REPORT NUMBER: SINCAP-MGA-2012-009

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

CHRYSLER GROUP LLC
2012 Dodge Avenger SXT 4-Dr Sedan
NHTSA No.: MC0311

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: October 5, 2011

Final Report Date: October 21, 2011

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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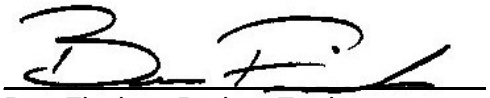
Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: October 21, 2011

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. SINCAP-MGA-2012-009	*2. Government Accession No.*	*3. Recipient's Catalog No.*
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2012 Dodge Avenger SXT 4-Dr Sedan; NHTSA No.: MC0311		*5. Report Date* October 21, 2011 *6. Performing Organization Code* MGA
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer		*8. Performing Organization Report No.* SINCAP-MGA-2012-009
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 U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590		*13. Type of Report and Period Covered:* Final Test Report October 5 to October 21, 2011 *14. Sponsoring Agency Code* NVS-111
15. Supplementary Notes		

16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2012 Dodge Avenger SXT 4-Dr Sedan in accordance with the specifications of the Office of Crashworthiness Standards NCAP Side Laboratory Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on October 5, 2011.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.3 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21°C. The target vehicle post-test maximum crush was 264 mm at level 3. The test vehicle's performance was as follows:

		Driver ATD (ES-2re)	
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	82
Maximum Thorax Rib Deflection	mm	44	35
Total Abdominal Force	N	2500	1589
Pubic Symphysis Force	N	6000	1803

	Passenger ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	446
Resultant Lower Spine Acceleration	Gs	82	76
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3703
Maximum Thoracic Rib Deflection	mm	38*	38
Maximum Abdomen Rib Deflection	mm	45*	36

*Proposed IARV

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words New Car Assessment Program (NCAP) Side Impact MDB ES-2re 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

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SECTION 1
TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2012 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test is to generate comparative side impact performance in a 2012 Dodge Avenger SXT 4-Dr Sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Laboratory Test Procedure dated August 2011.

SECTION 2
SUMMARY OF TEST RESULTS

A 2012 Dodge Avenger SXT 4-Dr Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.3 km/h (38.7 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on October 5, 2011. Pretest and post test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

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

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)
Primary and Redundant Head CG Triaxial Accelerometers
Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
Abdomen Forward, Middle, and Rear Y-Axis Load Cells
Lower Spine (T12) Triaxial Accelerometers
Pubic Symphysis Y-Axis Load Cell

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

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

Dummy Injury readings were recorded as follows:

DUMMY INJURY VALUES

	Driver ATD (ES-2re)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	82
Maximum Thorax Rib Deflection	mm	44	35
Combined Abdominal Force	N	2500	1589
Pubic Symphysis Force	N	6000	1803

	Passenger ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	446
Resultant Lower Spine Acceleration	Gs	82	76
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3703
Maximum Thoracic Rib Deflection	mm	38*	38
Maximum Abdomen Rib Deflection	mm	45*	36

*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	No			
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	No	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:

Driver Lower Spine X after 65 msec.
Left Lower A-Post Y after 1 msec.
Left Lower B-Post Y after 8 msec.
Left Mid B-Post Y
Driver Seat Track Y after 10 msec.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC0311	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Dodge	Automatic Door Locks (ADL)	Yes
Model	Avenger	Power Window Auto-Reverse	No
Body Style	Sedan	Other Optional Feature	N/A
VIN	1C3CDZEG3CN112489	Driver Front Airbag	Yes
Body Color	Redline 2-Coat Pearl	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	26 / 16	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.6	Driver Torso Airbag	Yes
Type/No. Cylinders	6	Driver Torso/Pelvis Airbag	No
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	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	Yes	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	Yes, driver only	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	Chrysler Group LLC	GVWR (kg)	2087
Date of Manufacture	8-11	GAWR Front (kg)	1180
Vehicle Type	Passenger Car	GAWR Rear (kg)	1007

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				392	(A)
DSC x 68.04 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW)				52	(A-B)

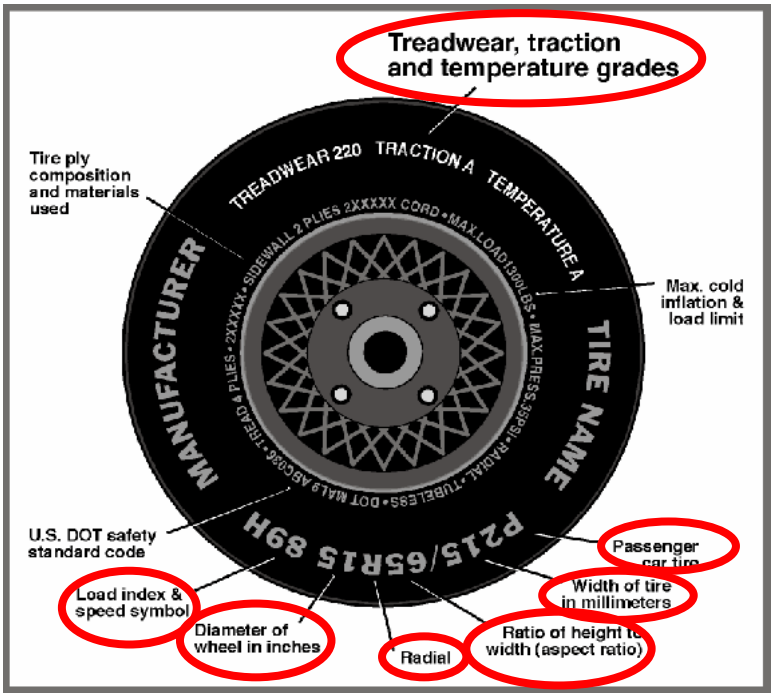
VEHICLE SEAT TYPE

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

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

Test Vehicle:	2012 Dodge Avenger SXT 4-Dr Sedan	NHTSA No.	MC0311
Test Program:	NCAP Side MDB Impact Test	Test Date:	10/05/2011

VEHICLE TIRE INFORMATION



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	P225/50R18	P225/50R18

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	P225/50R18	P225/50R18
Tire Manufacturer	Goodyear	Goodyear
Tire Name	Eagle LS2	Eagle LS2
Tire Type	Passenger	Passenger
Tire Width	225	225
Aspect Ratio	50	50
Radial	Yes	Yes
Wheel Diameter	18	18
Load Index/Speed Symbol	94T	94T
Treadwear	400	400
Traction Grade	A	A
Temperature Grade	B	B
Tire Material	Rubber	Rubber

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

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	220	220	220	220
Tire Placard	kpa	220	220	220	220
Owner's Manual	kpa				
As Tested	kpa	220	220	220	220

MDB TIRE SPECIFICATIONS

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	521.6	314.4		557.5	387.4		560.2	394.6	
Right	kg	489.0	313.4		497.1	371.5		491.2	372.9	
Ratio	%	61.7	38.3		58.2	41.8		57.8	42.2	
Totals	kg	1010.6	627.8	1638.4	1054.6	758.9	1813.5	1051.4	767.5	1818.9

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1638.4	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129.3	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	52	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1819.7	(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	27.7
Right tail light, right side mirror, jack & tools	12.2

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

Test Vehicle:	2012 Dodge Avenger SXT 4-Dr Sedan	NHTSA No.	MC0311
Test Program:	NCAP Side MDB Impact Test	Test Date:	10/05/2011

TEST VEHICLE ATTITUDES AND CG

	Units	Fully Loaded	As Tested	Meets Requirement***
Left Front	mm	722	720	Yes
Right Front	mm	728	727	Yes
Right Rear	mm	720	722	Yes
Left Rear	mm	705	715	Yes
Vehicle CG (Aft of Front Axle)	mm	1167	1157	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	33	39	

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

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

Test Vehicle:	2012 Dodge Avenger SXT 4-Dr Sedan	NHTSA No.	MC0311
Test Program:	NCAP Side MDB Impact Test	Test Date:	10/05/2011

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	8.4	0.0	4.2
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			

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	4.2	35	Max	68	68	68
	4.2	35	Mid	34	34	34
	0.0	35	Min	0	0	0
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			Max			
			Mid			
			Min			

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

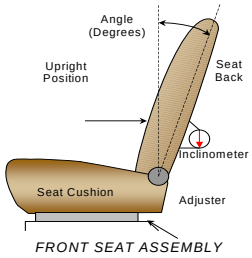
Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	232		116	
Front Passenger Seat	260	37 (1st as 0)	133	19th
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Center Seat				

SEAT BACK ANGLE ADJUSTMENT

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



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degrees	Detent
Driver Seat w/Seated Dummy	NA		12.7	
Front Passenger Seat	NA		12.5	
Front Center Seat				
Struck Side Rear Seat	Fixed		1.0	Fixed
Non-Struck Side Rear Seat	Fixed		1.0	Fixed
Rear Center Seat				

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

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

SEAT BELT ANCHORAGE ADJUSTMENT

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

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

HEAD RESTRAINT ADJUSTMENT

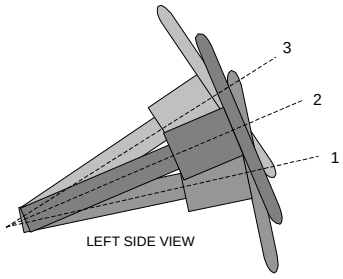
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	3	Highest
Rear Seat	3	Lowest

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.

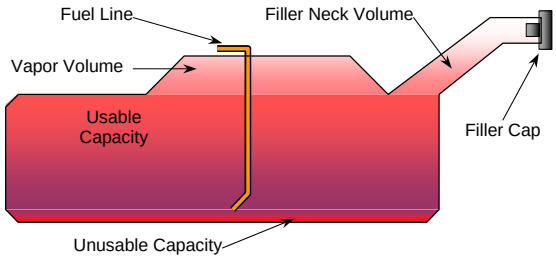
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	73.2	226
Geometric Center, Position 2	69.9	202
Uppermost, Position 3	66.6	178
Telescoping Steering Wheel Travel		48
Test Position	69.9	202



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 pump starts pumping fuel when the key is in the 'on' position. The fuel pipe is on the left side.



VEHICLE FUEL TANK ASSEMBLY

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

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

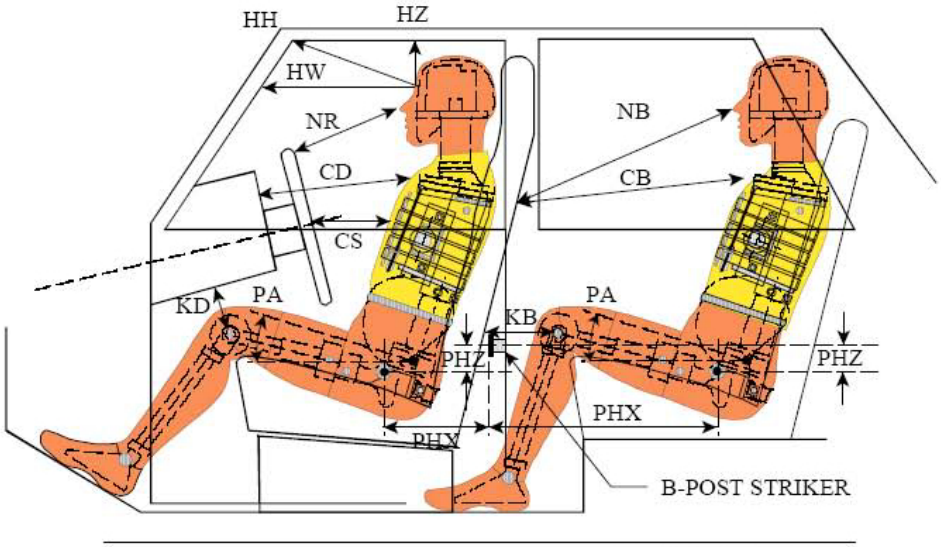
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard" Tank (see Form No. 1)	64.0
Usable Capacity of "Optional" Tank (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	64.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	59.5
Actual Amount of Solvent Used	59.4
1/3 of Usable Capacity	21.3

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 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



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

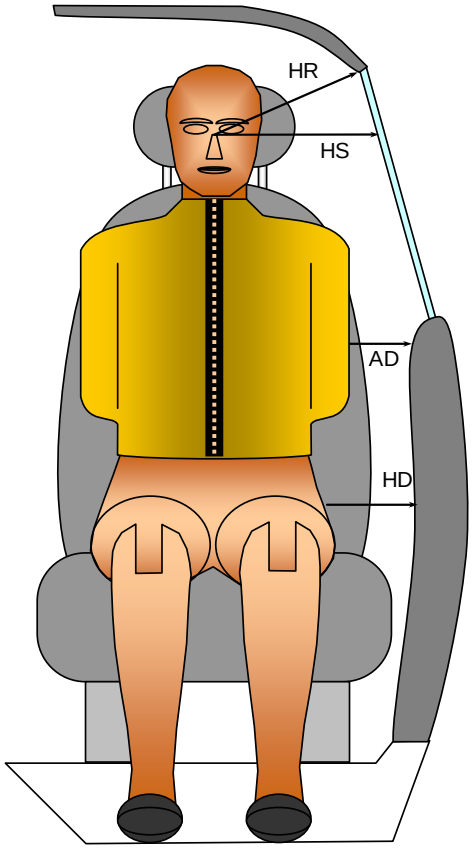
LEFT SIDE VIEW

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver S/N 032		Passenger S/N 306	
			Length (mm)	Angle(°)	Length (mm)	Angle(°)
HH		Head to Header	401	14.8		
HW		Head to Windshield	693			
HZ	HZ	Head to Roof Liner	144		266	90
NR	NB	Nose to Rim/Seat Back	458	16.4	562	8.9
CD	CB	Chest to Dashboard/Seat Back	554	10.2	537	9.2
CS		Chest to Steering Wheel	342	8.7		
KDL	KBL	Left Knee to Dash/Seat Back	169	31.2	255	21.0
KDR	KBR	Right Knee to Dash/Seat Back	137	32.5	254	19.4
PAX	PAX	Pelvic Tilt Angle X		23.5		25.3
	PAY	Pelvic Tilt Angle Y		1.3		
PHX	PHX	Hip Point to Striker (X-Axis)	191		191	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	183		287	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



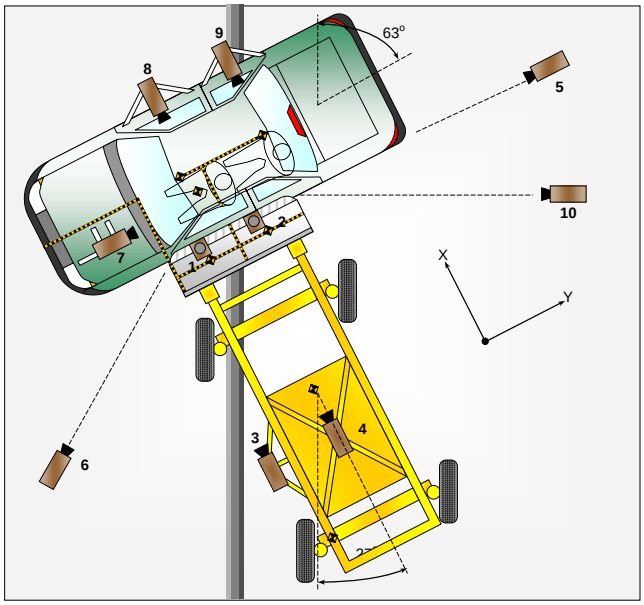
FRONT VIEW OF DUMMY

DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver S/N 032	Passenger S/N 306
HR	Head to Side Header	mm	193	245
HS	Head to Side Window	mm	342	359
AD	Arm to Door	mm	95	174
HD	Hip Point to Door	mm	143	197

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X*	Y*	Z*		
1	Overhead Overall	-280	210	-5050	14	1000
2	Overhead Close-Up	90	110	-5050	20	1000
3	Left Impact Point (MDB)				50	1000
4	Side Overall (MDB)				16	1000
5	Rear	30	4870	-1090	24	1000
6	Left Front	4020	-4290	-1080	24	1000
7	Driver Front (OB)				16	1000
8	Driver Side (OB)				8	1000
9	Passenger Side (OB)				8	1000
10	Real Time Left Rear					30
11	Real Time Inrun					30

Reference: Impact Point projected to Ground; +X = To Front of MDB, + Y = To Right of MDB, +Z = Down
* All measurements accurate to ± 6 mm

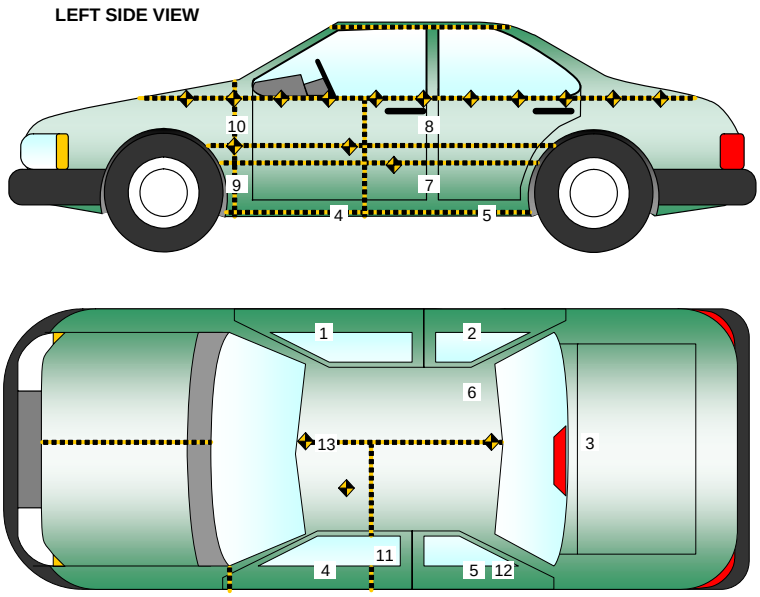
Explain why camera(s) did not operate as intended: Not Applicable

INSTRUMENTATION

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

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



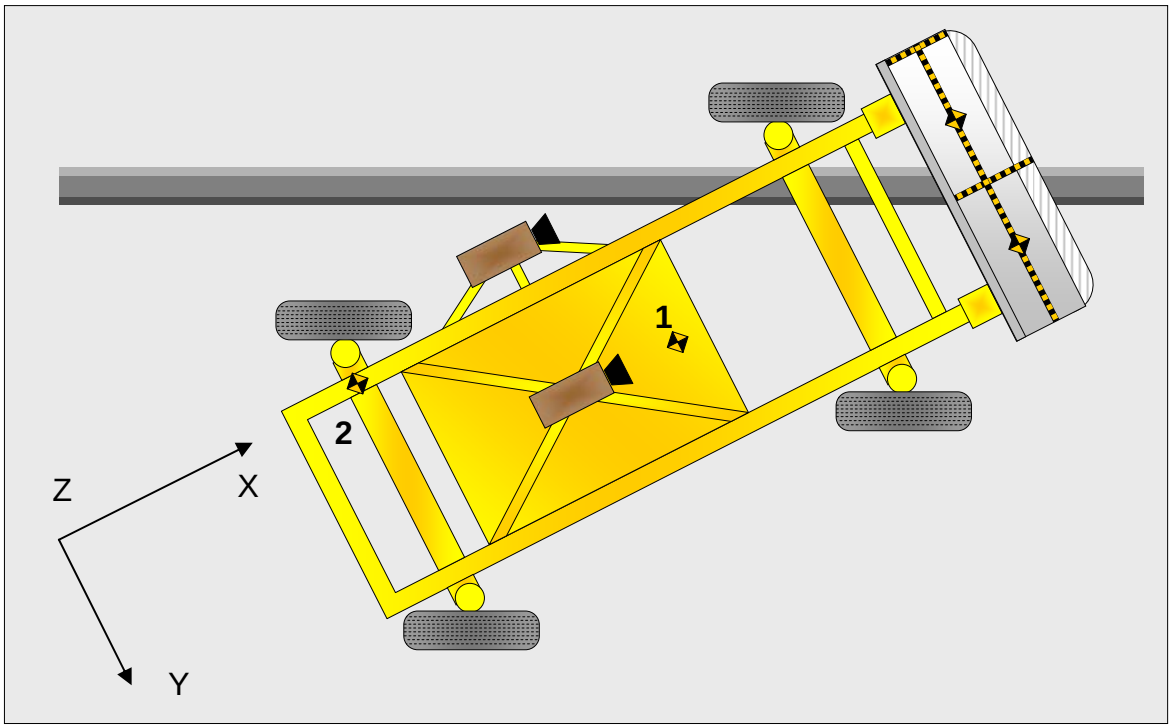
TEST VEHICLE ACCELEROMETER LOCATIONS

Accelerometer Location				
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2785	-35	-375
2	Right Sill at Front Seat	2555	737	-190
3	Right Sill at Rear Seat	1710	737	-195
4	Left Sill at Front Door	2760	-737	-180
5	Left Sill at Rear Door	1705	-737	-195
6	Left Lower A-Post	3247	-655	-514
7	Left Middle A-Post	3290	-810	-687
8	Left Lower B-Post	2177	-750	-454
9	Left Middle B-Post	2177	-750	-222
10	Front Seat Track	2360	-565	-320
11	Rear Seat Structure	1979	-240	-330
12	Rt. Rear Occ. Compartment	1990	400	-245
13	Engine Block	4100	0	-925
14	Rear Above Axle	1090	0	-585

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

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



MDB ACCELEROMETER LOCATIONS

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

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

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Side Header	Curtain Airbag, Side Header Center Headrest
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Headrest	Headrest, Center Headrest
Left Shoulder	Side Airbag	Door Panel
Upper Torso	Side Airbag	None
Lower Torso	Side Airbag	Door Panel
Left Hip	Door Panel	Door Panel
Left Knee	Door Panel	Door Panel

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

	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	None
Side Window Damage	Left Front Window Cracked
Other Notable Effects	None

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

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2765
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		442
Actual Impact Point (Aft of Front Axle)	mm		438
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	4
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	0

DATA SHEET NO. 9

MDB SUMMARY OF RESULTS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

MDB SPECIFICATIONS

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

MDB WEIGHTS

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

SPEED AND ANGLE AT IMPACT DATA

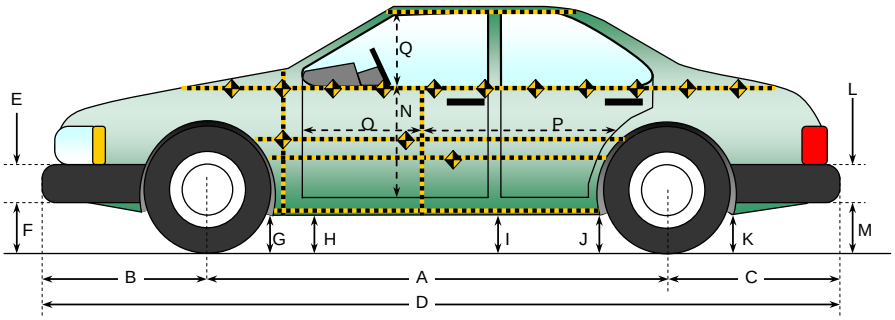
Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.3
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.1
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	91.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.1
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	26.9

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	215
B	Top of Bumper	533	800	Right	121
C	Mid-Level	686	800	Left	133
D	Top of Stack	813	800	Left	145

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



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

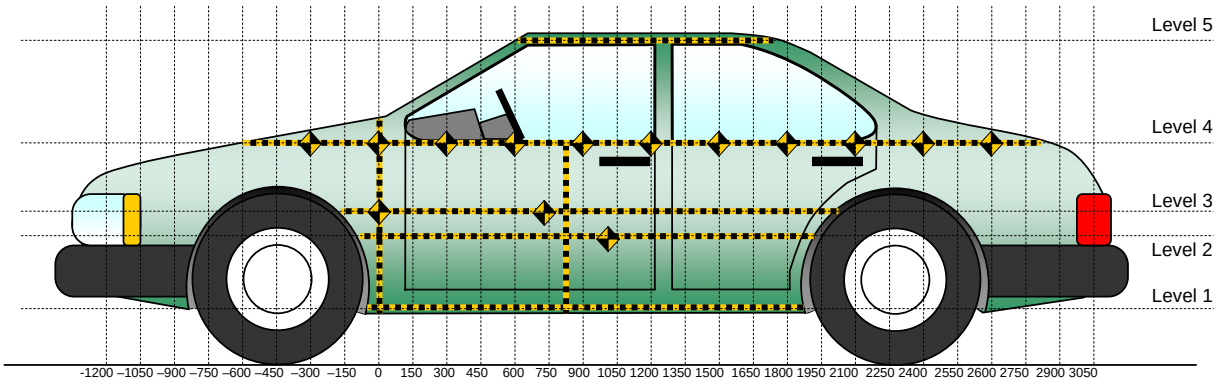
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2765	2782	-17
B	Front Axle to FSOV	1045	1042	3
C	Rear Axle to RSOV	1085	1090	-5
D	Total Length at Centerline	4895	4914	-19
E	Front Bumper Thickness	119	119	0
F	Front Bumper Bottom to Ground	257	267	-10
G	Sill Height at Front Wheel Well	155	157	-2
H	Sill Height at Front Door Leading Edge	155	157	-2
I	Sill Height at B Pillar	154	181	-27
J1	Sill Height at Rear Wheel Well	153	149	4
J2	Pinch Weld Height at Rear Wheel Well	153	145	8
K	Sill Height Aft of Rear Wheel Well	215	203	12
L	Rear Bumper Thickness	114	114	0
M	Rear Bumper Bottom to Ground	344	355	-11
N	Sill Height to Window Bottom Sill	720	620	100
O	Front Door Leading Edge to Impact CL	639	623	16
P	Rear Door Trailing Edge to Impact CL	1377	1375	2
Q	Front Window Opening	385	390	-5
R	Right Side Length	3863	3868	-5
S	Left Side Length	3863	3834	29
T	Vehicle Width at B Post	1822	1695	127

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



All Measurements Shown in mm

LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEAUREMENTS

Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	250	97	1350
2	Occupant Hip Point	522	257	900
3	Mid Door	620	264	750
4	Window Sill	928	167	1350
5	Window Top	1378	73	1350

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

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

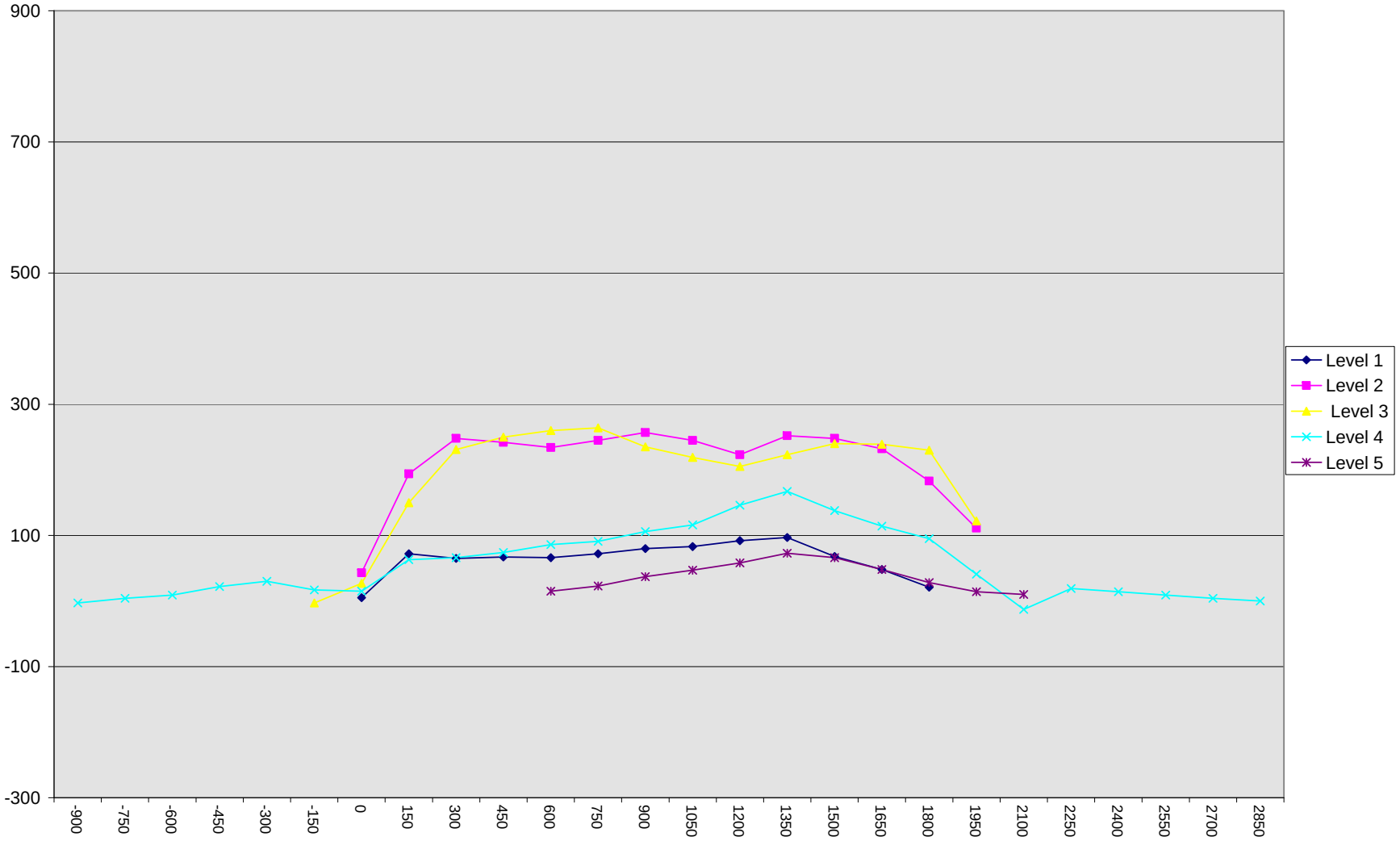
Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900				363					360					-3	
-750				326					330					4	
-600				305					314					9	
-450				285					317					22	
-300				274					304					30	
-150			178	261				175	278				-3	17	
0	219	185	190	252		224	228	217	267		5	43	27	15	
150	239	190	188	250		311	384	338	313		72	194	150	63	
300	237	190	186	242		302	438	417	308		65	248	231	66	
450	235	188	185	238		302	430	435	312		67	242	250	74	
600	235	188	185	231	470	301	422	445	317	485	66	234	260	86	15
750	235	188	185	231	460	307	433	449	322	483	72	245	264	91	23
900	235	188	185	226	460	315	445	420	332	497	80	257	235	106	37
1050	237	189	185	222	464	320	434	404	338	511	83	245	219	116	47
1200	240	191	187	222	466	332	414	392	368	524	92	223	205	146	58
1350	243	195	190	224	465	340	447	413	391	538	97	252	223	167	73
1500	247	198	194	225	466	315	446	434	363	532	68	248	240	138	66
1650	252	202	197	224	465	300	434	436	338	513	48	232	239	114	48
1800	249	205	202	225	470	270	388	432	320	498	21	183	230	95	28
1950		176	179	230	480		287	301	271	494		111	122	41	14
2100				235	493				222	503				-13	10
2250				241					260					19	
2400				249					263					14	
2550				258					267					9	
2700				272					276					4	
2850				287					287					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.

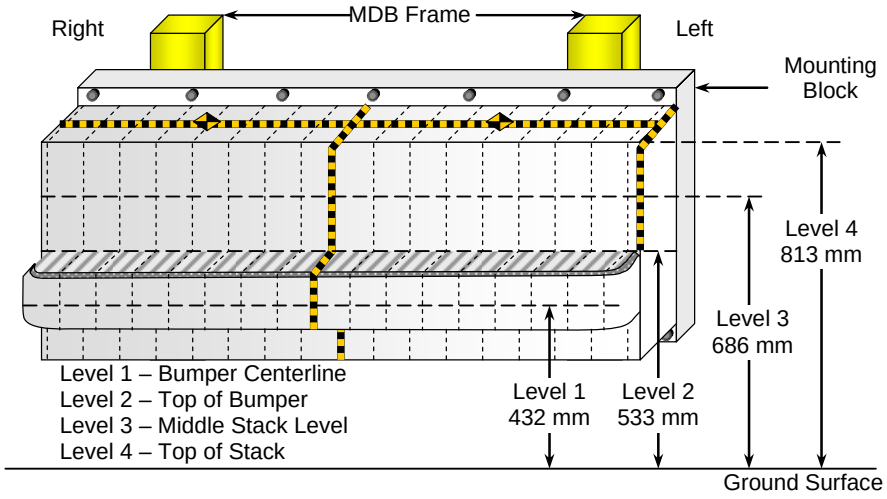
DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011



FRONT VIEW

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center (mm)								C_L	Distance Left of Center (mm)							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
4	84	57	43	37	48	75	107	70	47	57	57	70	83	98	112	125	145
3	53	40	37	40	49	66	84	80	48	33	27	27	33	43	57	72	133
2	121	107	101	97	90	80	86	78	80	89	91	95	96	95	93	97	100
1	215	209	192	183	180	179	174	173	172	169	168	167	166	162	165	171	184

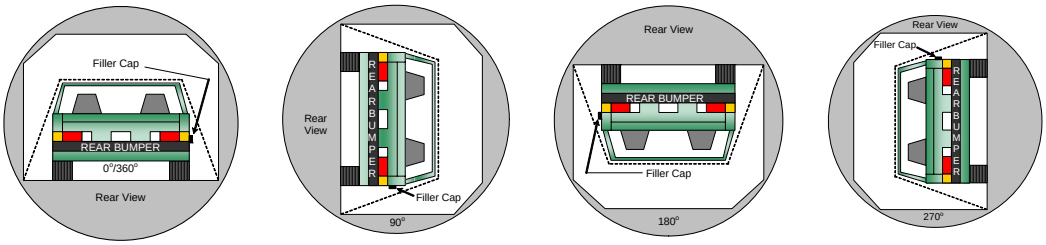
DATA SHEET NO. 13
FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2012 Dodge Avenger SXT 4-Dr Sedan NHTSA No. MC0311
Test Program: NCAP Side MDB Impact Test Test Date: 10/05/2011

Test Time: 9:22 am Temperature: 21° 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°	119	300	419
90° to 180°	115	300	415
180° to 270°	107	300	407
270° to 360°	116	300	416

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

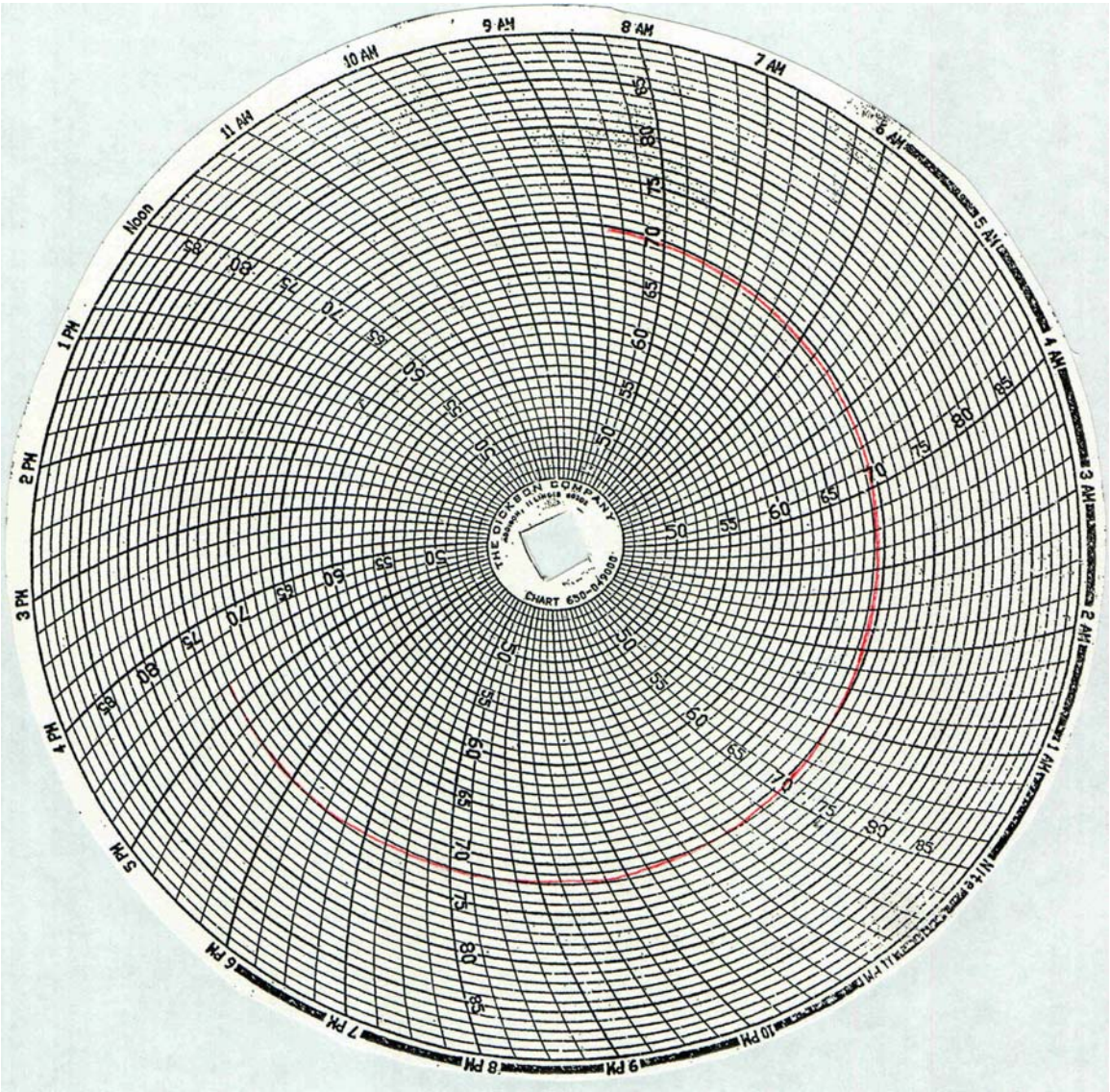
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

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

Test Vehicle:	2012 Dodge Avenger SXT 4-Dr Sedan	NHTSA No.	MC0311
Test Program:	NCAP Side MDB Impact Test	Test Date:	10/05/2011



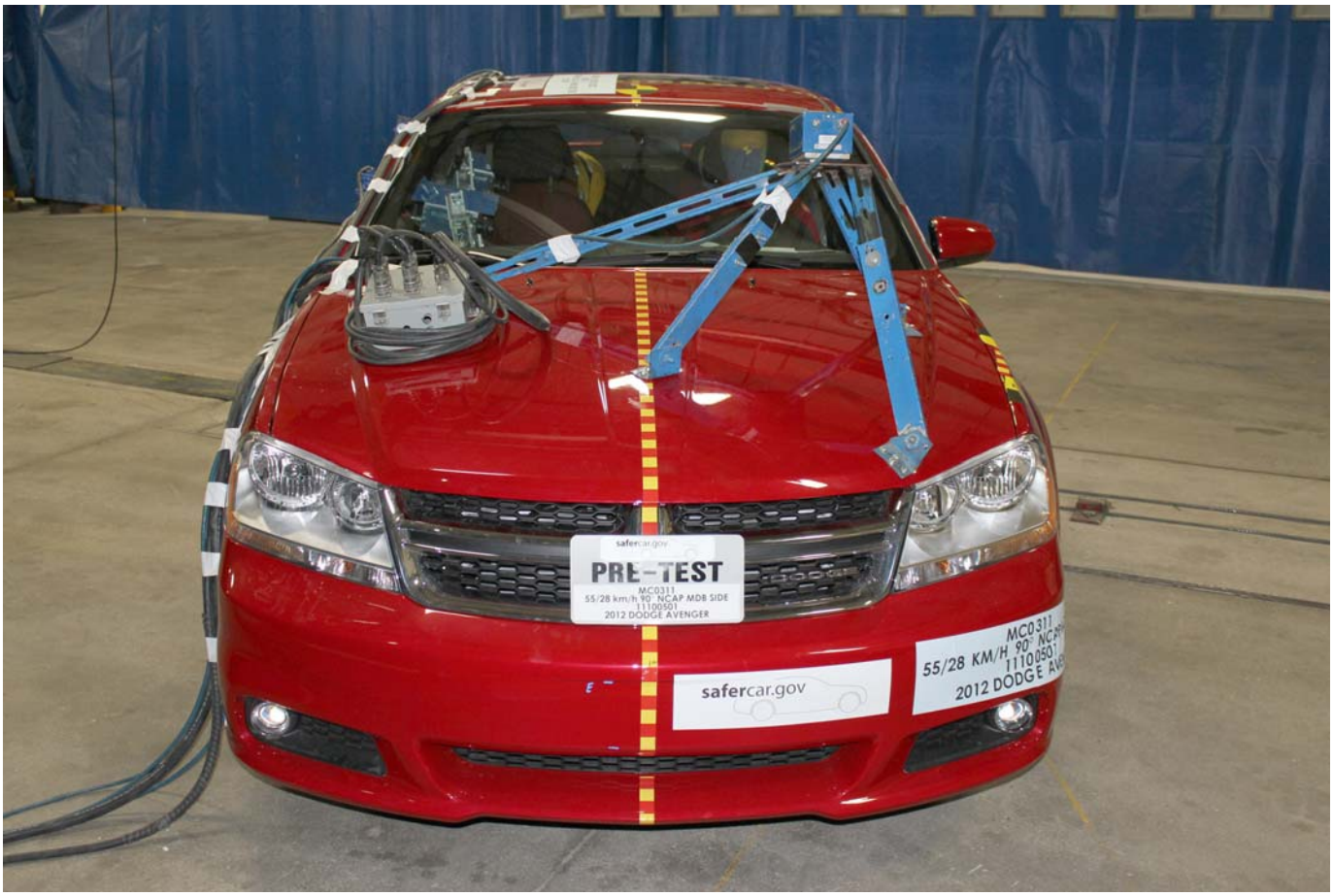
APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

As Delivered Right Front Three-Quarter View of Test Vehicle

As Delivered Left Rear Three-Quarter View of Test Vehicle



Pre-Test Frontal View of Test Vehicle

Post-Test Frontal View of Test Vehicle

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

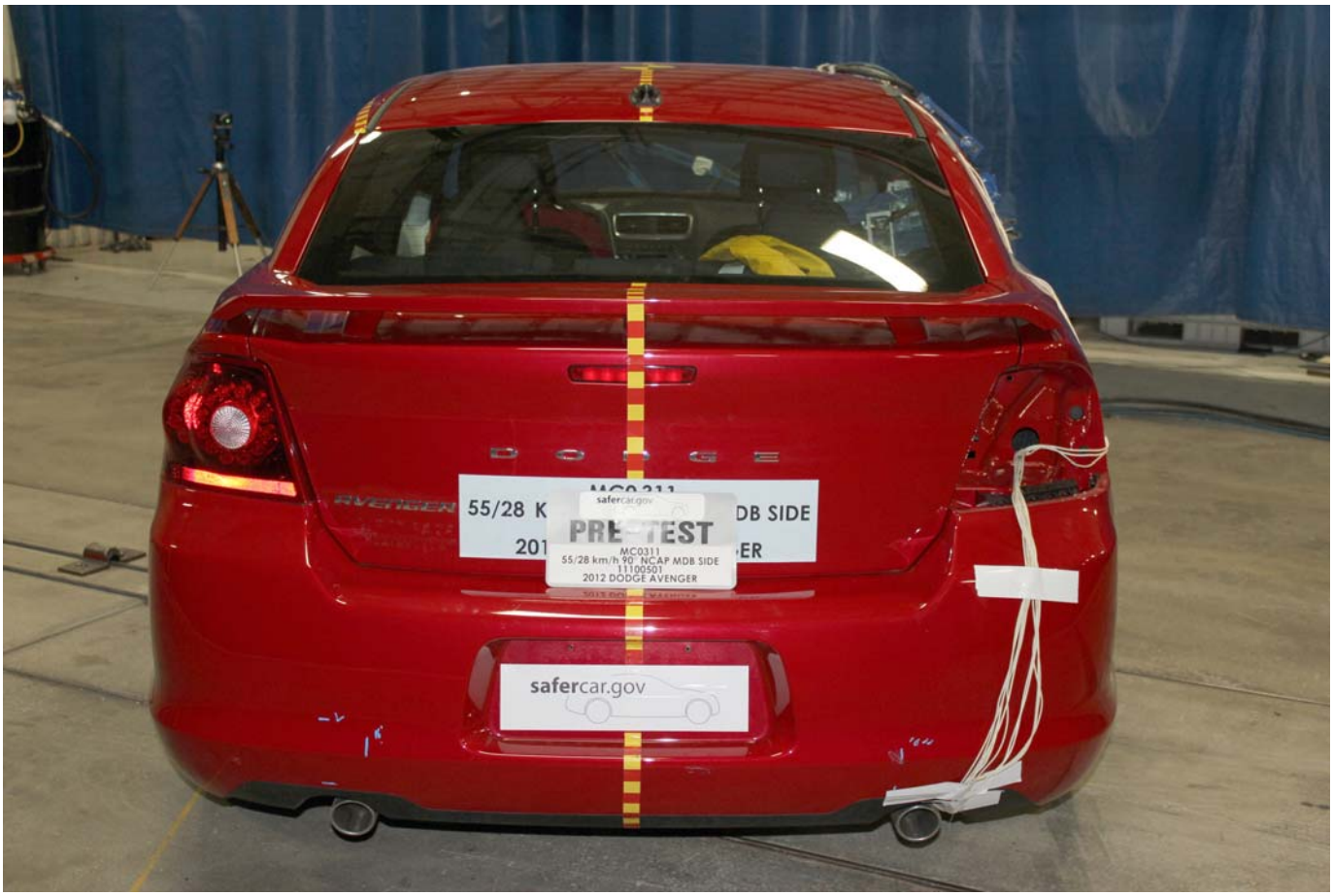
Post-Test Left Front Three-Quarter View of Test Vehicle

Pre-Test Left Side View of Test Vehicle

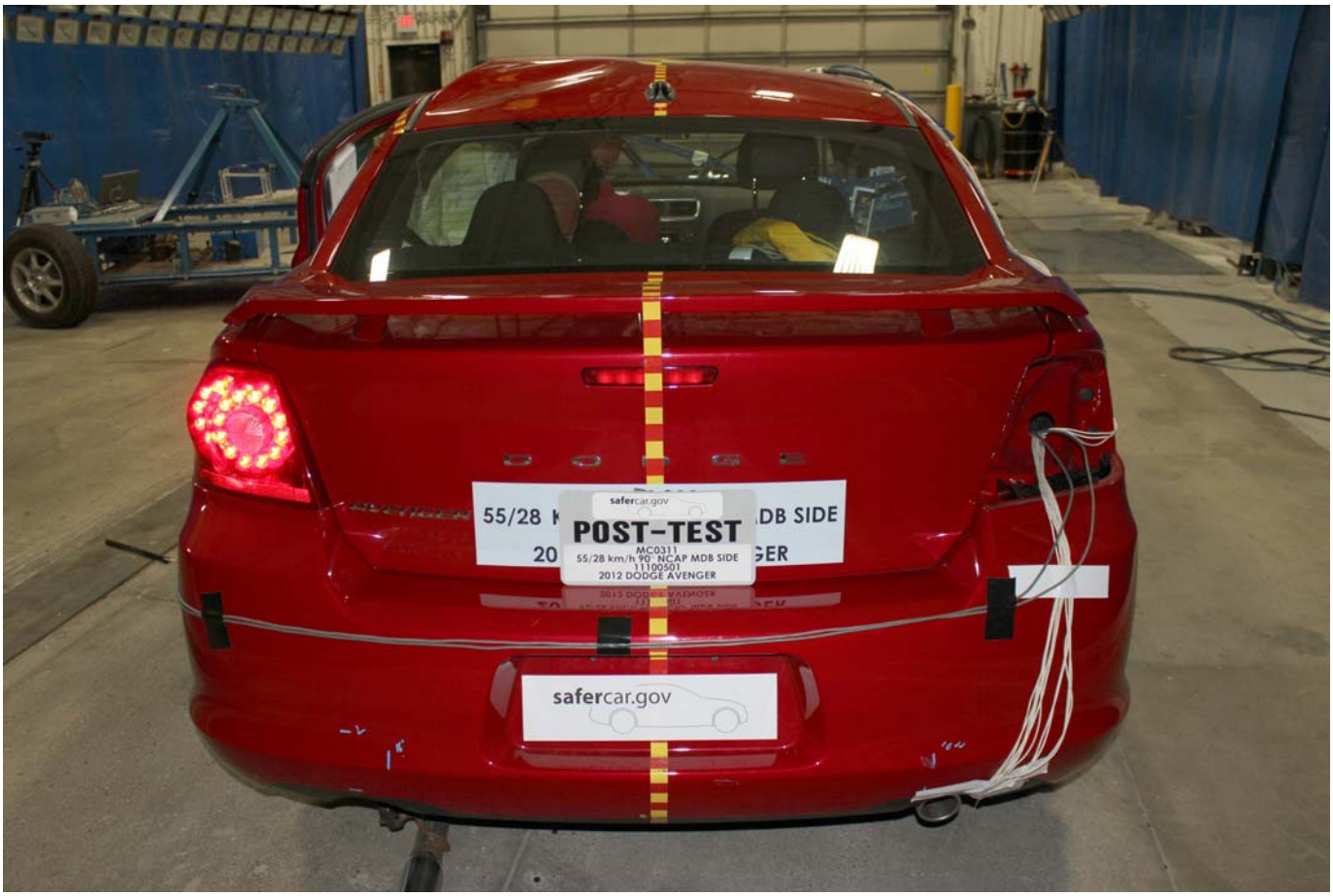
Post-Test Left Side View of Test Vehicle

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

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



Pre-Test Rear View of Test Vehicle

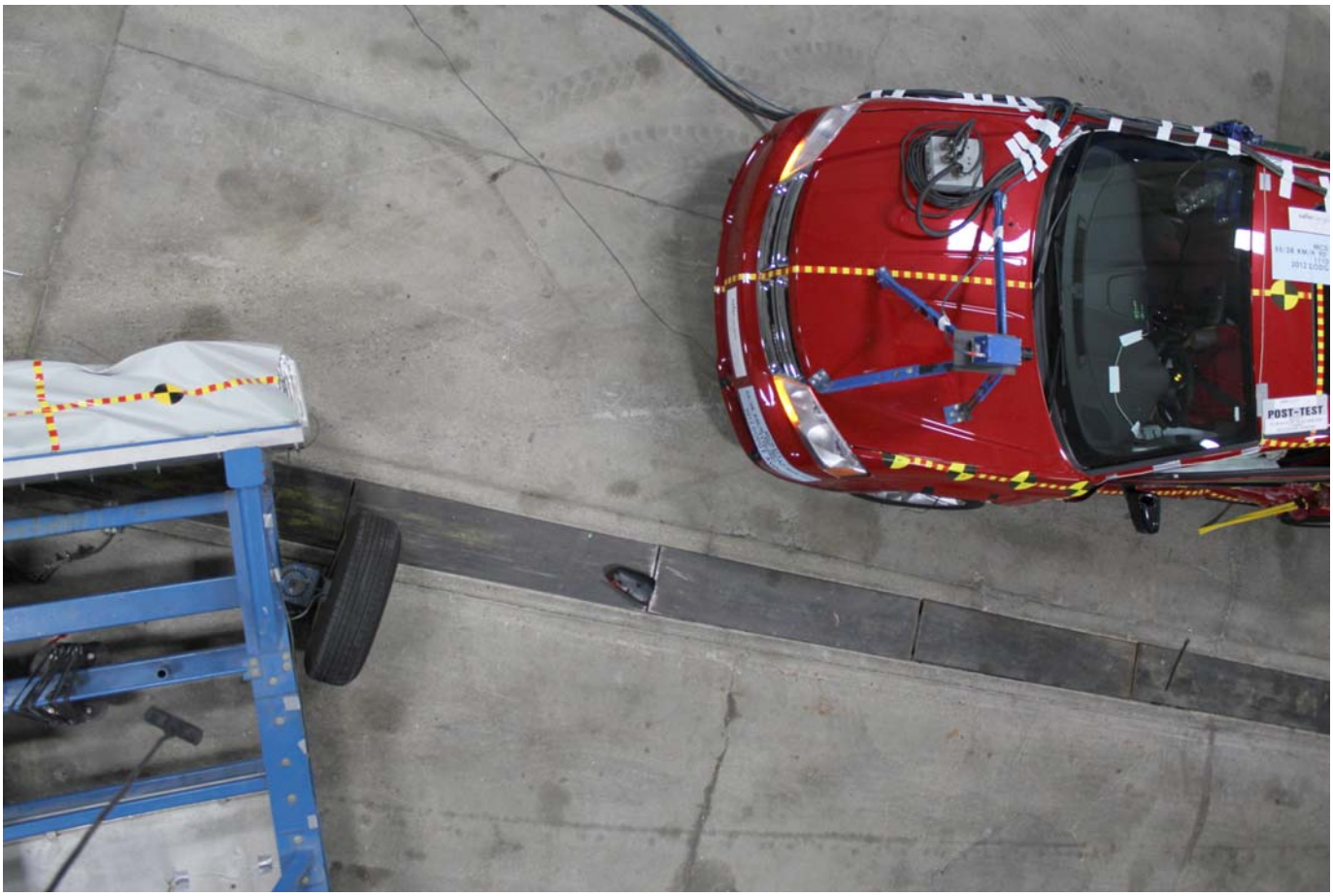


Post-Test Rear View of Test Vehicle

Pre-Test Right Side View of Test Vehicle

Post-Test Right Side View of Test Vehicle

Pre-Test Overhead View of Test Area



Post-Test Overhead View of Test Area

Post-Test Overhead View of Test Area

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

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

Pre-Test Close-Up View of Impact Point Target

Post-Test Close-Up View of Impact Point Target

Pre-Test Left Front Door Latch Close-Up

Post-Test Left Front Door Latch Close-Up

Pre-Test Left Rear Door Latch Close-Up

Post-Test Left Rear Door Latch Close-Up

Pre-Test Front Close-Up View of Driver Dummy

Post-Test Front Close-Up View of Driver Dummy

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

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

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

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

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

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

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

Pre-Test Placement of Driver Dummy's Feet

Pre-Test View of Belt Anchorage for Driver Dummy

Pre-Test Left Side View of Steering Wheel

Pre-Test View of Disengaged Parking Brake

Pre-Test View of Parking Brake

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

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

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

Pre-Test Driver Dummy and Door Clearance View

Post-Test Driver Dummy and Door Clearance View

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

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

Pre-Test Driver Inner Door Panel View

Post-Test Driver Inner Door Panel View

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

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

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

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

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

PHOTOGRAPH NOT APPLICABLE

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

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

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

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

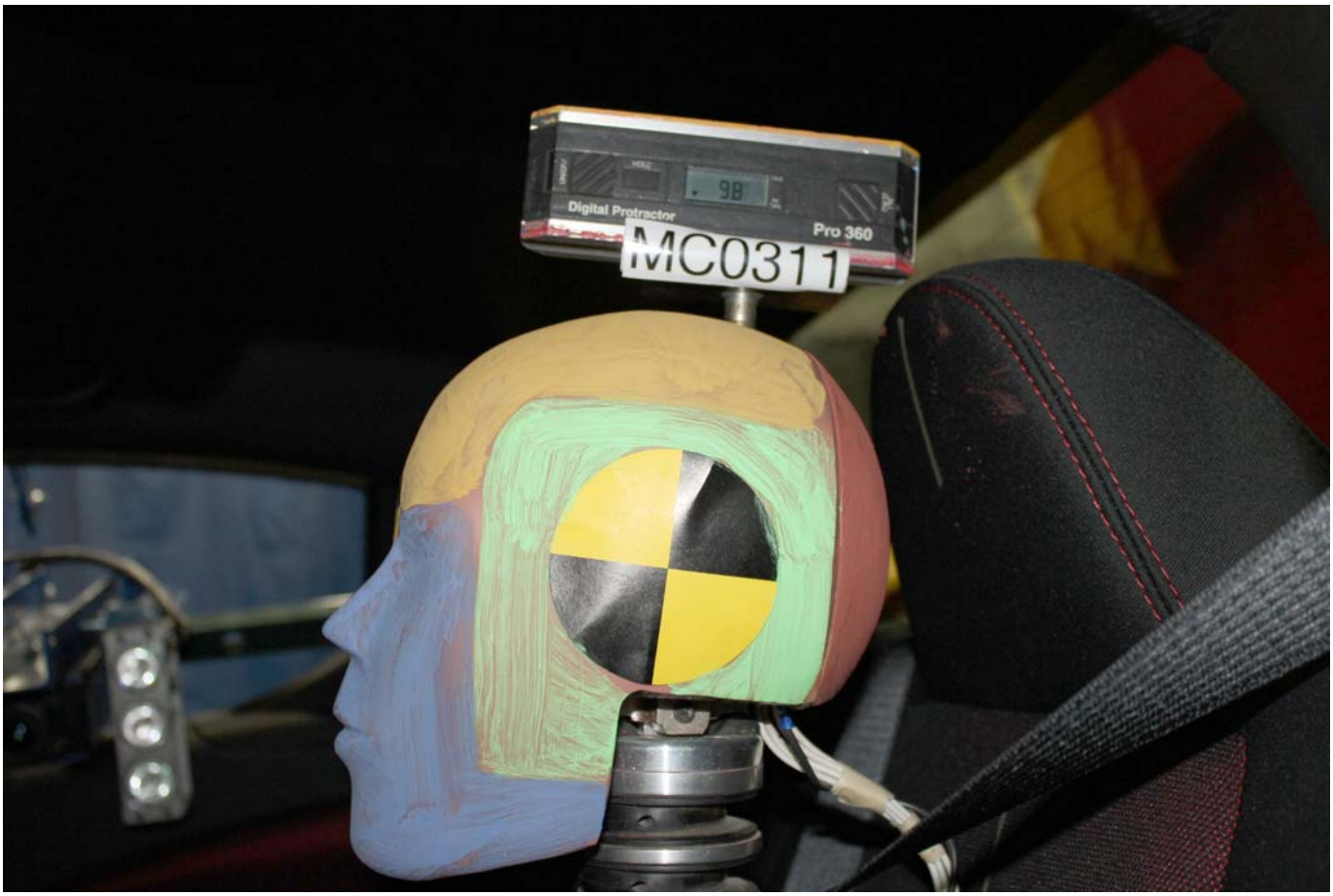
Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning

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

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

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

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



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

Pre-Test Placement of Rear Passenger Dummy's Feet

Pre-Test View of Belt Anchorage for Rear Passenger Dummy

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

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

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

Pre-Test Rear Passenger Dummy and Door Clearance View

Post-Test Rear Passenger Dummy and Door Clearance View

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

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

Pre-Test Rear Passenger Inner Door Panel View

Post-Test Rear Passenger Inner Door Panel View

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

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

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

PHOTOGRAPH NOT APPLICABLE

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

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

PHOTOGRAPH NOT APPLICABLE

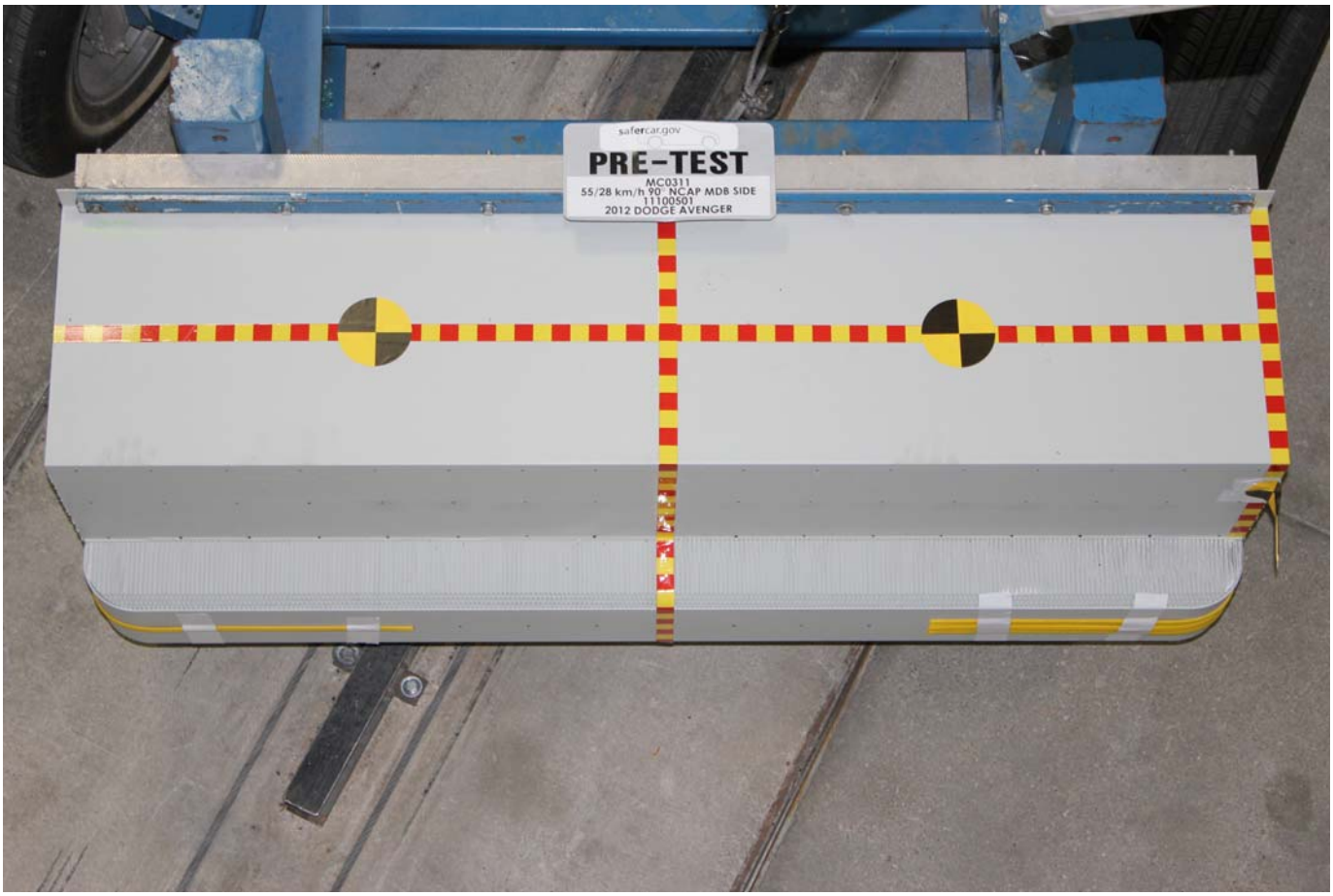
Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Side Airbag View

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

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

Pre-Test Front View of MDB Impactor Face

Post-Test Front View of MDB Impactor Face



Pre-Test Top View of MDB Impactor Face

Post-Test Top View of MDB Impactor Face

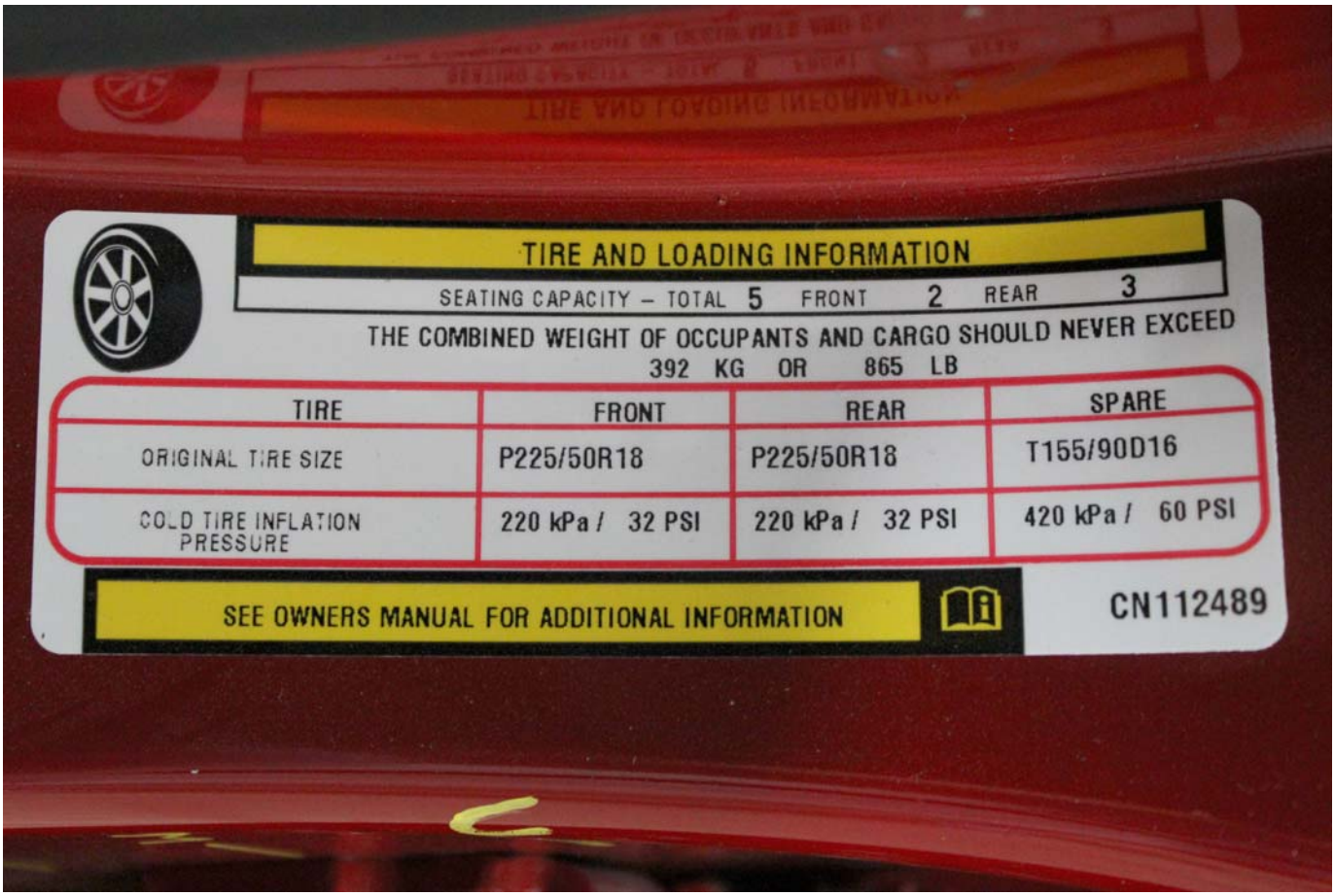
Pre-Test Left Side View of MDB Impactor Face

Post-Test Left Side View of MDB Impactor Face

Pre-Test Right Side View of MDB Impactor Face

Post-Test Right Side View of MDB Impactor Face

Close-Up View of Vehicle's Certification Label

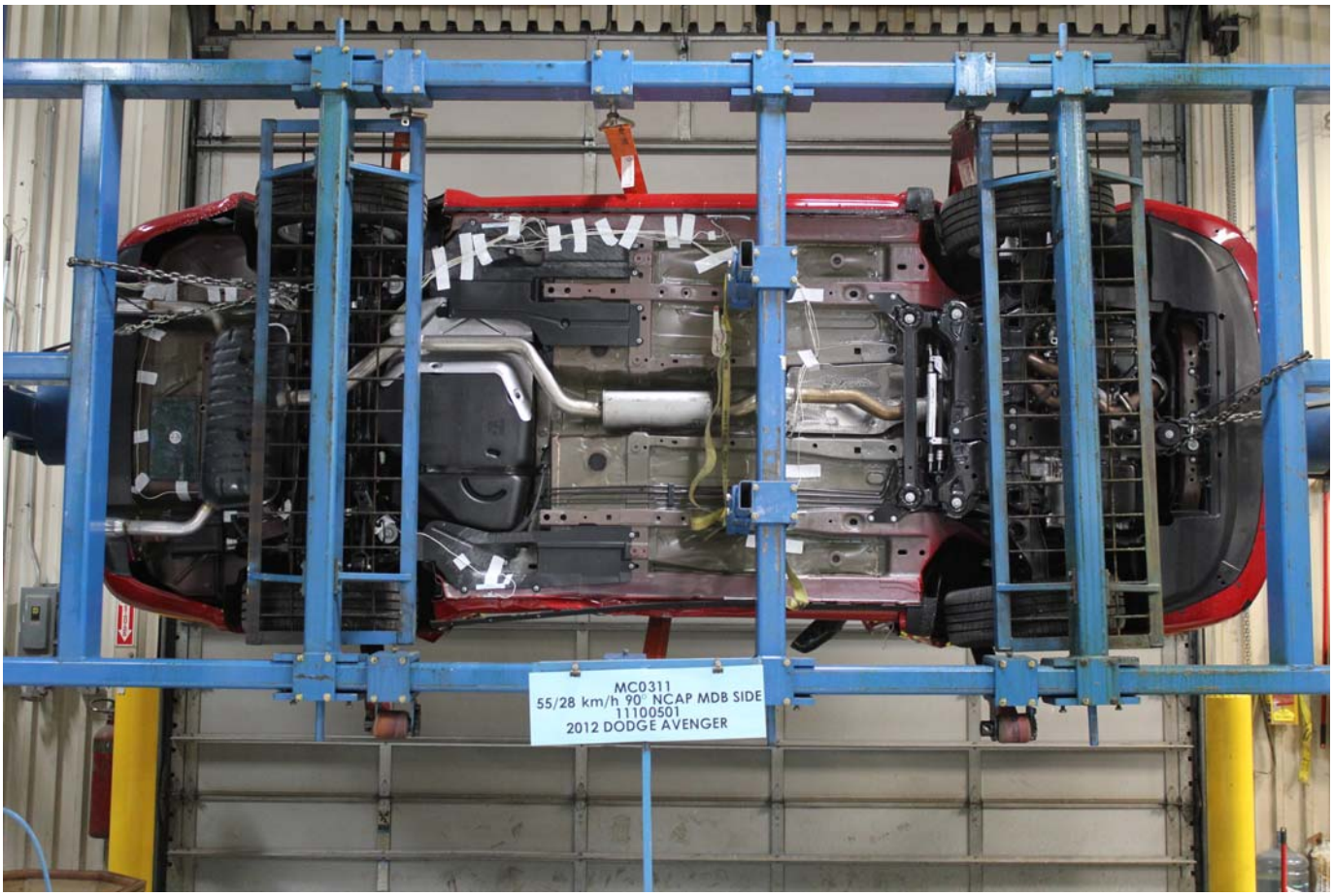


Close-Up View of Vehicle's Tire Information Placard or Label

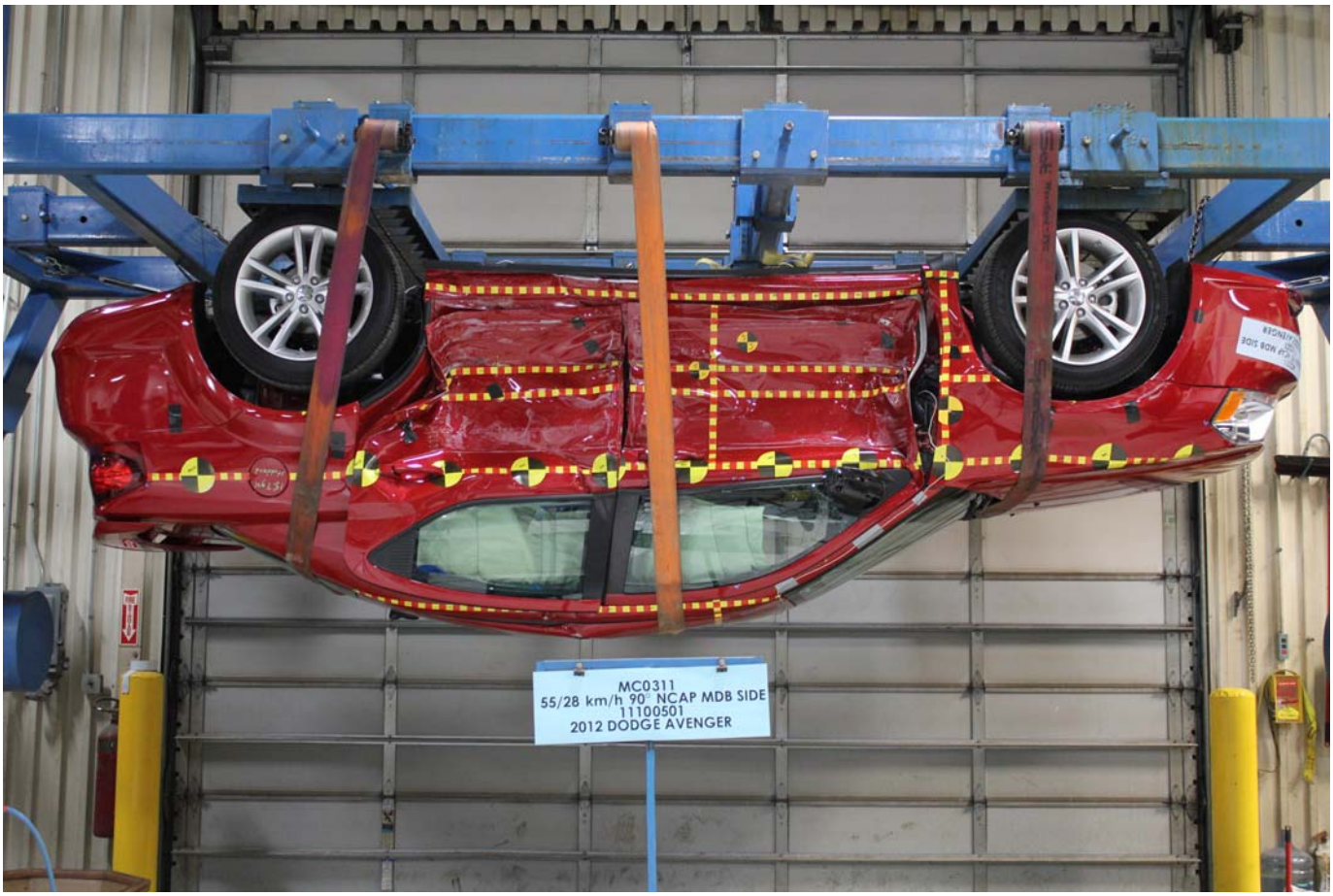
Pre-Test Ballast View

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

2012 DODGE

AVENGER SXT PLUS

THIS VEHICLE IS MANUFACTURED TO MEET SPECIFIC UNITED STATES REQUIREMENTS. THIS VEHICLE IS NOT MANUFACTURED FOR SALE OR REGISTRATION OUTSIDE OF THE UNITED STATES.

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION

Base Price: $23,995

DODGE AVENGER SXT PLUS
Exterior Color: Redline 2-Coat Pearl Exterior Paint
Interior Color: Black Interior Color
Interior: Premium Cloth Bucket Seats
Engine: 3.6-Liter V6 24-Valve VVT Engine
Transmission: 6-Speed Automatic Transmission

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL/SAFETY FEATURES

Advanced Multistage Front Airbags
Supplemental Front Seat-Mounted Side Airbags
Supplemental Side-Curtain Front and Rear Airbags
Active Head Restraints, Front Seat
Electronic Stability Control
Antilock 4-Wheel Disc Brakes
Traction Control
Speed Control
Child Seat Anchor System-LATCH Ready
Security Alarm
AutoStick Automatic Transmission
Front and Rear Stabilizer Bars
Automatic Headlamps

INTERIOR FEATURES

Media Center 430 CD/DVD/HDD
30 GB Hard Drive with 6,700 Song Capacity
6.5-Inch Touch-Screen Display
SiriusXM Satellite Radio w/ 1-Yr Radio Subscription
For More Information, Call 1-888-539-7474
8-Way Power Driver's Seat
Power Windows with Driver's One-Touch-Down Feature
Driver's Manually Adjustable Lumbar Support
60 / 40 Rear Seat with Trunk Pass-Through
Rear Armrest
Prem Headliner w/ UGDO, LED Lighting, Assist Handle
Leather-Wrapped Steering Wheel
Leather-Wrapped Shift Knob
Air Conditioning w/ Automatic Temperature Control
Instrument Cluster with Display Screen
6 Speakers
Tire Pressure Monitoring Display
Steering Wheel-Mounted Audio Controls
Tilt / Telescope Steering Column
Front & Rear Aimable LED Lamps
Premium Front and Rear Floor Mats
Laminated Windshield and Front Door Glass
Trunk Lamp

EXTERIOR FEATURES

18-Inch x 7.0-Inch Aluminum Wheels
P225/50R18 BSW All Season Touring Tires
Quad LHD Optics Headlamps
Projector Fog Lamps
LED Tail Lamps
Body Color Power Heated Exterior Mirrors
Bright/Black Grille
Trunklid Spoiler
Dual Bright Exhaust
Compact Spare Tire

OPTIONAL EQUIPMENT	
Customer Preferred Package 27W	
Red Seat Insert and Red Stitching	
Power Sunroof with Open / Close Express Feature	$845
Media Center 130 CD/MP3	-$300
Flexible Fuel Vehicle	
Media Center 430 Radio Credit	
DESTINATION CHARGE	$750

TOTAL PRICE: * $25,290

WARRANTY COVERAGE
5-year or 100,000-mile Powertrain Limited Warranty.
3-year or 36,000-mile Basic Limited Warranty.
24-hour towing assistance; certain restrictions apply.
Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

5YEAR/100,000MILE
POWERTRAIN WARRANTY

Assembly Point/Port of Entry: STERLING HTS, MICH., U.S.A.
VIN: 1C3-CDZEG3CN-112489   L4-VON: 0891

SOLD TO: 42 68960
WESTGATE CHRYSLER JEEP DODGE INC
2695 EAST MAIN STREET
PLAINFIELD IN 46168-

THIS LABEL IS ADDED TO THIS VEHICLE TO COMPLY WITH FEDERAL LAW. THE LABEL CANNOT BE REMOVED OR ALTERED PRIOR TO DELIVERY TO THE ULTIMATE PURCHASER.
* STATE AND/OR LOCAL TAXES IF ANY, LICENSE AND TITLE FEES AND DEALER SUPPLIED AND INSTALLED OPTIONS AND ACCESSORIES ARE NOT INCLUDED IN THIS PRICE. DISCOUNT, IF ANY, IS BASED ON PRICE OF OPTIONS IF PURCHASED SEPARATELY.

For more information visit: www.dodge.com or call 1-800-4ADODGE

Chrysler Group LLC

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

GASOLINE CITY MPG
19
Expected range for most drivers 15 to 23 MPG

*Fuel economy when operating on E85 will yield different values than gasoline. See Fuel Economy Guide for more information.

Dual Fuel Vehicle* **Gasoline-Ethanol (E85)**

Estimated Annual Fuel Cost
$2,048
based on 15,000 miles at at $3.00 per gallon of gasoline

Combined Gasoline Fuel Economy
This vehicle 22
10 — 39
All MIDSIZE CARS

GASOLINE HIGHWAY MPG
29
Expected range for most drivers 24 to 34 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

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver	**Not Rated**
	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

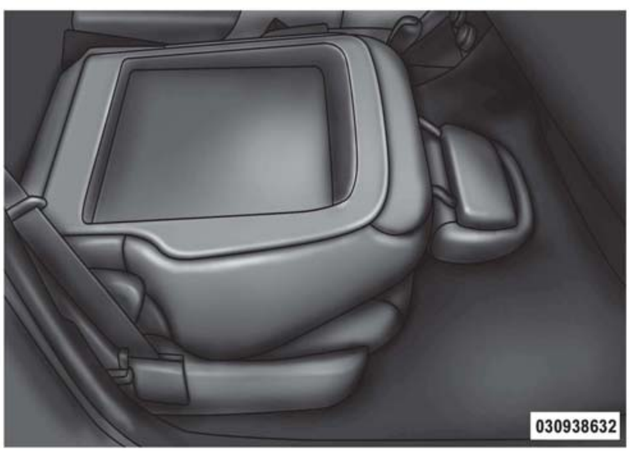
The safety ratings above are based on Federal Government tests of particular vehicles equipped with certain features and options. The performance of this vehicle may differ.
Bumper Performance
This vehicle is equipped with bumper systems that can withstand a frontal barrier impact speed of 2.5 miles per hour and a rear barrier impact speed of 2.5 miles per hour with no more damage than allowed by the Federal bumper standard. The Federal bumper standard allows damage to the bumpers and attaching hardware and specifies barrier tests to be conducted at 2.5 miles per hour.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 74 %
NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.
FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
STERLING HTS, MICH., U.S.A.
COUNTRY OF ORIGIN:
ENGINE: MEXICO
TRANSMISSION: UNITED STATES

Monroney Label

8



Fold-Flat Front Passenger Seat

Head Restraints

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

> **WARNING!**
>
> The head restraints for all occupants must be properly adjusted prior to operating the vehicle or occupying a seat. Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

Active Head Restraints — Front Seats

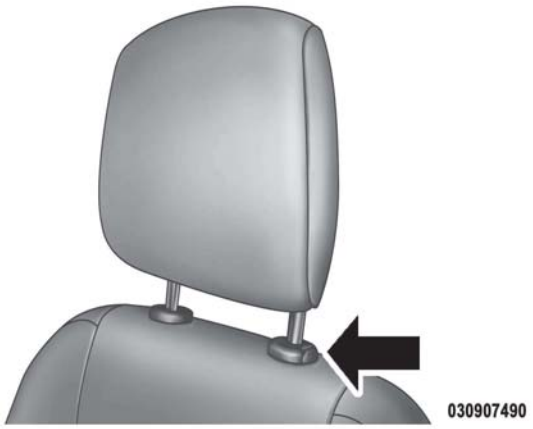
Active Head Restraints are passive, deployable components, and vehicles with this equipment cannot be readily identified by any markings, only through visual inspection of the head restraint. The head restraint will be split in two halves, with the front half being soft foam and trim, the back half being decorative plastic.

When AHRs deploy during a rear impact, the front half of the head restraint extends forward to minimize the gap

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

between the back of the occupant's head and the AHR. This system is designed to help prevent or reduce the extent of injuries to the driver and front passenger in certain types of rear impacts. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the push button, located at the base of the head restraint, and push downward on the head restraint.



Push Button

For comfort the Active Head Restraints can be tilted forward and rearward. To tilt the head restraint closer to the back of your head, pull forward on the bottom of the head restraint. Push rearward on the bottom of the head restraint to move the head restraint away from your head.

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

Active Head Restraint (Normal Position)

Active Head Restraint (Tilted)

NOTE:

- The head restraints should only be removed by qualified technicians, for service purposes only. If either of the head restraints require removal, see your authorized dealer.

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

- In the event of deployment of an Active Head Restraint, refer to "Occupant Restraints/Resetting Active Head Restraints (AHR)" in "Things to Know Before Starting Your Vehicle" for further information.

WARNING!

- Do not place items over the top of the Active Head Restraint, such as coats, seat covers or portable DVD players. These items may interfere with the operation of the Active Head Restraint in the event of a collision and could result in serious injury or death.

(Continued)

WARNING! (Continued)

- Active Head Restraints may be deployed if they are struck by an object such as a hand, foot or loose cargo. To avoid accidental deployment of the Active Head Restraint ensure that all cargo is secured, as loose cargo could contact the Active Head Restraint during sudden stops. Failure to follow this warning could cause personal injury if the Active Head Restraint is deployed.

Head Restraints — Rear Seats

The rear seat head restraints are fixed and cannot be adjusted. For proper routing of a Child Seat Tether refer to "Occupant Restraints" in "Things to Know Before Starting Your Vehicle" for further information.

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

Post-Test Driver Dummy Knee Contact with Vehicle Interior View

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

APPENDIX B

DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

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

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

Passenger Lower Thorax Rib Deflection (Y)

Passenger Upper Abdomen Rib Deflection (Y)

Passenger Lower Abdomen Rib Deflection (Y)

Driver Head Acceleration Redundant (X)

Driver Head Acceleration Redundant (Y)

Driver Head Acceleration Redundant (Z)

Passenger Head Acceleration Redundant (X)

Passenger Head Acceleration Redundant (Y)

Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)

Vehicle Center of Gravity Acceleration (Y)

Vehicle Center of Gravity Acceleration (Z)

Right Side Sill at Front Seat Acceleration (X)

Right Side Sill at Front Seat Acceleration (Y)

Right Side Sill at Front Seat Acceleration (Z)

Right Side Sill at Rear Seat Acceleration (X)

Right Side Sill at Rear Seat Acceleration (Y)

Right Side Sill at Rear Seat Acceleration (Z)

Left Side Sill at Front Seat Acceleration (Y)

Left Side Sill at Rear Seat Acceleration (Y)

Lower A-Post Acceleration (Y)

Middle A-Post Acceleration (Y)

Lower B-Post Acceleration (Y)

Middle B-Post Acceleration (Y)

Front Seat Track Acceleration (Y)

Rear Seat Track Acceleration (Y)

Right Rear Occupant Compartment Acceleration (Y)

Engine Block (X)

Engine Block (Y)

Rear Floorpan Above Axle Acceleration (X)

Rear Floorpan Above Axle Acceleration (Y)

Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

MDB Center of Gravity Acceleration (Z)

MDB Rear Acceleration (X)

MDB Rear Acceleration (Y)

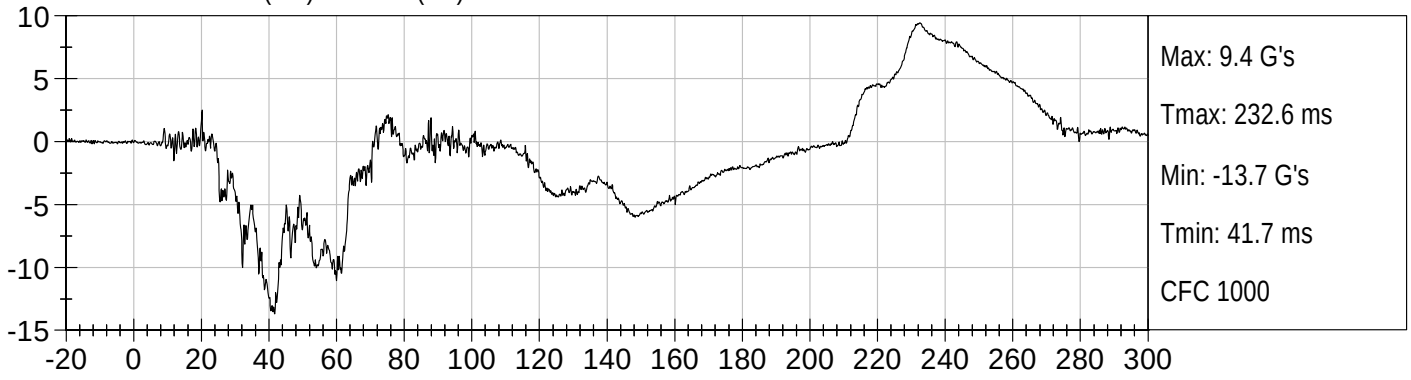
Left MDB Contact Switch

Right MDB Contact Switch

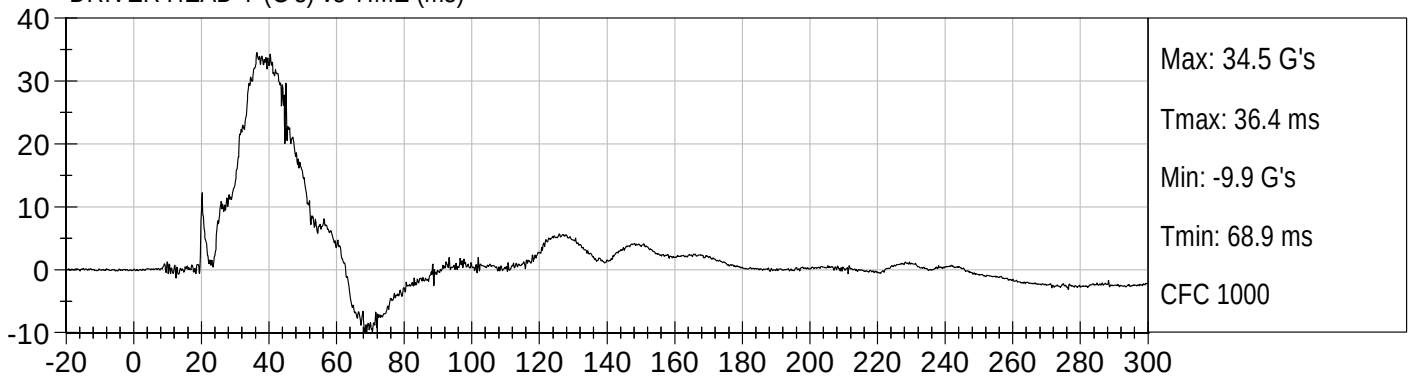
55/28 km/h 90° NCAP MDB Side Impact
2012 Dodge Avenger - MC0311

Test Date: 10/05/2011
Speed: 38.7 mph (62.3 km/h)

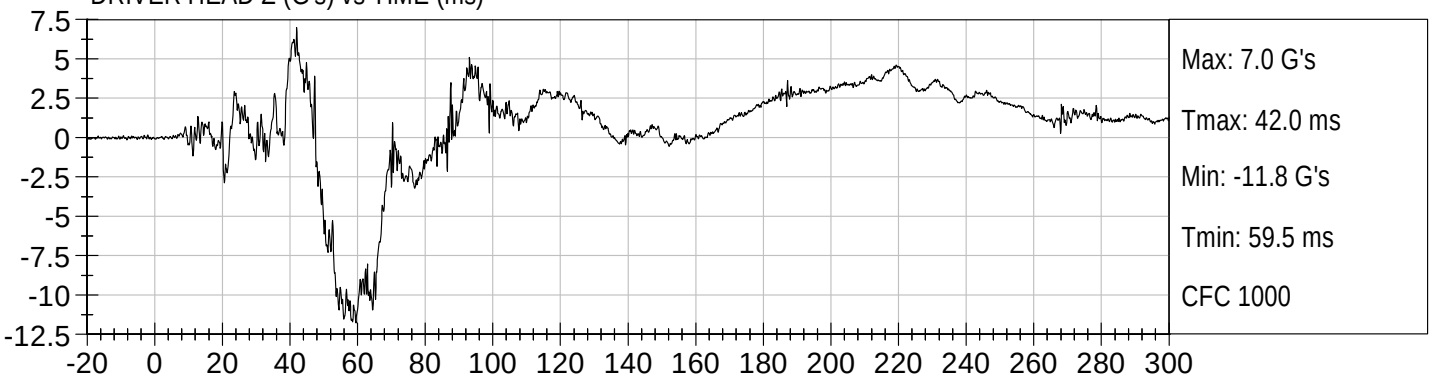
DRIVER HEAD X (G's) vs TIME (ms)



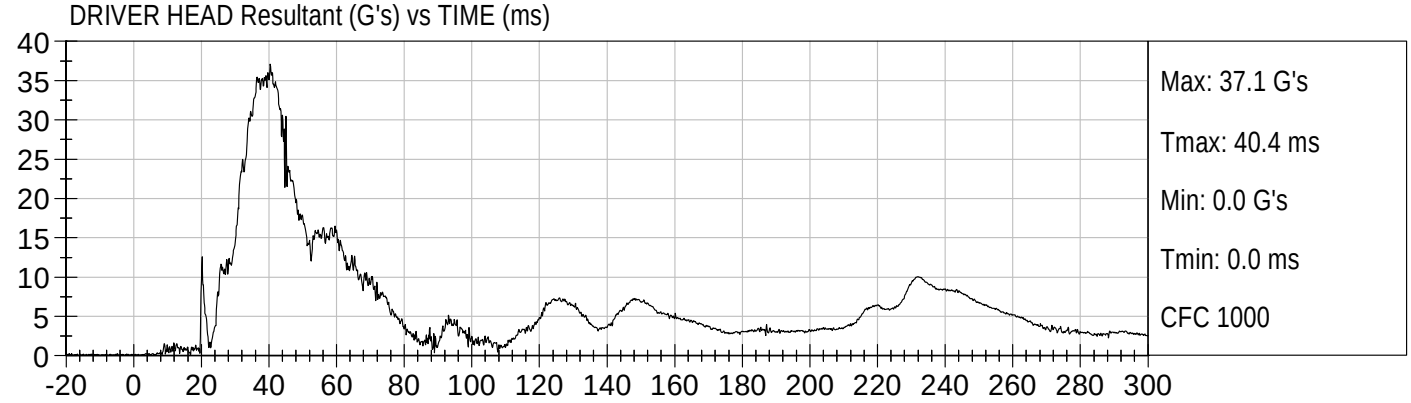
DRIVER HEAD Y (G's) vs TIME (ms)



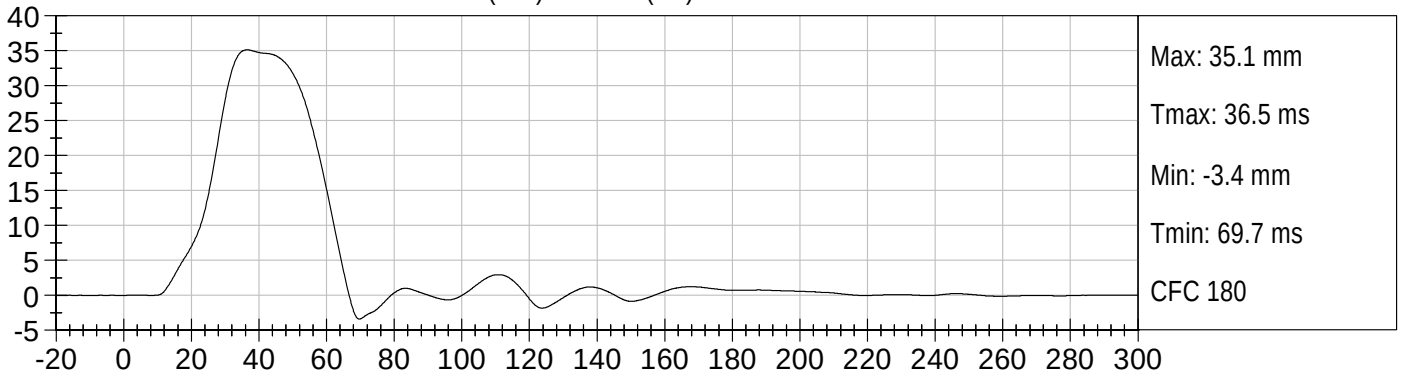
DRIVER HEAD Z (G's) vs TIME (ms)



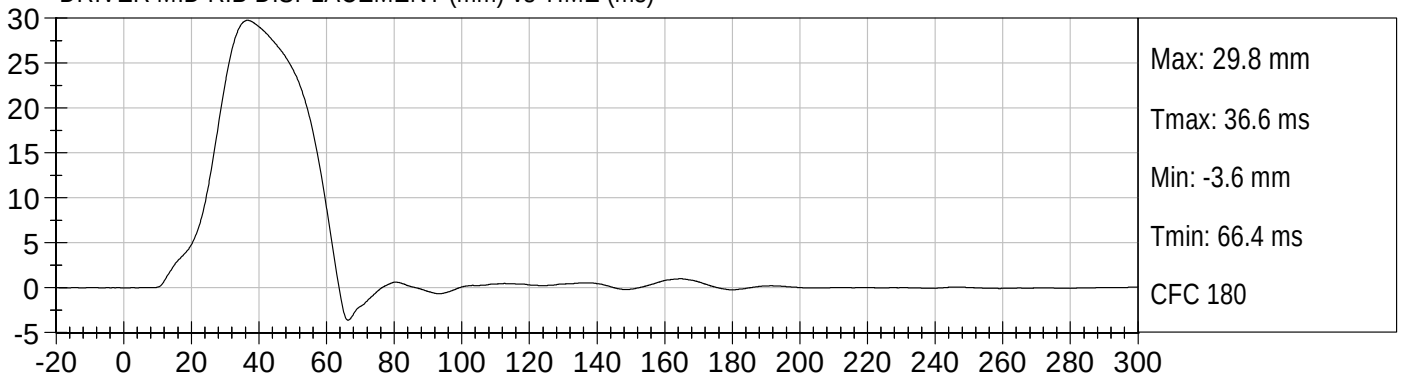
DRIVER HEAD Resultant (G's) vs TIME (ms)



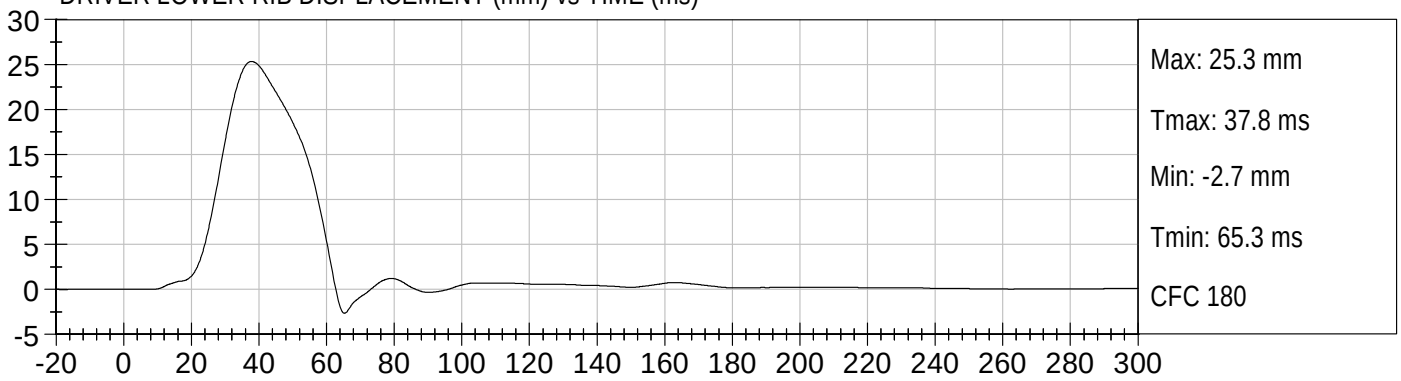
DRIVER UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



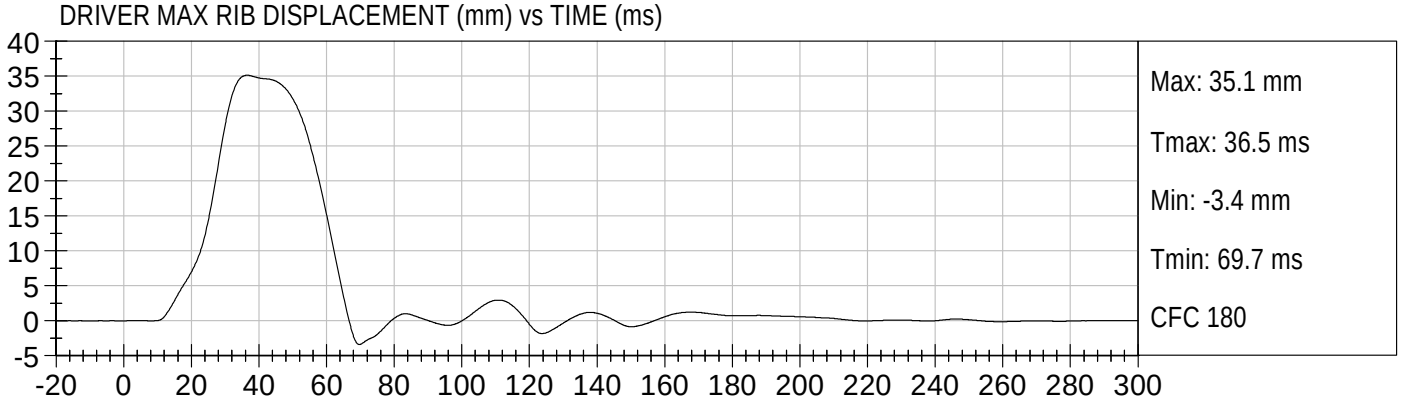
DRIVER MID RIB DISPLACEMENT (mm) vs TIME (ms)



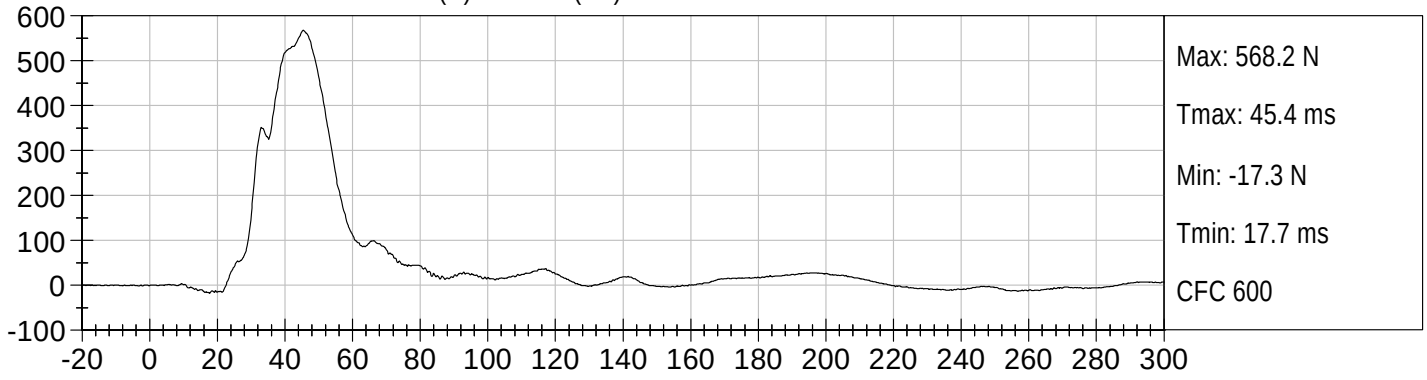
DRIVER LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



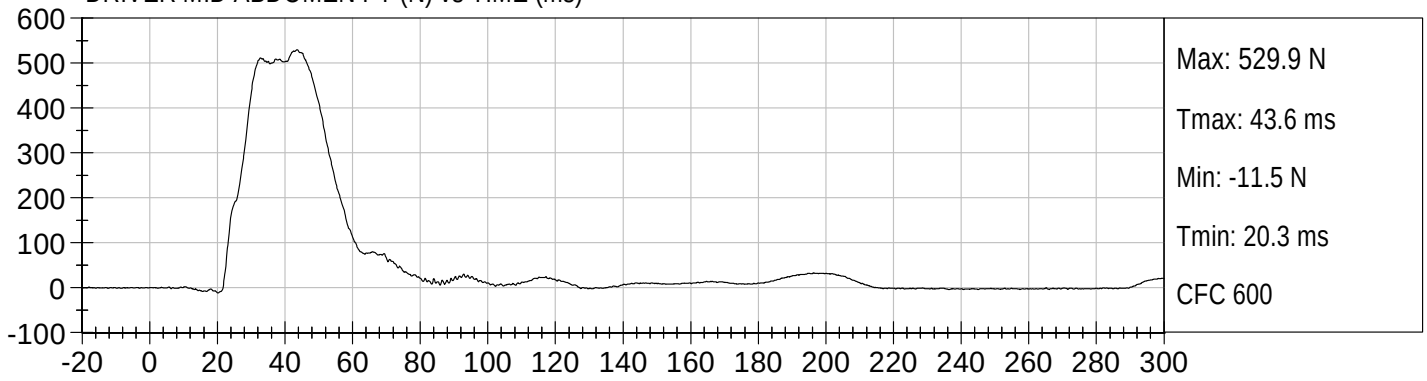
DRIVER MAX RIB DISPLACEMENT (mm) vs TIME (ms)



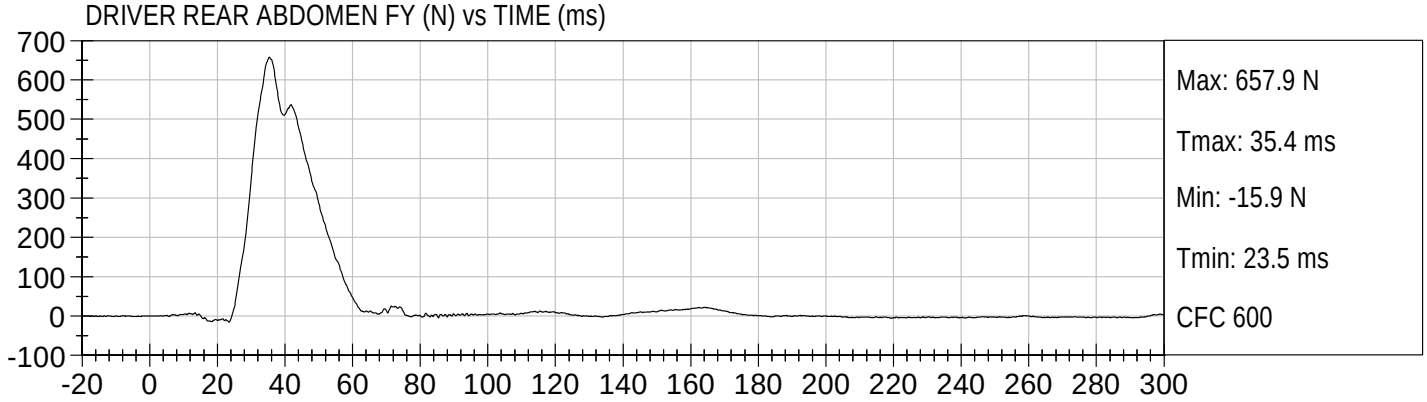
DRIVER FRONT ABDOMEN FY (N) vs TIME (ms)



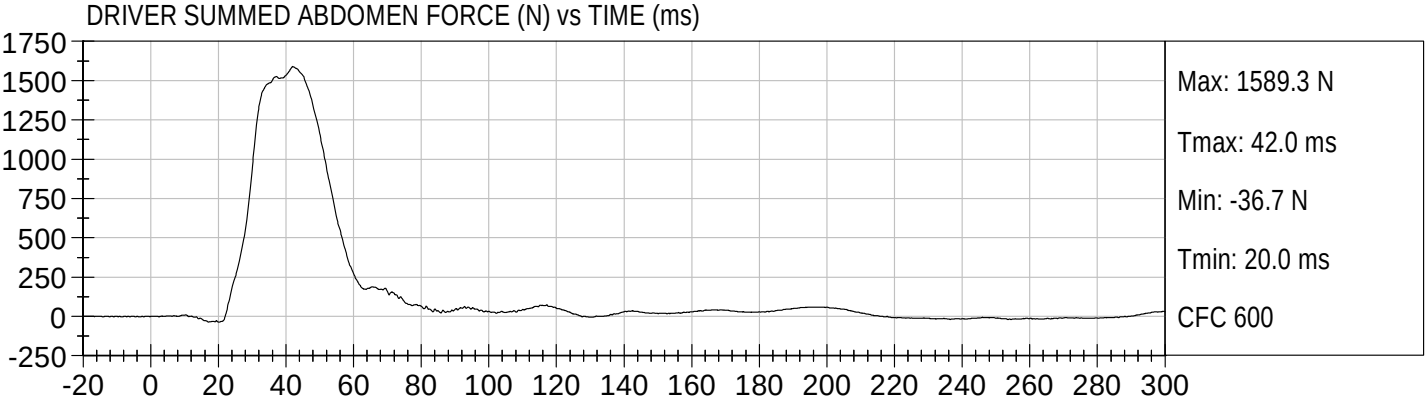
DRIVER MID ABDOMEN FY (N) vs TIME (ms)



DRIVER REAR ABDOMEN FY (N) vs TIME (ms)

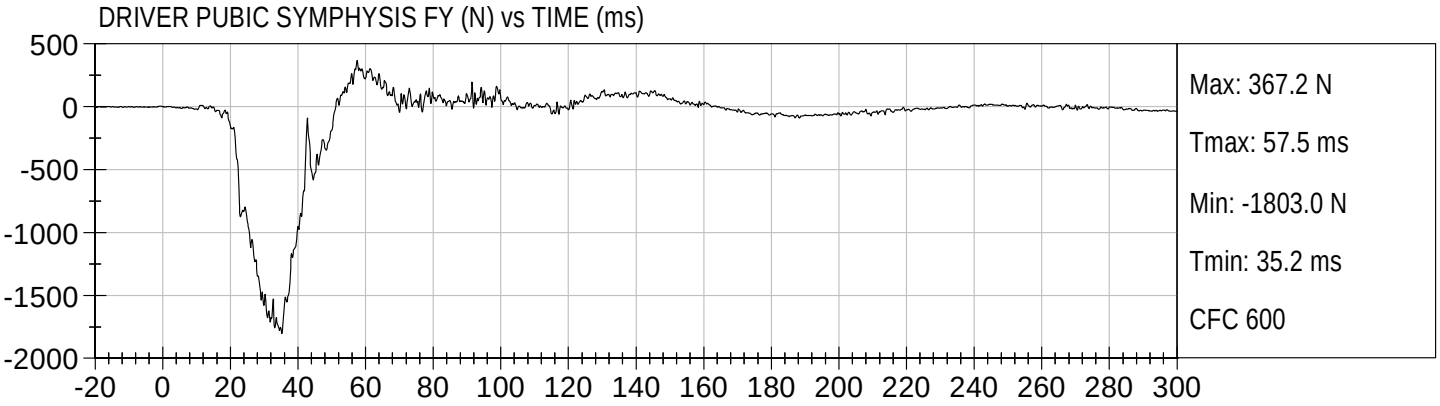


DRIVER SUMMED ABDOMEN FORCE (N) vs TIME (ms)



55/28 km/h 90° NCAP MDB Side Impact
2012 Dodge Avenger - MC0311

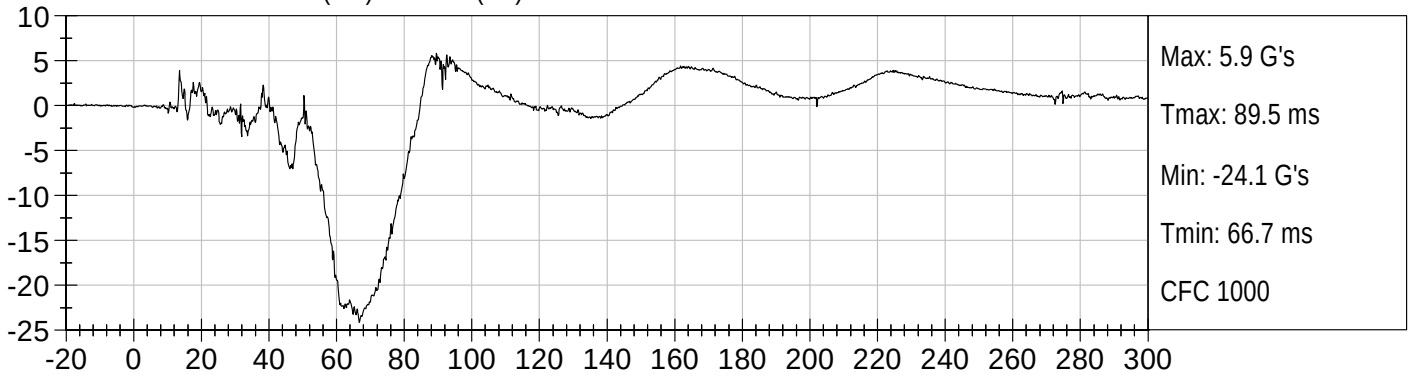
Test Date: 10/05/2011
Speed: 38.7 mph (62.3 km/h)



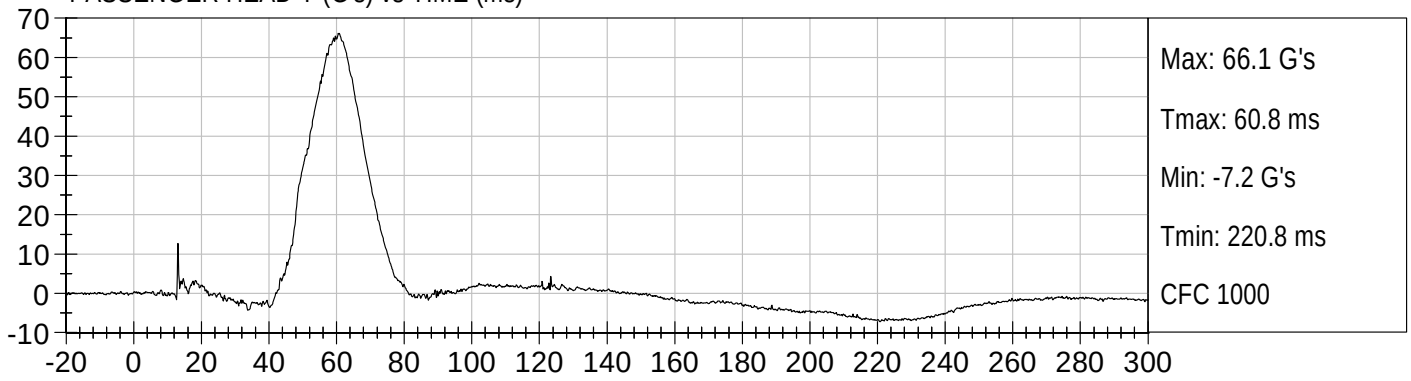
55/28 km/h 90° NCAP MDB Side Impact
2012 Dodge Avenger - MC0311

Test Date: 10/05/2011
Speed: 38.7 mph (62.3 km/h)

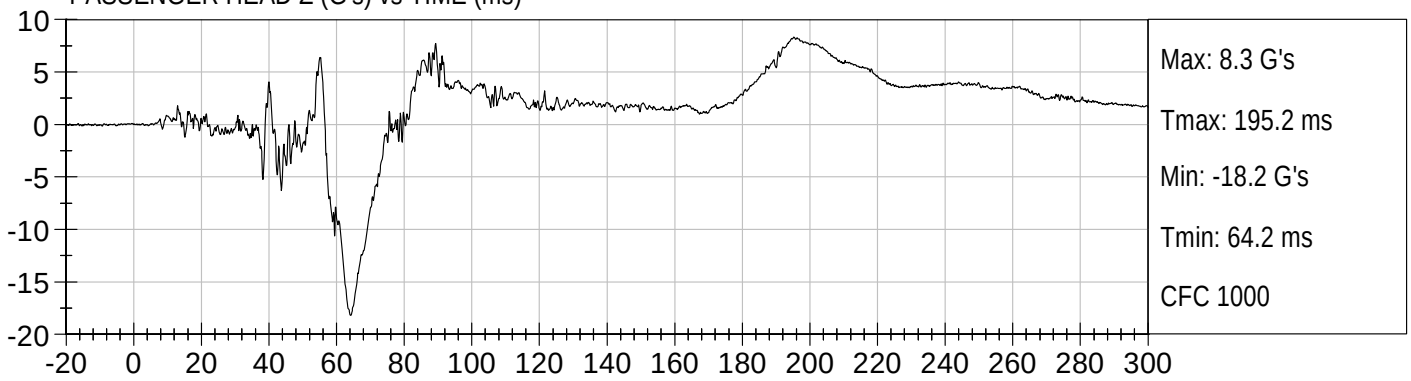
PASSENGER HEAD X (G's) vs TIME (ms)



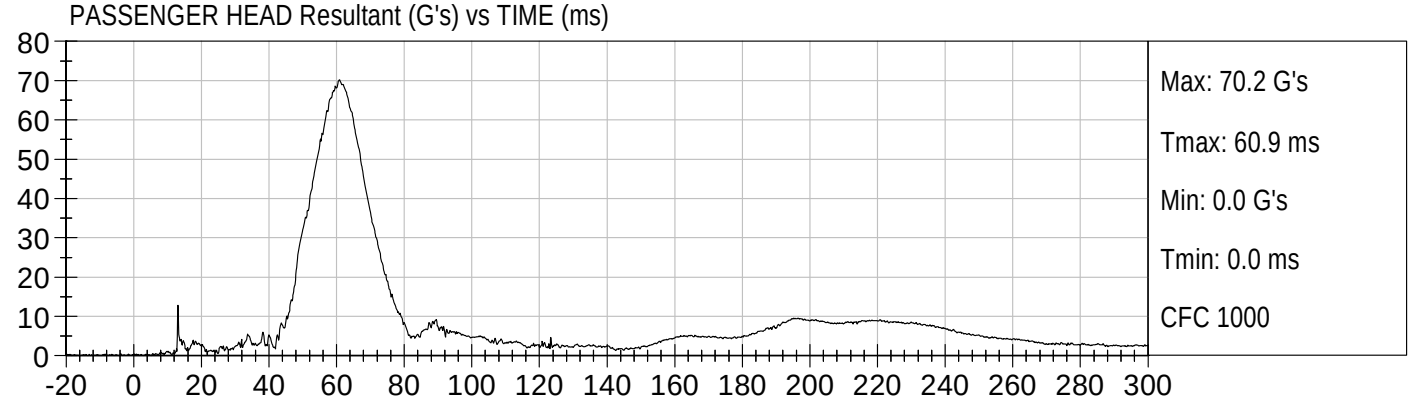
PASSENGER HEAD Y (G's) vs TIME (ms)



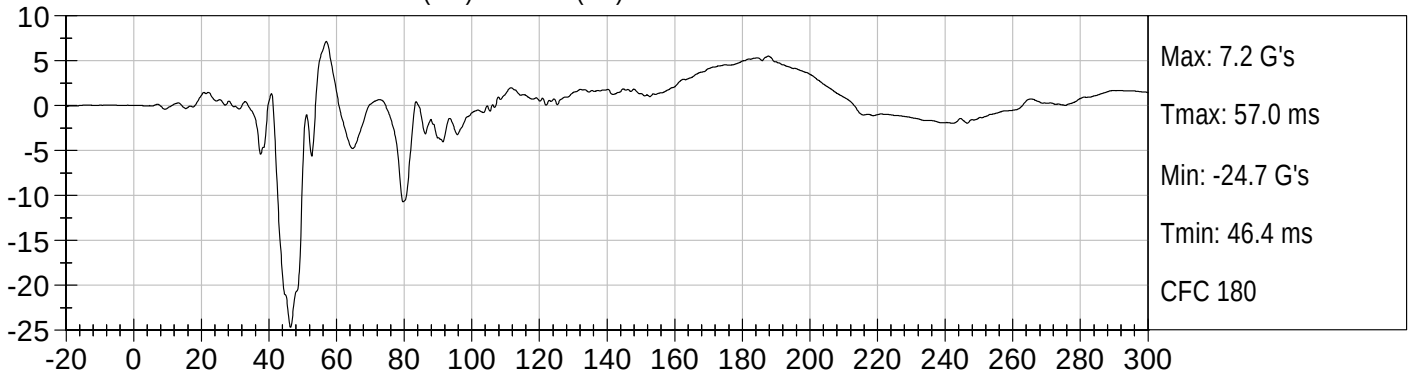
PASSENGER HEAD Z (G's) vs TIME (ms)



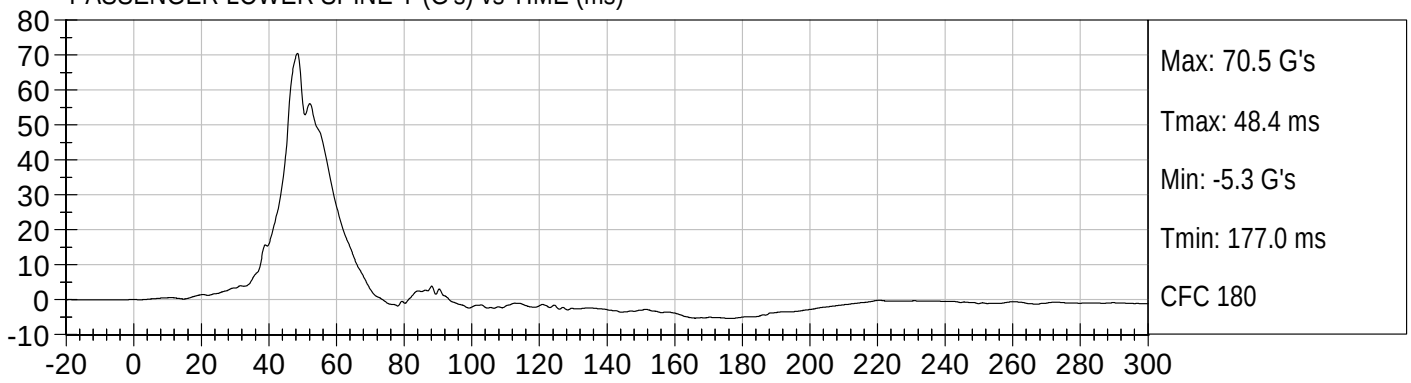
PASSENGER HEAD Resultant (G's) vs TIME (ms)



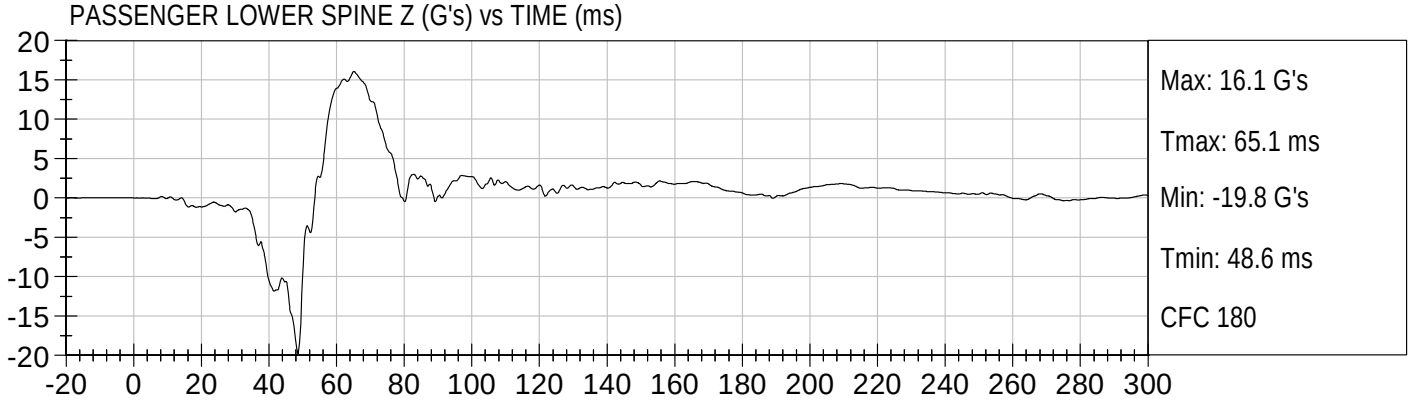
PASSENGER LOWER SPINE X (G's) vs TIME (ms)



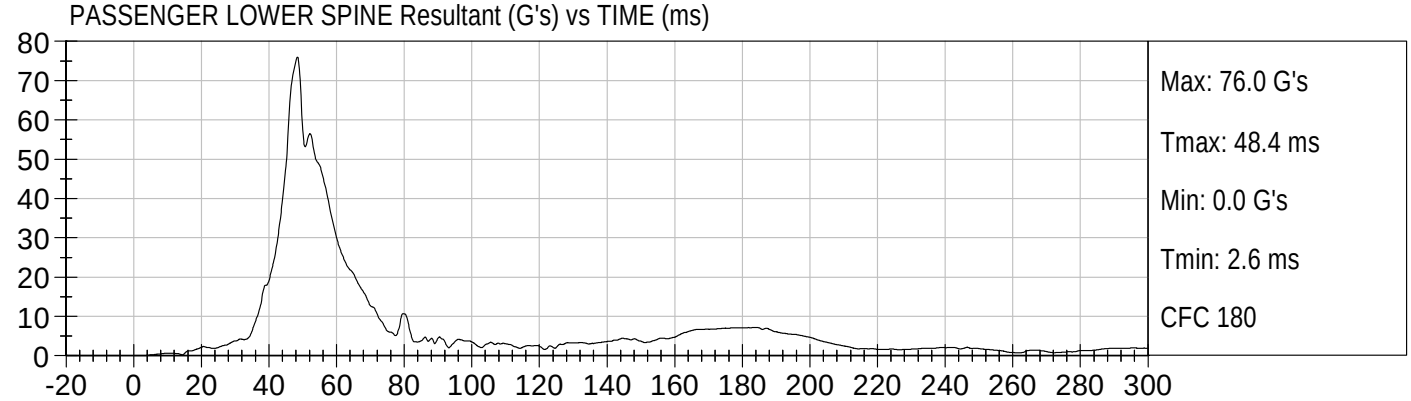
PASSENGER LOWER SPINE Y (G's) vs TIME (ms)



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



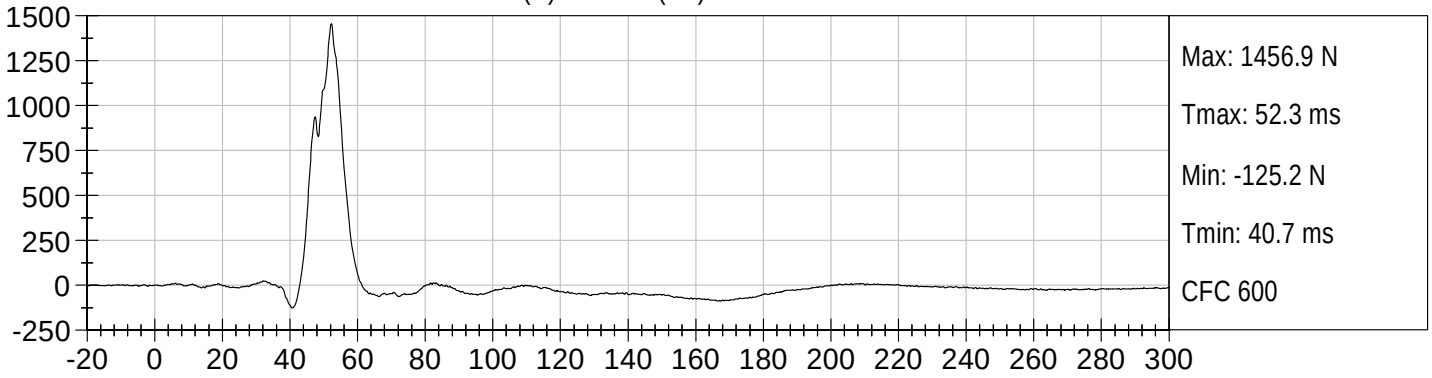
PASSENGER LOWER SPINE Resultant (G's) vs TIME (ms)



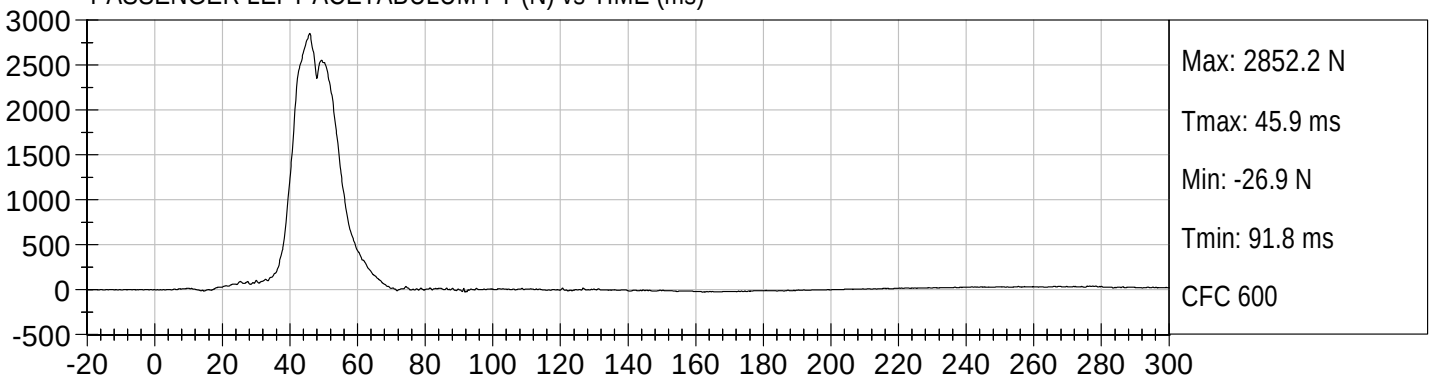
55/28 km/h 90° NCAP MDB Side Impact
2012 Dodge Avenger - MC0311

Test Date: 10/05/2011
Speed: 38.7 mph (62.3 km/h)

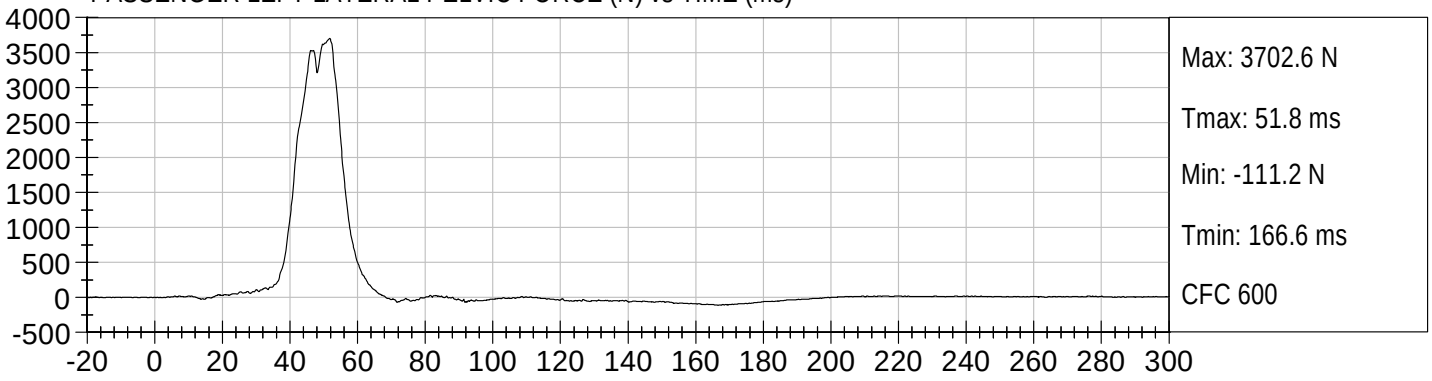
PASSENGER LEFT ILLIUM CREST FY (N) vs TIME (ms)



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



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



APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

ES-2re External Measurements
SN: 032

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

MGA RESEARCH CORPORATION

HEAD DROP TEST

ES-2re DUMMY

ATD Serial No: 032 **Test ID:** D113231

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Peak Resultant Acceleration	G's	125 to 155	152	Pass
Peak Lateral Acceleration	G's	+/- 15	-12.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

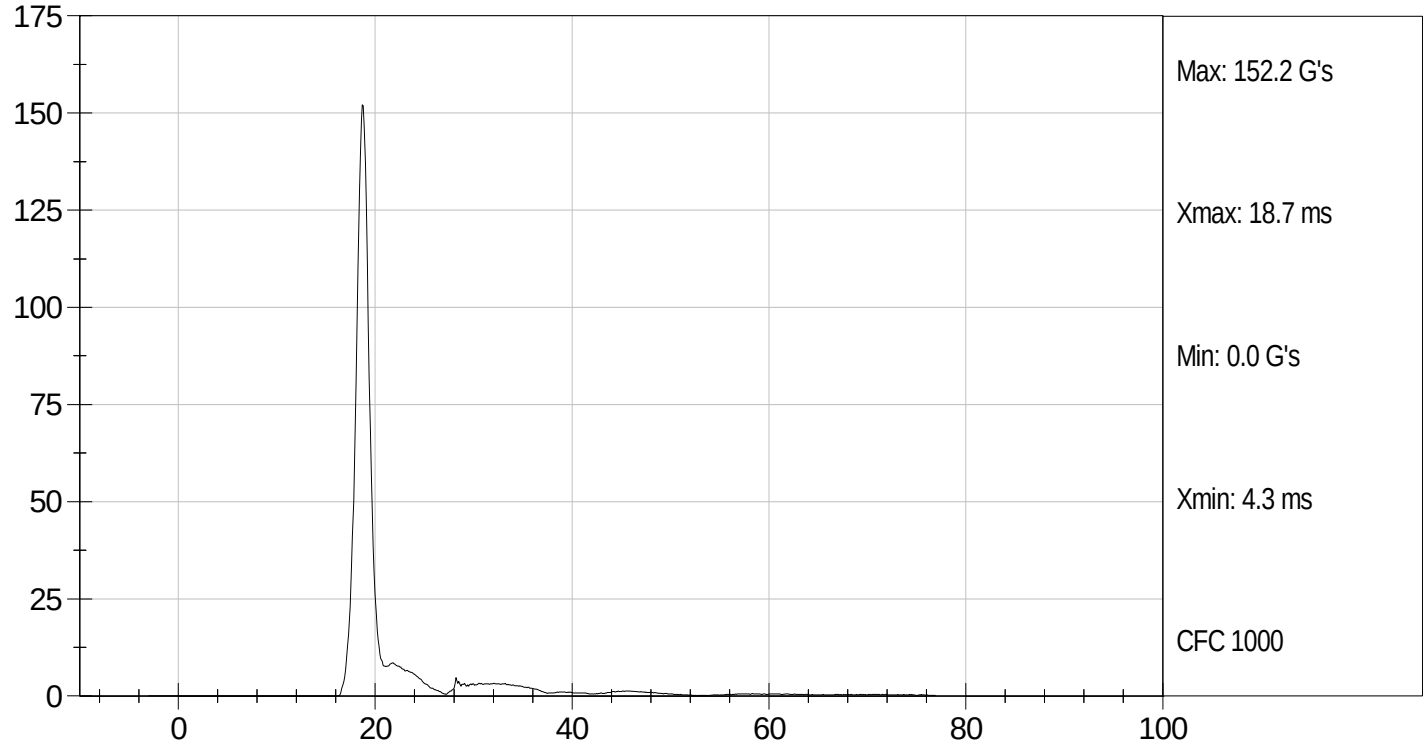
9/29/11
Test Date

David Winkelbauer
Approved By

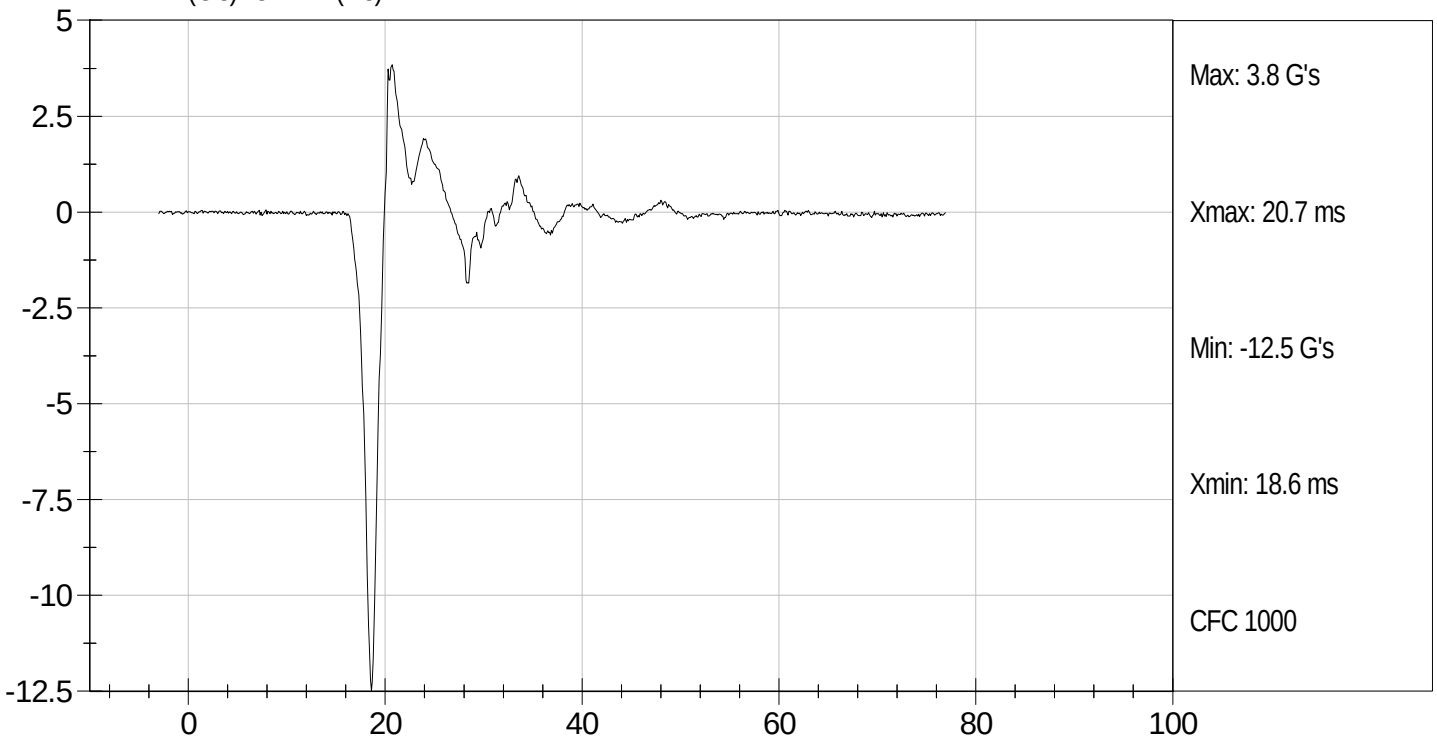
Test Desc: Head Drop
Component ID: D113231

Test Date: 9/29/11
Velocity: 0 ft/s, 0 m/s

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



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



MGA RESEARCH CORPORATION

NECK PENDULUM TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113232

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	18.0 to 22.0	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Speed		m/s	3.3 to 3.5	3.4	Pass
Pendulum Deceleration	1 ms	m/s	0.00 to -0.05	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.33	Pass
	14 ms	m/s	-3.20 to -3.70	-3.21	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	53.3	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	59.1	Pass
Head Rotation Decay Time to 0 degree		ms	53.0 to 88.0	61.1	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

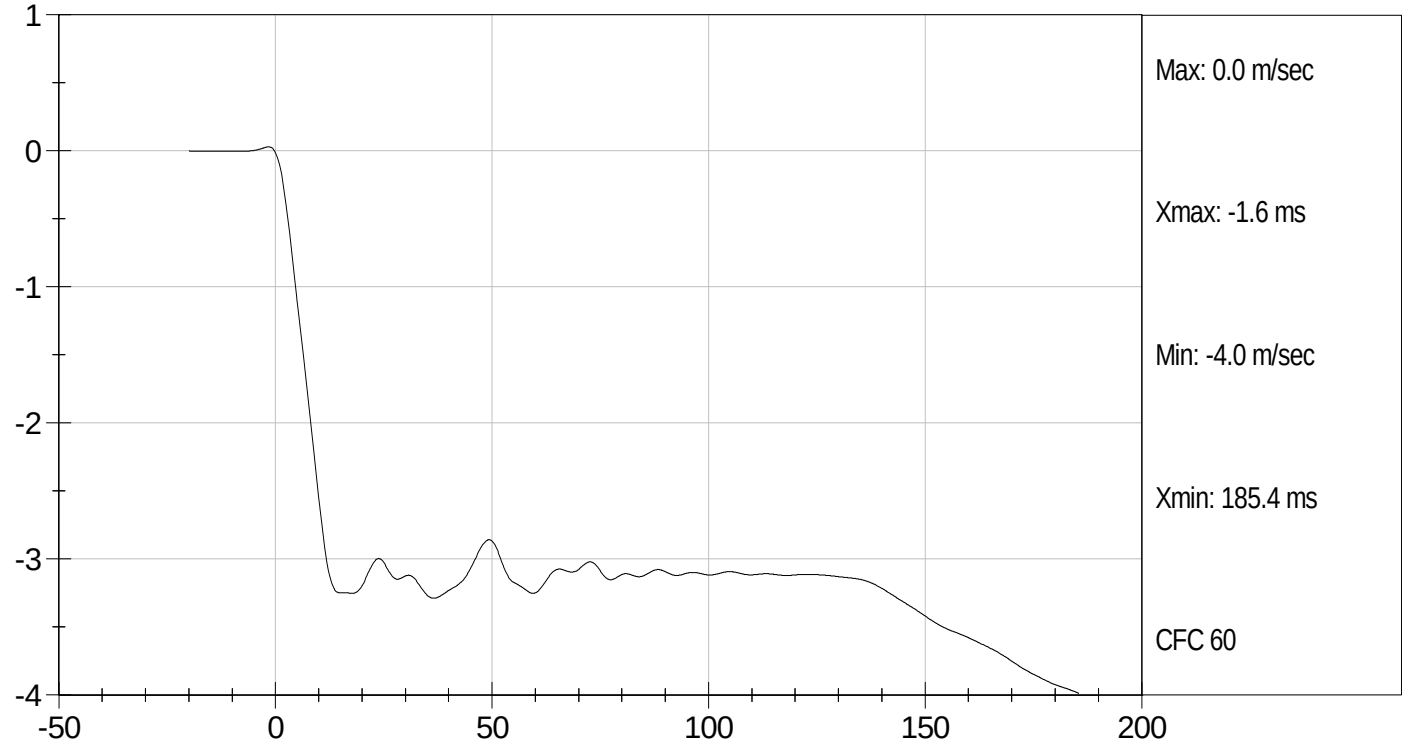
9/29/11
Test Date

David Winkelbauer
Approved By

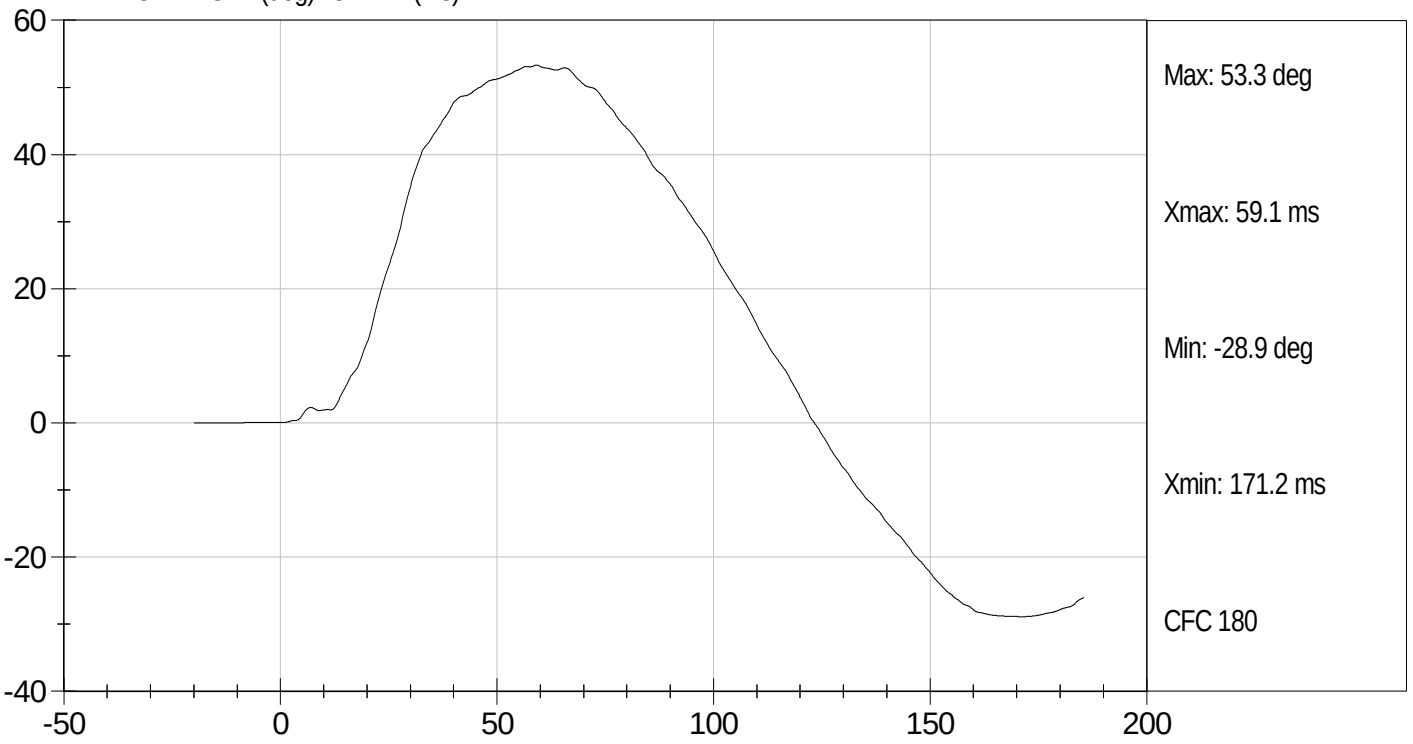
Test Desc: Neck Bending
Component ID: D113232

Test Date: 9/29/11
Velocity: 11.2 ft/s, 3.4 m/s

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



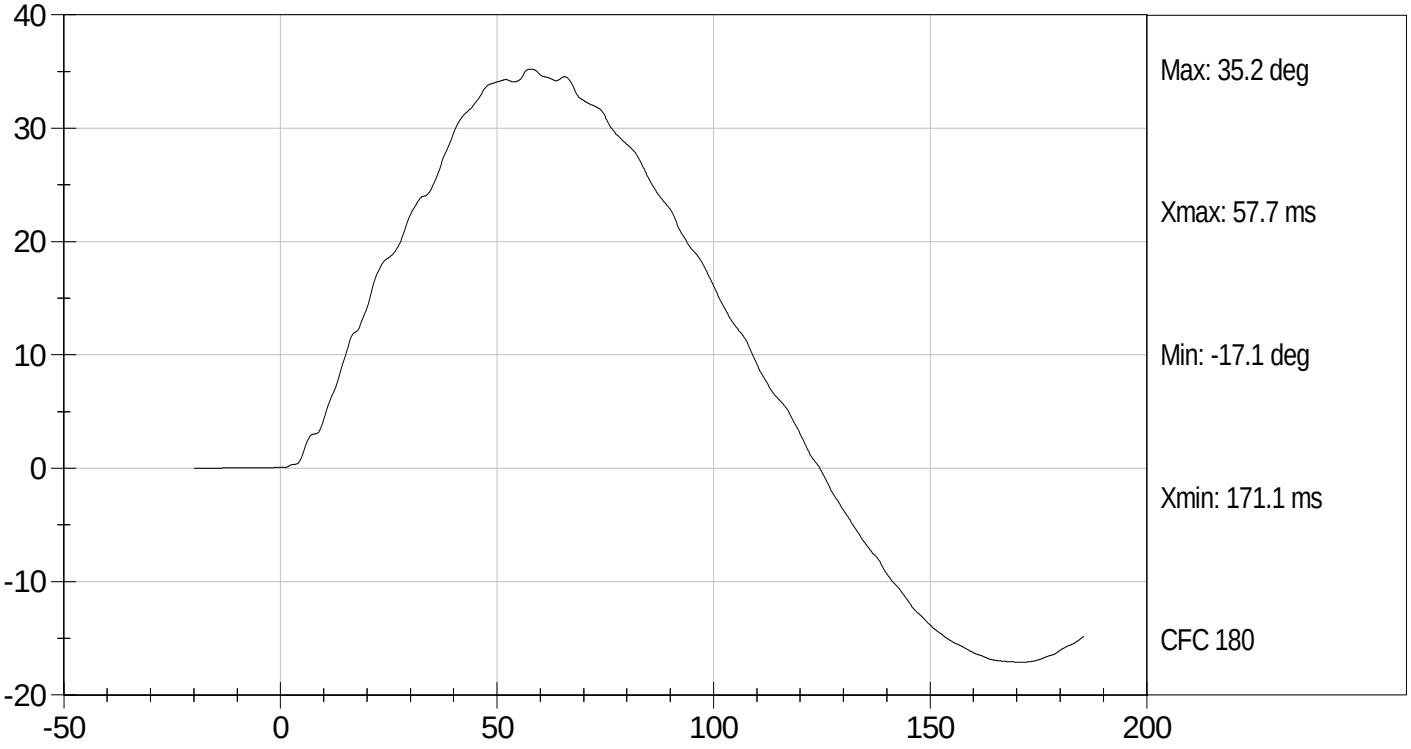
FLEXION ANGLE (deg) vs TIME (ms)



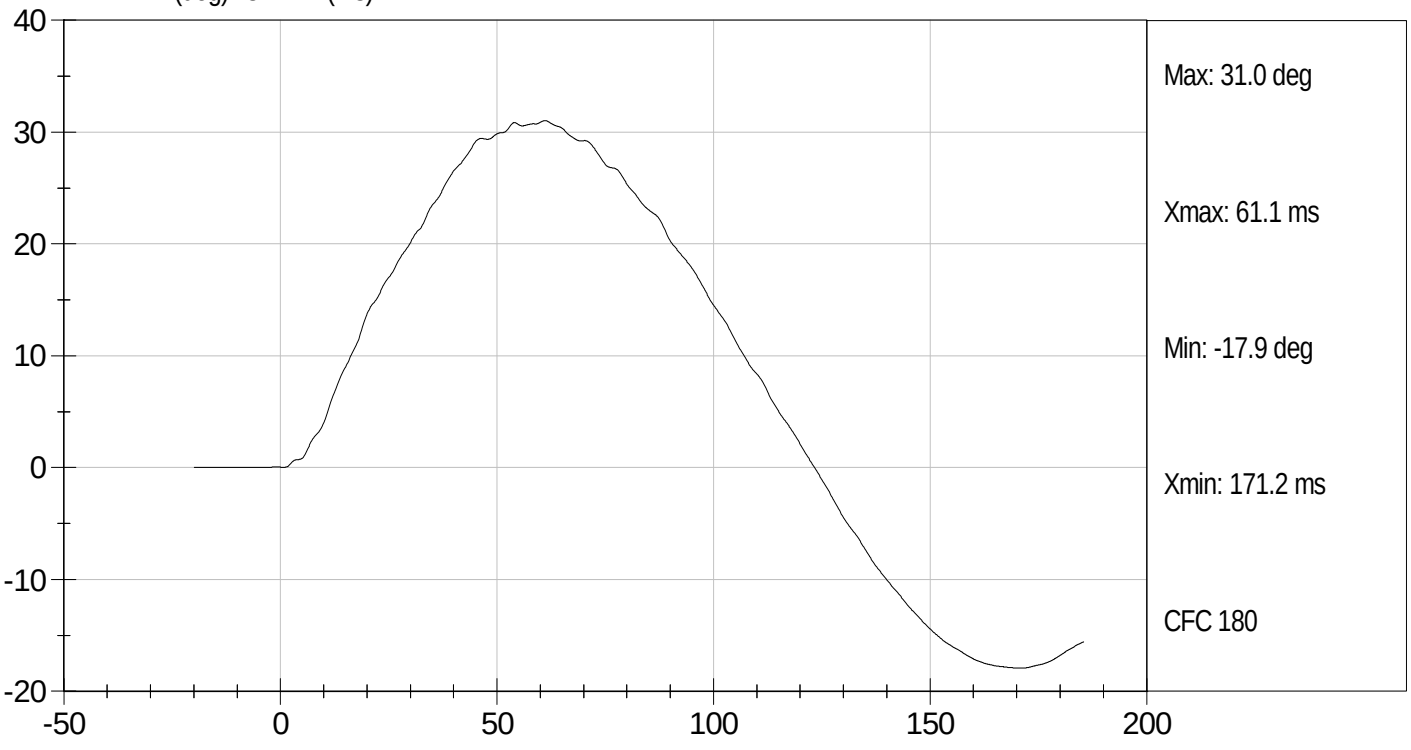
Test Desc: Neck Bending
Component ID: D113232

Test Date: 9/29/11
Velocity: 11.2 ft/s, 3.4 m/s

THETA A (deg) vs TIME (ms)



THETA B (deg) vs TIME (ms)



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113233

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.3	Pass
Peak Shoulder Acceleration	G's	7.5 to 10.5	9.3	Pass
Time of Peak Shoulder Acceleration	ms	NA	13.5	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

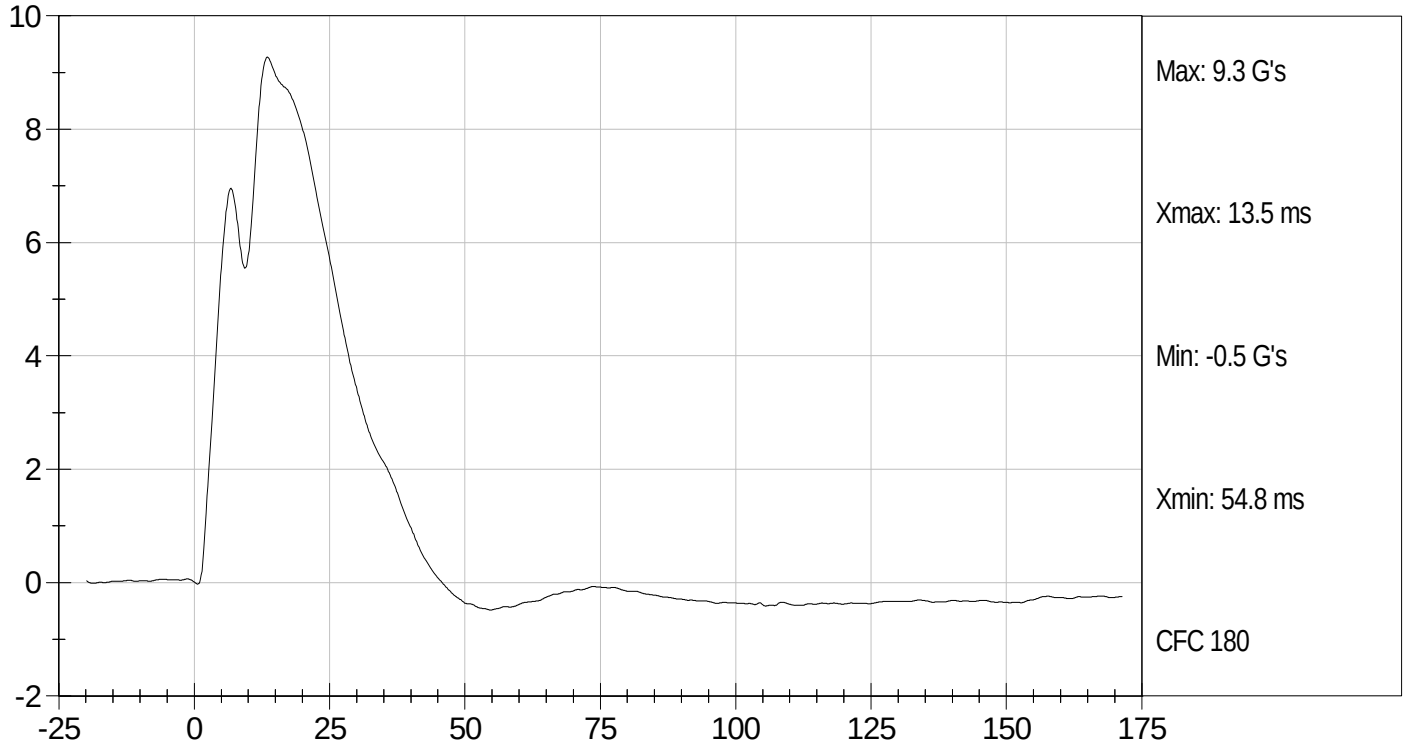
9/30/11
Test Date

David Winkelbauer
Approved By

Test Desc: Shoulder Impact
Component ID: D113233

Test Date: 9/30/11
Velocity: 14.24 ft/s, 4.3 m/s

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



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113234

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	47	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.1	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.0	Pass
		Overall Test Results		Pass

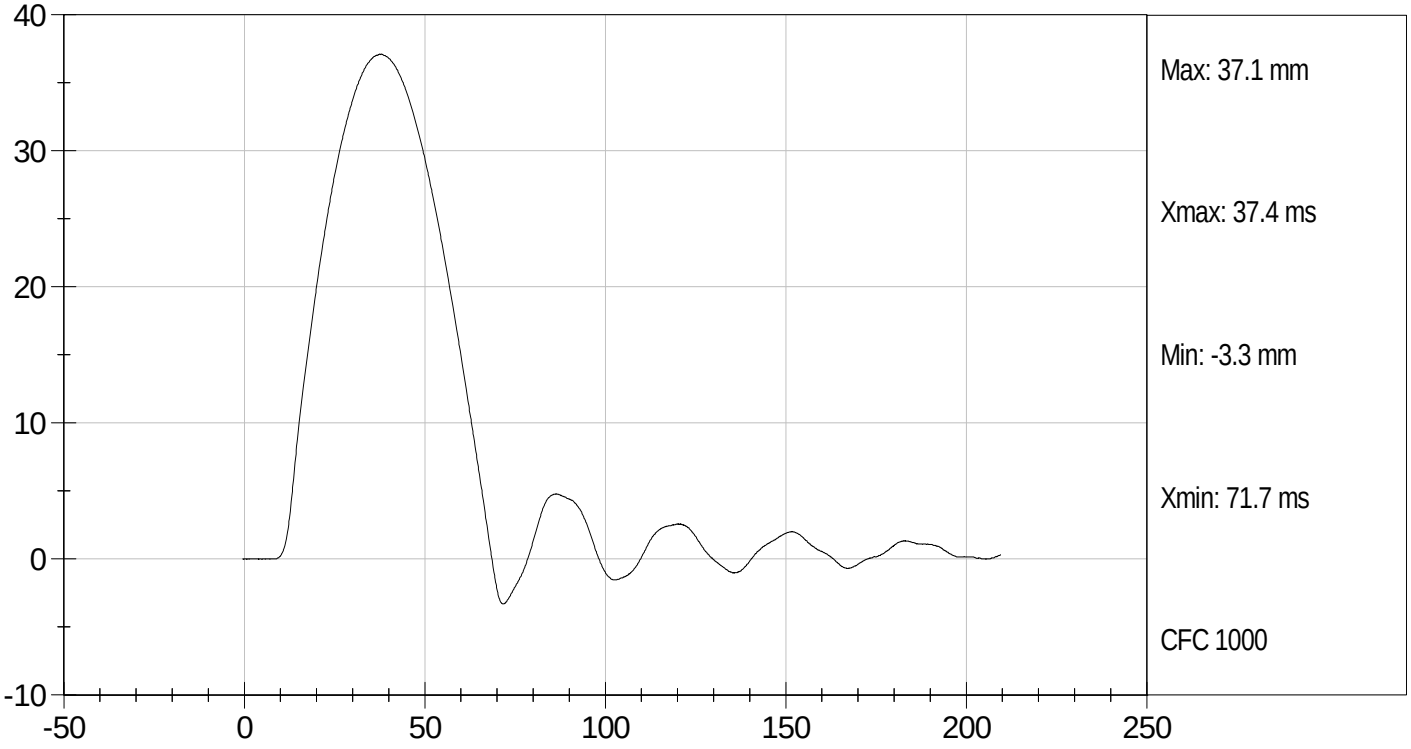
Jessica Gall
Laboratory Technician

9/29/11
Test Date

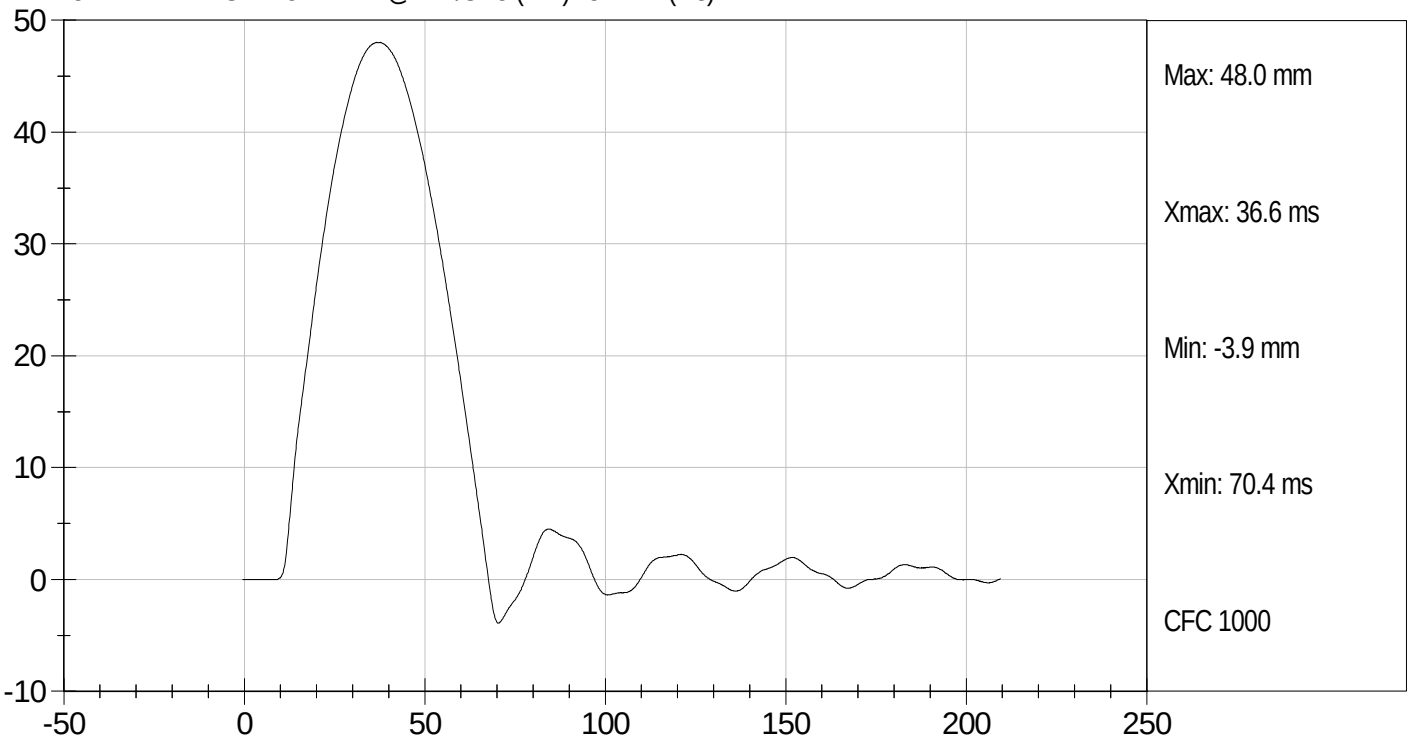
David Winkelbauer
Approved By

Test Desc: Rib Impact - Upper
Component ID: D113234
Test Date: 9/29/11

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



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



MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113235

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	47	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.5	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	47.7	Pass
		Overall Test Results		Pass

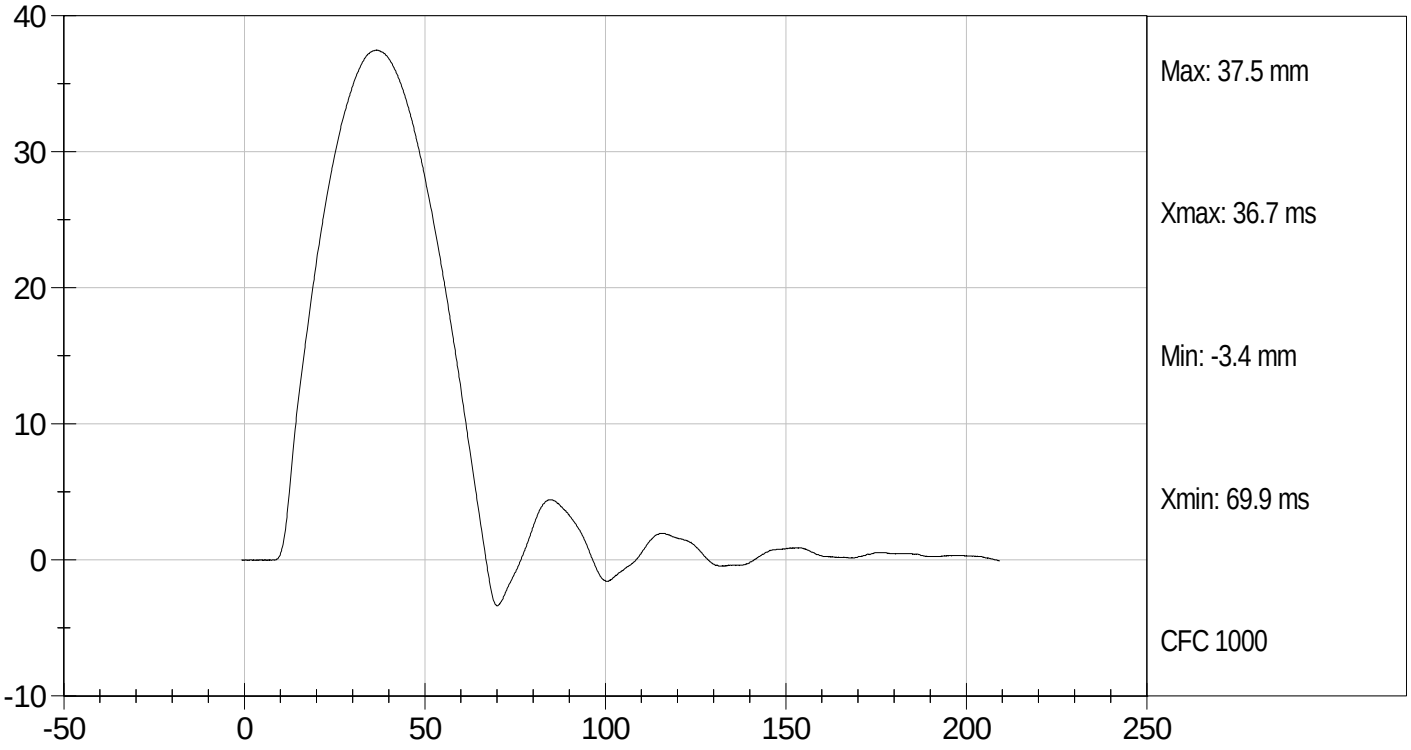
Jessica Gall
Laboratory Technician

9/29/11
Test Date

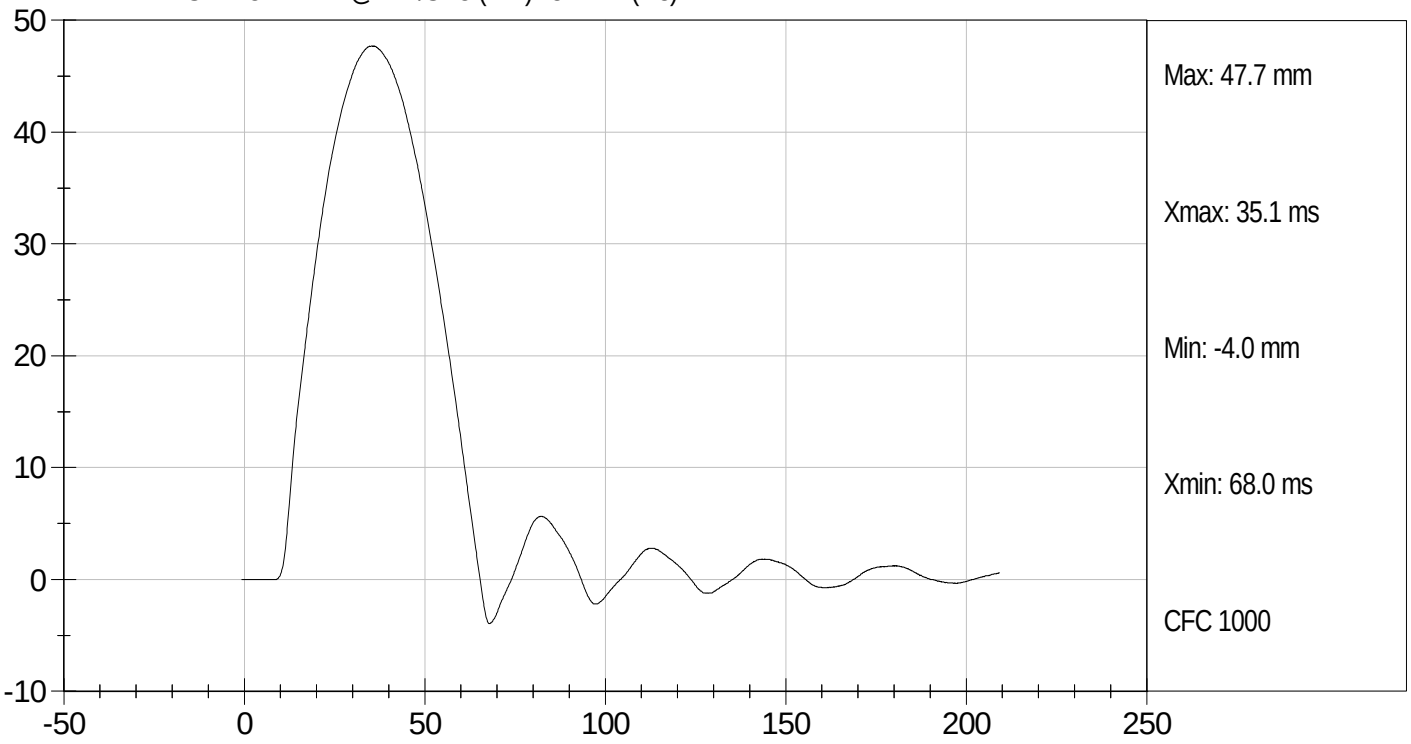
David Winkelbauer
Approved By

Test Desc: Rib Impact - Mid
Component ID: D113235
Test Date: 9/29/11

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



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



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 306 **Test I.D:** D113236

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	47	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.6	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.8	Pass
		Overall Test Results		Pass

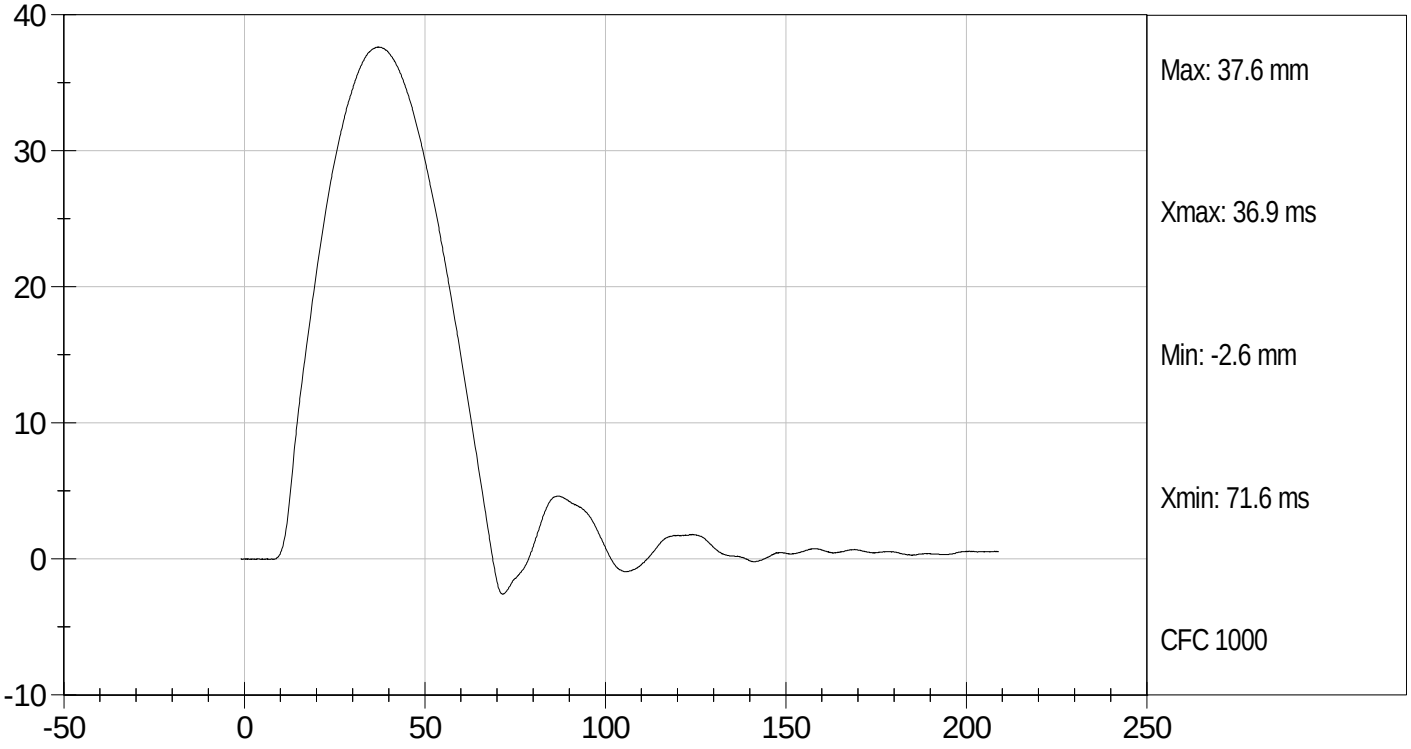
Jessica Hall
Laboratory Technician

9/29/11
Test Date

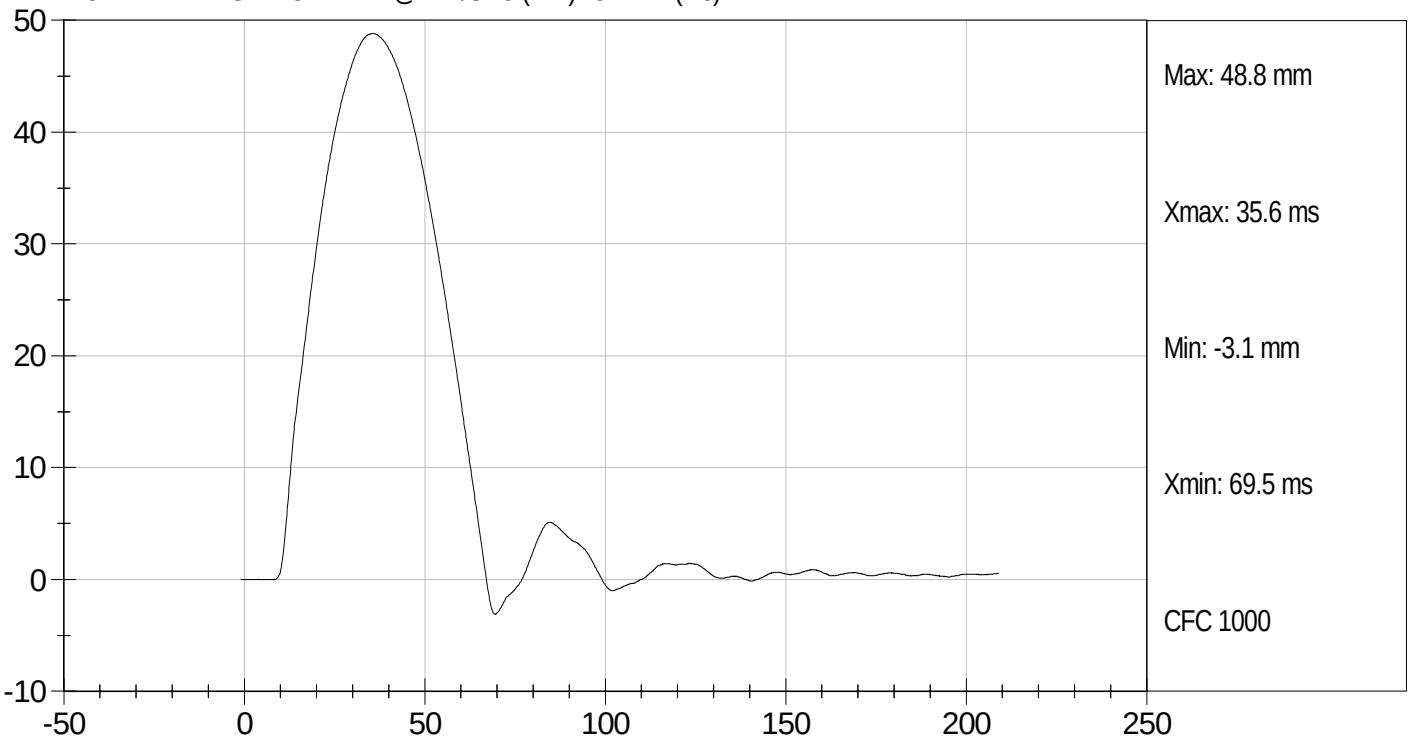
David Winkelbauer
Approved By

Test Desc: Rib Impact - Lower
Component ID: D113236
Test Date: 9/29/11

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



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



MGA RESEARCH CORPORATION

FULL BODY THORAX IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113230

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	kN	5.10 to 6.20	5.19	Pass
Upper Rib Displacement	mm	34.0 to 41.0	37.5	Pass
Middle Rib Displacement	mm	37.0 to 45.0	40.4	Pass
Lower Rib Displacement	mm	37.0 to 44.0	39.9	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

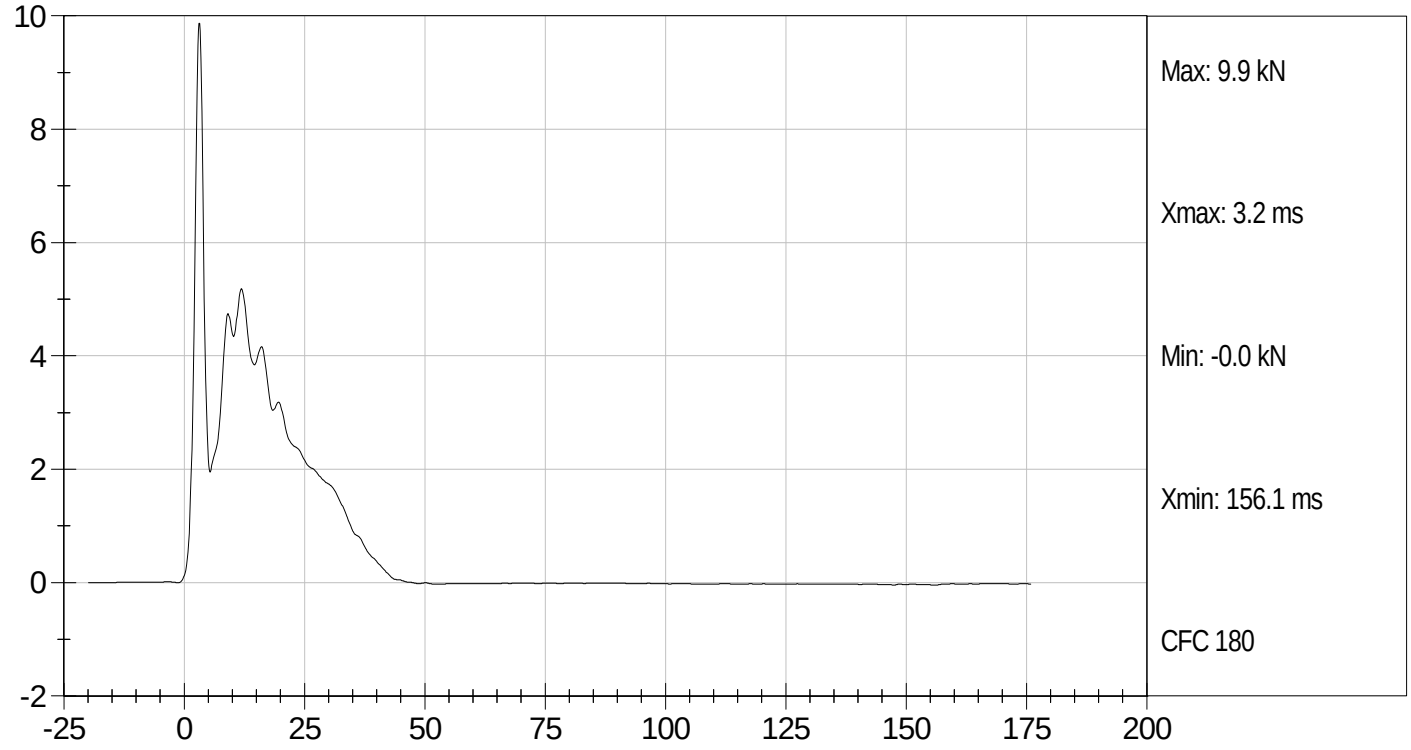
9/30/11
Test Date

David Winkelbauer
Approved By

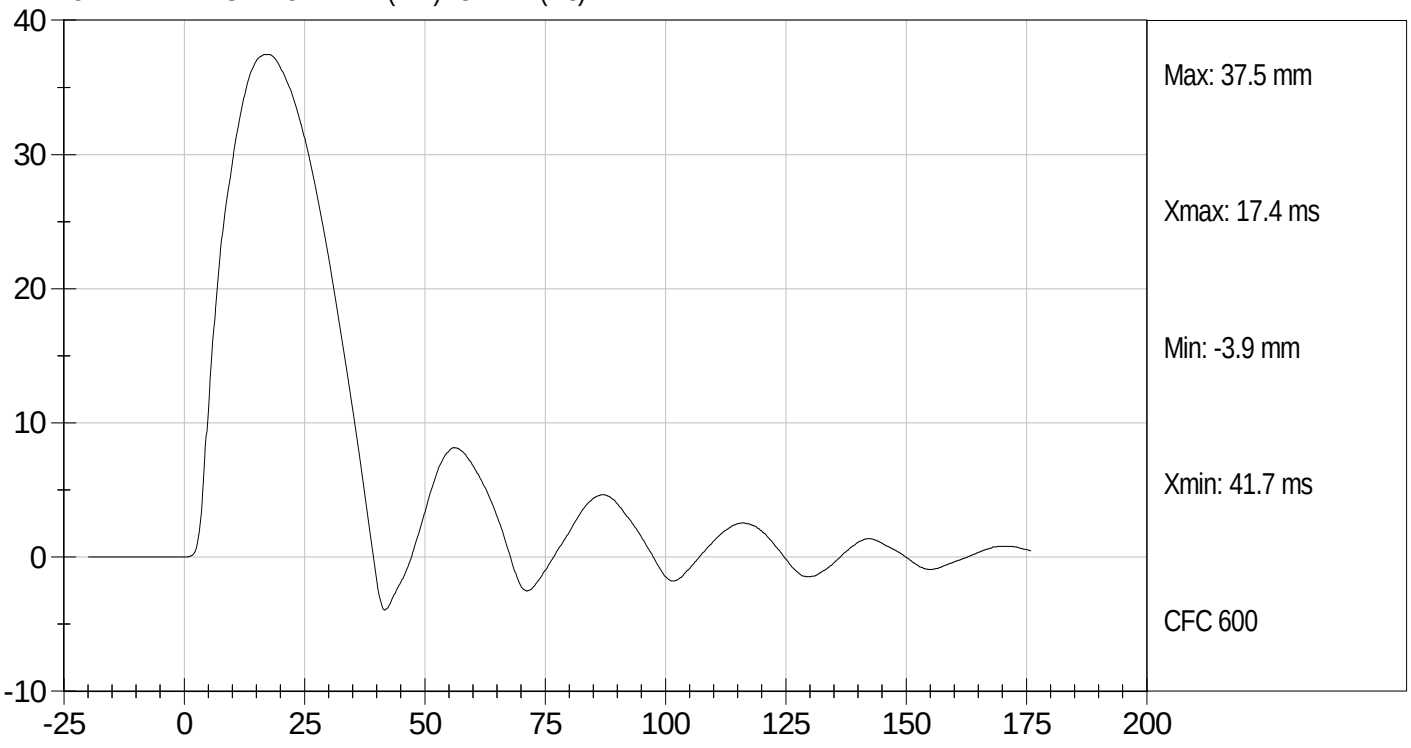
Test Desc: Thorax Impact
Component ID: D113230

Test Date: 9/30/11
Velocity: 18.31 ft/s, 5.58 m/s

PROBE FORCE (kN) vs TIME (ms)



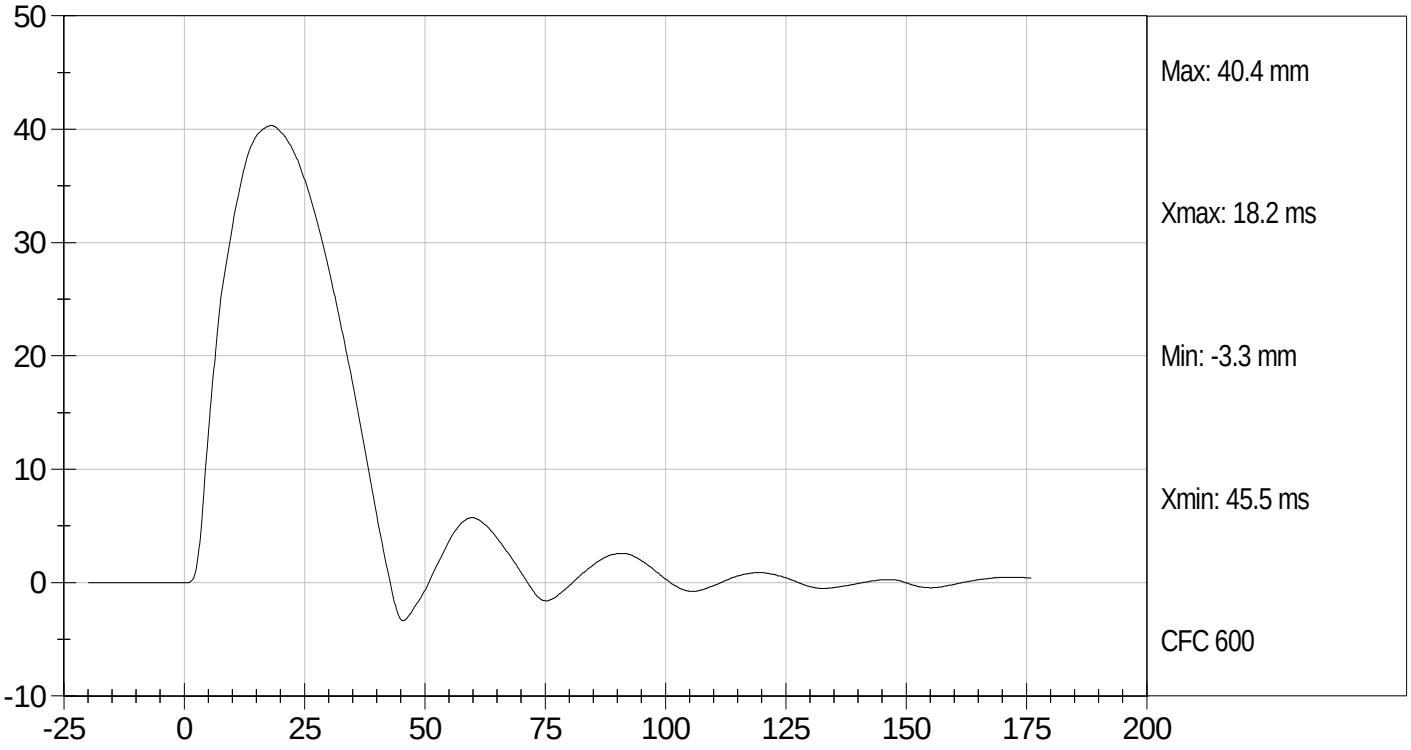
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



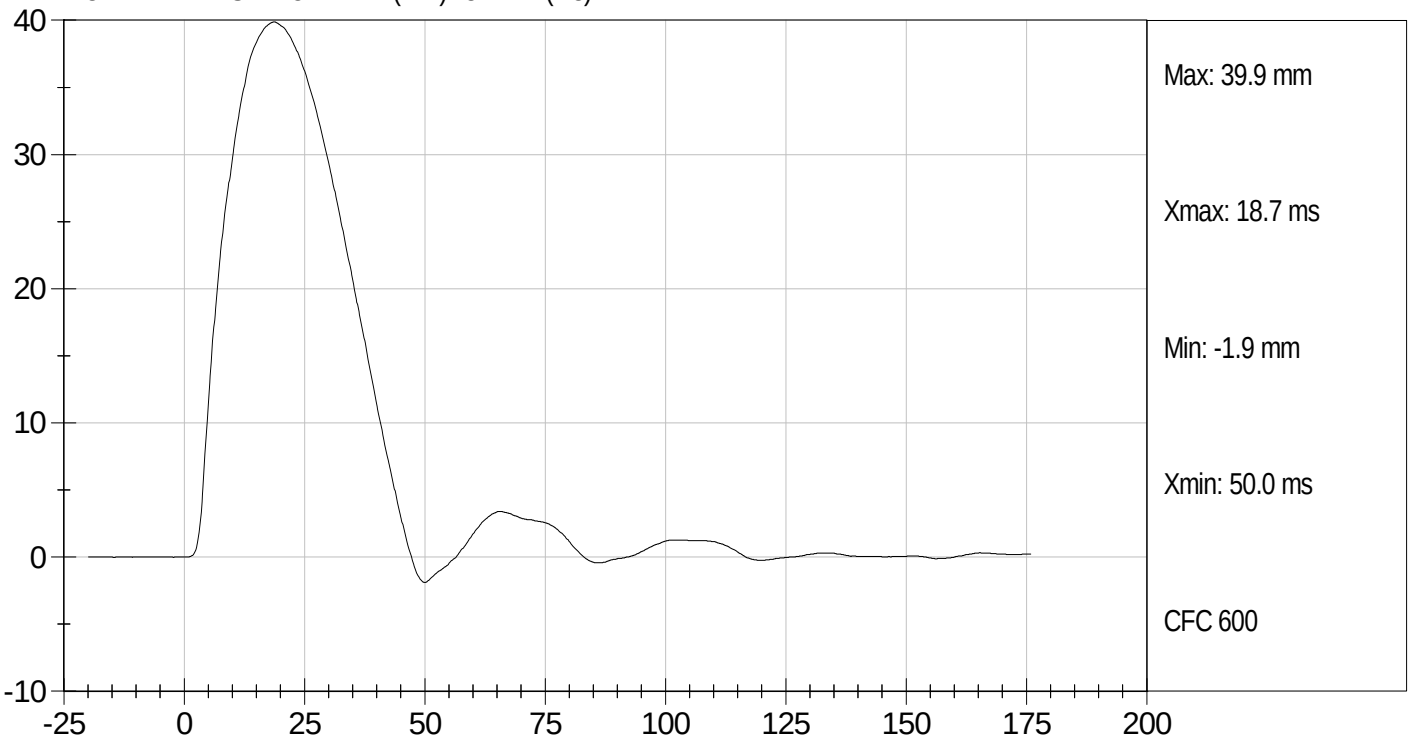
Test Desc: Thorax Impact
Component ID: D113230

Test Date: 9/30/11
Velocity: 18.31 ft/s, 5.58 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113237

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	3.90 to 4.10	4.06	Pass
Maximum Impact Force	kN	4.00 to 4.80	4.16	Pass
Time of Maximum Impactor Force	ms	10.60 to 13.00	11.40	Pass
Maximum Total Abdomen Force	kN	2.20 to 2.70	2.28	Pass
Time of Maximum Abdomen Force	ms	10.00 to 12.30	11.10	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

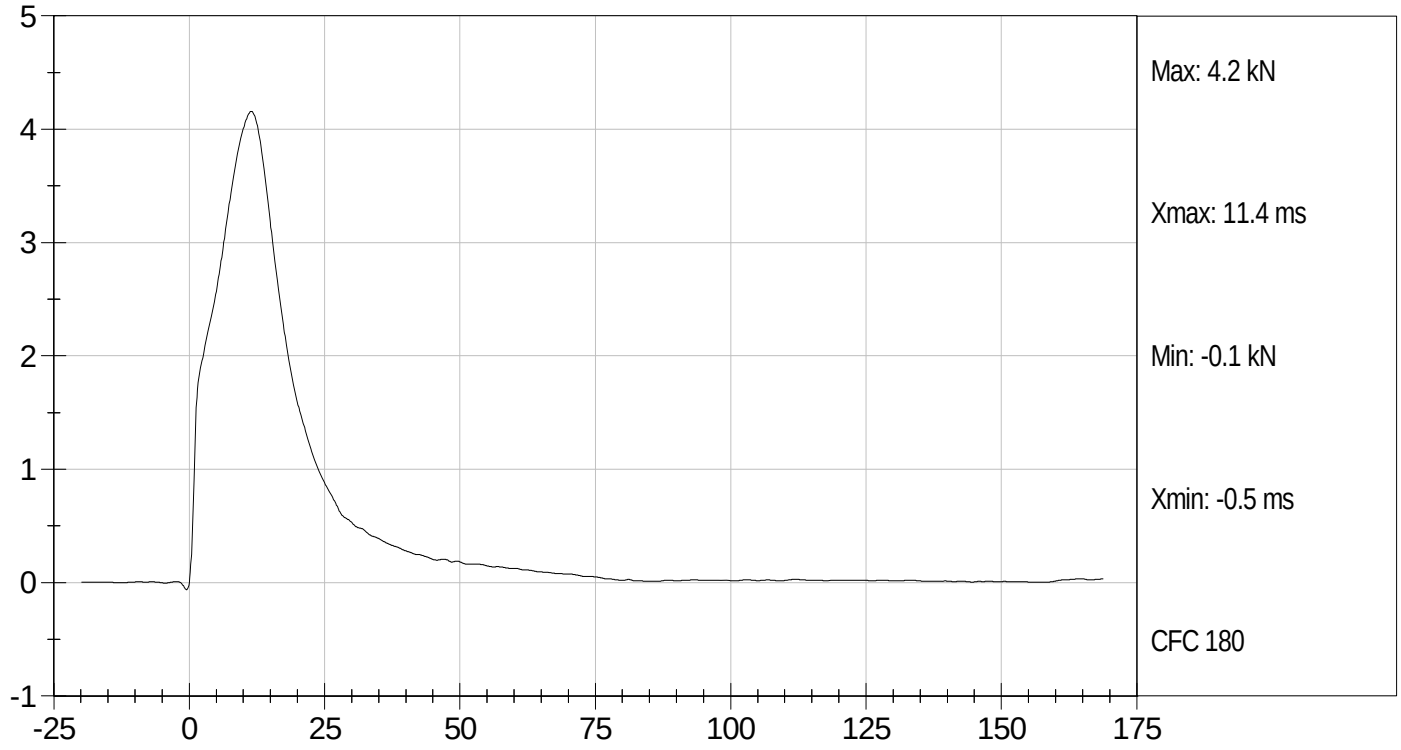
9/30/11
Test Date

David Winkelbauer
Approved By

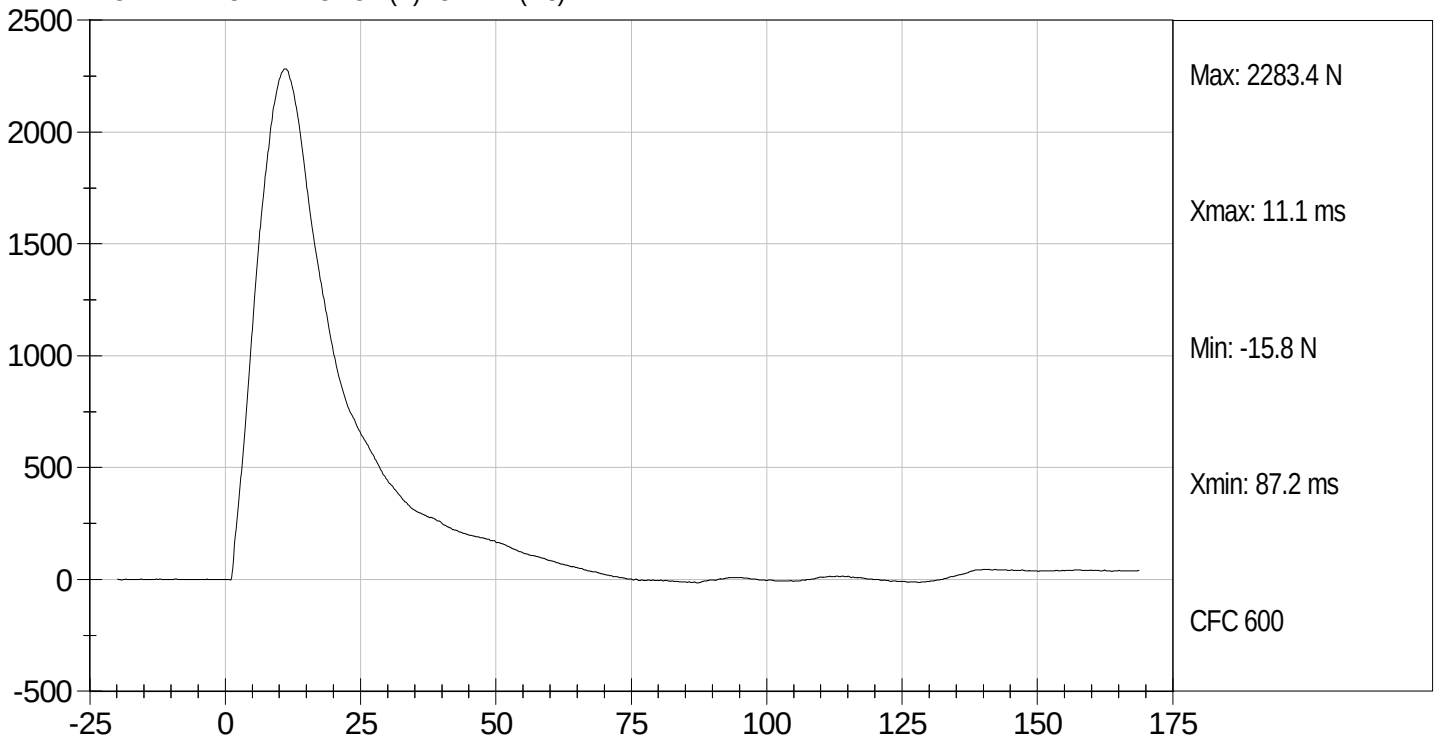
Test Desc: Abdomen Impact
Component ID: D113237

Test Date: 9/30/11
Velocity: 13.33 ft/s, 4.06 m/s

IMPACTOR FORCE (kN) vs TIME (ms)



TOTAL ABDOMEN FORCE (N) vs TIME (ms)



MGA RESEARCH CORPORATION

LUMBAR SPINE TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113238

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	47	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Deceleration	1 ms	m/s	-0.05 to 0.00	-0.00	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.42	Pass
	27 ms	m/s	-6.50 to -5.80	-5.90	Pass
	30 ms	m/s	>= -6.5	-5.83	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	49.4	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	43.4	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	44	Pass
			Overall Results		Pass

Jessica Gall
Laboratory Technician

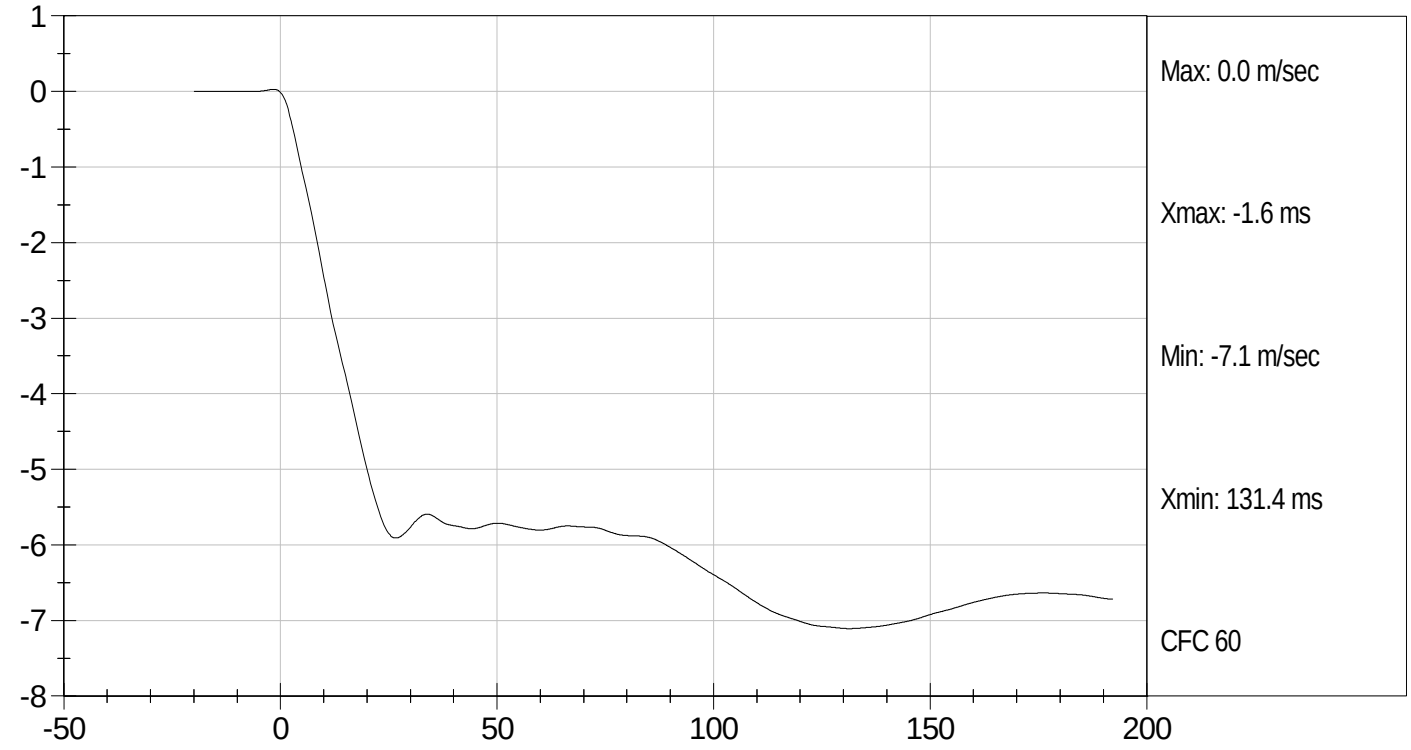
9/29/11
Test Date

David Winkelbauer
Approved By

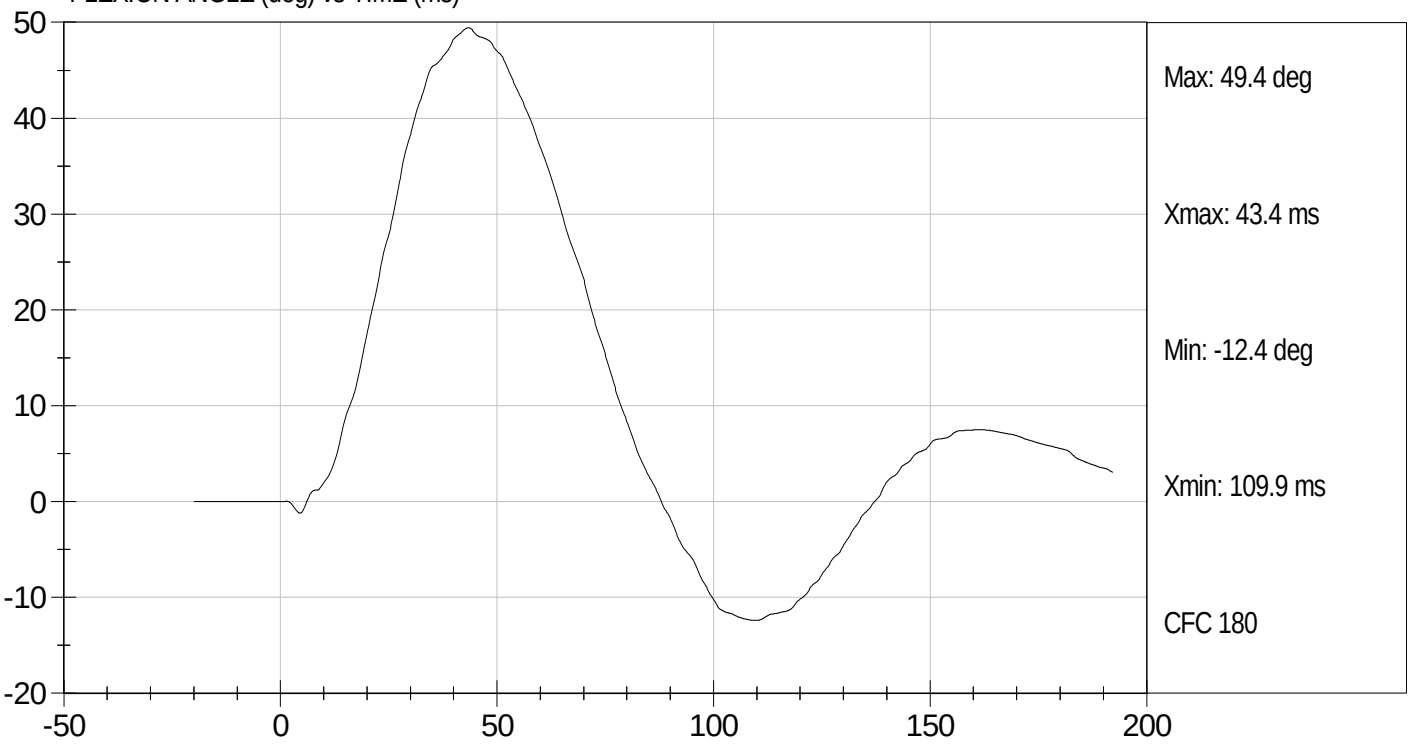
Test Desc: Lumbar Bending
Component ID: D113238

Test Date: 9/29/11
Velocity: 20.08 ft/s, 6.12 m/s

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



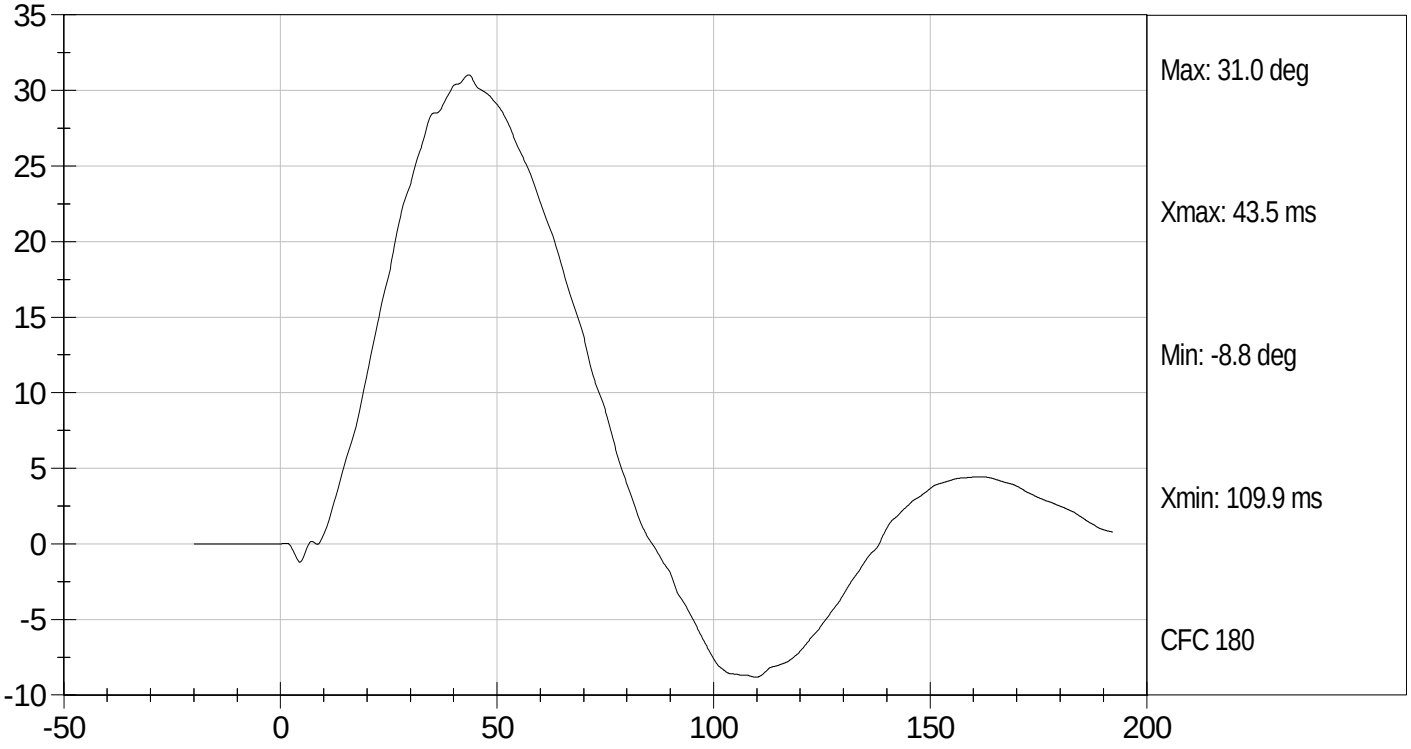
FLEXION ANGLE (deg) vs TIME (ms)



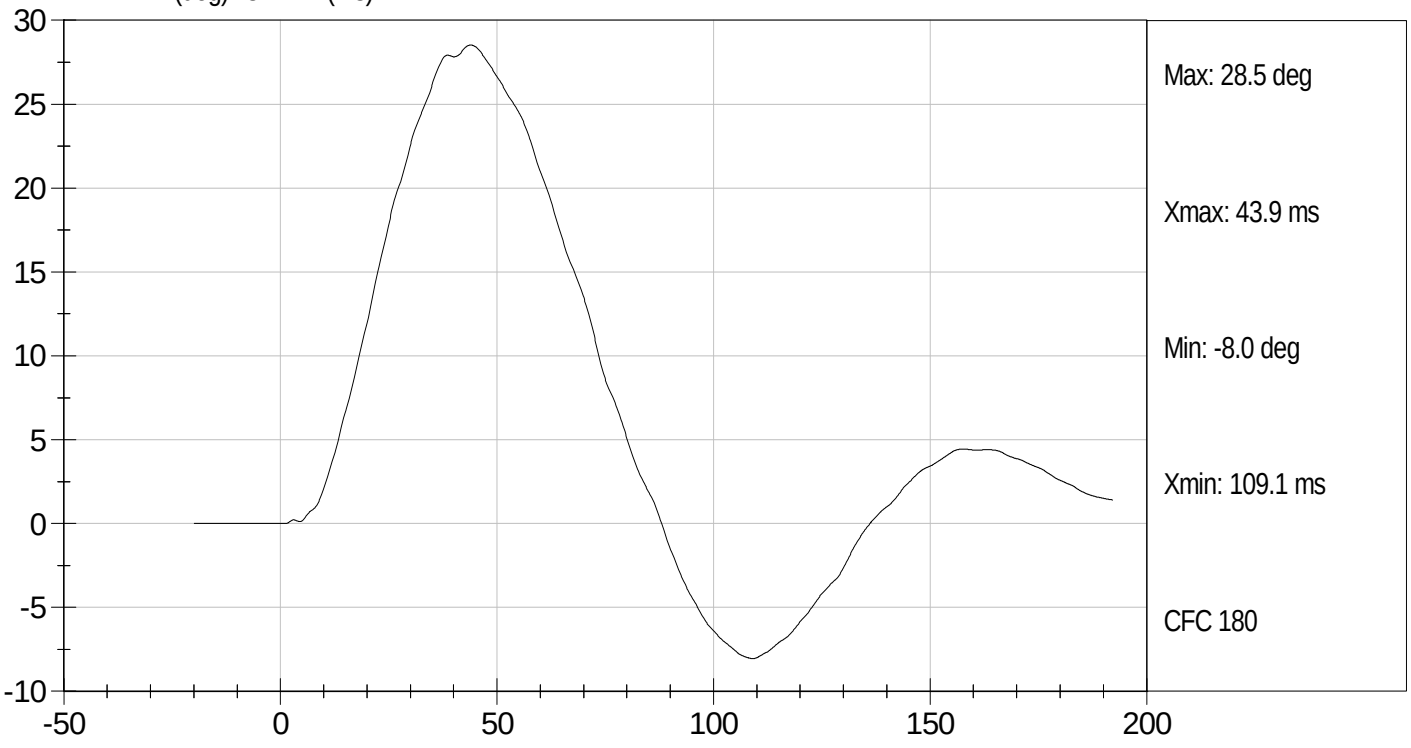
Test Desc: Lumbar Bending
Component ID: D113238

Test Date: 9/29/11
Velocity: 20.08 ft/s, 6.12 m/s

THETA A (deg) vs TIME (ms)



THETA B (deg) vs TIME (ms)



MGA RESEARCH CORPORATION

PELVIS TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113239

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	4.20 to 4.40	4.34	Pass
Maximum Impactor Force	kN	4.70 to 5.40	4.86	Pass
Time of Maximum Impactor Force	ms	11.80 to 16.10	13.60	Pass
Maximum Pubic Force	kN	1.23 to 1.59	1.49	Pass
Time of Maximum Pubic Force	ms	12.20 to 17.00	14.90	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

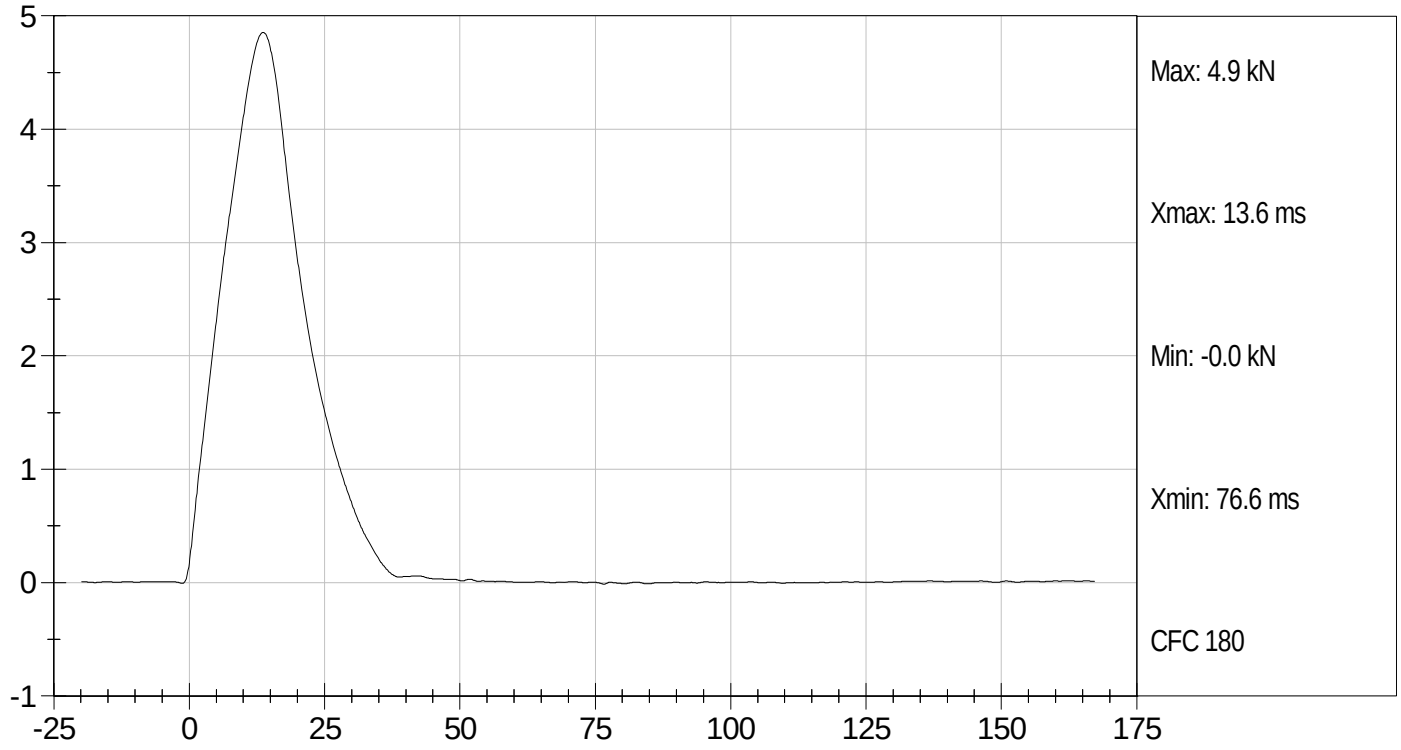
9/30/11
Test Date

David Winkelbauer
Approved By

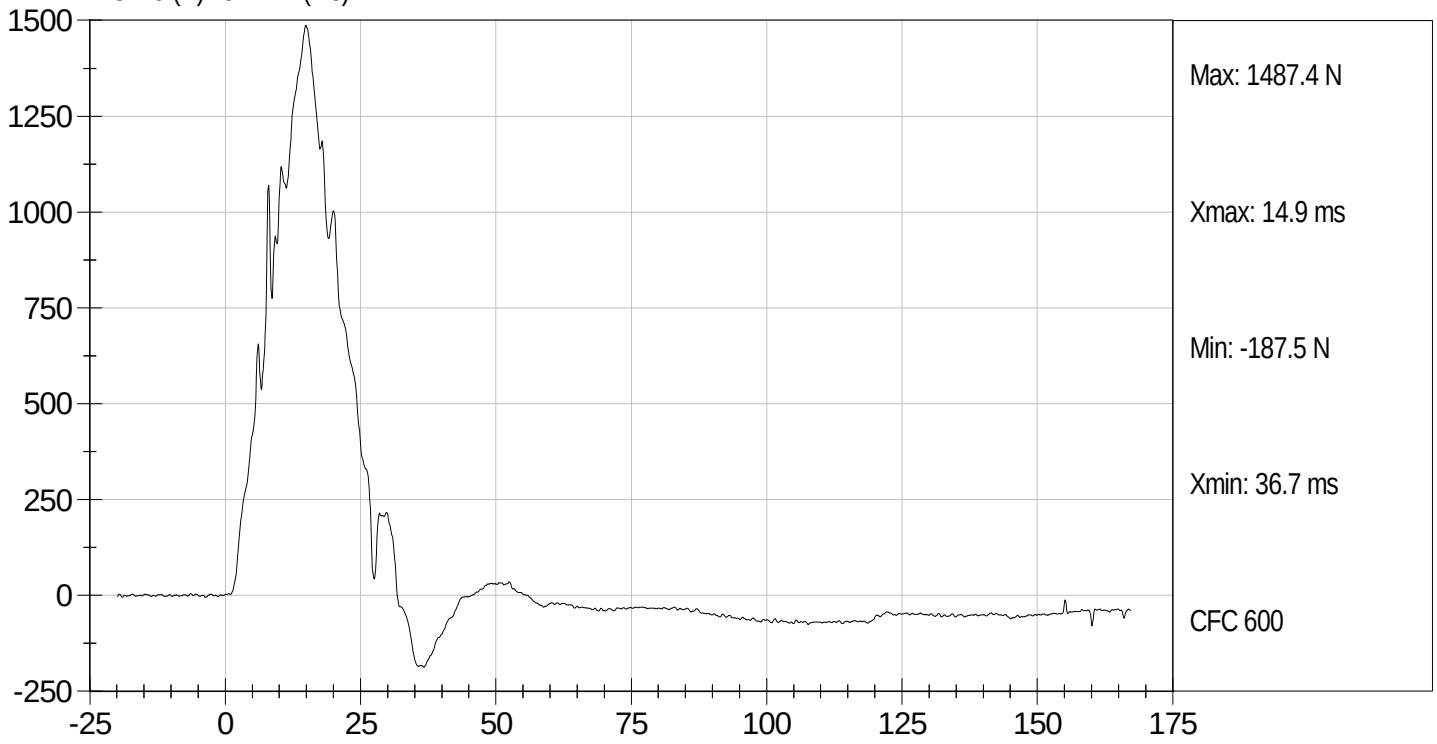
Test Desc: Pelvis Impact
Component ID: D113239

Test Date: 9/30/11
Velocity: 14.24 ft/s, 4.34 m/s

IMPACTOR FORCE (kN) vs TIME (ms)



PUBIC (N) vs TIME (ms)



MGA RESEARCH CORPORATION

HEAD DROP TEST

ES-2re DUMMY

ATD Serial No: 032 **Test ID:** D113321

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Peak Resultant Acceleration	G's	125 to 155	148	Pass
Peak Lateral Acceleration	G's	+/- 15	-11.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

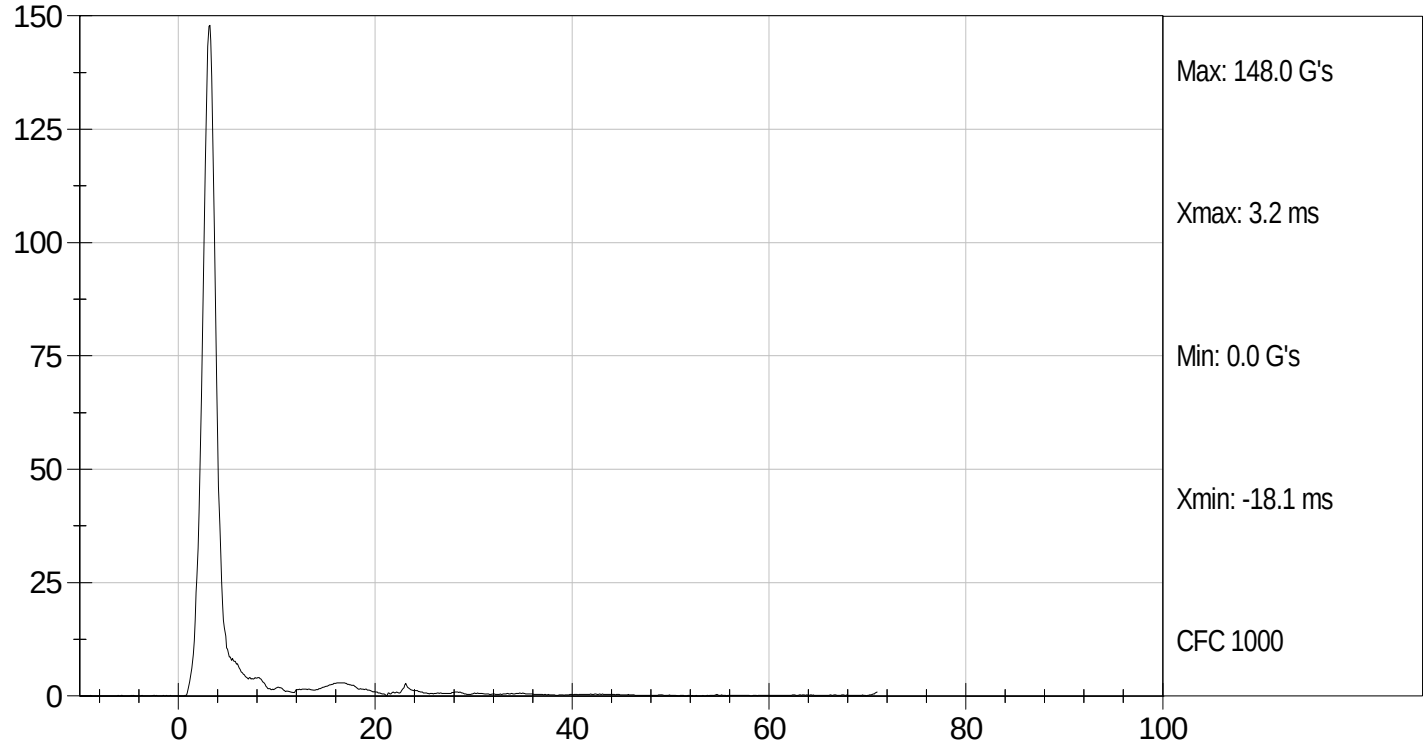
10/5/11
Test Date

David Winkelbauer
Approved By

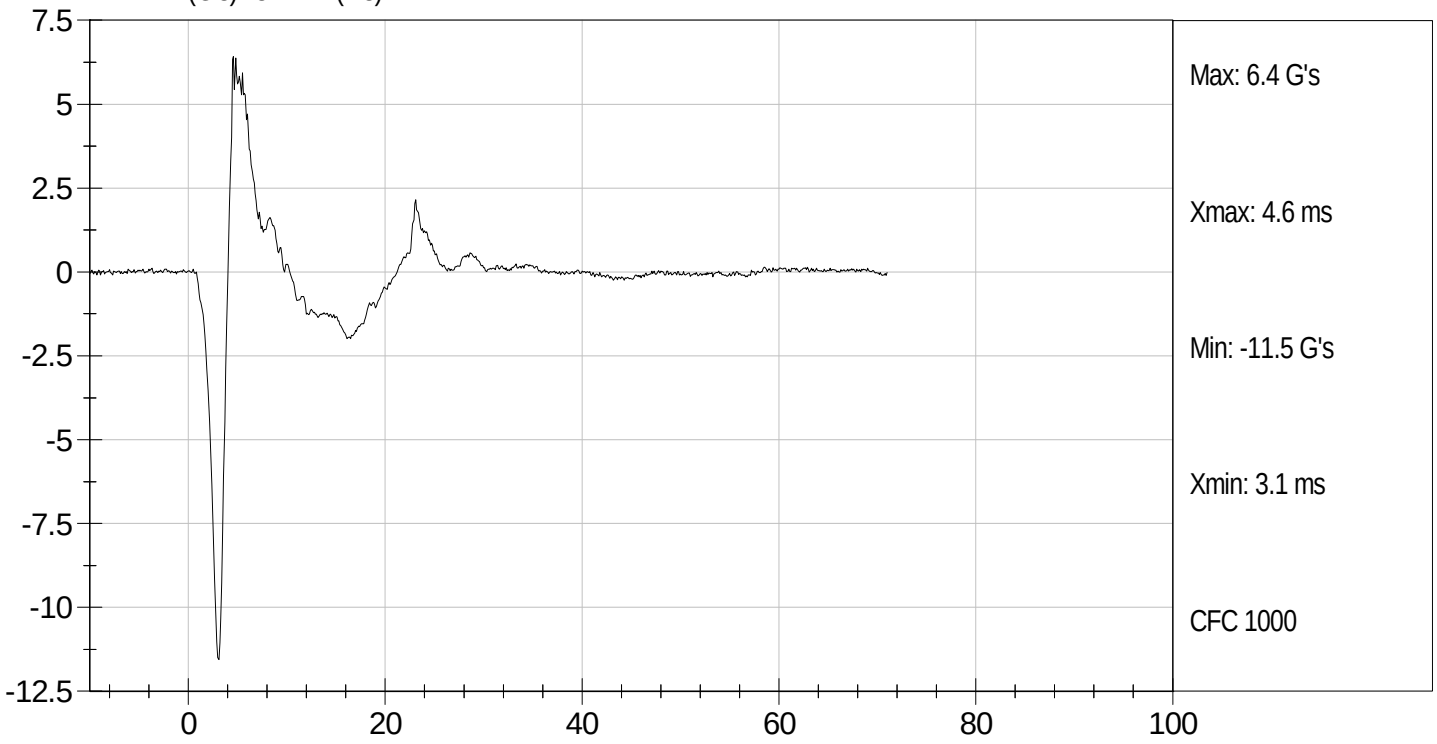
Test Desc: Head Drop
Component ID: D113321

Test Date: 10/5/11
Velocity: 0 ft/s, 0 m/s

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



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



MGA RESEARCH CORPORATION

NECK PENDULUM TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113322

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	18.0 to 22.0	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Speed		m/s	3.3 to 3.5	3.4	Pass
Pendulum Deceleration	1 ms	m/s	0.00 to -0.05	-0.01	Pass
	3 ms	m/s	-0.25 to -0.375	-0.34	Pass
	14 ms	m/s	-3.20 to -3.70	-3.28	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	53.3	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	62.1	Pass
Head Rotation Decay Time to 0 degree		ms	53.0 to 88.0	55.4	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

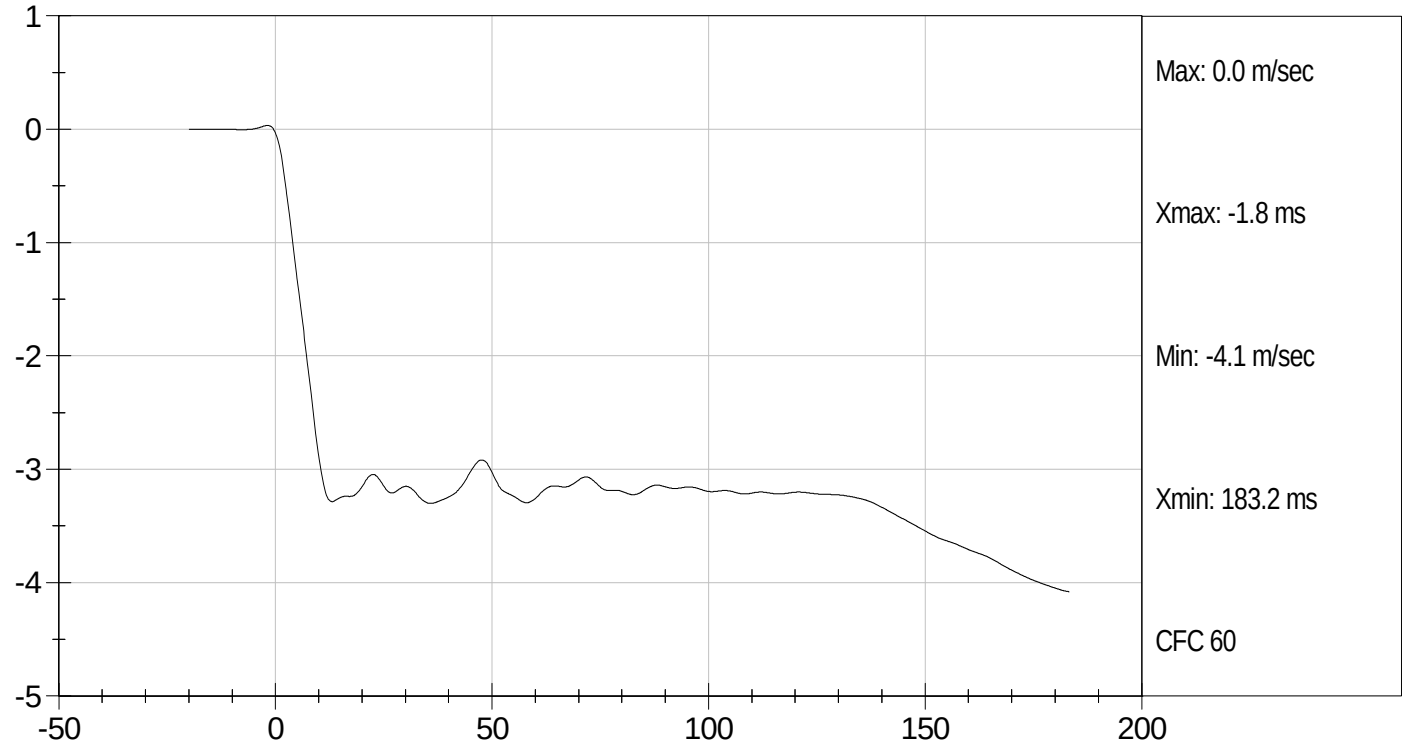
10/5/11
Test Date

David Winkelbauer
Approved By

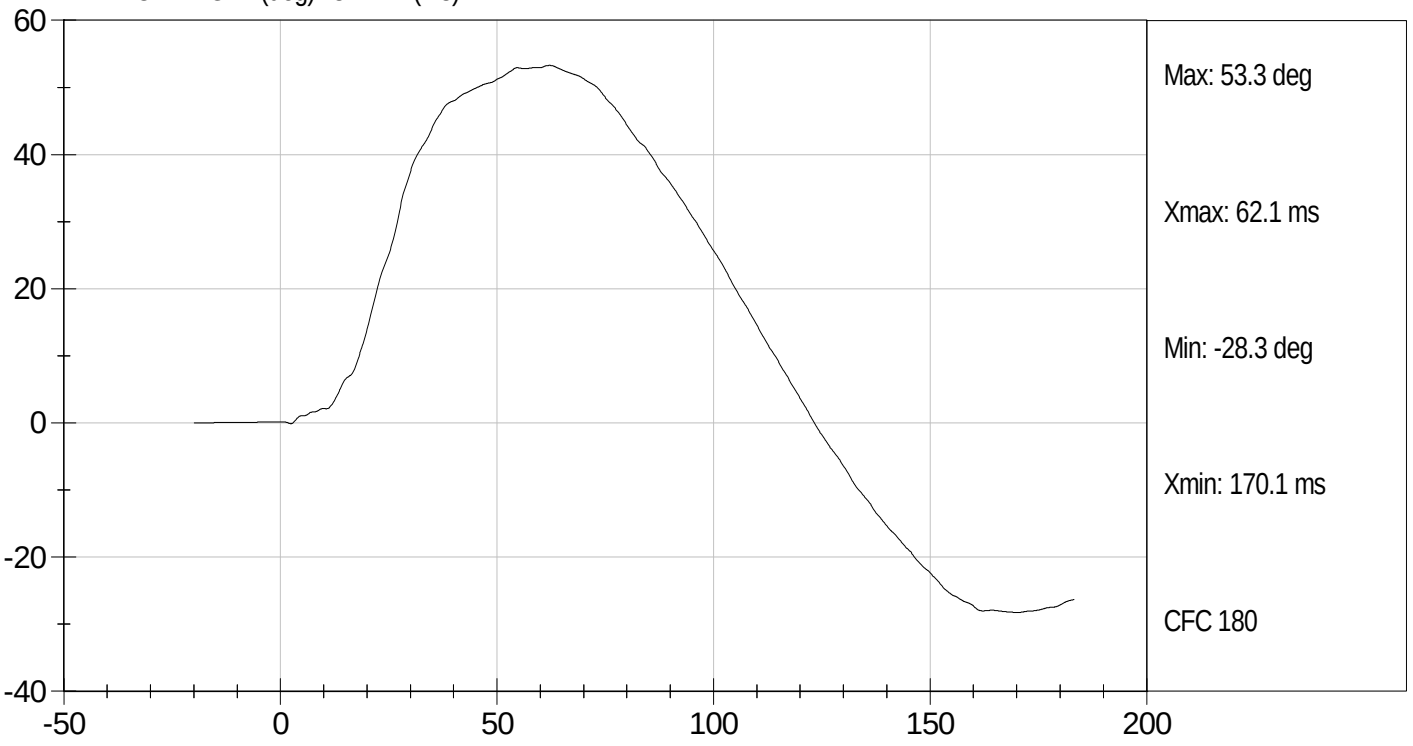
Test Desc: Neck Bending
Component ID: D113322

Test Date: 10/5/11
Velocity: 11.2 ft/s, 3.4 m/s

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



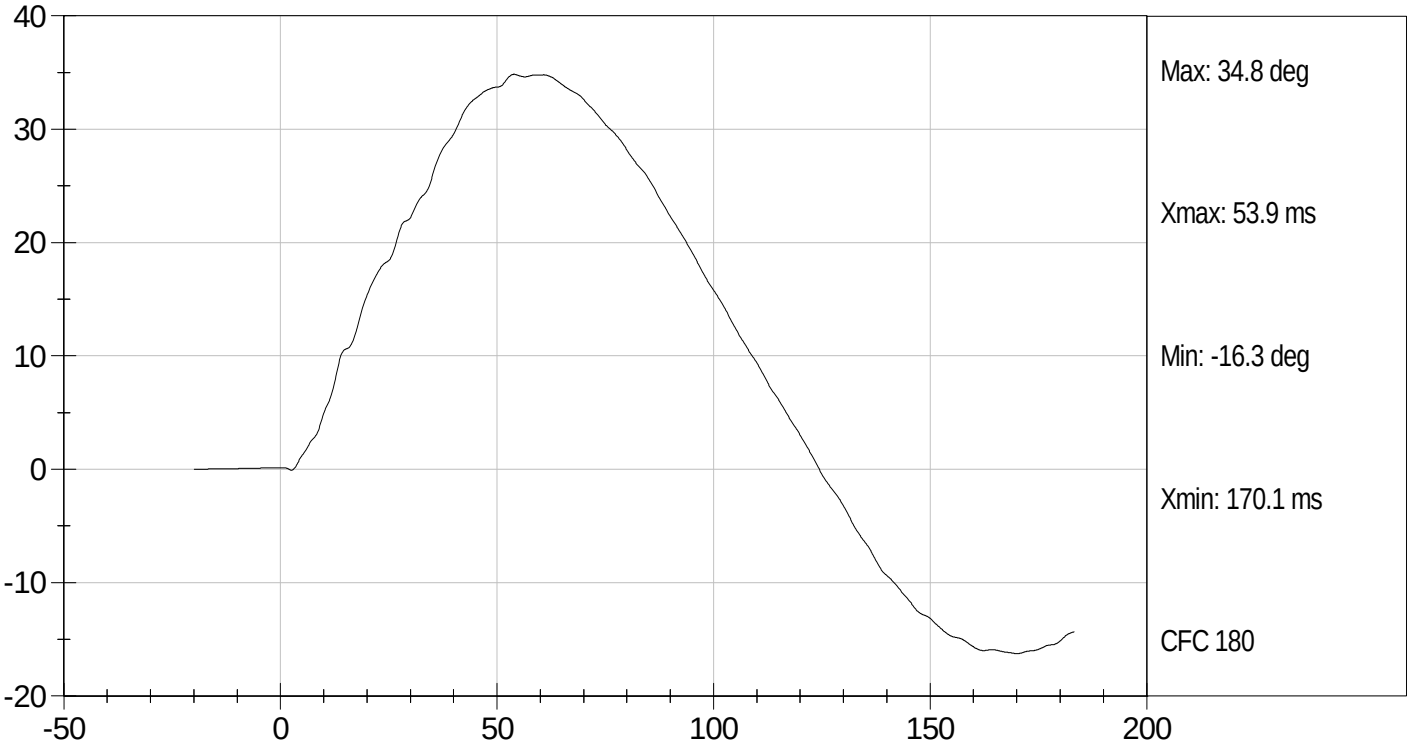
FLEXION ANGLE (deg) vs TIME (ms)



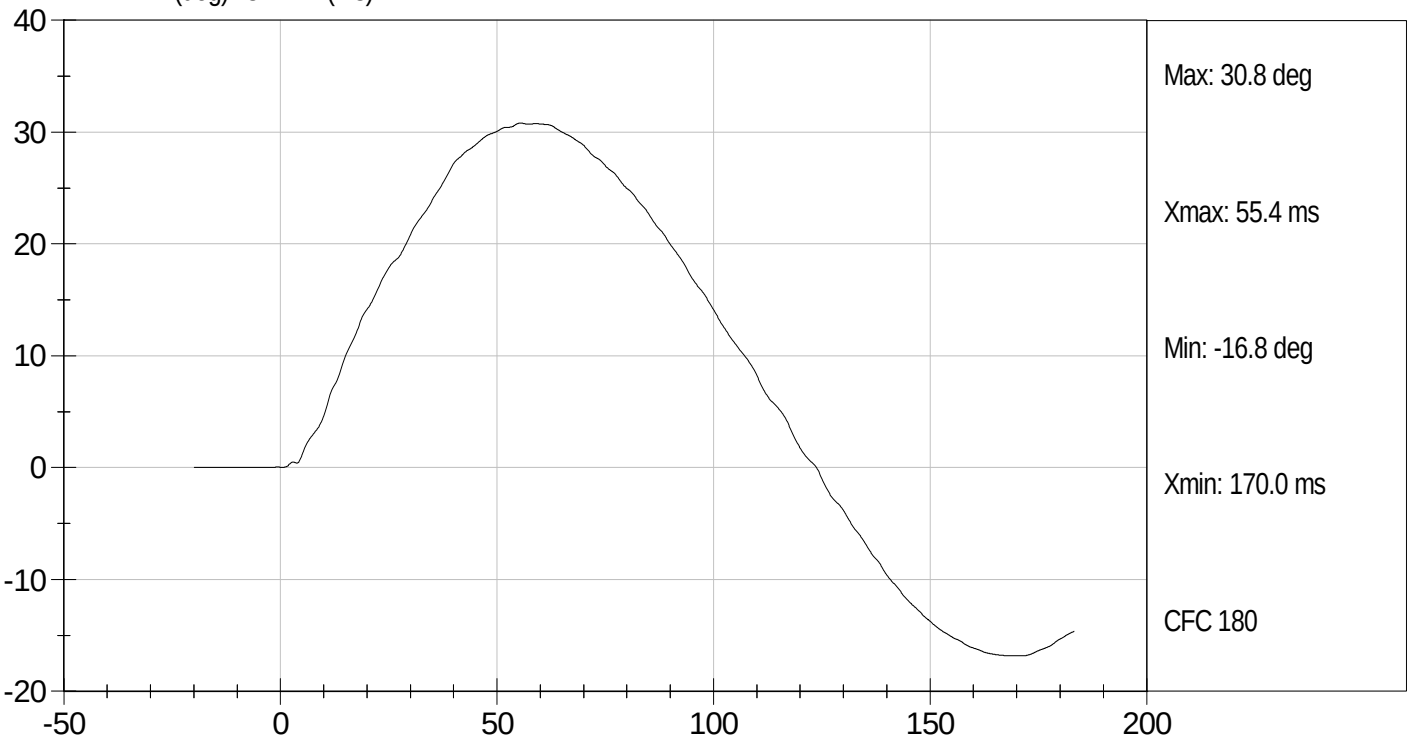
Test Desc: Neck Bending
Component ID: D113322

Test Date: 10/5/11
Velocity: 11.2 ft/s, 3.4 m/s

THETA A (deg) vs TIME (ms)



THETA B (deg) vs TIME (ms)



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113323

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.3	Pass
Peak Shoulder Acceleration	G's	7.5 to 10.5	9.2	Pass
Time of Peak Shoulder Acceleration	ms	NA	13.2	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

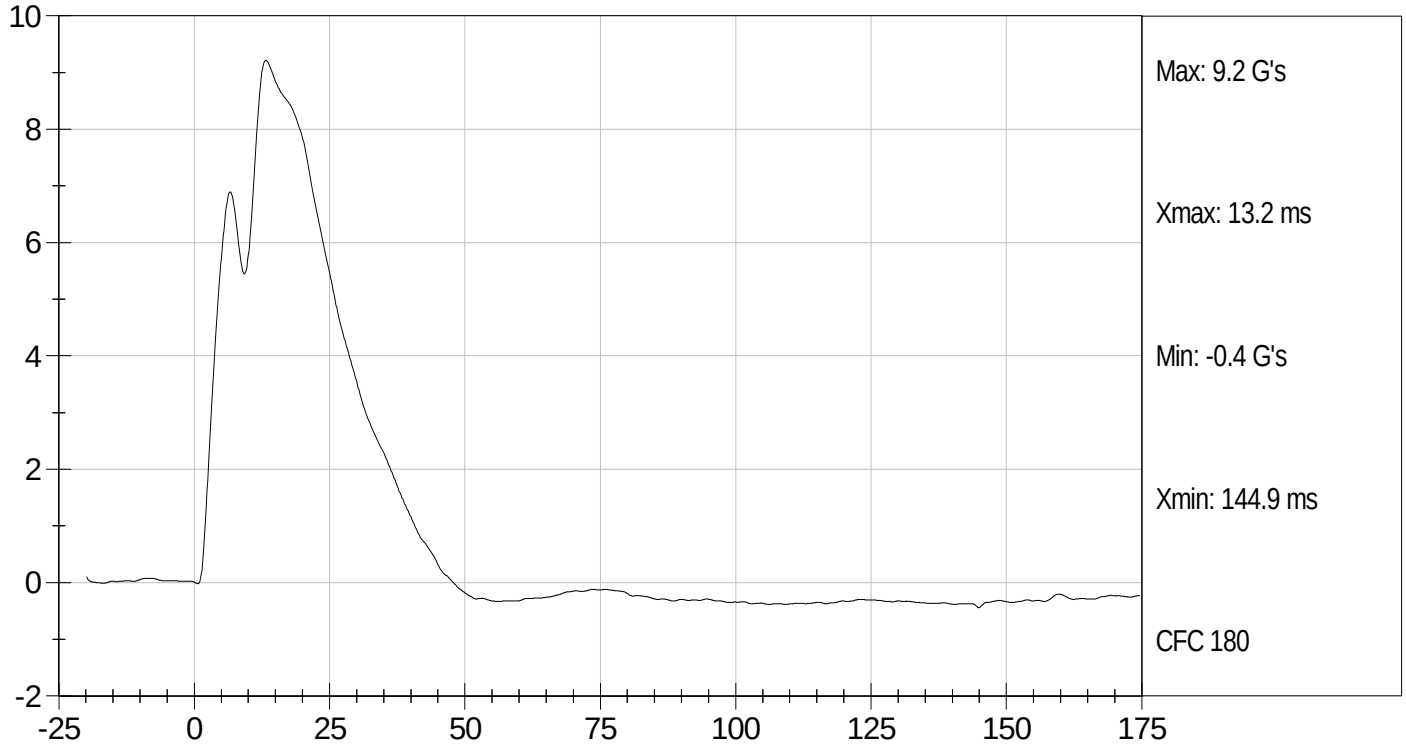
10/5/11
Test Date

David Winkelbauer
Approved By

Test Desc: Shoulder Impact
Component ID: D113323

Test Date: 10/5/11
Velocity: 14.24 ft/s, 4.3 m/s

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



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113324

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	41	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.6	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.3	Pass
		Overall Test Results		Pass

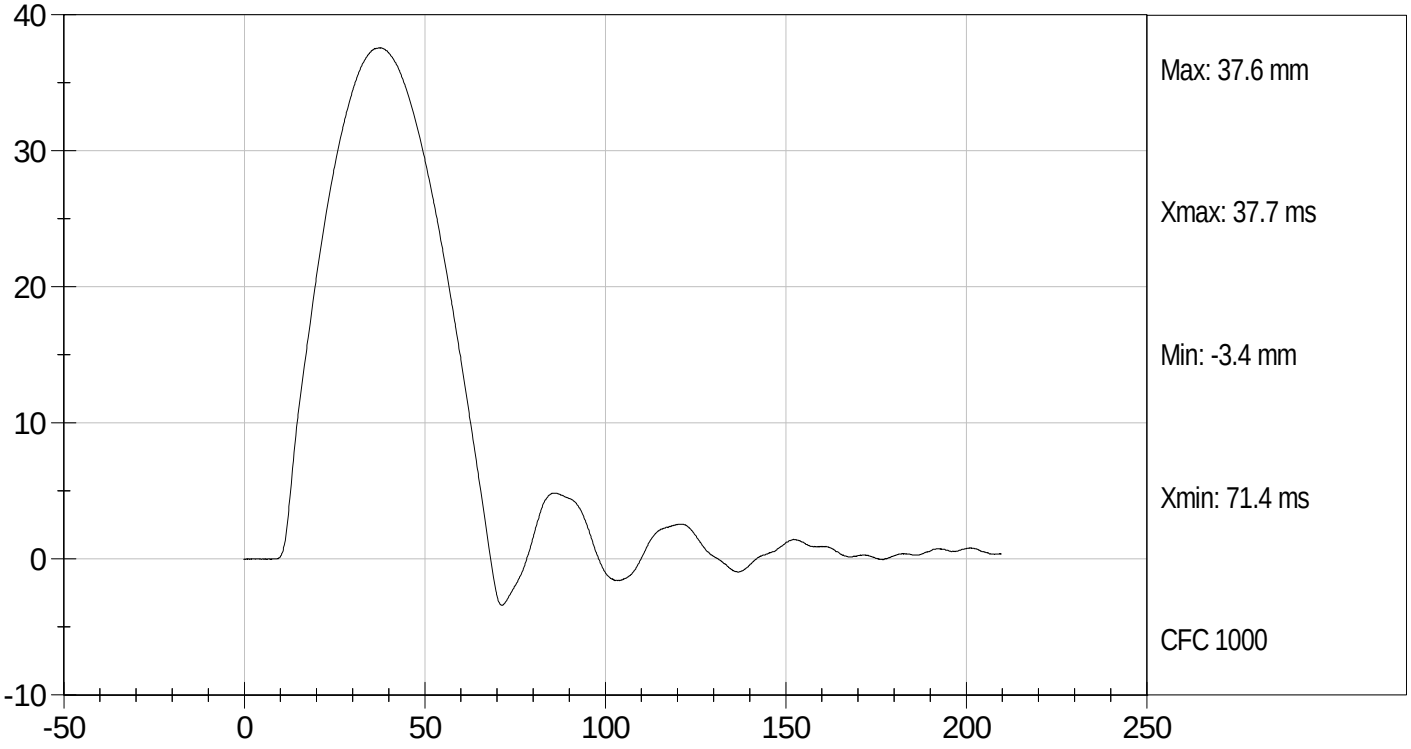
Jessica Gall
Laboratory Technician

10/5/11
Test Date

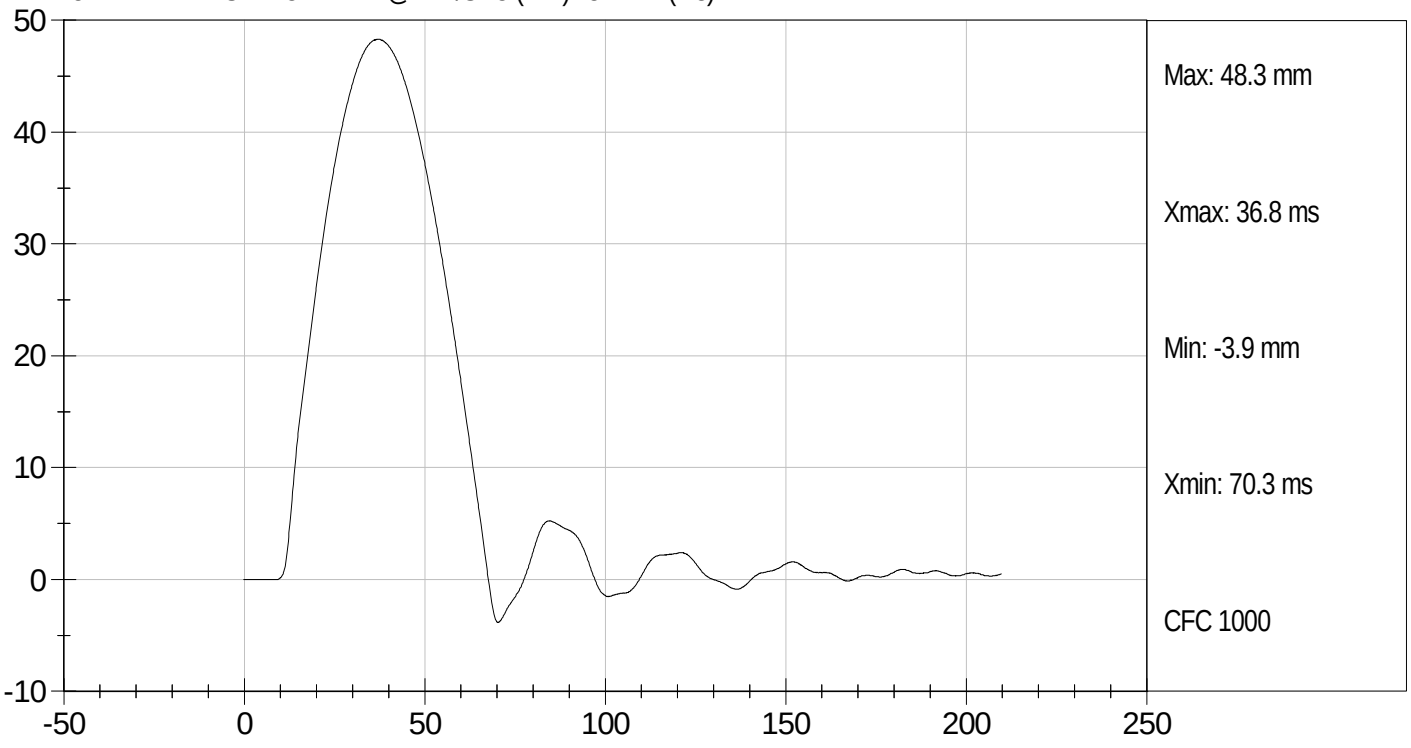
David Winkelbauer
Approved By

Test Desc: Rib Impact - Upper
Component ID: D113324
Test Date: 10/5/11

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



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



MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113325

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	41	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.4	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	47.7	Pass
		Overall Test Results		Pass

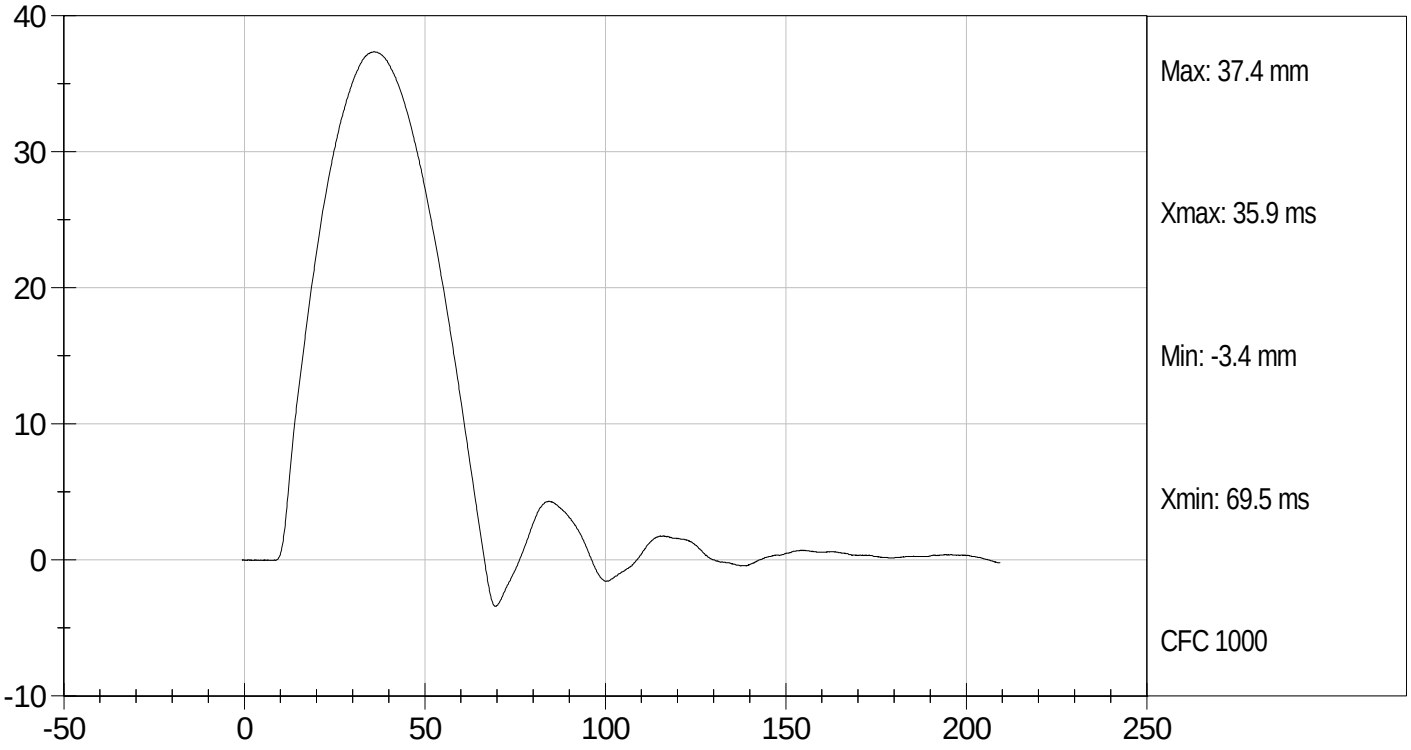
Jessica Hall
Laboratory Technician

10/5/11
Test Date

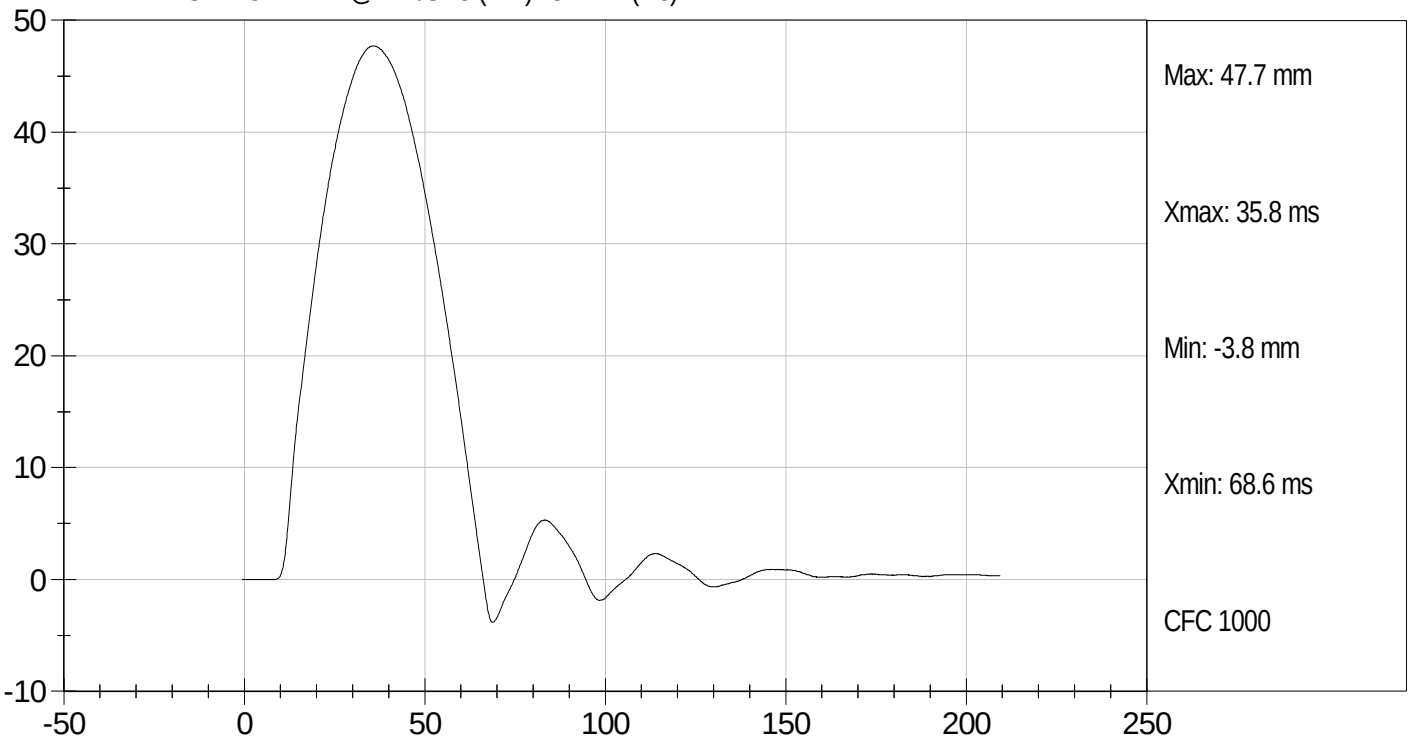
David Winkelbauer
Approved By

Test Desc: Rib Impact - Mid
Component ID: D113325
Test Date: 10/5/11

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



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



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113326

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	41	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.0	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.7	Pass
		Overall Test Results		Pass

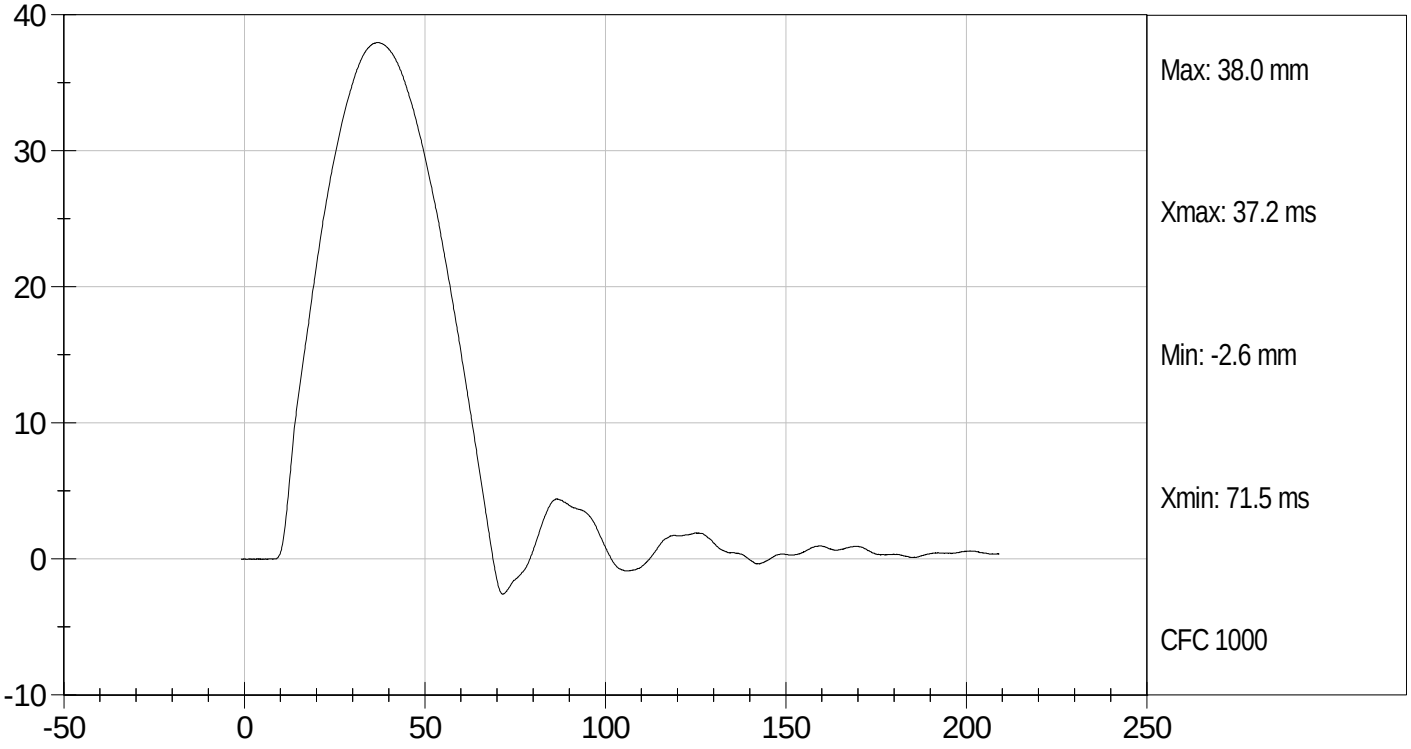
Jessica Hall
Laboratory Technician

10/5/11
Test Date

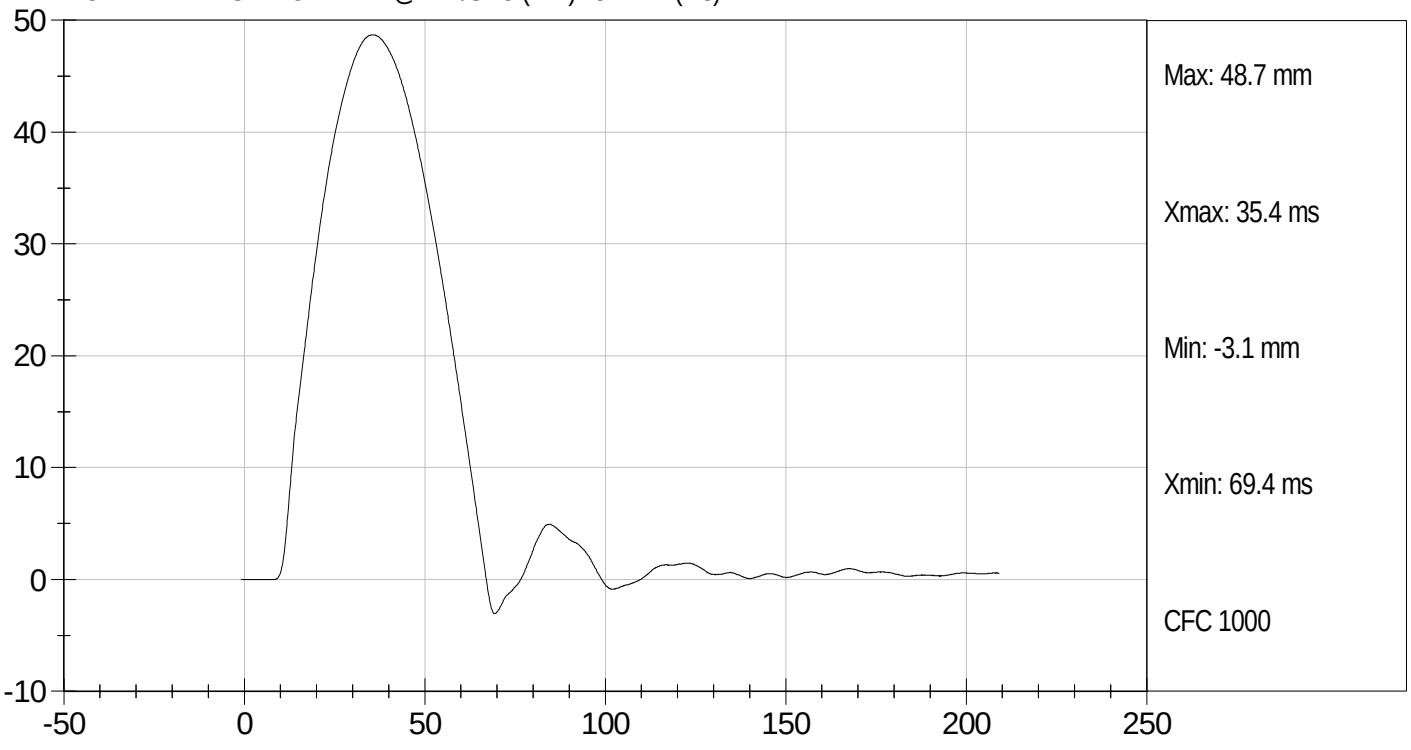
David Winkelbauer
Approved By

Test Desc: Rib Impact - Lower
Component ID: D113326
Test Date: 10/5/11

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



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



MGA RESEARCH CORPORATION

FULL BODY THORAX IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113320

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	kN	5.10 to 6.20	5.33	Pass
Upper Rib Displacement	mm	34.0 to 41.0	37.9	Pass
Middle Rib Displacement	mm	37.0 to 45.0	40.5	Pass
Lower Rib Displacement	mm	37.0 to 44.0	40.1	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

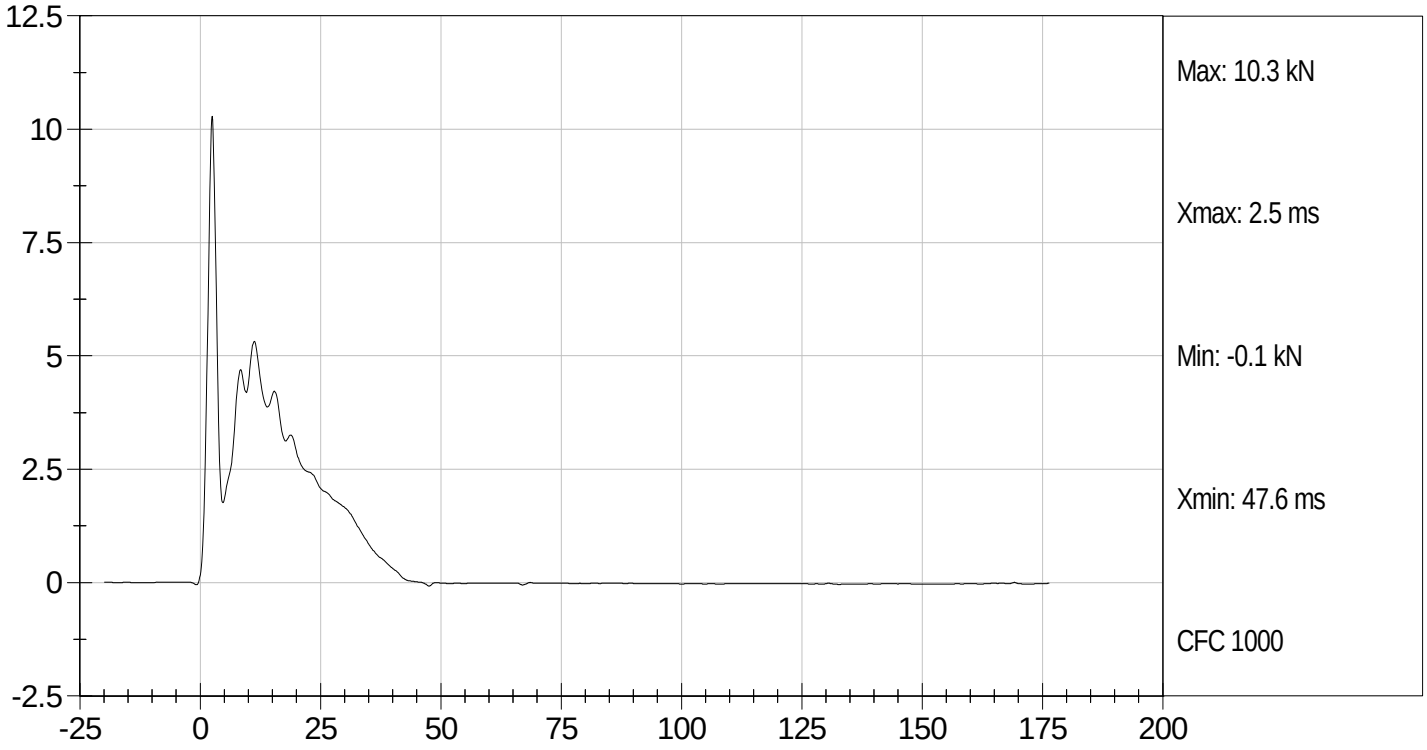
10/5/11
Test Date

David Winkelbauer
Approved By

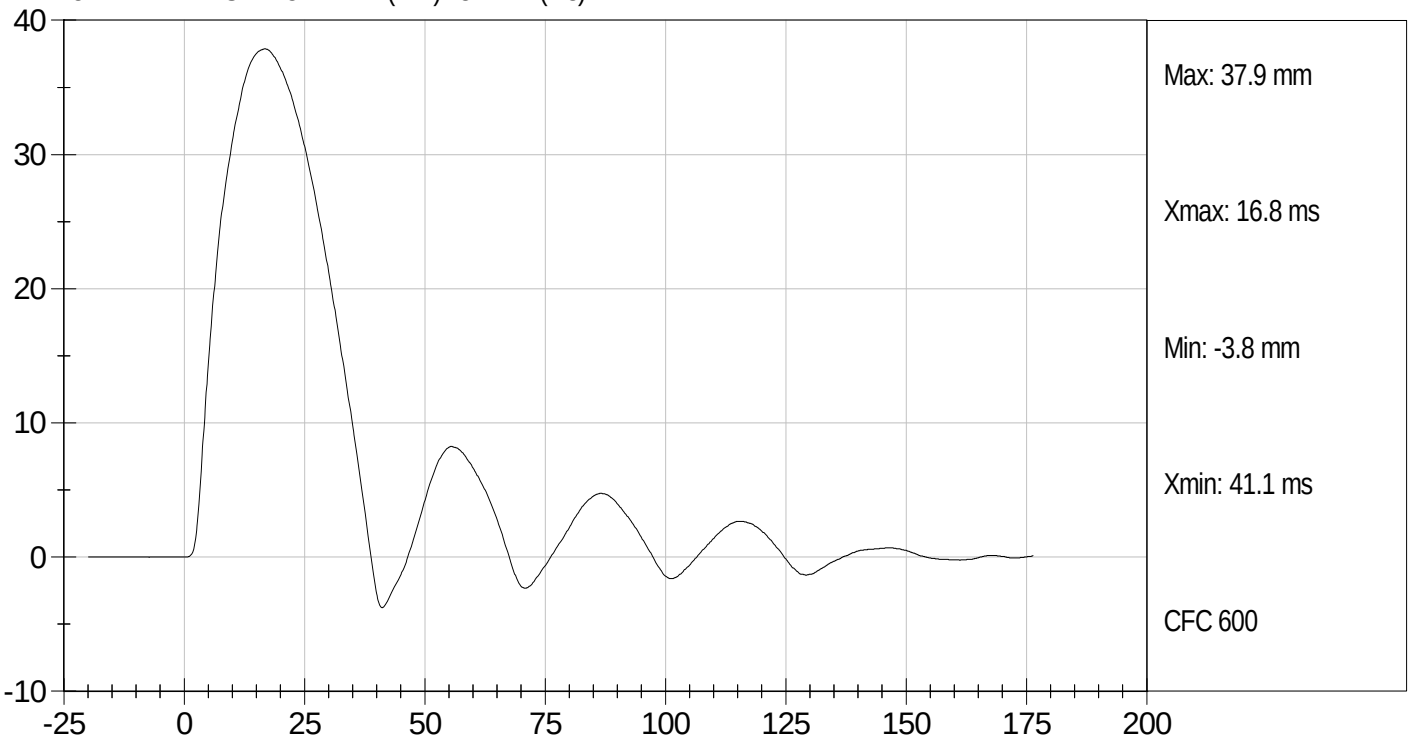
Test Desc: Thorax Impact
Component ID: D113320

Test Date: 10/5/11
Velocity: 18.32 ft/s, 5.58 m/s

PROBE FORCE (kN) vs TIME (ms)



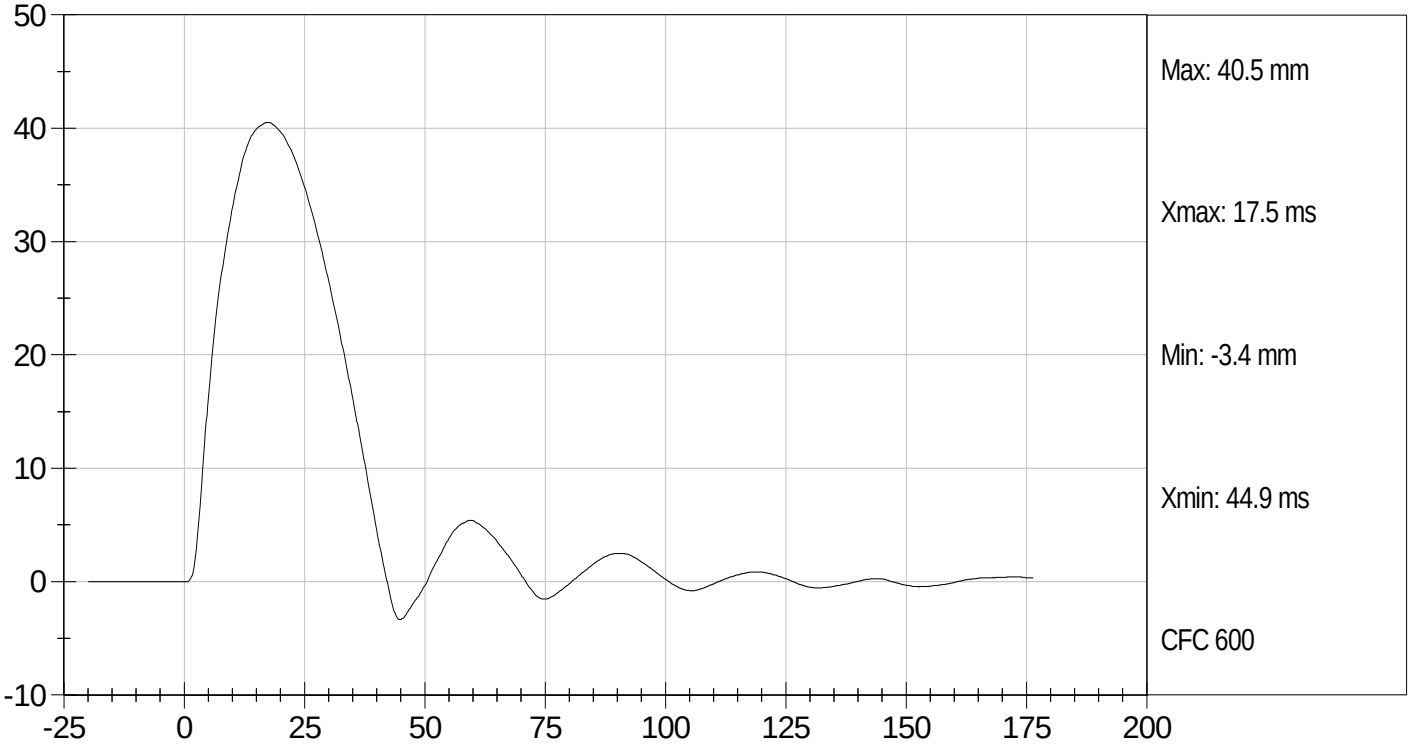
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



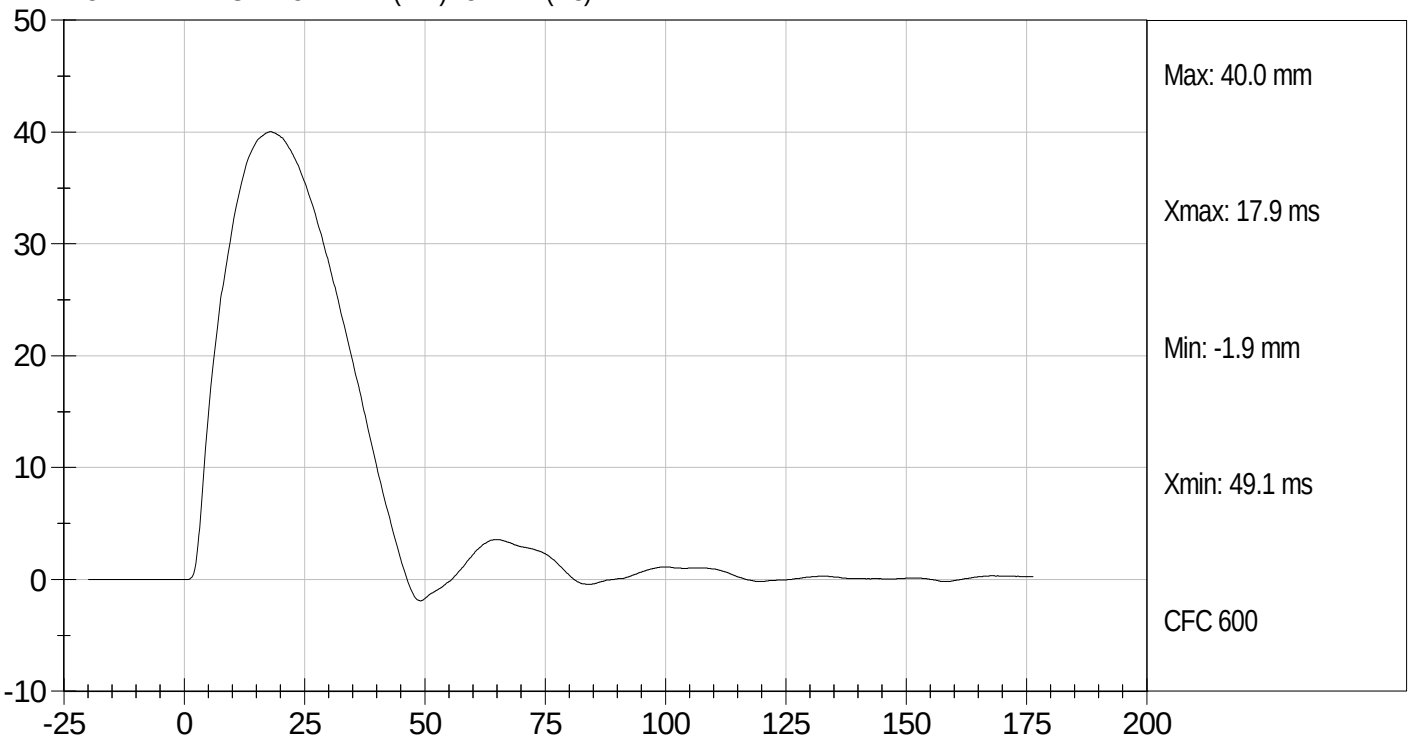
Test Desc: Thorax Impact
Component ID: D113320

Test Date: 10/5/11
Velocity: 18.32 ft/s, 5.58 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113327

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	3.90 to 4.10	4.06	Pass
Maximum Impact Force	kN	4.00 to 4.80	4.07	Pass
Time of Maximum Impactor Force	ms	10.60 to 13.00	11.00	Pass
Maximum Total Abdomen Force	kN	2.20 to 2.70	2.41	Pass
Time of Maximum Abdomen Force	ms	10.00 to 12.30	10.80	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

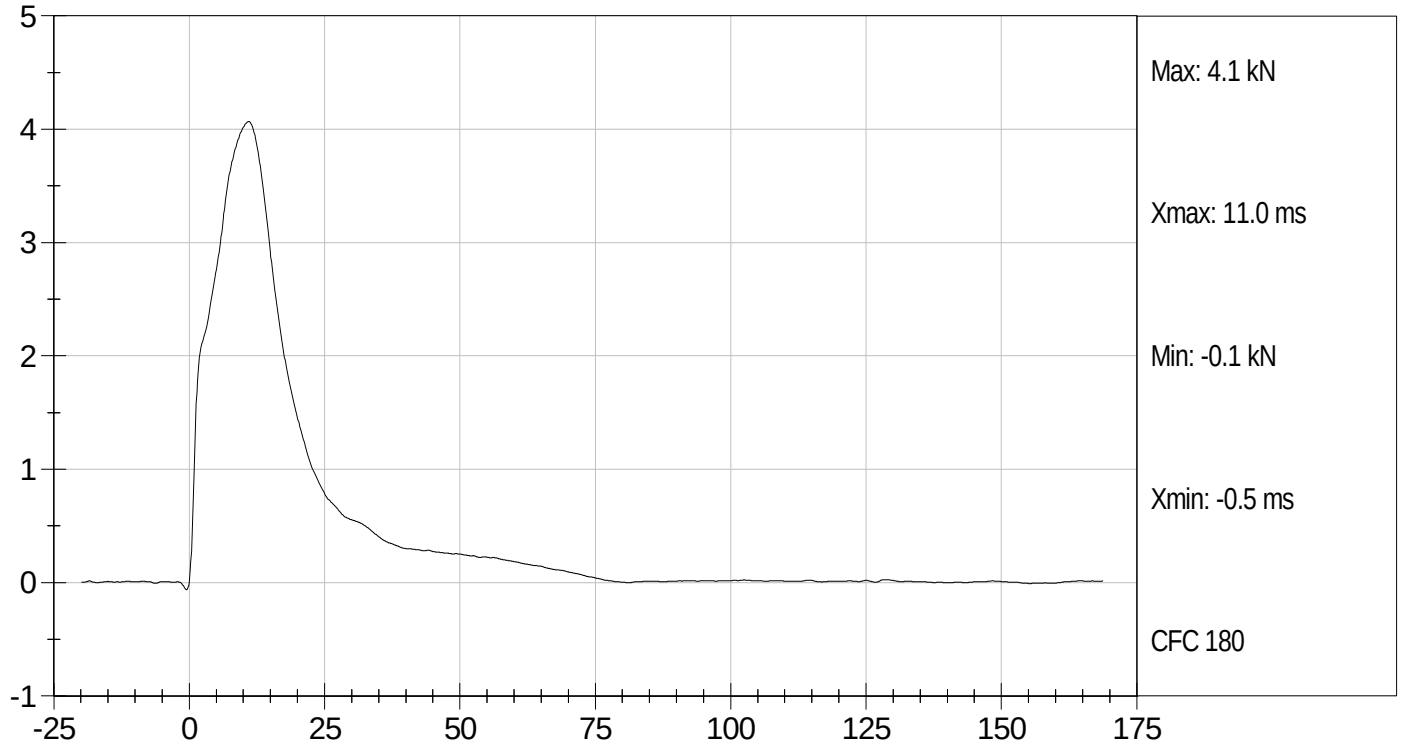
10/5/11
Test Date

David Winkelbauer
Approved By

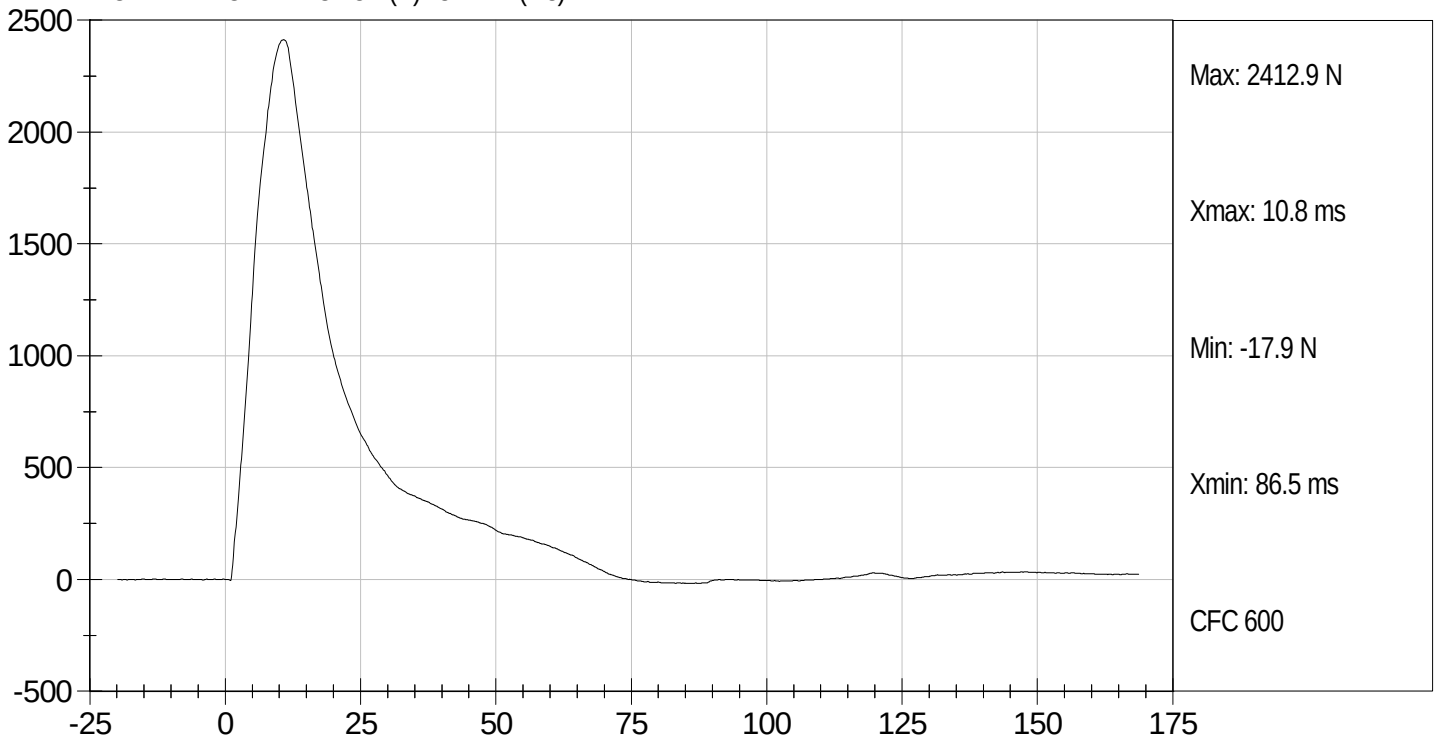
Test Desc: Abdomen Impact
Component ID: D113327

Test Date: 10/5/11
Velocity: 13.33 ft/s, 4.06 m/s

IMPACTOR FORCE (kN) vs TIME (ms)



TOTAL ABDOMEN FORCE (N) vs TIME (ms)



MGA RESEARCH CORPORATION

LUMBAR SPINE TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113328

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Deceleration	1 ms	m/s	-0.05 to 0.00	-0.01	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.41	Pass
	27 ms	m/s	-6.50 to -5.80	-6.01	Pass
	30 ms	m/s	>= -6.5	-6.00	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	50.7	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	45.3	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	44	Pass
			Overall Results		Pass

Jessica Gall
Laboratory Technician

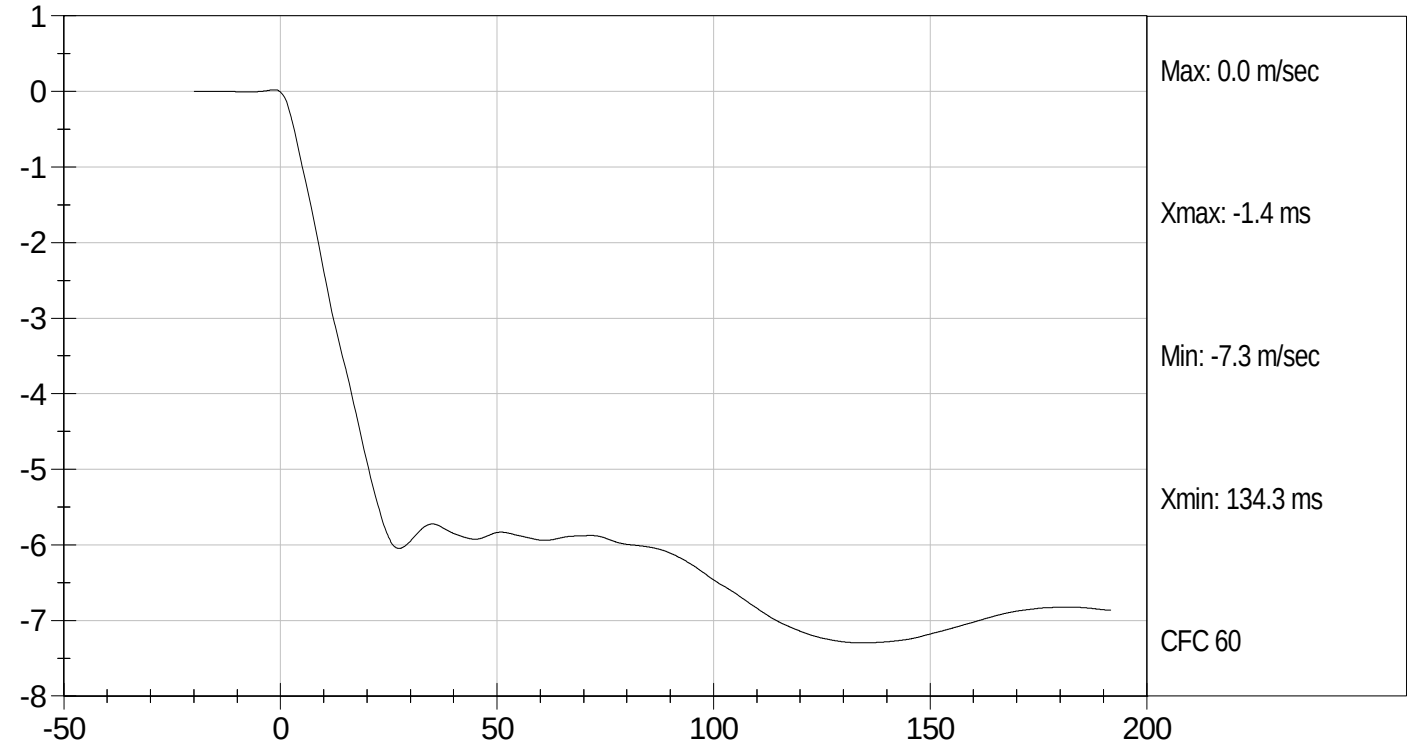
10/5/11
Test Date

David Winkelbauer
Approved By

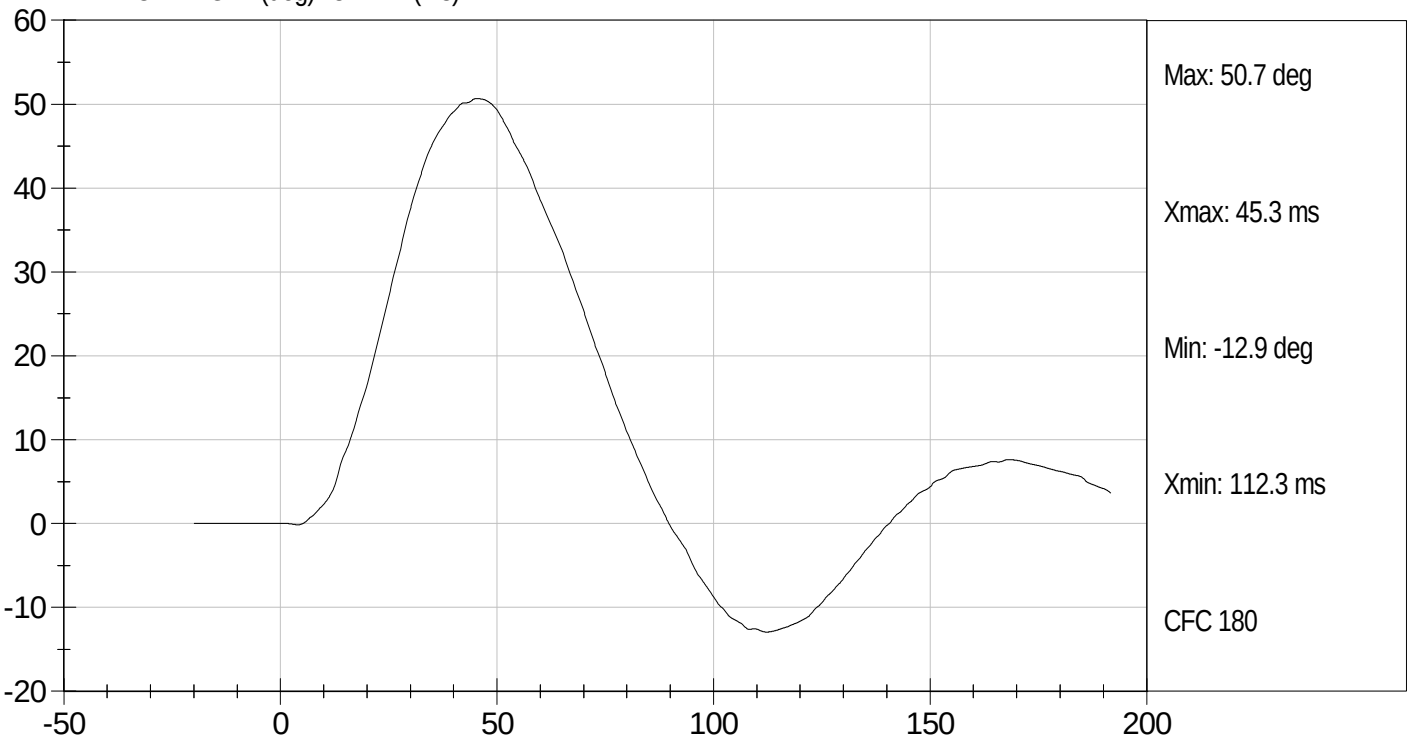
Test Desc: Lumbar Bending
Component ID: D113328

Test Date: 10/5/11
Velocity: 20.08 ft/s, 6.12 m/s

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



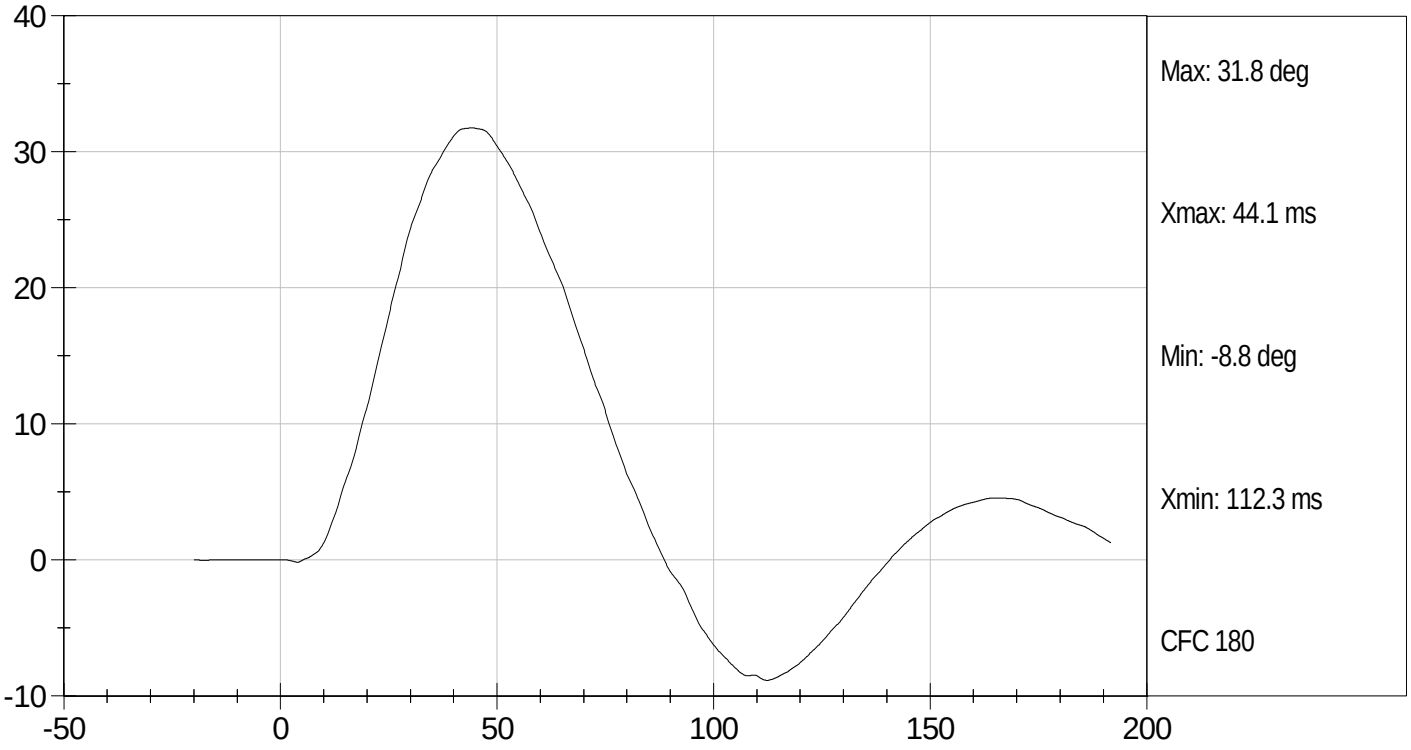
FLEXION ANGLE (deg) vs TIME (ms)



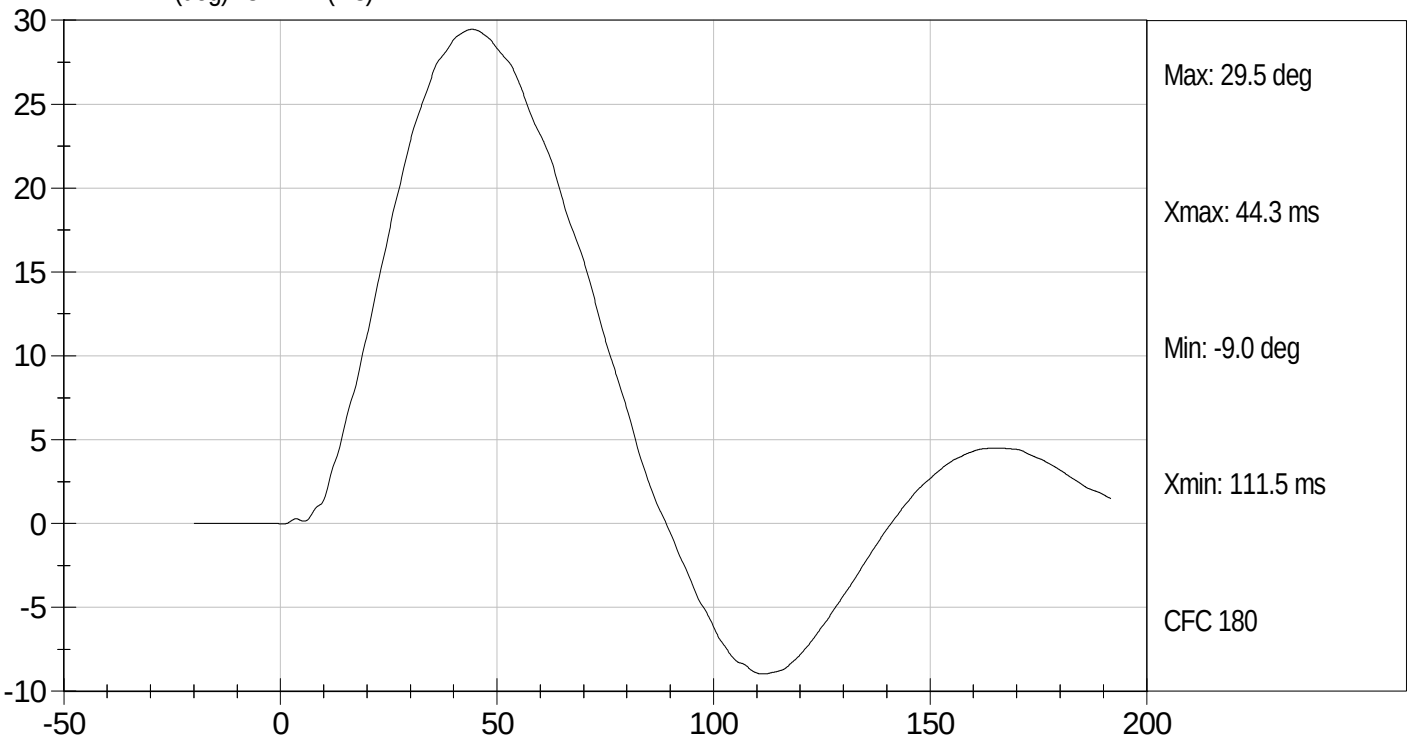
Test Desc: Lumbar Bending
Component ID: D113328

Test Date: 10/5/11
Velocity: 20.08 ft/s, 6.12 m/s

THETA A (deg) vs TIME (ms)



THETA B (deg) vs TIME (ms)



MGA RESEARCH CORPORATION

PELVIS TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D113329

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	4.20 to 4.40	4.27	Pass
Maximum Impactor Force	kN	4.70 to 5.40	4.76	Pass
Time of Maximum Impactor Force	ms	11.80 to 16.10	13.70	Pass
Maximum Pubic Force	kN	1.23 to 1.59	1.47	Pass
Time of Maximum Pubic Force	ms	12.20 to 17.00	14.50	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

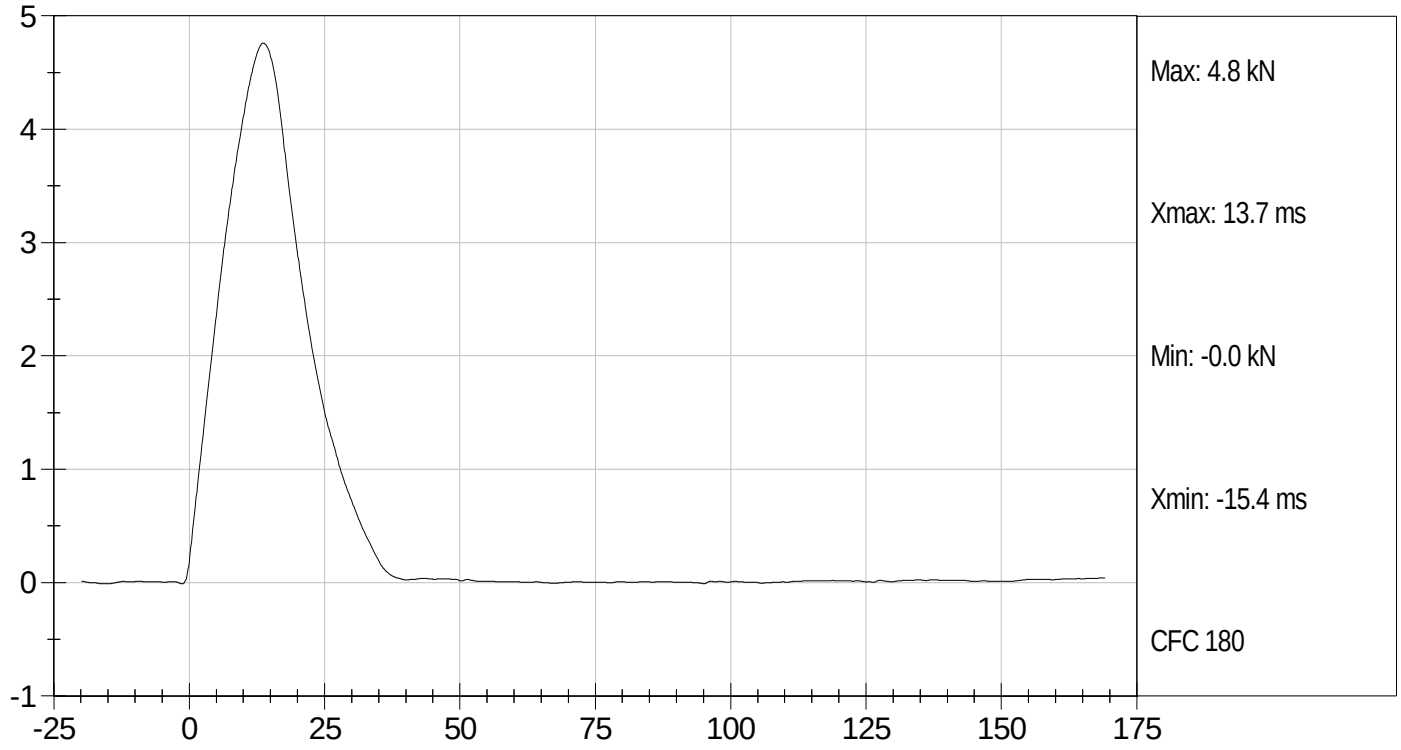
10/5/11
Test Date

David Winkelbauer
Approved By

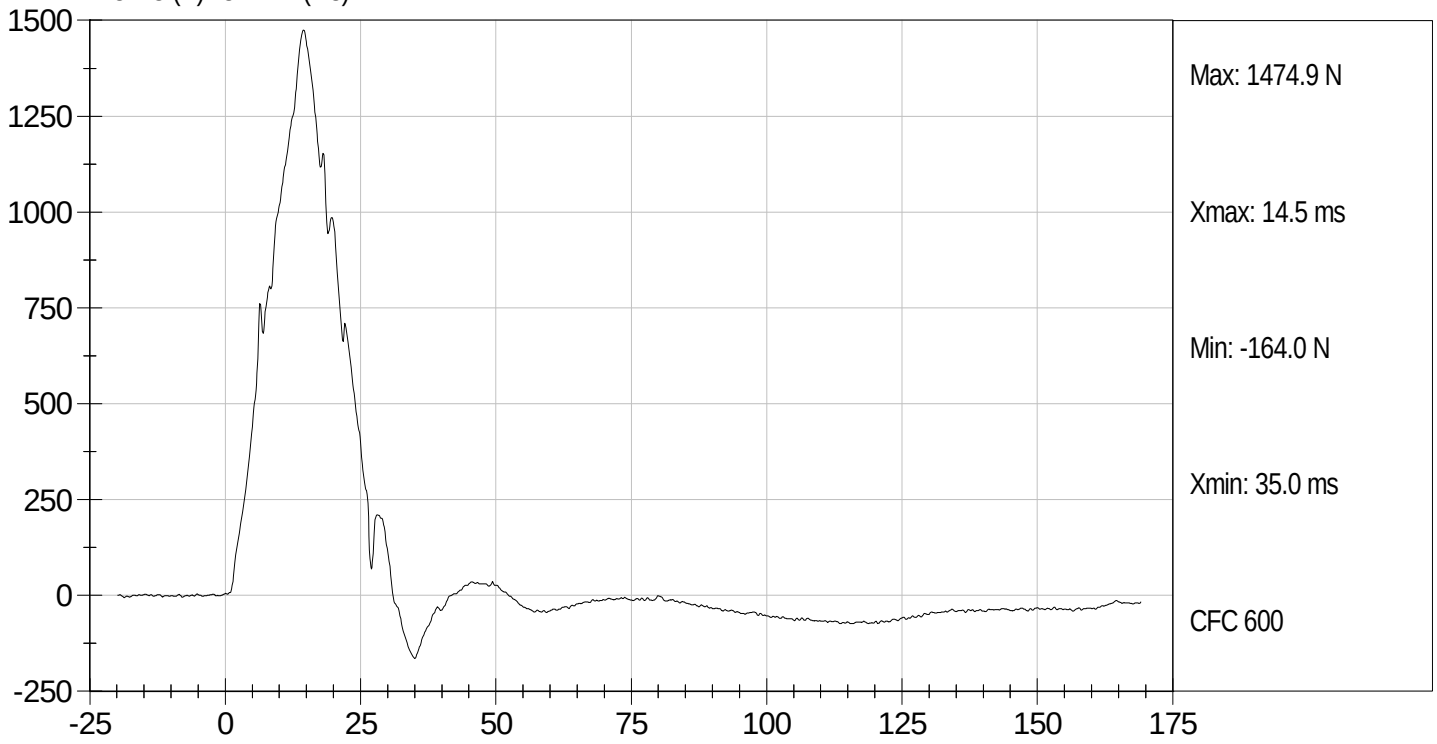
Test Desc: Pelvis Impact
Component ID: D113329

Test Date: 10/5/11
Velocity: 14.00 ft/s, 4.27 m/s

IMPACTOR FORCE (kN) vs TIME (ms)



PUBIC (N) vs TIME (ms)



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:** D113241

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Peak Resultant Acceleration	G's	115 to 137	118	Pass
Peak Lateral Acceleration	G's	+/- 15	-2.5	Pass
Unimodal	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

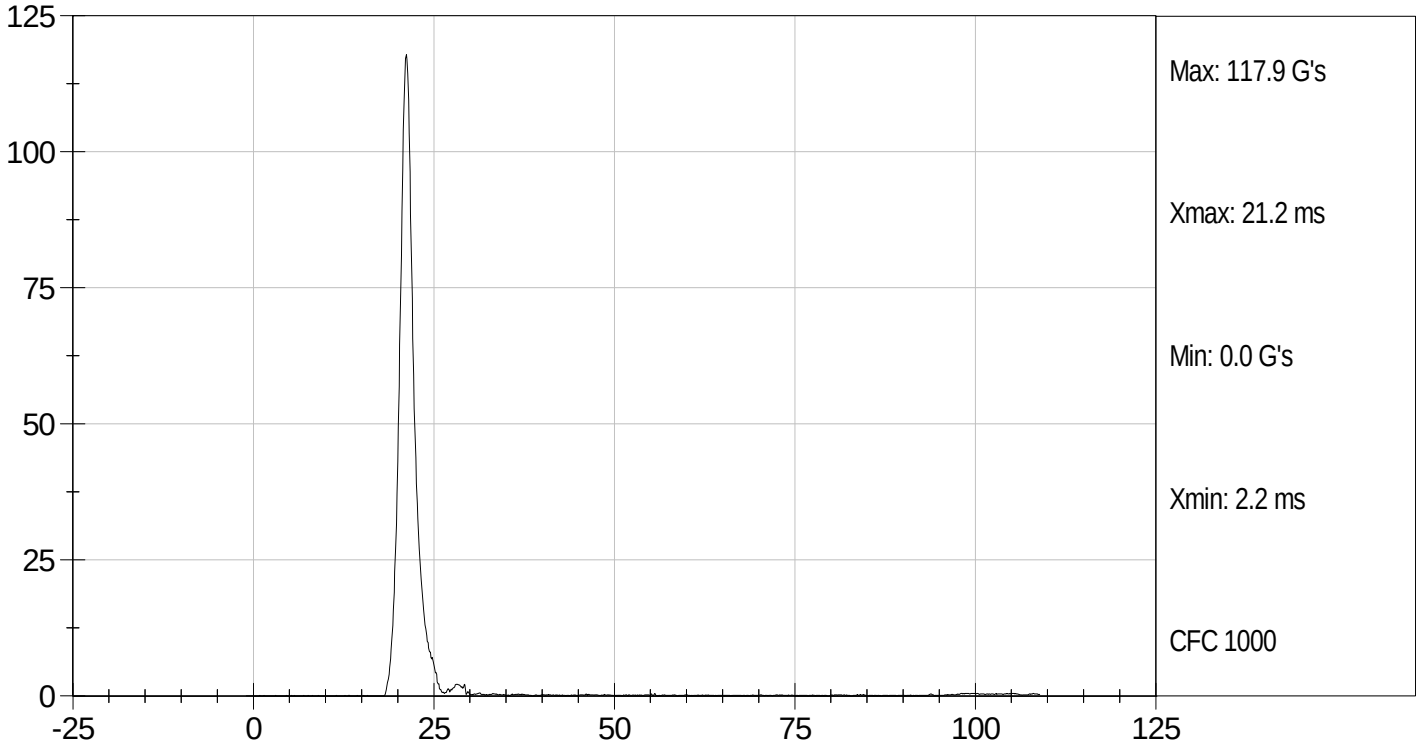
9/29/11
Test Date

David Winkelbauer
Approved By

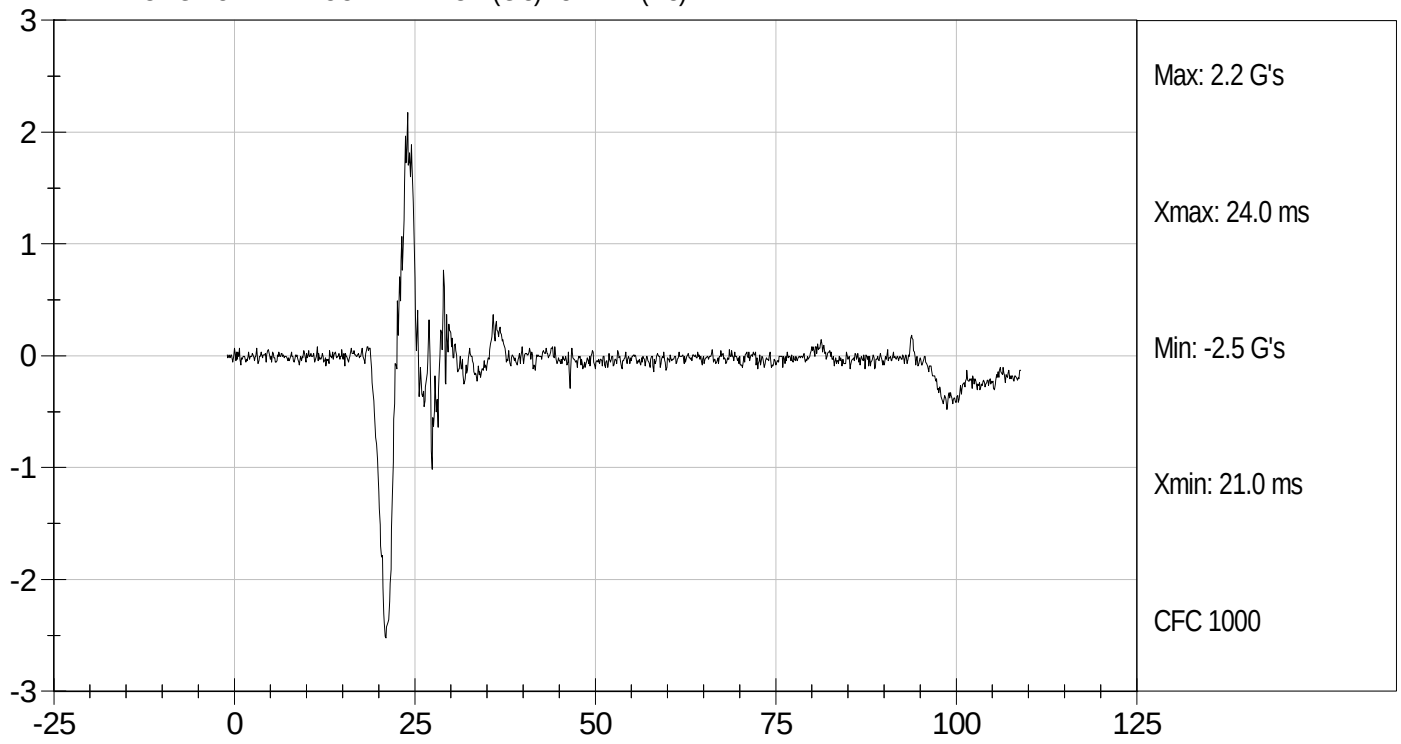
Test Desc: Head Drop
Component ID: D113241

Test Date: 9/29/11
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:** D113242

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.6	Pass
Humidity		%	10 to 70	45	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.72	Pass
	15 ms	m/s	3.30 to 4.10	3.77	Pass
	20 ms	m/s	4.40 to 5.40	4.91	Pass
	25 ms	m/s	5.40 to 6.10	5.58	Pass
	25-100 ms	m/s	5.50 to 6.20	5.59	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	64	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	114	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

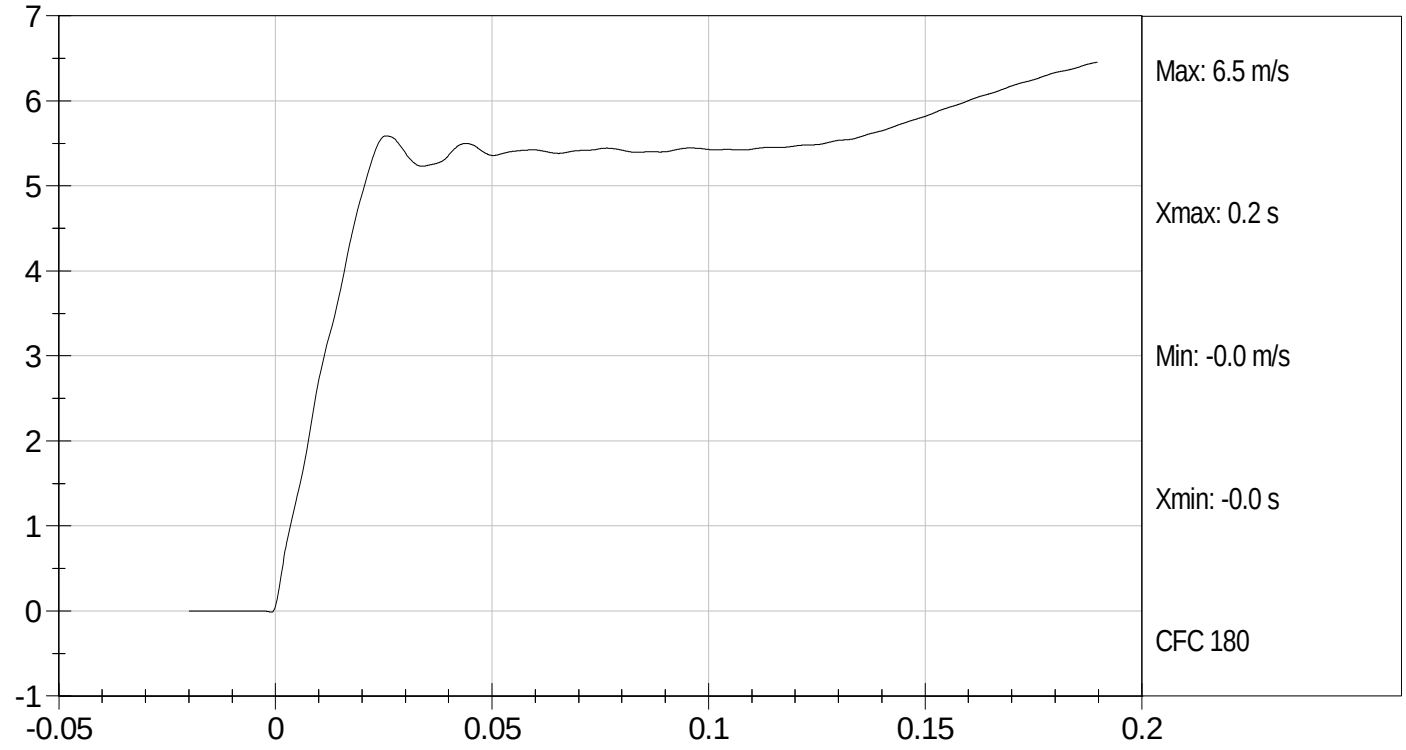
9/28/11
Test Date

David Winkelbauer
Approved By

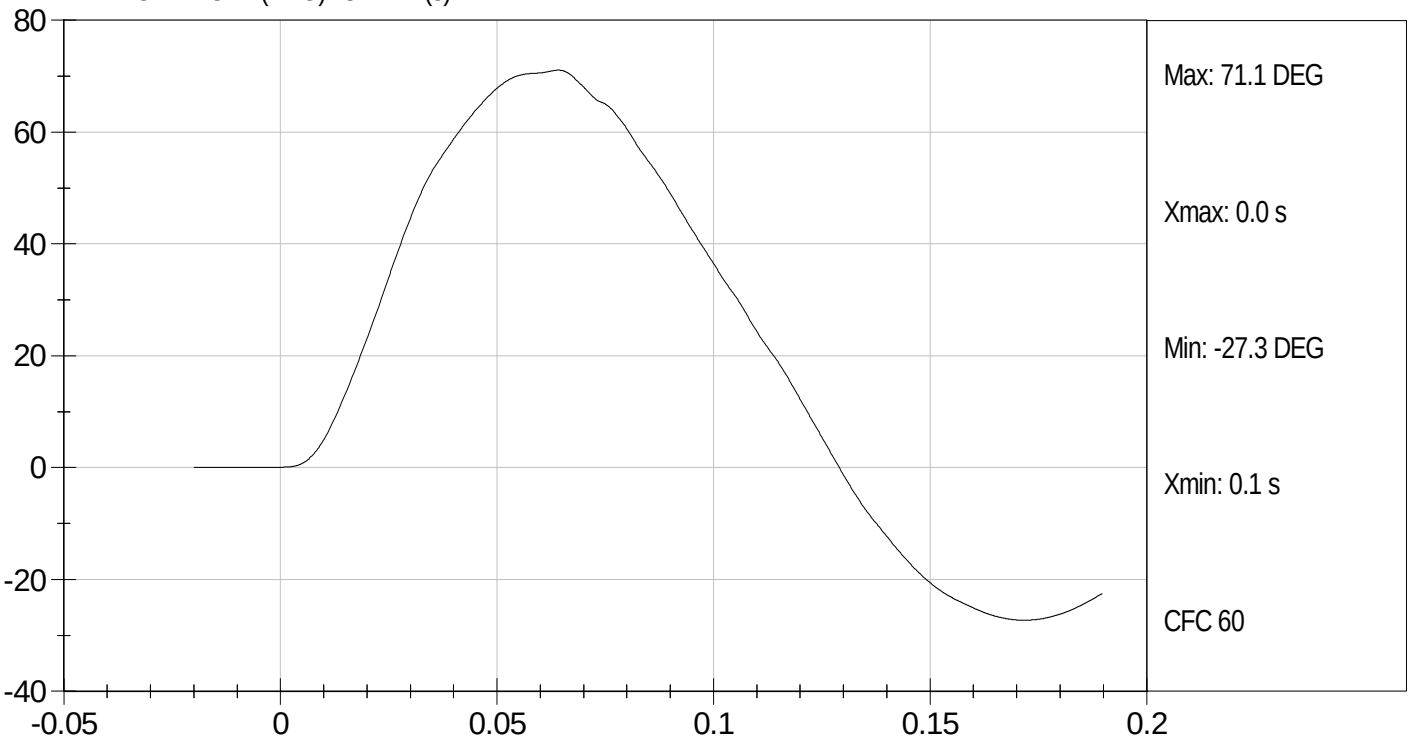
Test Desc: Neck Bending
Component ID: D113242

Test Date: 9/28/11
Velocity: 18.32 ft/s, 5.58 m/s

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

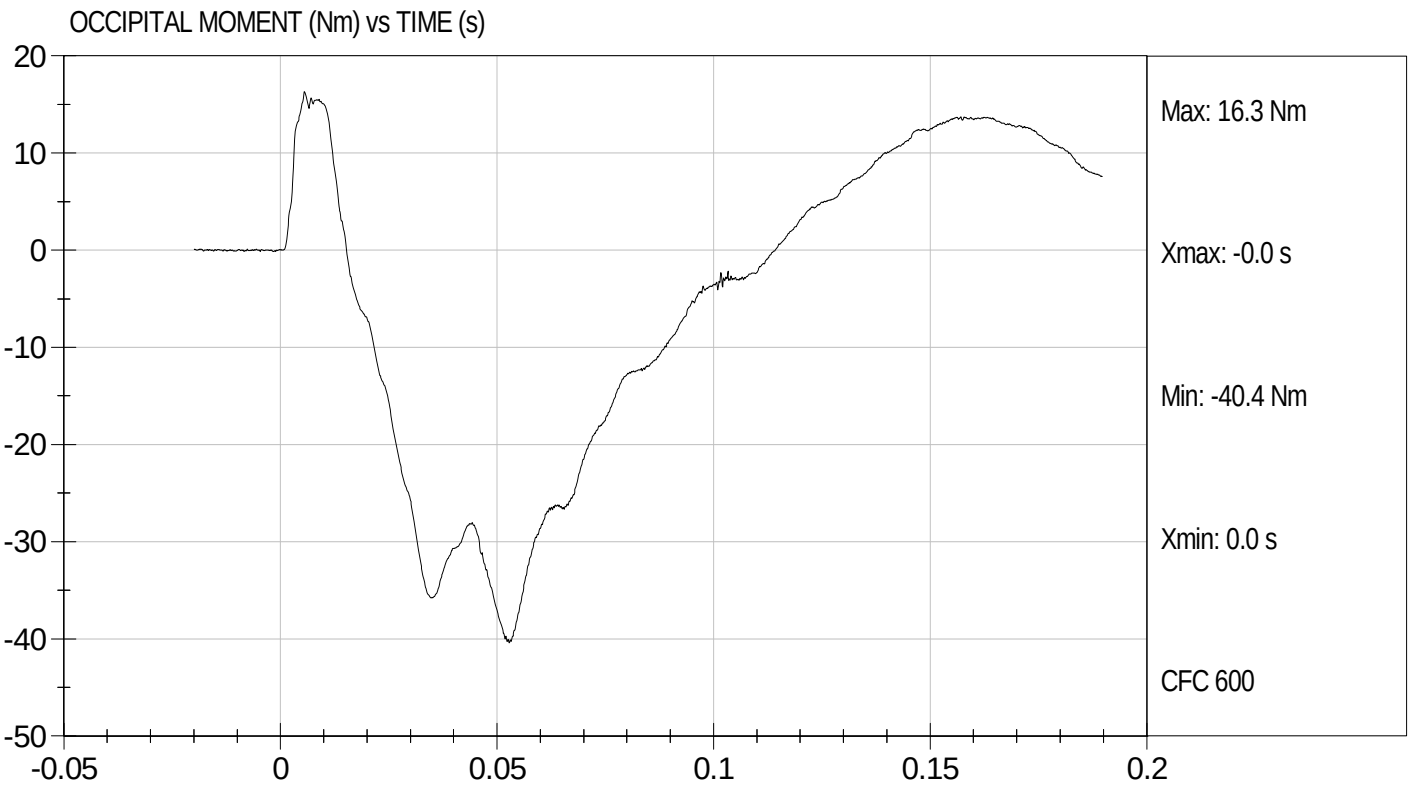


FLEXION ANGLE (DEG) vs TIME (s)



Test Desc: Neck Bending
Component ID: D113242

Test Date: 9/28/11
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:** D113243

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	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	17	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

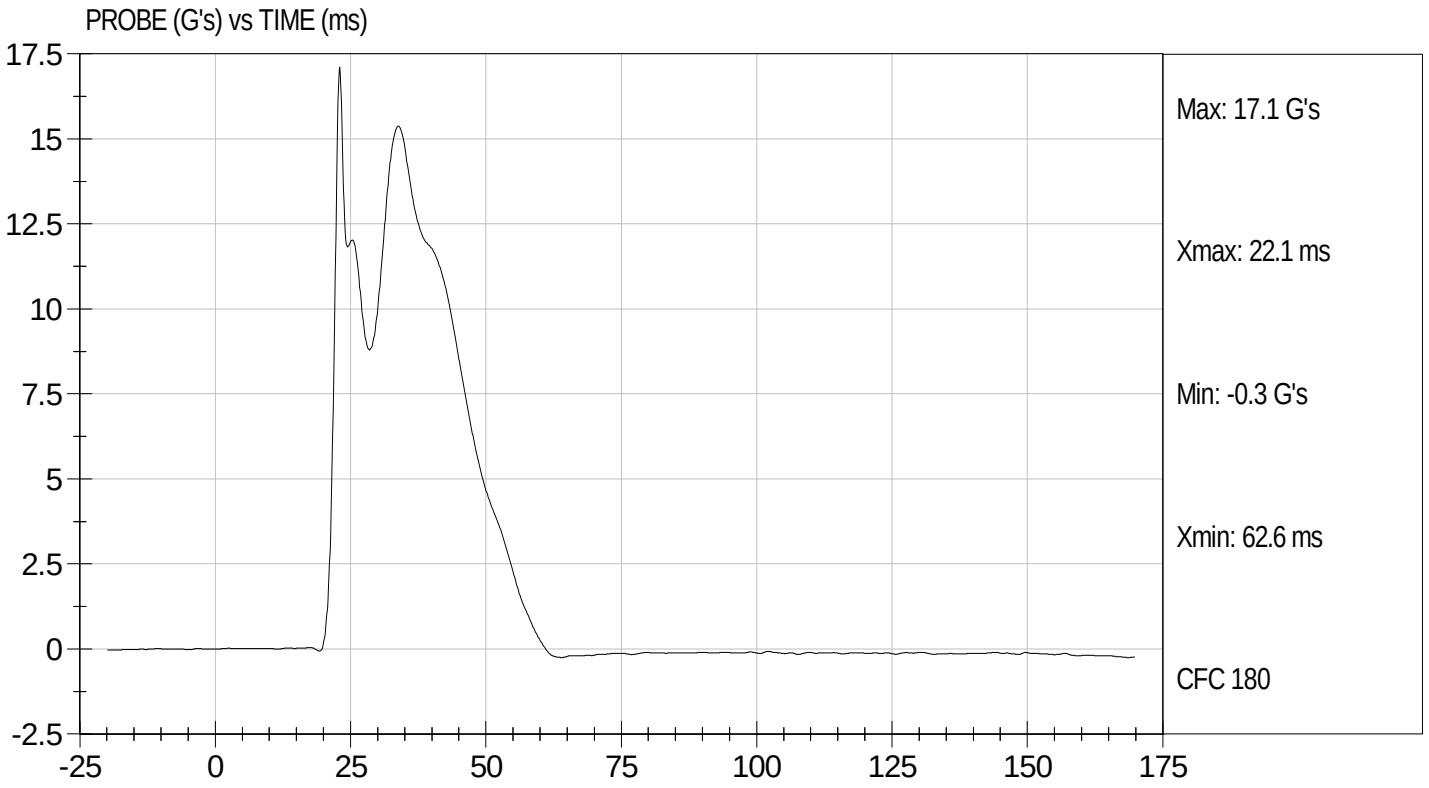
Jessica Hall
Laboratory Technician

9/29/11
Test Date

David Winkelbauer
Approved By

Test Desc: Shoulder Impact
Component ID: D113243

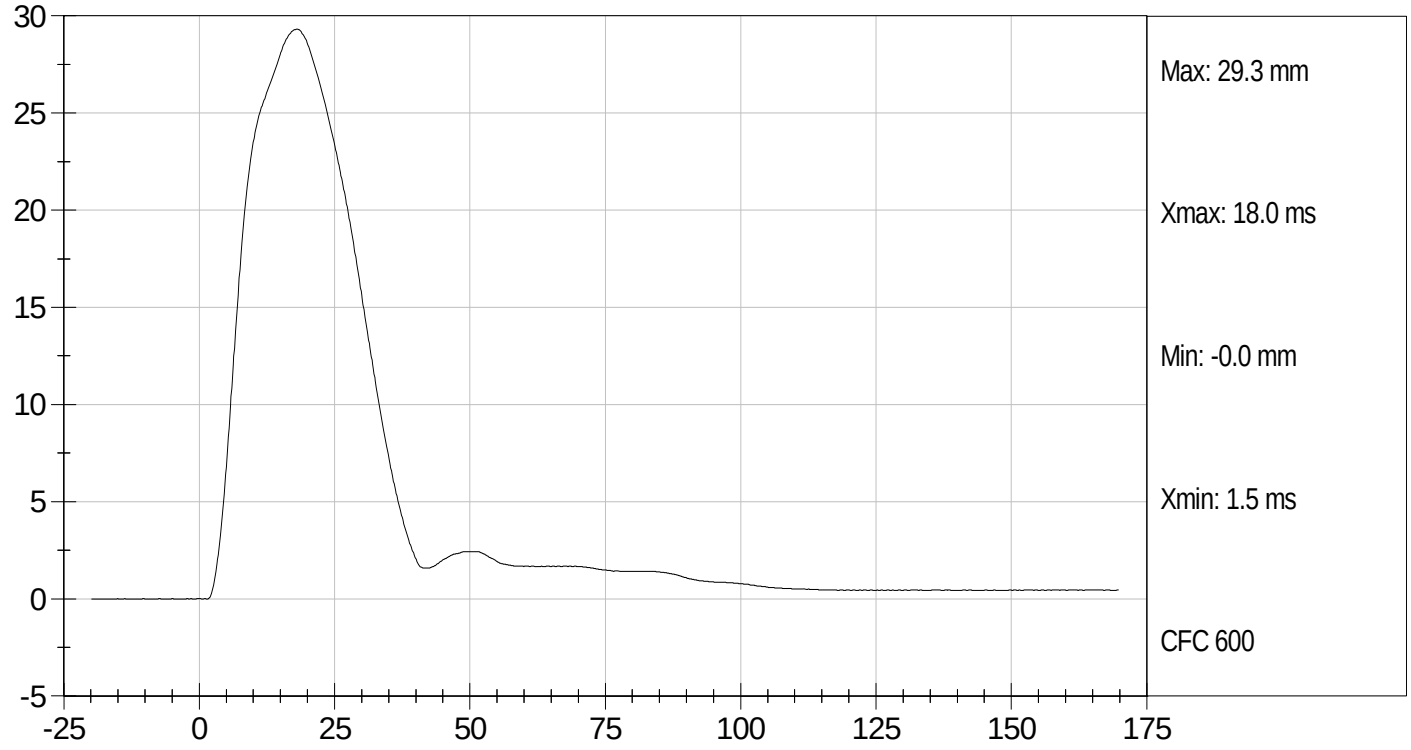
Test Date: 9/29/11
Velocity: 14.24 ft/s, 4.34 m/s



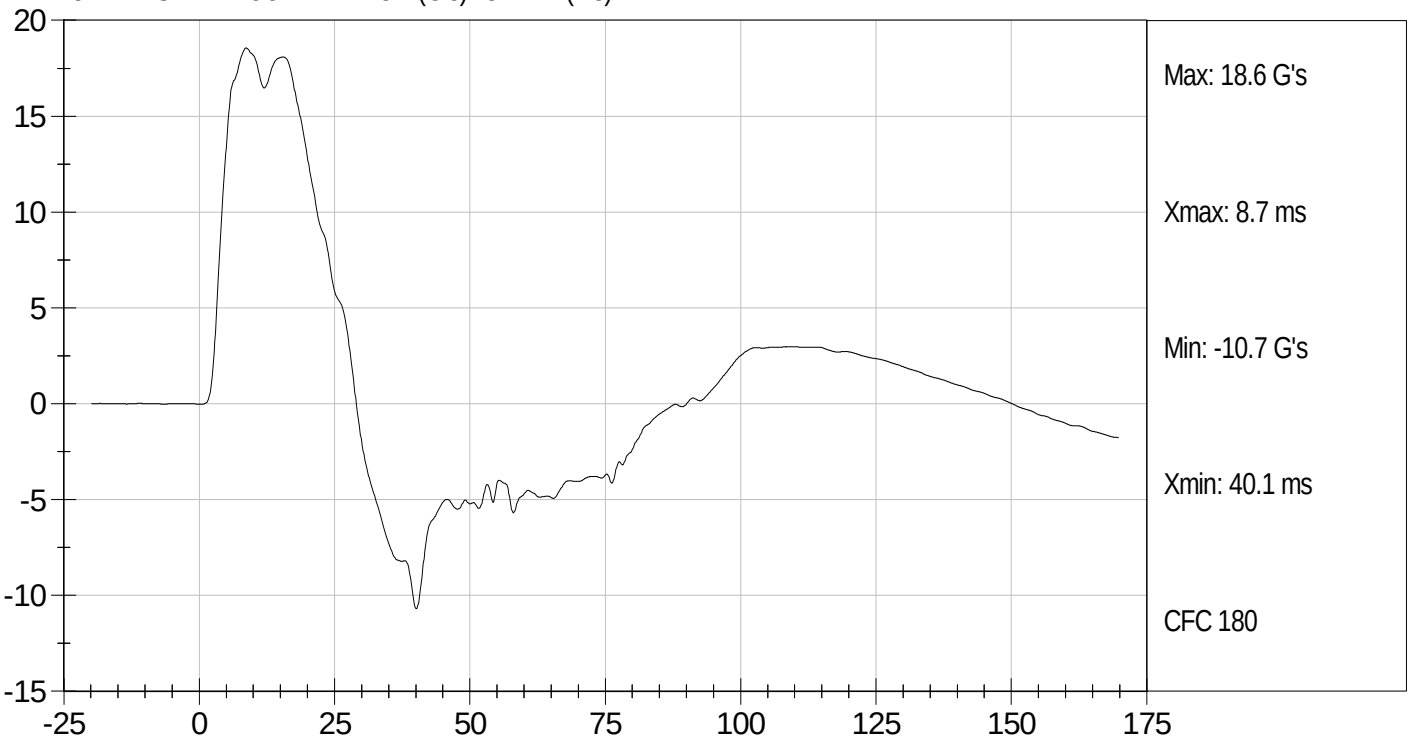
Test Desc: Shoulder Impact
Component ID: D113243

Test Date: 9/29/11
Velocity: 14.24 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:** D113244

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	47	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	34	Pass
Upper Rib Displacement	mm	25 to 32	29	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

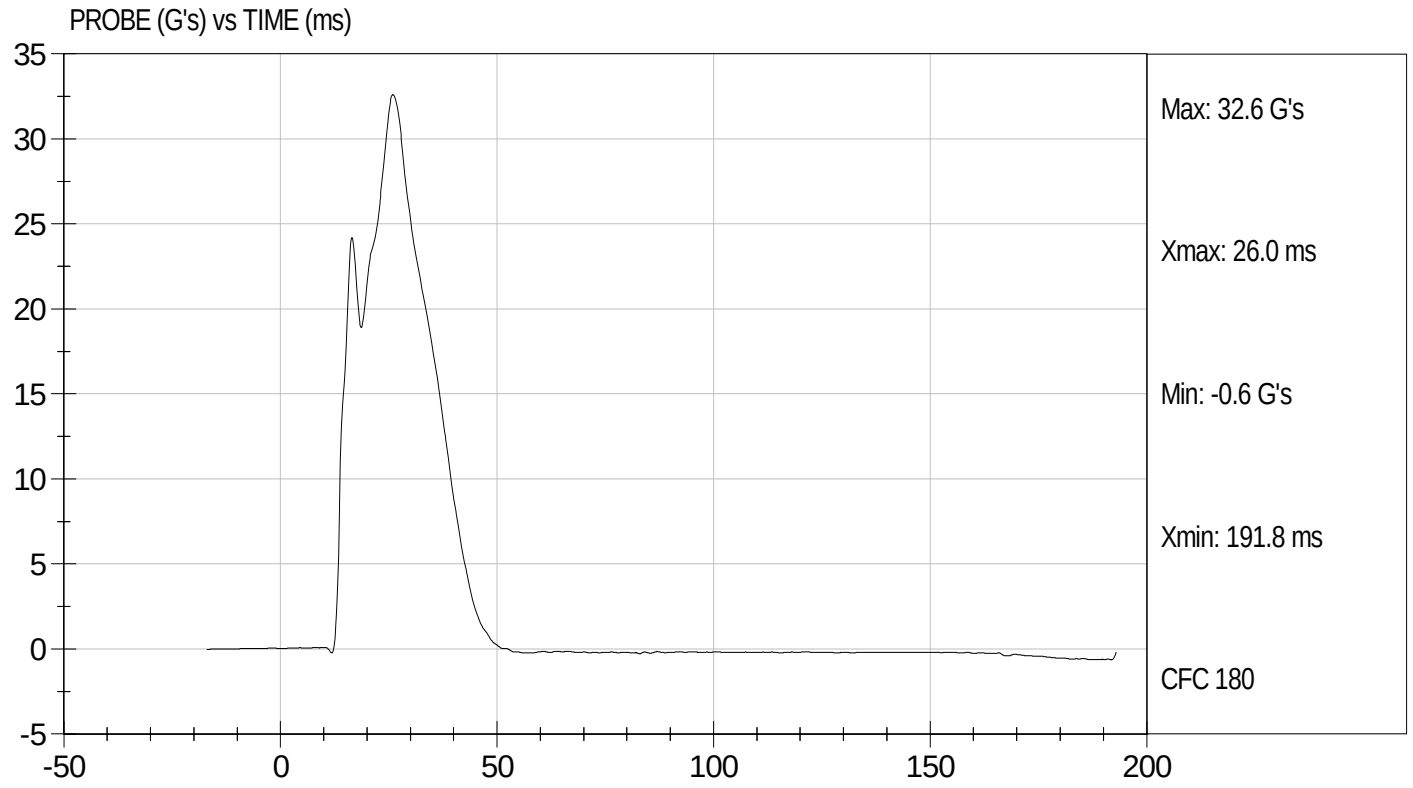
Jessica Hall
Laboratory Technician

9/29/11
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax With Arm
Component ID: D113244

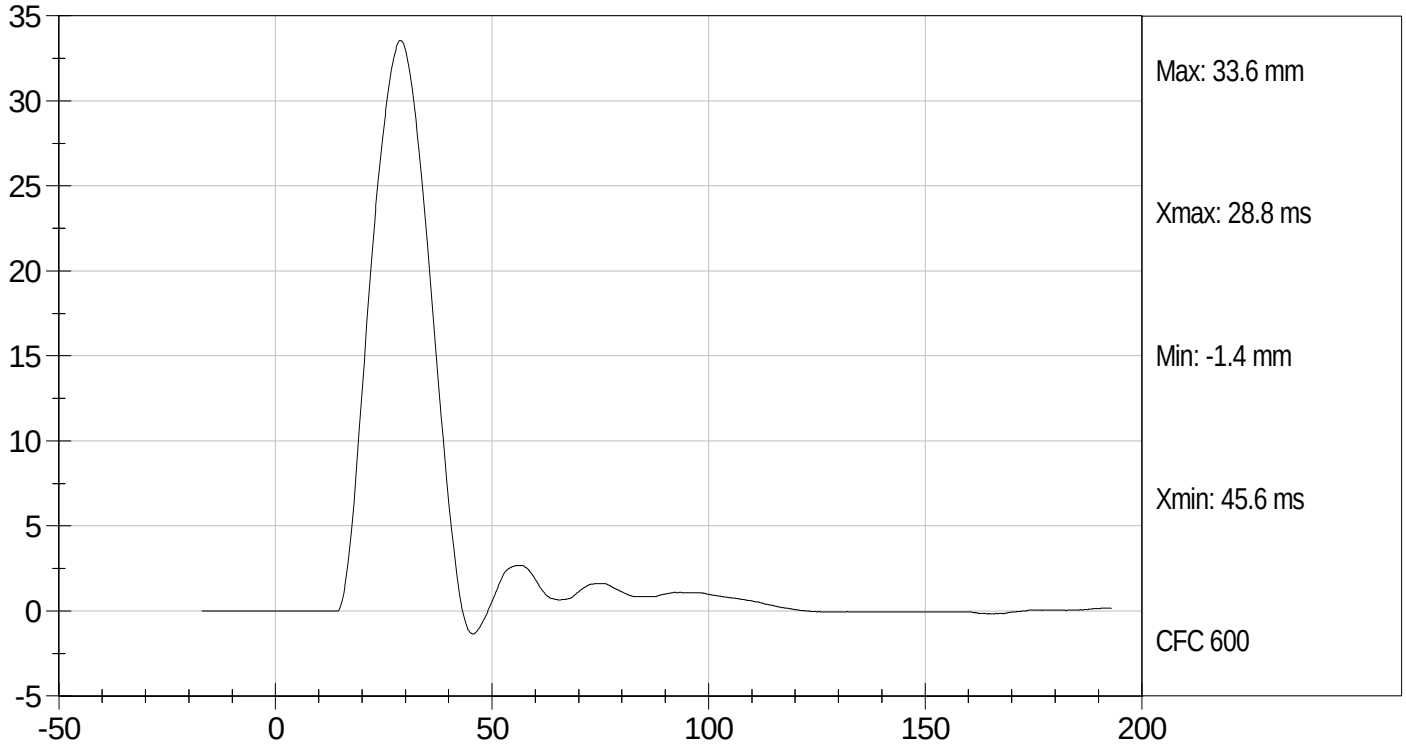
Test Date: 9/29/11
Velocity: 22.2 ft/s, 6.77 m/s



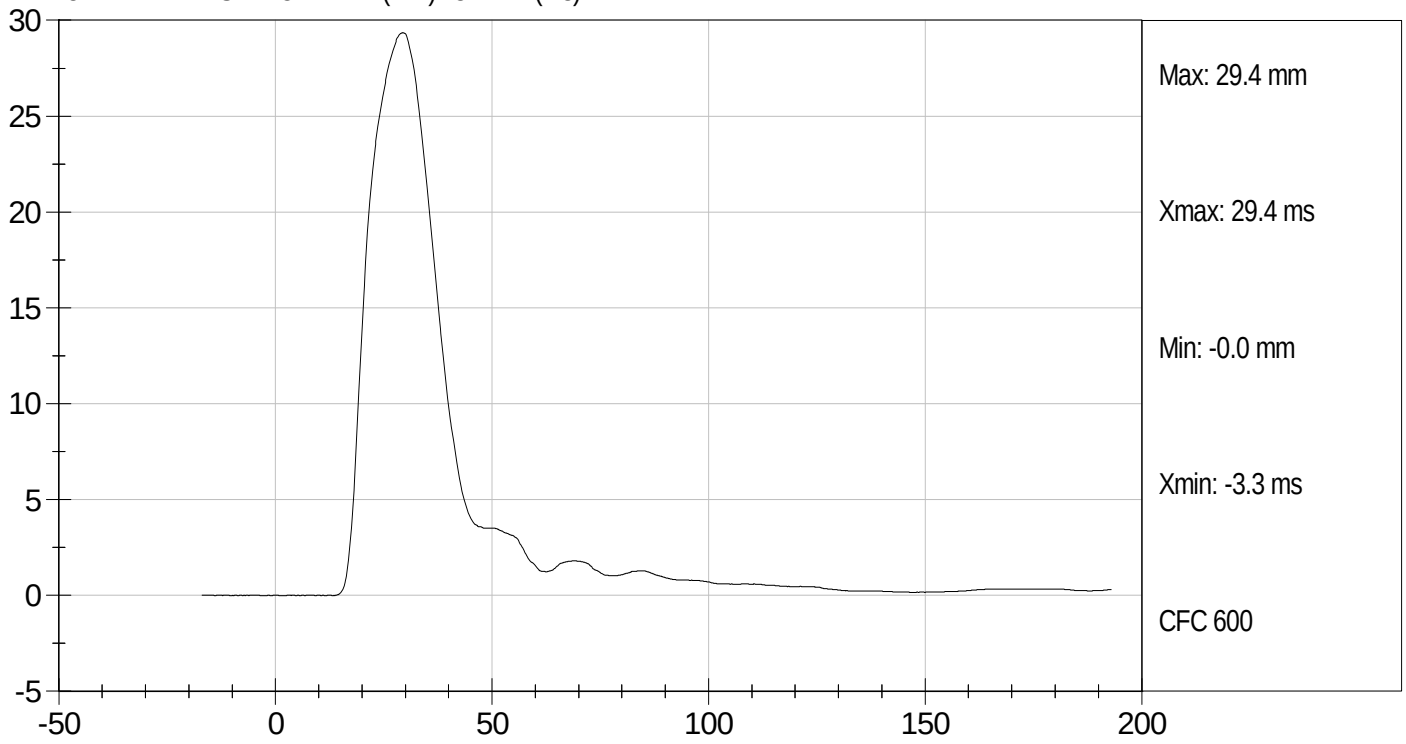
Test Desc: Thorax With Arm
Component ID: D113244

Test Date: 9/29/11
Velocity: 22.2 ft/s, 6.77 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



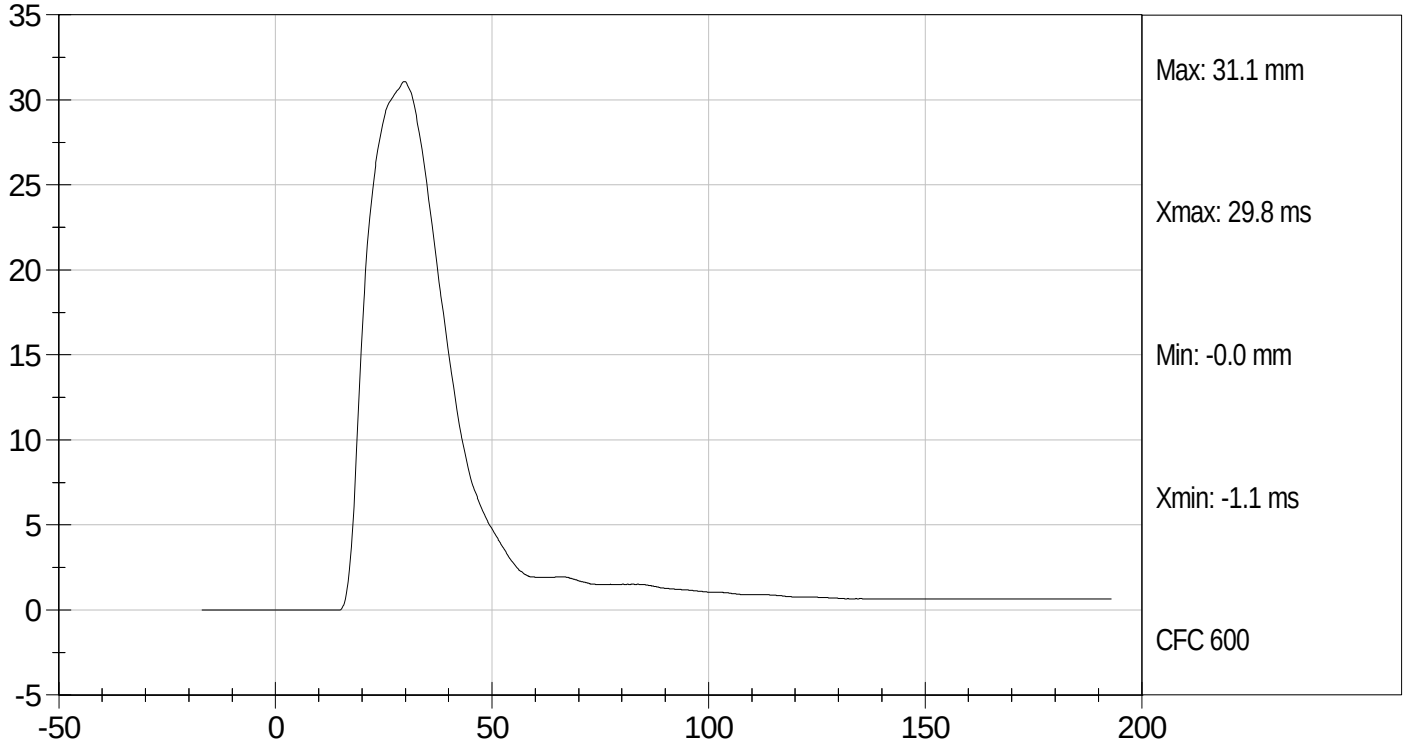
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



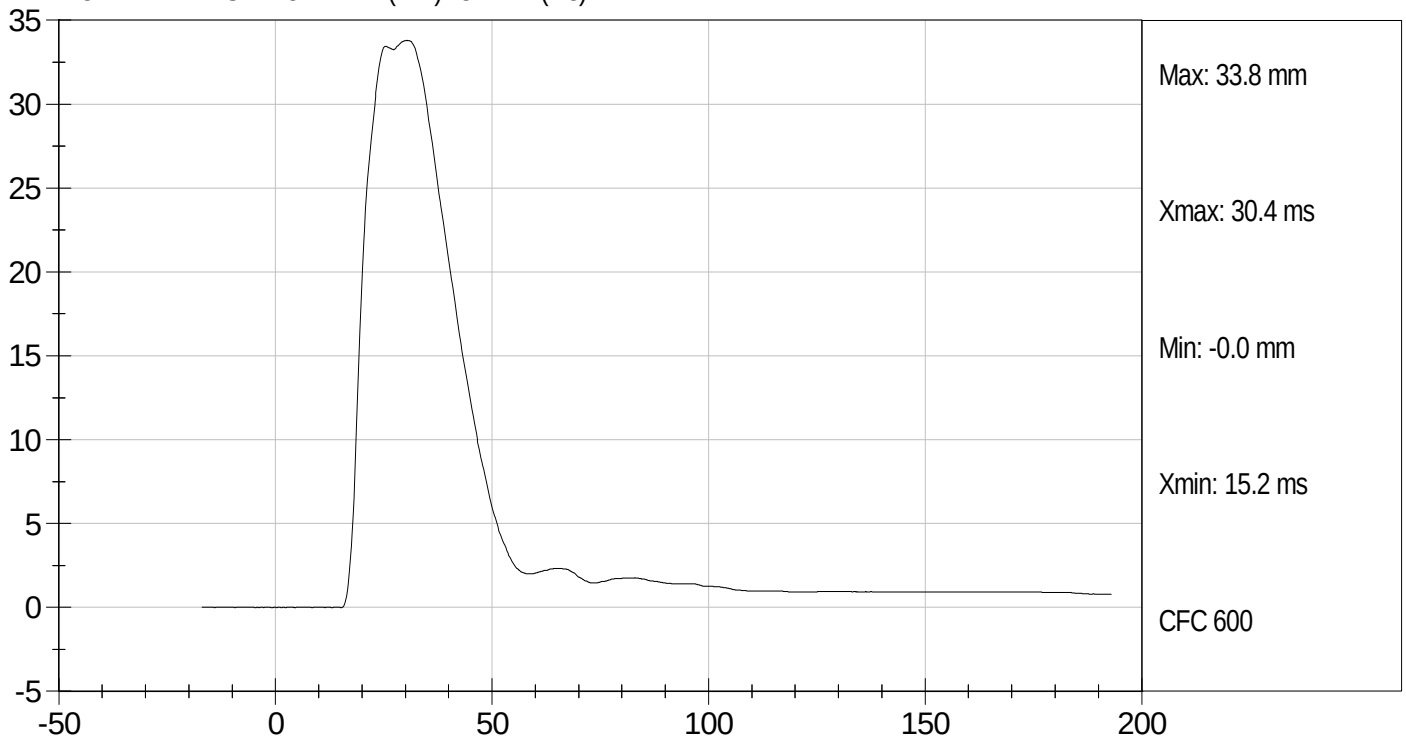
Test Desc: Thorax With Arm
Component ID: D113244

Test Date: 9/29/11
Velocity: 22.2 ft/s, 6.77 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



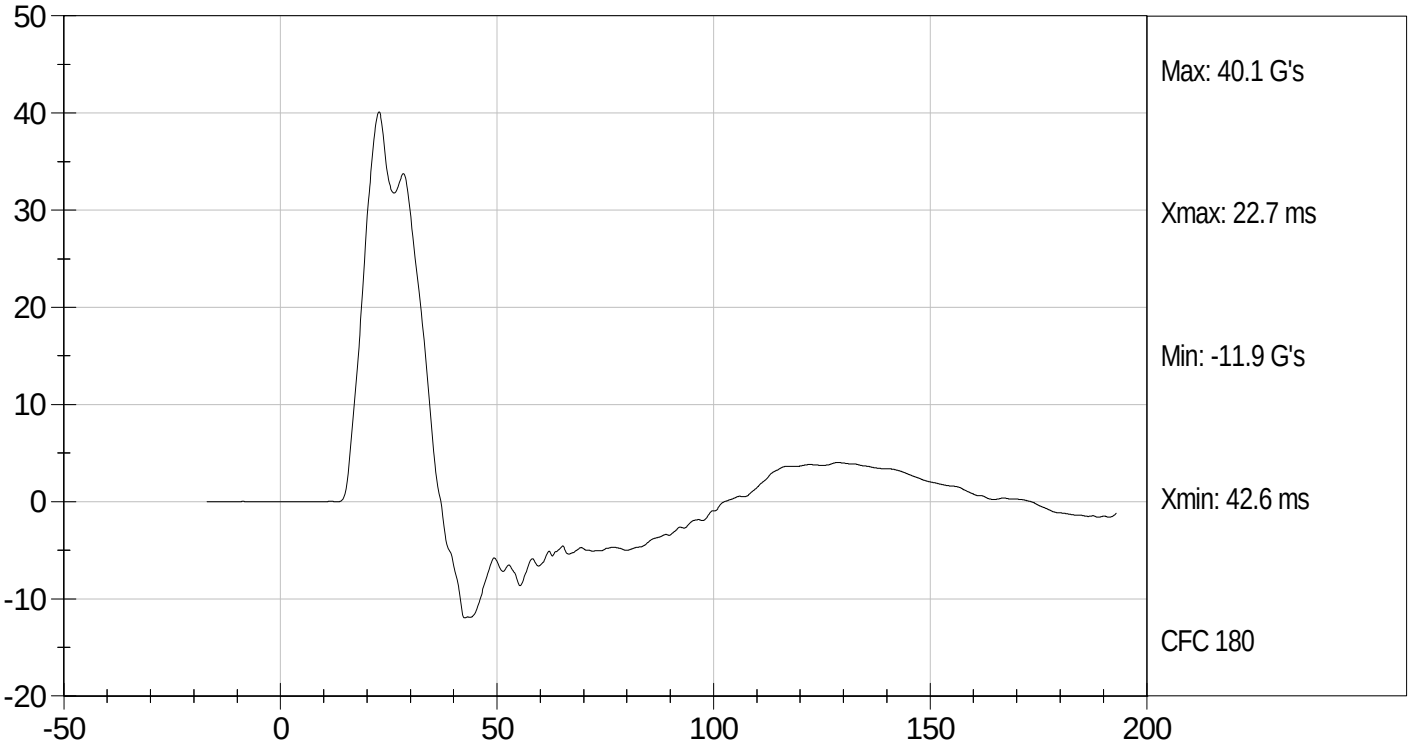
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



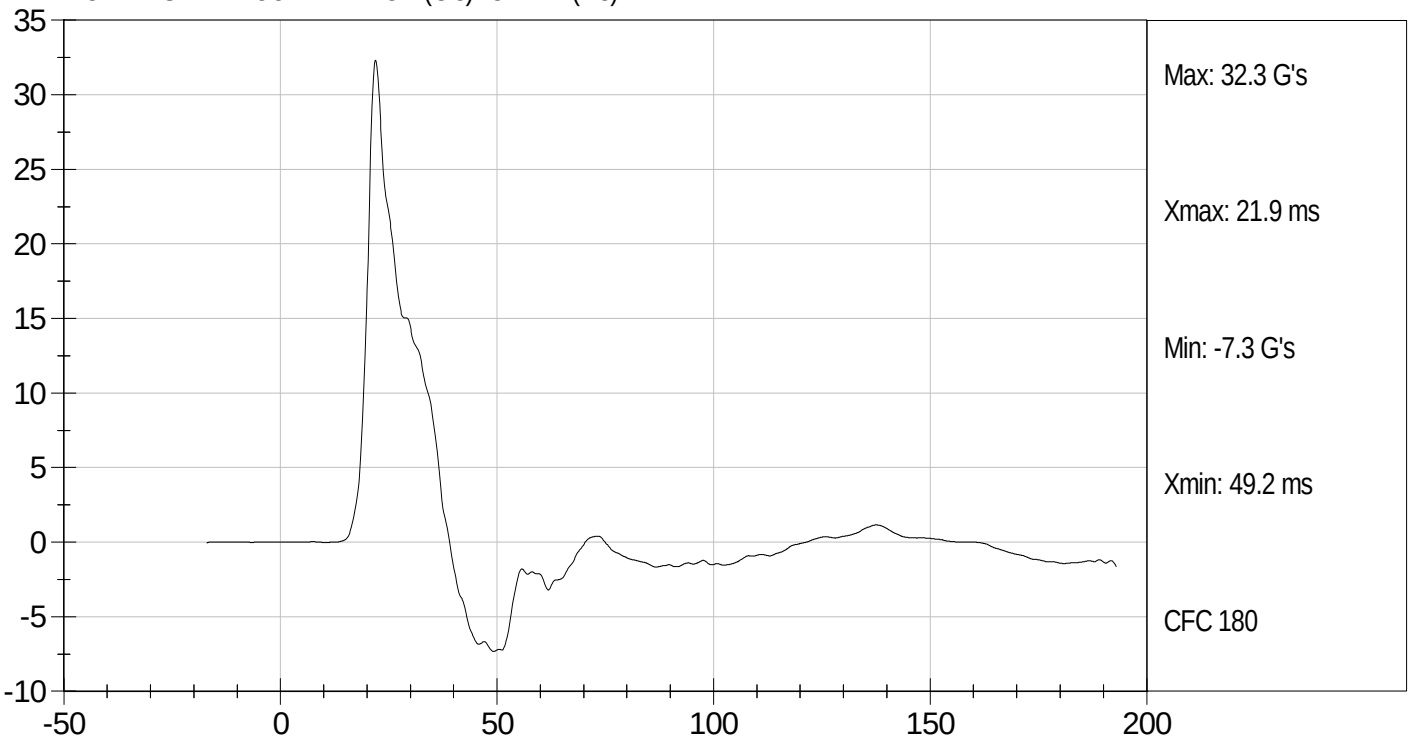
Test Desc: Thorax With Arm
Component ID: D113244

Test Date: 9/29/11
Velocity: 22.2 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:** D113245

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	47	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	38	Pass
Middle Rib Displacement	mm	39 to 45	41	Pass
Lower Rib Displacement	mm	35 to 43	40	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

Jessica Gall
Laboratory Technician

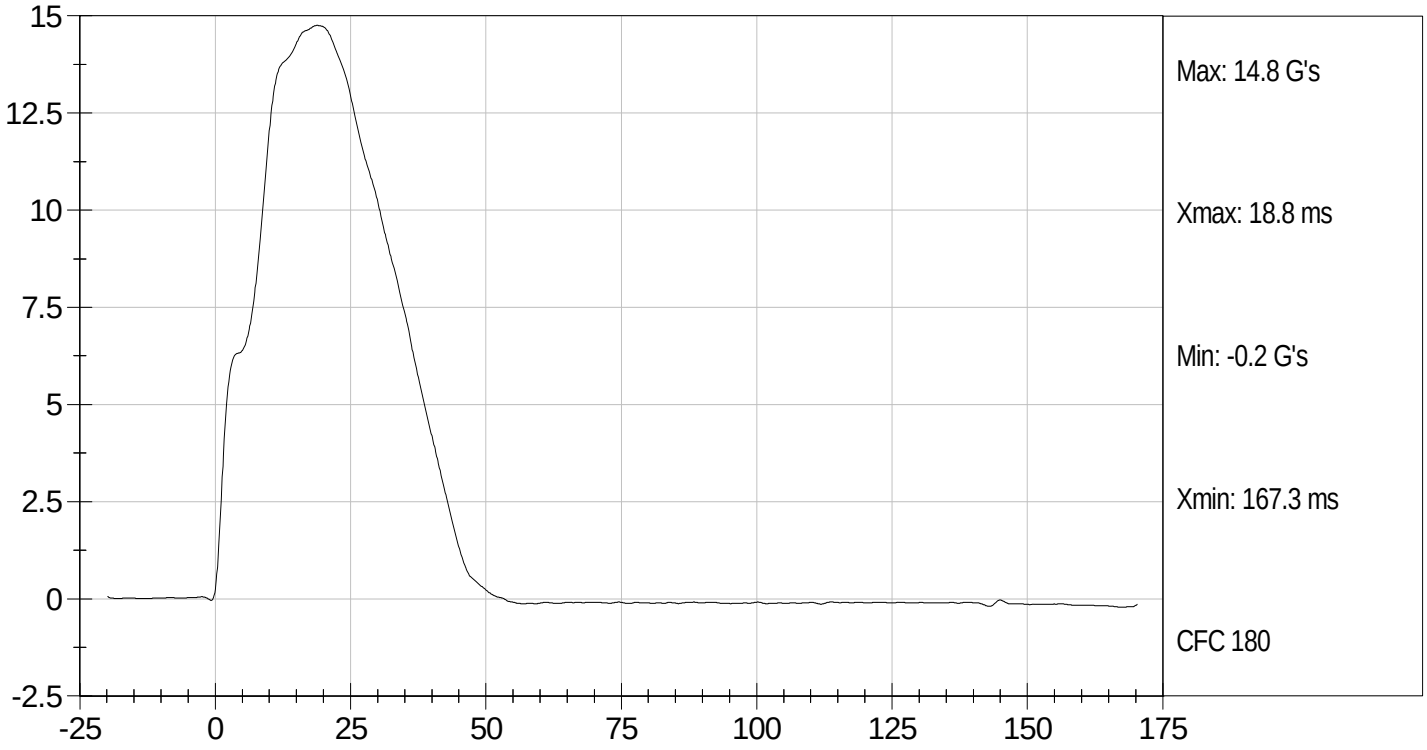
9/29/11
Test Date

David Winkelbauer
Approved By

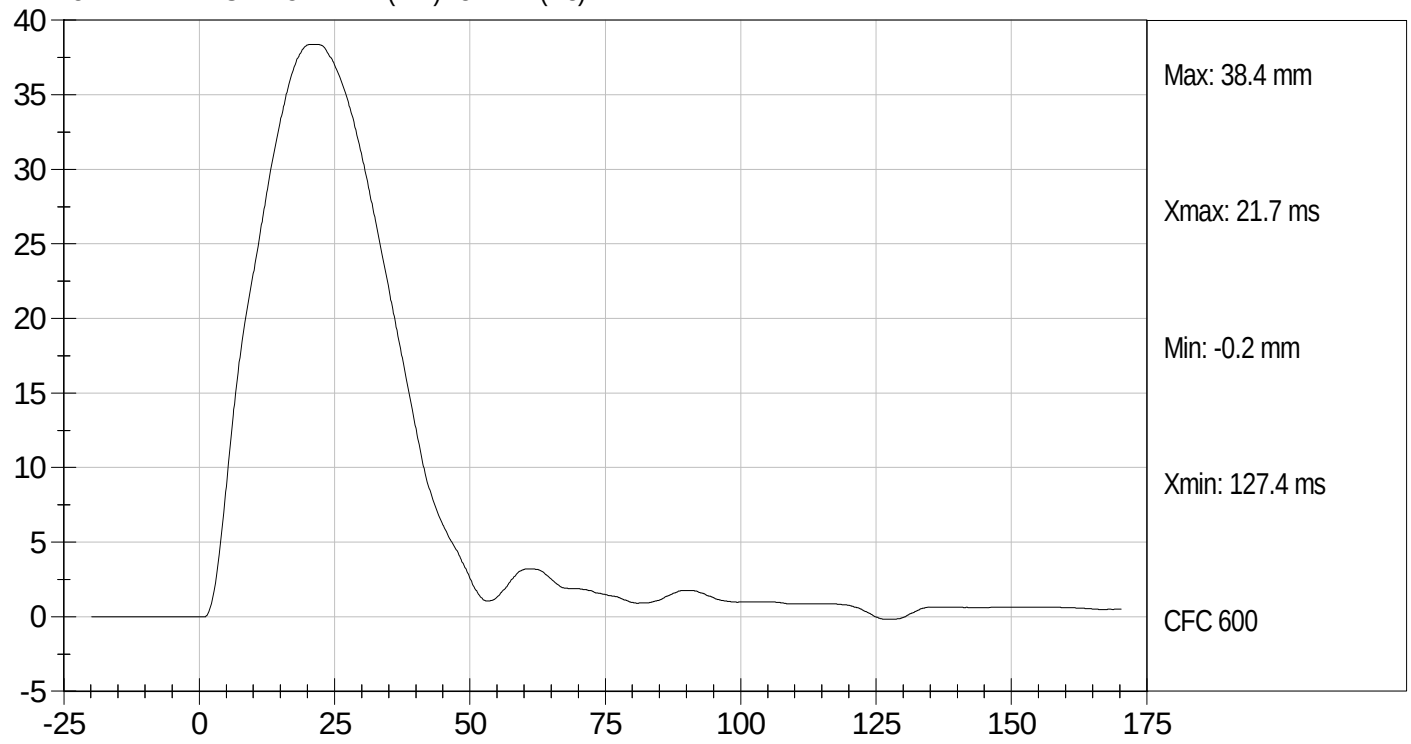
Test Desc: Thorax Without Arm
Component ID: D113245

Test Date: 9/29/11
Velocity: 14.25 ft/s, 4.34 m/s

PROBE (G's) vs TIME (ms)



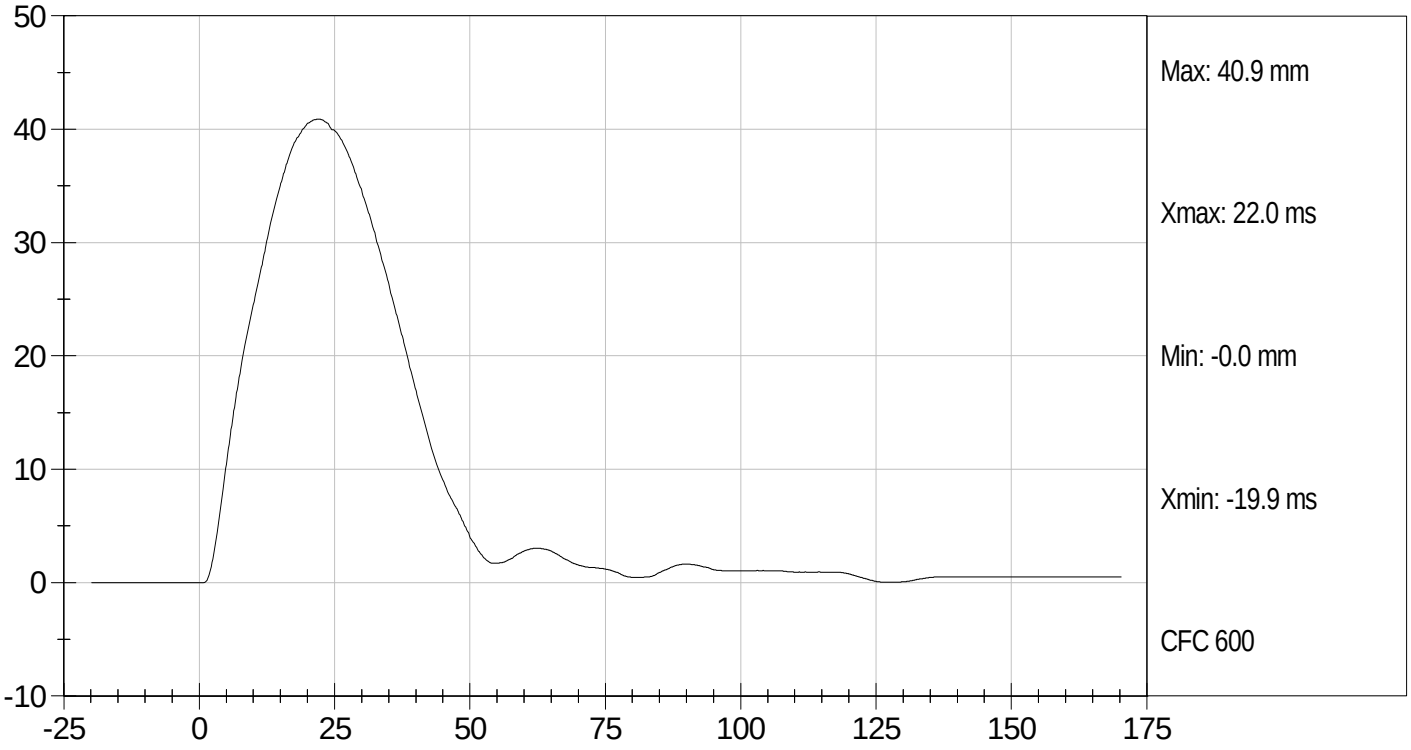
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



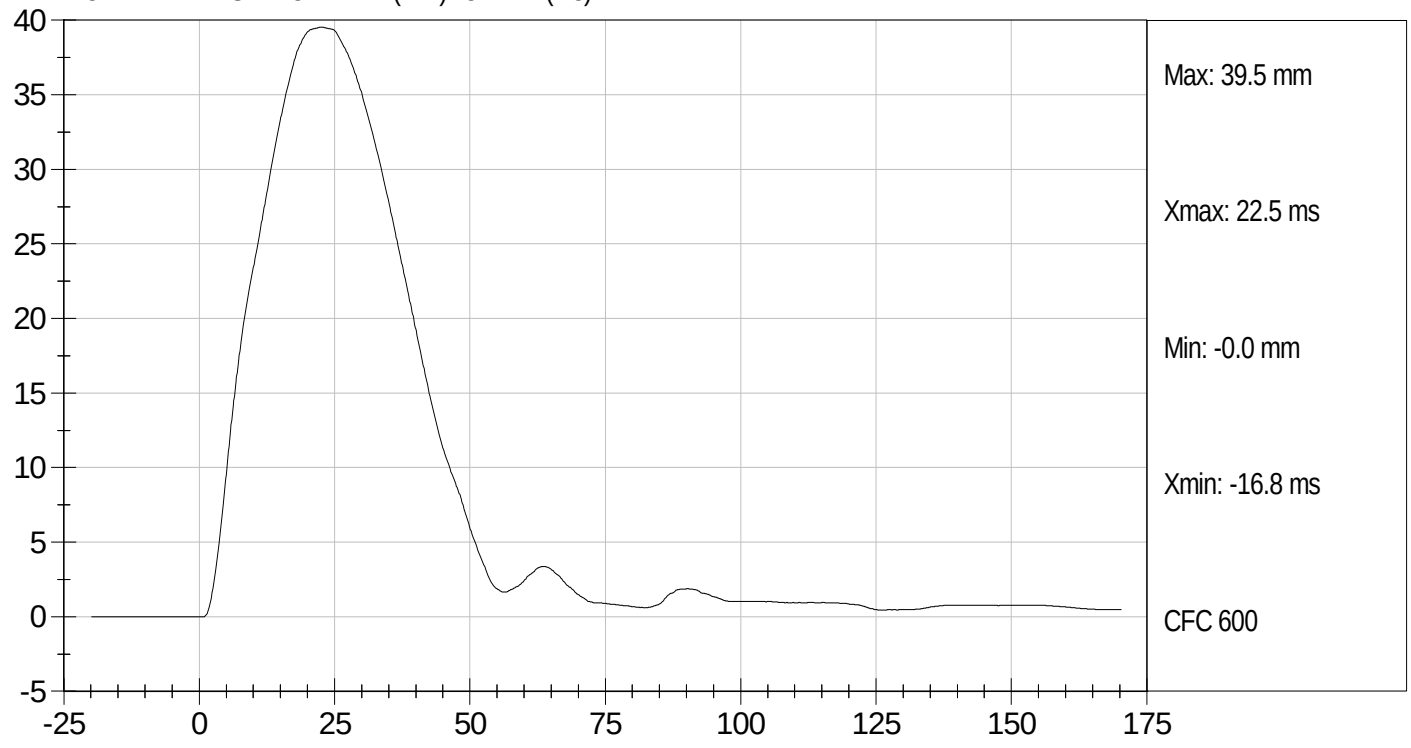
Test Desc: Thorax Without Arm
Component ID: D113245

Test Date: 9/29/11
Velocity: 14.25 ft/s, 4.34 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



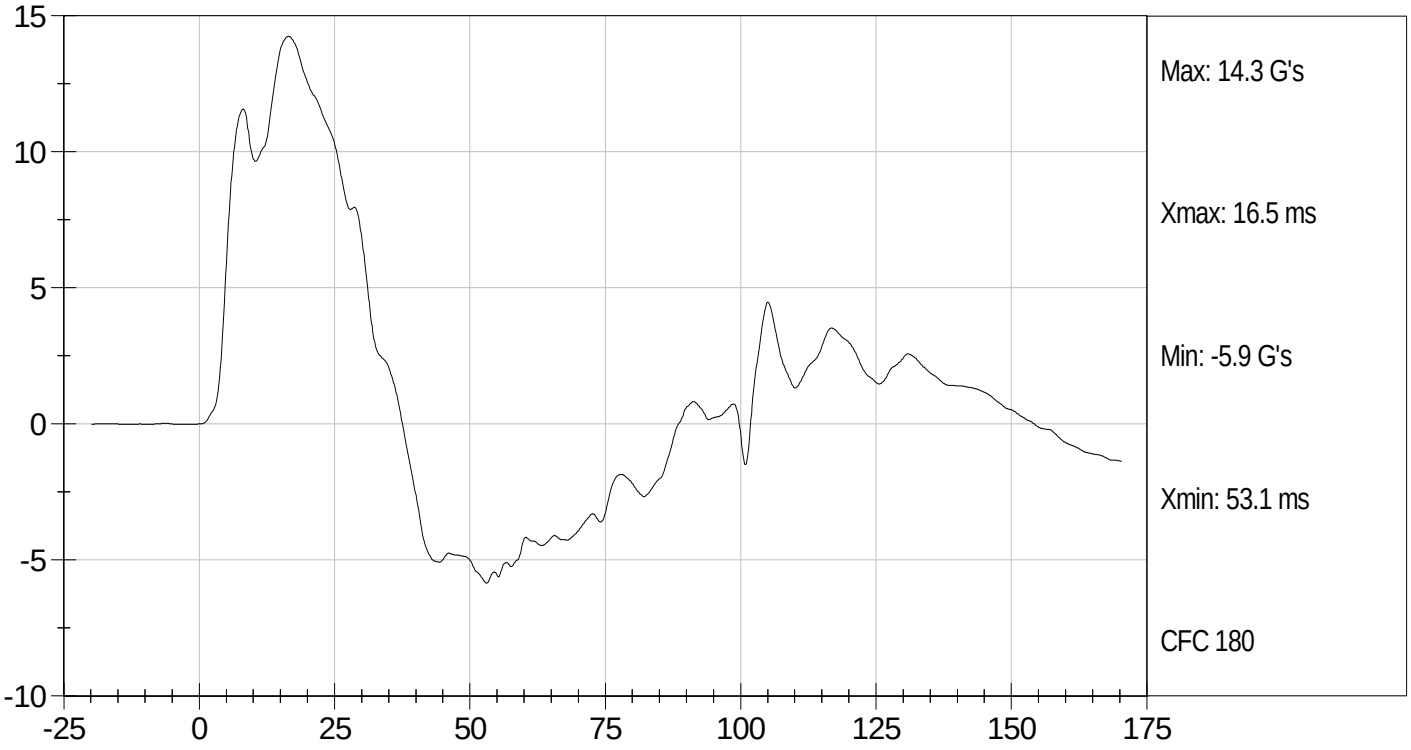
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



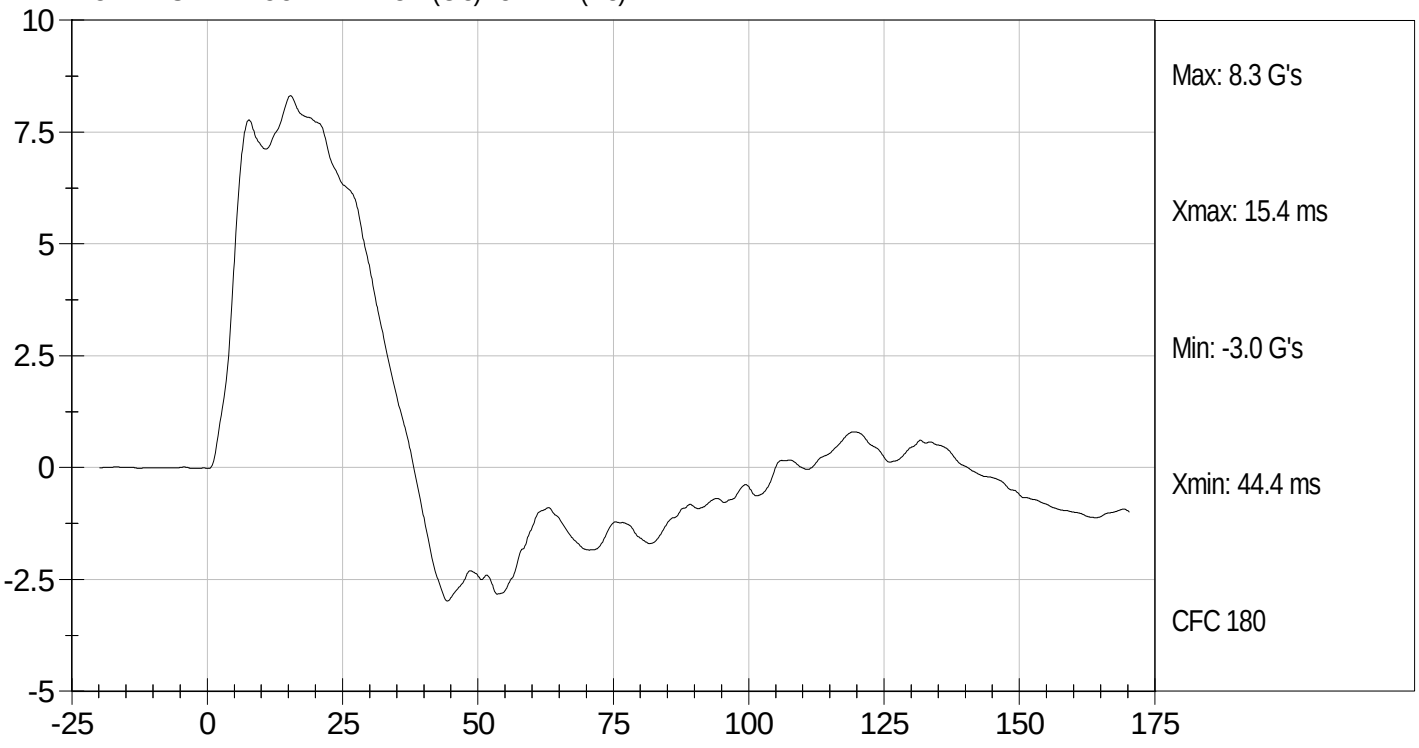
Test Desc: Thorax Without Arm
Component ID: D113245

Test Date: 9/29/11
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:** D113246

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	47	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	42	Pass
Lower Rib Displacement	mm	33 to 44	43	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

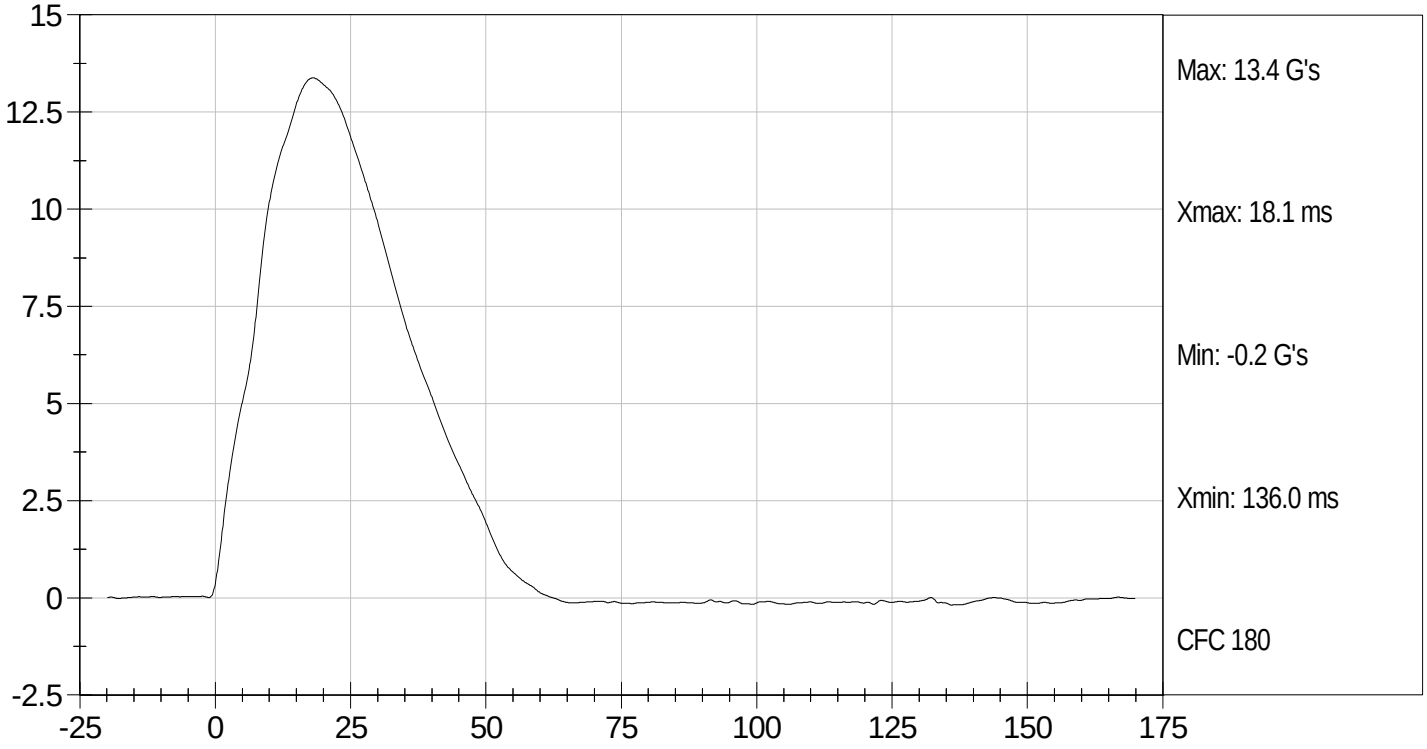
9/29/11
Test Date

David Winkelbauer
Approved By

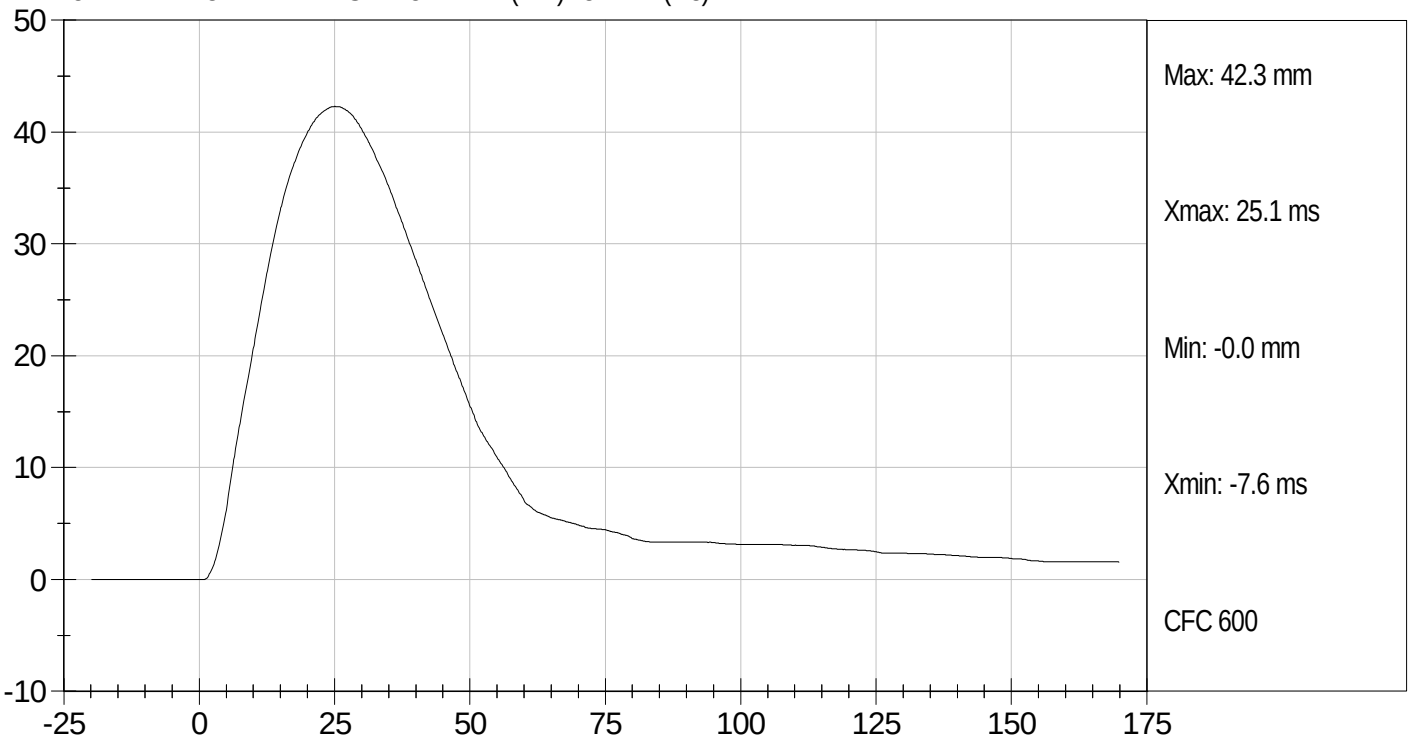
Test Desc: Abdomen Impact
Component ID: D113246

Test Date: 9/29/11
Velocity: 14.12 ft/s, 4.30 m/s

PROBE (G's) vs TIME (ms)



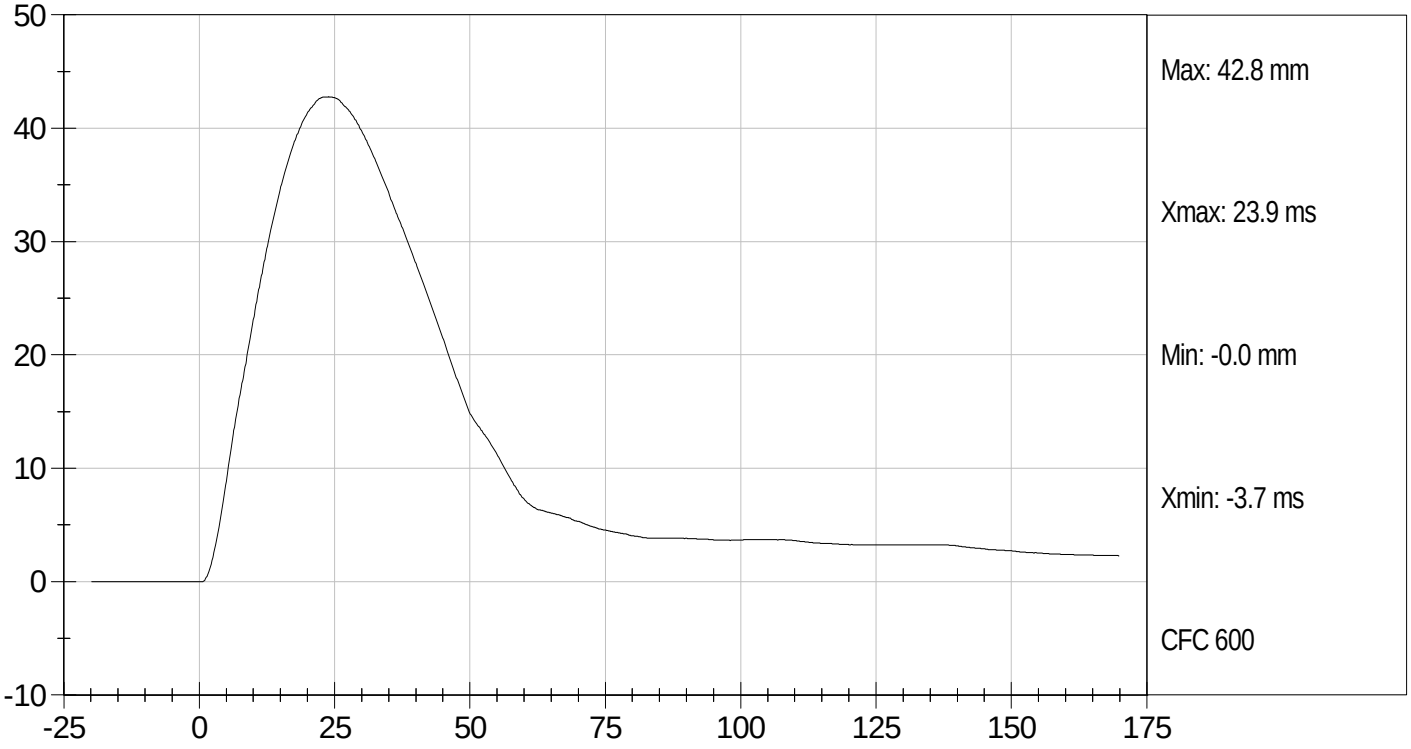
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



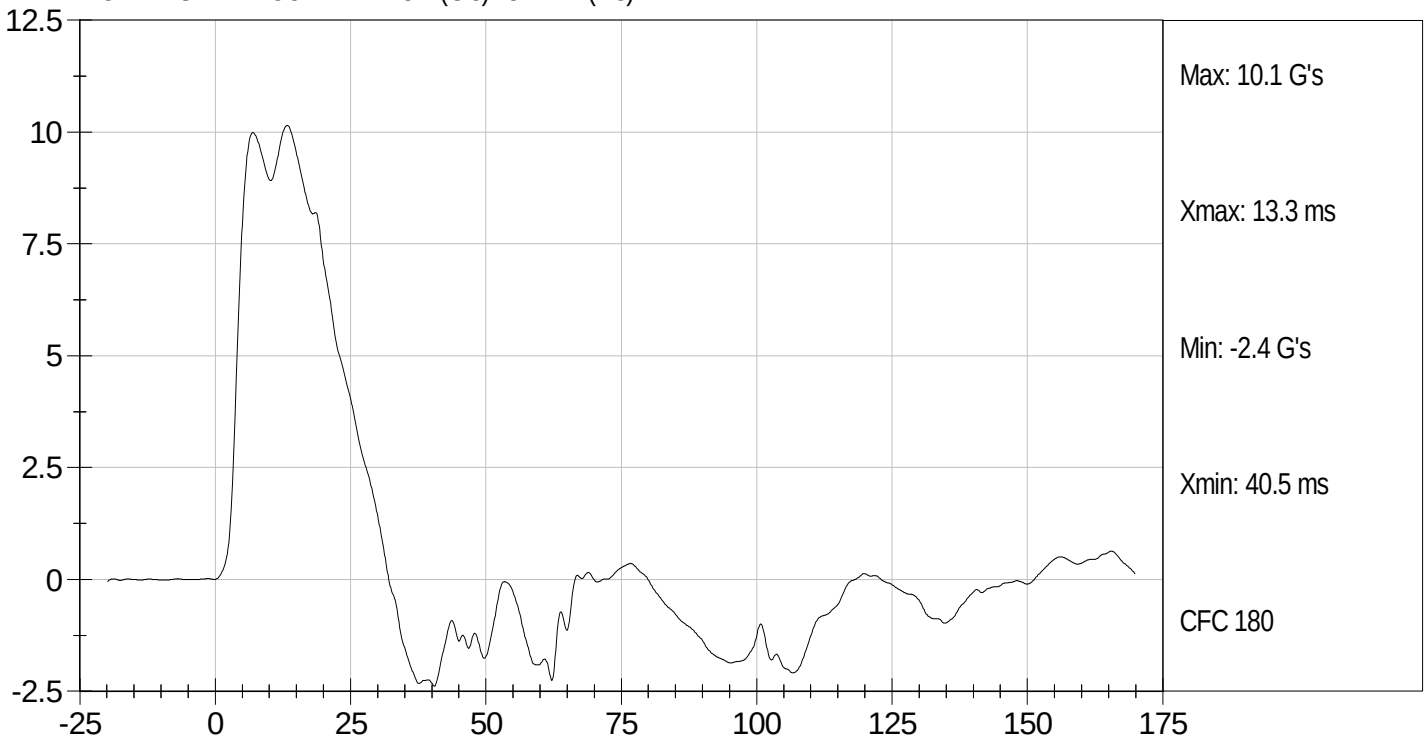
Test Desc: Abdomen Impact
Component ID: D113246

Test Date: 9/29/11
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: 306 **Test I.D:** D113247

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	41	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	39	Pass
Peak Acetabulum Force	N	3600 to 4300	3754	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

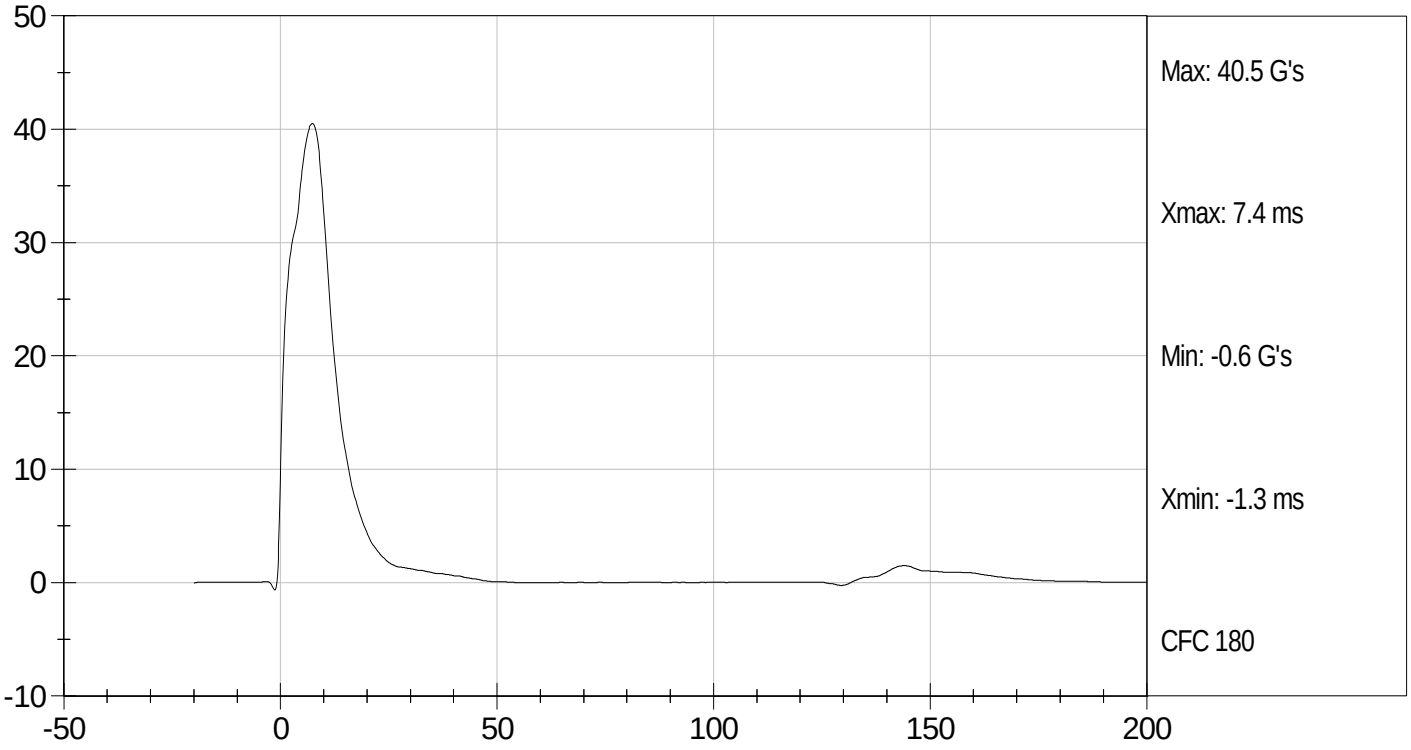
9/29/11
Test Date

David Winkelbauer
Approved By

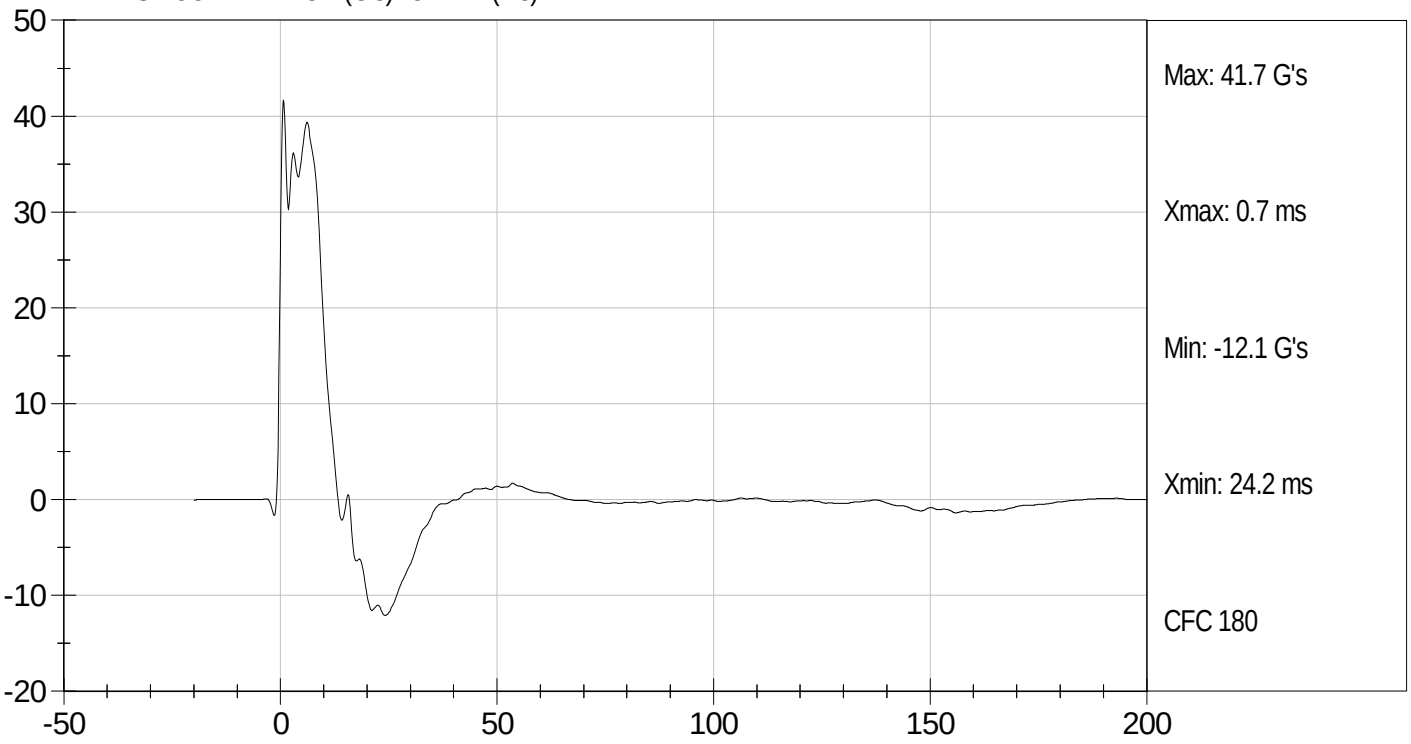
Test Desc: Pelvis Impact
Component ID: D113247

Test Date: 9/29/11
Velocity: 22.2 ft/s, 6.77 m/s

PROBE (G's) vs TIME (ms)

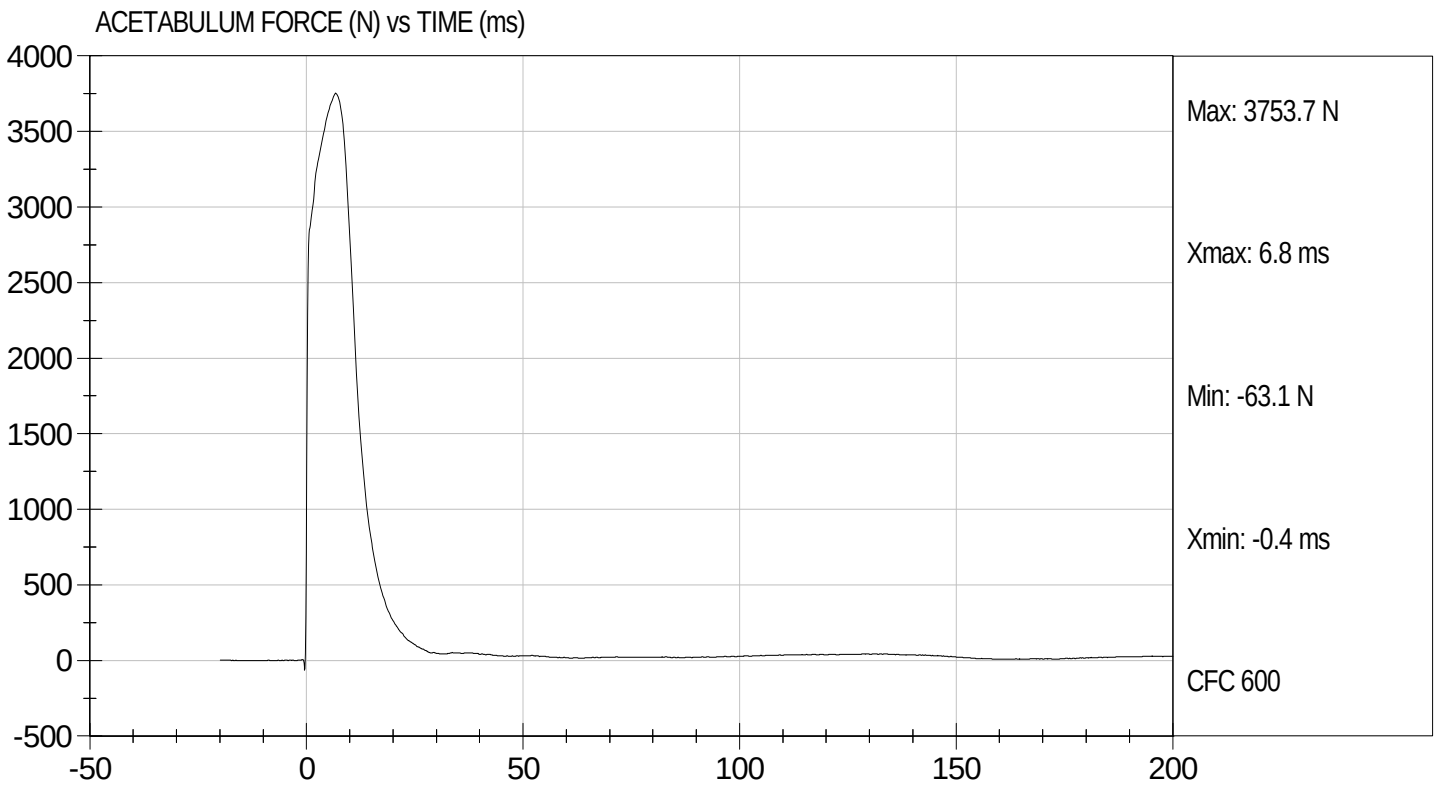


PELVIS ACCELERATION (G's) vs TIME (ms)



Test Desc: Pelvis Impact
Component ID: D113247

Test Date: 9/29/11
Velocity: 22.2 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D113248

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	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	5064	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

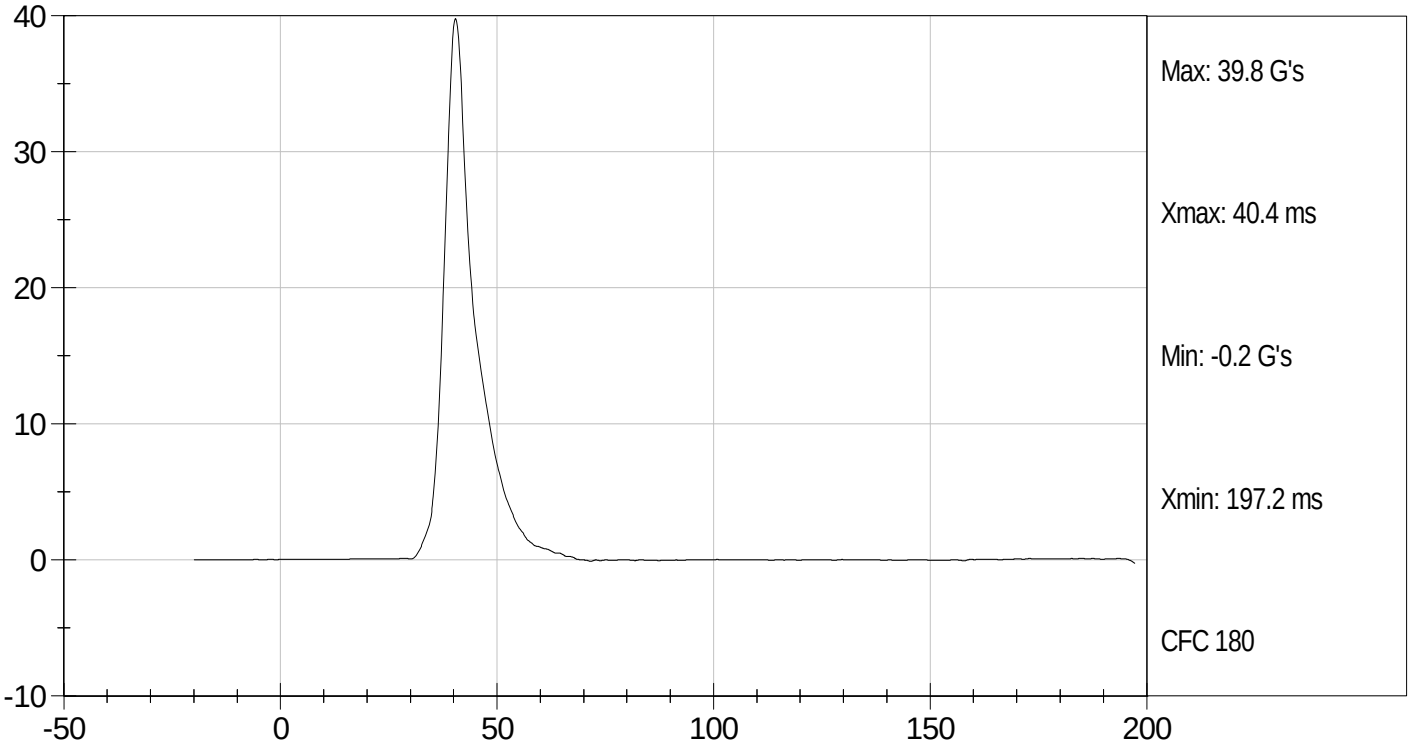
9/29/11
Test Date

David Winkelbauer
Approved By

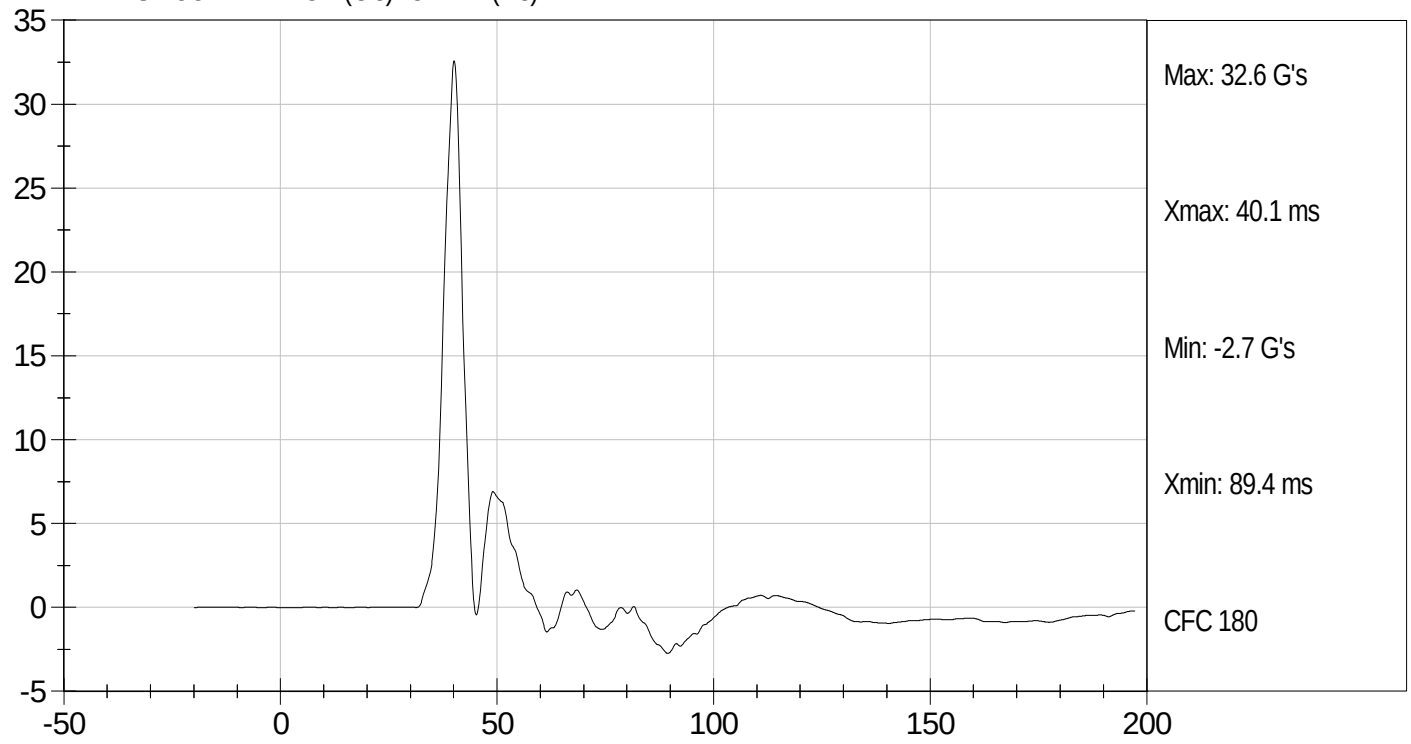
Test Desc: Iliac Impact
Component ID: D113248

Test Date: 9/29/11
Velocity: 13.88 ft/s, 4.23 m/s

PROBE (G's) vs TIME (ms)

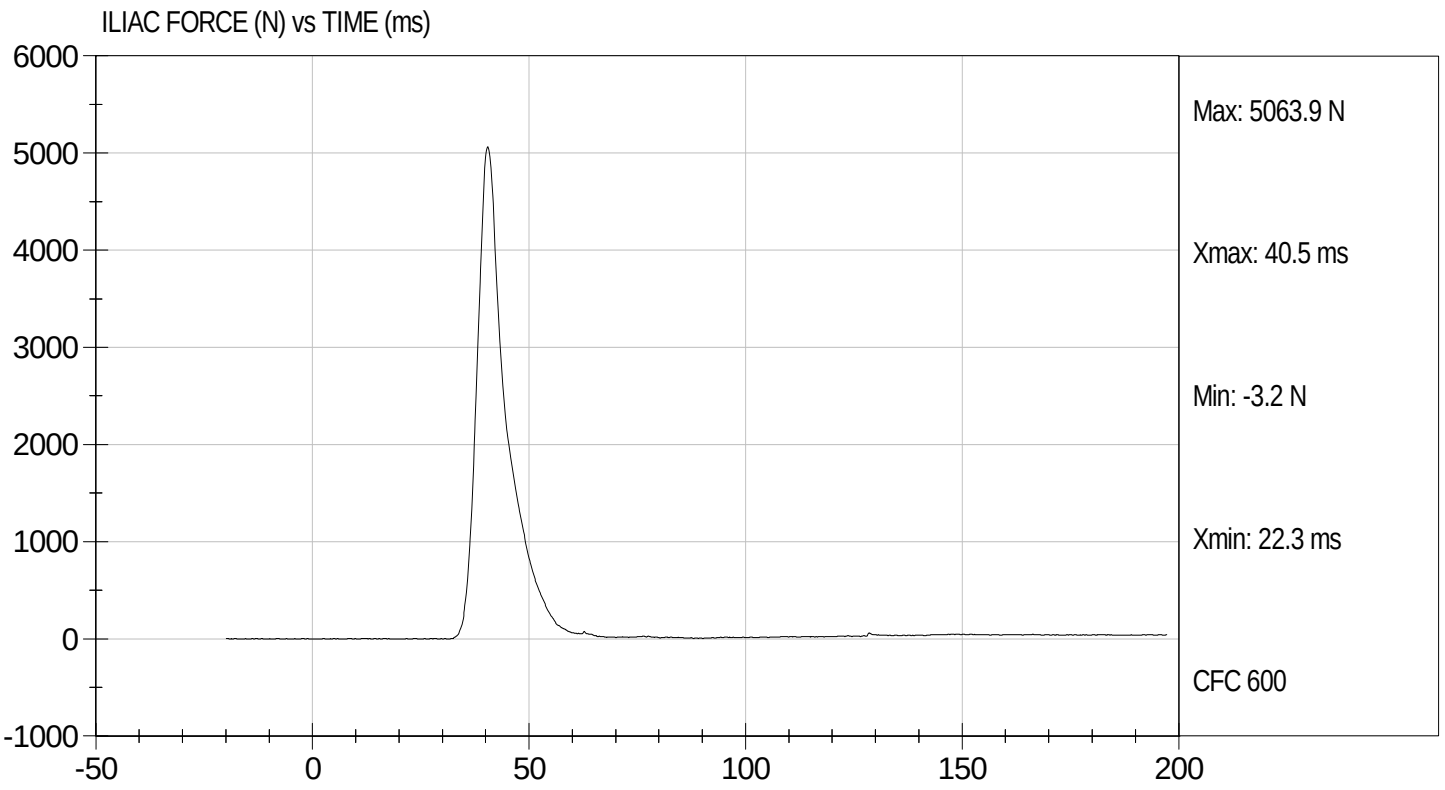


PELVIS ACCELERATION (G's) vs TIME (ms)



Test Desc: Iliac Impact
Component ID: D113248

Test Date: 9/29/11
Velocity: 13.88 ft/s, 4.23 m/s



MGA RESEARCH CORPORATION

HEAD DROP TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D113331

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Peak Resultant Acceleration	G's	115 to 137	120	Pass
Peak Lateral Acceleration	G's	+/- 15	-3.3	Pass
Unimodal	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

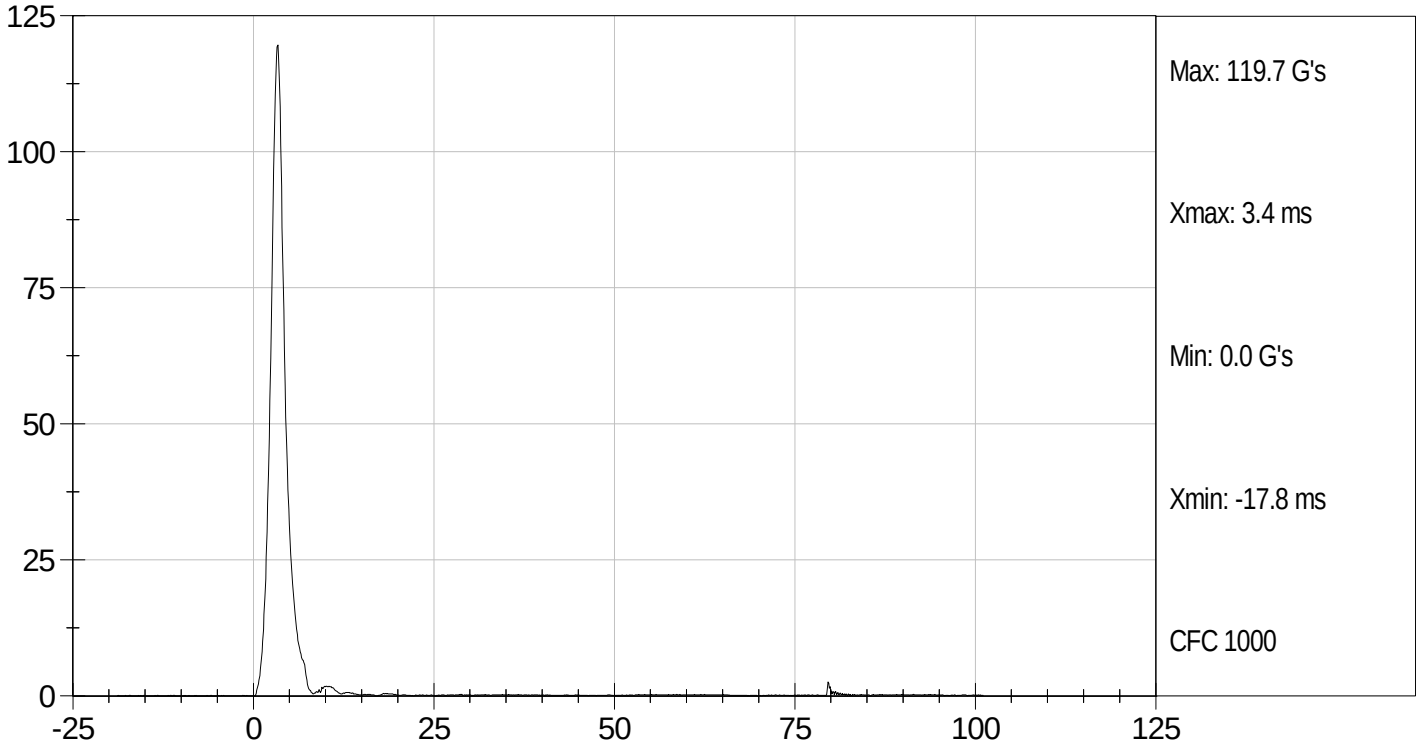
10/5/11
Test Date

David Winkelbauer
Approved By

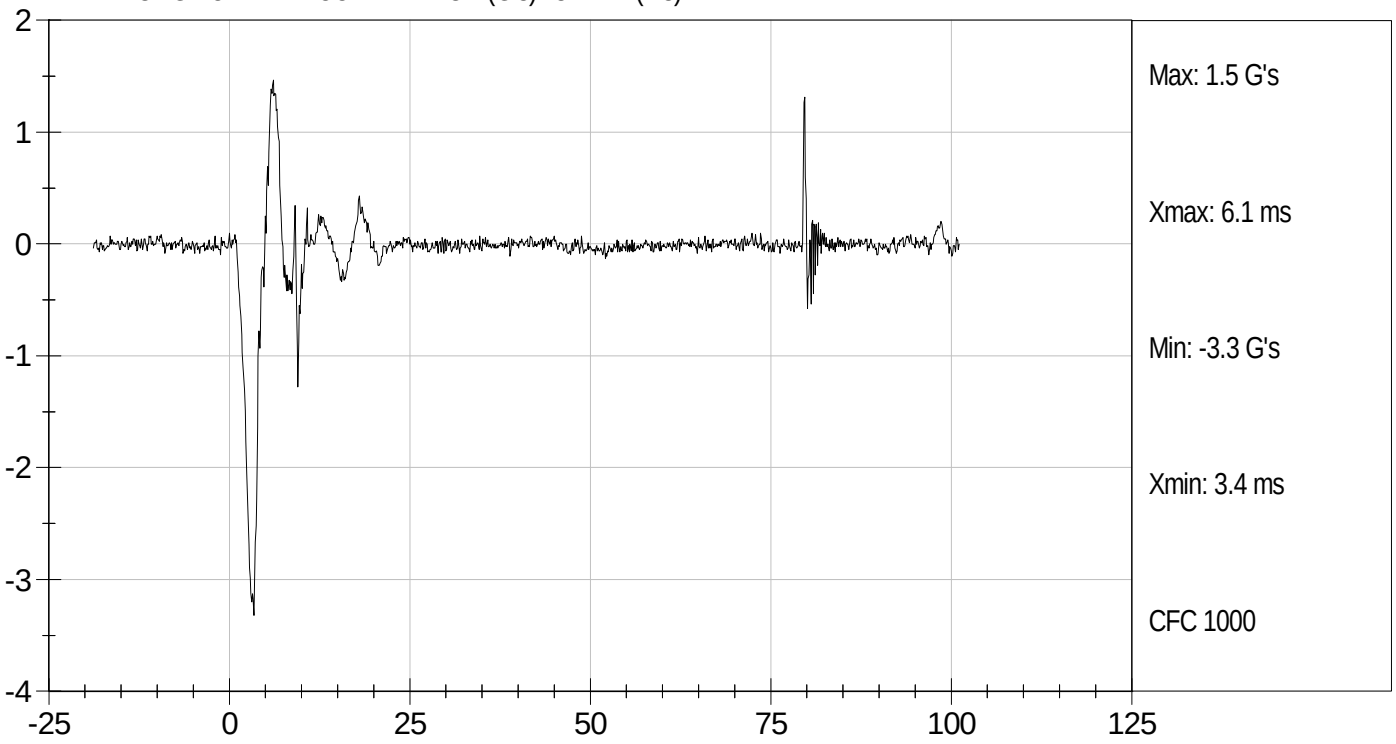
Test Desc: Head Drop
Component ID: D113331

Test Date: 10/5/11
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:** D113332

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.9	Pass
Humidity		%	10 to 70	41	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.40	Pass
	15 ms	m/s	3.30 to 4.10	3.40	Pass
	20 ms	m/s	4.40 to 5.40	4.50	Pass
	25 ms	m/s	5.40 to 6.10	5.47	Pass
	25-100 ms	m/s	5.50 to 6.20	5.62	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	59	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	113	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

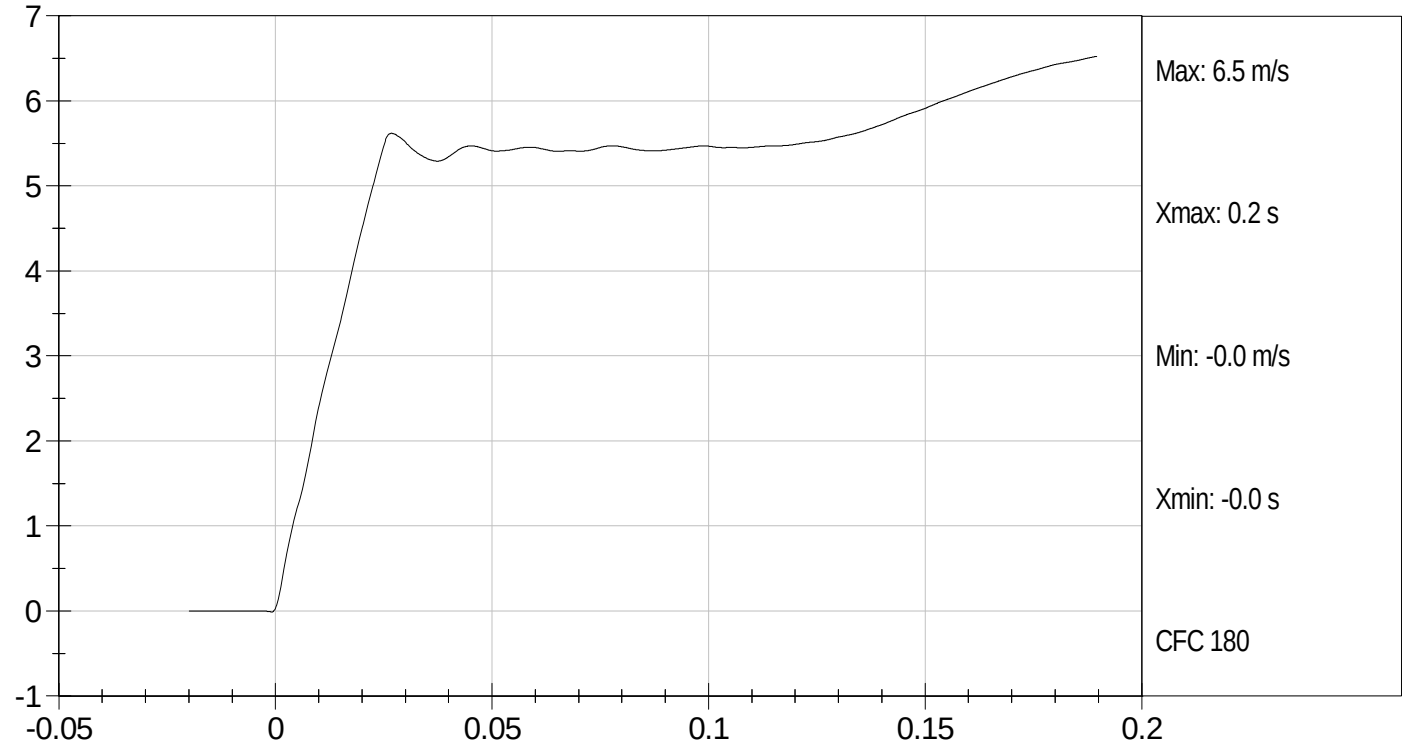
10/5/11
Test Date

David Winkelbauer
Approved By

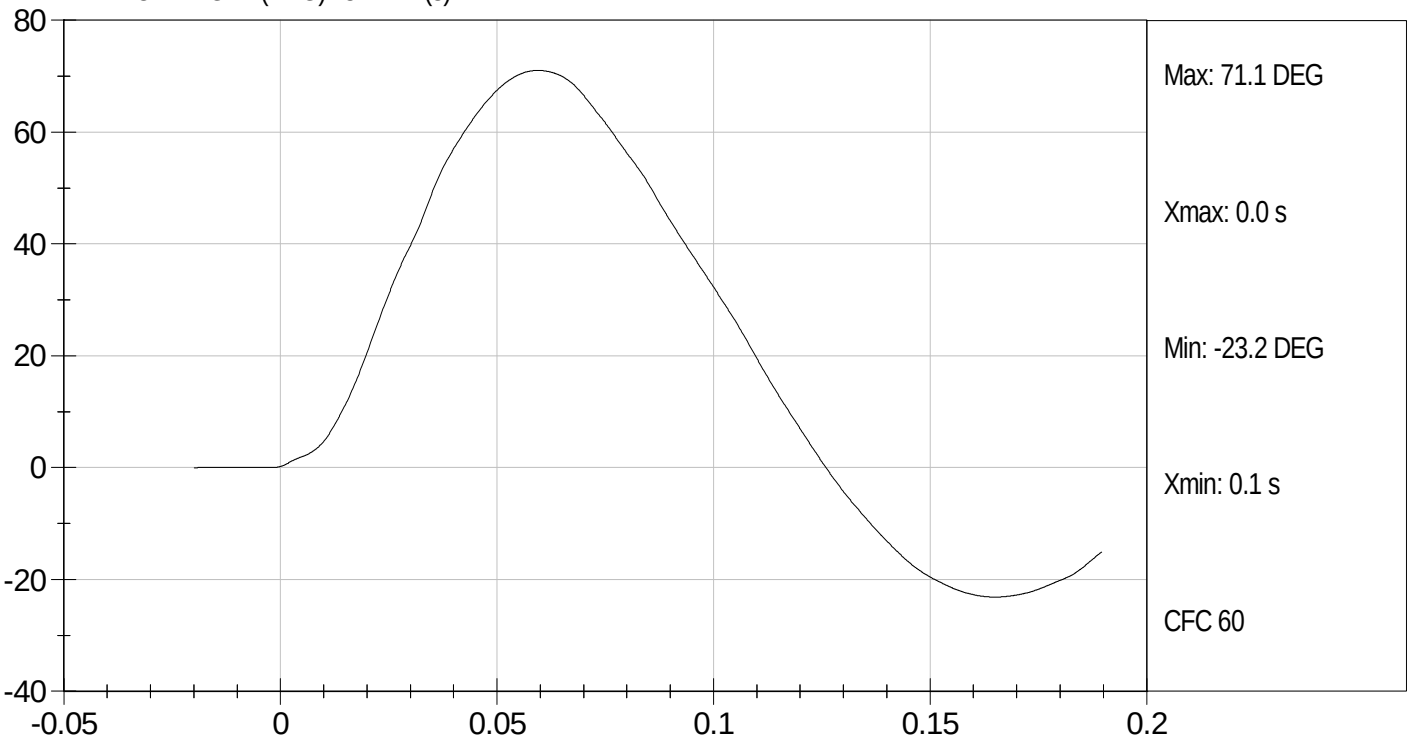
Test Desc: Neck Bending
Component ID: D113332

Test Date: 10/5/11
Velocity: 18.32 ft/s, 5.58 m/s

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



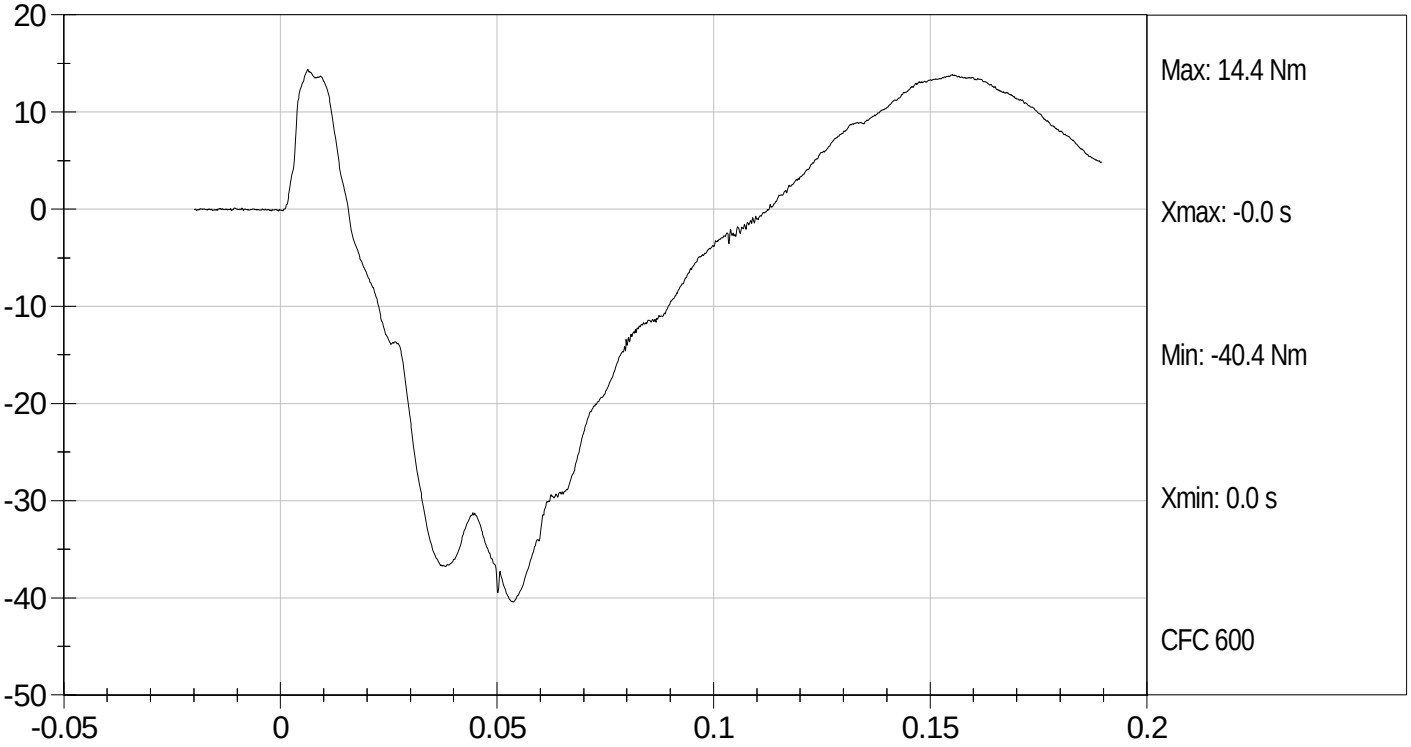
FLEXION ANGLE (DEG) vs TIME (s)



Test Desc: Neck Bending
Component ID: D113332

Test Date: 10/5/11
Velocity: 18.32 ft/s, 5.58 m/s

OCCIPITAL MOMENT (Nm) vs TIME (s)



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D113333

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	42	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	30	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
		Overall Test Results		Pass

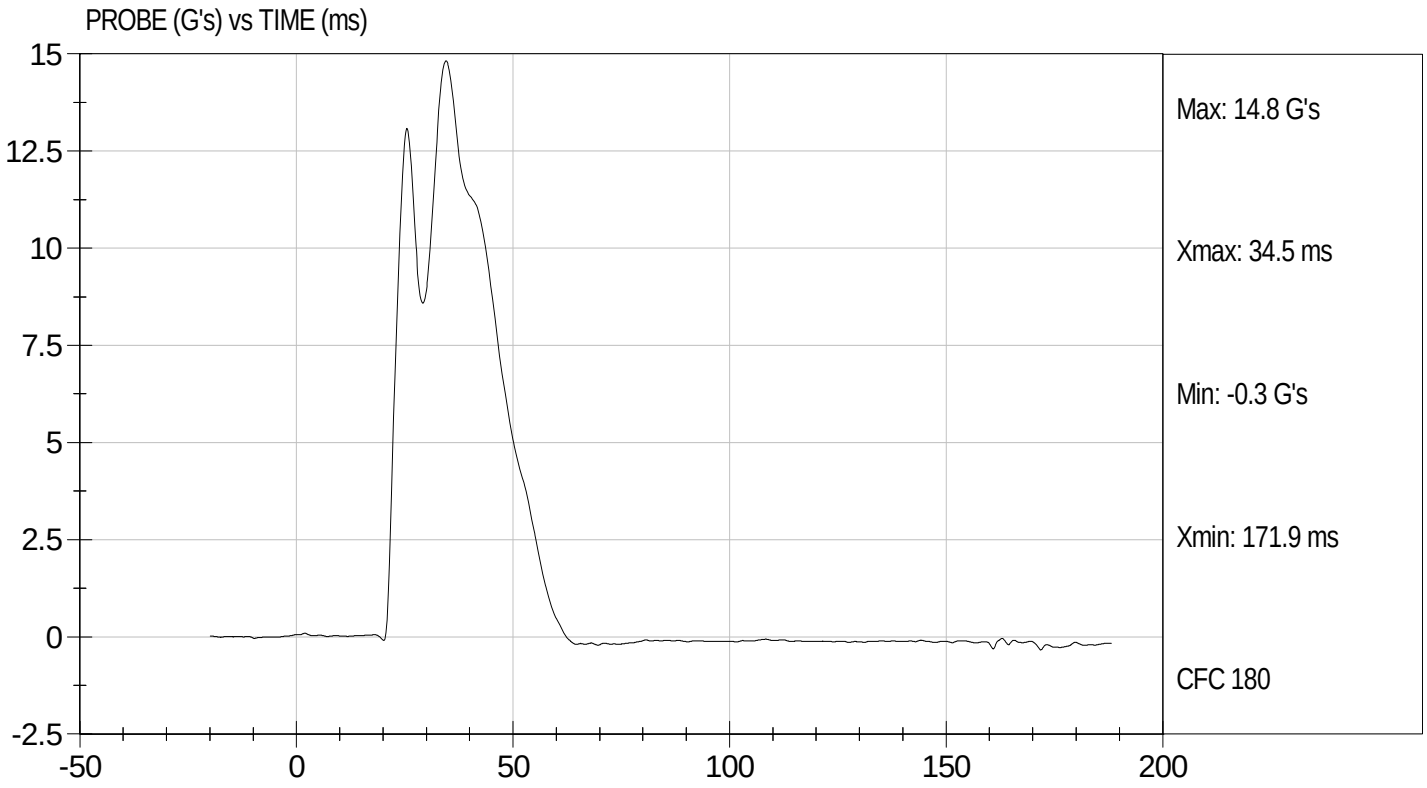
Jessica Hall
Laboratory Technician

10/5/11
Test Date

David Winkelbauer
Approved By

Test Desc: Shoulder Impact
Component ID: D113333

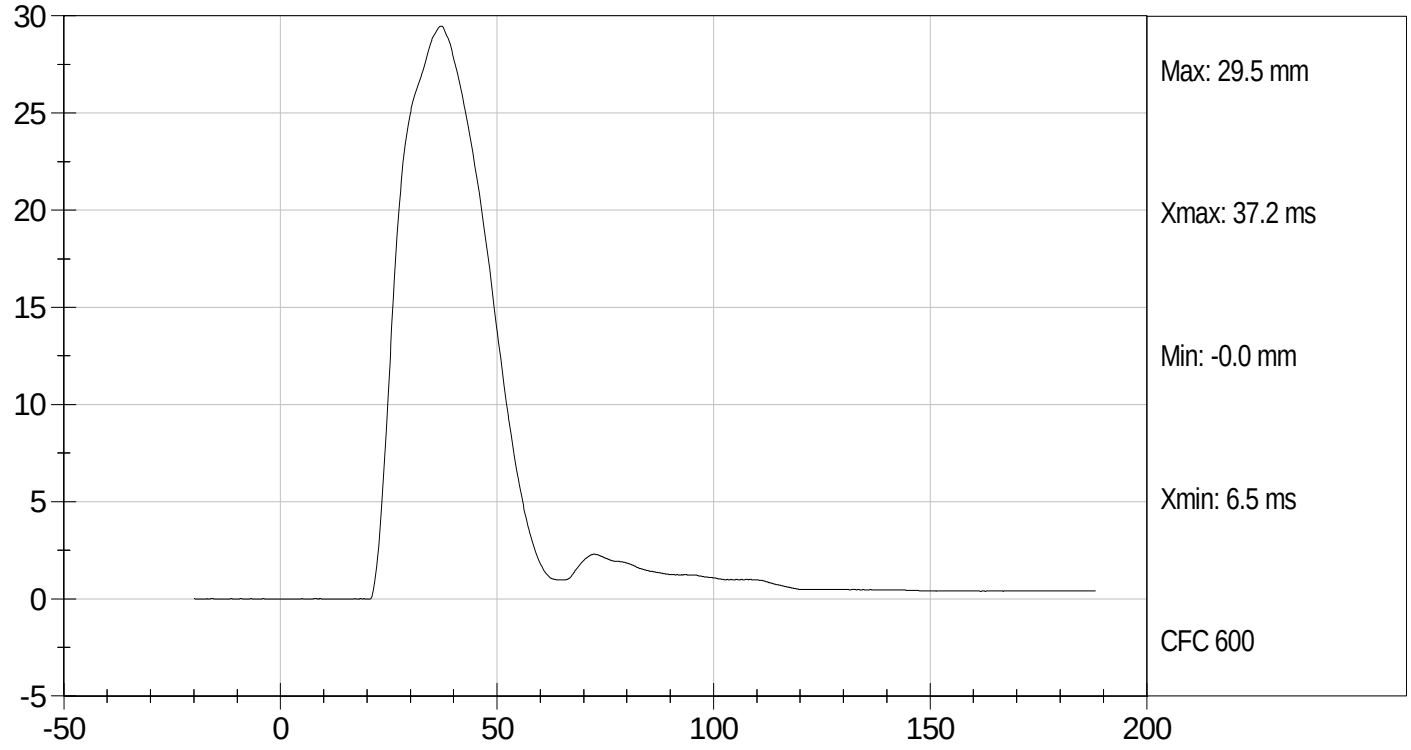
Test Date: 10/5/11
Velocity: 14.36 ft/s, 4.38 m/s



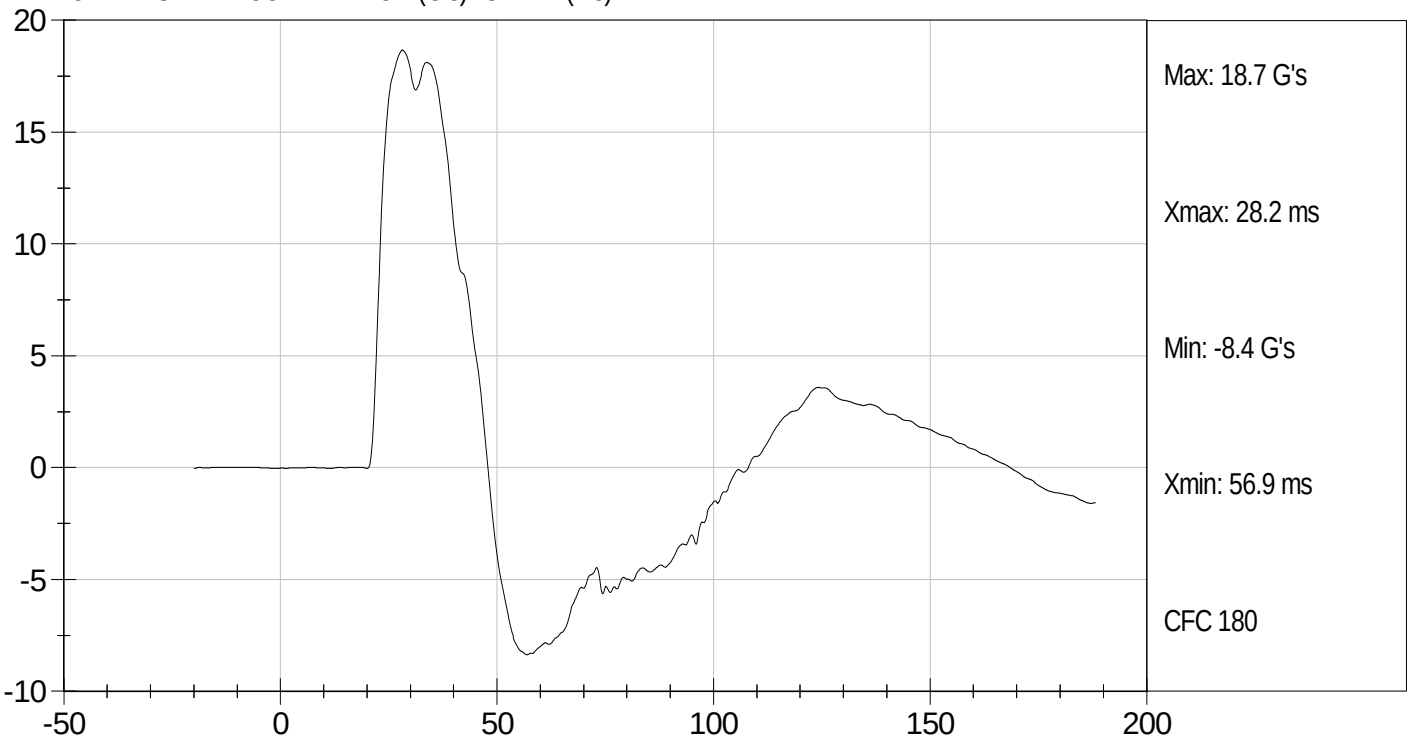
Test Desc: Shoulder Impact
Component ID: D113333

Test Date: 10/5/11
Velocity: 14.36 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:** D113334

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	42	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	33	Pass
Upper Rib Displacement	mm	25 to 32	29	Pass
Middle Rib Displacement	mm	30 to 36	32	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	39	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
		Overall Test Results		Pass

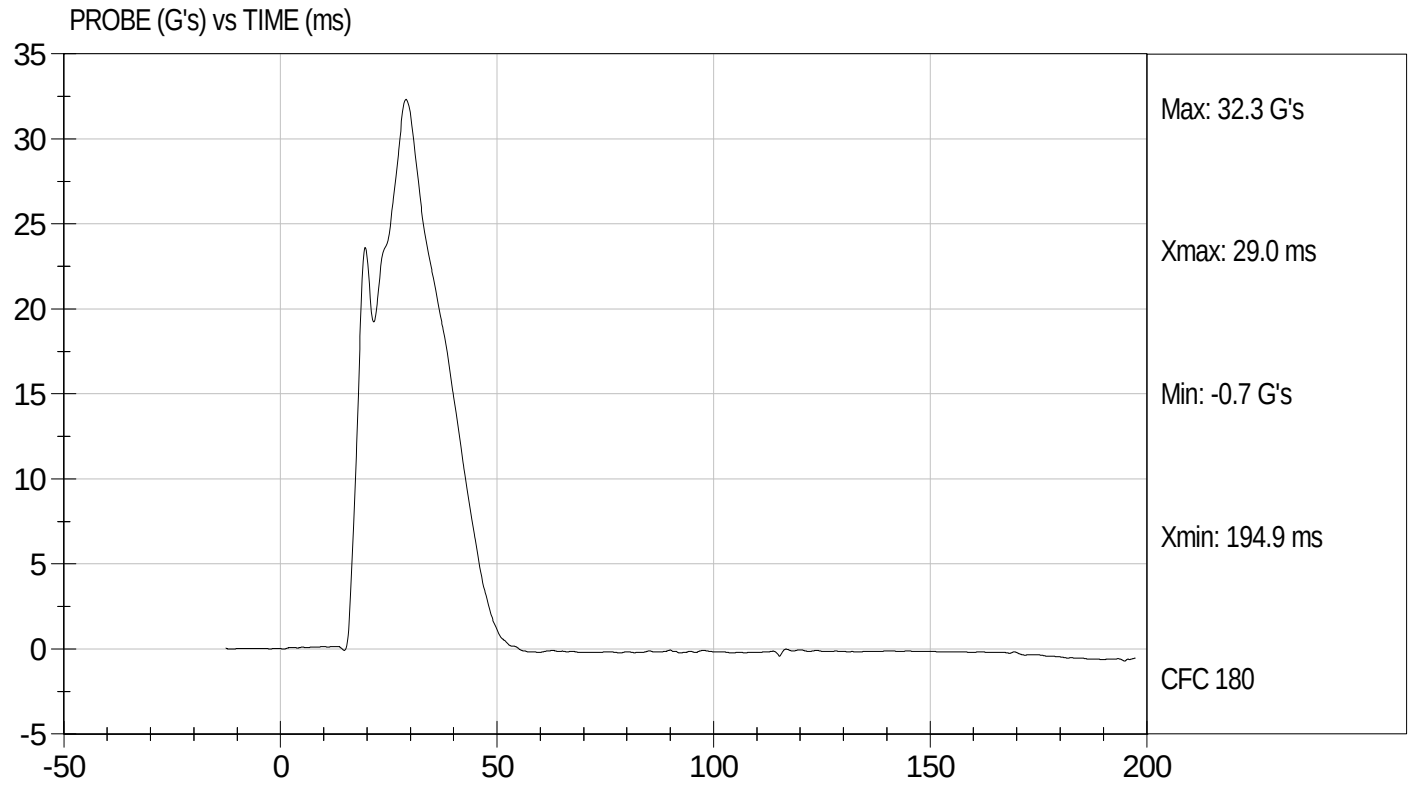
Jessica Hall
Laboratory Technician

10/5/11
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax With Arm
Component ID: D113334

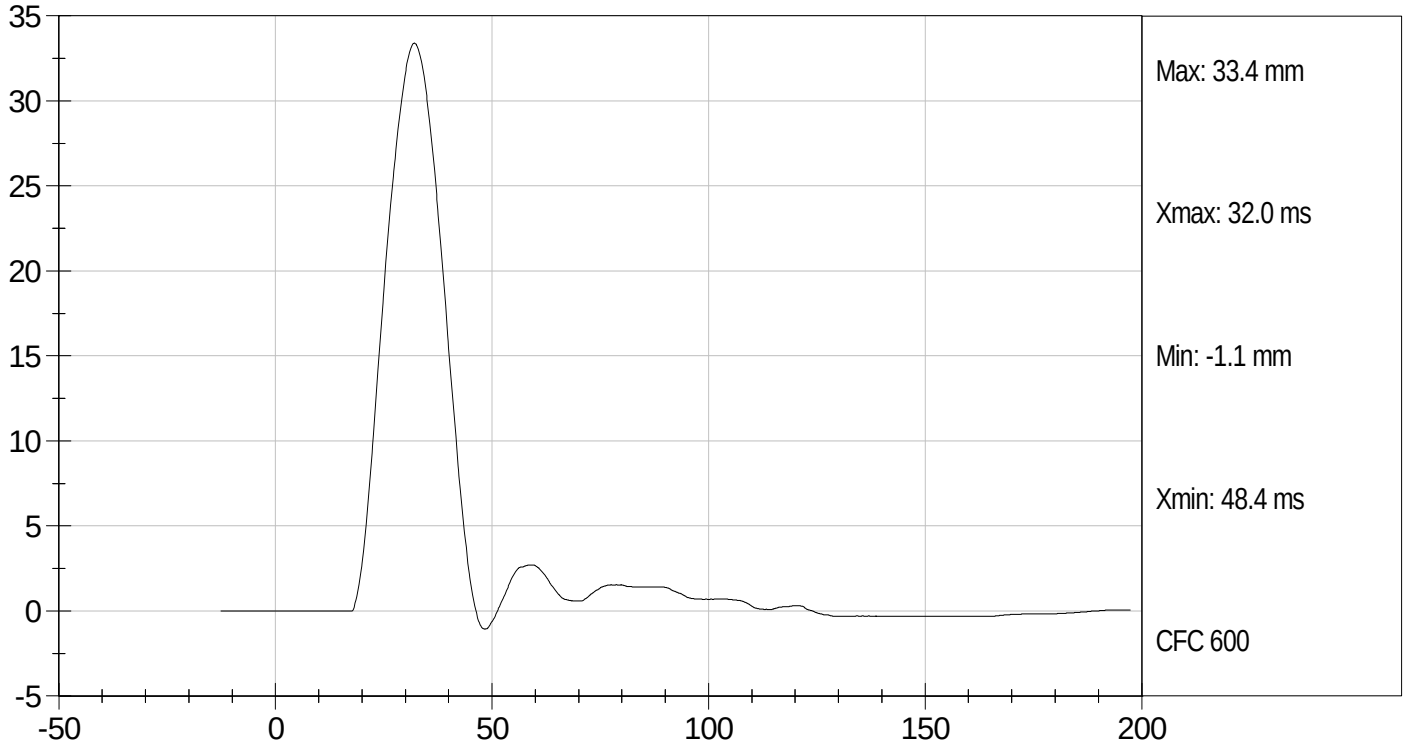
Test Date: 10/5/11
Velocity: 22.22 ft/s, 6.77 m/s



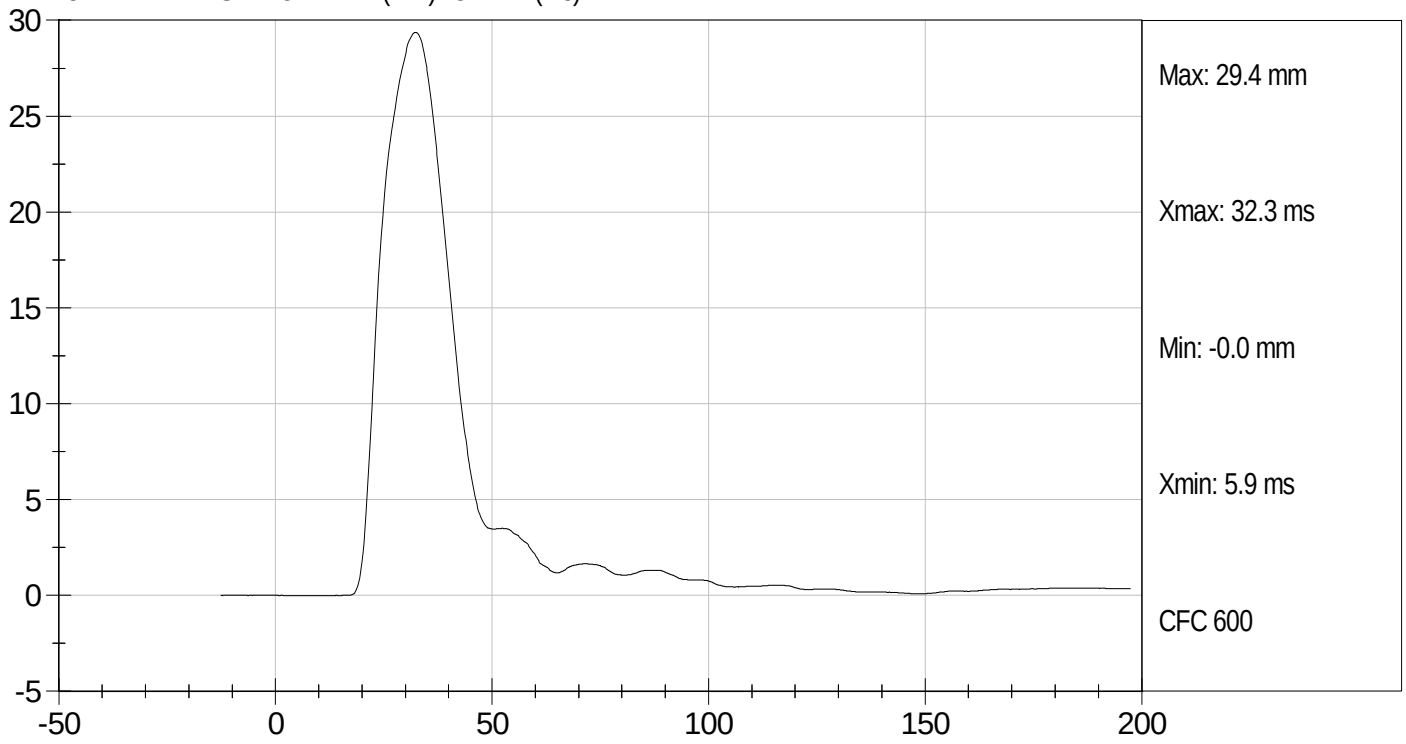
Test Desc: Thorax With Arm
Component ID: D113334

Test Date: 10/5/11
Velocity: 22.22 ft/s, 6.77 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



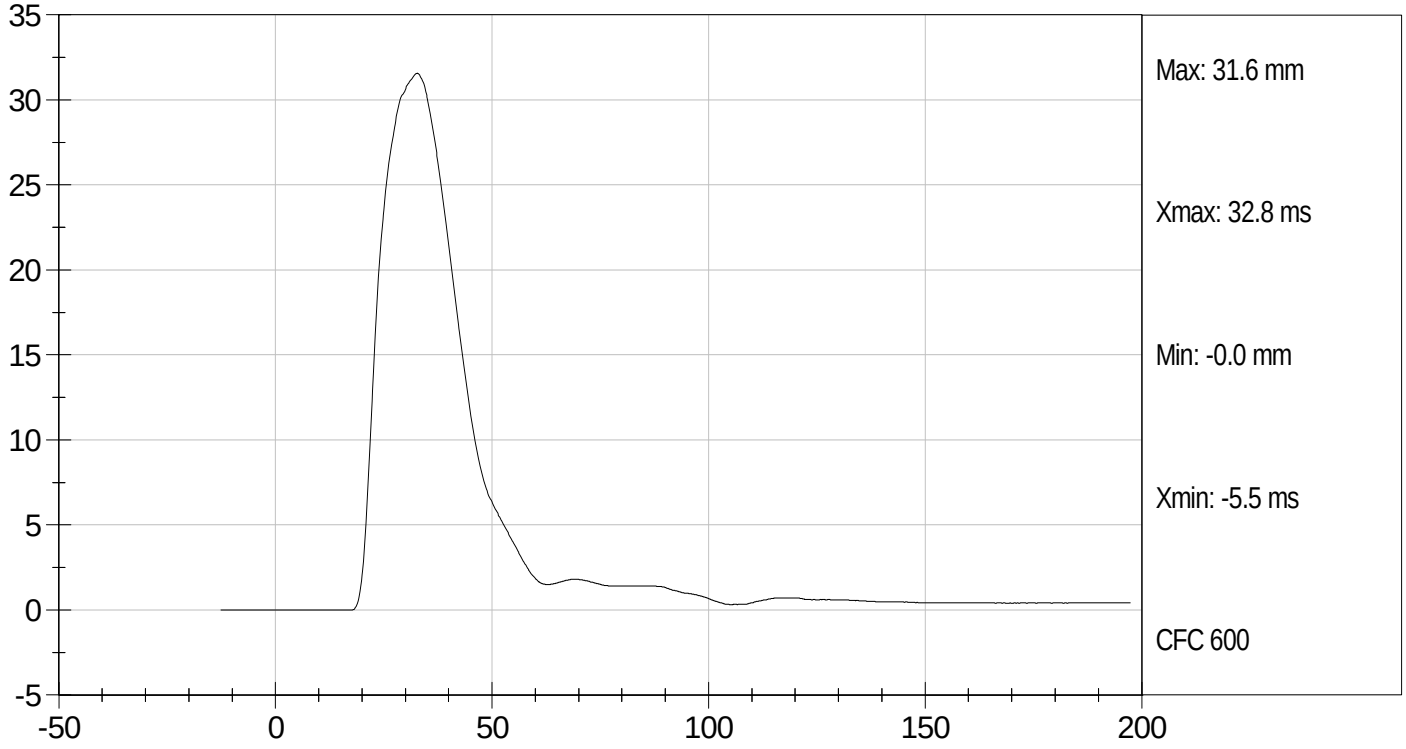
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



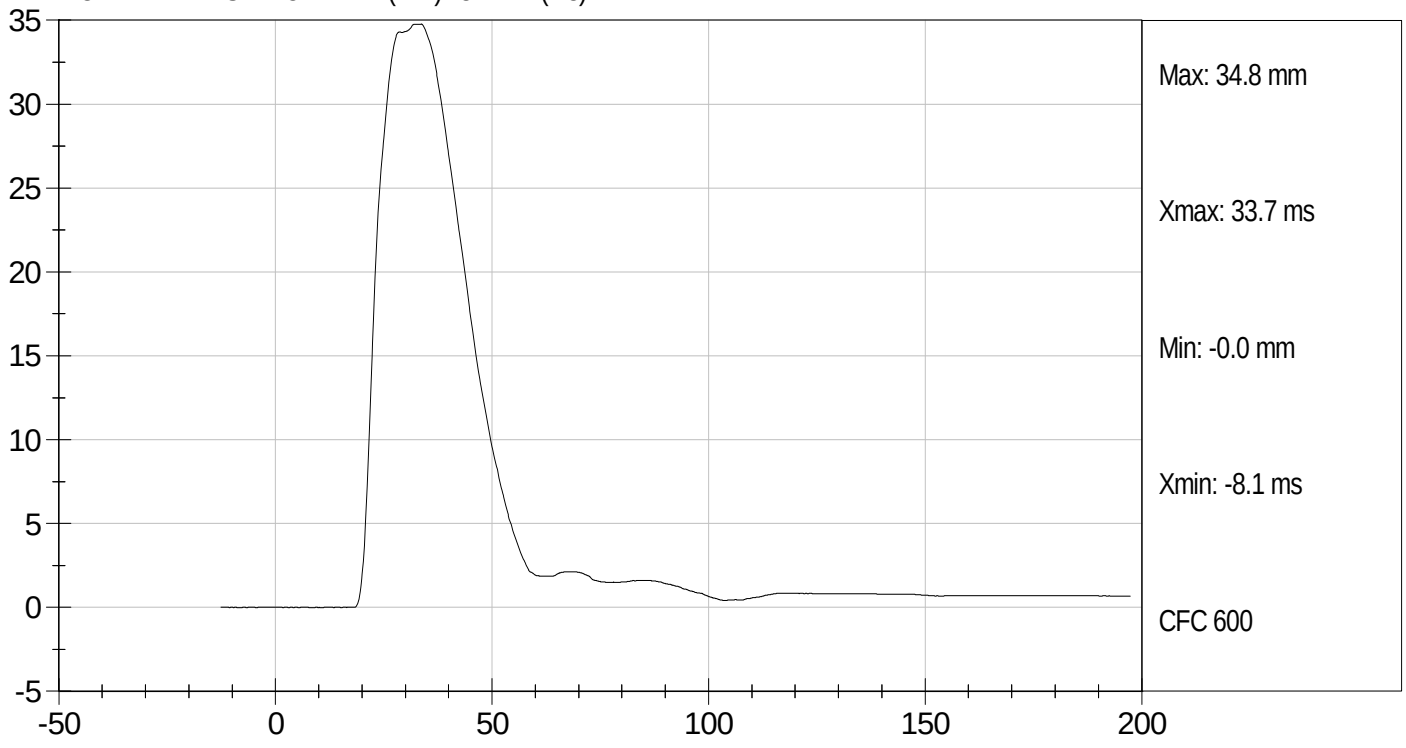
Test Desc: Thorax With Arm
Component ID: D113334

Test Date: 10/5/11
Velocity: 22.22 ft/s, 6.77 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



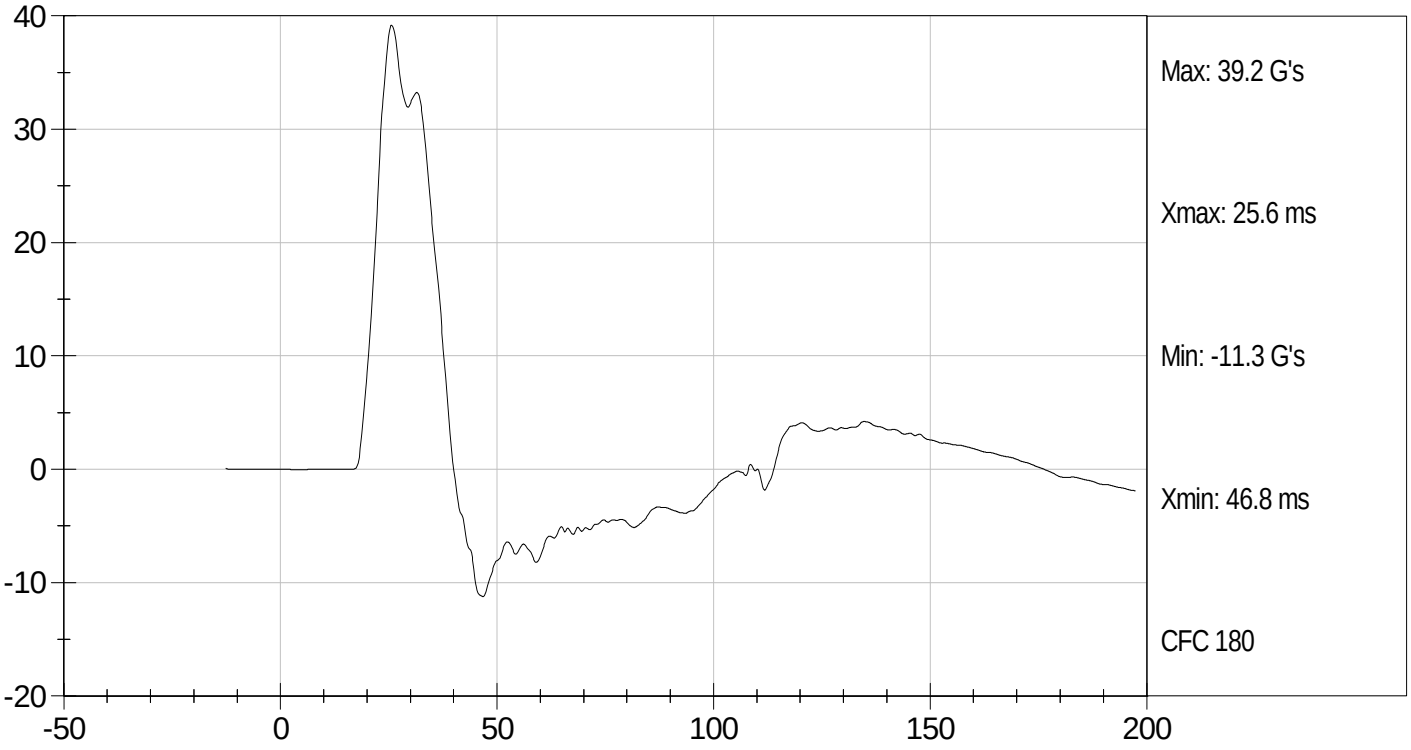
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



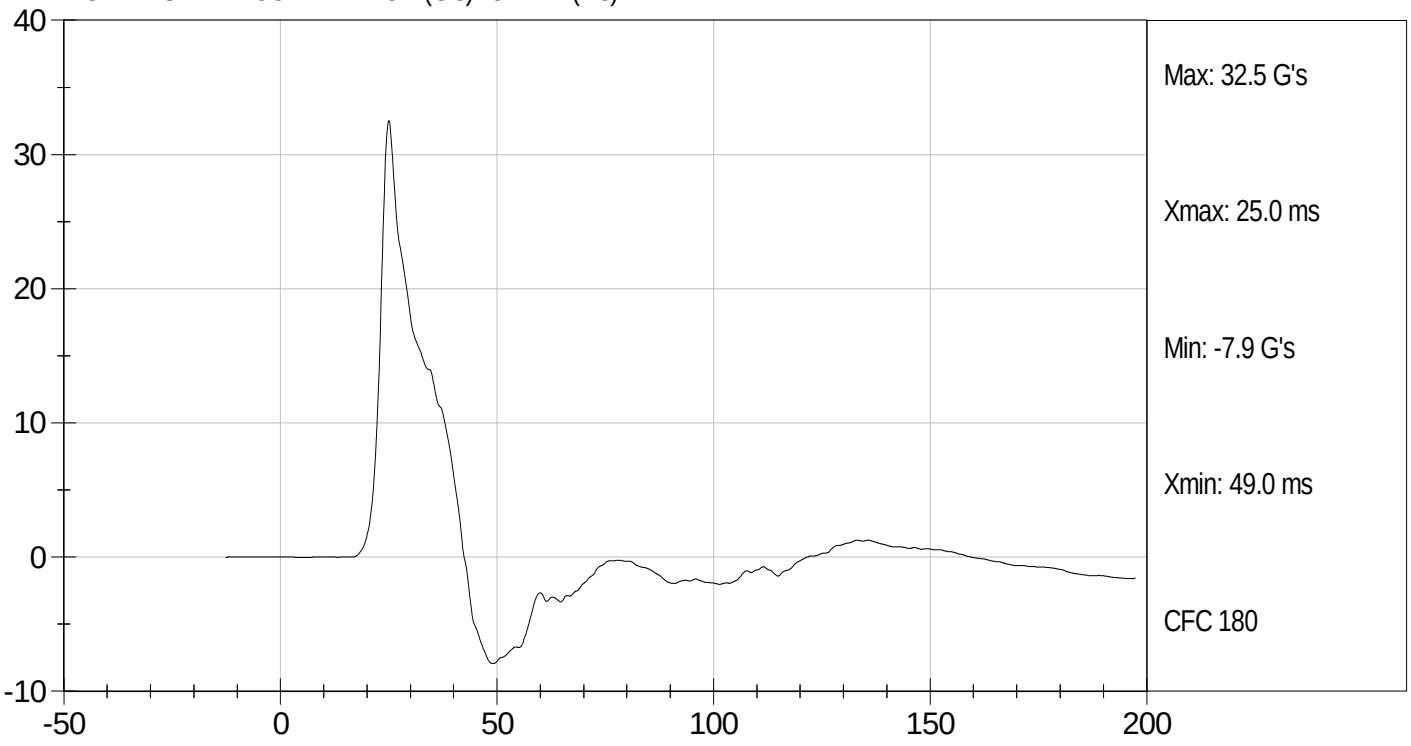
Test Desc: Thorax With Arm
Component ID: D113334

Test Date: 10/5/11
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:** D113335

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	42	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	39	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

Jessica Hall
Laboratory Technician

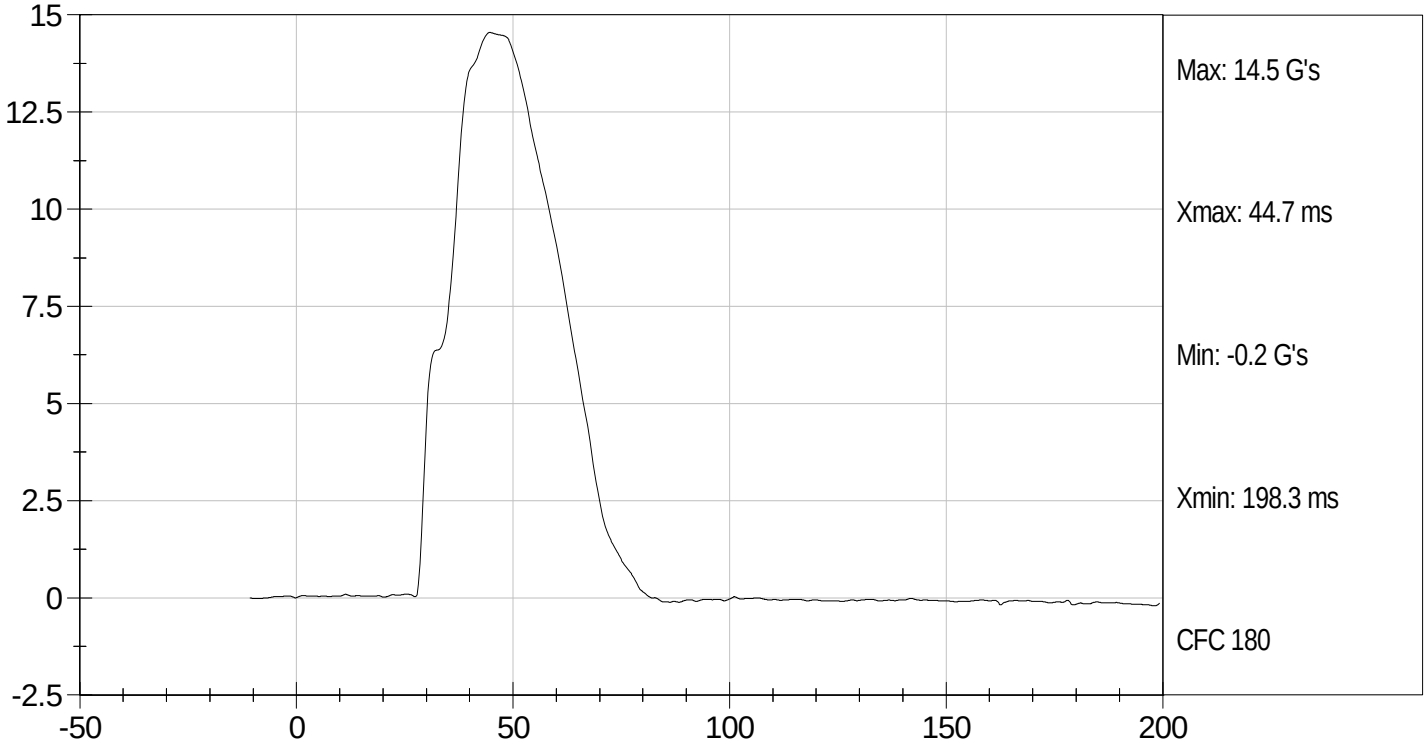
10/5/11
Test Date

David Winkelbauer
Approved By

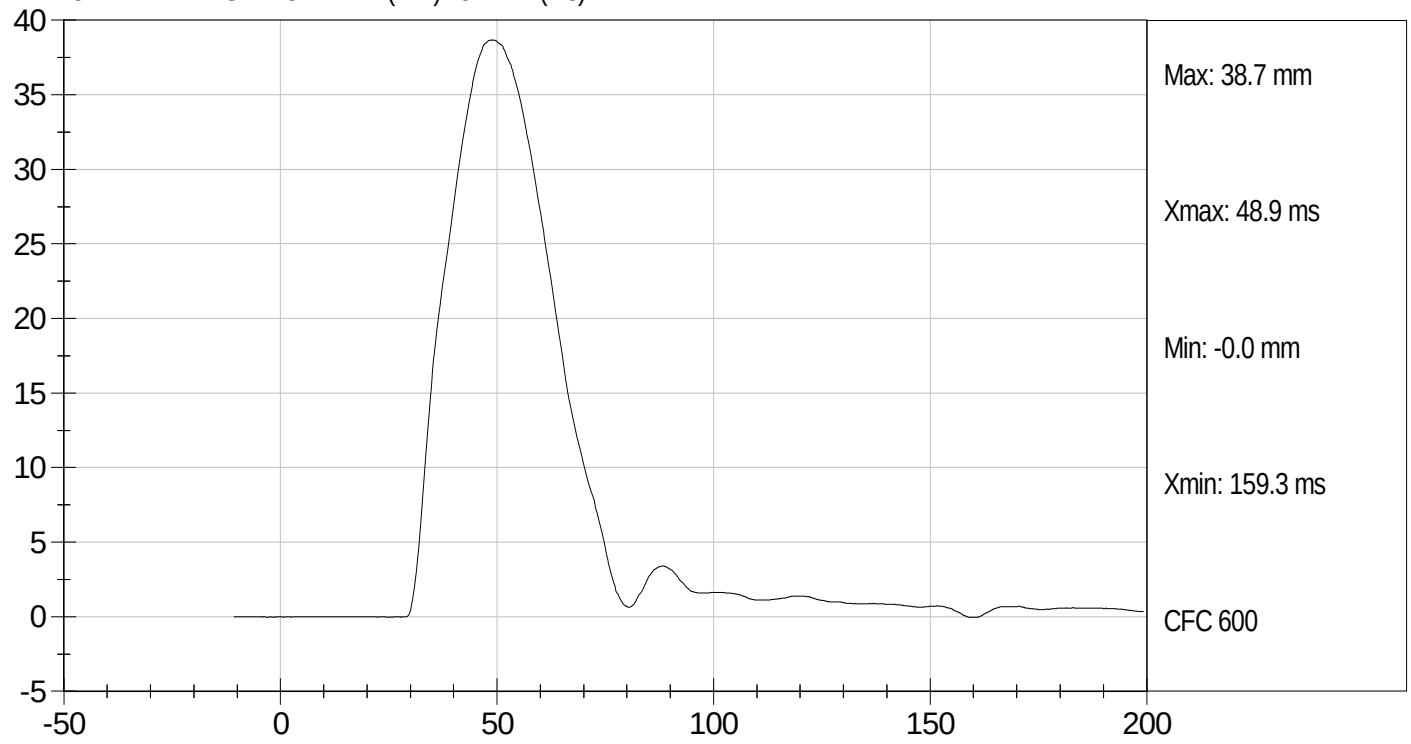
Test Desc: Thorax Without Arm
Component ID: D113335

Test Date: 10/5/11
Velocity: 14.25 ft/s, 4.34 m/s

PROBE (G's) vs TIME (ms)



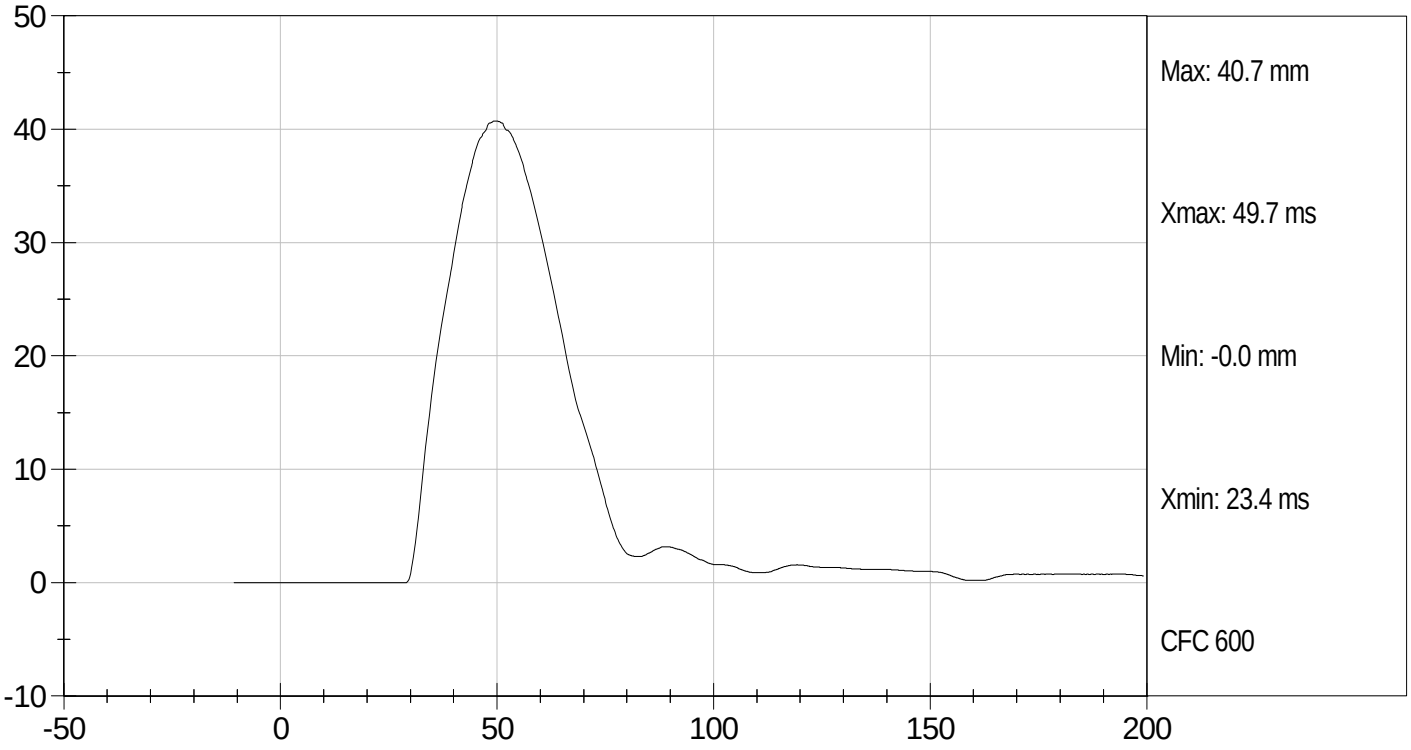
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



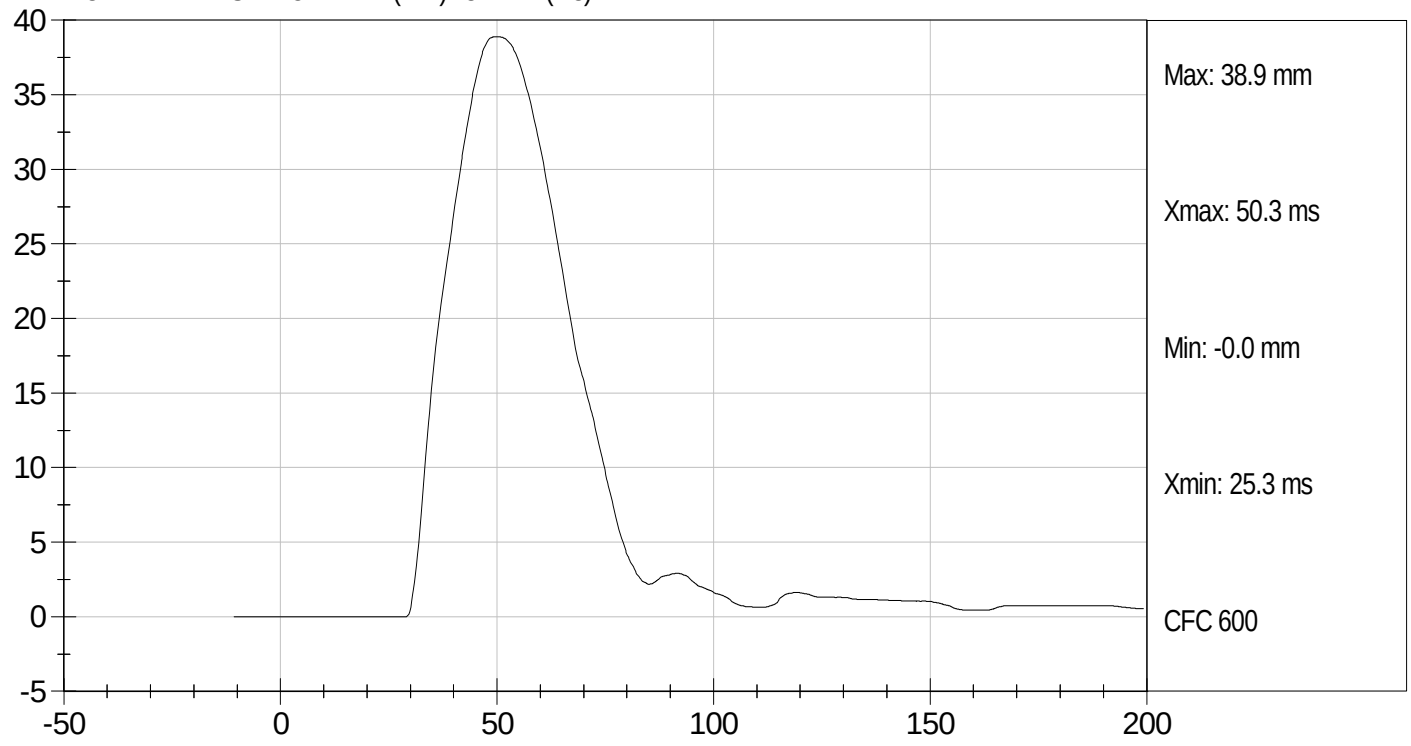
Test Desc: Thorax Without Arm
Component ID: D113335

Test Date: 10/5/11
Velocity: 14.25 ft/s, 4.34 m/s

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



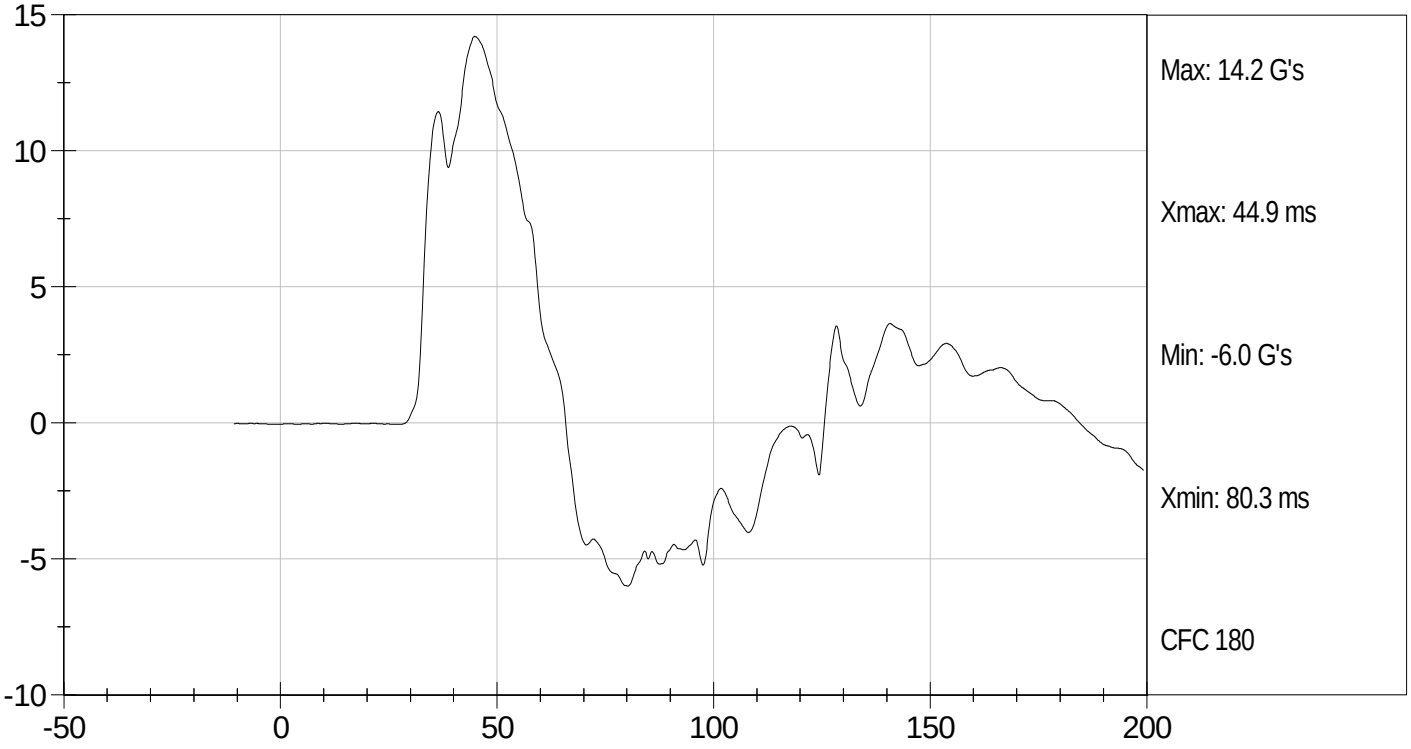
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



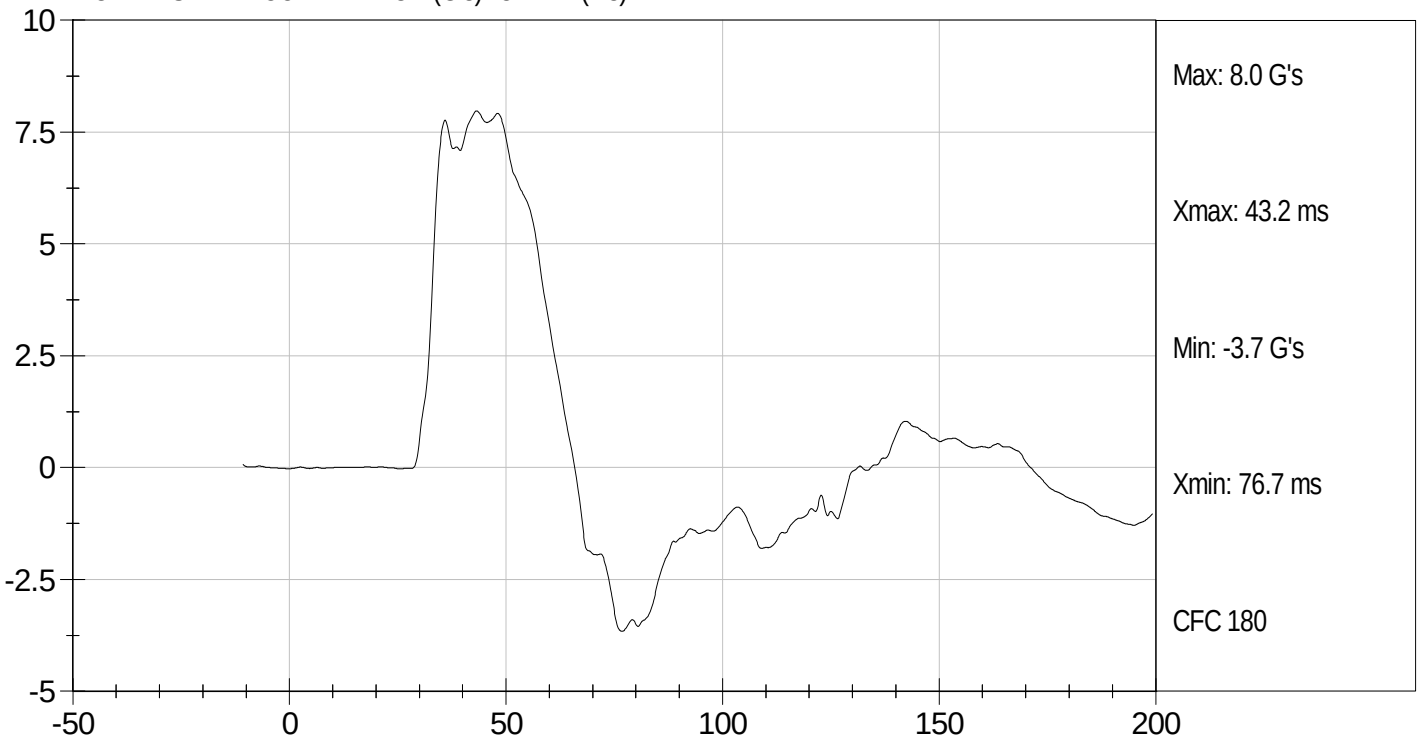
Test Desc: Thorax Without Arm
Component ID: D113335

Test Date: 10/5/11
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:** D113336

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	41	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	12 to 16	13	Pass
Upper Rib Displacement	mm	36 to 47	43	Pass
Lower Rib Displacement	mm	33 to 44	41	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

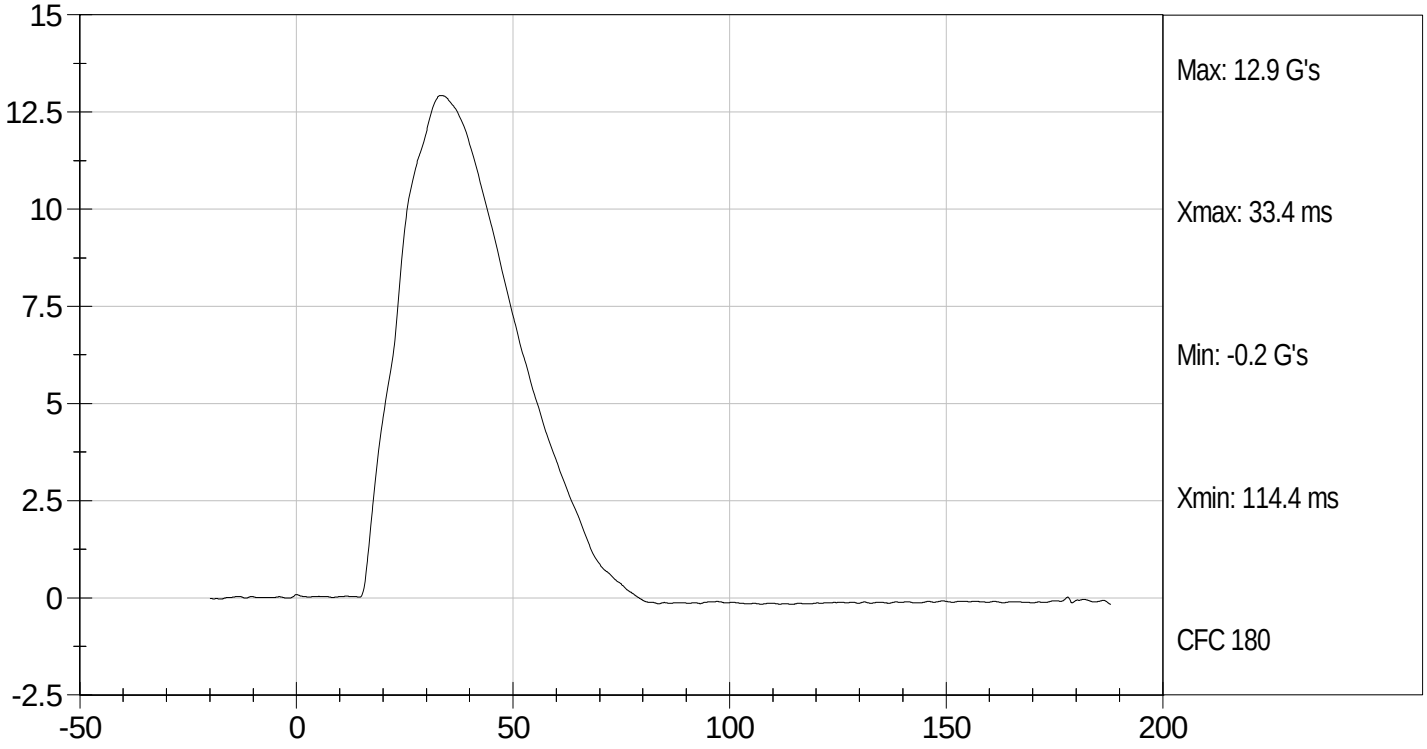
10/5/11
Test Date

David Winkelbauer
Approved By

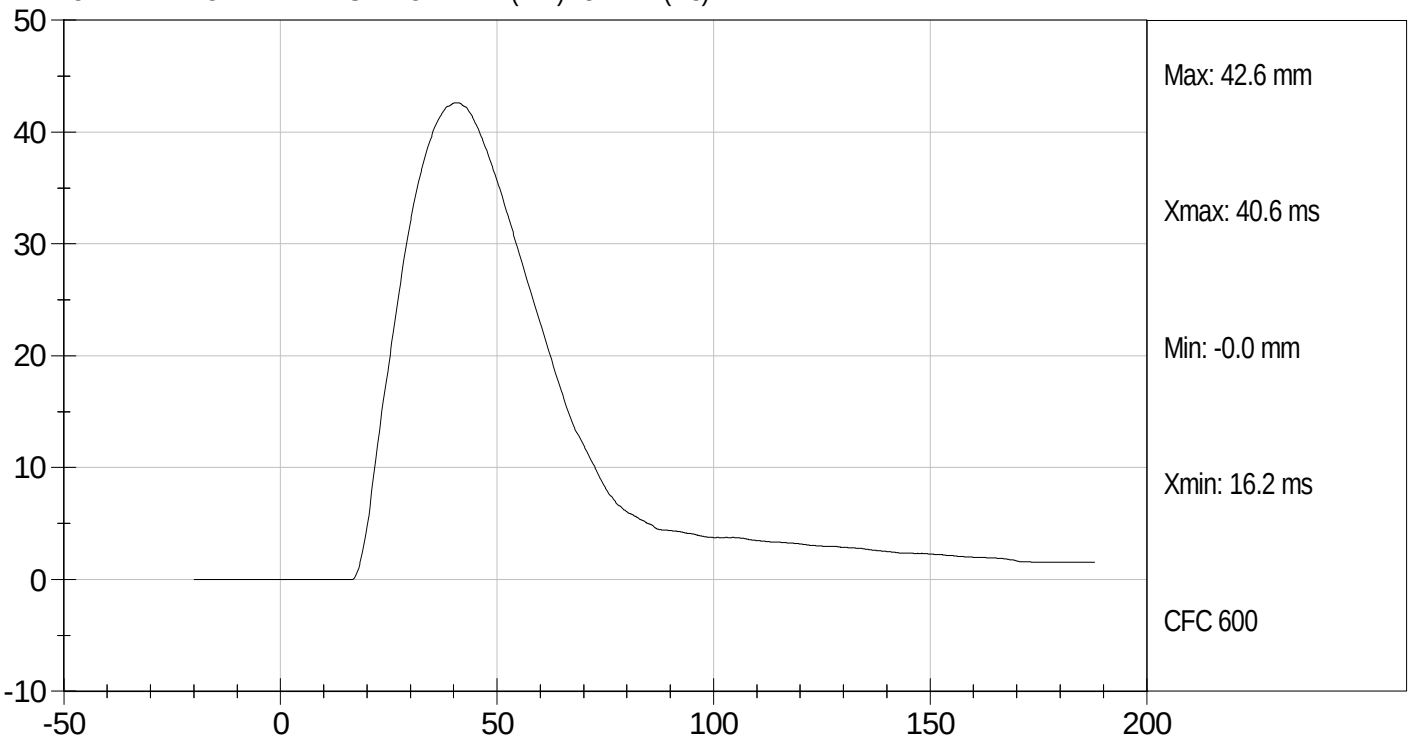
Test Desc: Abdomen Impact
Component ID: D113336

Test Date: 10/5/11
Velocity: 14.25 ft/s, 4.34 m/s

PROBE (G's) vs TIME (ms)



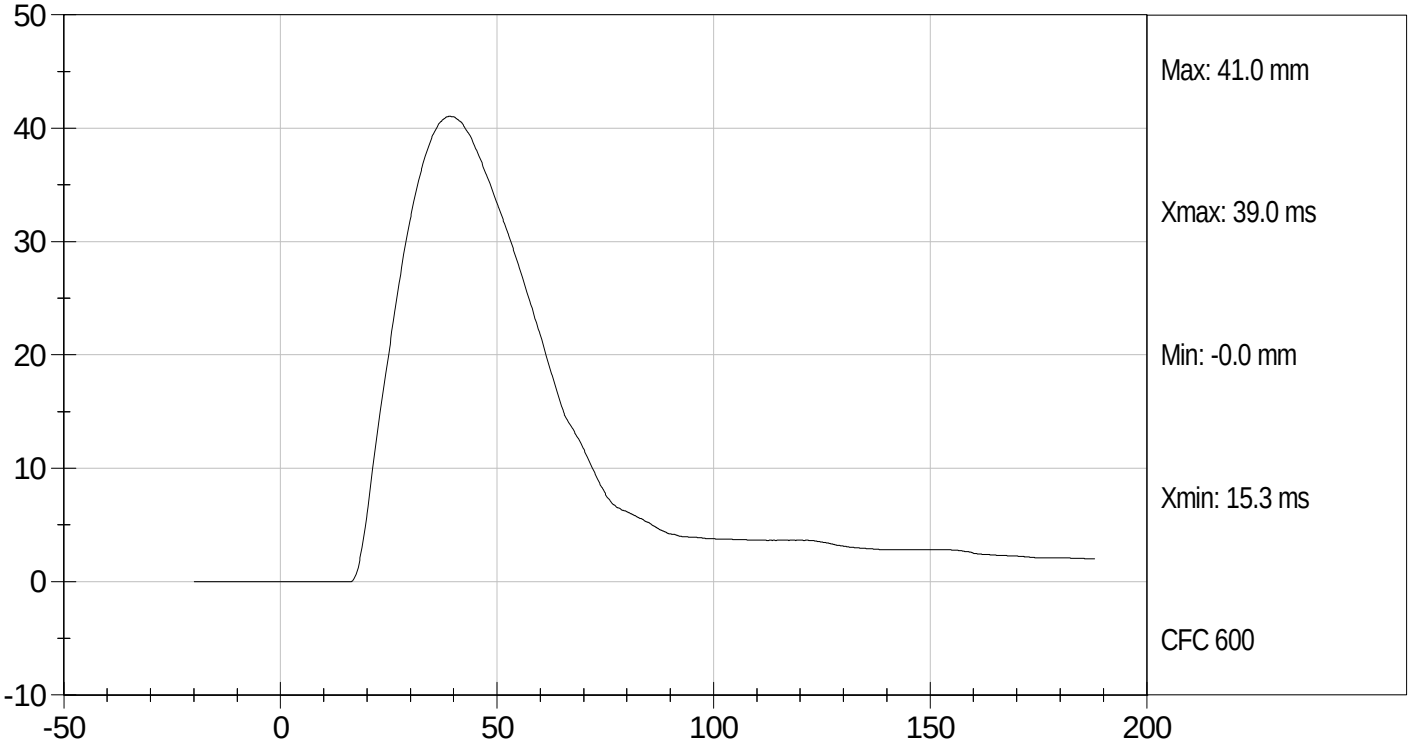
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



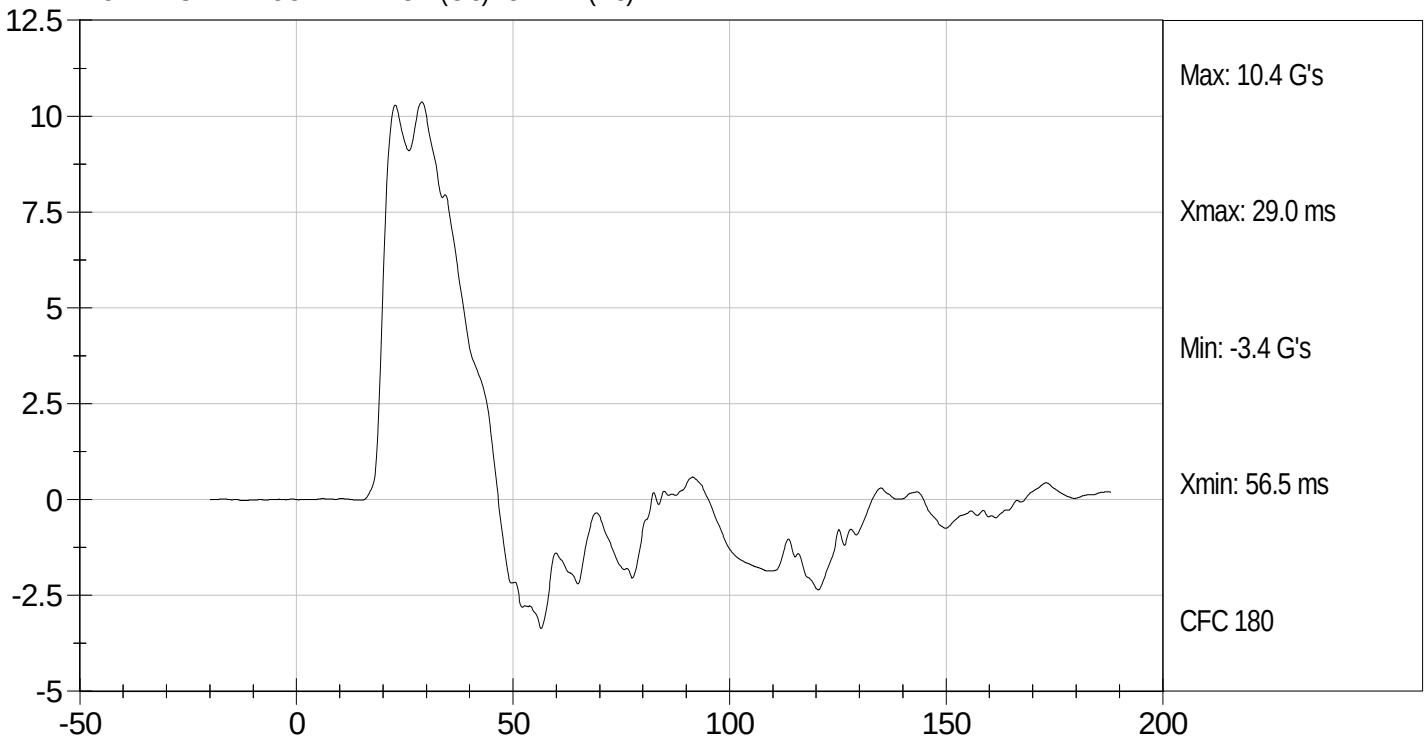
Test Desc: Abdomen Impact
Component ID: D113336

Test Date: 10/5/11
Velocity: 14.25 ft/s, 4.34 m/s

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D113337

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	40	Pass
Impact Velocity	m/s	6.60 to 6.80	6.67	Pass
Peak Impactor Acceleration	G's	38 to 47	41	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	3675	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

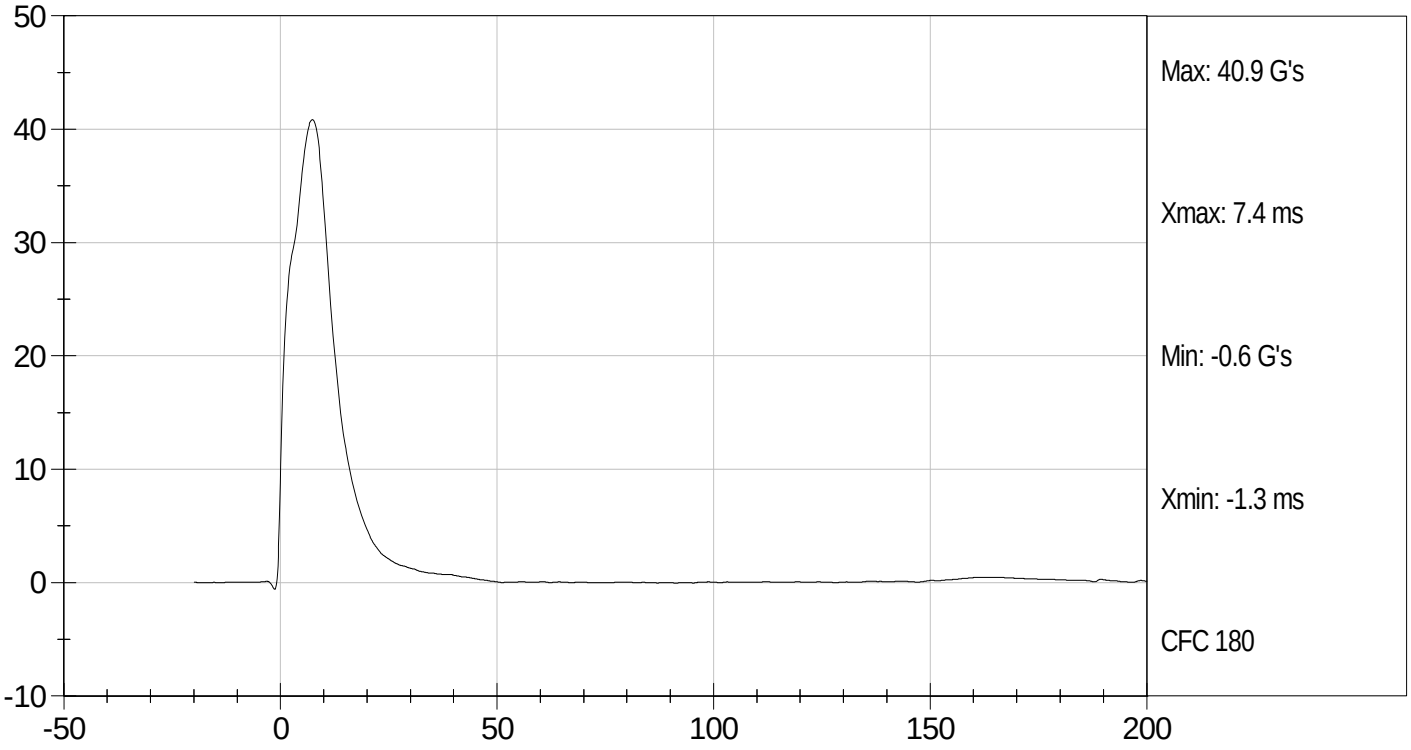
10/5/11
Test Date

David Winkelbauer
Approved By

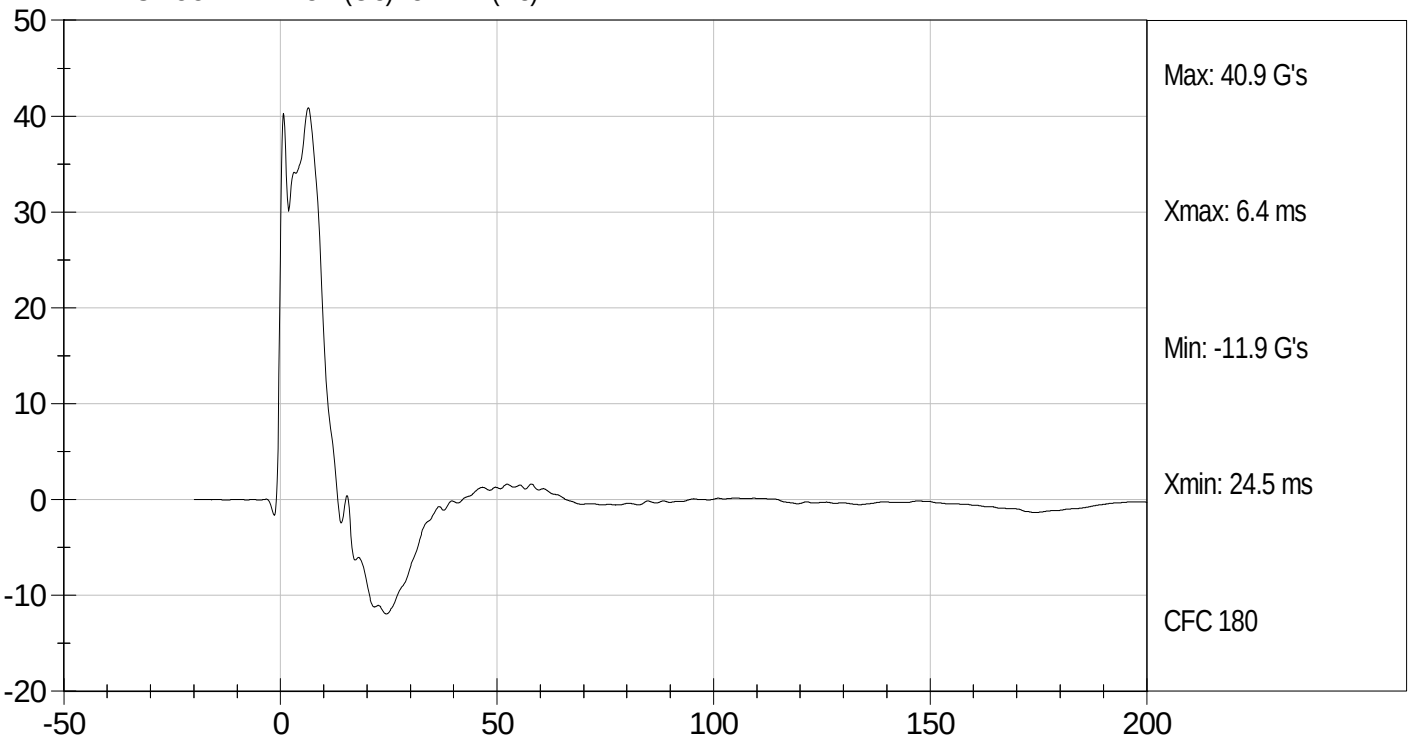
Test Desc: Pelvis Impact
Component ID: D113337

Test Date: 10/5/11
Velocity: 21.88 ft/s, 6.67 m/s

PROBE (G's) vs TIME (ms)



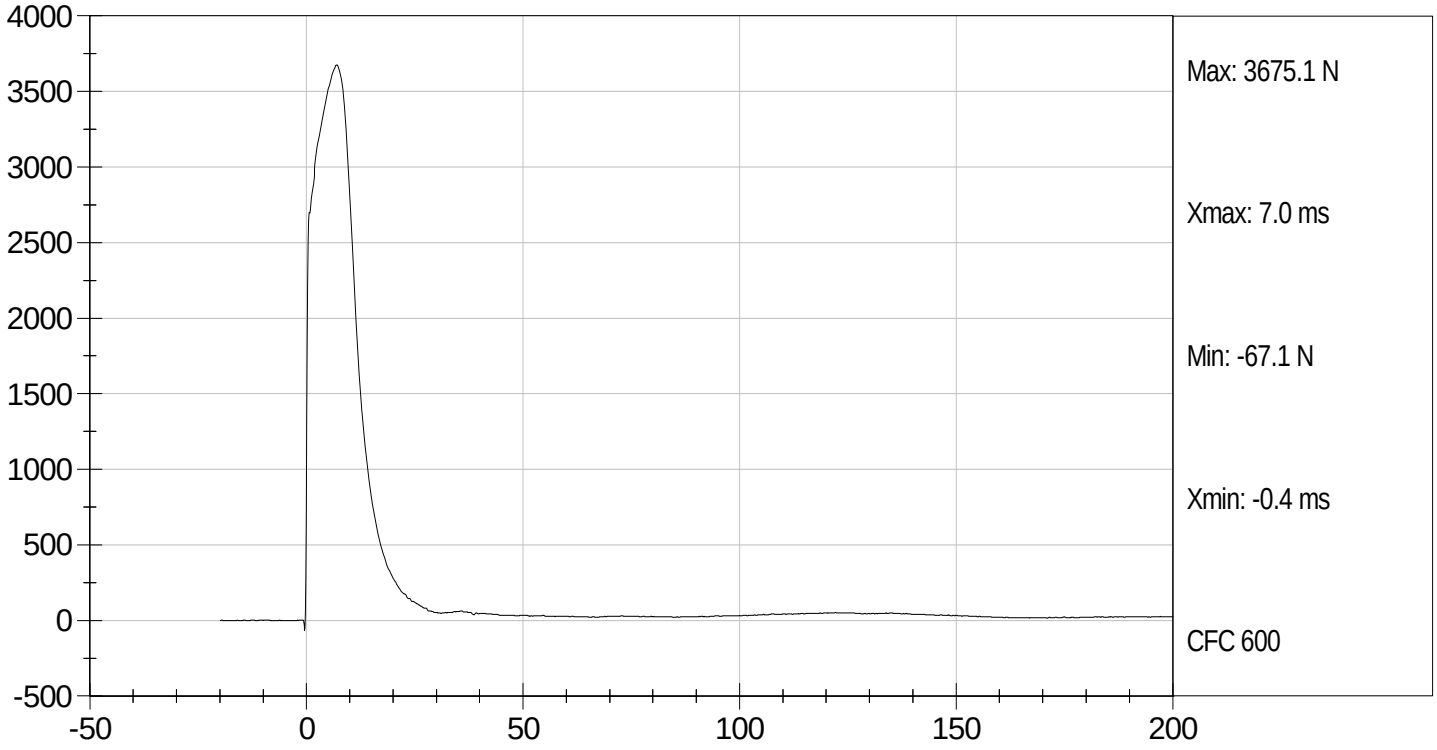
PELVIS ACCELERATION (G's) vs TIME (ms)



Test Desc: Pelvis Impact
Component ID: D113337

Test Date: 10/5/11
Velocity: 21.88 ft/s, 6.67 m/s

ACETABULUM FORCE (N) vs TIME (ms)



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D113338

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	40	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Acceleration	G's	36 to 45	40	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	5097	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

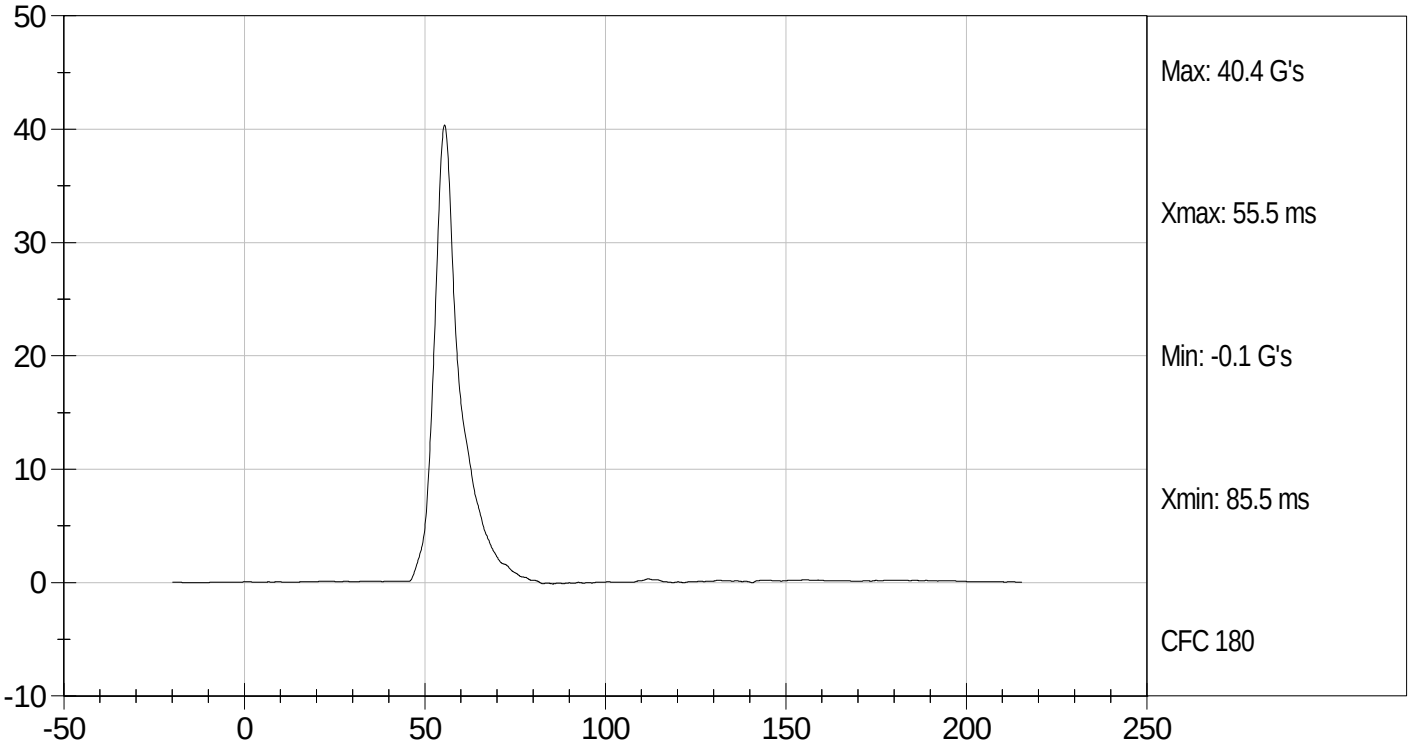
10/5/11
Test Date

David Winkelbauer
Approved By

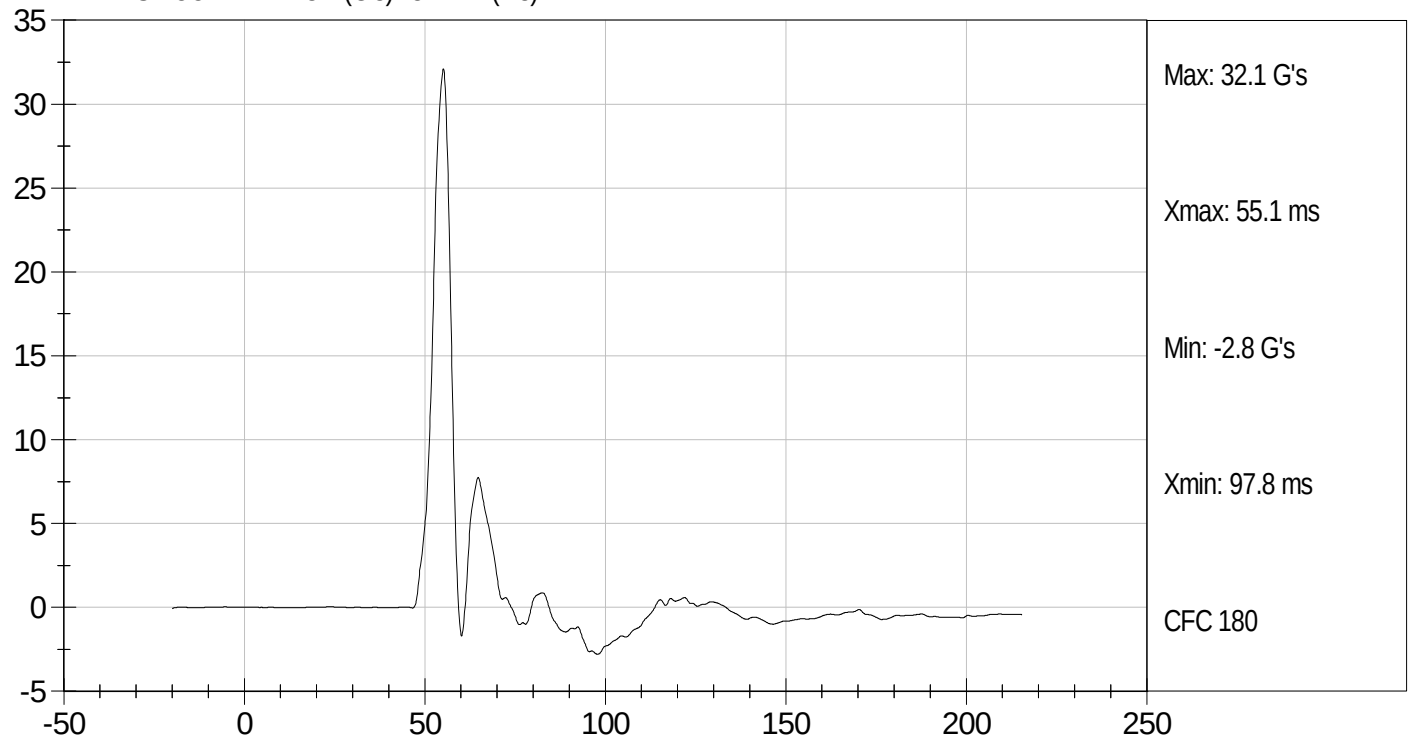
Test Desc: Iliac Impact
Component ID: D113338

Test Date: 10/5/11
Velocity: 14.00 ft/s, 4.27 m/s

PROBE (G's) vs TIME (ms)

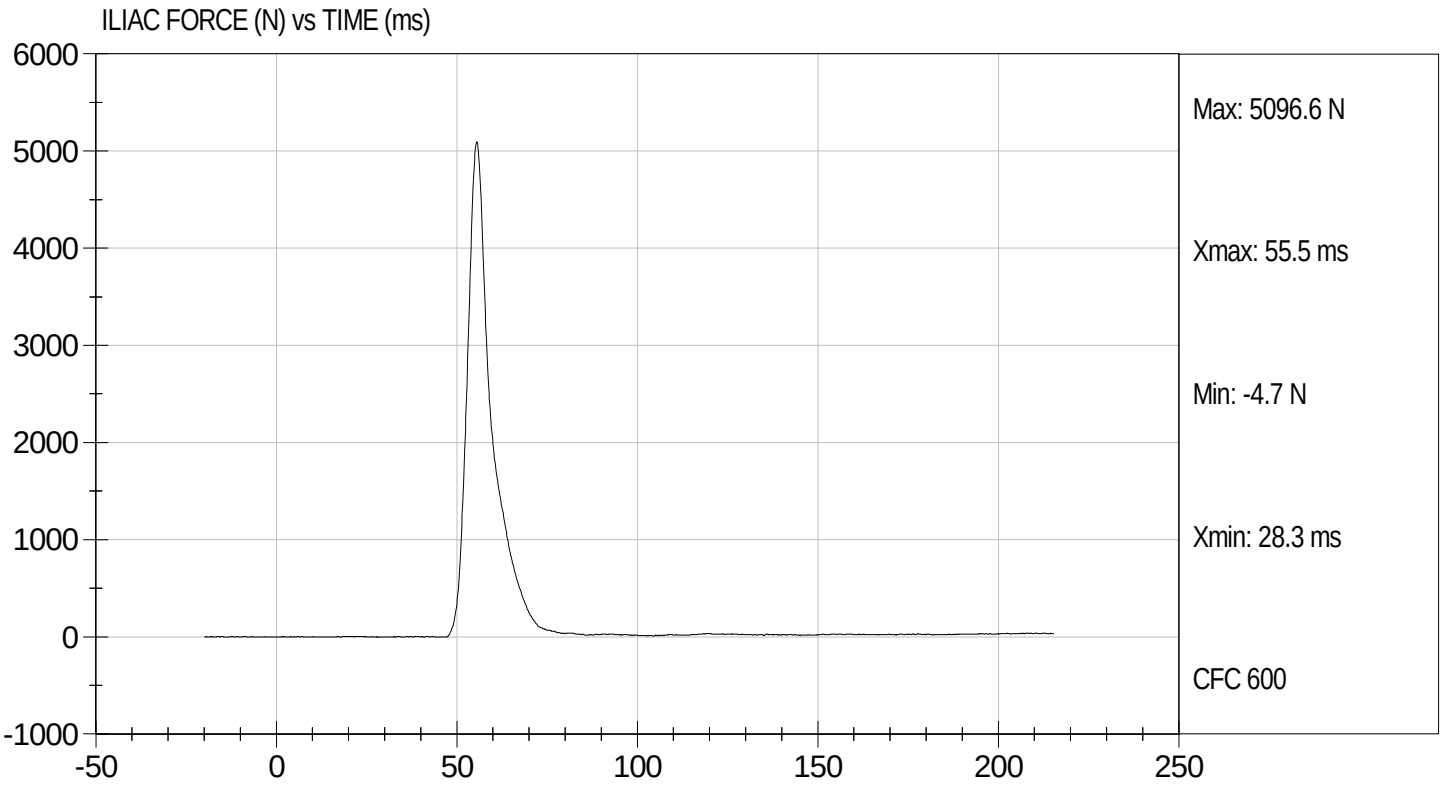


PELVIS ACCELERATION (G's) vs TIME (ms)



Test Desc: Iliac Impact
Component ID: D113338

Test Date: 10/5/11
Velocity: 14.00 ft/s, 4.27 m/s



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N 032		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers		X	P63414	Endevco	05/03/11
		Y	P63490	Endevco	05/03/11
		Z	P63491	Endevco	05/03/11
Head Accelerometers		Xr	P63492	Endevco	05/03/11
		Yr	P63494	Endevco	05/03/11
		Zr	P63498	Endevco	05/03/11
Thorax Rib Displacement Potentiometers	Upper	Y	G176	Honeywell	06/10/11
	Middle	Y	G169	Honeywell	06/10/11
	Lower	Y	G164	Honeywell	06/10/11
Abdomen Load Cells	Forward	Y	ABG1532	Denton	01/06/11
	Middle	Y	ABG1534	Denton	01/06/11
	Rear	Y	ABG1535	Denton	01/06/11
Lower Spine Accelerometers (T12)		X	P63280	Endevco	05/03/11
		Y	P63281	Endevco	05/03/11
		Z	P63282	Endevco	05/03/11
Pubic Symphysis Load Cell		Y	PG461	Denton	01/06/11

Table 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 306		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	P67884	Endevco	06/08/11
			Y	P67886	Endevco	06/08/11
			Z	P67887	Endevco	06/08/11
Head Accelerometers			X	P67888	Endevco	06/08/11
			Y	P67889	Endevco	06/08/11
			Z	P67890	Endevco	06/08/11
Displacement Potentiometers	Thoracic Rib	Upper	Y	G1187	FTSS	06/09/11
		Middle	Y	G1261	FTSS	06/09/11
		Lower	Y	G1270	FTSS	06/09/11
	Abdominal Rib	Upper	Y	G1287	FTSS	06/09/11
		Lower	Y	G1304	FTSS	06/09/11
Lower Spine Accelerometers (T12)			X	P67893	Endevco	06/08/11
			Y	P67894	Endevco	06/08/11
			Z	P67895	Endevco	06/08/11
Acetabulum Load Cell			Y	ACG111	FTSS	05/20/11
Iliac Wing Load Cell			Y	IWG226	FTSS	05/20/11
Pelvis Plug (struck side)				37128	FTSS	10/08/10
Pelvis Plug (non-struck side)				37119	FTSS	10/08/10

Table 3 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P59663	Endevco	05/20/11
Vehicle Center of Gravity	Y	P59665	Endevco	05/20/11
Vehicle Center of Gravity	Z	P59664	Endevco	05/20/11
Right Sill at Front Seat	X	P49494	Endevco	07/07/11
Right Sill at Front Seat	Y	P63293	Endevco	04/08/11
Right Sill at Front Seat	Z	P49495	Endevco	07/07/11
Right Sill at Rear Seat	X	P59372	Endevco	09/13/11
Right Sill at Rear Seat	Y	P59373	Endevco	09/13/11
Right Sill at Rear Seat	Z	P59374	Endevco	09/13/11
Left Sill at Front Door	Y	P52186	Endevco	08/22/11
Left Sill at Rear Door	Y	P49443	Endevco	05/20/11
Left A-Post Lower	Y	P52278	Endevco	07/07/11
Left A-Post Middle	Y	P59238	Endevco	06/15/11
Left B-Post Lower	Y	P55719	Endevco	04/28/11
Left B-Post Middle	Y	P59244	Endevco	06/10/11
Front Seat Track	Y	P52170	Endevco	04/28/11
Rear Seat Track or Structure	Y	P59277	Endevco	04/28/11
Right Rear Occ. Compartment	Y	P59301	Endevco	05/20/11
Engine Block	X	P59309	Endevco	06/15/11
Engine Block	Y	P59310	Endevco	06/15/11
Rear Floorpan Above Axle	X	P52179	Endevco	08/22/11
Rear Floorpan Above Axle	Y	P52180	Endevco	08/22/11
Rear Floorpan Above Axle	Z	P52178	Endevco	08/22/11

Table 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P63531	Endevco	07/08/11
MDB Center of Gravity	Y	P63532	Endevco	07/08/11
MDB Center of Gravity	Z	P63533	Endevco	07/08/11
Left Frame at Rear Axle Centerline	X	P59322	Endevco	07/07/11
Left Frame at Rear Axle Centerline	Y	P59323	Endevco	07/07/11