REPORT NUMBER: SINCAP-MGA-2014-043

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

GENERAL MOTORS LLC
2014 Chevrolet Malibu 1LS 4-Dr Sedan
NHTSA No.: M20140110

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: December 18, 2013

Final Report Date: January 17, 2014

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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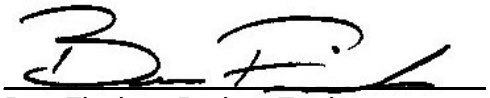
Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: January 17, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2014 Chevrolet Malibu 1LS 4-Dr Sedan, NHTSA No.: M20140110		*5. Report Date* January 17, 2014 *6. Performing Organization Code* MGA
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer		*8. Performing Organization Report No.* SINCAP-MGA-2014-043
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 December 18, 2013 to January 17, 2014 *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 2014 Chevrolet Malibu 1LS 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 December 18, 2013.

The impact velocity of the Moving Deformable Barrier (MDB) was 61.9 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.1° C. The target vehicle post-test maximum crush was 226 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	155
Maximum Thorax Rib Deflection	mm	44	25
Total Abdominal Force	N	2500	757
Pubic Symphysis Force	N	6000	1365

	Passenger ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	169
Resultant Lower Spine Acceleration	Gs	82	47
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3788
Maximum Thoracic Rib Deflection	mm	38*	22
Maximum Abdomen Rib Deflection	mm	45*	22

*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 Washington, DC 20590 e-mail: 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 2014 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 2014 Chevrolet Malibu 1LS 4-Dr Sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Laboratory Test Procedure dated September 2013.

SECTION 2
SUMMARY OF TEST RESULTS

A 2014 Chevrolet Malibu 1LS 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 61.9 km/h. 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 December 18, 2013. Pre-test 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 September 2013. 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
9 Axis Head CG 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	155
Maximum Thorax Rib Deflection	mm	44	25
Total Abdominal Force	N	2500	757
Pubic Symphysis Force	N	6000	1365

	Passenger ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	169
Resultant Lower Spine Acceleration	Gs	82	47
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3788
Maximum Thoracic Rib Deflection	mm	38*	22
Maximum Abdomen Rib Deflection	mm	45*	22

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

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

GENERAL COMMENTS

Left Rear Sill Y is questionable from 8-29ms
Left Lower A-Post Y is questionable from 1-21ms
Left Lower B-Post Y is questionable from 6-85ms
Left Mid B-Post Y was not installed
Top of Engine Y has no valid data after 29ms

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

SECTION 3
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20140110	Traction Control System (TCS)	Yes
Model Year	2014	Auto-Leveling System	No
Make	Chevrolet	Automatic Door Locks (ADL)	Yes
Model	Malibu	Power Window Auto-Reverse	Yes
Body Style	Sedan	Other Optional Feature	N/A
VIN	1G11B5SL8EF126512	Driver Front Airbag	Yes
Body Color	Champagne Silver	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	169 / 105	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.4	Driver Torso Airbag	No
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	6	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	Front	Rear Pass. Torso Airbag	Yes
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
		Other Safety Restraint	N/A

Does owner's manual provide instruction to turn off automatic door locks?	No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors LLC	GVWR (kg)	2008
Date of Manufacture	09/13	GAWR Front (kg)	1032
Vehicle Type	Passenger Car	GAWR Rear (kg)	976

VEHICLE SEATING AND WEIGHT CAPACITY DATA

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

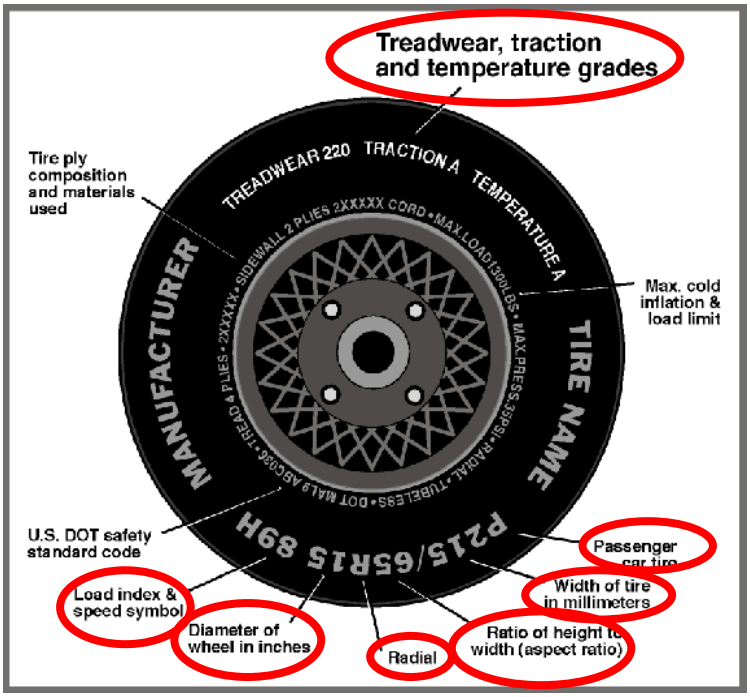
VEHICLE SEAT TYPE

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

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test
NHTSA No. M20140110
Test Date: 12/18/2013

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Manufacturer	Continental	Continental
Tire Model	Contipro Contact	Contipro Contact
Treadwear	540	540
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	94S	94S
Tire Material	Rubber	Rubber
DOT Safety Code Left	6YX8 BN4 3113	6YX8 BN4 3113
DOT Safety Code Right	6YX8 BN4 3113	6YX8 BN4 3113

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

TEST PRESSURES

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

MDB TIRE SPECIFICATIONS

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	491.3	311.6		524.8	405.1		525.3	410.0	
Right	kg	464.0	296.2		464.5	371.5		462.7	374.7	
Ratio	%	61.1	38.9		56.0	44.0		55.7	44.3	
Totals	kg	955.3	607.8	1563.1	989.3	776.6	1765.9	988.0	784.7	1772.7

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1563.1	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129.3	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	80	(C)
Calculated Test Vehicle Target Weight (TVTW)	kg	1772.4	(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**

TEST VEHICLE ATTITUDES AND CG

	Units	Fully Loaded	As Tested	Meets Requirement***
Left Front	mm	700	700	Yes
Right Front	mm	706	705	Yes
Right Rear	mm	695	694	Yes
Left Rear	mm	685	692	Yes
Vehicle CG (Aft of Front Axle)	mm	1213	1205	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	44	42	

*** 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.

Test height adjustable suspension setting, if applicable:	Not Applicable

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Weight of Ballast, if any	45.4
None	0.0

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

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	18.4	13.4	15.9
Front Passenger Seat	15.6	11.0	13.3
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-most	Mid-Fore/Aft	Forward-Most
Driver Seat	15.9	Fixed	Max	Fixed	Fixed	Fixed
	15.9	Fixed	Mid	Fixed	Fixed	Fixed
	15.9	Fixed	Min	Fixed	Fixed	Fixed
Front Passenger Seat	13.3	Fixed	Max	Fixed	Fixed	Fixed
	13.3	Fixed	Mid	Fixed	Fixed	Fixed
	13.3	Fixed	Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed

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

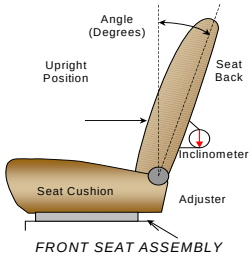
Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	244	54 (1st as 0)	122	27th (1st as 0)
Front Passenger Seat	244	54 (1st as 0)	122	27th (1st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned 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 adjusted following Appendix C, "Positioning Dummies in the Test Vehicle" in the NCAP Laboratory Test Procedure dated September 2013. The rear center and non-struck side rear outboard seat backs are positioned to match the struck side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degrees	Detent
Driver Seat w/Seated Dummy	90.2	49 (1st as 1)	-12.2	24th (1st as 0)
Front Passenger Seat	88.4	49 (1st as 1)	-12.0	34th (1st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	19.6*	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	19.6*	Fixed
Rear Center Seat	Fixed	Fixed	19.6*	Fixed

*Seat backs are fixed. Seat back angles measured on headrest post.

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

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	5 detents (1st as 1)	0 (uppermost as 0)
Rear Seat	Fixed	Not Applicable

HEAD RESTRAINT ADJUSTMENT

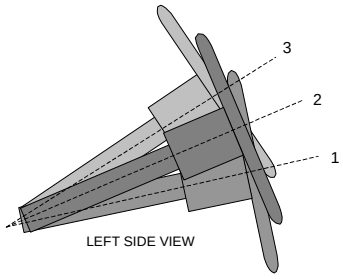
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	10	Highest
Rear Seat	4	Lowest

STEERING COLUMN ADJUSTMENT

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

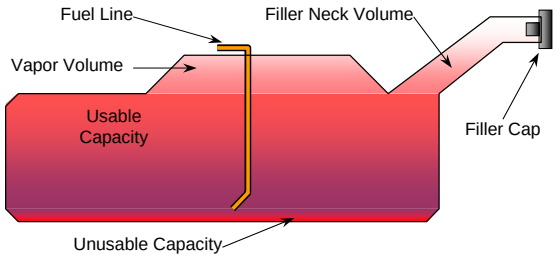
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	71.0	228
Geometric Center, Position 2	69.0	201
Uppermost, Position 3	67.0	174
Telescoping Steering Wheel Travel		54
Test Position	69.0	201



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. Pump will run when engine is running. Also, it will run briefly when ignition key is turned to the "on" position without starting the engine. The fuel pipe is on the right side.



VEHICLE FUEL TANK ASSEMBLY

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

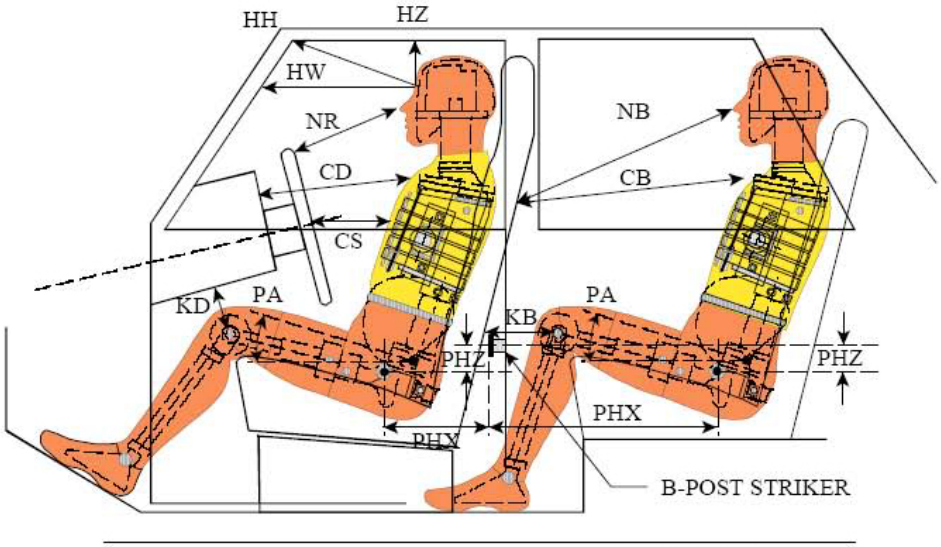
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard" Tank (see Form No. 1)	59.8
Usable Capacity of "Optional" Tank (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	59.7
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	55.6
Actual Amount of Solvent Used	55.6
1/3 of Usable Capacity	19.9

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: 2014 Chevrolet Malibu 1LS 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test
NHTSA No. M20140110
Test Date: 12/18/2013



LEFT SIDE VIEW

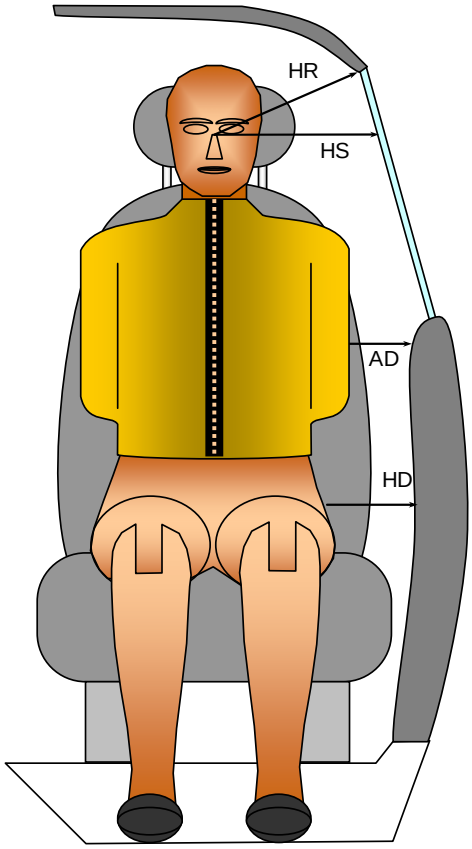
NOTE: 2-DOOR VEHICLE SHOWN. REAR DUMMY PHX & PHZ MEASUREMENTS FOR A 4-DOOR VEHICLE WOULD USE THE C-POST STRIKER AS A REFERENCE POINT

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle(°)	Length (mm)	Angle(°)
HH		Head to Header	445	17.4		
HW		Head to Windshield	701			
HZ	HZ	Head to Roof Liner	190		265	
NR	NB	Nose to Rim/Seat Back	510	12.5	476	17.0
CD	CB	Chest to Dashboard/Seat Back	620	7.8	460	11.9
CS		Chest to Steering Wheel	447	6.2		
KDL	KBL	Left Knee to Dash/Seat Back	209	35.4	214	21.6
KDR	KBR	Right Knee to Dash/Seat Back	218	31.6	219	28.8
PAX	PAX	Pelvic Tilt Angle X		23.3		28.7
	PAY	Pelvic Tilt Angle Y		-0.3		-0.7
PHX	PHX	Hip Point to Striker (X-Axis)	128		218	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	172		266	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2014 Chevrolet Malibu 1LS 4-Dr Sedan	NHTSA No.	M20140110
Test Program:	NCAP Side MDB Impact Test	Test Date:	12/18/2013



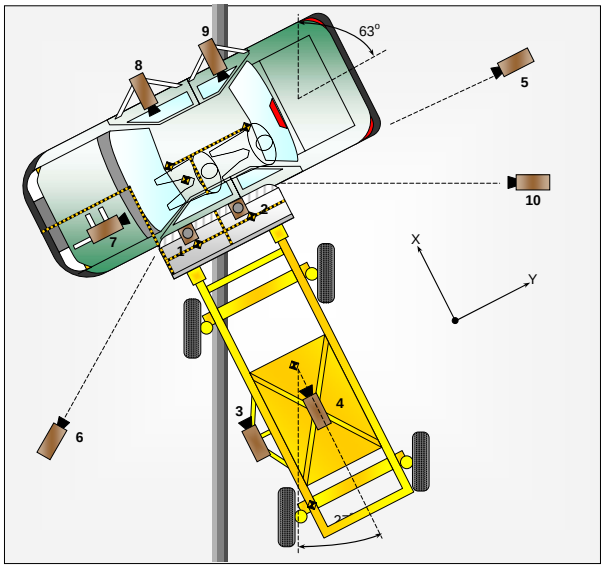
FRONT VIEW OF DUMMY

DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	189	244
HS	Head to Side Window	mm	337	377
AD	Arm to Door	mm	92	177
HD	Hip Point to Door	mm	159	195

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X*	Y*	Z*		
1	Overhead Overall	130	190	-5050	14	1000
2	Overhead Close-Up	90	50	-5050	20	1000
3	Left Impact Point (MDB)				50	1000
4	Side Overall (MDB)				16	1000
5	Rear	60	4850	-1130	24	1000
6	Left Front	4100	-4220	-1110	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

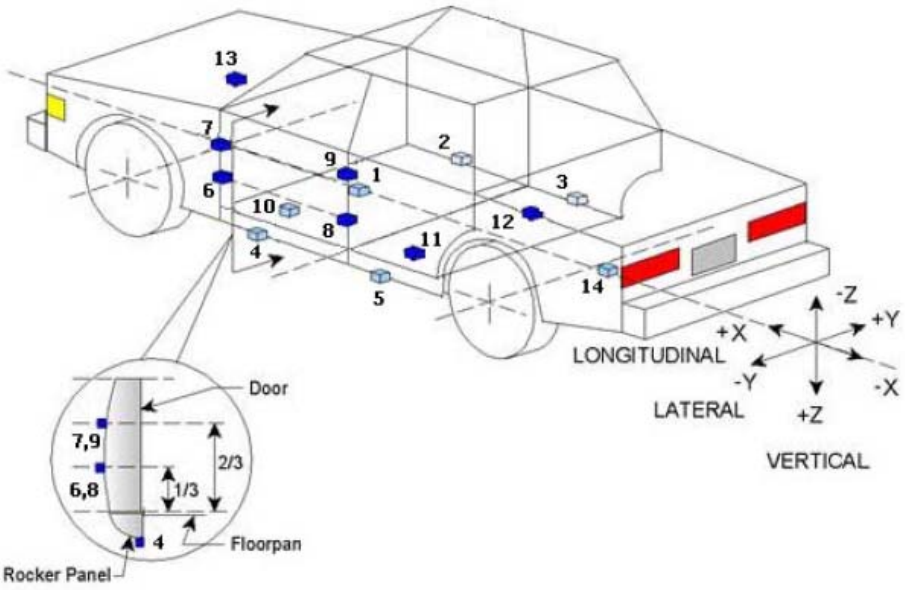
Reference: Impact Point projected to Ground; +X = To Front of MDB, + Y = To Right of MDB, +Z = Down
* All measurements accurate to ± 6 mm
Explain why camera(s) did not operate as intended: None

INSTRUMENTATION

	Number of Channels
Driver Dummy	22
Passenger Dummy	16
Vehicle Structure	23
MDB Accelerometers	5
MDB Contacts	2
Total	68

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013



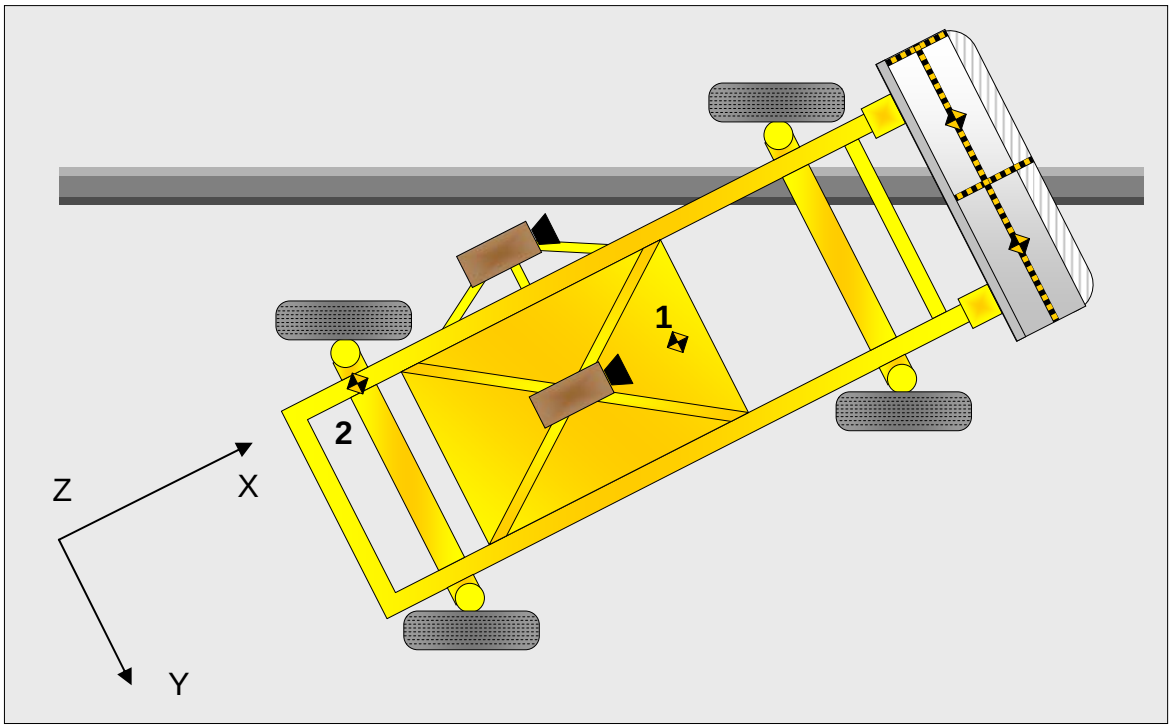
TEST VEHICLE ACCELEROMETER LOCATIONS

Accelerometer Location				
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2586	162	-172
2	Right Sill at Front Seat	2521	755	-192
3	Right Sill at Rear Seat	1630	755	-197
4	Left Sill at Front Door	2840	-750	-192
5	Left Sill at Rear Door	1830	-755	-191
6	Left Lower A-Post	3311	-828	-564
7	Left Middle A-Post	3320	-812	-770
8	Left Lower B-Post	2281	-717	-421
9	Left Middle B-Post			
10	Front Seat Track	2494	-362	-265
11	Rear Seat Structure	1986	-378	-309
12	Rt. Rear Occ. Compartment	2079	342	-243
13	Engine Block	4132	-13	-835
14	Rear Above Axle	1105	35	-510

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:	2014 Chevrolet Malibu 1LS 4-Dr Sedan	NHTSA No.	M20140110
Test Program:	NCAP Side MDB Impact Test	Test Date:	12/18/2013



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: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

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	Curtain Airbag, Headliner	Curtain Airbag, Headliner, Seatback
Left Side of Head	Curtain Airbag, Headliner	Curtain Airbag
Back of Head	Headliner, Headrest	Headrest, Seatback
Left Shoulder	B-Post	Side Airbag, Seatback
Upper Torso	Side Airbag	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback	Side Airbag, Seatback
Left Hip	Side Airbag, Seatpan	Door Panel, Seatpan
Left Knee	None	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 Broken
Other Notable Effects	None

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

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2740
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		430
Actual Impact Point (Aft of Front Axle)	mm		431
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	-1
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	-1

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1251
Overall Length Including Honeycomb Face	4115
Wheelbase of Framework Carriage	2595
CG Location aft of Front Axle	1134

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	390.0	300.1	
Right	kg	376.8	294.7	
Ratio	%	56.3	43.7	
Totals	kg	766.8	594.8	1361.6

SPEED AND ANGLE AT IMPACT DATA

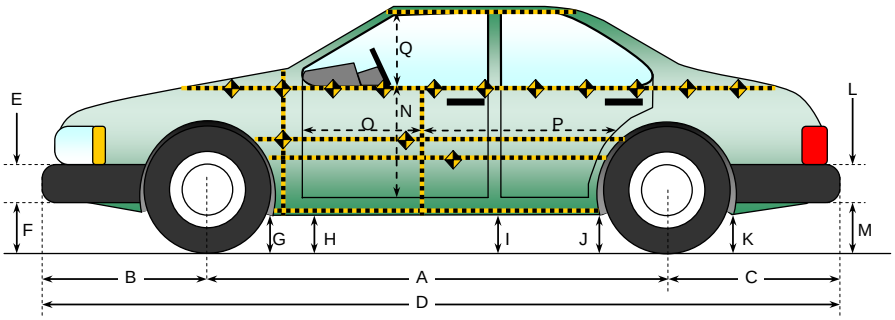
Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.9
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.2
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27.0

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	232
B	Top of Bumper	533	800	Right	144
C	Mid-Level	686	800	Left	103
D	Top of Stack	813	800	Left	127

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013



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

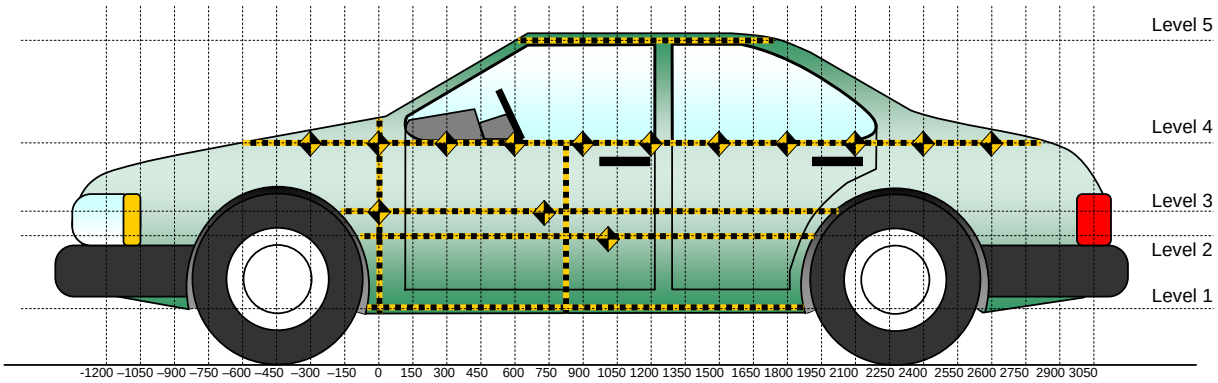
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2740	2734	6
B	Front Axle to FSOV	992	1000	-8
C	Rear Axle to RSOV	1144	1140	4
D	Total Length at Centerline	4876	4874	2
E	Front Bumper Thickness	130	130	0
F	Front Bumper Bottom to Ground	219	238	-19
G	Sill Height at Front Wheel Well	164	170	-6
H	Sill Height at Front Door Leading Edge	169	174	-5
I	Sill Height at B Pillar	165	159	6
J1	Sill Height at Rear Wheel Well	166	161	5
J2	Pinch Weld Height at Rear Wheel Well	167	160	7
K	Sill Height Aft of Rear Wheel Well	211	204	7
L	Rear Bumper Thickness	100	100	0
M	Rear Bumper Bottom to Ground	290	312	-22
N	Sill Height to Window Bottom Sill	722	670	52
O	Front Door Leading Edge to Impact CL	800	705	95
P	Rear Door Trailing Edge to Impact CL	1137	1056	81
Q	Front Window Opening	442	450	-8
R	Right Side Length	3635	3635	0
S	Left Side Length	3635	3620	15
T	Vehicle Width at B Post	1820	1674	146

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	2014 Chevrolet Malibu 1LS 4-Dr Sedan	NHTSA No.	M20140110
Test Program:	NCAP Side MDB Impact Test	Test Date:	12/18/2013



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	204	40	1650
2	Mid Door	480	224	300
3	Occupant Hip Point	605	226	300
4	Window Sill	885	171	1650
5	Window Top	1380	16	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: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

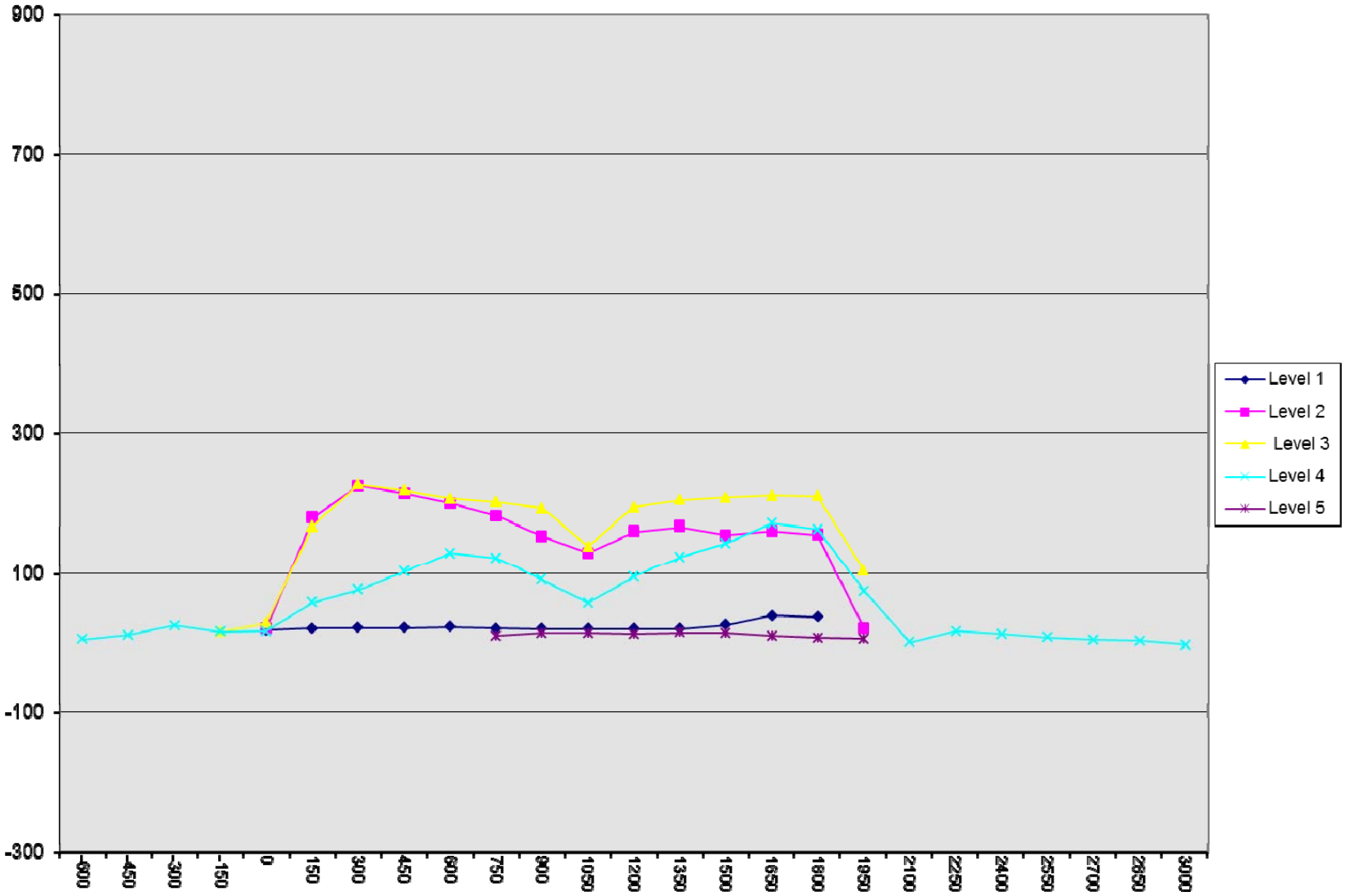
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-600				299					305					6	
-450				280					292					12	
-300				269					295					26	
-150			178	264				195	281				17	17	
0	221	183	186	258		240	204	216	276		19	21	30	18	
150	221	193	190	252		243	372	357	311		22	179	167	59	
300	222	194	190	248		245	418	416	325		23	224	226	77	
450	223	194	189	245		246	407	407	347		23	213	218	102	
600	226	194	188	240		250	393	394	369		24	199	206	129	
750	227	195	188	237	504	249	376	389	359	515	22	181	201	122	11
900	229	196	189	233	494	250	349	381	324	509	21	153	192	91	15
1050	232	197	190	231	490	253	326	329	289	505	21	129	139	58	15
1200	234	199	192	230	489	255	358	385	325	503	21	159	193	95	14
1350	237	200	193	230	487	258	366	397	354	503	21	166	204	124	16
1500	238	201	194	230	488	265	355	401	373	503	27	154	207	143	15
1650	241	203	195	230	494	281	363	405	401	505	40	160	210	171	11
1800	244	198	195	230	502	282	353	404	393	510	38	155	209	163	8
1950		190	184	234	515		211	288	309	522		21	104	75	7
2100				234					236					2	
2250				235					253					18	
2400				240					254					14	
2550				250					259					9	
2700				264					269					5	
2850				284					288					4	
3000				312					310					-2	

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

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

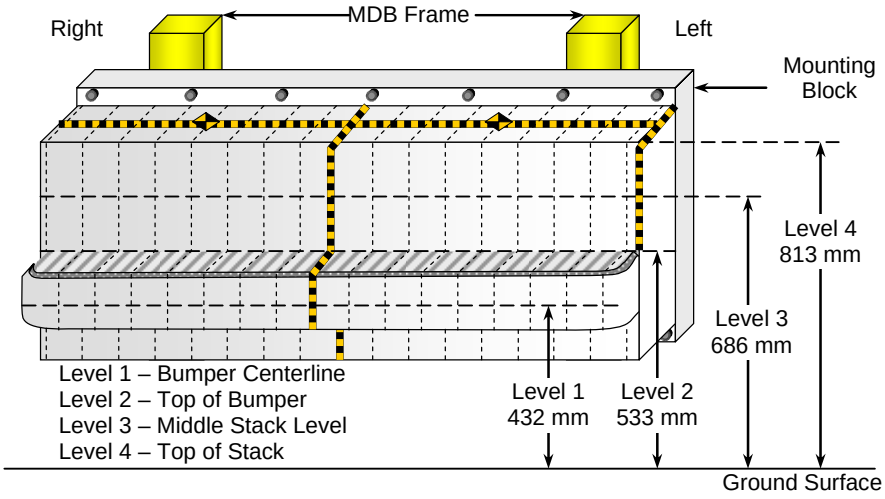
Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20140110
Test Date: 12/18/2013



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013



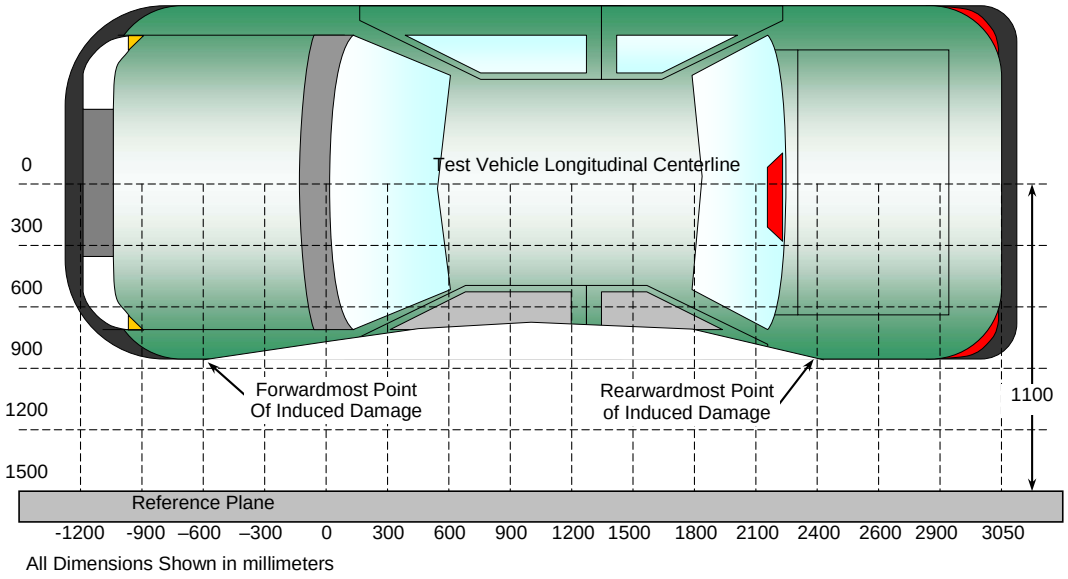
FRONT VIEW

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	52	22	24	29	45	71	118	118	106	62	35	38	43	40	56	91	127
3	60	31	32	34	38	49	80	84	70	43	24	20	20	22	33	48	103
2	144	143	139	135	122	98	85	90	75	74	73	75	84	82	78	75	80
1	232	227	220	214	210	209	203	197	195	179	170	162	161	157	158	160	172

DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013



TOP VIEW

VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2000	3	184	215	31
2	1600	3	195	407	212
3	1200	3	192	385	193
4	800	3	188	391	203
5	400	3	189	410	221
6	0	3	186	216	30

MDB DAMAGE PROFILE DISTANCES

DPD	Distance from Center of MDB	Level	Post-Test (mm)
1	800 mm right of center	1	232
2	480 mm right of center	1	211
3	160 mm right of center	1	199
4	160 mm left of center	1	173
5	480 mm left of center	1	155
6	800 mm left of center	1	172

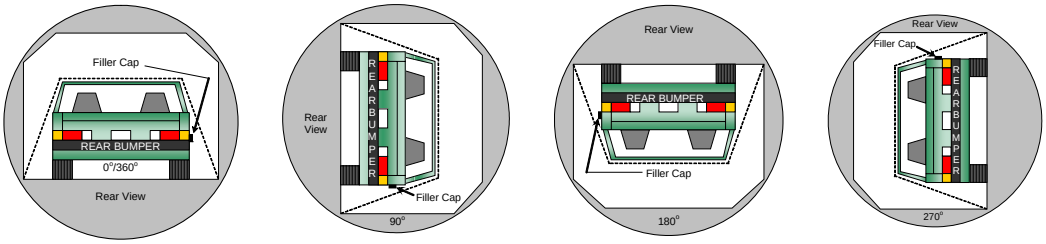
DATA SHEET NO. 14
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Chevrolet Malibu 1LS 4-Dr Sedan NHTSA No. M20140110
Test Program: NCAP Side MDB Impact Test Test Date: 12/18/2013

Test Time: 11:46 am Temperature: 21.1° 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°	112	300	412
90° to 180°	111	300	411
180° to 270°	109	300	409
270° to 360°	111	300	411

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

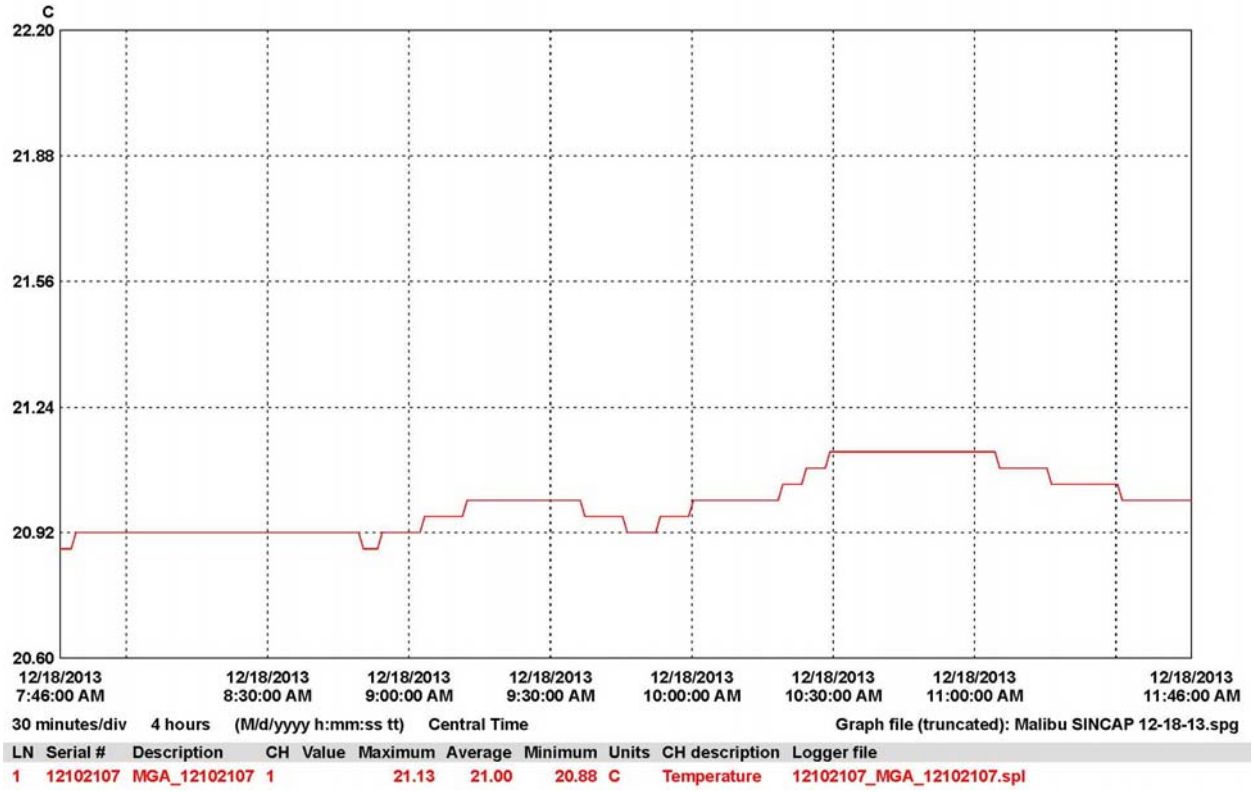
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 15
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle:	2014 Chevrolet Malibu 1LS 4-Dr Sedan	NHTSA No.	M20140110
Test Program:	NCAP Side MDB Impact Test	Test Date:	12/18/2013



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	12102107	MGA_12102107	1		21.13	21.00	20.88	C	Temperature	12102107_MGA_12102107.spl

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

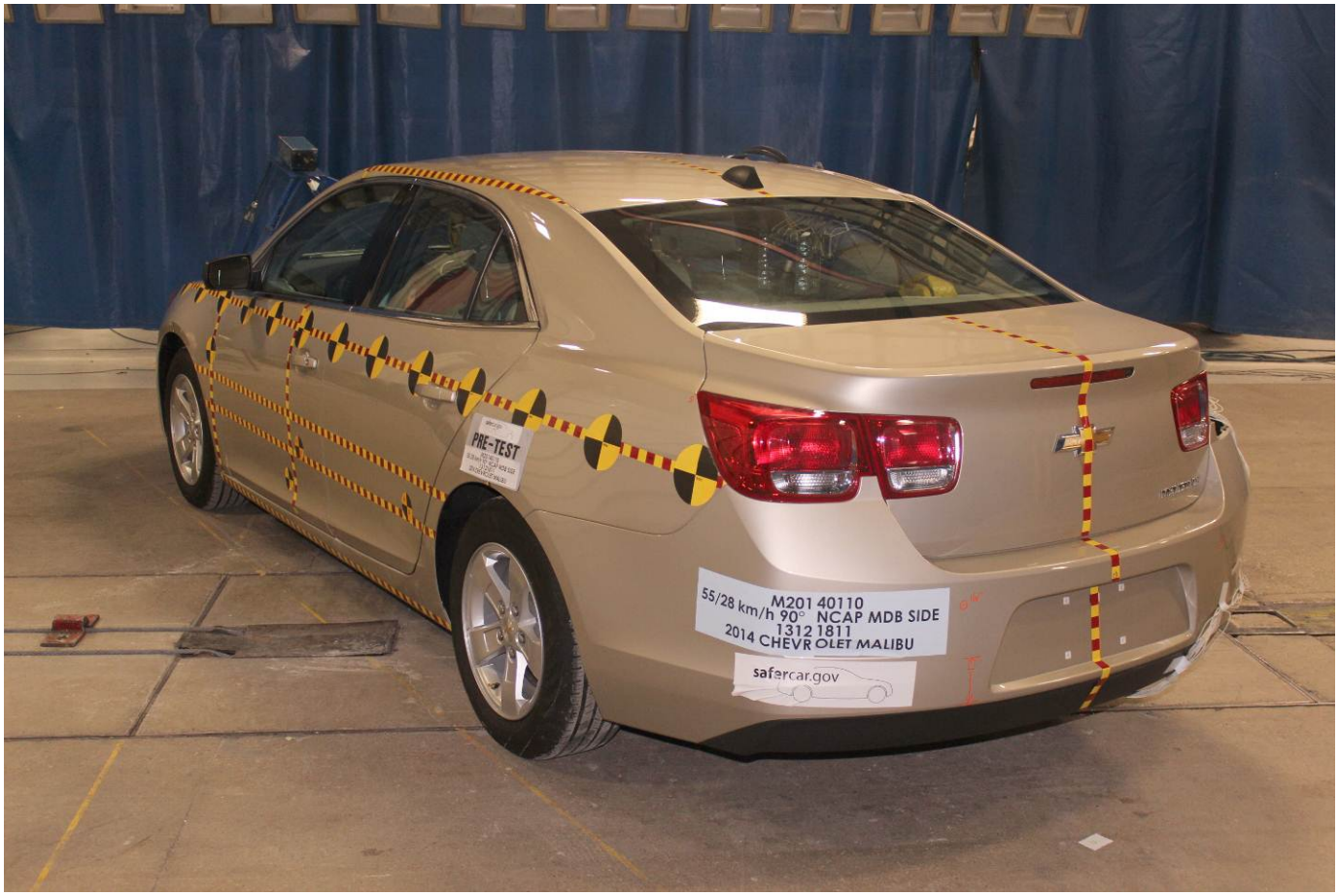
Post-Test Frontal View of Test Vehicle

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

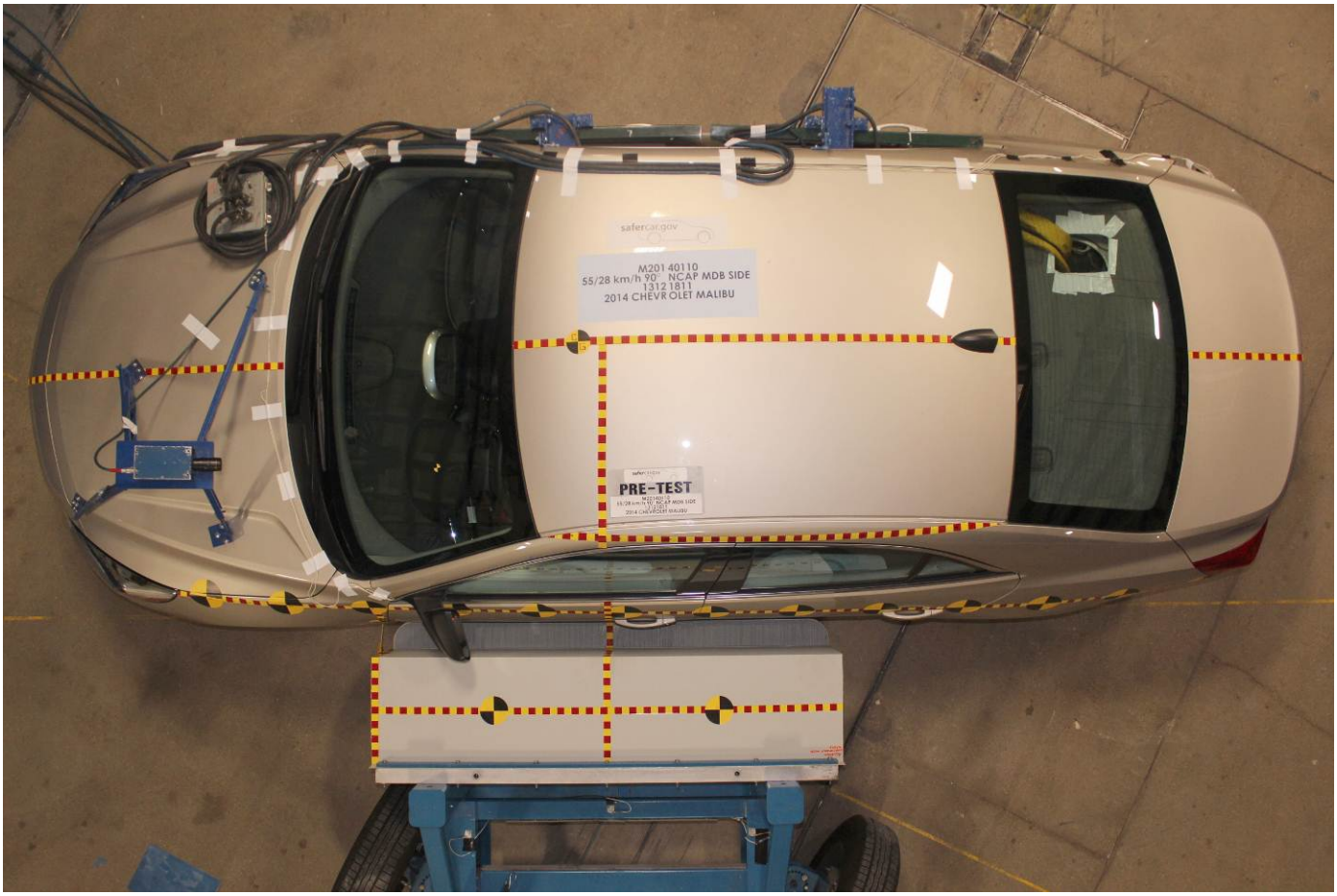
Post-Test Left Three-Quarter Rear View of Test Vehicle

Pre-Test Rear View of Test Vehicle

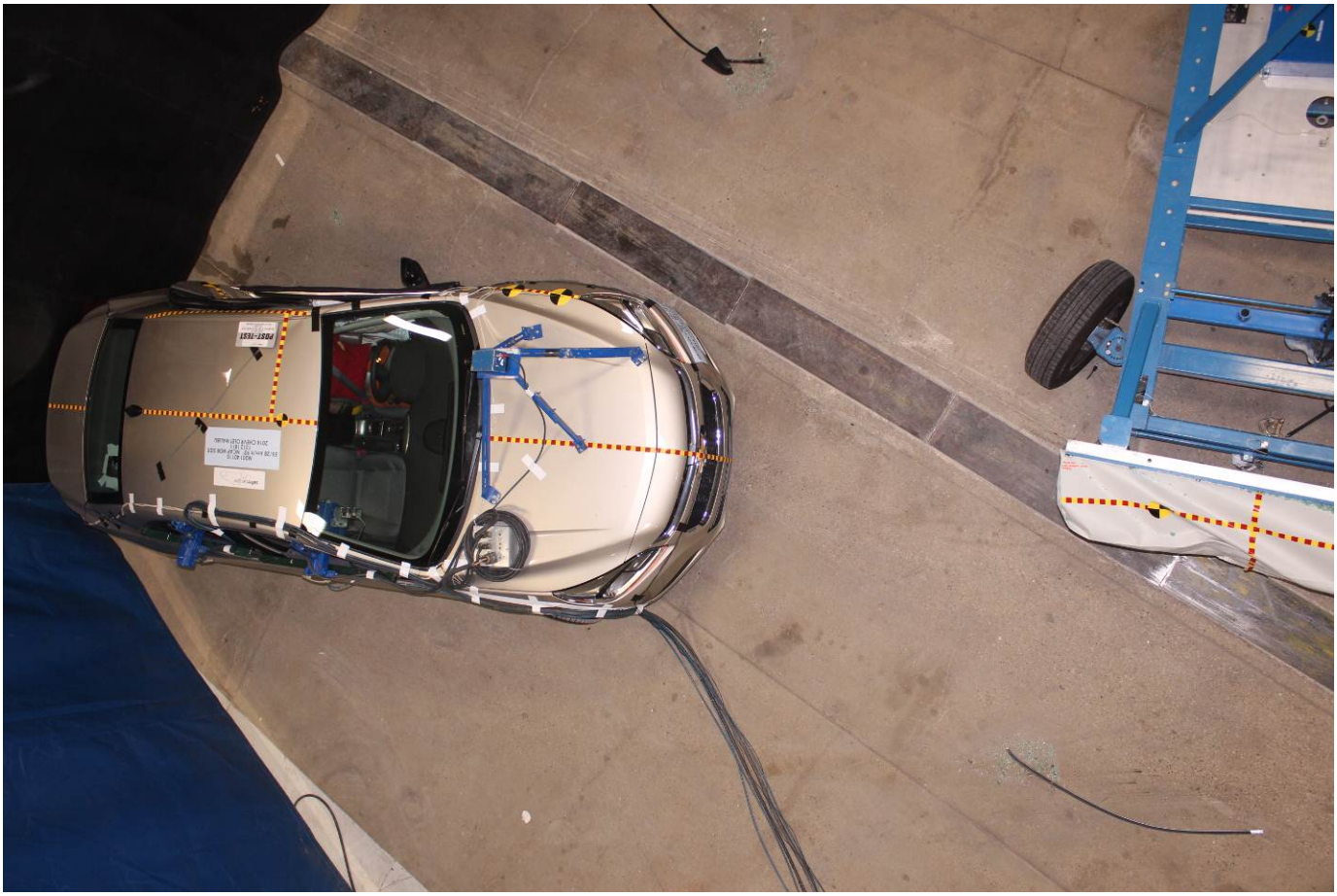
Post-Test Rear View of Test Vehicle

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

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 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 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

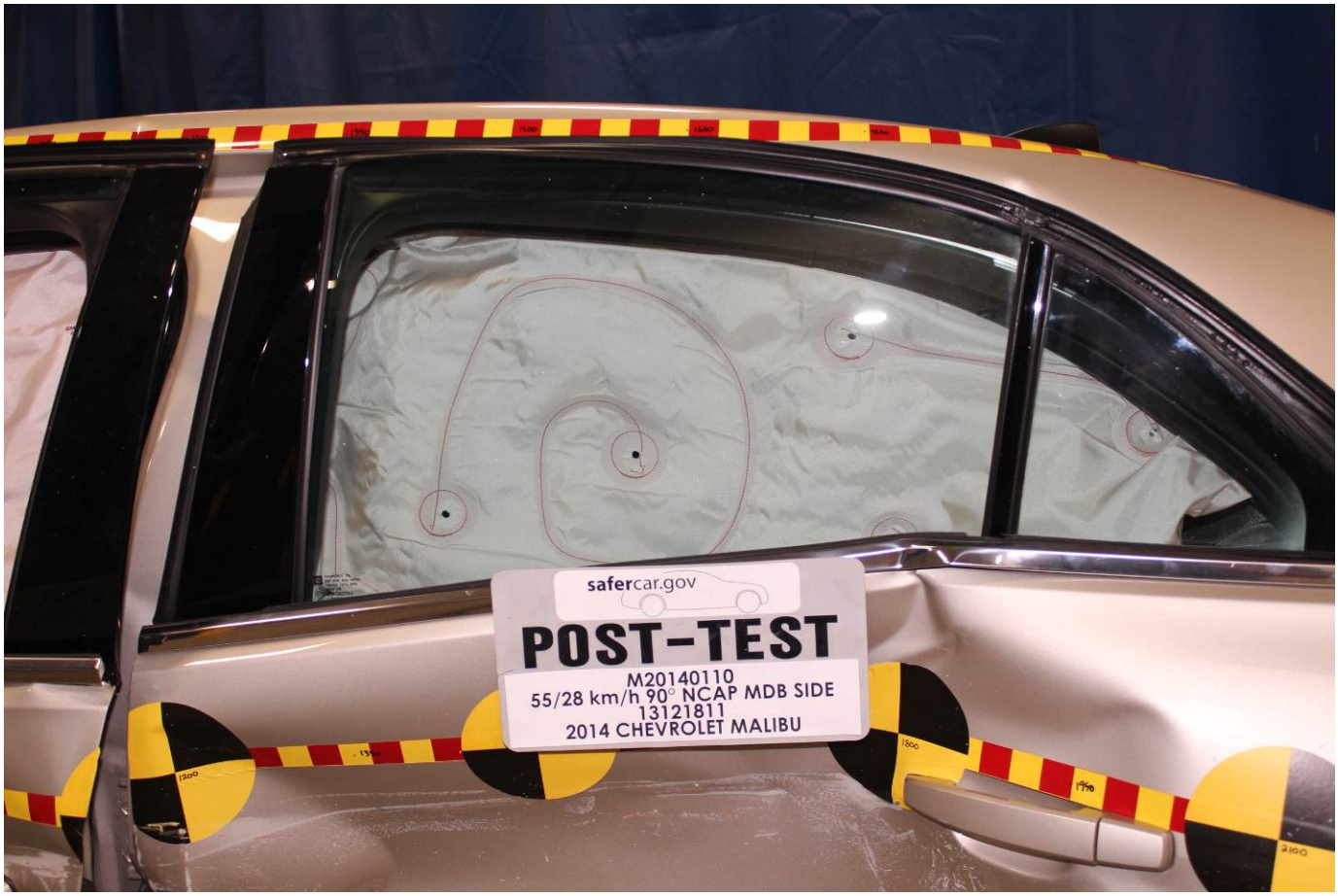
Post-Test Driver Dummy Close-up Pelvis Contact with Side Airbag View

PHOTOGRAPH NOT APPLICABLE

Post-Test Driver Dummy Close-up Knee Contact View

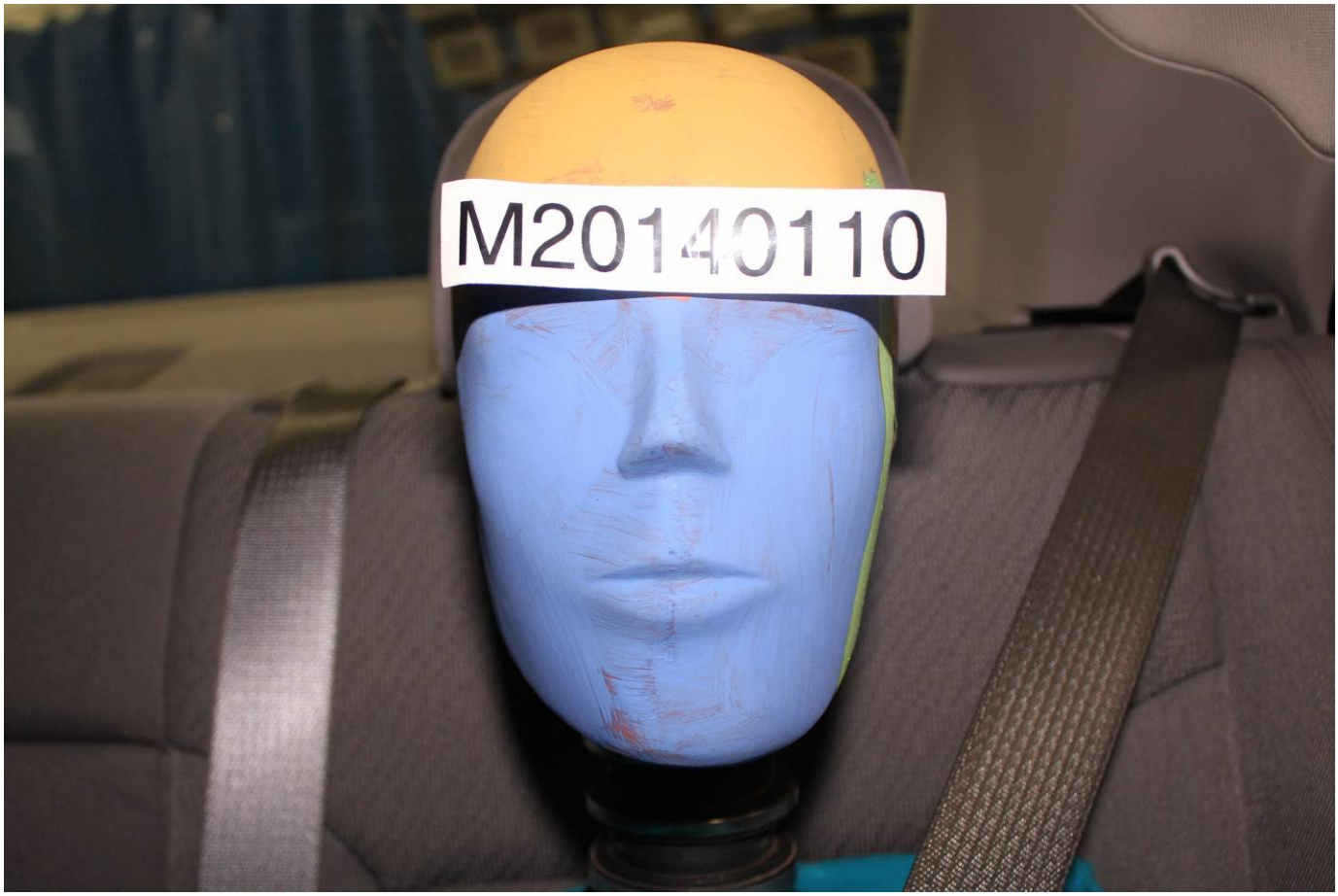
Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking

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

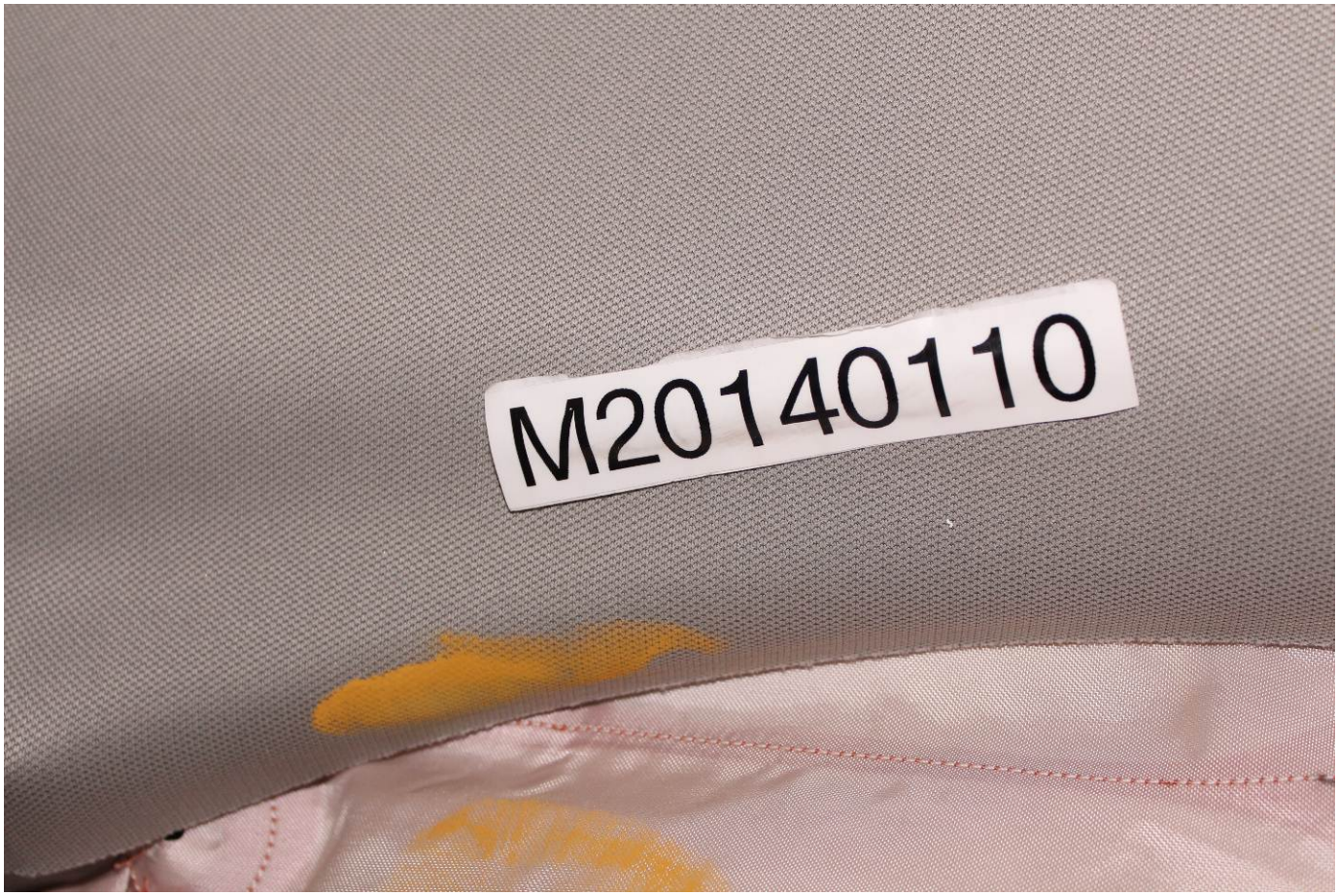
Post-Test Rear Passenger Dummy and Door Clearance View

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 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

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

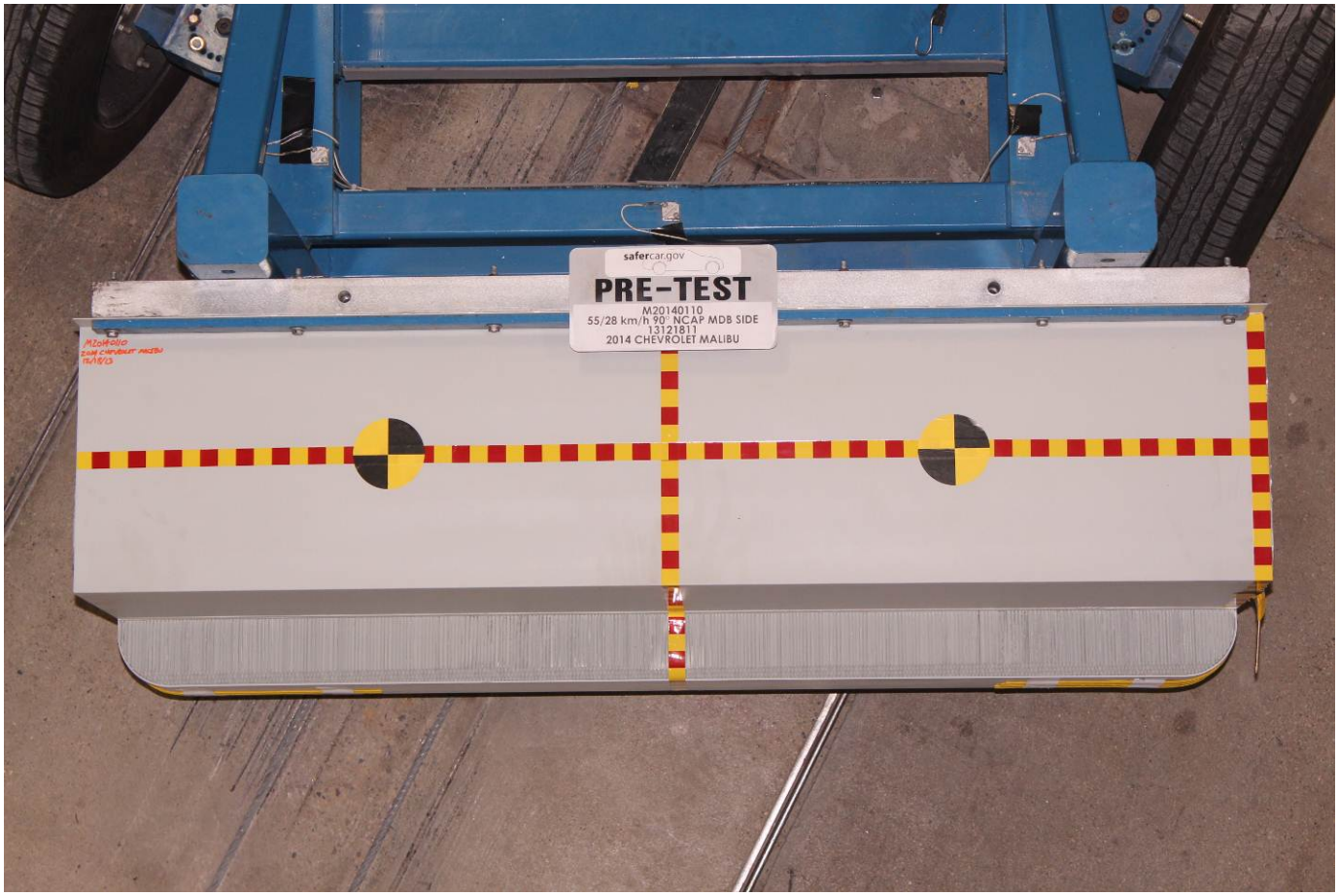
Post-Test Rear Passenger Dummy Close-up Knee Contact View

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

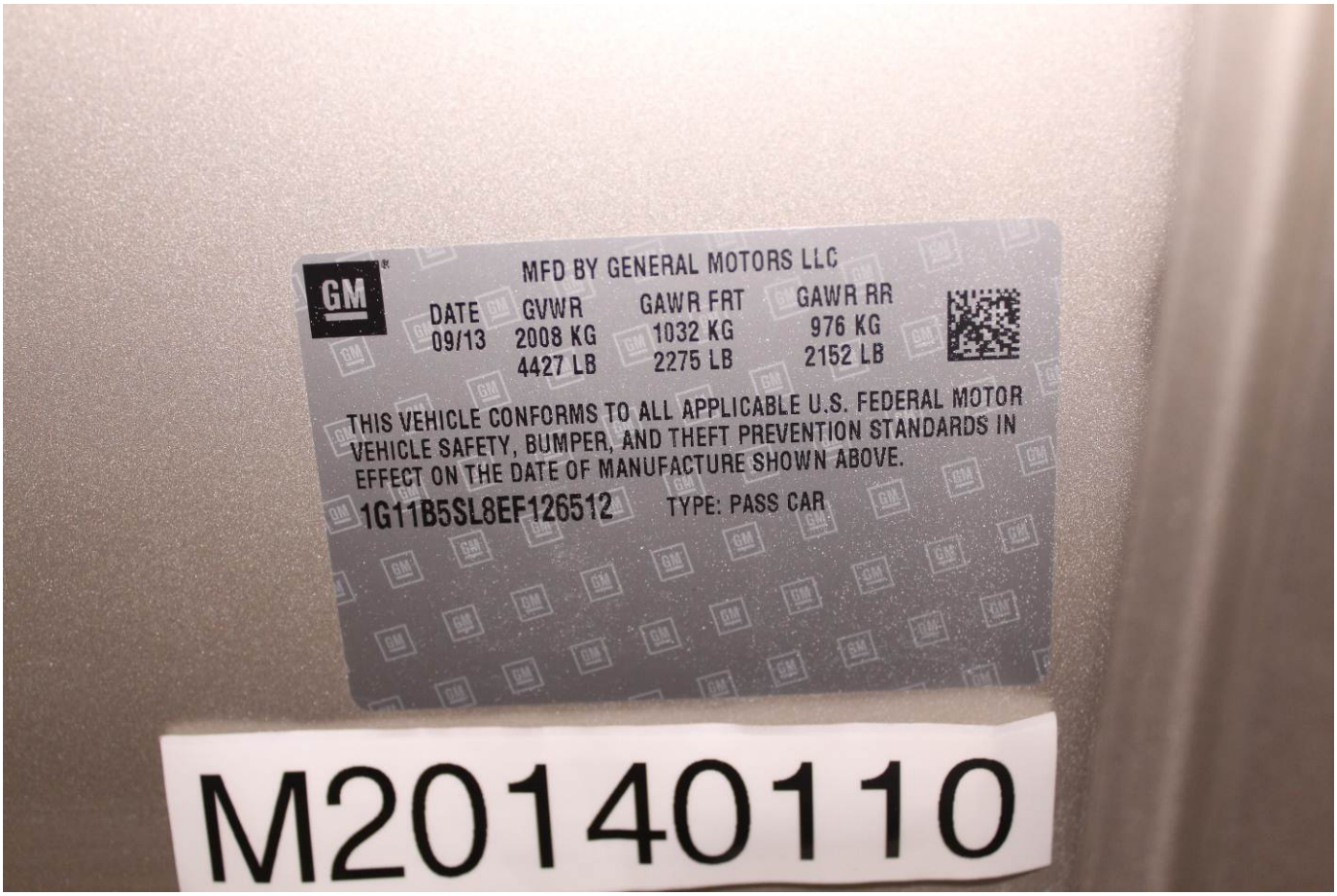
Post-Test Top View of MDB Impactor Face

Pre-Test Left Side View of MDB Impactor Face

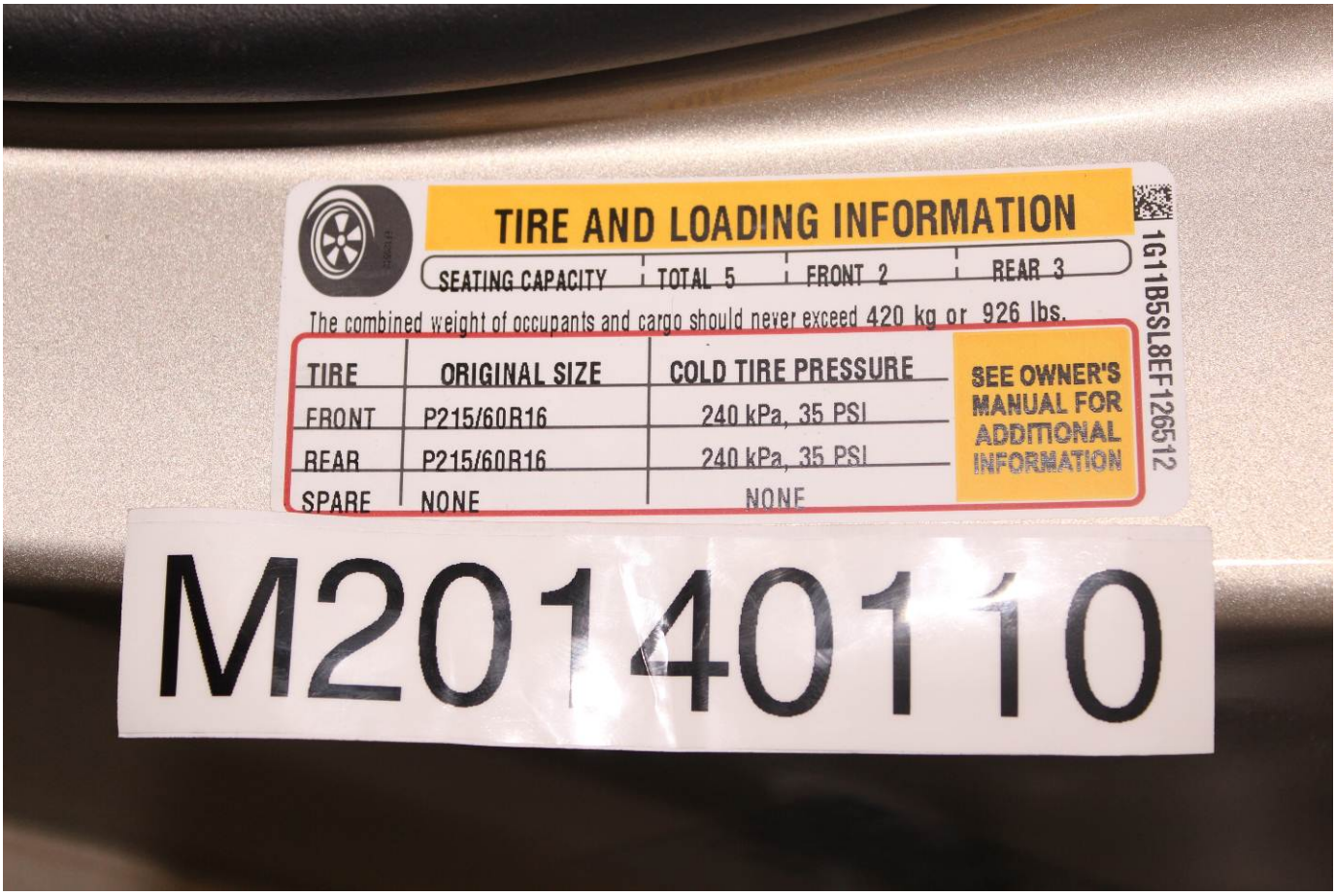
Post-Test Left Side View of MDB Impactor Face

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



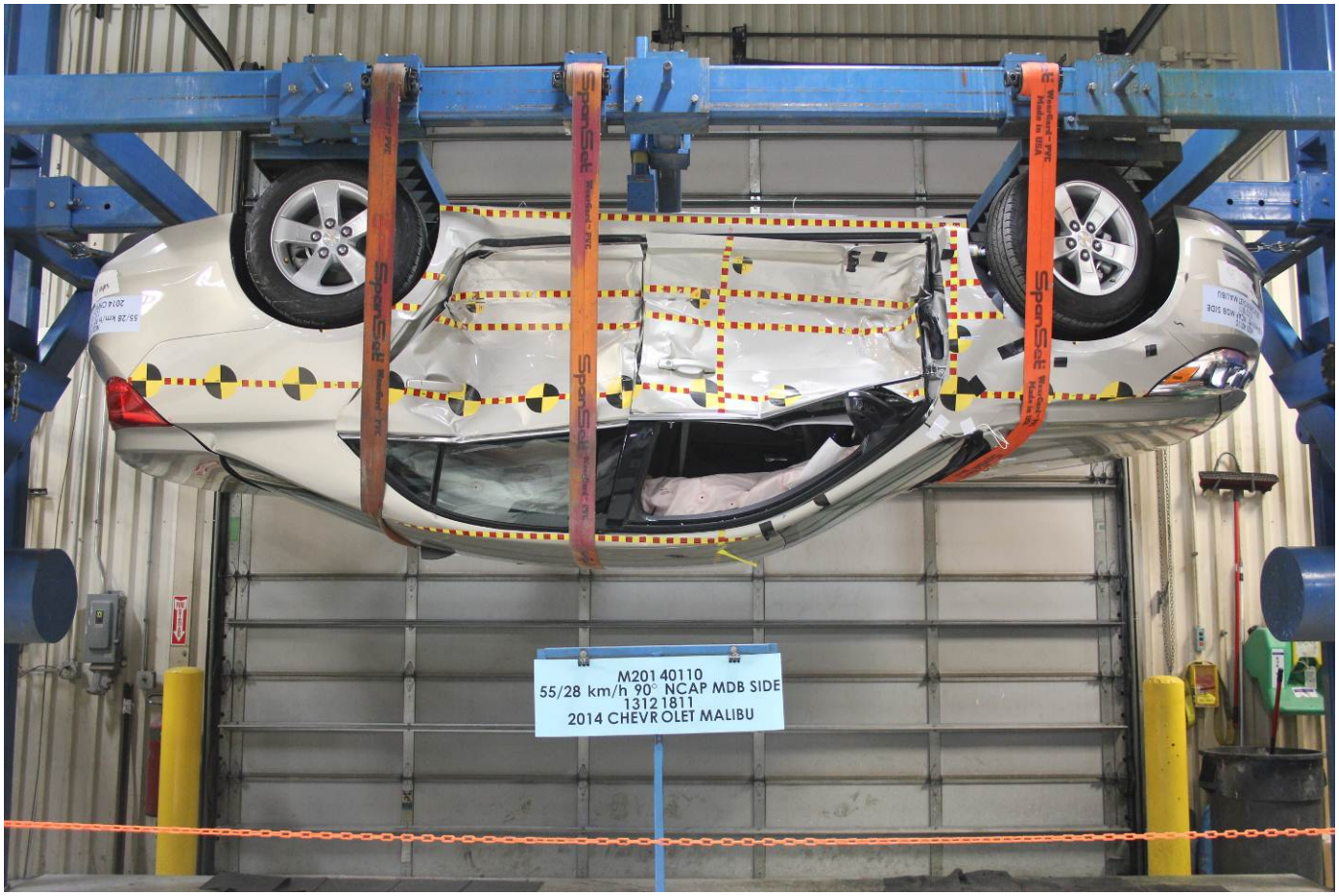
Close-Up View of Vehicle's Tire Information Placard or Label

Pre-Test Ballast View

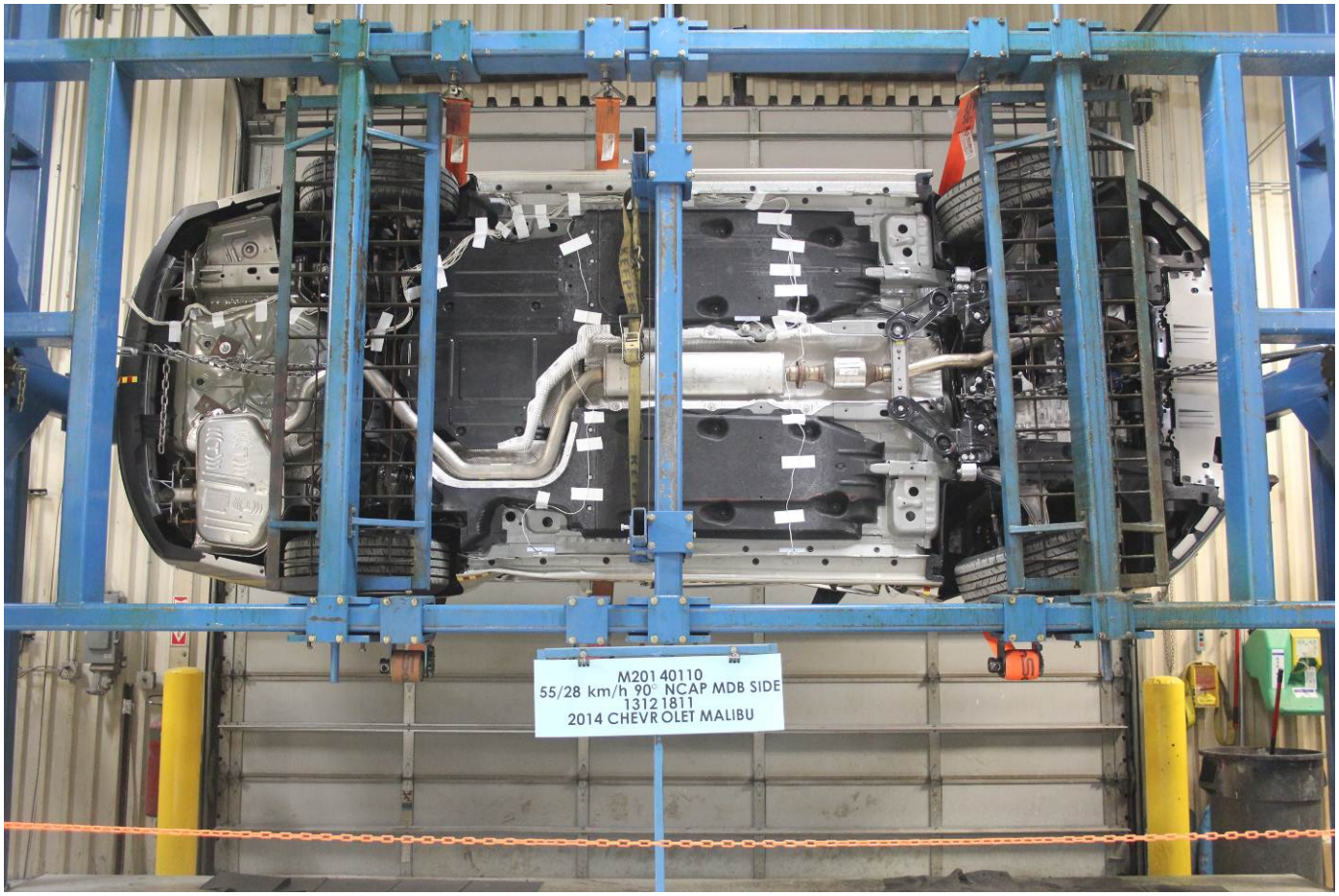
Post-Test Primary and Redundant Speed Trap Read-Out

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

CHEVROLET

2014 MALIBU 1LS

EXTERIOR: CHAMPAGNE SILVER METALLIC
INTERIOR: JET BLACK/DARK TITANIUM

ENGINE, ECOTEC 2.5L DOHC
TRANSMISSION, 6-SPD AUTOMATIC

Visit us at www.chevy.com

STANDARD EQUIPMENT

ITEMS FEATURED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE SHOWN

- SCHEDULED MAINTENANCE 2YR/24,000 MILES OIL & FILTER, 4 WHEEL TIRE ROTATION (SEE WWW.CHEVY.COM OR DEALER FOR DETAILS)
- 5 YEAR / 100,000 MILE POWERTRAIN LIMITED WARRANTY SEE DEALER FOR DETAILS

MECHANICAL

- ENGINE, ECOTEC 2.5L DOHC 4 CYL DI W/VVT, INTAKE VVL & AUTO STOP/START
- TAPSHIFT MANUAL SHIFT CONTROL
- POWER STEERING, ELECTRIC
- CRUISE CONTROL

SAFETY & SECURITY

- AIRBAGS, DRIVER & PASSENGER FRONTAL AND KNEE
- FRT/RR HEAD CURTAIN & SIDE
- STABILITRAK-STABILITY CONTROL SYSTEM W/ TRACTION CONTROL
- ANTILOCK BRAKE SYSTEM, 4 WHEEL DISC
- THEFT DETERRENT SYSTEM
- SAFETY BELTS, 3 POINT, ALL SEATING POSITIONS INCLUDING FRONT SAFETY BELT PRETENSIONERS
- CHILD LOCKS, REAR DOORS & WINDOWS
- 6 MTH ONSTAR(R) DIRECTIONS AND CONNECTIONS W/AUTOMATIC CRASH RESPONSE, TURN-BY-TURN NAV & 5-YEARS REMOTELINK APP KEY FOB SERVICES (ASK DEALER ABOUT GEOGRAPHIC COVERAGE).
- DAYTIME RUNNING LAMPS
- HEADLAMP CONTROL AUTO ON/OFF
- TIRE PRESSURE MONITOR SYSTEM
- TIRE REPAIR KIT

EXTERIOR

- DURALIFE (TM) BRAKE ROTORS
- HEADLAMPS, HALOGEN
- WHEELS, 16" ALUMINUM

INTERIOR

- POWER WINDOWS, FRONT & REAR WITH EXPRESS DOWN
- POWER DOOR LOCKS W/ REMOTE KEYLESS ACCESS
- FRONT BUCKET SEATS
- SEAT ADJUSTER, DRIVER 4-WAY MANUAL, 2-WAY POWER VERTICAL
- SEAT ADJUSTER, FRONT PASSENGER 4 WAY MANUAL 2 WAY POWER VERTICAL
- ARMREST, REAR CENTER, CUPHOLDERS/STORAGE
- STEERING COLUMN, TILT & TELESCOPIC
- STEERING WHEEL CONTROLS, AUDIO AND CRUISE
- AM/FM STEREO, CD PLAYER, AUX JACK
- AUDIO SYSTEM, 6 SPEAKER PREMIUM SOUND
- BLUETOOTH FOR PHONE
- FRT PWR OUTLETS, TWO 12 VOLT

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE

STANDARD VEHICLE PRICE	**$22,140.00**

OPTIONS INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)

TOTAL OPTIONS	$0.00
TOTAL VEHICLE & OPTIONS	$22,140.00
DESTINATION CHARGE	825.00
TOTAL VEHICLE PRICE*	**$22,965.00**

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy: **29 MPG** combined city/hwy (25 city, 36 highway)
Mid-size cars range from 13 to 58 MPG. The best vehicle rates 121 MPGe.
3.4 gallons per 100 miles

You save **$2,500** in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost **$1,800**

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 7 (1 – 10 Best)
Smog Rating (tailpipe only): 6 (1 – 10 Best)

This vehicle emits 307 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions: learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 MPG and costs $11,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $3.50 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

GOVERNMENT 5-STAR SAFETY RATINGS

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

Frontal Crash — Driver ★★★★★ Passenger ★★★★
Based on the risk of injury in a frontal impact.
Should ONLY be compared to other vehicles of similar size and weight.

Side Crash — Front seat: Not Rated; Rear seat: Not Rated
Based on the risk of injury in a side impact.

Rollover ★★★★
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

Equipped with the safety and connectivity of OnStar.
Push your blue button or visit onstar.com for details.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 66%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 17%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
KANSAS CITY, KS U.S.A.
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: UNITED STATES

This label has been applied pursuant to Federal law. Do not remove prior to delivery to the ultimate purchaser. "Includes Manufacturer's Recommended Pre-Delivery Service. Does not include dealer installed options and accessories not listed above, local taxes or license fees.

ORDER NO RGNM04 SALES CODE E
SALES MODEL CODE 1GB69
DEALER NO 11461
FINAL ASSEMBLY:
KANSAS CITY, KS U.S.A.
VIN 1G11B5SL8EF126512
DEALER TO WHOM DELIVERED
RAY CHEVROLET, INC.
39 N RTE 12
FOX LAKE, IL 60020-1222

CE
1AG2285194

Monroney Label

3-2 Seats and Restraints

Head Restraints

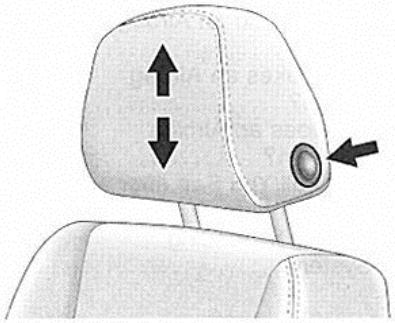
⚠ Warning

With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.

Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.

Front Seat

The vehicle's front seats have adjustable head restraints in the outboard seating positions.



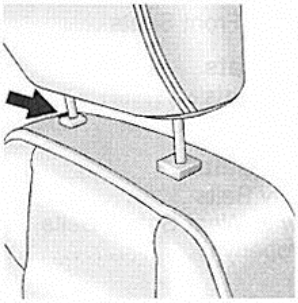
To raise or lower the head restraint, press the button located on the side of the head restraint and pull up or push the head restraint down and release the button.

Pull and push on the head restraint after the button is released to make sure that it is locked in place.

The front seat outboard head restraints are not designed to be removed.

Rear Seat

The vehicle's rear seats have adjustable head restraints in the outboard seating positions.



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

The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.

To lower the head restraint, press the button, located on the top of the seatback, and push the head restraint down. Try to move the head restraint after the button is released to make sure that it is locked in place.

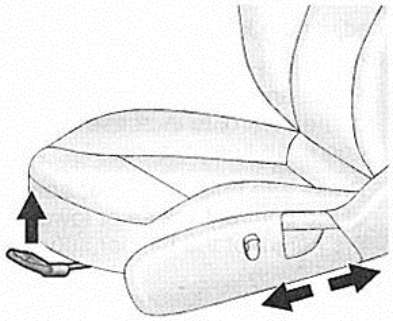
If you are installing a child restraint in the rear seat, see "Securing a Child Restraint Designed for the LATCH System" under *Lower Anchors and Tethers for Children (LATCH System) on page 3-39*.

Front Seats

Seat Adjustment

⚠ Warning

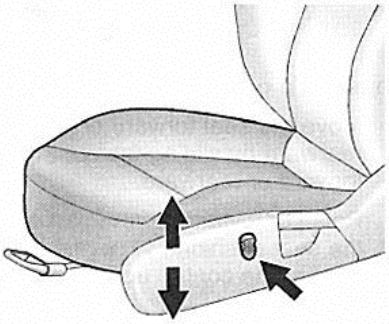
You can lose control of the vehicle if you try to adjust a driver seat while the vehicle is moving. Adjust the driver seat only when the vehicle is not moving.



To adjust a manual seat:

1. Pull the handle at the front of the seat.
2. Slide the seat to the desired position and release the handle.
3. Try to move the seat back and forth to be sure it is locked in place.

Seat Height Adjuster



Press and hold the top or bottom of the switch to raise or lower the seat. Release the switch when the desired height is reached.

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

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 Head CG Redundant Acceleration (X) vs. Time

Driver Head CG Redundant Acceleration (Y) vs. Time

Driver Head CG Redundant Acceleration (Z) vs. Time

Driver 9 Axis Head X Arm Y

Driver 9 Axis Head X Arm Z

Driver 9 Axis Head Y Arm X

Driver 9 Axis Head Y Arm Z

Driver 9 Axis Head Z Arm X

Driver 9 Axis Head Z Arm Y

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Head CG Redundant Acceleration (X) vs. Time

Passenger Head CG Redundant Acceleration (Y) vs. Time

Passenger Head CG Redundant Acceleration (Z) vs. Time

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)

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)

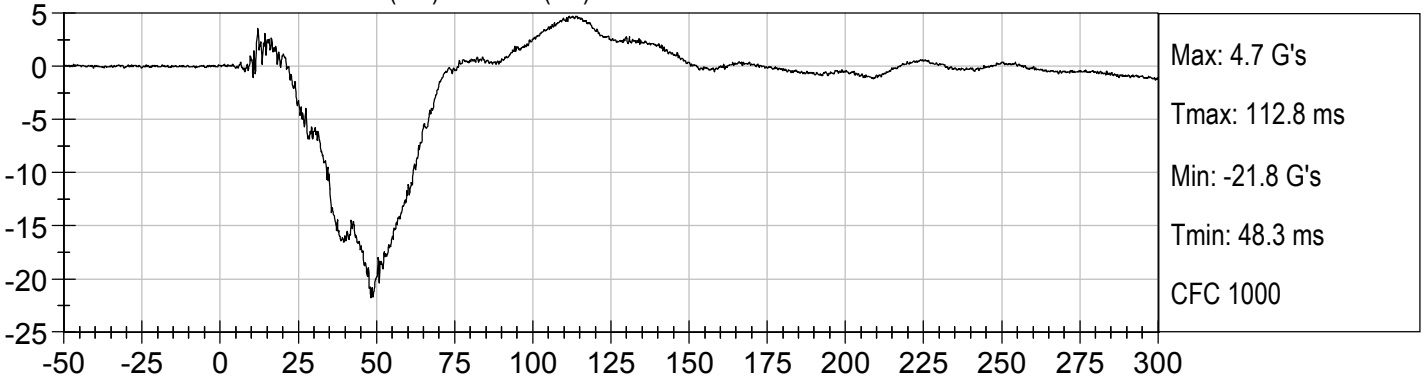
MDB Rear Acceleration (X)

MDB Rear Acceleration (Y)

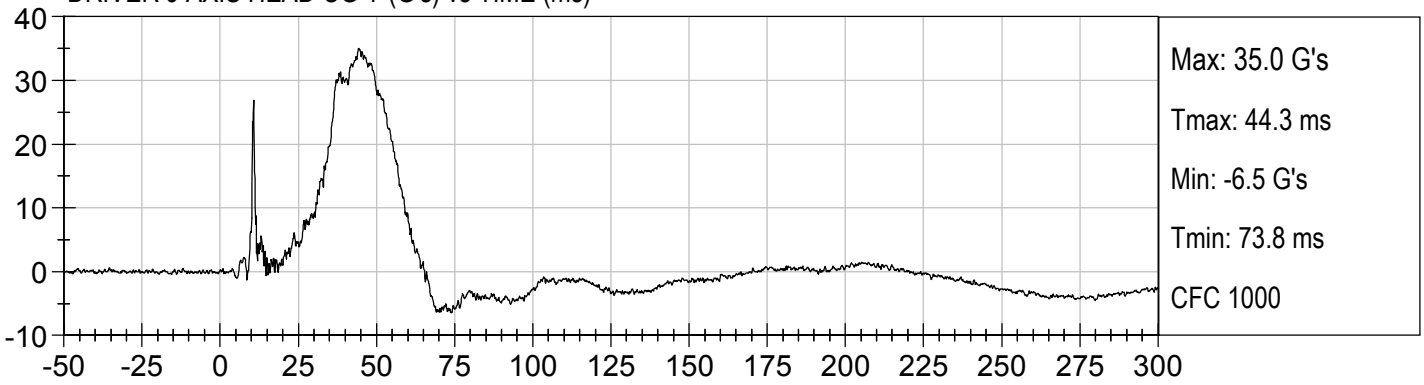
Left MDB Contact Switch

Right MDB Contact Switch

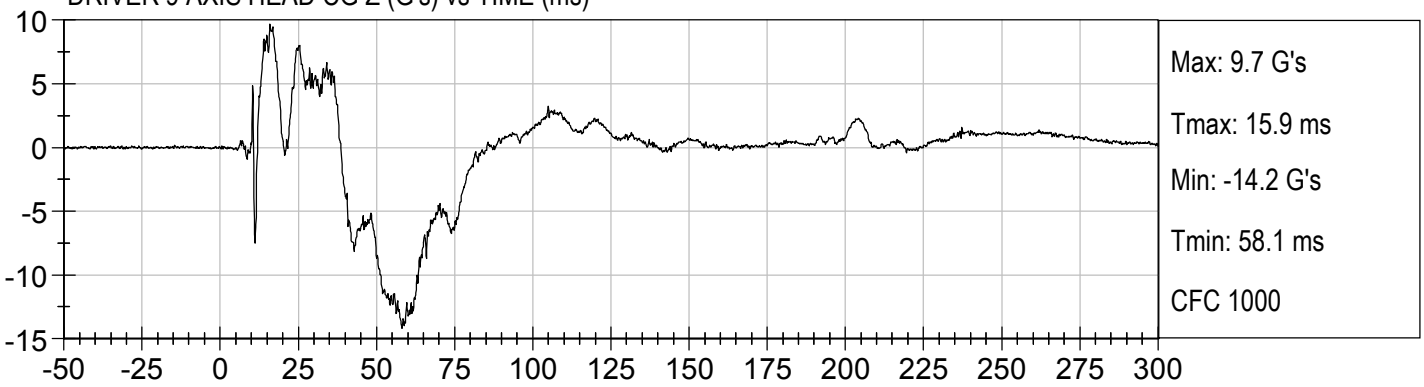
DRIVER 9 AXIS HEAD CG X (G's) vs TIME (ms)



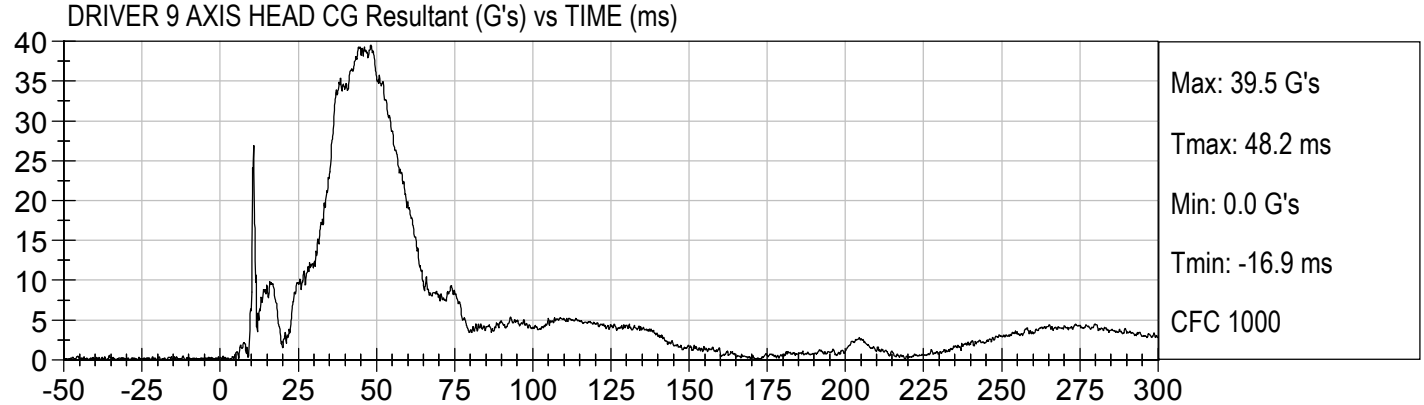
DRIVER 9 AXIS HEAD CG Y (G's) vs TIME (ms)



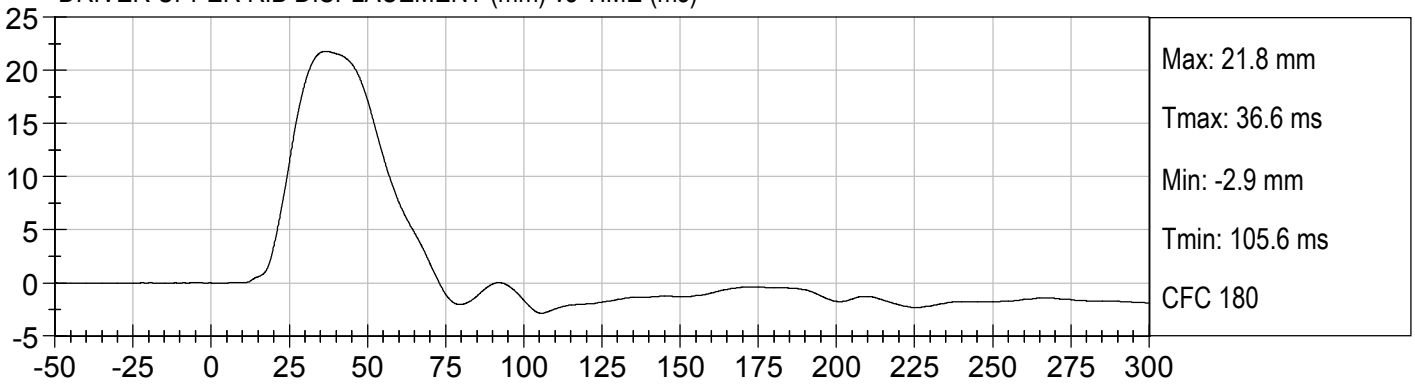
DRIVER 9 AXIS HEAD CG Z (G's) vs TIME (ms)



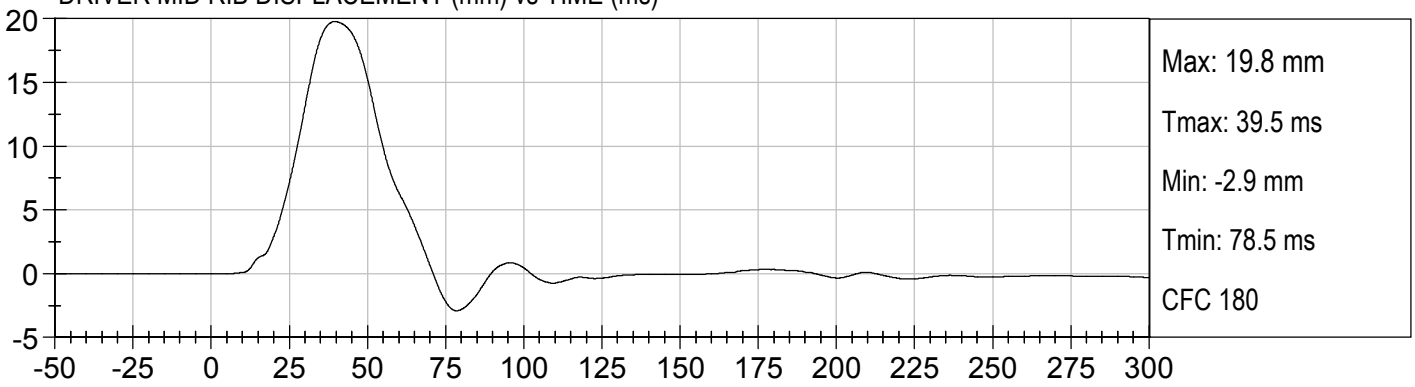
DRIVER 9 AXIS HEAD CG Resultant (G's) vs TIME (ms)



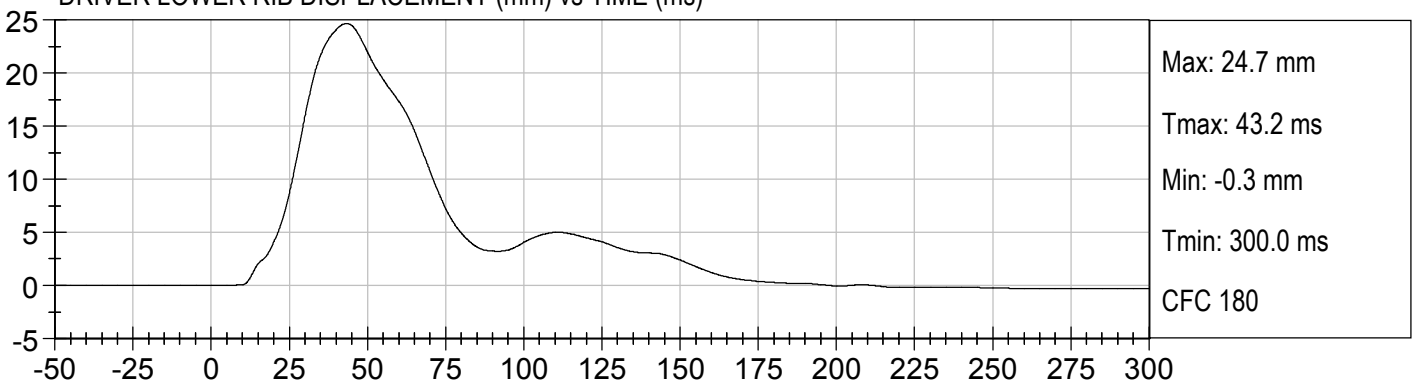
DRIVER UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



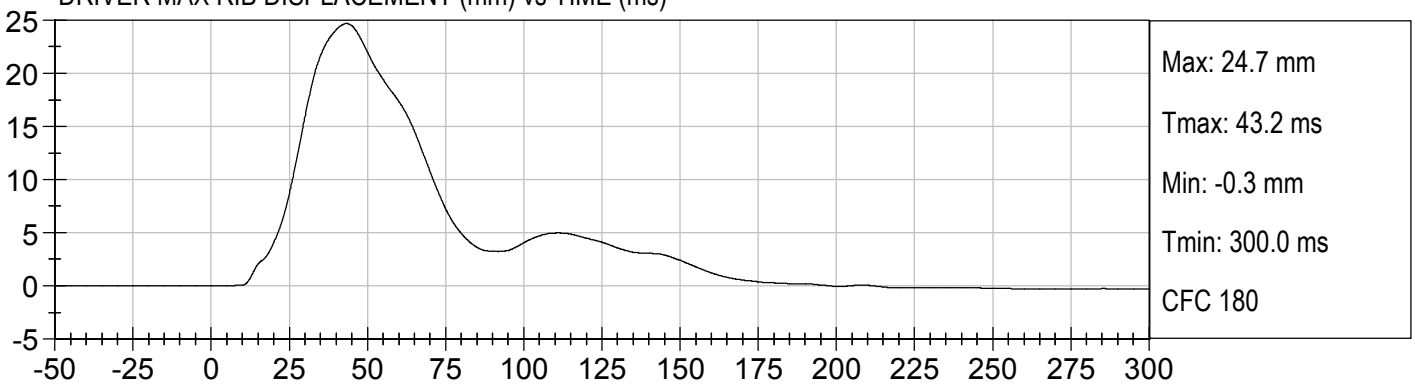
DRIVER MID RIB DISPLACEMENT (mm) vs TIME (ms)



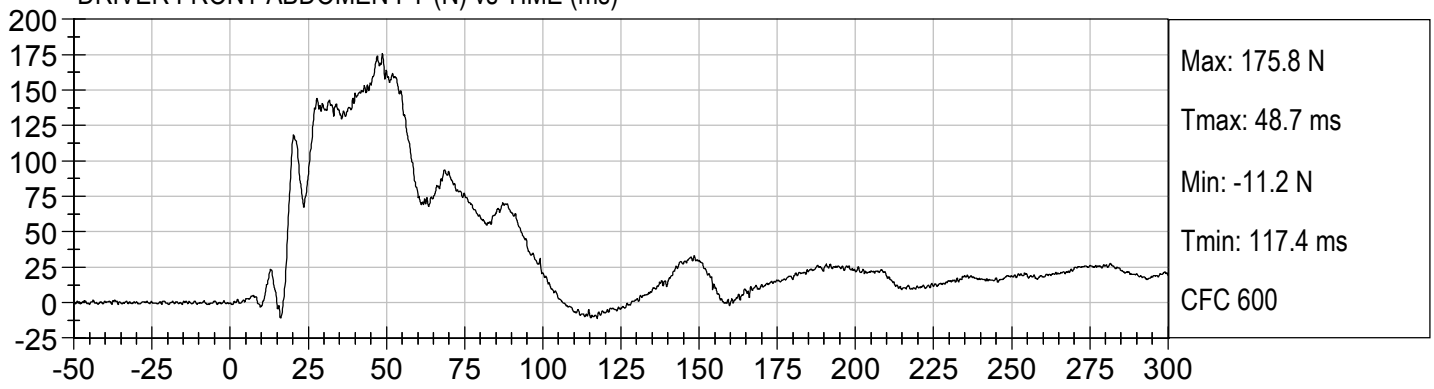
DRIVER LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



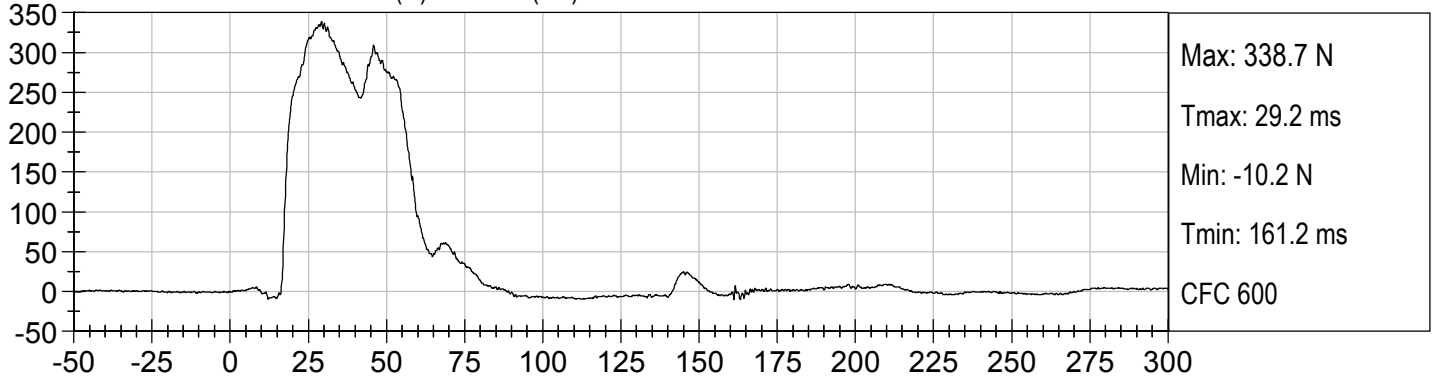
DRIVER MAX RIB DISPLACEMENT (mm) vs TIME (ms)



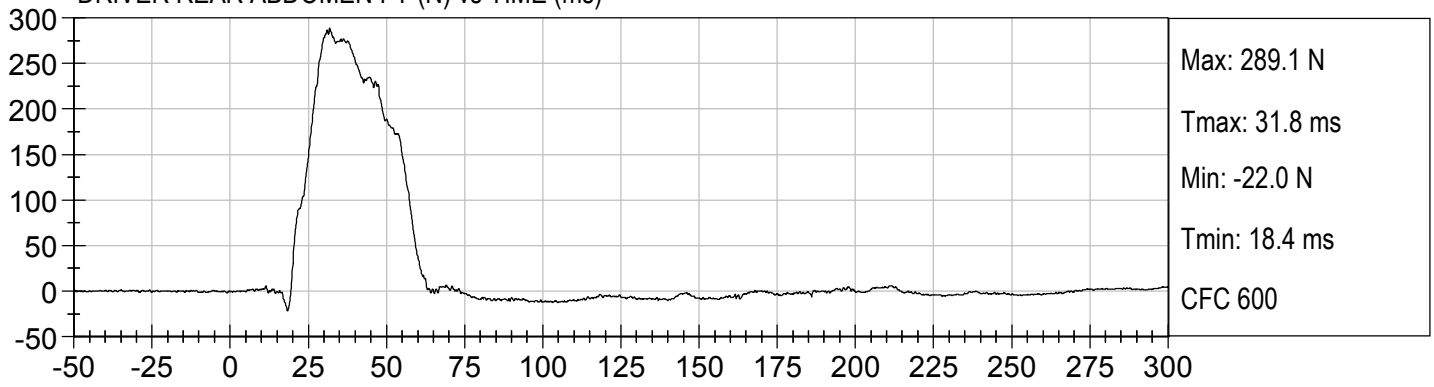
DRIVER FRONT ABDOMEN FY (N) vs TIME (ms)



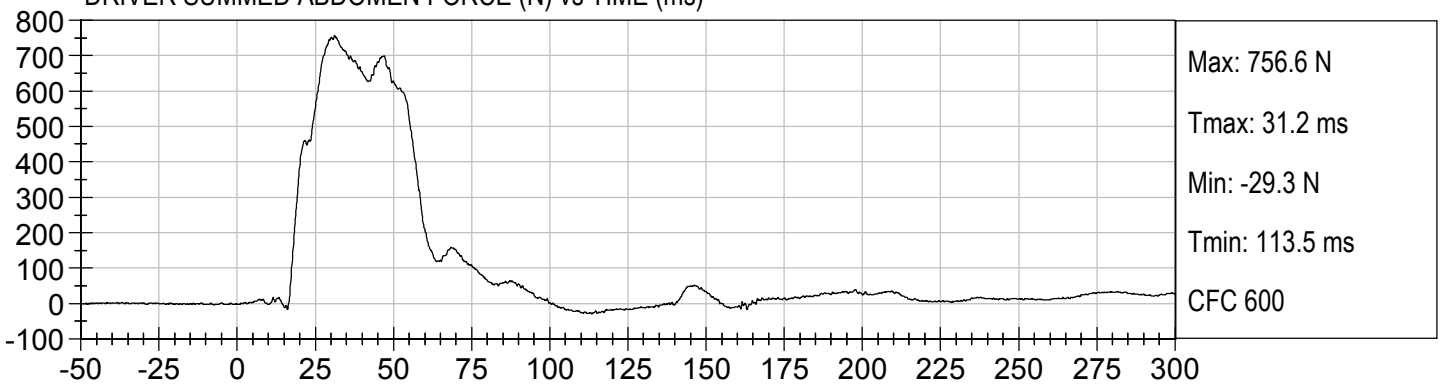
DRIVER MID ABDOMEN FY (N) vs TIME (ms)



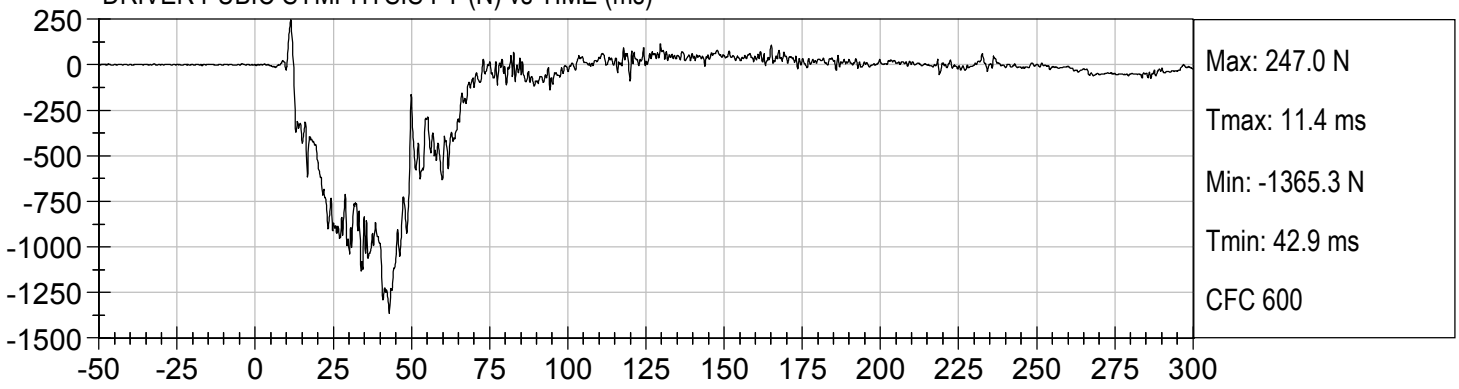
DRIVER REAR ABDOMEN FY (N) vs TIME (ms)



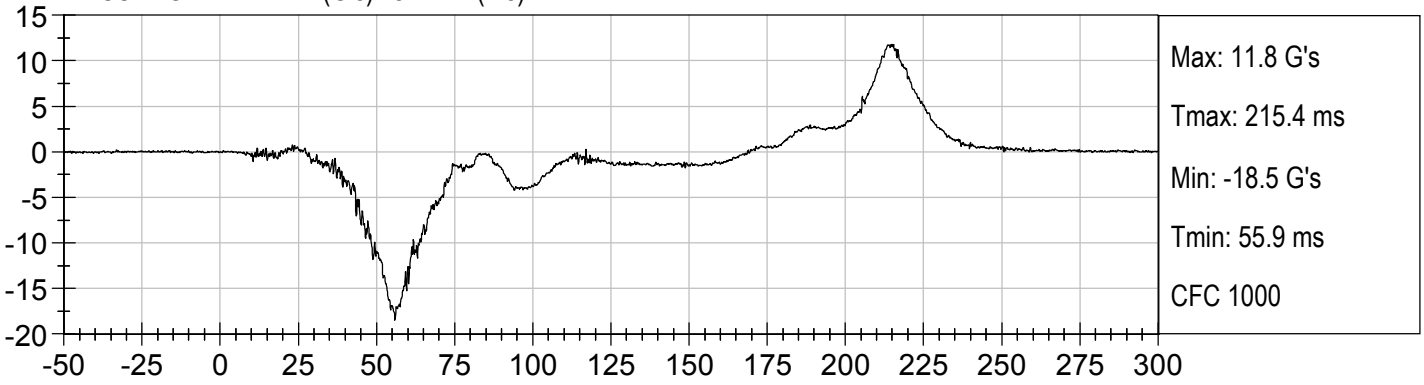
DRIVER SUMMED ABDOMEN FORCE (N) vs TIME (ms)



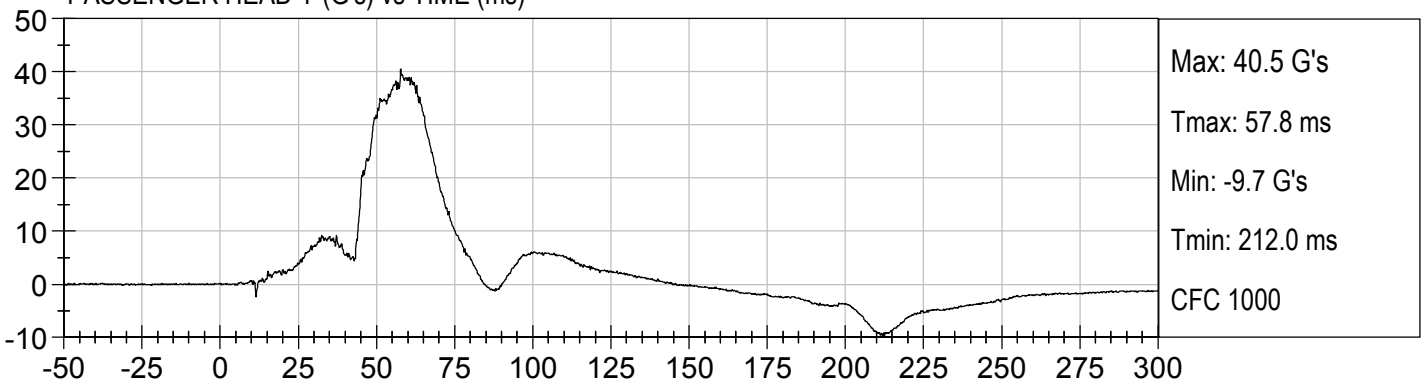
DRIVER PUBIC SYMPHYSIS FY (N) vs TIME (ms)



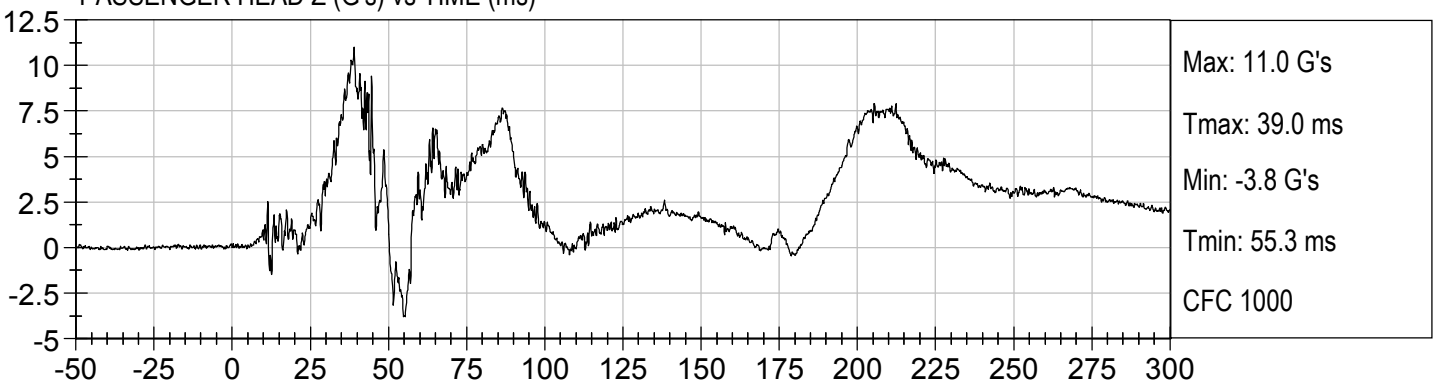
PASSENGER HEAD X (G's) vs TIME (ms)



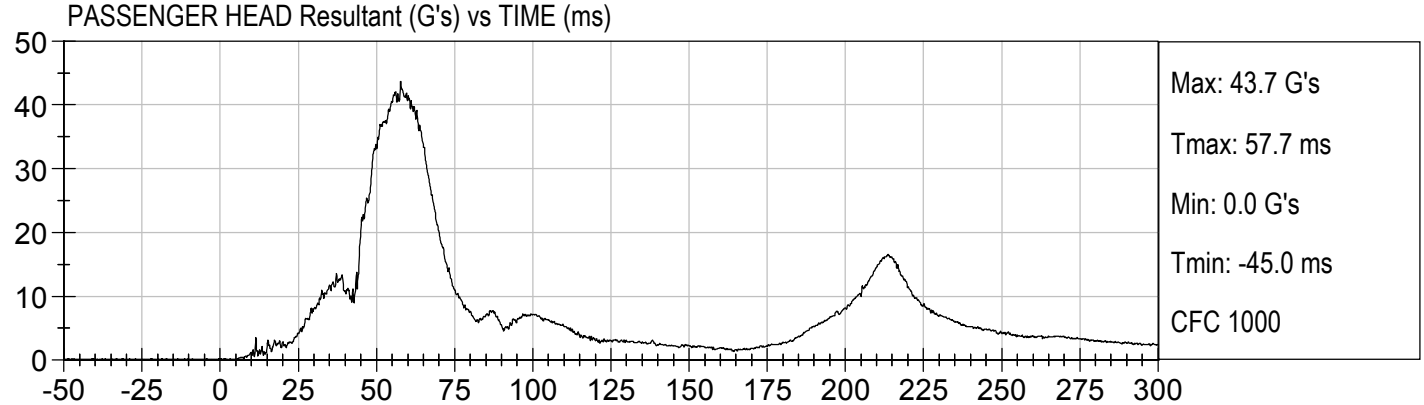
PASSENGER HEAD Y (G's) vs TIME (ms)



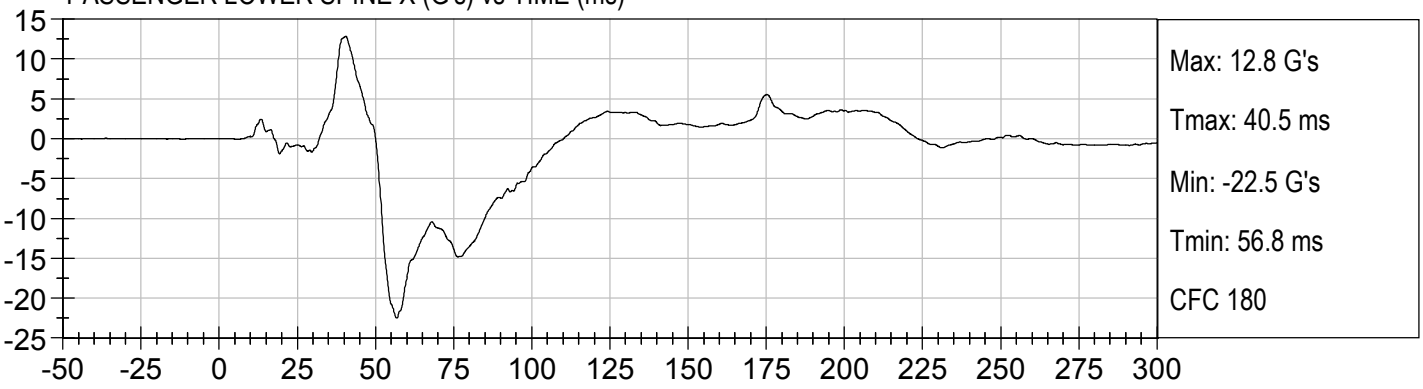
PASSENGER HEAD Z (G's) vs TIME (ms)



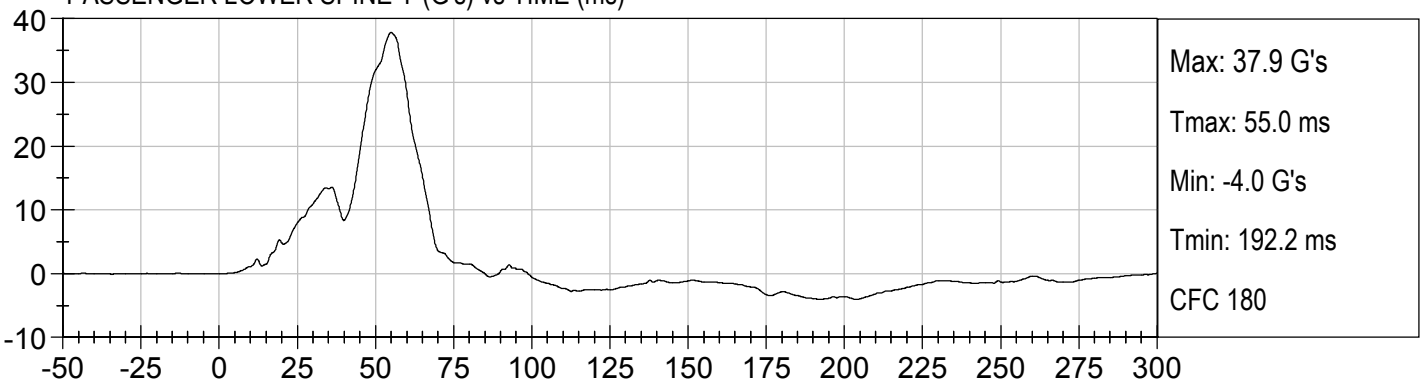
PASSENGER HEAD Resultant (G's) vs TIME (ms)



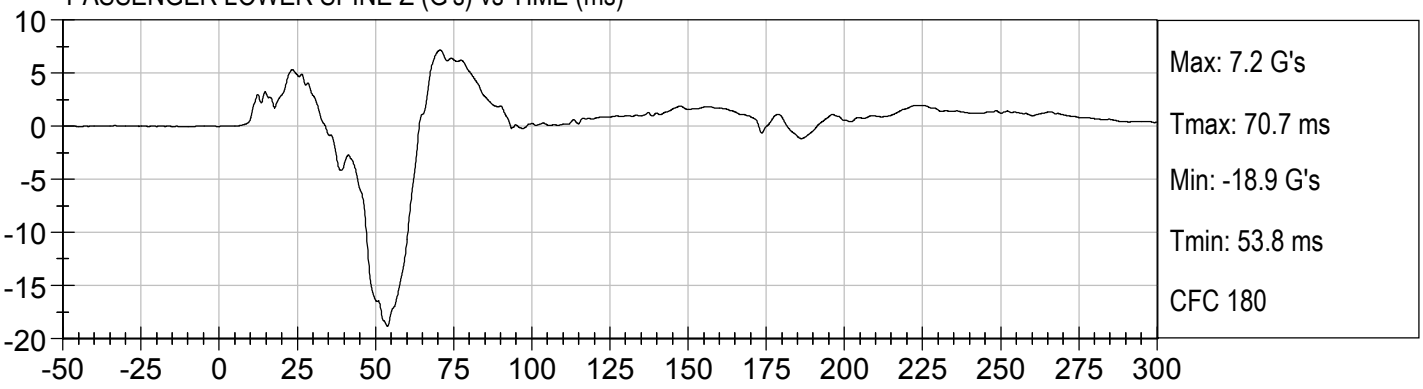
PASSENGER LOWER SPINE X (G's) vs TIME (ms)



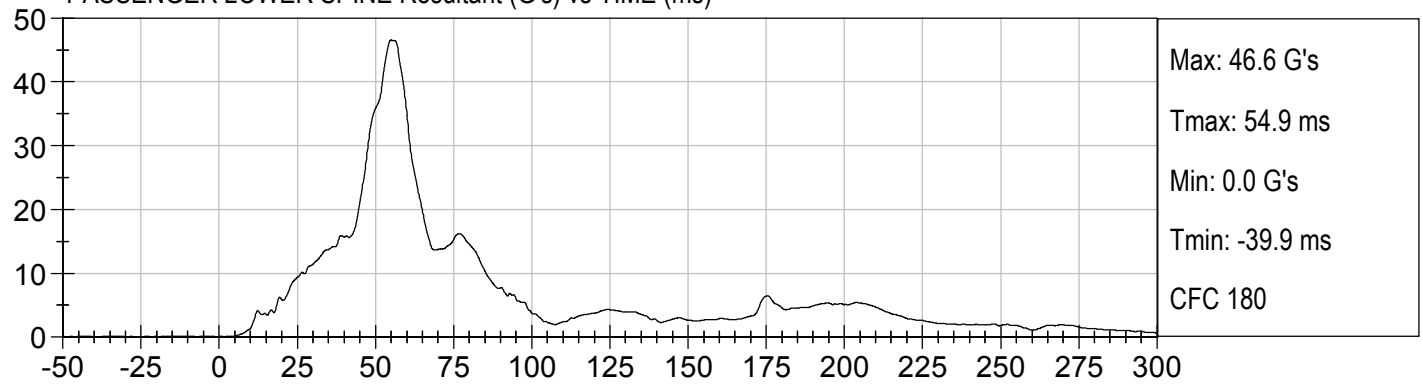
PASSENGER LOWER SPINE Y (G's) vs TIME (ms)



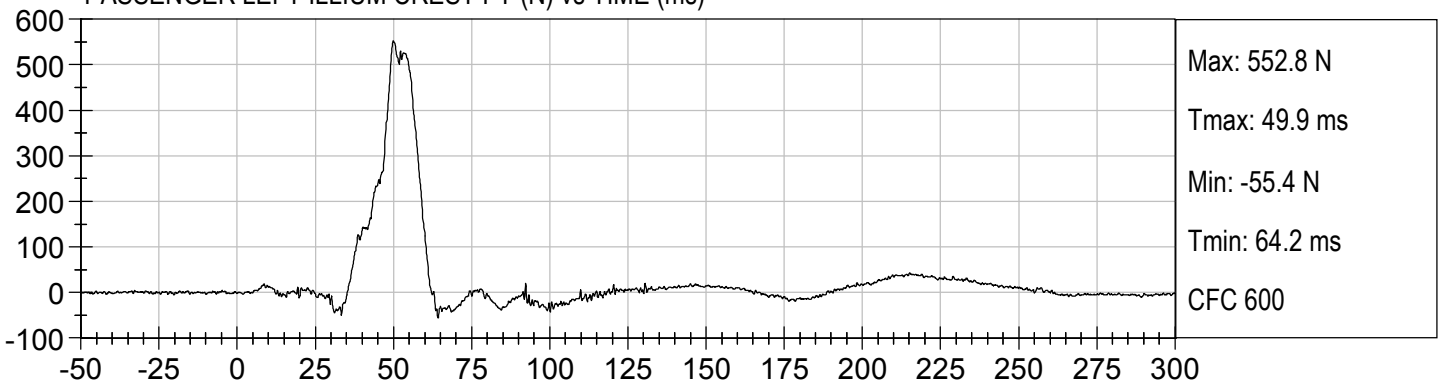
PASSENGER LOWER SPINE Z (G's) vs TIME (ms)



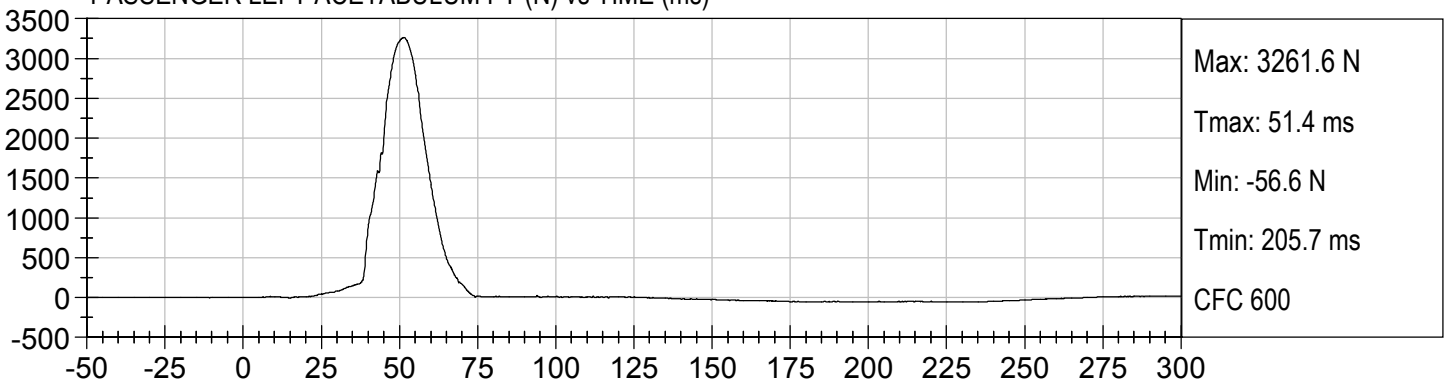
PASSENGER LOWER SPINE Resultant (G's) vs TIME (ms)



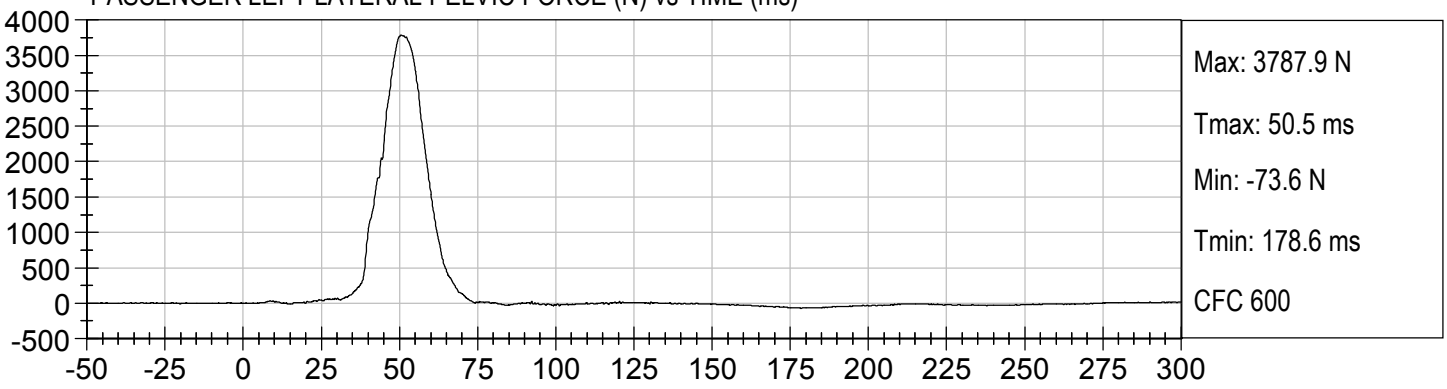
PASSENGER LEFT ILLIUM CREST FY (N) vs TIME (ms)



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:** D134281

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	12	Pass
Peak Resultant Acceleration	G's	125 to 155	146	Pass
Peak Longitudinal Acceleration	G's	<= +/- 15.0	-4.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

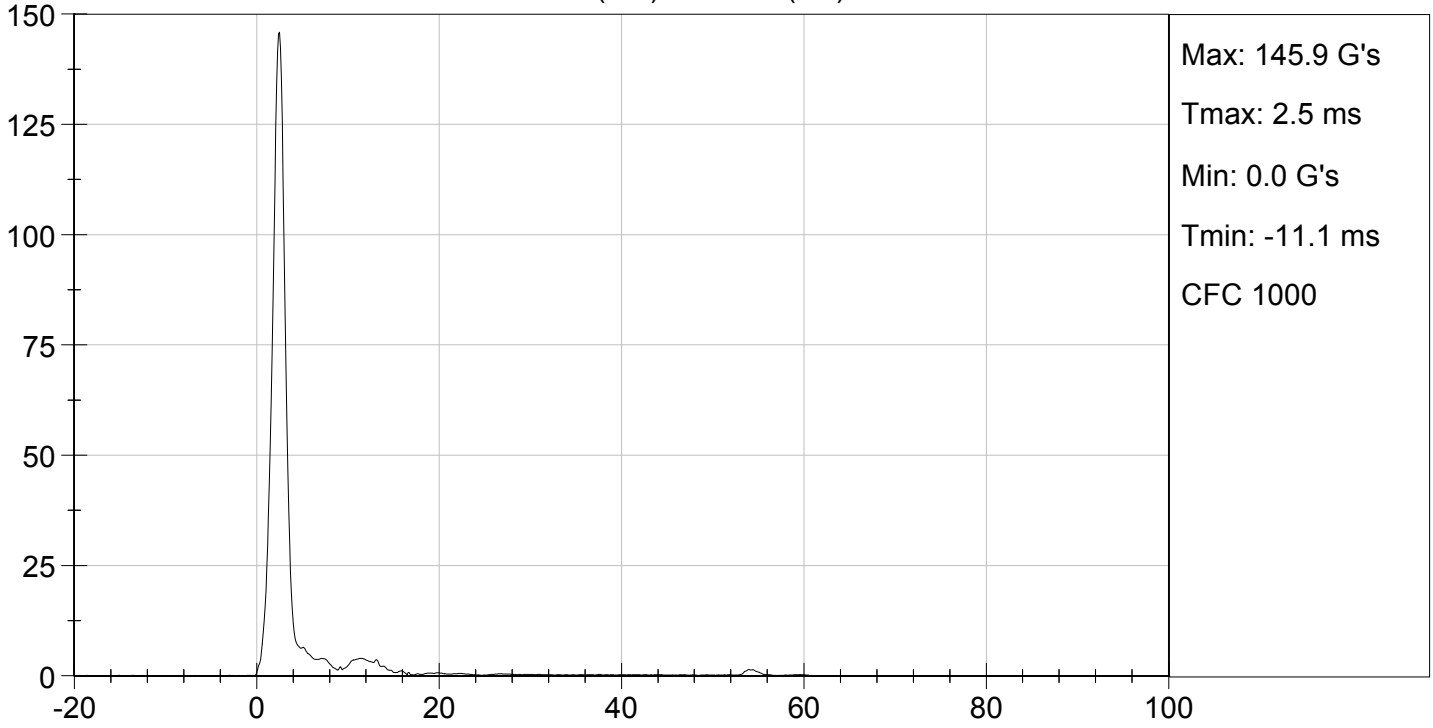
12/16/2013
Test Date

David Winkelbauer
Approved By

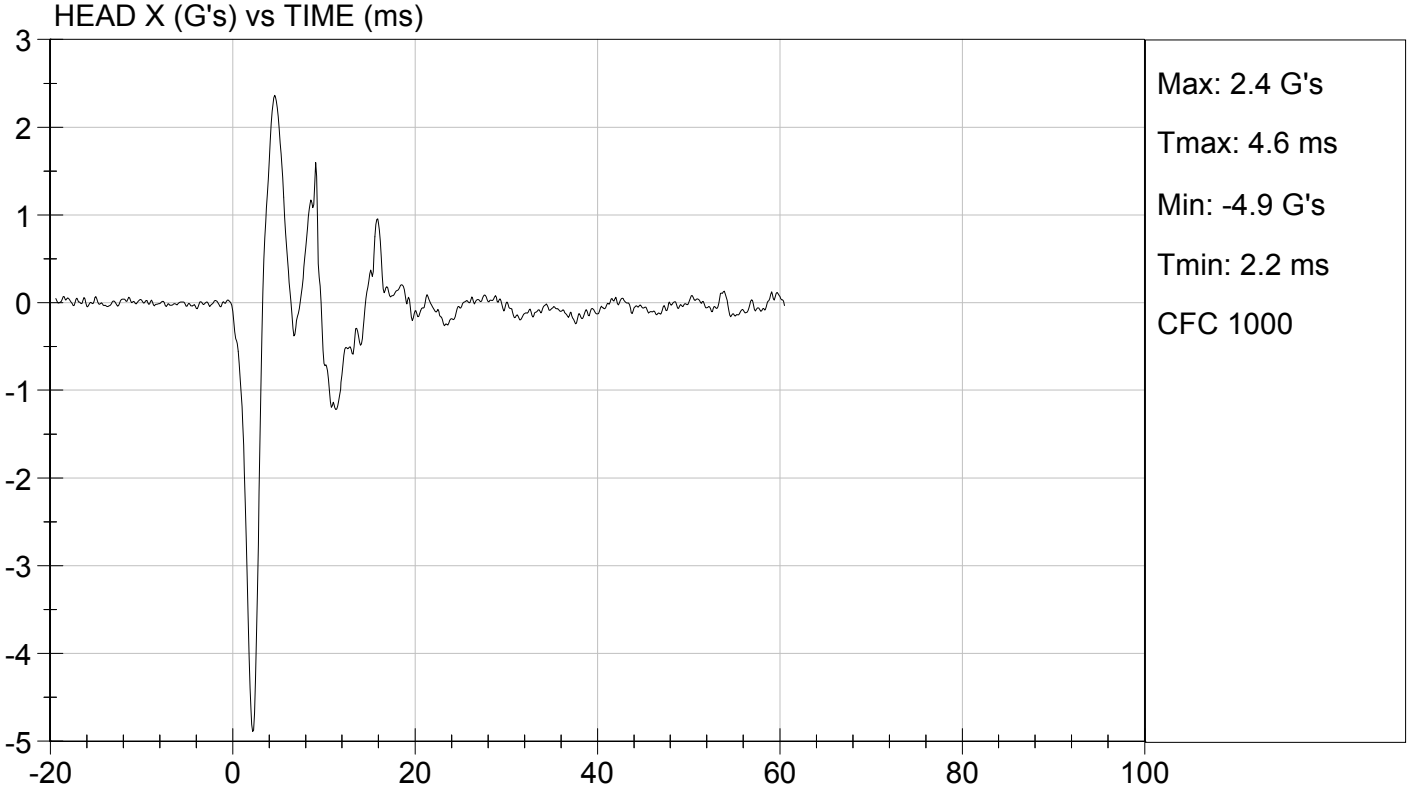
TEST DESC: HEAD DROP

TEST DATE: 12/16/2013
TEST #: D134281

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



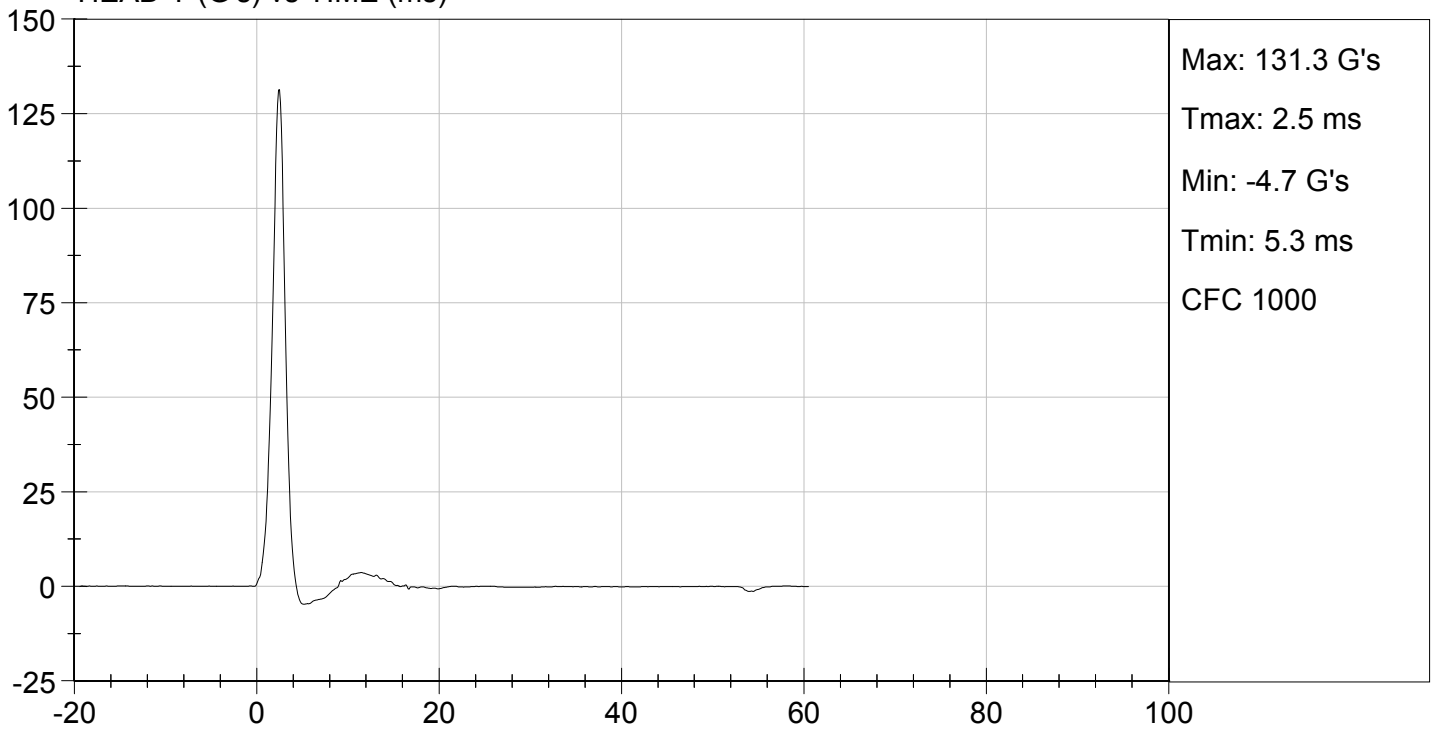
HEAD X (G's) vs TIME (ms)



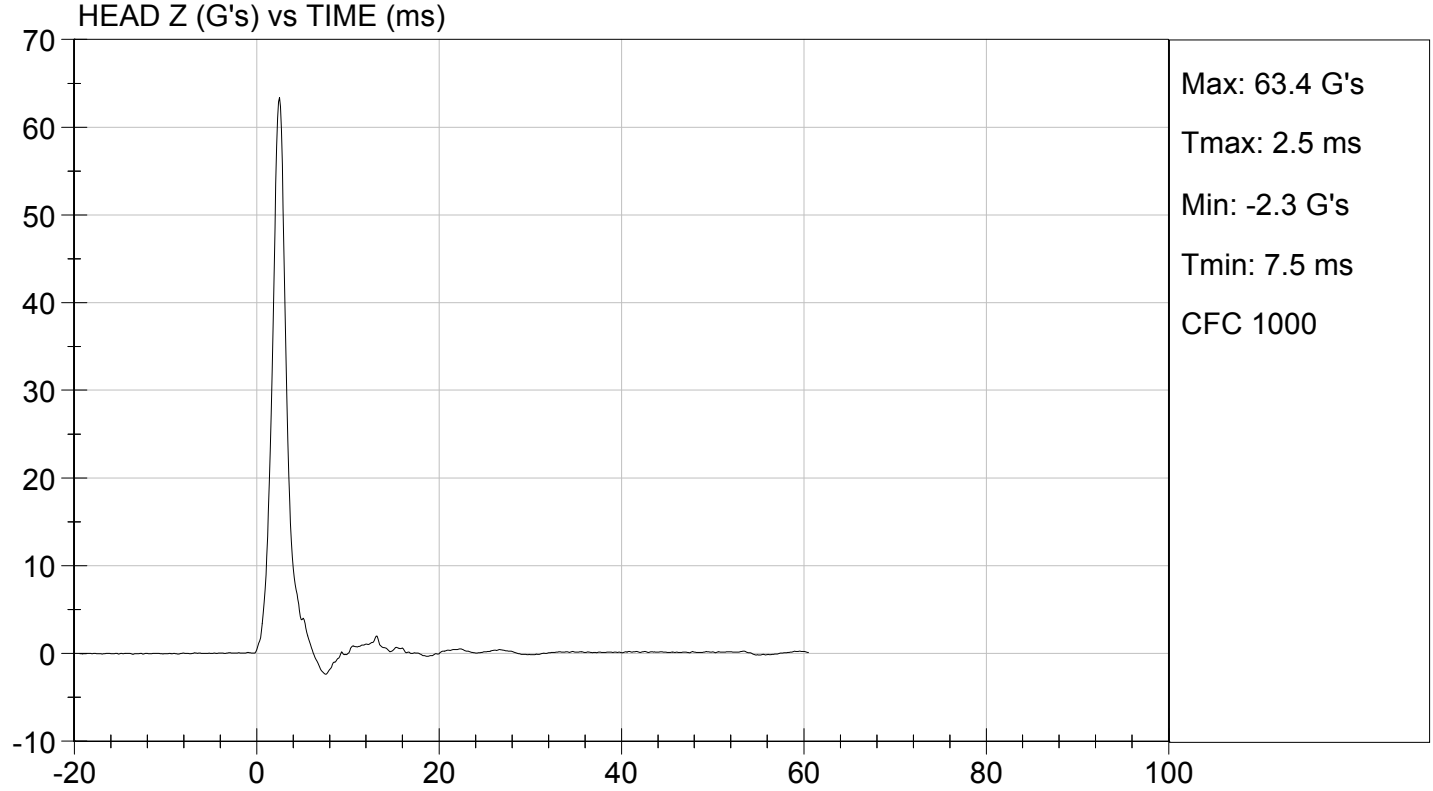
TEST DESC: HEAD DROP

TEST DATE: 12/16/2013
TEST #: D134281

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



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



MGA RESEARCH CORPORATION

NECK PENDULUM TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134282

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	12	Pass
Pendulum Speed		m/s	3.30 to 3.50	3.41	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.03	Pass
	3 ms	m/s	-0.25 to -0.375	-0.34	Pass
	14 ms	m/s	-3.20 to -3.70	-3.27	Pass
	17 ms	m/s	>= -3.70	-3.32	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	50.5	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	59.5	Pass
Head Rotation Decay Time to 0 Degree		ms	53.0 to 88.0	54.4	Pass
			Overall Results		Pass

Jessica Hall
Laboratory Technician

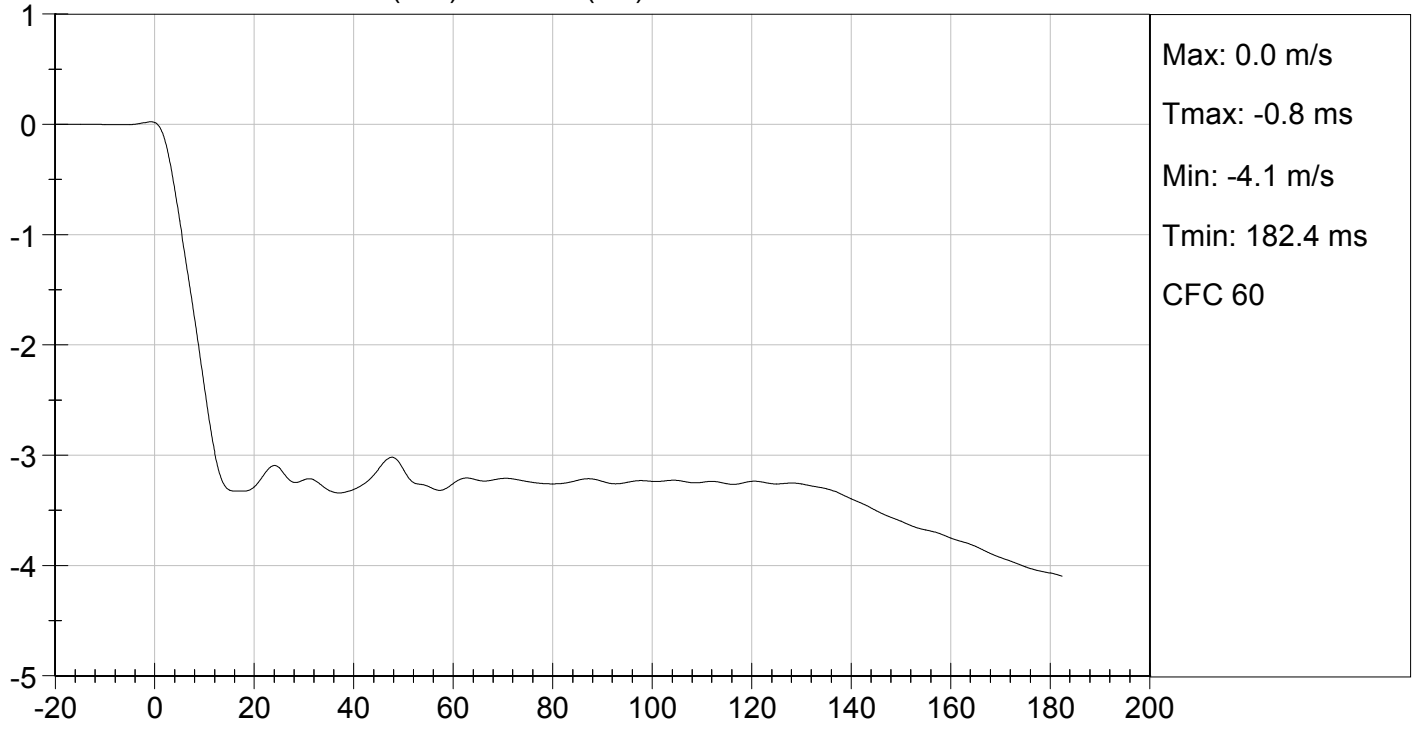
12/16/2013
Test Date

David Winkelbauer
Approved By

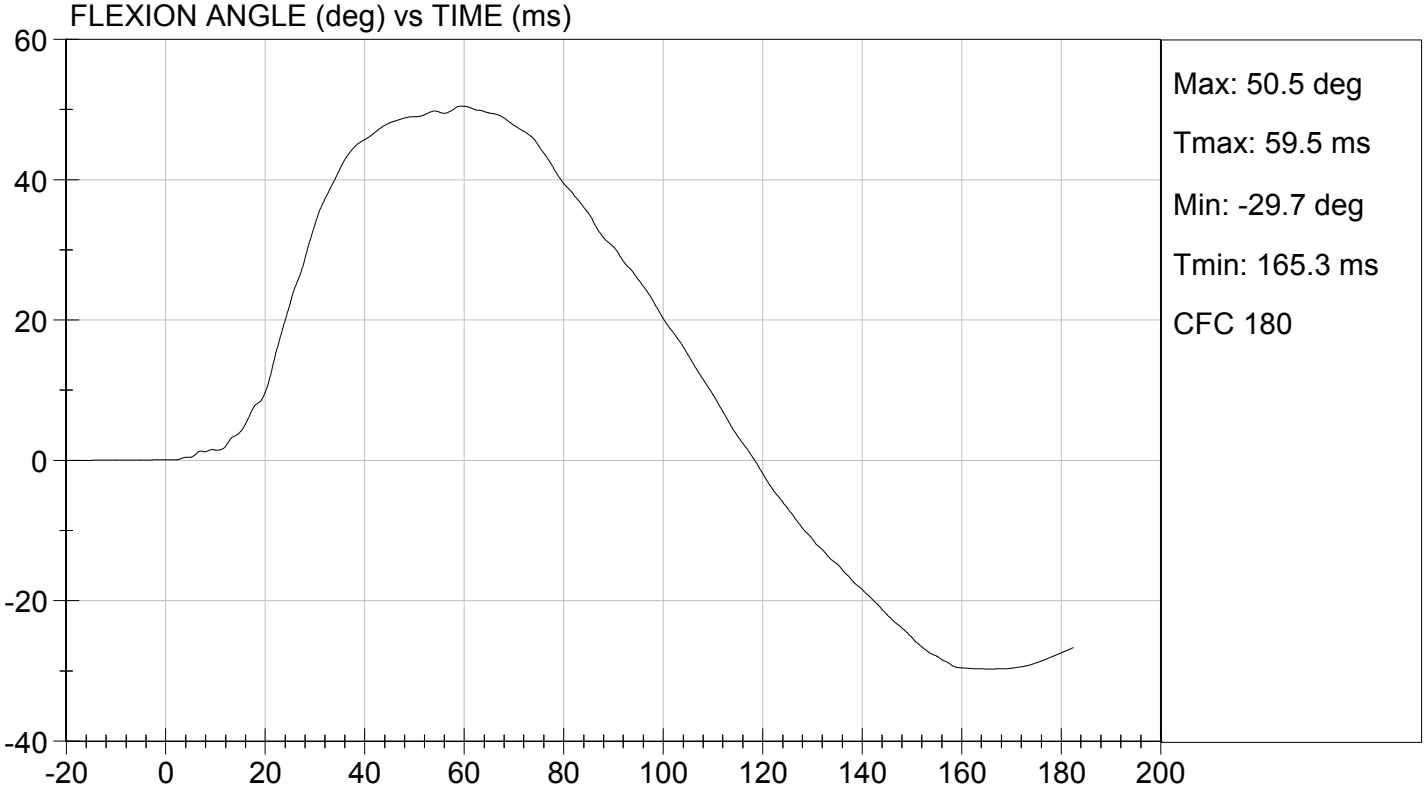
TEST DESC: NECK BENDING
VELOCITY: 11.19 ft/s, 3.41 m/s

TEST DATE: 12/16/2013
TEST #: D134282

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



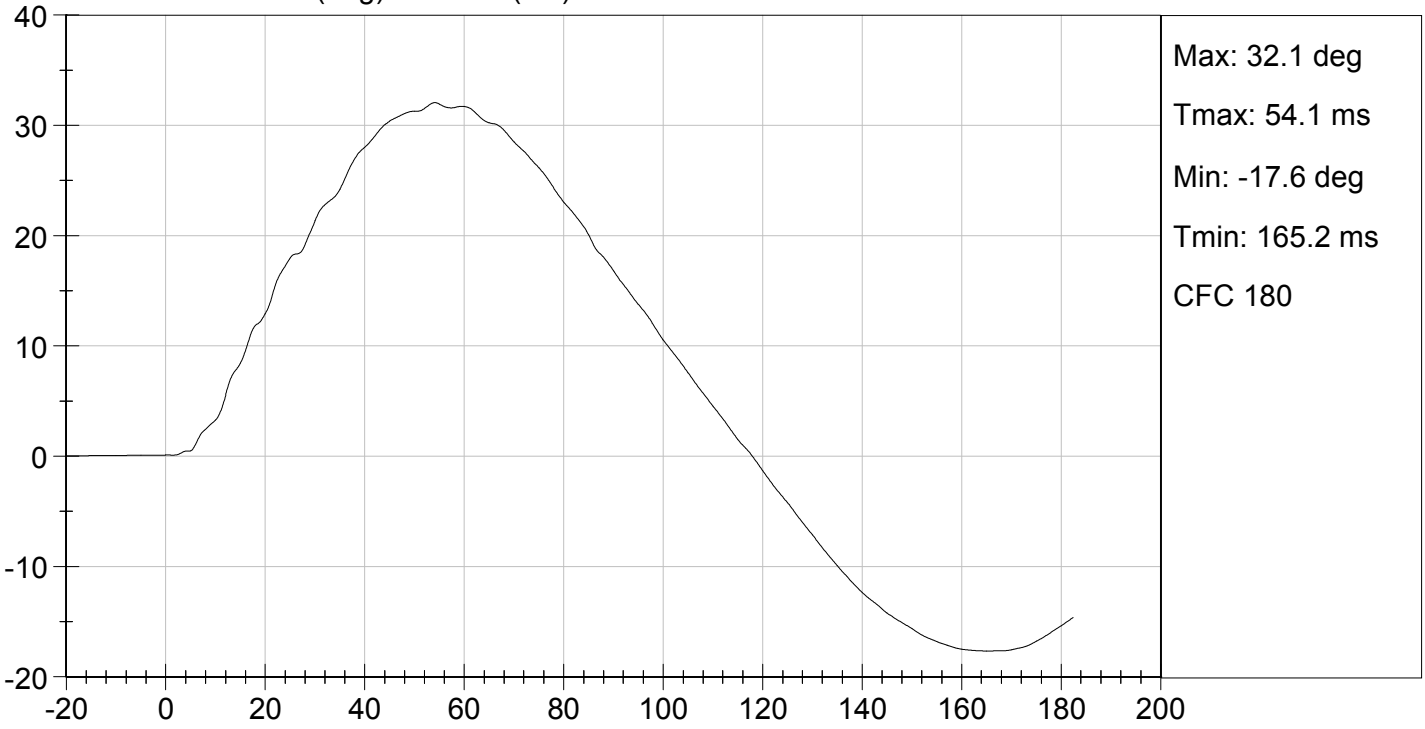
FLEXION ANGLE (deg) vs TIME (ms)



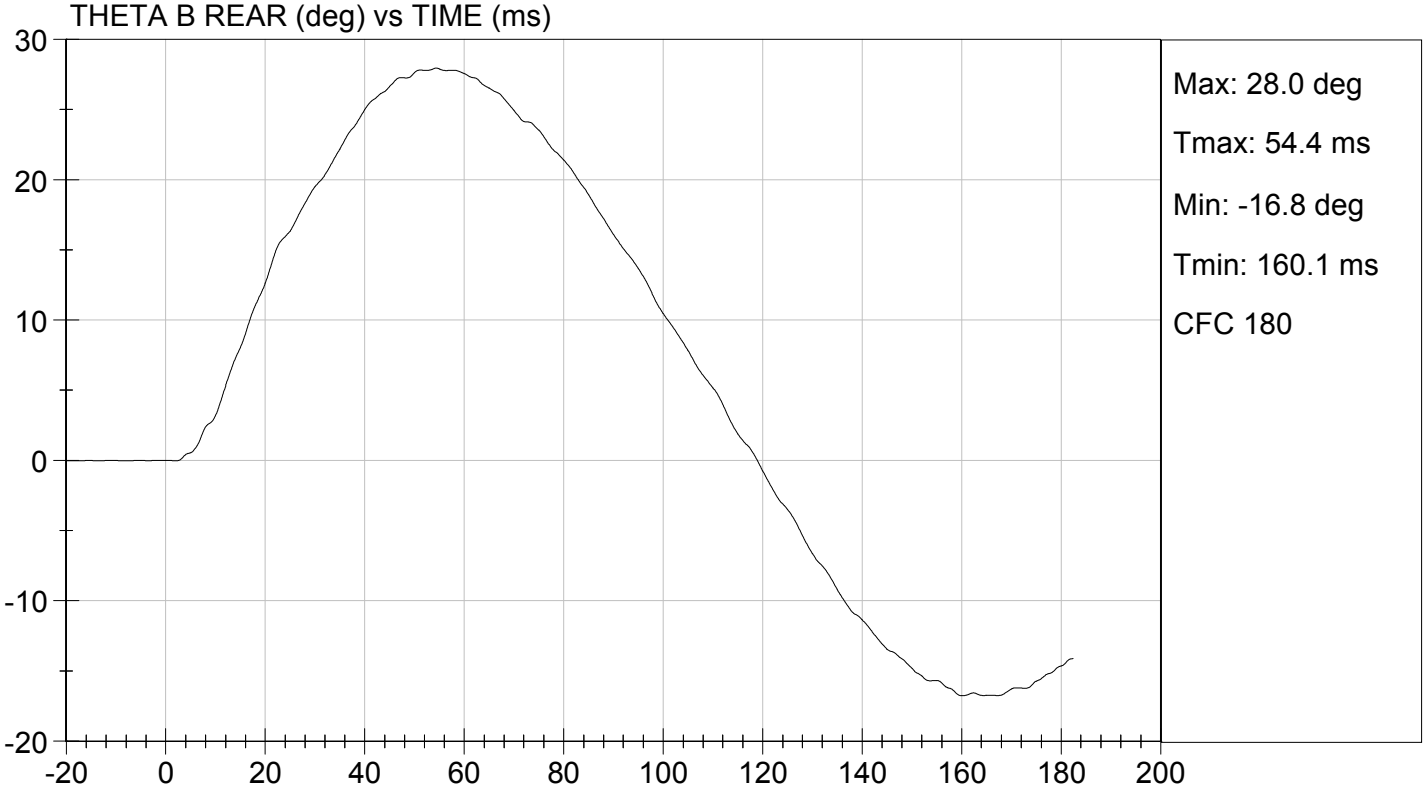
TEST DESC: NECK BENDING
VELOCITY: 11.19 ft/s, 3.41 m/s

TEST DATE: 12/16/2013
TEST #: D134282

THETA A FRONT (deg) vs TIME (ms)

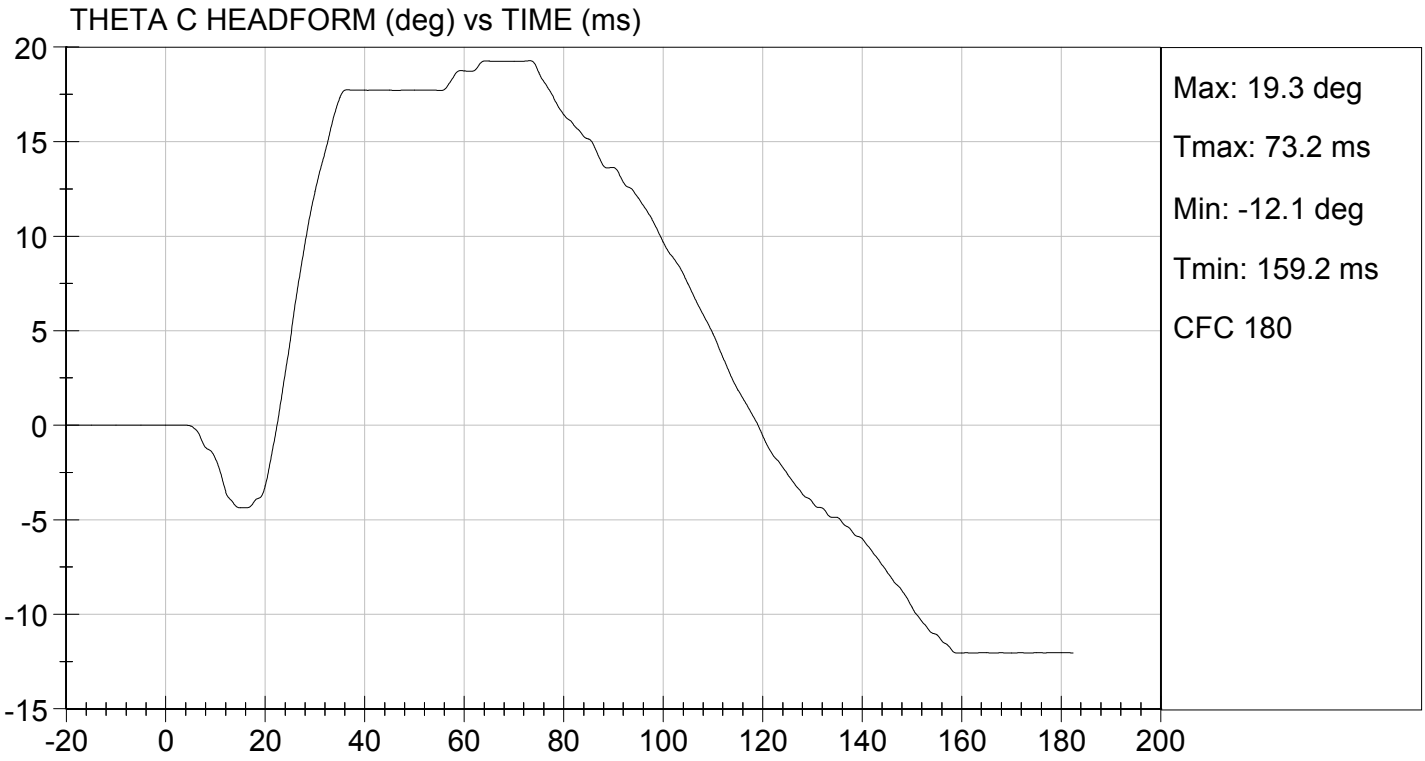


THETA B REAR (deg) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 11.19 ft/s, 3.41 m/s

TEST DATE: 12/16/2013
TEST #: D134282



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134283

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Pendulum Speed	m/s	4.20 to 4.40	4.39	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	8.8	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

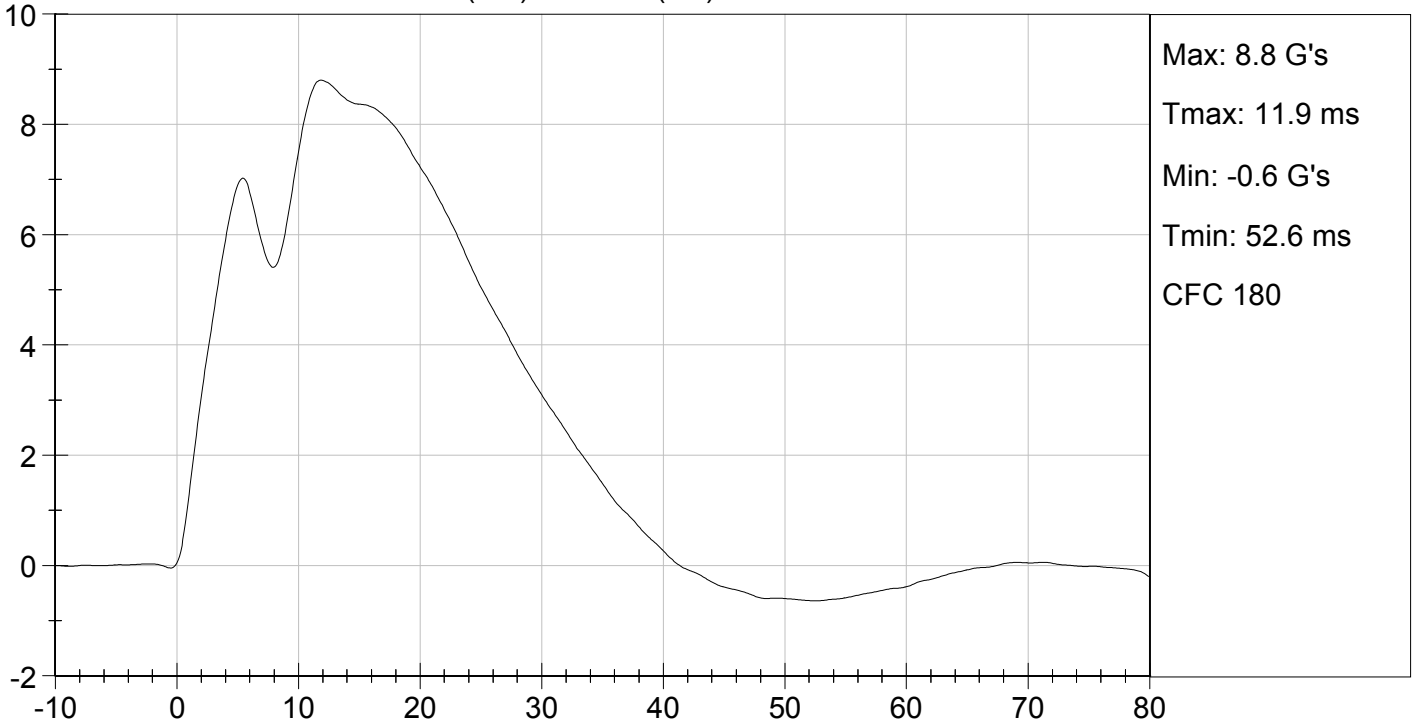
12/16/2013
Test Date

David Winkelbauer
Approved By

TEST DESC: SHOULDER IMPACT
VELOCITY: 14.40 ft/s, 4.39 m/s

TEST DATE: 12/16/2013
TEST #: D134283

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



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

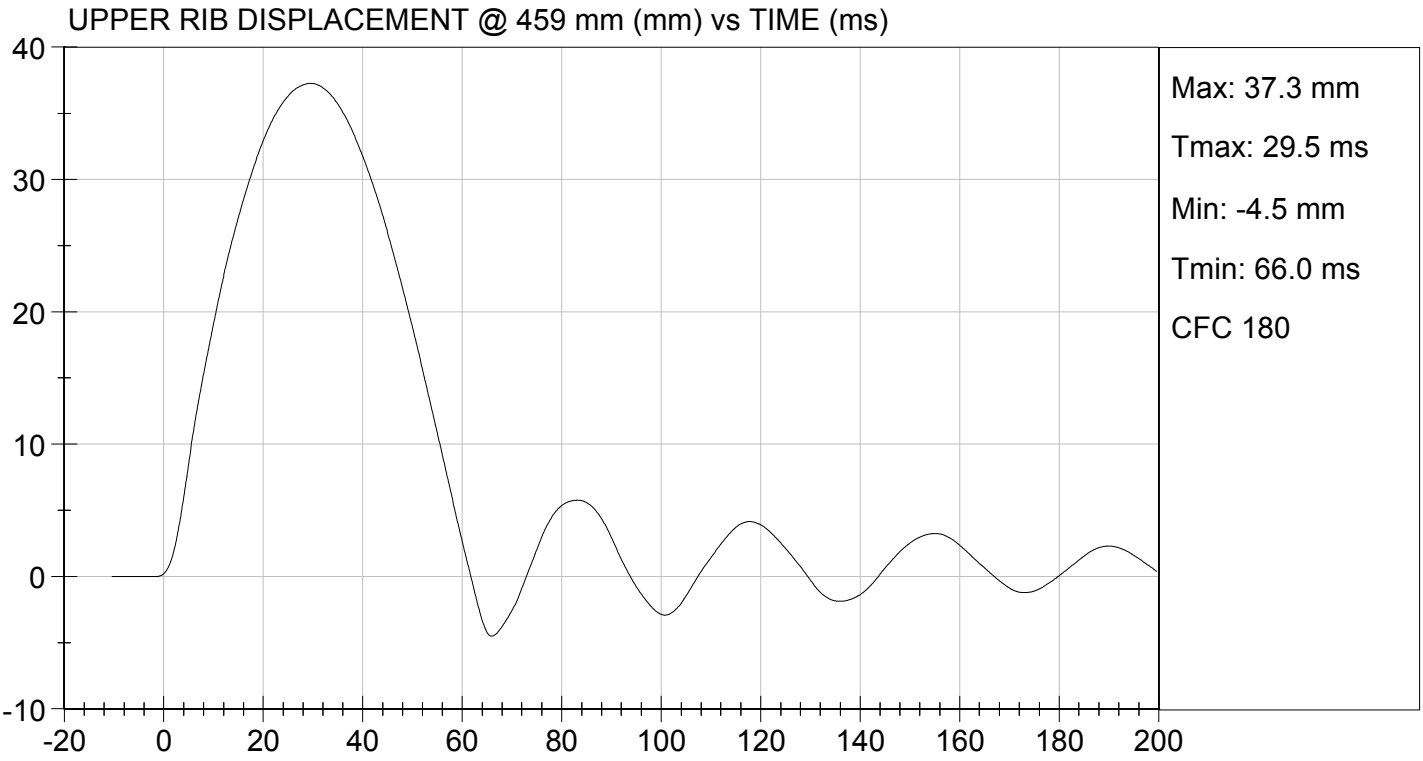
ATD Serial No: 032 **Test I.D:** D134284

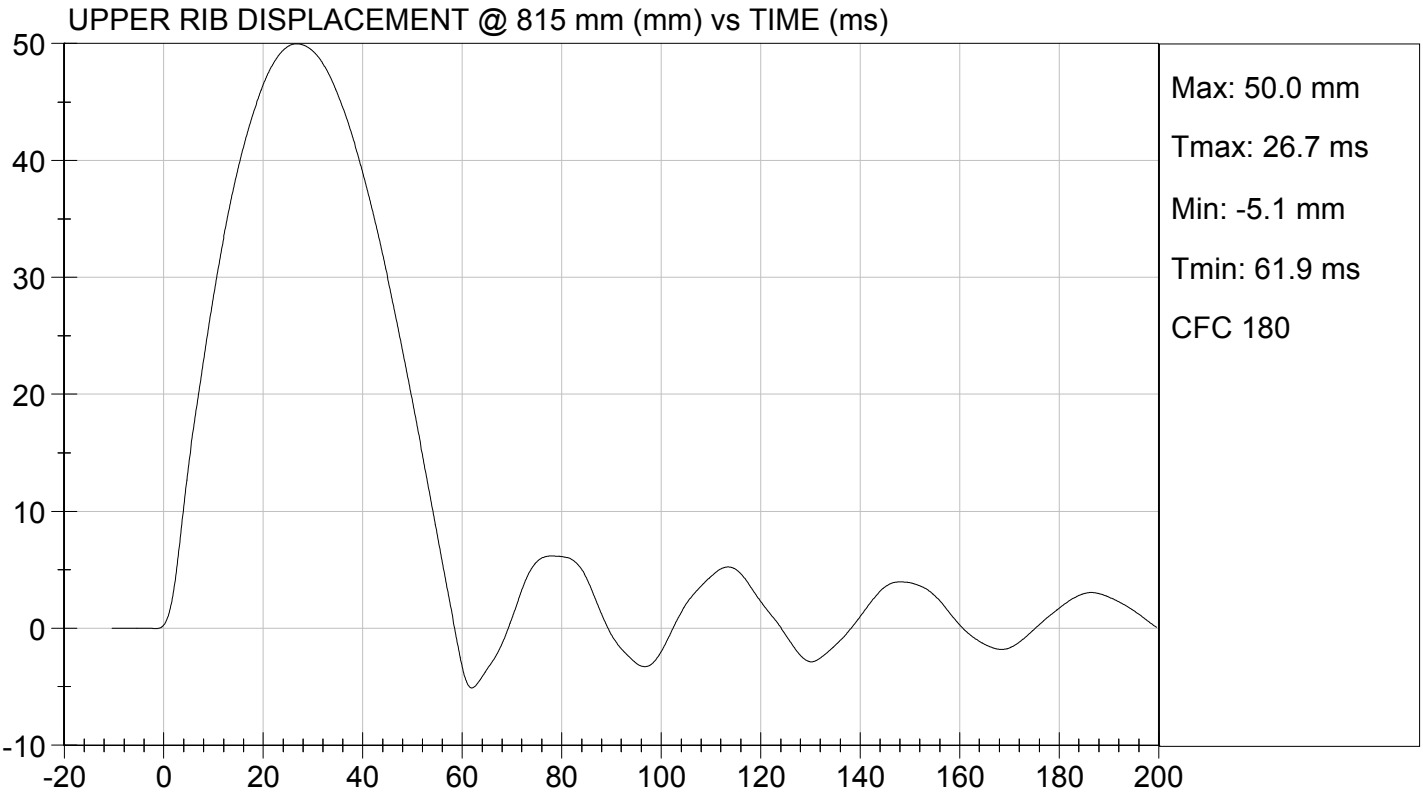
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Displacement at 459 mm	mm	36.0 to 40.0	37.3	Pass
Displacement at 815 mm	mm	46.0 to 51.0	50.0	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

12/16/2013
Test Date

David Winkelbauer
Approved By


UPPER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 37.3 mm
Tmax: 29.5 ms
Min: -4.5 mm
Tmin: 66.0 ms
CFC 180


UPPER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 50.0 mm
Tmax: 26.7 ms
Min: -5.1 mm
Tmin: 61.9 ms
CFC 180

MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134285

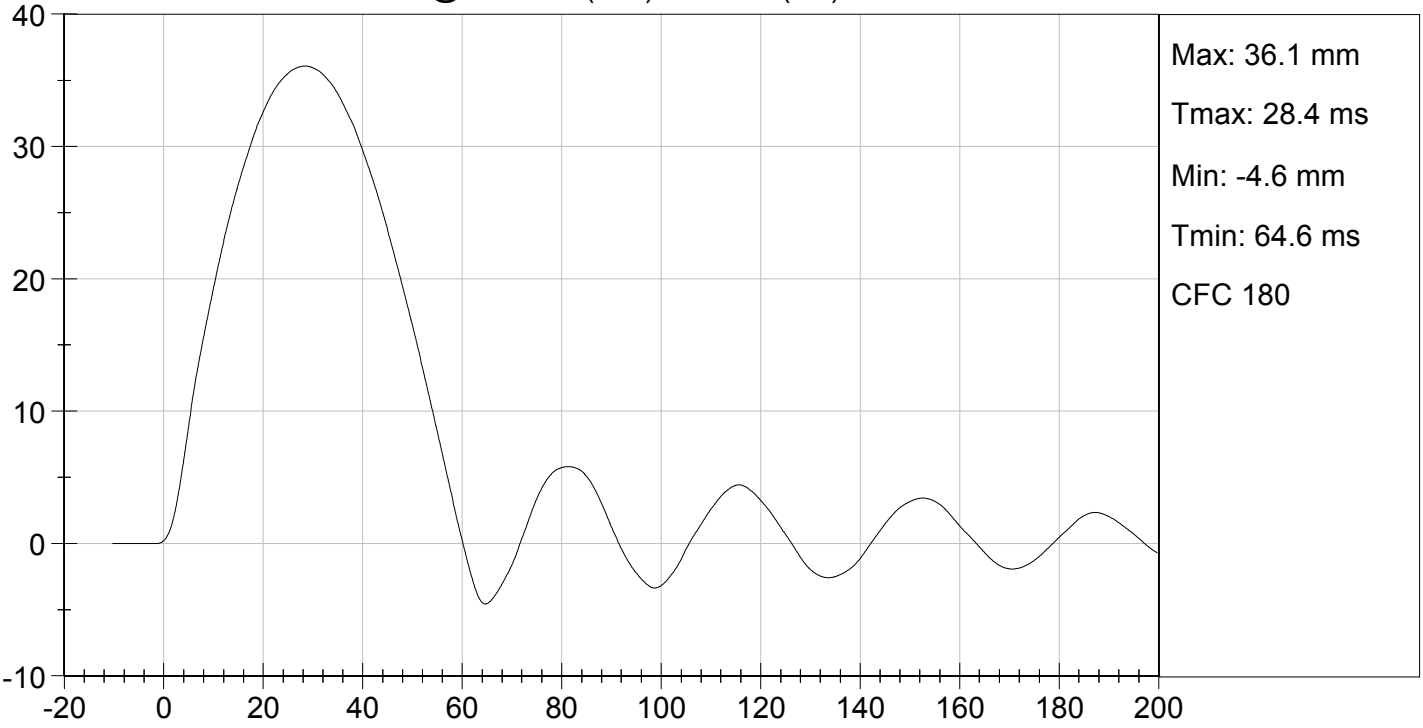
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Displacement at 459 mm	mm	36.0 to 40.0	36.1	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.1	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

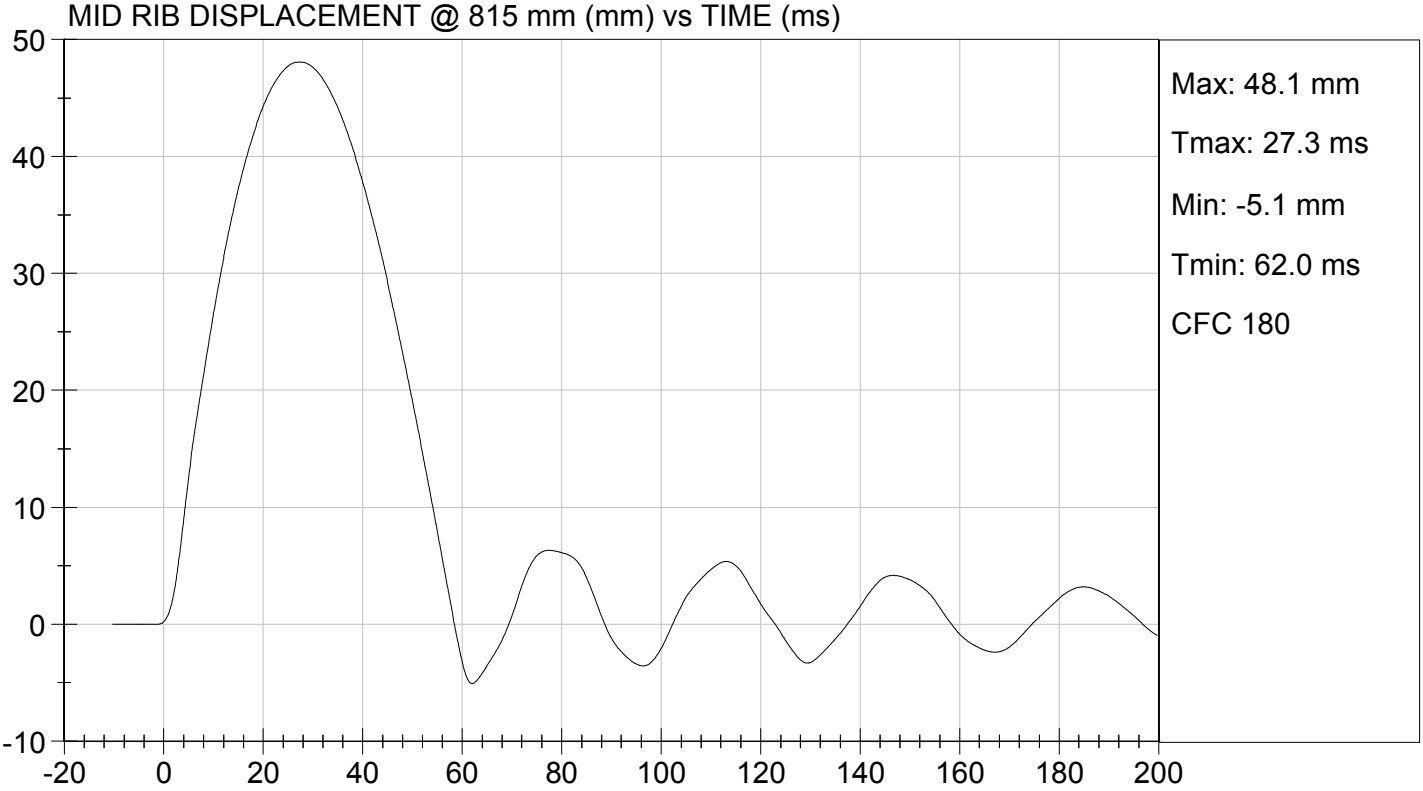
12/16/2013
Test Date

David Winkelbauer
Approved By

MID RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



MID RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134286

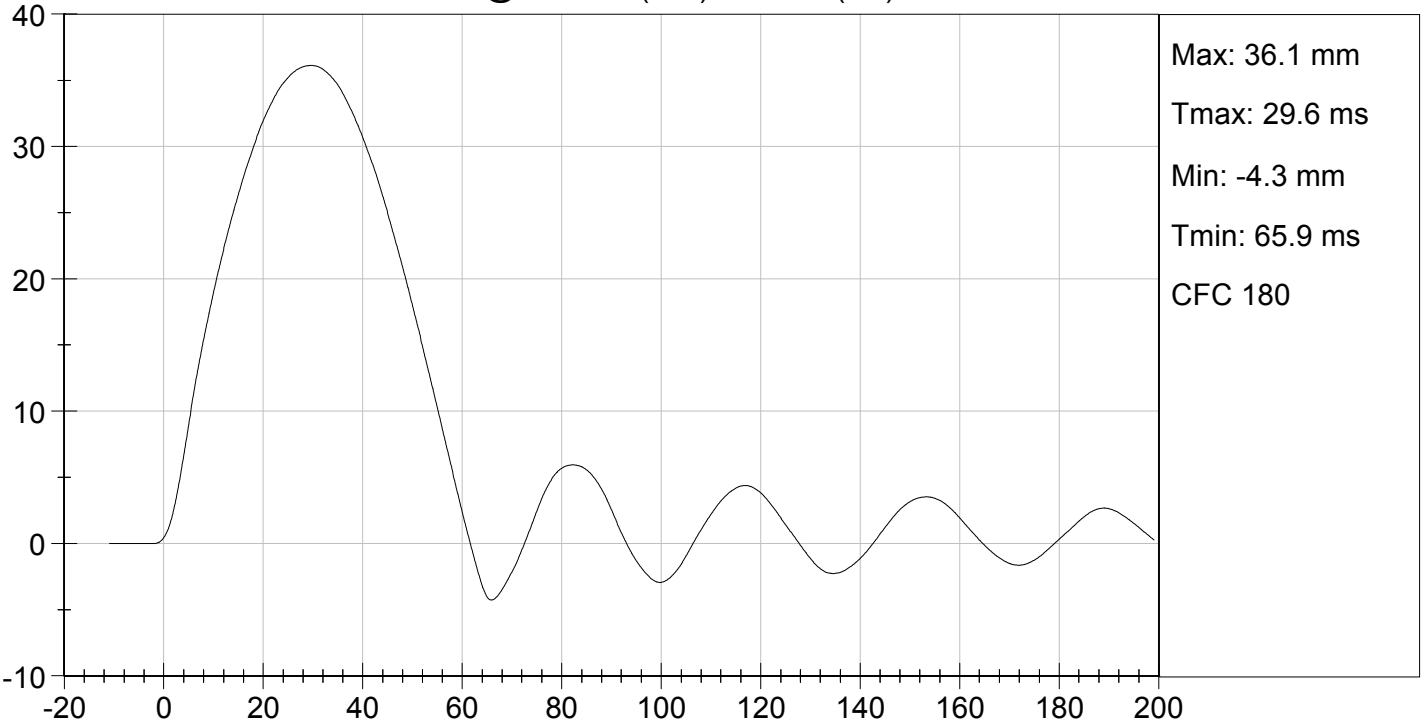
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Displacement at 459 mm	mm	36.0 to 40.0	36.1	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.8	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

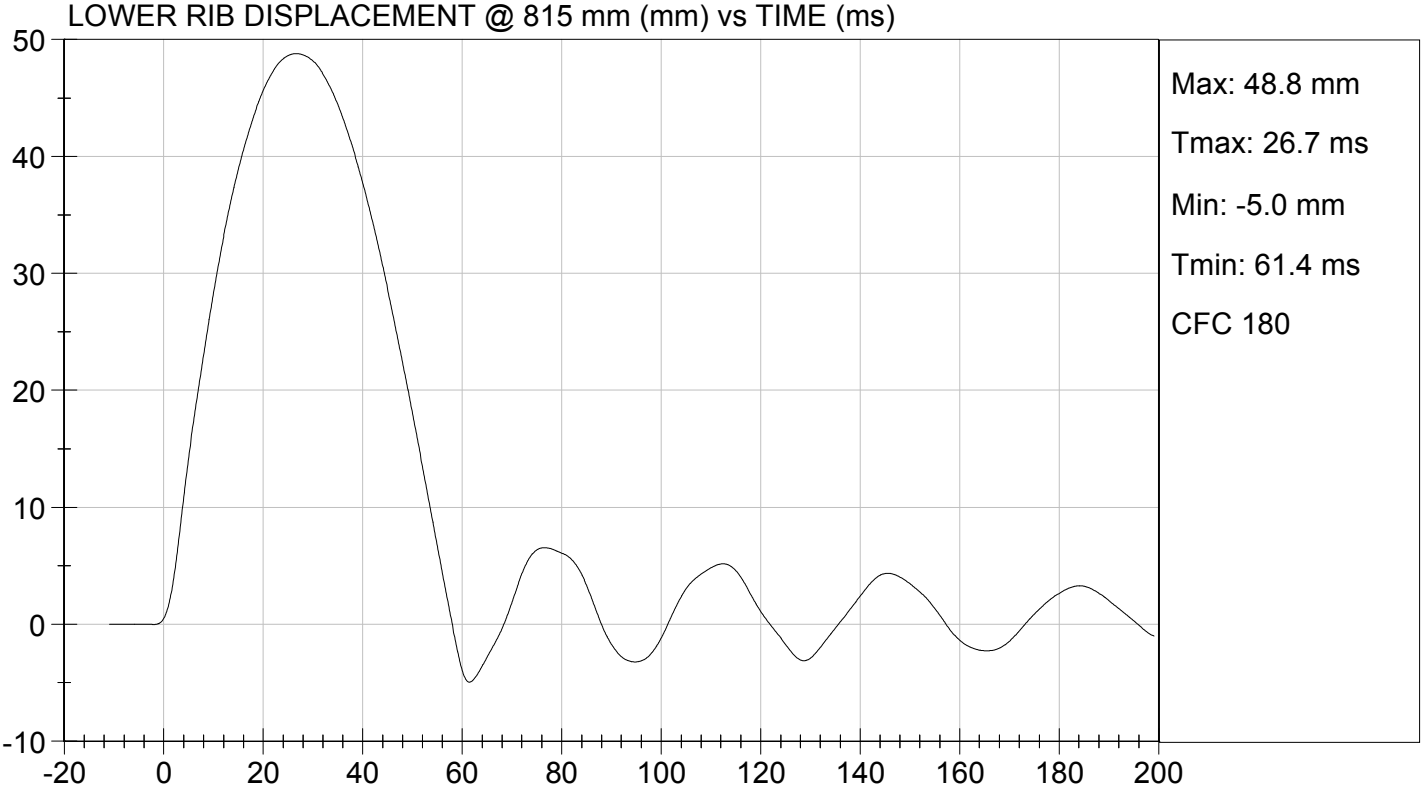
12/16/2013
Test Date

David Winkelbauer
Approved By

LOWER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134280

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	17	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	N	5100 to 6200	5602	Pass
Upper Rib Displacement	mm	34.0 to 41.0	38.7	Pass
Middle Rib Displacement	mm	37.0 to 45.0	40.7	Pass
Lower Rib Displacement	mm	37.0 to 44.0	39.8	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

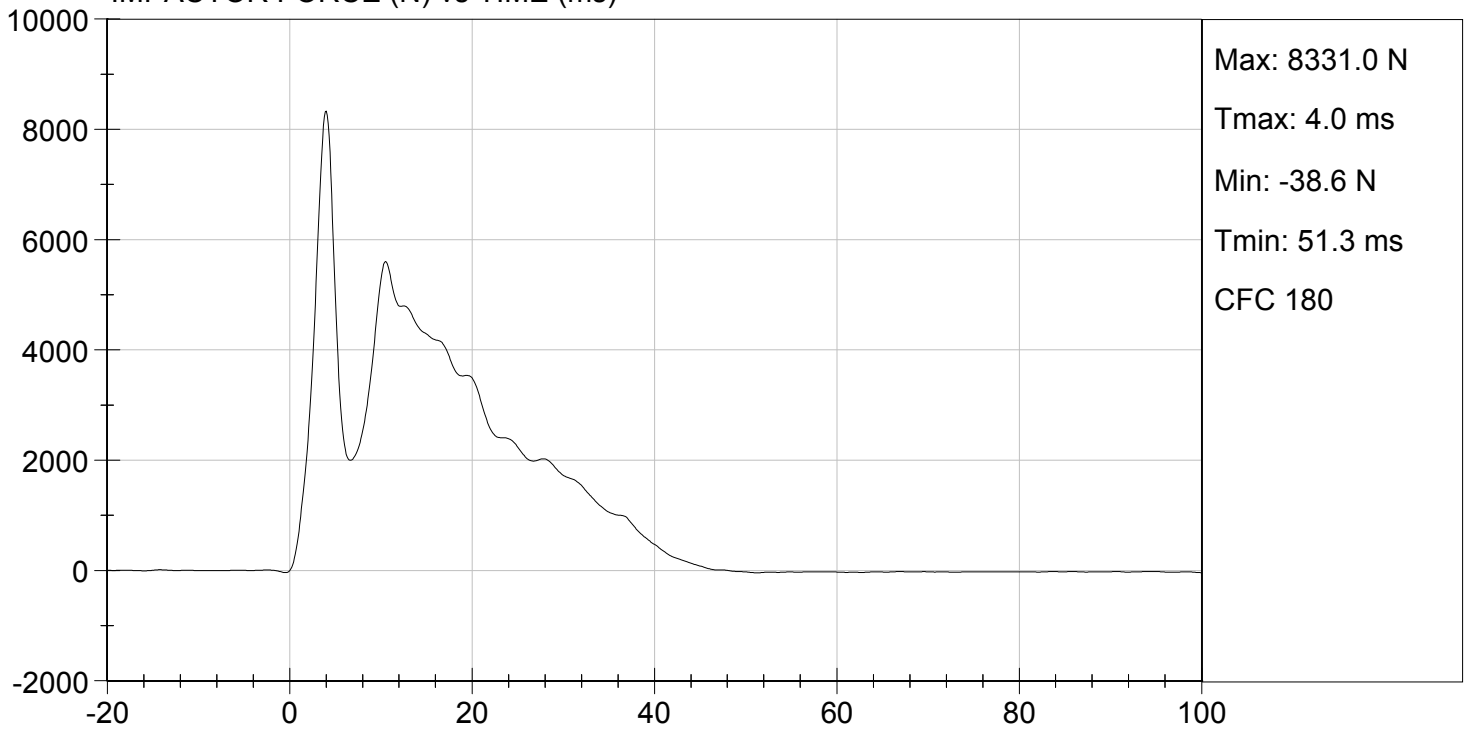
12/16/2013
Test Date

David Winkelbauer
Approved By

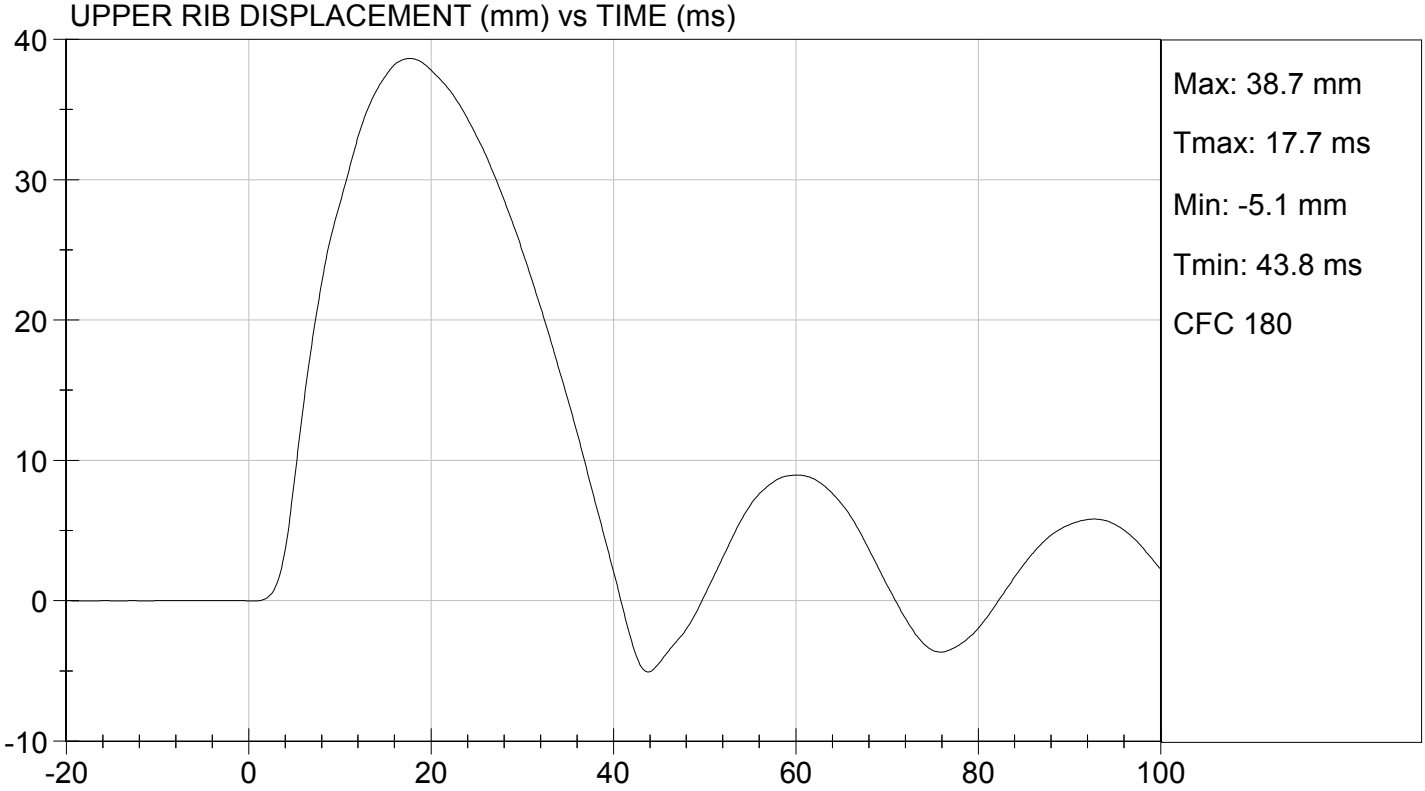
TEST DESC: THORAX IMPACT
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 12/16/2013
TEST #: D134280

IMPACTOR FORCE (N) vs TIME (ms)



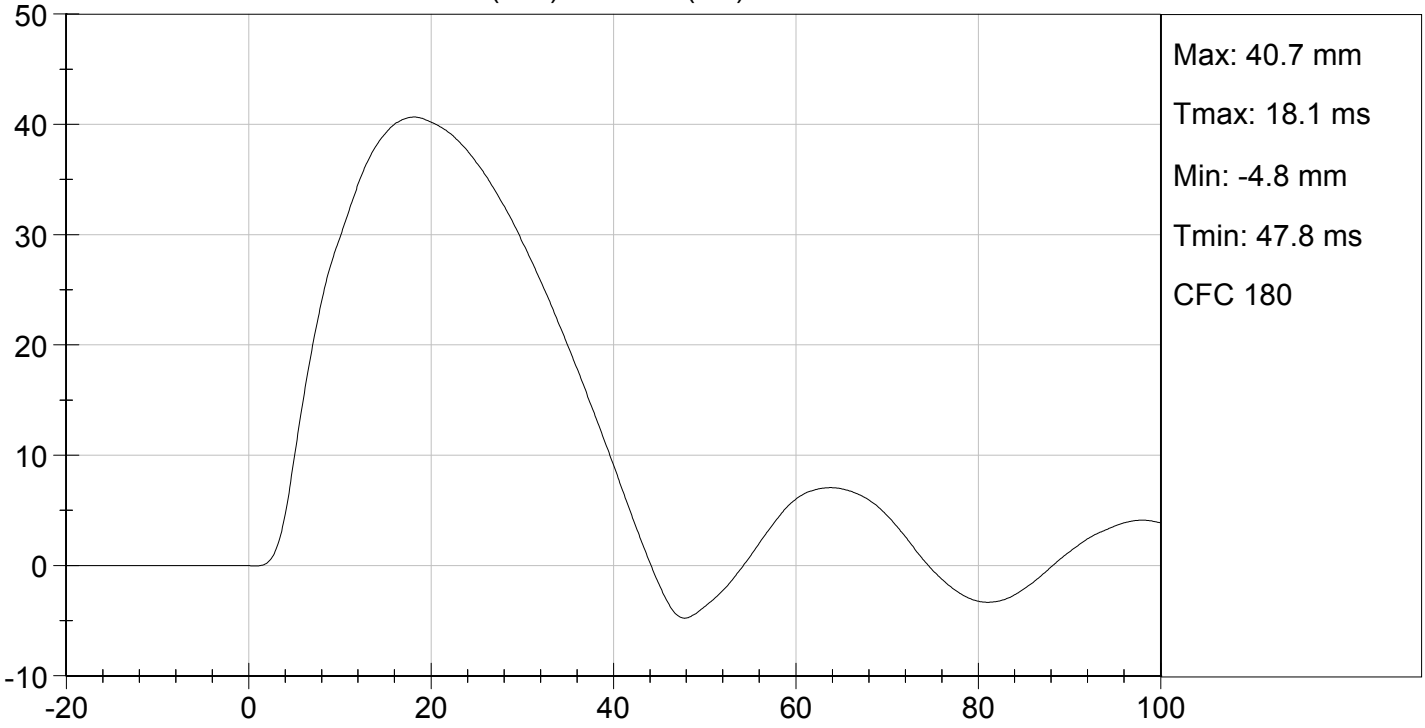
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



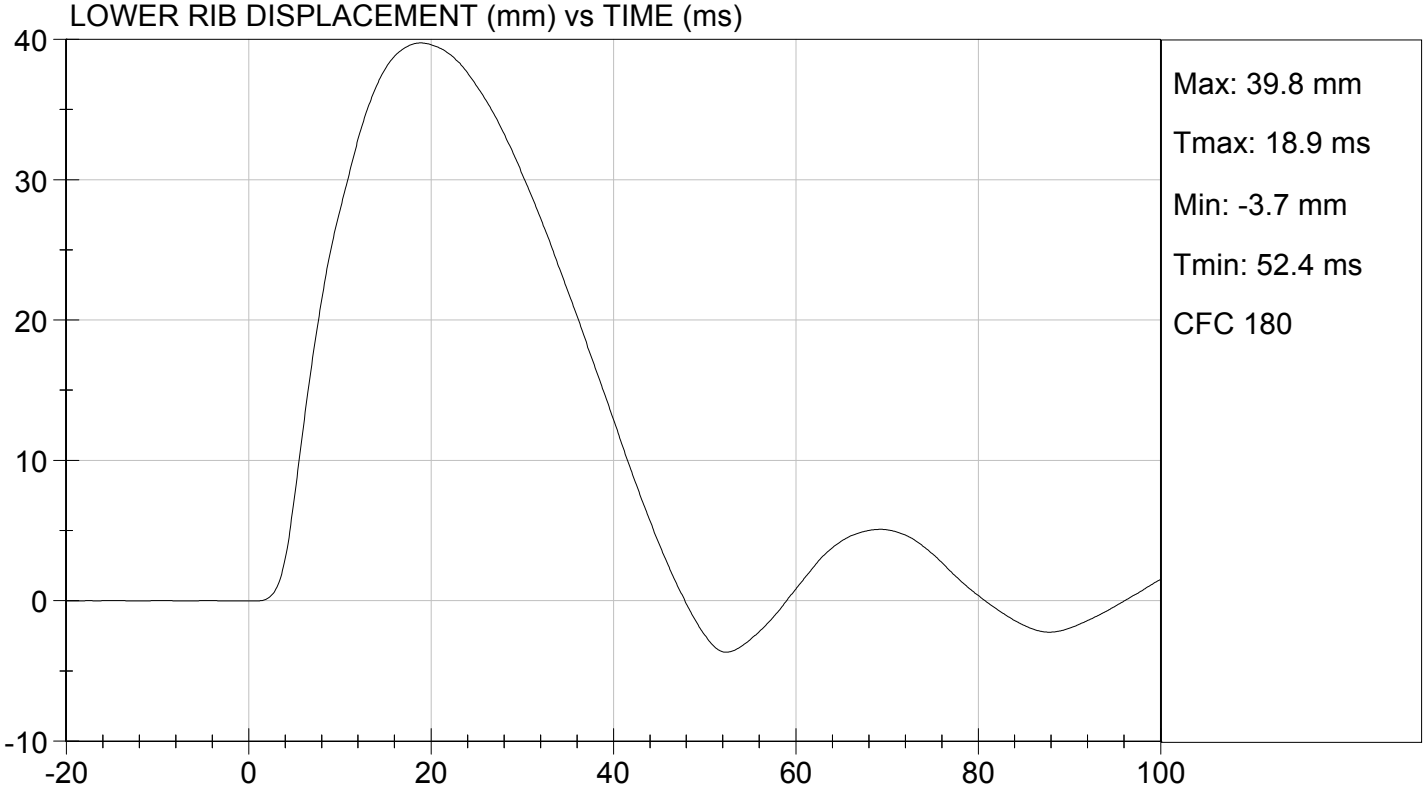
TEST DESC: THORAX IMPACT
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 12/16/2013
TEST #: D134280

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:** D134287

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Speed	m/s	3.90 to 4.10	4.06	Pass
Maximum Impactor Force	N	4000 to 4800	4414	Pass
Time of Maximum Impactor Force	ms	10.6 to 13.0	10.6	Pass
Maximum Total Abdomen Force	N	2200 to 2700	2283	Pass
Time of Maximum Abdomen Force	ms	10.0 to 12.3	10.9	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

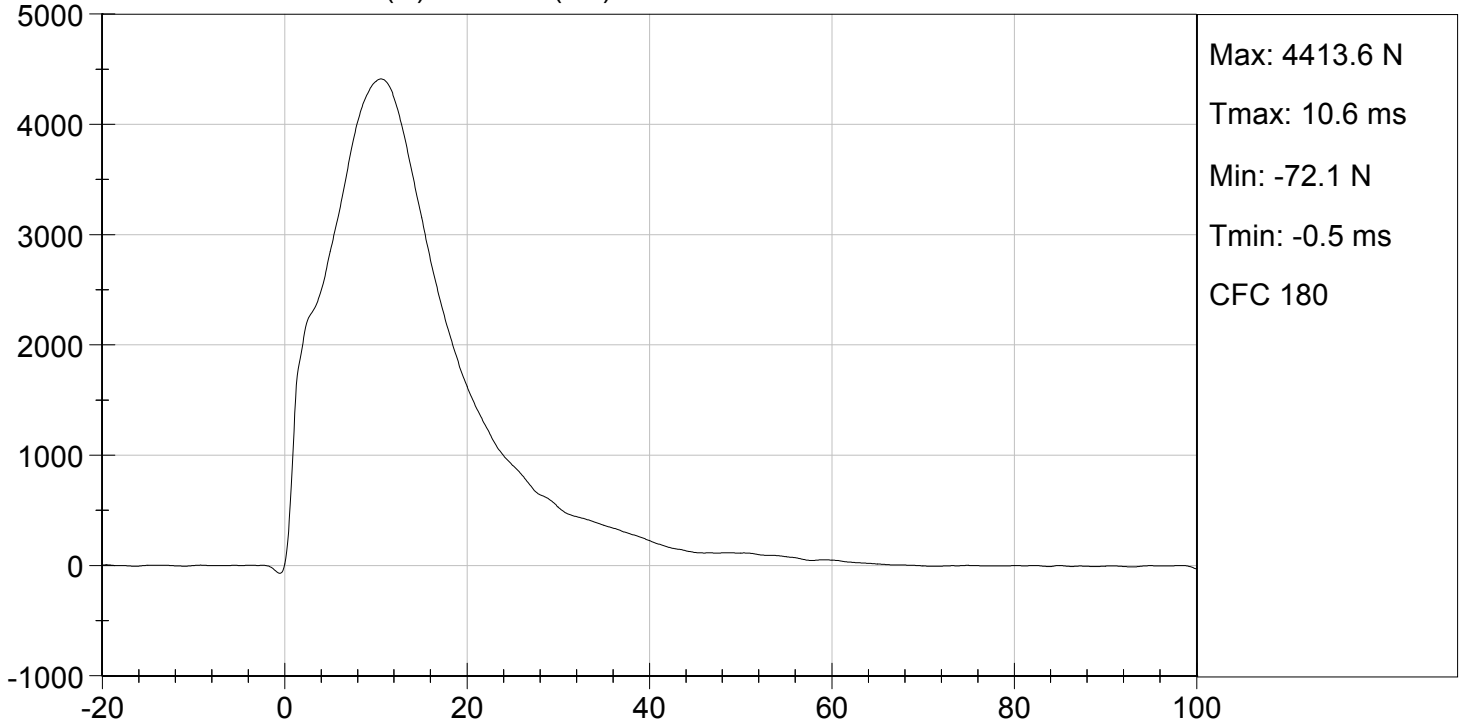
12/16/2013
Test Date

David Winkelbauer
Approved By

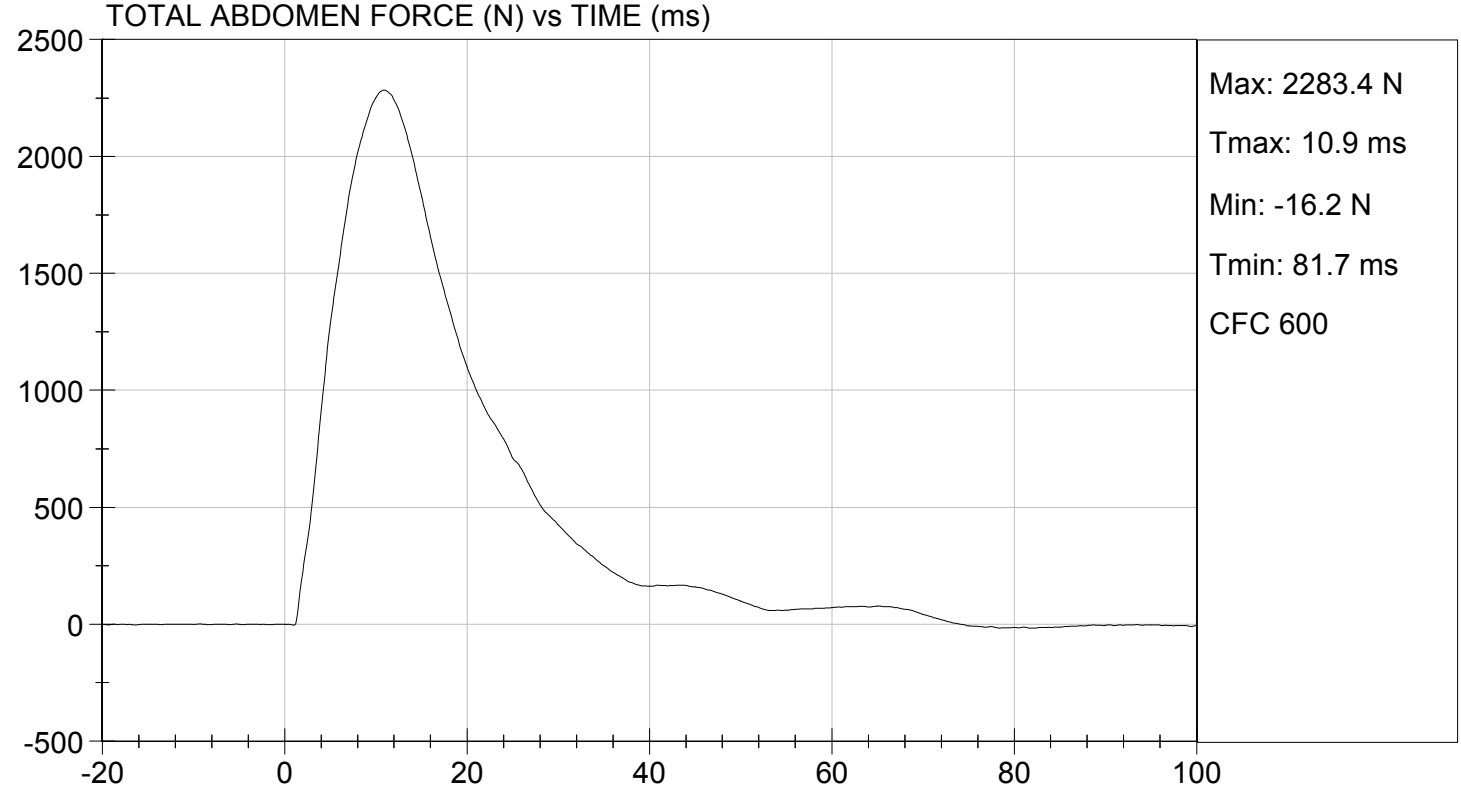
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.33 ft/s, 4.06 m/s

TEST DATE: 12/16/2013
TEST #: D134287

IMPACTOR FORCE (N) vs TIME (ms)



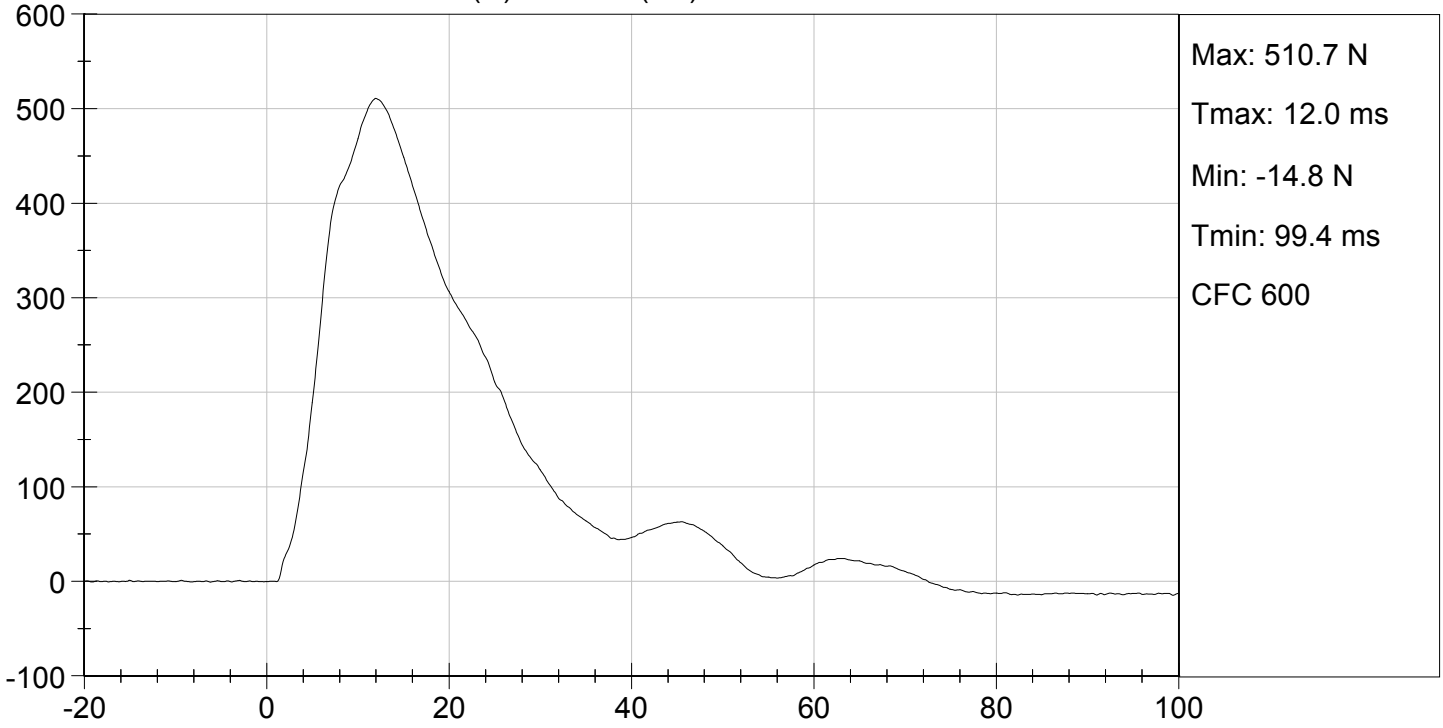
TOTAL ABDOMEN FORCE (N) vs TIME (ms)



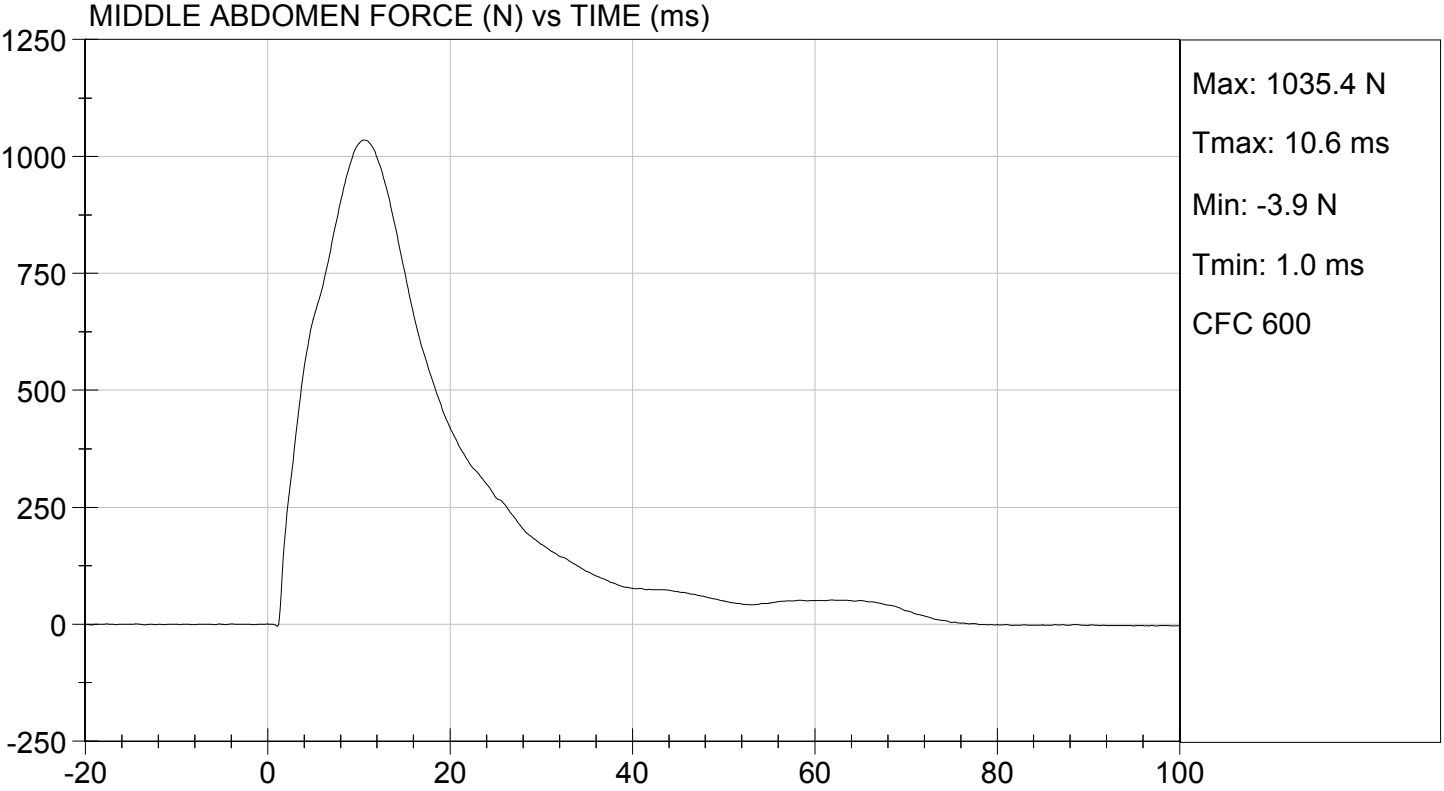
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.33 ft/s, 4.06 m/s

TEST DATE: 12/16/2013
TEST #: D134287

FRONT ABDOMEN FORCE (N) vs TIME (ms)



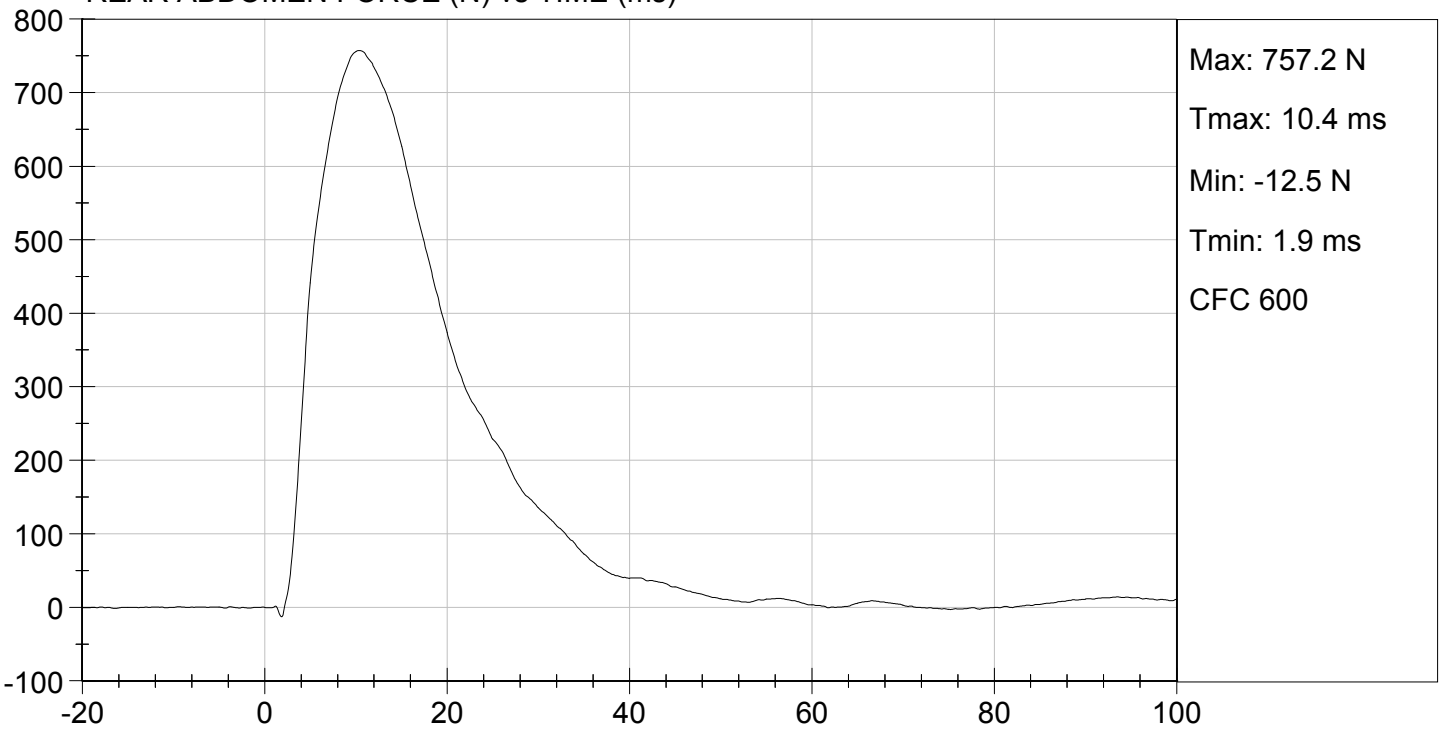
MIDDLE ABDOMEN FORCE (N) vs TIME (ms)



TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.33 ft/s, 4.06 m/s

TEST DATE: 12/16/2013
TEST #: D134287

REAR ABDOMEN FORCE (N) vs TIME (ms)



MGA RESEARCH CORPORATION

LUMBAR SPINE TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134288

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	12	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.15	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.02	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.423	Pass
	27 ms	m/s	-6.50 to -5.80	-5.87	Pass
	30 ms	m/s	>= -6.50	-6.26	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	45.9	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	43.7	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	41	Pass
			Overall Results		Pass

Jessica Hall
Laboratory Technician

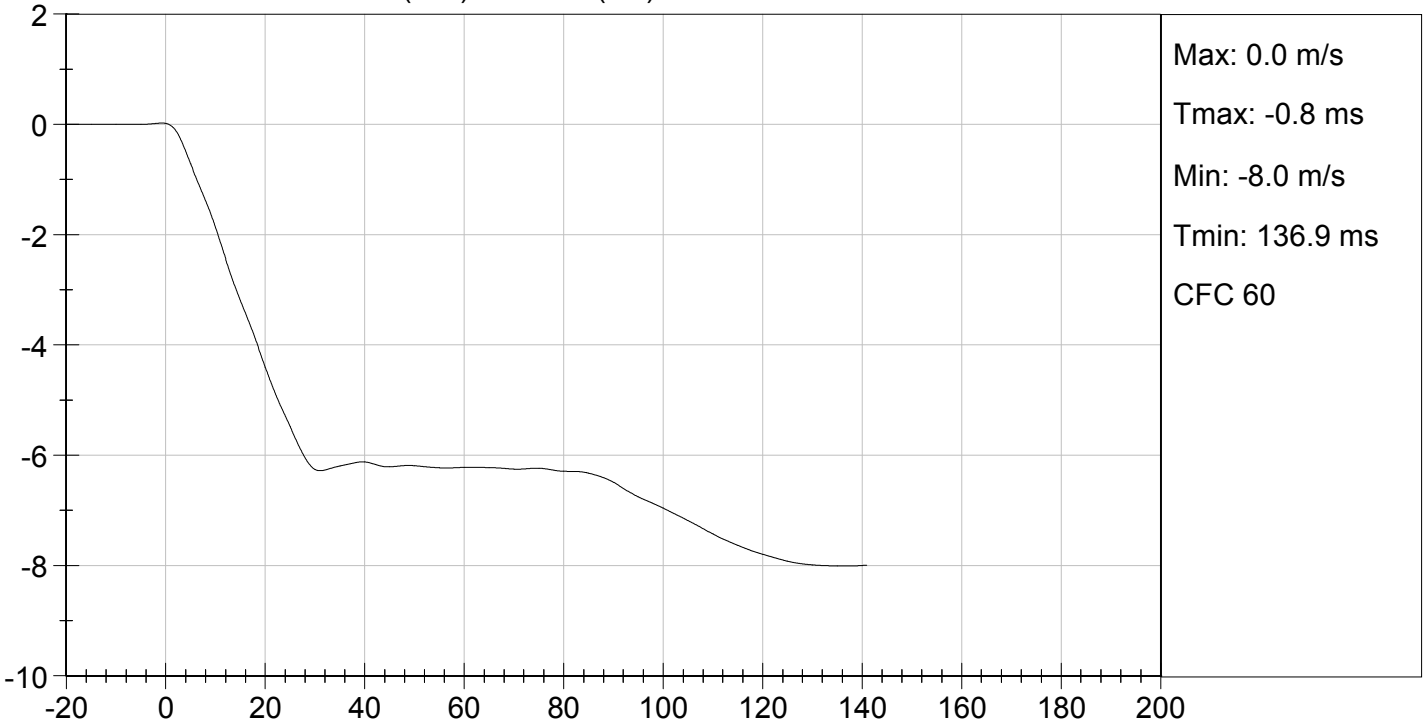
12/16/2013
Test Date

David Winkelbauer
Approved By

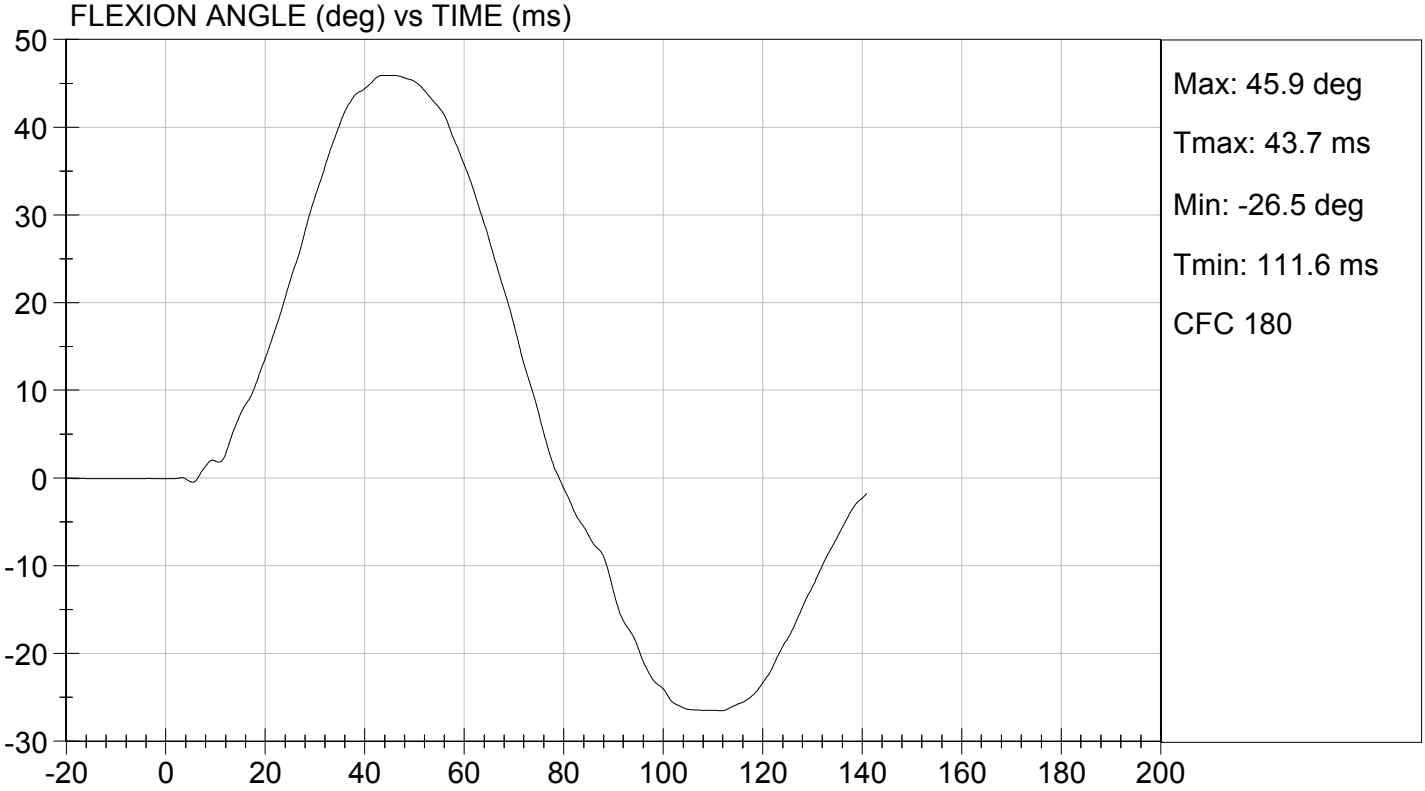
TEST DESC: LUMBAR BENDING
VELOCITY: 20.17 ft/s, 6.15 m/s

TEST DATE: 12/16/2013
TEST #: D134288

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



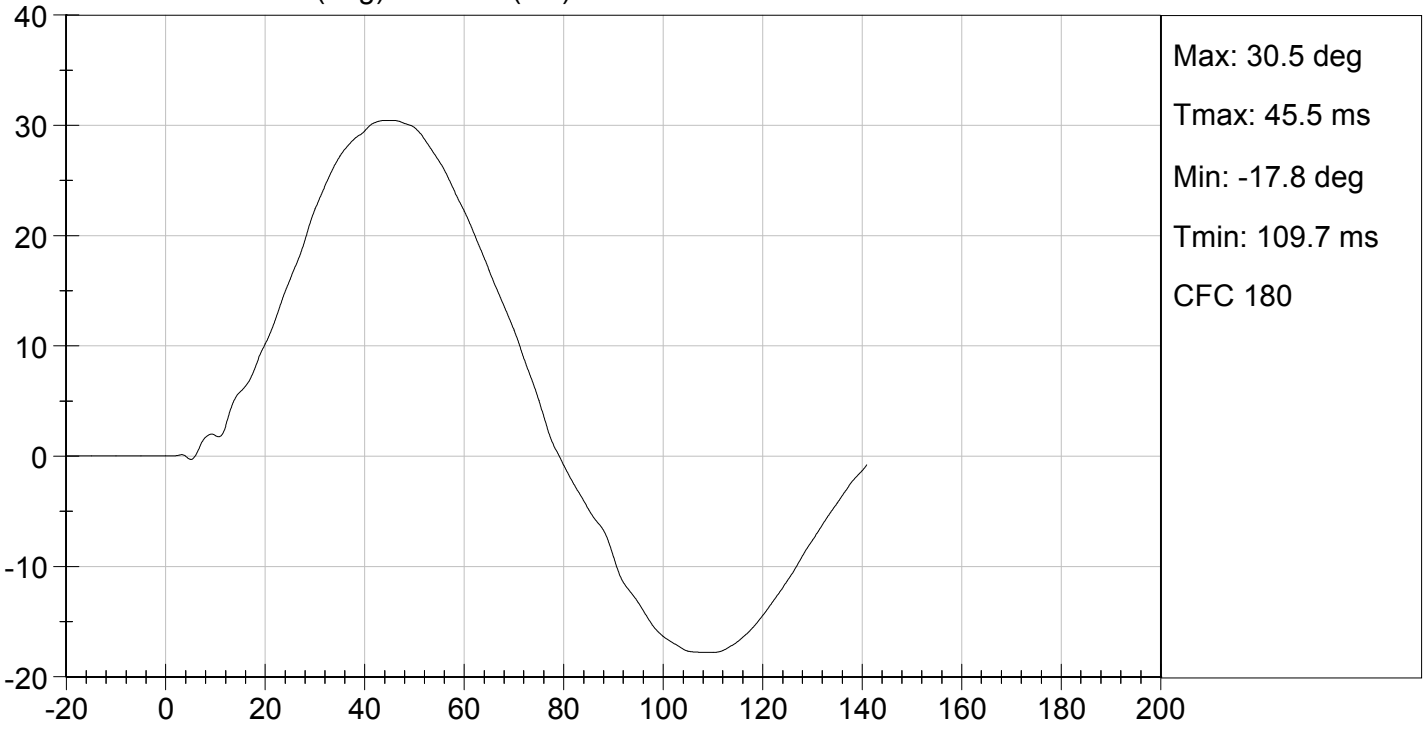
FLEXION ANGLE (deg) vs TIME (ms)



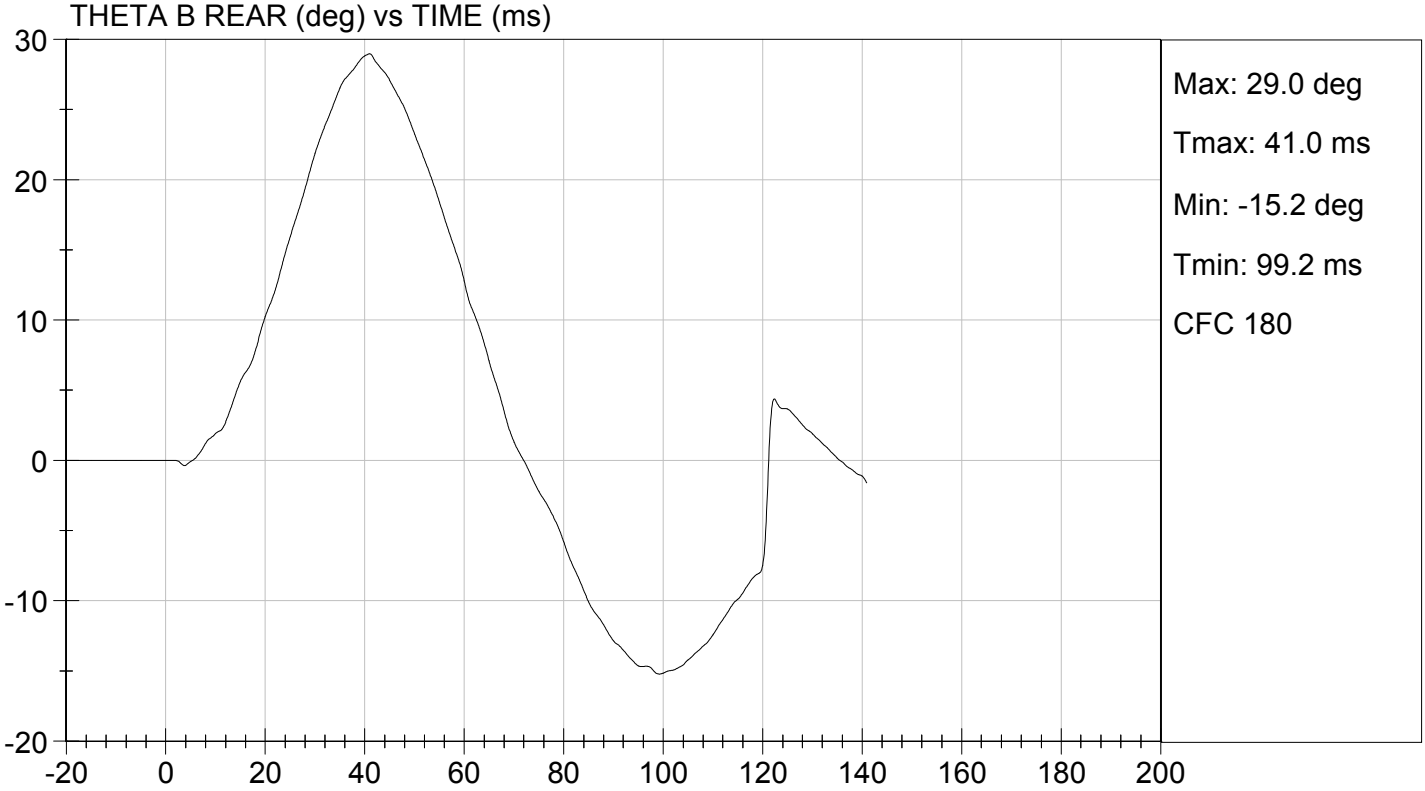
TEST DESC: LUMBAR BENDING
VELOCITY: 20.17 ft/s, 6.15 m/s

TEST DATE: 12/16/2013
TEST #: D134288

THETA A FRONT (deg) vs TIME (ms)

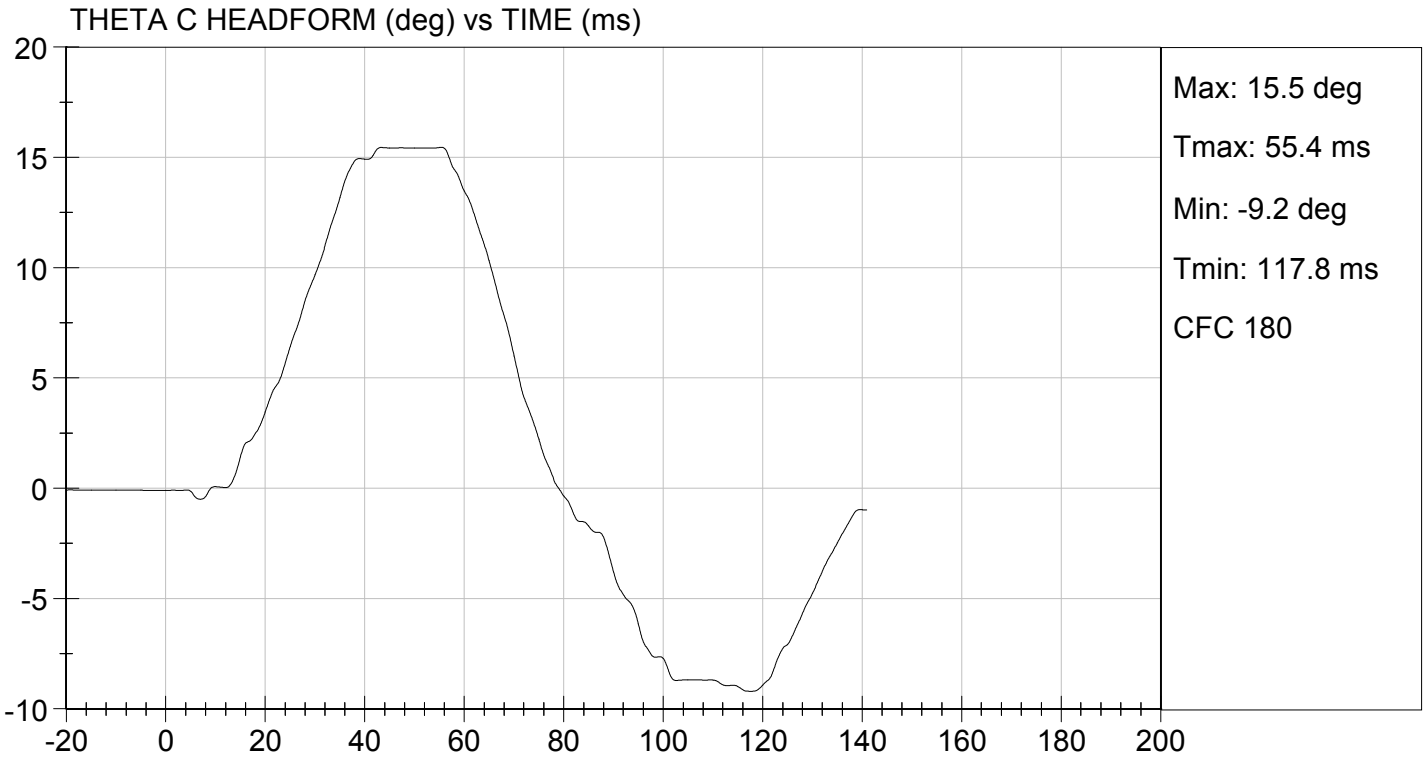


THETA B REAR (deg) vs TIME (ms)



TEST DESC: LUMBAR BENDING
VELOCITY: 20.17 ft/s, 6.15 m/s

TEST DATE: 12/16/2013
TEST #: D134288



MGA RESEARCH CORPORATION

PELVIS TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134289

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Speed	m/s	4.20 to 4.40	4.40	Pass
Maximum Impactor Force	N	4700 to 5400	4828	Pass
Time of Maximum Impactor Force	ms	11.8 to 16.1	12.4	Pass
Maximum Pubic Force	N	1230 to 1590	1440	Pass
Time of Maximum Pubic Force	ms	12.2 to 17.0	14.0	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

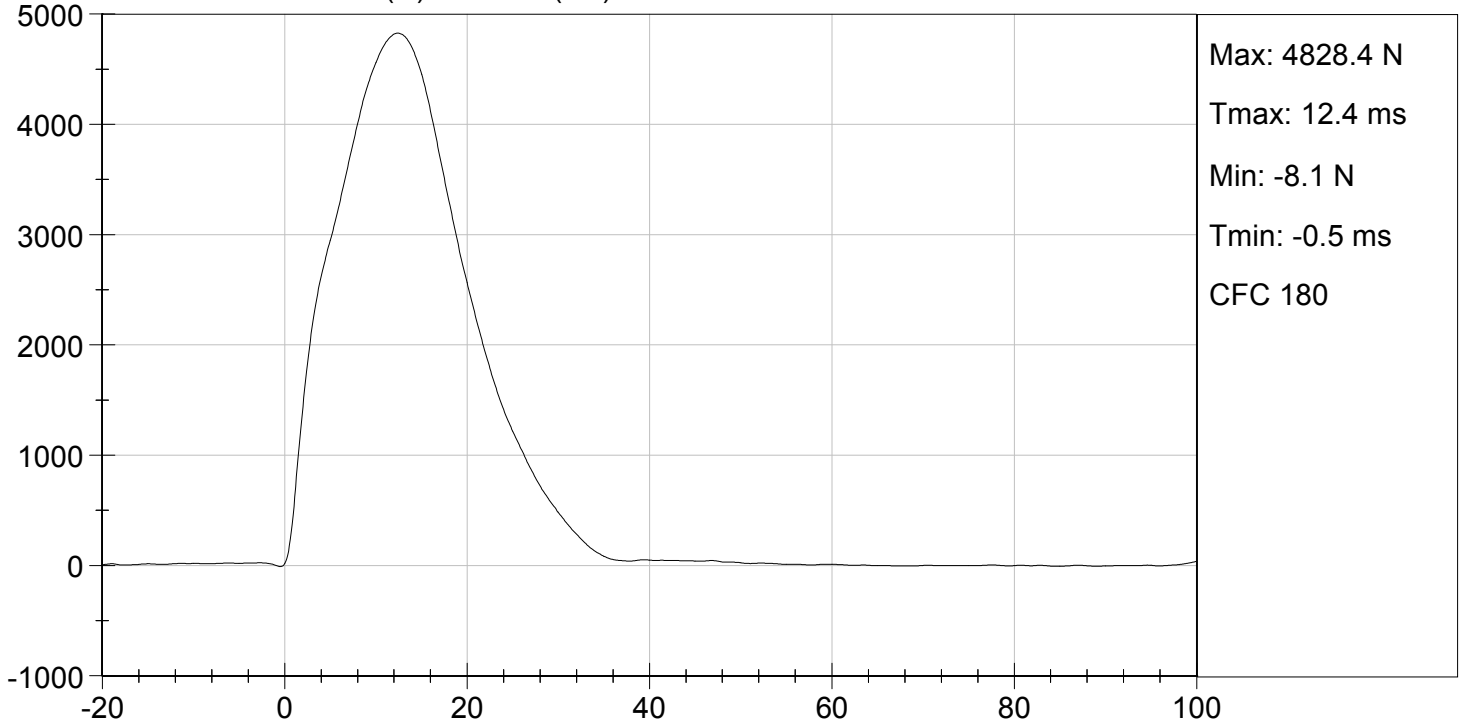
12/16/2013
Test Date

David Winkelbauer
Approved By

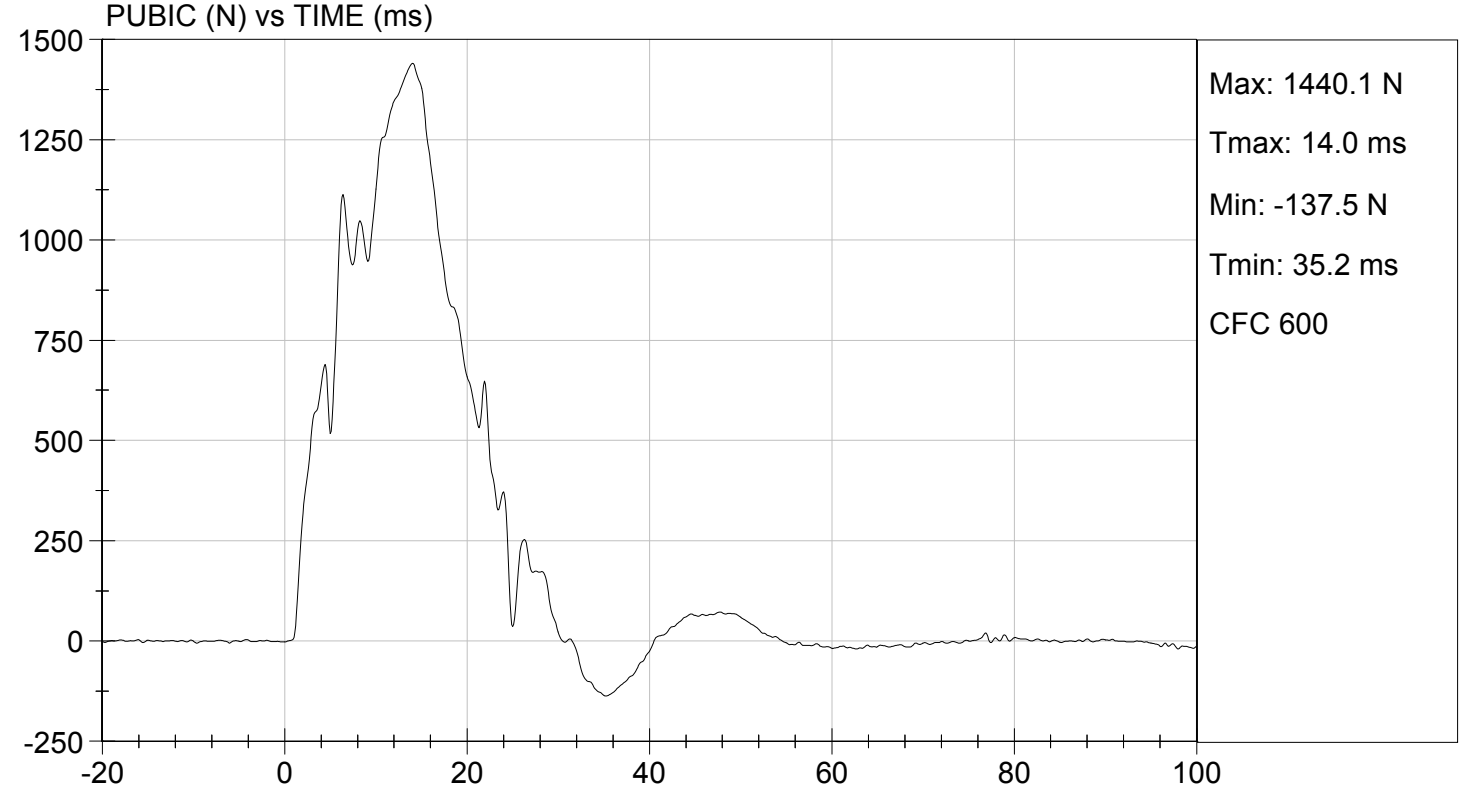
TEST DESC: PELVIS IMPACT
VELOCITY: 14.43 ft/s, 4.4 m/s

TEST DATE: 12/16/2013
TEST #: D134289

IMPACTOR FORCE (N) vs TIME (ms)



PUBIC (N) vs TIME (ms)



MGA RESEARCH CORPORATION

HEAD DROP TEST

ES-2re DUMMY

ATD Serial No: 032 **Test ID:** D134351

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Peak Resultant Acceleration	G's	125 to 155	137	Pass
Peak Longitudinal Acceleration	G's	<= +/- 15.0	-3.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

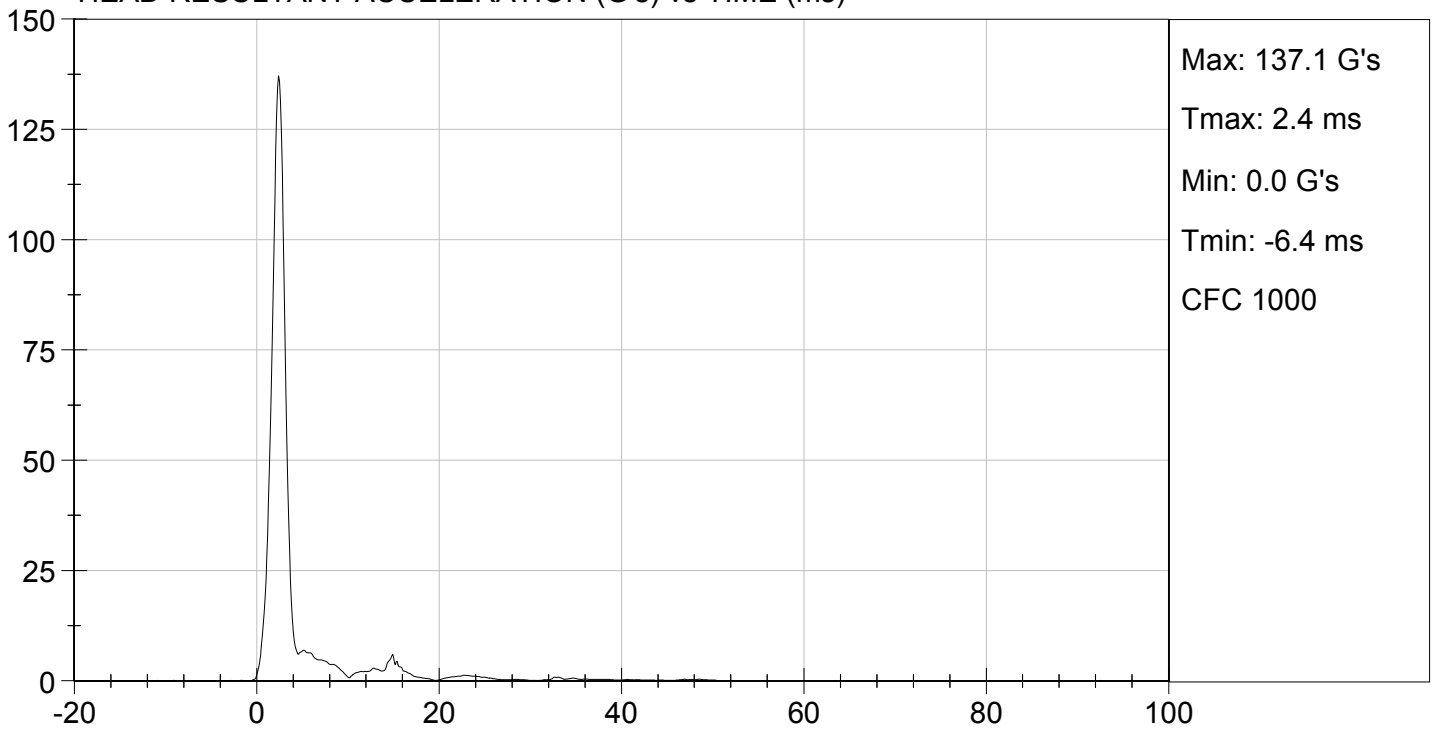
12/18/2013
Test Date

David Winkelbauer
Approved By

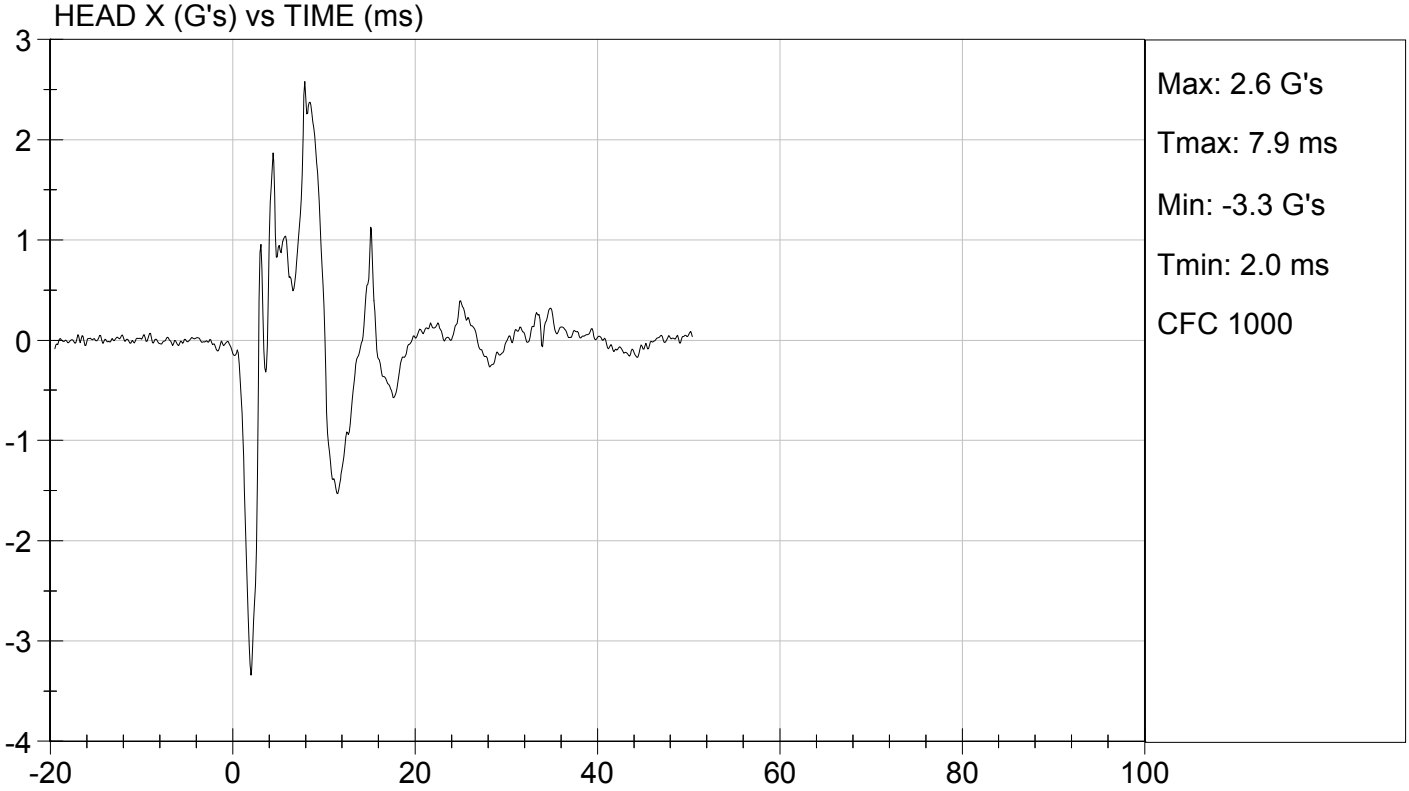
TEST DESC: HEAD DROP

TEST DATE: 12/18/2013
TEST #: D134351

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



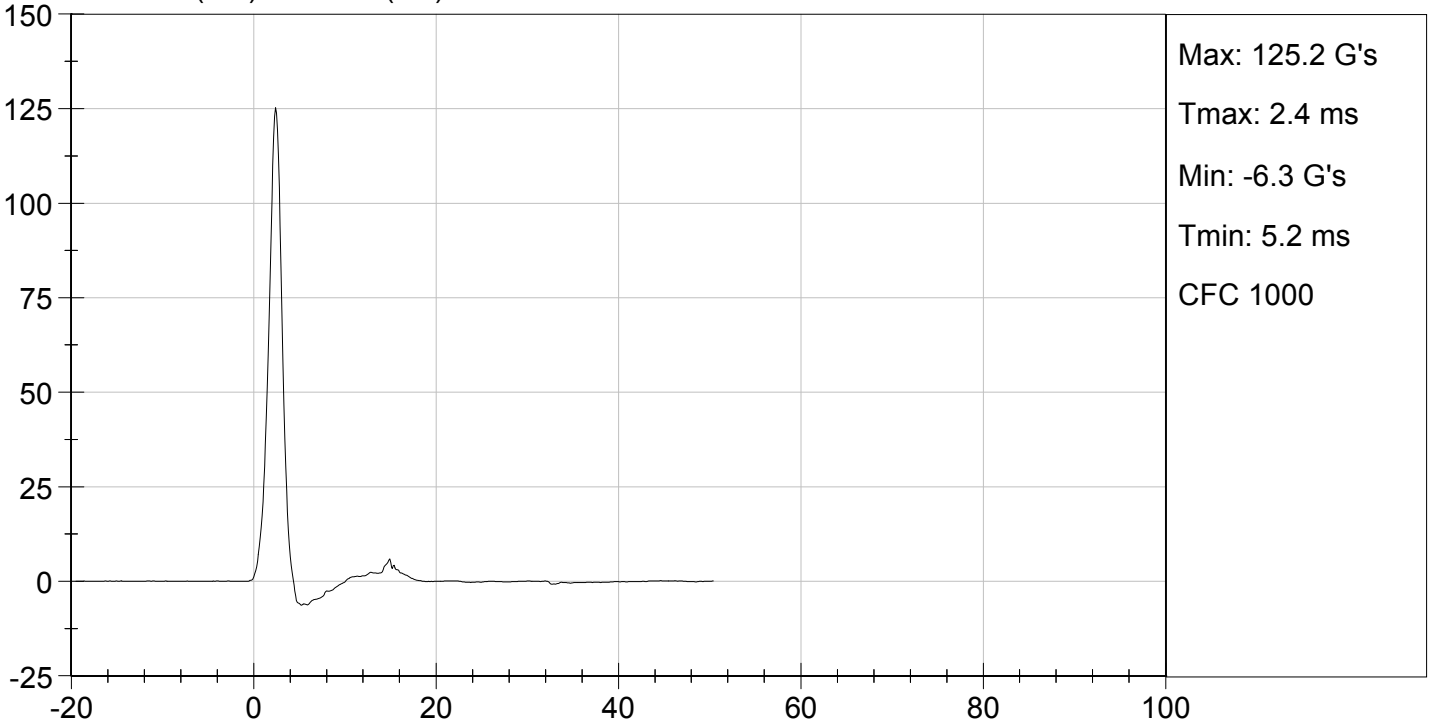
HEAD X (G's) vs TIME (ms)



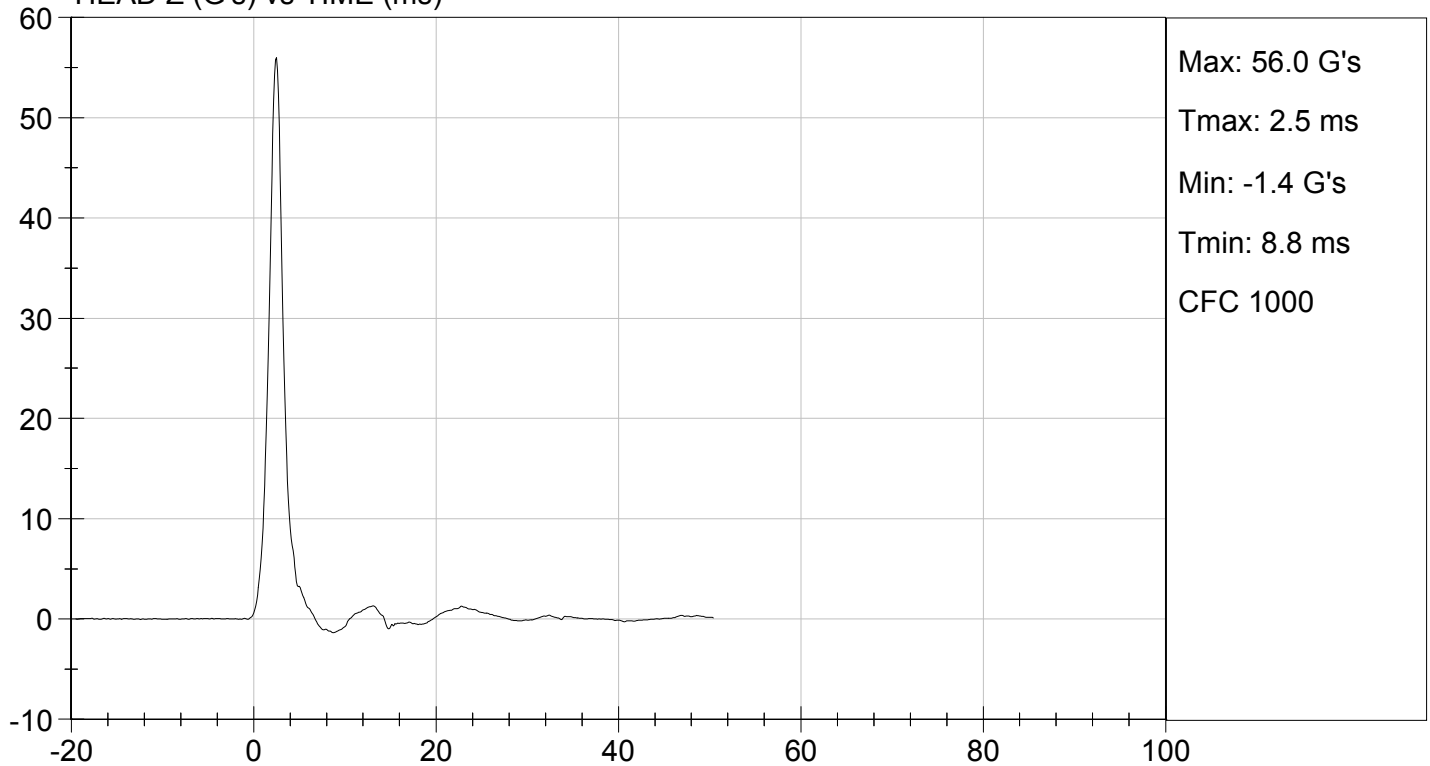
TEST DESC: HEAD DROP

TEST DATE: 12/18/2013
TEST #: D134351

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



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



MGA RESEARCH CORPORATION

NECK PENDULUM TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134352

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	17	Pass
Pendulum Speed		m/s	3.30 to 3.50	3.32	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.34	Pass
	14 ms	m/s	-3.20 to -3.70	-3.32	Pass
	17 ms	m/s	>= -3.70	-3.27	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	50.9	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	58.8	Pass
Head Rotation Decay Time to 0 Degree		ms	53.0 to 88.0	54.8	Pass
			Overall Results		Pass

Jessica Hall
Laboratory Technician

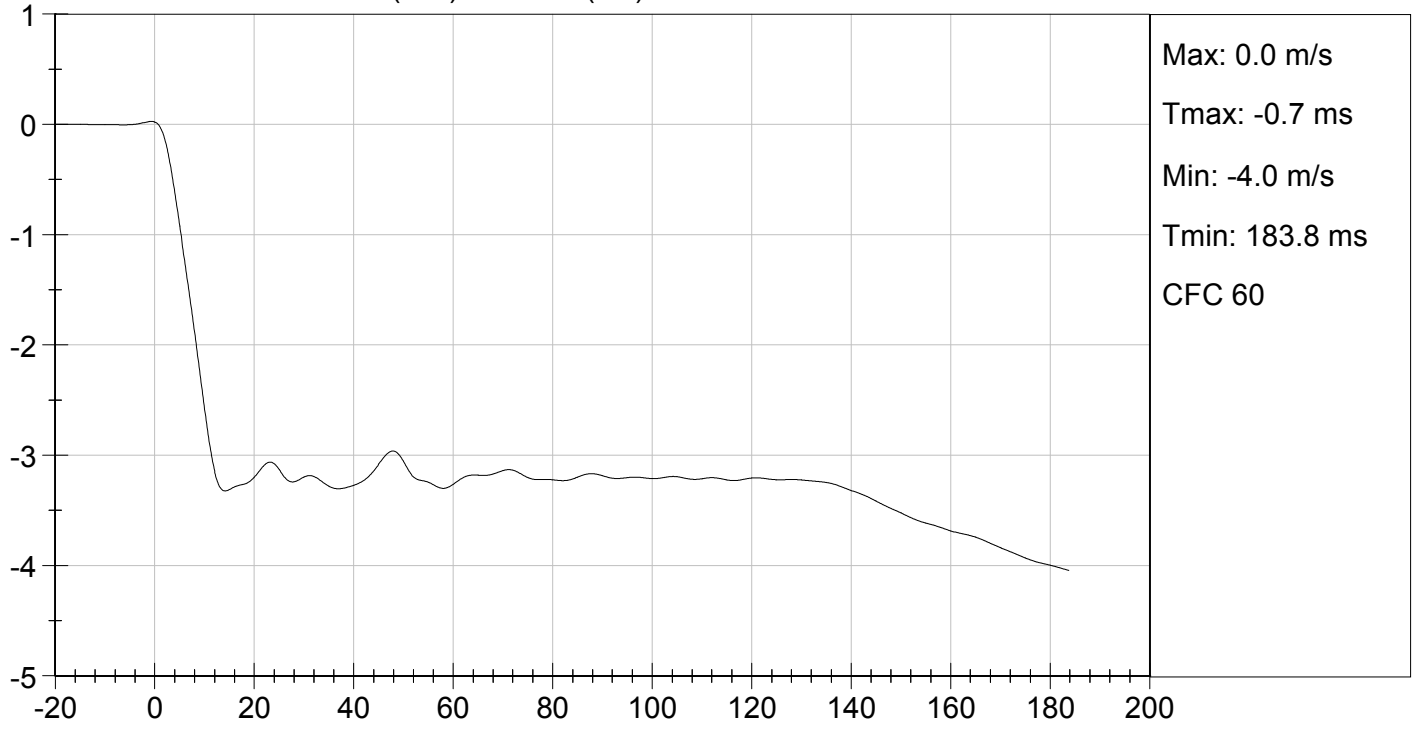
12/18/2013
Test Date

David Winkelbauer
Approved By

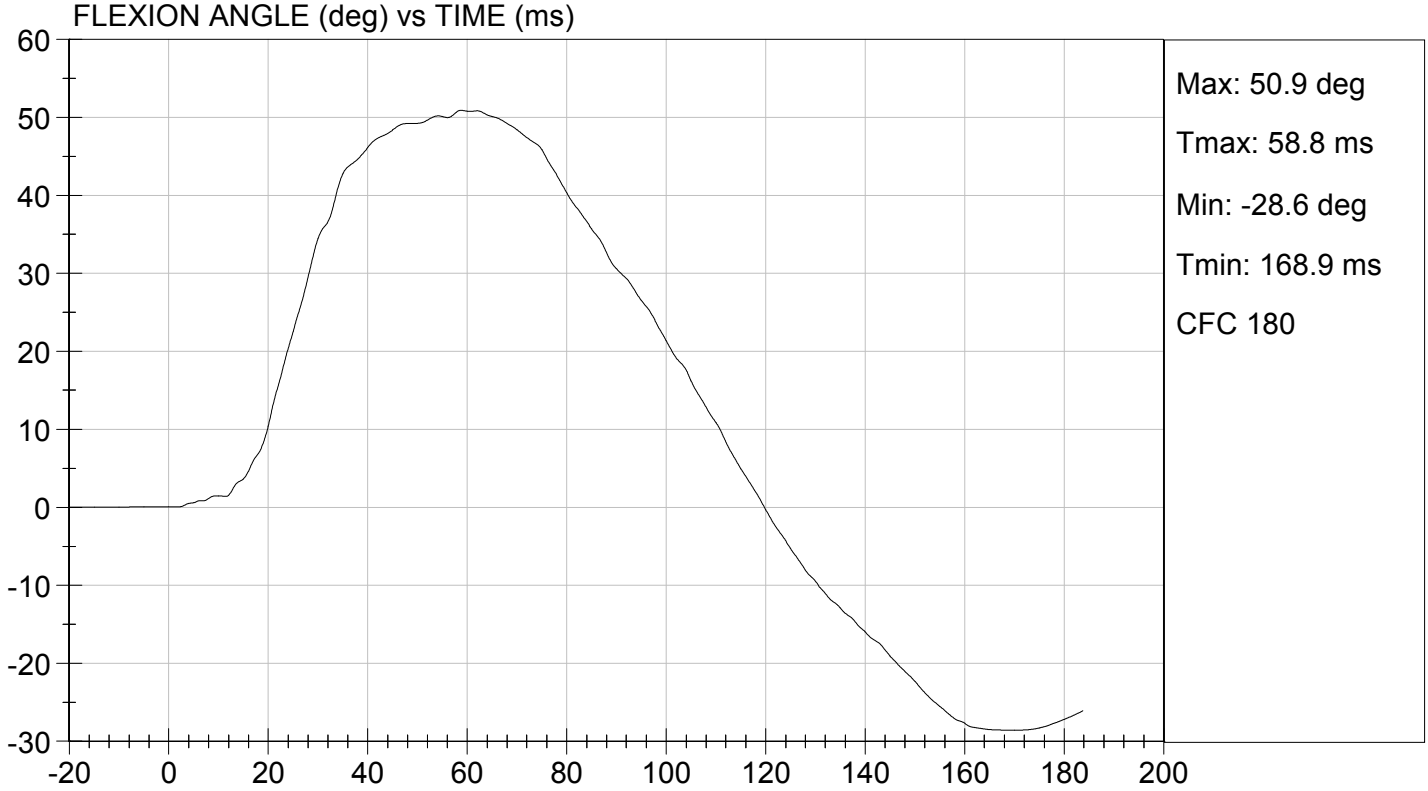
TEST DESC: NECK BENDING
VELOCITY: 10.89 ft/s, 3.32 m/s

TEST DATE: 12/18/2013
TEST #: D134352

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



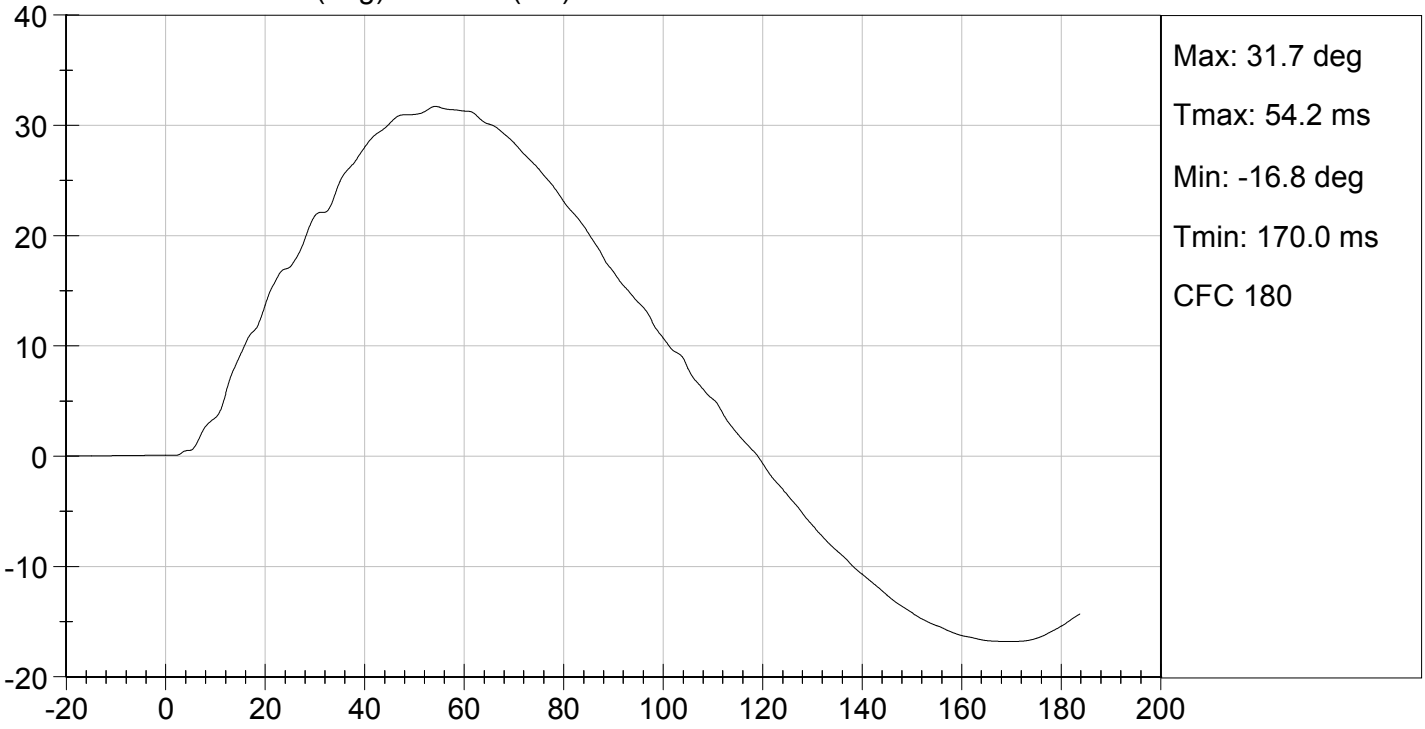
FLEXION ANGLE (deg) vs TIME (ms)



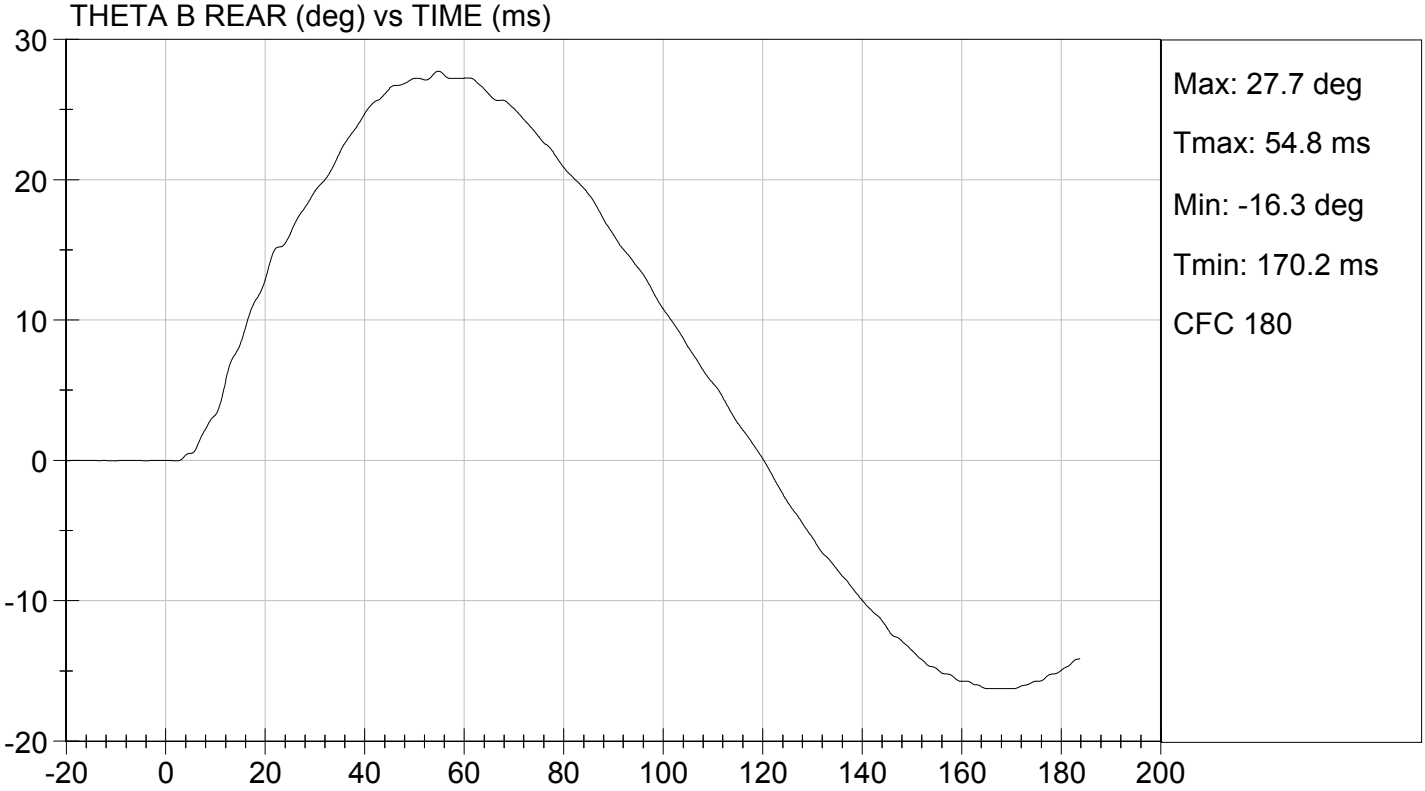
TEST DESC: NECK BENDING
VELOCITY: 10.89 ft/s, 3.32 m/s

TEST DATE: 12/18/2013
TEST #: D134352

THETA A FRONT (deg) vs TIME (ms)

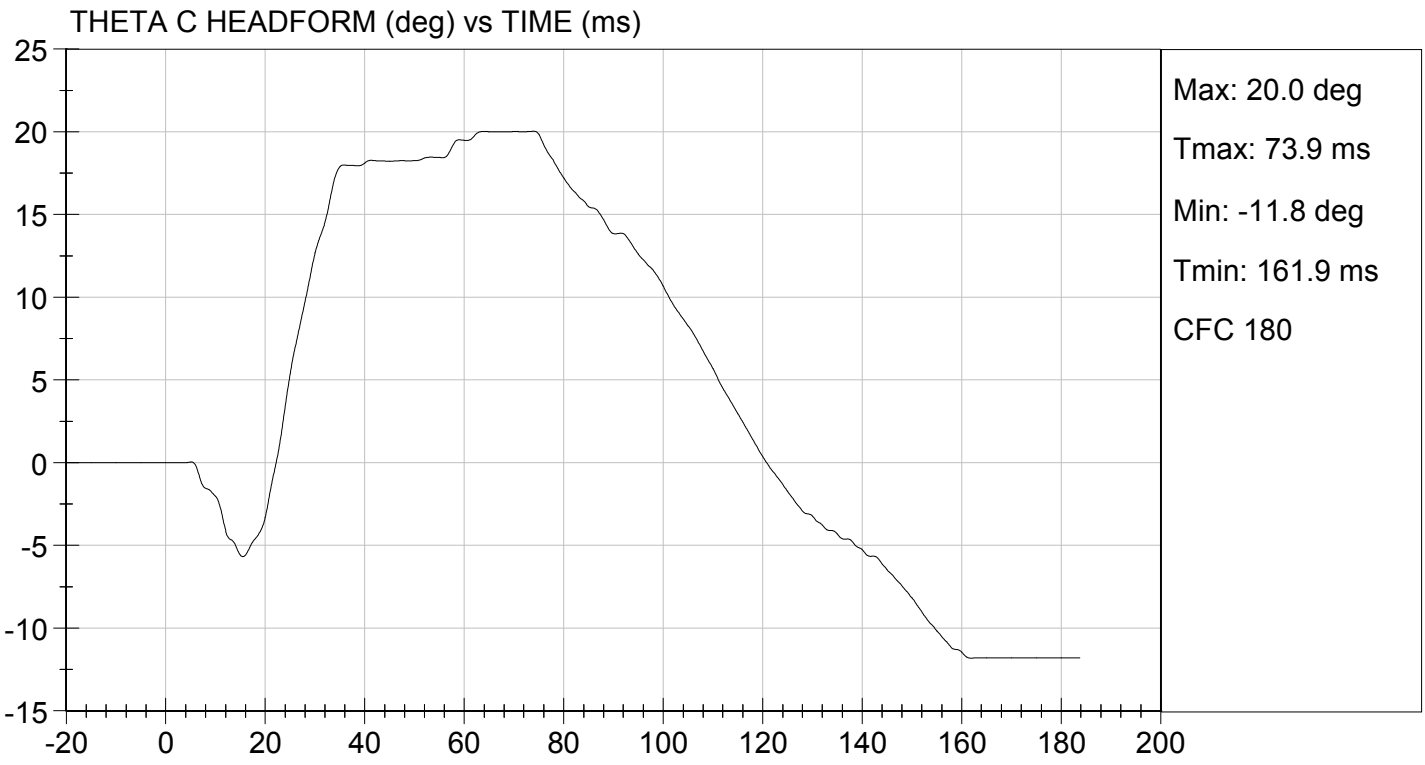


THETA B REAR (deg) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 10.89 ft/s, 3.32 m/s

TEST DATE: 12/18/2013
TEST #: D134352



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134353

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Pendulum Speed	m/s	4.20 to 4.40	4.30	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.5	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

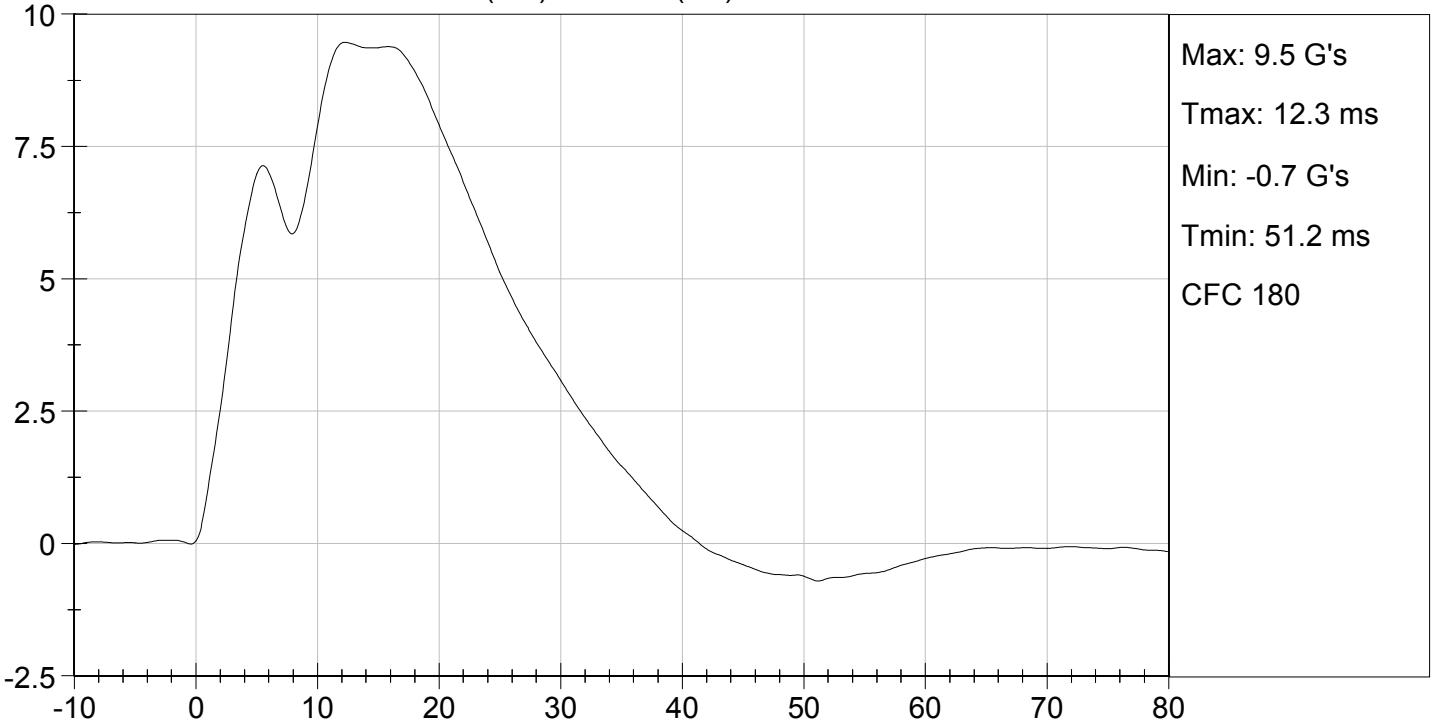
12/18/2013
Test Date

David Winkelbauer
Approved By

TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.3 m/s

TEST DATE: 12/18/2013
TEST #: D134353

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



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134354

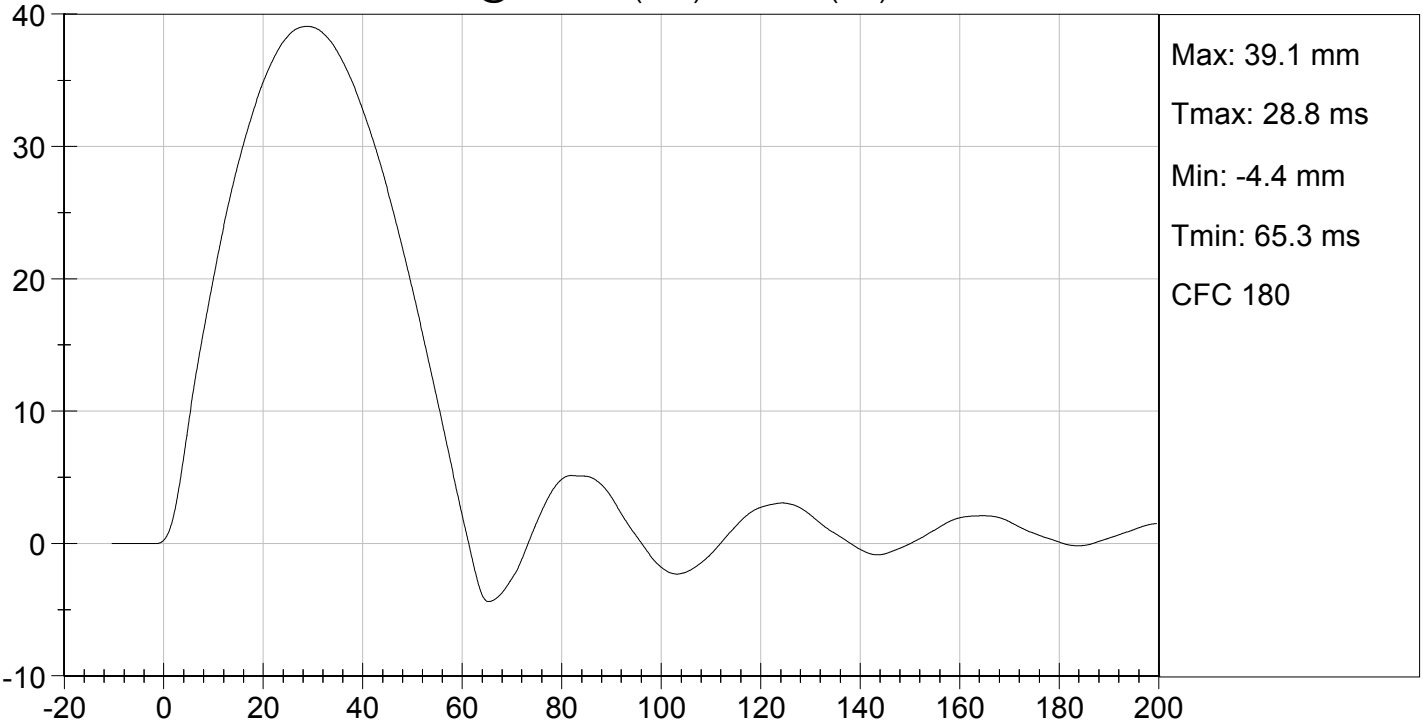
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Displacement at 459 mm	mm	36.0 to 40.0	39.1	Pass
Displacement at 815 mm	mm	46.0 to 51.0	50.2	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

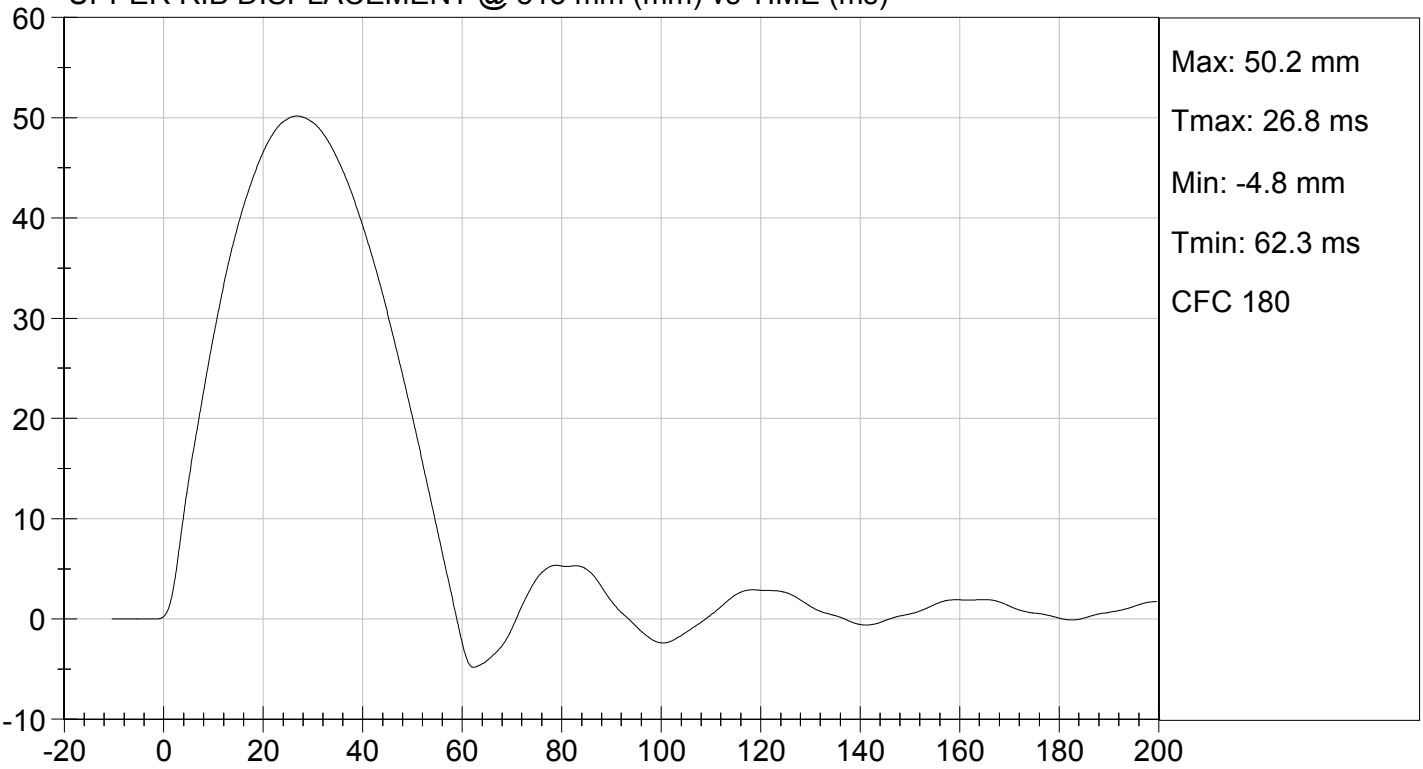
12/18/2013
Test Date

David Winkelbauer
Approved By

UPPER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



UPPER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134355

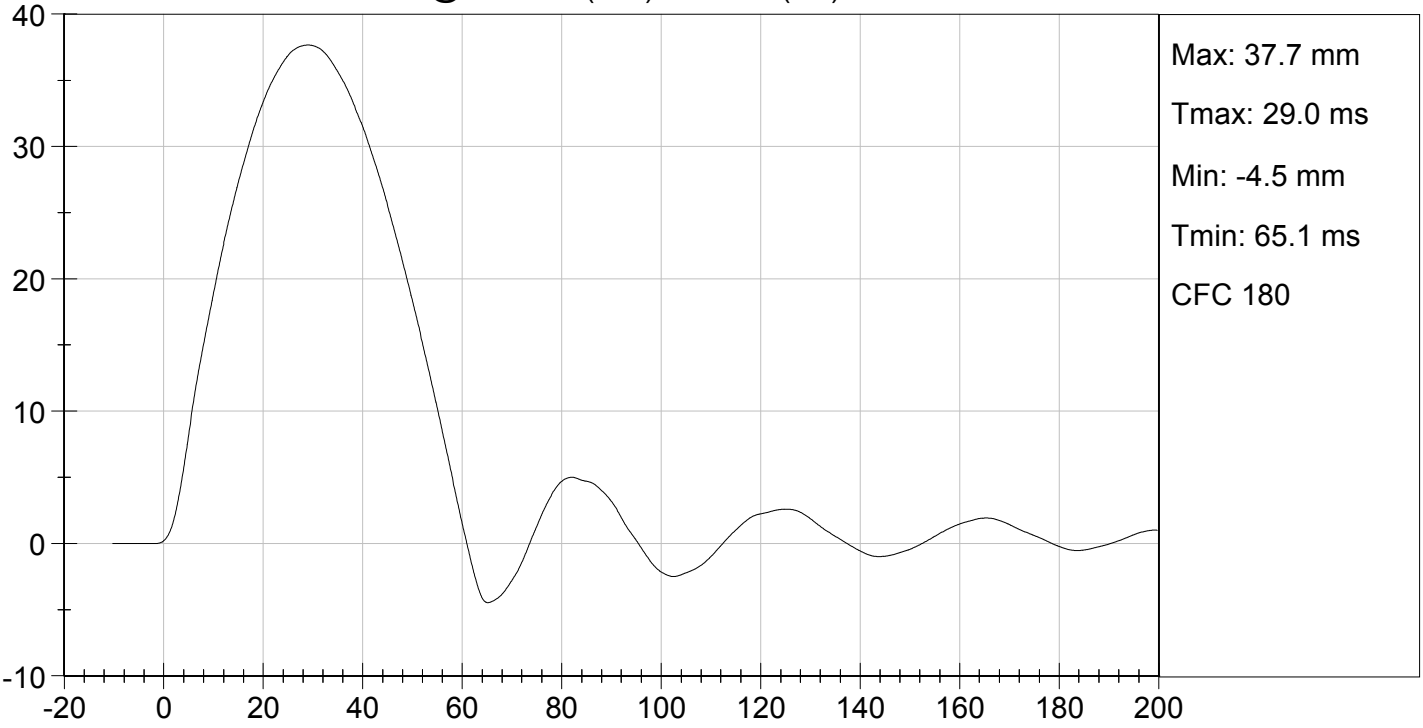
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Displacement at 459 mm	mm	36.0 to 40.0	37.7	Pass
Displacement at 815 mm	mm	46.0 to 51.0	49.4	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

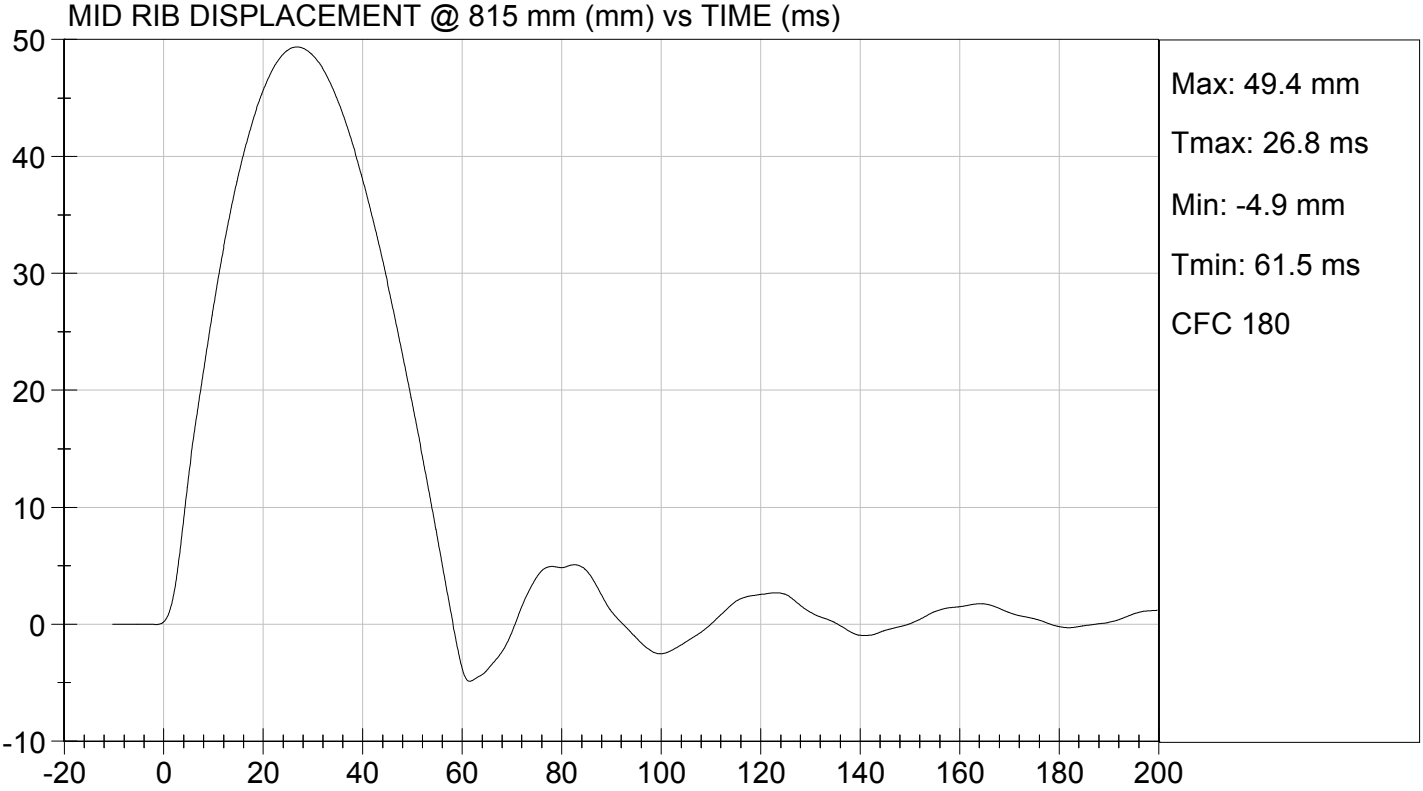
12/18/2013
Test Date

David Winkelbauer
Approved By

MID RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



MID RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134356

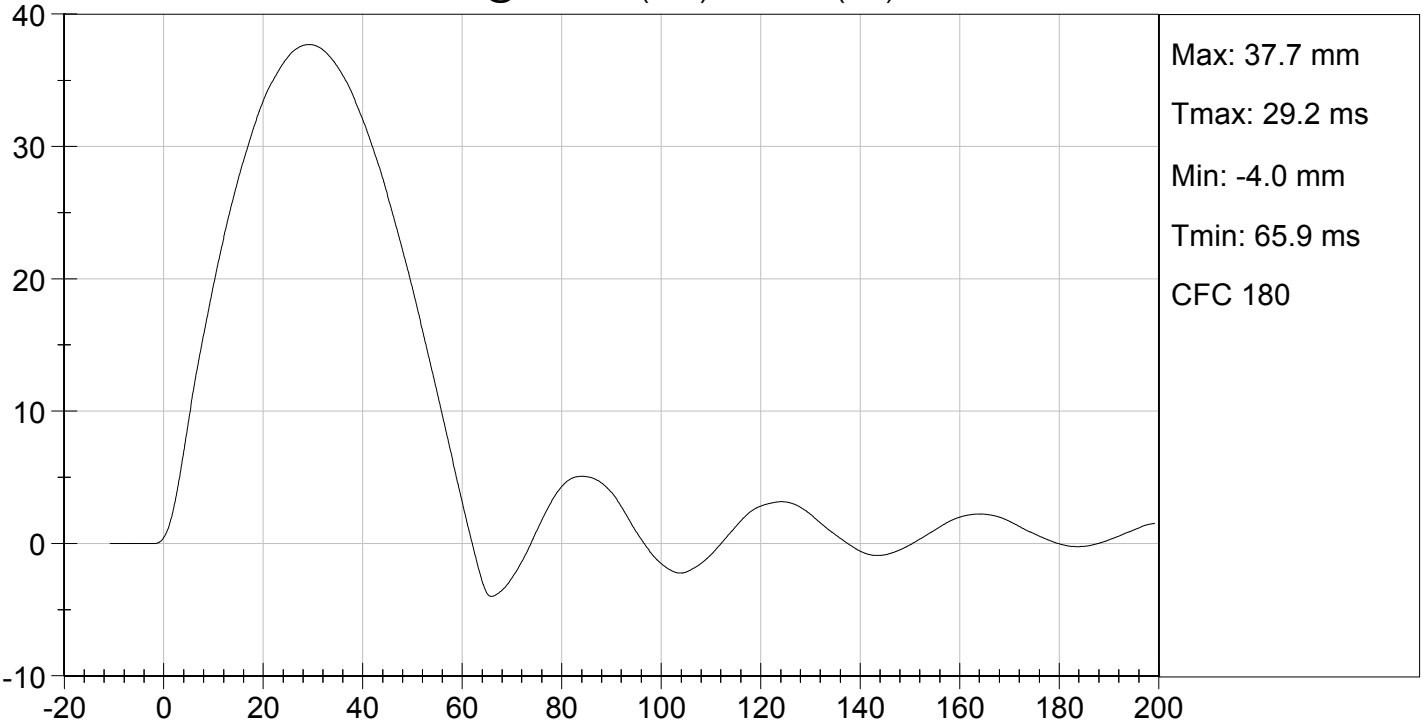
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Displacement at 459 mm	mm	36.0 to 40.0	37.7	Pass
Displacement at 815 mm	mm	46.0 to 51.0	49.9	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

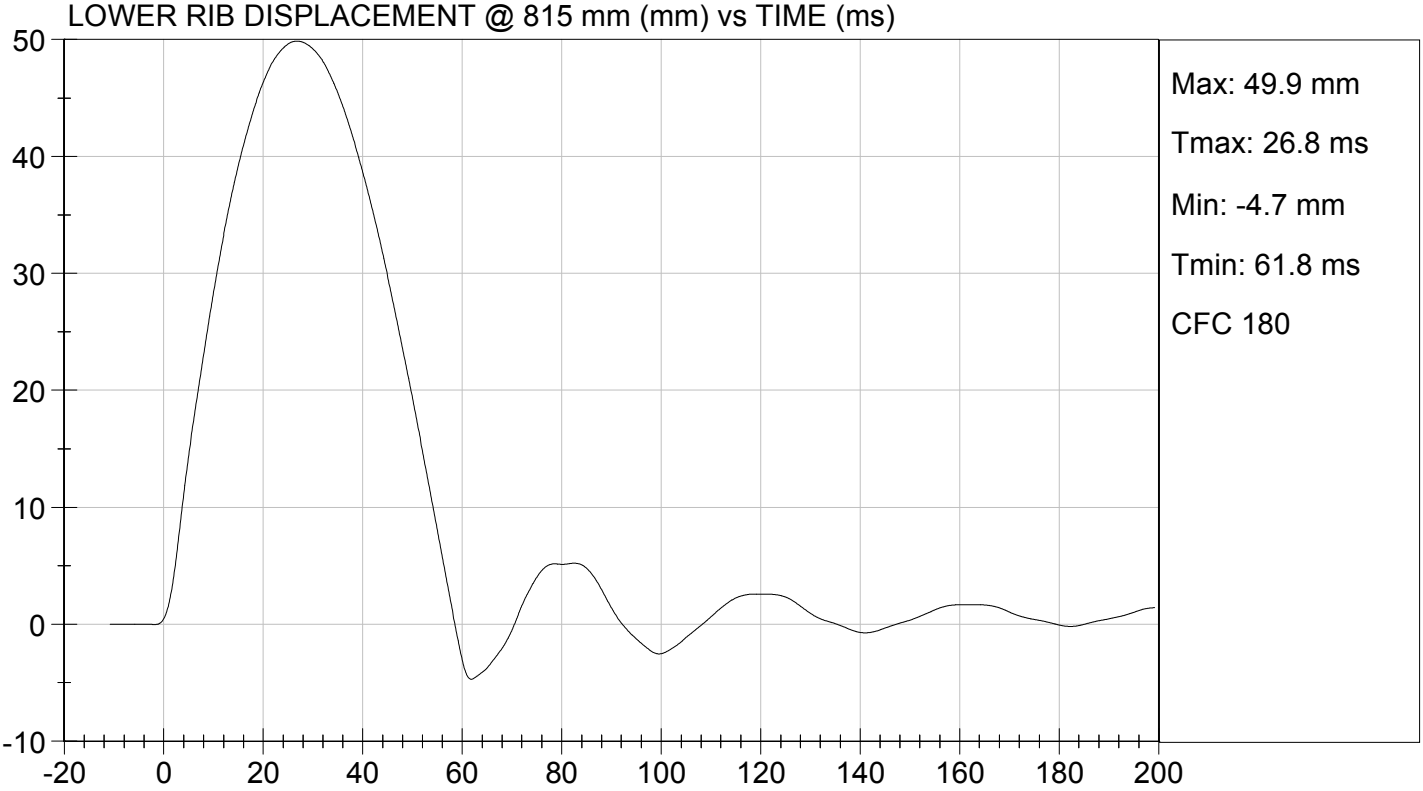
12/18/2013
Test Date

David Winkelbauer
Approved By

LOWER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134350

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	18	Pass
Probe Speed	m/s	5.40 to 5.60	5.60	Pass
Maximum Impactor Force (after 6 ms)	N	5100 to 6200	5230	Pass
Upper Rib Displacement	mm	34.0 to 41.0	40.0	Pass
Middle Rib Displacement	mm	37.0 to 45.0	41.7	Pass
Lower Rib Displacement	mm	37.0 to 44.0	41.1	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

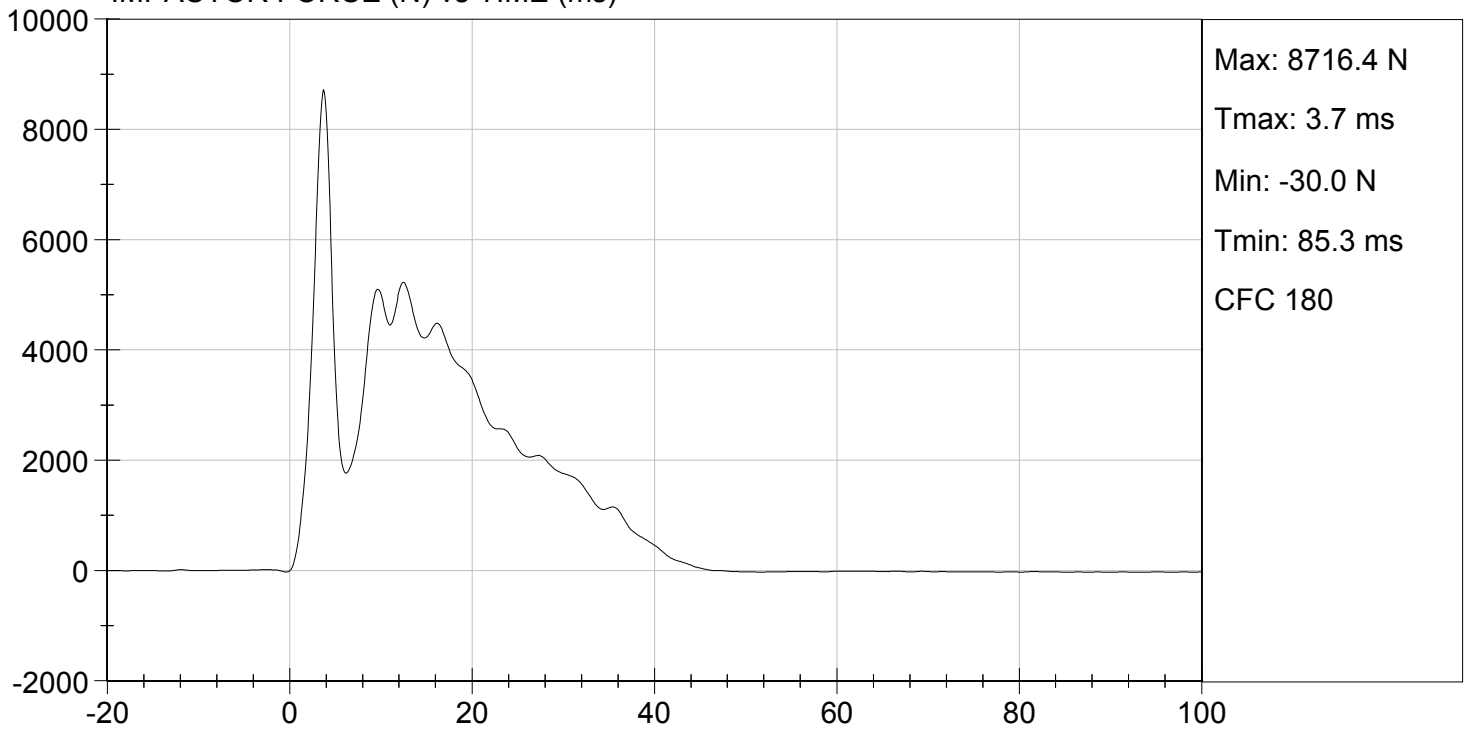
12/18/2013
Test Date

David Winkelbauer
Approved By

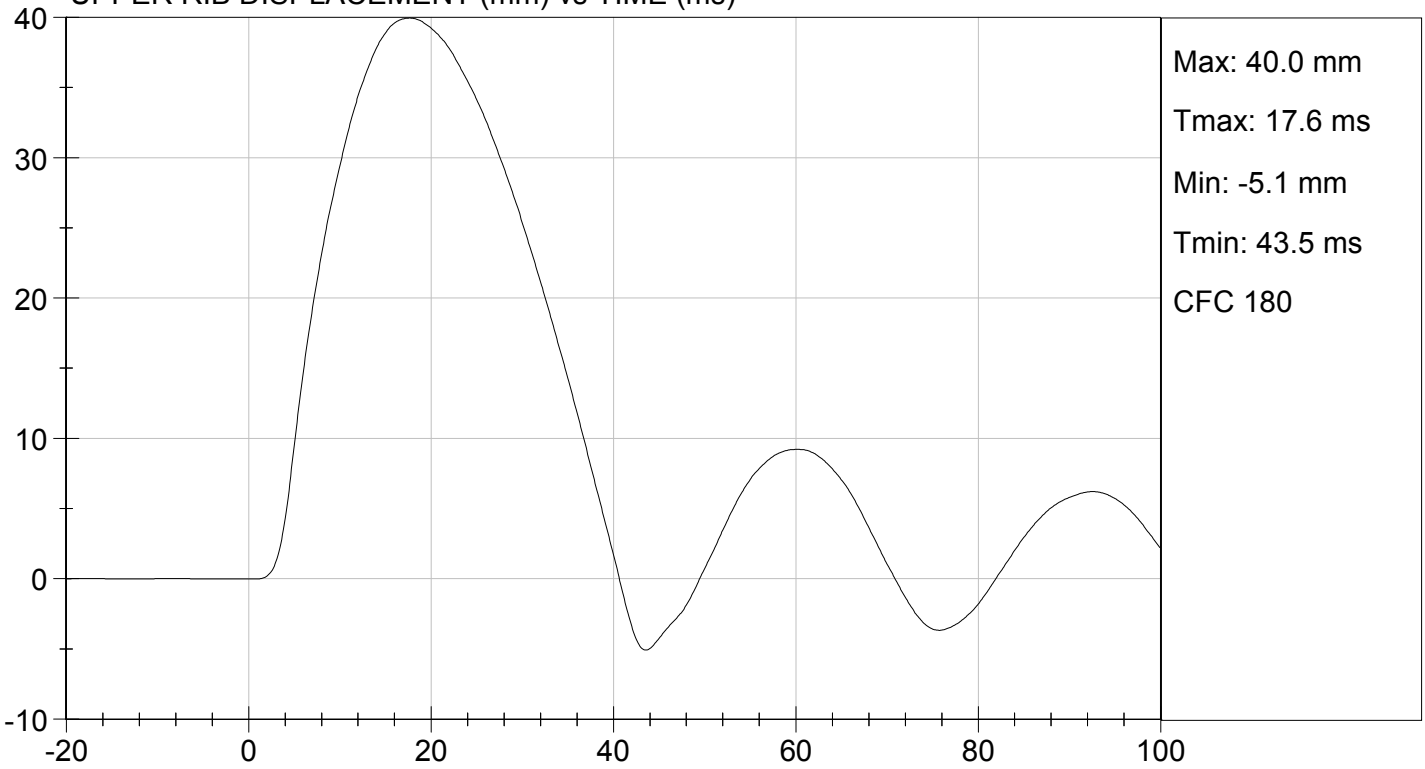
TEST DESC: THORAX IMPACT
VELOCITY: 18.37 ft/s, 5.60 m/s

TEST DATE: 12/18/2013
TEST #: D134350

IMPACTOR FORCE (N) vs TIME (ms)



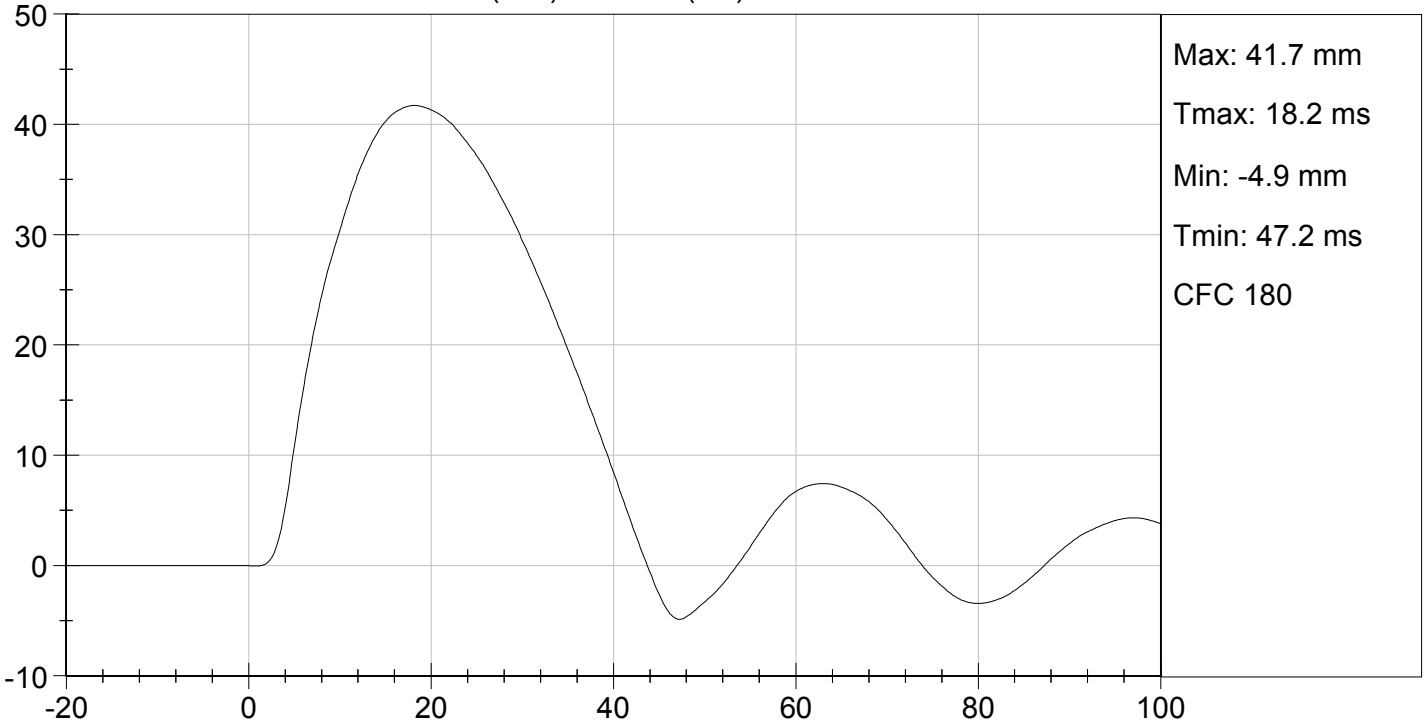
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



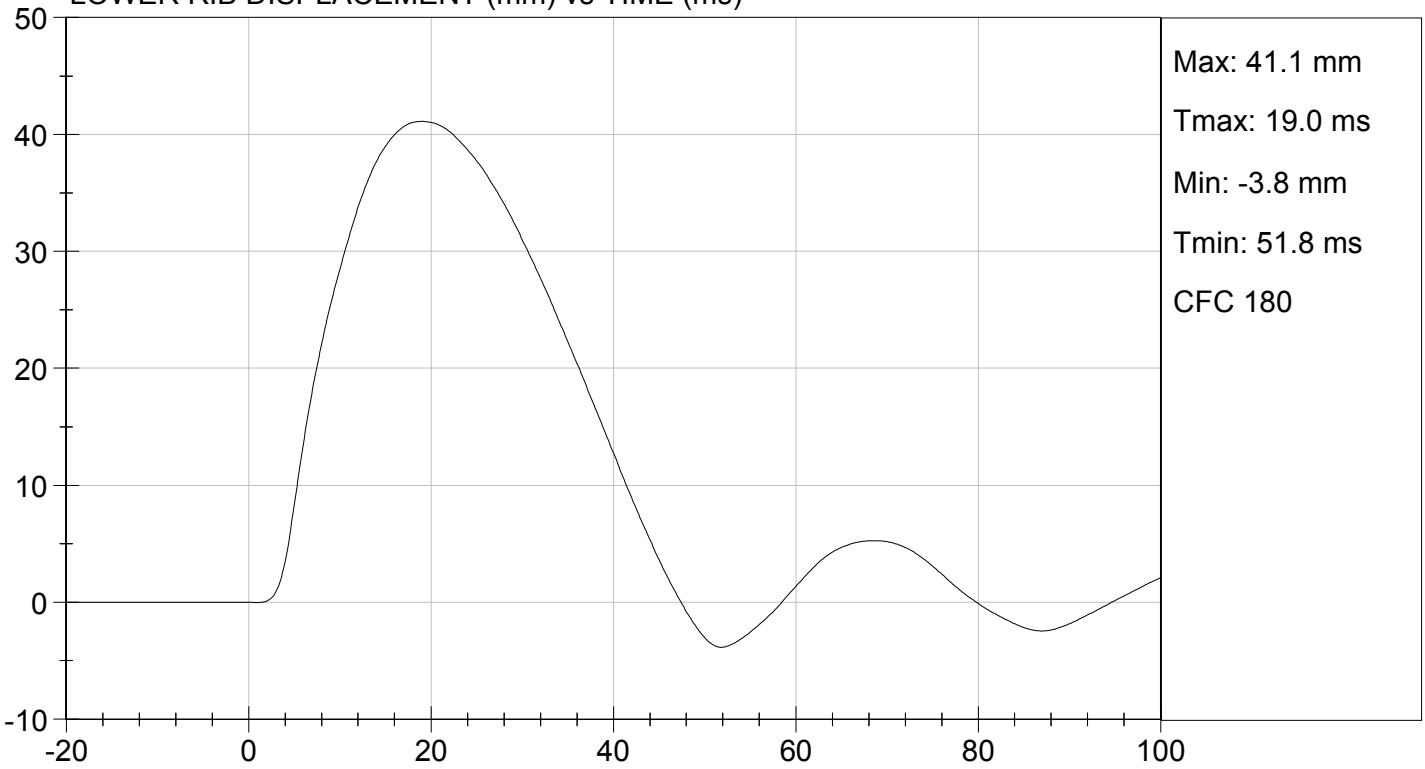
TEST DESC: THORAX IMPACT
VELOCITY: 18.37 ft/s, 5.60 m/s

TEST DATE: 12/18/2013
TEST #: D134350

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:** D134357

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	18	Pass
Probe Speed	m/s	3.90 to 4.10	4.04	Pass
Maximum Impactor Force	N	4000 to 4800	4458	Pass
Time of Maximum Impactor Force	ms	10.6 to 13.0	11.6	Pass
Maximum Total Abdomen Force	N	2200 to 2700	2279	Pass
Time of Maximum Abdomen Force	ms	10.0 to 12.3	10.8	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

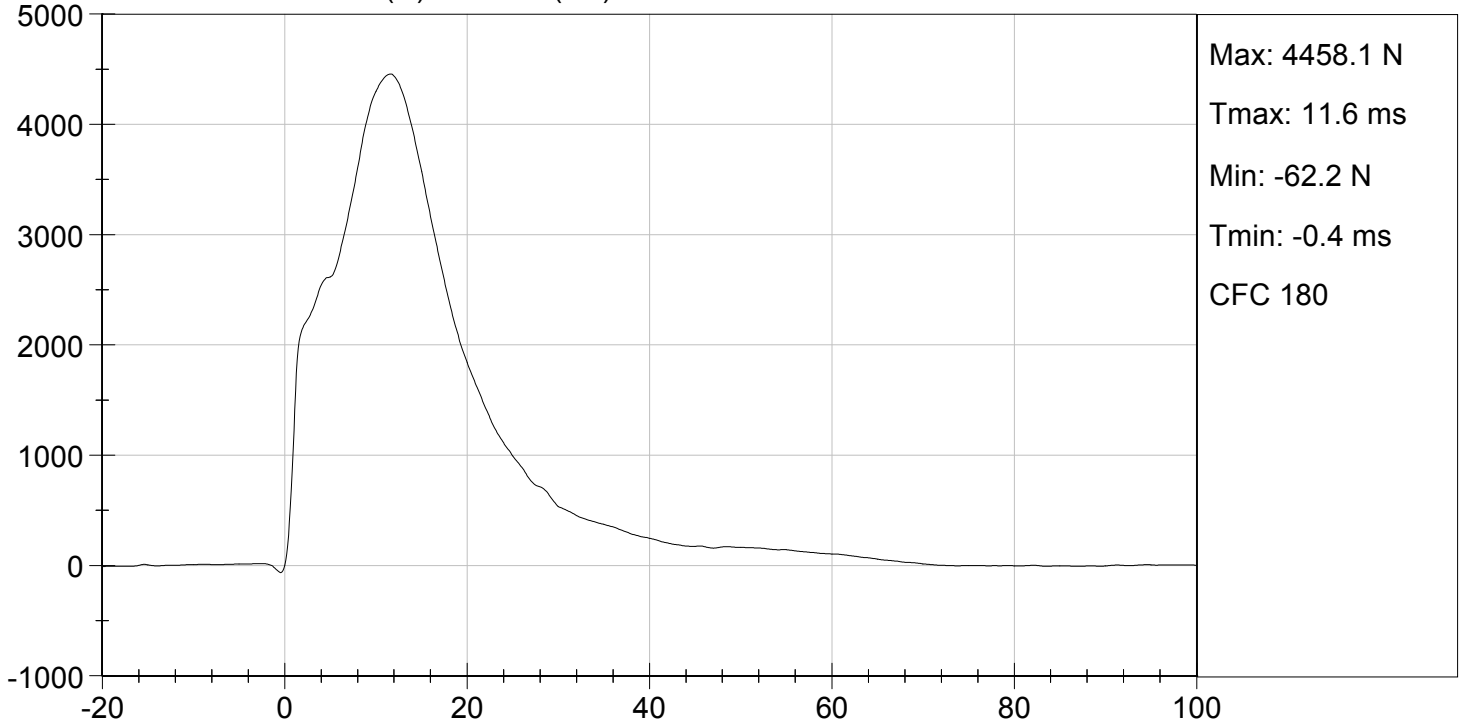
12/18/2013
Test Date

David Winkelbauer
Approved By

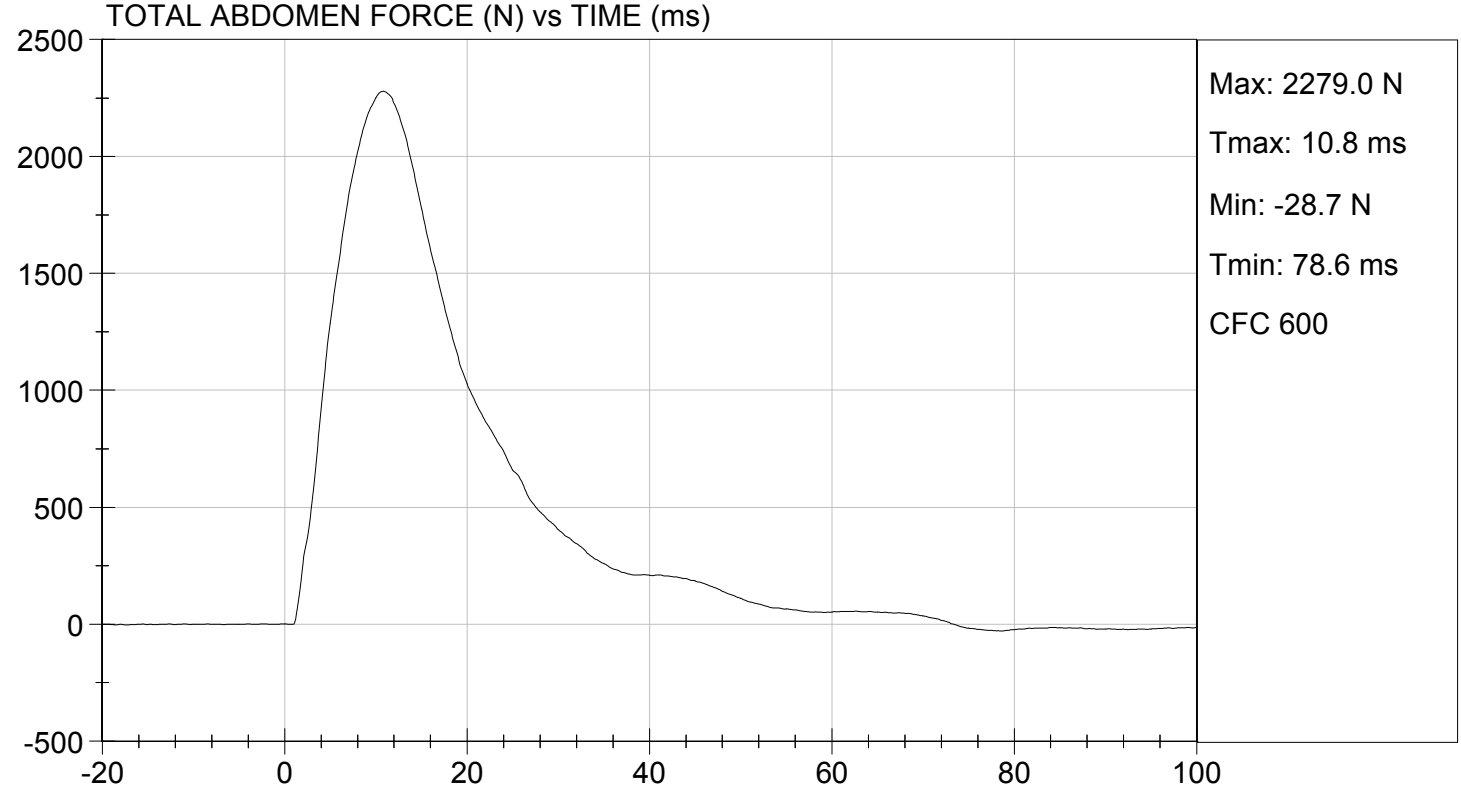
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.24 ft/s, 4.04 m/s

TEST DATE: 12/18/2013
TEST #: D134357

IMPACTOR FORCE (N) vs TIME (ms)



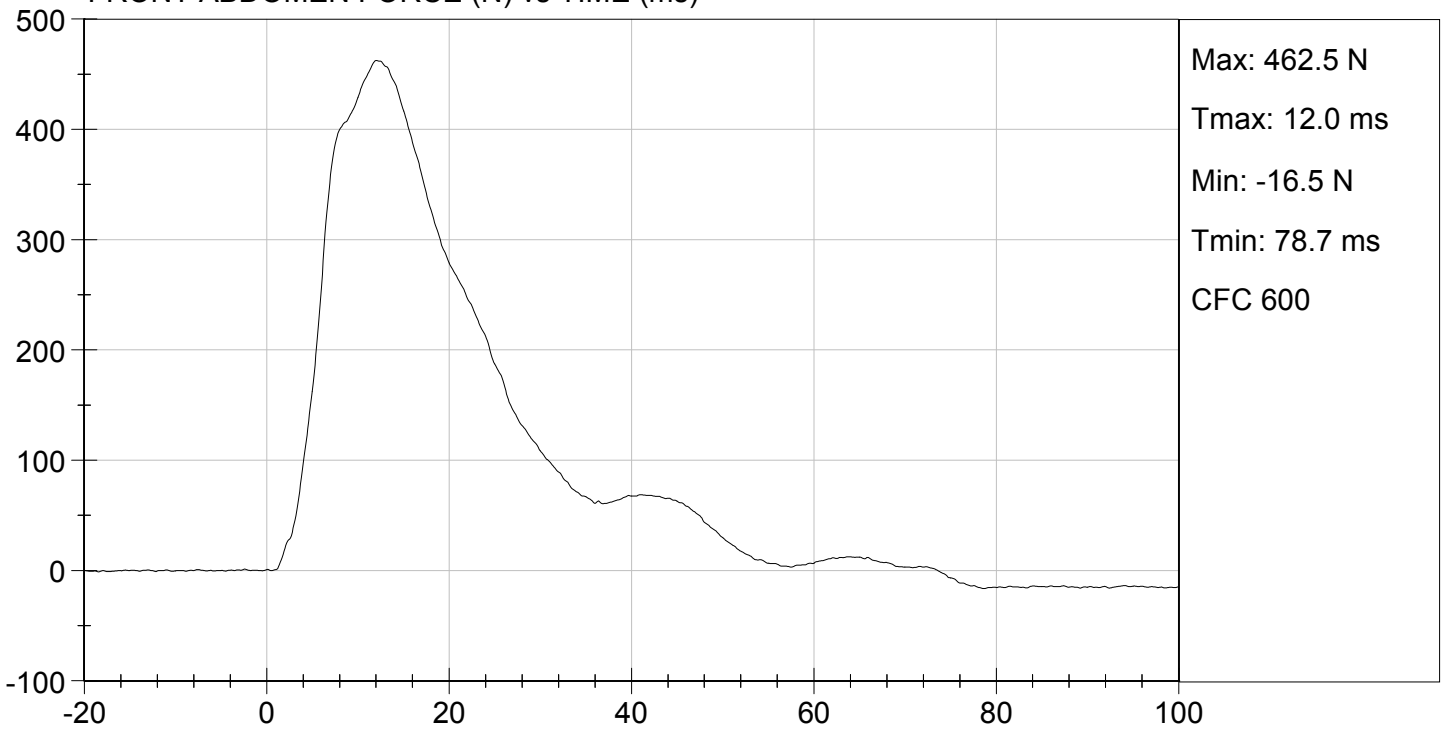
TOTAL ABDOMEN FORCE (N) vs TIME (ms)



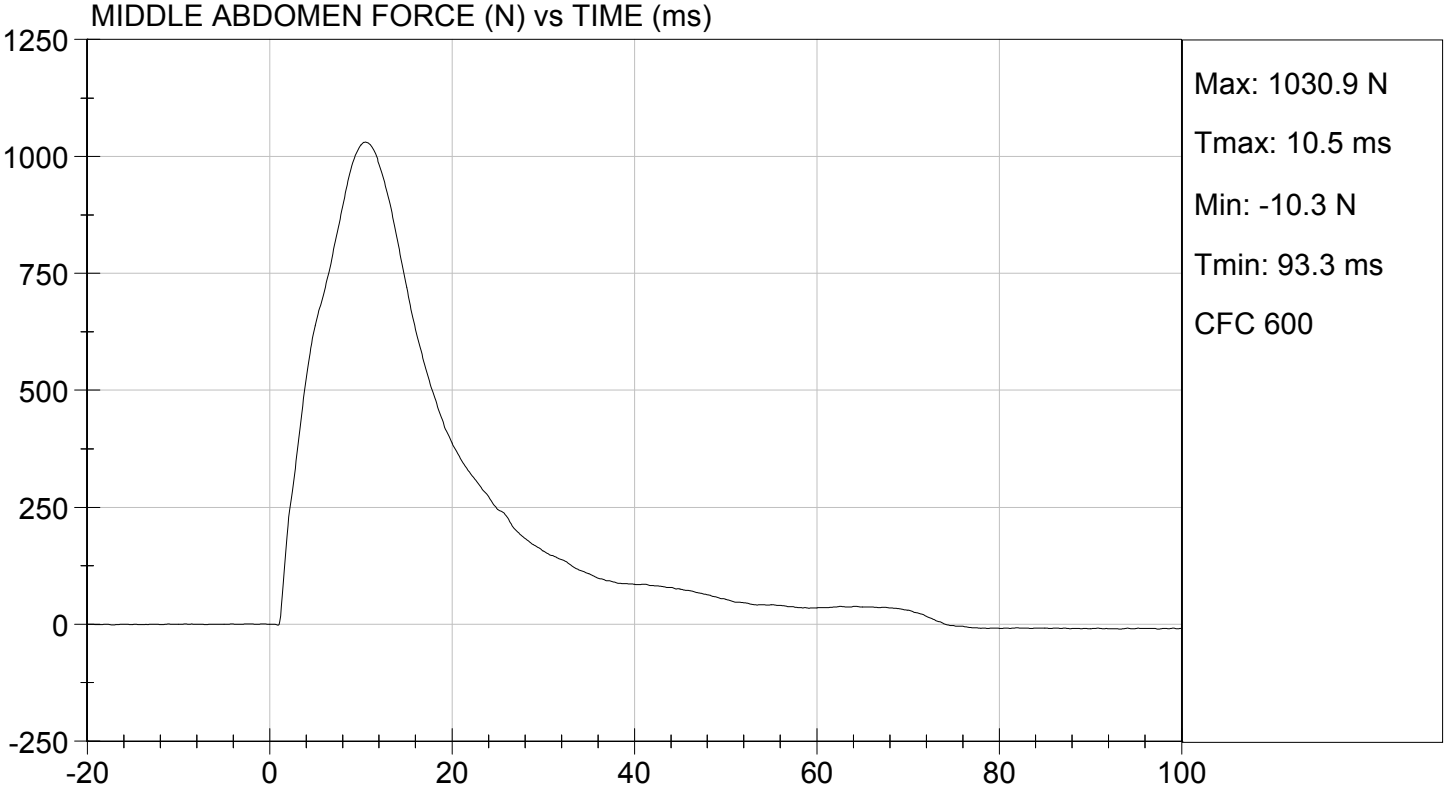
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.24 ft/s, 4.04 m/s

TEST DATE: 12/18/2013
TEST #: D134357

FRONT ABDOMEN FORCE (N) vs TIME (ms)



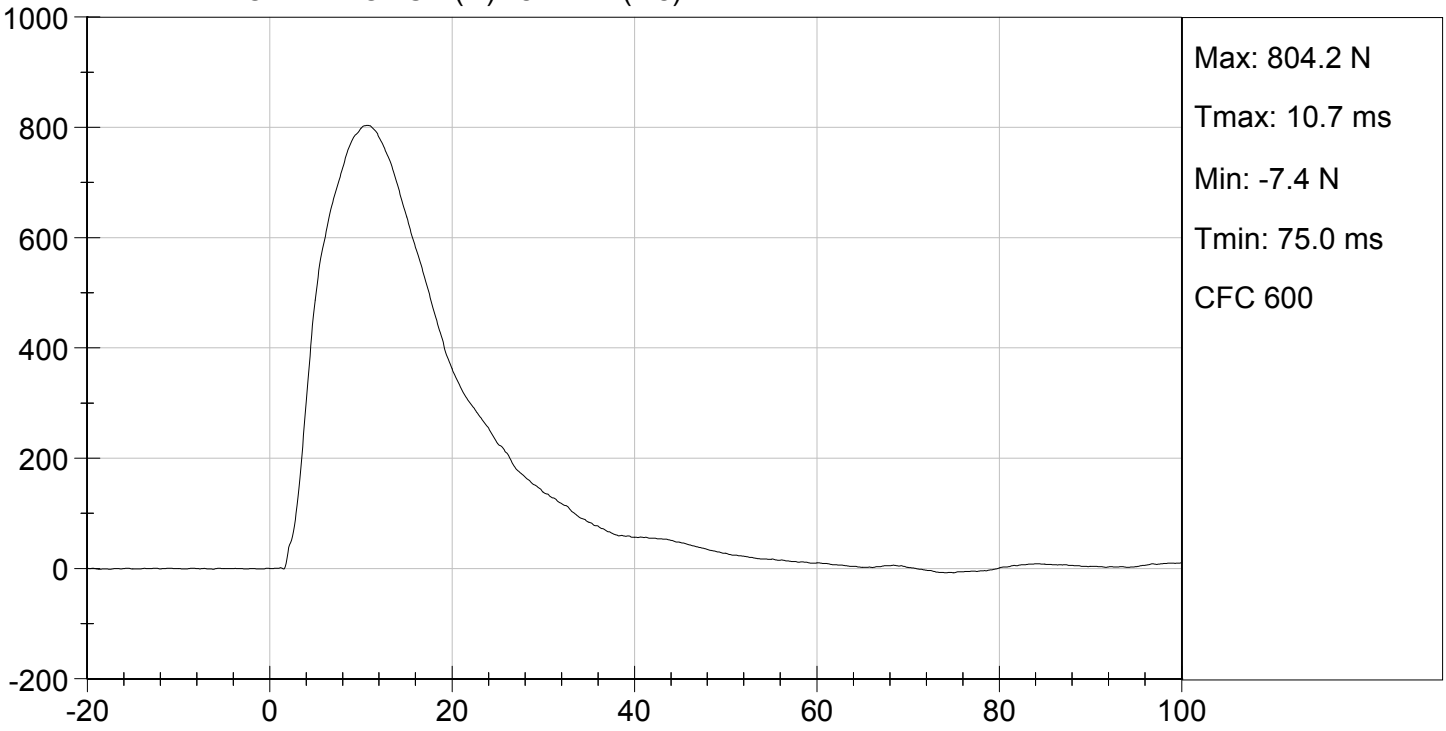
MIDDLE ABDOMEN FORCE (N) vs TIME (ms)



TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.24 ft/s, 4.04 m/s

TEST DATE: 12/18/2013
TEST #: D134357

REAR ABDOMEN FORCE (N) vs TIME (ms)



MGA RESEARCH CORPORATION

LUMBAR SPINE TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134358

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	17	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.02	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.423	Pass
	27 ms	m/s	-6.50 to -5.80	-5.87	Pass
	30 ms	m/s	>= -6.50	-6.38	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	46.1	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	44.8	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	44	Pass
			Overall Results		Pass

Jessica Gall
Laboratory Technician

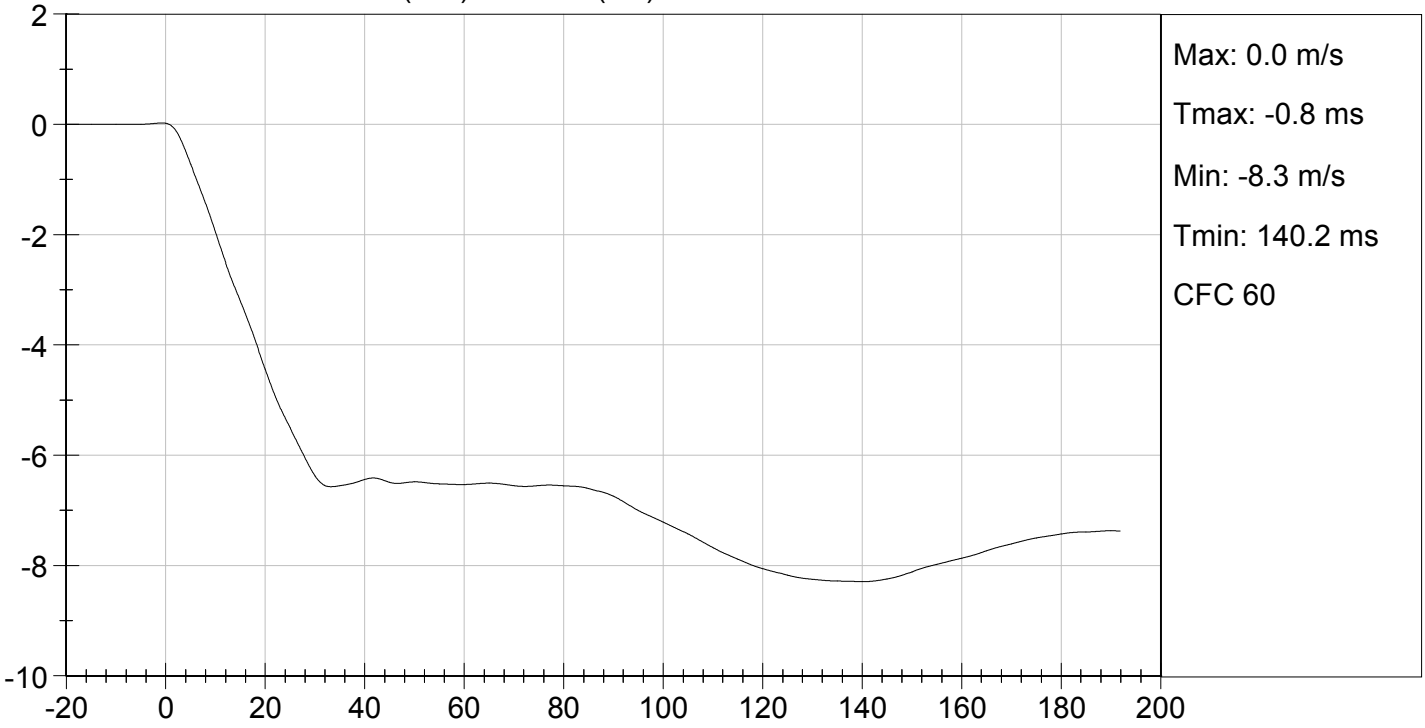
12/18/2013
Test Date

David Winkelbauer
Approved By

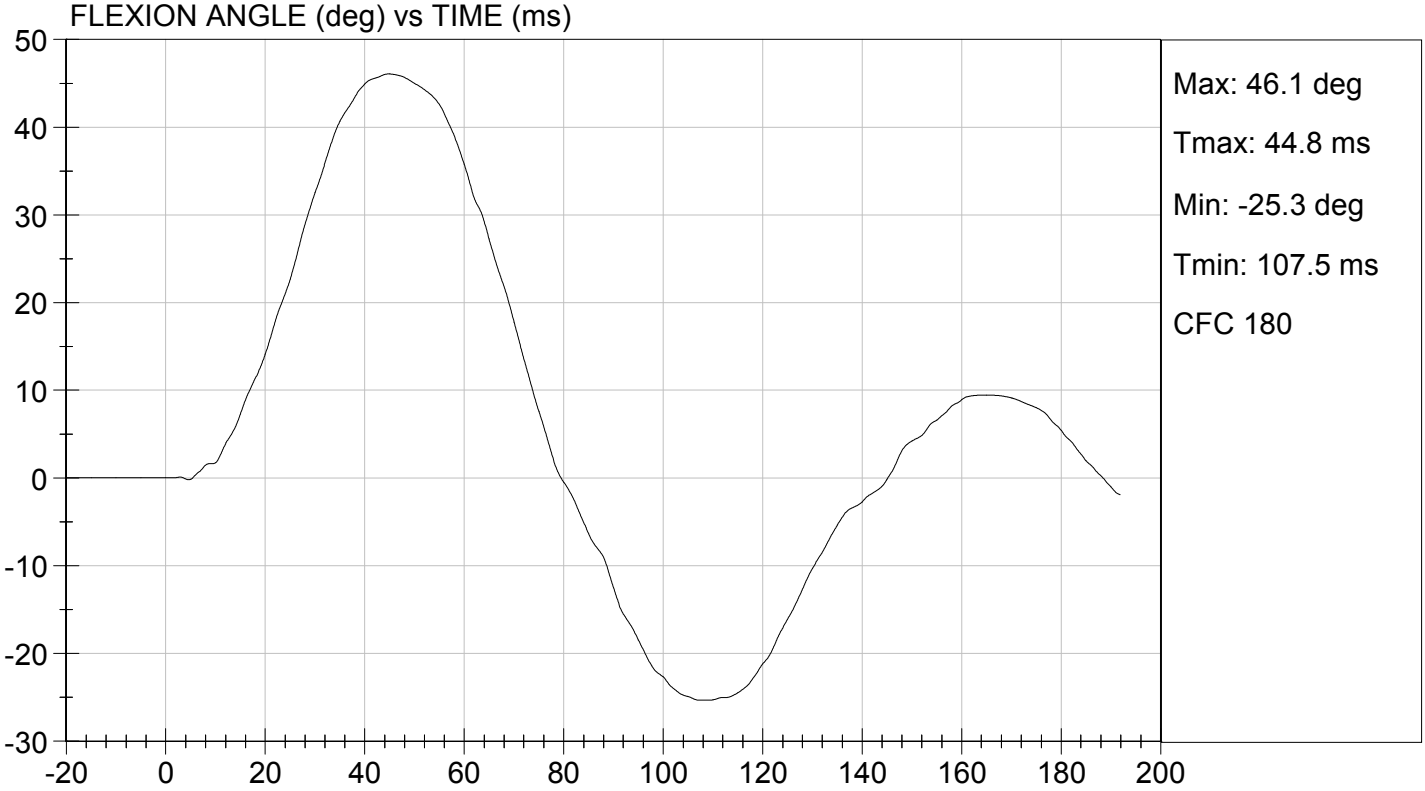
TEST DESC: LUMBAR BENDING
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 12/18/2013
TEST #: D134358

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



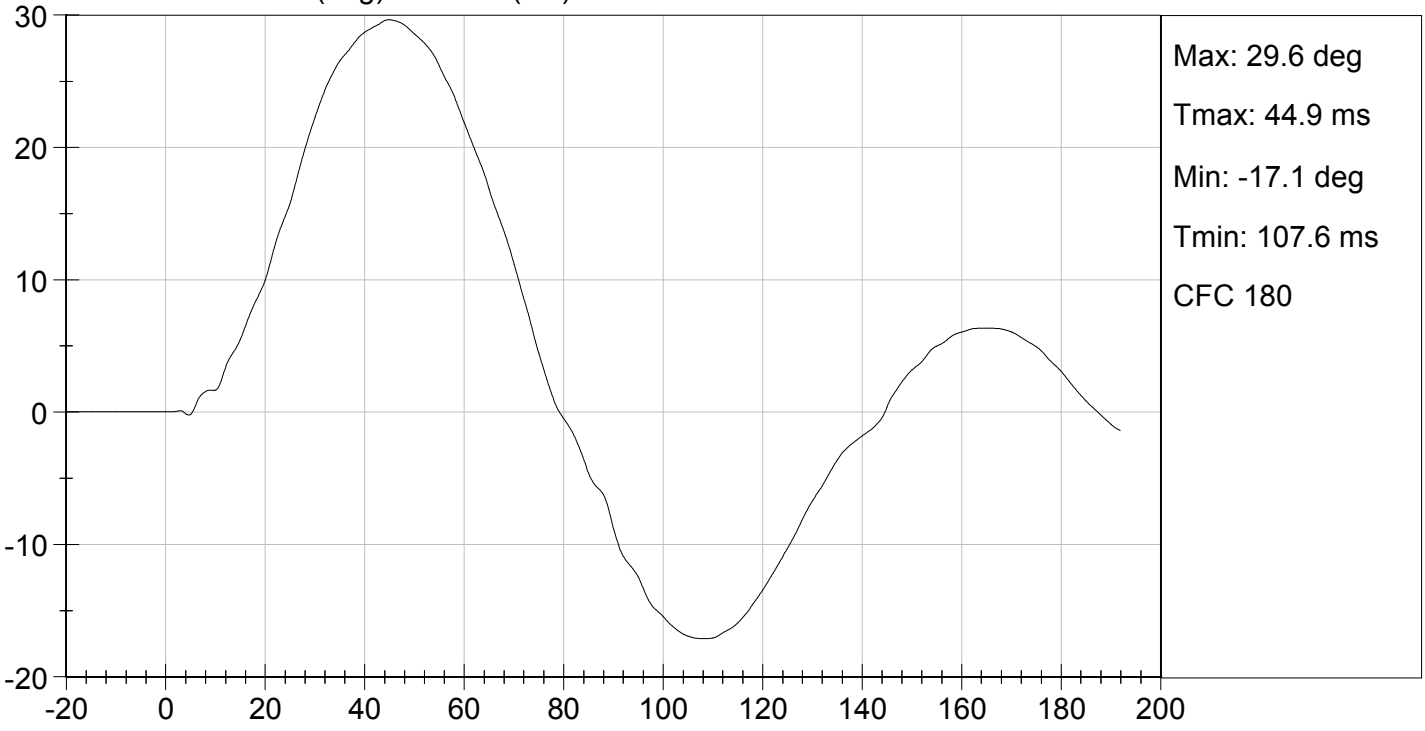
FLEXION ANGLE (deg) vs TIME (ms)



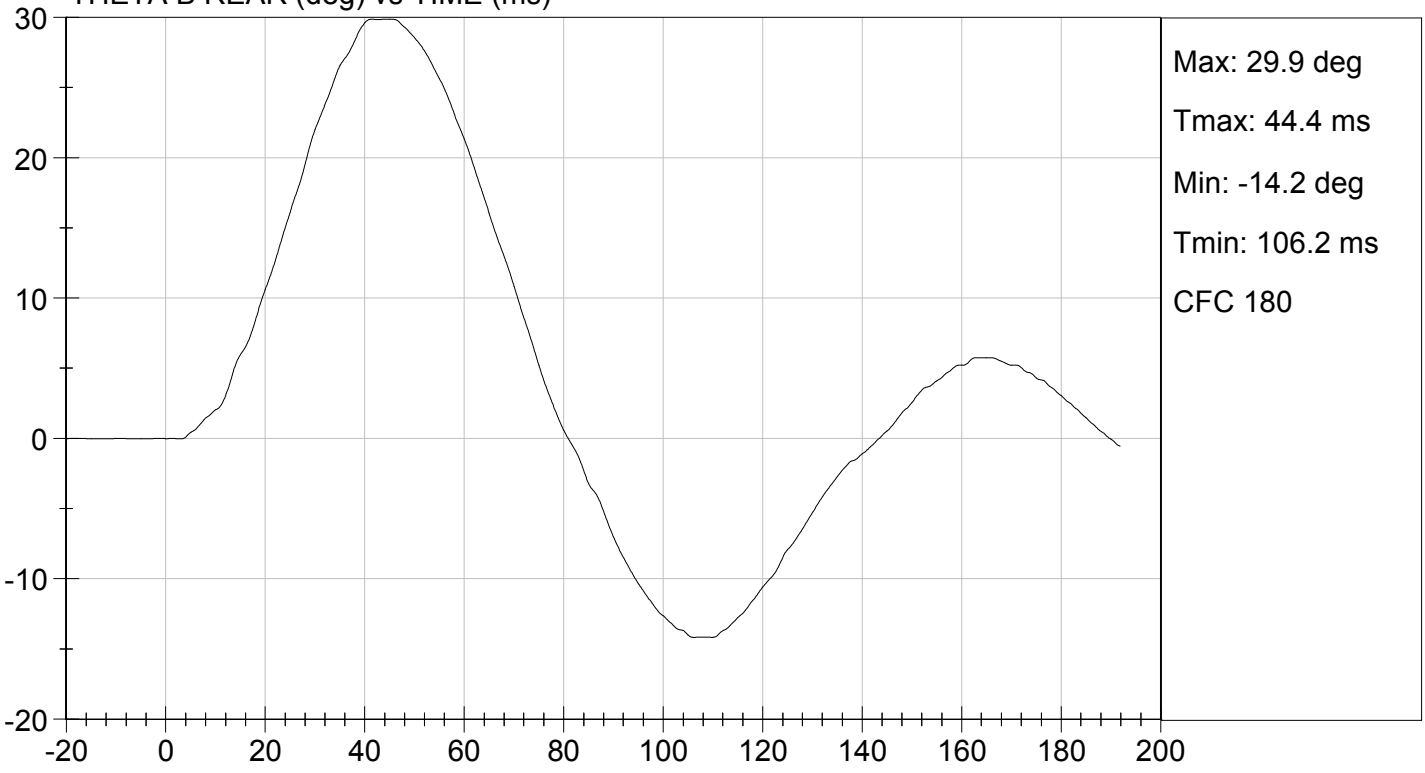
TEST DESC: LUMBAR BENDING
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 12/18/2013
TEST #: D134358

THETA A FRONT (deg) vs TIME (ms)

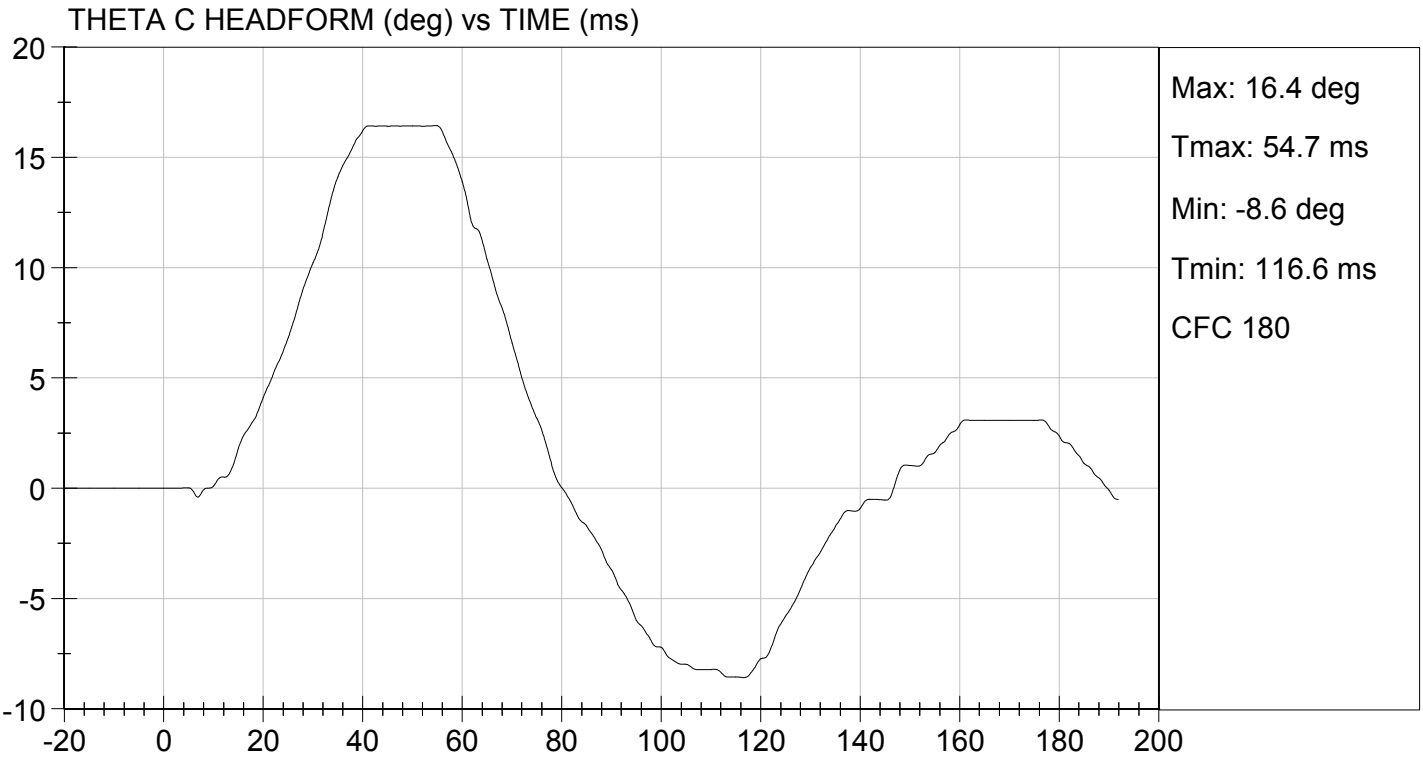


THETA B REAR (deg) vs TIME (ms)



TEST DESC: LUMBAR BENDING
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 12/18/2013
TEST #: D134358



MGA RESEARCH CORPORATION

PELVIS TEST

ES-2re DUMMY

ATD Serial No: 032 **Test I.D:** D134359

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	18	Pass
Probe Speed	m/s	4.20 to 4.40	4.40	Pass
Maximum Impactor Force	N	4700 to 5400	4851	Pass
Time of Maximum Impactor Force	ms	11.8 to 16.1	12.1	Pass
Maximum Pubic Force	N	1230 to 1590	1420	Pass
Time of Maximum Pubic Force	ms	12.2 to 17.0	13.5	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

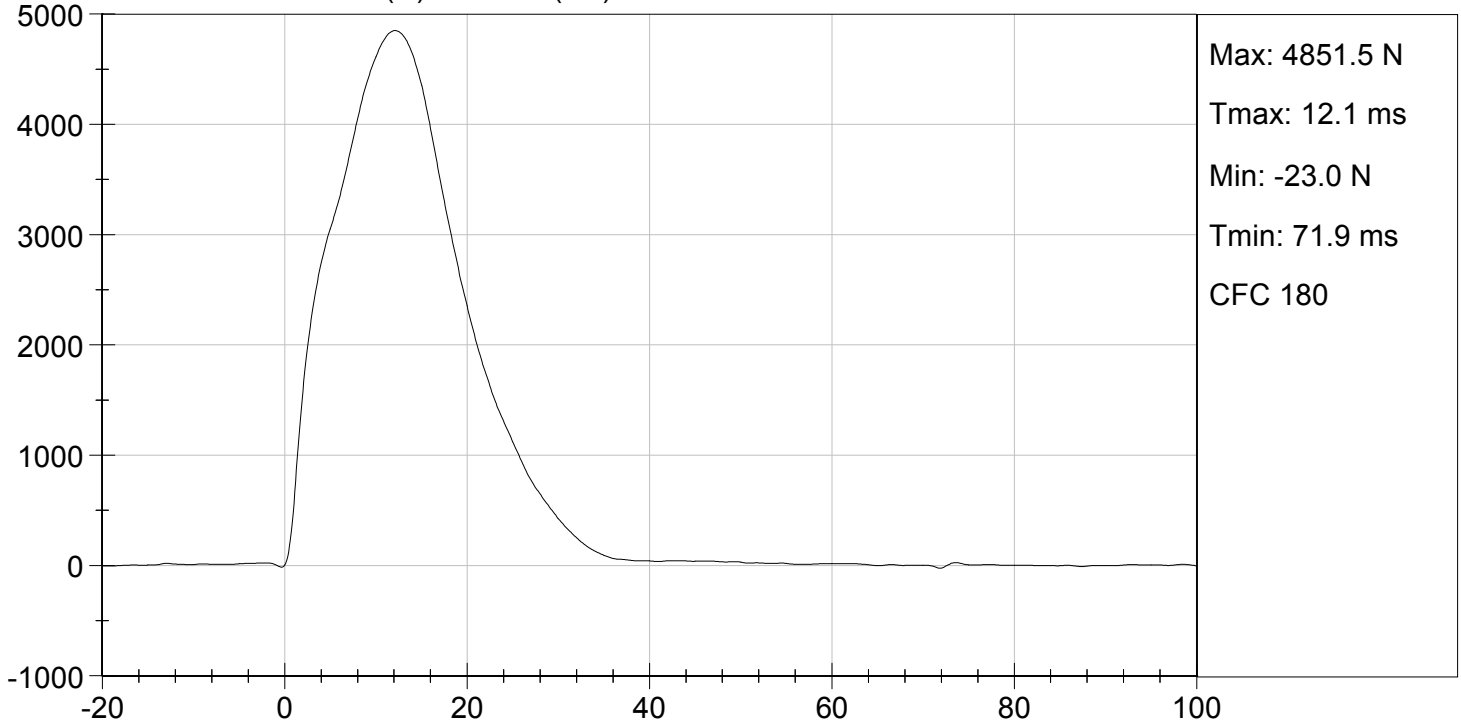
12/18/2013
Test Date

David Winkelbauer
Approved By

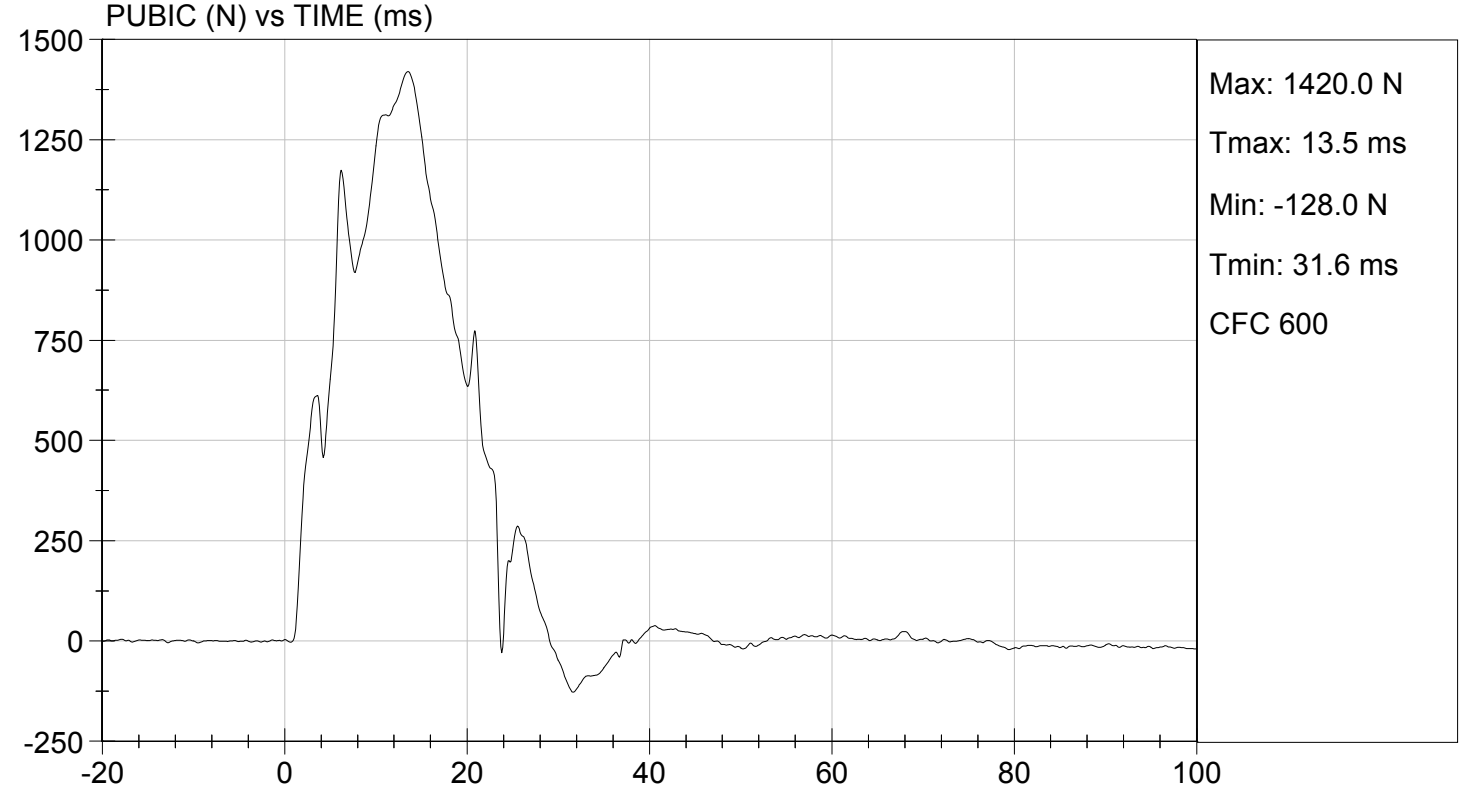
TEST DESC: PELVIS IMPACT
VELOCITY: 14.43 ft/s, 4.4 m/s

TEST DATE: 12/18/2013
TEST #: D134359

IMPACTOR FORCE (N) vs TIME (ms)



PUBIC (N) vs TIME (ms)



SID-IIsD External Measurements
SN: 296

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

MGA RESEARCH CORPORATION

HEAD DROP TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test ID:** D134291

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Peak Resultant Acceleration	G's	115 to 137	126	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-3.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

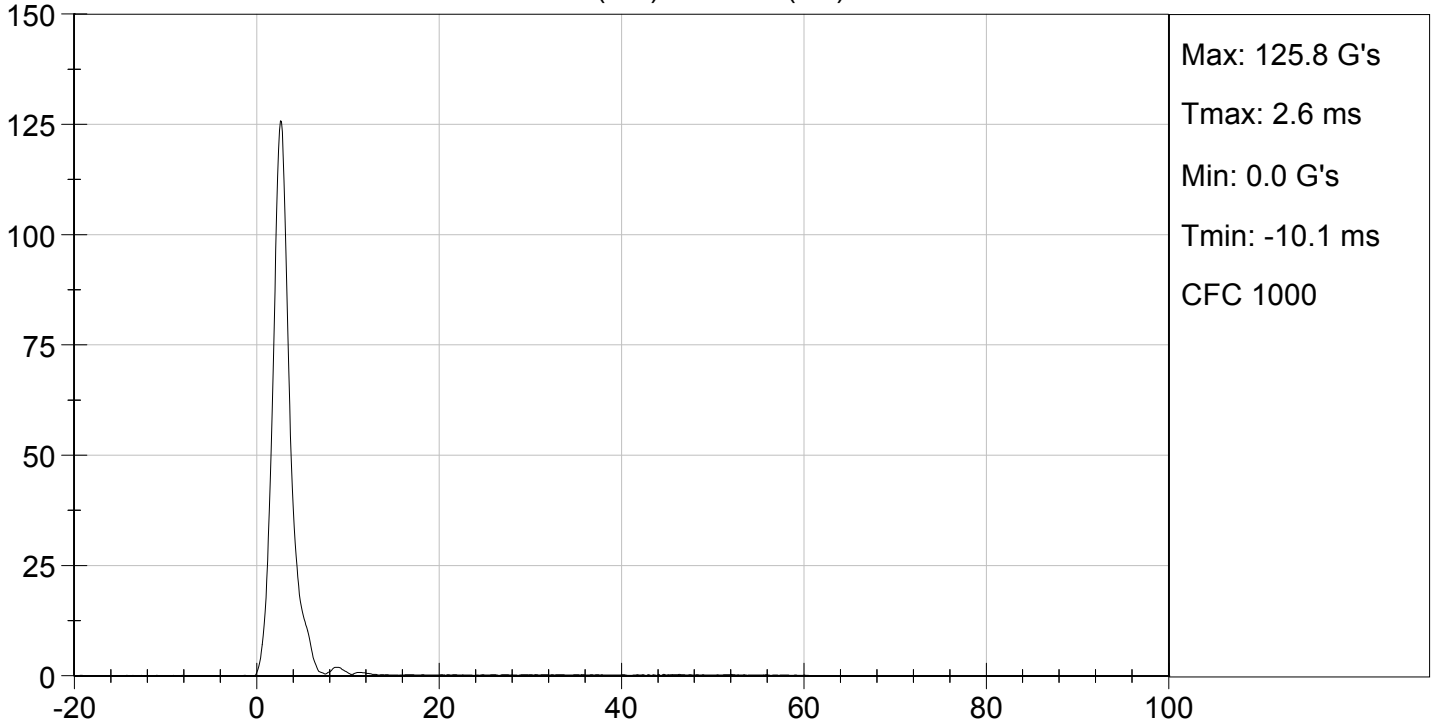
12/16/2013
Test Date

David Winkelbauer
Approved By

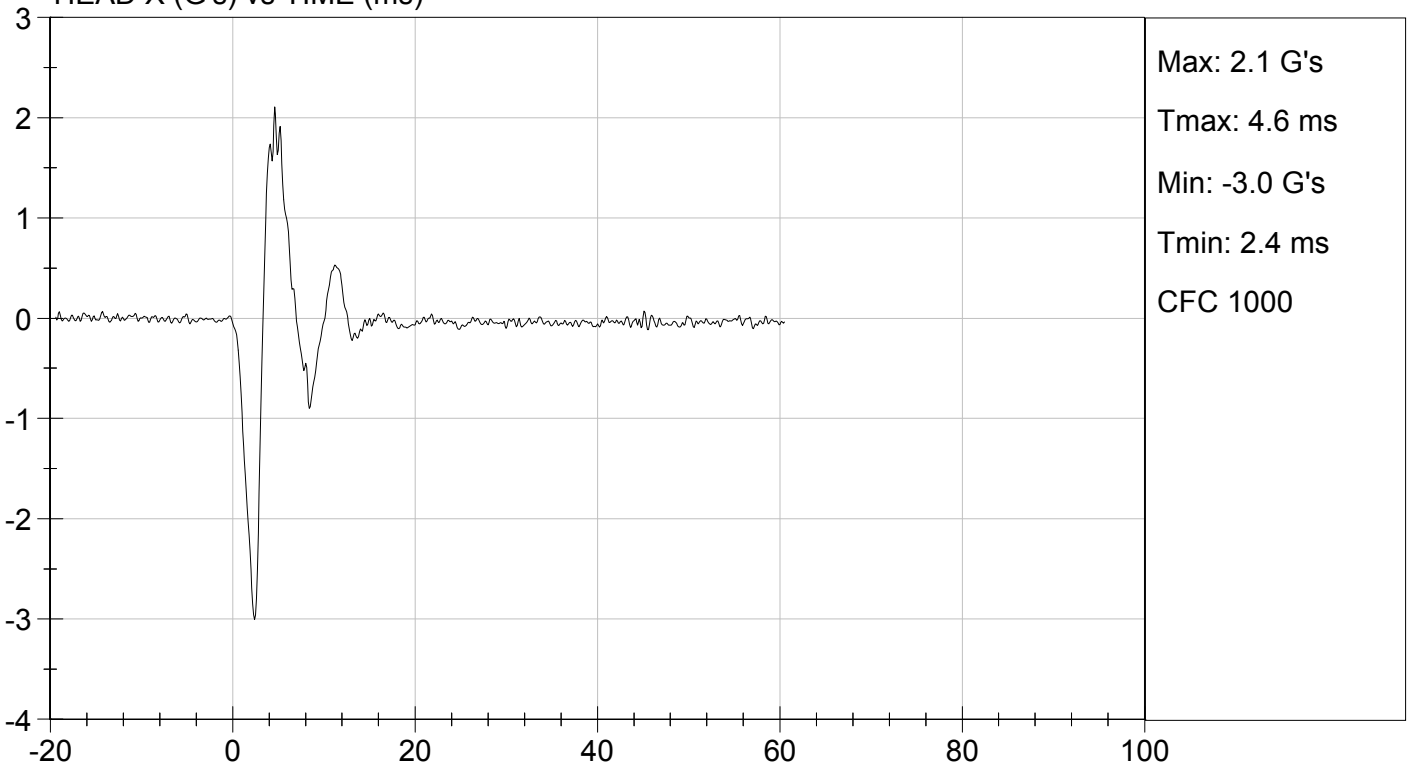
TEST DESC: HEAD DROP

TEST DATE: 12/16/2013
TEST #: D134291

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



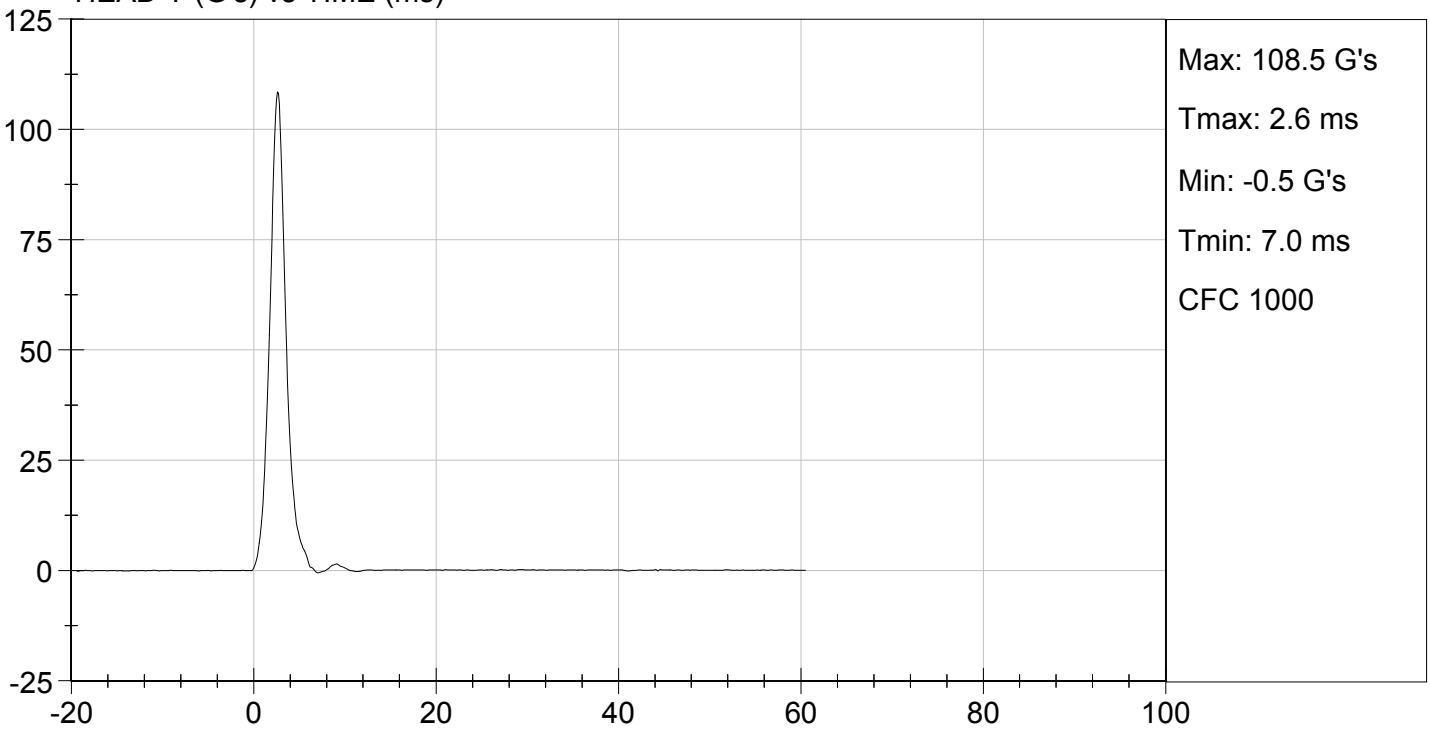
HEAD X (G's) vs TIME (ms)



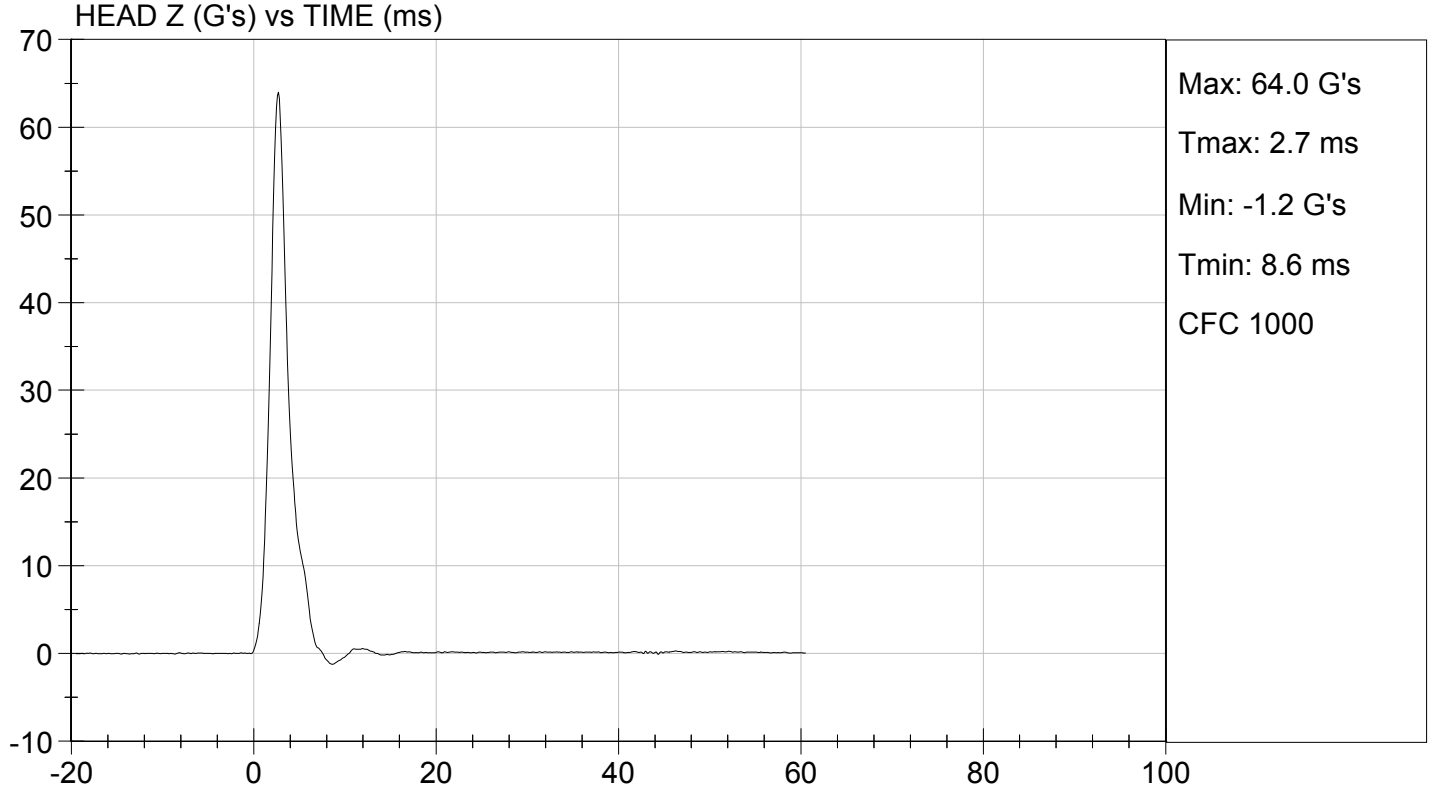
TEST DESC: HEAD DROP

TEST DATE: 12/16/2013
TEST #: D134291

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



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



MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134292

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.1	Pass
Humidity		%	10 to 70	16	Pass
Impact Velocity		m/s	5.51 to 5.63	5.52	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.33	Pass
	15 ms	m/s	3.30 to 4.10	3.32	Pass
	20 ms	m/s	4.40 to 5.40	4.47	Pass
	25 ms	m/s	5.40 to 6.10	5.45	Pass
	25-100 ms	m/s	5.50 to 6.20	5.63	Pass
Maximum D-Plane Rotation		deg	71 to 81	75	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	62	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-40	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	116	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

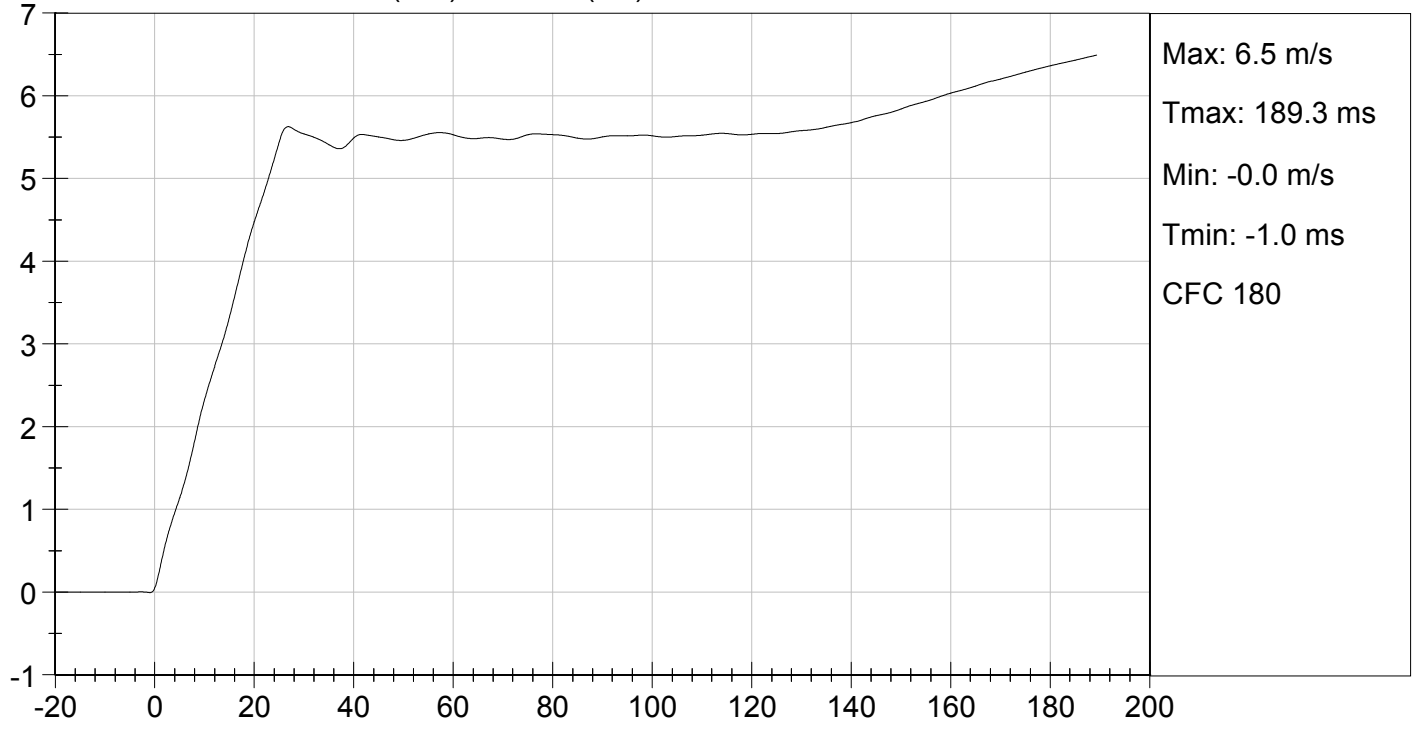
12/16/2013
Test Date

David Winkelbauer
Approved By

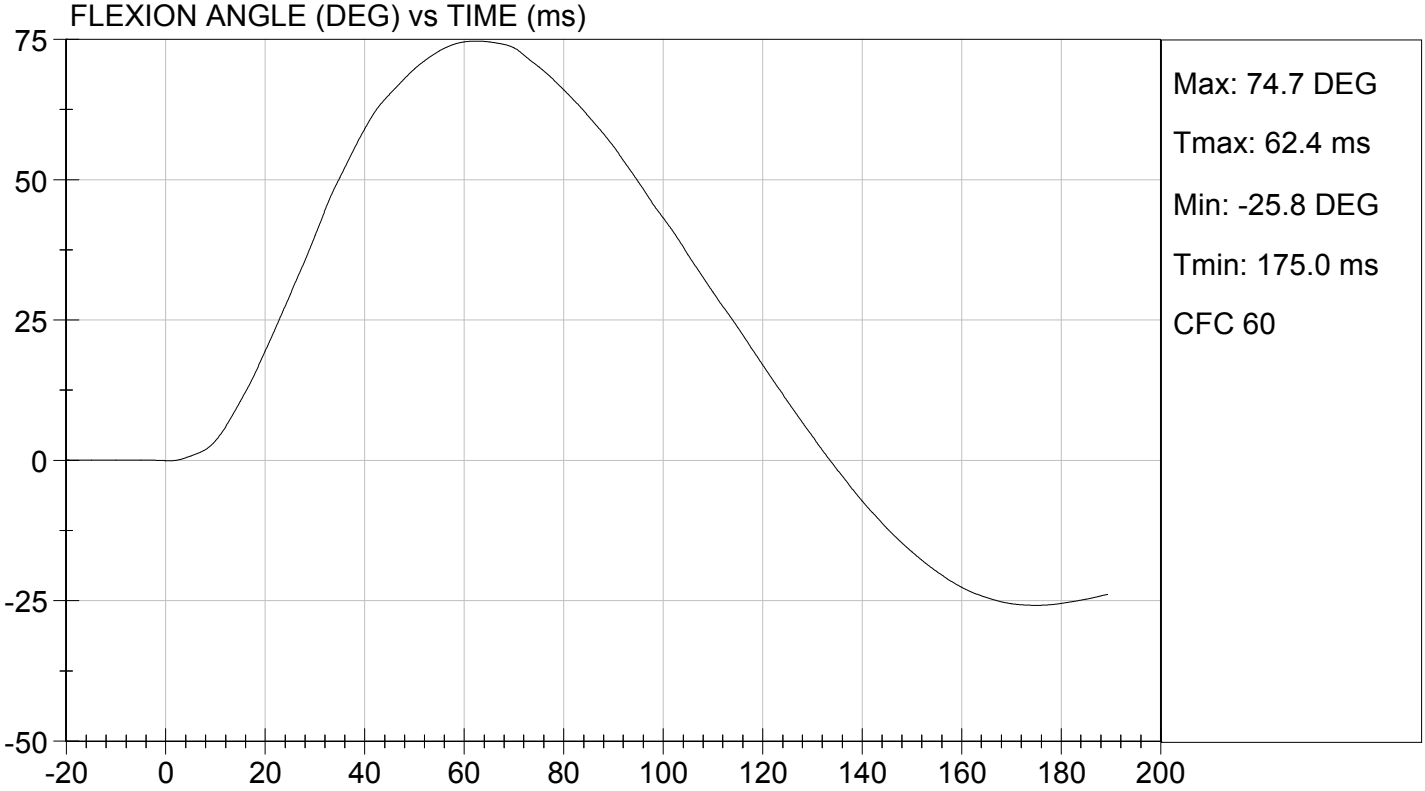
TEST DESC: NECK BENDING
VELOCITY: 18.12 ft/s, 5.52 m/s

TEST DATE: 12/16/2013
TEST #: D134292

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

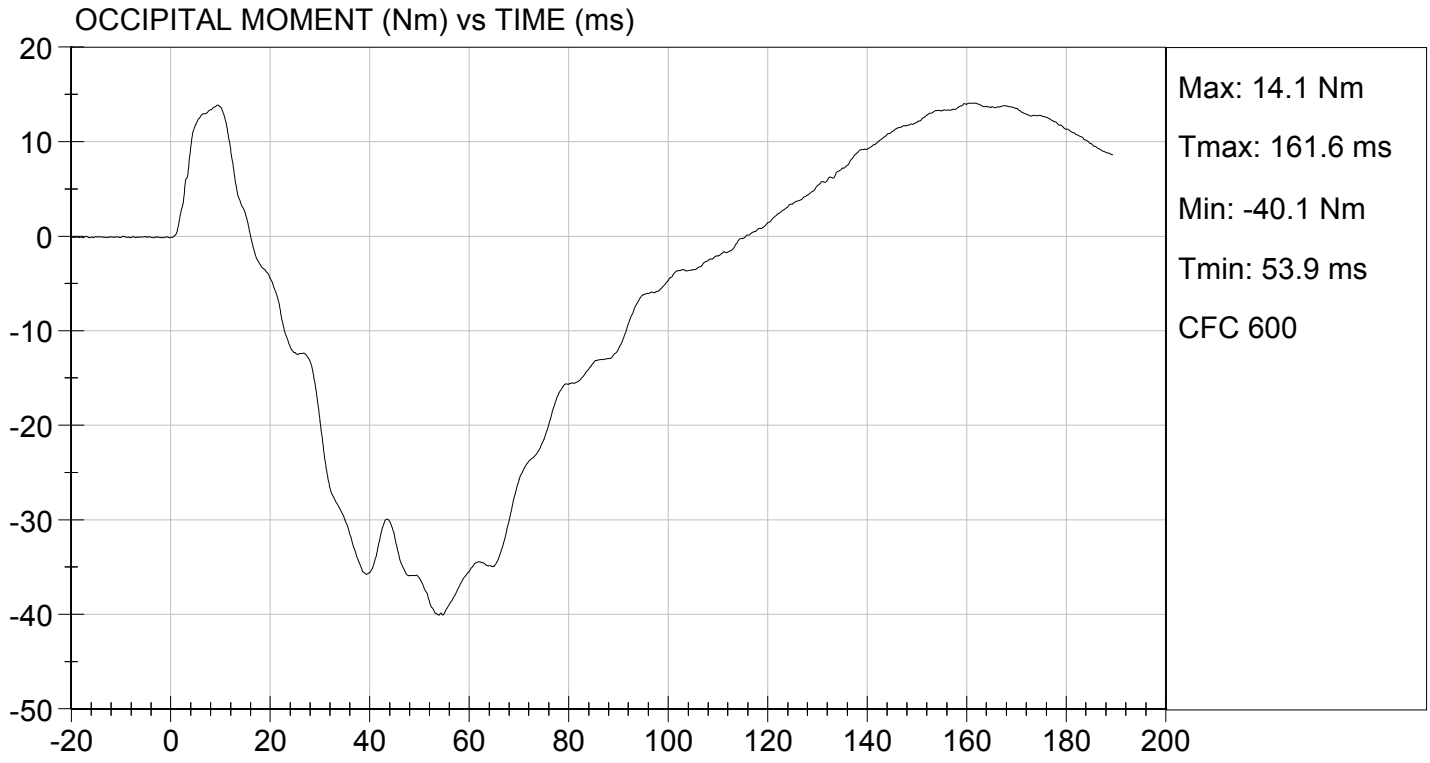


FLEXION ANGLE (DEG) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 18.12 ft/s, 5.52 m/s

TEST DATE: 12/16/2013
TEST #: D134292



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test ID:** D134293

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	32	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

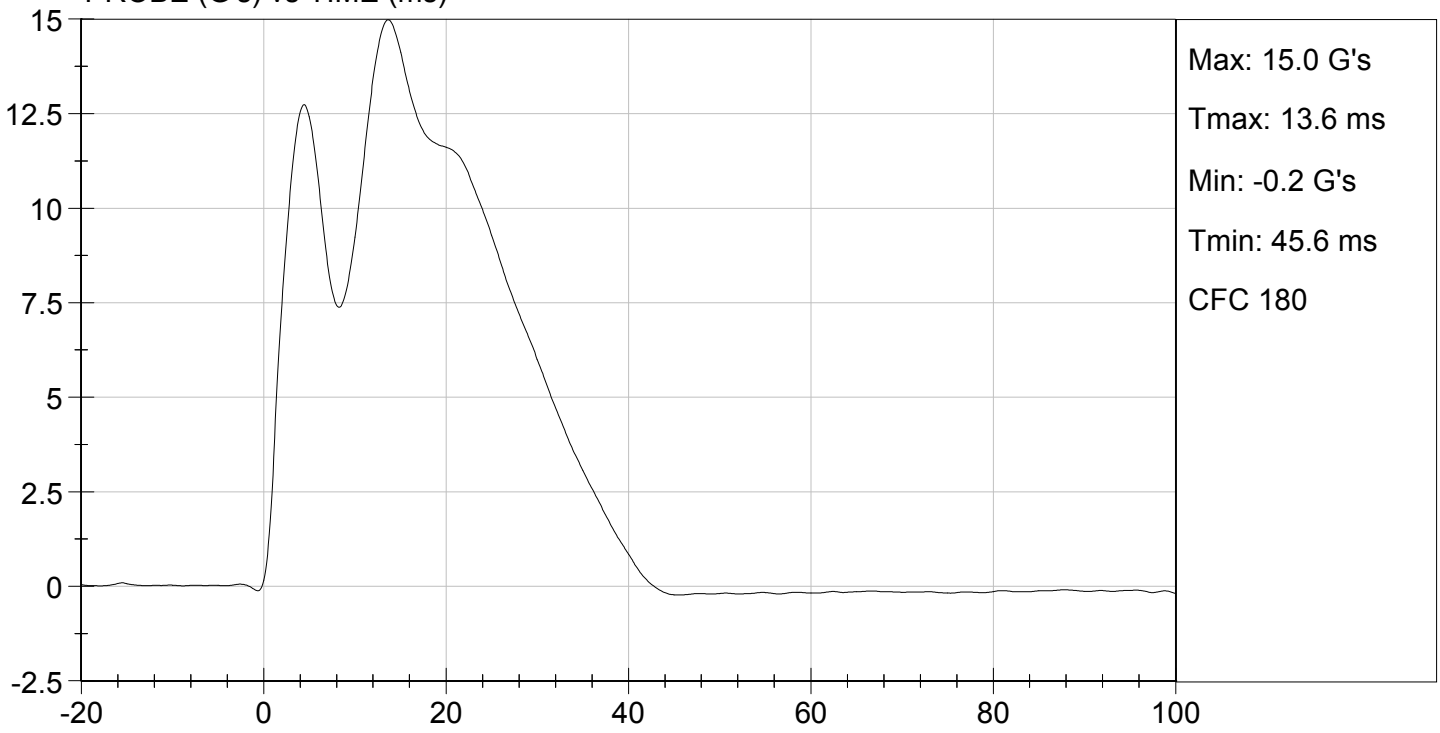
12/16/2013
Test Date

David Winkelbauer
Approved By

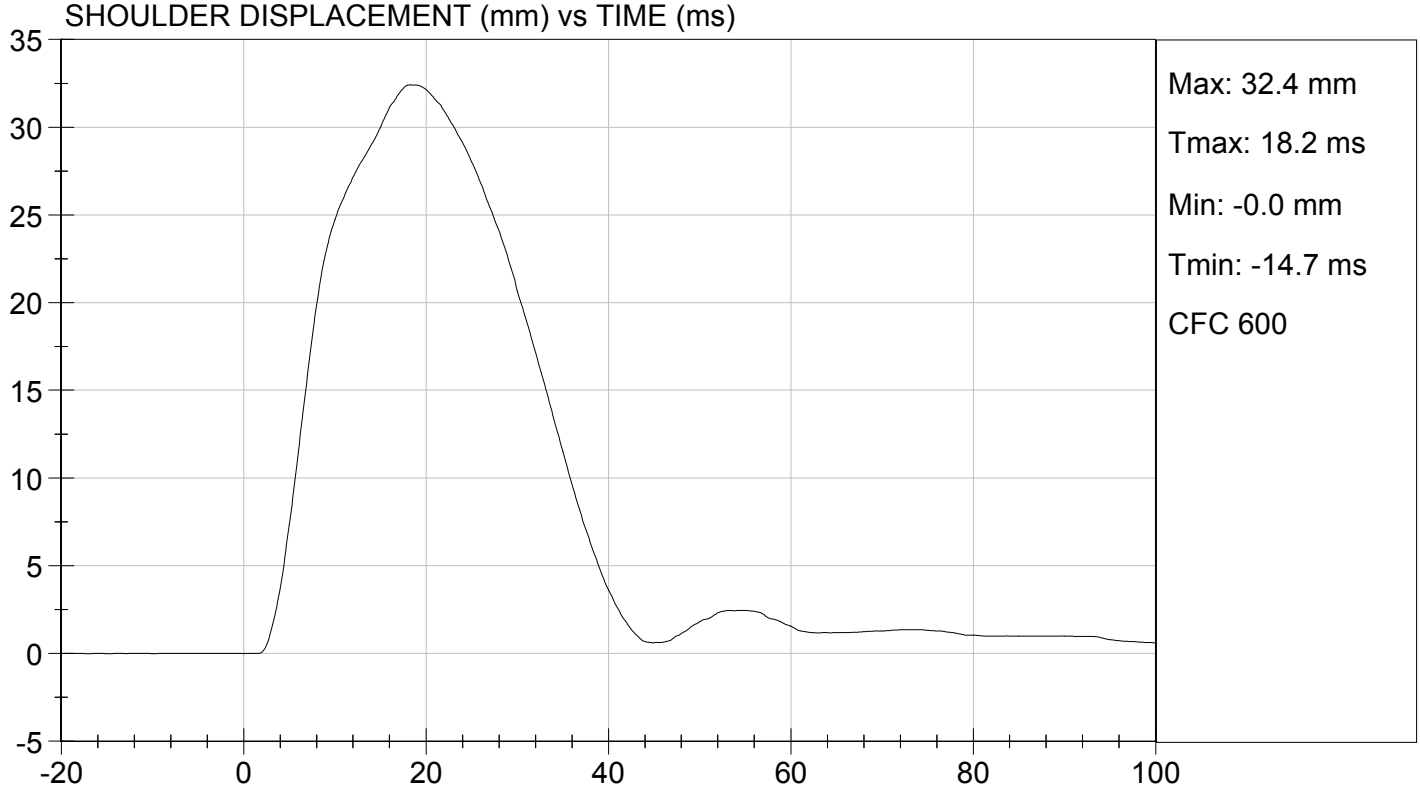
TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 12/16/2013
TEST #: D134293

PROBE (G's) vs TIME (ms)



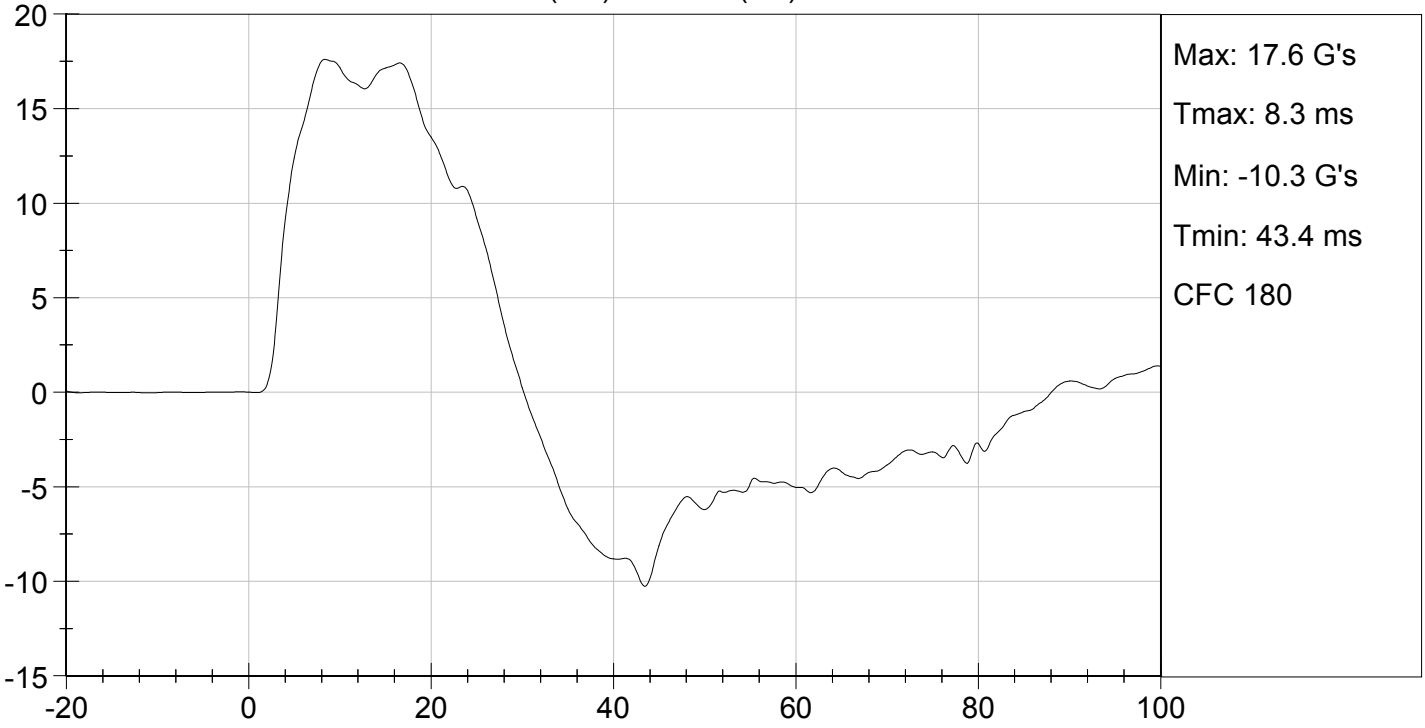
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 12/16/2013
TEST #: D134293

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



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134294

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	31	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle Rib Displacement	mm	30 to 36	32	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	29	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

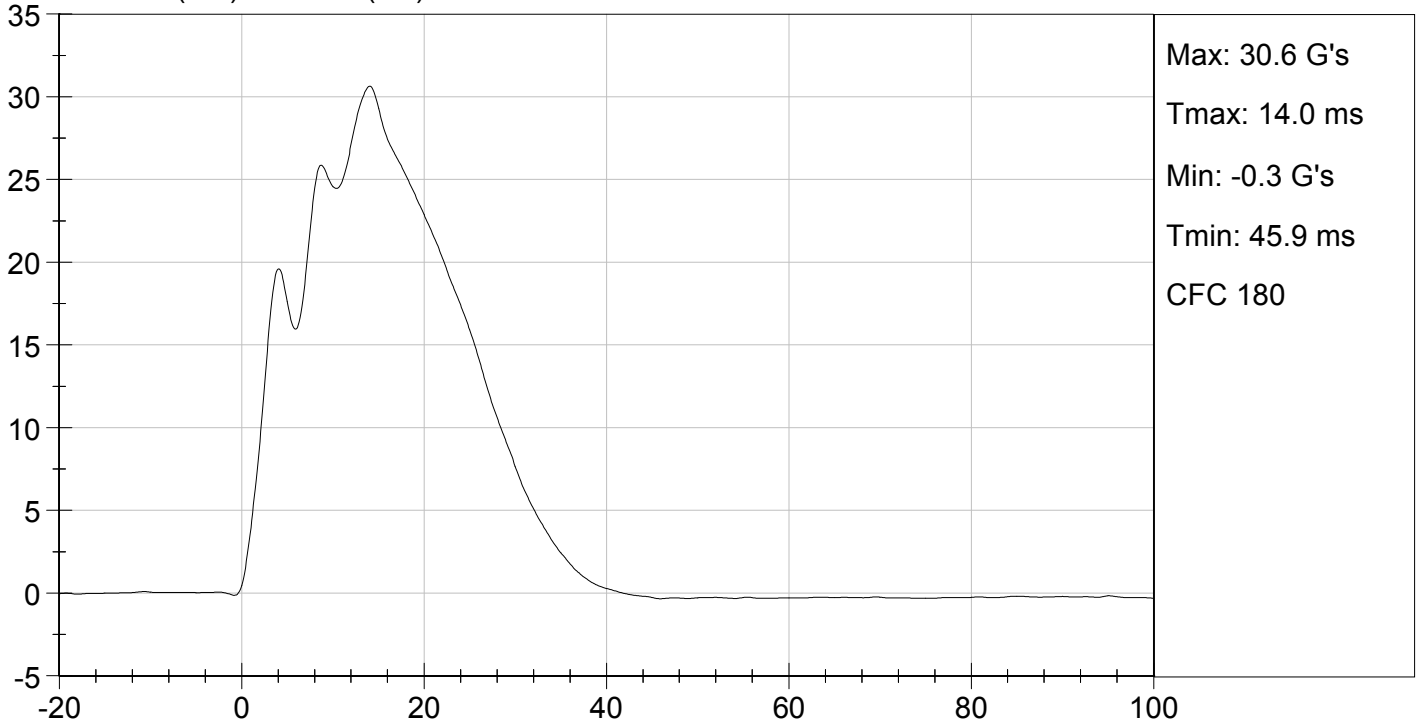
12/16/2013
Test Date

David Winkelbauer
Approved By

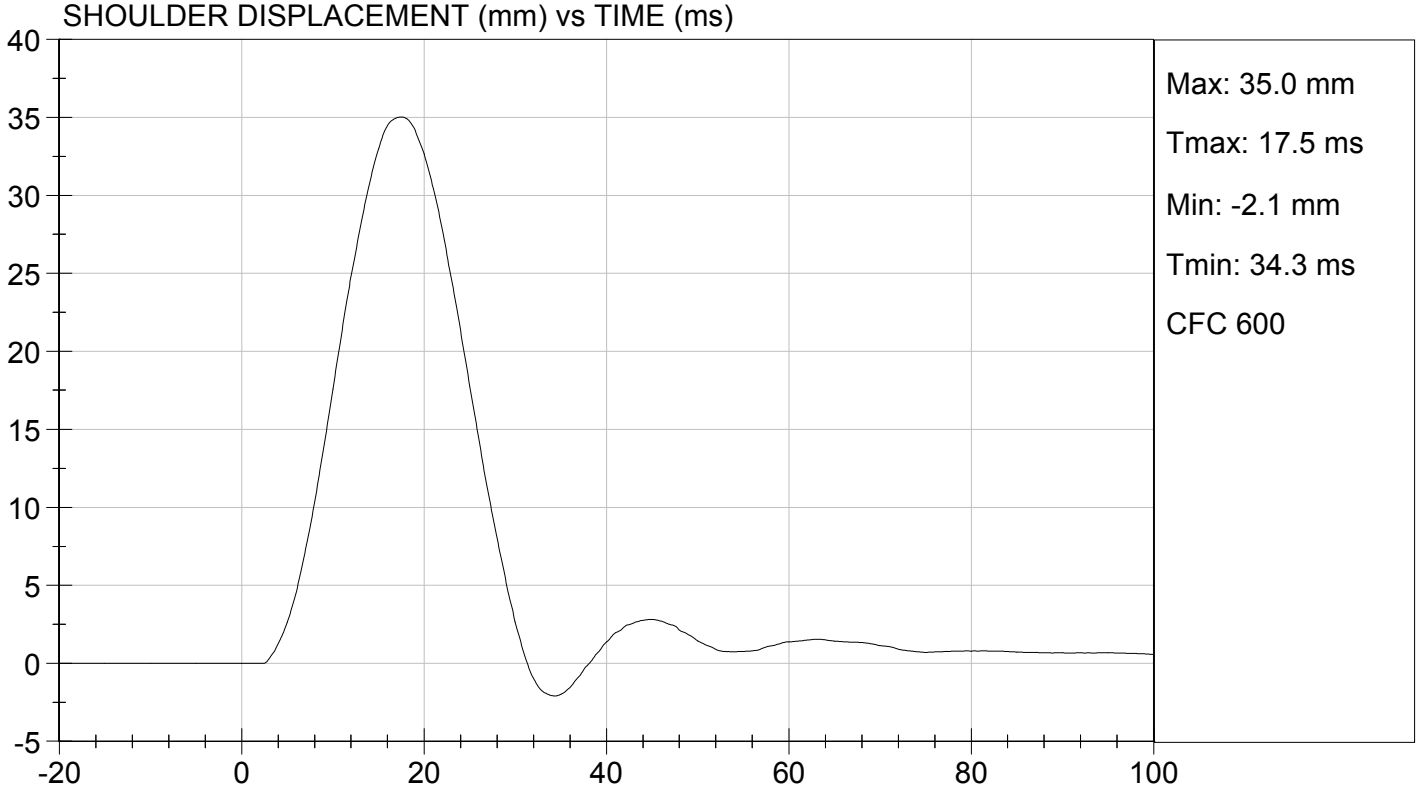
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 12/16/2013
TEST #: D134294

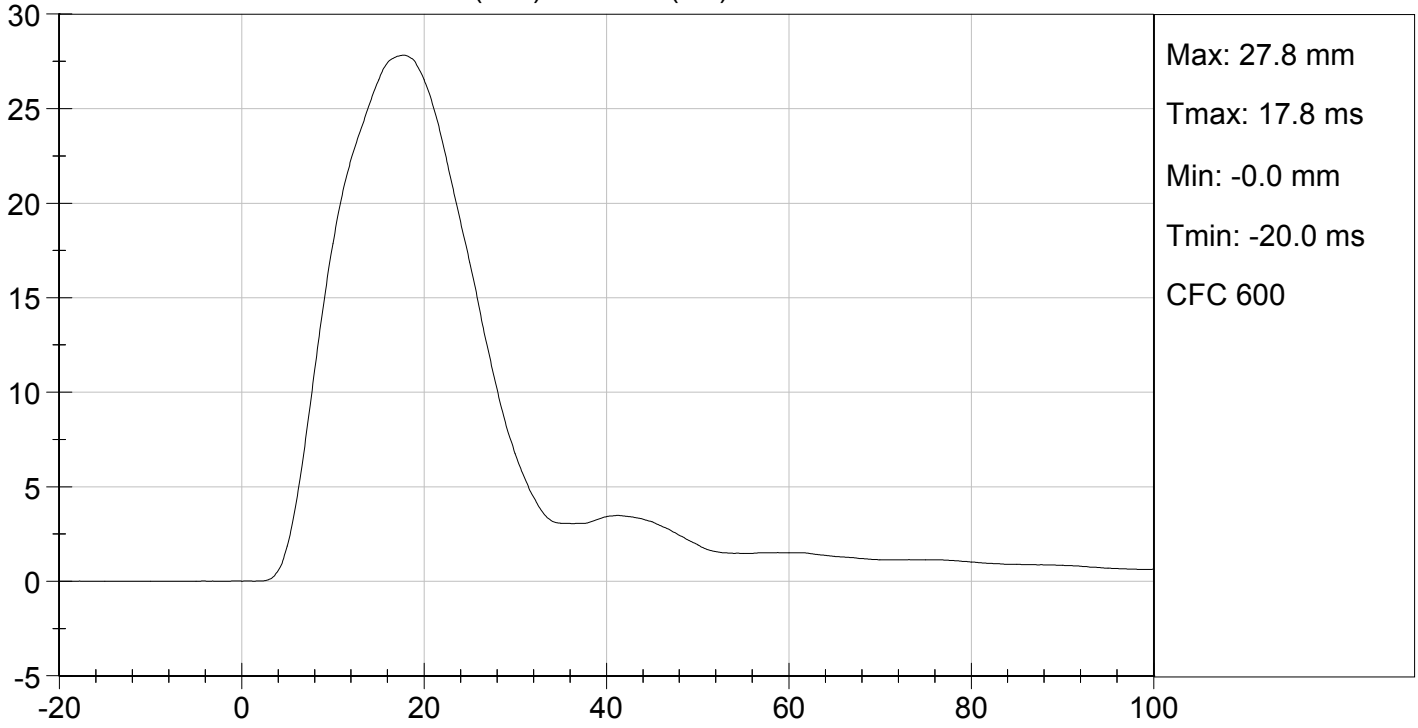
PROBE (G's) vs TIME (ms)



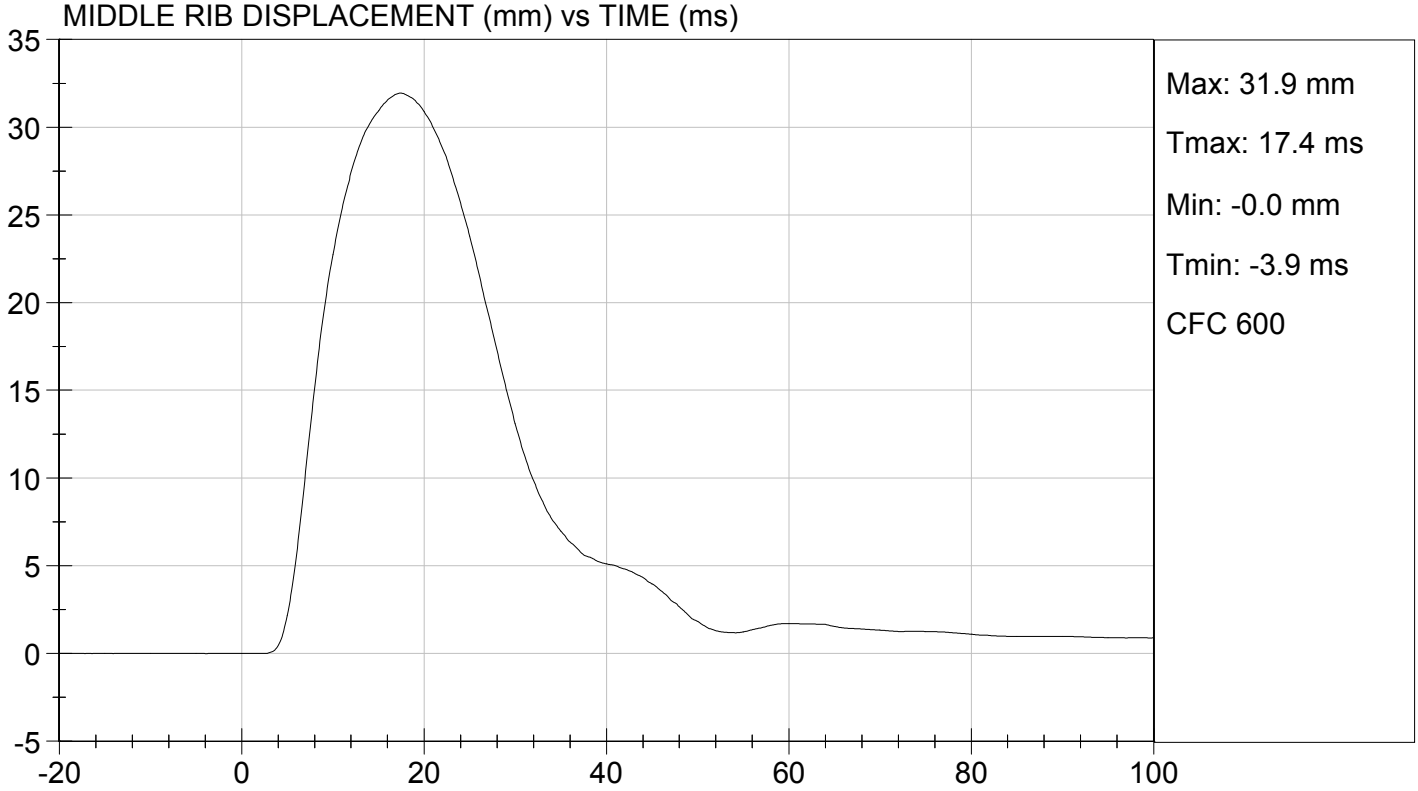
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



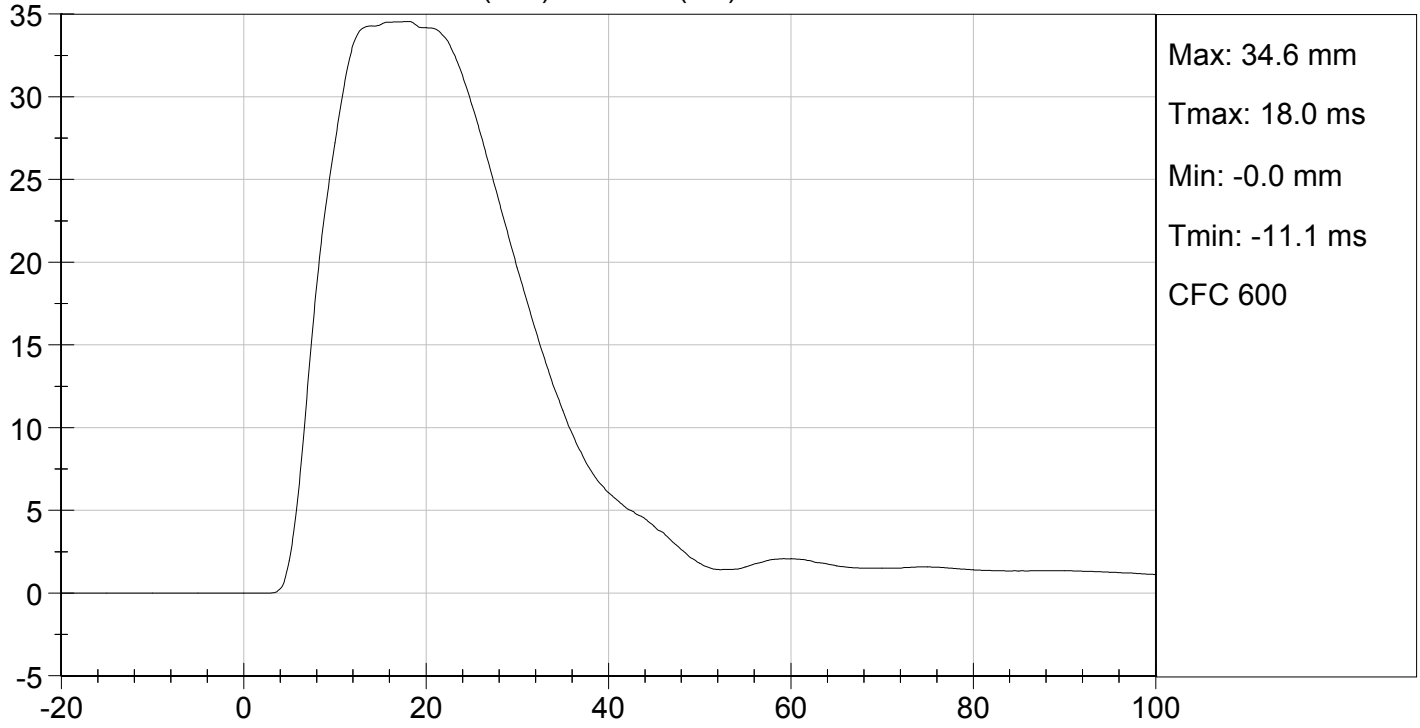
MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



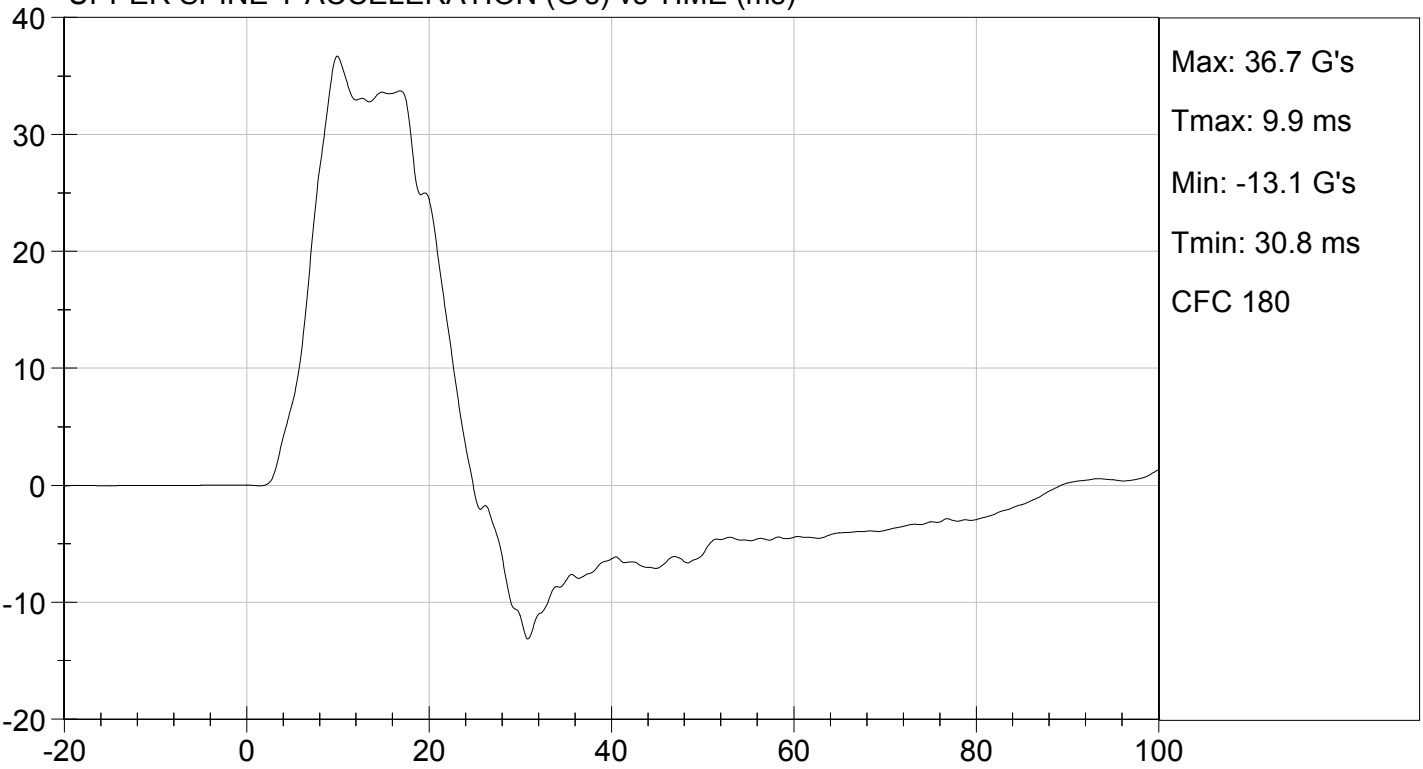
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 12/16/2013
TEST #: D134294

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



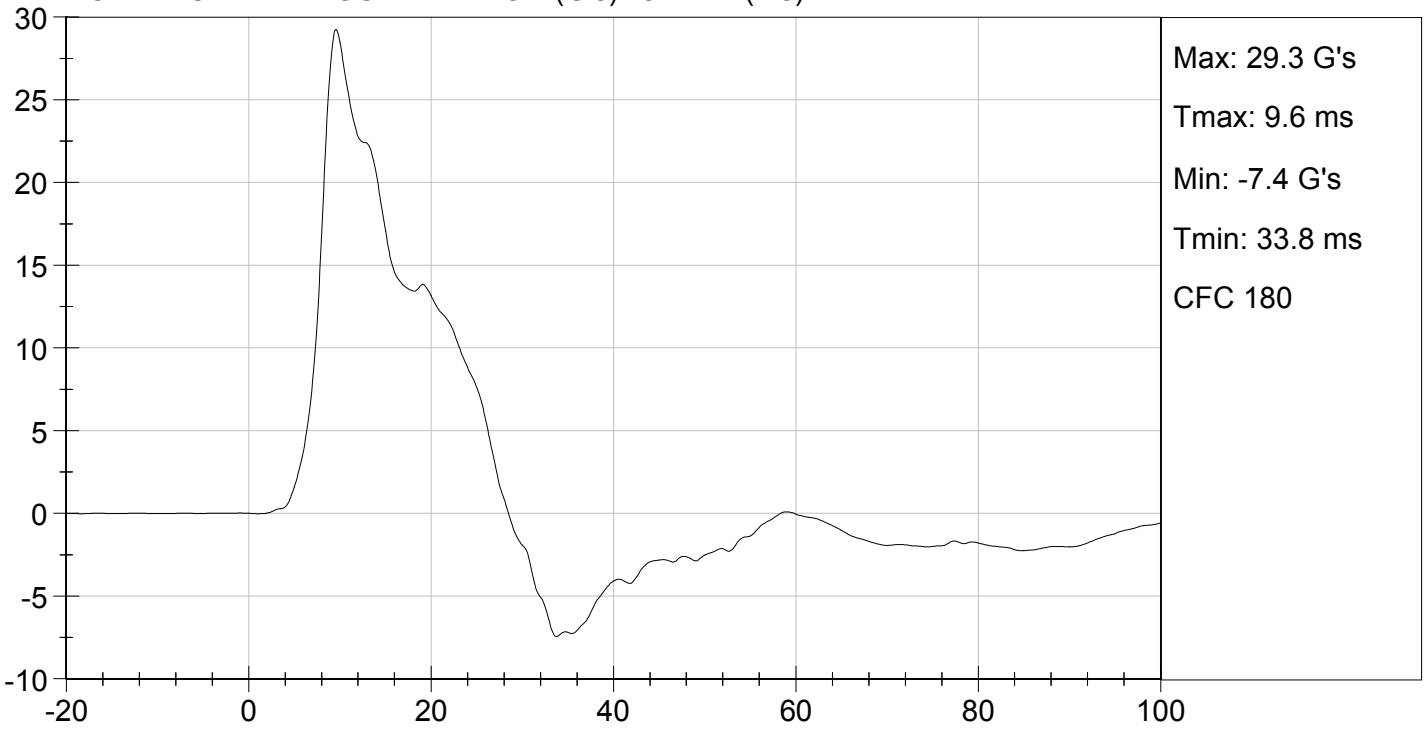
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 12/16/2013
TEST #: D134294

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



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134295

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	38	Pass
Middle Rib Displacement	mm	39 to 45	42	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 Gall
Laboratory Technician

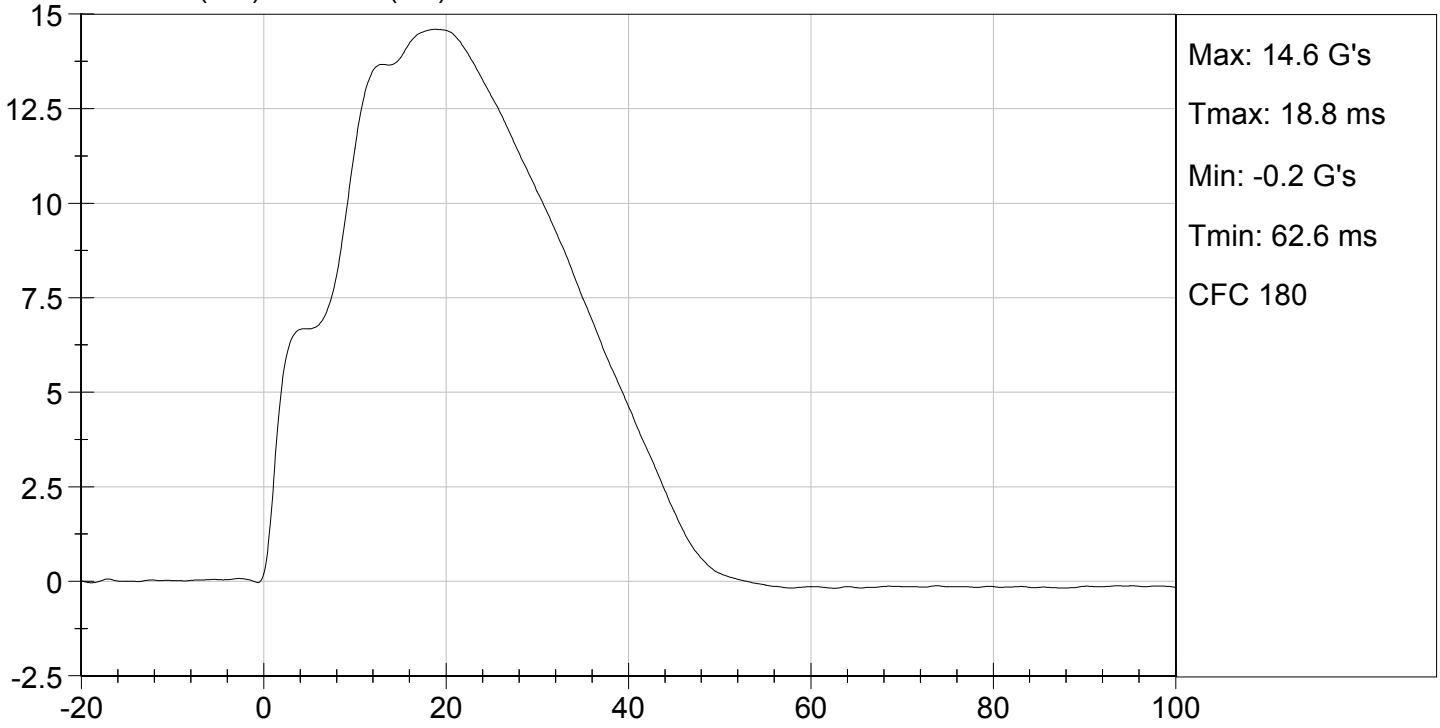
12/16/2013
Test Date

David Winkelbauer
Approved By

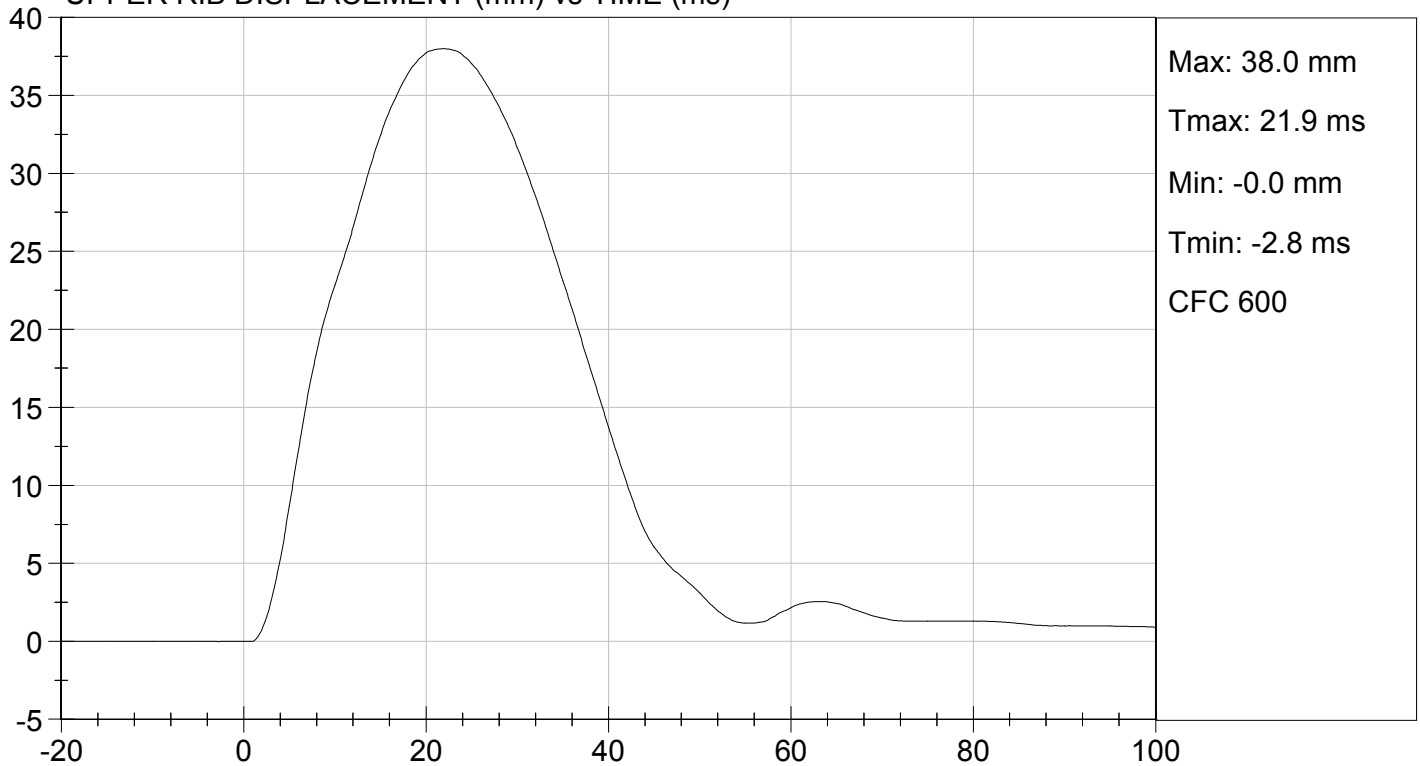
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 12/16/2013
TEST #: D134295

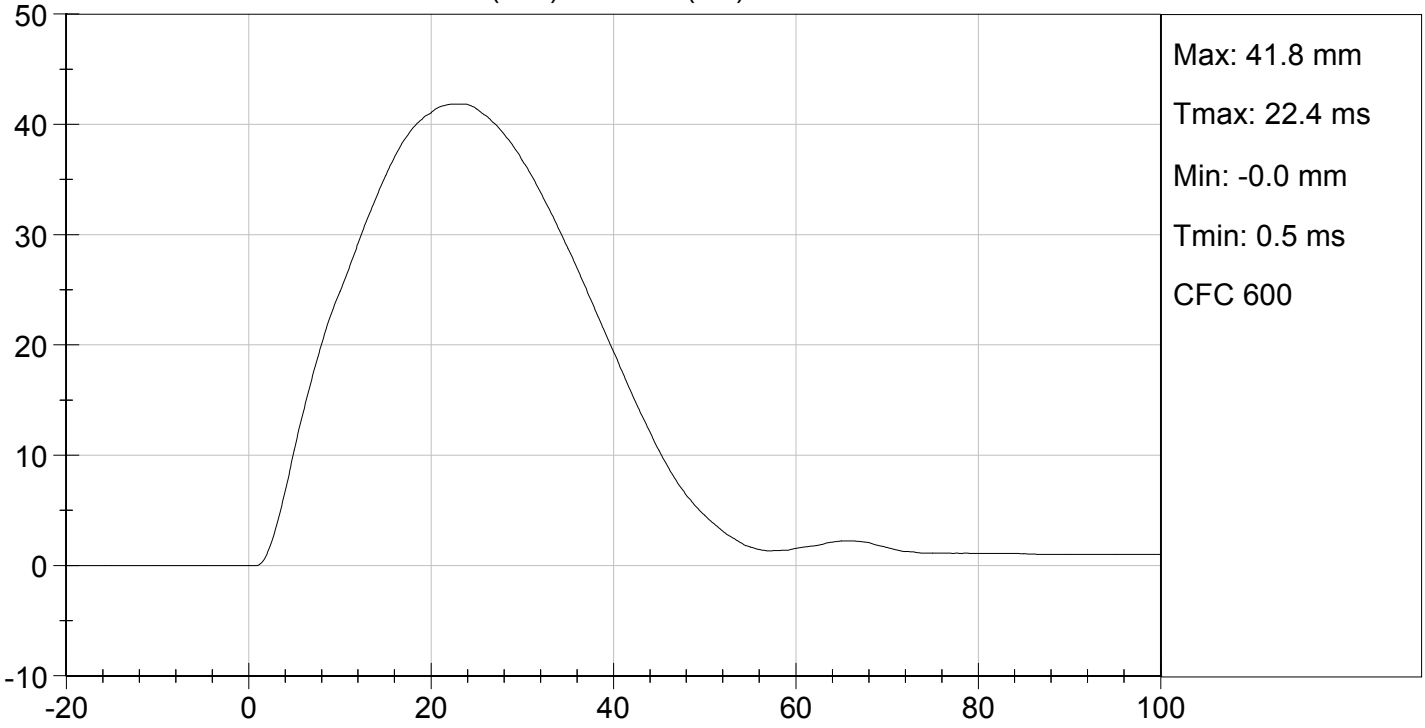
PROBE (G's) vs TIME (ms)



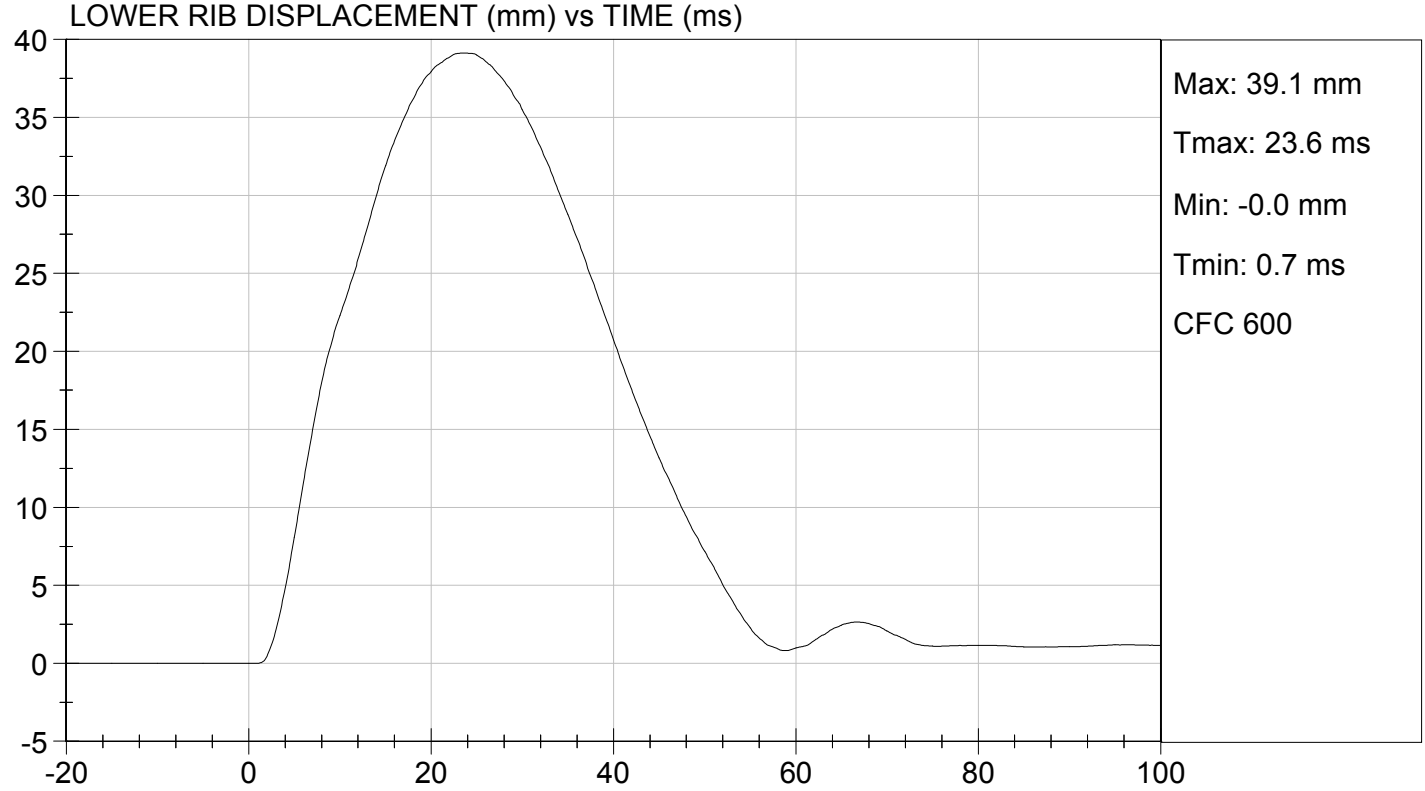
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



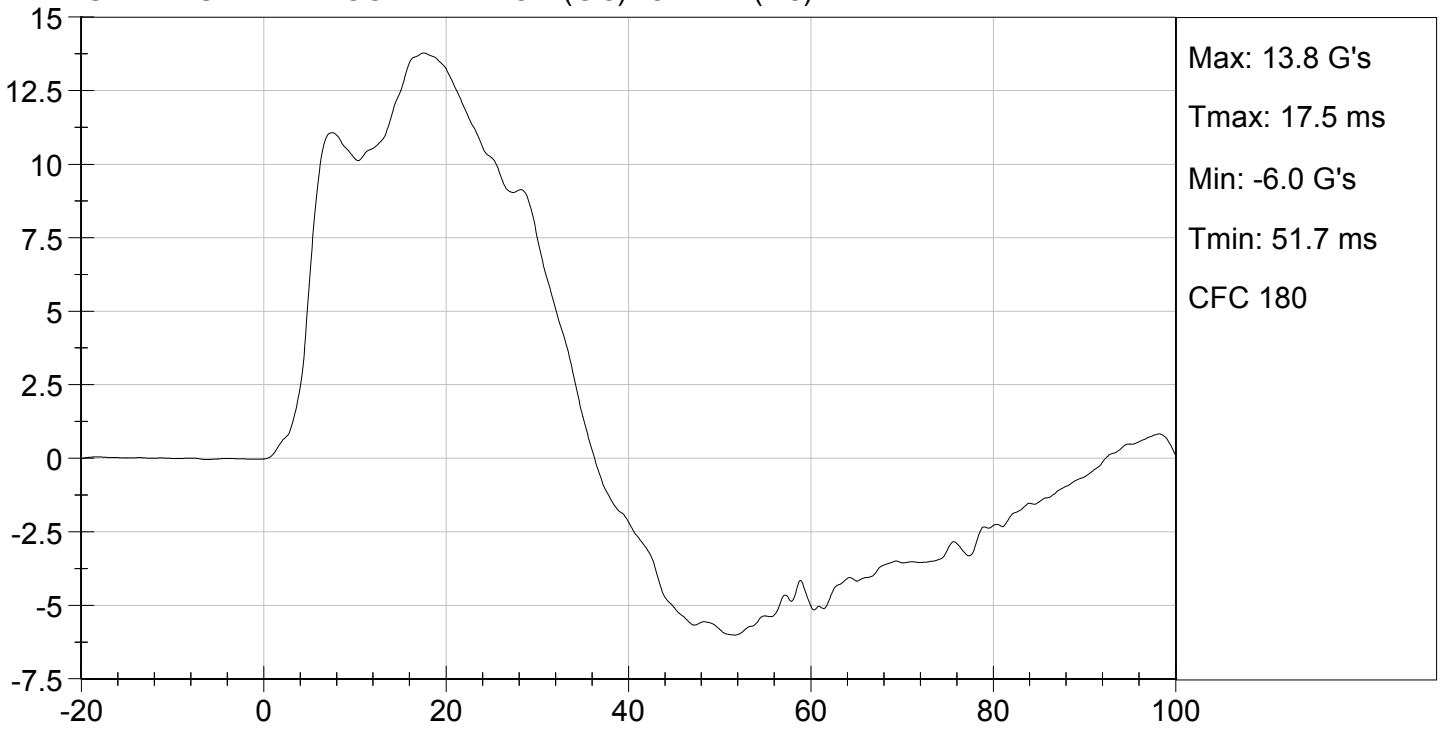
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



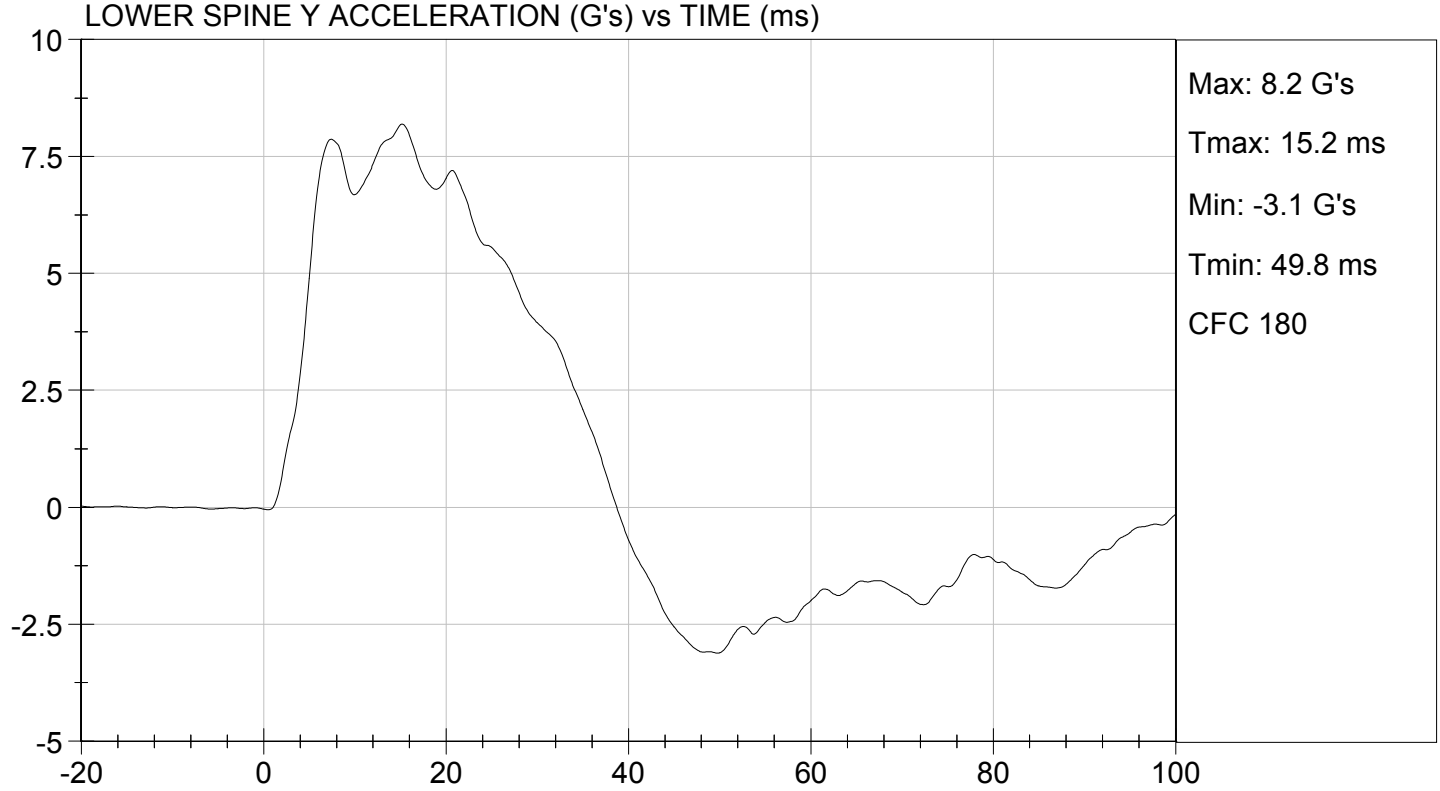
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 12/16/2013
TEST #: D134295

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134296

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	40	Pass
Lower Abdomen 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 Hall
Laboratory Technician

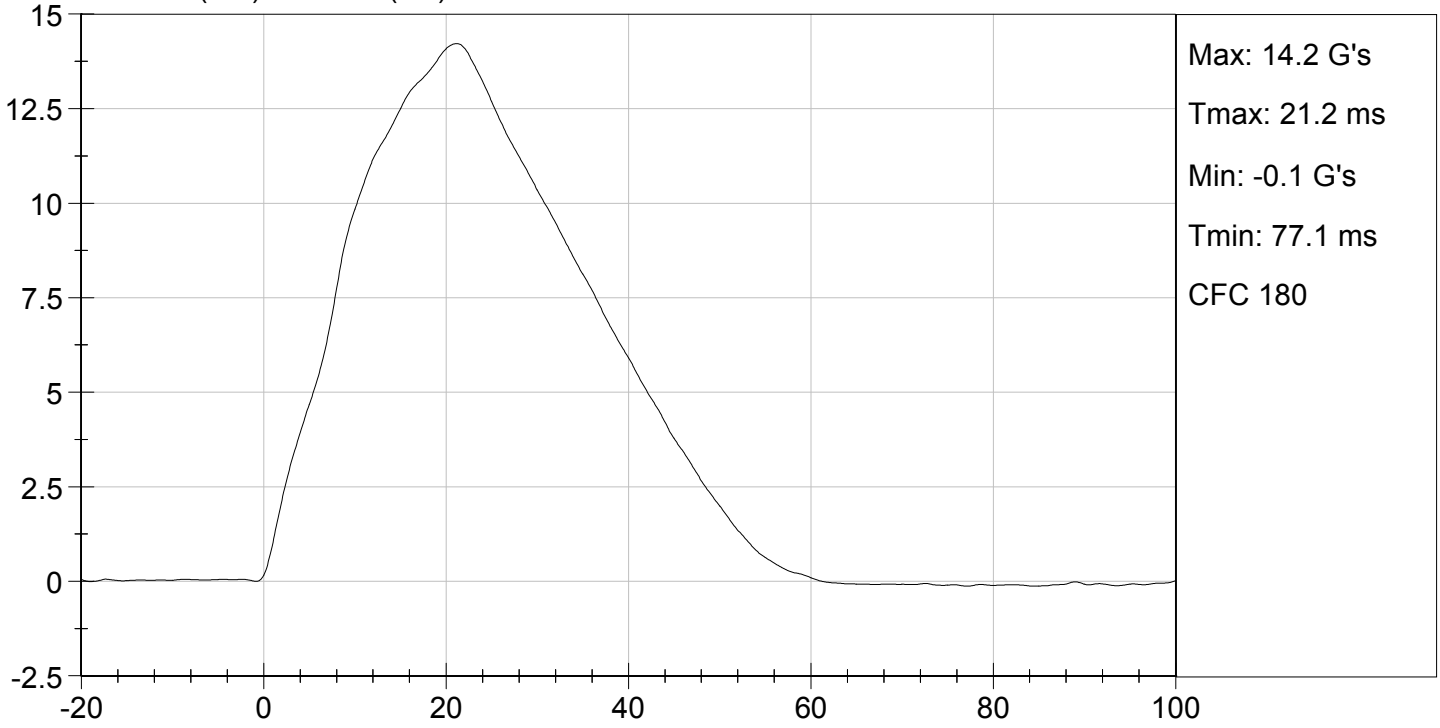
12/16/2013
Test Date

David Winkelbauer
Approved By

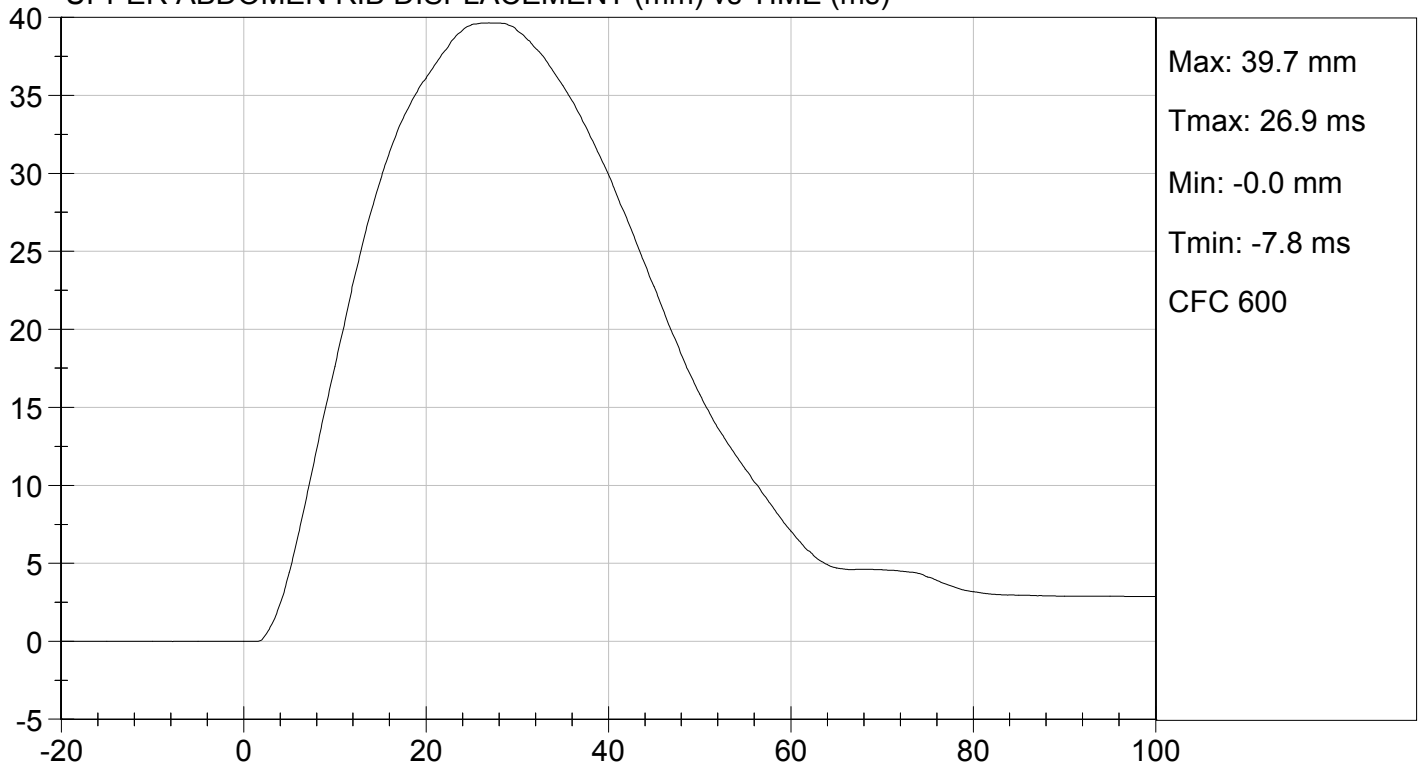
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/16/2013
TEST #: D134296

PROBE (G's) vs TIME (ms)



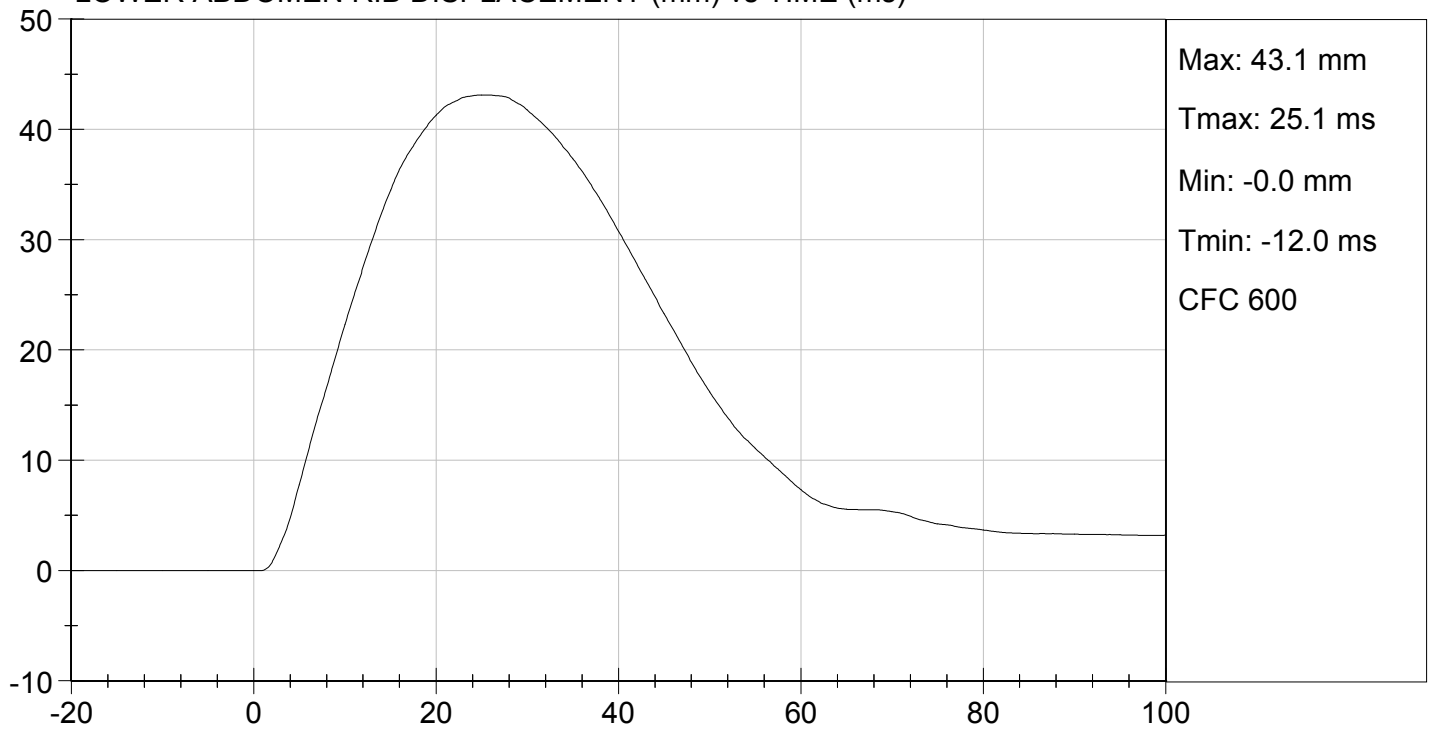
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



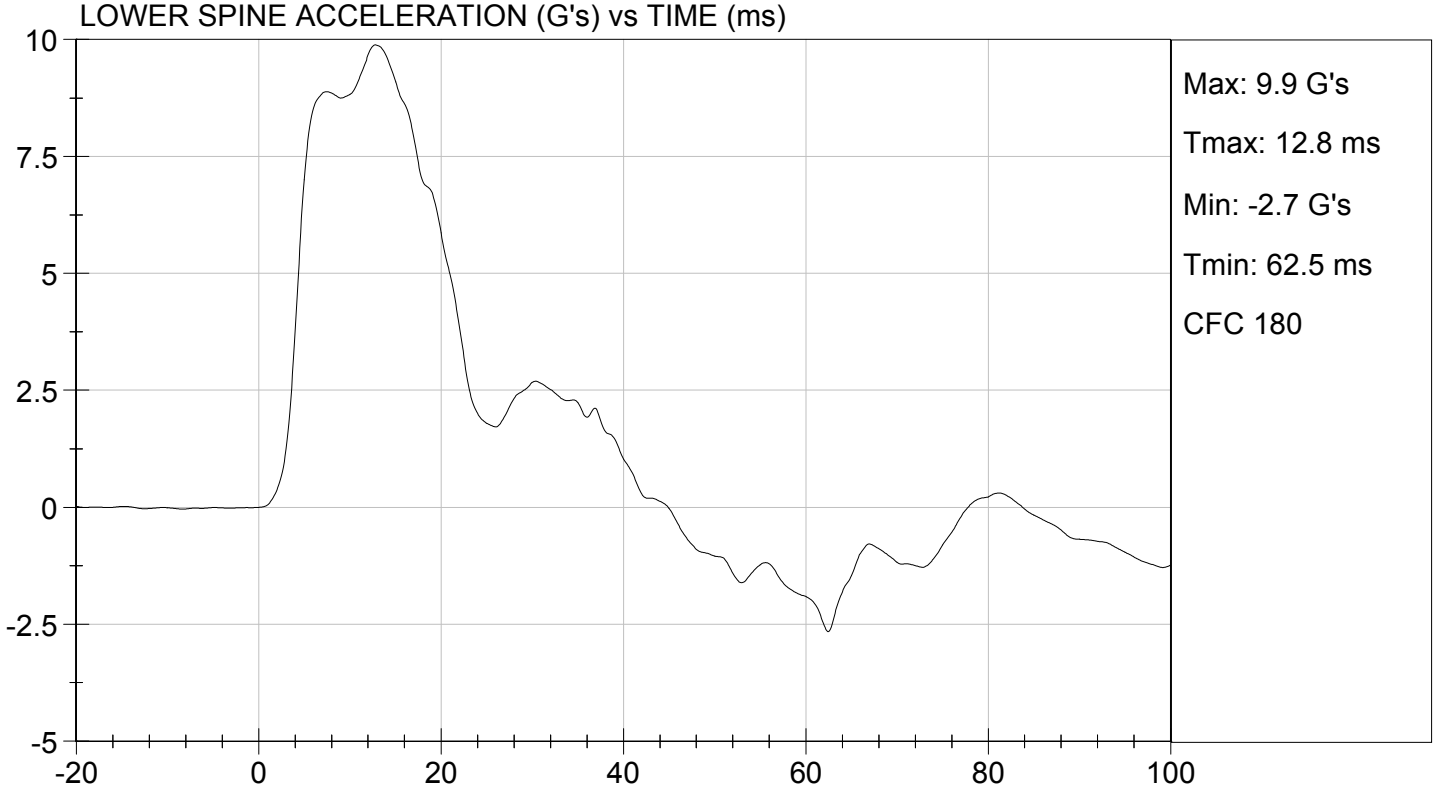
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/16/2013
TEST #: D134296

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134297

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	38	Pass
Peak Acetabulum Force	N	3600 to 4300	4,202	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

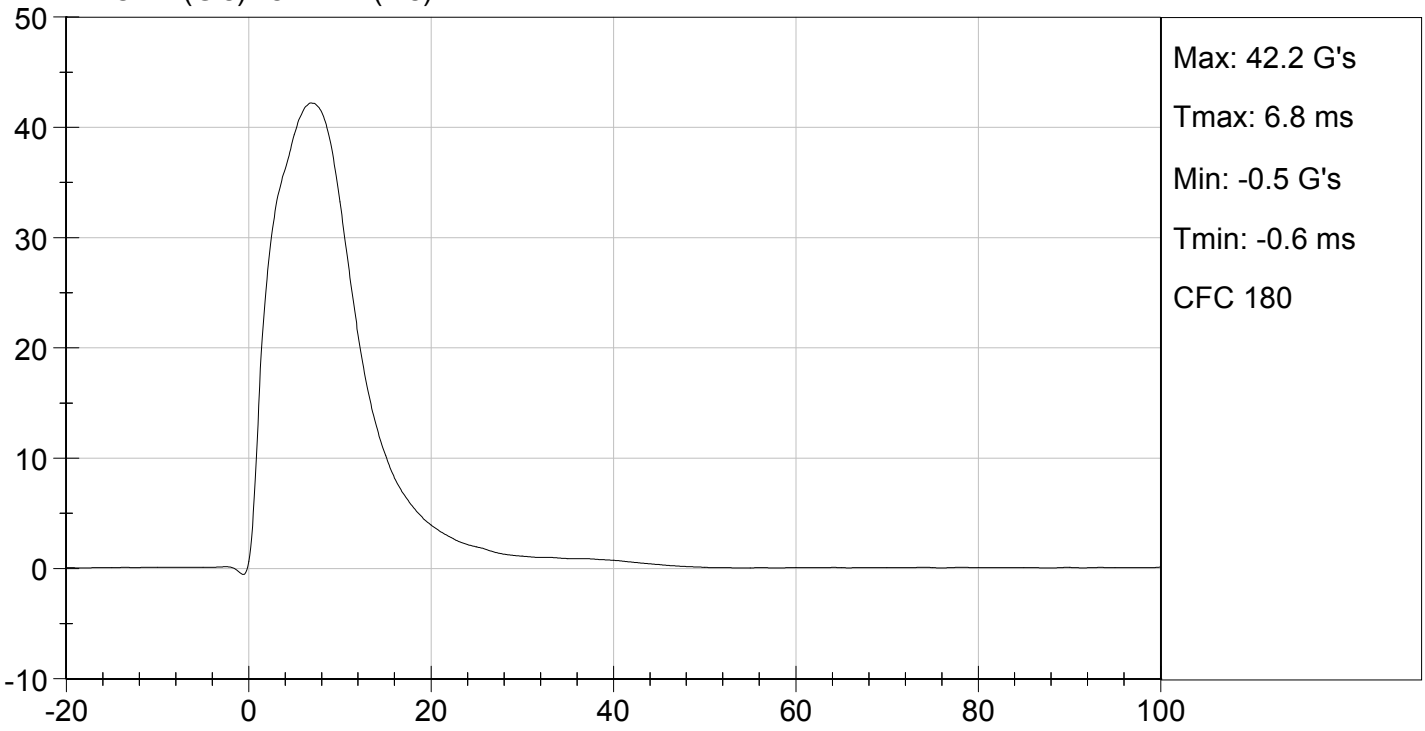
12/16/2013
Test Date

David Winkelbauer
Approved By

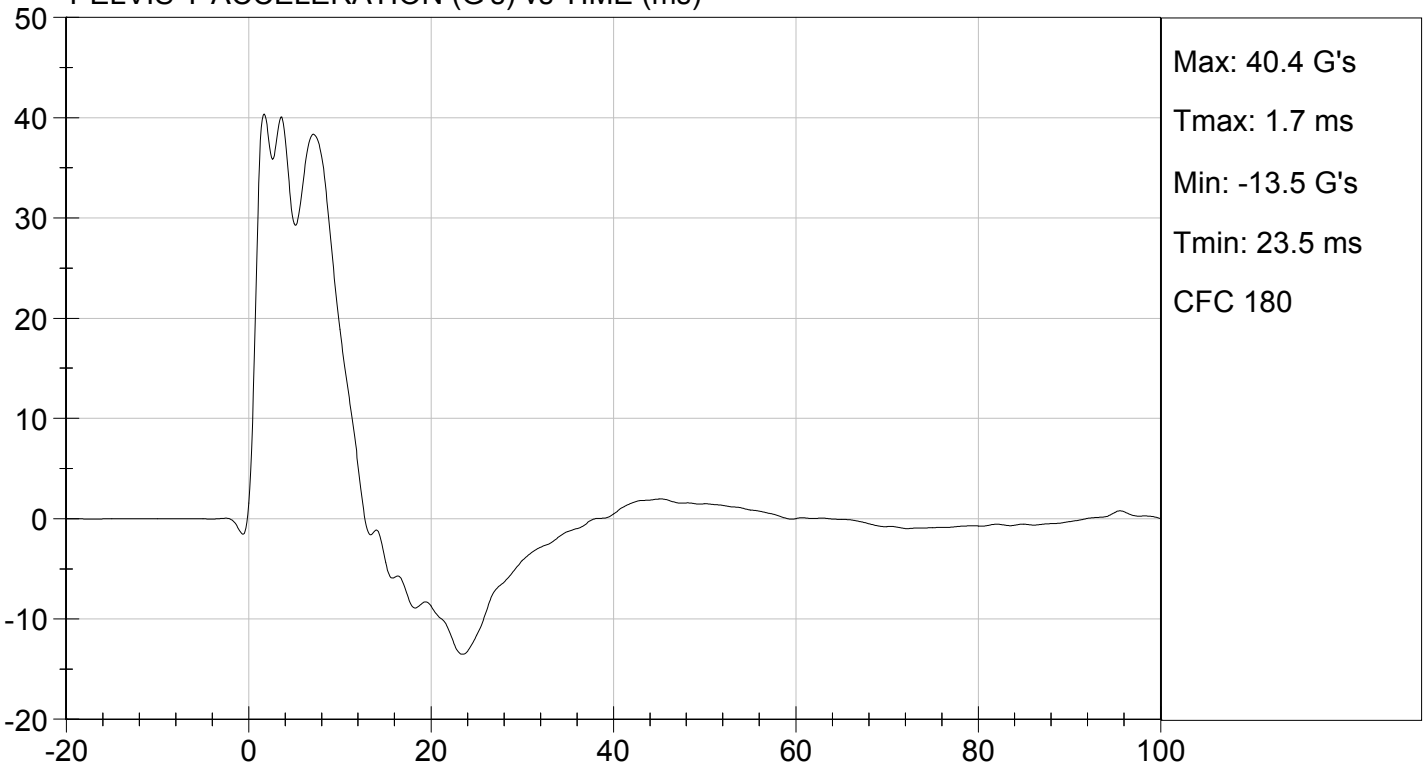
TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 12/16/2013
TEST #: D134297

PROBE (G's) vs TIME (ms)

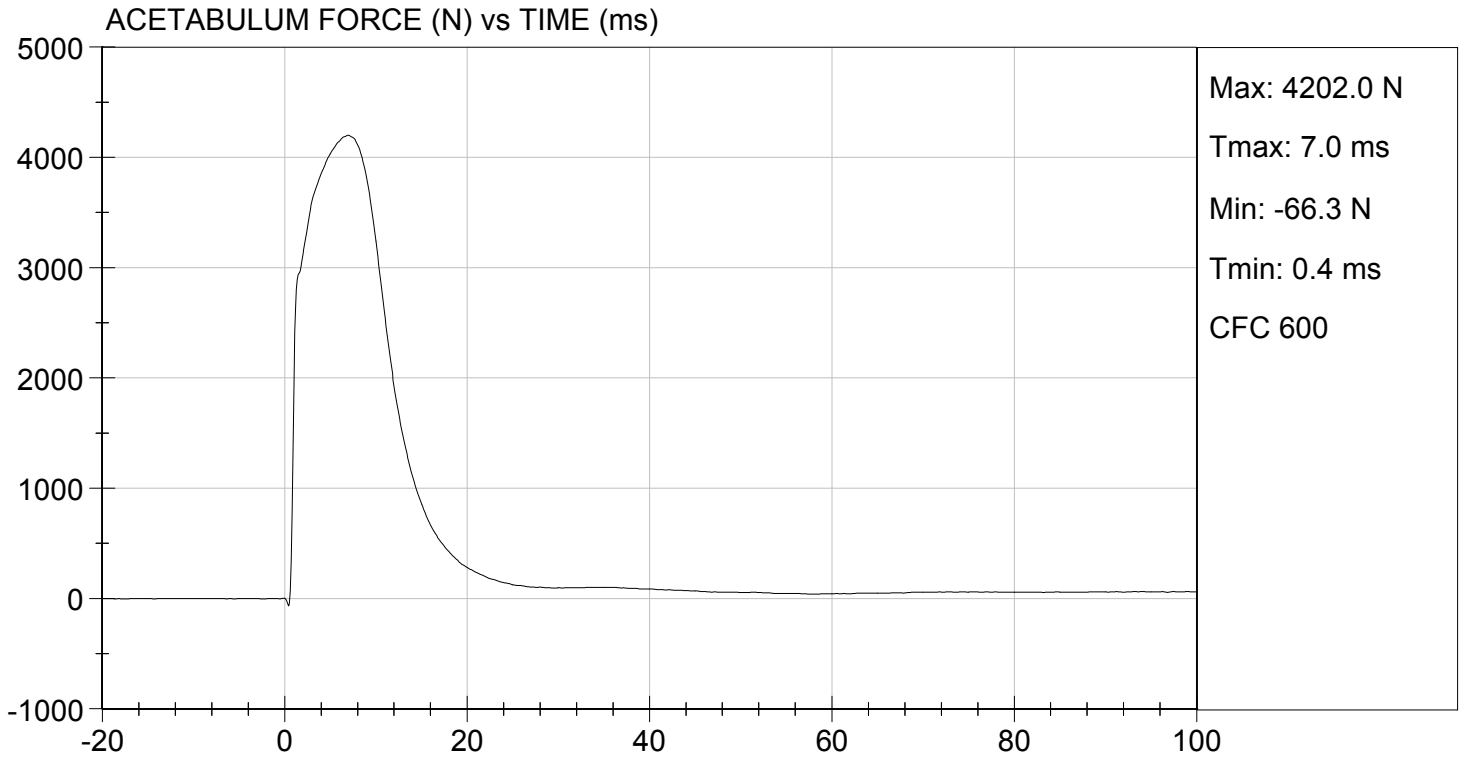


PELVIS Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 12/16/2013
TEST #: D134297



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134298

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	36 to 45	41	Pass
Pelvis Y Acceleration	G's	28 to 39	33	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,898	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

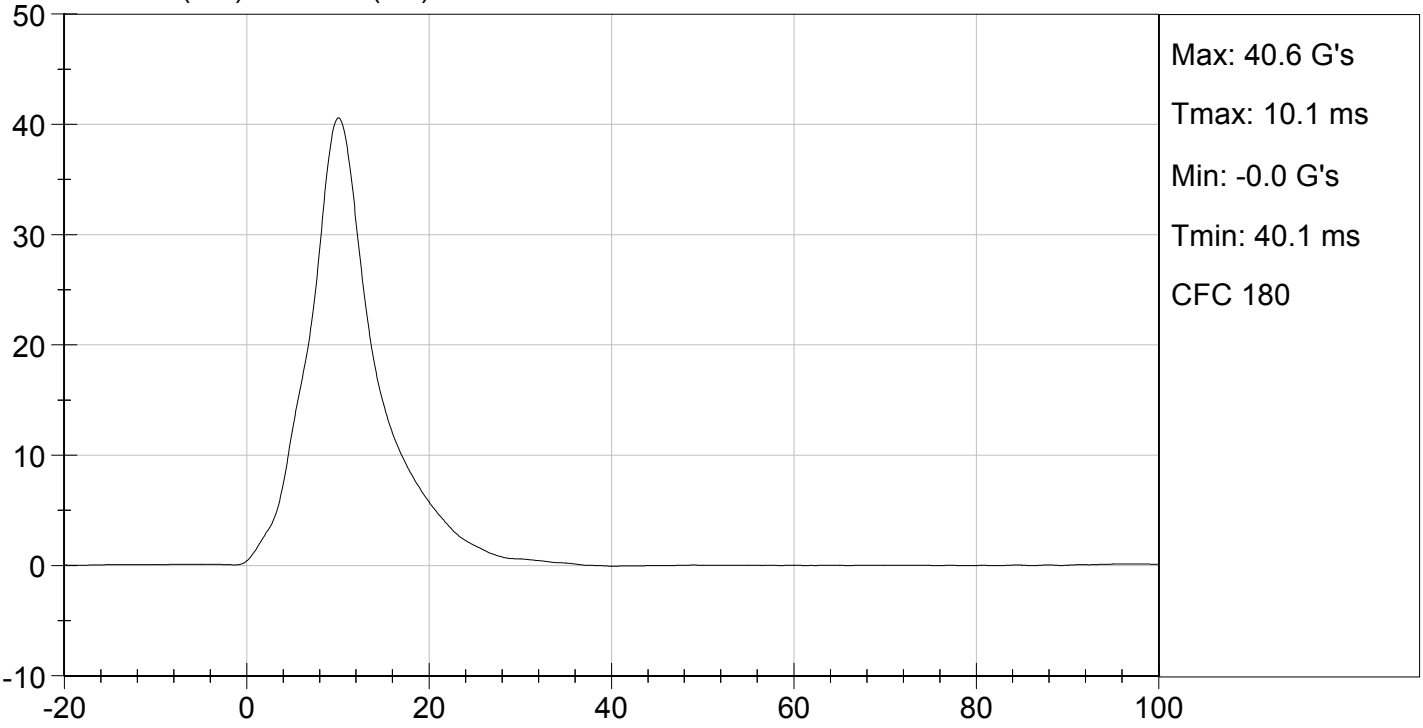
12/16/2013
Test Date

David Winkelbauer
Approved By

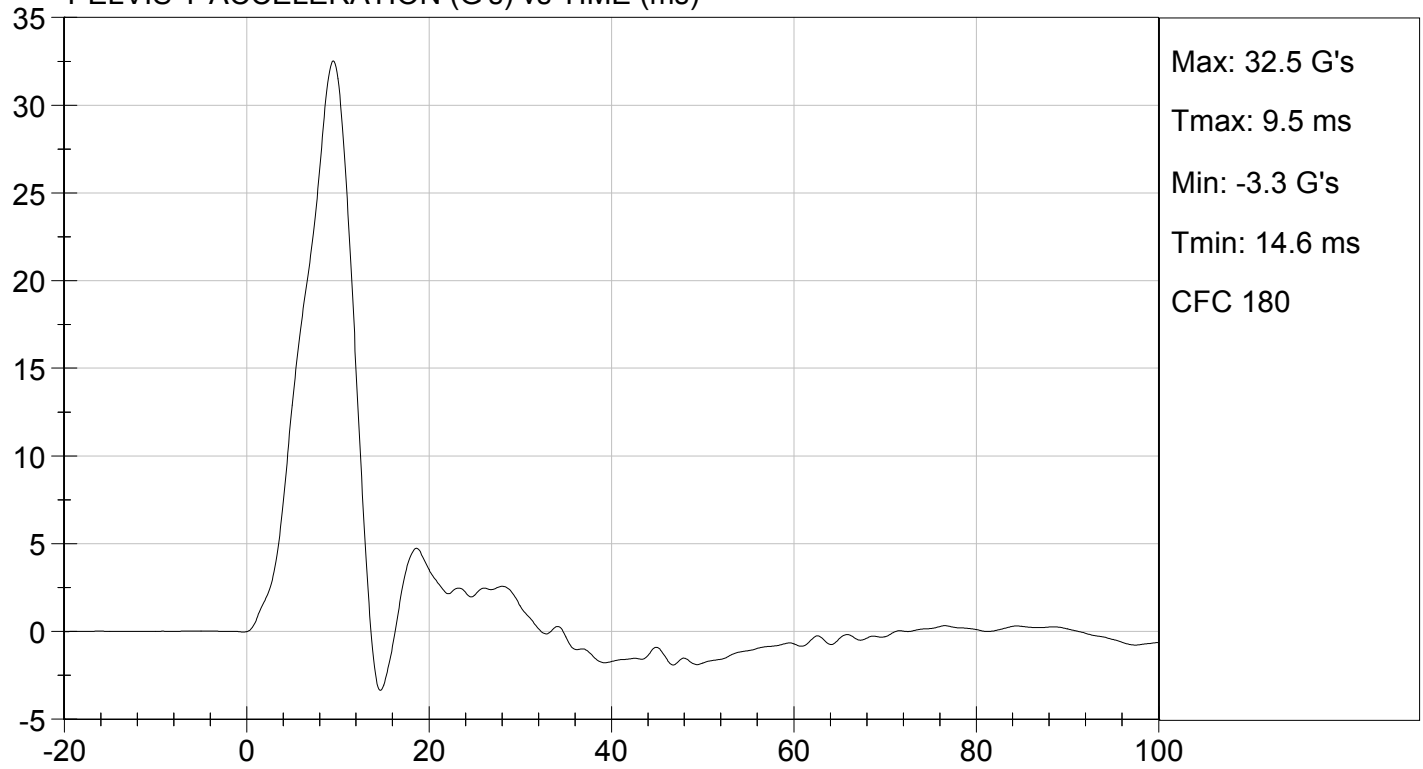
TEST DESC: ILLIAC
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 12/16/2013
TEST #: D134298

PROBE (G's) vs TIME (ms)

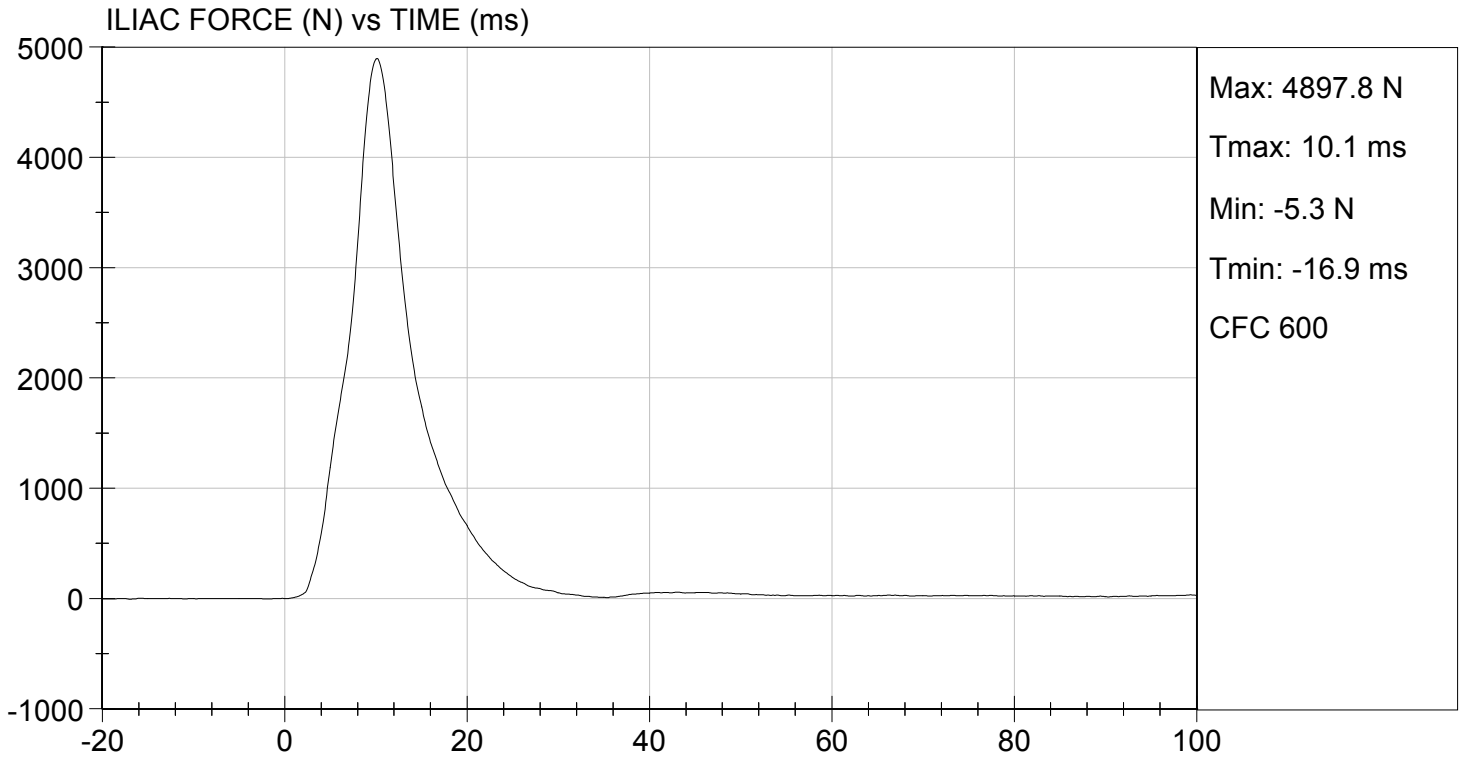


PELVIS Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: ILLIAC
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 12/16/2013
TEST #: D134298



MGA RESEARCH CORPORATION

HEAD DROP TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test ID:** D134361

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	17	Pass
Peak Resultant Acceleration	G's	115 to 137	121	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-2.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

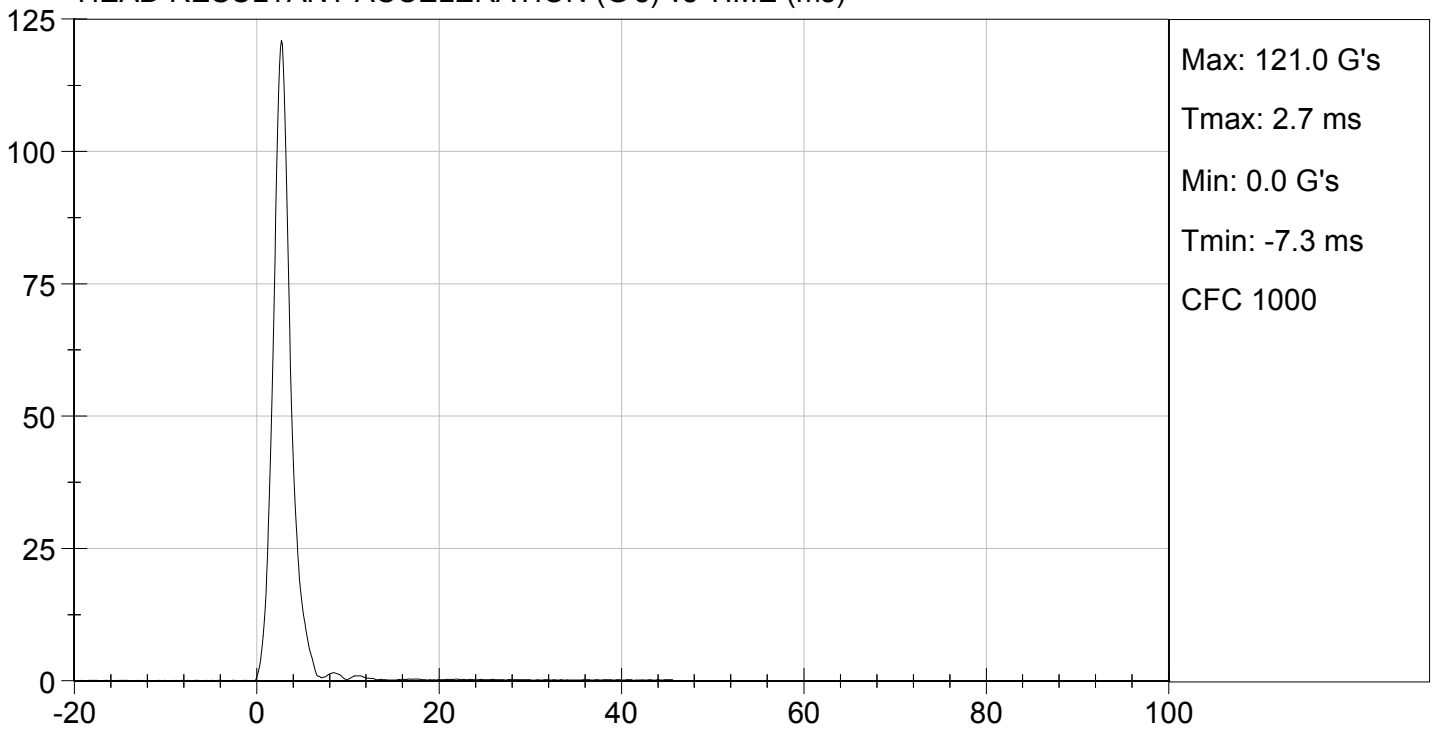
12/18/2013
Test Date

David Winkelbauer
Approved By

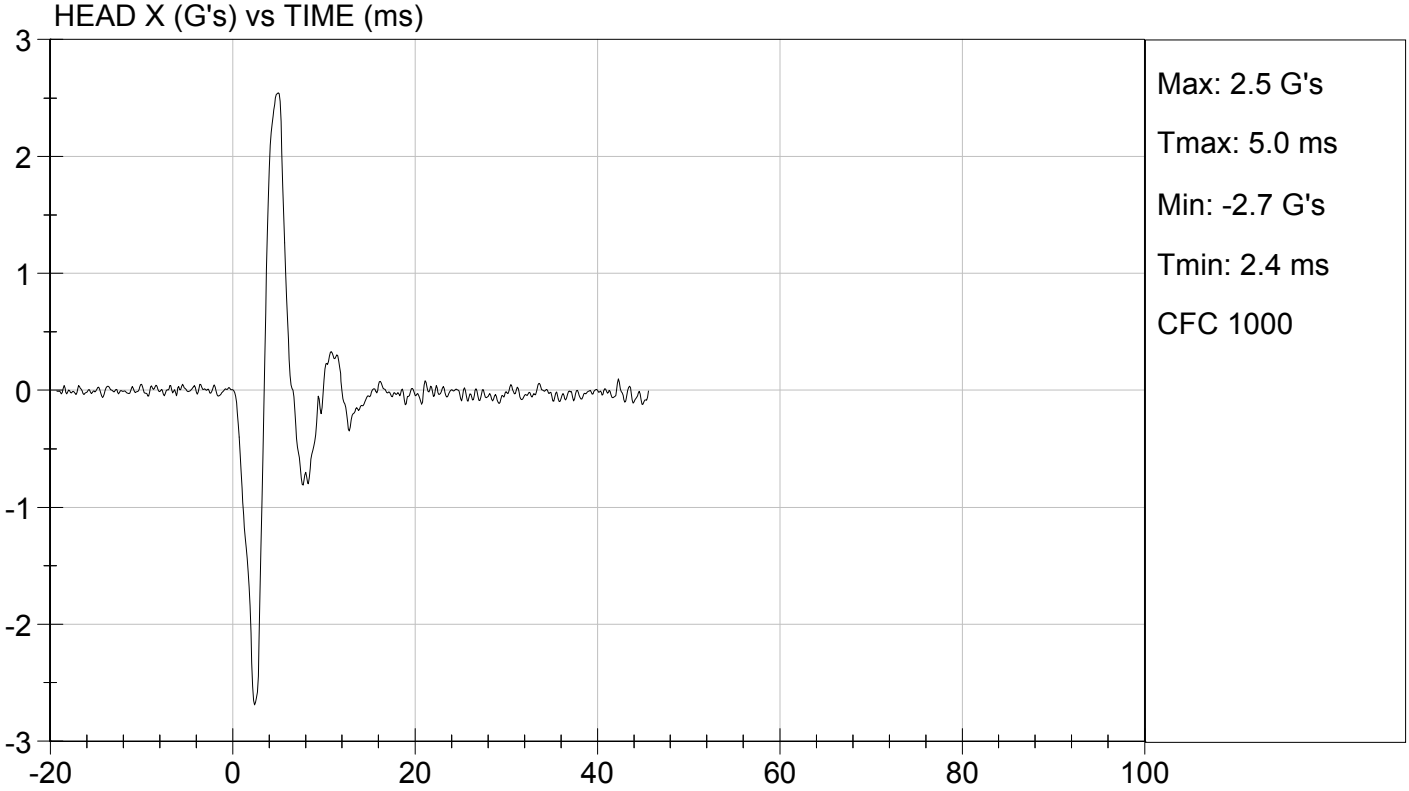
TEST DESC: HEAD DROP

TEST DATE: 12/18/2013
TEST #: D134361

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



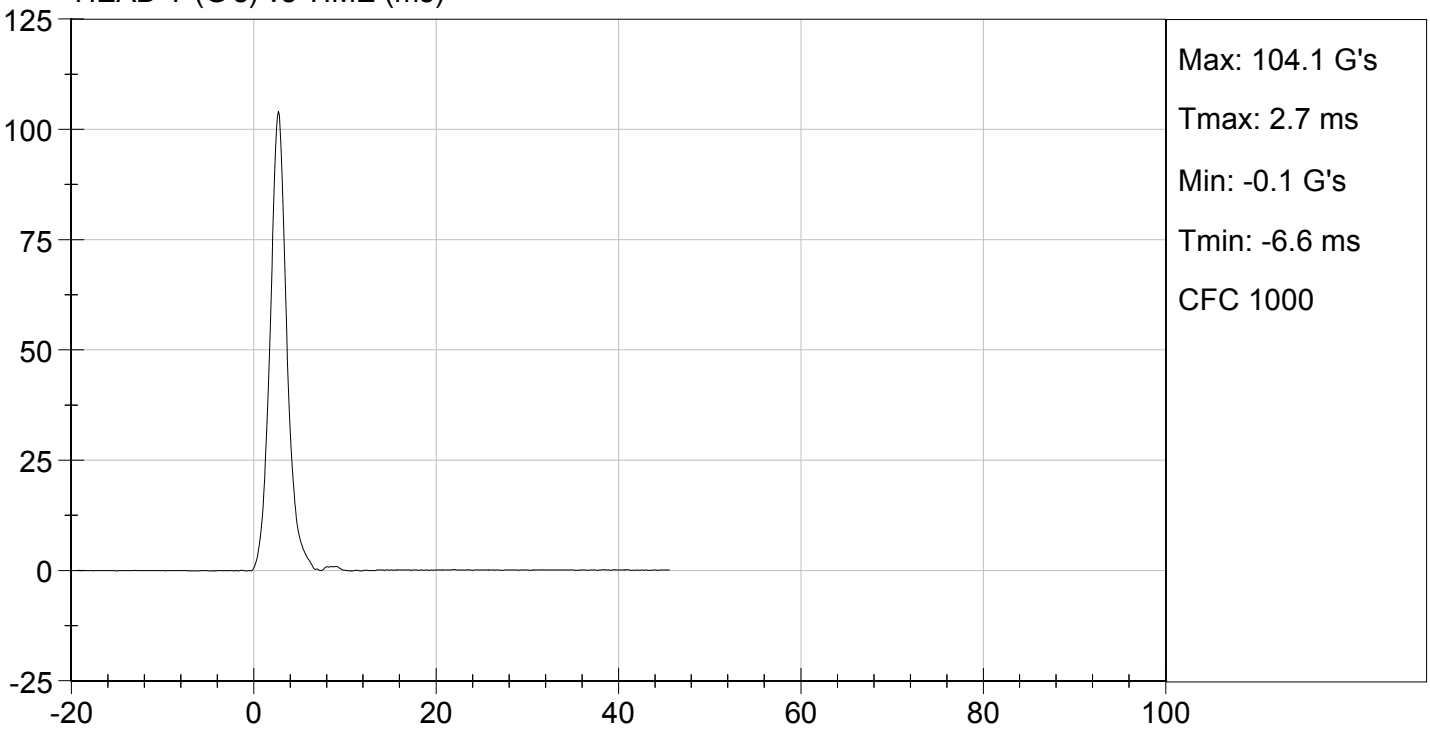
HEAD X (G's) vs TIME (ms)



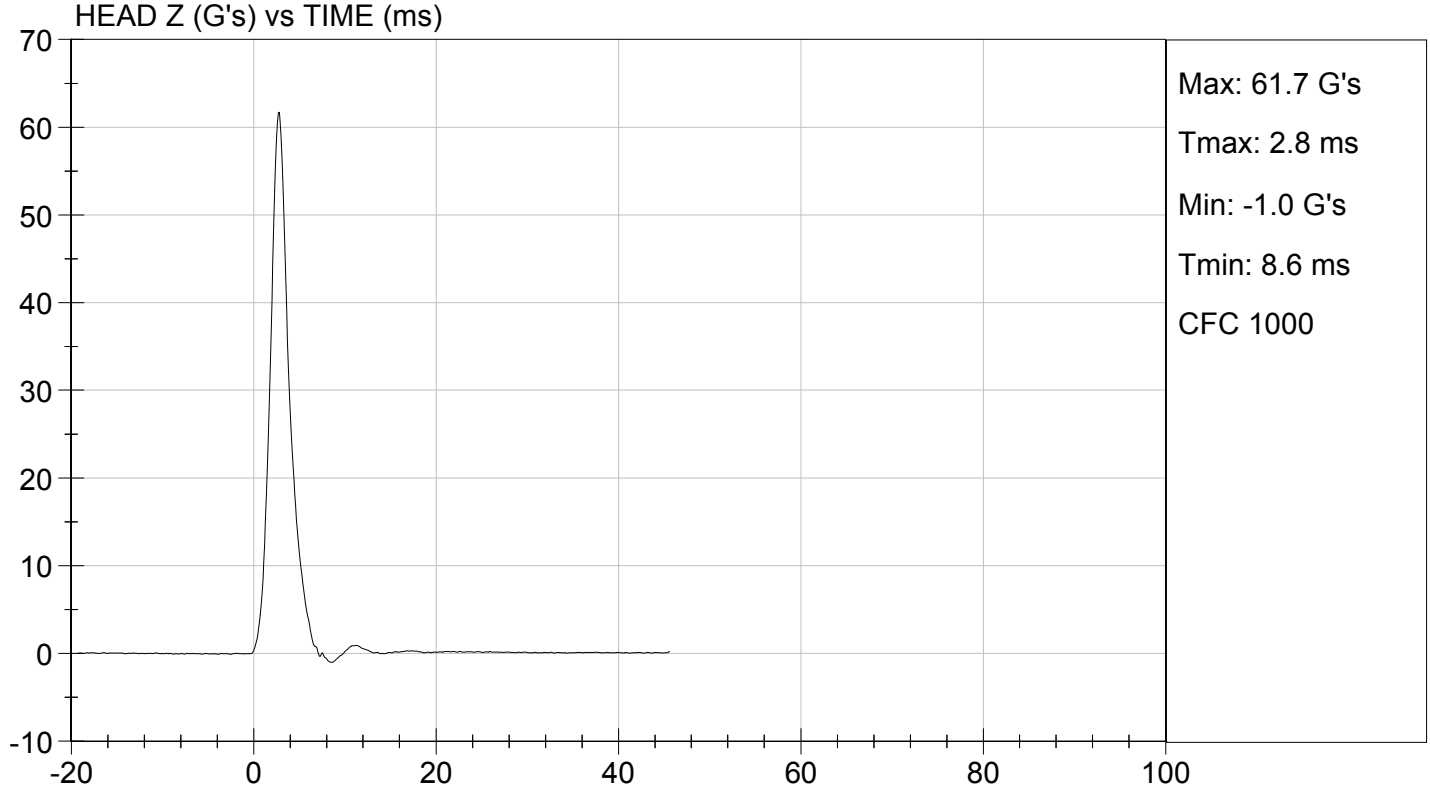
TEST DESC: HEAD DROP

TEST DATE: 12/18/2013
TEST #: D134361

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



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



MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134362

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.3	Pass
Humidity		%	10 to 70	20	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.37	Pass
	15 ms	m/s	3.30 to 4.10	3.38	Pass
	20 ms	m/s	4.40 to 5.40	4.51	Pass
	25 ms	m/s	5.40 to 6.10	5.52	Pass
	25-100 ms	m/s	5.50 to 6.20	5.63	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	61	Pass
Maximum Occipital Condyle Moment		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

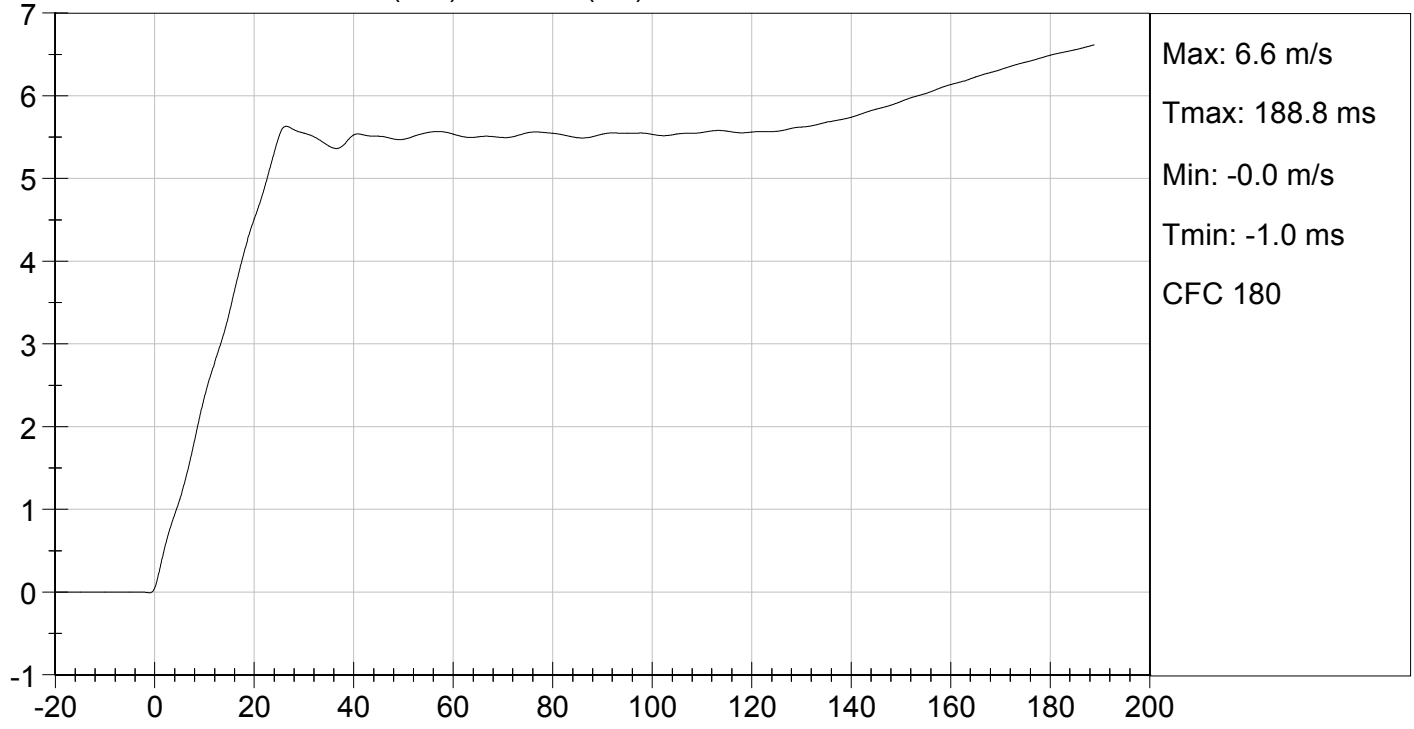
12/18/2013
Test Date

David Winkelbauer
Approved By

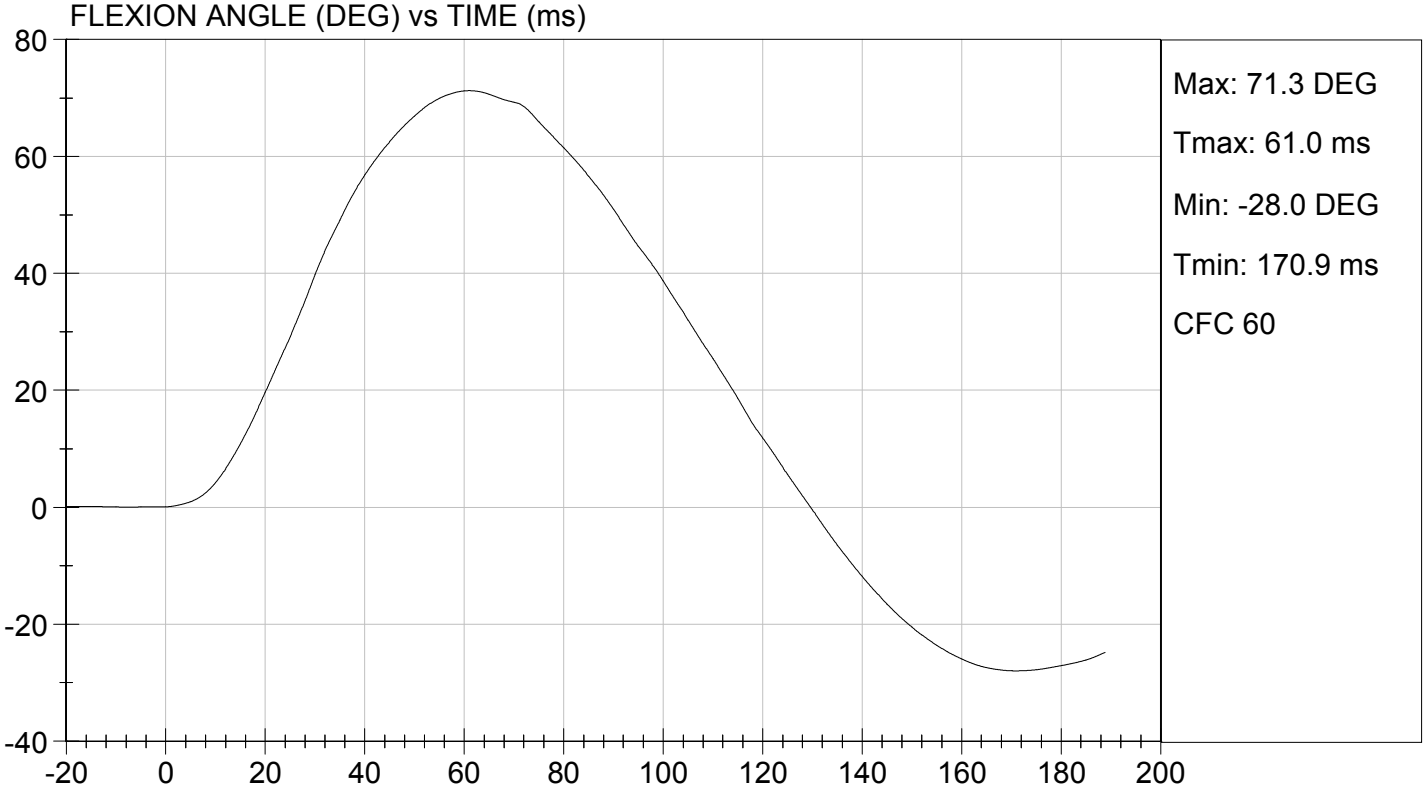
TEST DESC: NECK BENDING
VELOCITY: 18.31 ft/s, 5.58 m/s

TEST DATE: 12/18/2013
TEST #: D134362

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

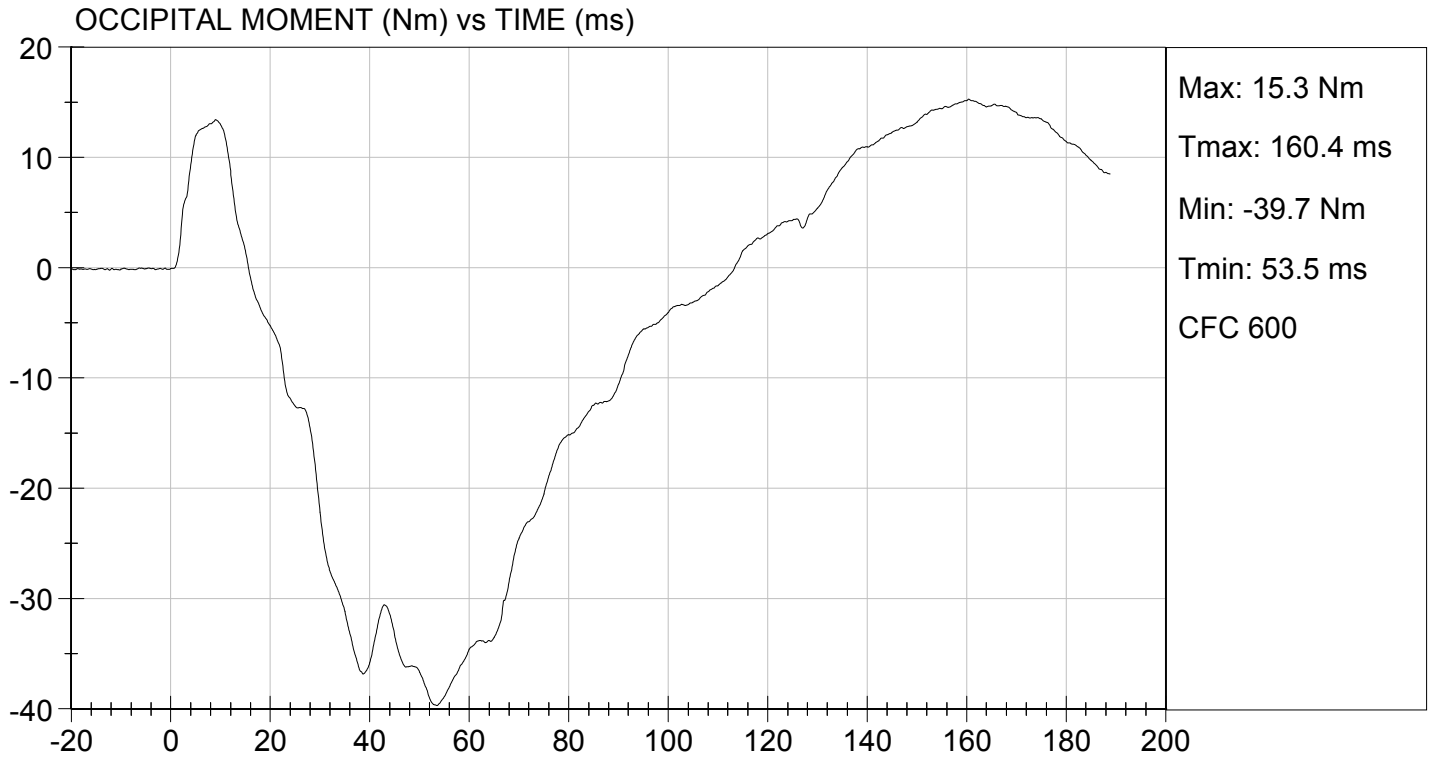


FLEXION ANGLE (DEG) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 18.31 ft/s, 5.58 m/s

TEST DATE: 12/18/2013
TEST #: D134362



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test ID:** D134363

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	33	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

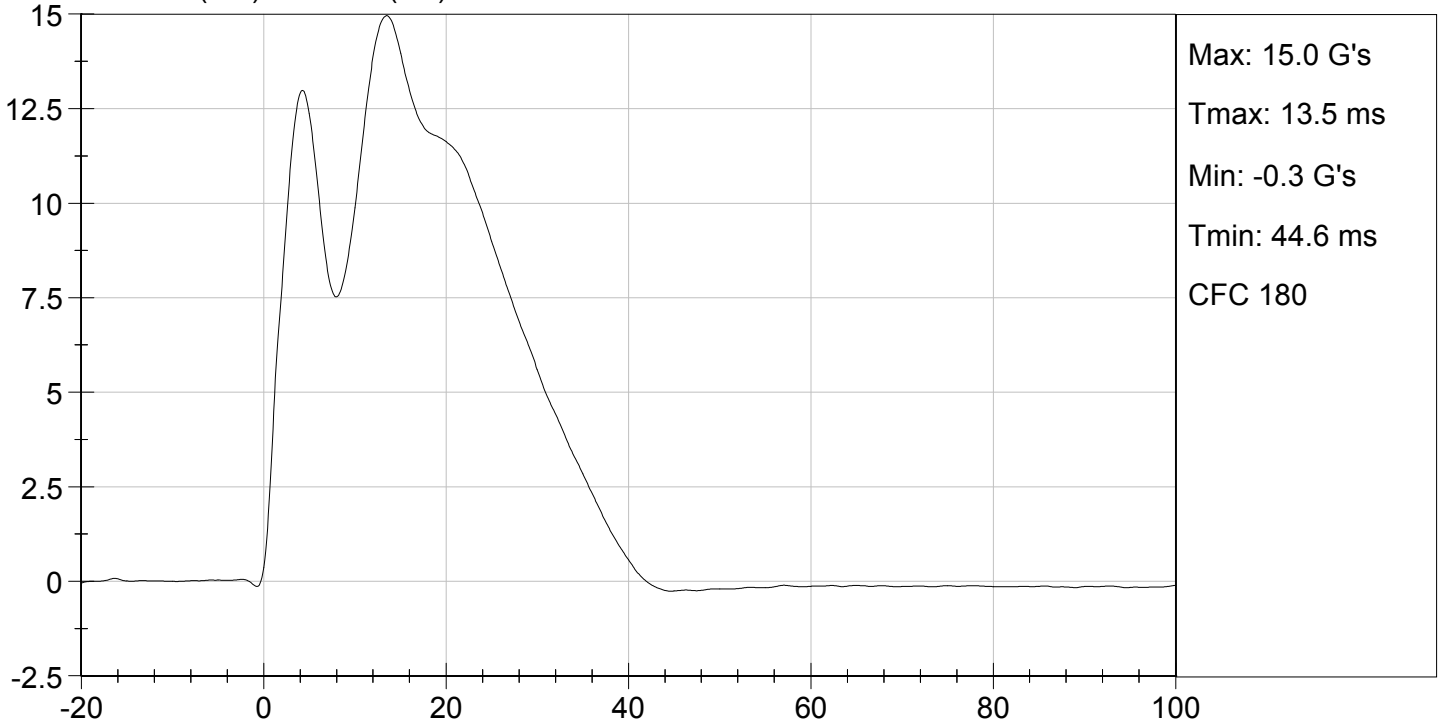
12/18/2013
Test Date

David Winkelbauer
Approved By

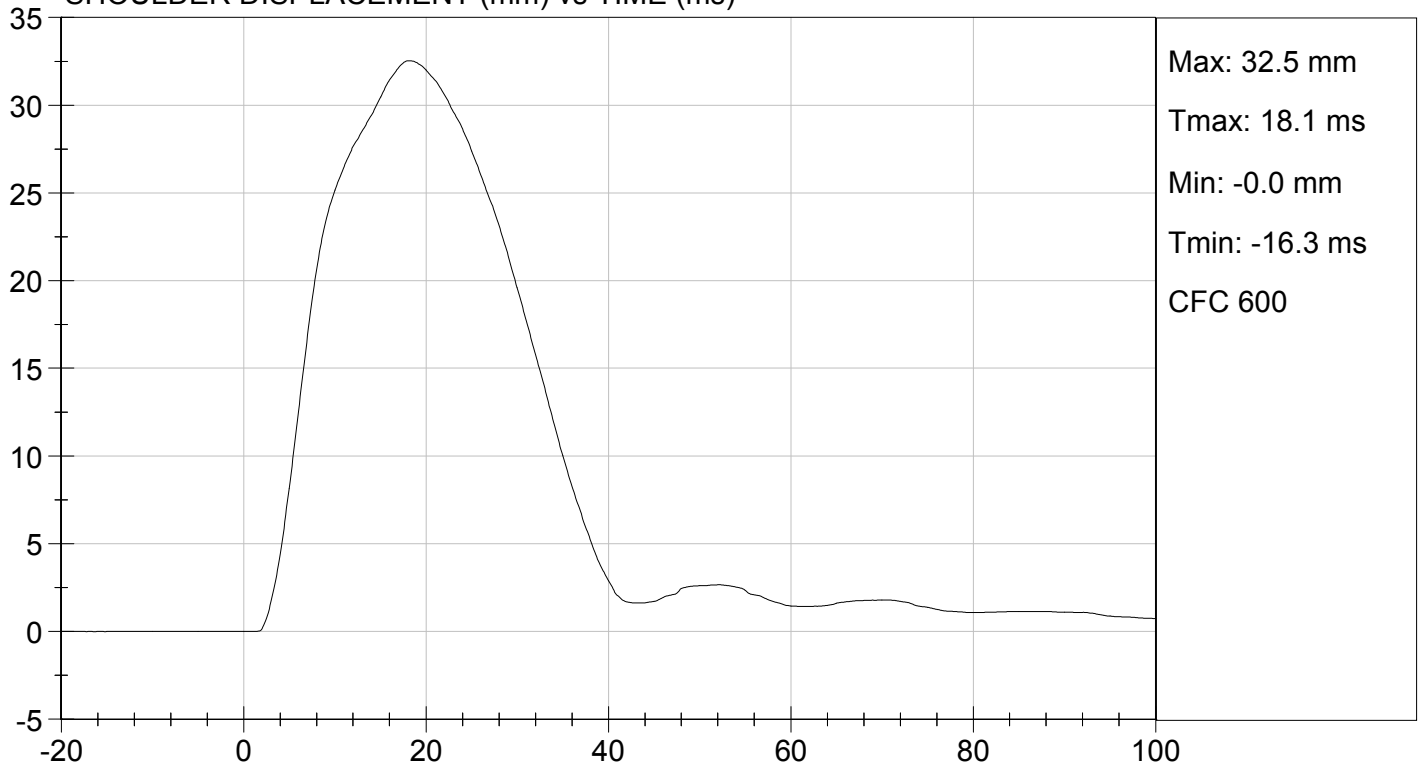
TEST DESC: SHOULDER IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 12/18/2013
TEST #: D134363

PROBE (G's) vs TIME (ms)

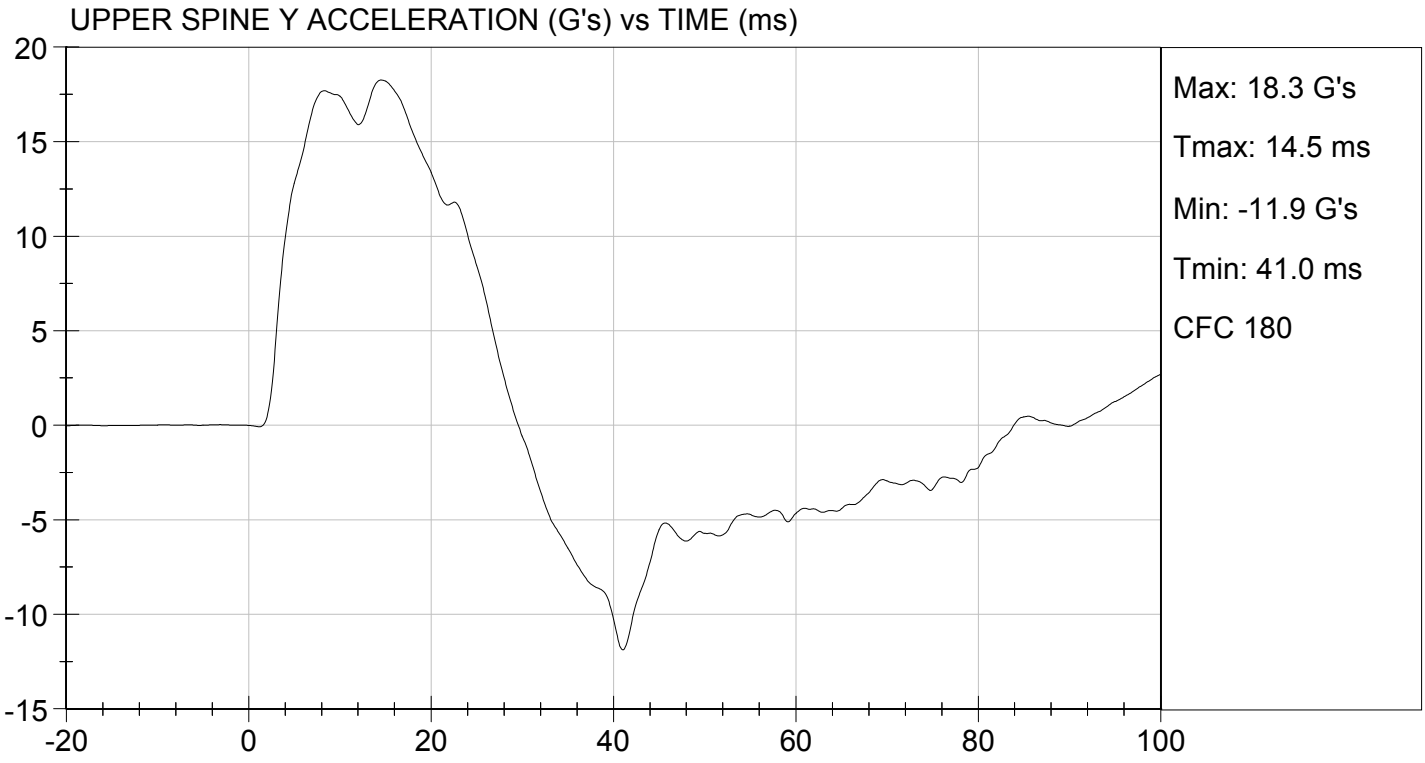


SHOULDER DISPLACEMENT (mm) vs TIME (ms)



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 12/18/2013
TEST #: D134363



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134364

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	30	Pass
Shoulder Displacement	mm	31 to 40	37	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	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

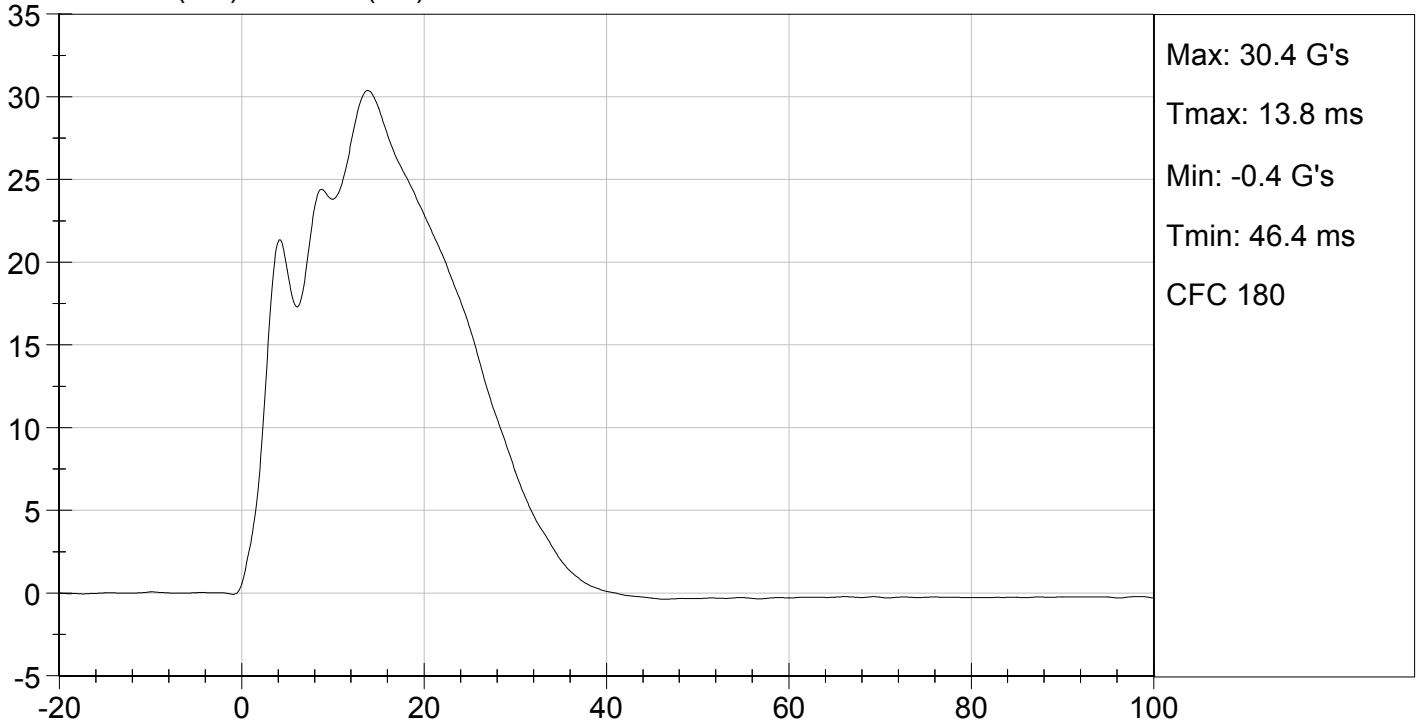
12/18/2013
Test Date

David Winkelbauer
Approved By

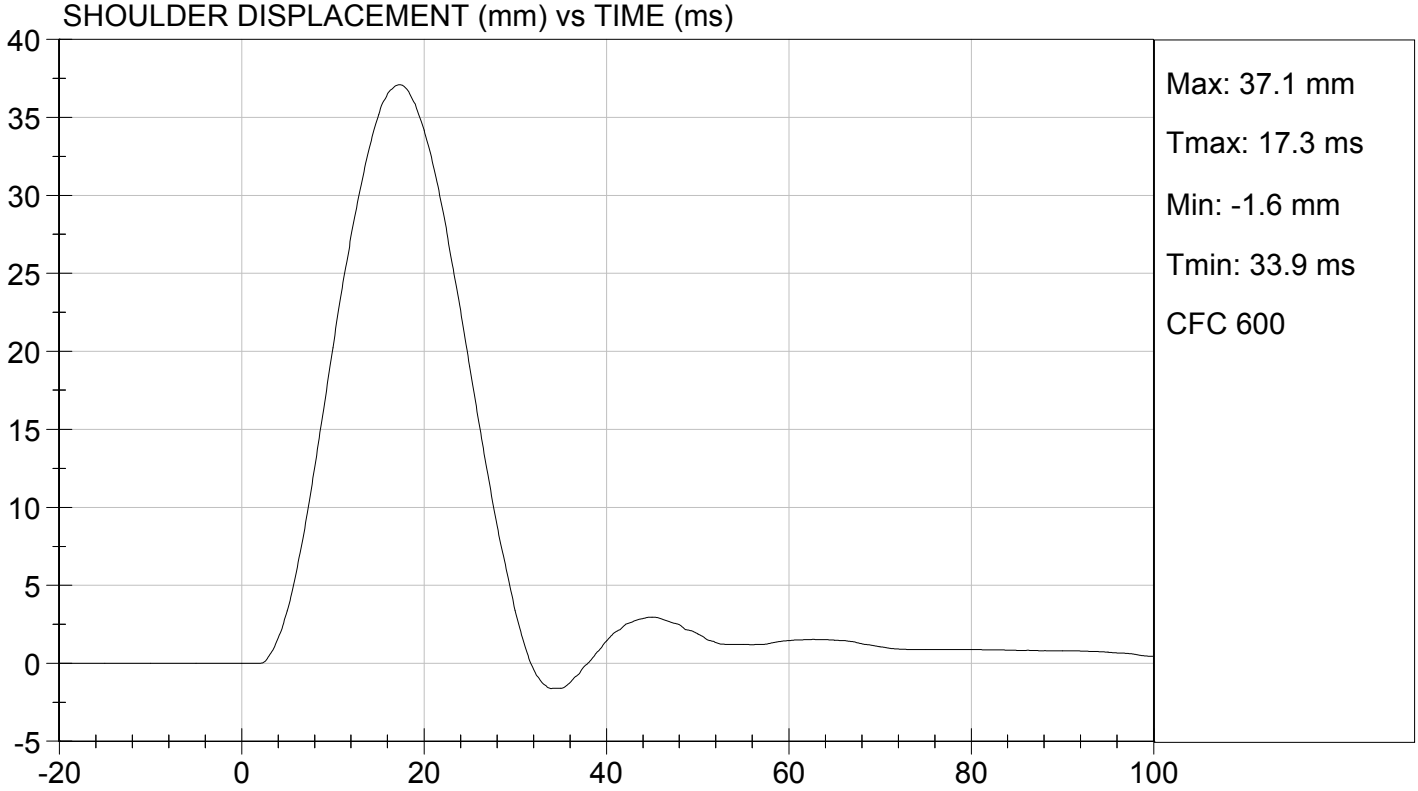
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 12/18/2013
TEST #: D134364

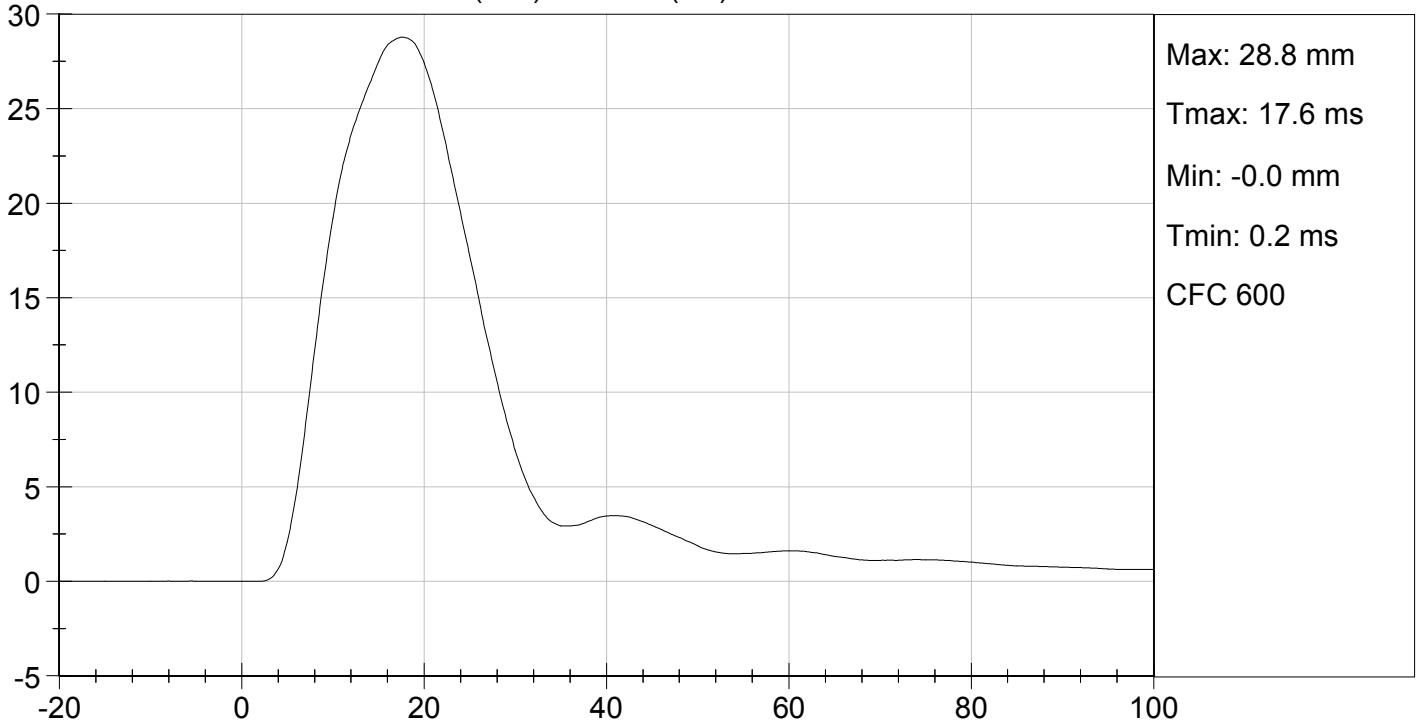
PROBE (G's) vs TIME (ms)



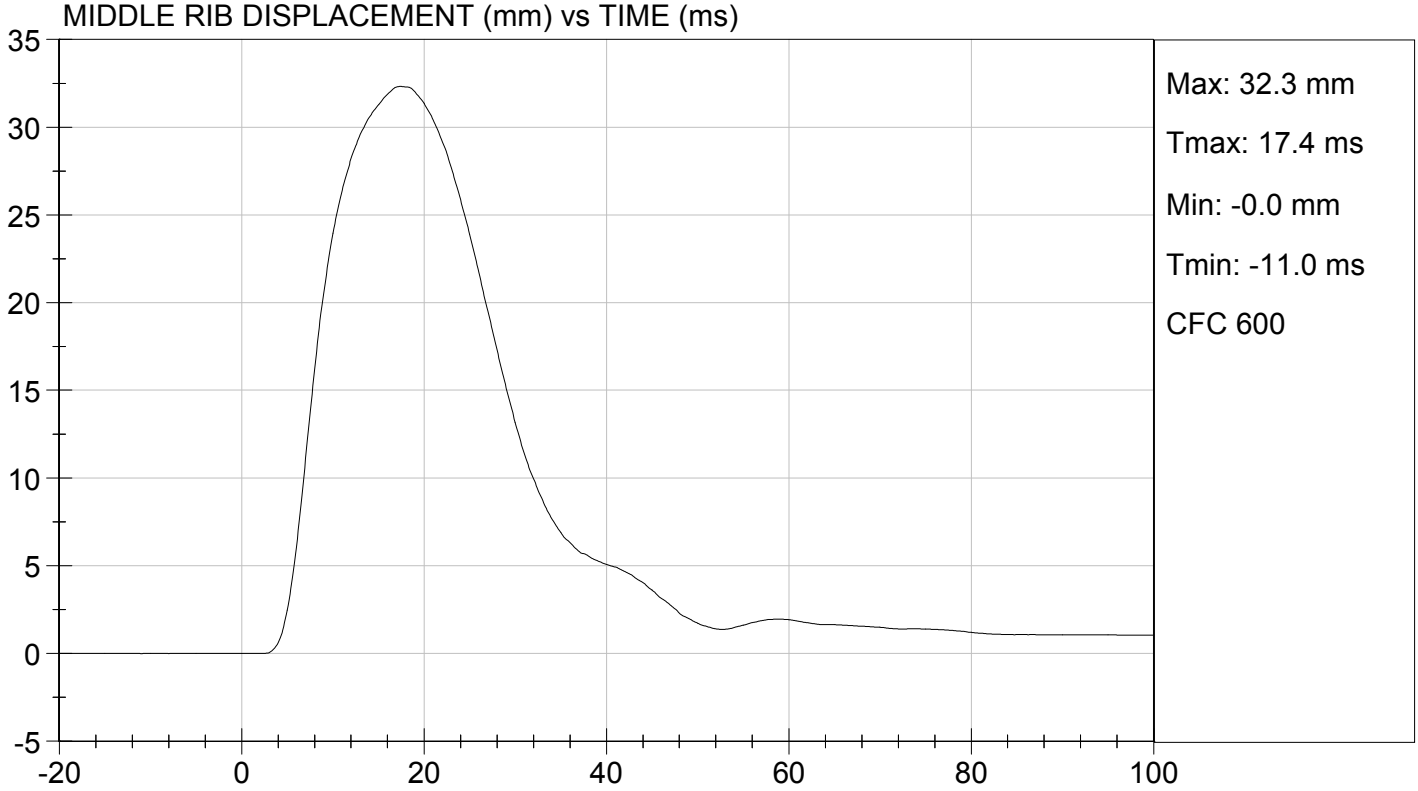
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



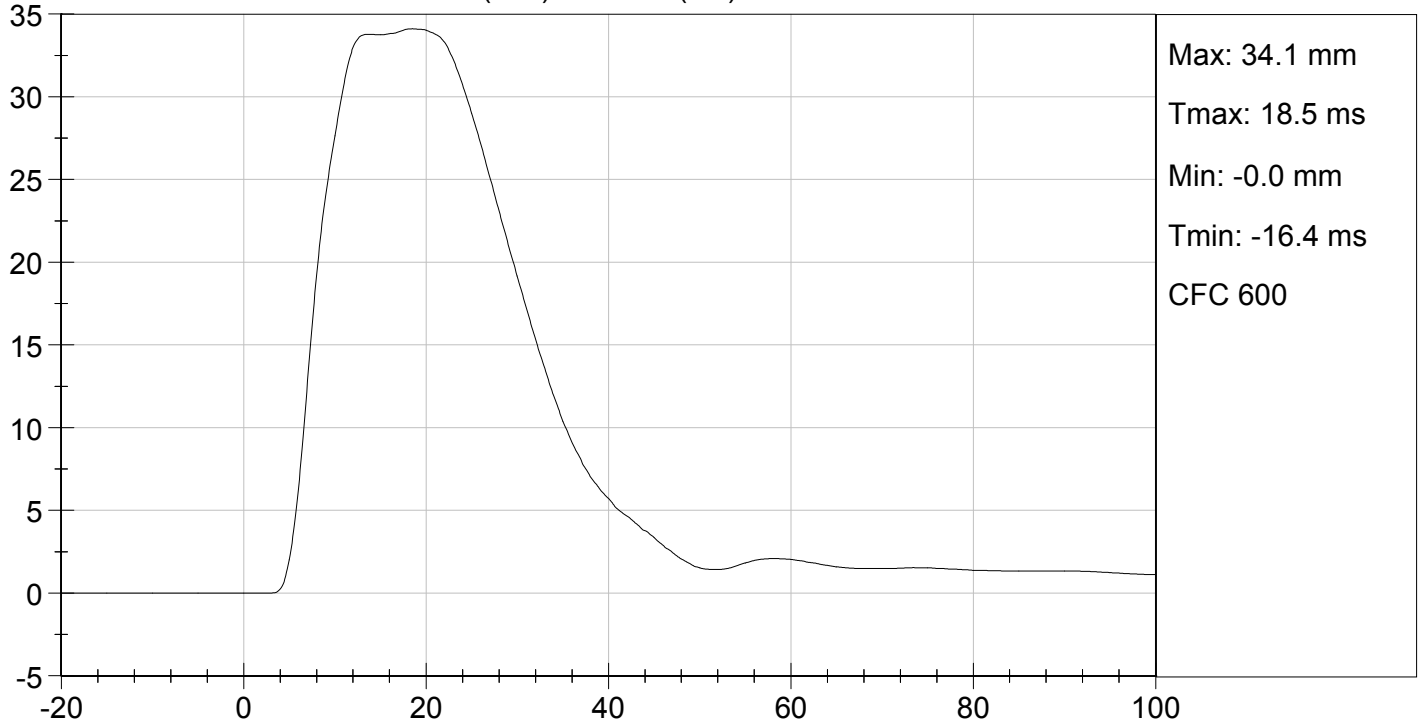
MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



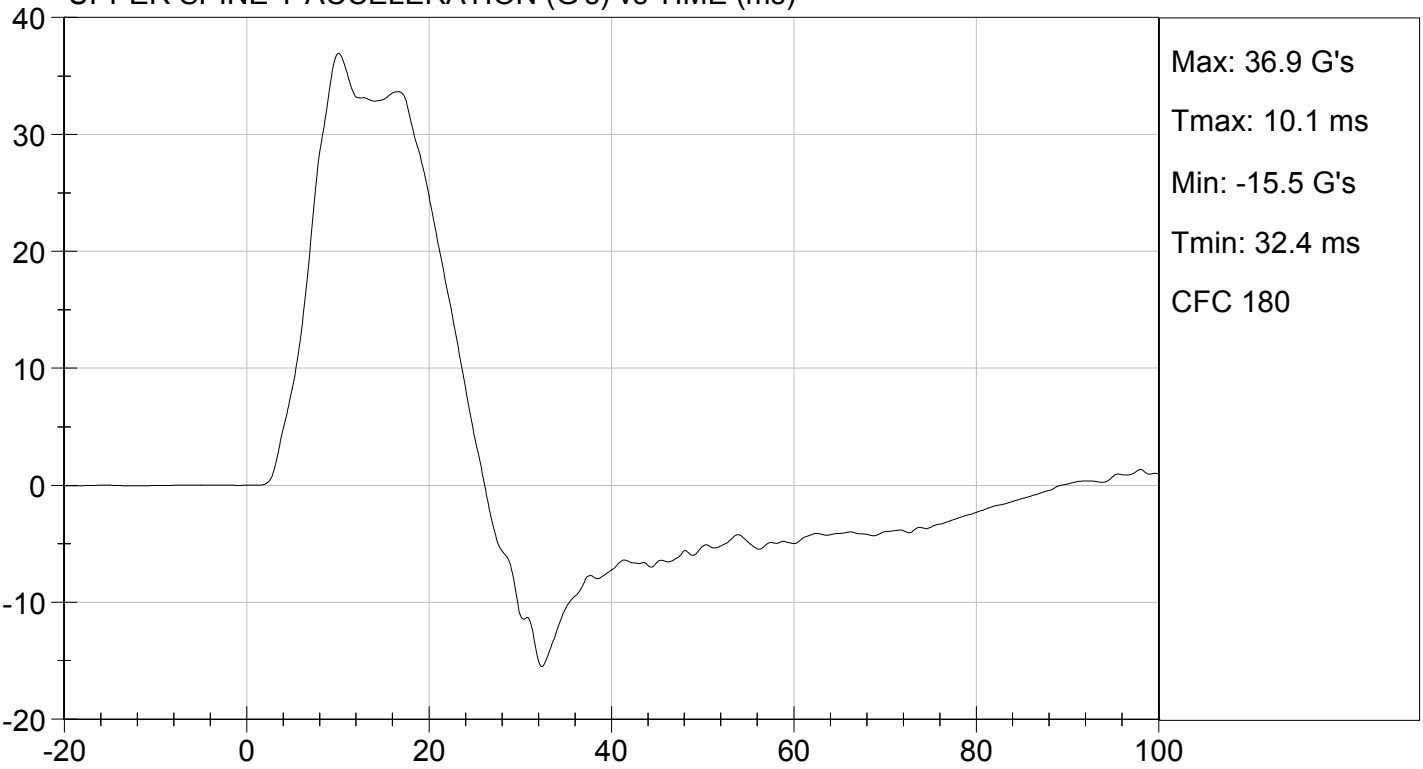
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 12/18/2013
TEST #: D134364

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



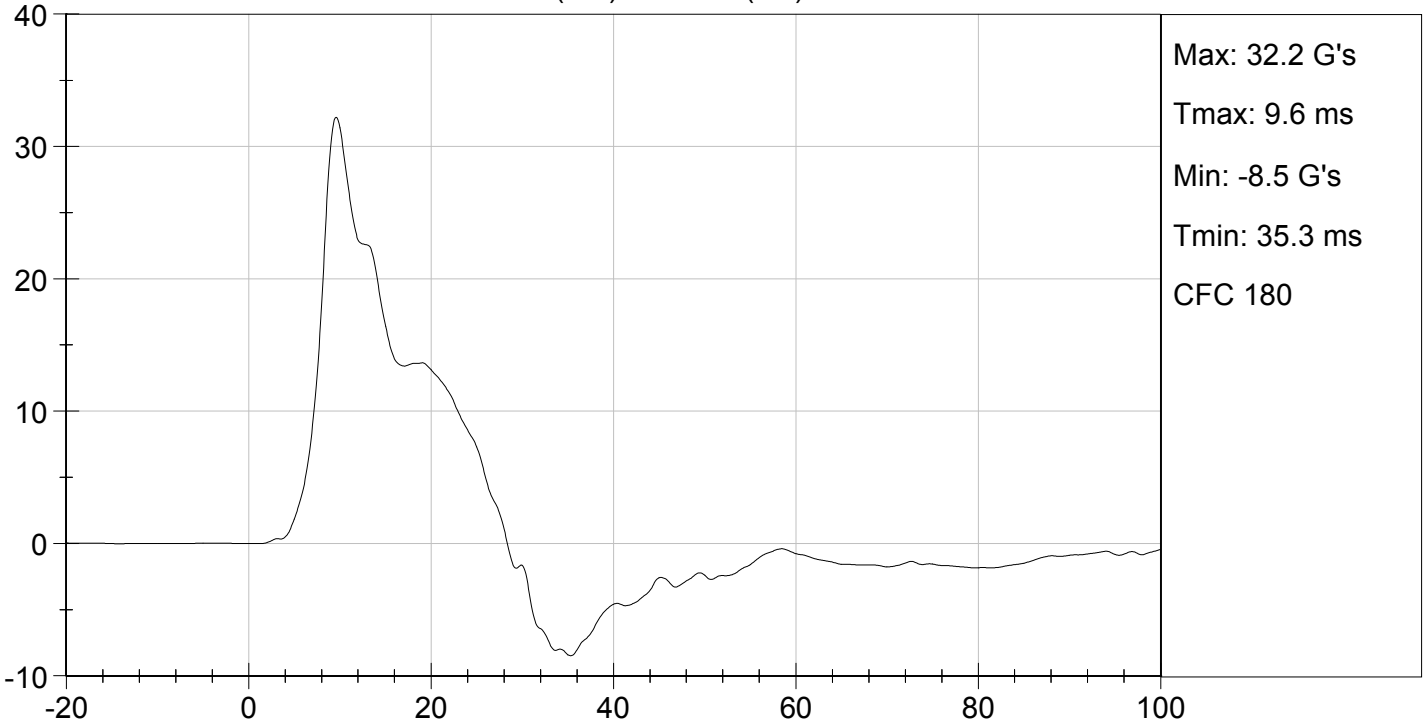
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 12/18/2013
TEST #: D134364

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



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134365

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	14 to 18	14	Pass
Upper Rib Displacement	mm	32 to 40	37	Pass
Middle Rib Displacement	mm	39 to 45	41	Pass
Lower Rib Displacement	mm	35 to 43	39	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	13	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	8	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

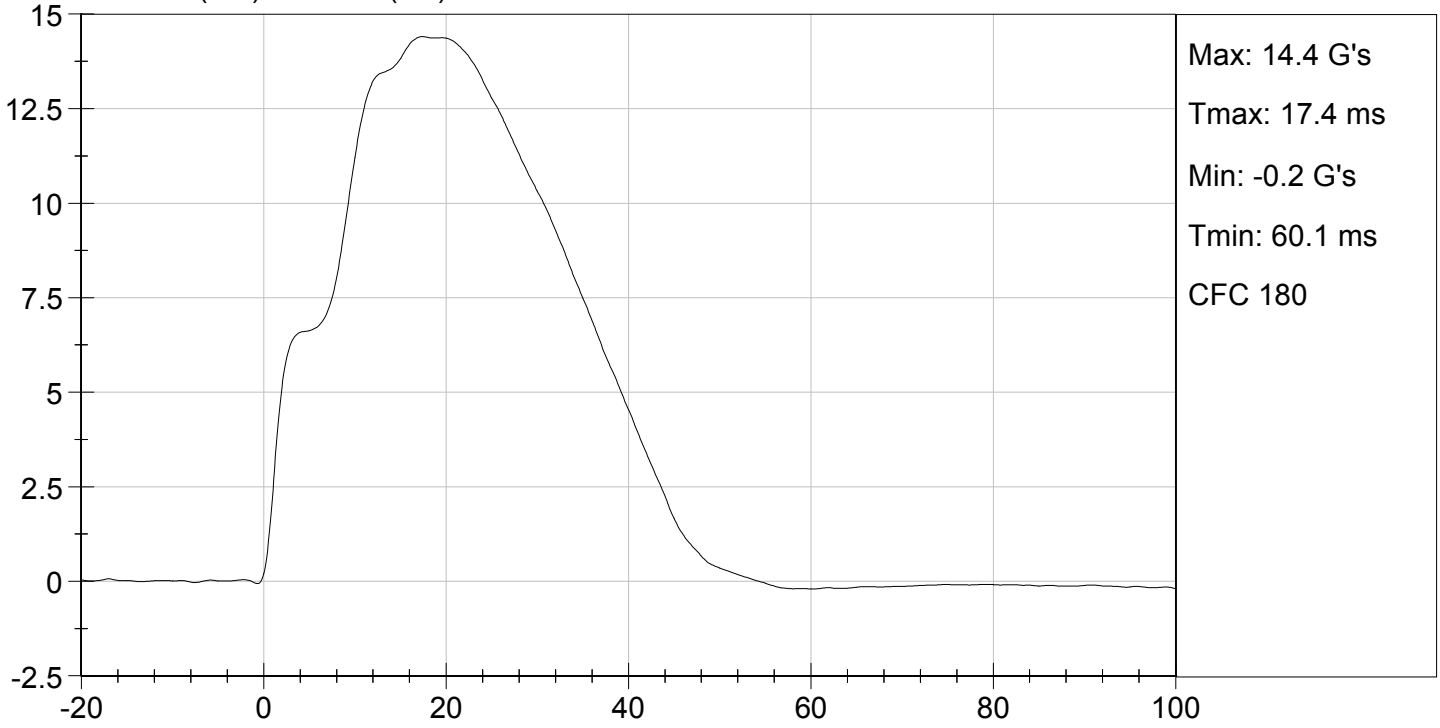
12/18/2013
Test Date

David Winkelbauer
Approved By

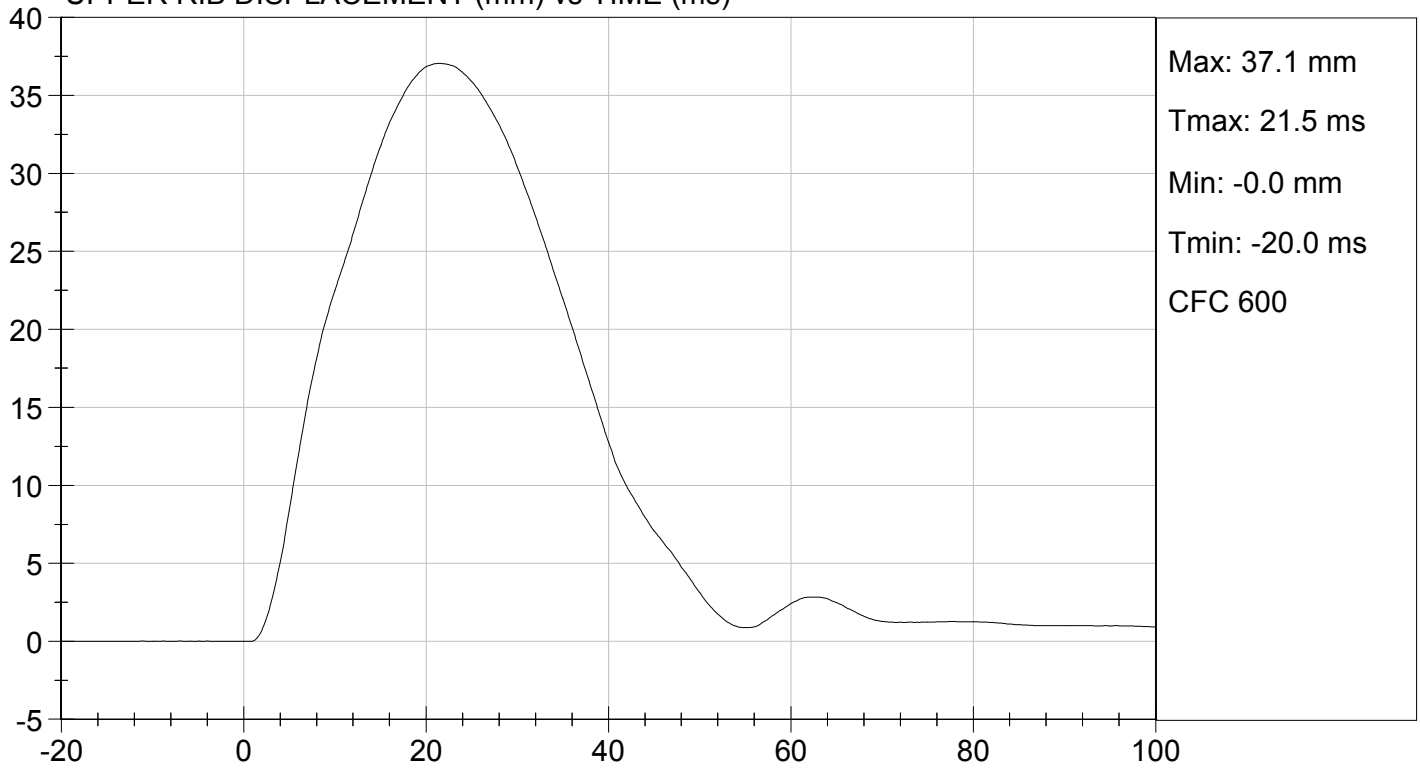
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/18/2013
TEST #: D134365

PROBE (G's) vs TIME (ms)



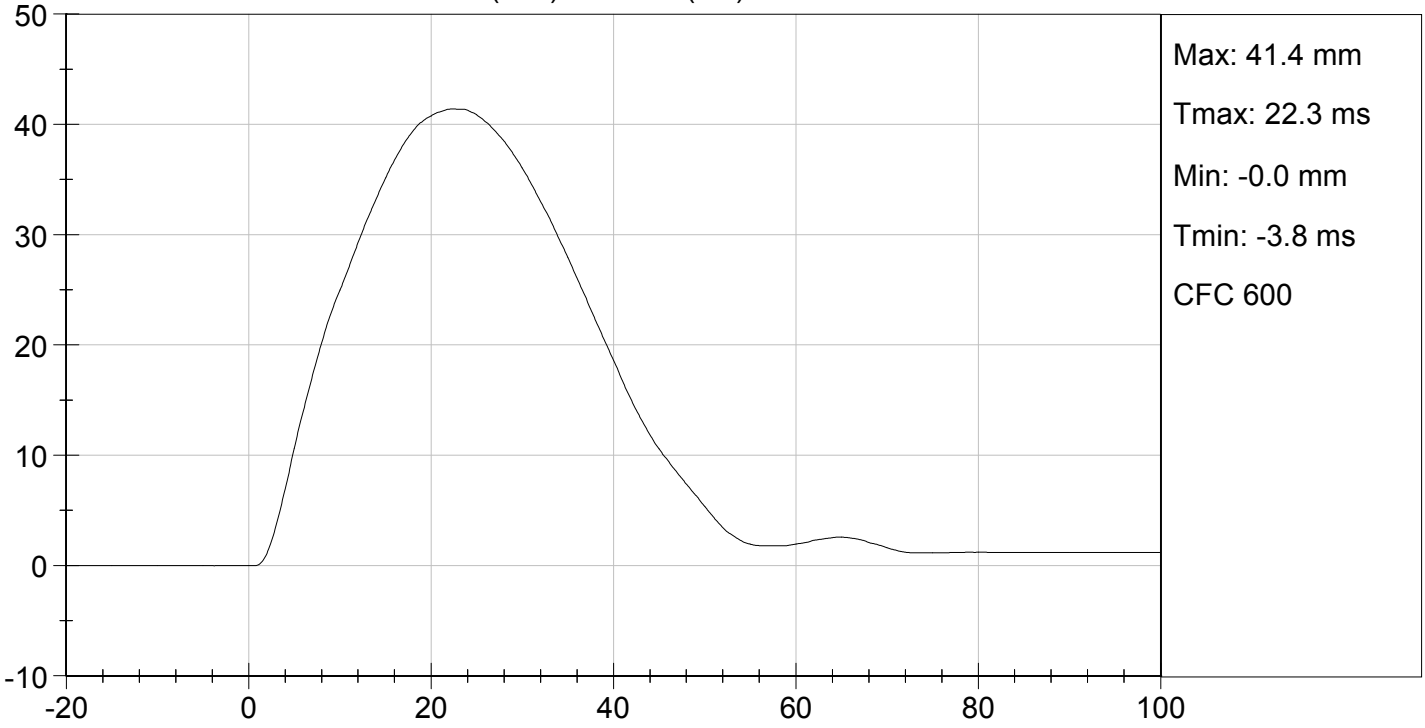
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



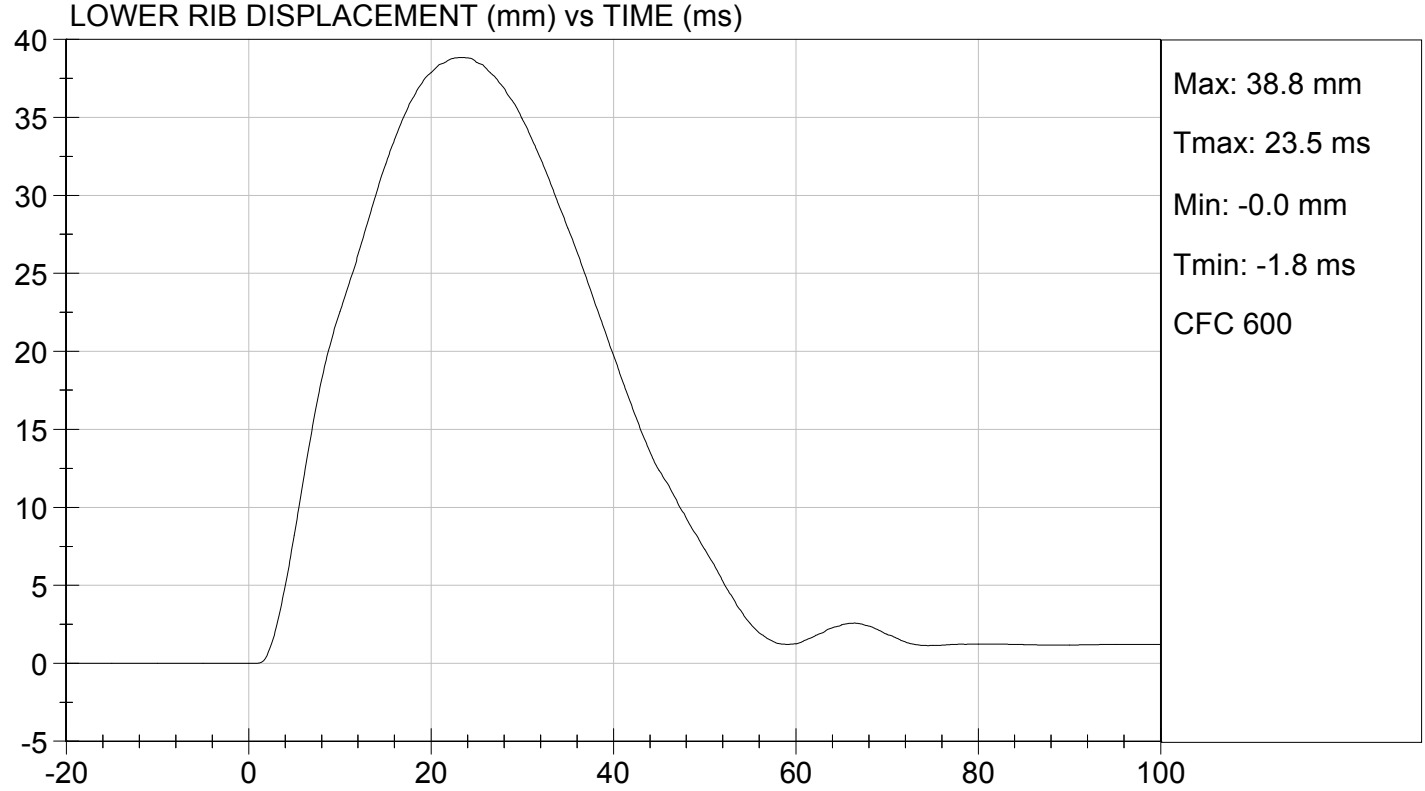
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/18/2013
TEST #: D134365

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



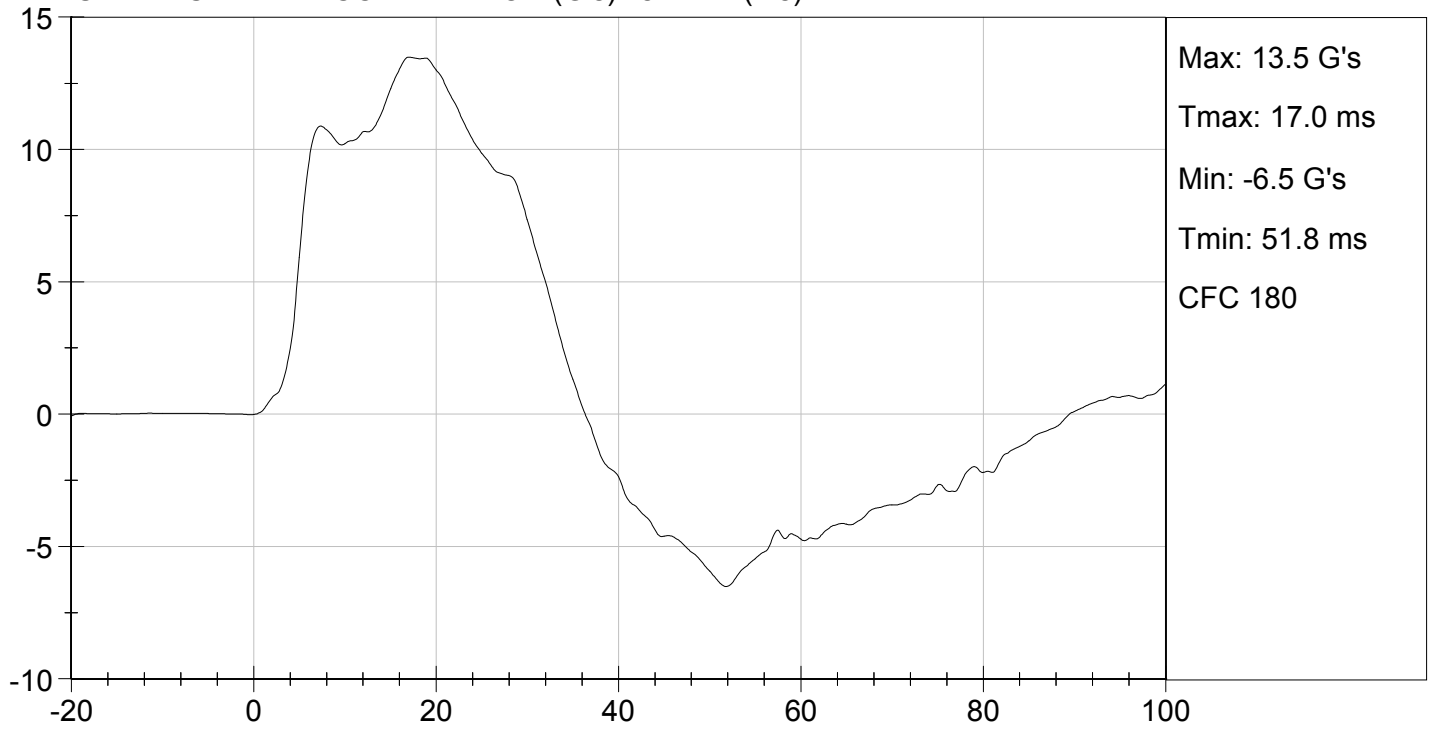
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



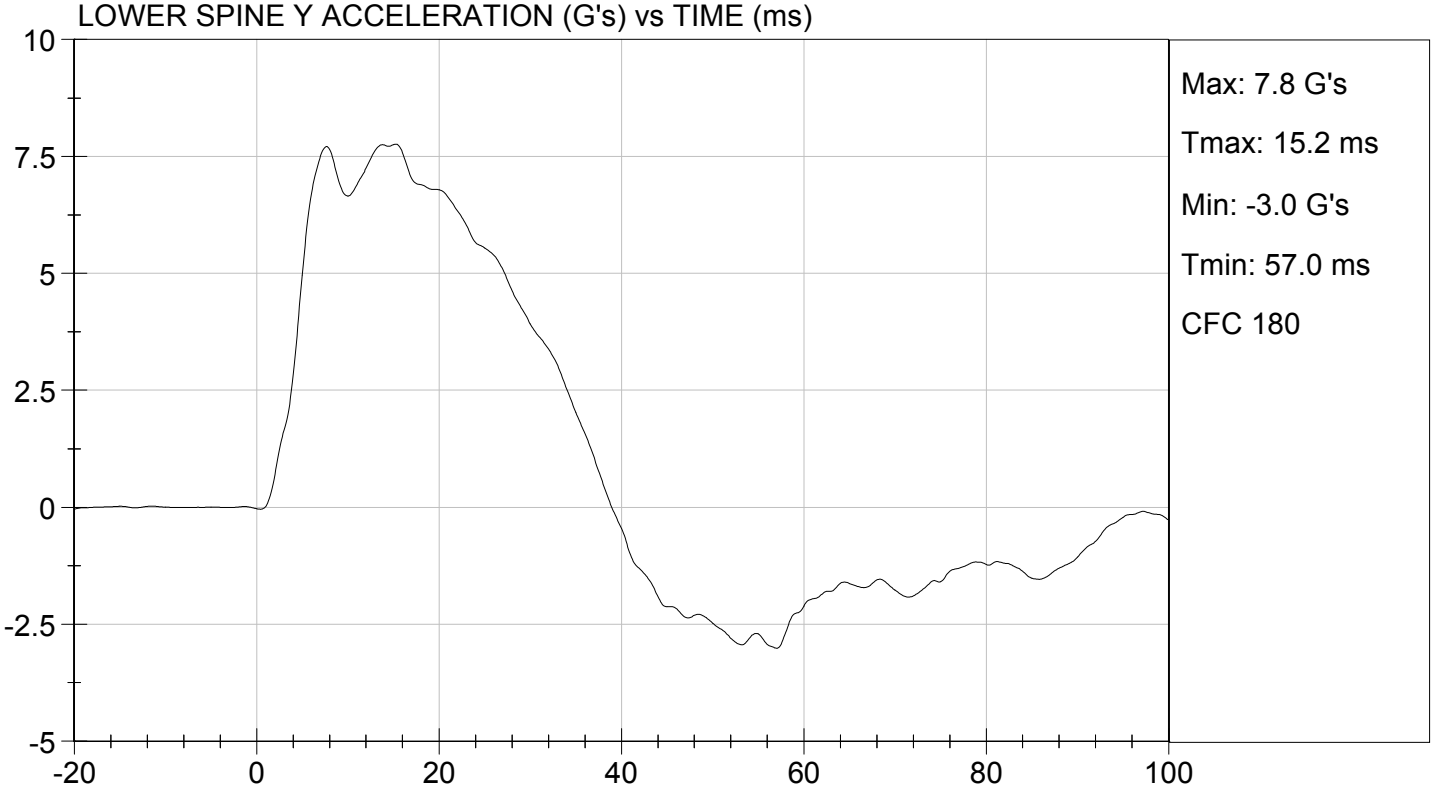
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/18/2013
TEST #: D134365

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134366

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	38	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

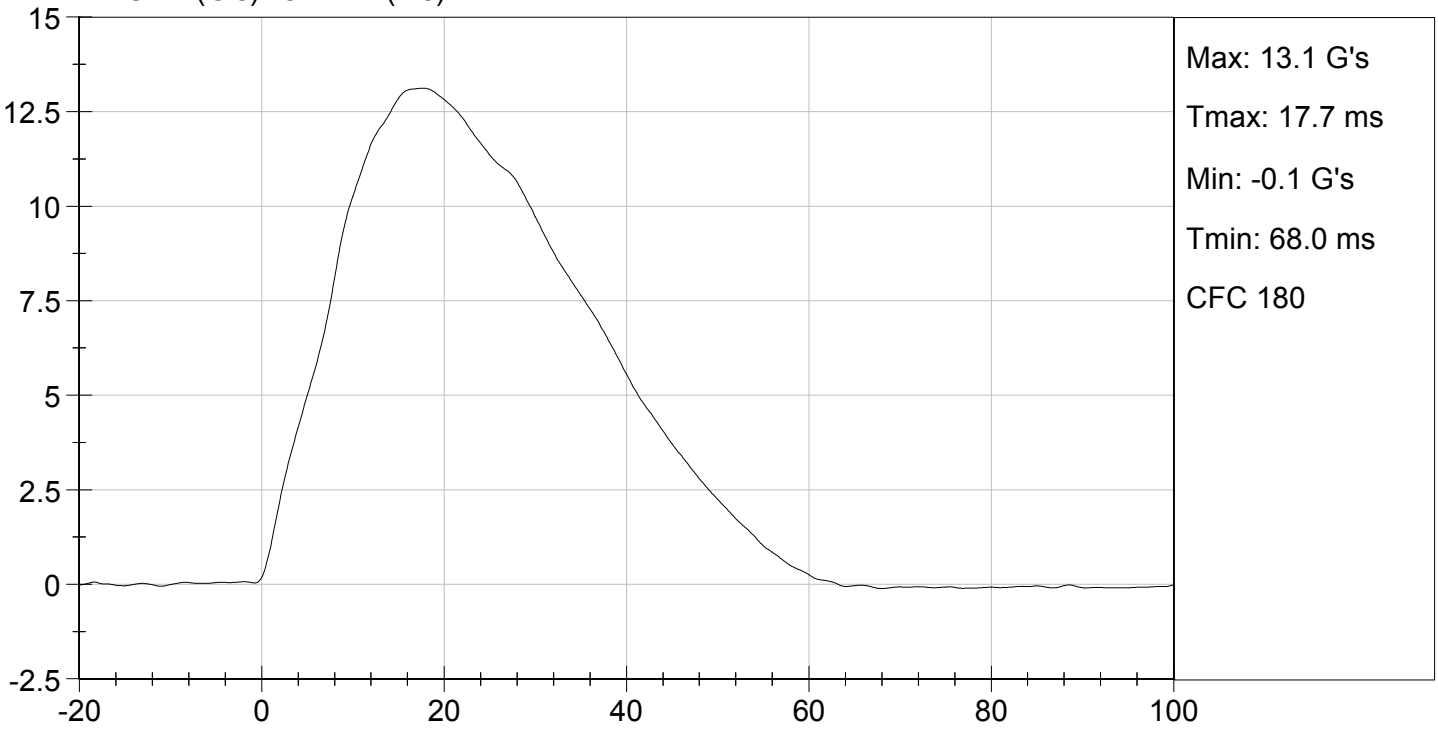
12/18/2013
Test Date

David Winkelbauer
Approved By

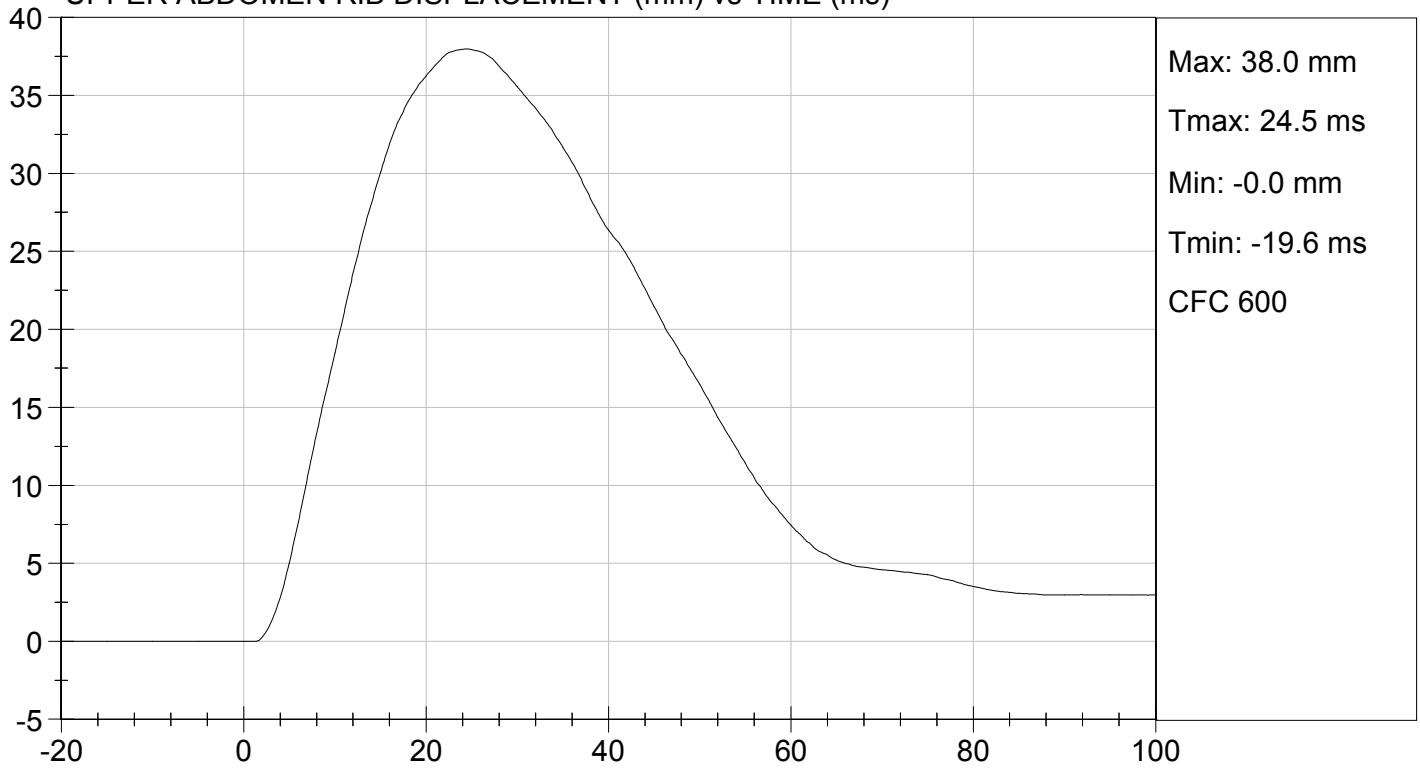
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/18/2013
TEST #: D134366

PROBE (G's) vs TIME (ms)



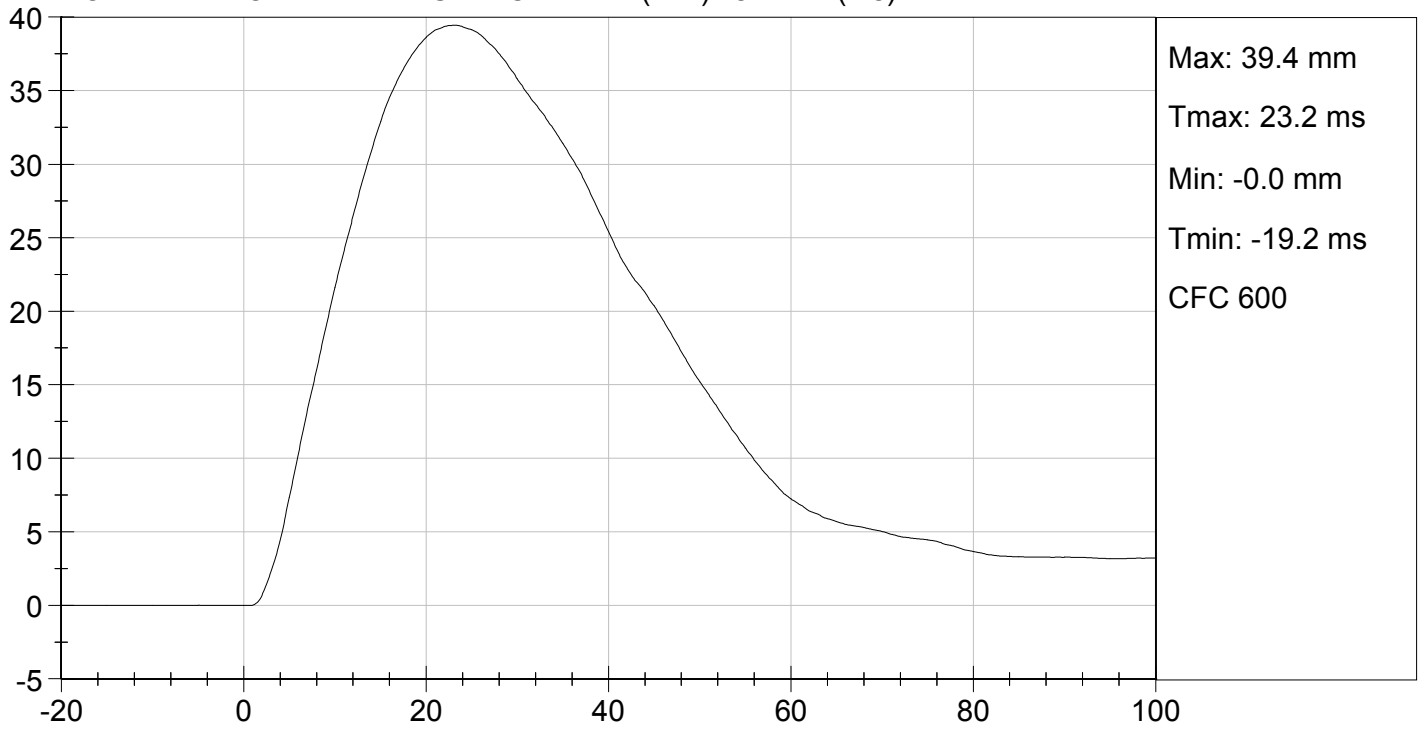
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



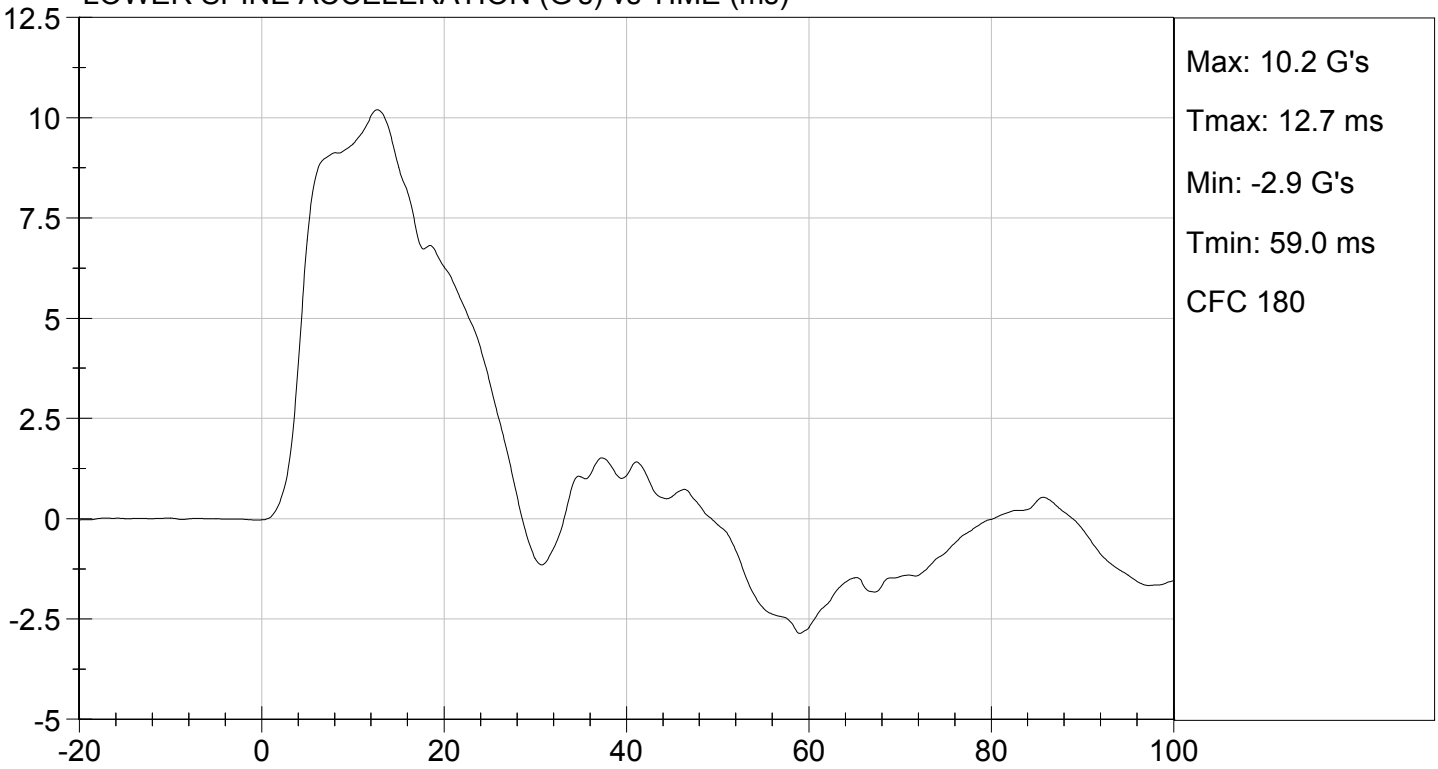
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 12/18/2013
TEST #: D134366

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134367

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	39	Pass
Peak Acetabulum Force	N	3600 to 4300	4,141	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

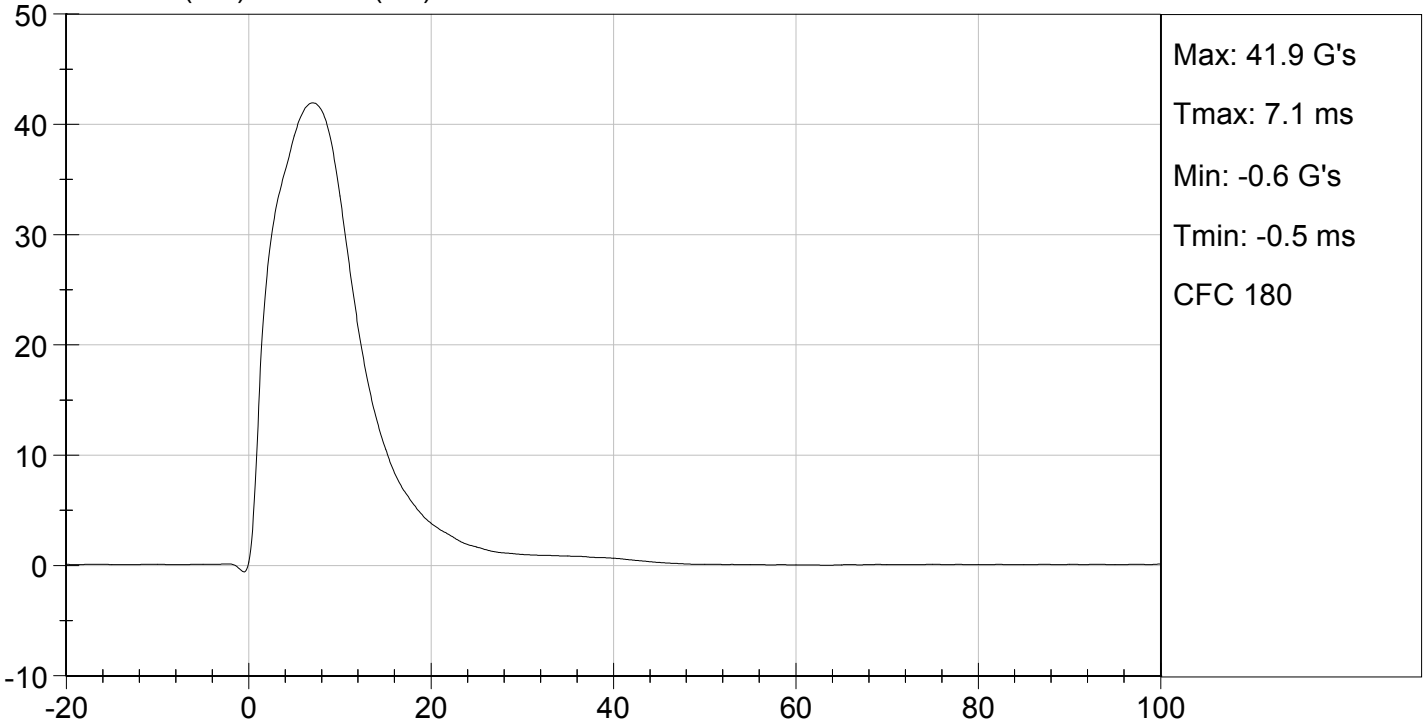
12/18/2013
Test Date

David Winkelbauer
Approved By

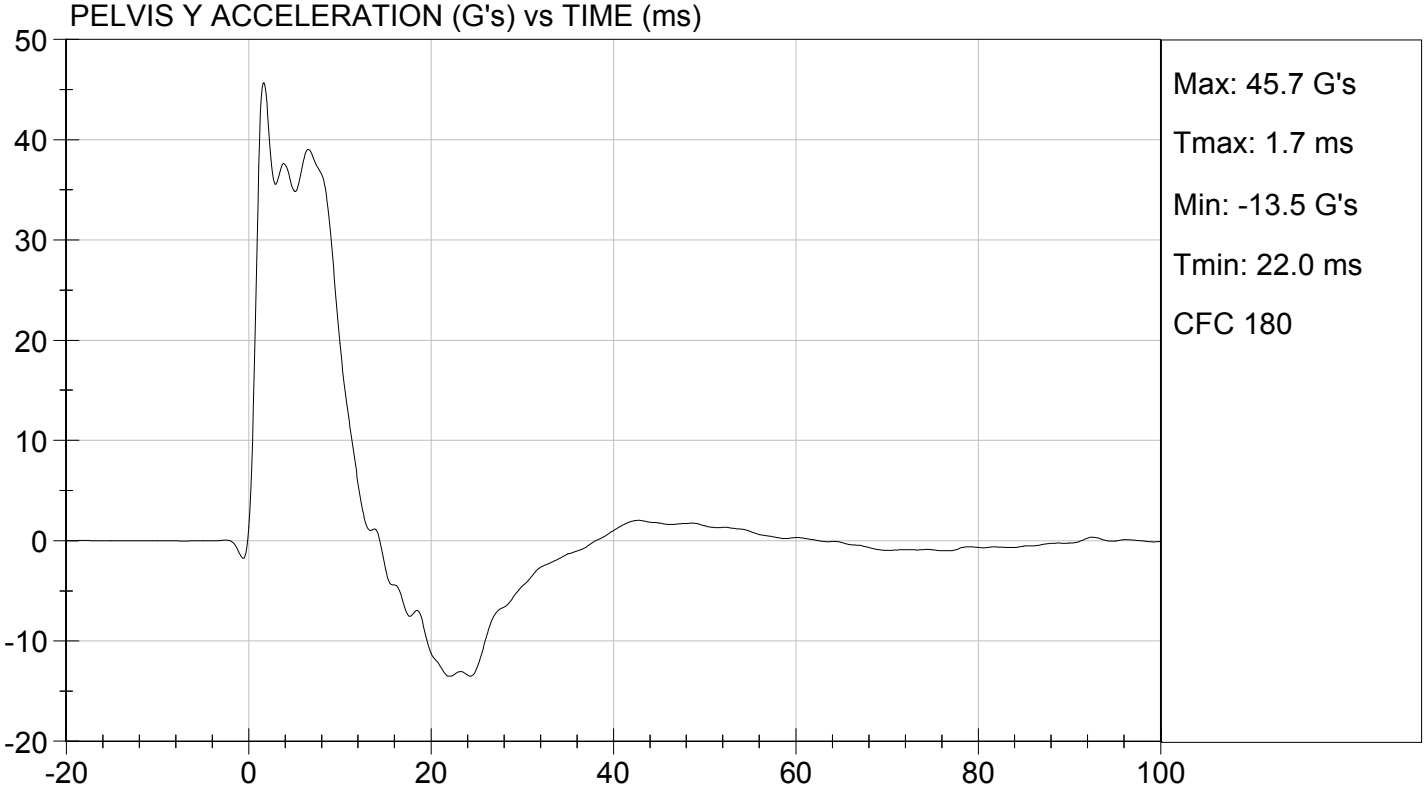
TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 12/18/2013
TEST #: D134367

PROBE (G's) vs TIME (ms)

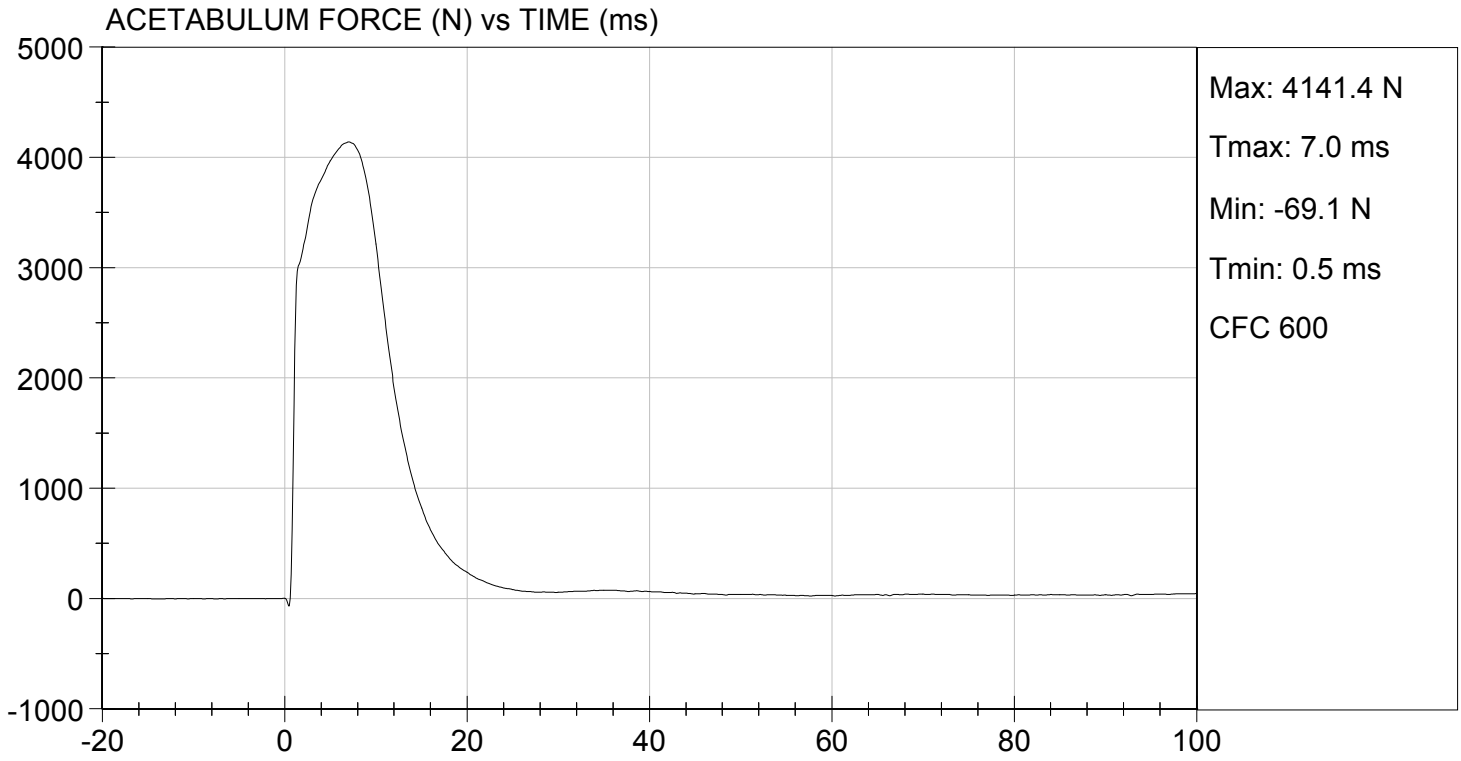


PELVIS Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 12/18/2013
TEST #: D134367



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296 **Test I.D:** D134368

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	36 to 45	41	Pass
Pelvis Y Acceleration	G's	28 to 39	34	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,973	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

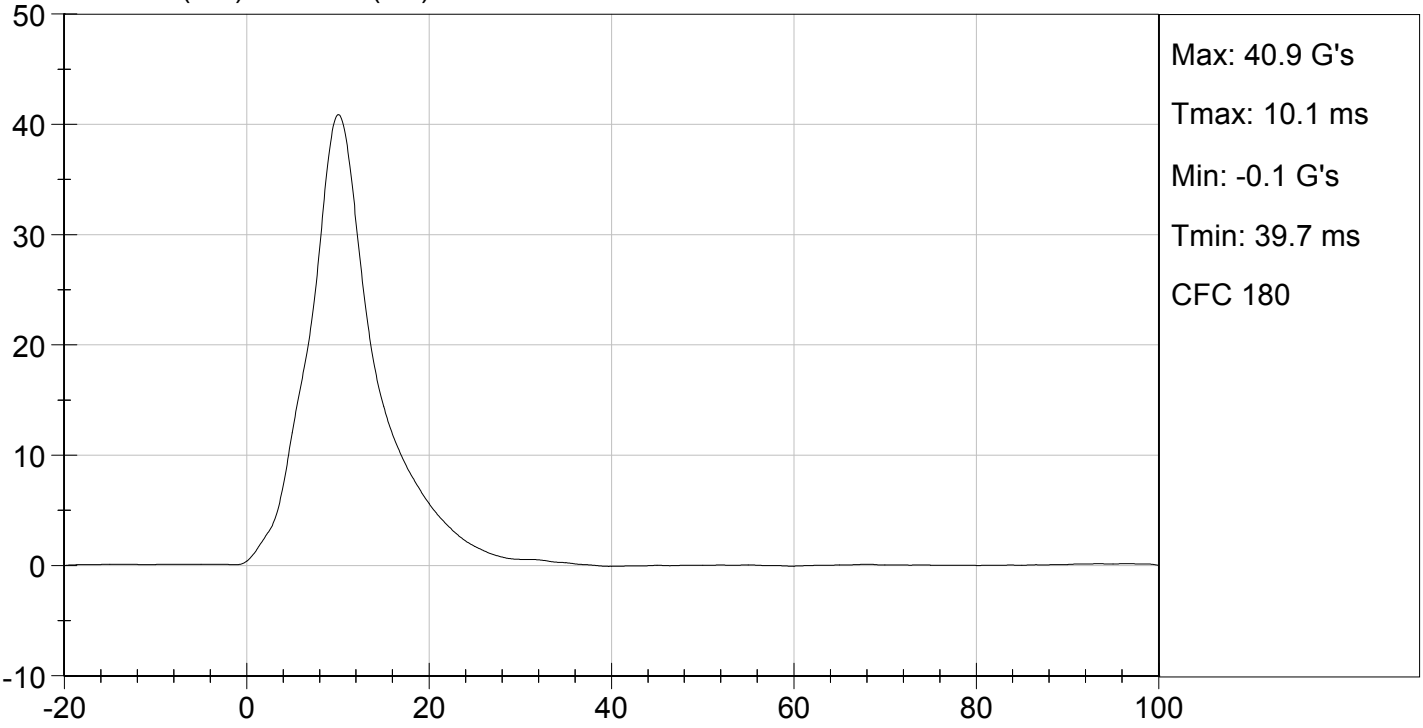
12/18/2013
Test Date

David Winkelbauer
Approved By

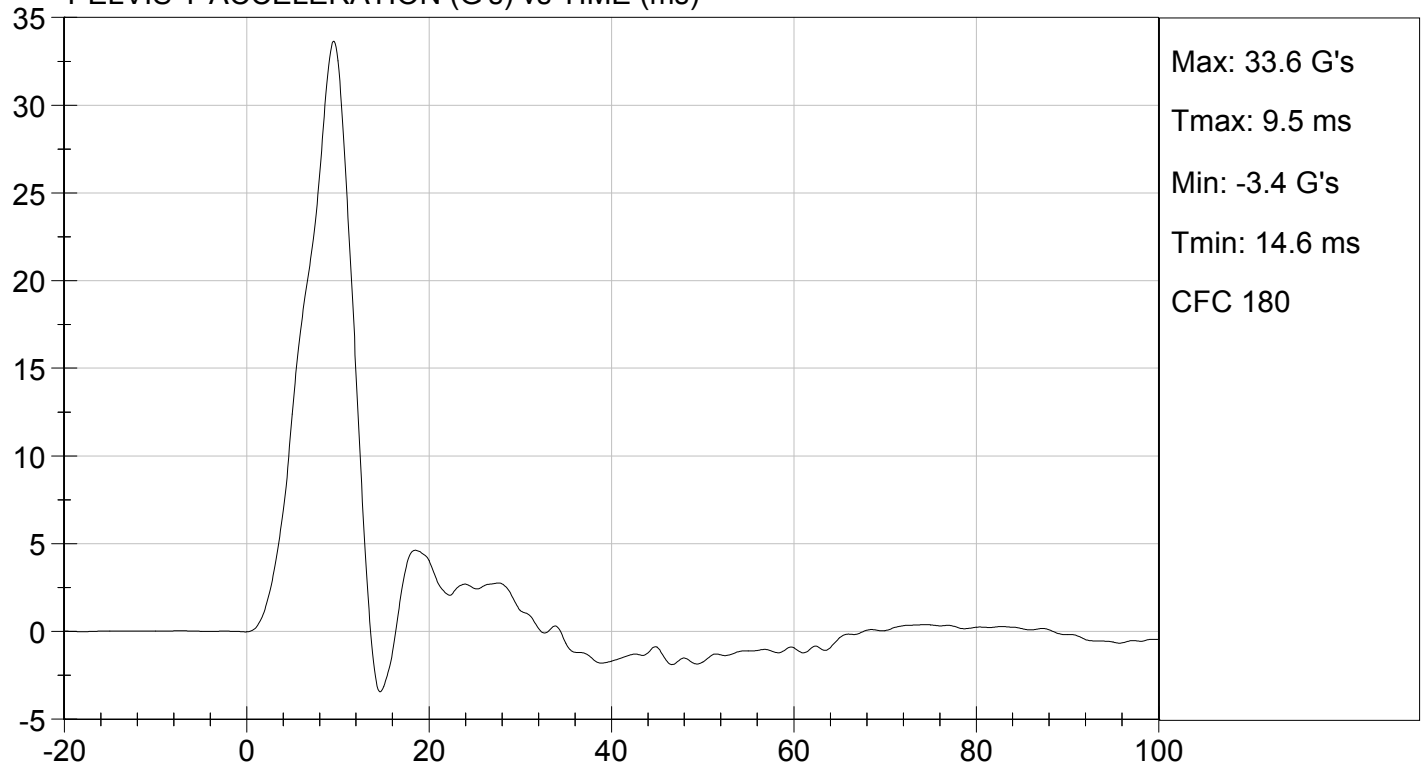
TEST DESC: ILLIAC
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 12/18/2013
TEST #: D134368

PROBE (G's) vs TIME (ms)

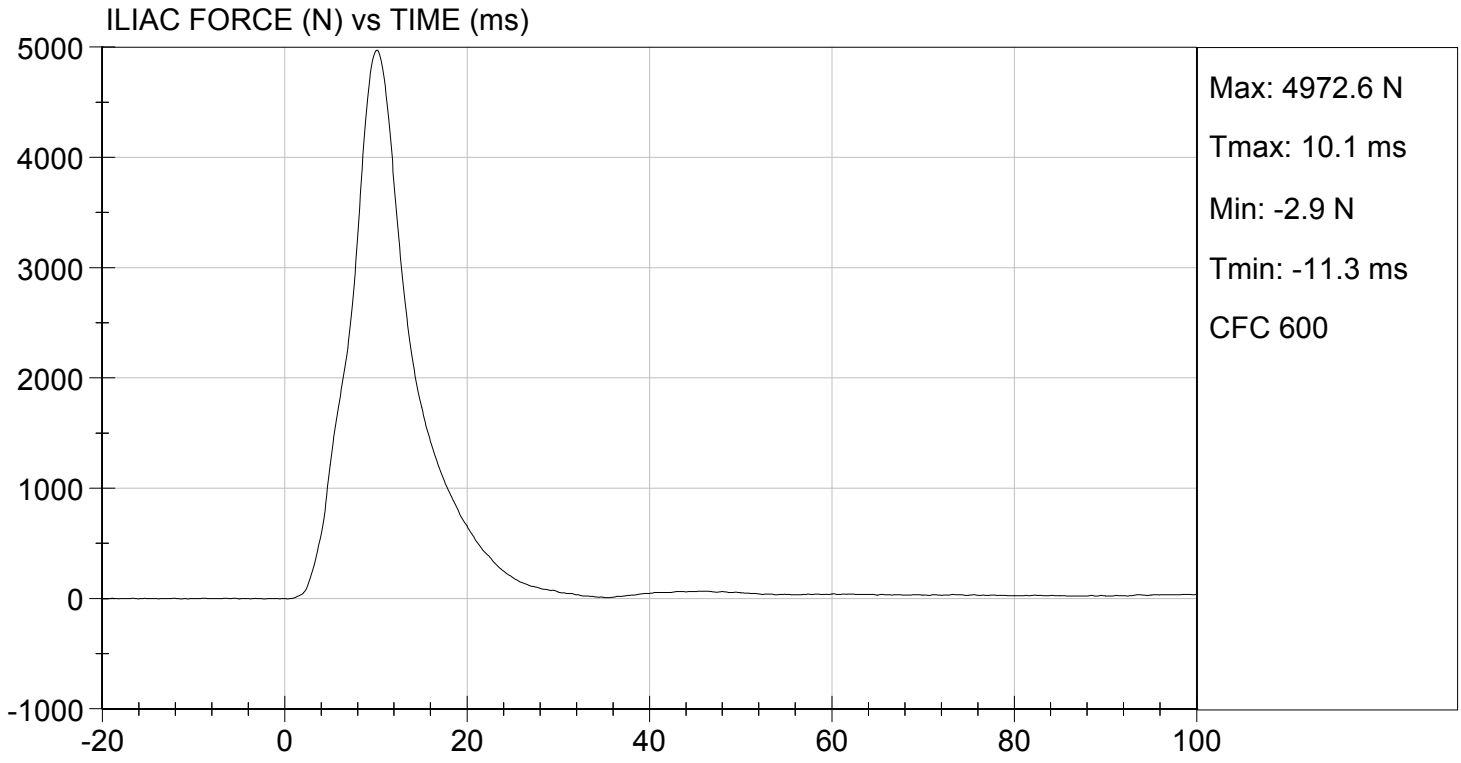


PELVIS Y ACCELERATION (G's) vs TIME (ms)

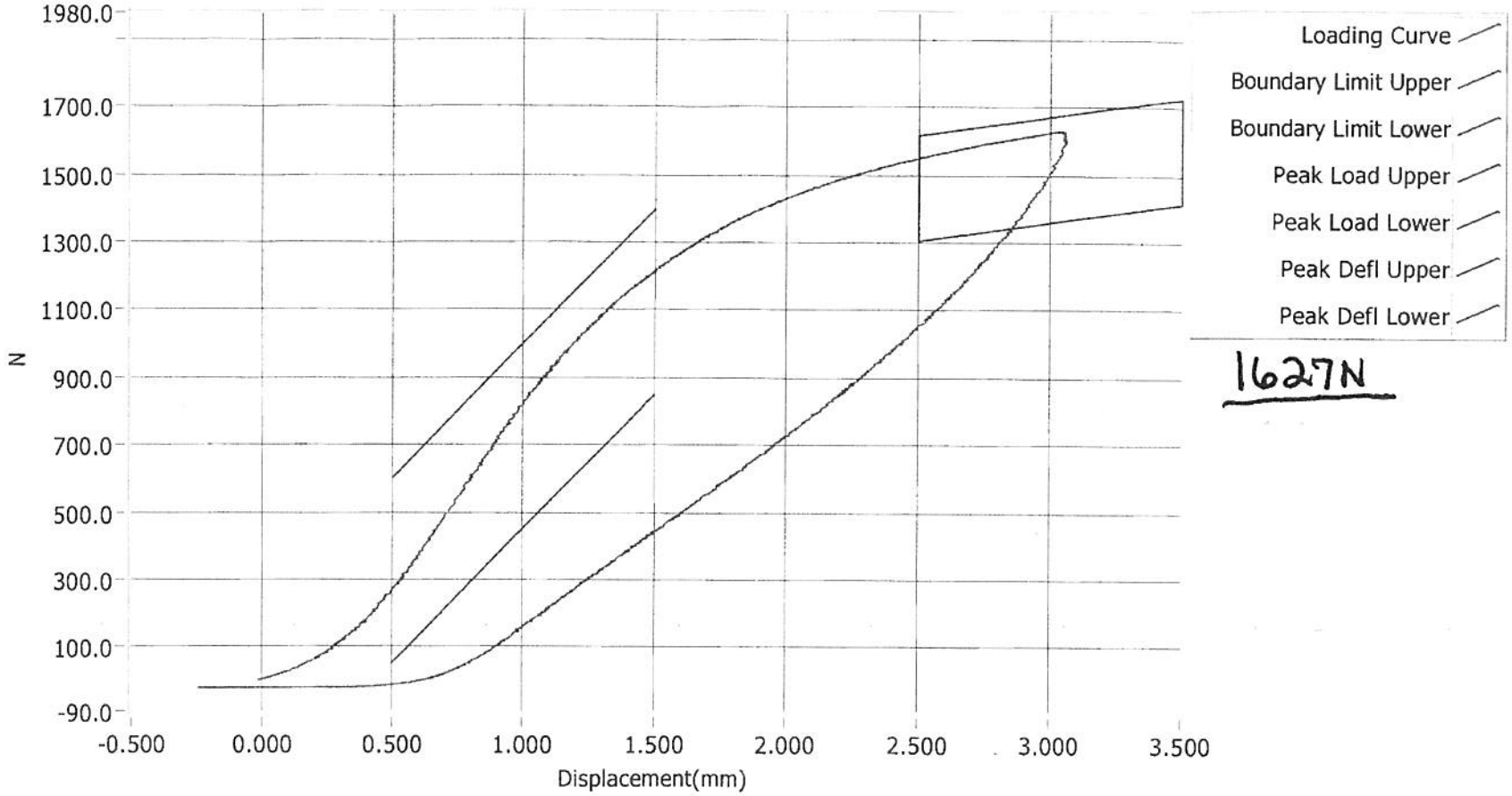


TEST DESC: ILLIAC
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 12/18/2013
TEST #: D134368



Resultant Data - SIDIIs Plug Compression



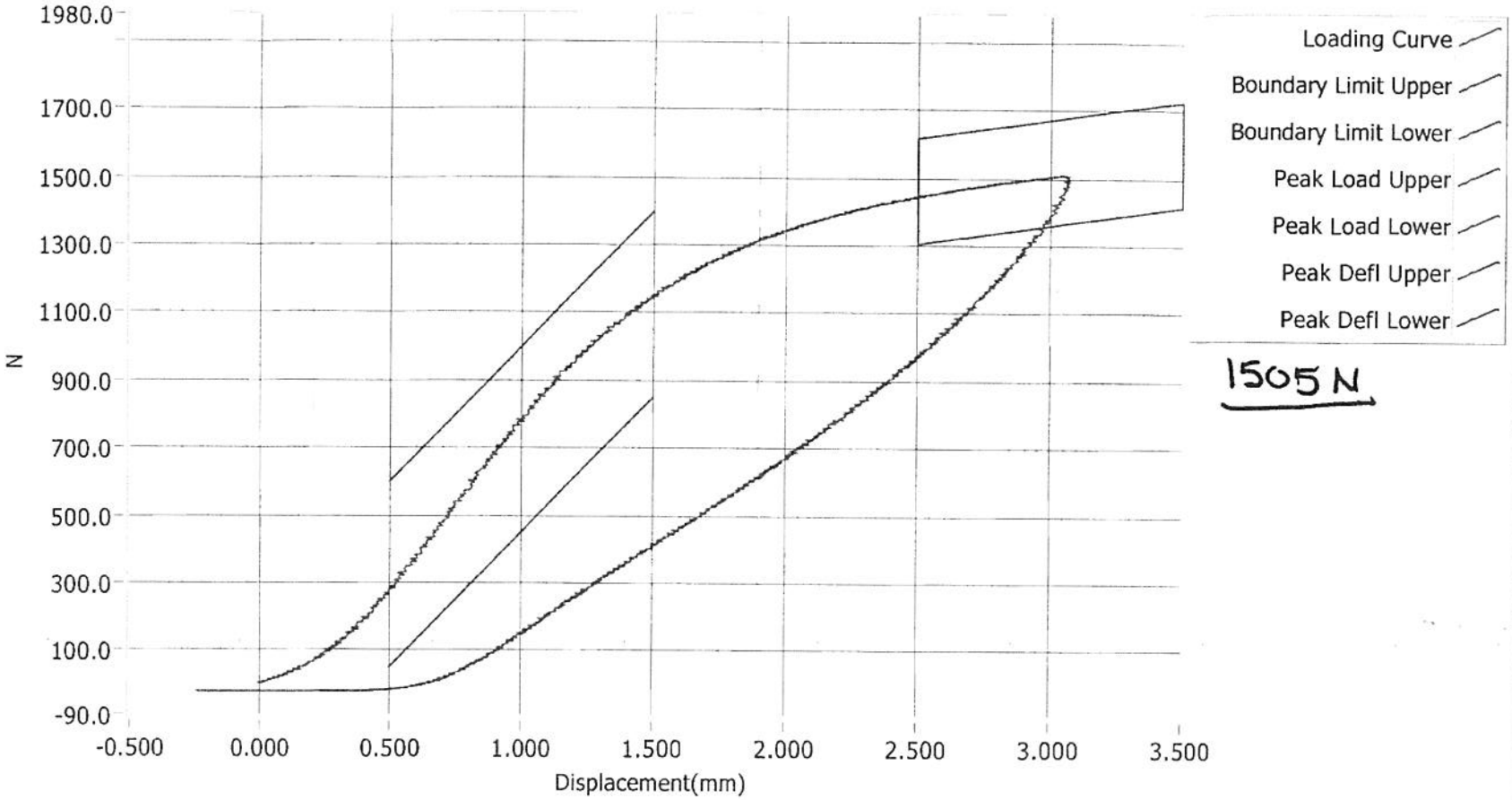
1627N

ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	63349	1/25/2013	12:19 AM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 1/25/2013 Current Time : 00:20:18

Resultant Data - SIDIIs Plug Compression



1505 N

ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	63421	1/28/2013	7:49 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 1/28/2013 Current Time : 19:49:42

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 CG Accelerometers		X	P79874	Endevco	09/17/13
		Y	P79875	Endevco	09/17/13
		Z	P79876	Endevco	09/17/13
		Xr	P79877	Endevco	09/17/13
		Yr	P79878	Endevco	09/17/13
		Zr	P79879	Endevco	09/17/13
9 Axis Head X		Y	P79709	Endevco	07/08/13
		Z	P79708	Endevco	07/08/13
9 Axis Head Y		X	P79451	Endevco	07/08/13
		Z	P79710	Endevco	07/08/13
9 Axis Head Z		X	P79711	Endevco	07/08/13
		Y	P79712	Endevco	07/08/13
Thorax Rib Displacement Potentiometers	Upper	Y	G176	Honeywell	09/19/13
	Middle	Y	G169	Honeywell	09/19/13
	Lower	Y	G164	Honeywell	09/19/13
Abdomen Load Cells	Forward	Y	ABG1532	Denton	01/03/13
	Middle	Y	ABG1534	Denton	01/03/13
	Rear	Y	ABG1535	Denton	01/03/13
Lower Spine Accelerometers (T12)		X	P78709	Endevco	09/17/13
		Y	P78710	Endevco	09/17/13
		Z	P78712	Endevco	09/17/13
Public Symphysis Load Cell		Y	PG461	Denton	01/03/13

Table 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 296		
				Serial Number	Manufacturer	Calibration Date
Head CG Accelerometers			X	P73999	Endevco	09/17/13
			Y	P74001	Endevco	09/17/13
			Z	P74002	Endevco	09/17/13
			Xr	P74003	Endevco	09/17/13
			Yr	P74004	Endevco	09/17/13
			Zr	P74005	Endevco	09/17/13
Displacement Potentiometers	Thoracic Rib	Upper	Y	G012	Servo	09/24/13
		Middle	Y	G1163	FTSS	09/24/13
		Lower	Y	G1158	FTSS	09/24/13
	Abdominal Rib	Upper	Y	G1146	FTSS	09/24/13
		Lower	Y	G1126	FTSS	09/24/13
Lower Spine Accelerometers (T12)			X	P79445	Endevco	09/23/13
			Y	P79447	Endevco	09/23/13
			Z	P79448	Endevco	09/23/13
Acetabulum Load Cell			Y	ACG268	Denton	01/03/13
Iliac Wing Load Cell			Y	IWG282	Denton	01/03/13
Pelvis Plug (struck side)				63349	FTSS	01/25/13
Pelvis Plug (non-struck side)				63421	FTSS	01/28/13

Table 3 – Vehicle Instrumentation

			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P78978	Endevco	10/16/13
	Vehicle Center of Gravity	Y	P78979	Endevco	10/16/13
	Vehicle Center of Gravity	Z	P78977	Endevco	10/16/13
2	Right Sill at Front Seat	X	P66768	Endevco	09/16/13
	Right Sill at Front Seat	Y	P66769	Endevco	09/16/13
	Right Sill at Front Seat	Z	P66767	Endevco	09/16/13
3	Right Sill at Rear Seat	X	P59625	Endevco	07/17/13
	Right Sill at Rear Seat	Y	P59623	Endevco	07/17/13
	Right Sill at Rear Seat	Z	P59624	Endevco	07/17/13
4	Left Sill at Front Door	Y	P72735	Endevco	08/15/13
5	Left Sill at Rear Door	Y	P78968	Endevco	07/24/13
6	Left A-Post Lower	Y	P73708	Endevco	08/13/13
7	Left A-Post Middle	Y	P73707	Endevco	08/13/13
8	Left B-Post Lower	Y	P66840	Endevco	11/20/13
9	Left B-Post Middle	Y			
10	Front Seat Track	Y	P78881	Endevco	07/24/13
11	Rear Seat Track or Structure	Y	P63334	Endevco	10/23/13
12	Right Rear Occ. Compartment	Y	P66827	Endevco	10/23/13
13	Engine Block	X	P66754	Endevco	09/26/13
	Engine Block	Y	P66753	Endevco	09/26/13
14	Rear Floorpan Above Axle	X	P73703	Endevco	09/26/13
	Rear Floorpan Above Axle	Y	P73705	Endevco	09/26/13
	Rear Floorpan Above Axle	Z	P73704	Endevco	09/26/13

Table 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P66819	Endevco	12/11/13
MDB Center of Gravity	Y	P66820	Endevco	12/11/13
MDB Center of Gravity	Z	P66821	Endevco	12/11/13
Left Frame at Rear Axle Centerline	X	P74310	Endevco	12/11/13
Left Frame at Rear Axle Centerline	Y	P74311	Endevco	12/11/13