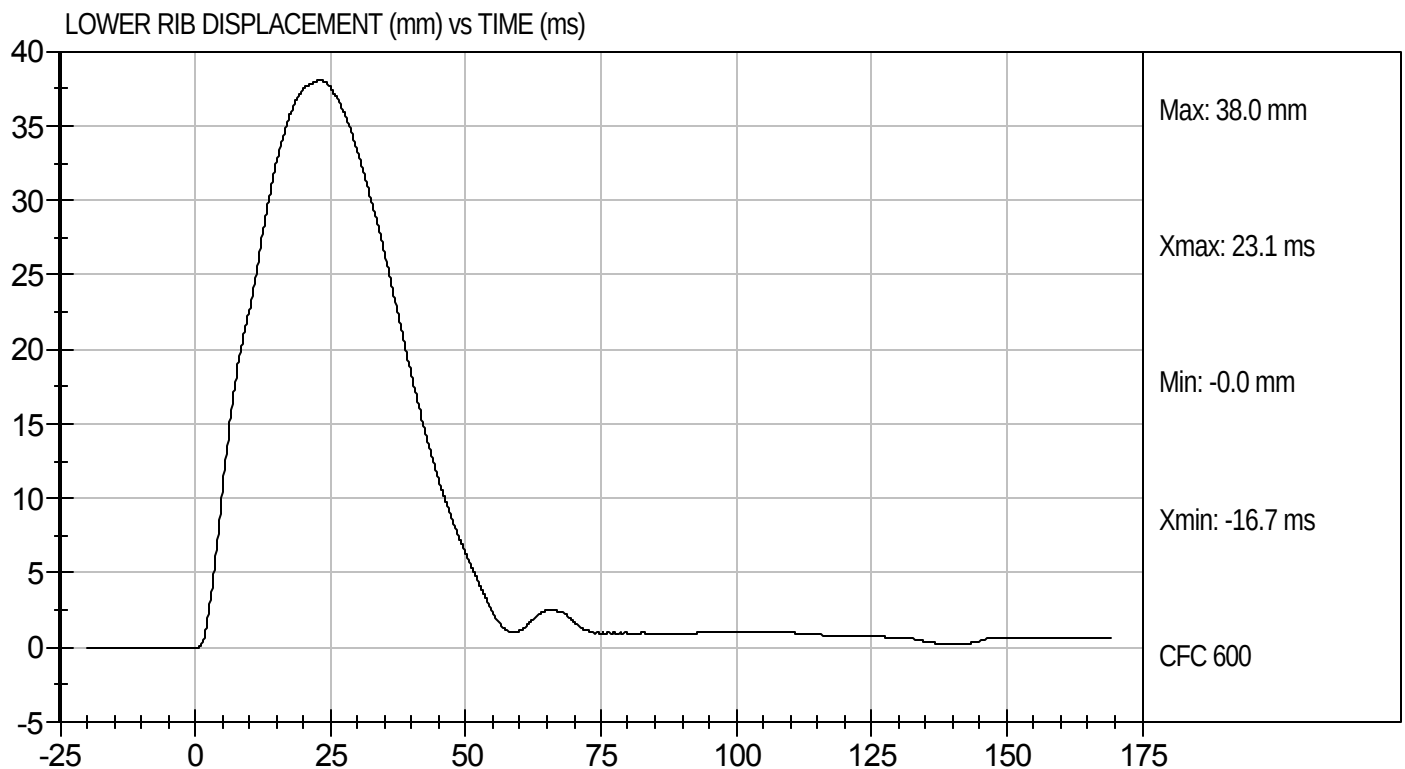
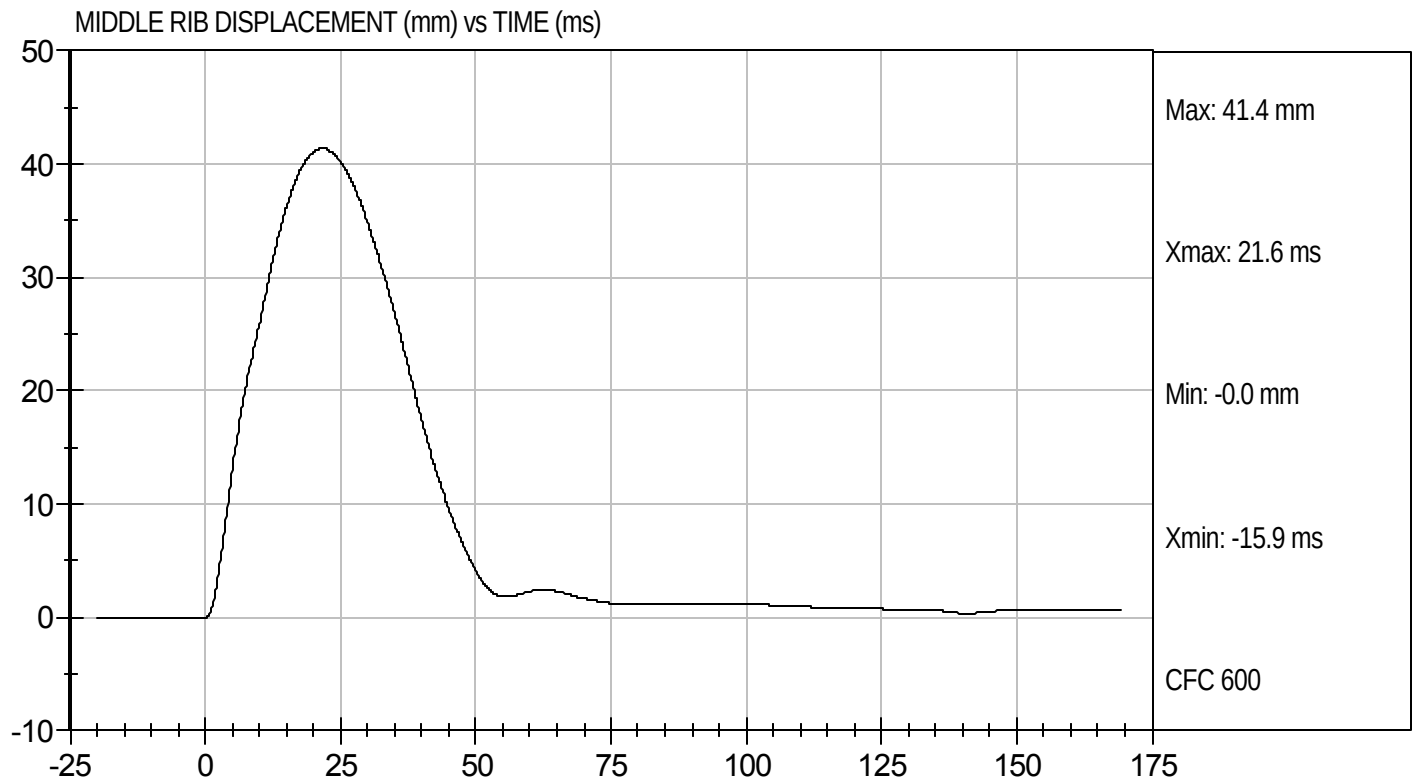
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Velocity: 14.00 ft/s, 4.27 m/s





Test Desc: Thorax Without Arm
Component ID: D114075

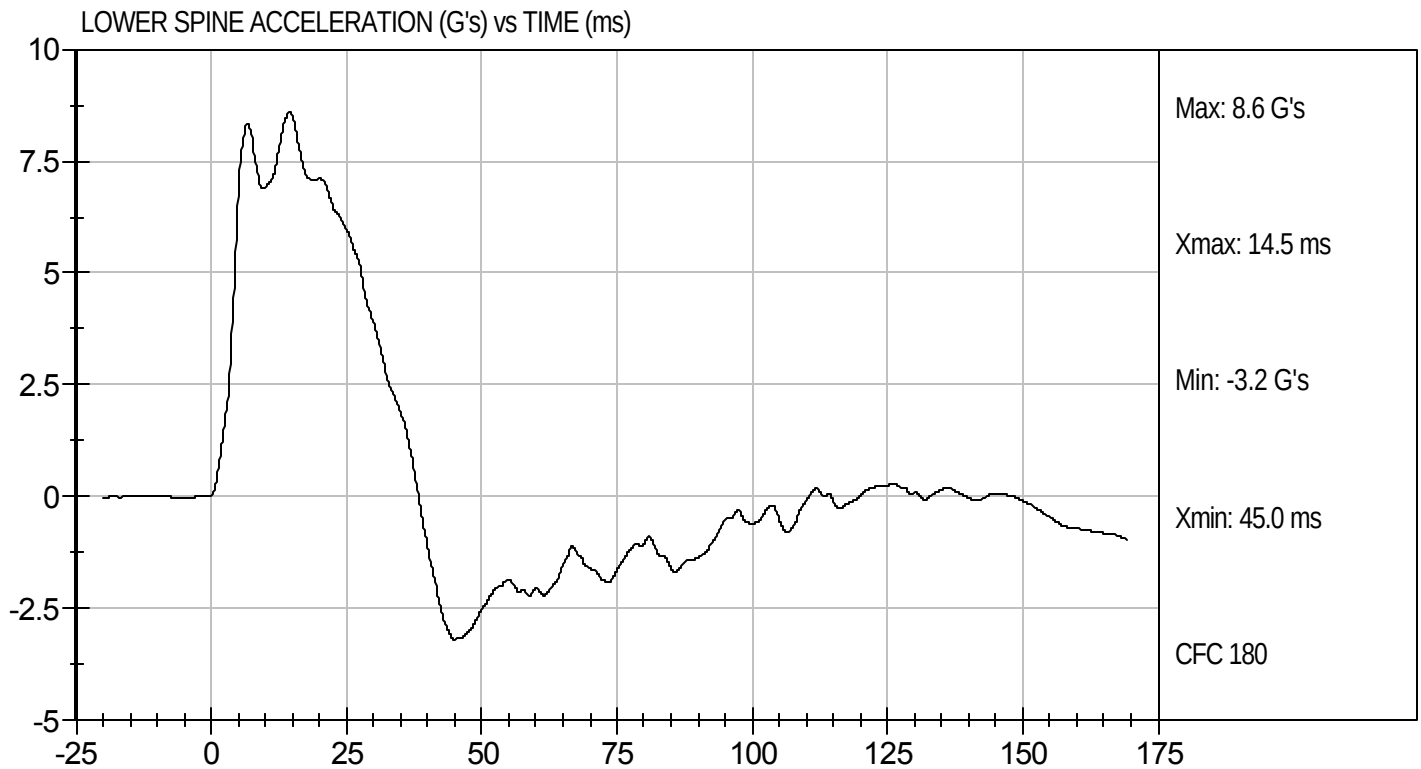
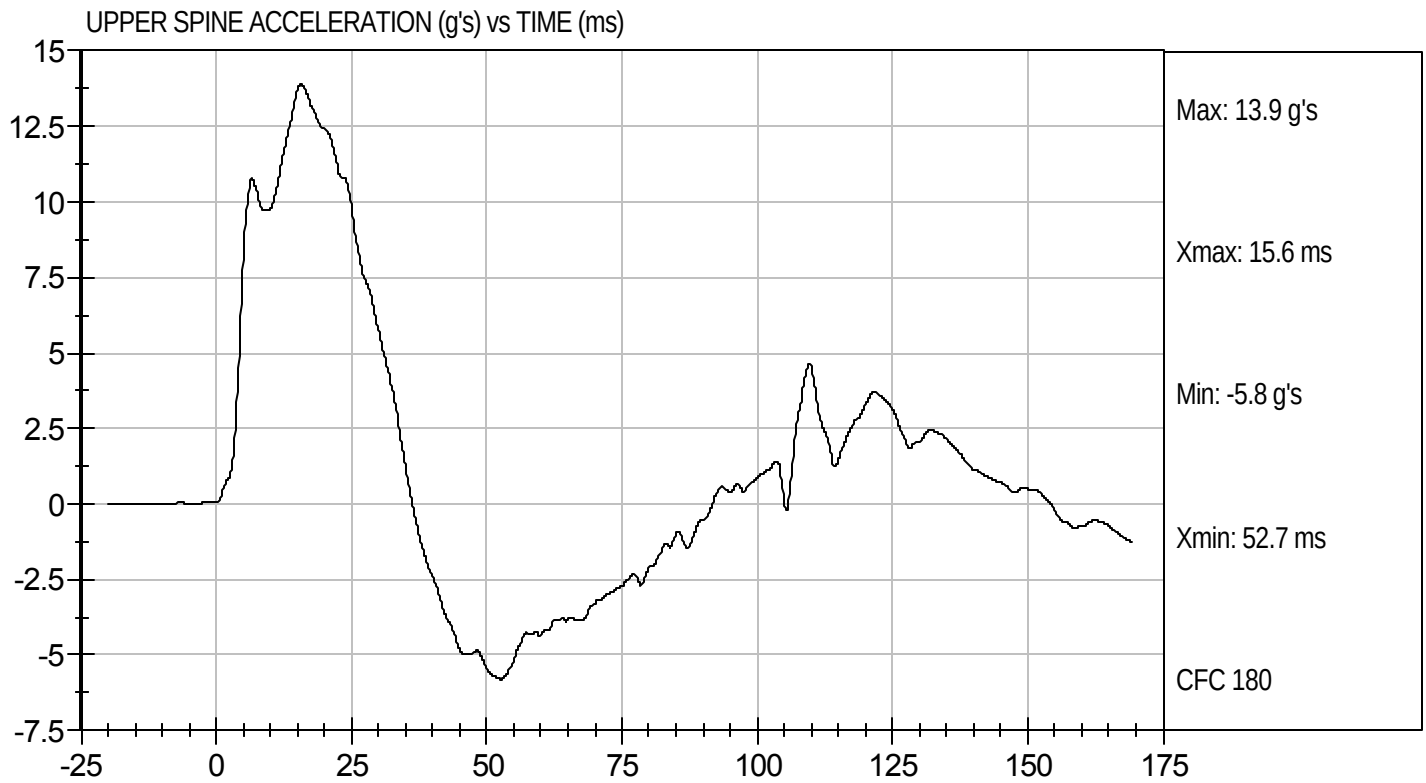
Test Date: 12/6/11
Velocity: 14.00 ft/s, 4.27 m/s





Test Desc: Thorax Without Arm
Component ID: D114075

Test Date: 12/6/11
Velocity: 14.00 ft/s, 4.27 m/s



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

ATD Serial No: 296

Test I.D: D114076

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	22	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Peak Impactor Acceleration	G's	12 to 16	13	Pass
Upper Rib Displacement	mm	36 to 47	38	Pass
Lower Rib Displacement	mm	33 to 44	38	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
			Overall Test Results	Pass


Laboratory Technician

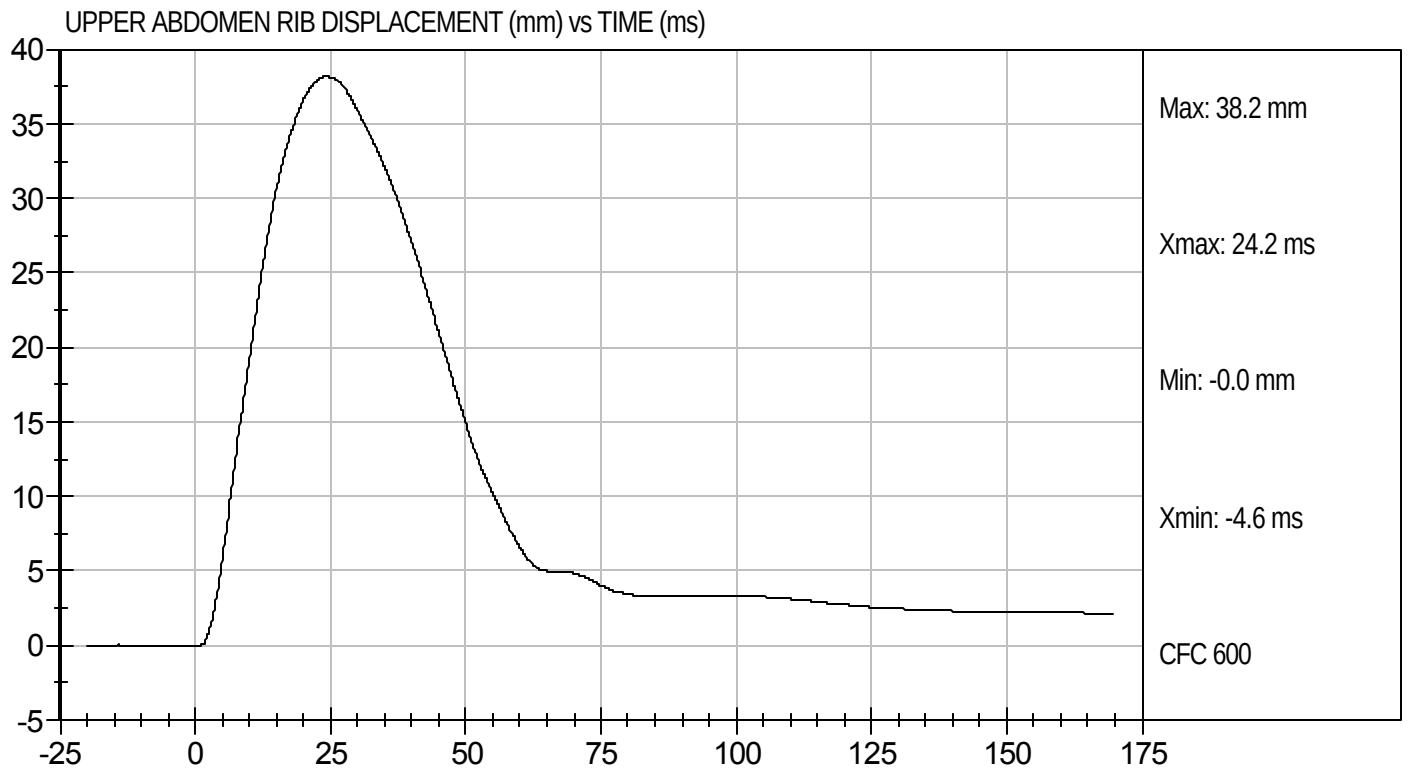
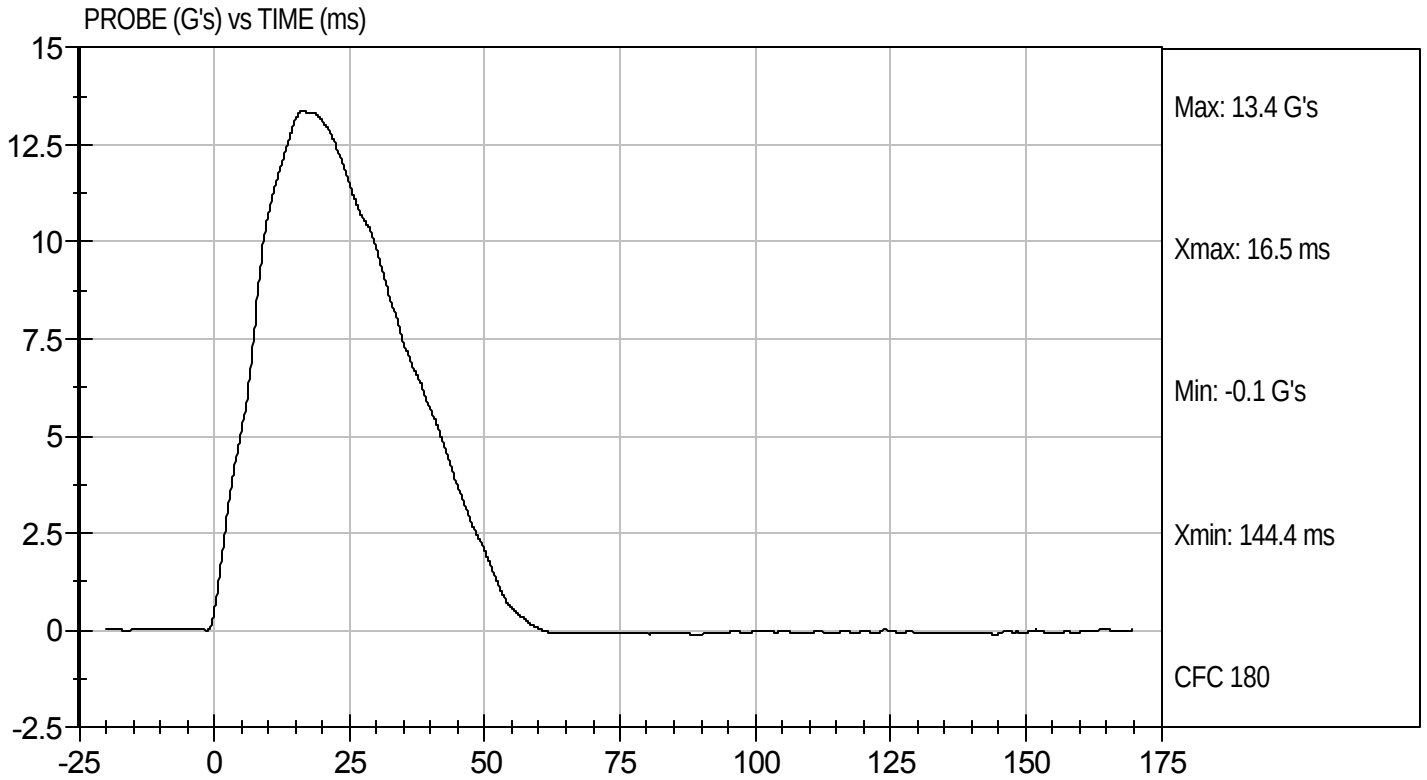
12/6/11
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D114076

Test Date: 12/6/11
Velocity: 14.12 ft/s, 4.30 m/s

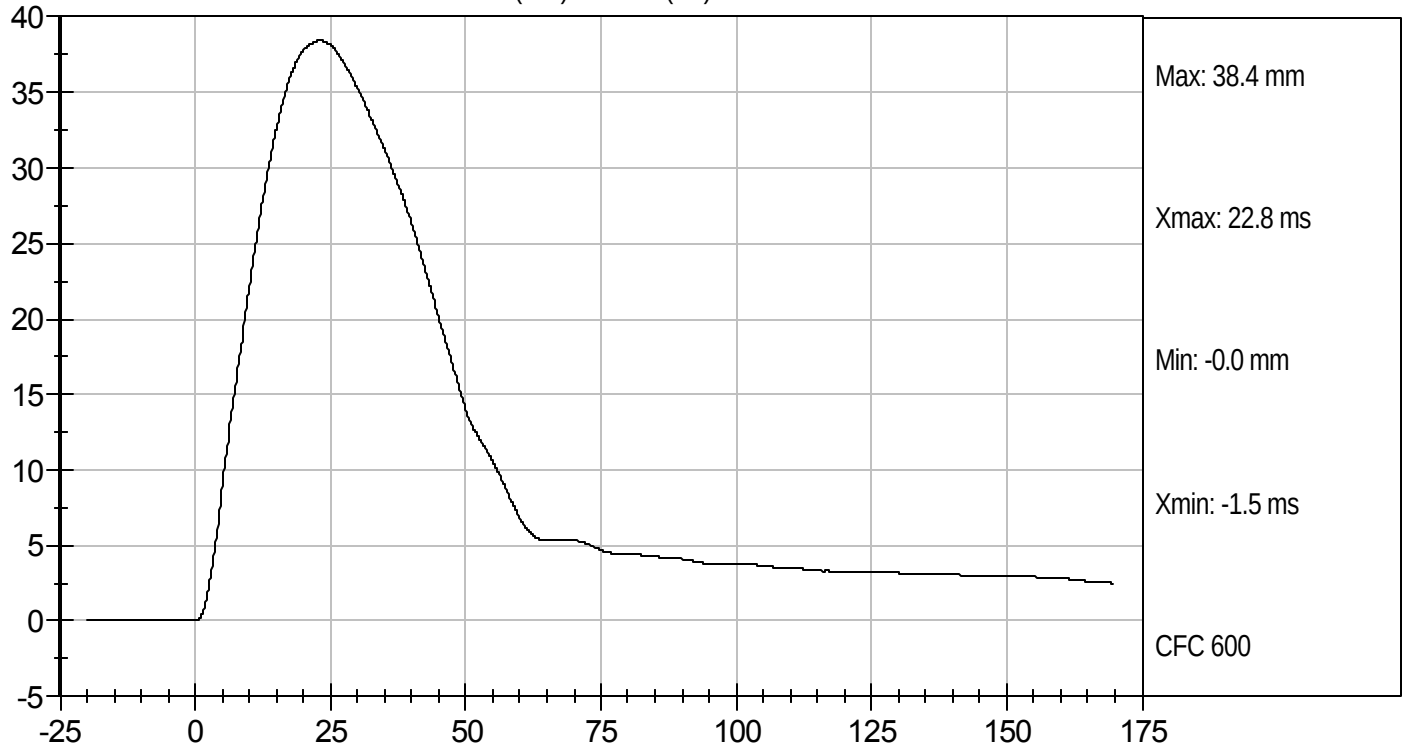




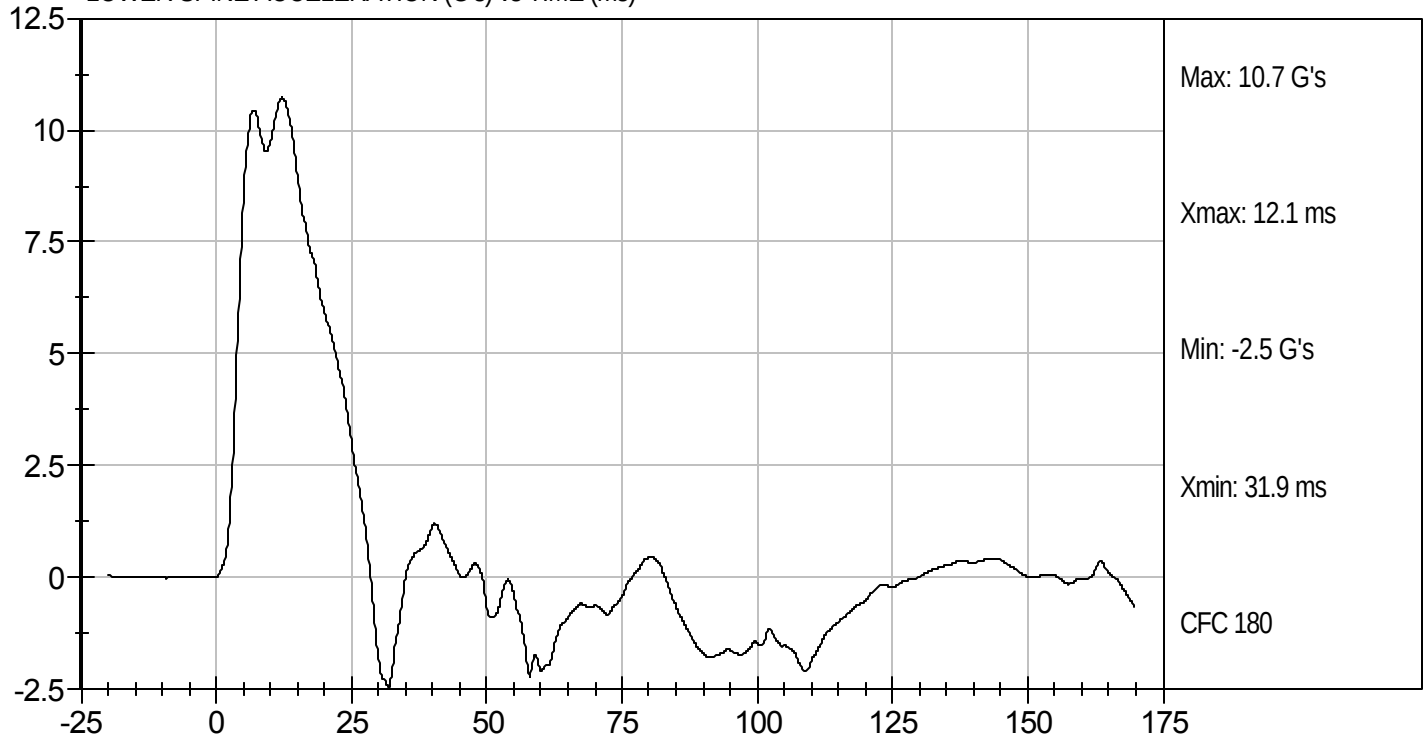
Test Desc: Abdomen Impact
Component ID: D114076

Test Date: 12/6/11
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: 296

Test I.D: D114077

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	22	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	4096	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

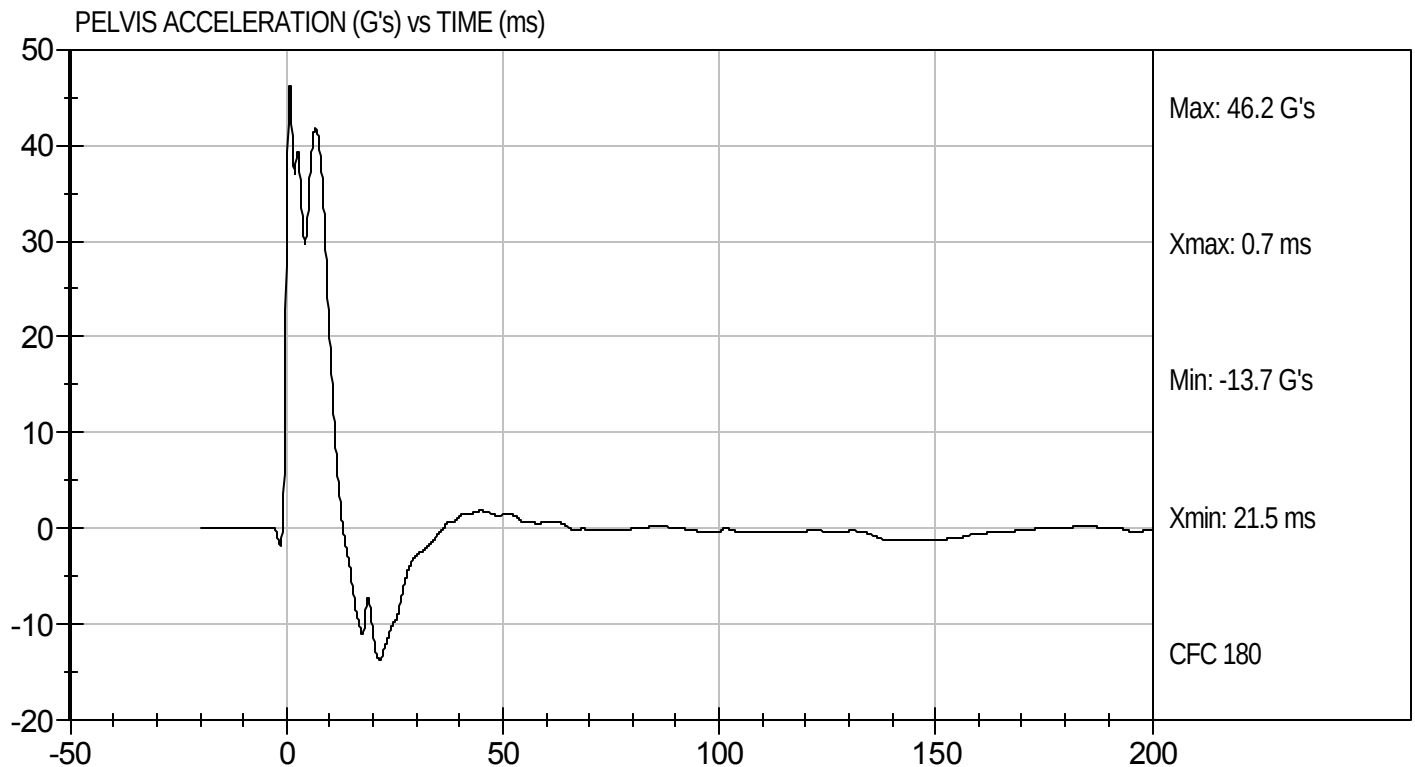
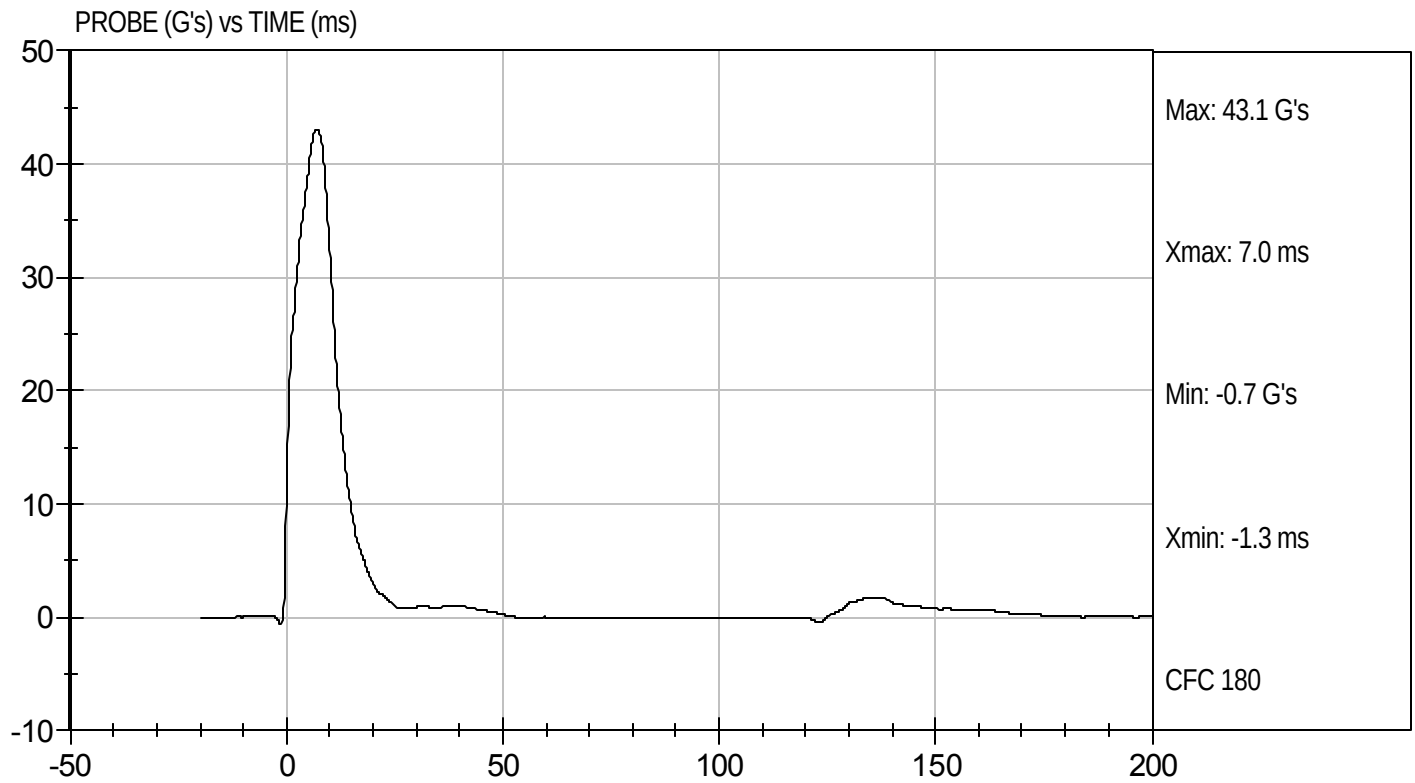
12/6/11
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D114077

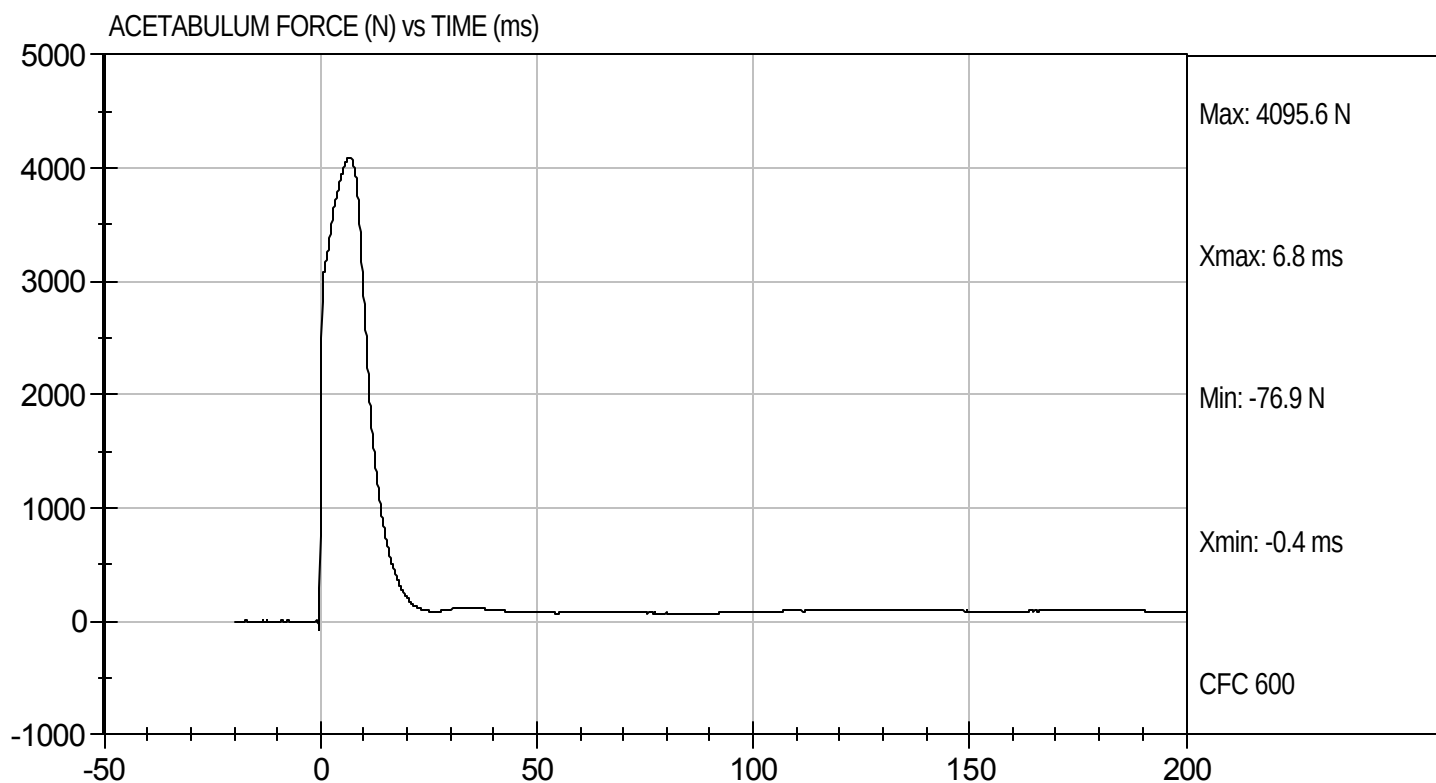
Test Date: 12/6/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D114077

Test Date: 12/6/11
Velocity: 22.2 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: D114078

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	22	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	36 to 45	36	Pass
Pelvis Y Acceleration	G's	28 to 39	29	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4487	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

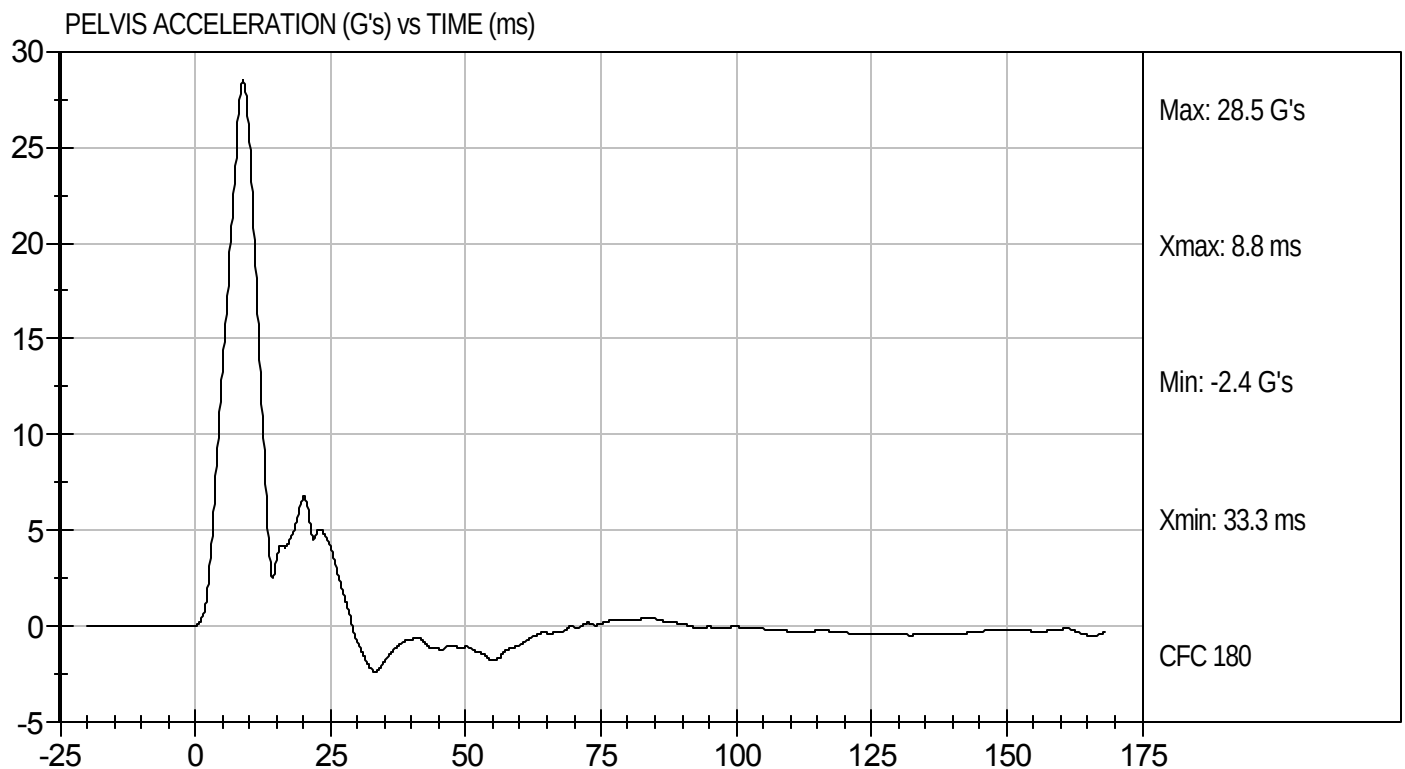
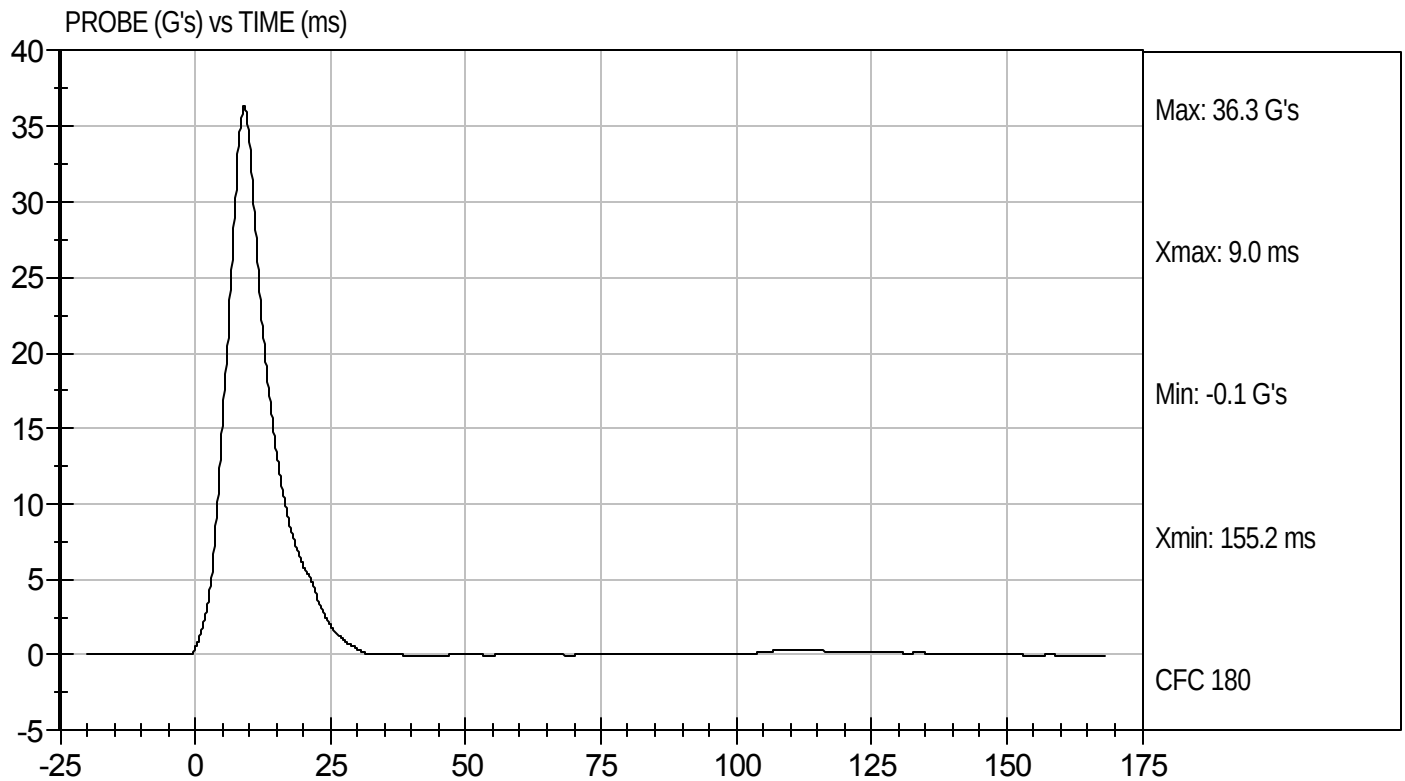
12/6/11
Test Date

David Winkelbauer
Approved By



Test Desc: Iliac Impact
Component ID: D114078

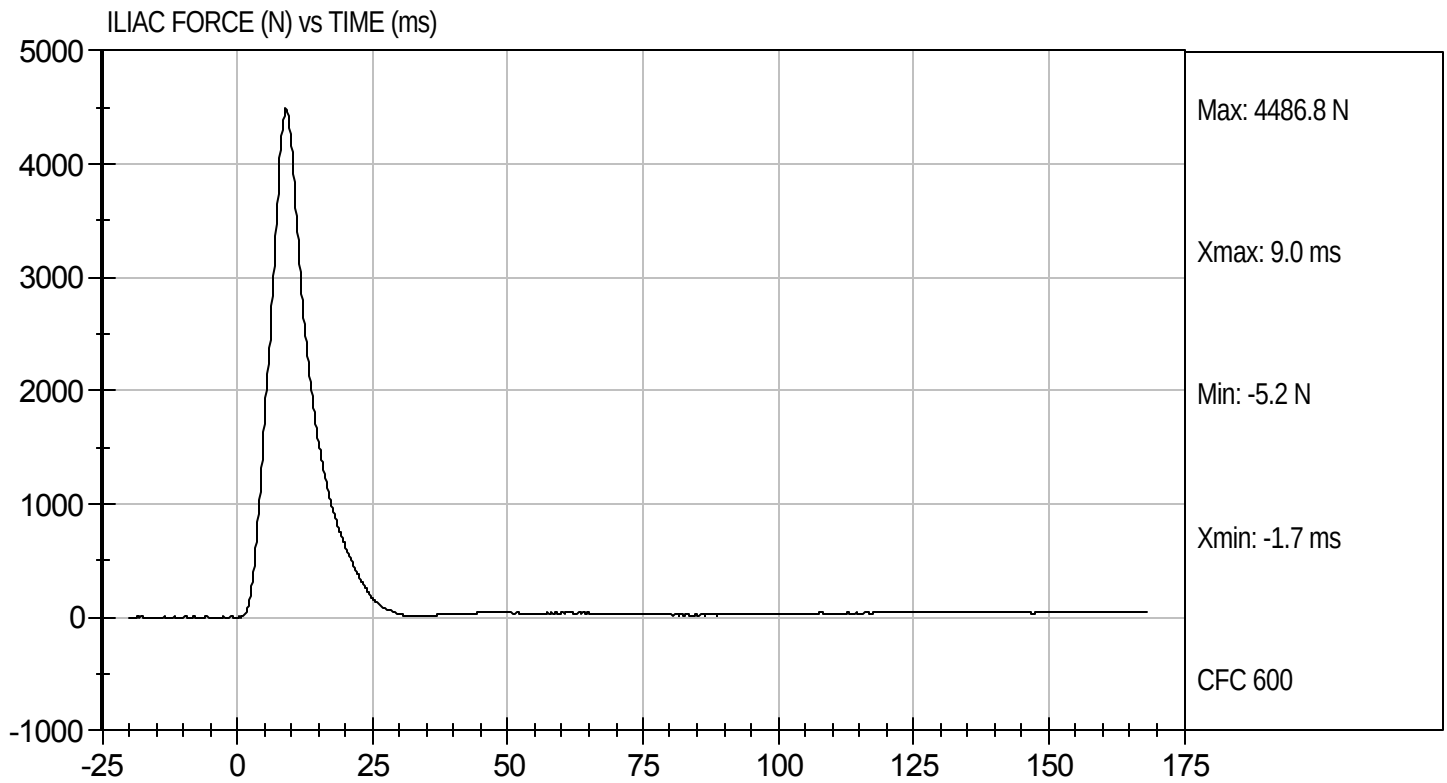
Test Date: 12/6/11
Velocity: 14.24 ft/s, 4.34 m/s





Test Desc: Iliac Impact
Component ID: D114078

Test Date: 12/6/11
Velocity: 14.24 ft/s, 4.34 m/s



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

ATD Serial No: 296

Test ID: D114161

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	115 to 137	130	Pass
Peak Lateral Acceleration	G's	+/- 15	4.3	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

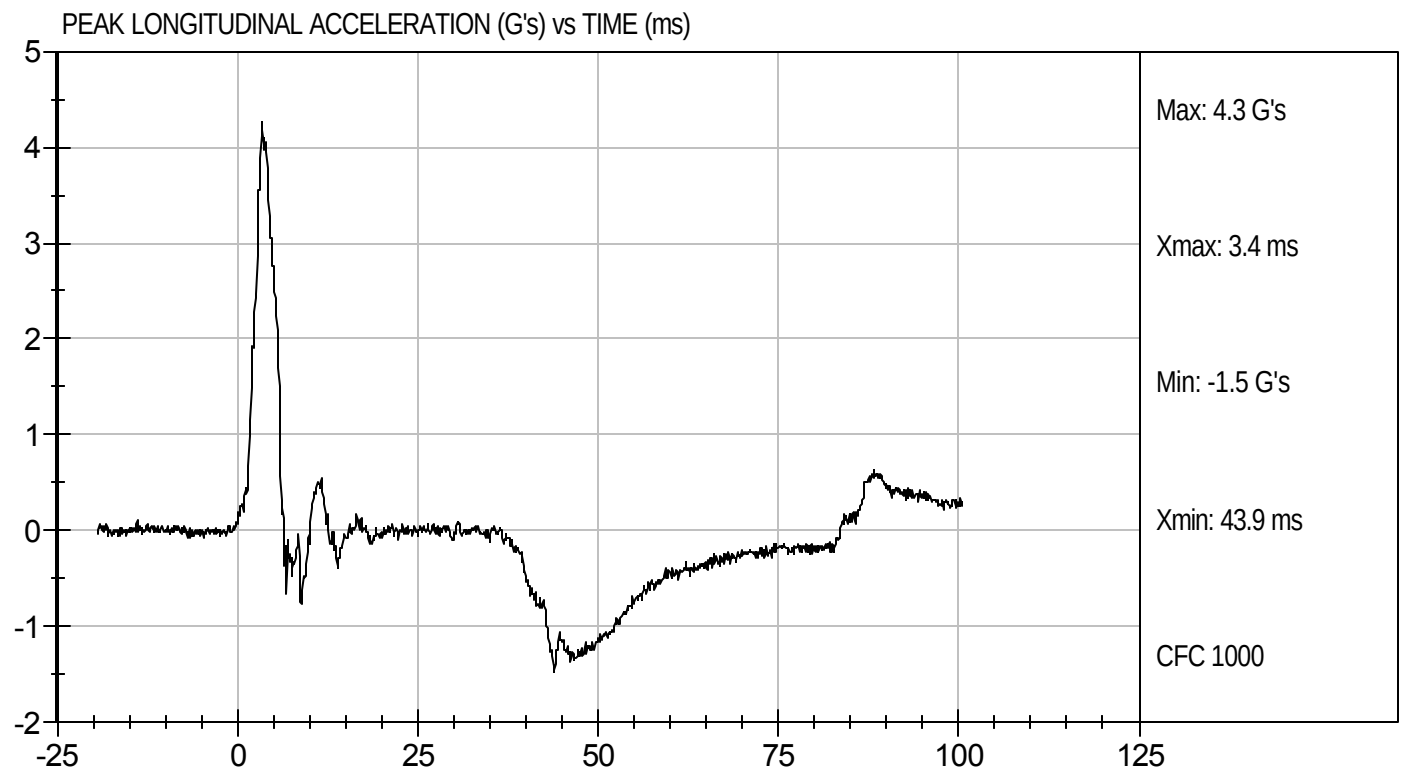
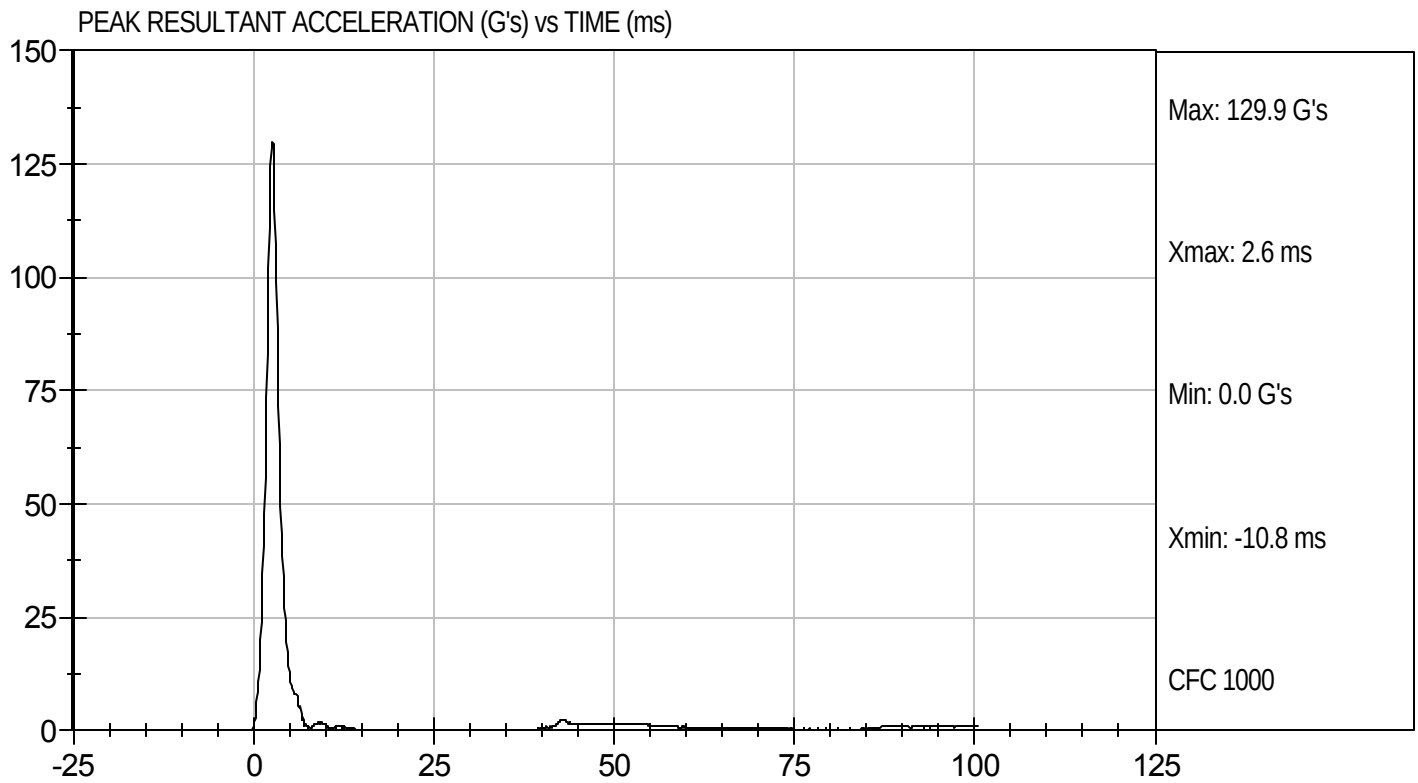
12/13/11
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D114161

Test Date: 12/13/11
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: D114162

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.9	Pass
Humidity		%	10 to 70	23	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.45	Pass
	15 ms	m/s	3.30 to 4.10	3.49	Pass
	20 ms	m/s	4.40 to 5.40	4.62	Pass
	25 ms	m/s	5.40 to 6.10	5.47	Pass
	25-100 ms	m/s	5.50 to 6.20	5.56	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	60	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	117	Pass
Overall Test Results				Pass	


 Laboratory Technician

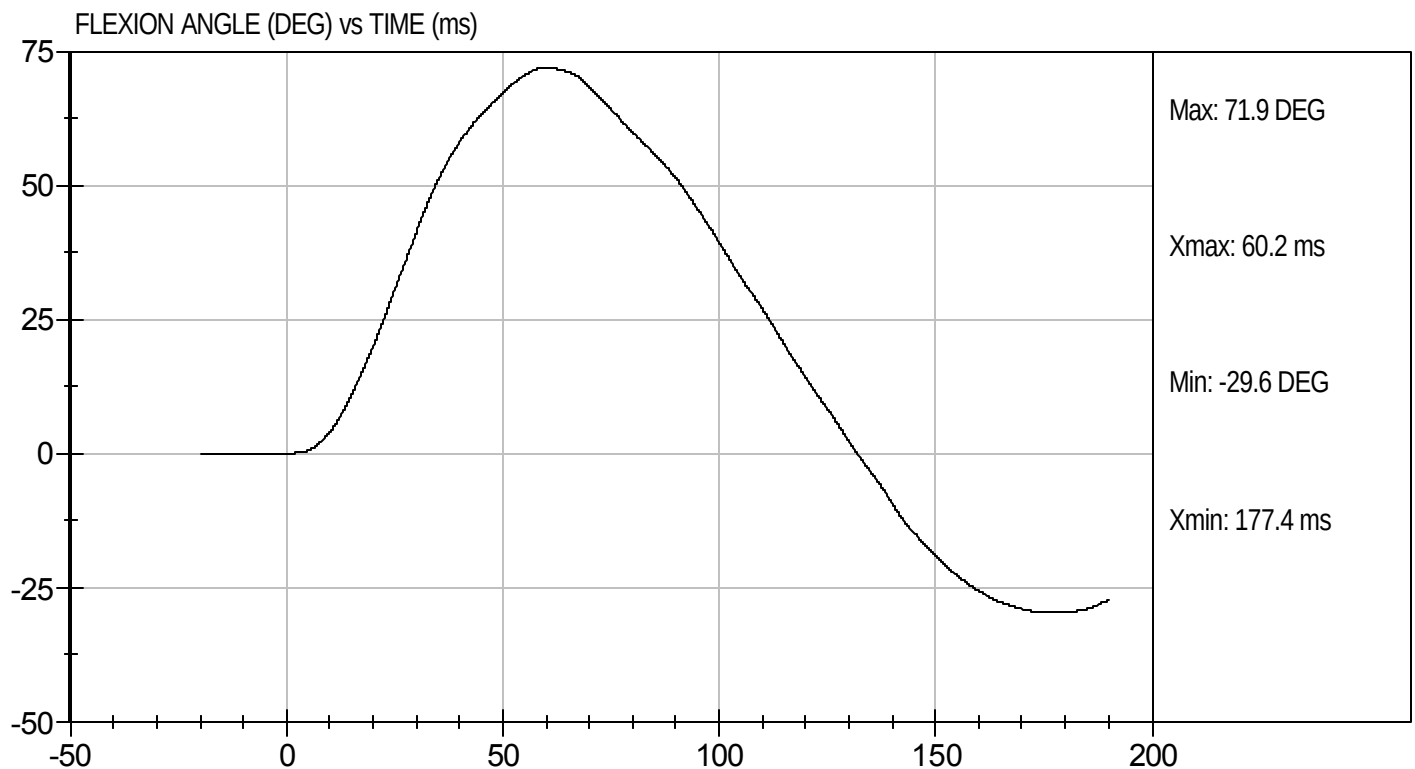
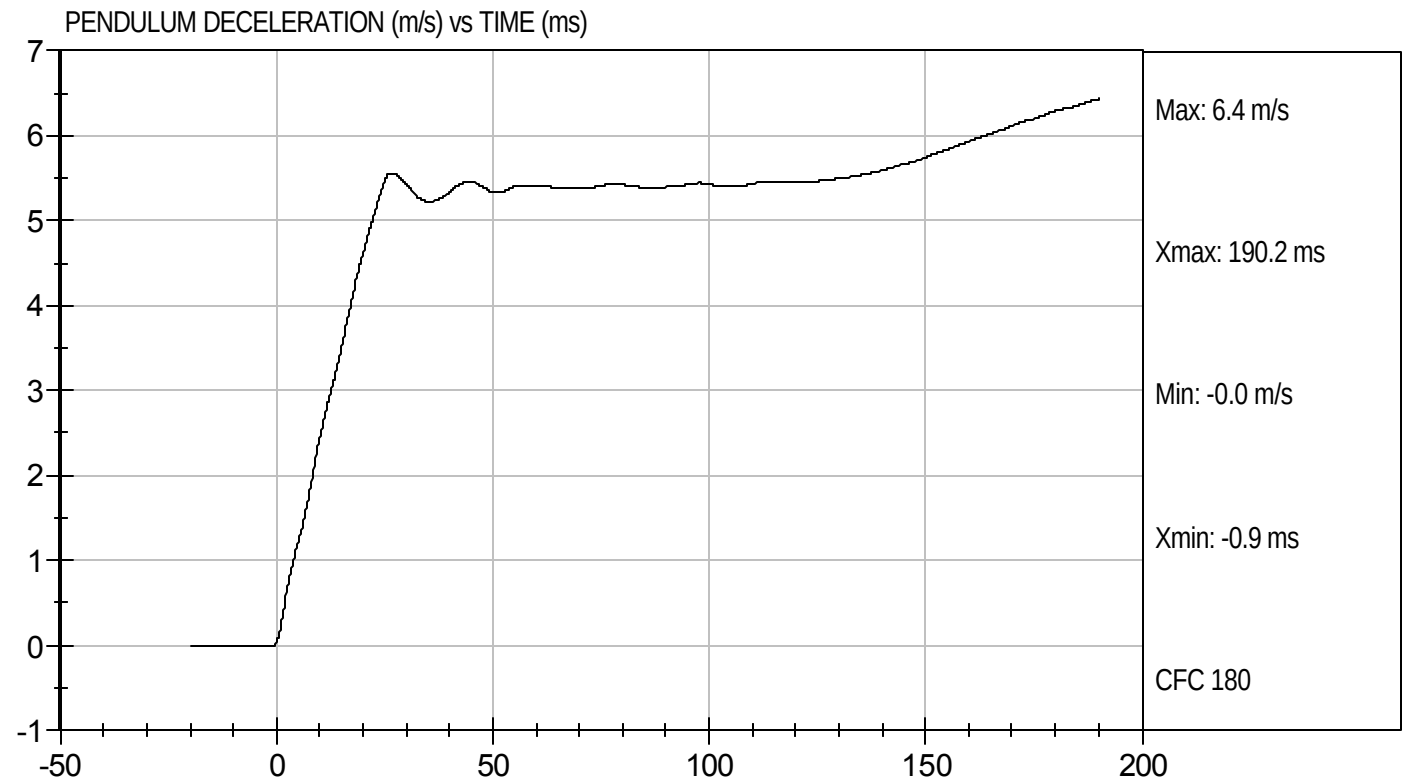
12/13/11
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D114162

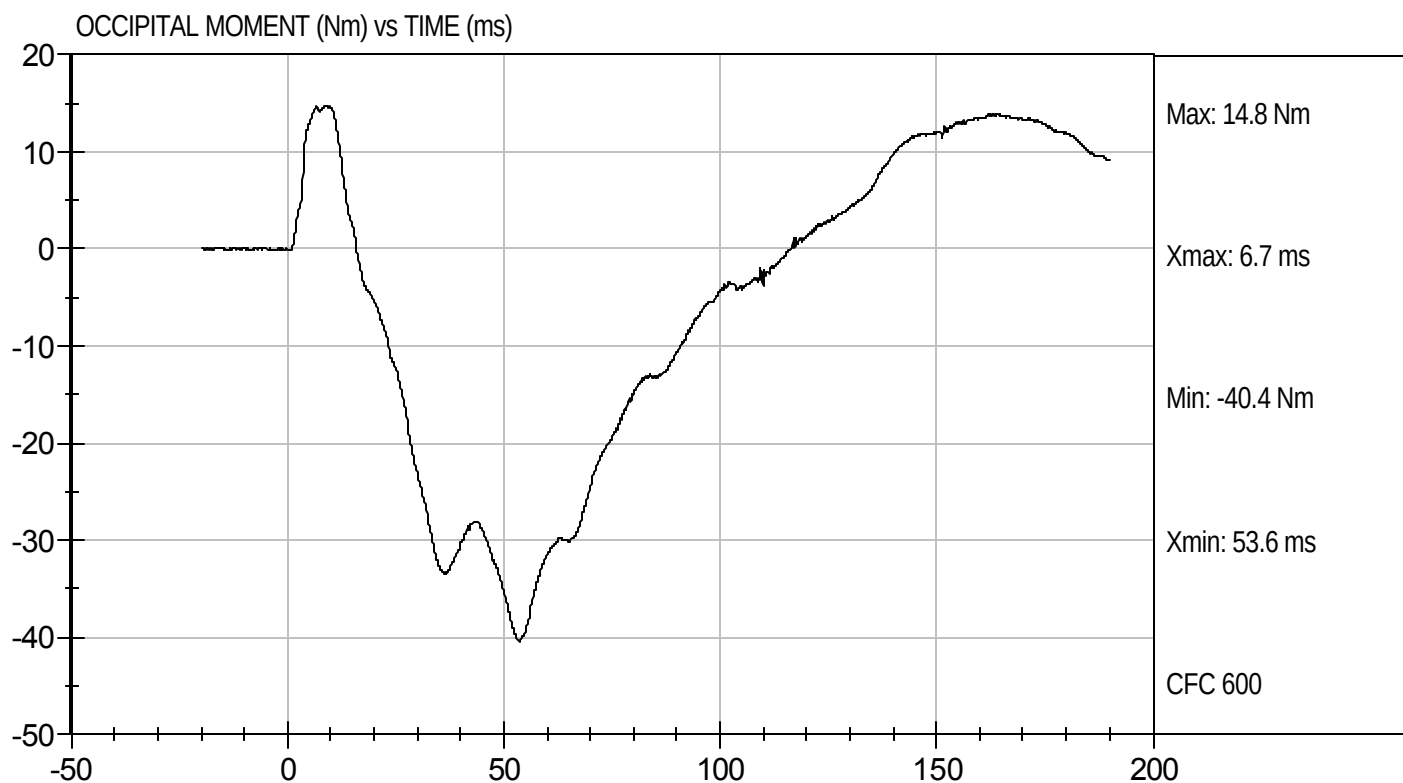
Test Date: 12/13/11
Velocity: 18.31 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D114162

Test Date: 12/13/11
Velocity: 18.31 ft/s, 5.58 m/s



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

ATD Serial No: 296

Test ID: D114163

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	23	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	31	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

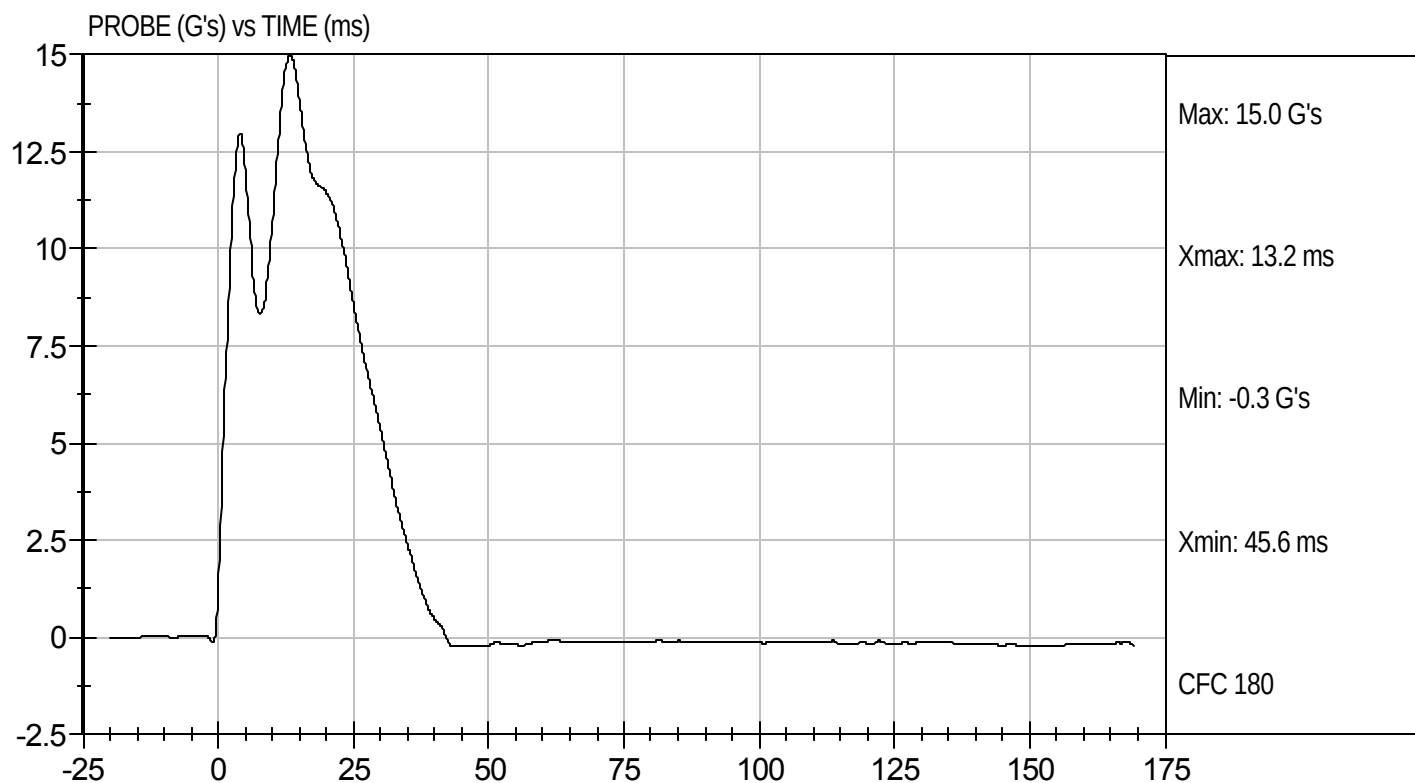
12/13/11
Test Date

David Winkelbauer
Approved By



Test Desc: Shoulder Impact
Component ID: D114163

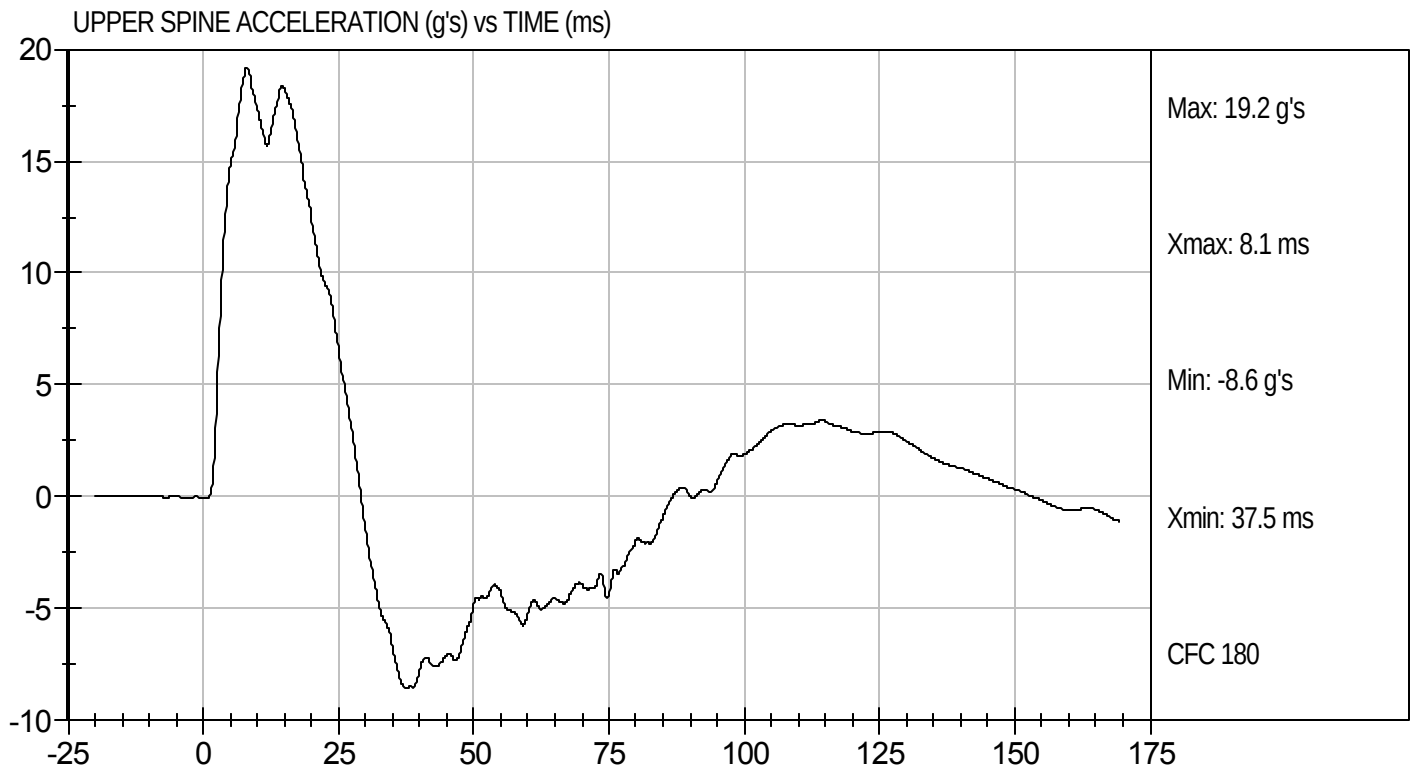
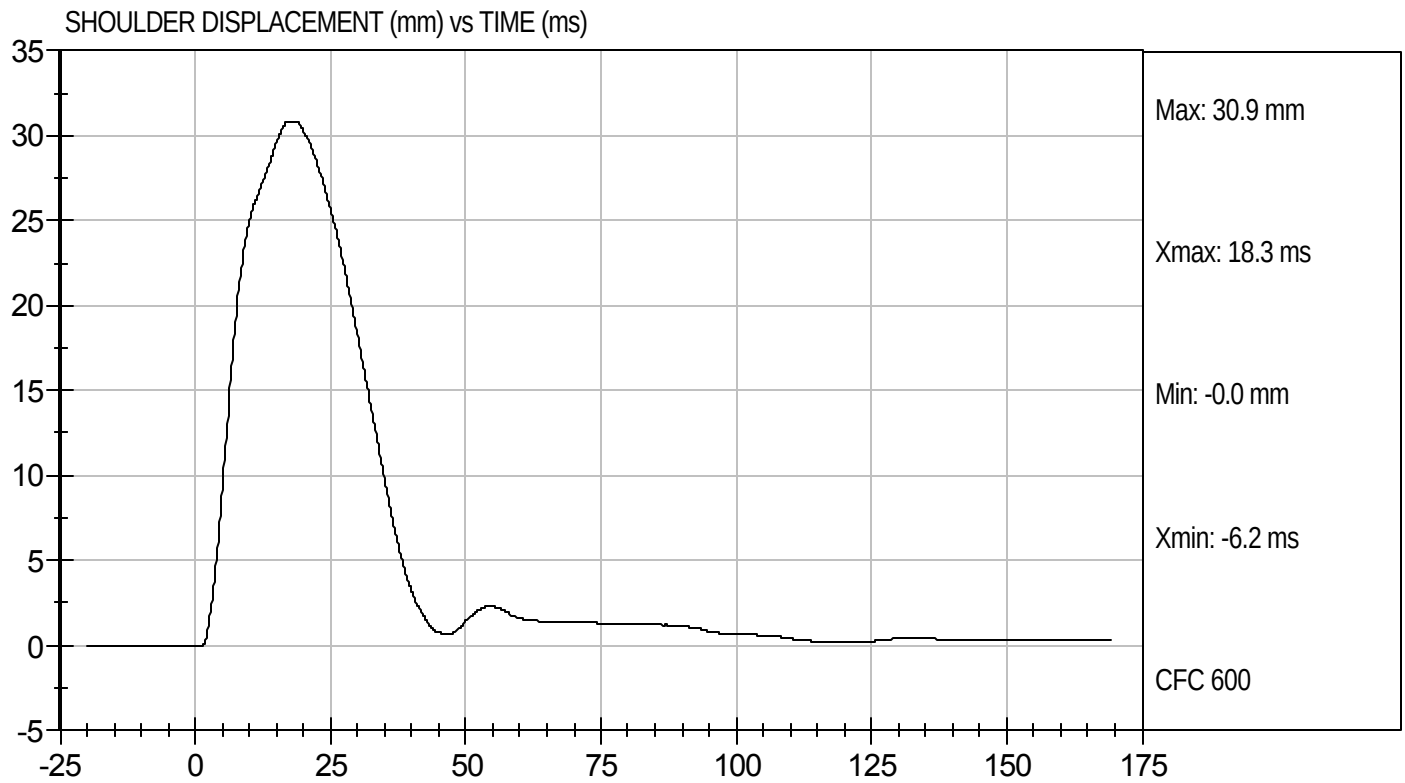
Test Date: 12/13/11
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Shoulder Impact
Component ID: D114163

Test Date: 12/13/11
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: 296

Test I.D: D114164

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	33	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	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

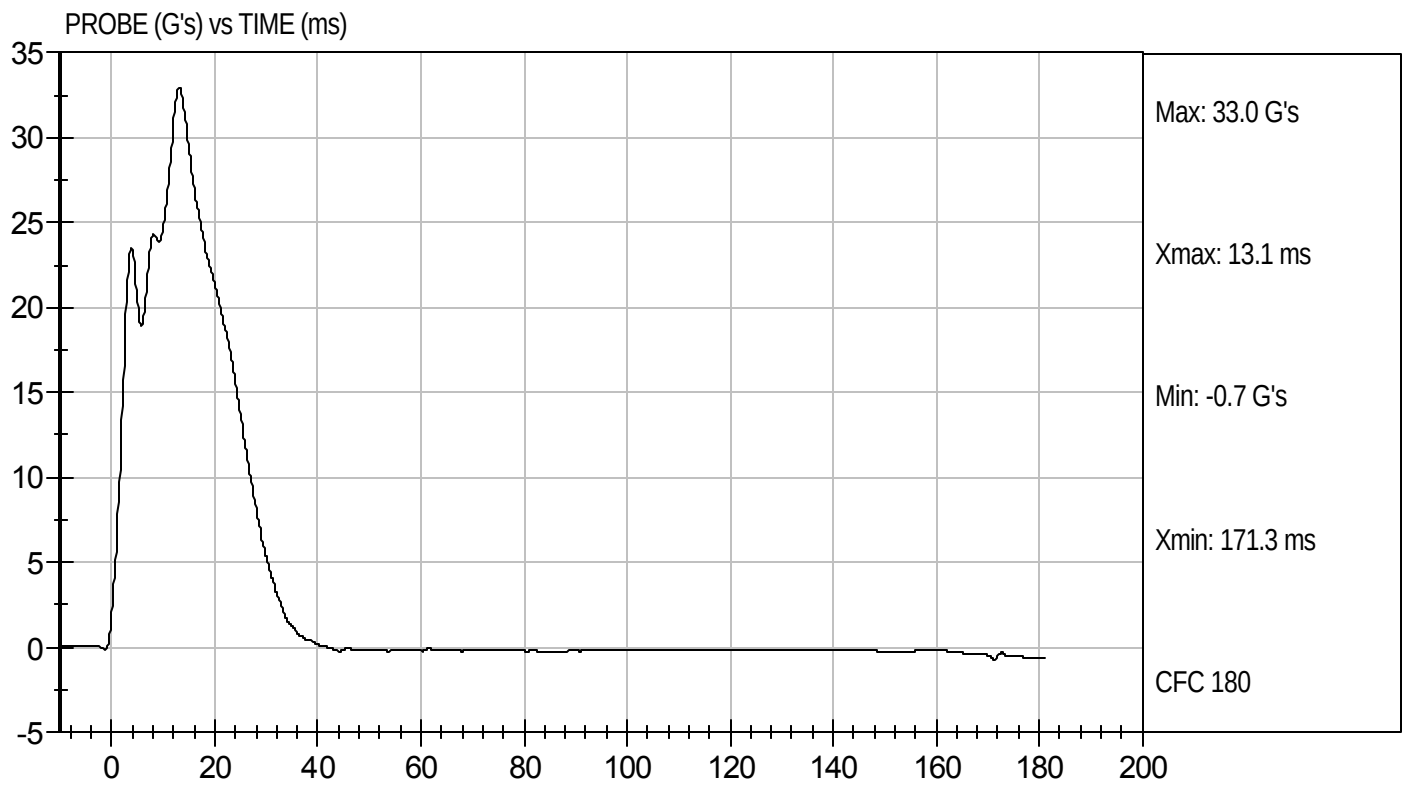
12/13/11
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax With Arm
Component ID: D114164

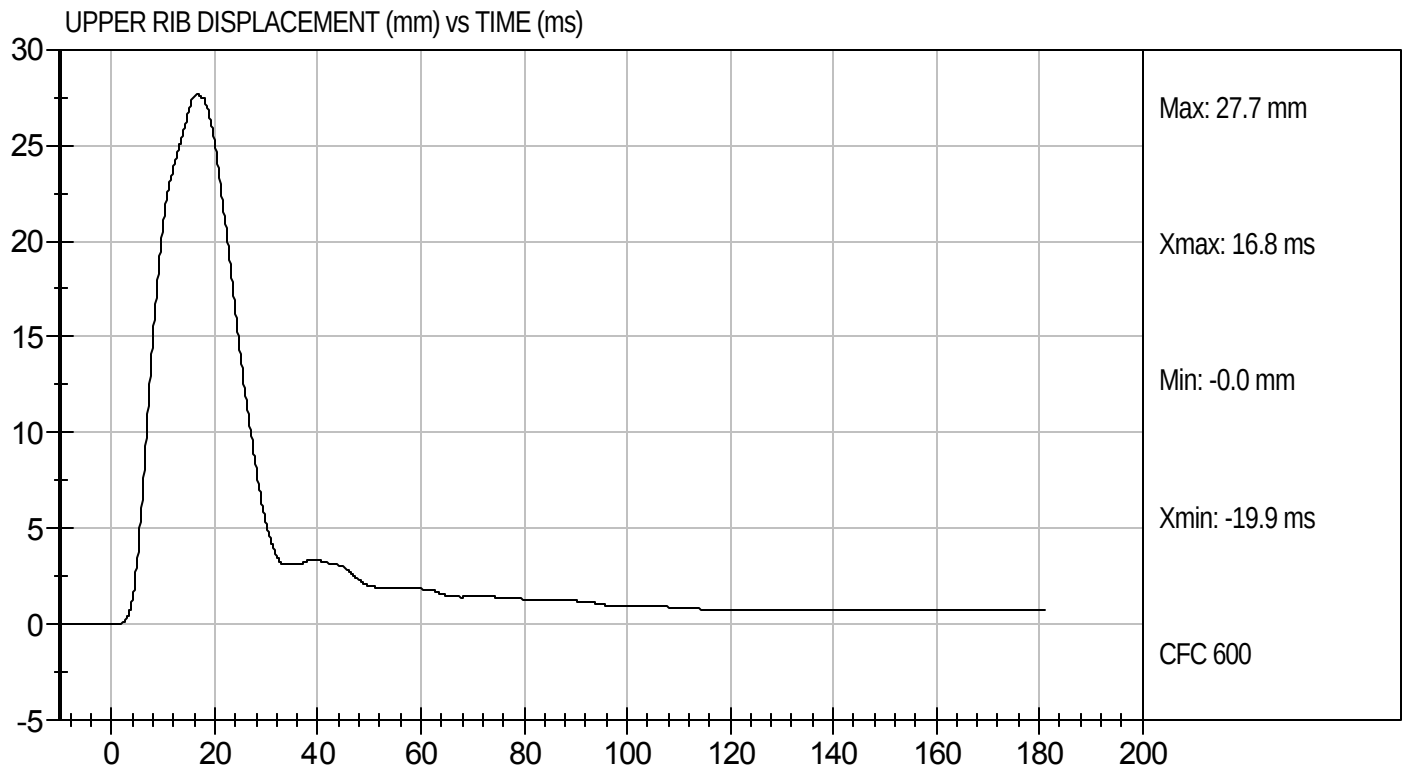
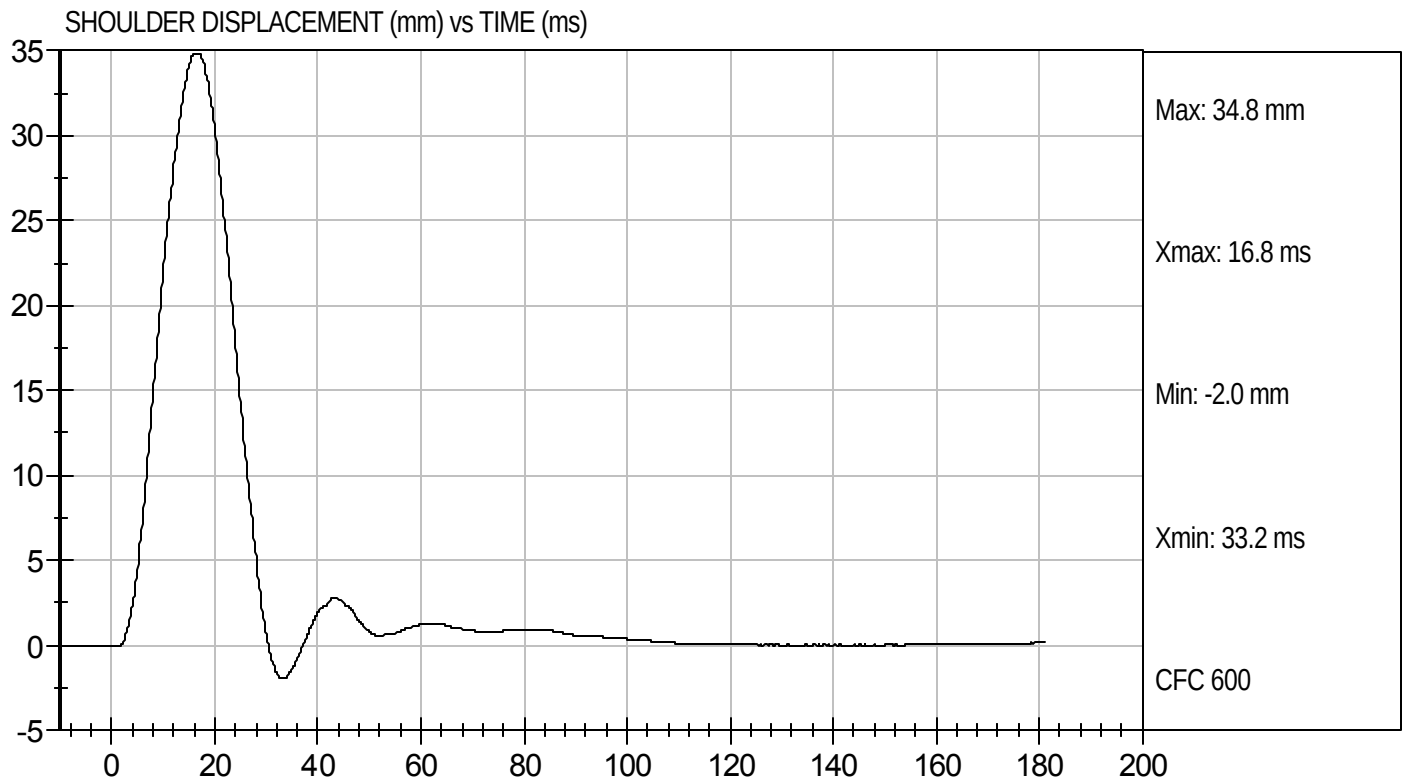
Test Date: 12/13/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D114164

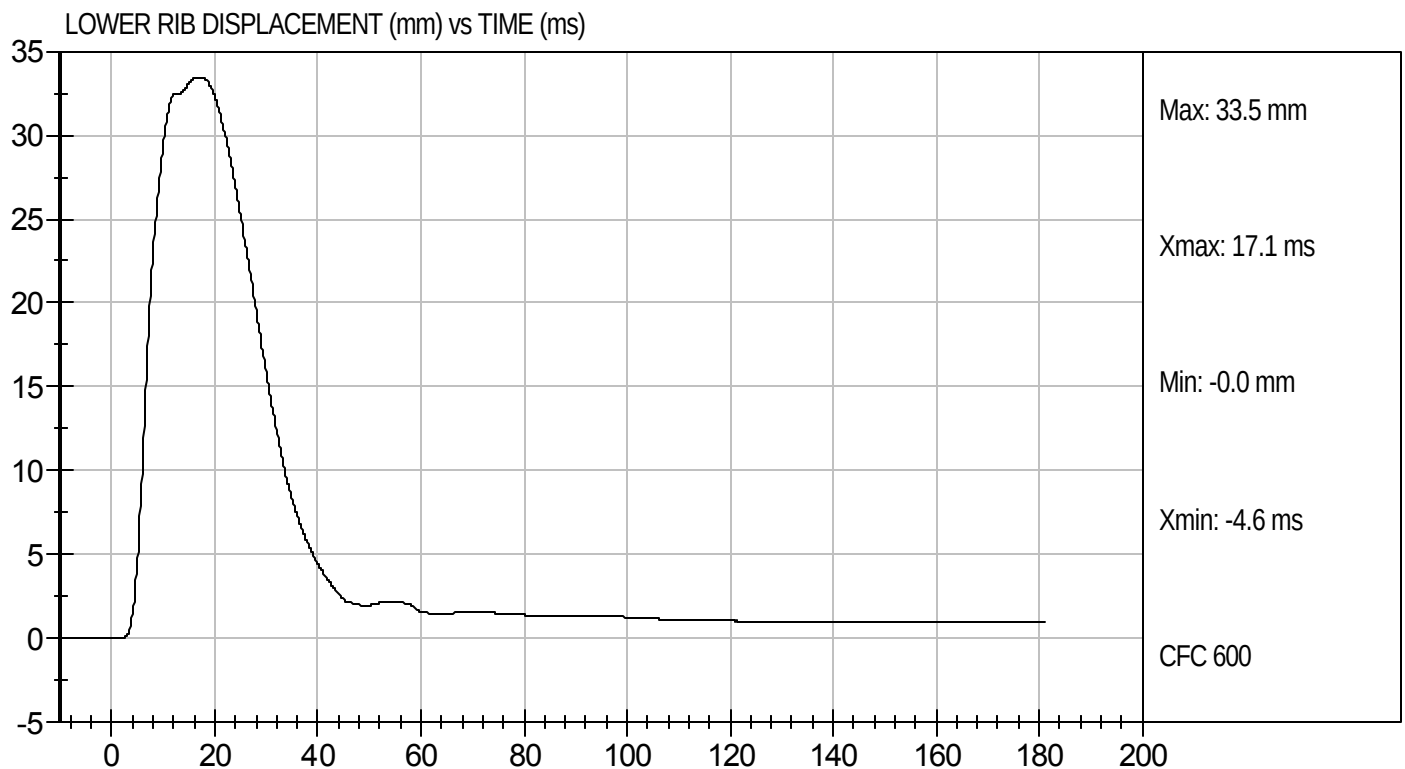
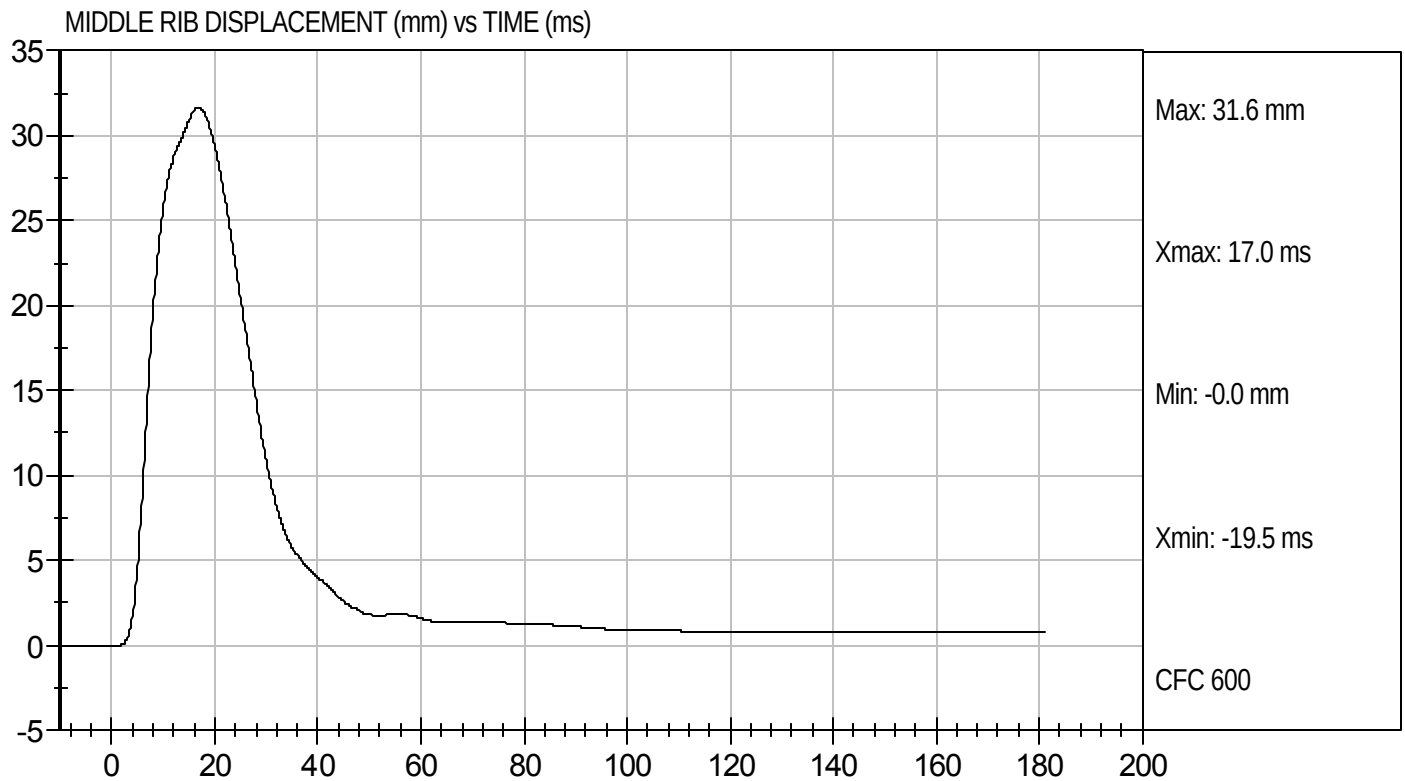
Test Date: 12/13/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D114164

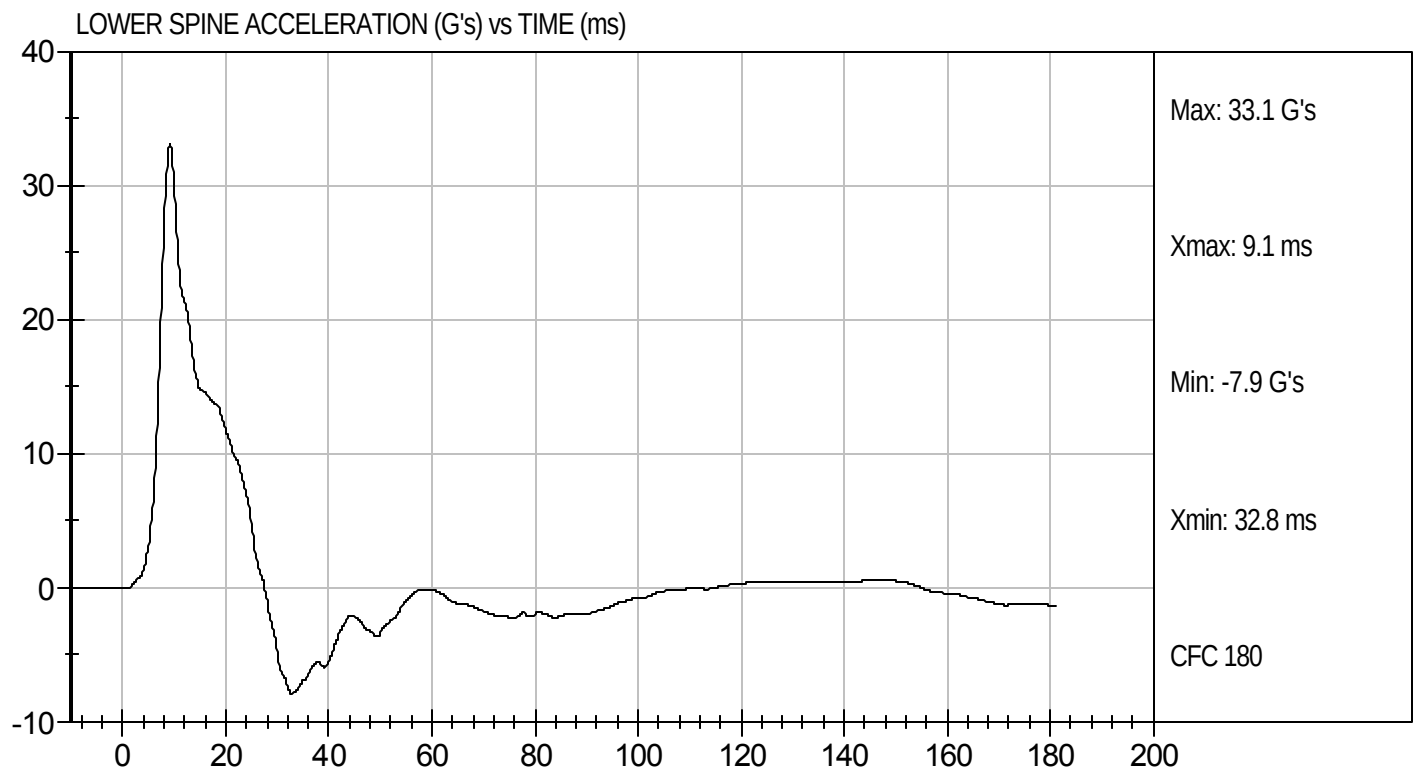
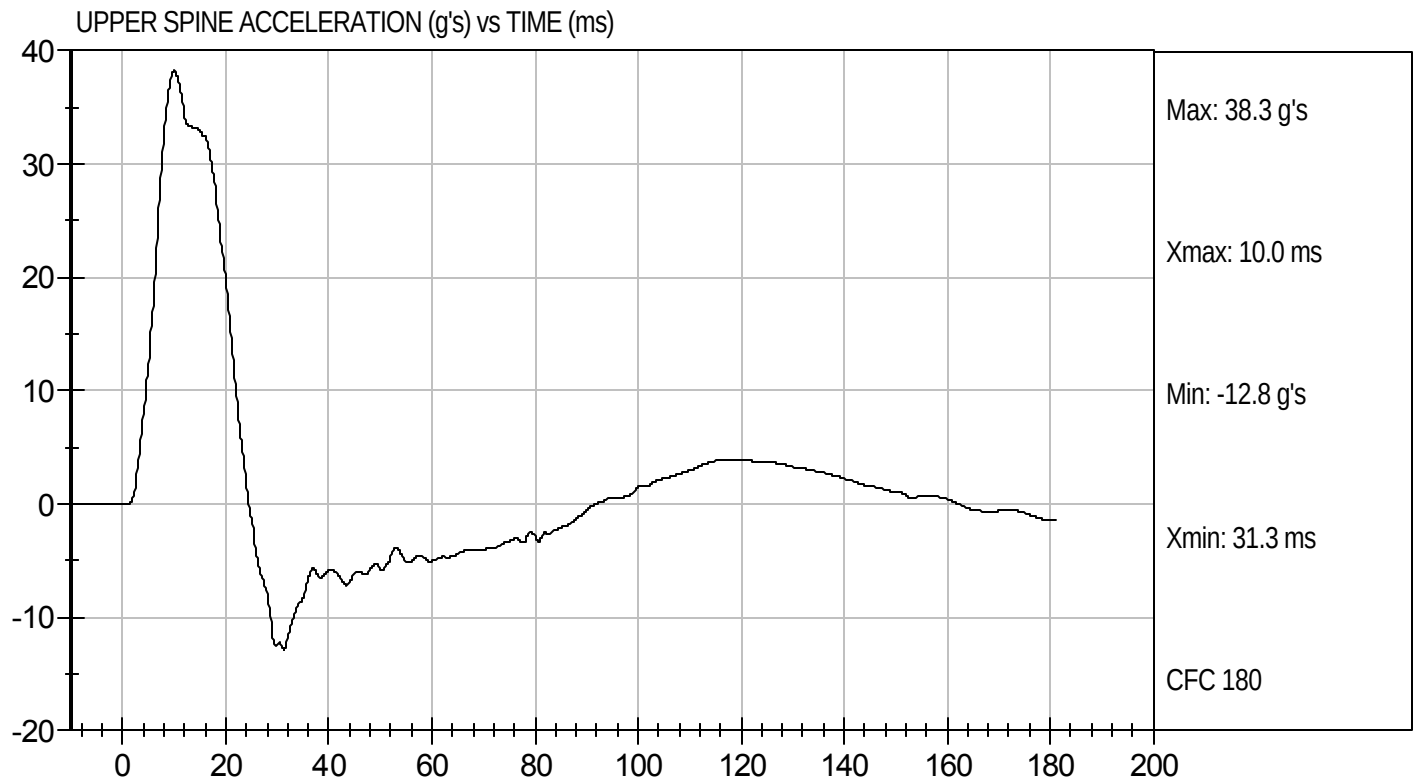
Test Date: 12/13/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D114164

Test Date: 12/13/11
Velocity: 22.2 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: D114165

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	23	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	41	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

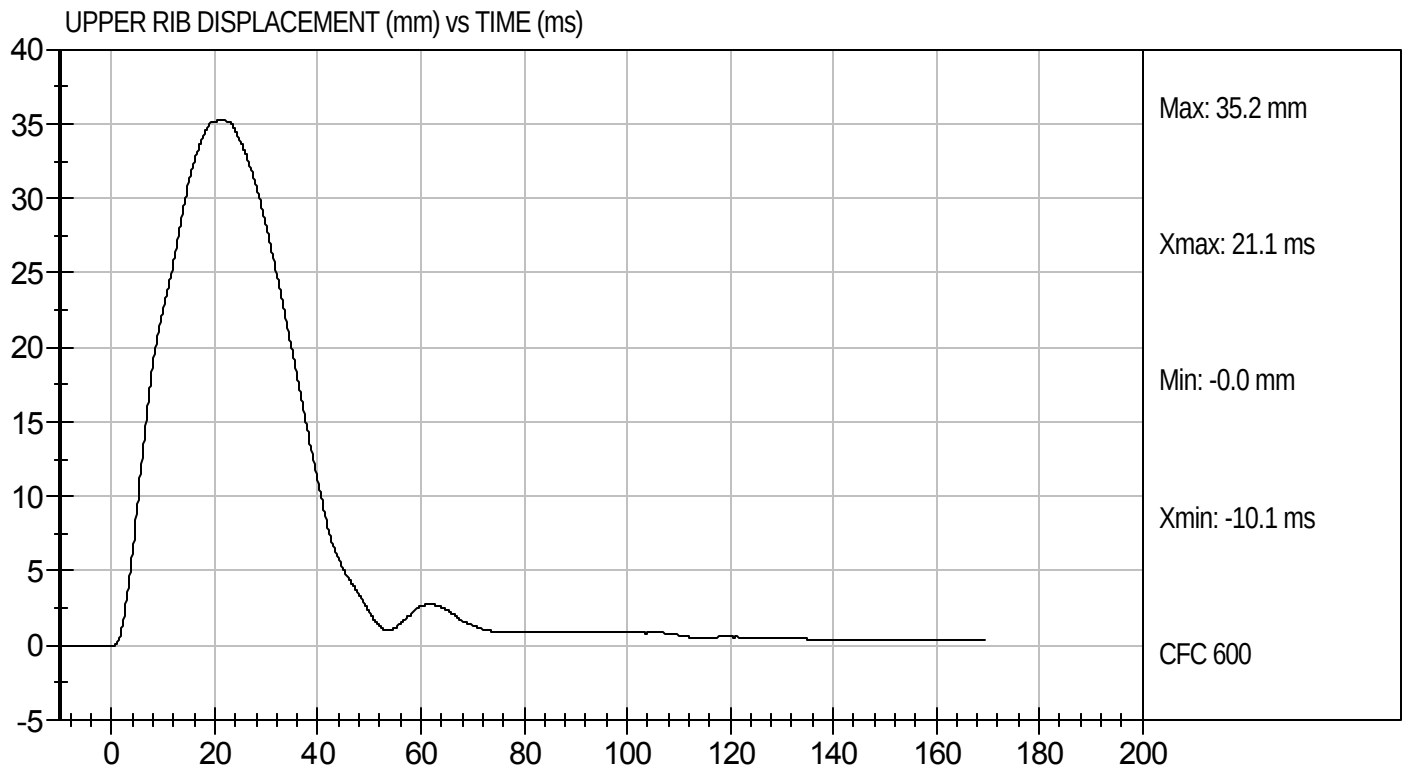
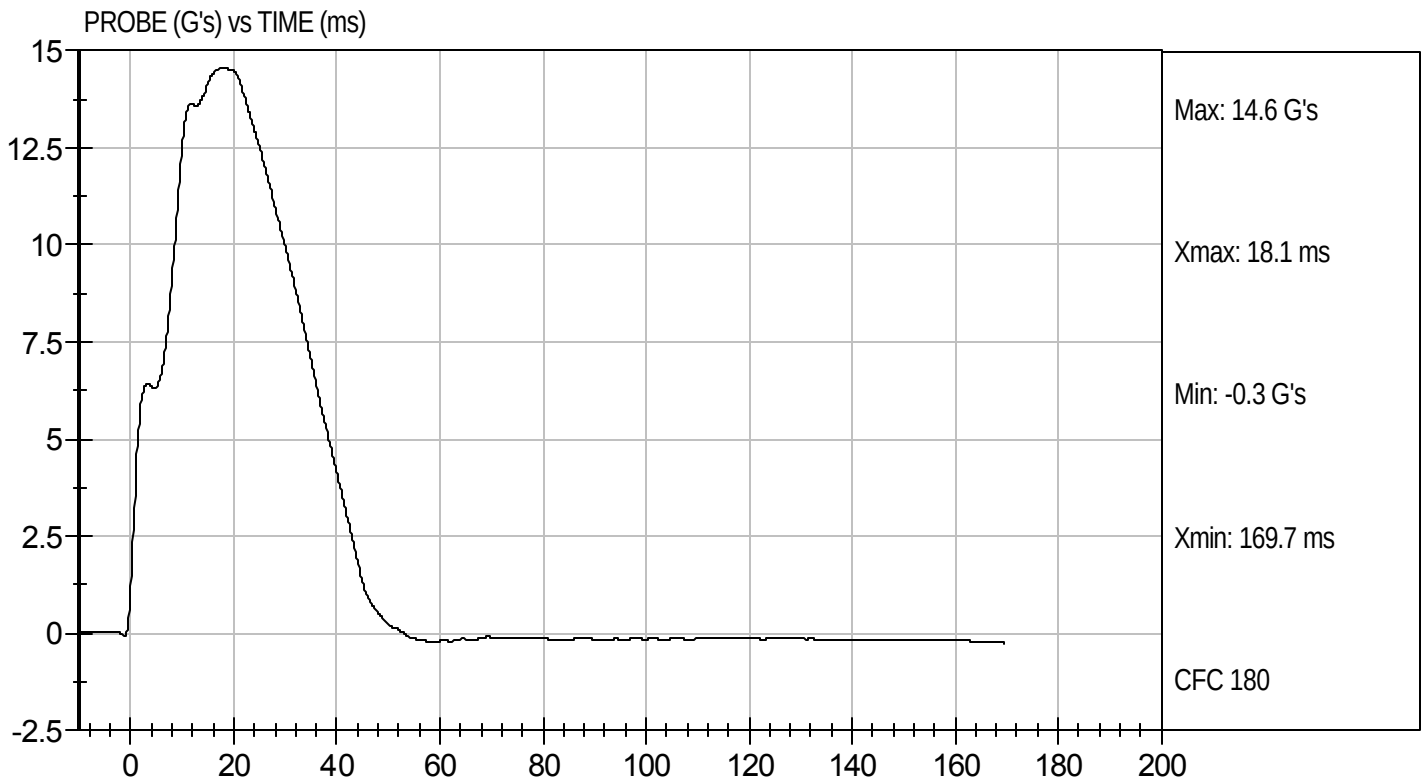
12/13/11
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D114165

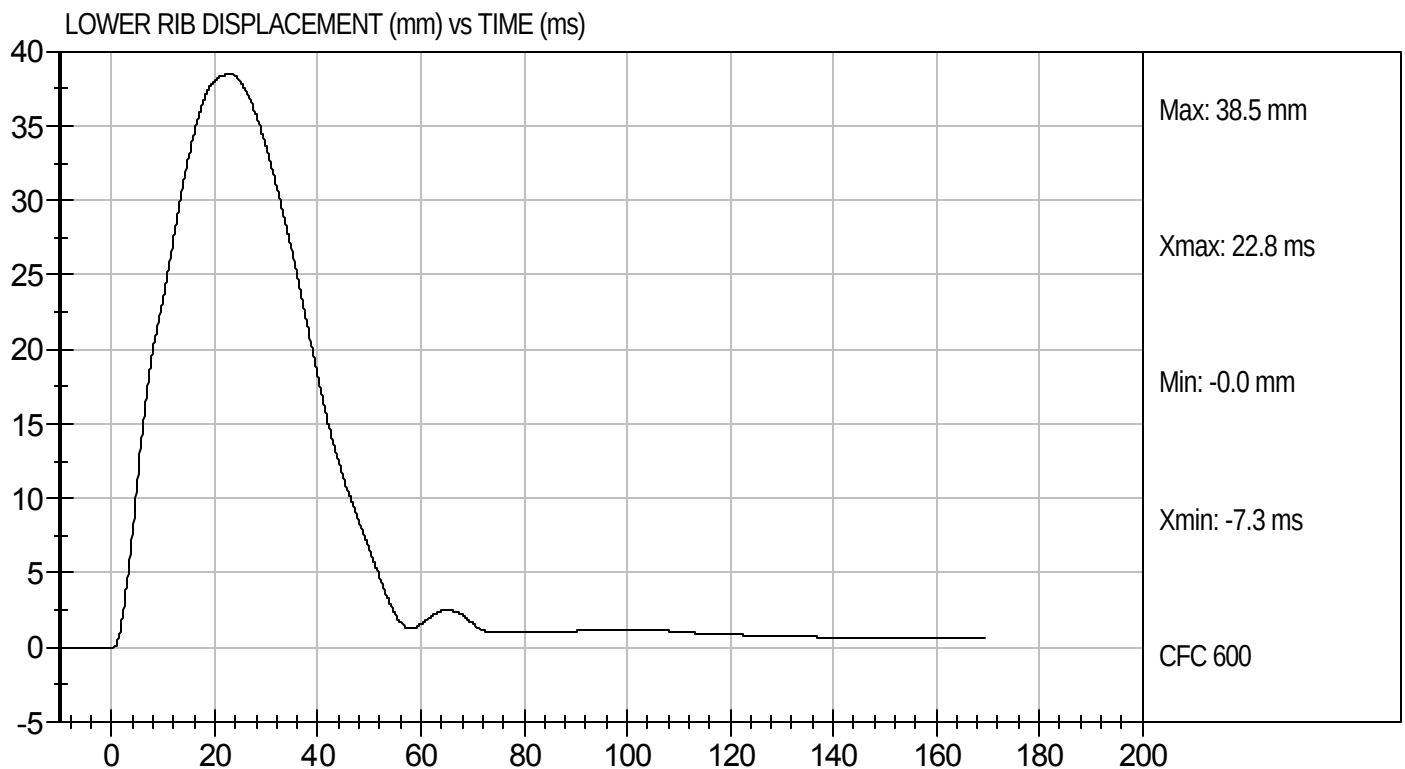
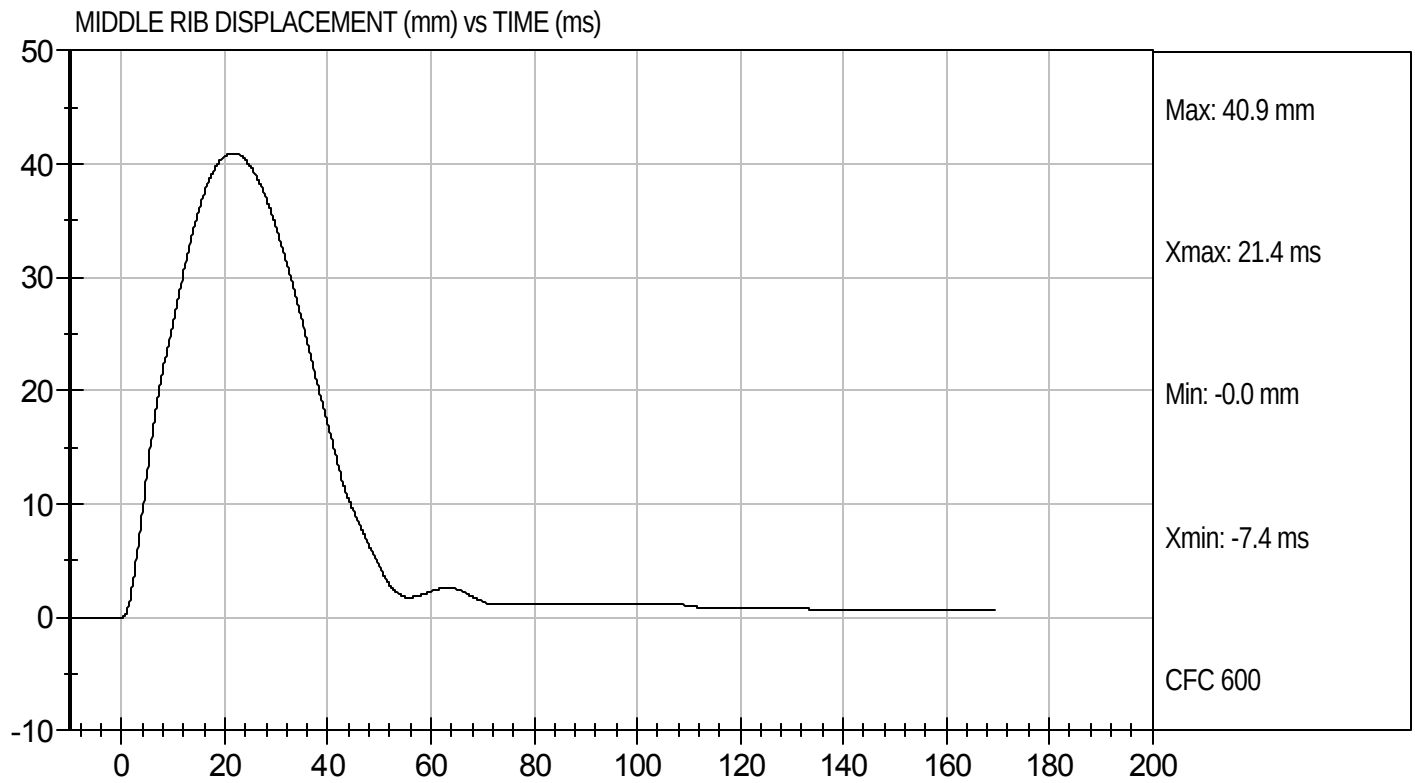
Test Date: 12/13/11
Velocity: 14.24 ft/s, 4.34 m/s





Test Desc: Thorax Without Arm
Component ID: D114165

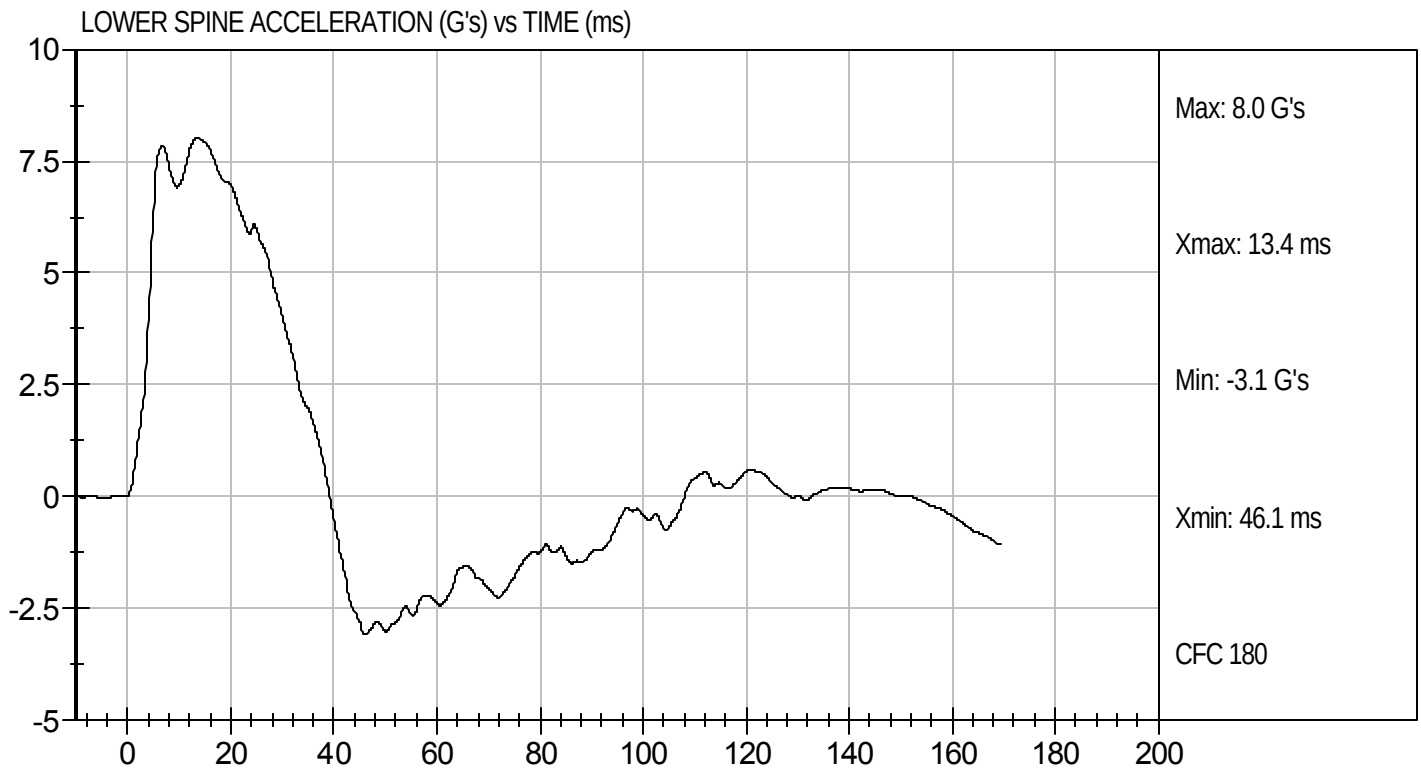
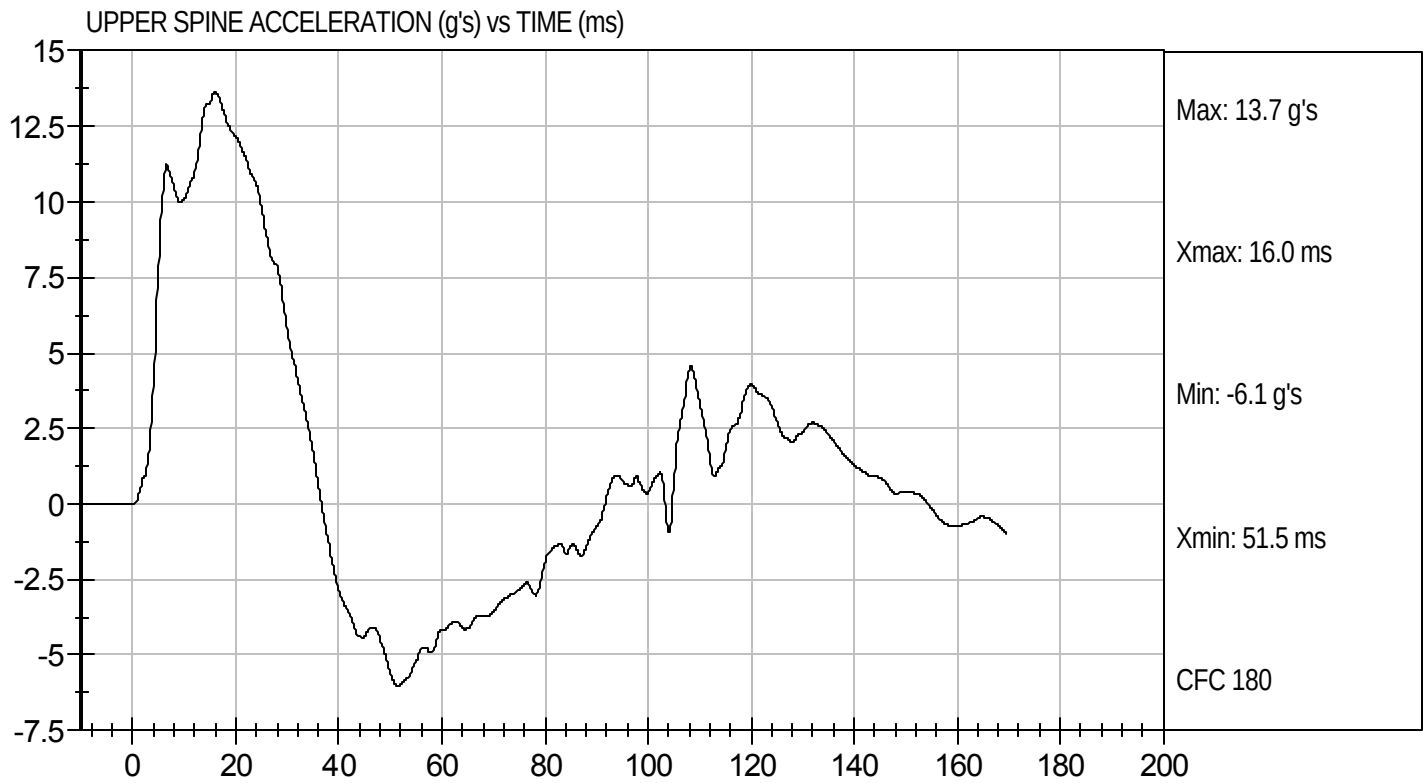
Test Date: 12/13/11
Velocity: 14.24 ft/s, 4.34 m/s





Test Desc: Thorax Without Arm
Component ID: D114165

Test Date: 12/13/11
Velocity: 14.24 ft/s, 4.34 m/s



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

ATD Serial No: 296

Test I.D: D114166

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	23	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	37	Pass
Lower Rib Displacement	mm	33 to 44	37	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results			Pass	

Jessica Gall
Laboratory Technician

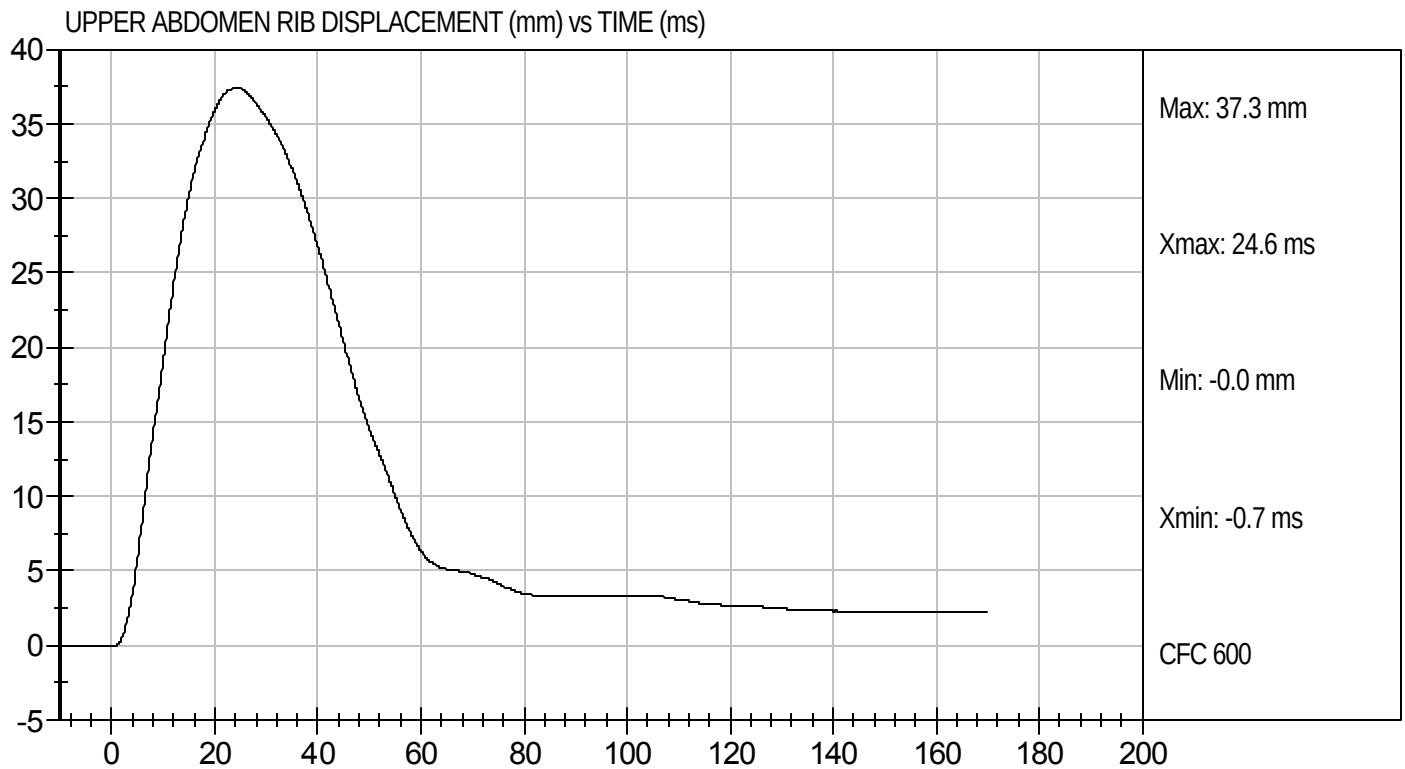
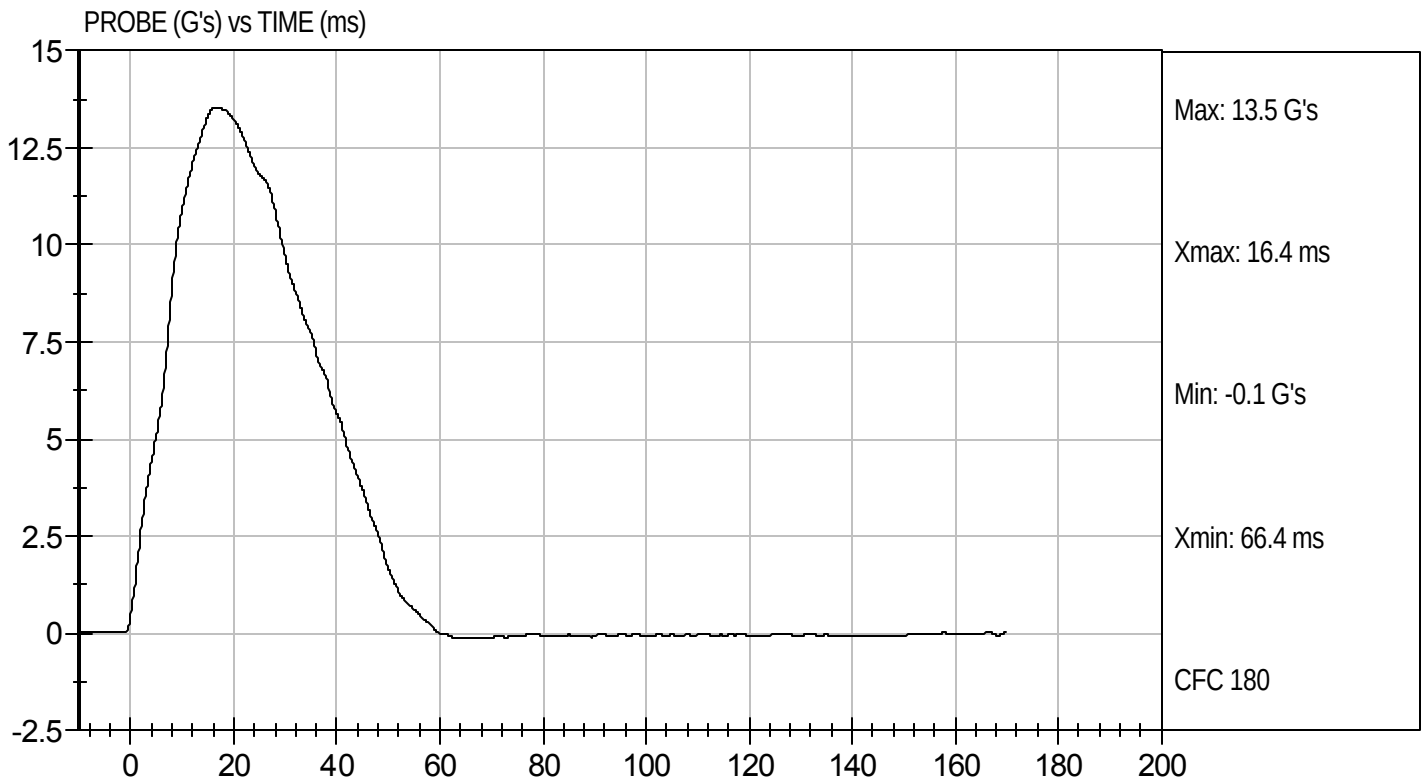
12/13/11
Test Date

David Winkelbauer
Approved By



Test Desc: Abdomen Impact
Component ID: D114166

Test Date: 12/13/11
Velocity: 14.24 ft/s, 4.34 m/s

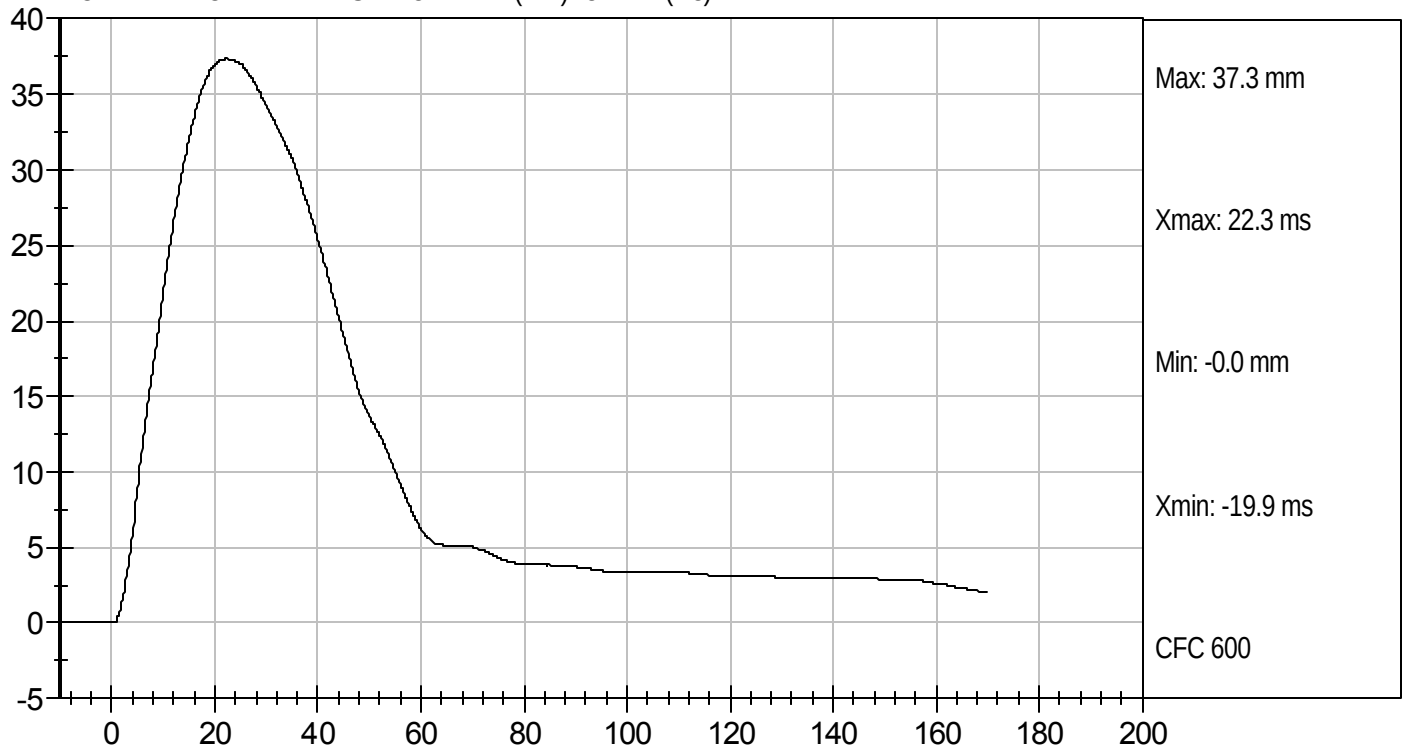




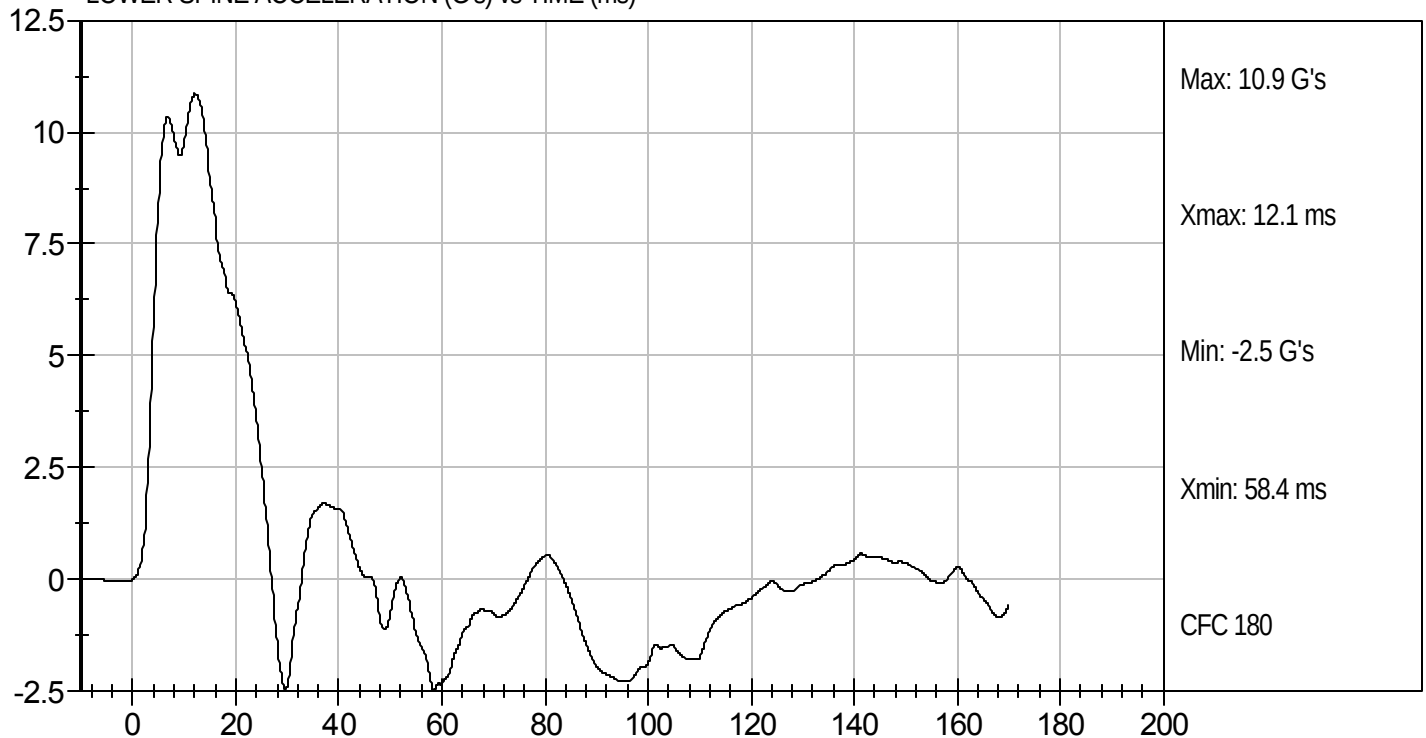
Test Desc: Abdomen Impact
Component ID: D114166

Test Date: 12/13/11
Velocity: 14.24 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: D114167

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Peak Impactor Acceleration	G's	38 to 47	43	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	3871	Pass
Overall Test Results				Pass


Laboratory Technician

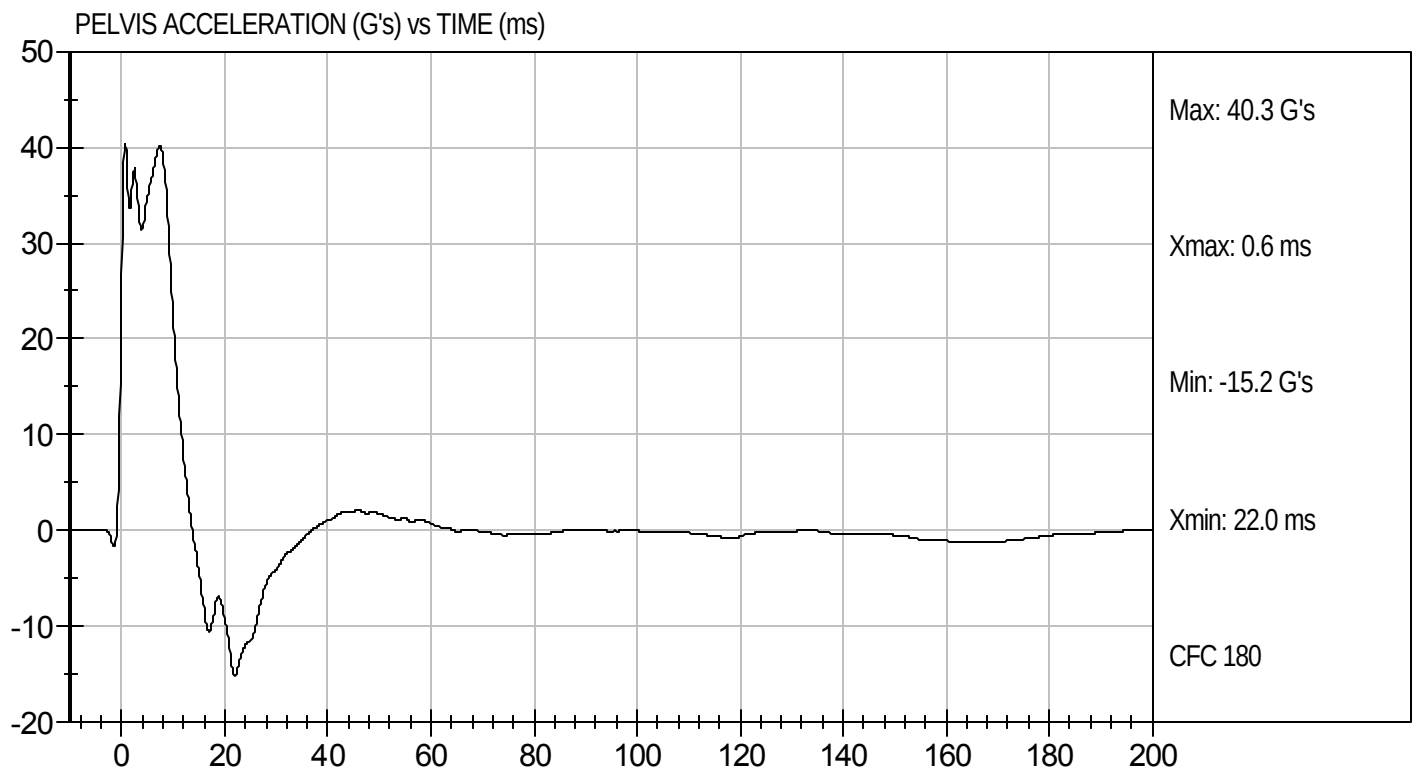
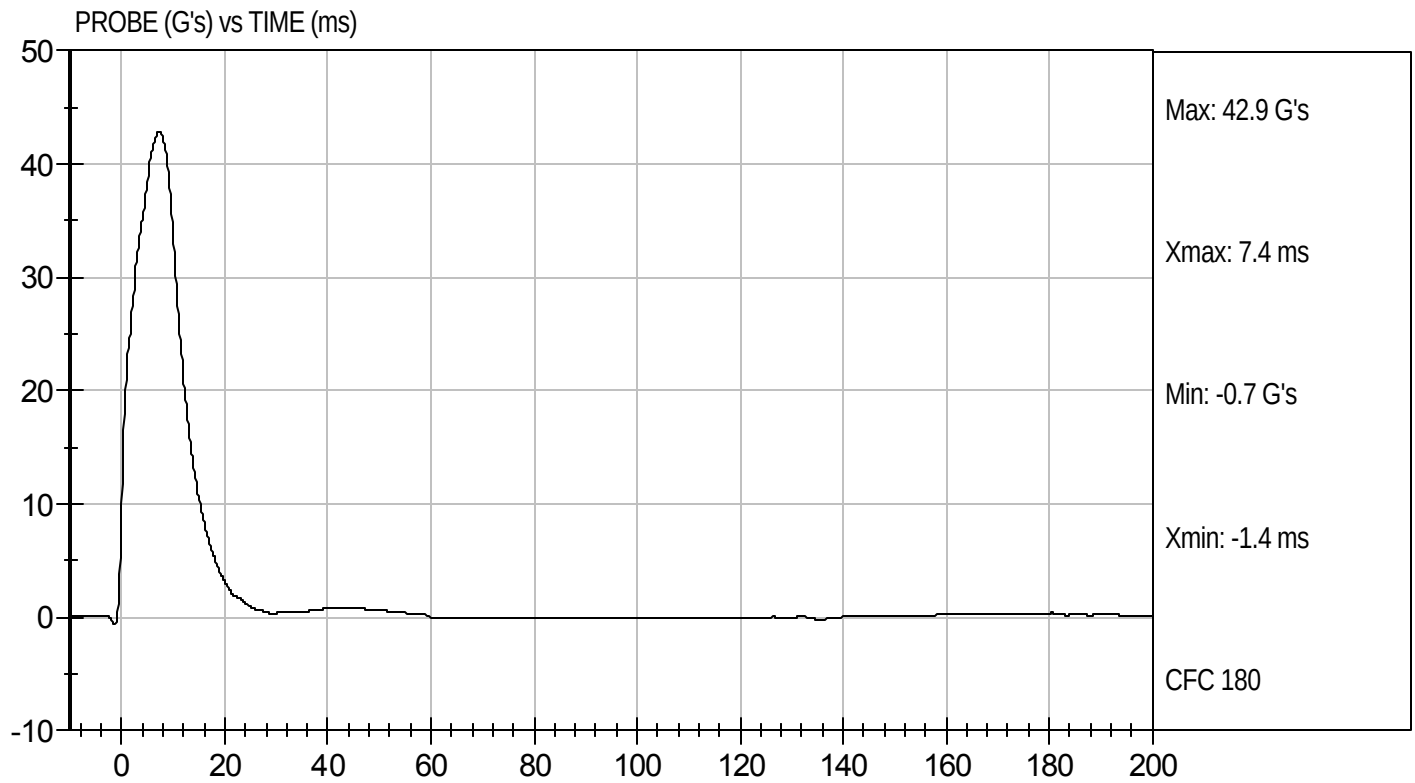
12/13/11
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D114167

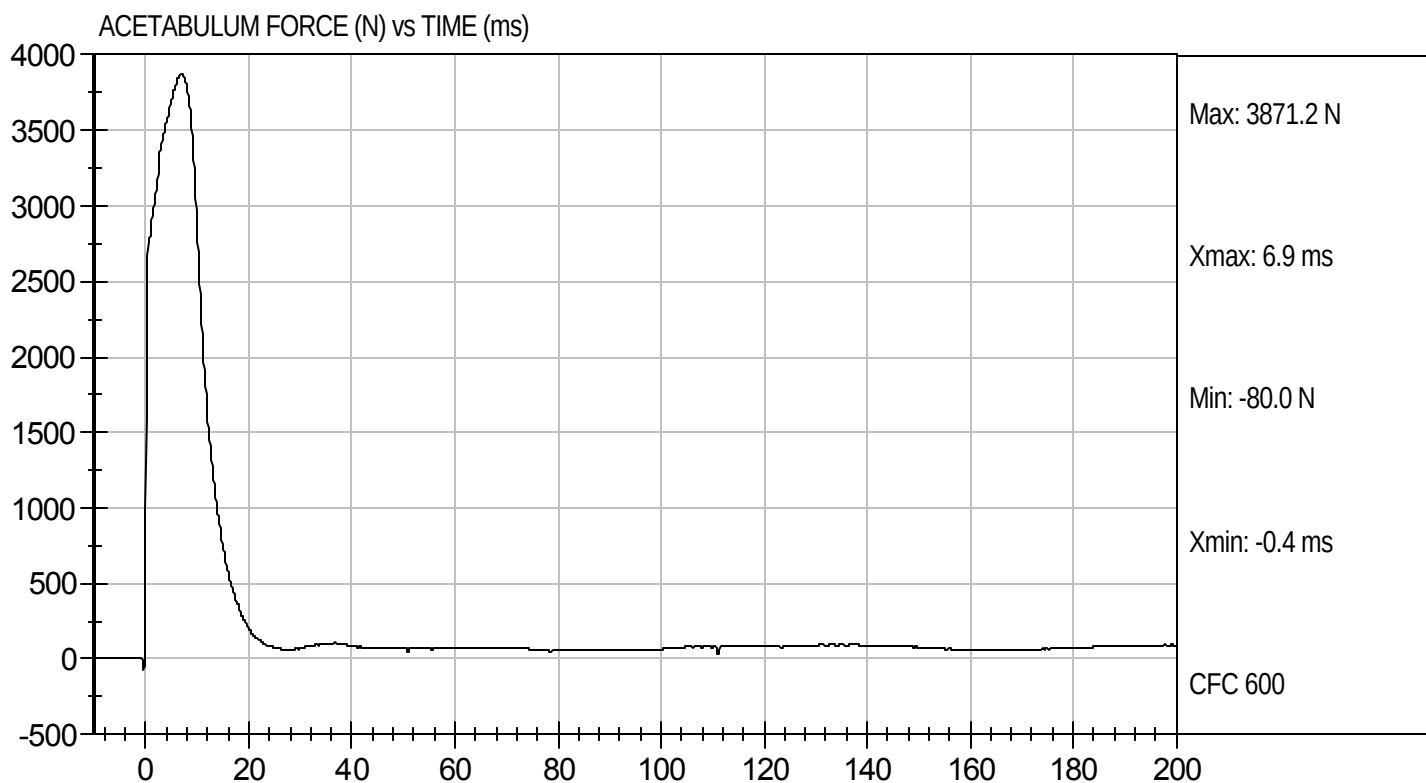
Test Date: 12/13/11
Velocity: 21.9 ft/s, 6.68 m/s





Test Desc: Pelvis Impact
Component ID: D114167

Test Date: 12/13/11
Velocity: 21.9 ft/s, 6.68 m/s



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

ATD Serial No: 296

Test I.D: D114168

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	36	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4487	Pass
Overall Test Results				Pass


Laboratory Technician

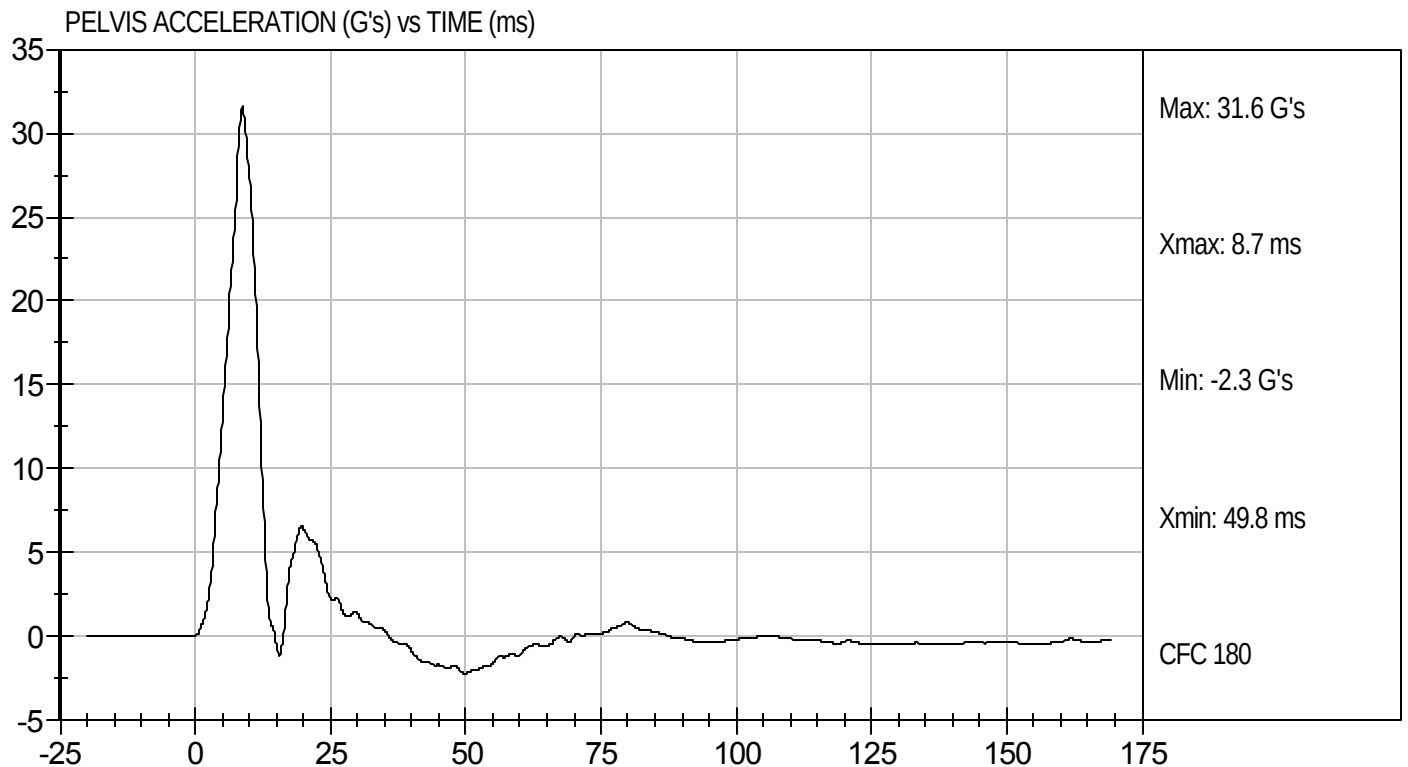
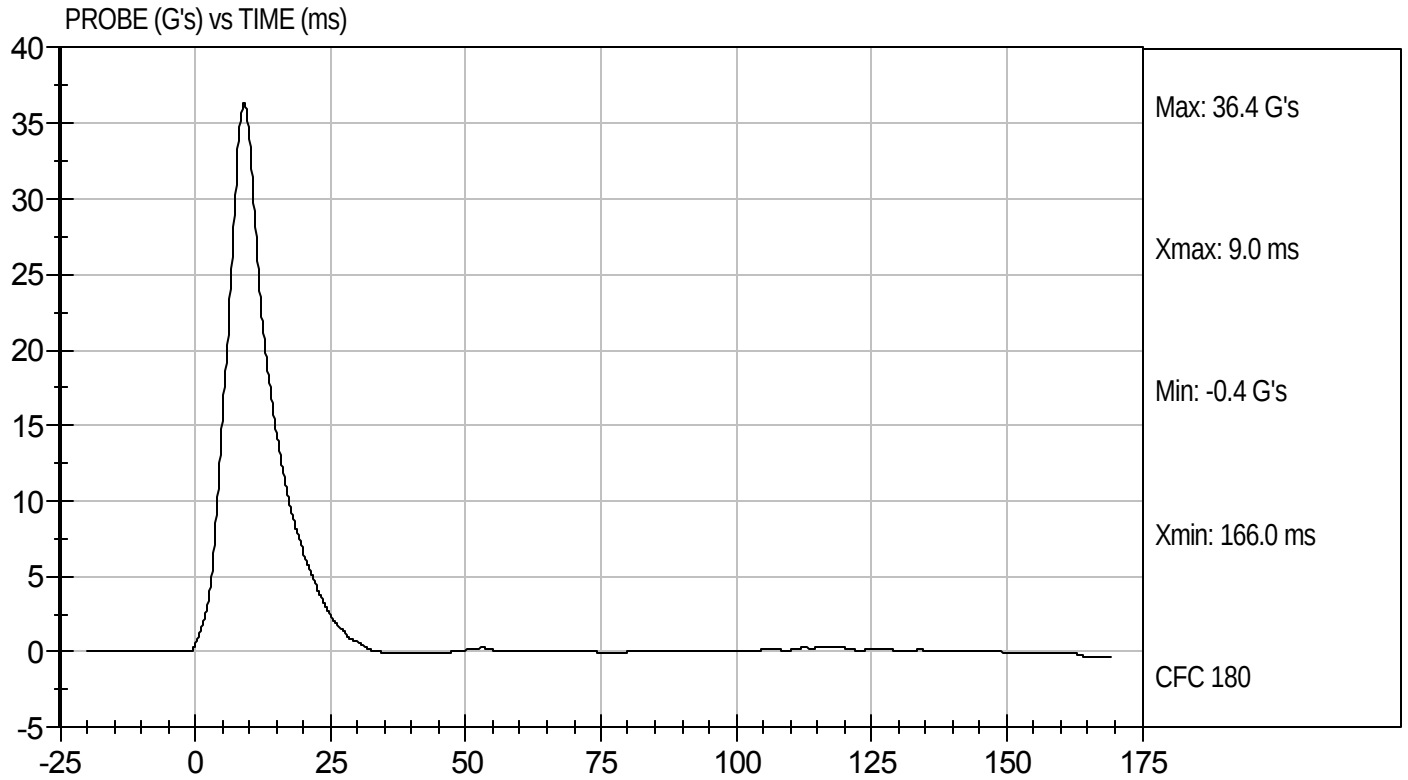
12/13/11
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D114168

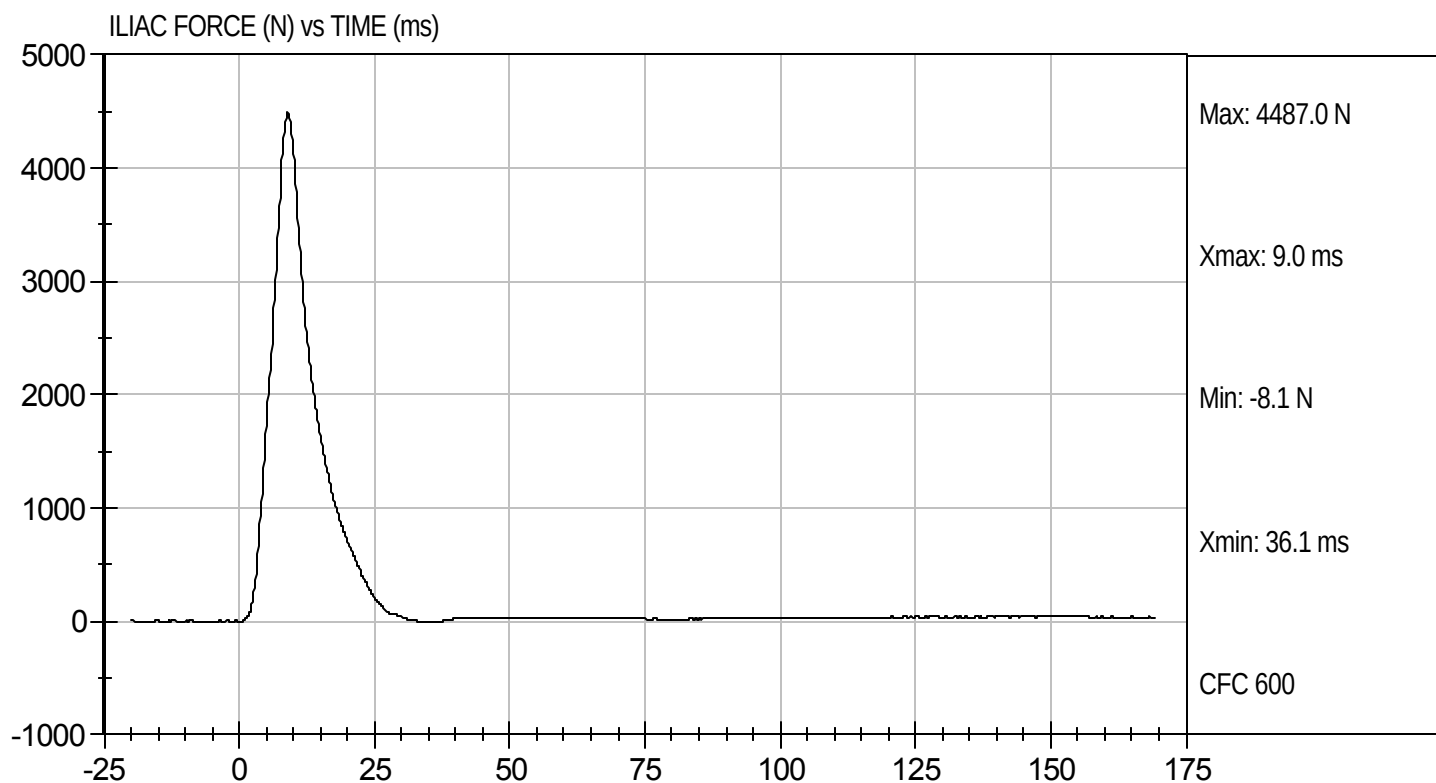
Test Date: 12/13/11
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D114168

Test Date: 12/13/11
Velocity: 14.36 ft/s, 4.38 m/s



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation

			SID-IIs S/N 296			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers			X	P67363	Endevco	10/13/11
			Y	P67364	Endevco	10/13/11
			Z	P67365	Endevco	10/13/11
Head Accelerometers			Xr	P64023	Endevco	10/13/11
			Yr	P66672	Endevco	10/13/11
			Zr	P66762	Endevco	10/13/11
Displacement Potentiometers	Thoracic Rib	Upper	Y	G1214	FTSS	10/18/11
		Middle	Y	G1163	FTSS	10/18/11
		Lower	Y	G1158	FTSS	10/18/11
	Abdominal Rib	Upper	Y	G1146	FTSS	10/18/11
		Lower	Y	G1126	FTSS	10/18/11
Lower Spine Accelerometers (T12)			X	P67286	Endevco	09/22/11
			Y	P67289	Endevco	09/22/11
			Z	P67291	Endevco	09/22/11
Acetabulum Load Cell			Y	ACG269	Denton	01/06/11
Iliac Wing Load Cell			Y	IWG282	Denton	01/06/11
Pelvis Plug (struck side)				46405	FTSS	09/22/11
Pelvis Plug (non-struck side)				12822	FTSS	07/17/07

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P50055	Endevco	11/04/11
Vehicle Center of Gravity	Y	P50056	Endevco	11/04/11
Vehicle Center of Gravity	Z	P50057	Endevco	11/04/11
Left Floor Sill	Y	P63226	Endevco	10/20/11
A-Pillar Sill	Y	P55687	Endevco	11/04/11
A-Pillar Low	Y	P53288	Endevco	09/12/11
A-Pillar Mid	Y	P59386	Endevco	11/04/11
B-Pillar Sill	Y	P37910	Endevco	07/07/11
B-Pillar Low	Y	P55684	Endevco	11/04/11
B-Pillar Mid	V	P55674	Endevco	07/07/11
Driver Seat	Y	P59352	Endevco	07/07/11
Engine Top	X	P52190	Endevco	08/22/11
Engine Top	Y	P52191	Endevco	08/22/11
Firewall	Y	P47083	Endevco	09/12/11
Right Roof	Y	P63206	Endevco	10/20/11
Right Floor Sill	Y	P47115	Endevco	09/12/11
Rear Floorpan	X	P63388	Endevco	09/13/11
Rear Floorpan	Y	P63387	Endevco	09/13/11

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