REPORT NUMBER: SPNCAP-MGA-2012-065

NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test

MITSUBISHI MOTORS CORPORATION, JAPAN
2012 Mitsubishi Lancer ES 4-Dr Sedan
NHTSA No.: MC5605

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: February 21, 2012

Final Report Date: April 11, 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: 
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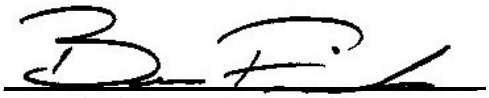
Approved by: 
Ben Fischer, Project Engineer

Approval Date: April 11, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2012 Mitsubishi Lancer ES 4-Dr Sedan, NHTSA No.: MC5605		*5. Report Date* April 11, 2012 *6. Performing Organization Code* MGA
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer		*8. Performing Organization Report No.* SPNCAP-MGA-2012-065
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 February 21 to April 11, 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 Mitsubishi Lancer ES 4-Dr Sedan 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 February 21, 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 21.0°C. The test vehicle post-test maximum crush was 383 mm at level 3. The test vehicle's performance was as follows:

	Driver ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	297
Resultant Lower Spine Acceleration	Gs	82	41
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3507
Maximum Thoracic Rib Deflection	mm	38*	17
Maximum Abdomen Rib Deflection	mm	45*	21

* 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.

17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs	*18. Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE, Room E12-100 Washington, DC 20590 Email: tis@nhtsa.dot.gov FAX: 202-493-2833

19. Security Classification of Report Unclassified	*20. Security Classification of Page* Unclassified	*21. No. of Pages* 133	22. Price

TABLE OF CONTENTS

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 Mitsubishi Lancer ES 4-Dr Sedan. 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 Mitsubishi Lancer ES 4-Dr Sedan. 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 February 21, 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:

	Driver ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	297
Resultant Lower Spine Acceleration	Gs	82	41
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3507
Maximum Thoracic Rib Deflection	mm	38*	17
Maximum Abdomen Rib Deflection	mm	45*	21

*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/Abdomen/Pelvis 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 70ms
Vehicle CG Y after 70ms
Vehicle CG Z after 70ms
Left Lower B-Post Y after 61ms
Left Mid B-Post Y after 74ms

Left Mid A-Post Y is questionable from 14-22ms and 63-70ms
Left Mid B-Post Y is questionable from 11-22ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC5605	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Mitsubishi	Automatic Door Locks (ADL)	No
Model	Lancer	Power Window Auto-Reverse	No
Body Style	Sedan	Other Optional Feature	N/A
VIN	JA32U2FU1CU010020	Driver Front Airbag	Yes
Body Color	Apex Silver	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	146 / 91	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.0	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	Yes
Transmission Speeds	Continuous	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?			N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	Mitsubishi Motors Corporation, Japan	GVWR (kg)	1800
Date of Manufacture	NOV 2011	GAWR Front (kg)	1010
Vehicle Type	Passenger Car	GAWR Rear (kg)	910

VEHICLE SEATING AND WEIGHT CAPACITY DATA

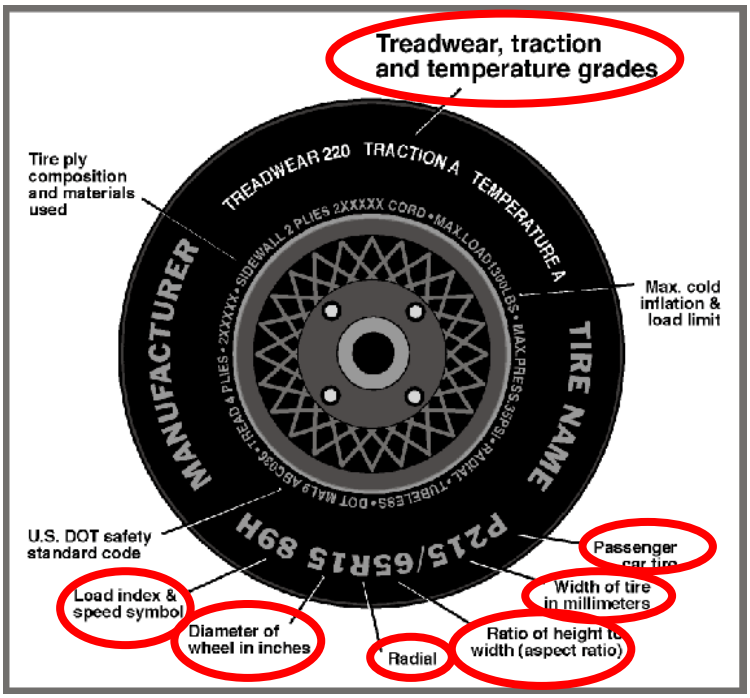
Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				375	(A)
DSC x 68.04 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW)				35	(A-B)

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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	250	250
Recommended Tire Size	P205/60R16	P205/60R16

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	P205/60R16	P205/60R16
Tire Manufacturer	Yokohama	Yokohama
Tire Name	AVID S34	AVID S34
Tire Type	Passenger	Passenger
Tire Width	205	205
Aspect Ratio	60	60
Radial	Yes	Yes
Wheel Diameter	16	16
Load Index/Speed Symbol	91H	91H
Treadwear	320	320
Traction Grade	B	B
Temperature Grade	A	A
Tire Material	Rubber	Rubber

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

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	250	250	250	250
Tire Placard	kpa	250	250	250	250
Owner's Manual	kpa				
As Tested	kpa	250	250	250	250

TEST VEHICLE AXLE WEIGHTS

		As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
	Units	Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	413.7	269.0		438.6	301.6		429.6	308.4	
Right	kg	401.9	259.0		397.9	287.6		405.5	286.7	
Ratio	%	60.7	39.3		58.7	41.3		58.4	41.6	
Totals	kg	815.6	528.0	1343.6	836.5	589.2	1425.7	835.1	595.1	1430.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1343.6	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	35	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1430.8	(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
Spare tire, jack & tools, left and right taillight, right side mirror, trunk lid lights. Right front & rear door trims, windows, window motors, speakers, and headrests.	42.2

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	deg	-0.7	-0.4	-0.3	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	-0.8	-0.6	-0.3	Yes
Front Bumper Angle (left-to-right)**	deg	-0.5	-0.5	-0.8	Yes
Rear Bumper Angle (left-to-right)**	deg	-0.3	-0.3	-0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1035	1089	1096	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	12	29	24	

*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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

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	2.6	0.0	1.3
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-most	Mid-Fore/Aft	Forward-Most
Driver Seat	1.3	Fixed	Max	Fixed	Fixed	Fixed
	1.3	Fixed	Mid	Fixed	Fixed	Fixed
	1.3	Fixed	Min	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed

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

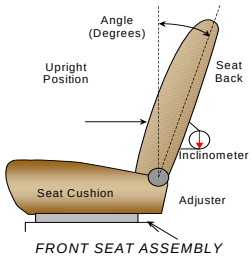
Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	220	22 (1st as 0)	0	0 (1st as 0)
Front Passenger Seat	220	22 (1st as 0)	0	0 (1st 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	47.2		-7.2	0 (1st as 0)
Front Passenger Seat	47.7		-6.8	0 (1st 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 (1st 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	4	Lowest

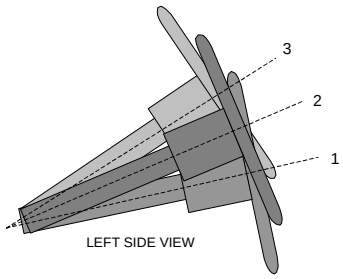
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

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.

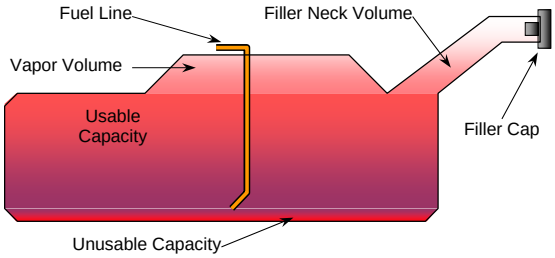
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	71.2	
Geometric Center, Position 2	68.6	
Uppermost, Position 3	66.0	
Telescoping Steering Wheel Travel		
Test Position	68.6	



STEERING COLUMN ASSEMBLY

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 electric fuel pump operates while the engine is running. The fuel pipe is on the left side.



VEHICLE FUEL TANK ASSEMBLY

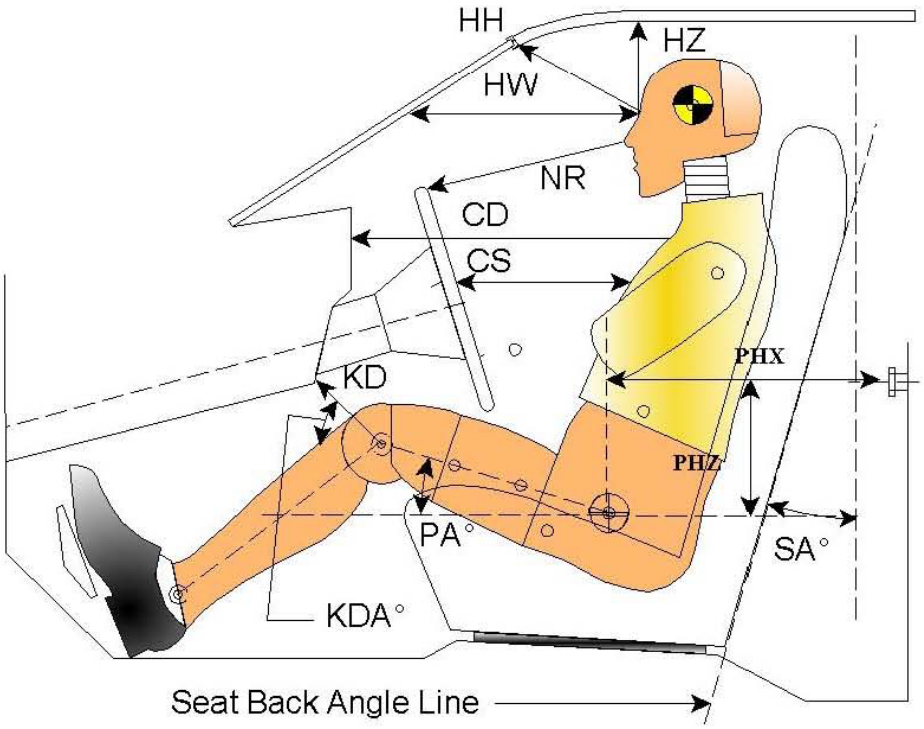
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	58.7
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	59.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	54.6
Actual Amount of Solvent Used	54.6
1/3 of Usable Capacity	19.6

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

.DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

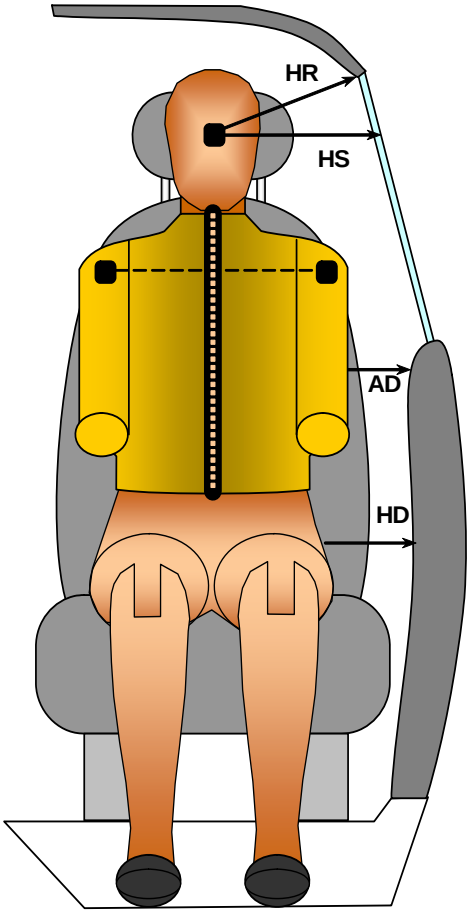


LEFT SIDE VIEW

Code	Measurement Description	Driver S/N 306	
		Length (mm)	Angle (°)
HH	Head to Header	236	
HW	Head to Windshield	638	
HZ	Head to Roof Liner	185	
NR	Nose to Rim	260	
CD	Chest to Dashboard	468	
CS	Chest to Steering Wheel	208	
KDL/KDAL°	Left Knee to Dash	143	33.5
KDR/KDAR°	Right Knee to Dash	147	31.8
PAX°	Pelvic Tilt Angle (X-Axis)		18.2
PAY°	Pelvic Tilt Angle (Y-Axis)		-0.4
PHX	Hip Point to Striker (X-Axis)	306	
PHZ	Hip Point to Striker (Z-Axis)	168	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

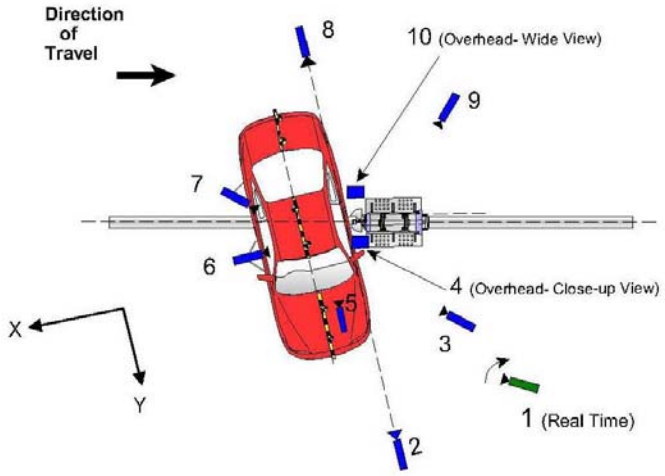


FRONT VIEW OF DUMMY

Code	Measurement Description	Driver S/N 306 Length (mm)
HR	Head to Side Header	230
HS	Head to Side Window	367
AD	Arm to Door	164
HD	Hip Point to Door	149

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



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	-100	5690	-1820	24	1000
3	Impact Side 45° Forward	-2580	4980	-1910	20	1000
4	Overhead Closeup	210	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	-90	-5870	-1820	24	1000
9	Impact Side 45° Rearward	-4180	-4310	-1930	20	1000
10	Overhead Wide View	460	0	-4610	14	1000
11	Real-Time Dummy Front View					*

* All measurements accurate to ± 6 mm
Note: Vehicle was at a 15° angle to the rigid pole.

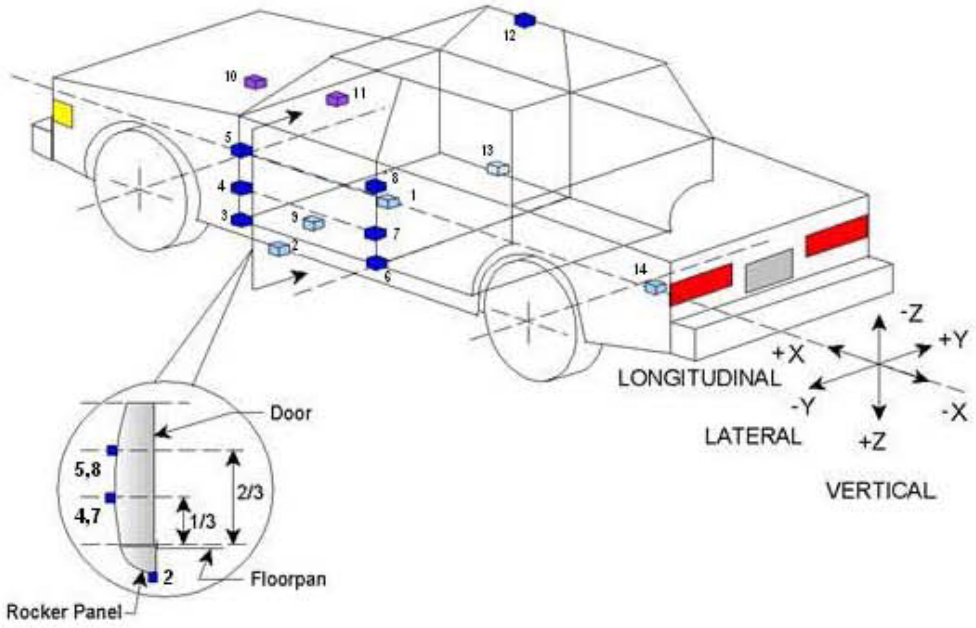
Explain why camera(s) did not operate as intended: Camera was damaged during impact.

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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2553	-145	-222
2	Left Floor Sill	2739	-692	-200
3	A Pillar Sill	3121	-694	-200
4	A Pillar Low	3029	-665	-452
5	A Pillar Mid	3052	-750	-776
6	B Pillar Sill	1970	-694	-215
7	B Pillar Low	1976	-705	-595
8	B Pillar Mid	1964	-698	-761
9	Driver Seat Track	2395	-546	-355
10	Engine Top	3785	35	-813
11	Firewall	3556	0	-892
12	Right Roof	1910	534	-1486
13	Right Floor Sill	2785	692	-210
14	Rear Floorpan	251	0	-435

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 Mitsubishi Lancer ES 4-Dr Sedan	NHTSA No.	MC5605
Test Program:	NCAP Side Pole Impact Test	Test Date:	2/21/2012

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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

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	Curtain Airbag, Headrest
Left Shoulder	Side Airbag, Seatback
Upper Torso	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag
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	No *
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

	Struck Side		Non-Struck Side	
Description	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	* The trunk opened upon impact

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

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

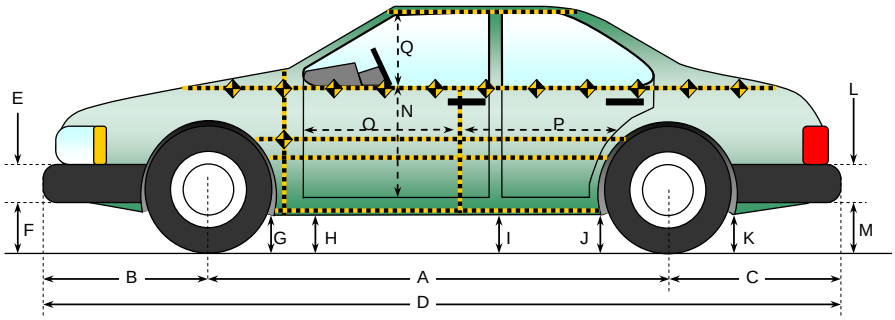
Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Abdomen/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other				

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		1145
Actual Impact Point (Aft of Front Axle)	mm		1145
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	0
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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



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

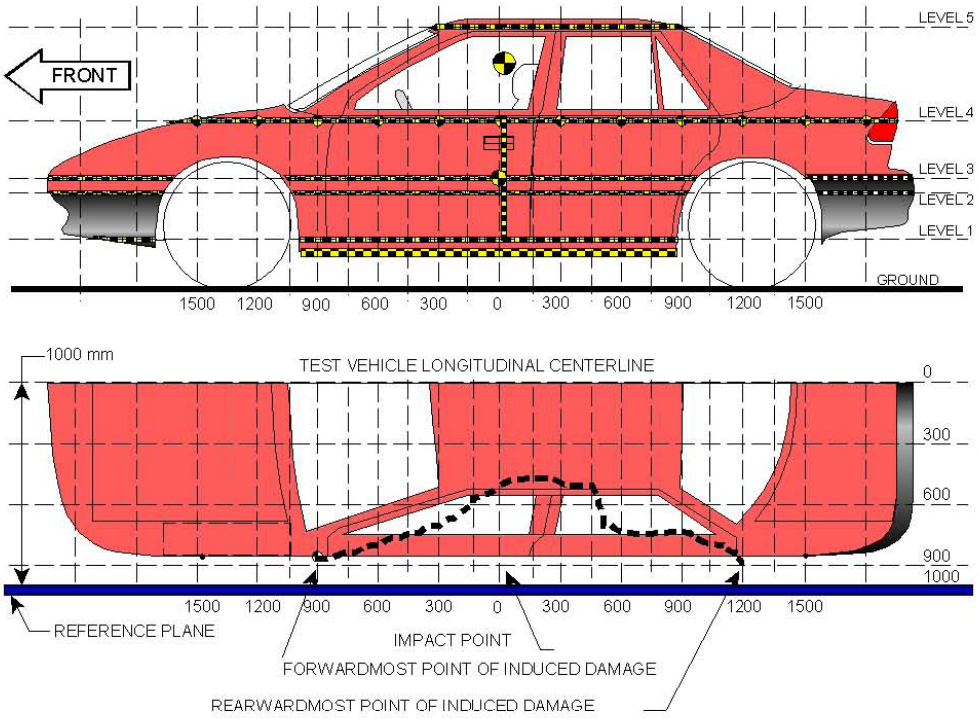
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2634	2578	56
B	Front Axle to FSOV	958	931	27
C	Rear Axle to RSOV	980	983	-3
D	Total Vehicle Length at Centerline	4572	4492	80
E	Front Bumper Thickness	95	95	0
F	Front Bumper Bottom to Ground	265	304	-39
G	Sill Height at Front Wheel Well	185	167	18
H	Sill Height at Front Door Leading Edge	182	164	18
I	Sill Height at B Pillar	190	169	21
J1	Sill Height at Rear Wheel Well	196	233	-37
J2	Pinch Weld Height at Rear Wheel Well	196	211	-15
K	Sill Height Aft of Rear Wheel Well	250	273	-23
L	Rear Bumper Thickness	120	120	0
M	Rear Bumper Bottom to Ground	335	324	11
N	Sill Height to Bottom of Front Window Sill	724	719	5
O	Front Door Leading Edge to Impact CL	665	664	1
P	Rear Door Trailing Edge to Impact CL	1206	1223	-17
Q	Front Window Opening	425	393	32
R	Right Side Length	3746	3760	-14
S	Left Side Length	3746	3615	131
T	Vehicle Width at B-Pillars	1742	1611	131

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



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	305
2	Occupant Hip Point	557
3	Mid Door	634
4	Window Sill	931
5	Window Top	1366

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

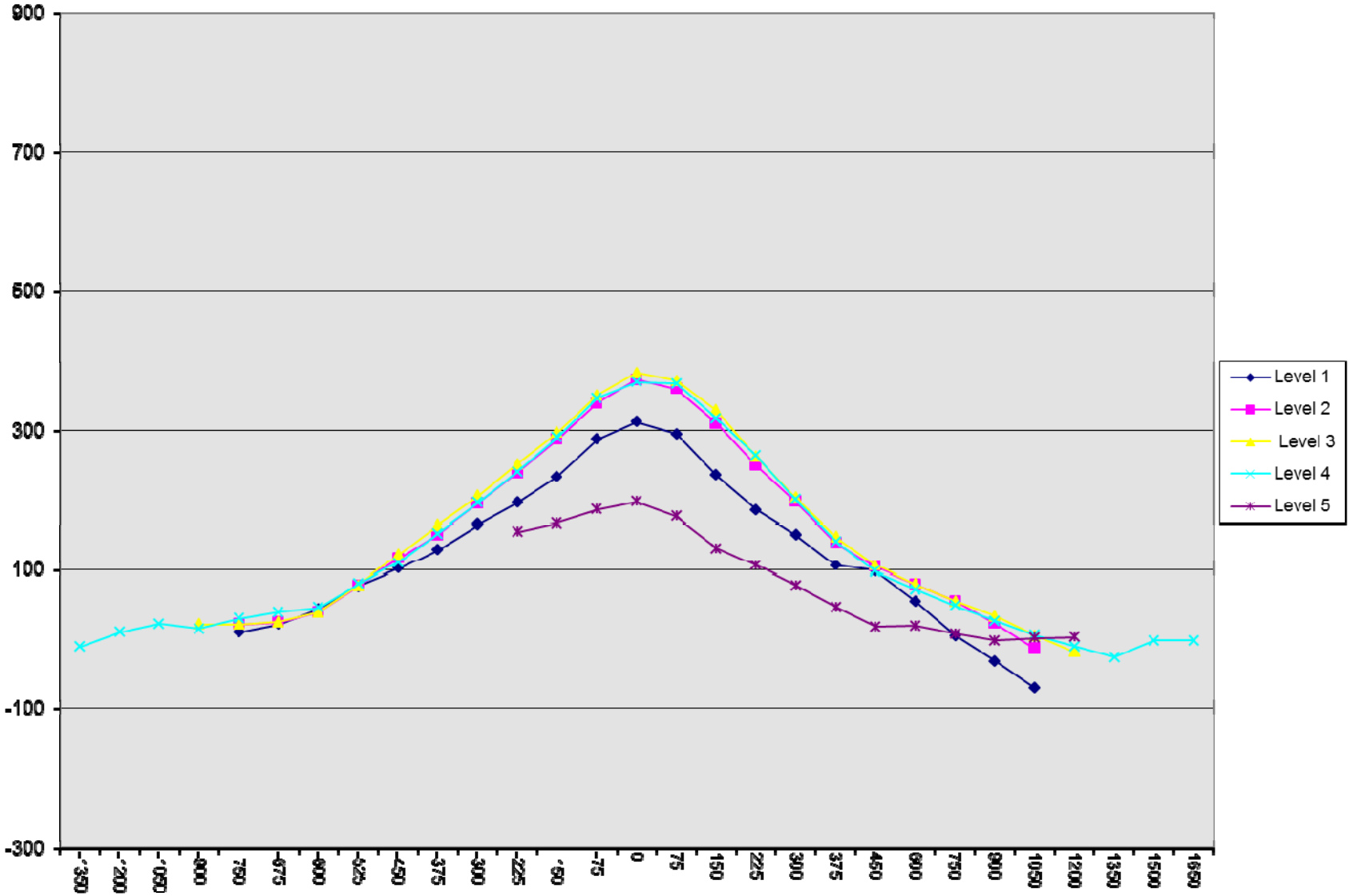
Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1350				355					346					-9	
-1200				334					346					12	
-1050				312					336					24	
-900			215	297				238	314				23	17	
-750	251	232	231	285		263	255	254	317		12	23	23	32	
-675	270	237	233	278		293	263	260	319		23	26	27	41	
-600	280	238	233	273		325	279	274	320		45	41	41	47	
-525	283	238	232	269		360	316	311	350		77	78	79	81	
-450	285	238	231	265		387	355	354	376		102	117	123	111	
-375	285	238	231	262		415	390	395	415		130	152	164	153	
-300	285	238	231	259		450	433	437	455		165	195	206	196	
-225	286	238	230	257	490	482	477	481	497	645	196	239	251	240	155
-150	287	238	230	255	483	520	525	527	545	650	233	287	297	290	167
-75	289	238	230	253	479	576	578	581	600	665	287	340	351	347	186
0	289	238	230	252	476	601	611	613	622	673	312	373	383	370	197
75	288	238	230	250	476	583	598	602	618	652	295	360	372	368	176
150	288	239	230	249	478	523	549	559	566	610	235	310	329	317	132
225	292	239	230	247	477	477	488	492	510	584	185	249	262	263	107
300	289	239	230	247	477	440	436	433	447	556	151	197	203	200	79
375	290	240	230	245	477	397	380	378	387	525	107	140	148	142	48
450	289	240	230	245	479	388	345	337	343	499	99	105	107	98	20
600	290	241	232	244	484	346	321	313	317	505	56	80	81	73	21
750	293	244	234	244	485	300	300	290	294	495	7	56	56	50	10
900	280	246	236	244	486	251	271	271	272	486	-29	25	35	28	0
1050	243	238	237	246	489	175	226	244	254	493	-68	-12	7	8	4
1200			218	248	503			202	240	508			-16	-8	5
1350				251					227					-24	
1500				255					255					0	
1650				261					261					0	

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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



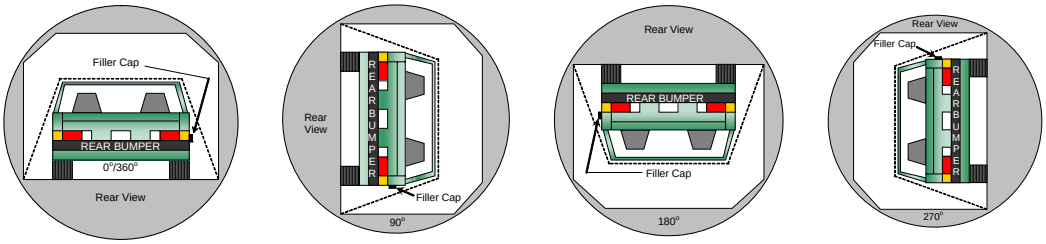
DATA SHEET NO. 11
FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2012 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012

Test Time: 9:58 am Temperature: 21.0° 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



0°/360° 90° 180° 270°

ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	113	300	413
90° to 180°	111	300	411
180° to 270°	106	300	406
270° to 360°	115	300	415

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

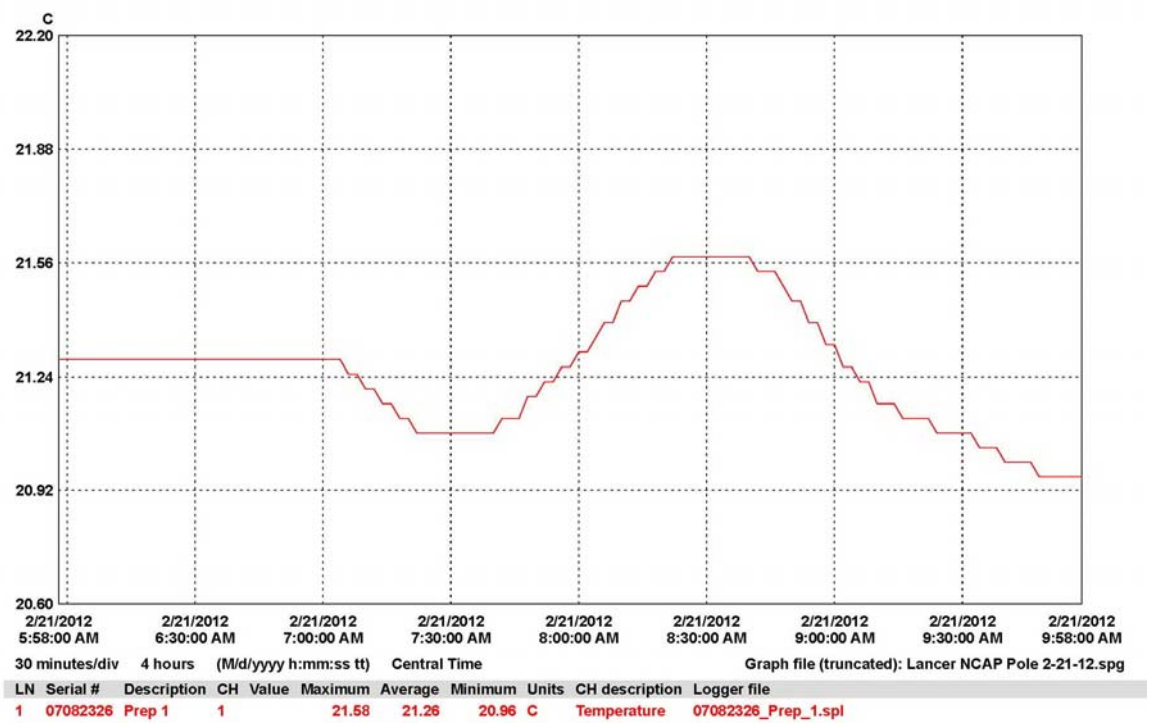
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

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 Mitsubishi Lancer ES 4-Dr Sedan NHTSA No. MC5605
Test Program: NCAP Side Pole Impact Test Test Date: 2/21/2012



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

As Delivered Right Front ¾ View of Test Vehicle

As Delivered Left Rear ¾ View of Test Vehicle

Pre-Test Frontal View of Test Vehicle

Post-Test Frontal View of Test Vehicle

Pre-Test Left Front ¾ View of Test Vehicle

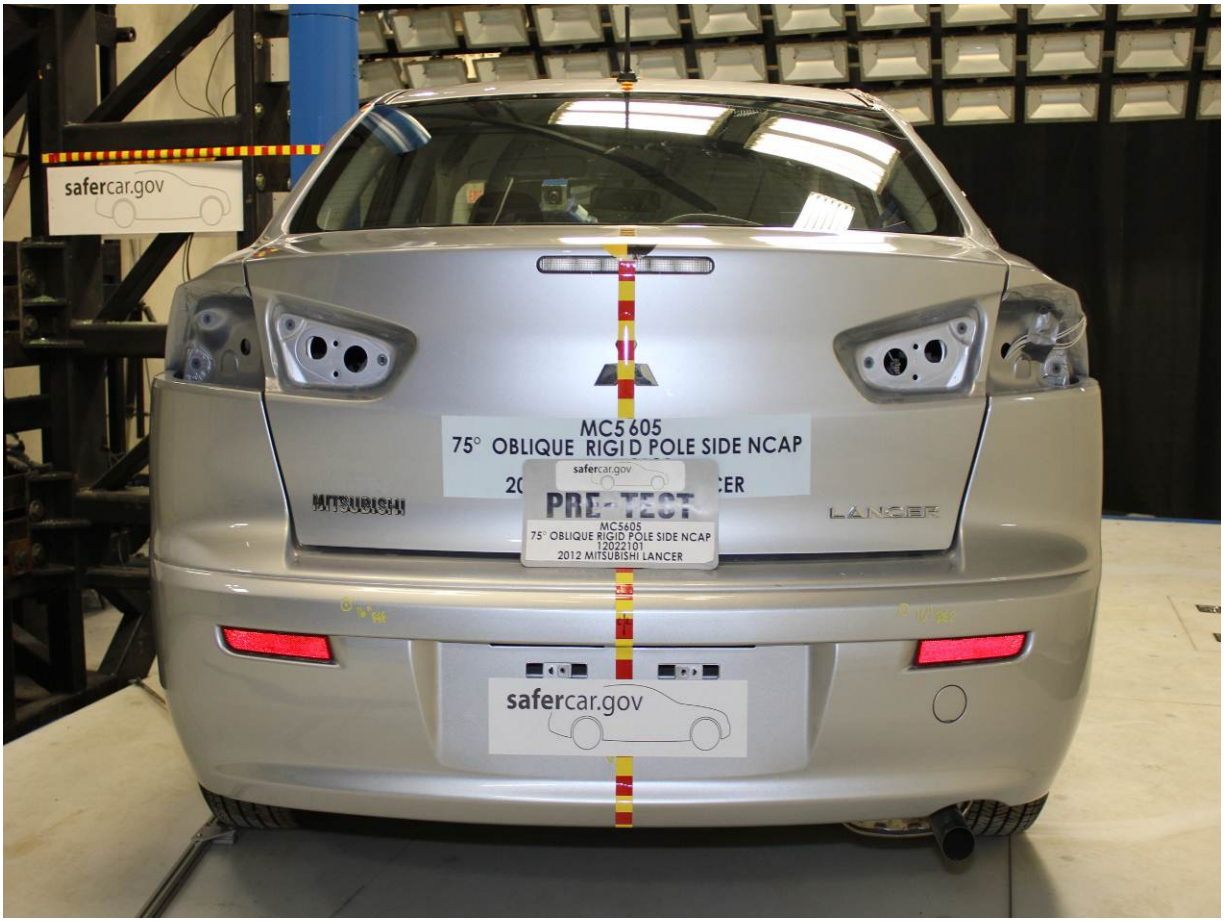
Post-Test Left Front ¾ View of Test Vehicle

Pre-Test Left Side View of Test Vehicle

Post-Test Left Side View of Test Vehicle

Pre-Test Left Rear ¾ View of Test Vehicle

Post-Test Left Rear ¾ View of Test Vehicle



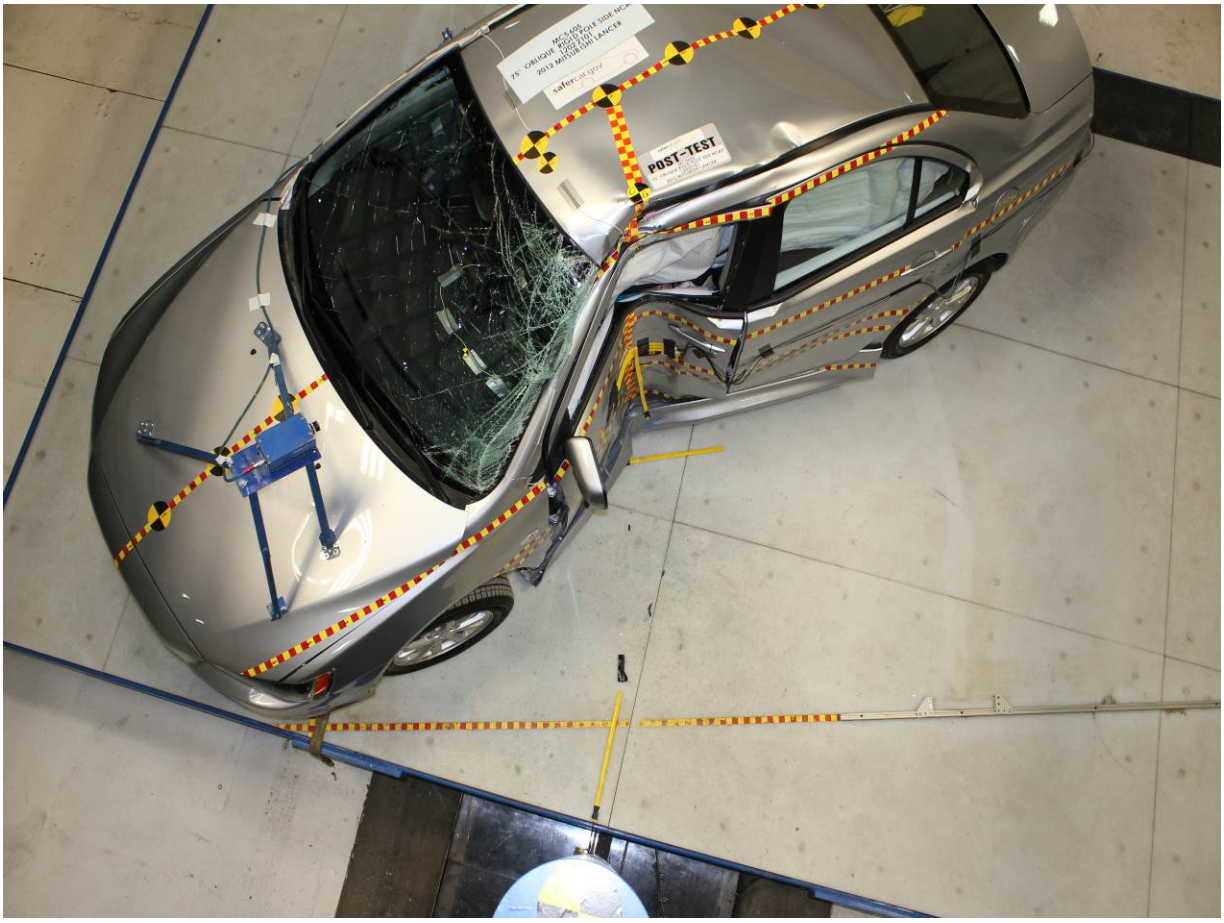
Pre-Test Rear View of Test Vehicle

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

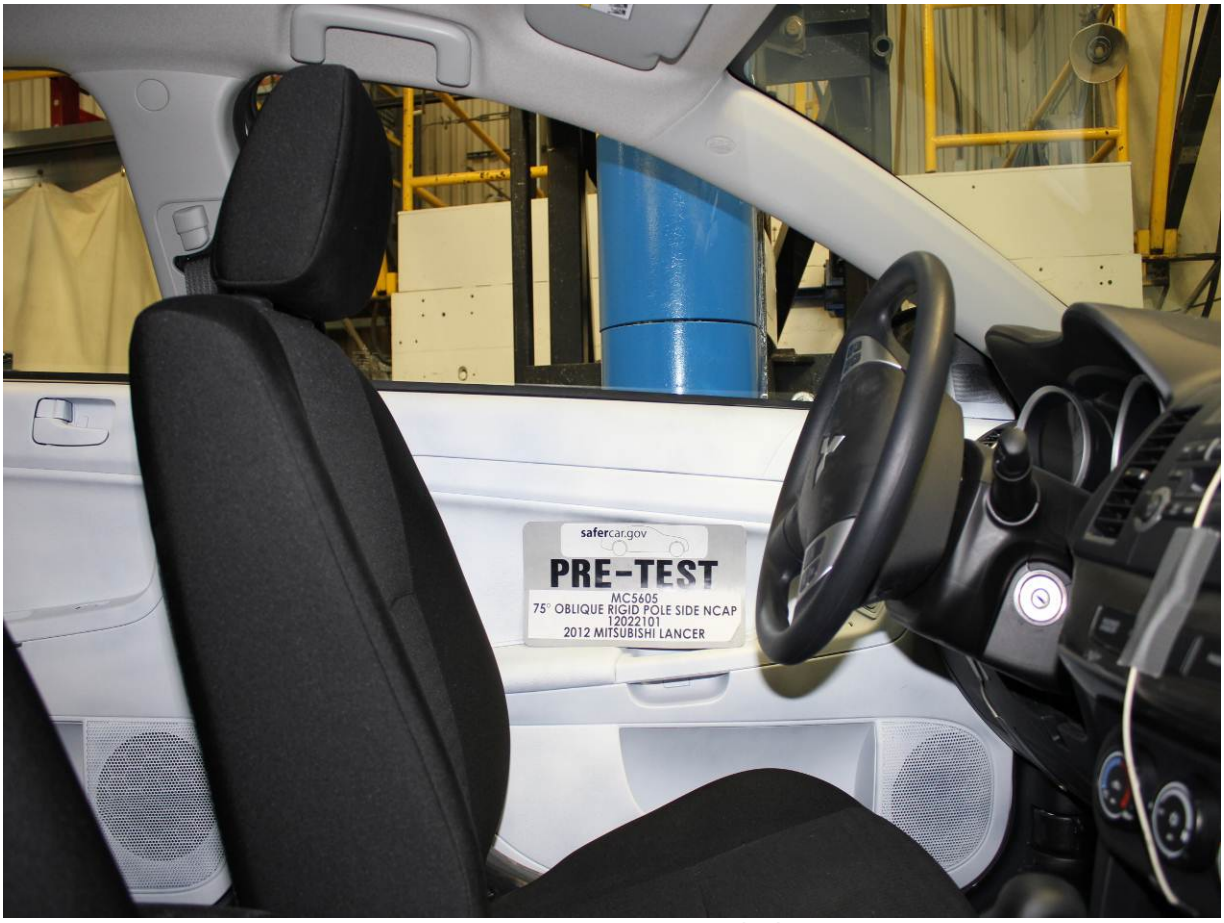
Pre-Test Close-Up View of Driver Seat Back or Head Restraint

Pre-Test Dummy and Door Clearance View

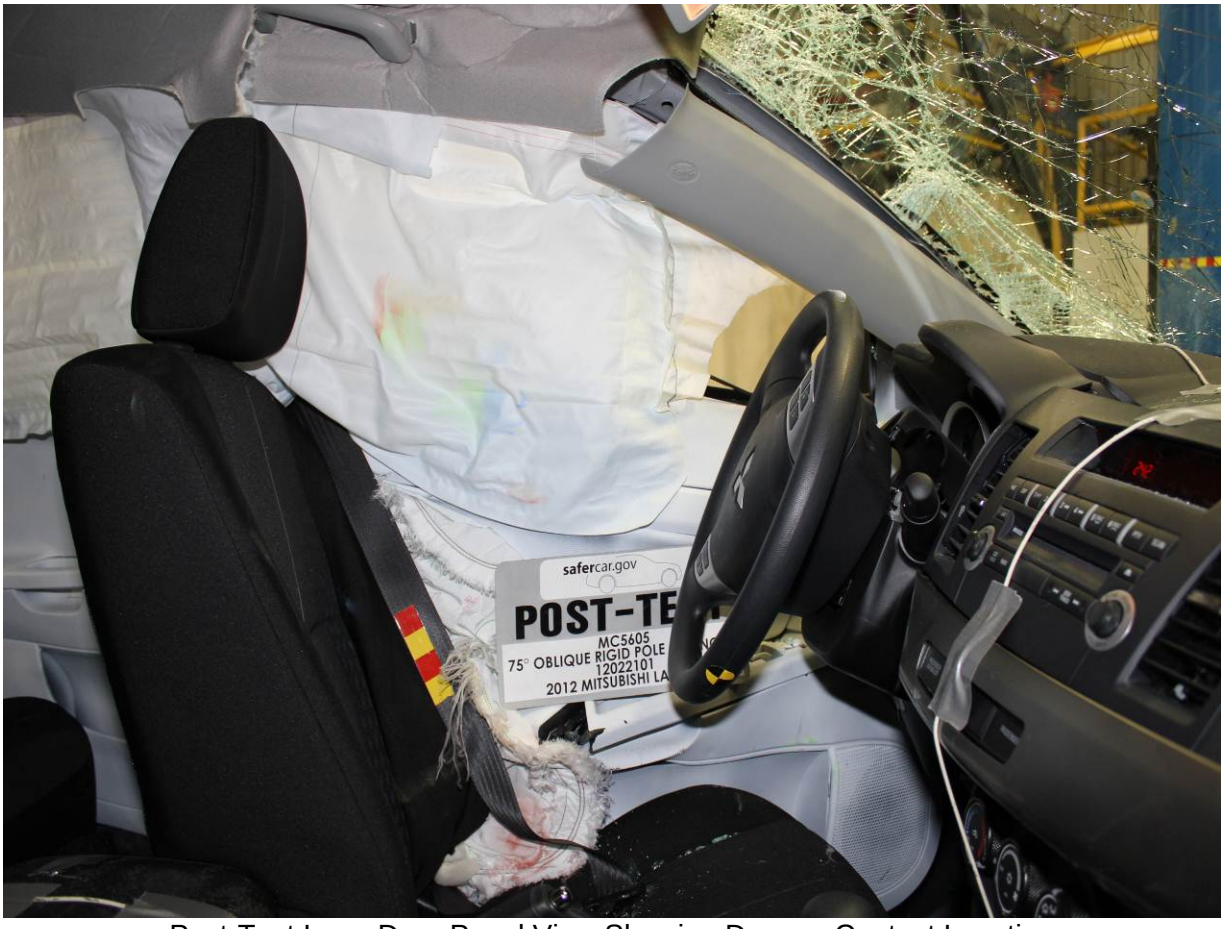
Post-Test Dummy and Door Clearance View

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 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

PHOTOGRAPH NOT APPLICABLE

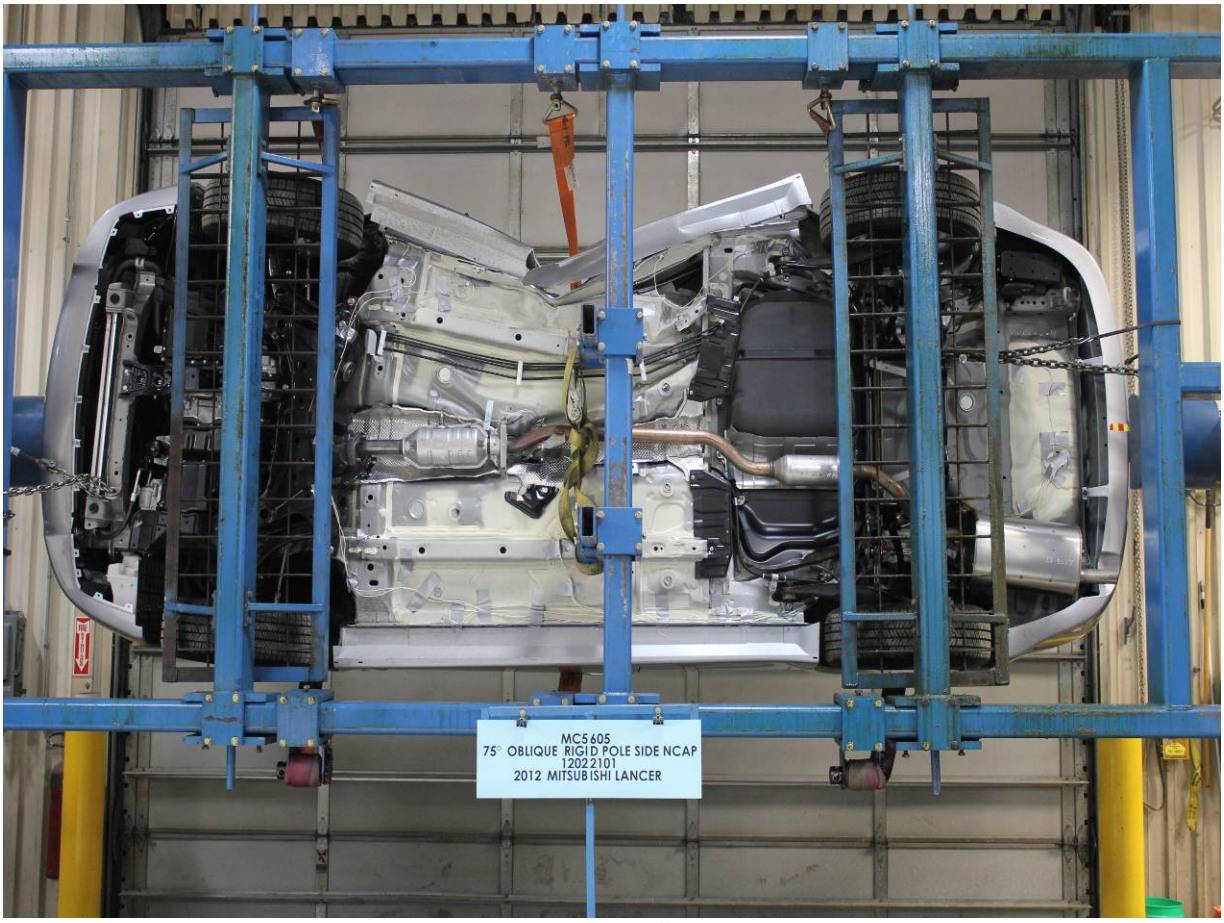
Pre-Test Ballast View

Post-Test Primary and Redundant Speed Trap Read-Out

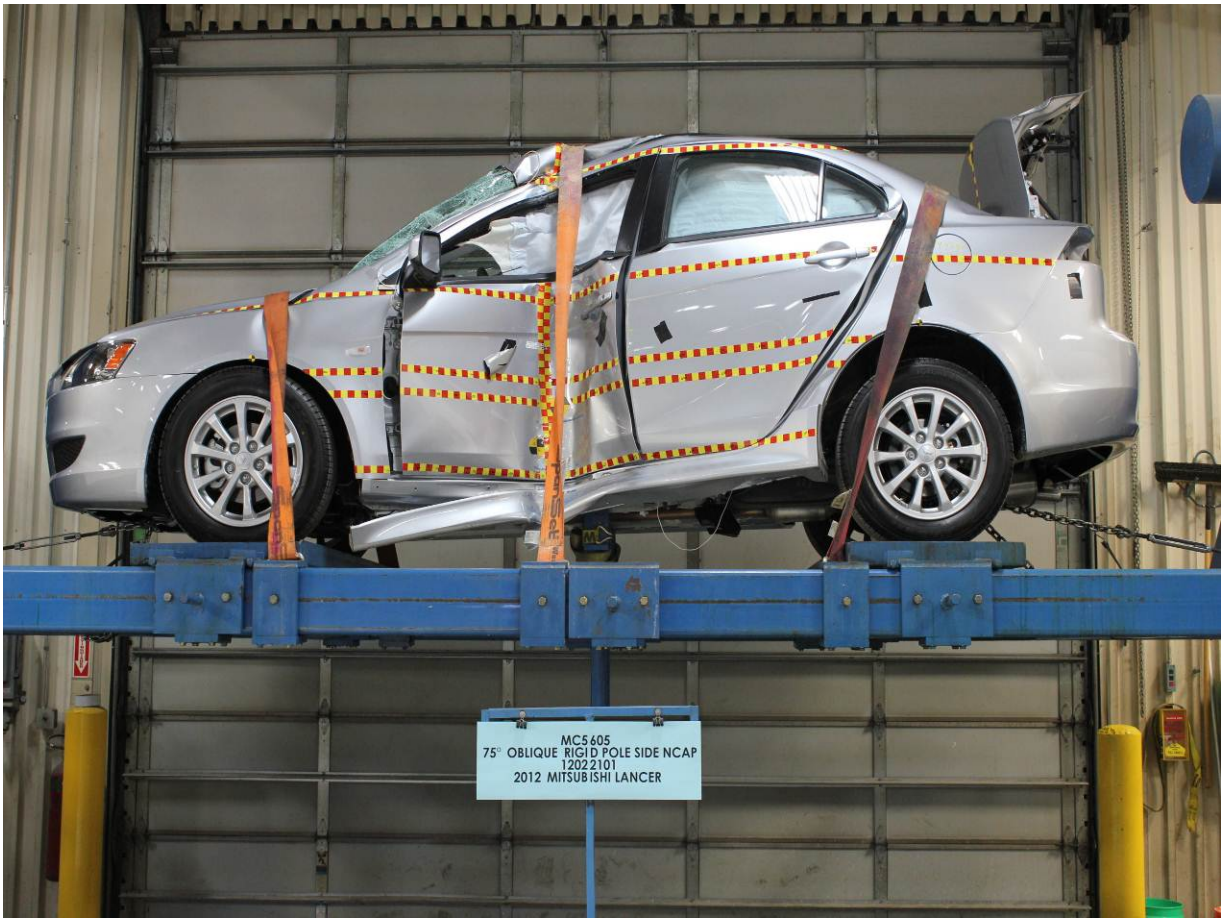
FMVSS No. 301 Static Rollover 0 Degrees

FMVSS No. 301 Static Rollover 90 Degrees

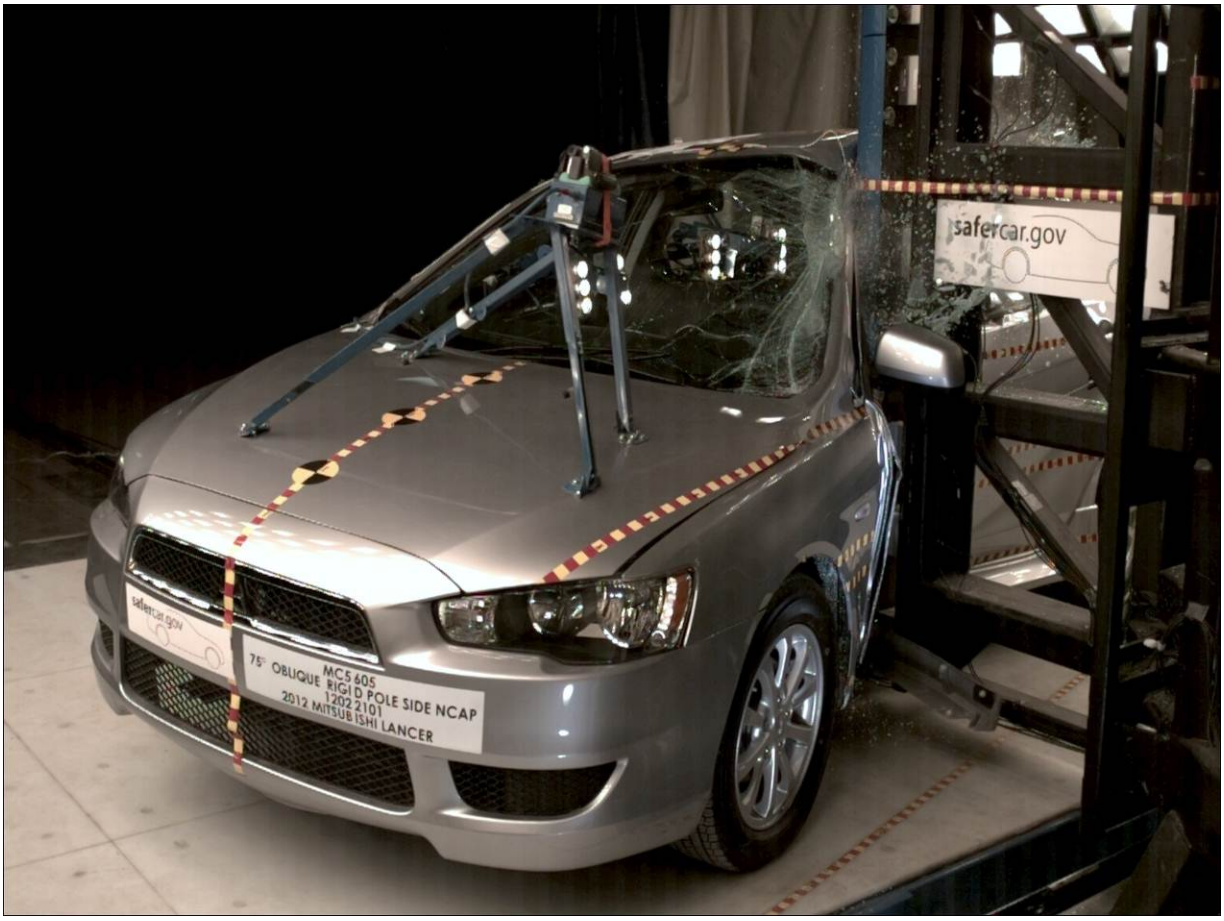
FMVSS No. 301 Static Rollover 180 Degrees



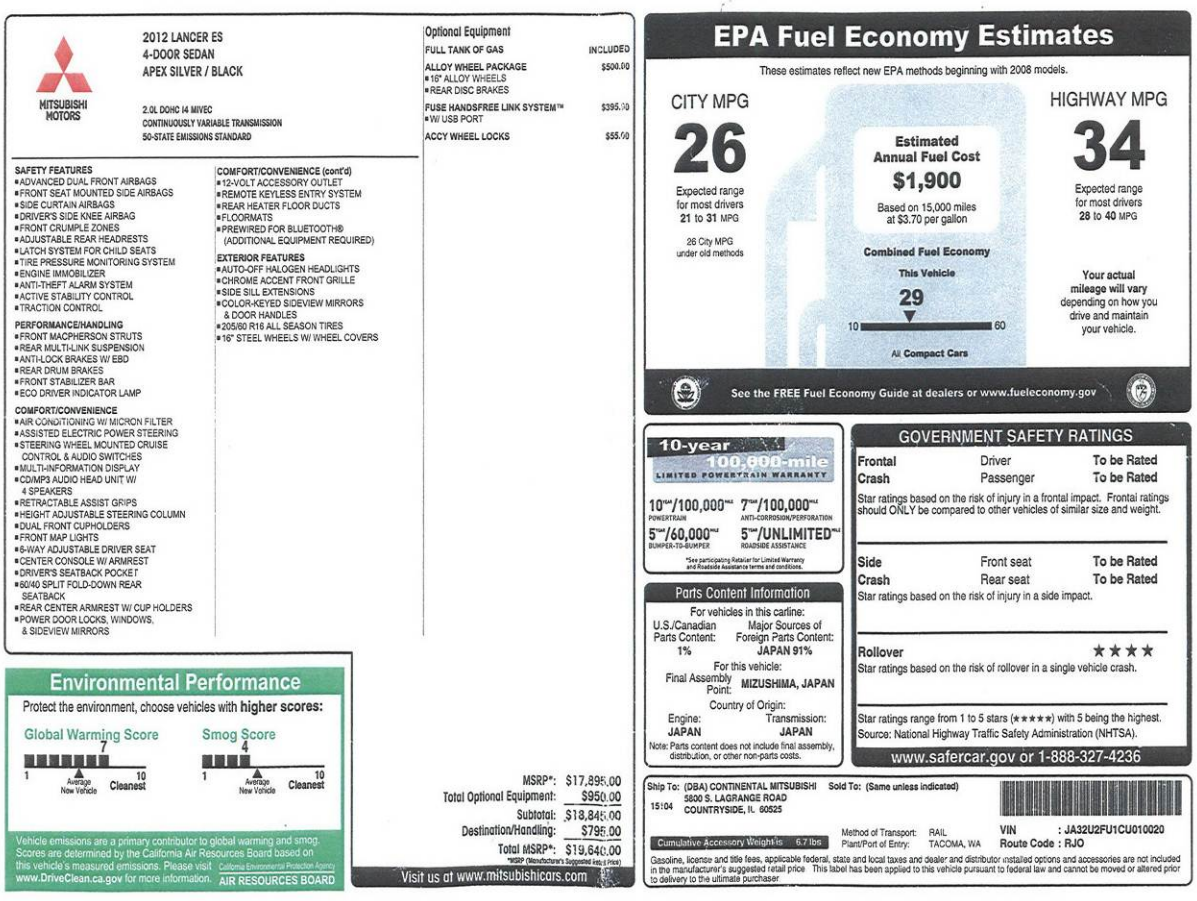
FMVSS No. 301 Static Rollover 270 Degrees



FMVSS No. 301 Static Rollover 360 Degrees



Impact Event

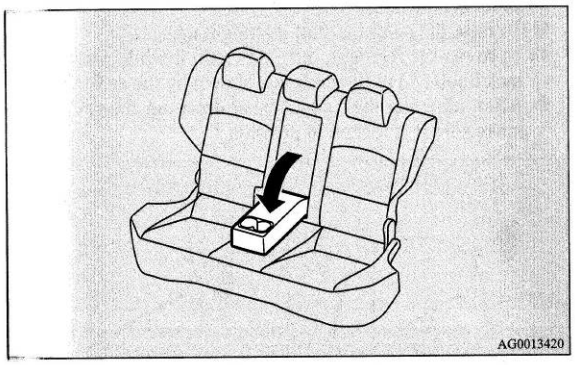


Monroney Label

Arm rest (if so equipped)

N00403000294

Tilt the arm rest down for use as shown.
The arm rest includes a cup holder. (Refer to "Cup holder" on page 3-302.)



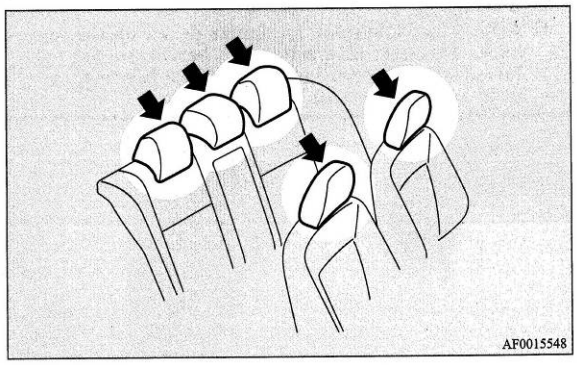
Head restraints

N00404300539

Except for RECARO seat

N00409400030

Padded head restraints for the seats can reduce the risk of a whiplash injury if your vehicle is hit from the rear.
The head restraints are equipped in the illustrated position.
To maximize the effectiveness of your head restraint, adjust the head restraint to the proper position. For the driver and front passenger, adjust the seatbacks to the upright position before adjusting the head restraints. Sit back against the seatback with your head close to the head restraint.



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

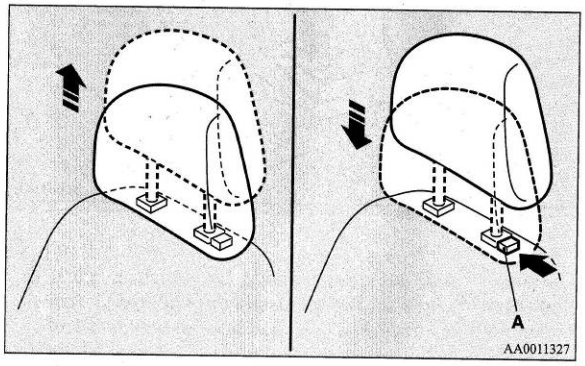
⚠ WARNING

- **In order to minimize the risk of a neck injury due to a rear impact, the head restraint must be adjusted to the proper position before vehicle operation. For the driver and front passenger, the seatbacks must be adjusted to the upright position before adjusting the head restraints. The driver should never adjust the seat while the vehicle is in motion.**
- **Driving without the head restraints in place can cause you and your passengers serious injury or death in an accident. To reduce the risk of injury in an accident, always make sure the head restraints are installed and properly positioned when the seat is occupied.**
- **Never place a cushion or similar device on the seatback. This can adversely affect head restraint performance by increasing the distance between your head and the restraint.**

Adjustment of the head restraint height

To reduce the risk of injury in an accident, adjust the head restraint height so that the center of the restraint is at your eye level when seated. Any person too tall for the restraint to reach their eye level when seated should raise the restraint to the highest locked position.

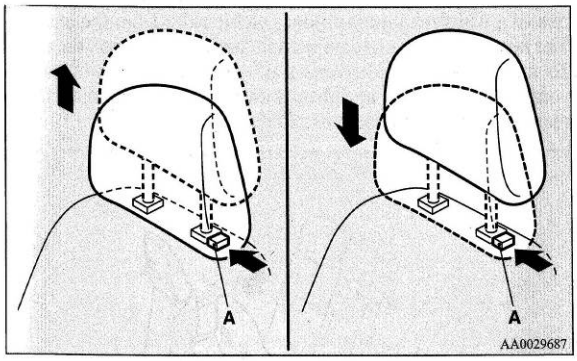
- To raise the restraint, pull it straight up.
- To lower the restraint, push down on it while pressing the lock knob (A) in the direction shown by the arrow.
- After adjusting the height, push down on the restraint to make sure it is locked in position.



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

To remove

Press the lock knob (A) in the direction shown by the arrows. Then pull the head restraint up and out of the seatback.



⚠ WARNING

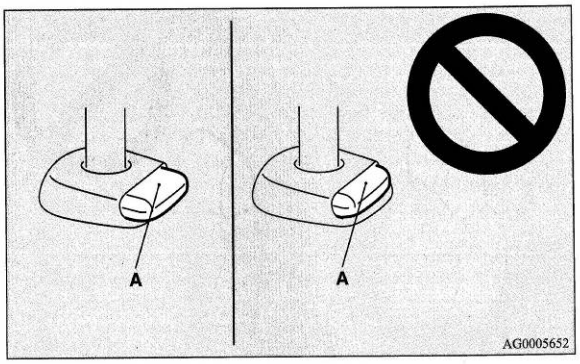
- **To help minimize the risk of neck injury in the event of an accident, the head restraints must be properly installed and positioned to proper height before vehicle operation.**

To install

First check that the head restraint is facing in the right direction as shown in the previous illustration, and then insert it into the seatback. Push the head restraint down while pressing the lock knob (A) until the restraint locks into place.

⚠ CAUTION

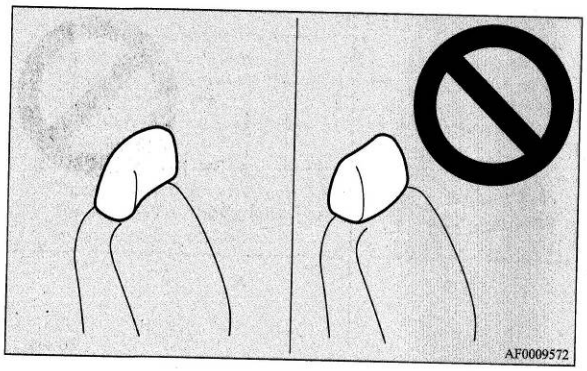
- **Check that the lock knob (A) is extended out as shown in the illustration. Then pull the head restraint up to make sure that it is locked in place and will not come out of the seatback.**



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

⚠ CAUTION

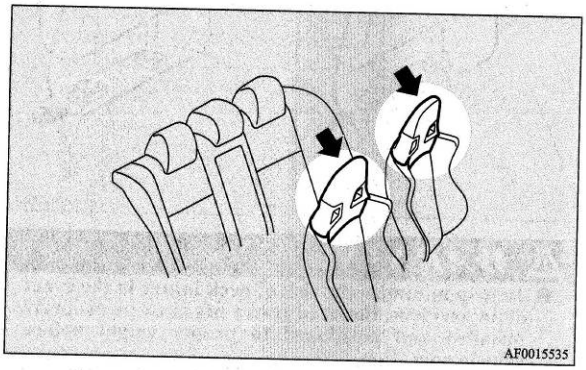
- **The shape and size of the head restraint differs according to the seat. Always use the correct head restraint provided for the seat and do not install the head restraint in the wrong direction.**



RECARO seat

N00409500044

RECARO seats are equipped with padded head restraints integrated with the seatbacks. These head restraints can reduce the risk of a whiplash injury if your vehicle is hit from the rear. The head restraints are equipped in the illustrated position. To maximize the effectiveness of your head restraint, adjust your seatback to the upright position and sit back against the seatback with your head close to the head restraint.



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

Post-Test Dummy Knee Contact with Vehicle Interior View

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

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)

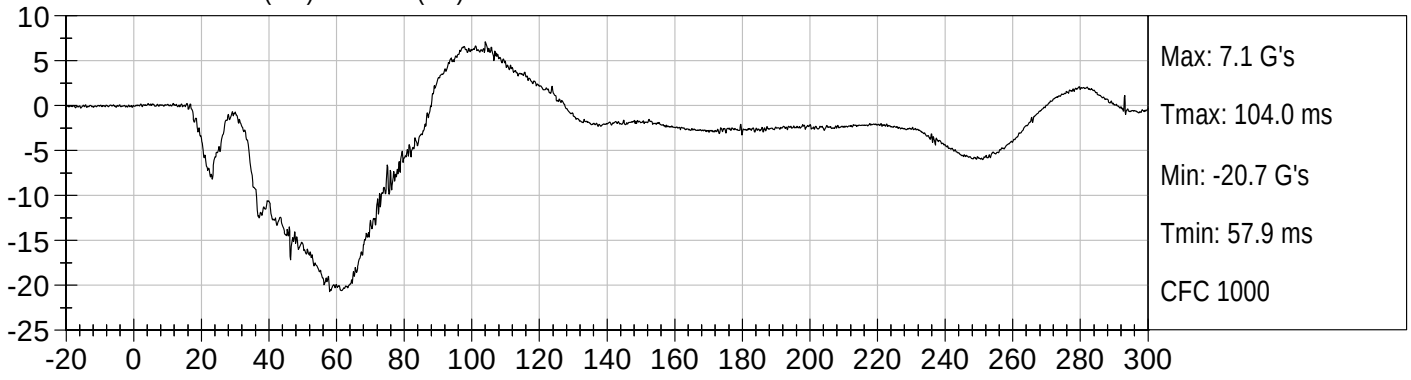
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

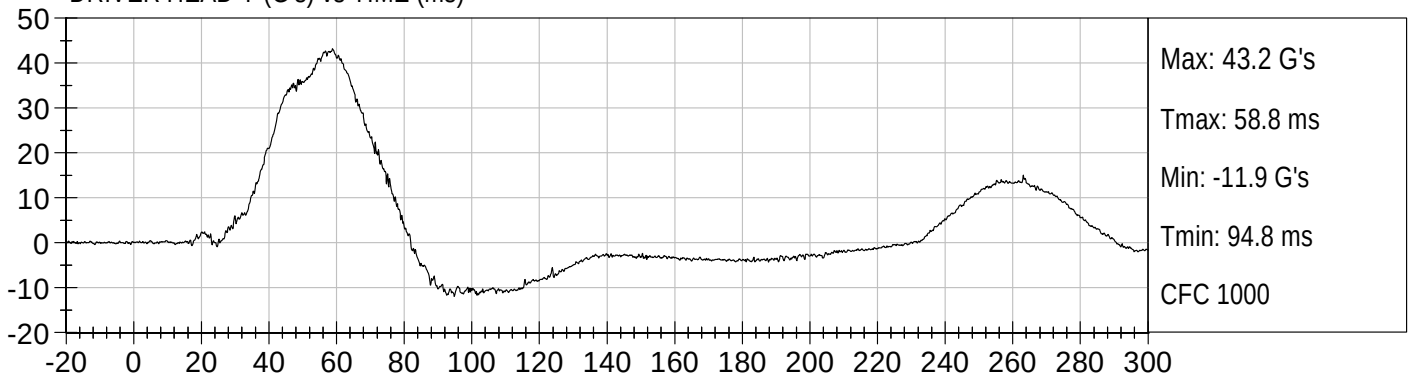
75° Oblique Rigid Pole Side NCAP
2012 Mitsubishi Lancer - MC5605

Test Date: 02/21/2012
Speed: 20.0 mph (32.1 km/h)

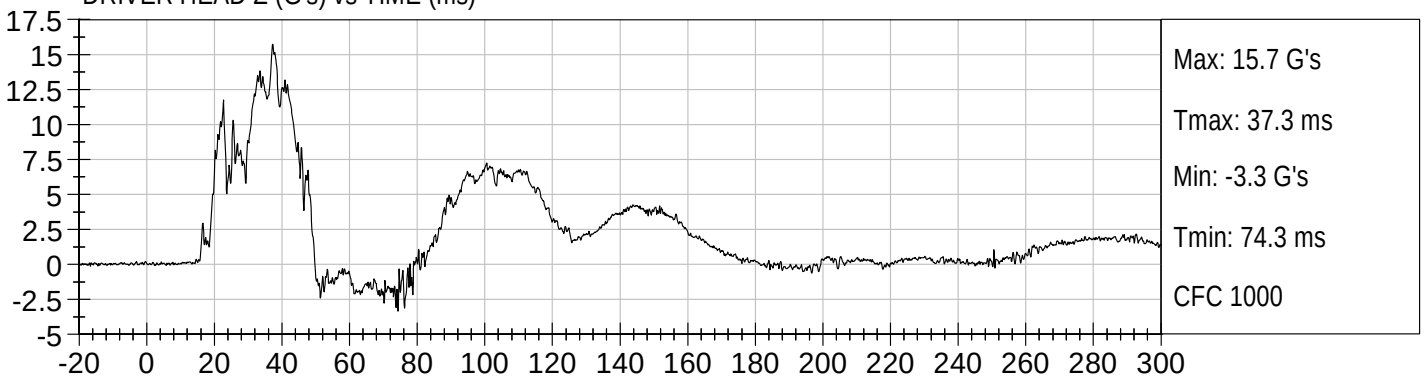
DRIVER HEAD X (G's) vs TIME (ms)



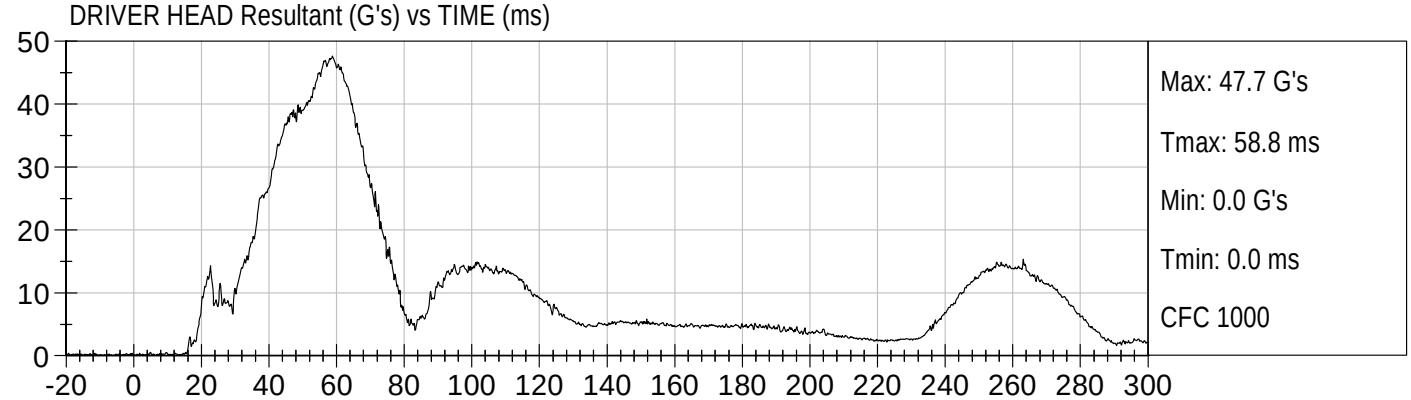
DRIVER HEAD Y (G's) vs TIME (ms)



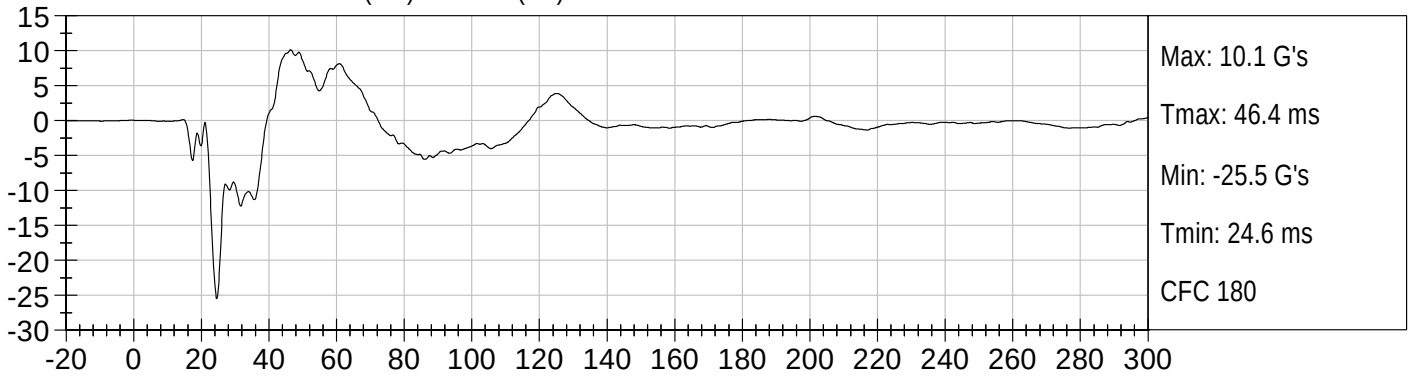
DRIVER HEAD Z (G's) vs TIME (ms)



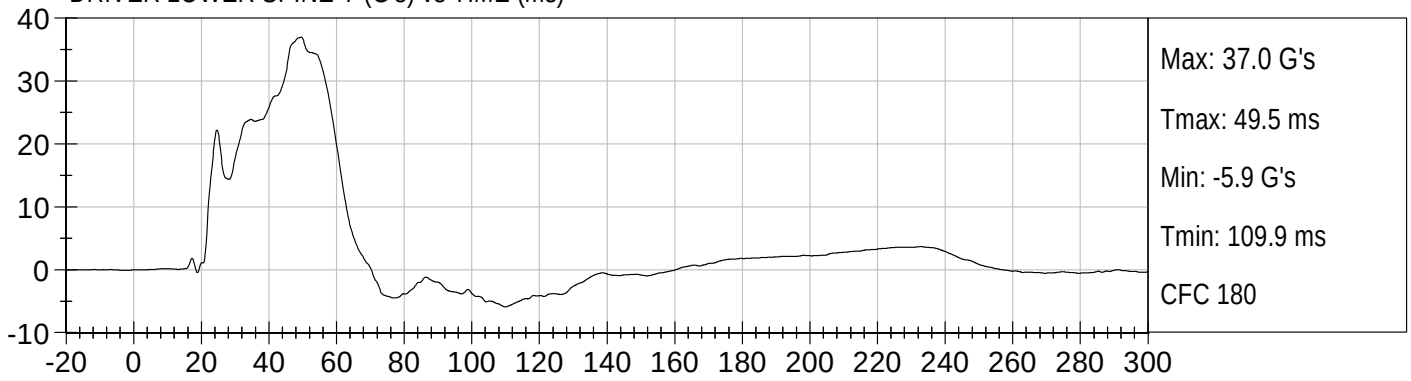
DRIVER HEAD Resultant (G's) vs TIME (ms)



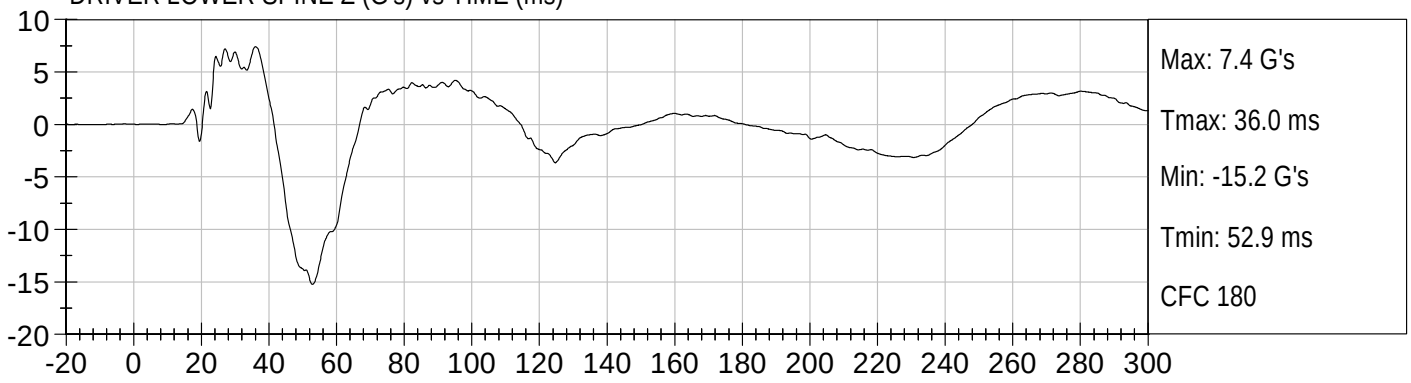
DRIVER LOWER SPINE X (G's) vs TIME (ms)



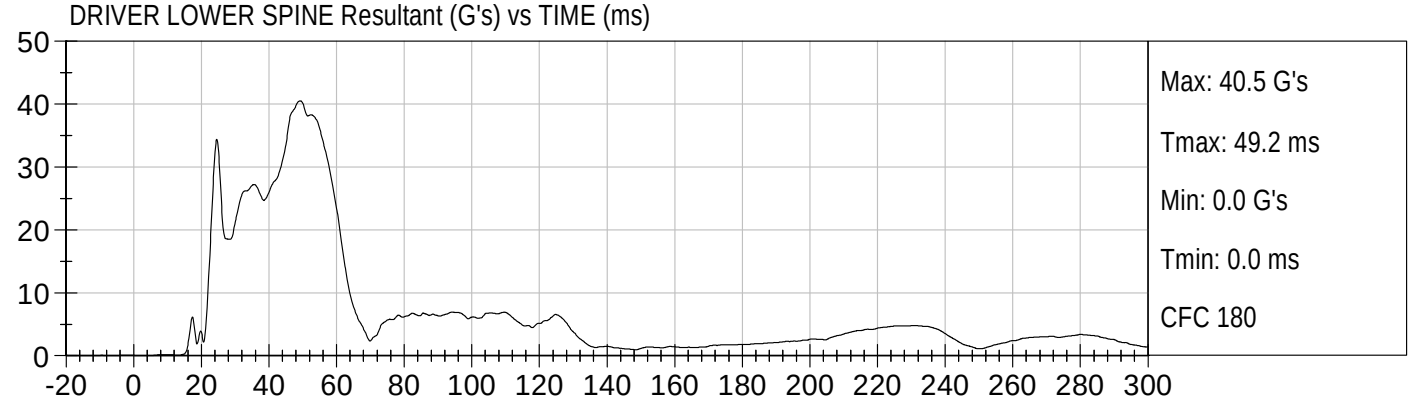
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



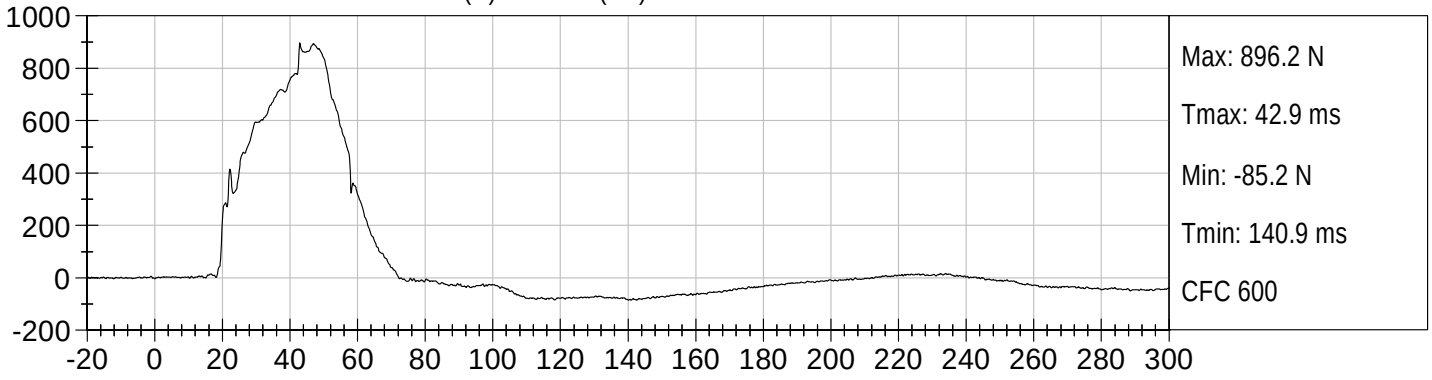
DRIVER LOWER SPINE Z (G's) vs TIME (ms)



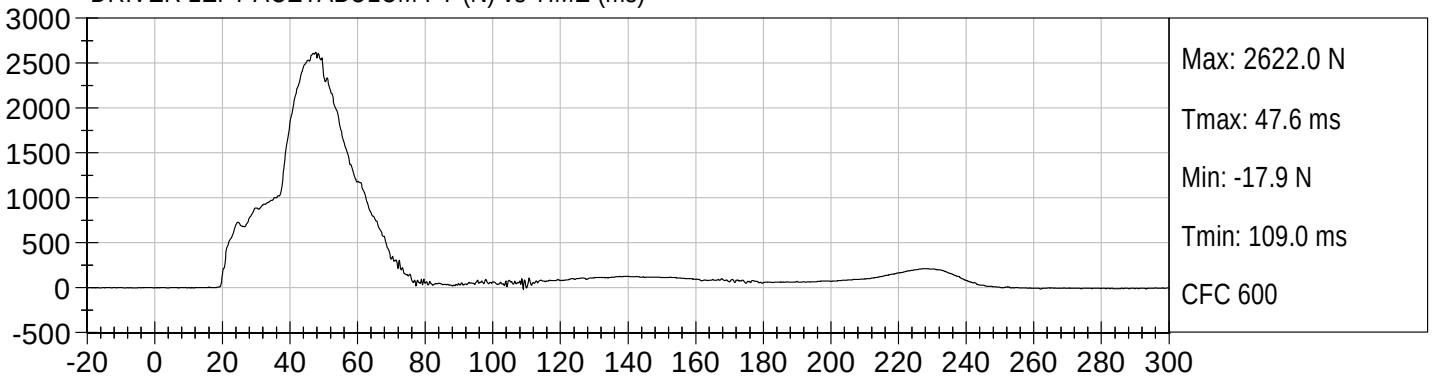
DRIVER LOWER SPINE Resultant (G's) vs TIME (ms)



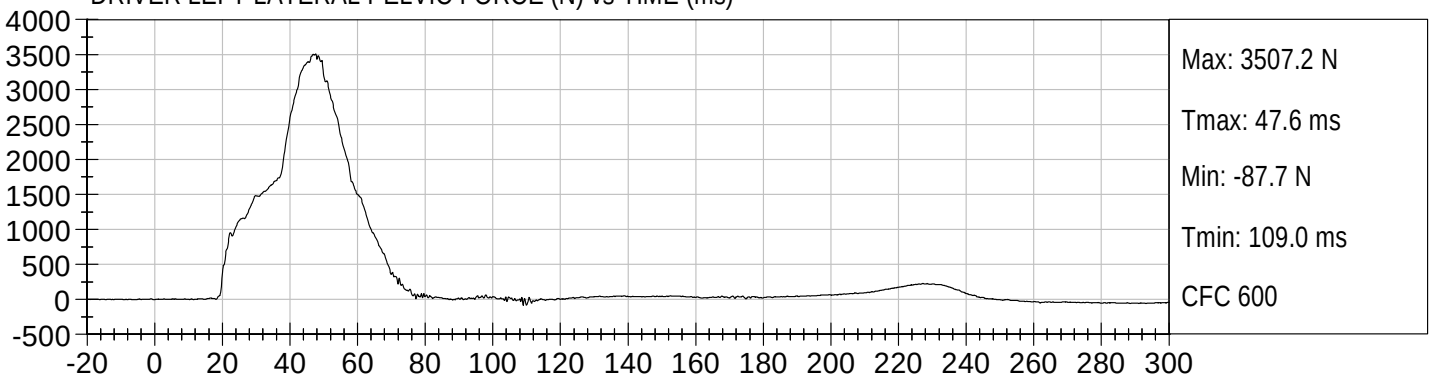
DRIVER LEFT ILLIUM CREST FY (N) vs TIME (ms)



DRIVER LEFT ACETABULUM FY (N) vs TIME (ms)



DRIVER LEFT LATERAL PELVIC FORCE (N) vs TIME (ms)



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:** D12501

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	115 to 137	125	Pass
Peak Longitudinal Acceleration	G's	+/- 15	2.8	Pass
Unimodal	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

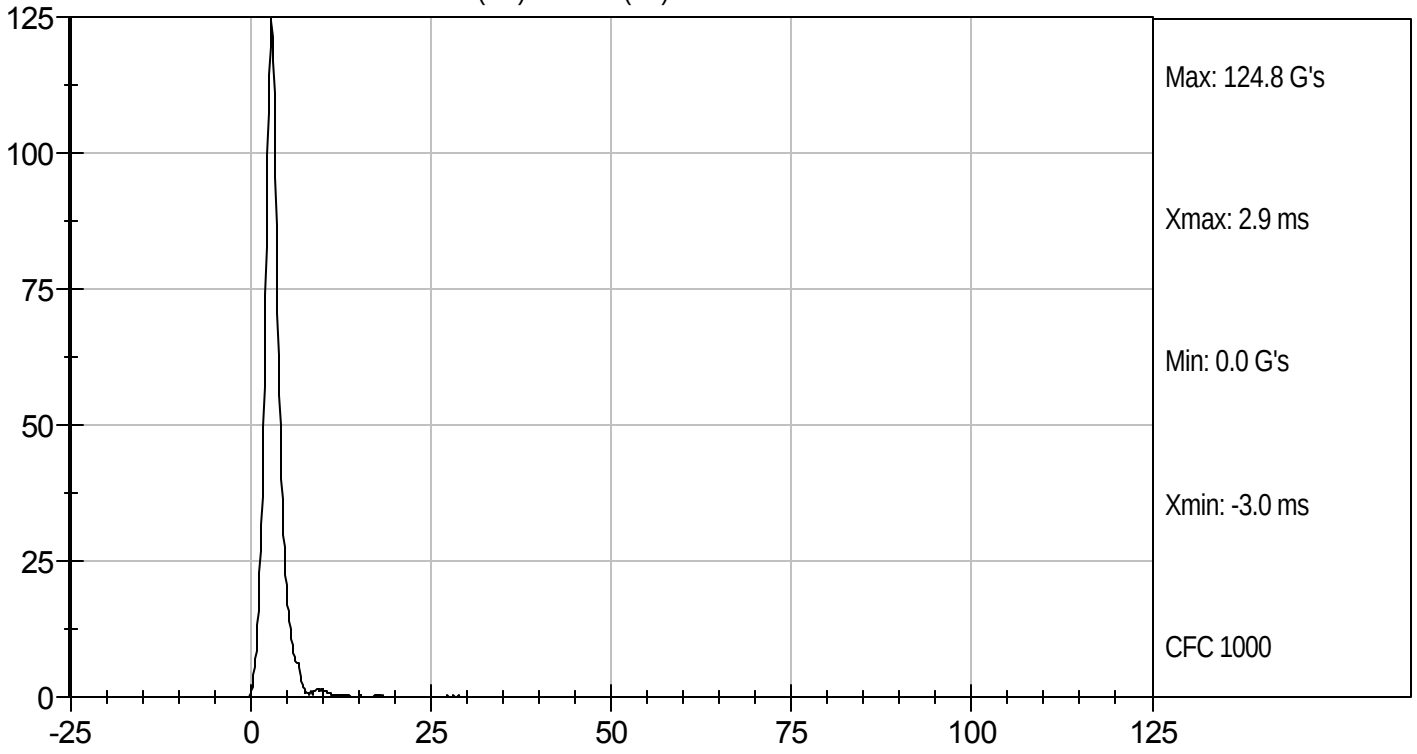
2/15/12
Test Date

David Winkelbauer
Approved By

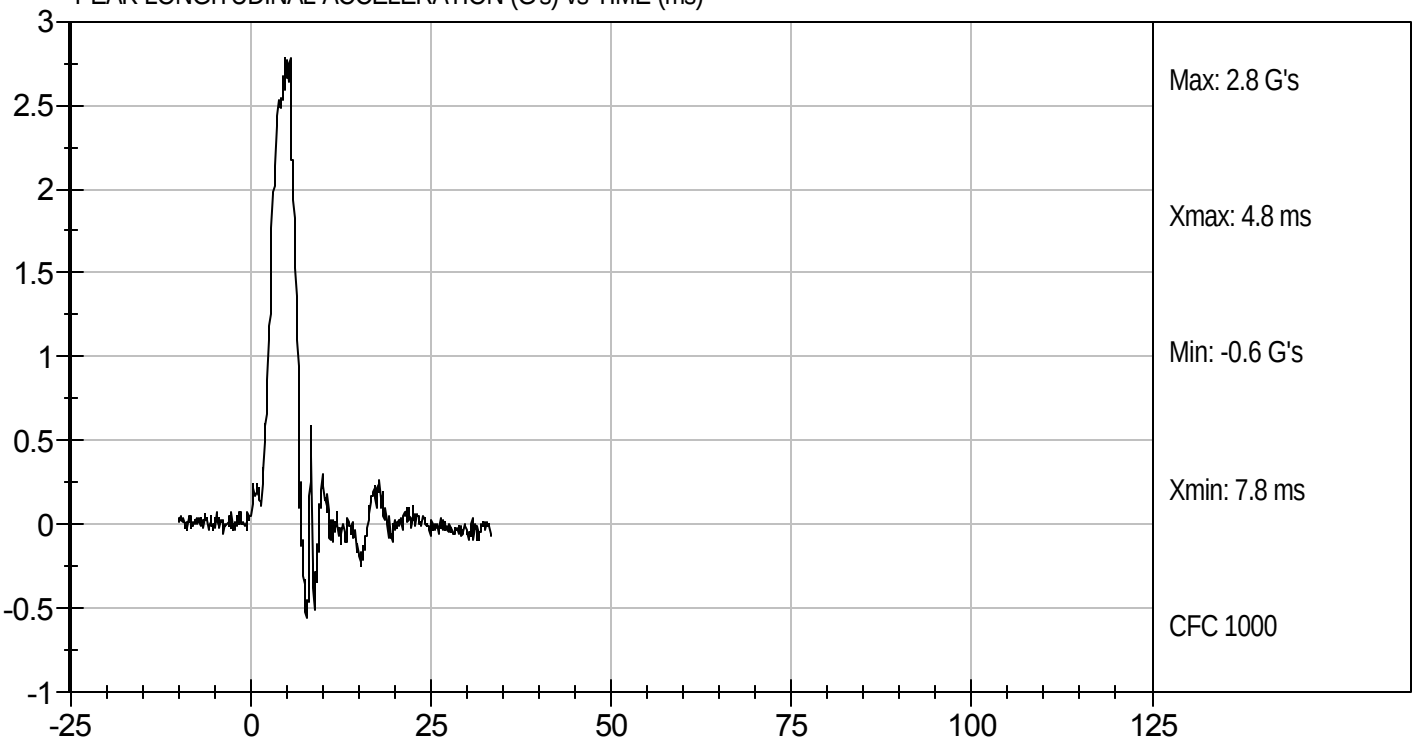
Test Desc: Head Drop
Component ID: D12501

Test Date: 2/15/12
Velocity: 0 ft/s, 0 m/s

PEAK RESULTANT ACCELERATION (G's) vs TIME (ms)



PEAK LONGITUDINAL ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12502

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	22.0	Pass
Humidity		%	10 to 70	26	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.66	Pass
	15 ms	m/s	3.30 to 4.10	3.70	Pass
	20 ms	m/s	4.40 to 5.40	5.07	Pass
	25 ms	m/s	5.40 to 6.10	5.50	Pass
	25-100 ms	m/s	5.50 to 6.20	5.52	Pass
Maximum D-Plane Rotation		deg	71 to 81	73	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	60	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	117	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

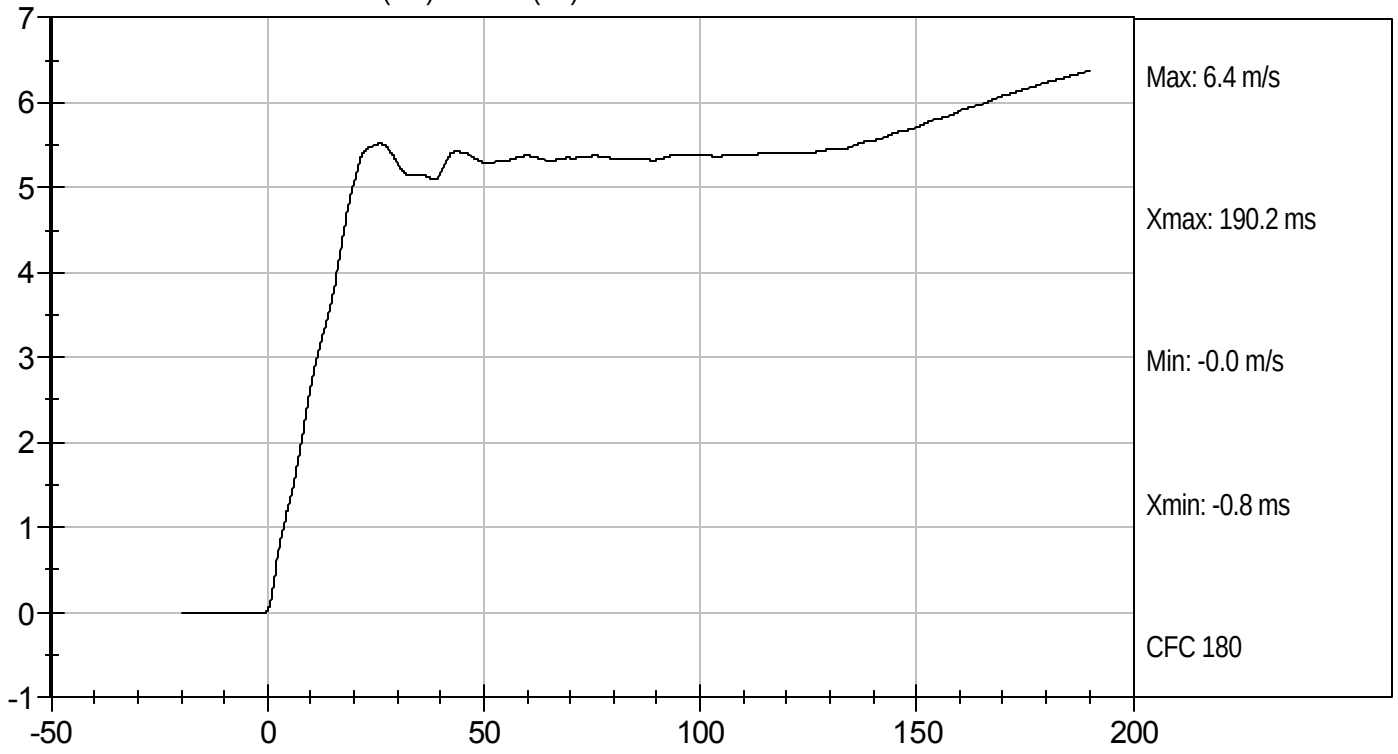
2/15/12
Test Date

David Winkelbauer
Approved By

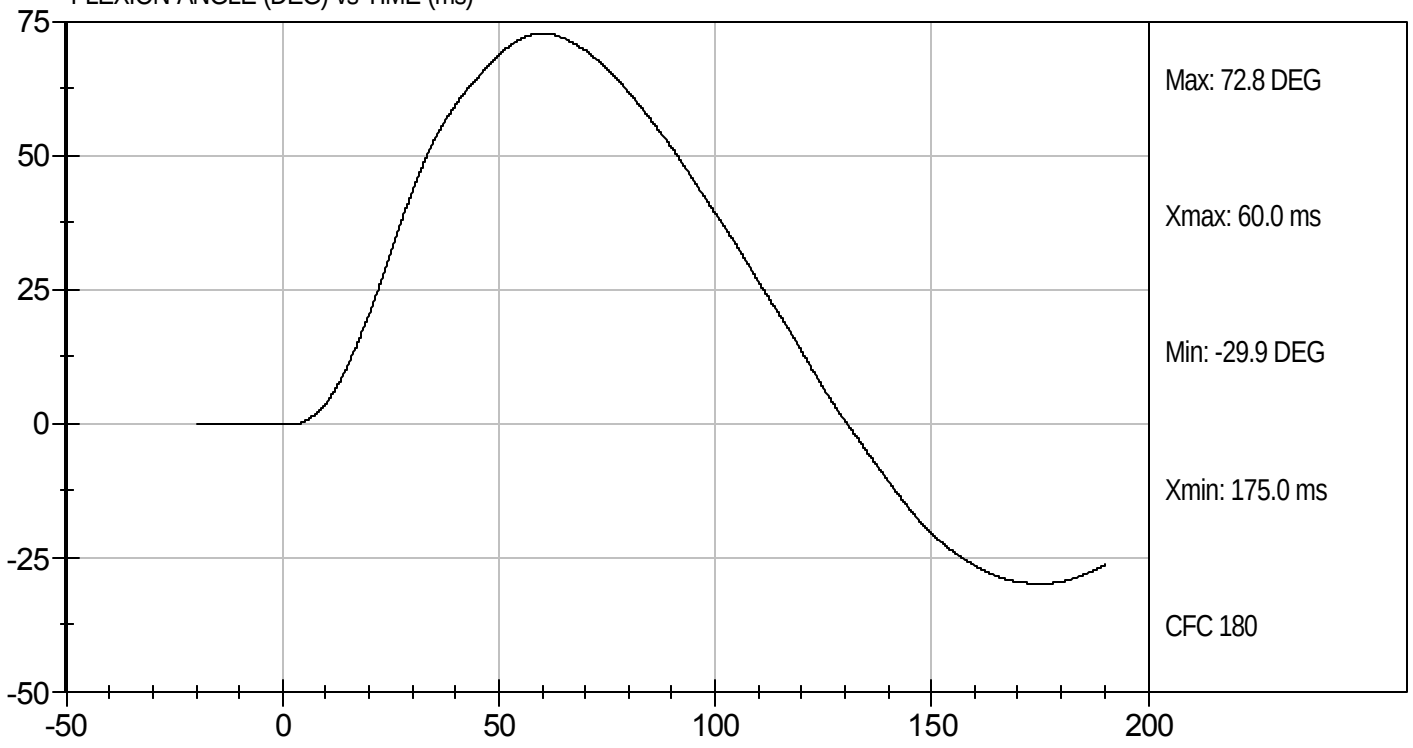
Test Desc: Neck Bending
Component ID: D12502

Test Date: 2/15/12
Velocity: 18.32 ft/s, 5.58 m/s

PENDULUM DECELERATION (m/s) vs TIME (ms)

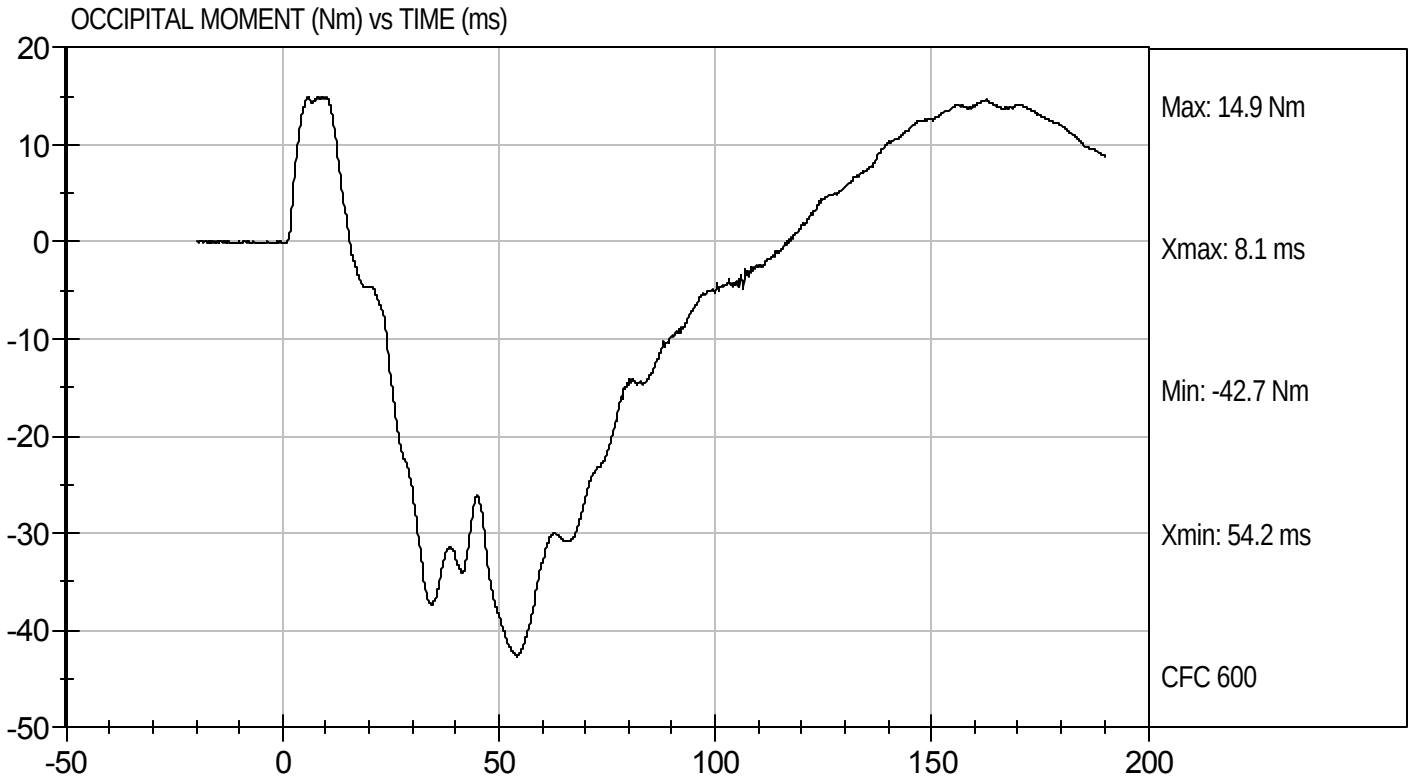


FLEXION ANGLE (DEG) vs TIME (ms)



Test Desc: Neck Bending
Component ID: D12502

Test Date: 2/15/12
Velocity: 18.32 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D12503

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
		Overall Test Results		Pass

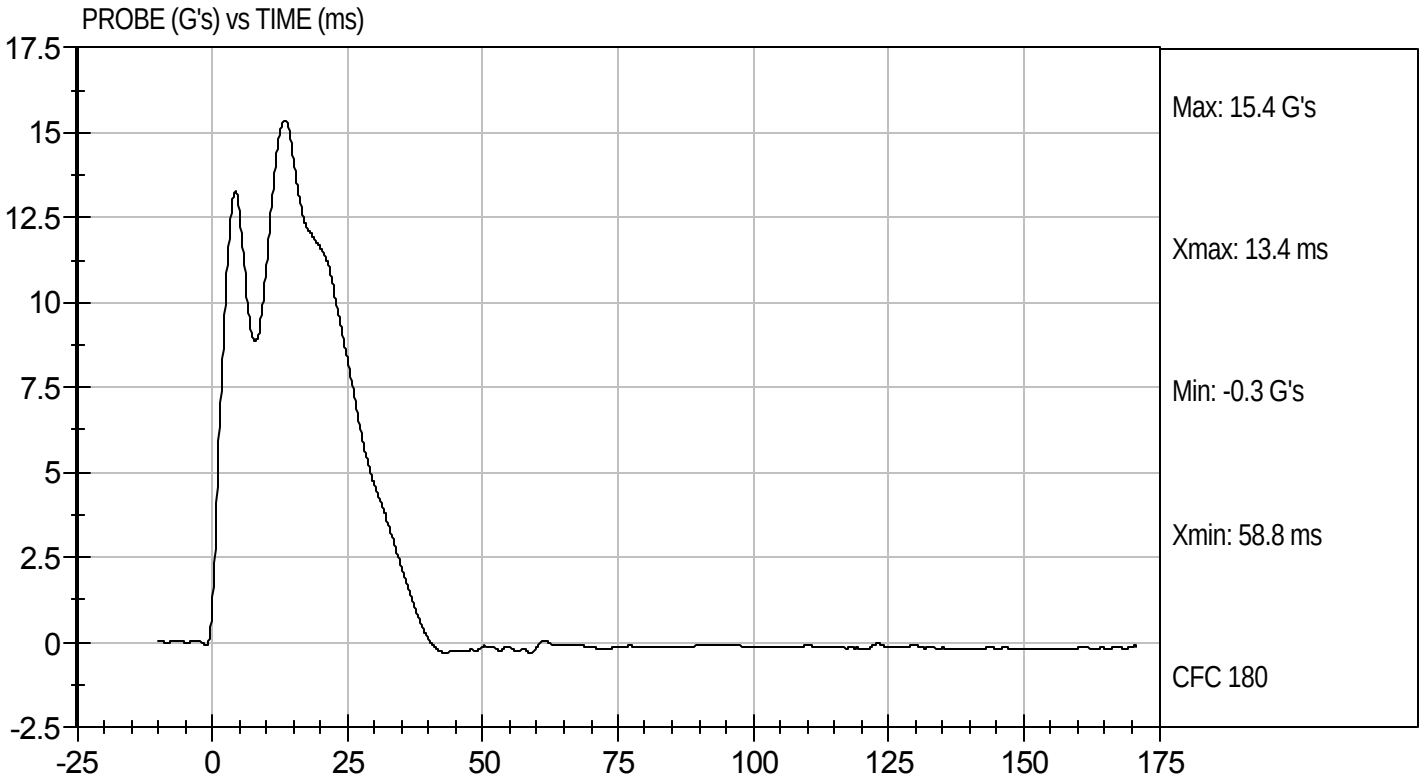
Jessica Hall
Laboratory Technician

2/15/12
Test Date

David Winkelbauer
Approved By

Test Desc: Shoulder Impact
Component ID: D12503

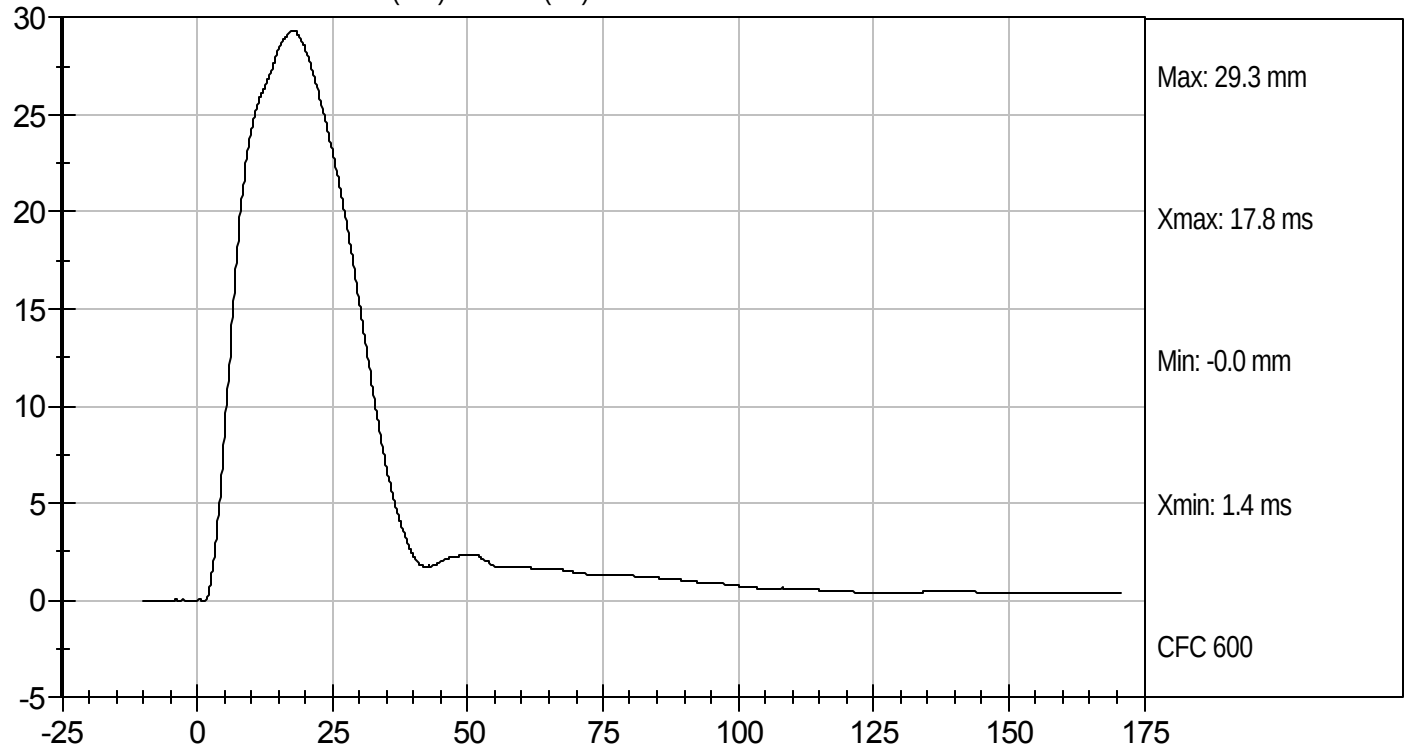
Test Date: 2/15/12
Velocity: 14.25 ft/s, 4.34 m/s



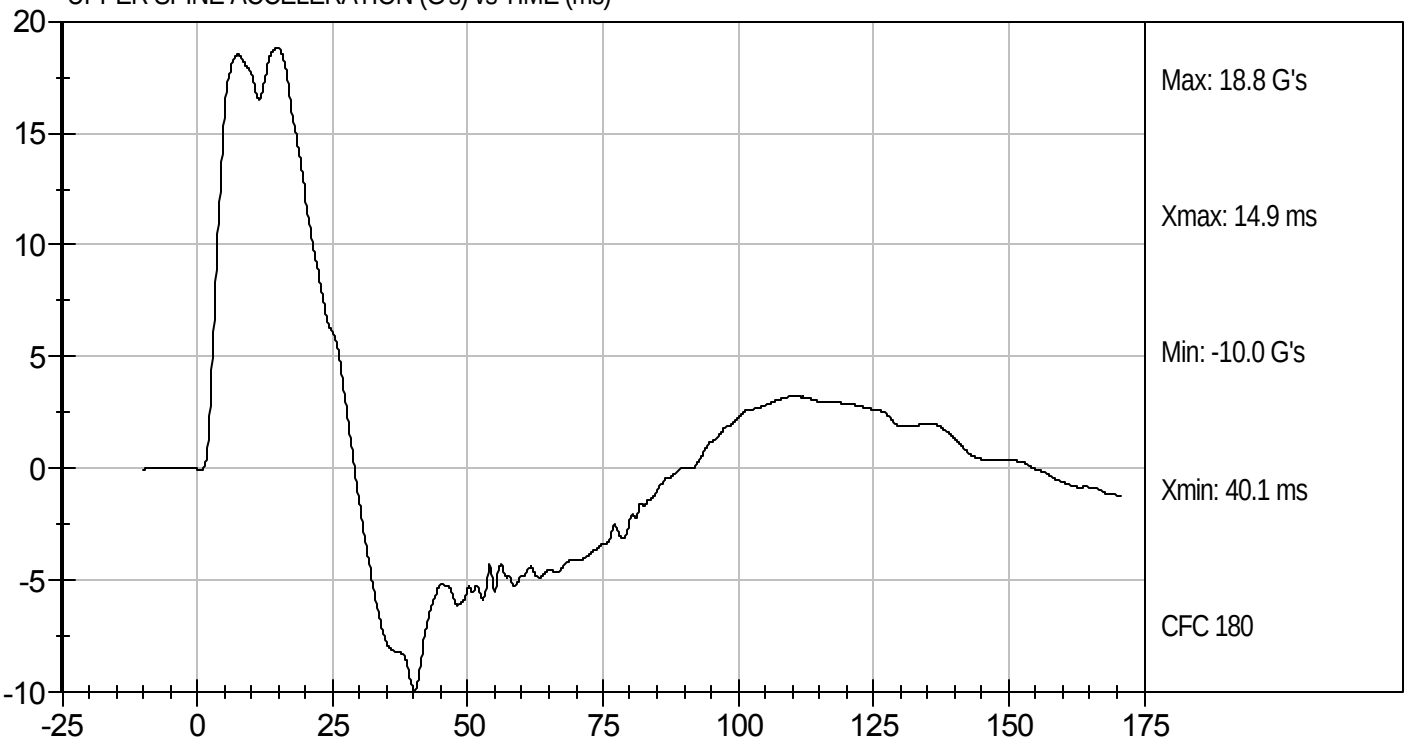
Test Desc: Shoulder Impact
Component ID: D12503

Test Date: 2/15/12
Velocity: 14.25 ft/s, 4.34 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



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



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12504

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	26	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	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	39	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	31	Pass
		Overall Test Results		Pass

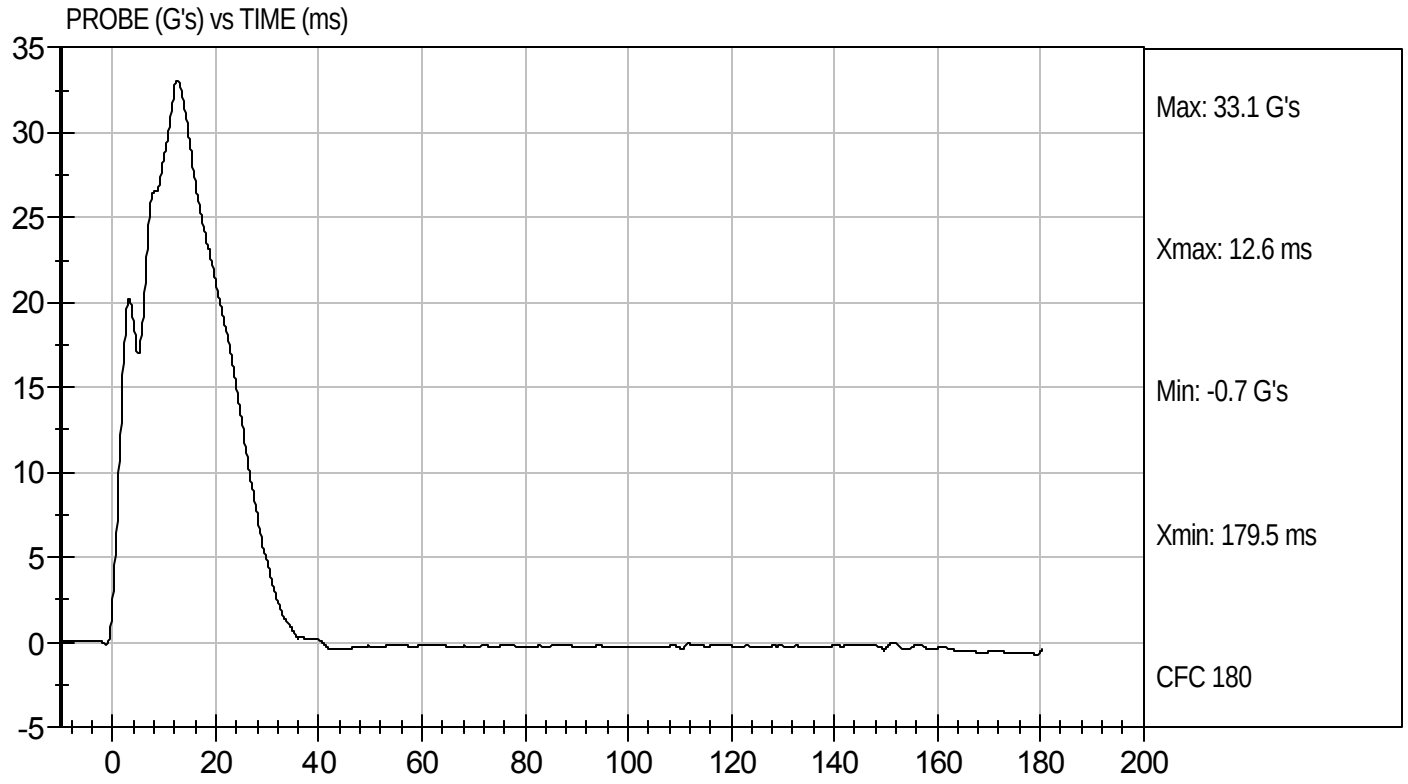
Jessica Hall
Laboratory Technician

2/15/12
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax With Arm
Component ID: D12504

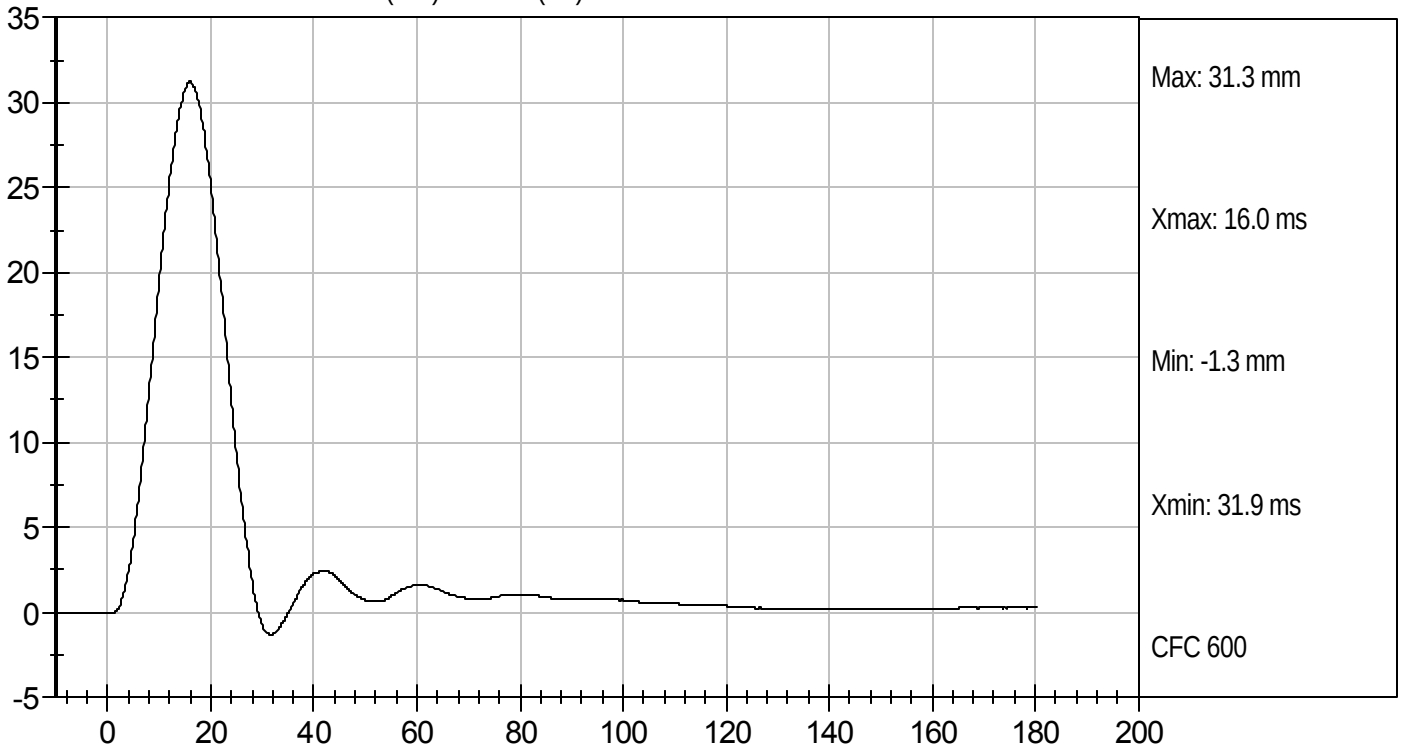
Test Date: 2/15/12
Velocity: 22.22 ft/s, 6.77 m/s



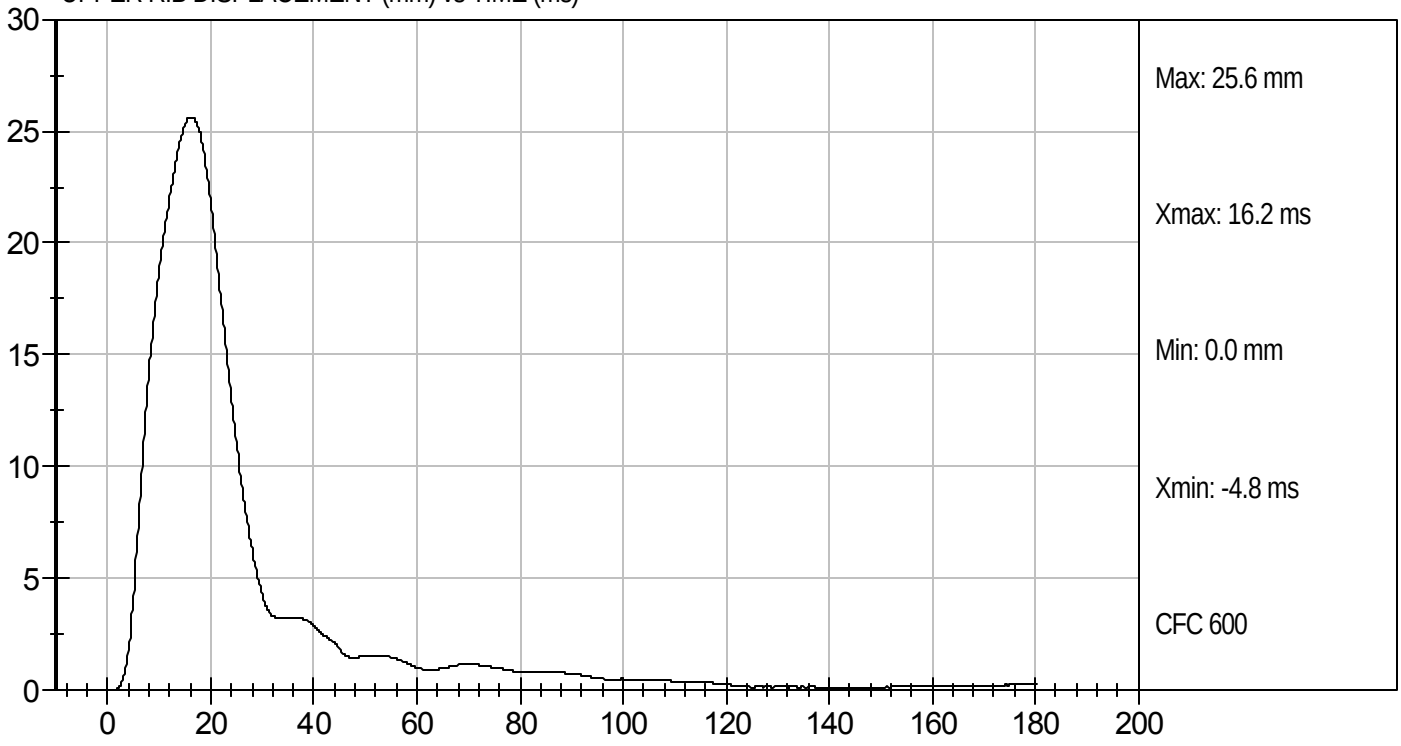
Test Desc: Thorax With Arm
Component ID: D12504

Test Date: 2/15/12
Velocity: 22.22 ft/s, 6.77 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



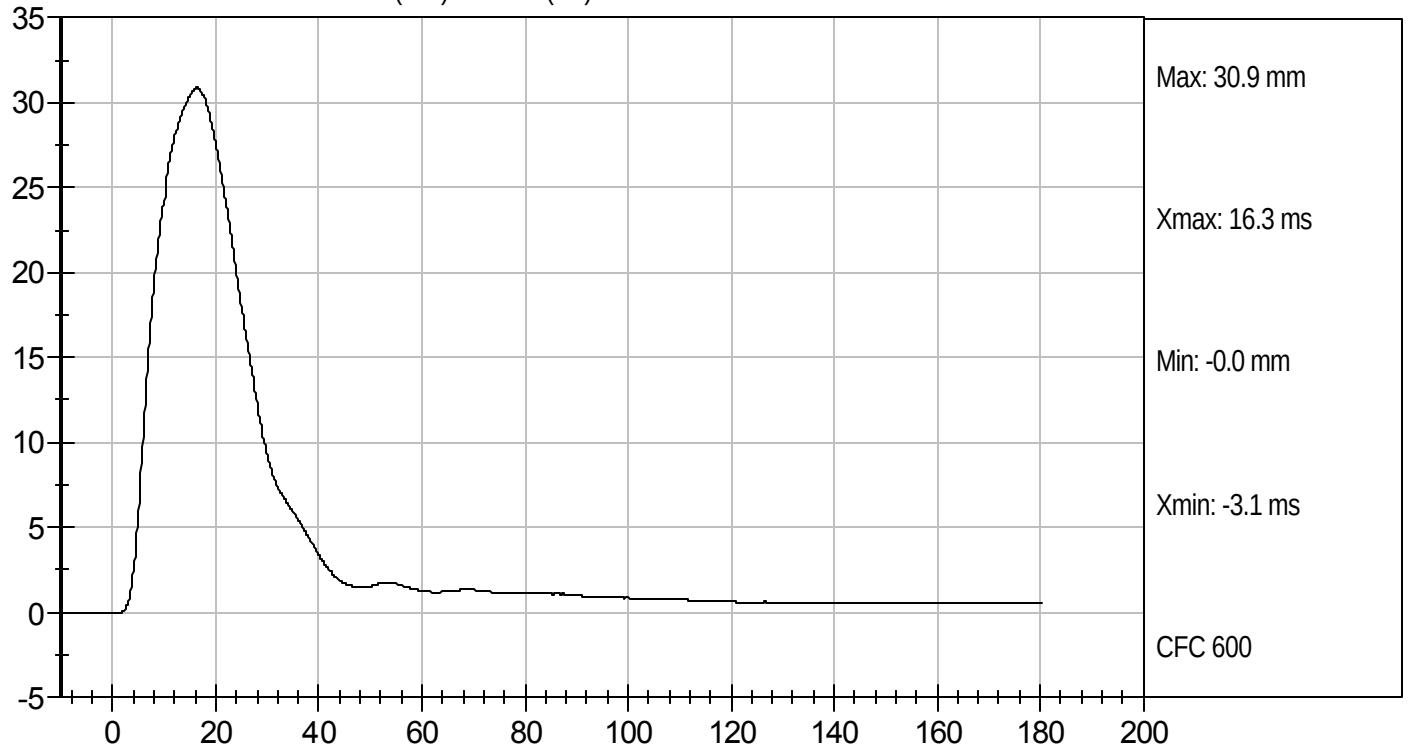
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



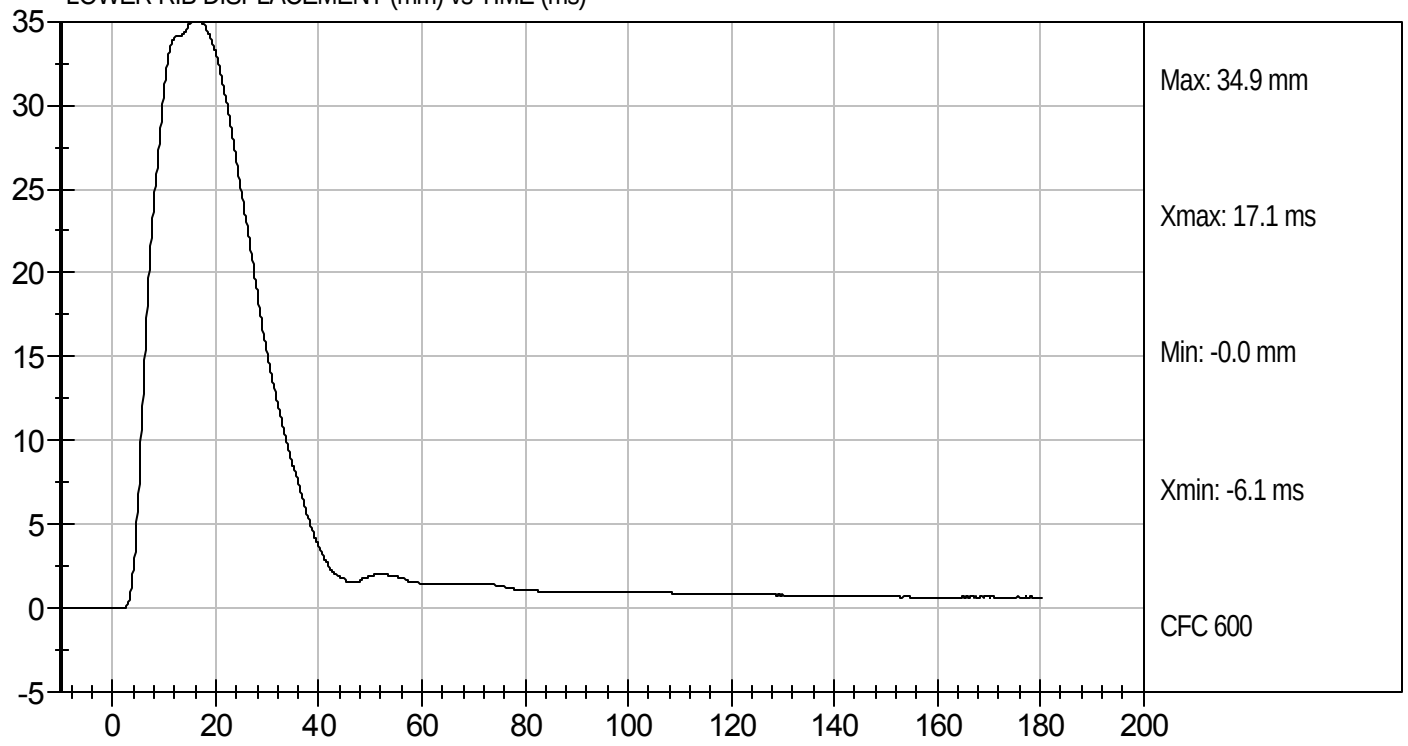
Test Desc: Thorax With Arm
Component ID: D12504

Test Date: 2/15/12
Velocity: 22.22 ft/s, 6.77 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



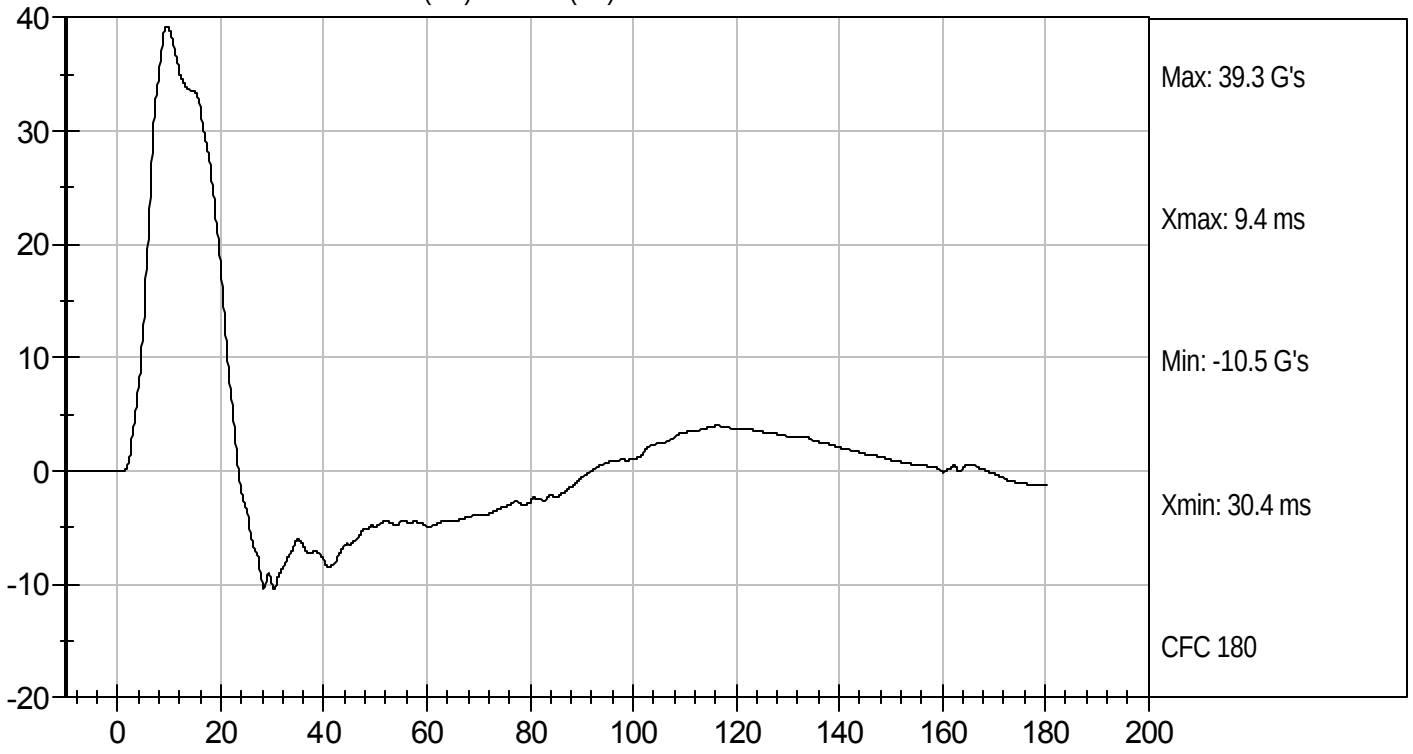
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



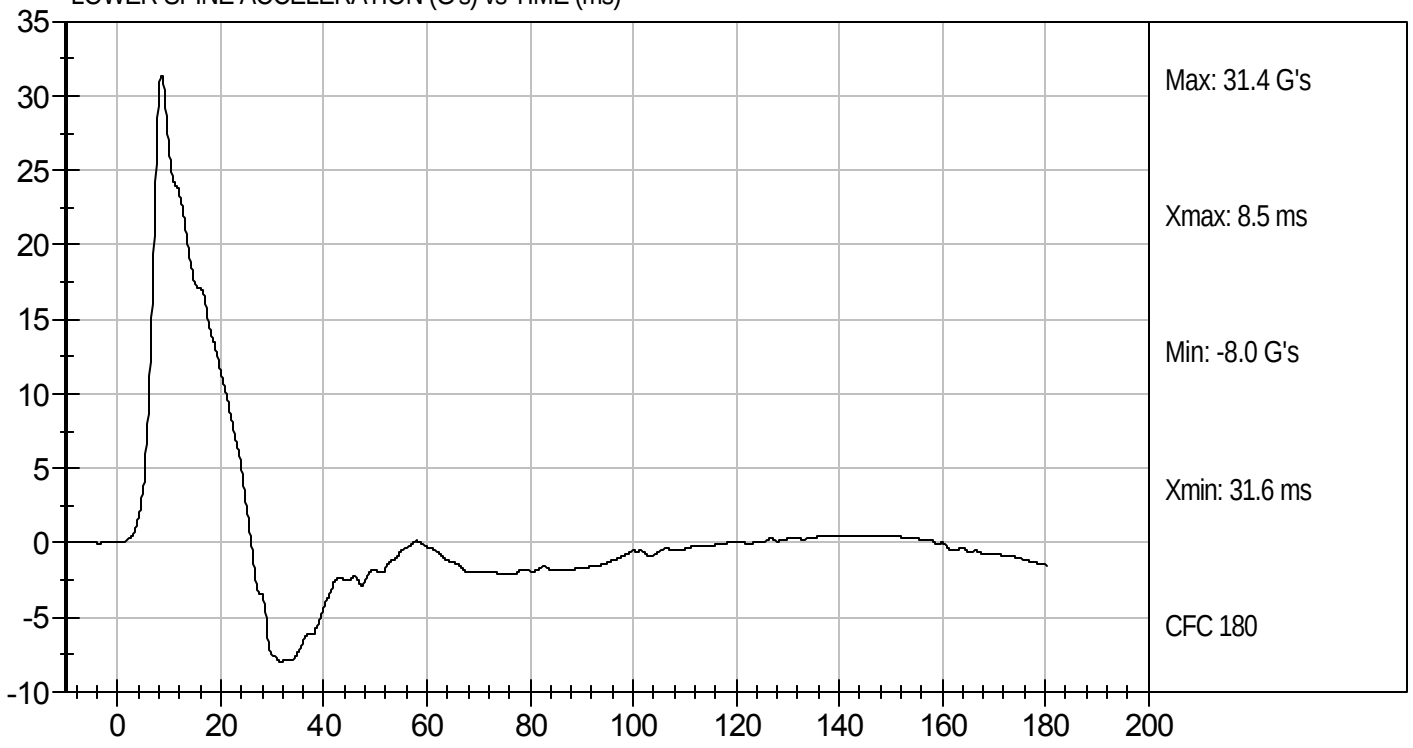
Test Desc: Thorax With Arm
Component ID: D12504

Test Date: 2/15/12
Velocity: 22.22 ft/s, 6.77 m/s

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



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



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12505

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Force	G's	14 to 18	16	Pass
Upper Rib Displacement	mm	32 to 40	33	Pass
Middle Rib Displacement	mm	39 to 45	39	Pass
Lower Rib Displacement	mm	35 to 43	39	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
		Overall Test Results		Pass

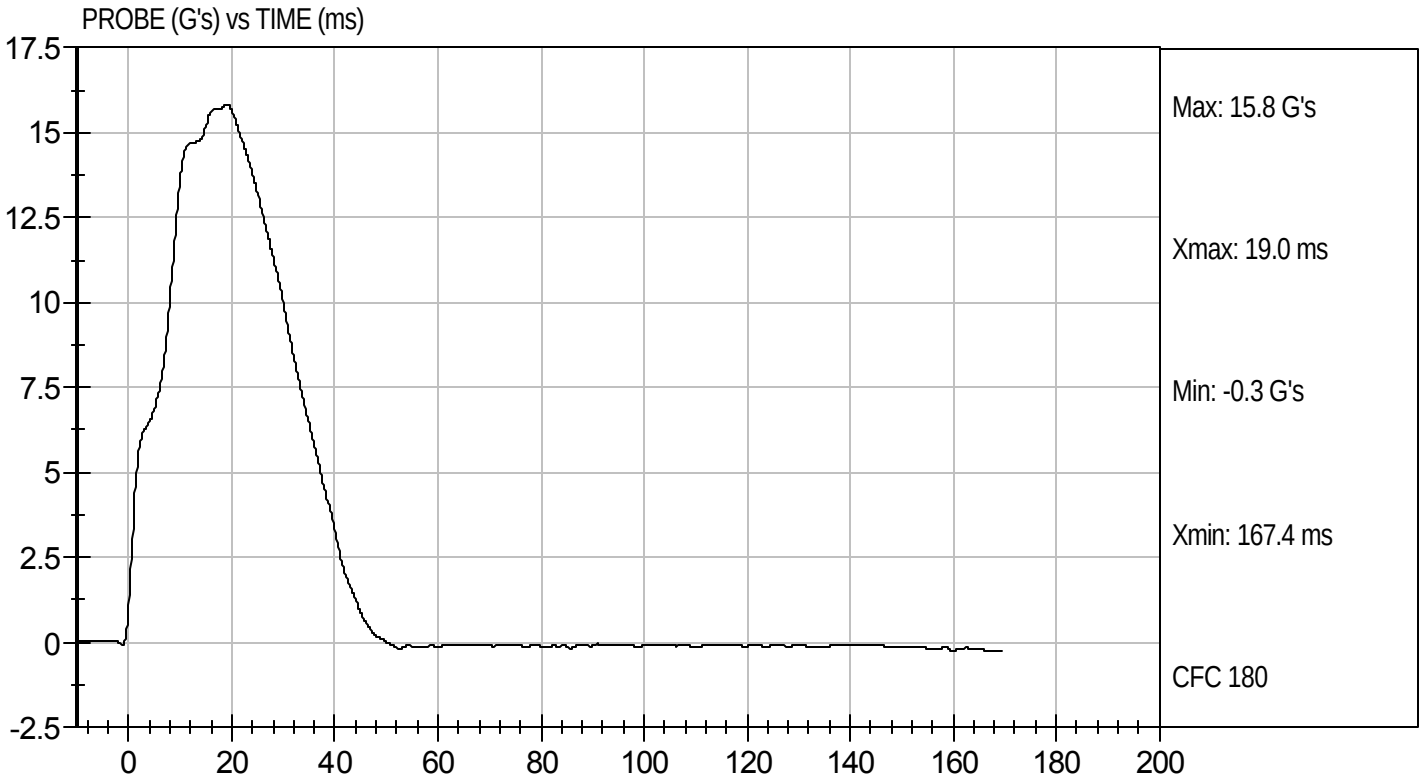
Jessica Hall
Laboratory Technician

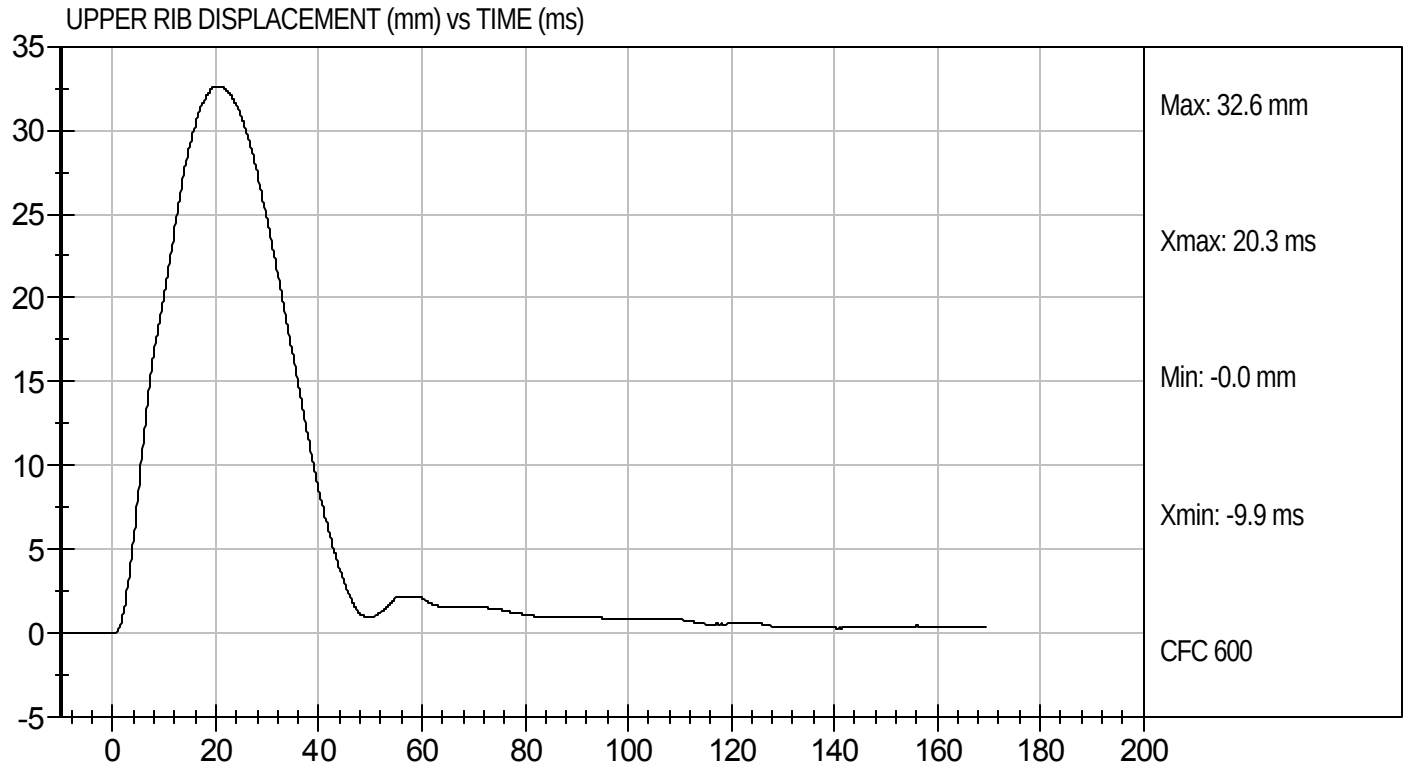
2/15/12
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax Without Arm
Component ID: D12505

Test Date: 2/15/12
Velocity: 14.25 ft/s, 4.34 m/s

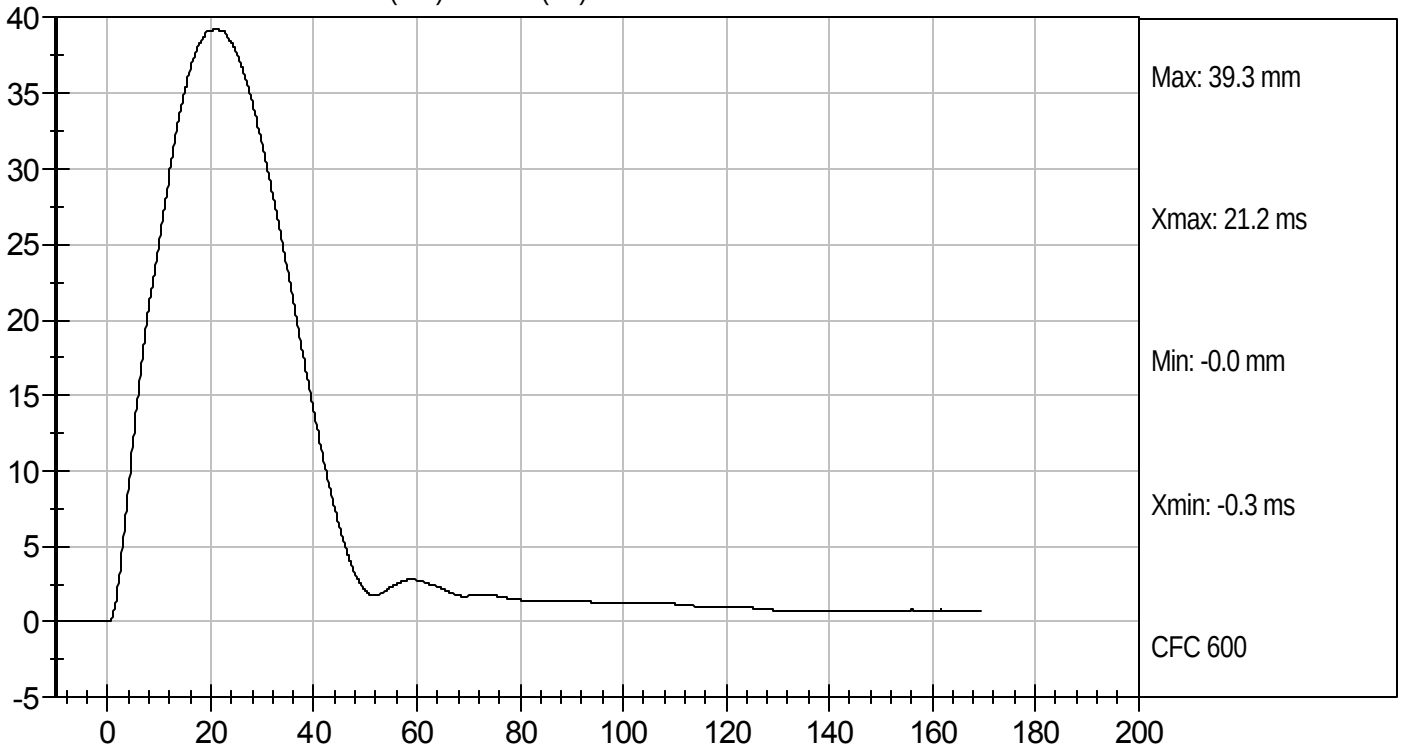




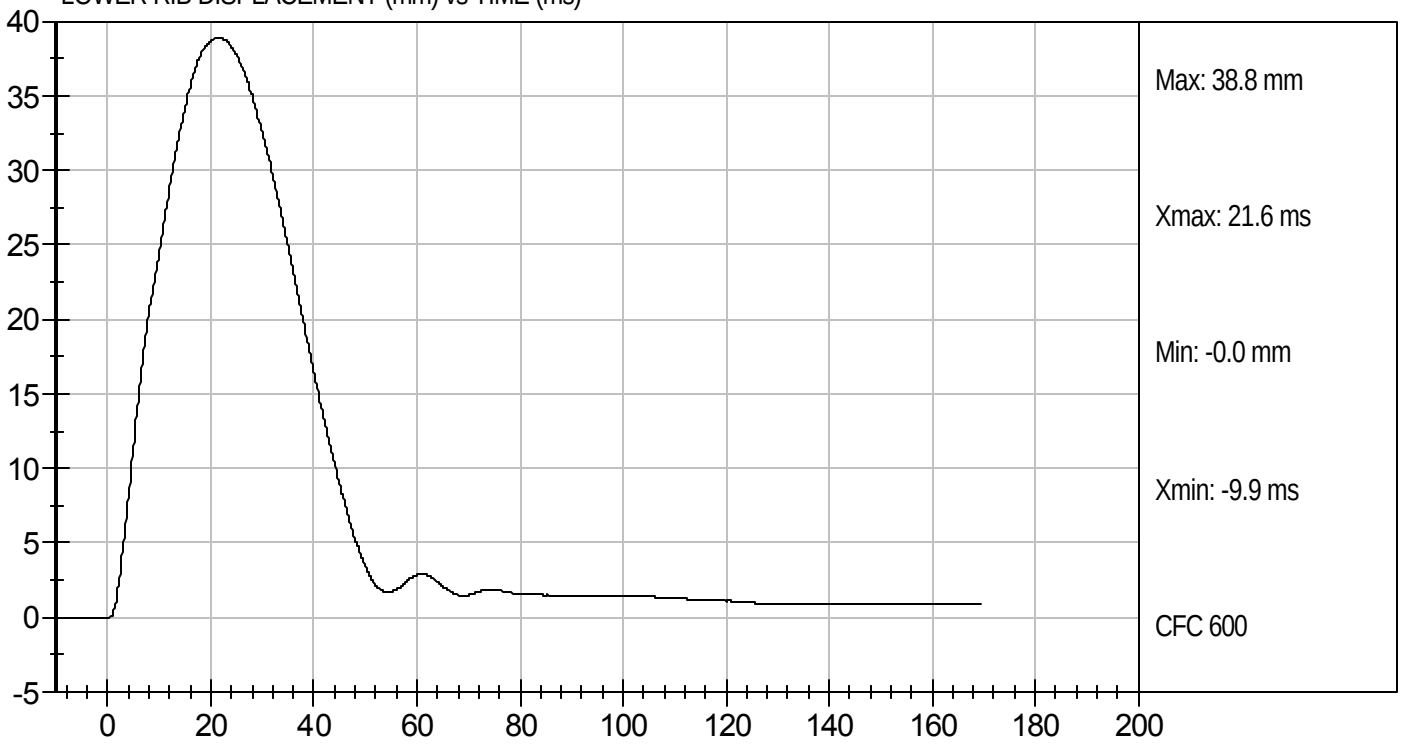
Test Desc: Thorax Without Arm
Component ID: D12505

Test Date: 2/15/12
Velocity: 14.25 ft/s, 4.34 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



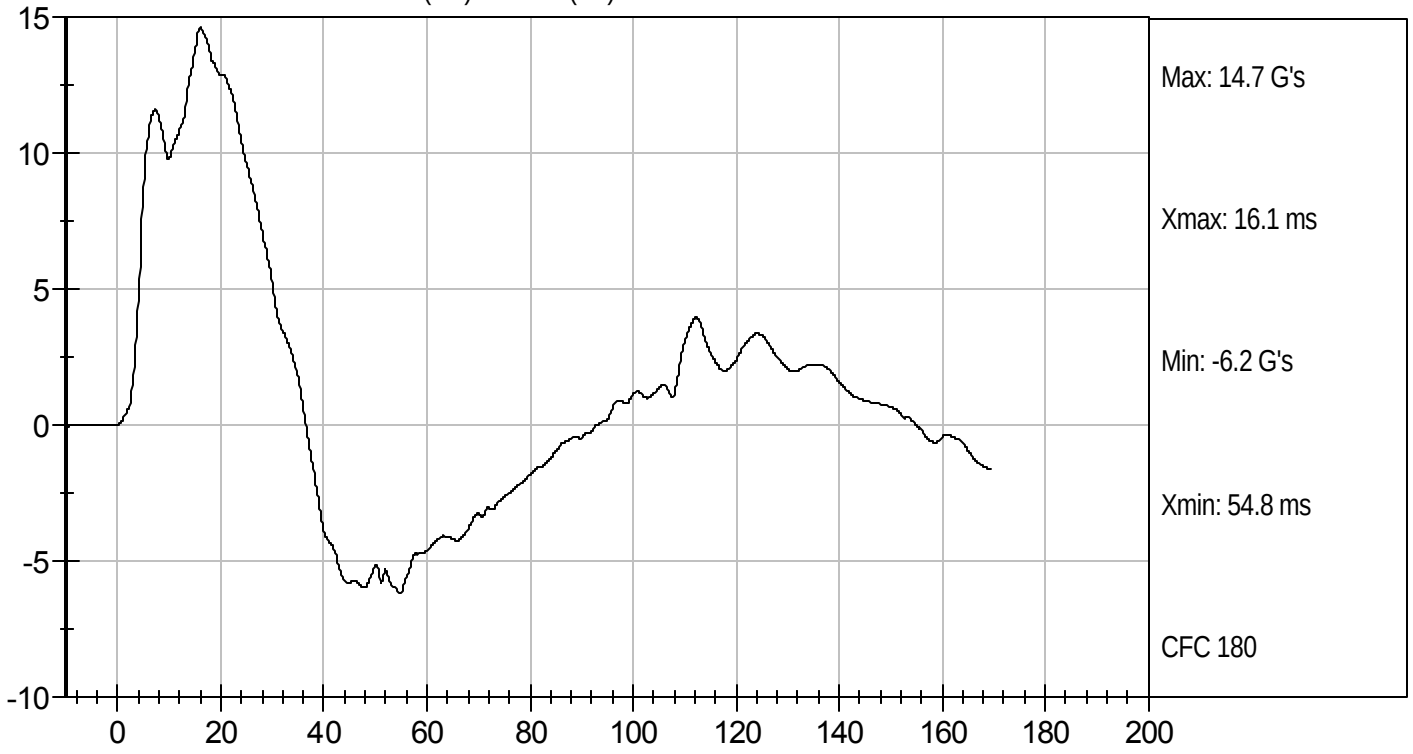
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



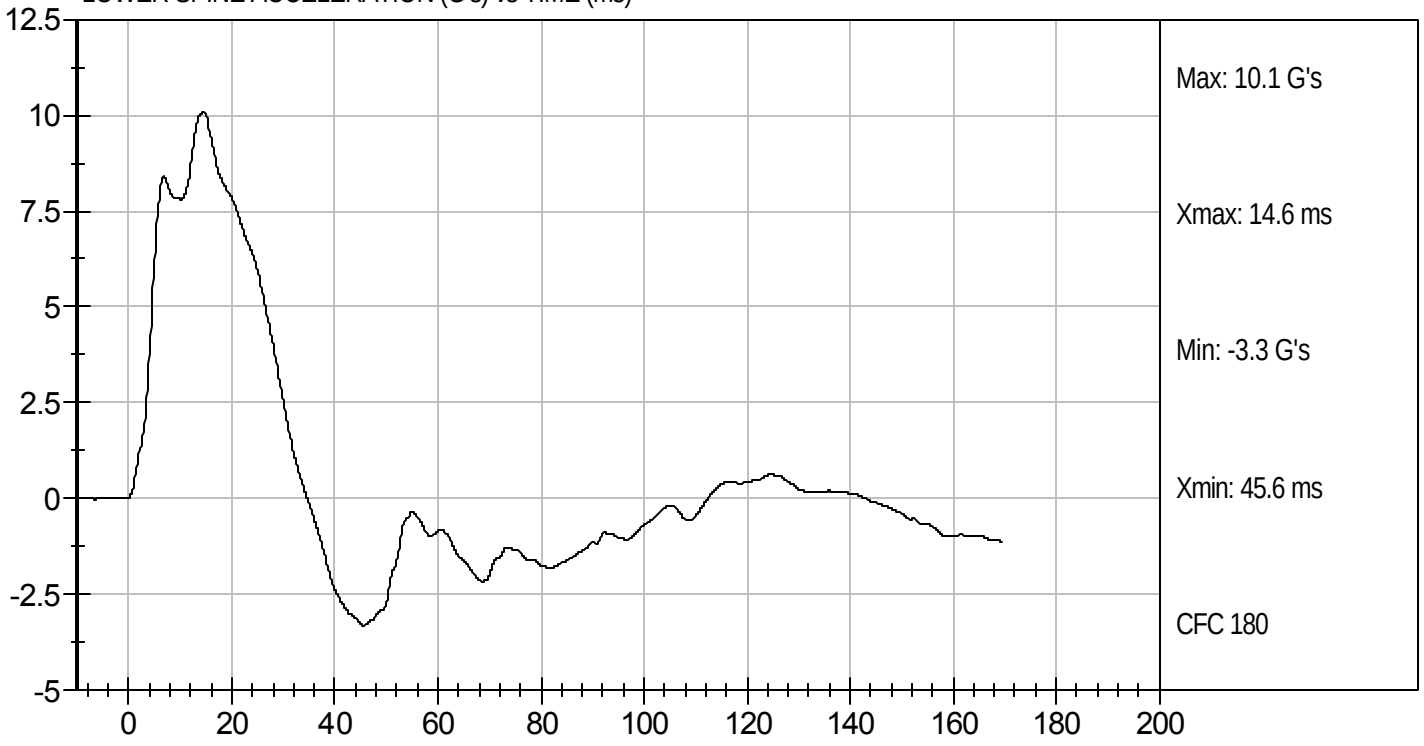
Test Desc: Thorax Without Arm
Component ID: D12505

Test Date: 2/15/12
Velocity: 14.25 ft/s, 4.34 m/s

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12506

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	39	Pass
Lower Rib Displacement	mm	33 to 44	36	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
		Overall Test Results		Pass

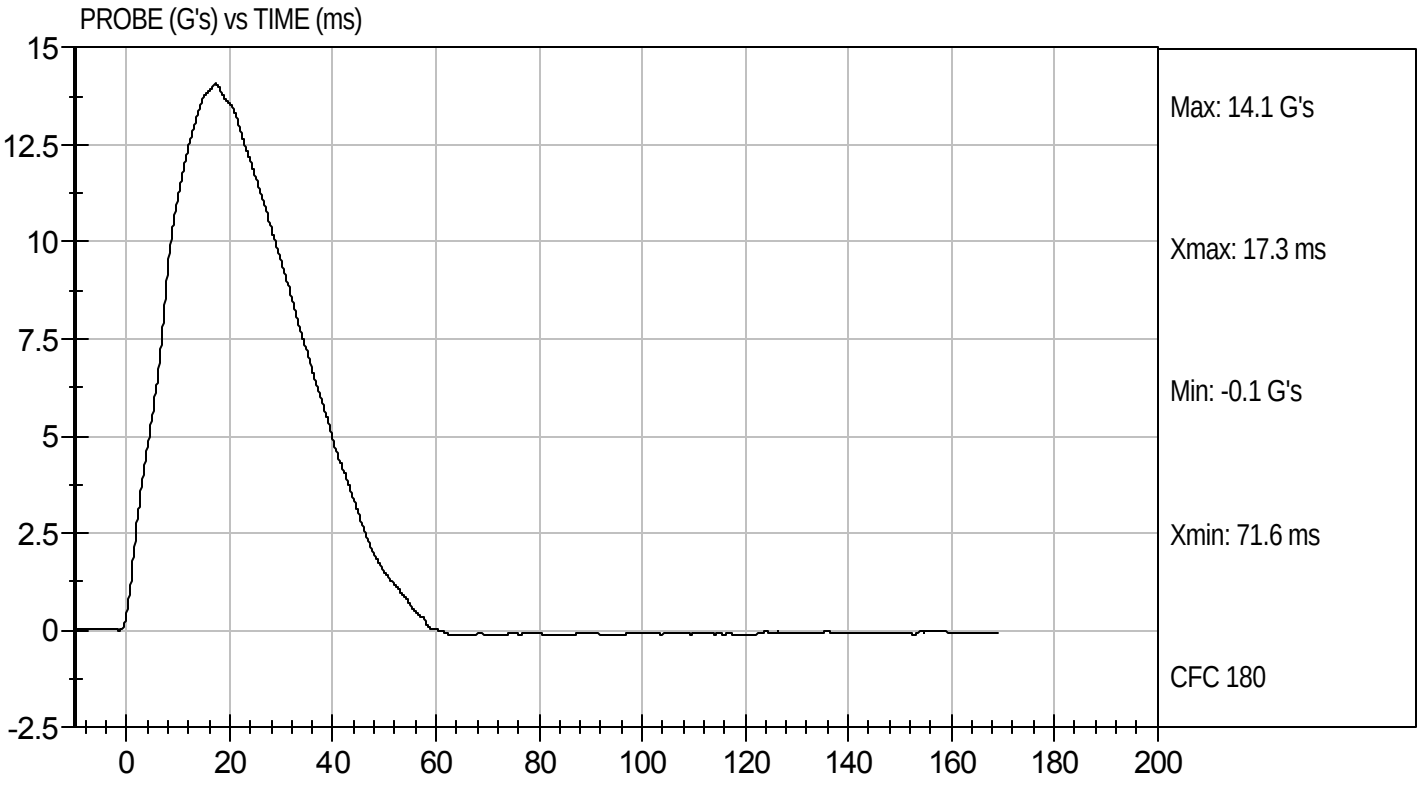
Jessica Hall
Laboratory Technician

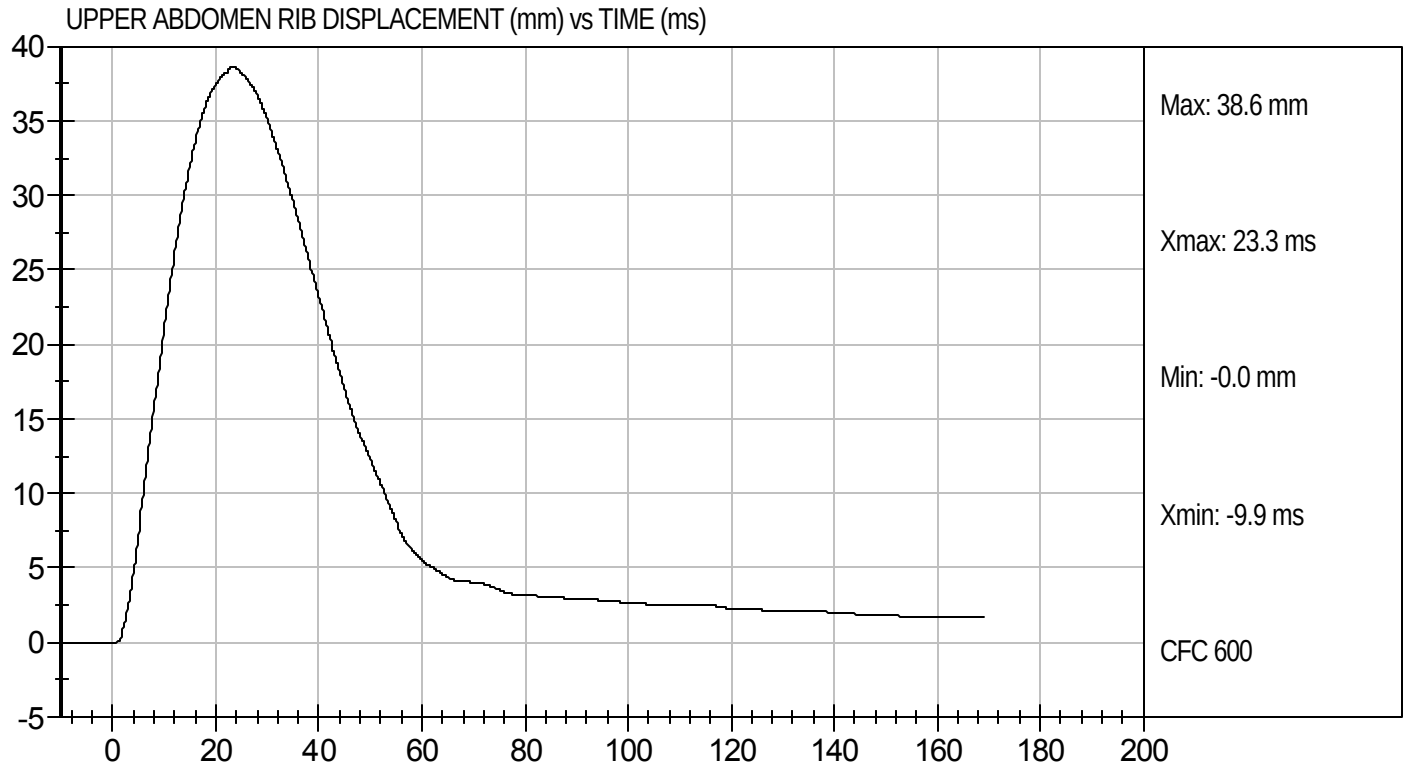
2/15/12
Test Date

David Winkelbauer
Approved By

Test Desc: Abdomen Impact
Component ID: D12506

Test Date: 2/15/12
Velocity: 14.37 ft/s, 4.38 m/s

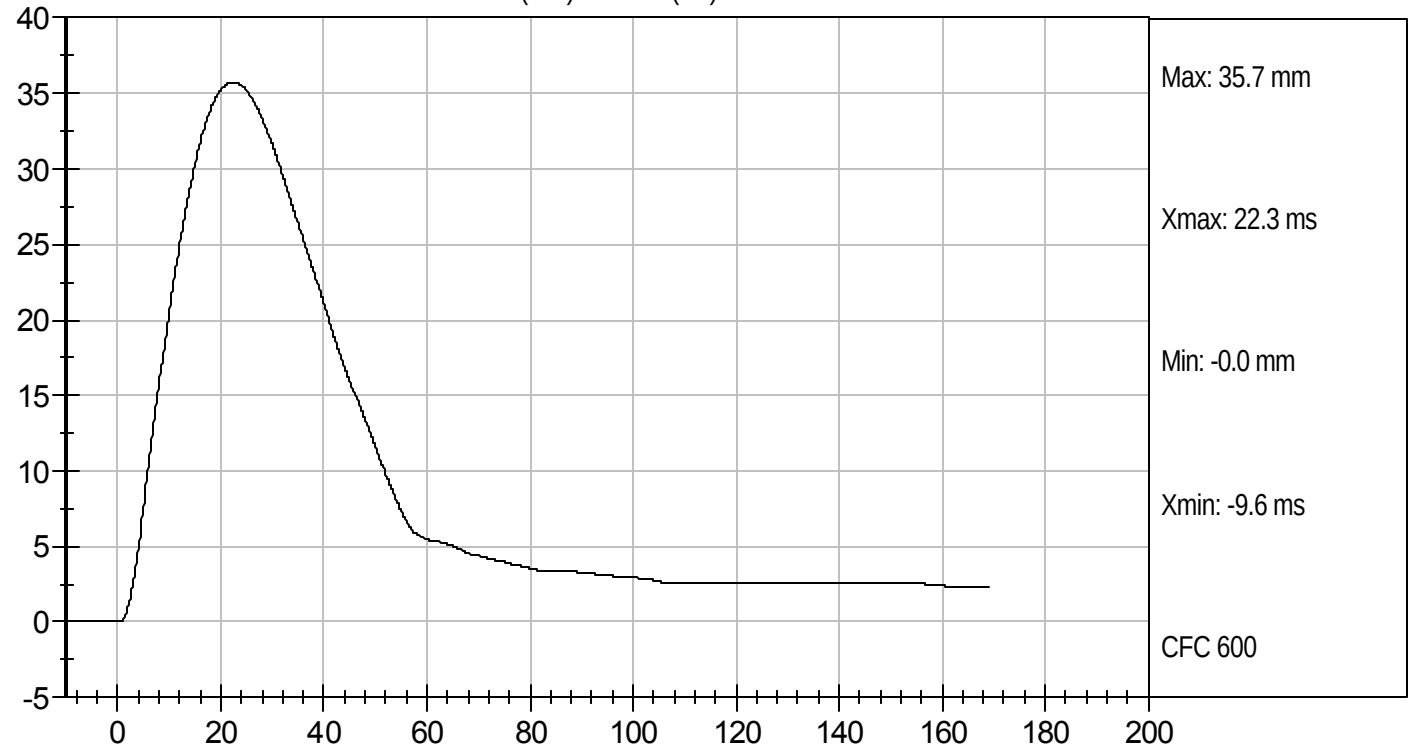




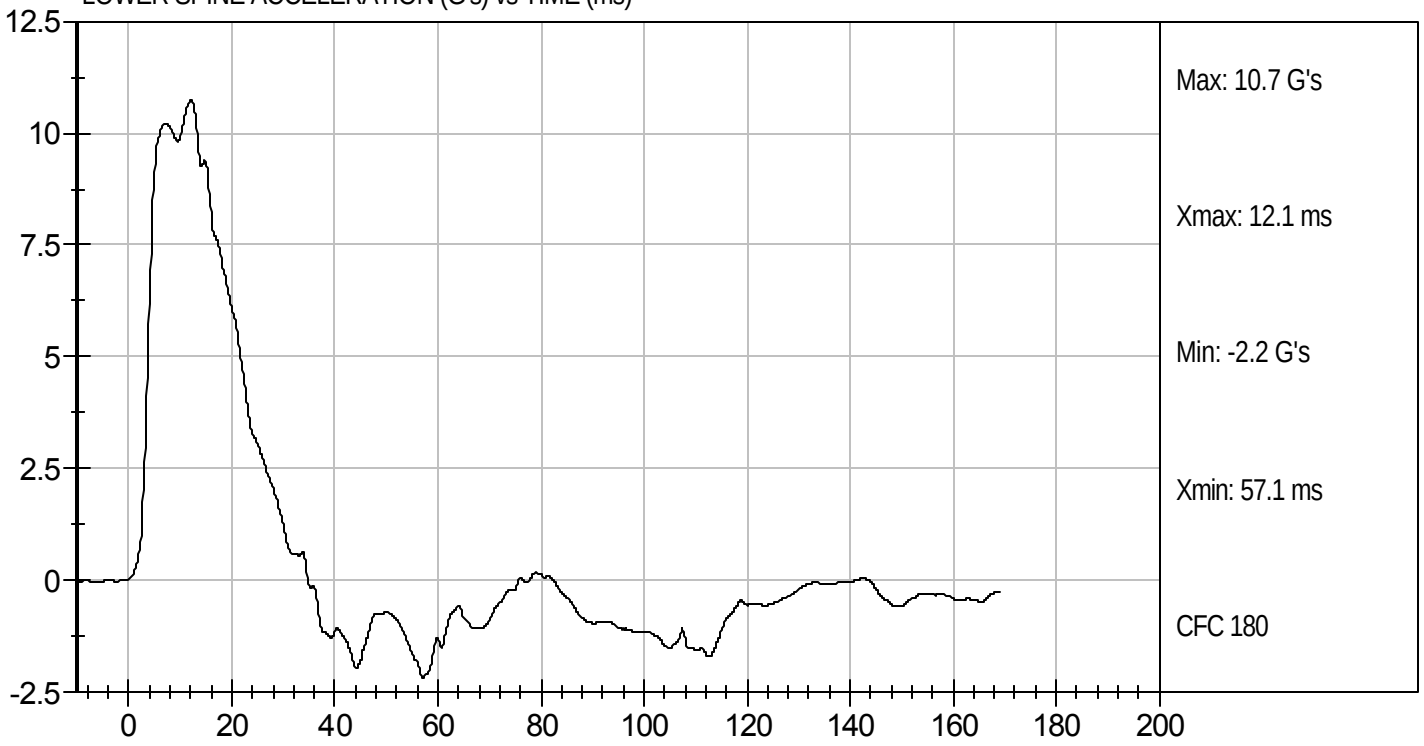
Test Desc: Abdomen Impact
Component ID: D12506

Test Date: 2/15/12
Velocity: 14.37 ft/s, 4.38 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:** D12507

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.74	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	3800	Pass
		Overall Test Results		Pass

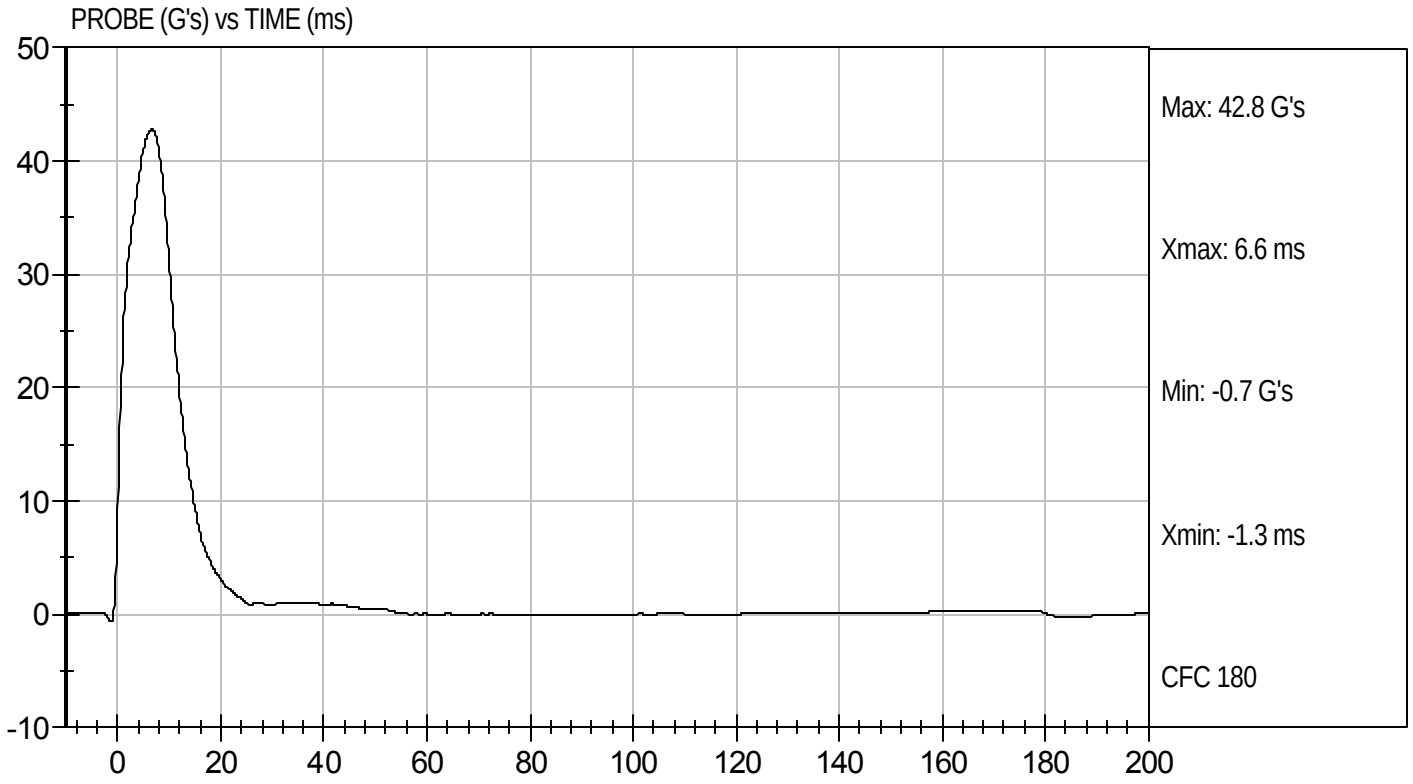
Jessica Hall
Laboratory Technician

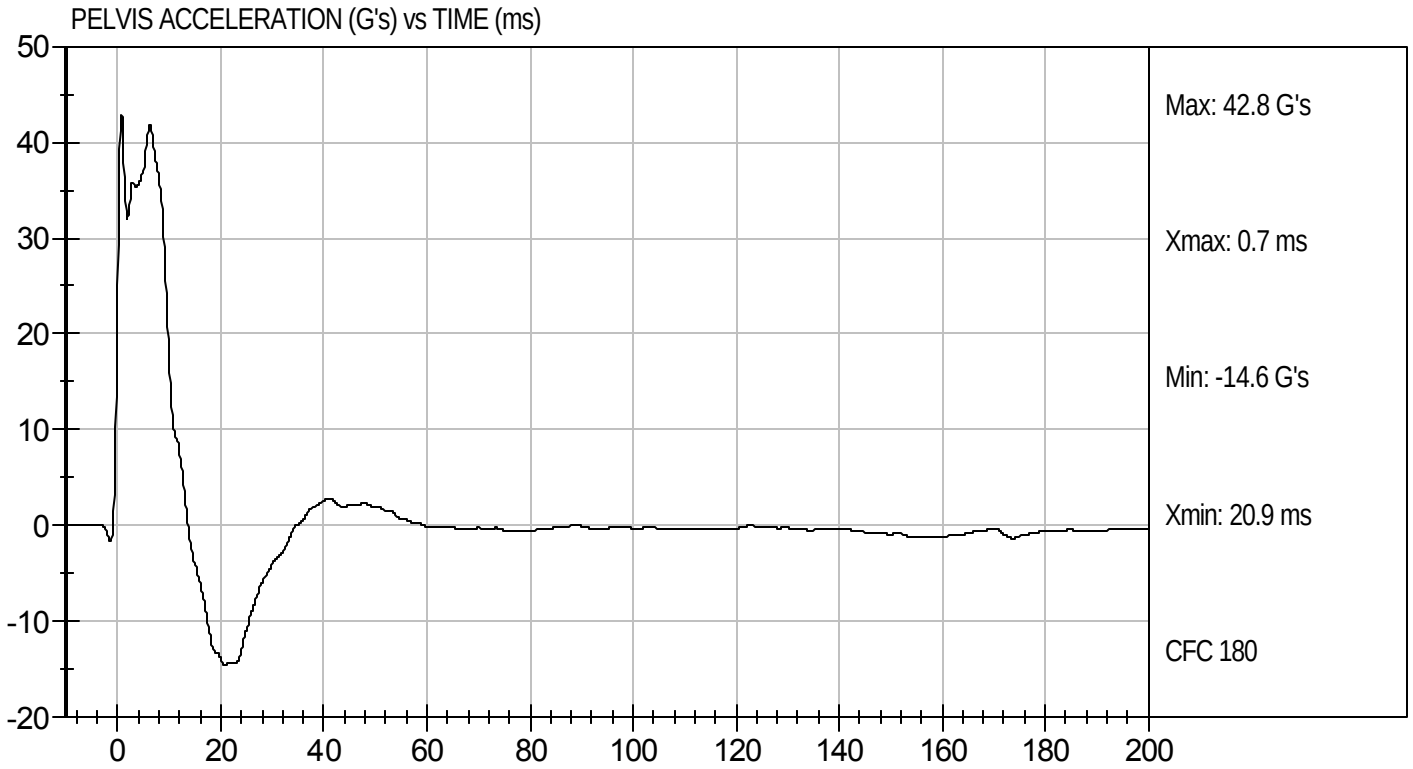
2/15/12
Test Date

David Winkelbauer
Approved By

Test Desc: Pelvis Impact
Component ID: D12507

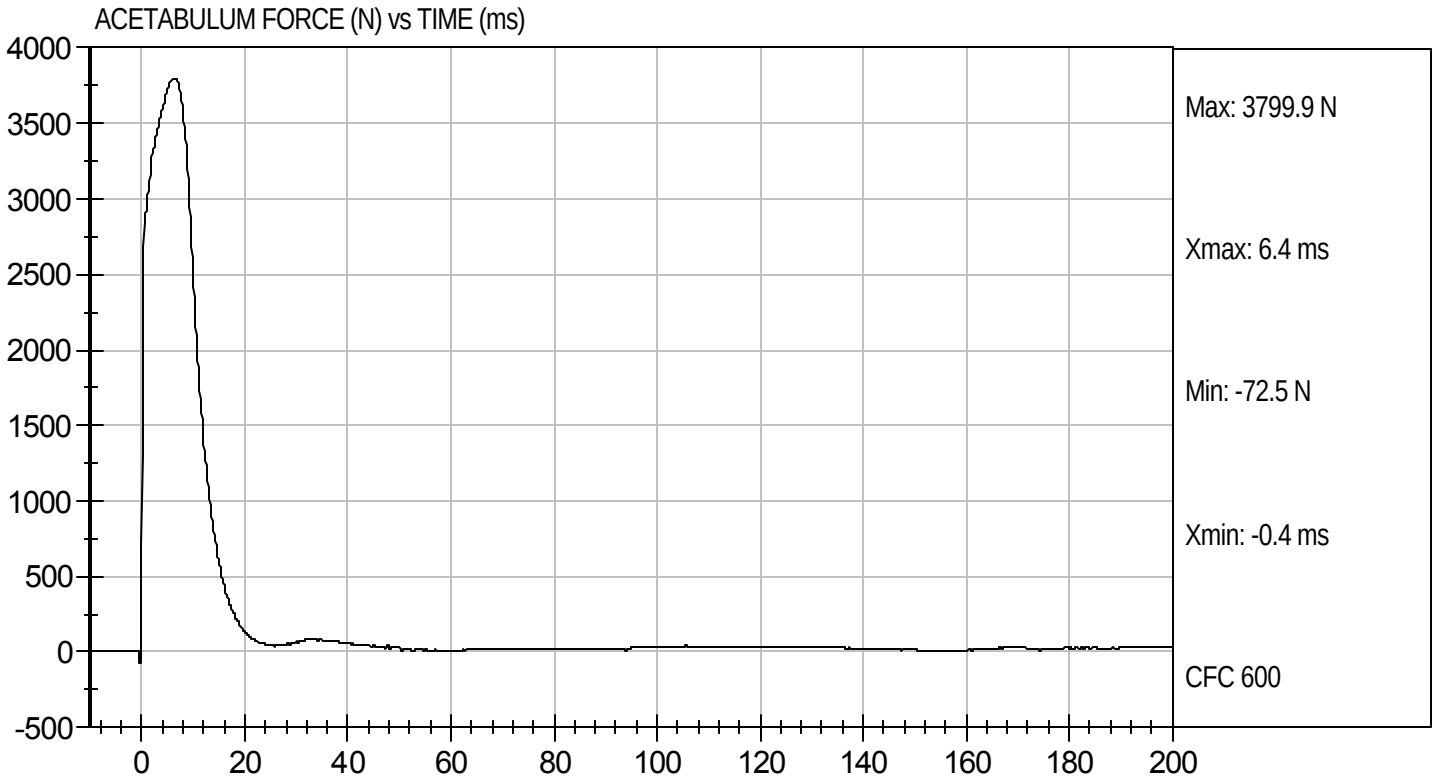
Test Date: 2/15/12
Velocity: 22.11 ft/s, 6.74 m/s





Test Desc: Pelvis Impact
Component ID: D12507

Test Date: 2/15/12
Velocity: 22.11 ft/s, 6.74 m/s



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12508

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4564	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

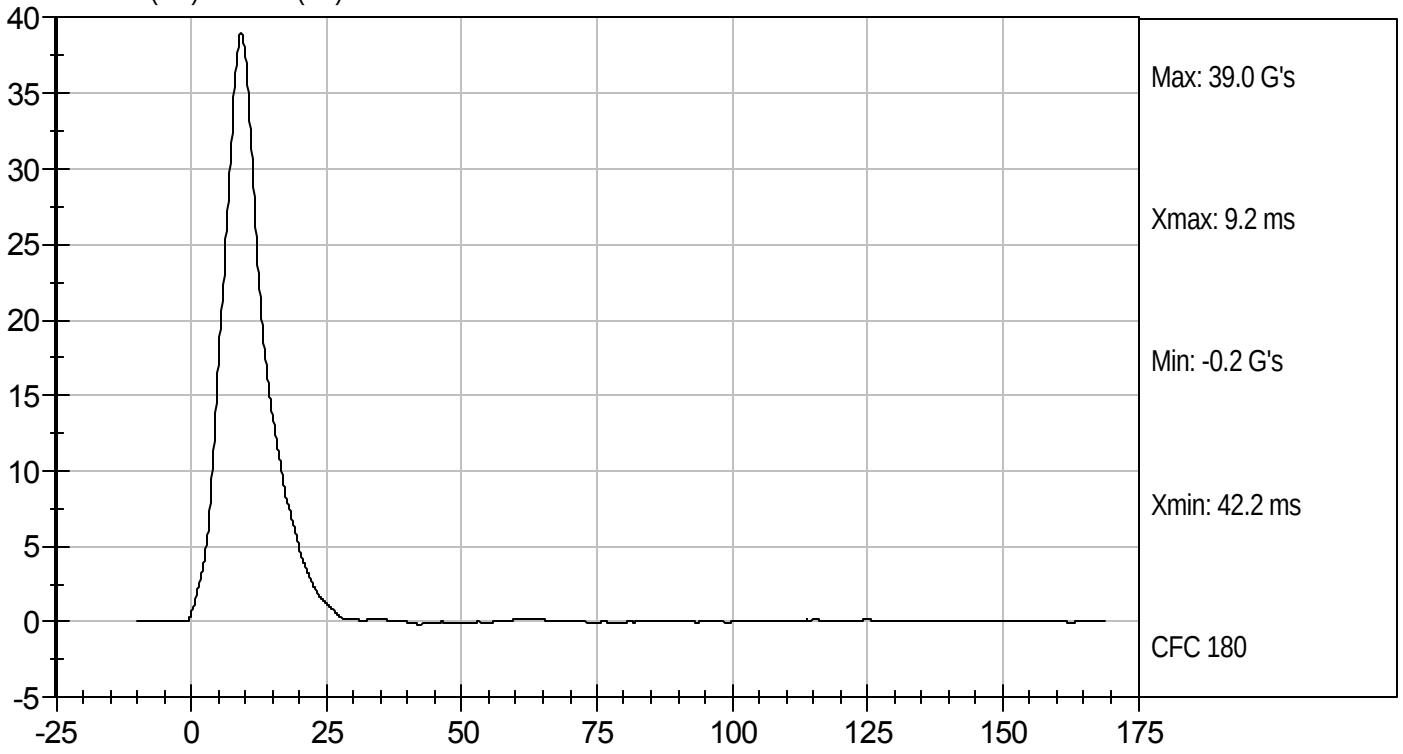
2/15/12
Test Date

David Winkelbauer
Approved By

Test Desc: Iliac Impact
Component ID: D12508

Test Date: 2/15/12
Velocity: 14.37 ft/s, 4.38 m/s

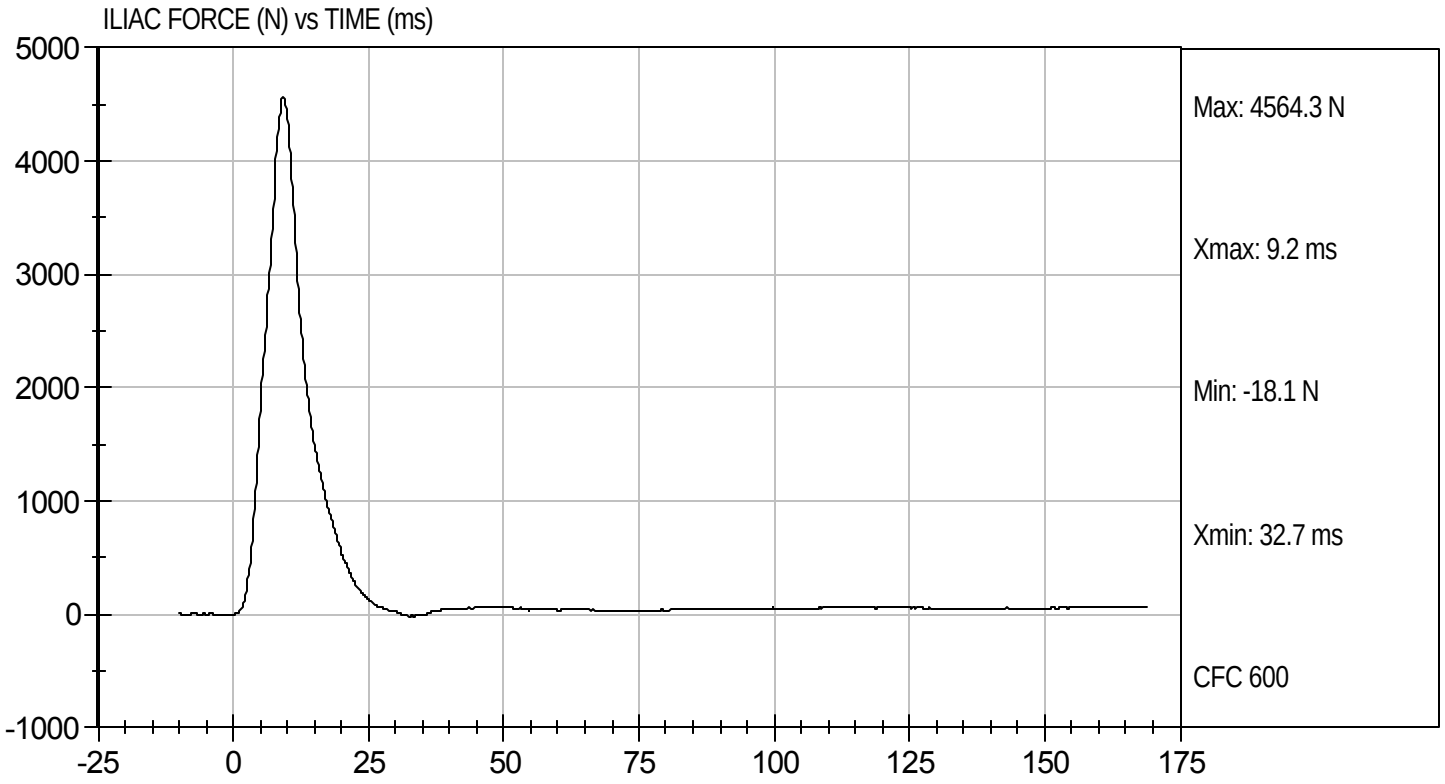
PROBE (G's) vs TIME (ms)



PELVIS ACCELERATION (G's) vs TIME (ms)

Test Desc: Iliac Impact
Component ID: D12508

Test Date: 2/15/12
Velocity: 14.37 ft/s, 4.38 m/s



MGA RESEARCH CORPORATION

HEAD DROP TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D12571

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	115 to 137	125	Pass
Peak Longitudinal Acceleration	G's	+/- 15	2.7	Pass
Unimodal	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

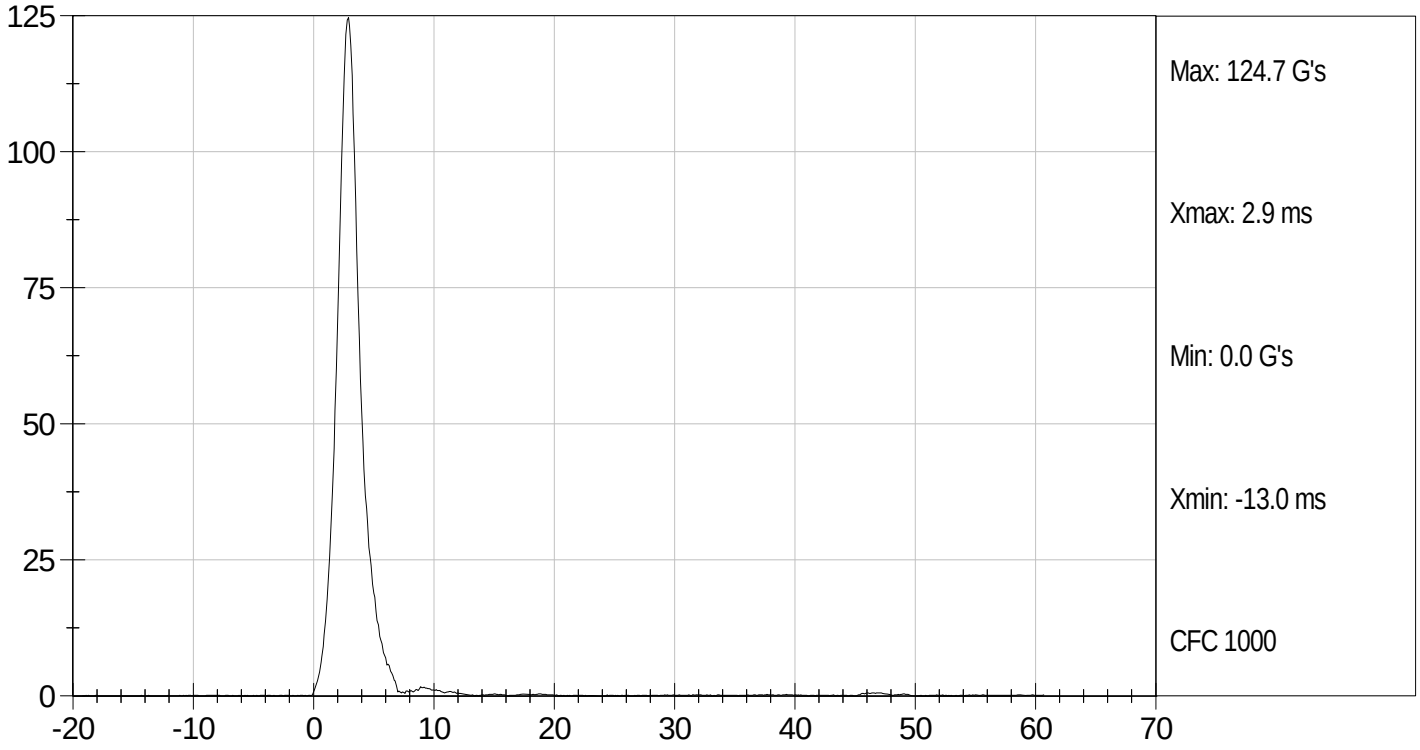
2/21/12
Test Date

David Winkelbauer
Approved By

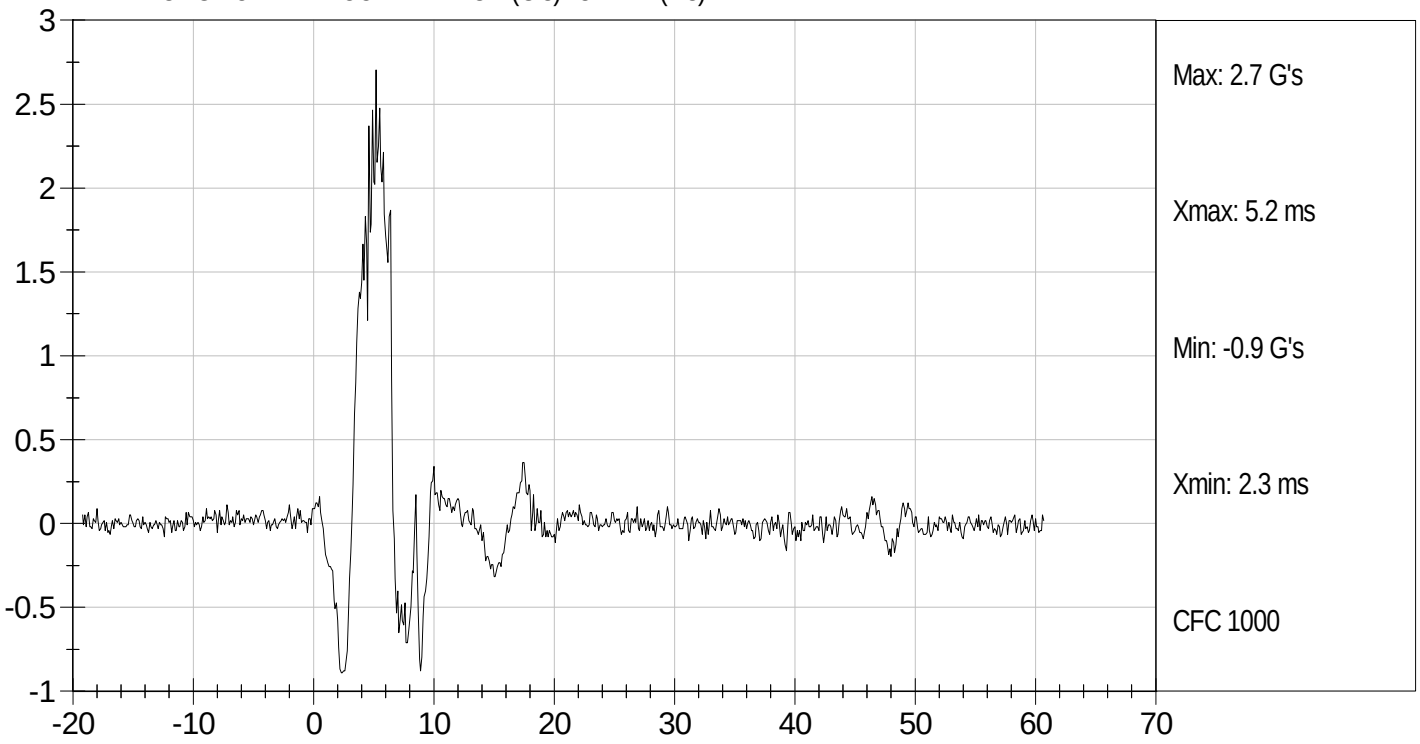
Test Desc: Head Drop
Component ID: D12571

Test Date: 2/21/12
Velocity: 0 ft/s, 0 m/s

PEAK RESULTANT ACCELERATION (G's) vs TIME (ms)



PEAK LONGITUDINAL ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12572

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.9	Pass
Humidity		%	10 to 70	25	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.67	Pass
	15 ms	m/s	3.30 to 4.10	3.79	Pass
	20 ms	m/s	4.40 to 5.40	5.02	Pass
	25 ms	m/s	5.40 to 6.10	5.51	Pass
	25-100 ms	m/s	5.50 to 6.20	5.53	Pass
Maximum D-Plane Rotation		deg	71 to 81	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	-43	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	115	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

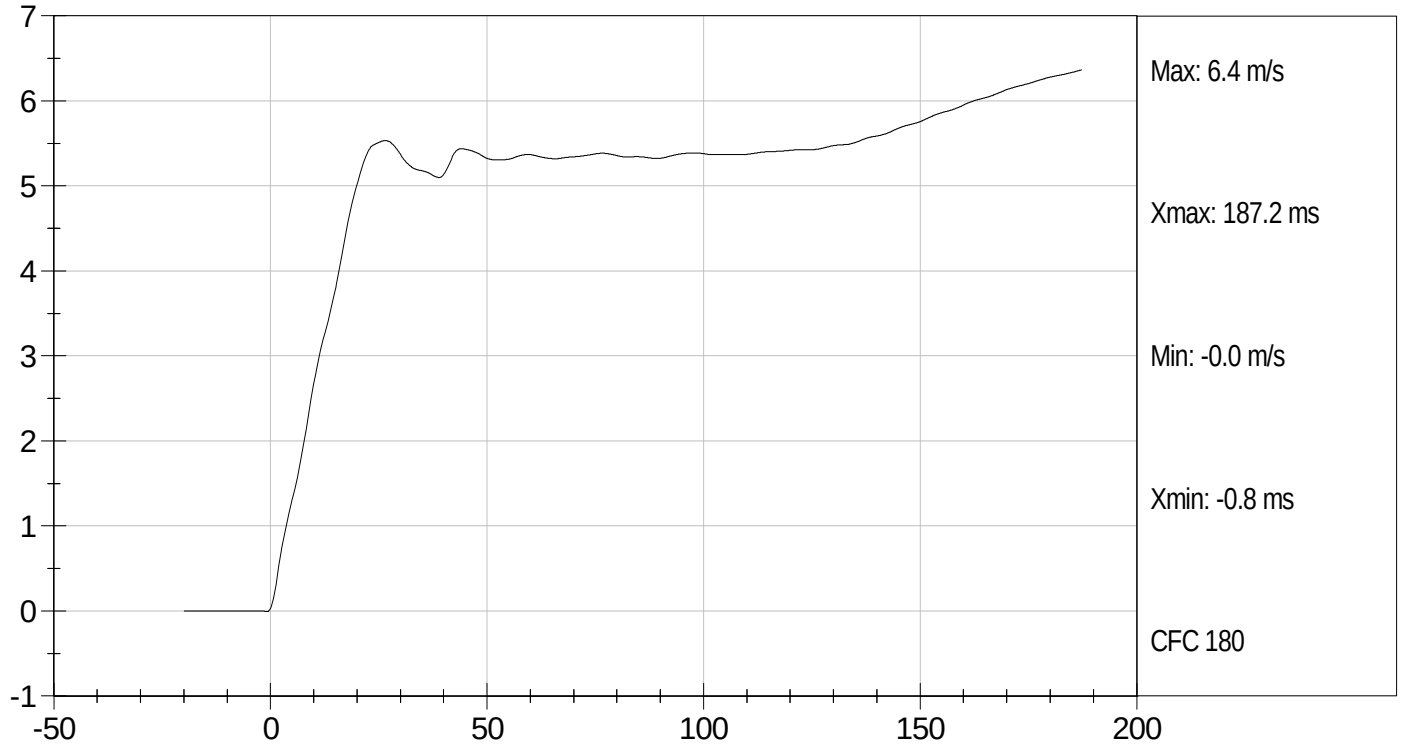
2/21/12
Test Date

David Winkelbauer
Approved By

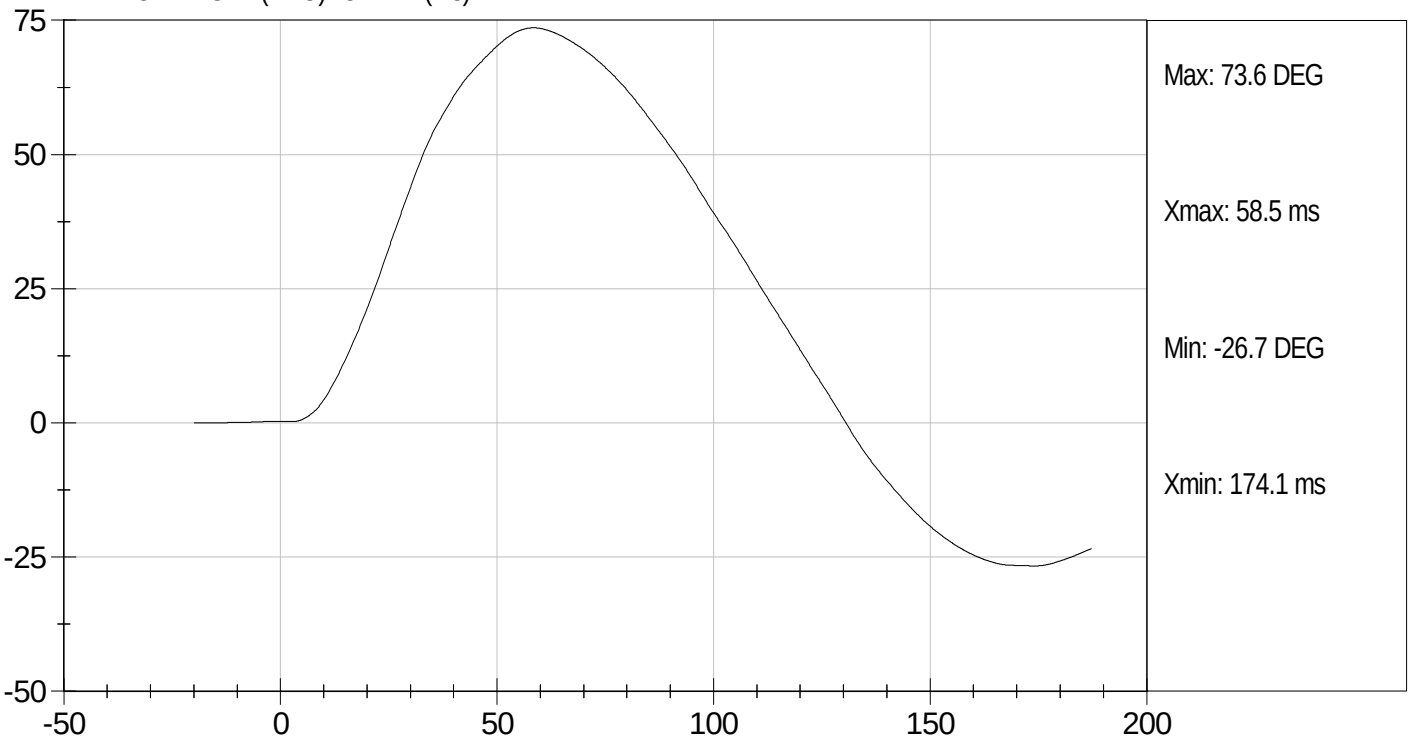
Test Desc: Neck Bending
Component ID: D12572

Test Date: 2/21/12
Velocity: 18.32 ft/s, 5.58 m/s

PENDULUM DECELERATION (m/s) vs TIME (ms)

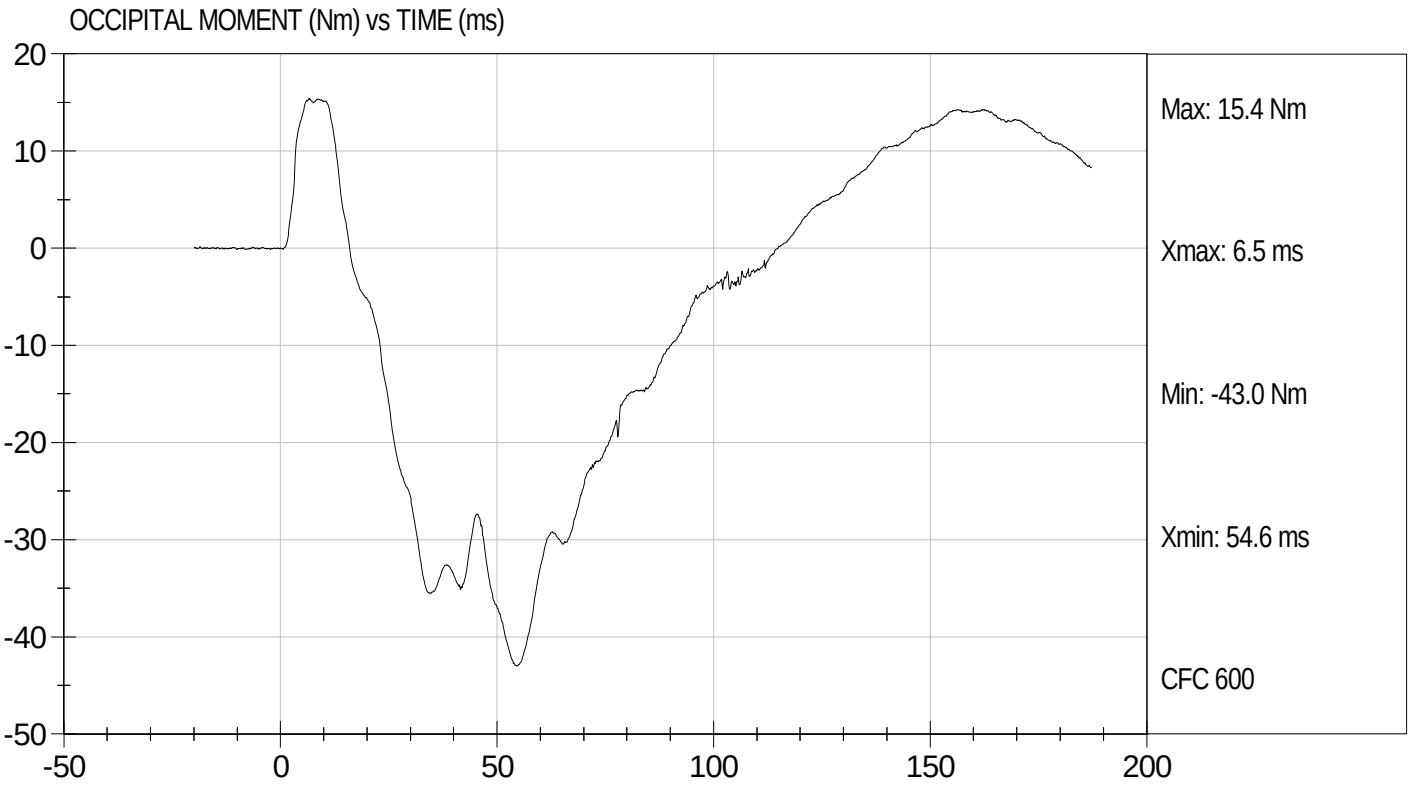


FLEXION ANGLE (DEG) vs TIME (ms)



Test Desc: Neck Bending
Component ID: D12572

Test Date: 2/21/12
Velocity: 18.32 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D12573

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	13 to 18	16	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

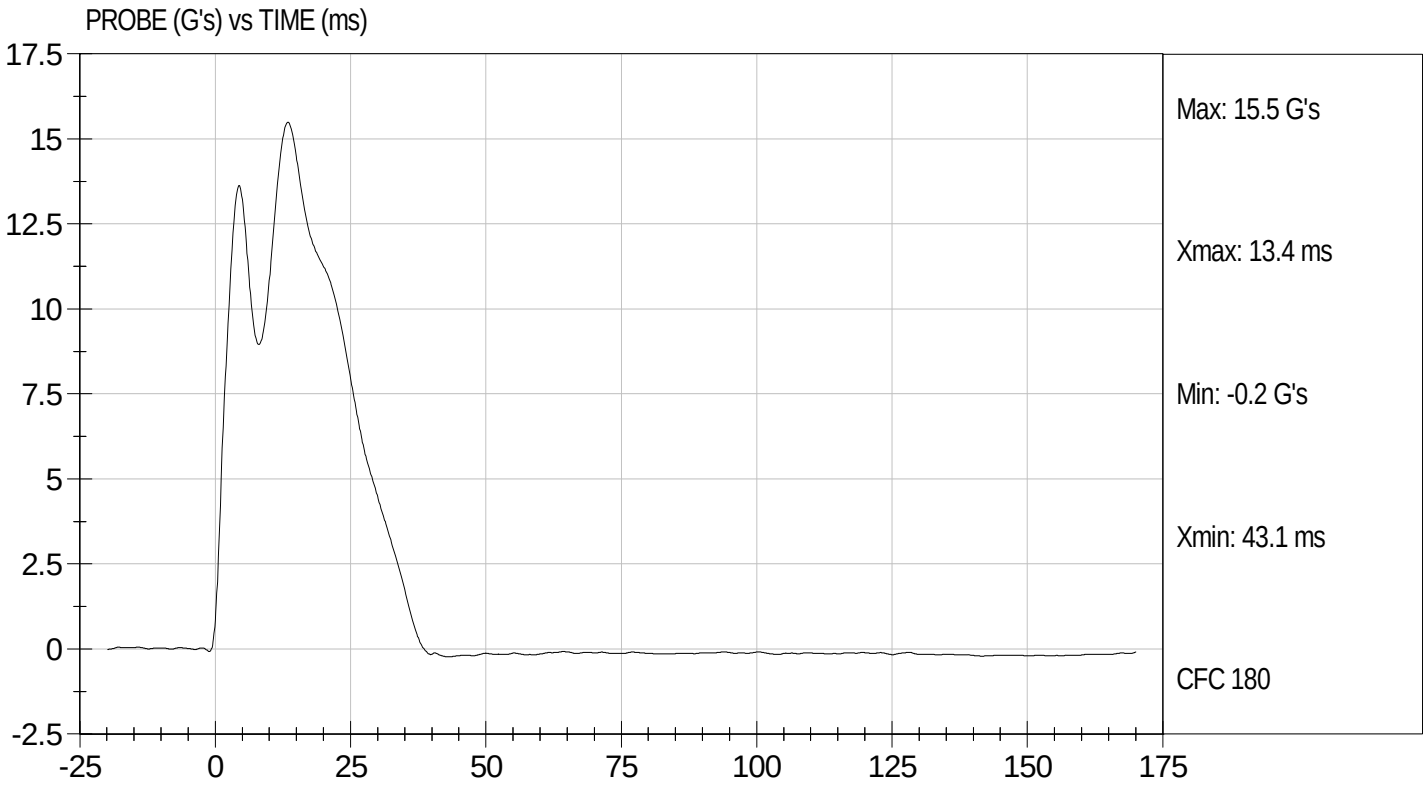
Jessica Gall
Laboratory Technician

2/21/12
Test Date

David Winkelbauer
Approved By

Test Desc: Shoulder Impact
Component ID: D12573

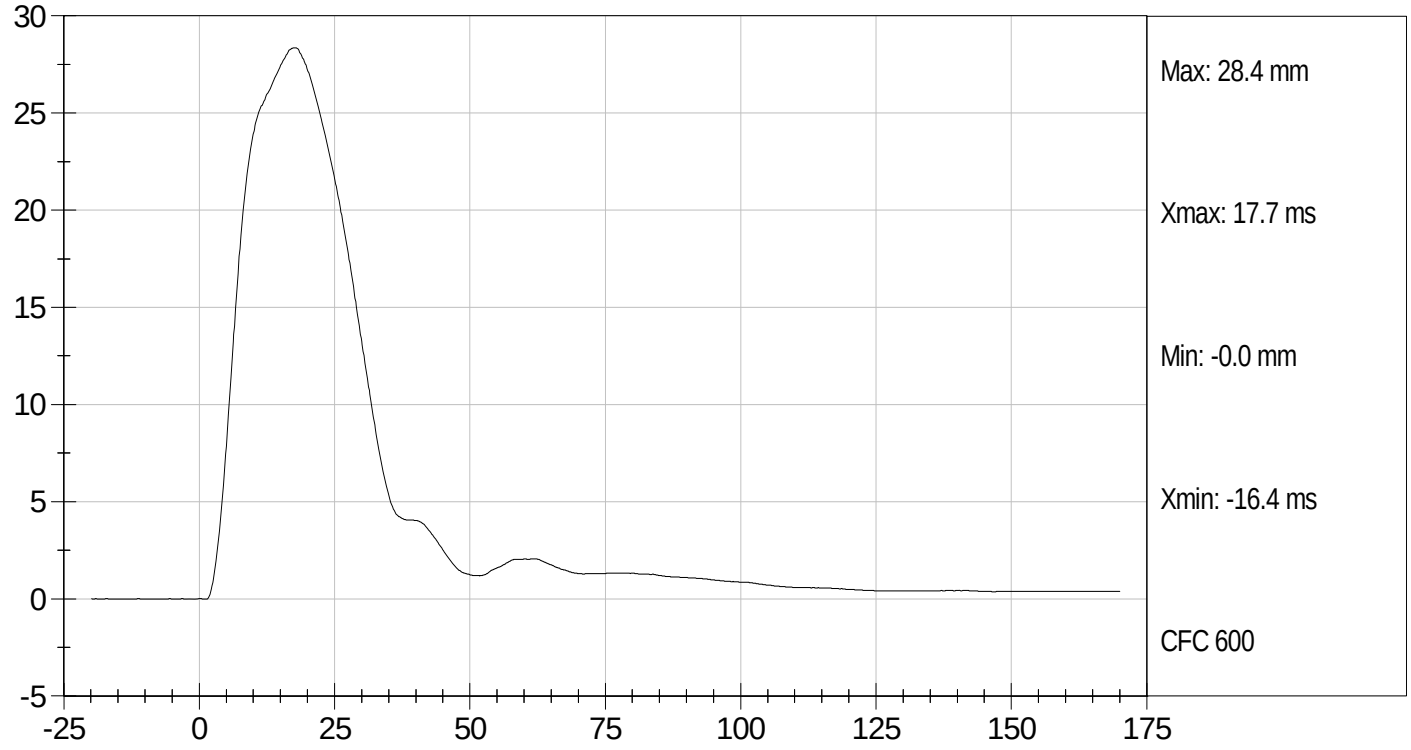
Test Date: 2/21/12
Velocity: 14.37 ft/s, 4.38 m/s



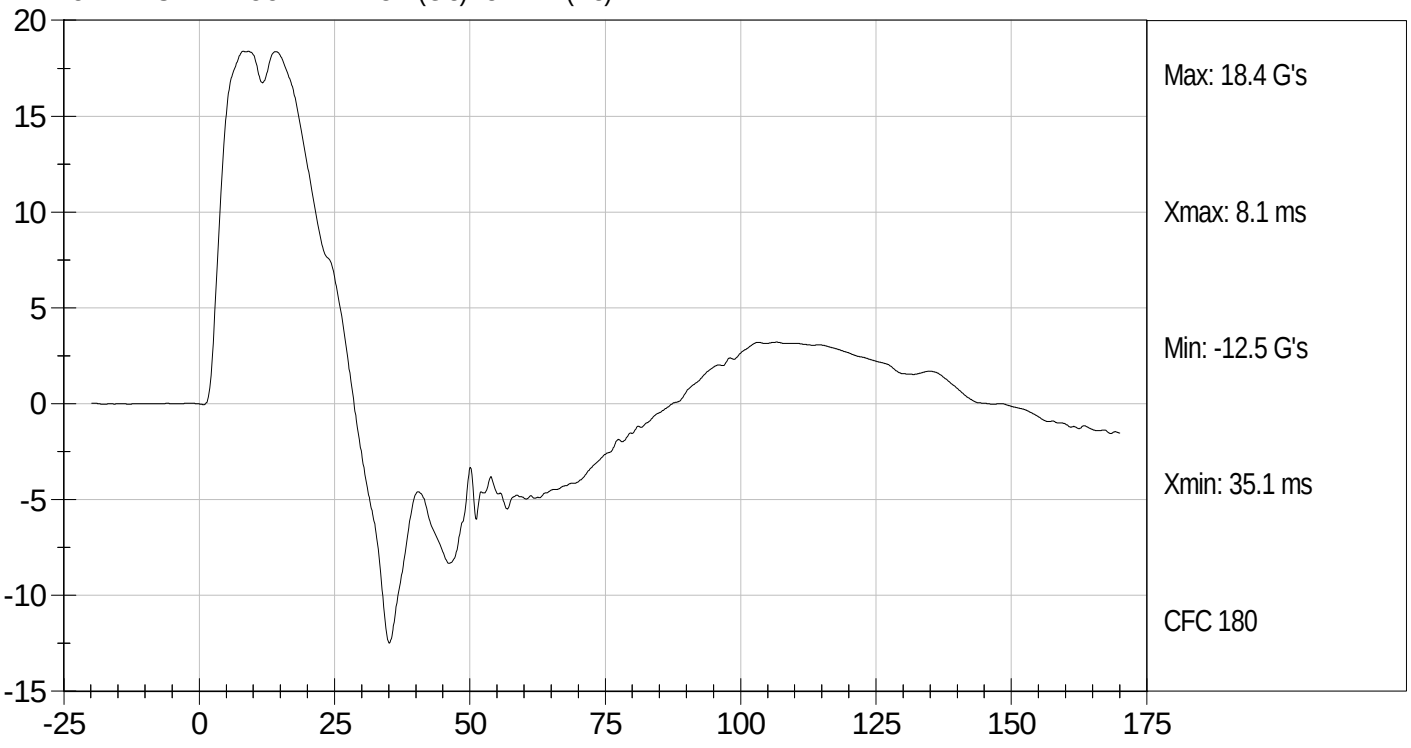
Test Desc: Shoulder Impact
Component ID: D12573

Test Date: 2/21/12
Velocity: 14.37 ft/s, 4.38 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



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



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12574

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	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	33	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	34	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

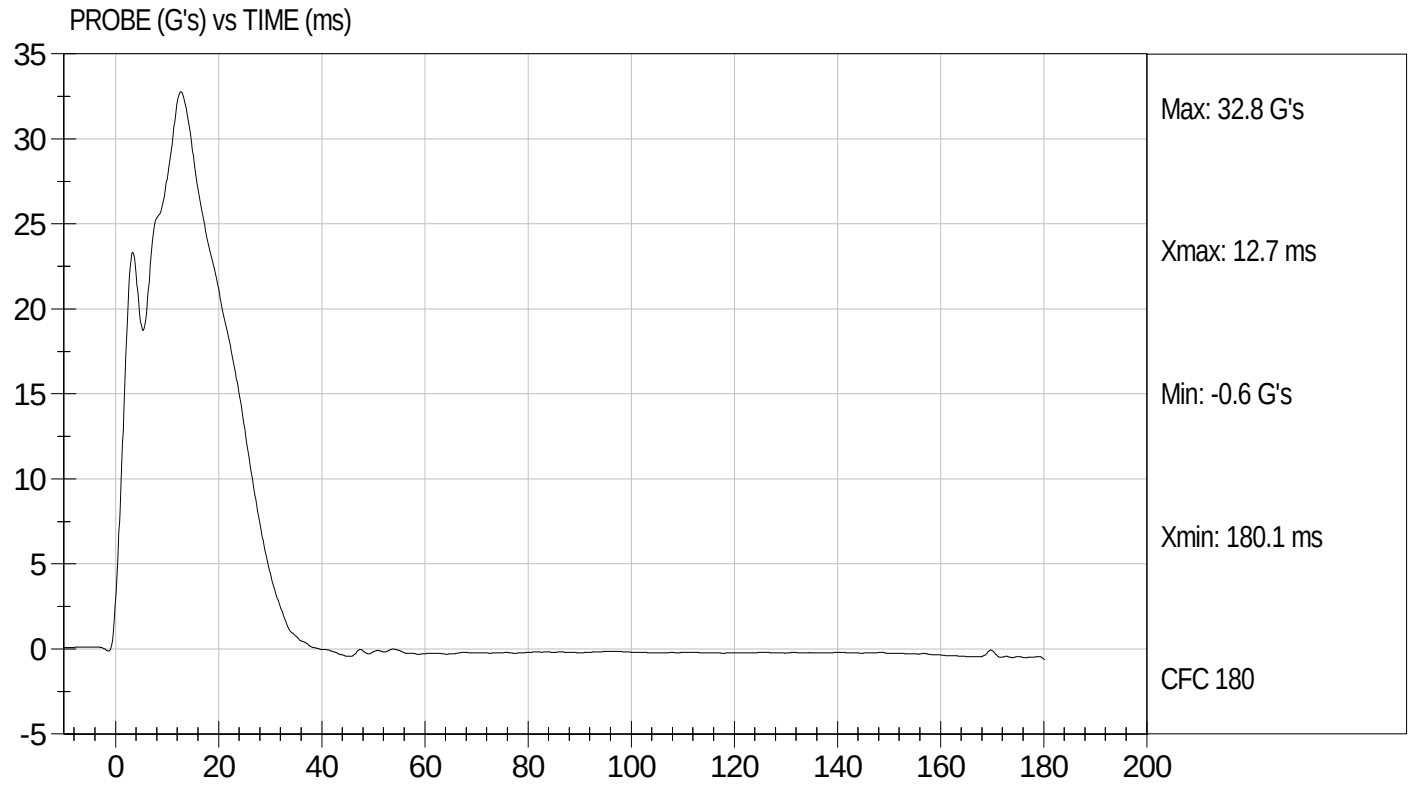
Jessica Hall
Laboratory Technician

2/21/12
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax With Arm
Component ID: D12574

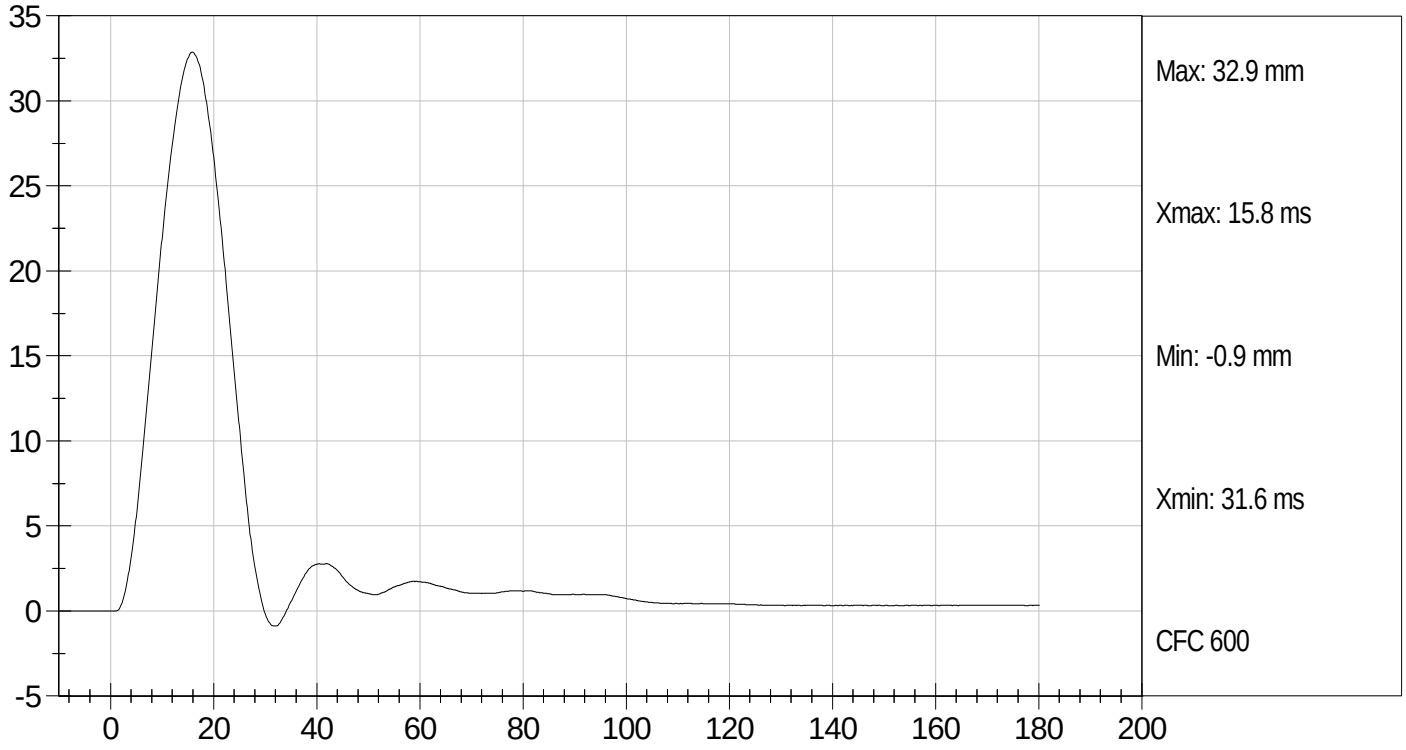
Test Date: 2/21/12
Velocity: 22.22 ft/s, 6.77 m/s



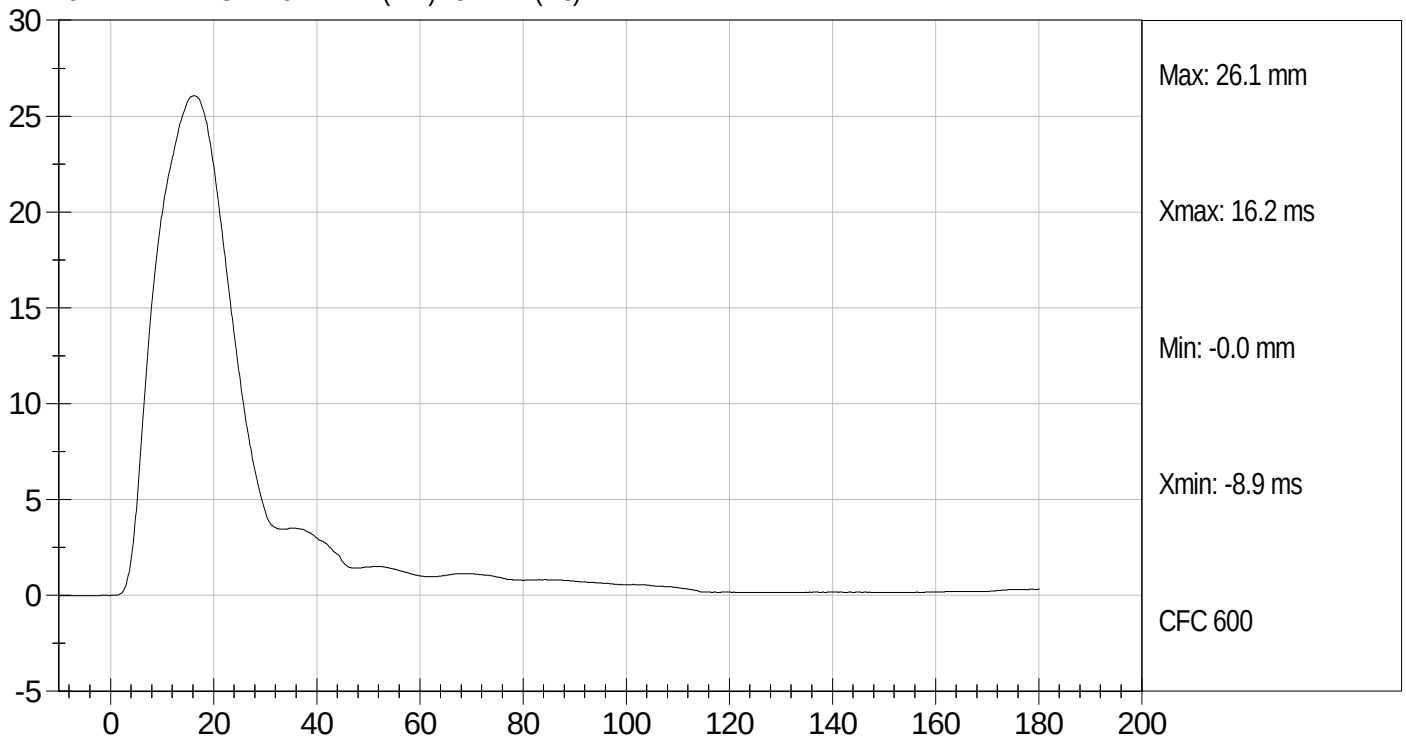
Test Desc: Thorax With Arm
Component ID: D12574

Test Date: 2/21/12
Velocity: 22.22 ft/s, 6.77 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



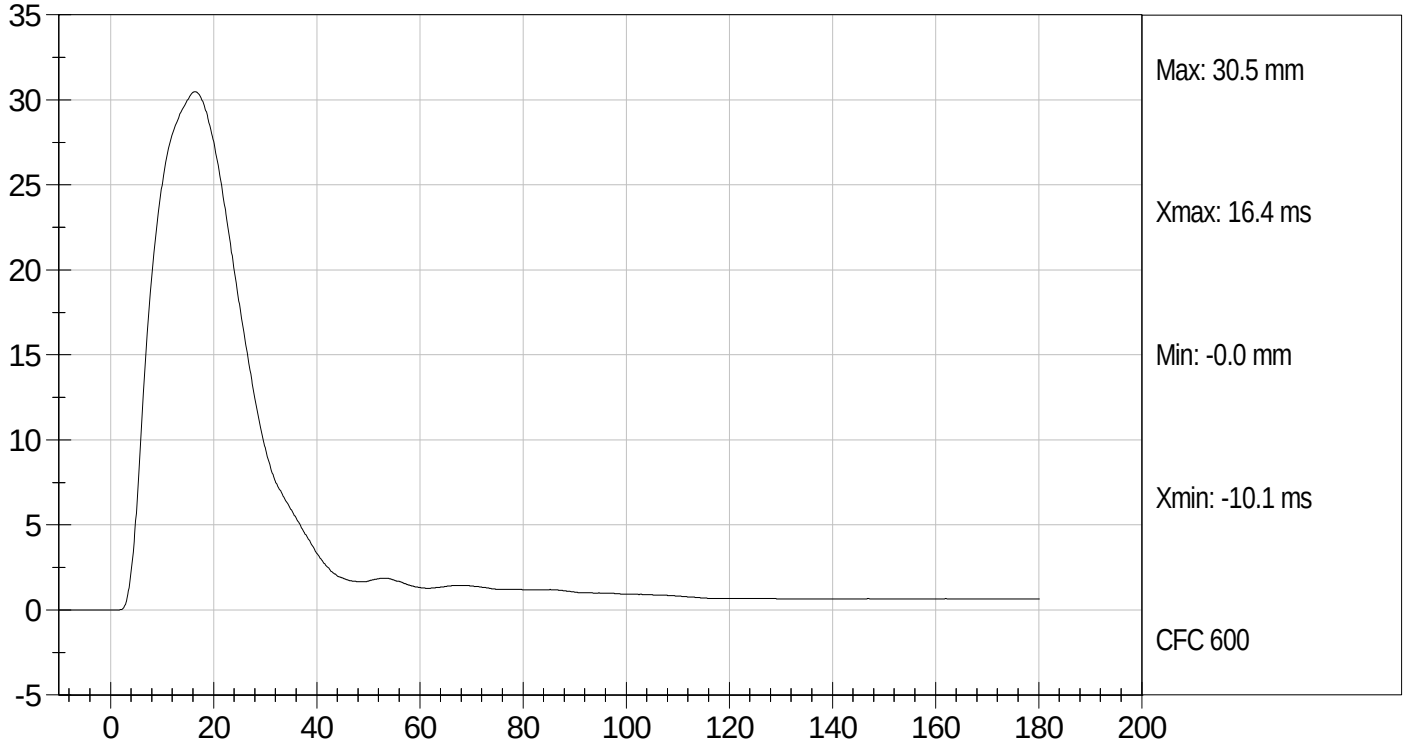
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



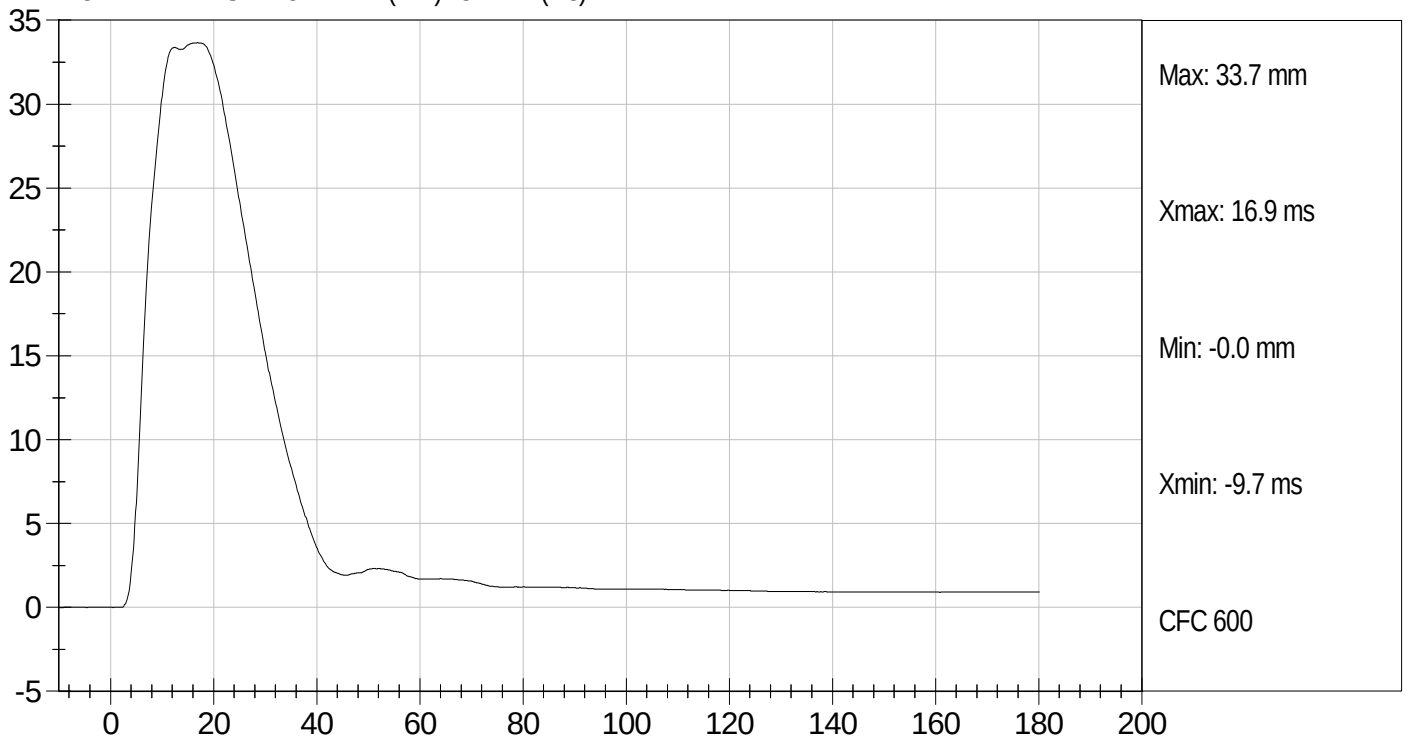
Test Desc: Thorax With Arm
Component ID: D12574

Test Date: 2/21/12
Velocity: 22.22 ft/s, 6.77 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



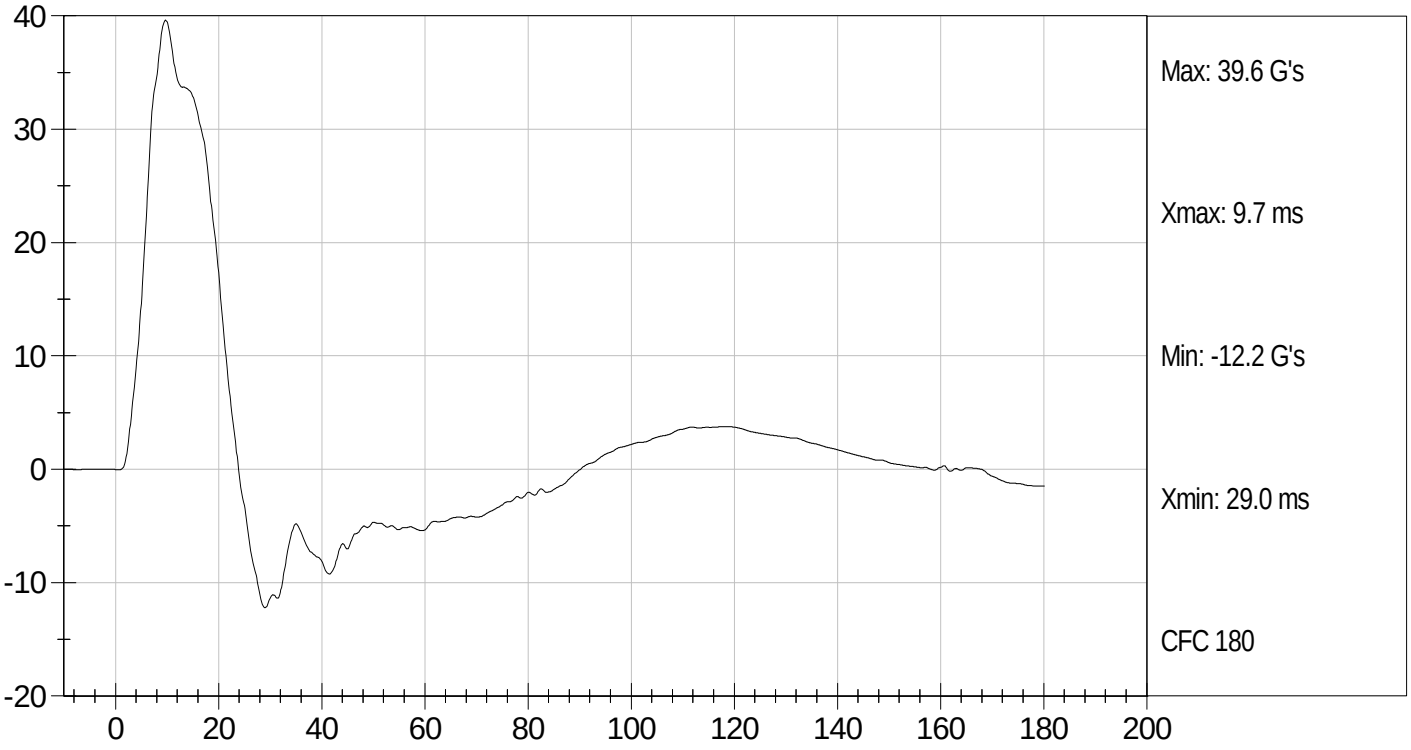
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



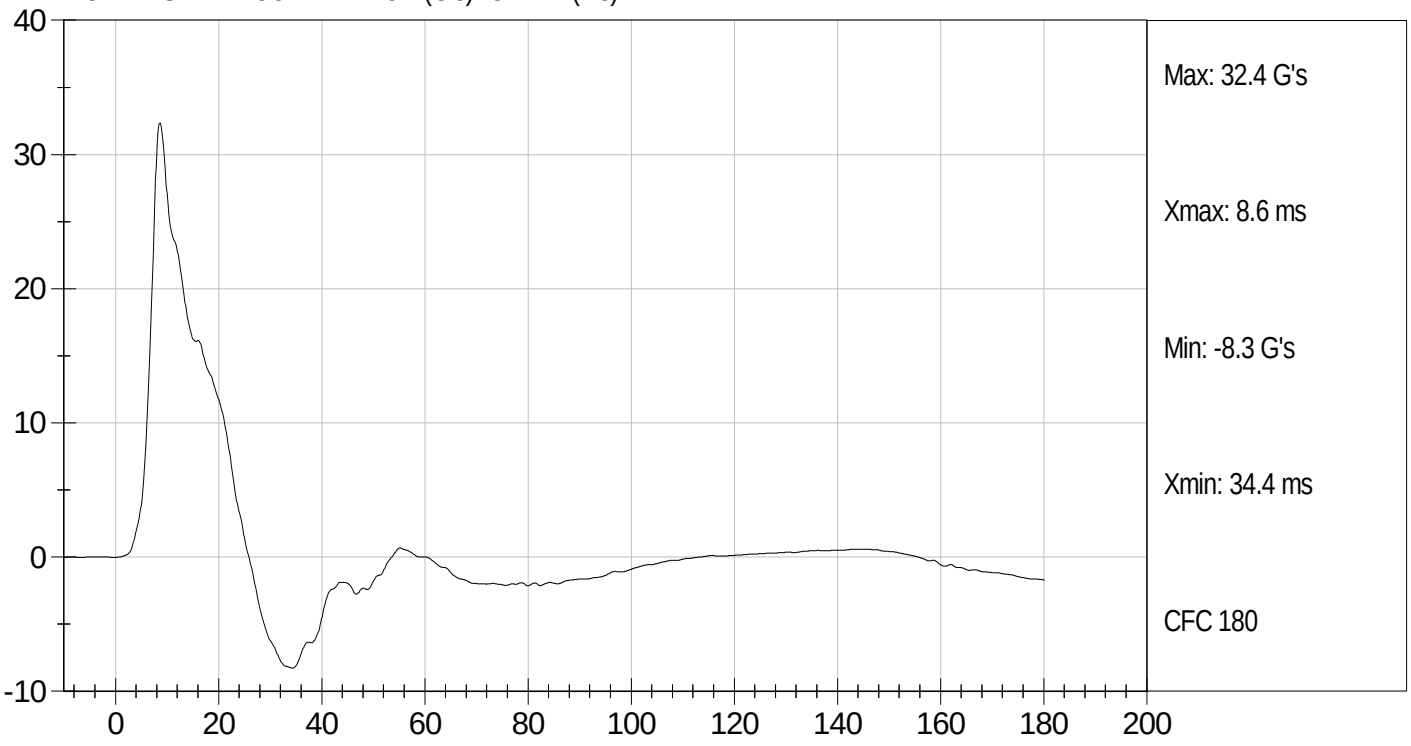
Test Desc: Thorax With Arm
Component ID: D12574

Test Date: 2/21/12
Velocity: 22.22 ft/s, 6.77 m/s

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



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



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12575

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	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	40	Pass
Lower Rib Displacement	mm	35 to 43	39	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

Jessica Gall
Laboratory Technician

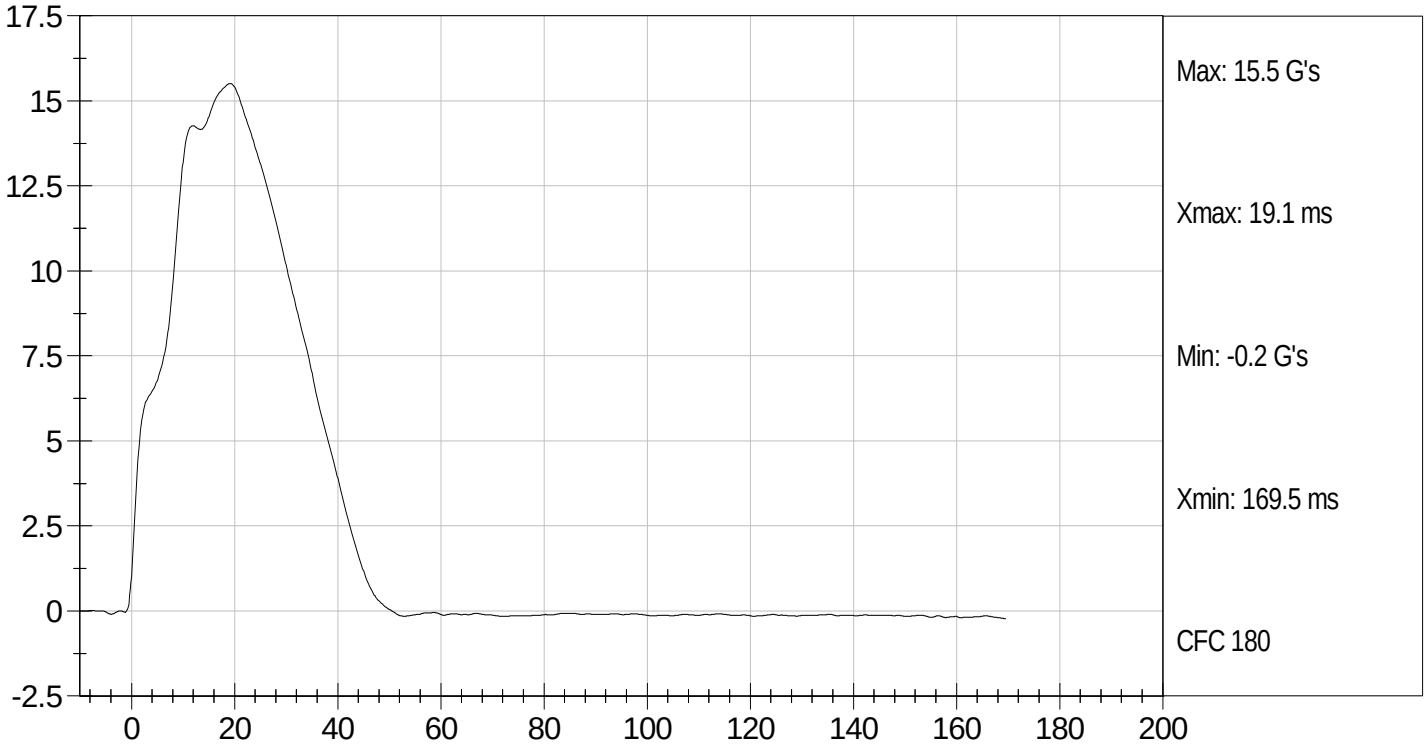
2/21/12
Test Date

David Winkelbauer
Approved By

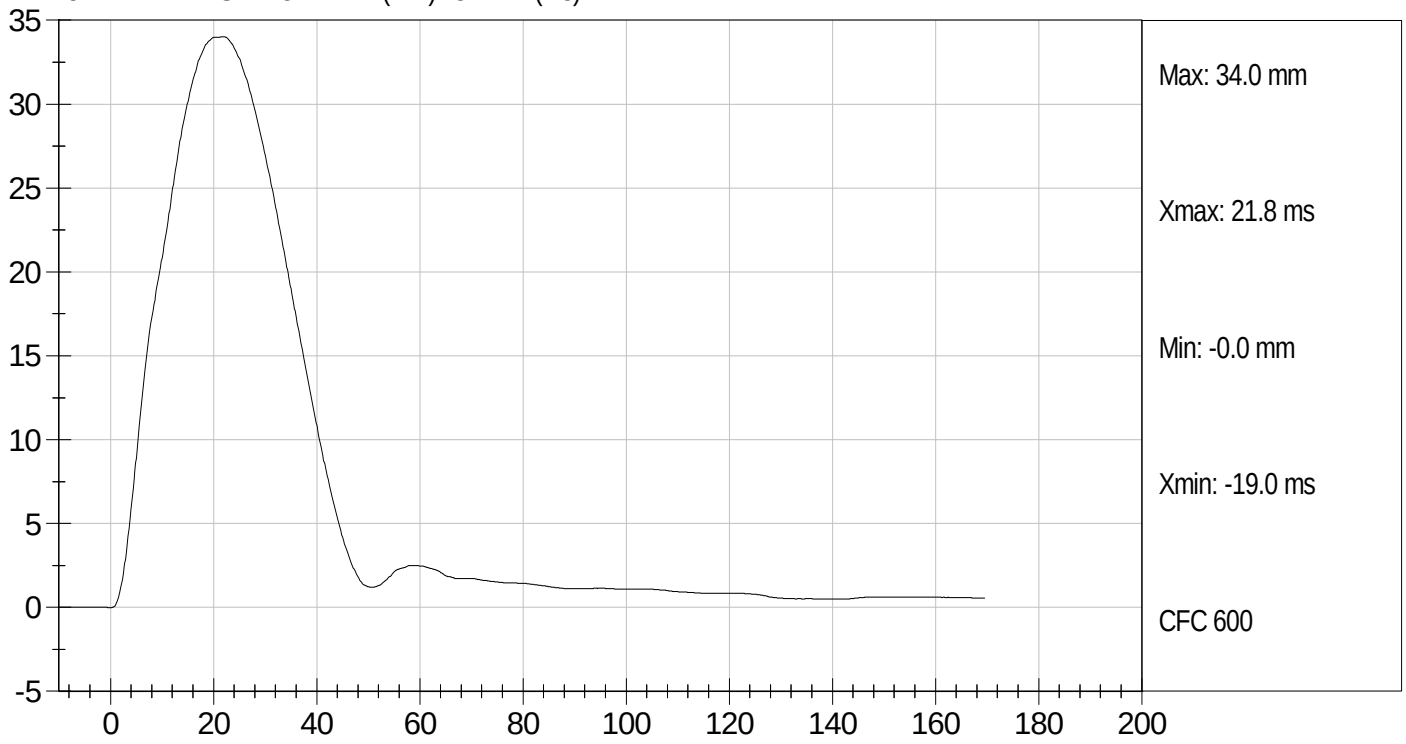
Test Desc: Thorax Without Arm
Component ID: D12575

Test Date: 2/21/12
Velocity: 14.25 ft/s, 4.34 m/s

PROBE (G's) vs TIME (ms)



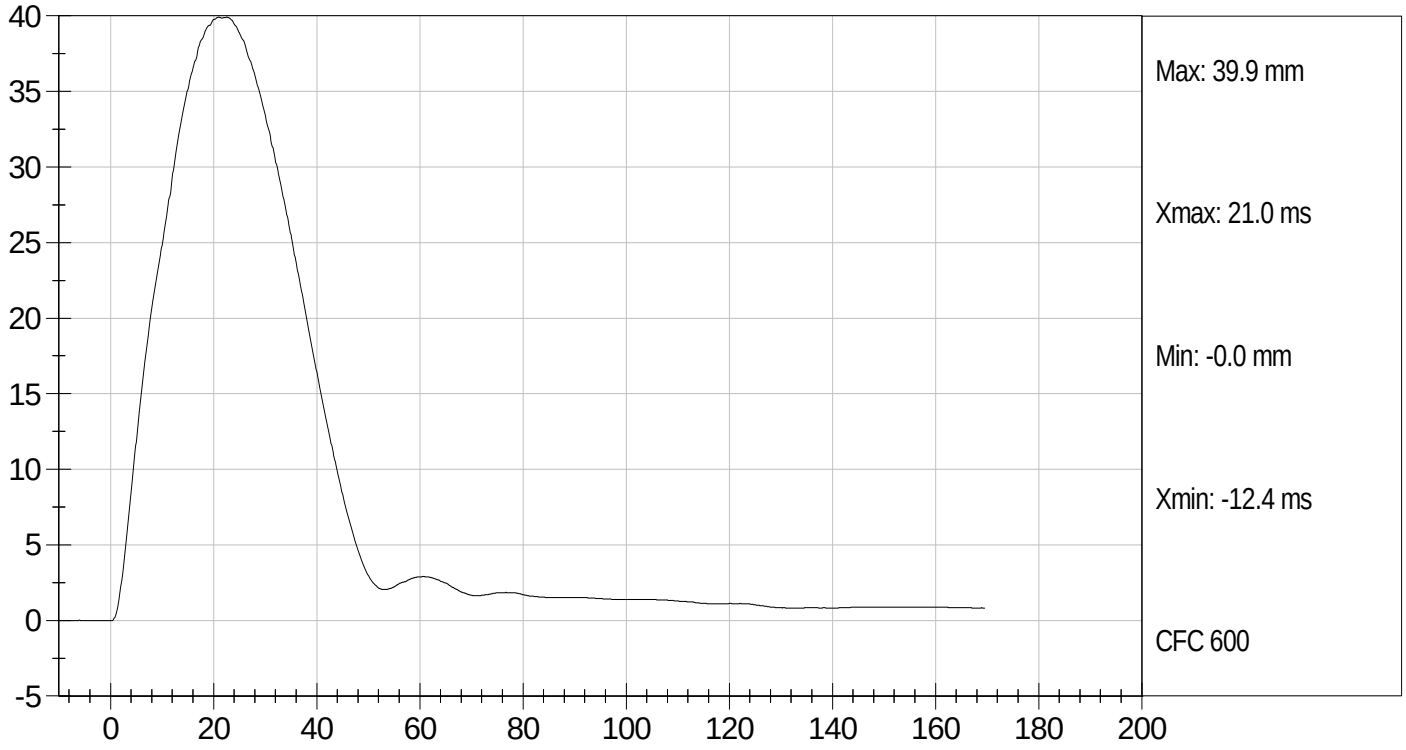
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



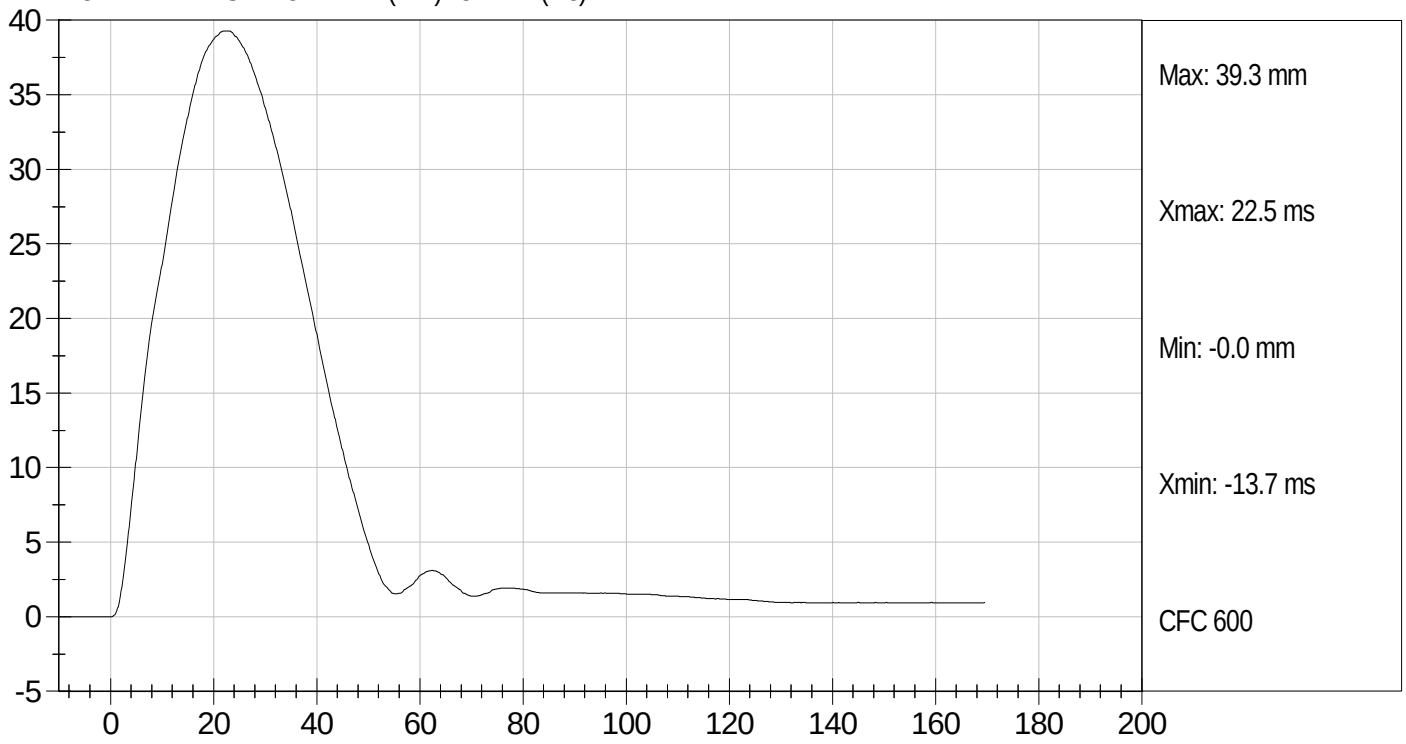
Test Desc: Thorax Without Arm
Component ID: D12575

Test Date: 2/21/12
Velocity: 14.25 ft/s, 4.34 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



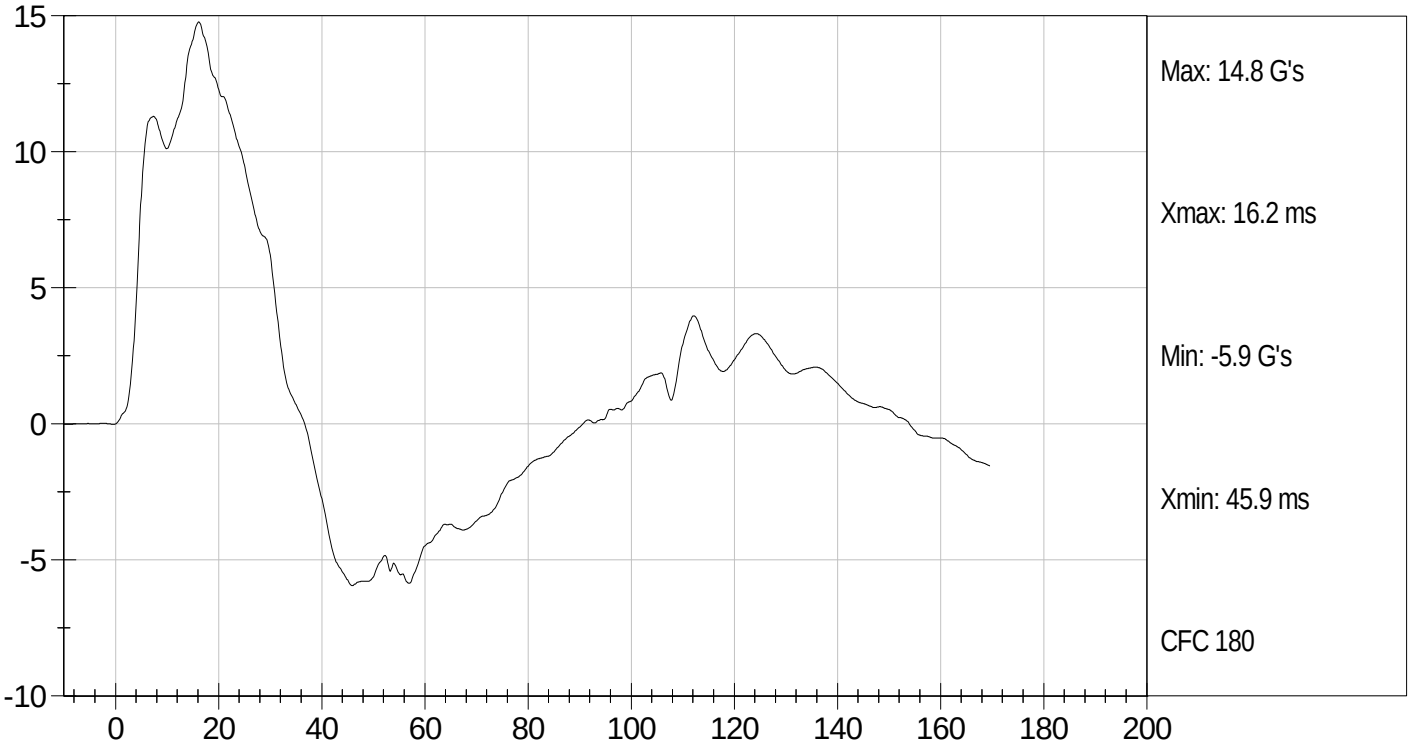
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



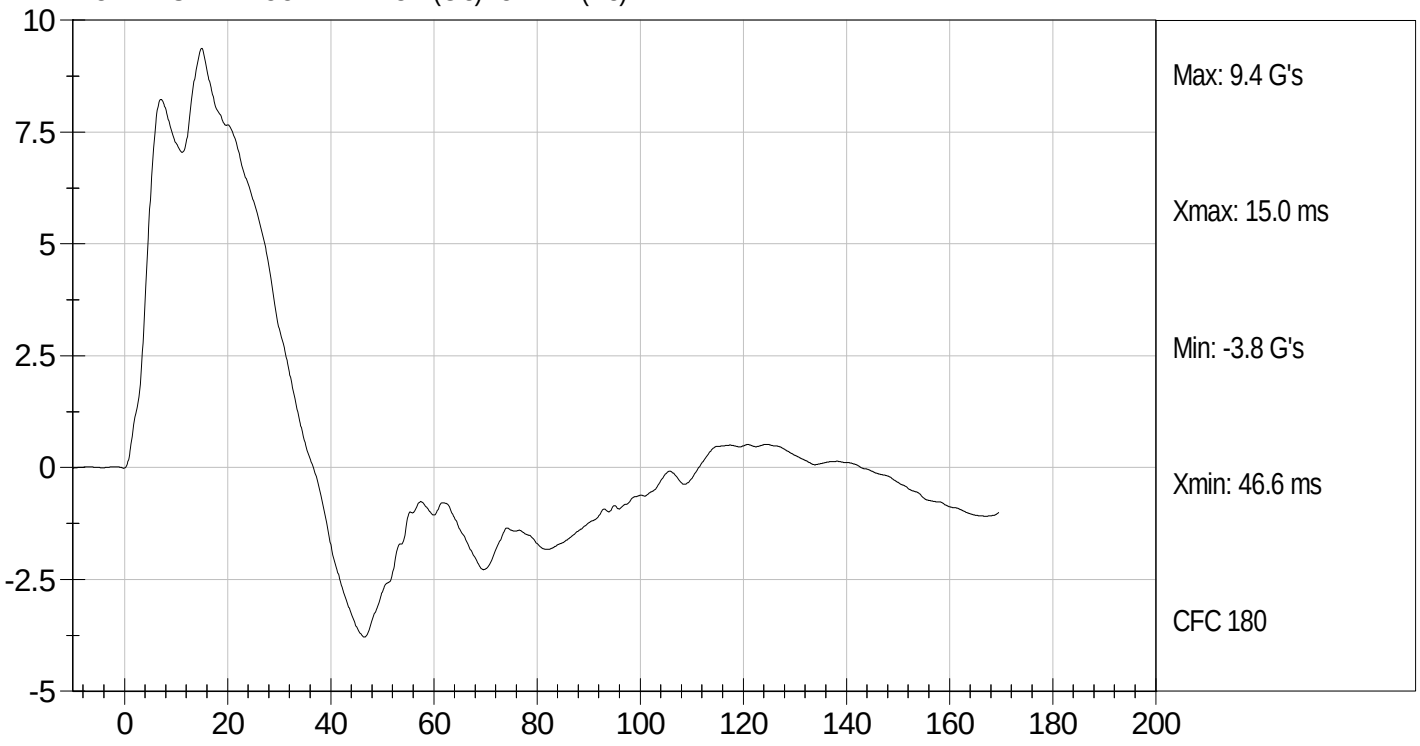
Test Desc: Thorax Without Arm
Component ID: D12575

Test Date: 2/21/12
Velocity: 14.25 ft/s, 4.34 m/s

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D12576

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	39	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

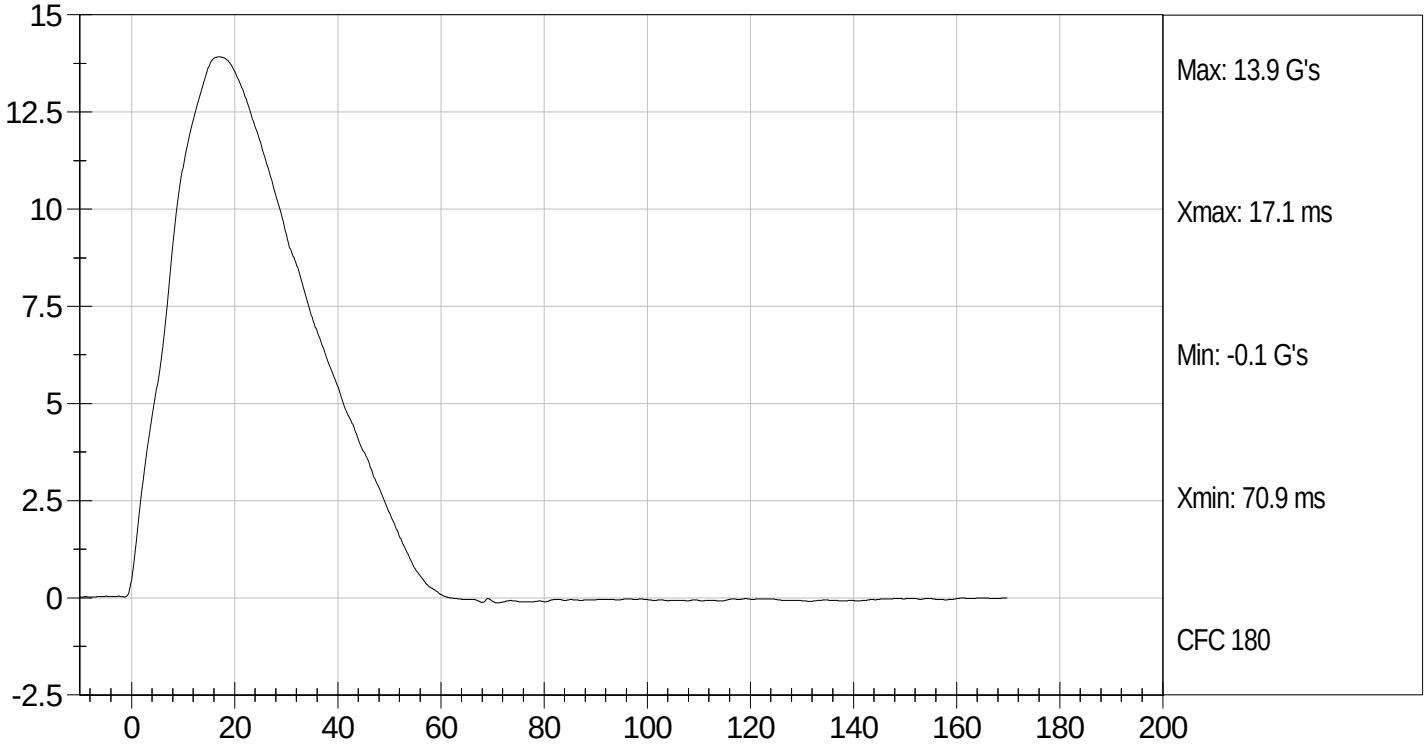
2/21/12
Test Date

David Winkelbauer
Approved By

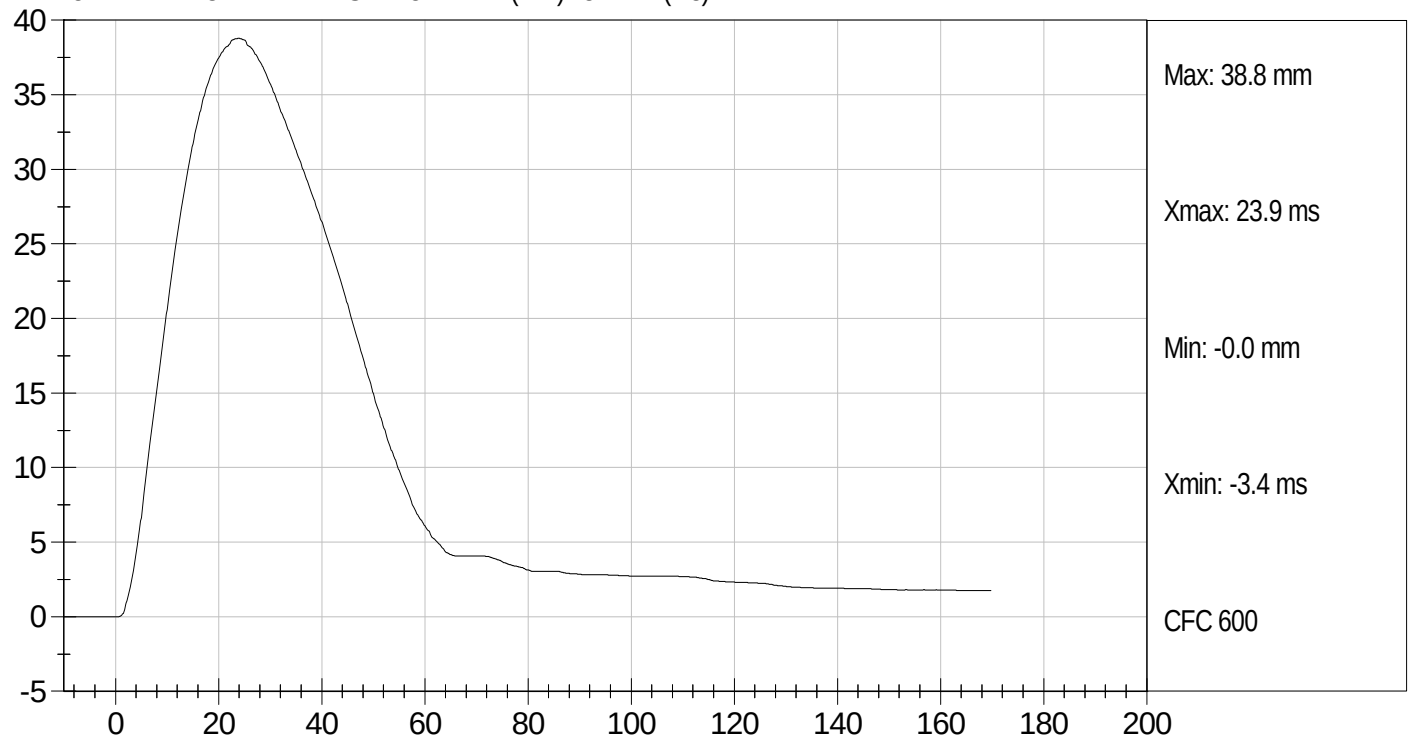
Test Desc: Abdomen Impact
Component ID: D12576

Test Date: 2/21/12
Velocity: 14.37 ft/s, 4.38 m/s

PROBE (G's) vs TIME (ms)



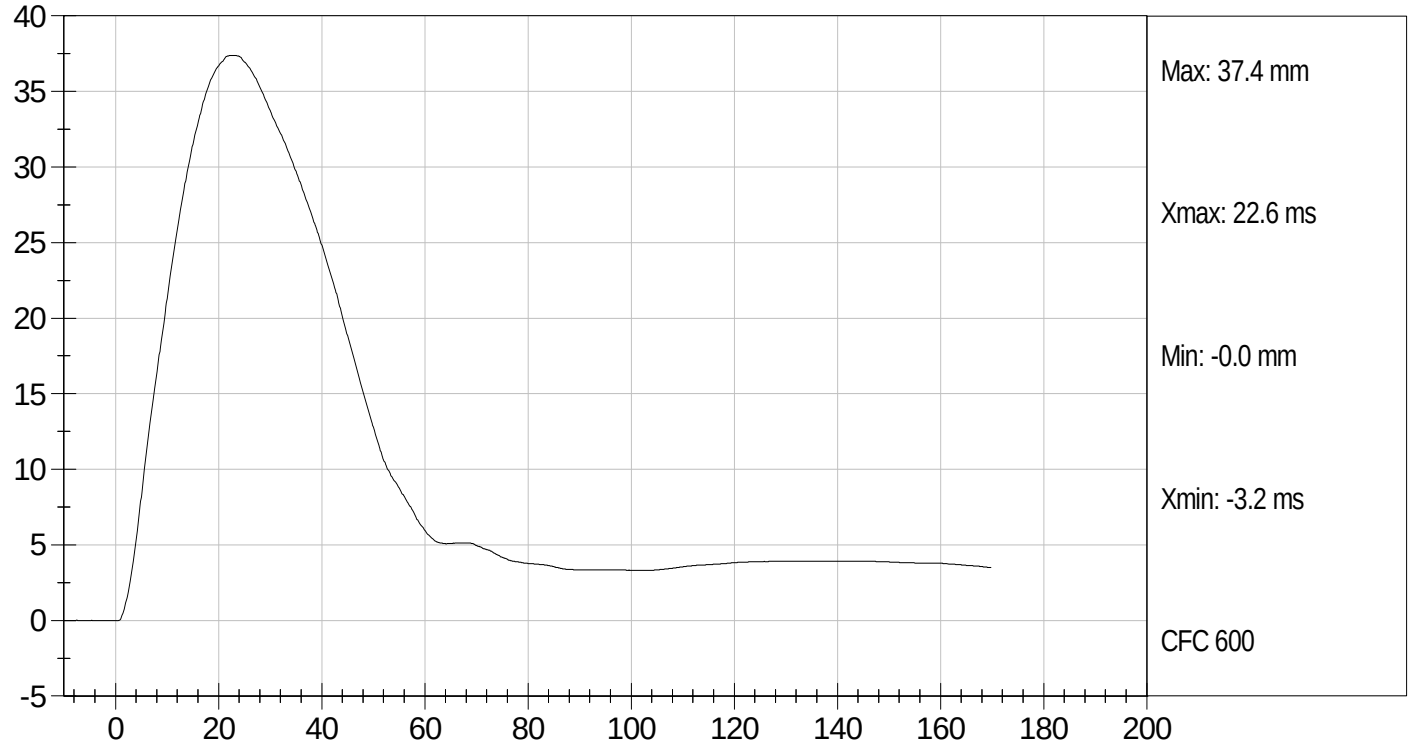
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



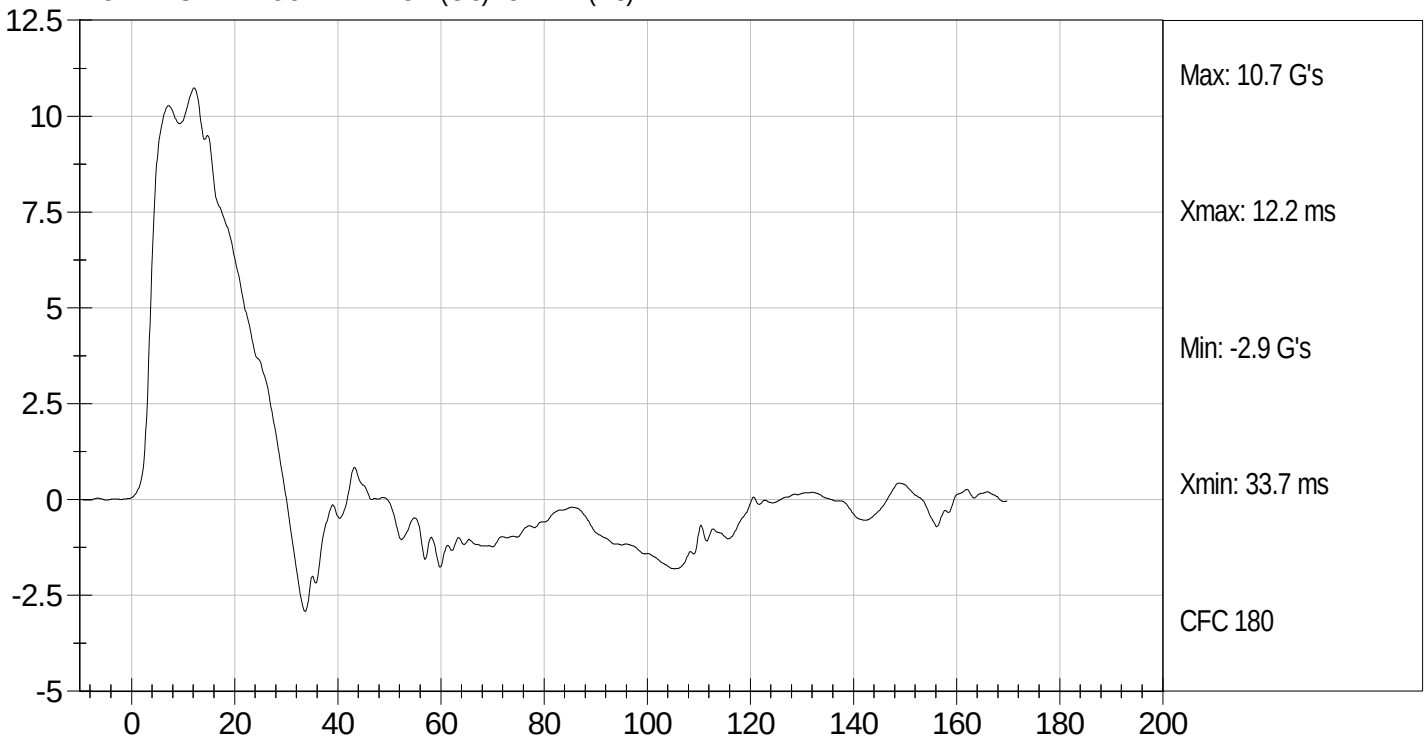
Test Desc: Abdomen Impact
Component ID: D12576

Test Date: 2/21/12
Velocity: 14.37 ft/s, 4.38 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:** D12577

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	3710	Pass
		Overall Test Results		Pass

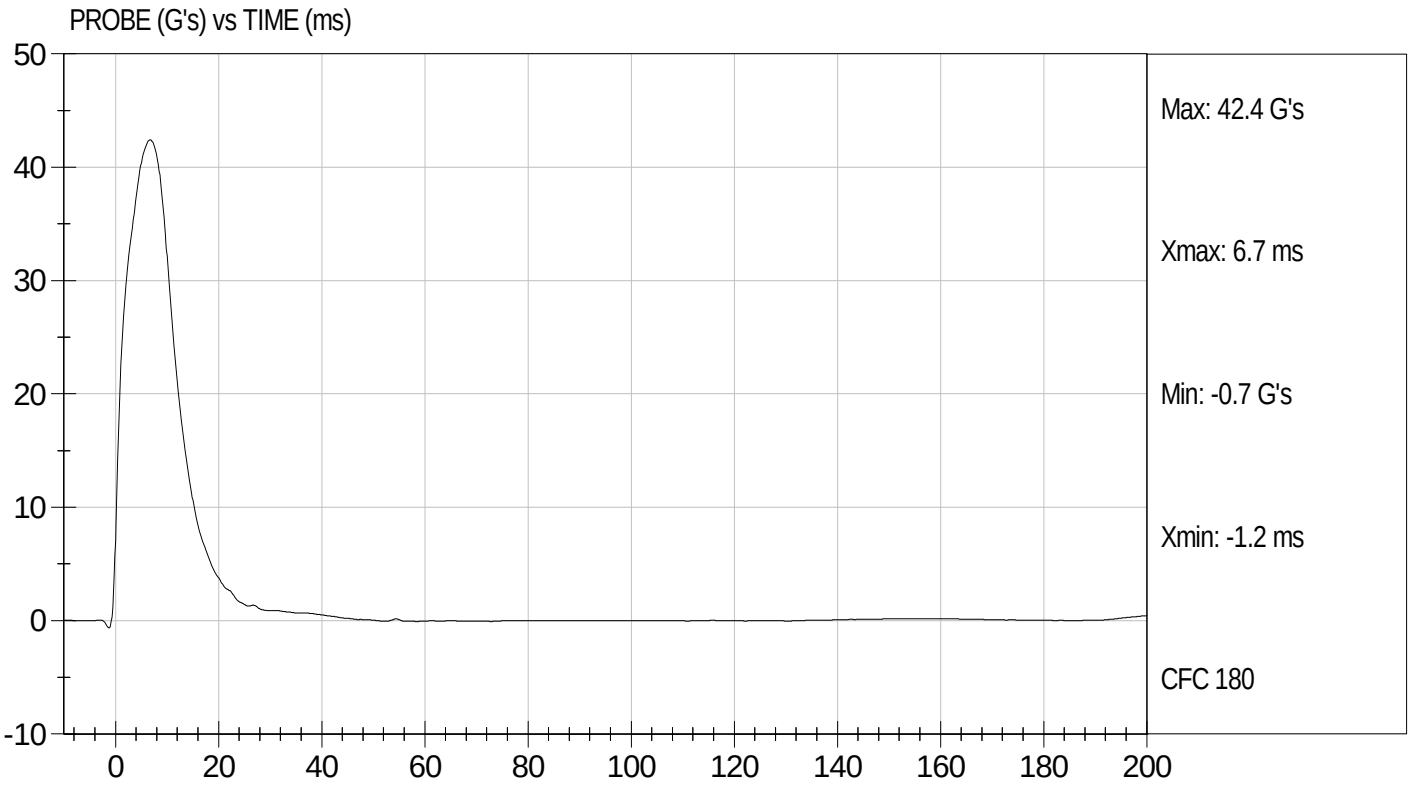
Jessica Hall
Laboratory Technician

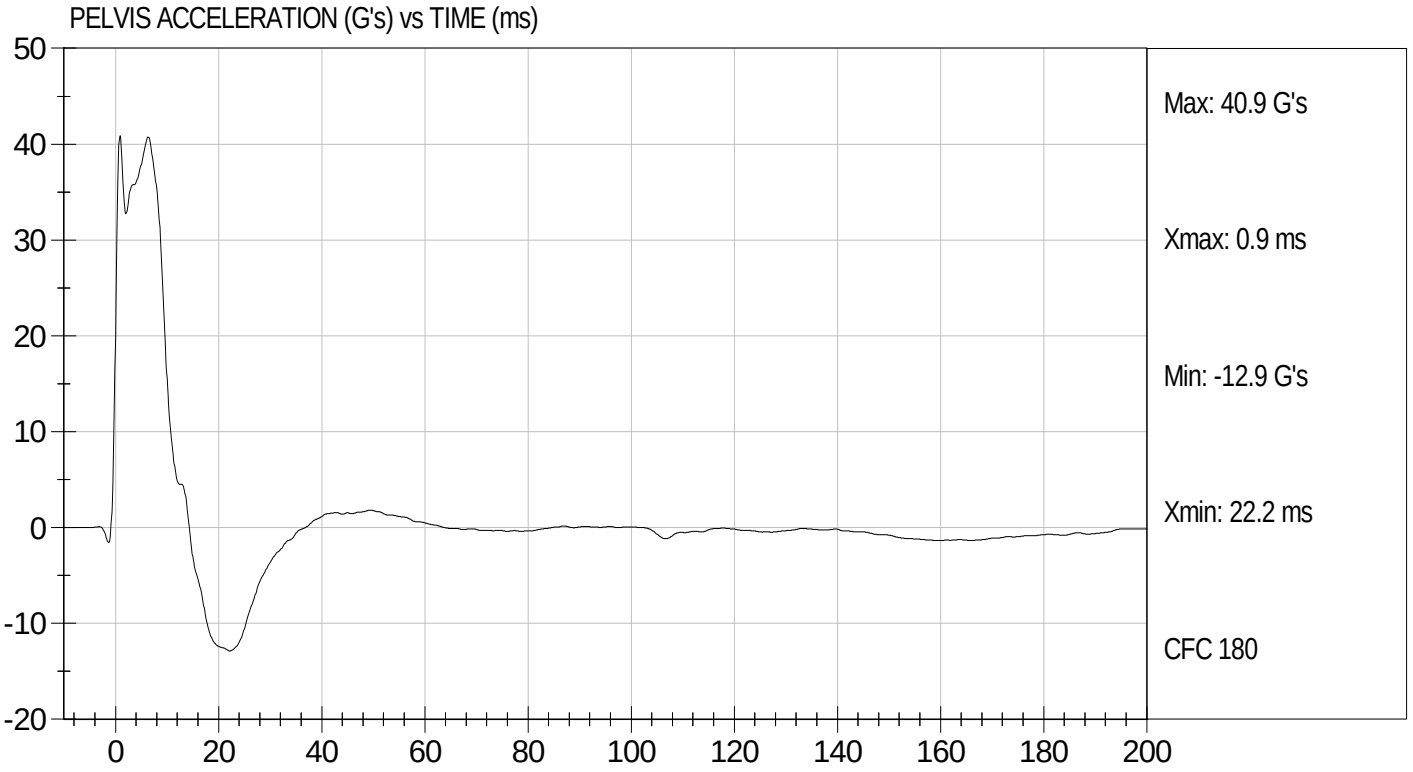
2/21/12
Test Date

David Winkelbauer
Approved By

Test Desc: Pelvis Impact
Component ID: D12577

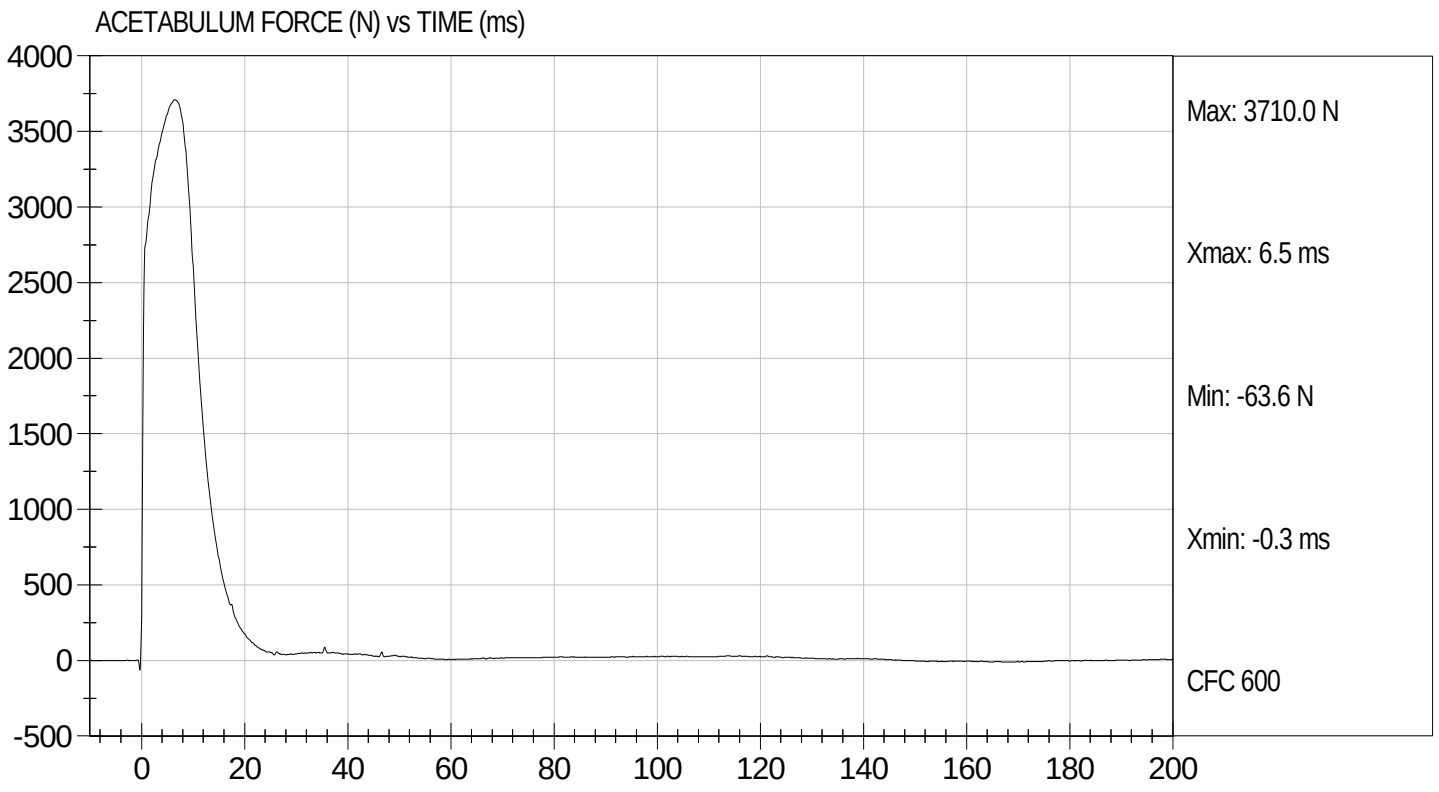
Test Date: 2/21/12
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D12577

Test Date: 2/21/12
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:** D12578

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	40	Pass
Pelvis Y Acceleration	G's	28 to 39	33	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4744	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

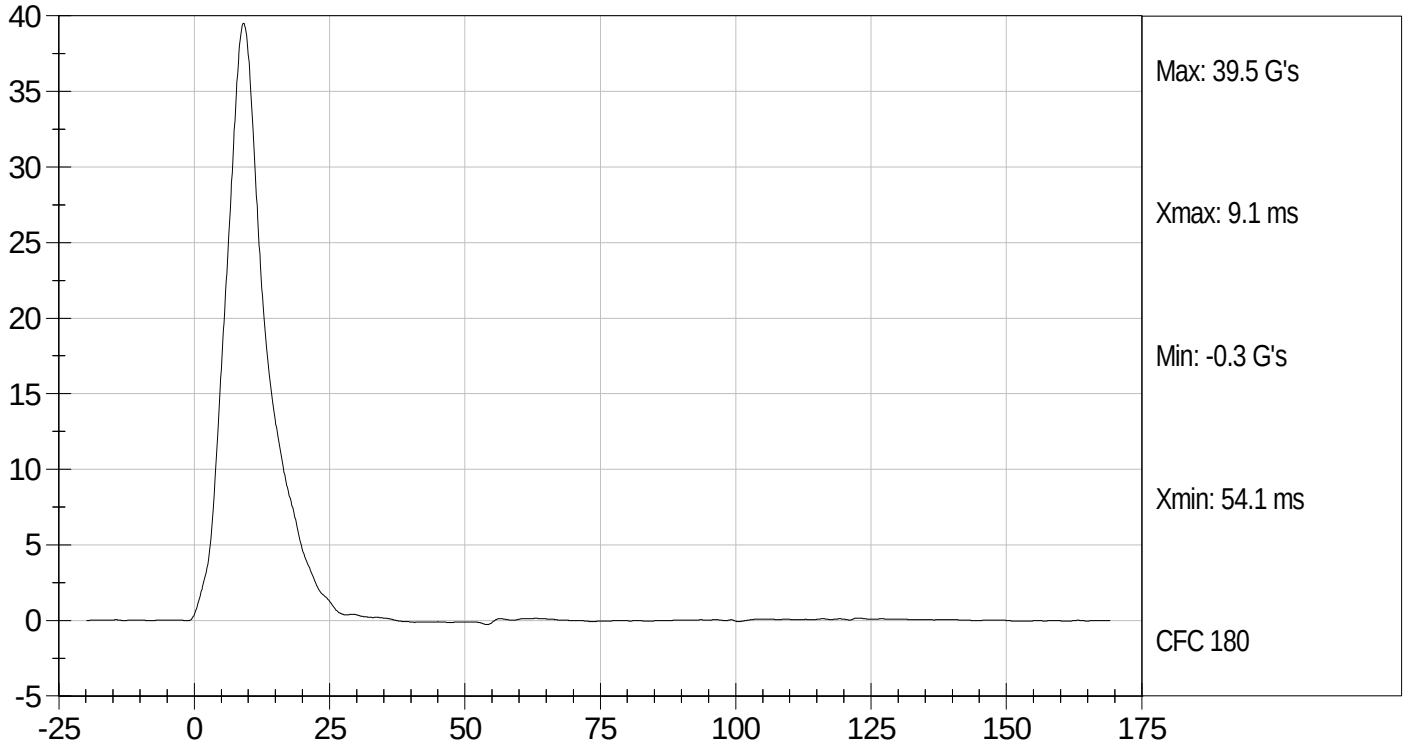
2/21/12
Test Date

David Winkelbauer
Approved By

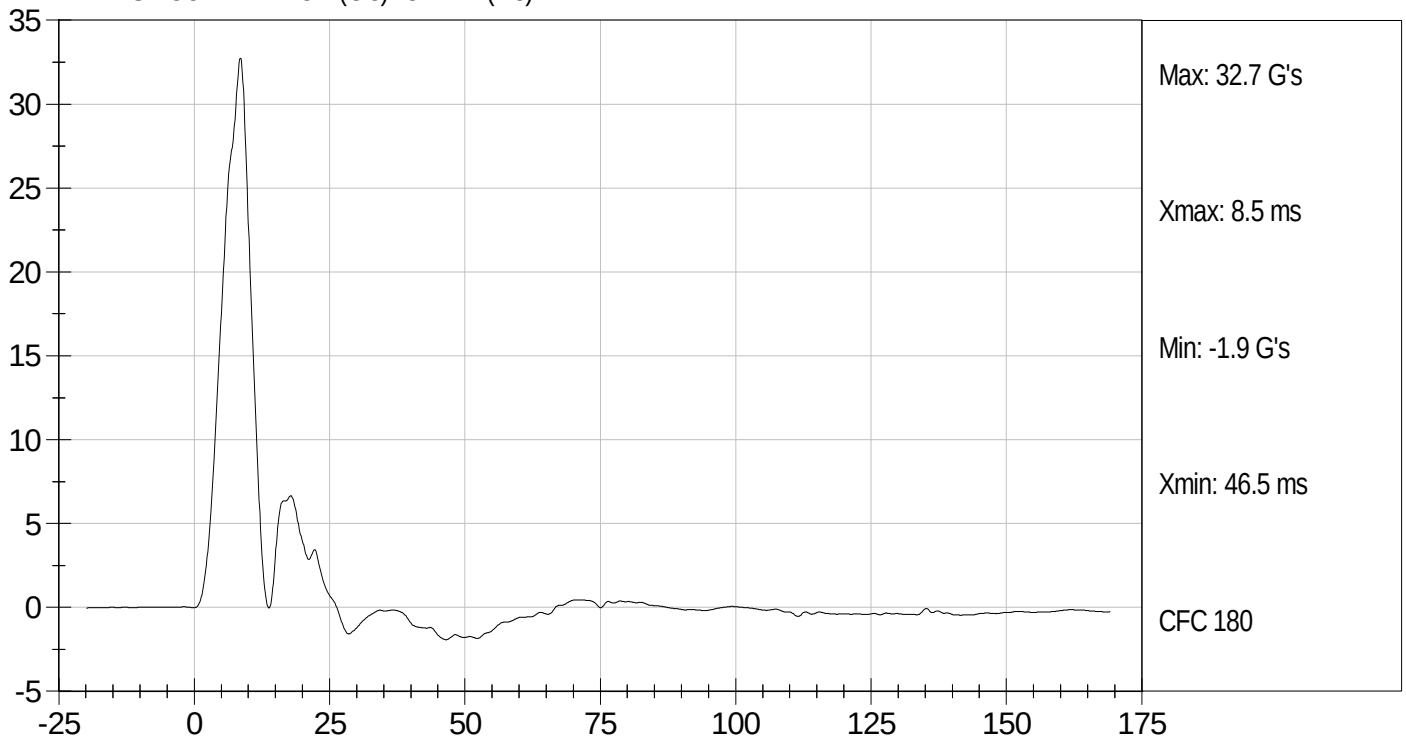
Test Desc: Iliac Impact
Component ID: D12578

Test Date: 2/21/12
Velocity: 14.37 ft/s, 4.38 m/s

PROBE (G's) vs TIME (ms)

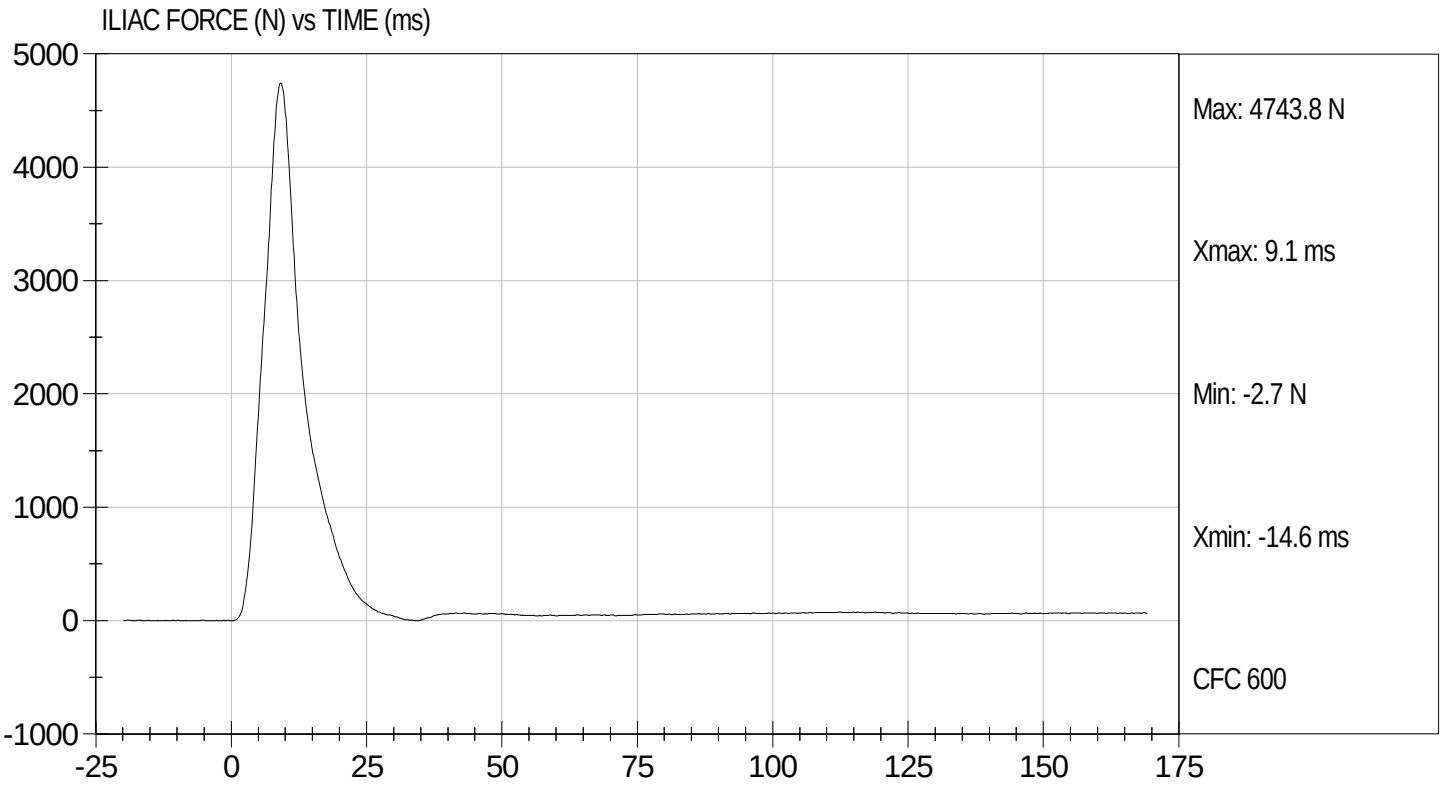


PELVIS ACCELERATION (G's) vs TIME (ms)



Test Desc: Iliac Impact
Component ID: D12578

Test Date: 2/21/12
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	12/06/11
			Y	P67886	Endevco	12/06/11
			Z	P67887	Endevco	12/06/11
Head Accelerometers			Xr	P67888	Endevco	12/06/11
			Yr	P67889	Endevco	120/6/11
			Zr	P67890	Endevco	12/06/11
Displacement Potentiometers	Thoracic Rib	Upper	Y	G1187	FTSS	12/06/11
		Middle	Y	G1261	FTSS	12/06/11
		Lower	Y	G1270	FTSS	12/06/11
	Abdominal Rib	Upper	Y	G1287	FTSS	12/06/11
		Lower	Y	G1304	FTSS	12/06/11
Lower Spine Accelerometers (T12)			X	P67893	Endevco	12/06/11
			Y	P67894	Endevco	12/06/11
			Z	P67895	Endevco	12/06/11
Acetabulum Load Cell			Y	ACG111	FTSS	05/20/11
Iliac Wing Load Cell			Y	IWG226	FTSS	05/20/11
Pelvis Plug (struck side)				42594	FTSS	06/22/11
Pelvis Plug (non-struck side)				46426	FTSS	09/22/11

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P63502	Endevco	10/25/11
Vehicle Center of Gravity	Y	P63500	Endevco	10/25/11
Vehicle Center of Gravity	Z	P63501	Endevco	10/25/11
Left Floor Sill	Y	P59376	Endevco	10/20/11
A-Pillar Sill	Y	P49475	Endevco	01/12/12
A-Pillar Low	Y	P47837	Endevco	02/10/12
A-Pillar Mid	Y	P52191	Entran	02/10/12
B-Pillar Sill	Y	P63395	Endevco	12/13/11
B-Pillar Low	Y	P63930	Endevco	09/28/11
B-Pillar Mid	V	P63346	Endevco	11/04/11
Driver Seat	Y	P63229	Endevco	02/10/12
Engine Top	X	P63885	Endevco	02/10/12
Engine Top	Y	P63886	Endevco	02/10/12
Firewall	Y	P63282	Endevco	11/04/11
Right Roof	Y	P63224	Endevco	02/10/12
Right Floor Sill	Y	P63907	Endevco	01/12/12
Rear Floorpan	X	P63349	Endevco	11/04/11
Rear Floorpan	Y	P63348	Endevco	11/04/11

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