

REPORT NUMBER: SINCAP-MGA-2014-011

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

**TOYOTA MOTOR CORPORATION
2014 Lexus IS250 4-Dr Sedan
NHTSA No.: M20145102**

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



Test Date: August 14, 2013

Final Report Date: August 30, 2013

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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Approval Date: August 30, 2013

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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15. Supplementary Notes																																																							
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the 2014 Lexus IS250 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 August 14, 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 21.8° C. The target vehicle post-test maximum crush was 241 mm at level 3. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th colspan="3">Driver ATD (ES-2re)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>99</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>44</td> <td>23</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>858</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>2107</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th colspan="3">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>89</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>33</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>3072</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>18</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td>15</td> </tr> </tbody> </table> *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.					Driver ATD (ES-2re)			Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	99	Maximum Thorax Rib Deflection	mm	44	23	Total Abdominal Force	N	2500	858	Pubic Symphysis Force	N	6000	2107		Passenger ATD (SID-IIs)			Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	89	Resultant Lower Spine Acceleration	Gs	82	33	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3072	Maximum Thoracic Rib Deflection	mm	38*	18	Maximum Abdomen Rib Deflection	mm	45*	15
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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 Lexus IS250 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 2012.

SECTION 2 SUMMARY OF TEST RESULTS

A 2014 Lexus IS250 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 August 14, 2013. Pretest and post test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS NCAP Side Laboratory Test Procedure dated September 2012. 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

9 Axis Head CG 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	99
Maximum Thorax Rib Deflection	mm	44	23
Total Abdominal Force	N	2500	858
Pubic Symphysis Force	N	6000	2107

Passenger ATD (SID-IIs)			
Measurement Description	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	89
Resultant Lower Spine Acceleration	Gs	82	33
Total Pelvic Force	N	5525	3072
Maximum Thoracic Rib Deflection	mm	38*	18
Maximum Abdomen Rib Deflection	mm	45*	15

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Abdomen/Pelvis Airbag	Yes	Yes	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

There was no valid data collected for:
Left Lower A-Post Y after 16ms

Vehicle CG X is questionable
Vehicle CG Y is questionable
Vehicle CG Z is questionable
Left Front Sill Y is questionable

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 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20145102	Traction Control System (TCS)	Yes
Model Year	2014	Auto-Leveling System	No
Make	Lexus	Automatic Door Locks (ADL)	Yes
Model	IS250	Power Window Auto-Reverse	Yes
Body Style	Sedan	Other Optional Feature	N/A
VIN	JTHBF1D26E5001834	Driver Front Airbag	Yes
Body Color	Nebula Gray Pearl	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	183 / 114	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.5	Driver Torso Airbag	No
Type/No. Cylinders	6	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Longitudinal	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	Rear	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	Yes
Sunroof/T-Top	Yes	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	Yes	Driver 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?	Yes
---	-----

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation	GVWR (kg)	2100
Date of Manufacture	05/13	GAWR Front (kg)	1089
Vehicle Type	Passenger Car	GAWR Rear (kg)	1154

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	(A)
Capacity Weight (VCW) (kg)				374	(B)
DSC x 68.04 kg				340	(A-B)
Rated Cargo and Luggage Weight (RCLW)				34	

VEHICLE SEAT TYPE

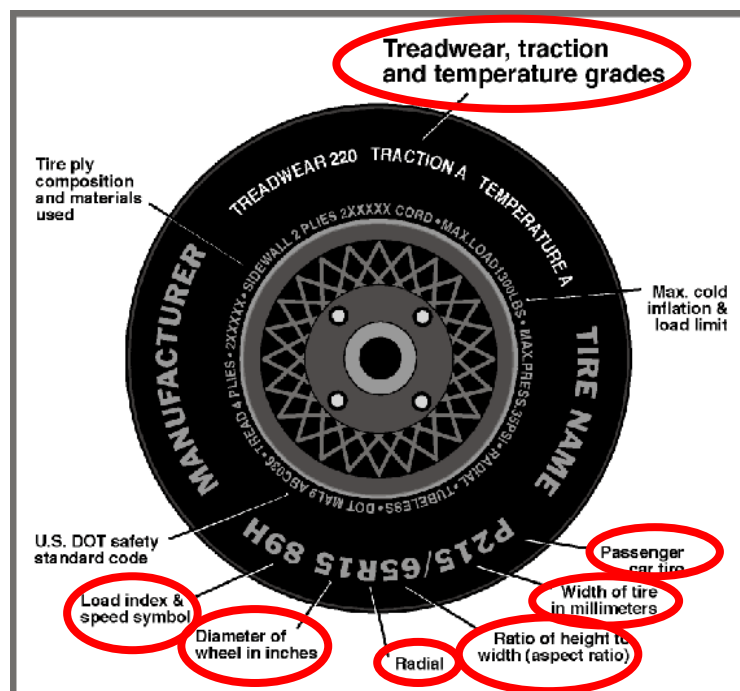
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X						X
Rear or Second Row			X		X		
Third Row Seat							

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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	250	250
Recommended Tire Size	P225/40R18	P255/35R18
Tire Size on Vehicle	P225/40R18	P255/35R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Turanza	Turanza
Treadwear	140	140
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	3 Polyester	3 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	88Y	90Y
Tire Material	Rubber	Rubber
DOT Safety Code Left	ELT7 DKJ 0513	ELT5 DKJ 1013
DOT Safety Code Right	ELT7 DKJ 0513	ELT5 DKJ 1013

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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013

TEST PRESSURES

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

MDB TIRE SPECIFICATIONS

	Requirement	Units	LF	RF	LR	RR
Tire Size	P205/75R15	N/A	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire	200 ± 21	kPa	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	436.4	388.3		479.9	438.6		476.7	459.6	
Right	kg	425.9	381.9		449.0	421.0		428.2	430.9	
Ratio	%	52.8	47.2		51.9	48.1		50.4	49.6	
Totals	kg	862.3	770.2	1632.5	928.9	859.6	1788.5	904.9	890.5	1795.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1632.5	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129.3	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	34	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1795.8	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **YES**

TEST VEHICLE ATTITUDES AND CG

	Units	Fully Loaded	As Tested	Meets Requirement***
Left Front	mm	661	663	Yes
Right Front	mm	672	670	Yes
Right Rear	mm	661	659	Yes
Left Rear	mm	648	656	Yes
Vehicle CG (Aft of Front Axle)	mm	1387	1344	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	33	20	

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

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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Weight of Ballast, if any	0.0
Right taillight, cargo area cover, divider, jack & tools, first aid kit, spare tire, subwoofer, cargo net, underbody plastic.	27.7

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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013

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	22.0	9.0	15.5
Front Passenger Seat	22.4	9.2	15.8
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rear- most	Mid- Fore/Aft	Forward- Most
Driver Seat	15.5	0	Max	50	50	50
	15.5	0	Mid	25	25	25
	15.5	0	Min	0	0	0
Front Passenger Seat	15.8	0	Max	54	54	54
	15.8	0	Mid	27	27	27
	15.8	0	Min	0	0	0
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 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

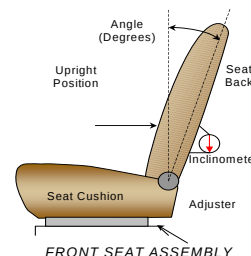
NHTSA No. M20145102
 Test Date: 8/14/2013

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	260		130	
Front Passenger Seat	260		130	
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 2012. 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	52.2		5.4	
Front Passenger Seat	51.4		5.0	
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	17.0*	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	17.0*	Fixed
Rear Center Seat	Fixed	Fixed	17.0*	Fixed

*Seat back was fixed, angle measured on seatback.

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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013

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

HEAD RESTRAINT ADJUSTMENT

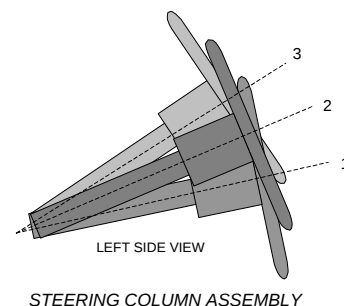
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	1	
Rear Seat	2	Lowest

STEERING COLUMN ADJUSTMENT

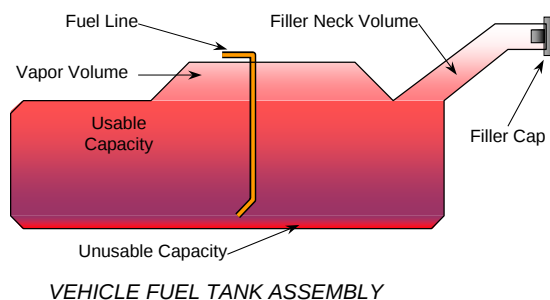
Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	71.2	252
Geometric Center, Position 2	69.5	232
Uppermost, Position 3	67.8	212
Telescoping Steering Wheel Travel		40
Test Position	69.5	232



FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler pipe. The vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on. The fuel pipe is on the left side.



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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013

FUEL TANK CAPACITY DATA

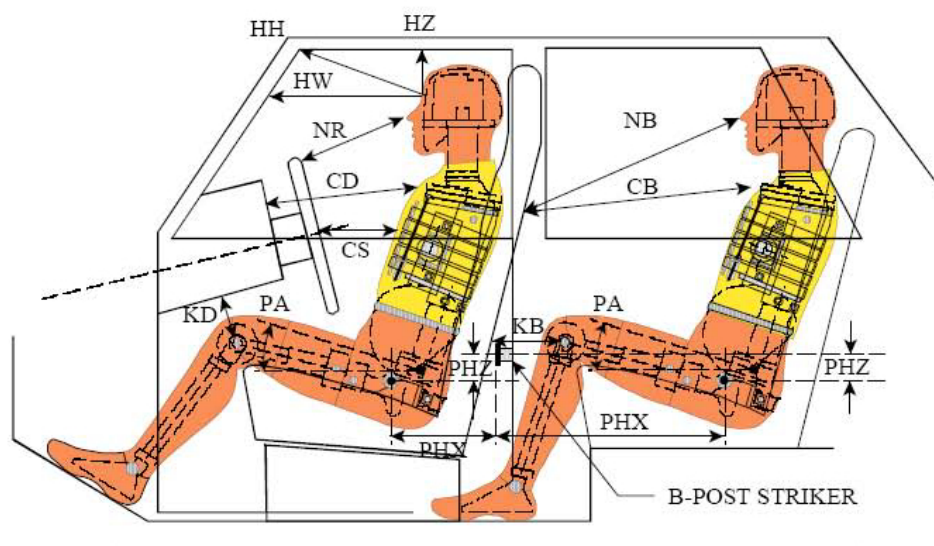
	Liters
Usable Capacity of "Standard" Tank (see Form No. 1)	66.2
Usable Capacity of "Optional" Tank (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	66.3
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	61.6
Actual Amount of Solvent Used	61.7
1/3 of Usable Capacity	22.1

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

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013



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

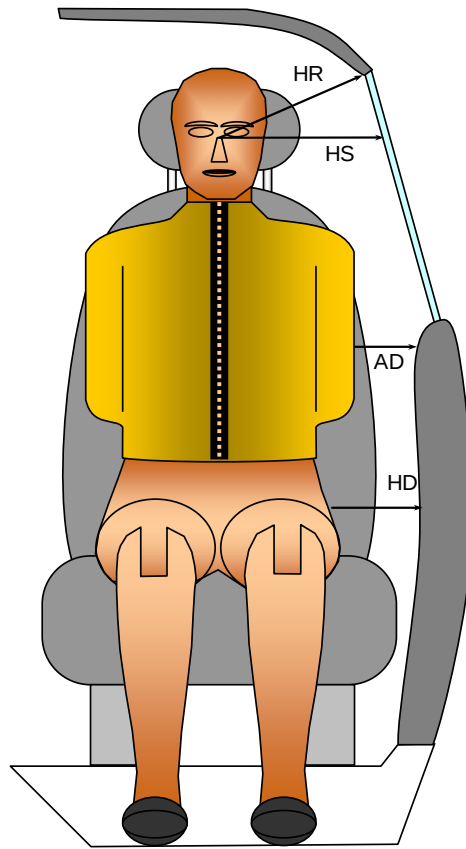
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver S/N 032		Passenger S/N 306	
			Length (mm)	Angle(°)	Length (mm)	Angle(°)
HH		Head to Header	372	11.5		
HW		Head to Windshield	587			
HZ	HZ	Head to Roof Liner	122		220	
NR	NB	Nose to Rim/Seat Back	450	17.1	490	13.3
CD	CB	Chest to Dashboard/Seat Back	569	5.2	486	9.4
CS		Chest to Steering Wheel	383	9.9		
KDL	KBL	Left Knee to Dash/Seat Back	199	22.2	240	11.7
KDR	KBR	Right Knee to Dash/Seat Back	202	21.2	244	10.9
PAX	PAX	Pelvic Tilt Angle X		23.7		24.6
	PAY	Pelvic Tilt Angle Y		-1.4		-1.0
PHX	PHX	Hip Point to Striker (X-Axis)	144		291	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	244		319	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



FRONT VIEW OF DUMMY

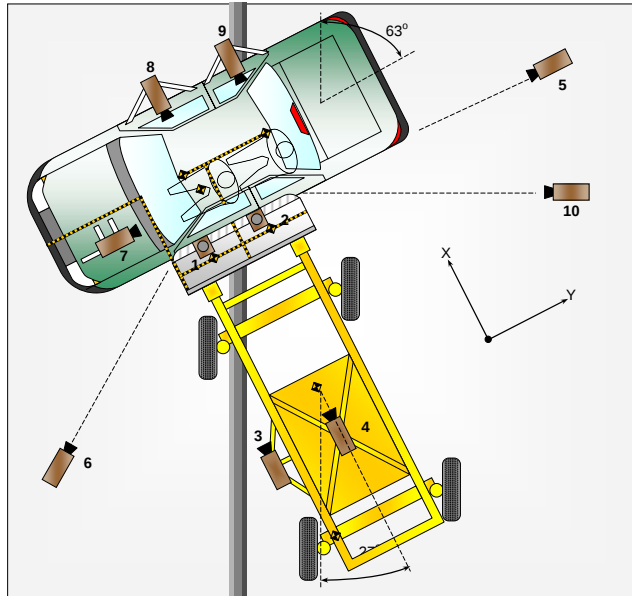
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver S/N 032	Passenger S/N 306
HR	Head to Side Header	mm	257	241
HS	Head to Side Window	mm	296	380
AD	Arm to Door	mm	100	186
HD	Hip Point to Door	mm	156	217

DATA SHEET NO. 5 CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X*	Y*	Z*		
1	Overhead Overall	160	200	-5060	14	1000
2	Overhead Close-Up	100	60	-5060	20	1000
3	Left Impact Point (MDB)				50	1000
4	Side Overall (MDB)				16	1000
5	Rear	70	4840	-1140	24	1000
6	Left Front	4090	-4200	-1170	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

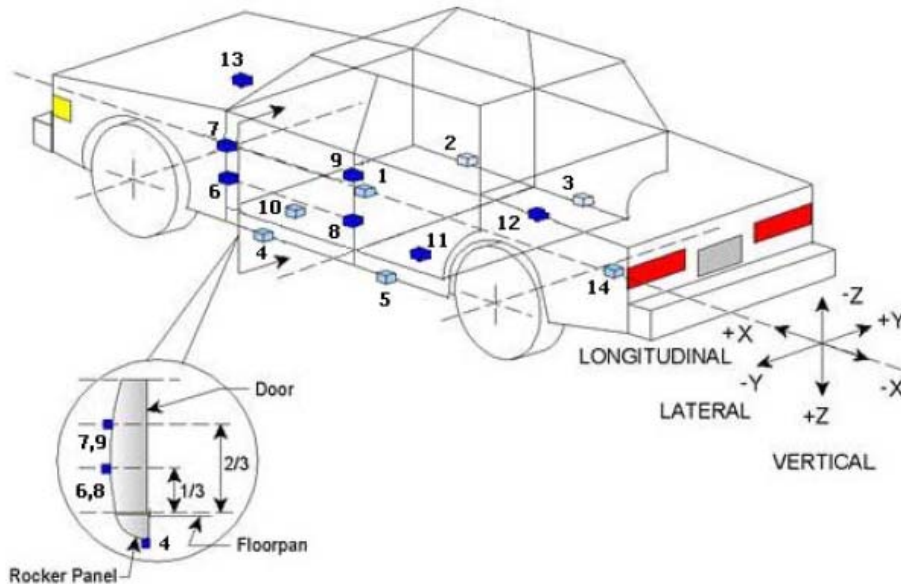
INSTRUMENTATION

Driver Dummy Channels	22
Passenger Dummy Channels	22
Vehicle Structure Accelerometers	23
MDB Accelerometers	5
MDB Contacts	2
Total	74

DATA SHEET NO. 6 **TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013



TEST VEHICLE ACCELEROMETER LOCATIONS

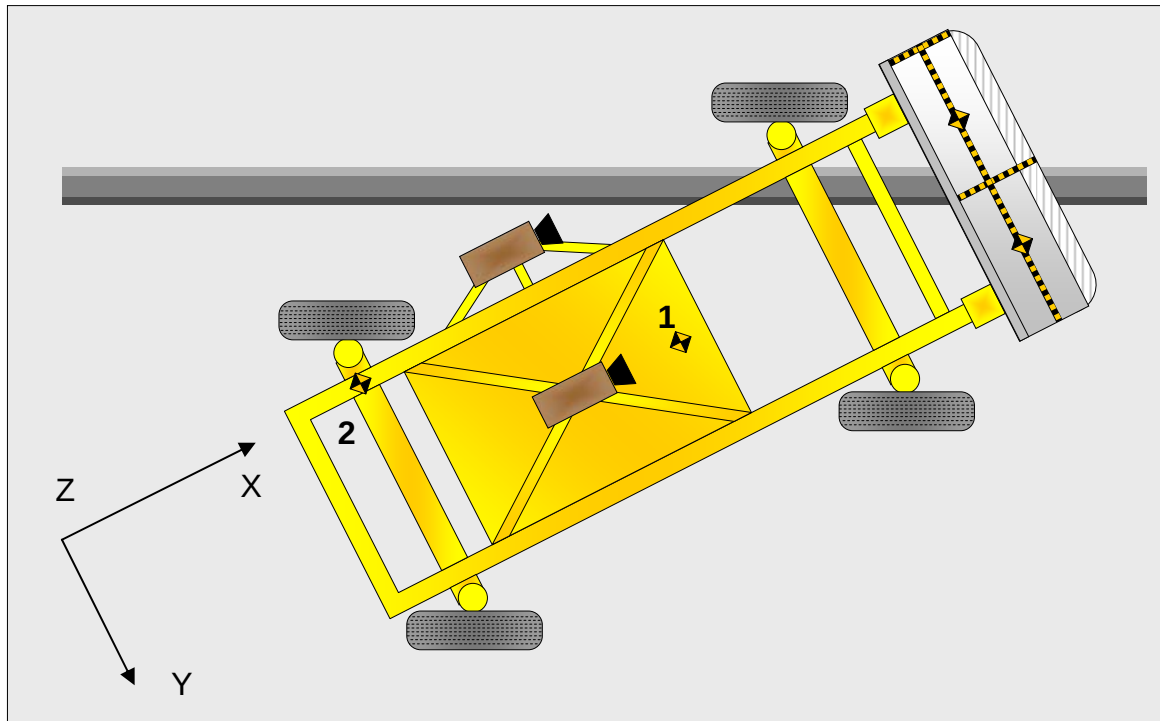
Accelerometer Location				
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2645	200	-245
2	Right Sill at Front Seat	2660	722	-205
3	Right Sill at Rear Seat	1750	725	-210
4	Left Sill at Front Door	2660	-722	-210
5	Left Sill at Rear Door	1700	-725	-215
6	Left Lower A-Post	3206	-840	-540
7	Left Middle A-Post	3210	-845	-710
8	Left Lower B-Post	2110	-725	-610
9	Left Middle B-Post	2100	-730	-820
10	Front Seat Track	2280	-400	-305
11	Rear Seat Structure	1840	-390	-330
12	Rt. Rear Occ. Compartment	1872	405	-240
13	Engine Block	3870	0	-865
14	Rear Above Axle	900	0	-450

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 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



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 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013

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	Headliner	Curtain Airbag
Left Side of Head	Curtain Airbag, Headliner	Curtain Airbag
Back of Head	Curtain Airbag, Headrest, Headliner	Center Seatback, RR Seatback
Left Shoulder	Side Airbag	Side Airbag, Seatback
Upper Torso	Side Airbag, Seatback	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback	Side Airbag, Seatback
Left Hip	Side Airbag, Seat pan	Door Panel, Seatback, Seat Pan
Left Knee	Door Panel	Door Panel

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	None
Side Window Damage	Left Front and Left Rear Windows Broken
Other Notable Effects	None

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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013

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/Abdomen/Pelvis Airbag	Yes	Yes	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		2796
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		458
Actual Impact Point (Aft of Front Axle)	mm		454
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	+4
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	-6

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
Test Date: 8/14/2013

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	61.92
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.22
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.8
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.9
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27.3

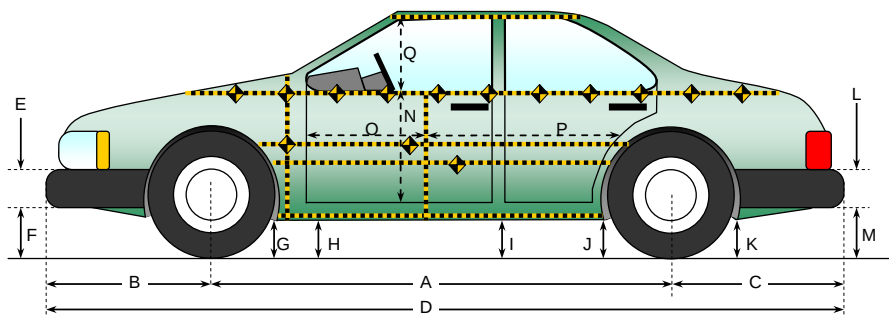
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Left	207
B	Top of Bumper	533	800	Right	110
C	Mid-Level	686	800	Left	145
D	Top of Stack	813	800	Left	178

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



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

LEFT SIDE VIEW

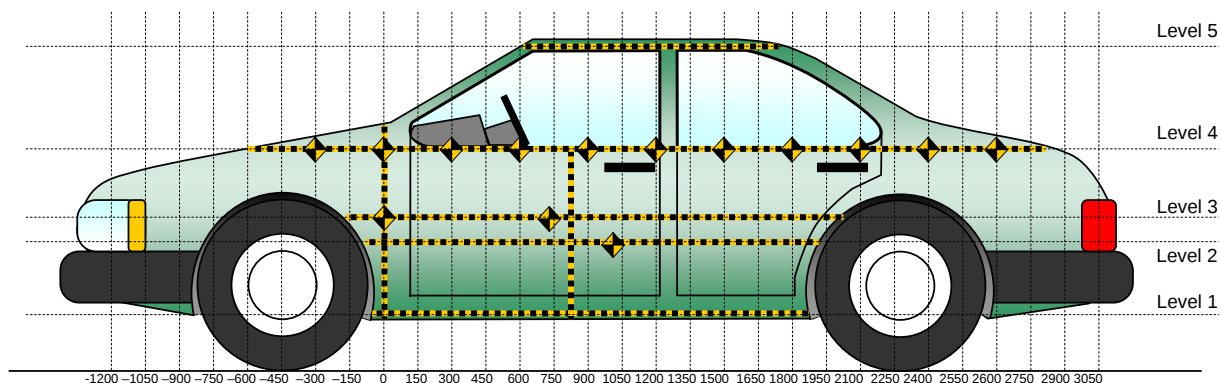
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2796	2802	-6
B	Front Axle to FSOV	830	830	0
C	Rear Axle to RSOV	1042	1042	0
D	Total Length at Centerline	4668	4674	-6
E	Front Bumper Thickness	115	115	0
F	Front Bumper Bottom to Ground	170	188	-18
G	Sill Height at Front Wheel Well	189	195	-6
H	Sill Height at Front Door Leading Edge	192	197	-5
I	Sill Height at B Pillar	195	206	-11
J1	Sill Height at Rear Wheel Well	193	196	-3
J2	Pinch Weld Height at Rear Wheel Well	193	195	-2
K	Sill Height Aft of Rear Wheel Well	193	186	7
L	Rear Bumper Thickness	200	200	0
M	Rear Bumper Bottom to Ground	262	260	2
N	Sill Height to Window Bottom Sill	753	655	98
O	Front Door Leading Edge to Impact CL	742	742	0
P	Rear Door Trailing Edge to Impact CL	1215	1215	0
Q	Front Window Opening	382	353	29
R	Right Side Length	3737	3725	12
S	Left Side Length	3737	3705	32
T	Vehicle Width at B Post	1780	1600	180

DATA SHEET NO. 11 **TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



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	218	49	300
2	Occupant Hip Point	473	228	600
3	Mid Door	621	241	1350
4	Window Sill	943	133	1650
5	Window Top	1330	19	1500

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 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013

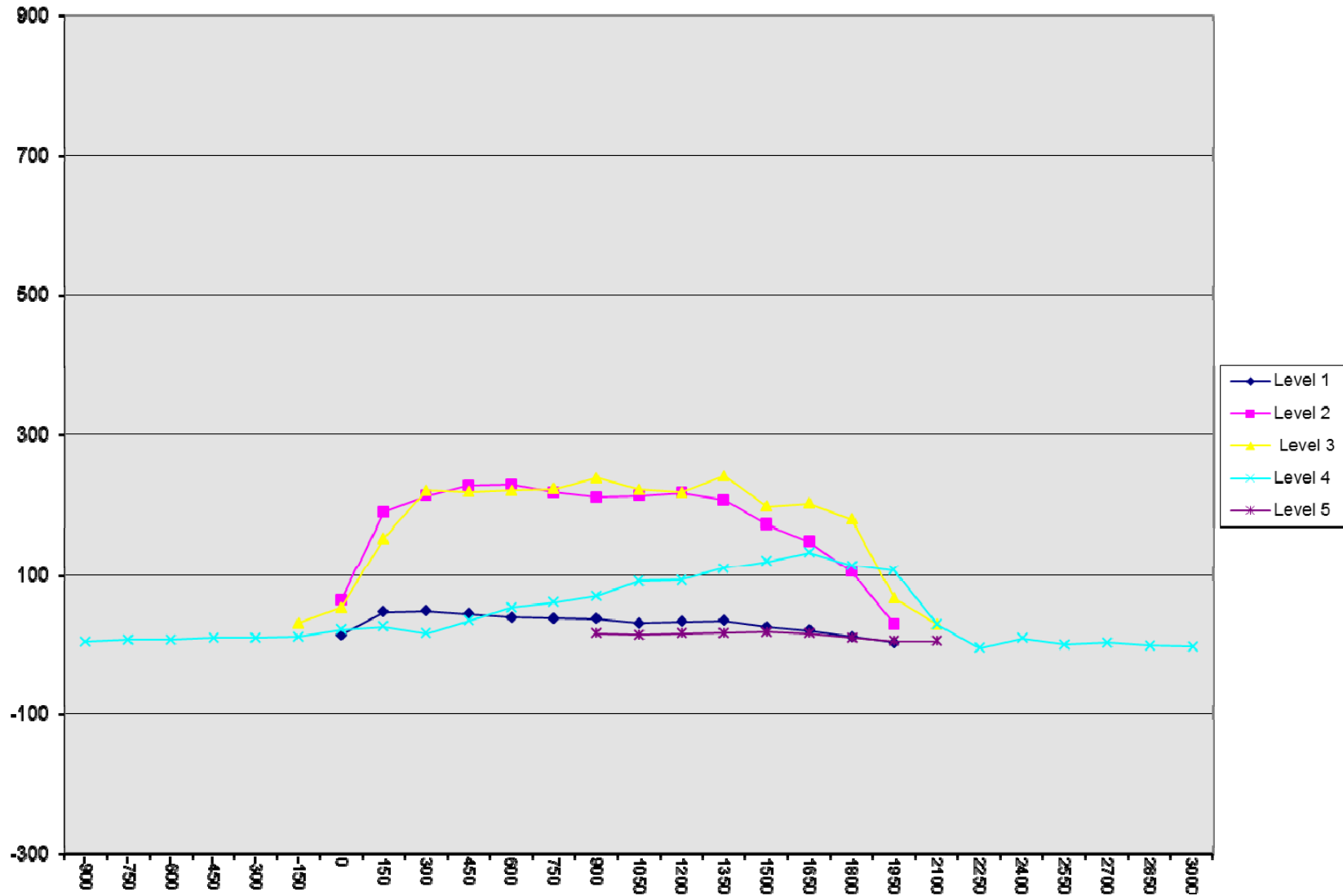
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900				470					475					5	
-750				446					454					8	
-600				425					433					8	
-450				400					411					11	
-300				385					396					11	
-150			200	365				232	377				32	12	
0	240	207	205	353		255	272	259	376		15	65	54	23	
150	246	210	204	338		294	399	357	365		48	189	153	27	
300	250	212	202	333		299	424	422	350		49	212	220	17	
450	255	214	202	325		300	441	420	360		45	227	218	35	
600	262	214	204	312		302	442	424	366		40	228	220	54	
750	265	217	204	304		304	434	426	366		39	217	222	62	
900	262	218	206	297	536	300	428	444	368	553	38	210	238	71	17
1050	258	221	208	282	526	290	433	429	374	541	32	212	221	92	15
1200	246	225	210	277	523	280	441	427	370	540	34	216	217	93	17
1350	233	230	215	270	522	268	436	456	380	540	35	206	241	110	18
1500	244	235	221	268	521	270	407	418	388	540	26	172	197	120	19
1650	253	237	225	268	520	274	385	426	401	537	21	148	201	133	17
1800	263	239	231	270	526	275	344	410	384	537	12	105	179	114	11
1950	273	219	231	274	534	277	249	298	380	540	4	30	67	106	6
2100			197	282	557			227	312	563			30	30	6
2250				289					285					-4	
2400				302					312					10	
2550				315					316					1	
2700				331					335					4	
2850				352					352					0	
3000				376					374					-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 Lexus IS250 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

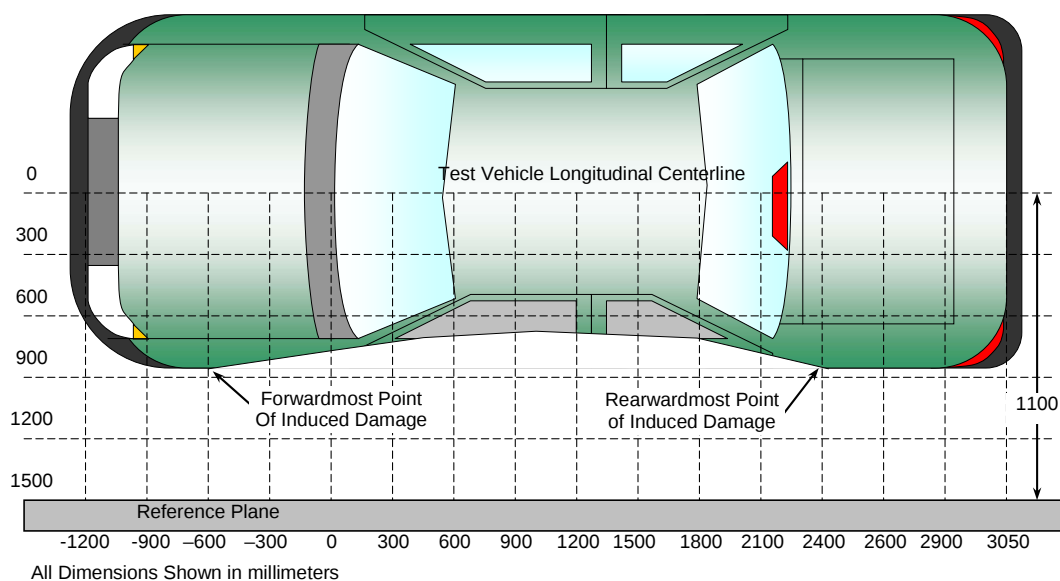
NHTSA No. M20145102
Test Date: 8/14/2013



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

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



TOP VIEW

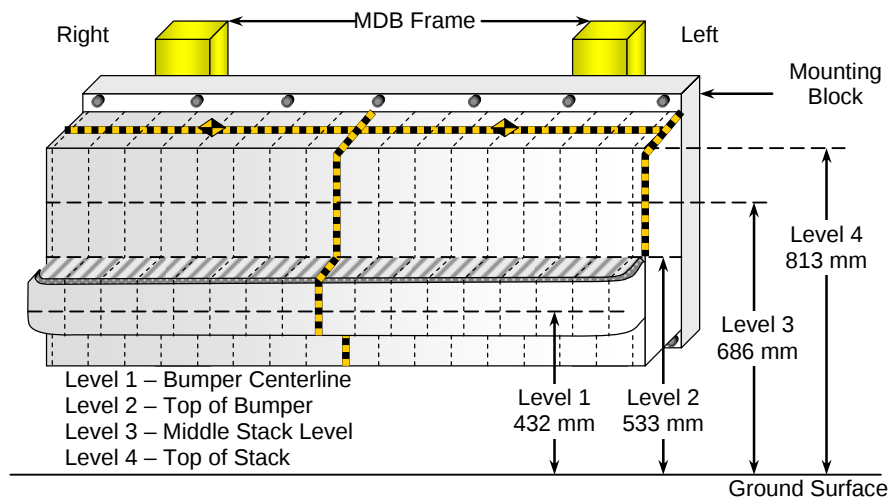
DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2700	331	335	4
2	2040	278	333	55
3	1380	216	454	238
4	720	205	458	253
5	60	208	318	110
6	-600	425	433	8

DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



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		100	200	300	400	500	600	700	800
4	4	7	19	33	64	103	16	84	54	36	36	39	44	56	77	117	178
3	7	12	19	25	44	66	63	37	21	19	17	18	22	33	42	75	145
2	110	82	66	68	60	56	64	60	59	61	69	85	85	85	85	90	101
1	170	161	151	149	157	150	150	151	147	146	145	148	144	144	155	187	207

DATA SHEET NO. 13
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

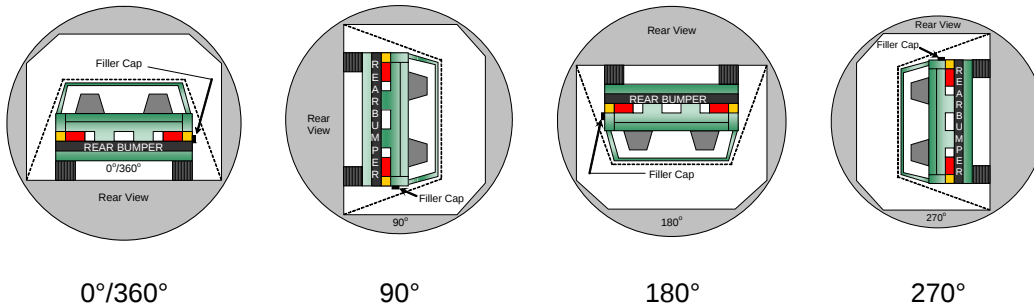
NHTSA No. M20145102
 Test Date: 8/14/2013

Test Time: 9:54 am

Temperature: 21.8° C

- A. From impact until vehicle motion ceases: 0 oz.
 (Maximum Allowable = 1 ounce)
 B. For the 5 minute period after motion ceases: None
 (Maximum allowable = 5 ounces)
 C. For the following 25 minutes: None
 (Maximum allowable = 1 oz./minute)
 D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	114	300	414
90° to 180°	109	300	409
180° to 270°	111	300	411
270° to 360°	113	300	413

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

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

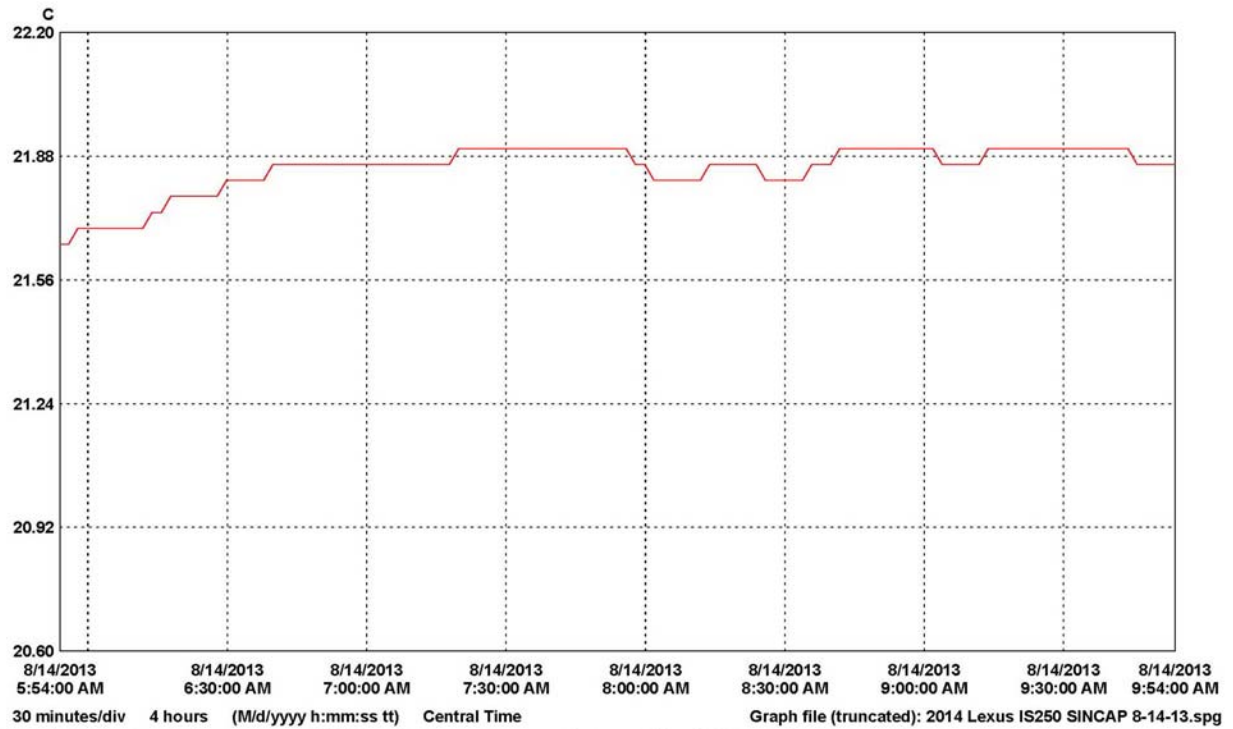
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 14
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2014 Lexus IS250 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20145102
 Test Date: 8/14/2013



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	10102162	MGATemp_10102162	1		21.90	21.85	21.65	C	Temperature	10102162_MGATemp_10102162.spl

APPENDIX A
PHOTOGRAPHS

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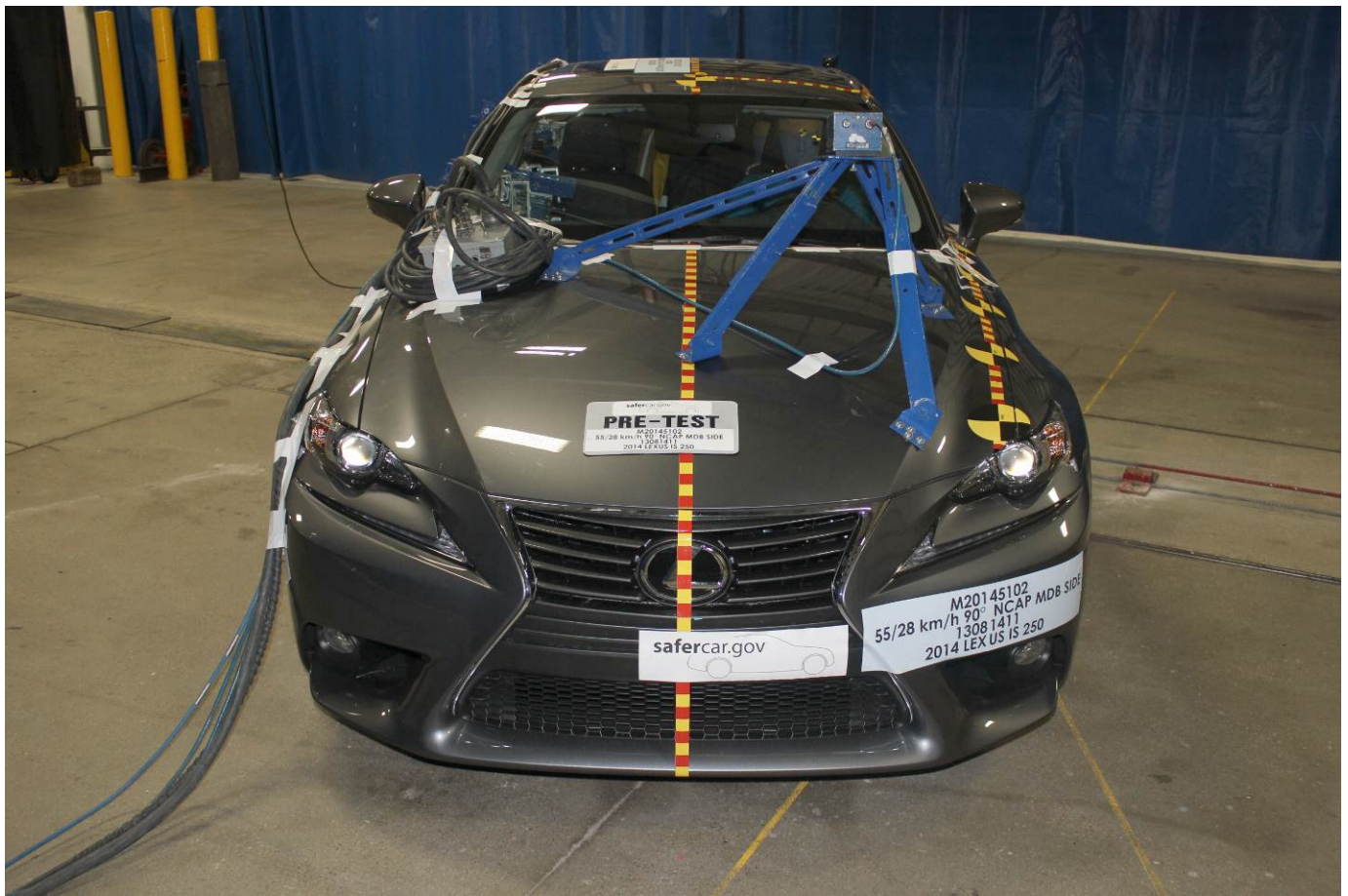
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As Delivered Right Front Three-Quarter View of Test Vehicle



As Delivered Left Rear Three-Quarter View of Test Vehicle



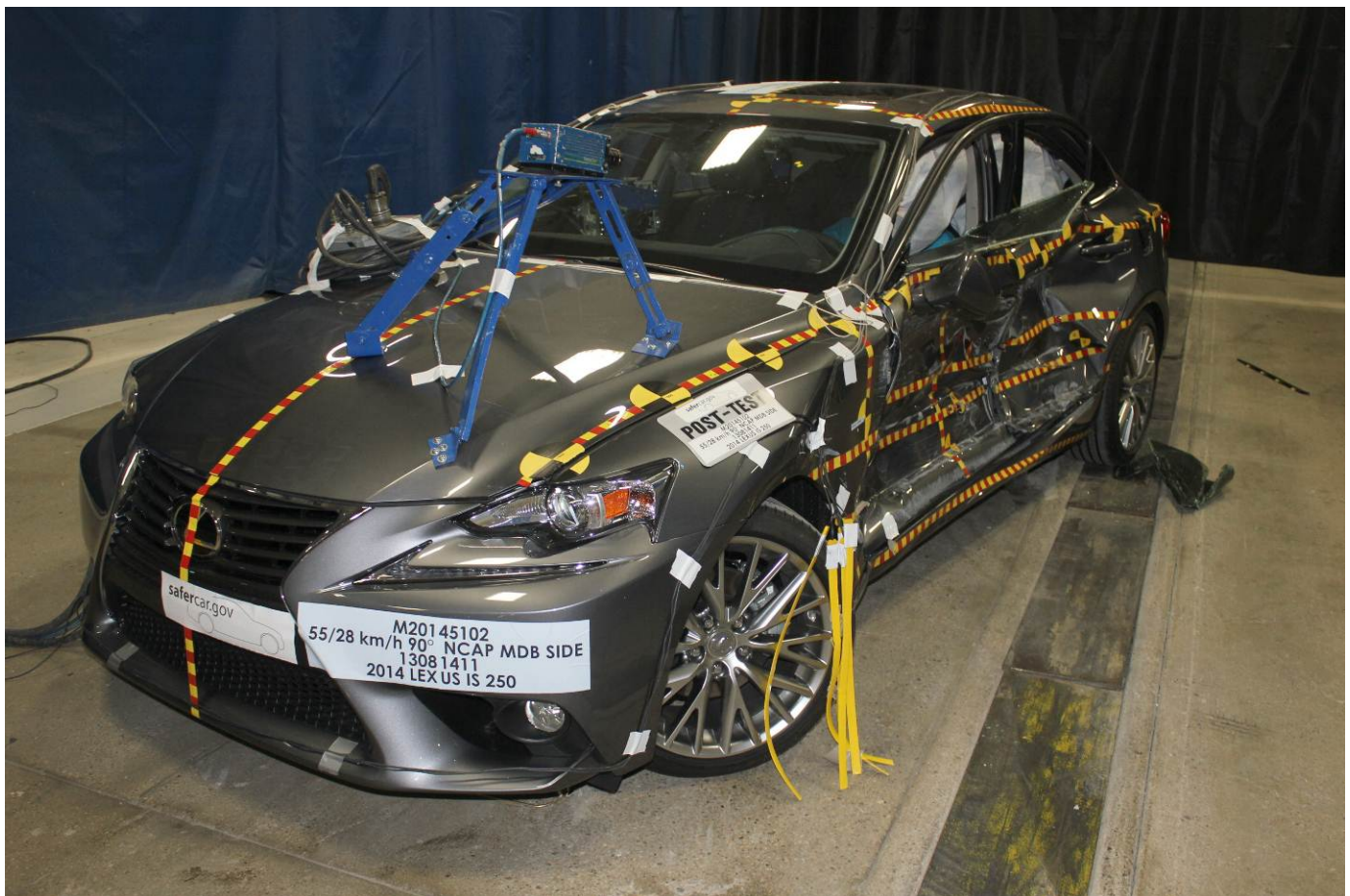
Pre-Test Frontal View of Test Vehicle



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



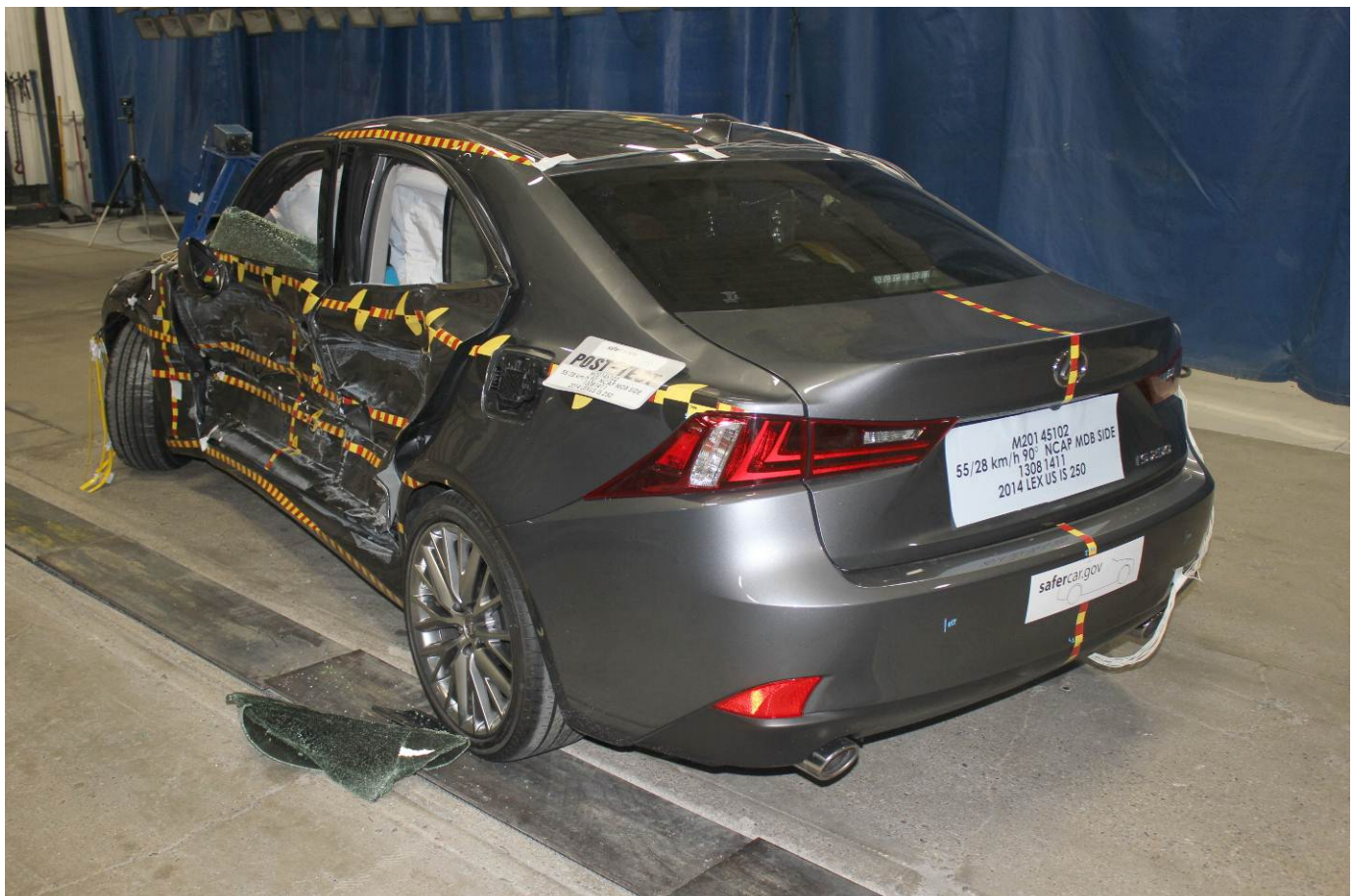
Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



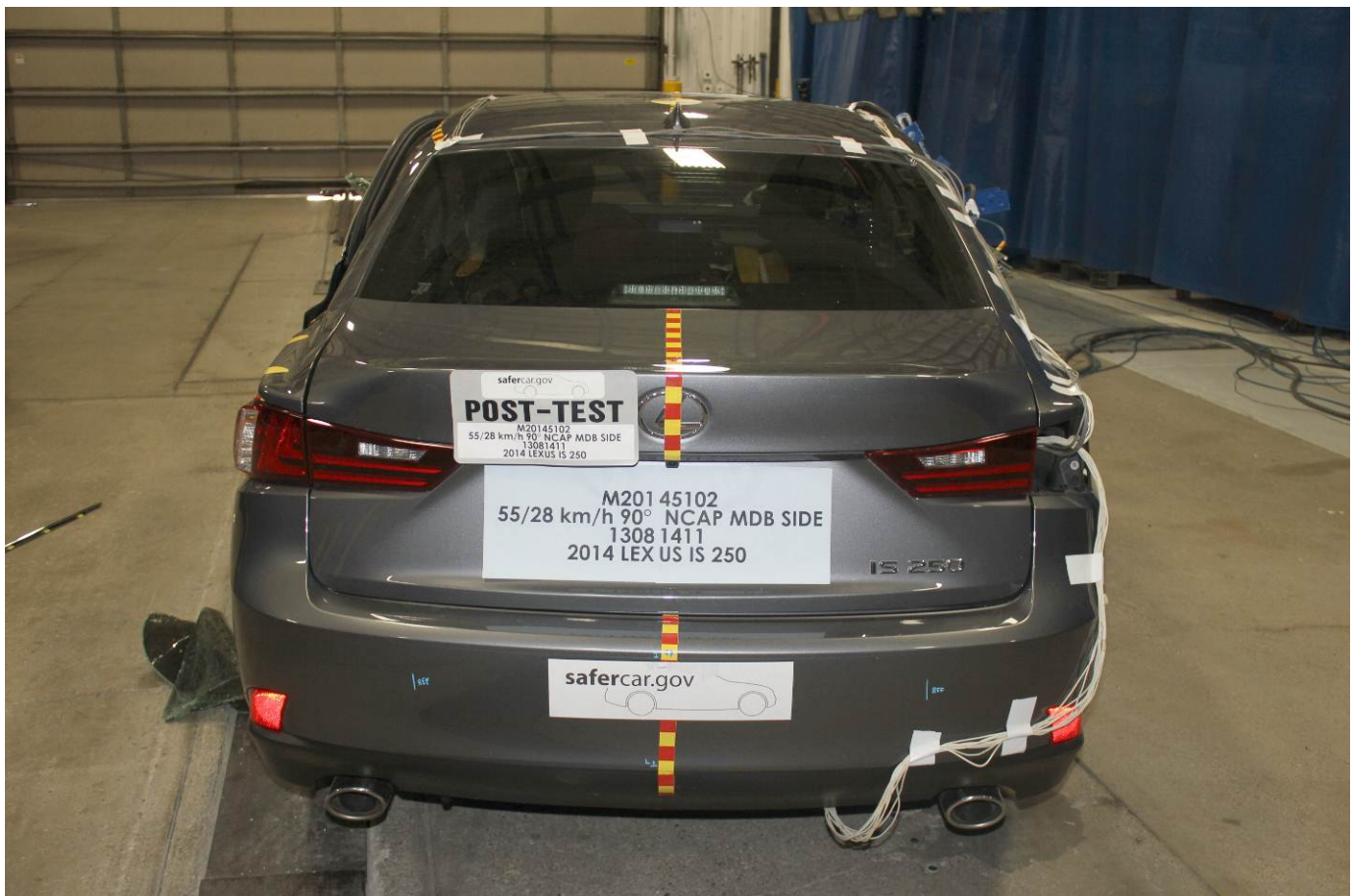
Pre-Test Left Three-Quarter Rear View of Test Vehicle



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

PHOTOGRAPH NOT AVAILABLE

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

PHOTOGRAPH NOT AVAILABLE

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 Left Side View of Driver Seat Back



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



Pre-Test Driver Dummy and Door Clearance View



Post-Test Driver Dummy and Door Clearance View



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



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



Pre-Test Driver Inner Door Panel View



Post-Test Driver Inner Door Panel View



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



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



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



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



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



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



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



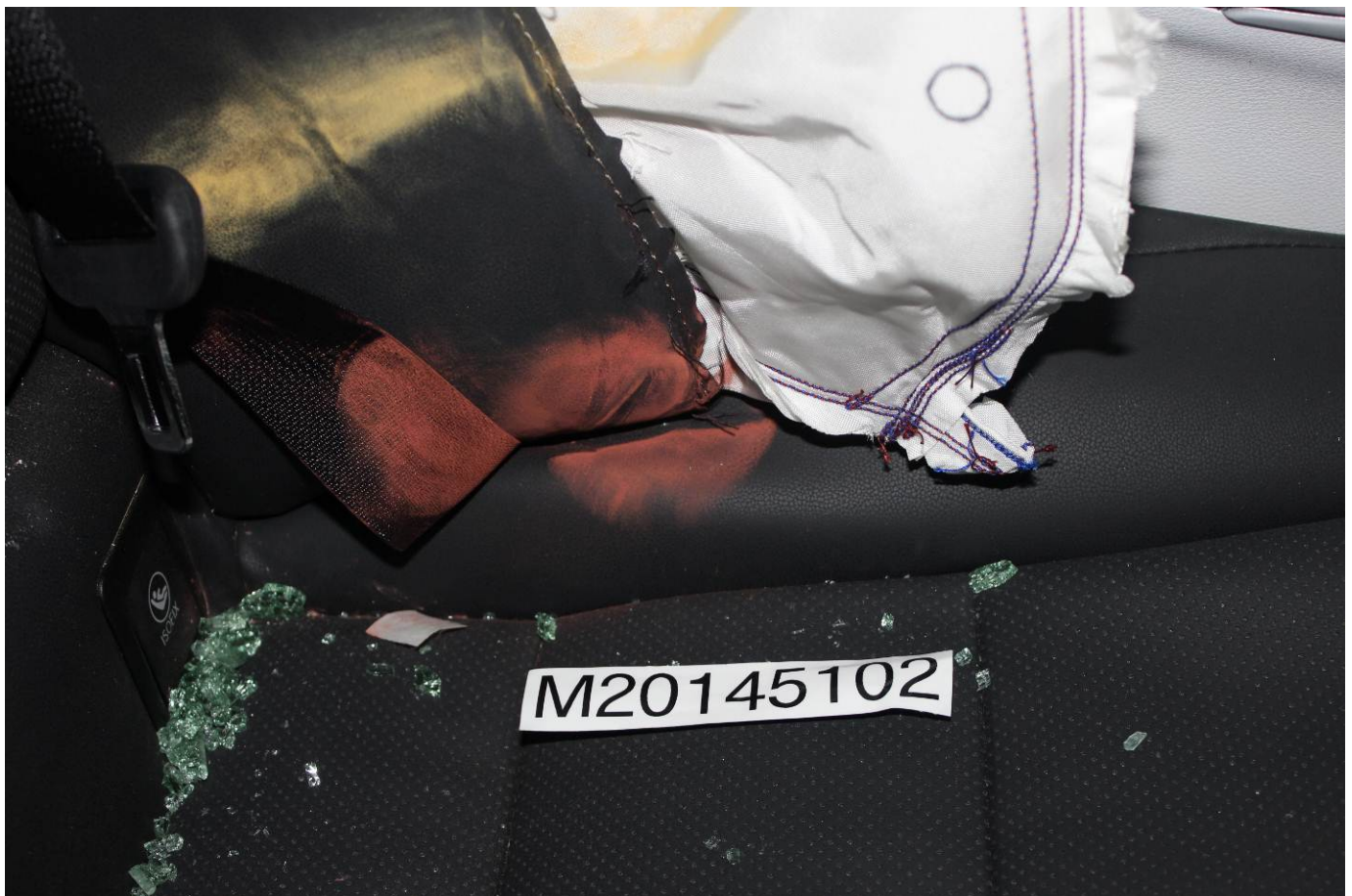
Post-Test Rear Passenger Dummy Close-up Head Contact with Side Airbag View



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



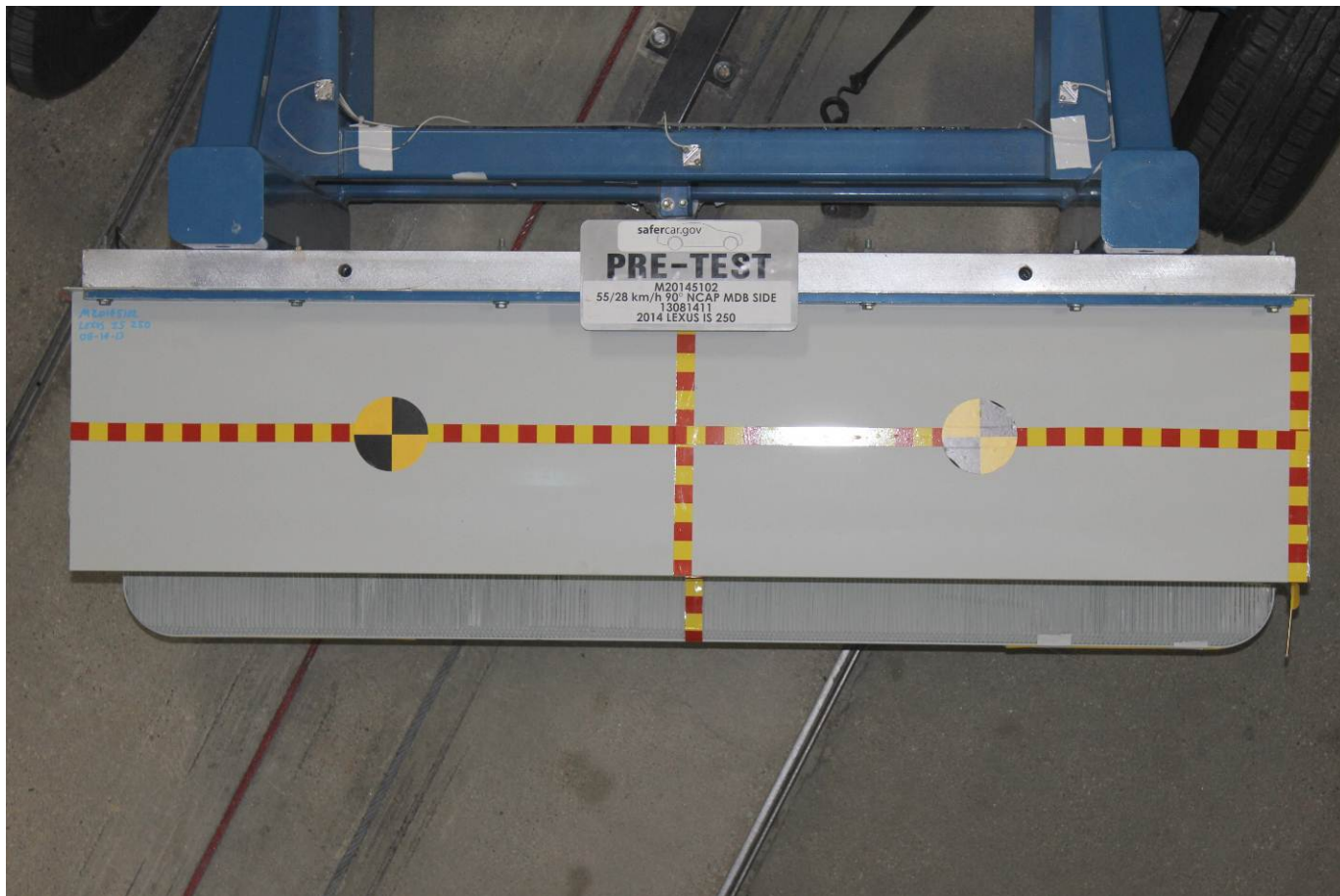
Post-Test View of Fuel Filler Cap or Fuel Filler Neck



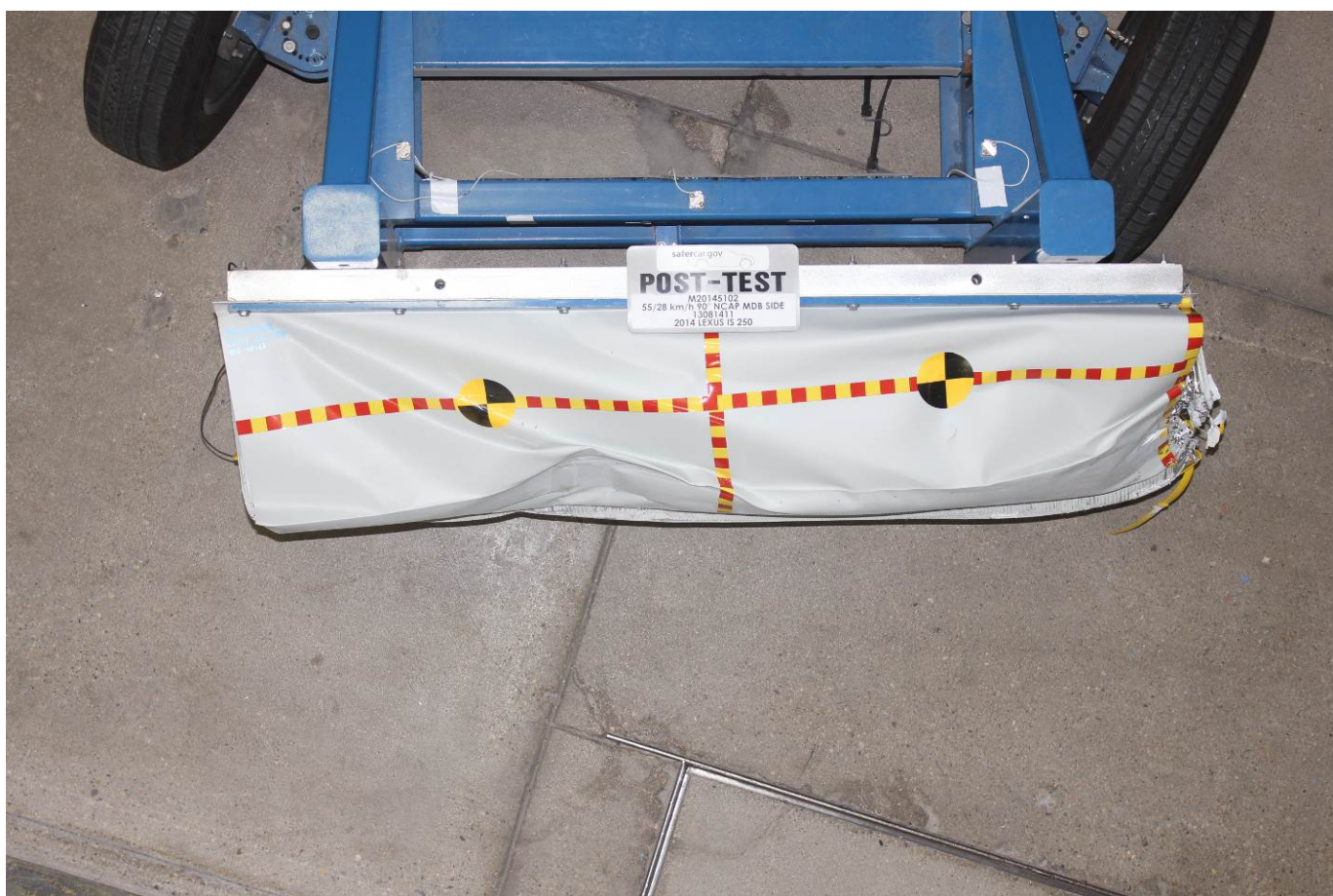
Pre-Test Front View of MDB Impactor Face



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

MFD. BY: TOYOTA MOTOR CORPORATION 05/13
 GVWR 4630LB GAWR FR 2400LB RR 2545LB
 THIS VEHICLE CONFORMS TO ALL APPLICABLE
 FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND
 THEFT PREVENTION STANDARDS IN EFFECT ON
 THE DATE OF MANUFACTURE SHOWN ABOVE.
 JTHBF1D26E5001834 PASS. CAR

 C/TR: 1H9/EA20 GSE30L-AETLHA
 A/TM: A01A/A960E MADE IN JAPAN 768 A

M20145102

Close-Up View of Vehicle's Certification Label

CAUTION
ATTENTION
ACHTUNG

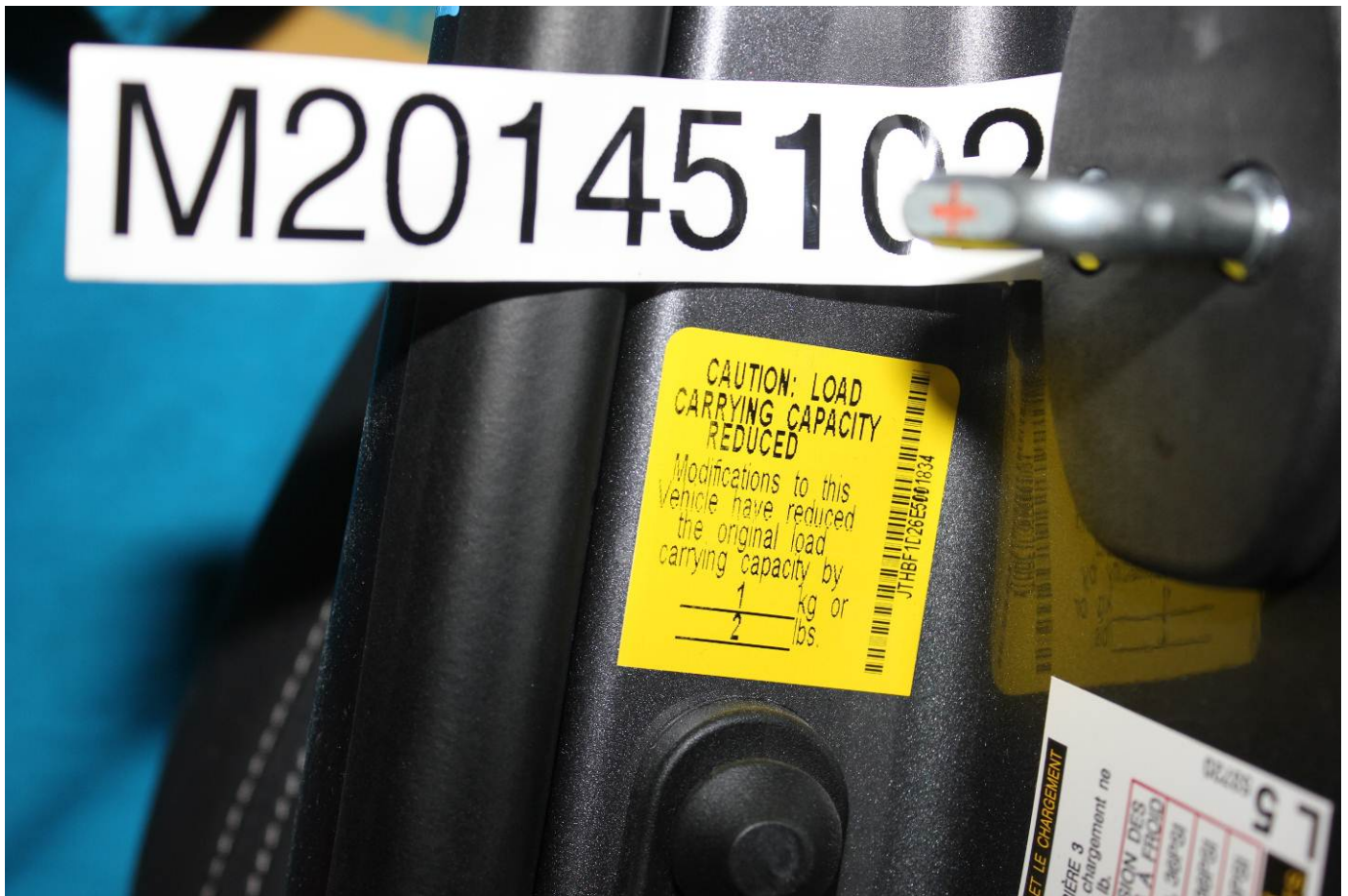
9

TIRE AND LOADING INFORMATION			RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT		
 SEATING CAPACITY: TOTAL 5 FRONT 2: REAR 3 The combined weight of occupants and cargo should never exceed 375 kg or 825 lbs.			NOMBRE DE PLACES : TOTAL 5 AVANT 2: ARRIERE 3 Le poids total des occupants et du chargement ne doit jamais dépasser 375 kg ou 825 lb.		
TIRE	SIZE	COLD TIRE PRESSURE	PNEU	DIMENSIONS	PRESSION DES PNEUS A FROID
FRONT	225/40R18	250kPa, 36PSI	AVANT	225/40R18	250kPa, 36PSI
REAR	255/35R18	250kPa, 36PSI	ARRIERE	255/35R18	250kPa, 36PSI
SPARE	T125/70D17	420kPa, 60PSI	DE SECOURS	T125/70D17	420kPa, 60PSI
SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION			VOIR LE MANUEL DE L'USAGER POUR PLUS DE RENSEIGNEMENTS		

L 5 53720

M20145102

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



Close-Up View of Load Carrying Capacity Reduced Label

PHOTOGRAPH NOT APPLICABLE

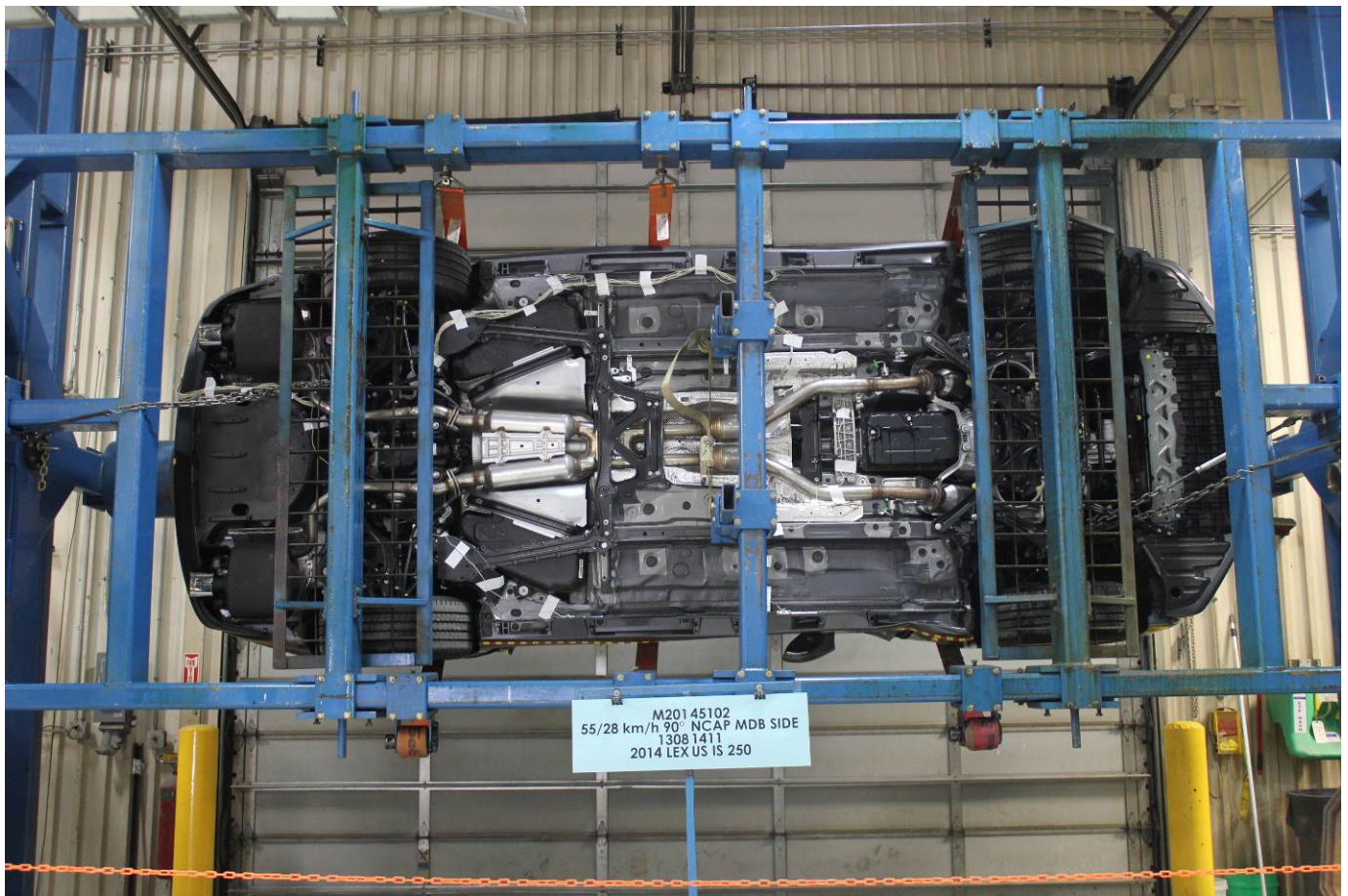
Pre-Test Ballast View



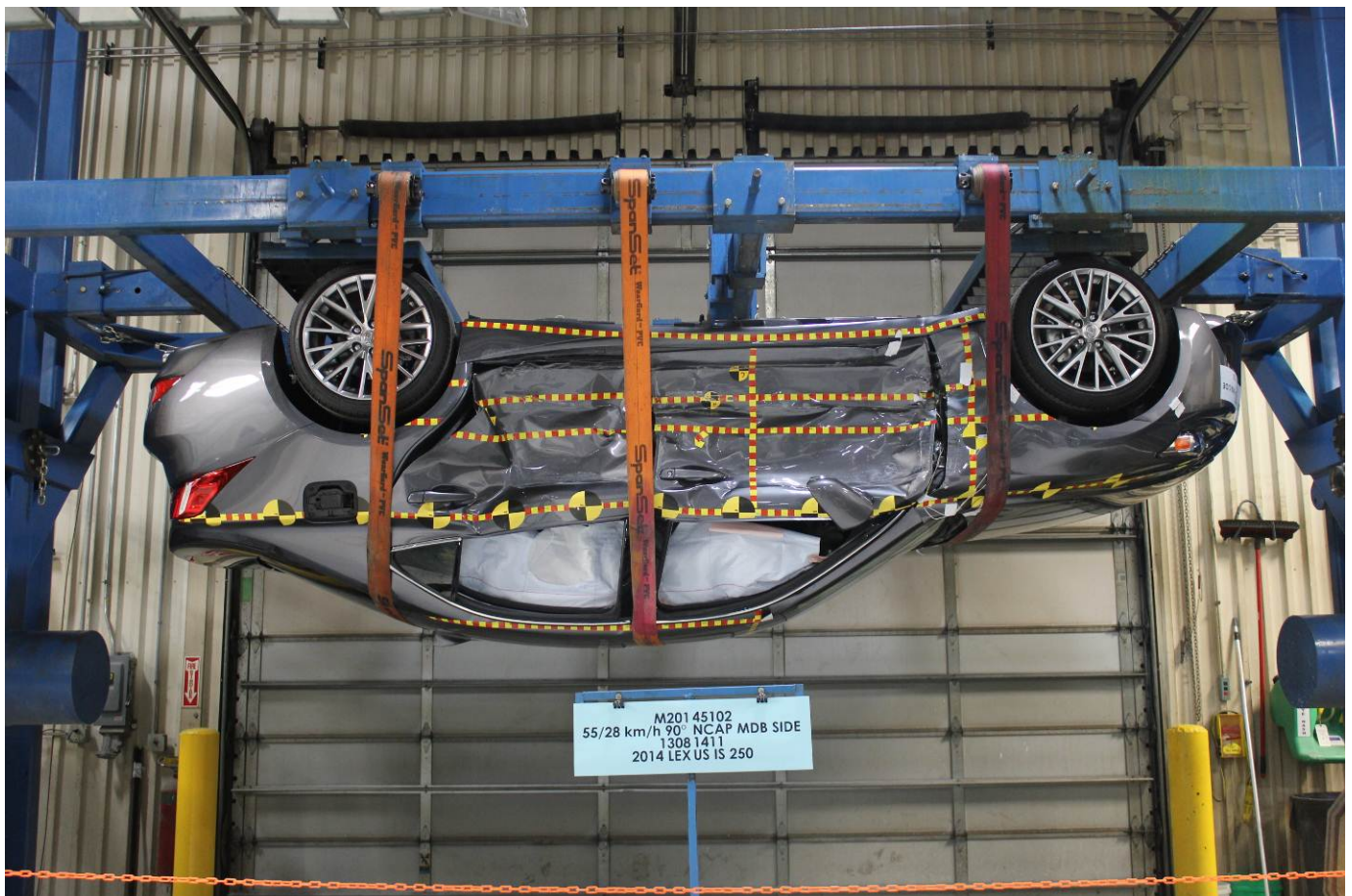
Post-Test Primary and Redundant Speed Trap Read-Out



FMVSS No. 301 Static Rollover 0 Degrees



FMVSS No. 301 Static Rollover 90 Degrees



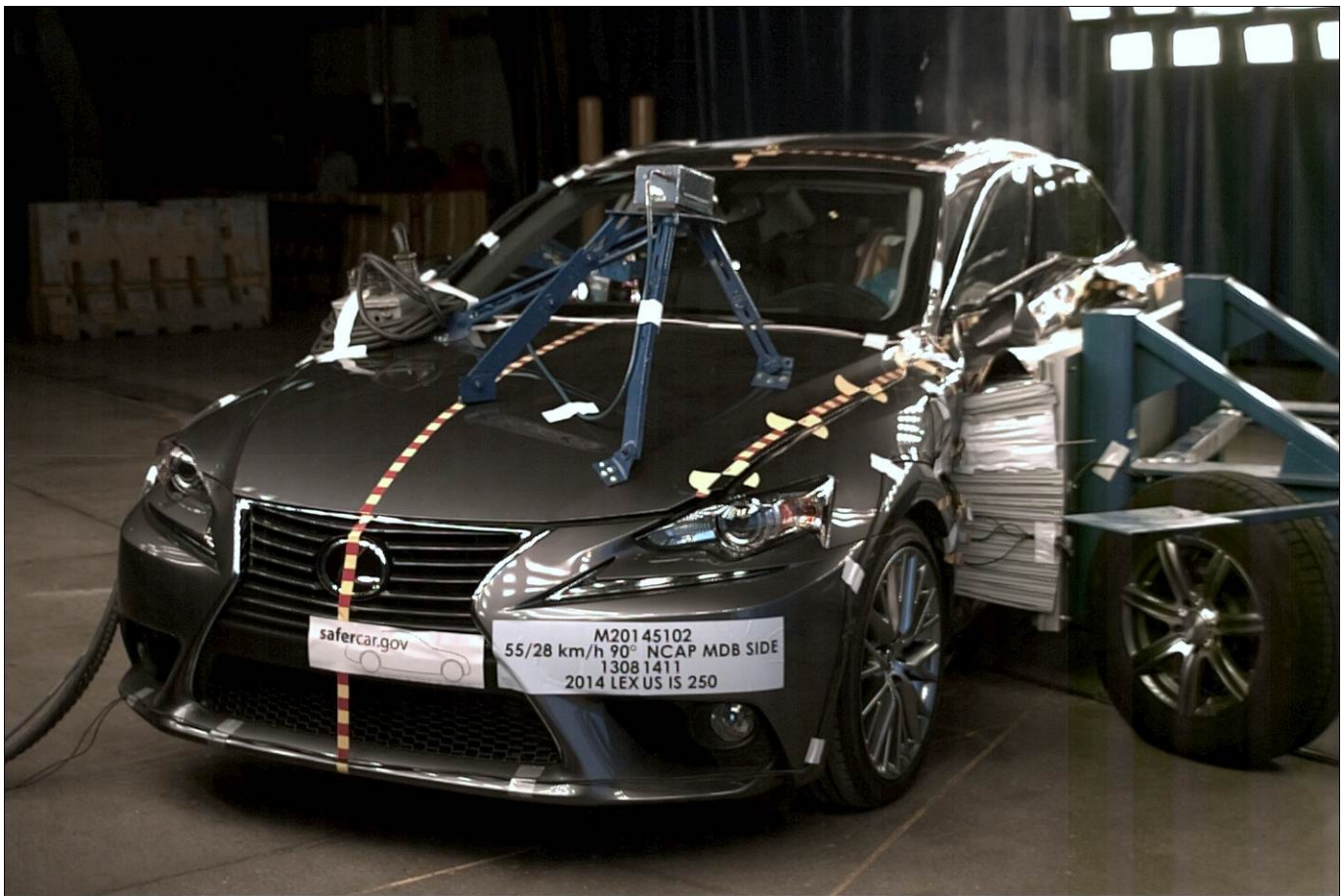
FMVSS No. 301 Static Rollover 180 Degrees



FMVSS No. 301 Static Rollover 270 Degrees



FMVSS No. 301 Static Rollover 360 Degrees



Impact Event

LEXUS
The Pursuit of Perfection

DESCRIPTION 2014 / 9502A IS250 4-DR SEDAN
COLOR NEBULA GRAY PEARL
VIN JTHBF1D26E5001834
PORT/PLANT Long Beach, CA

Dealer Name / Address:
 LEXUS OF TULSA
 4210 SOUTH MEMORIAL DR
 TULSA OK74145

Ship to: (Dealer, unless otherwise indicated)

STANDARD EQUIPMENT & INSTALLED OPTIONS

STANDARD FEATURES

- 2.5-liter V6-24 valve, dual overhead cam (DOHC), Direct Injection, Variable Valve Timing (VVT-i), 204 Horsepower, 185 lb-ft Torque
- 8 speed automatic transmission- paddle shifters, Electronic Control with Intelligence (ECT-i)
- Drive Mode Select- ECO, Normal, Sport & Snow modes
- Double wishbone front & multi-link rear suspension
- Vehicle Dynamics Integrated Management (VDIM)
- Anti-Lock Braking System (ABS), Electronic Brakeforce Distribution (EBD) & Brake Assist (BA)
- 17" Aluminum Wheels- 225/45R17 All-Season tires, Location specific tire pressure monitoring system
- High Intensity Discharge Headlamps (HID) low & high beams, LED Daytime Running Lights (DRLs)
- Dual Chrome Exhaust
- Power Tilt/Slide Moonroof w/One-Touch Open/Close
- SmartAccess with Push-Button Start/Stop
- Rear View Mirror- Auto Dimming, HomeLink Garage Door Opener
- Driver Seat- 10-way power, (including 2-way lumbar) Passenger seat 8-way power
- Folding rear seats (60/40 Split)
- Multi Information Display(MID)- full color display
- Includes Audio, Phone and Trip Information
- Lexus Premium Display Audio System
- HD Radio with real-time traffic and weather, Gracenote album art, MP3 player USB integration,

STANDARD EQUIPMENT & INSTALLED OPTIONS

- SiriusXM Satellite Radio (90-day trial & subscription)
- Bluetooth hands free phone & media streaming
- Airbags 10: Driver & Front passenger: Front, Knee & Side (6), Rear Side (2), Side Curtain (2)
- Safety Connect- Automatic Collision Notification, Stolen Vehicle Location, Emergency Assist Button (SOS), & Enhanced Roadside Assistance (1-year trial subscription included)

MANUFACTURER'S SUGGESTED RETAIL PRICE

Backup Camera	350.00
18" Aluminum Alloy Wheels	935.00
Mesh 3-sign, Liquid Graphite Finish, FR225/40R18 RR255/35/R18, Summer Tires	
Rear Bumper Applique	76.00
Cargo Net	64.00
Wheel Locks	73.00

\$ 35,950.00

Fuel Economy and Environment

Fuel Economy

24 MPG
combined city/hwy

21 MPG
city

30 MPG
highway

4.2 gallons per 100 miles

You spend \$ 250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,350

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

6 (Best)

Smog Rating (tailpipe only)

5 (Best)

This vehicle emits 361 grams CO2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions. Learn more at fuelconomy.gov

APPLICABLE FEDERAL TAXES NOT INCLUDED

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

LEXUS NEW VEHICLE LIMITED WARRANTY

Limited warranty coverage highlights include:

- 4YR / 50,000 mile basic coverage
- 6YR / 70,000 mile powertrain coverage
- 4YR / Unlimited mile corrosion perforation warranty

See your Warranty and Service Guide for details.

LEXUS IS PLEASED TO OFFER THE FOLLOWING OWNER SUPPORT PACKAGE WITH EACH NEW LEXUS

- 24 hour, 365 day, roadside assistance plan
- Complimentary 1st and 2nd scheduled maintenance services
- Lodging for emergency breakdowns 100 miles from home

An extended service contract may be available for this vehicle. Ask dealer for details.

GOVERNMENT 5-STAR SAFETY RATINGS

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

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

SUB-TOTAL \$ 37,448.00

DELIVERY, PROCESSING AND HANDLING FEE 895.00

TOTAL \$ 38,343.00

18BA67 380 MDT1 J4046 R

Monroney Label

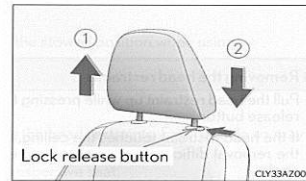
Head restraints

Head restraints are provided for all seats.

Front seats

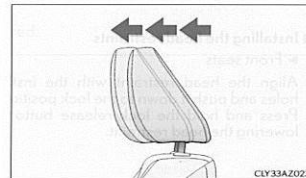
◆ Vertical adjustment

- ① Up
Pull the head restraints up.
- ② Down
Push the head restraint down while pressing the lock release button.



◆ Horizontal adjustment (if equipped)

The position of the head restraint can be adjusted forward in 4 stages. If the head restraint is pulled forward from the foremost position, it will return to the rearmost position.

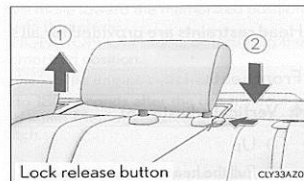


3
Operation of each component

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

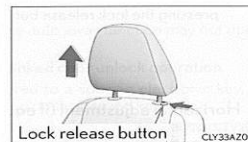
Rear seats

- ① Up
Pull the head restraints up.
- ② Down
Push the head restraint down while pressing the lock release button.



■ Removing the head restraints

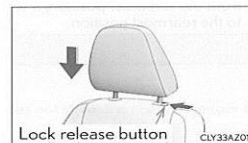
Pull the head restraint up while pressing the lock release button. If the head restraint touches the ceiling, making the removal difficult, change the seat height or angle.



■ Installing the head restraints

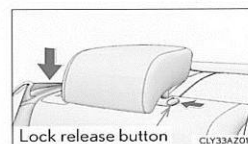
► Front seats

Align the head restraint with the installation holes and push it down to the lock position. Press and hold the lock release button when lowering the head restraint.



► Rear seats

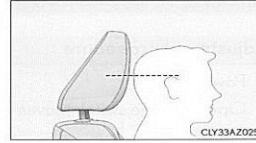
Align the head restraint with the installation holes and push it down to the lowest lock position while pressing the lock release button.



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

■ Adjusting the height of the head restraints

Make sure that the head restraints are adjusted so that the center of the head restraint is closest to the top of your ears.



■ Adjusting the rear seat head restraint

Always raise the head restraint one level from the stowed position when using.

⚠ CAUTION

■ Head restraint precautions

Observe the following precautions regarding the head restraints. Failure to do so may result in death or serious injury.

- Use the head restraints designed for each respective seat.
- Adjust the head restraints to the correct position at all times.
- After adjusting the head restraints, push down on them and make sure they are locked in position.
- Do not drive with the head restraints removed.

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

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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 9 Axis Head X Arm Y

Passenger 9 Axis Head X Arm Z

Passenger 9 Axis Head Y Arm X

Passenger 9 Axis Head Y Arm Z

Passenger 9 Axis Head Z Arm X

Passenger 9 Axis Head Z Arm 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)

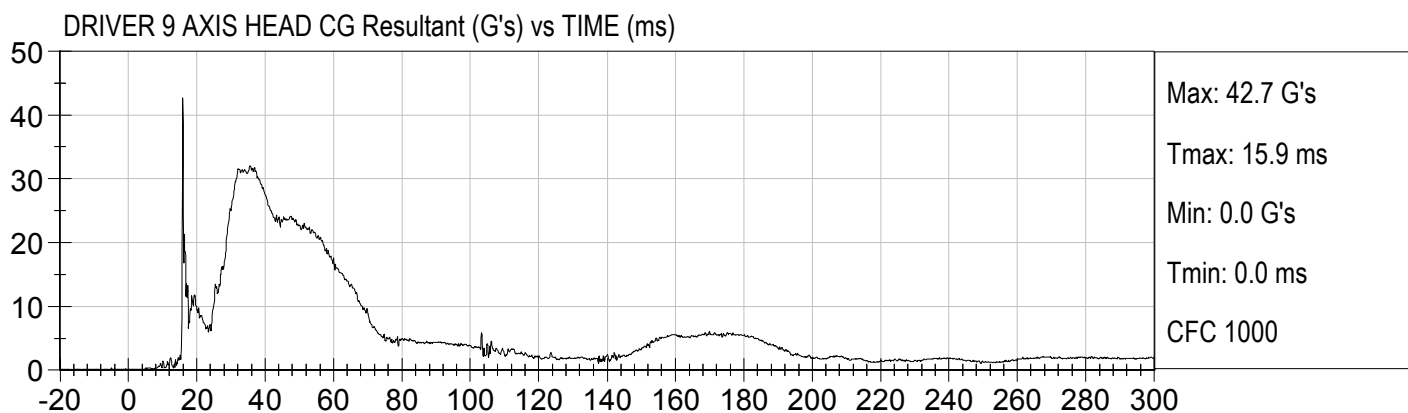
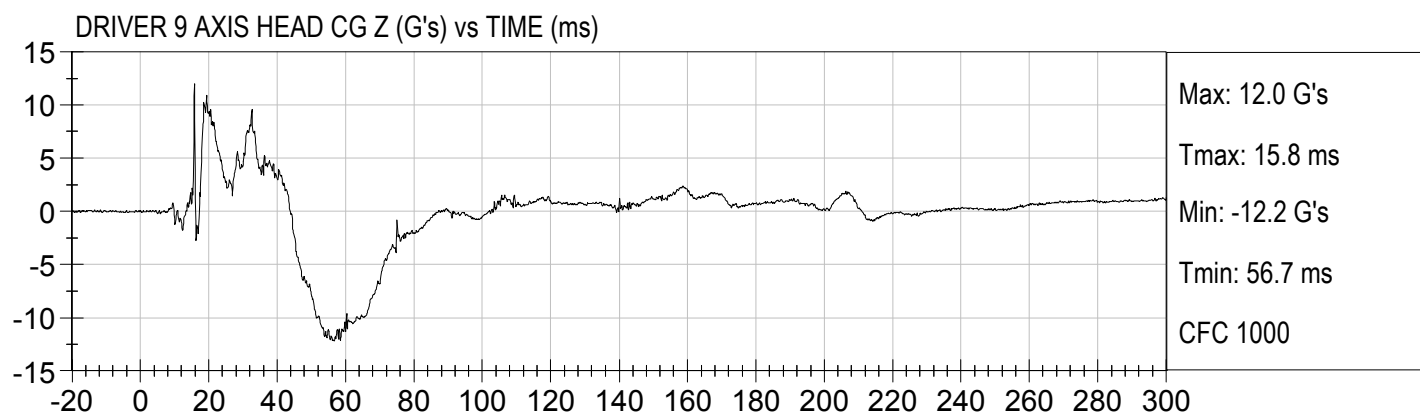
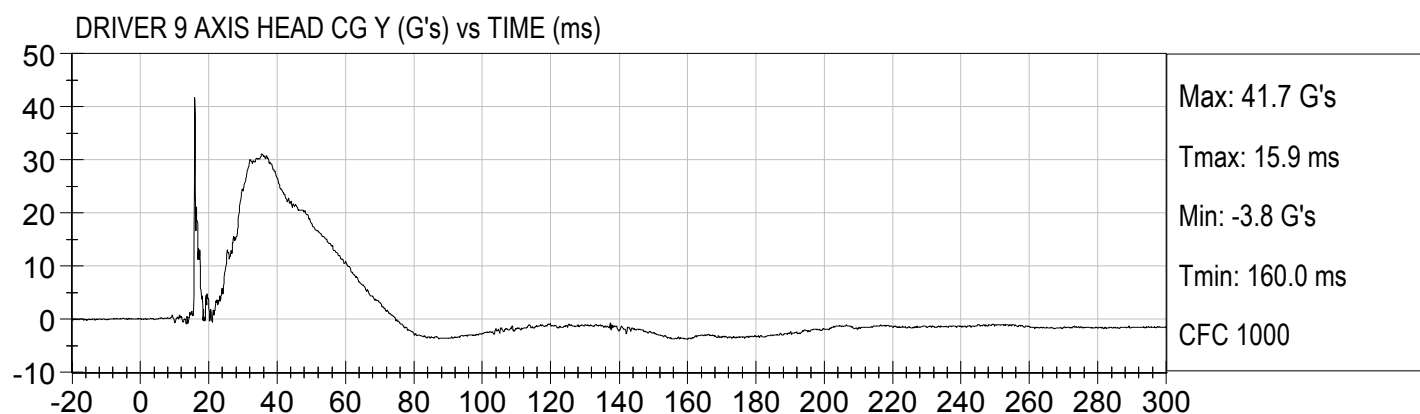
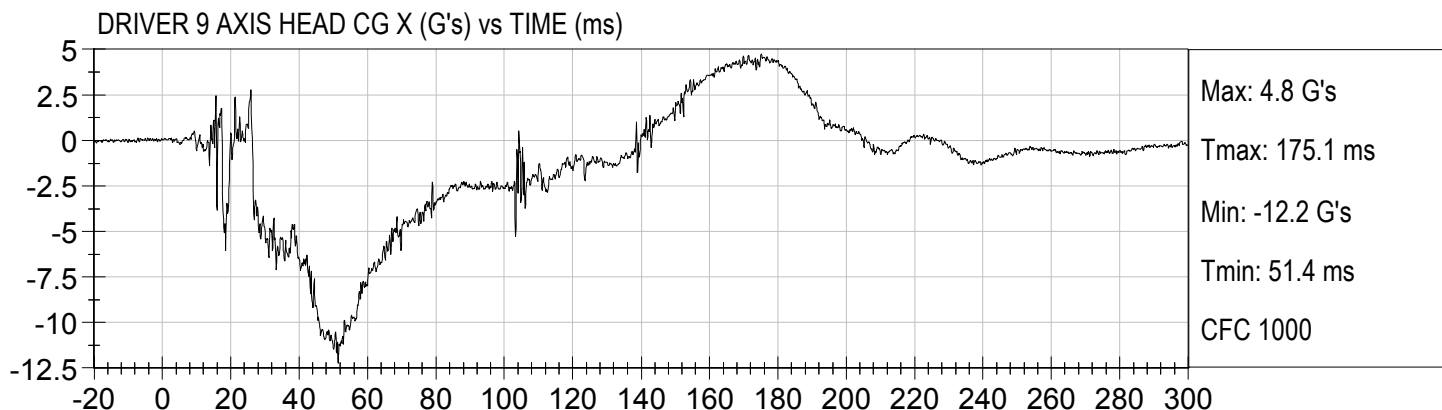
MDB Center of Gravity Acceleration (Z)

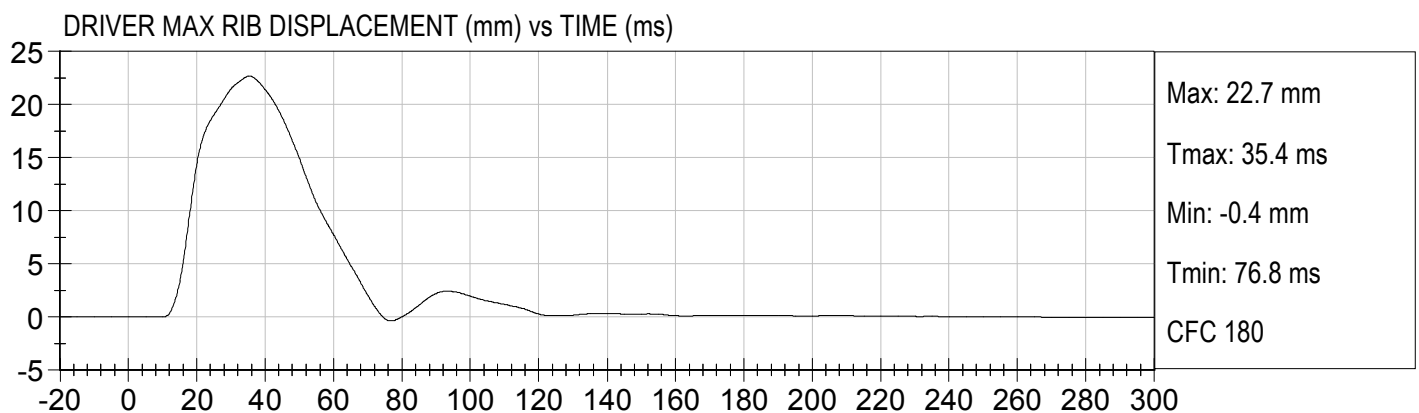
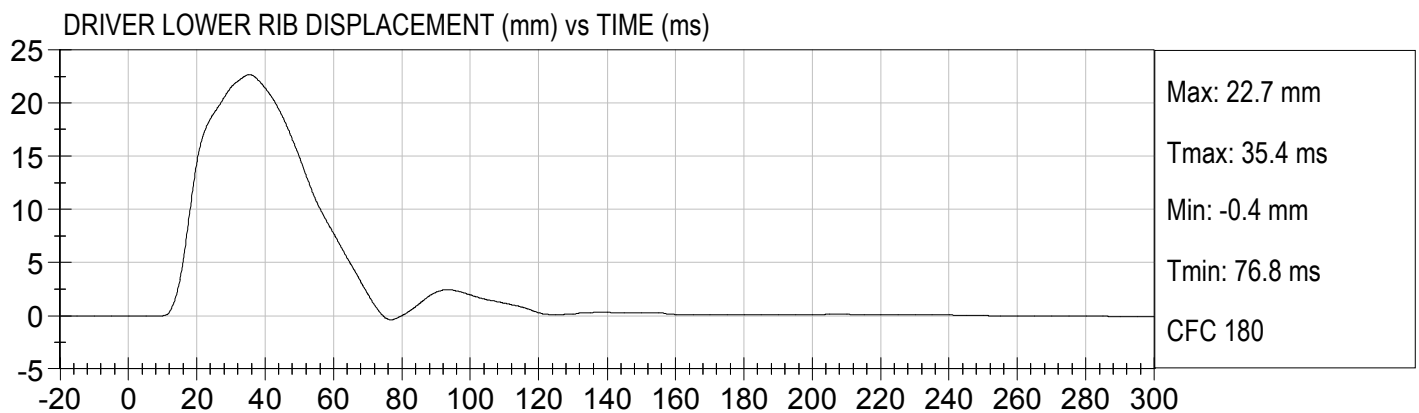
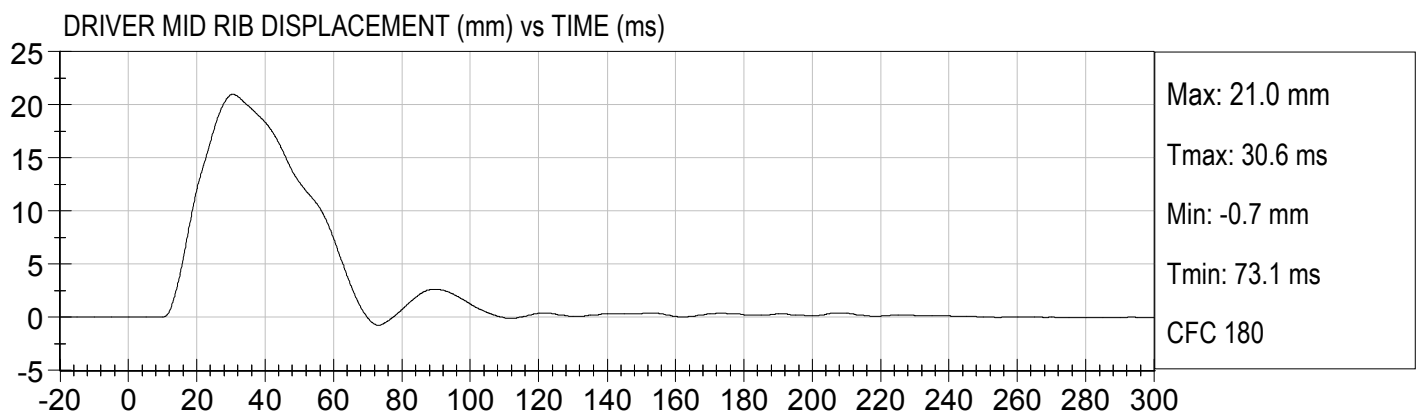
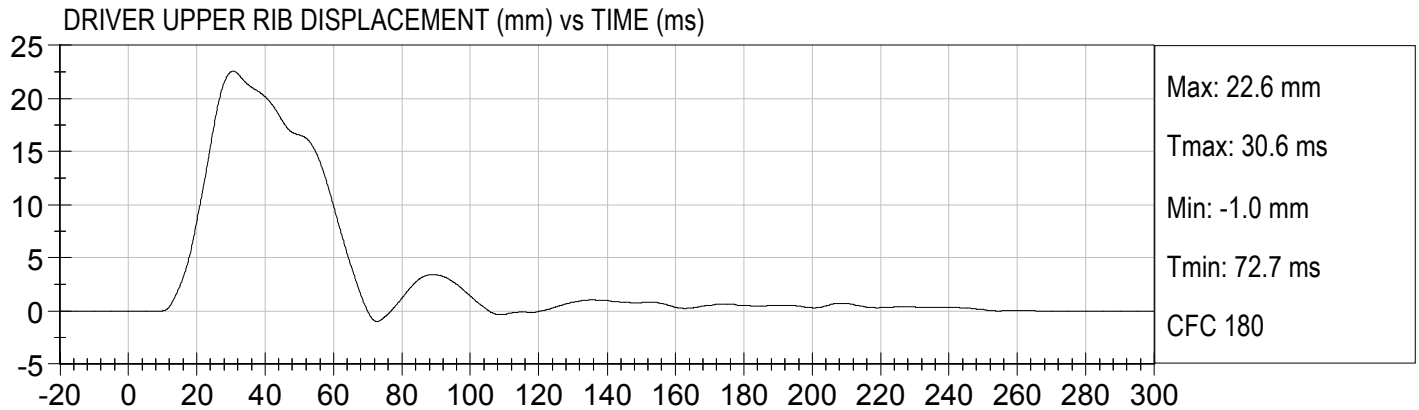
MDB Rear Acceleration (X)

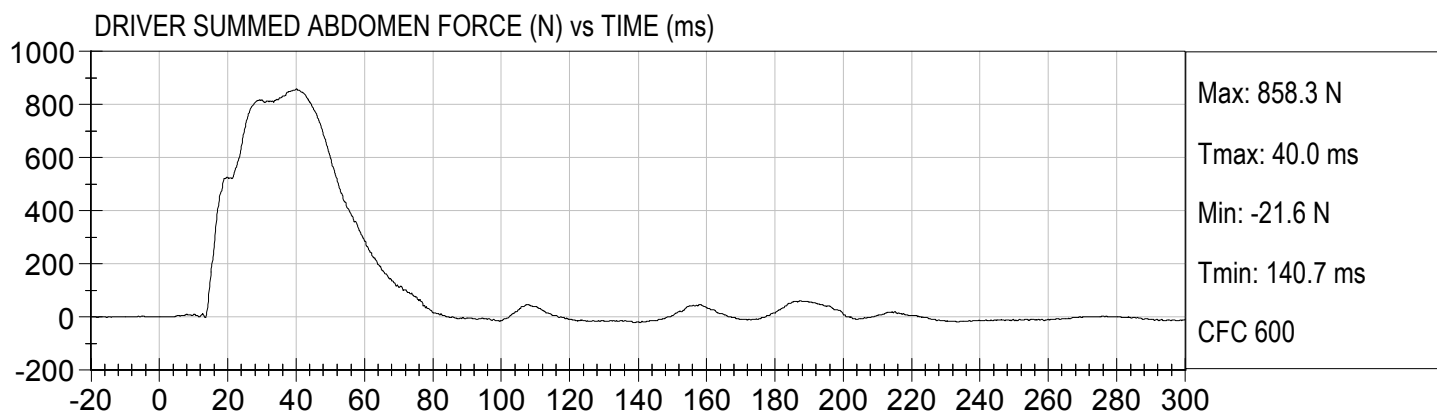
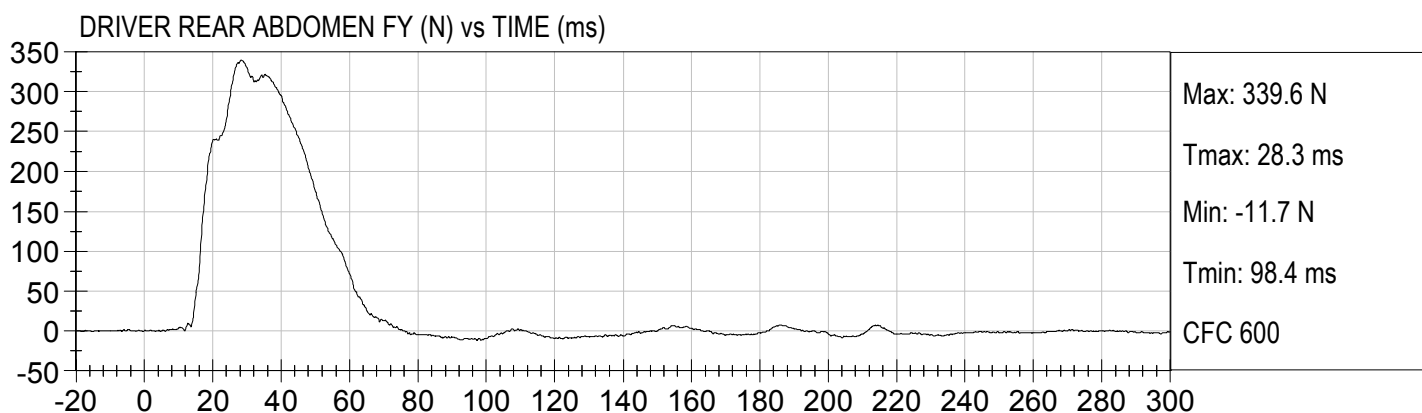
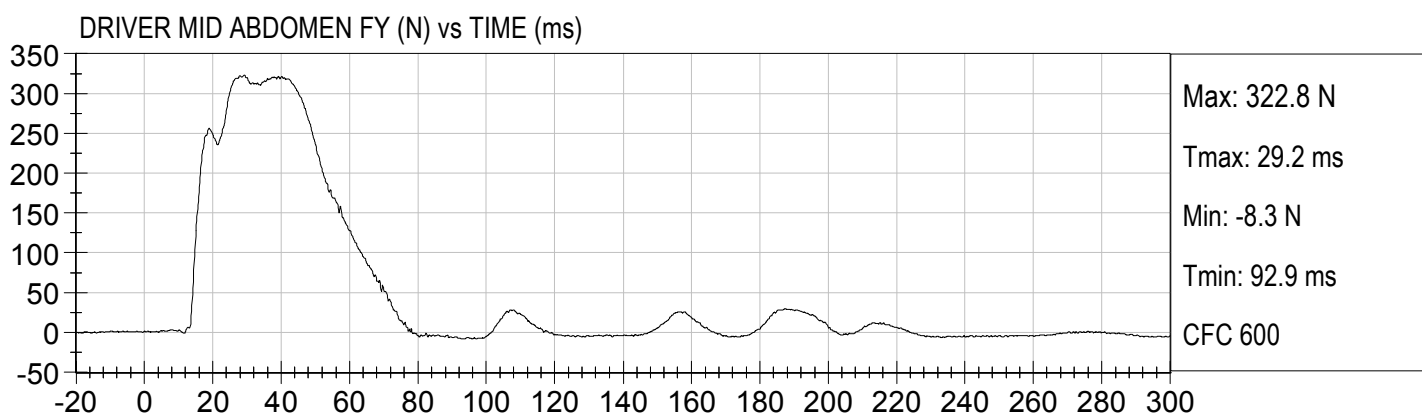
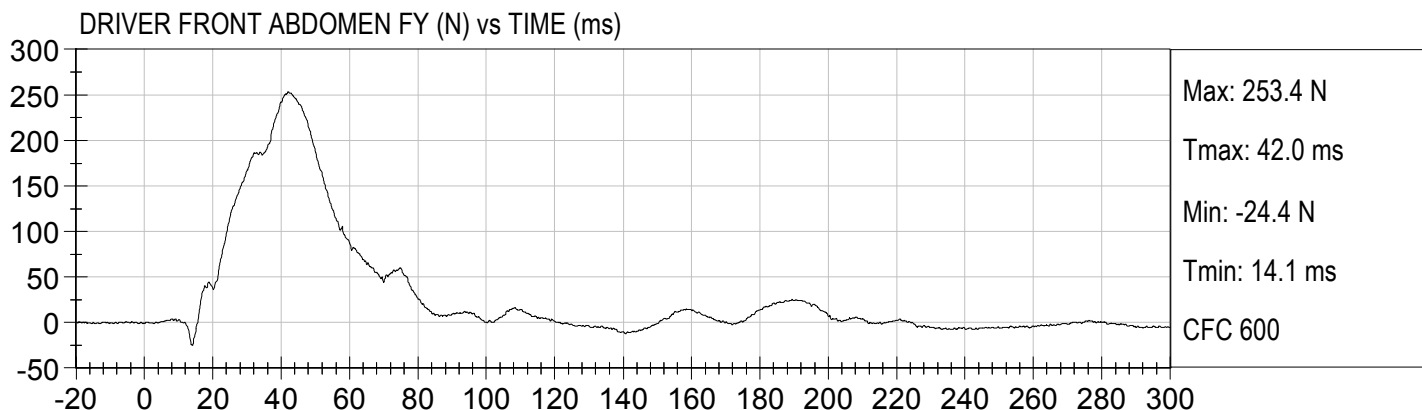
MDB Rear Acceleration (Y)

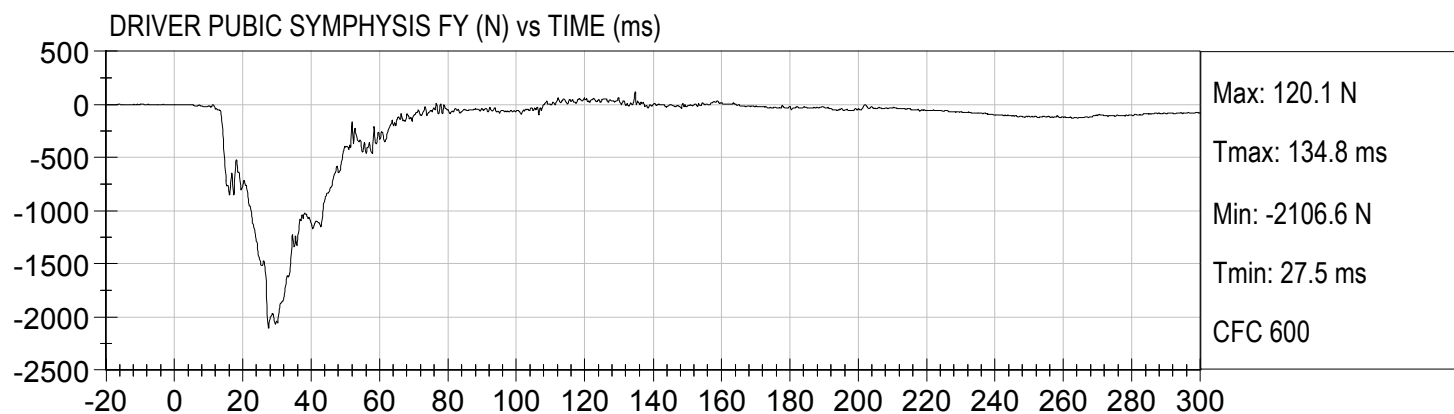
Left MDB Contact Switch

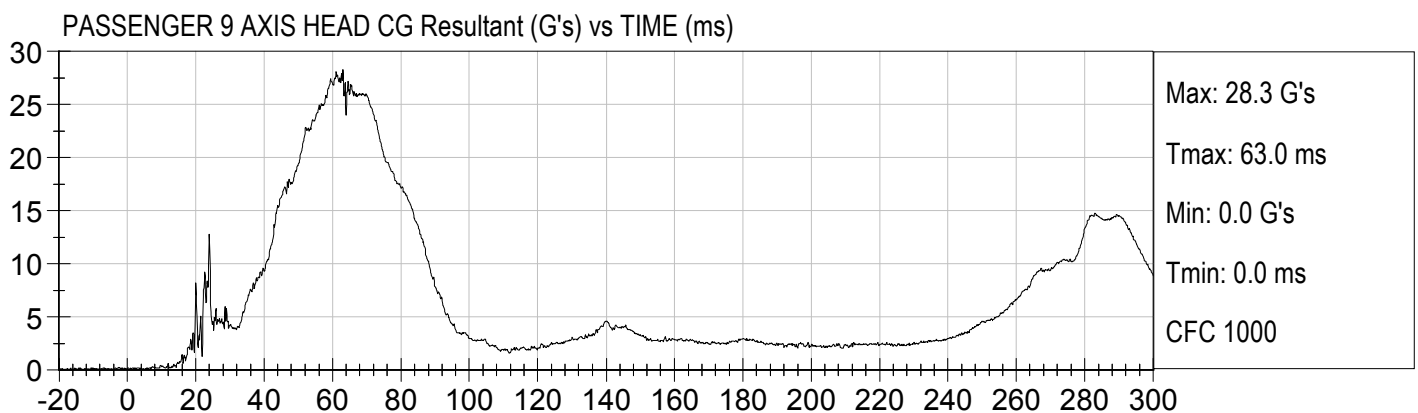
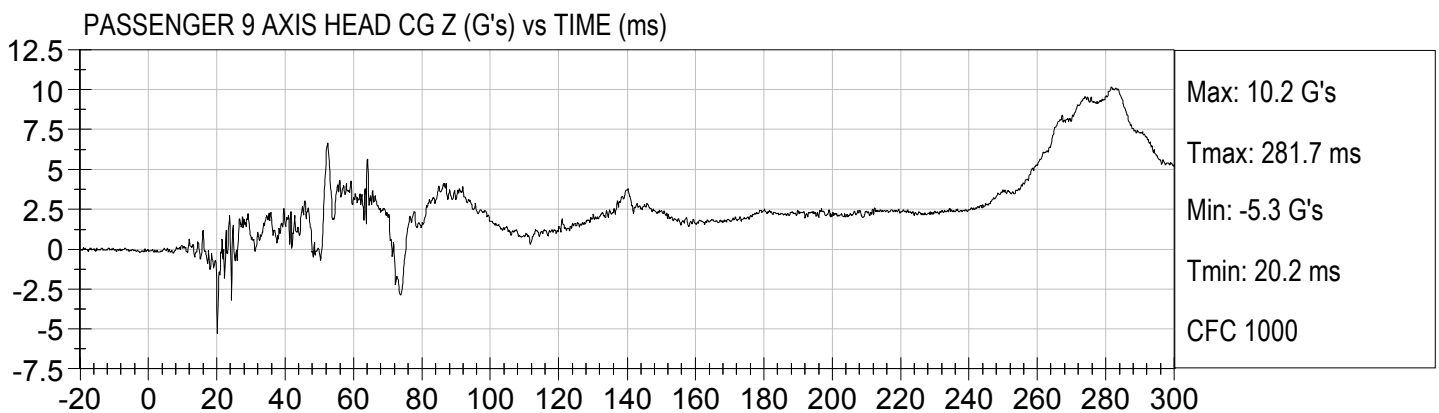
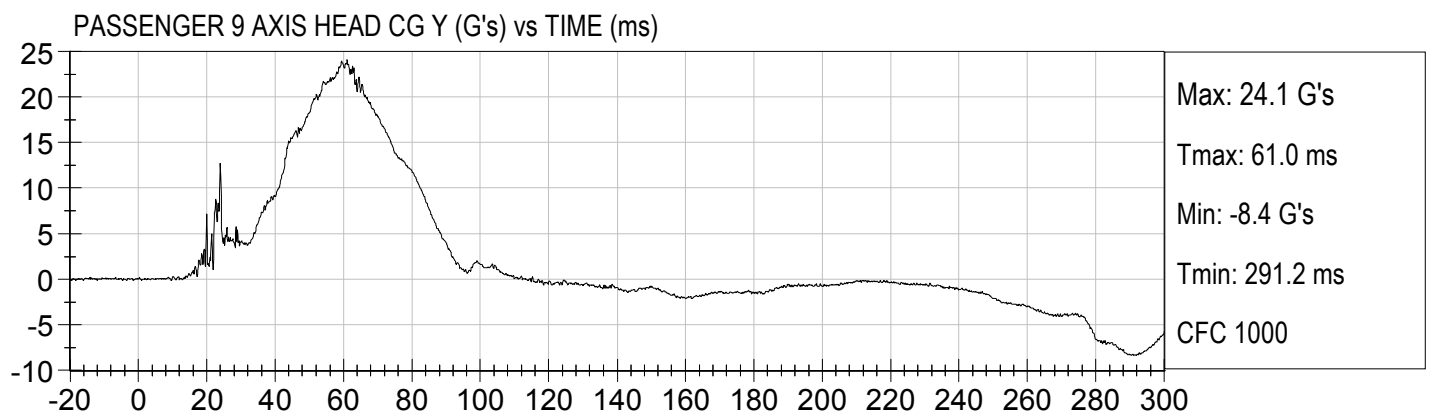
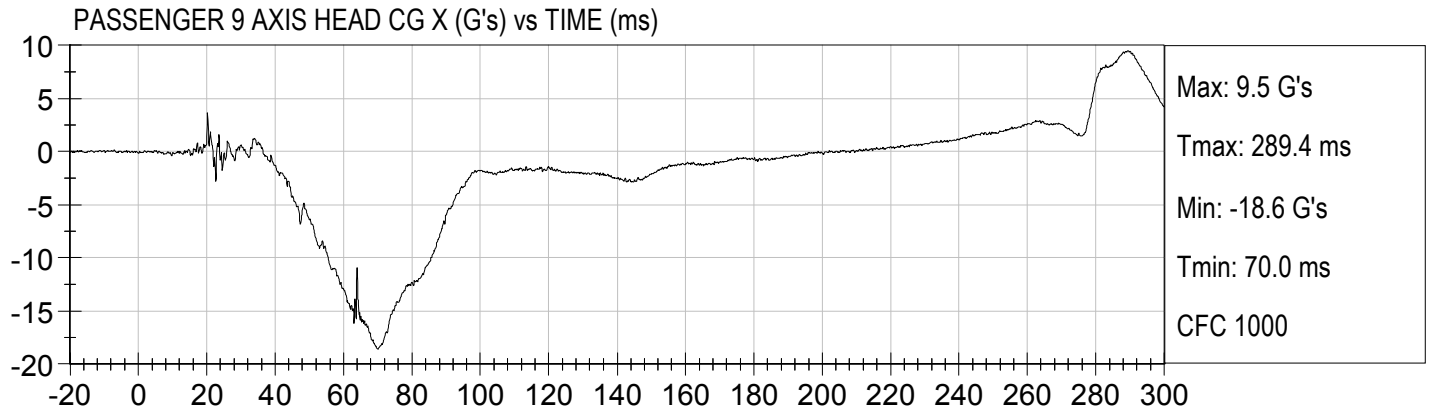
Right MDB Contact Switch

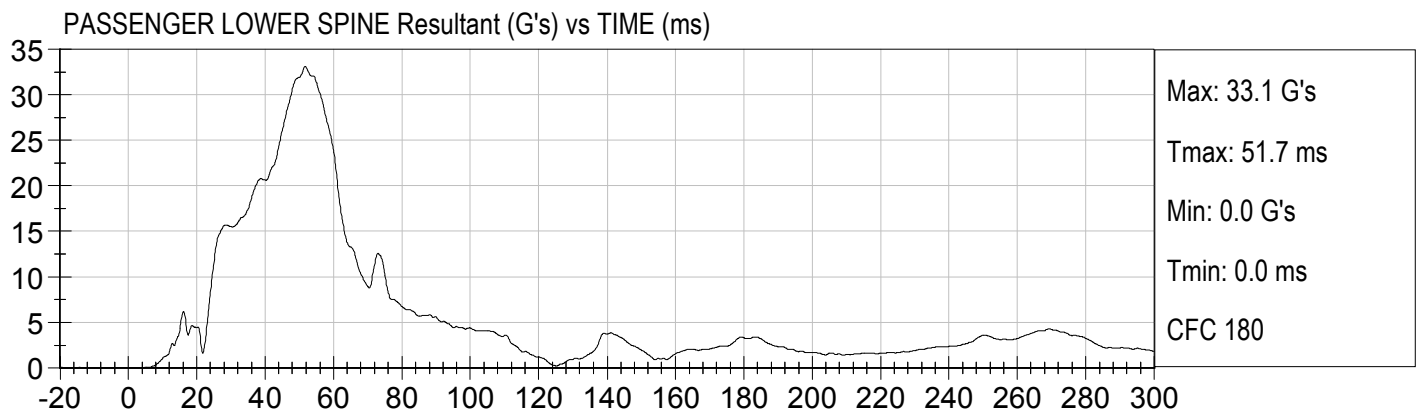
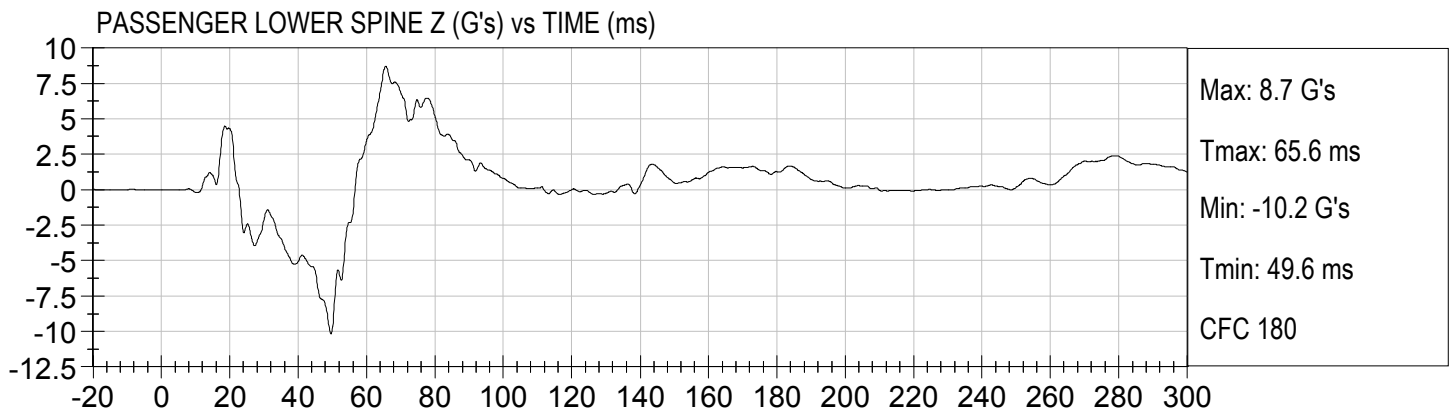
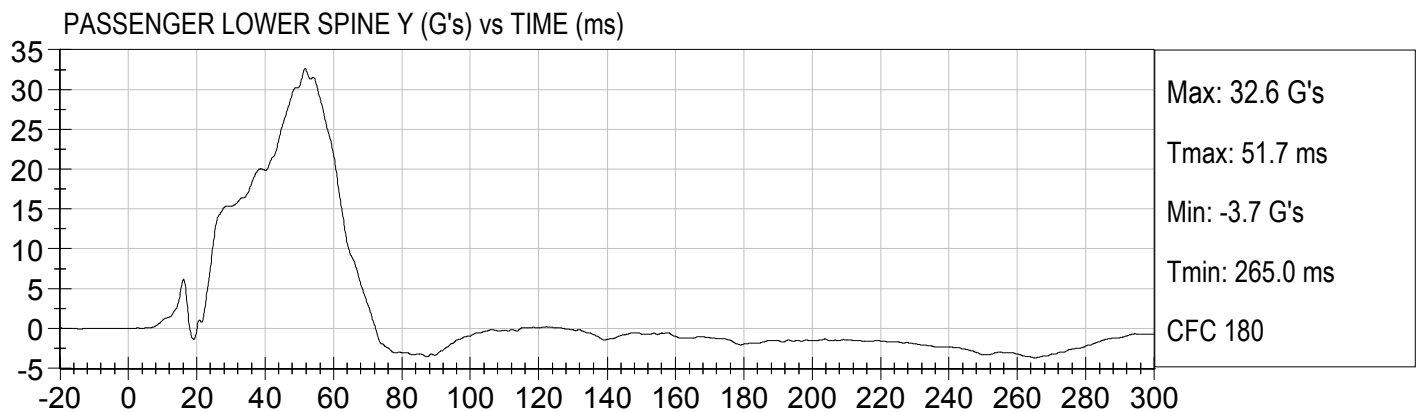
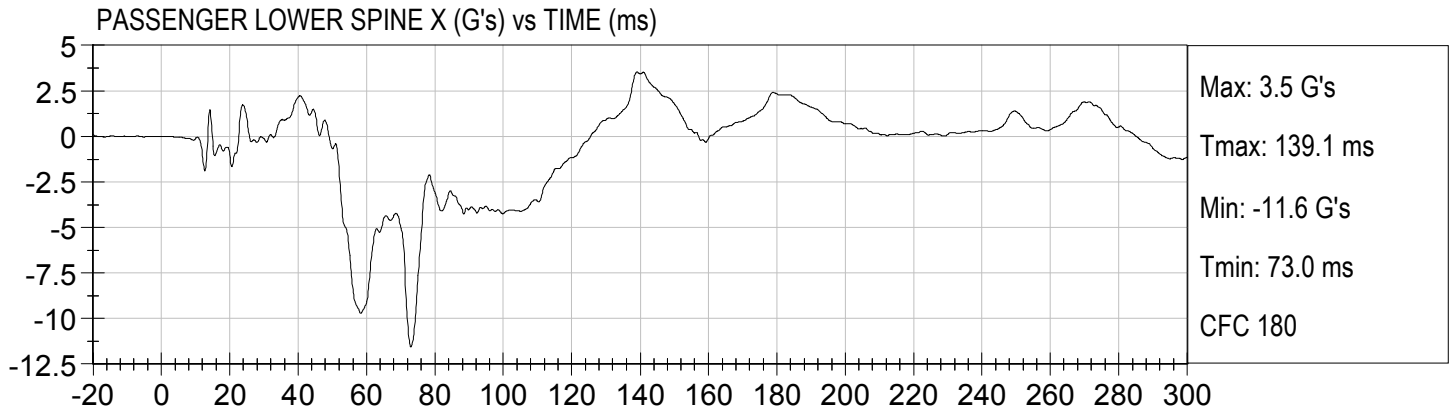


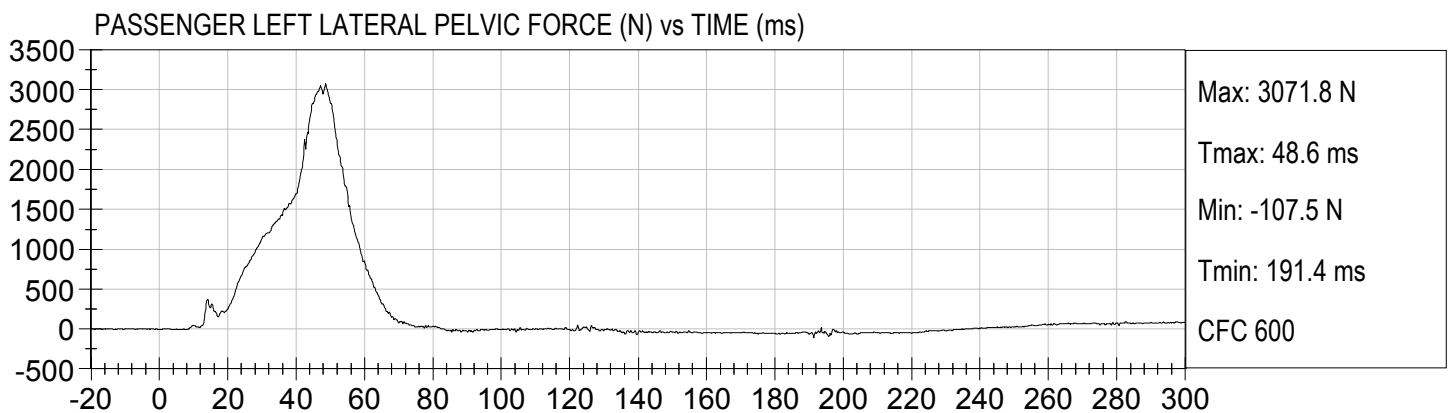
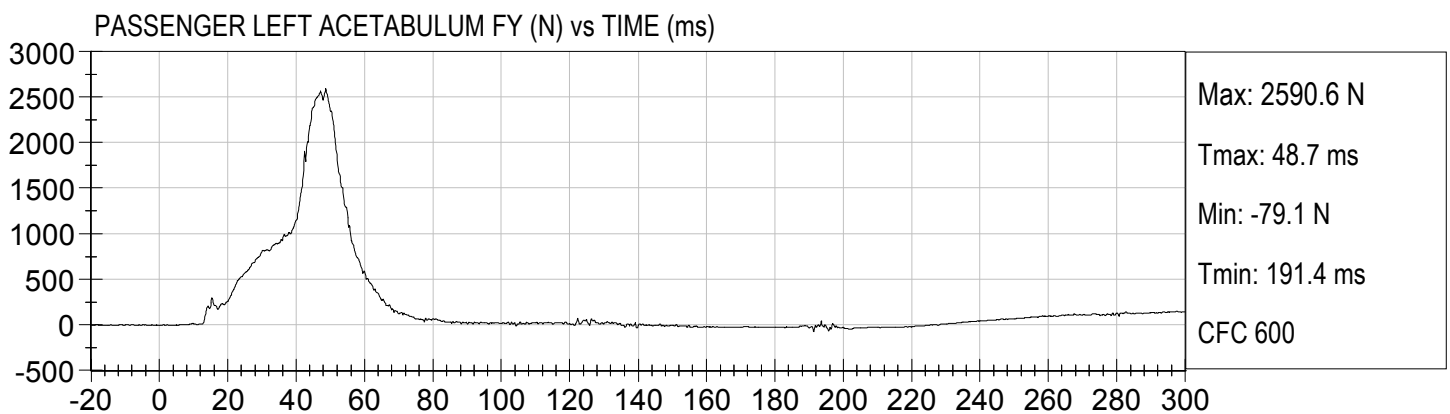
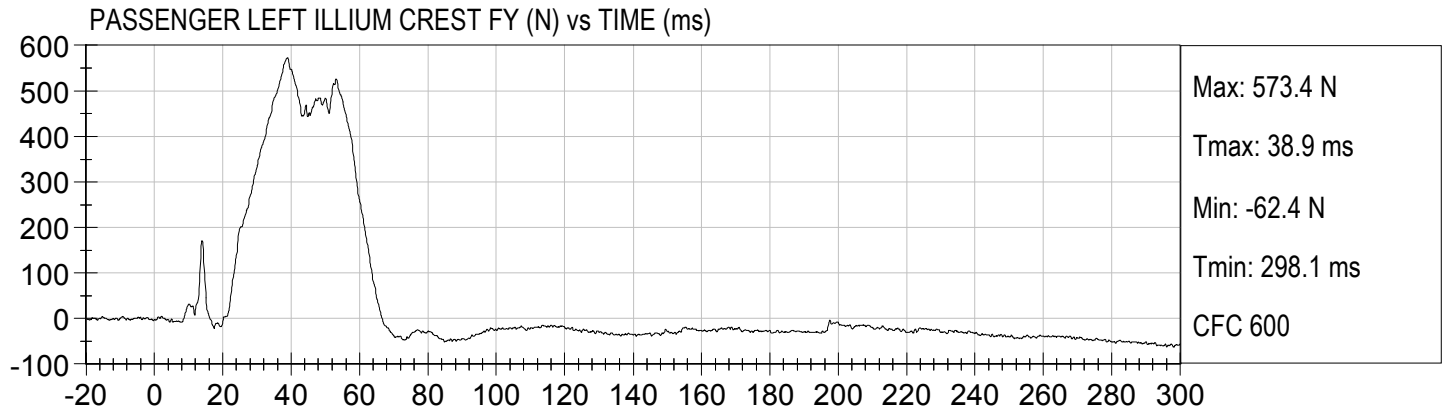












APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

ES-2re External Measurements
SN: 032

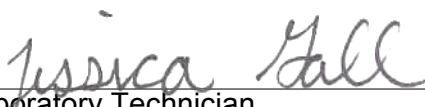
No.	Name	Spec. (mm)	Result	Pass/Fail
1	Sitting Height	900 - 918	915	Pass
2	Seat to Shoulder Joint	558 - 572	568	Pass
3	Seat to Lower Face of Thoracic Spine Box	346 - 356	355	Pass
4	Seat to Hip Joint (center of bolt)	97 - 103	98	Pass
5	Sole to Seat, Sitting	333 - 451	440	Pass
6	Head Width	152 - 158	157	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

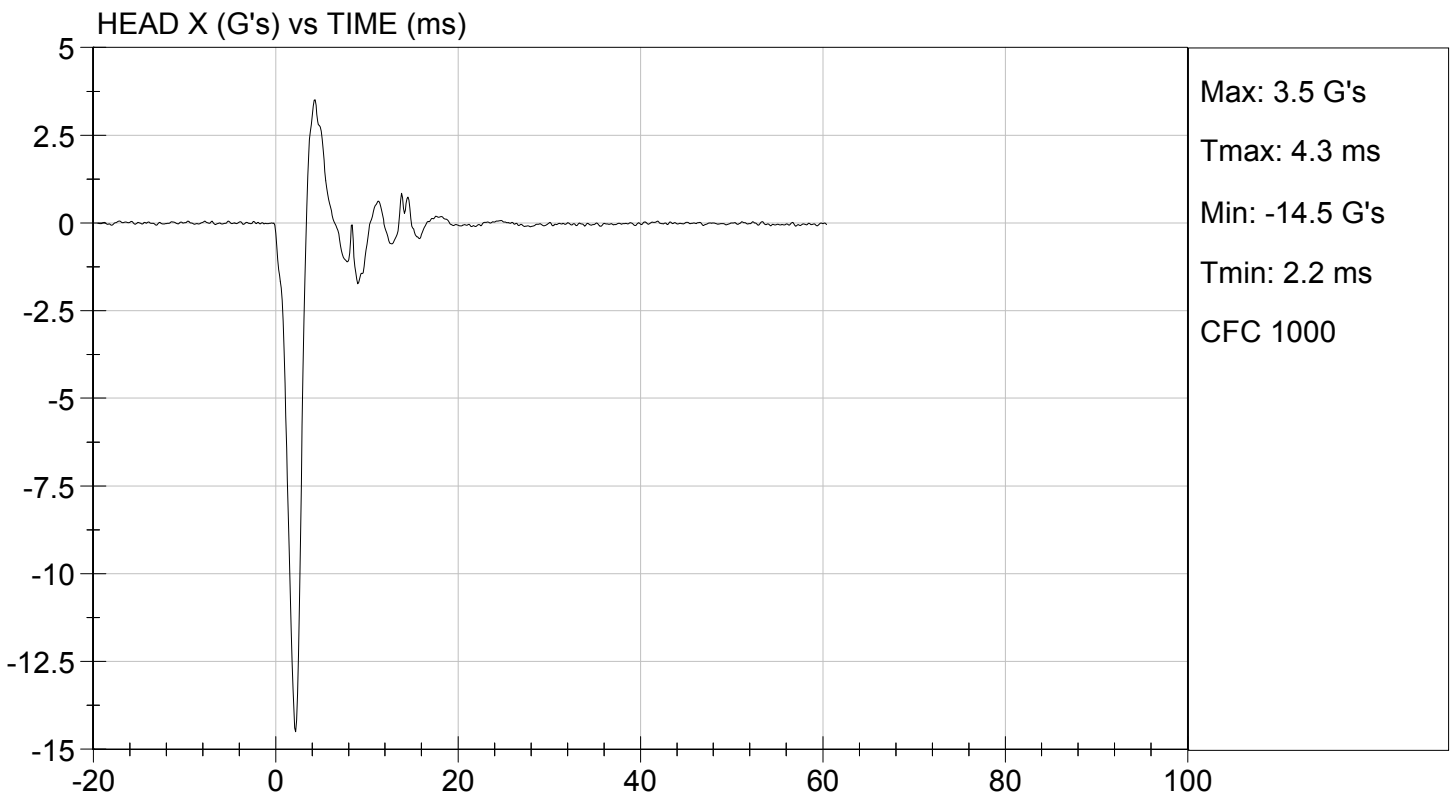
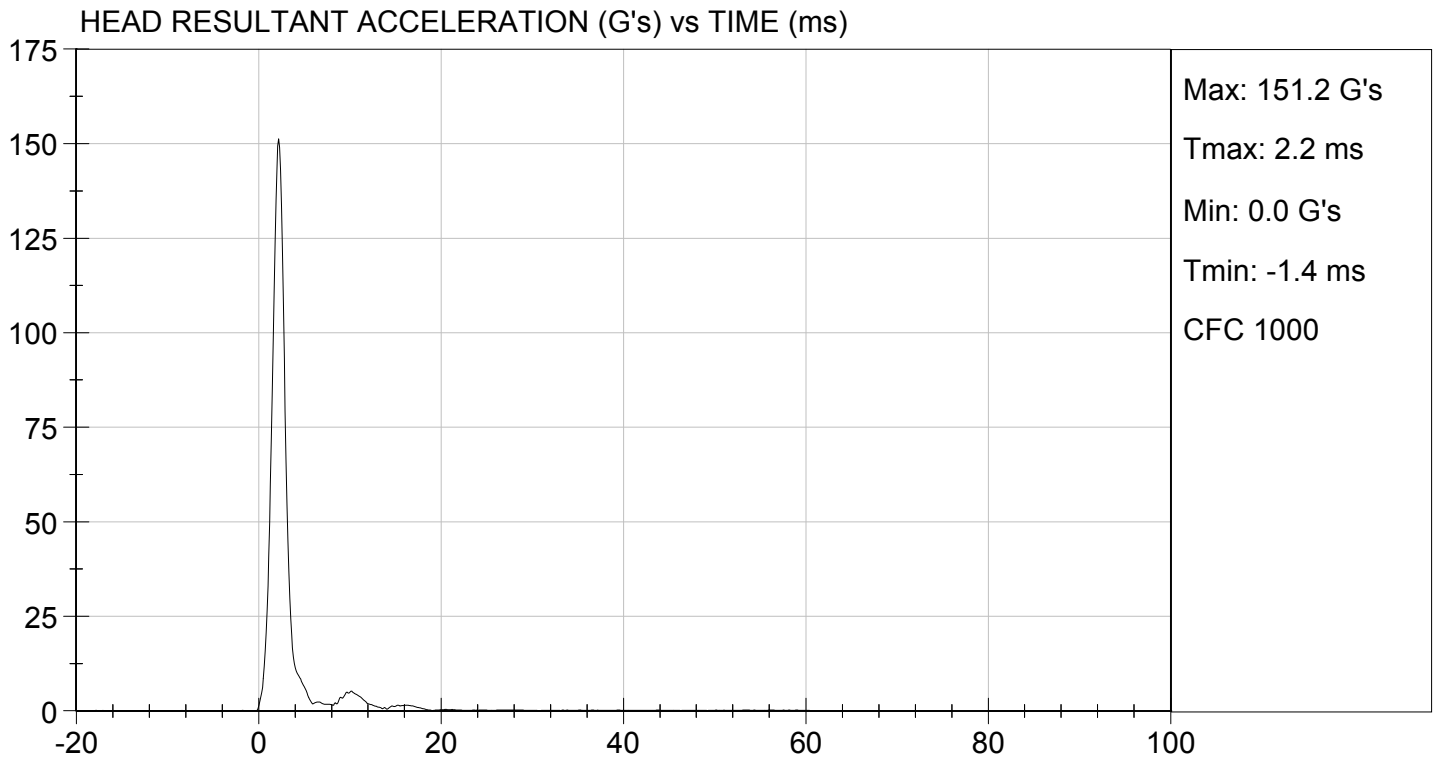
Test ID: D132481

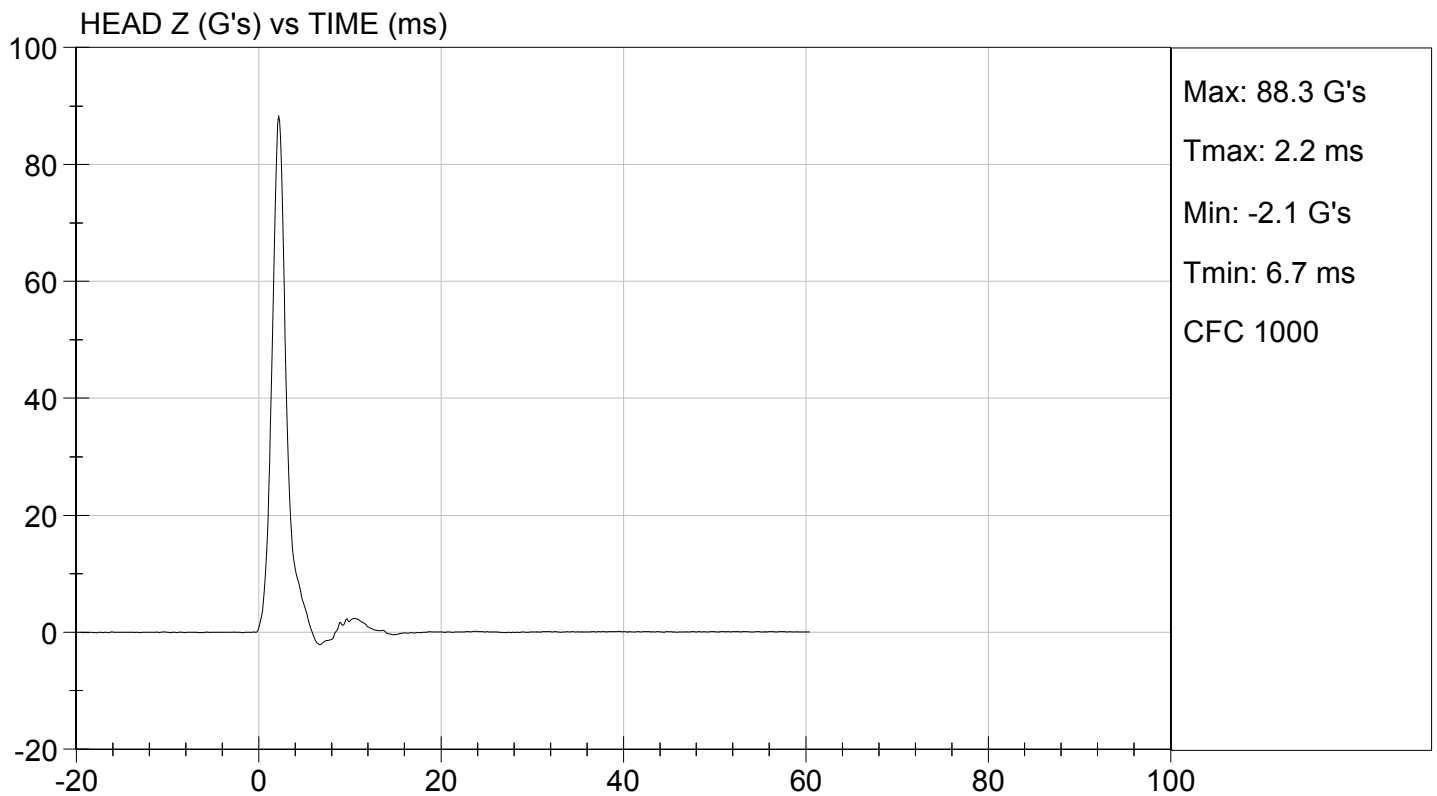
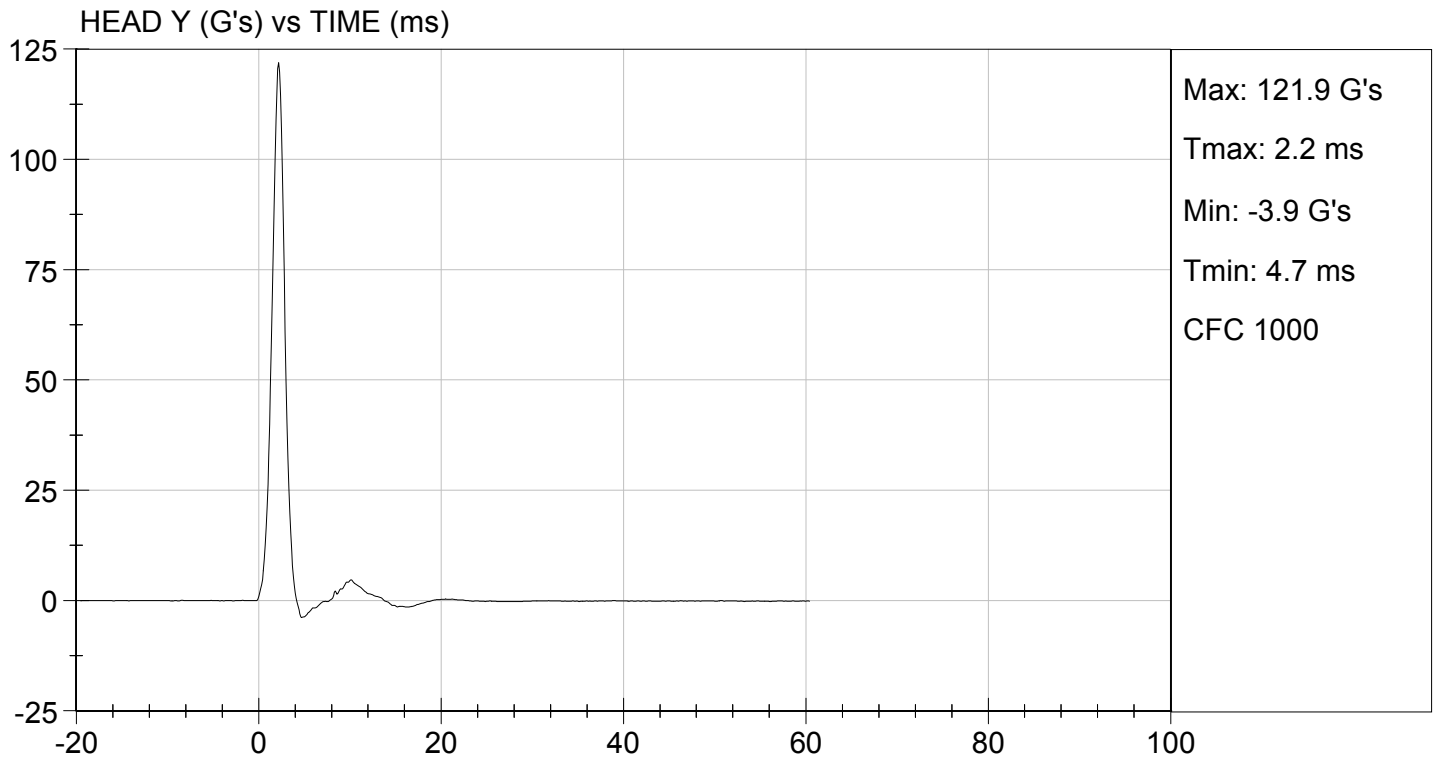
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Peak Resultant Acceleration	G's	125 to 155	151	Pass
Peak Longitudinal Acceleration	G's	<= +/- 15.0	-14.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results			Pass	


Laboratory Technician

07/30/2013
Test Date


Approved By



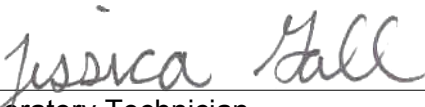


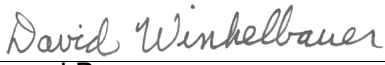
MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY

ATD Serial No: 032

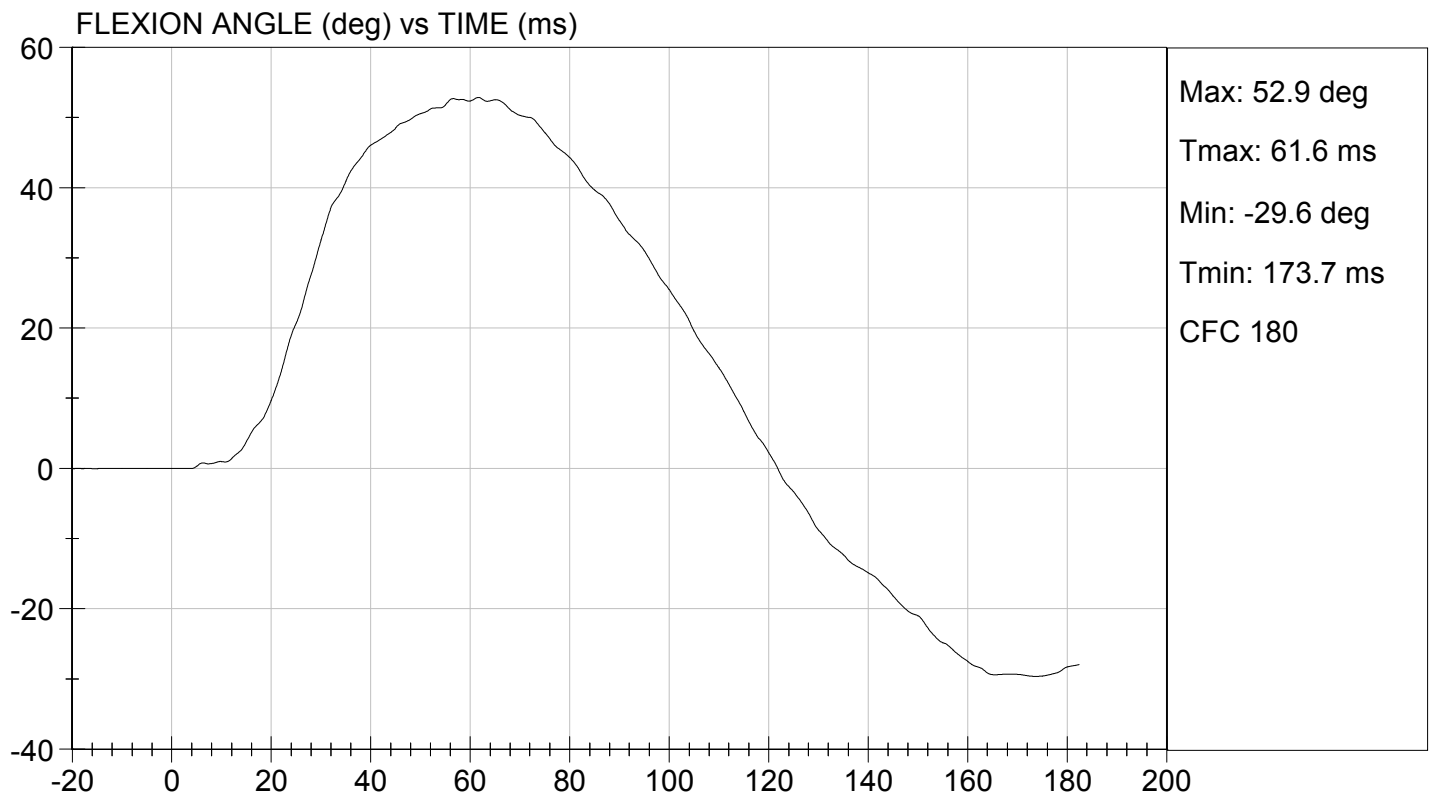
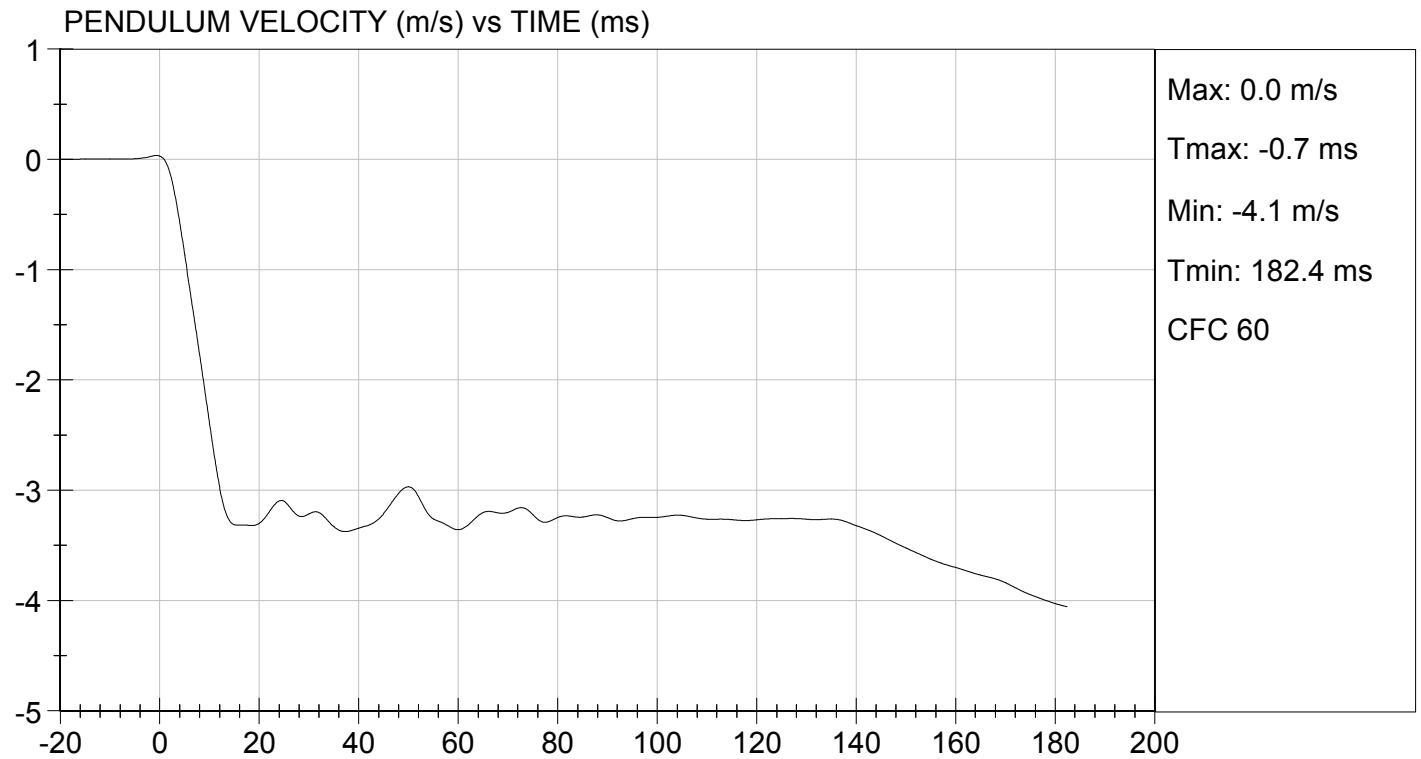
Test I.D: D132482

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Pendulum Speed		m/s	3.30 to 3.50	3.36	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.01	Pass
	3 ms	m/s	-0.25 to -0.375	-0.31	Pass
	14 ms	m/s	-3.20 to -3.70	-3.27	Pass
	17 ms	m/s	>= -3.70	-3.31	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	52.9	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	61.6	Pass
Head Rotation Decay Time to 0 Degree		ms	53.0 to 88.0	59.7	Pass
Overall Results					Pass


 Laboratory Technician


 Approved By

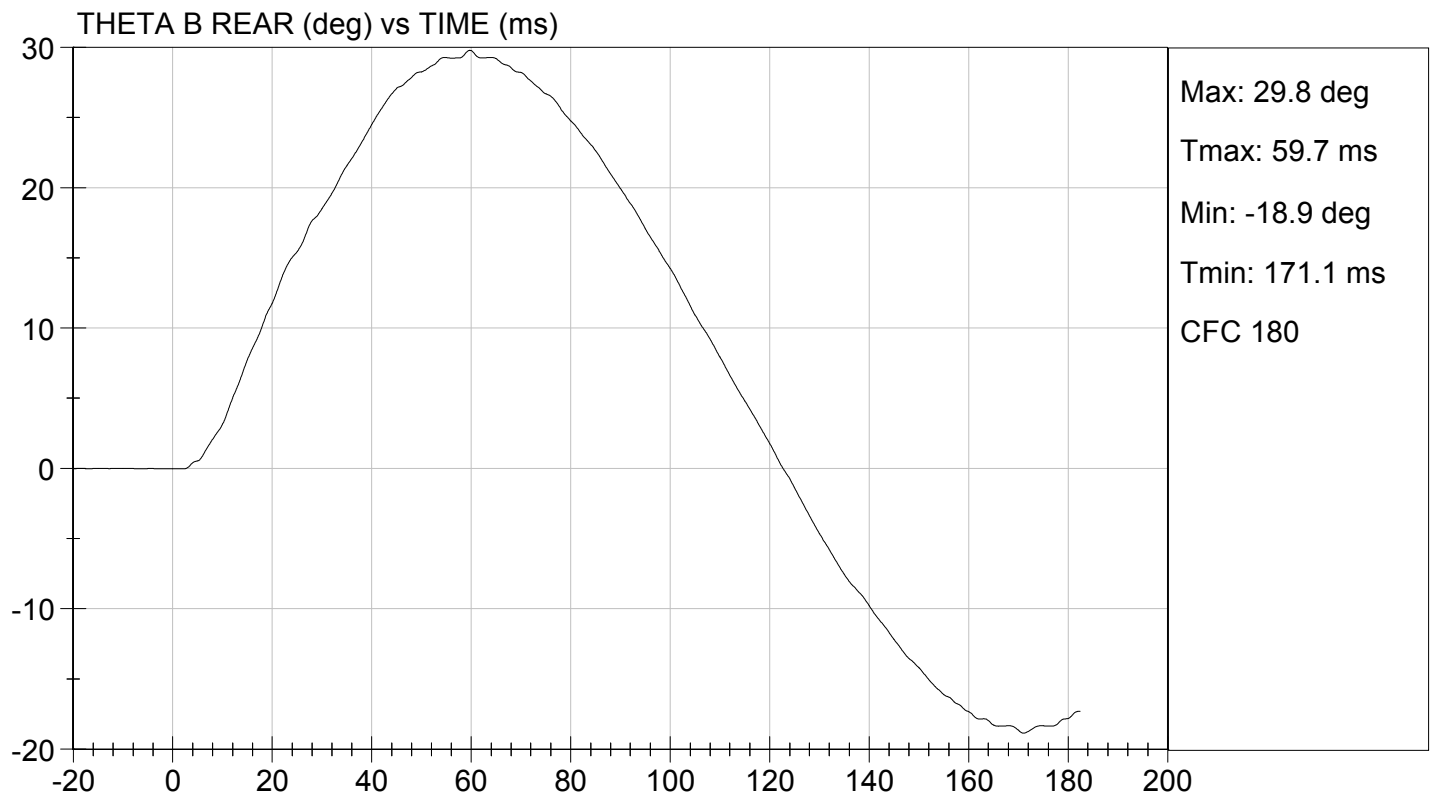
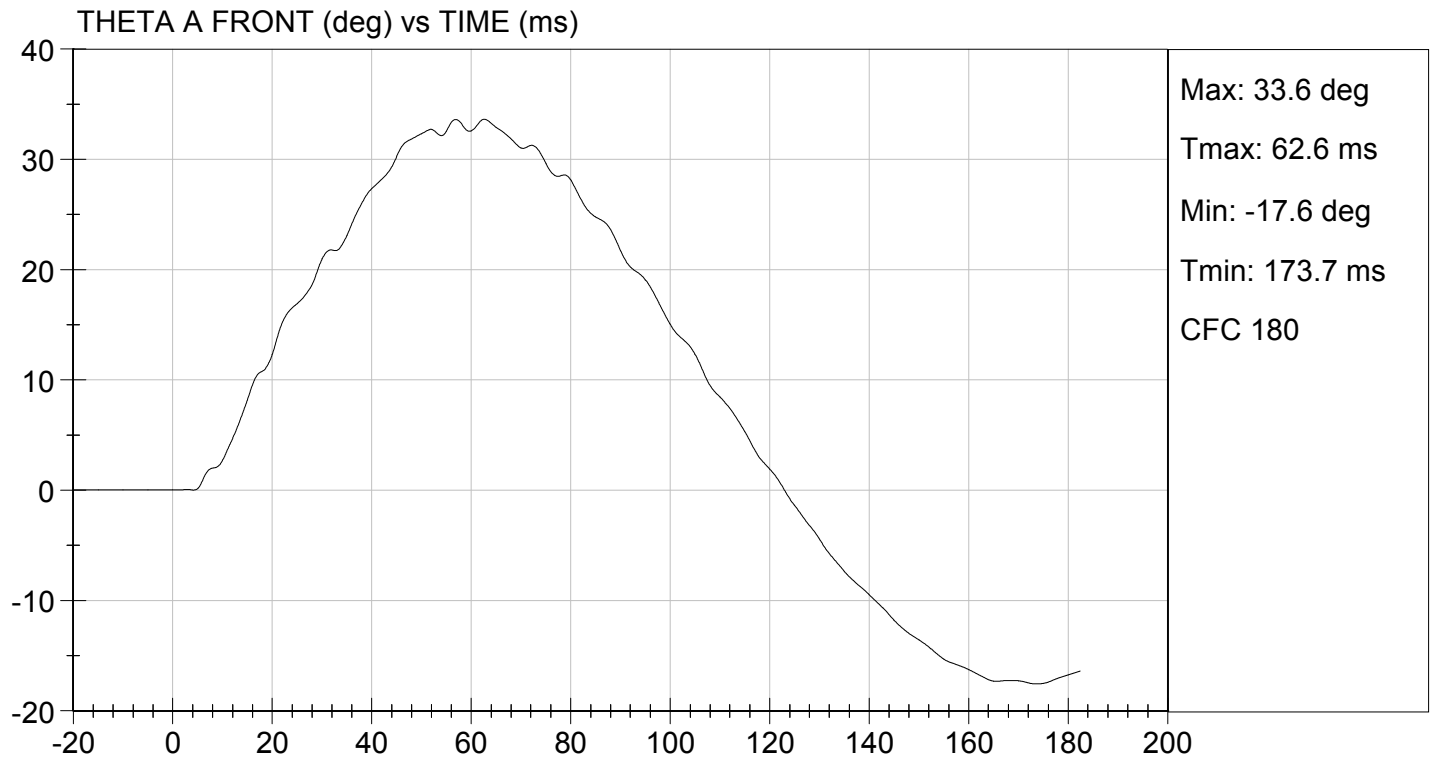
07/30/2013
 Test Date





TEST DESC: NECK BENDING
VELOCITY: 11.04 ft/s, 3.36 m/s

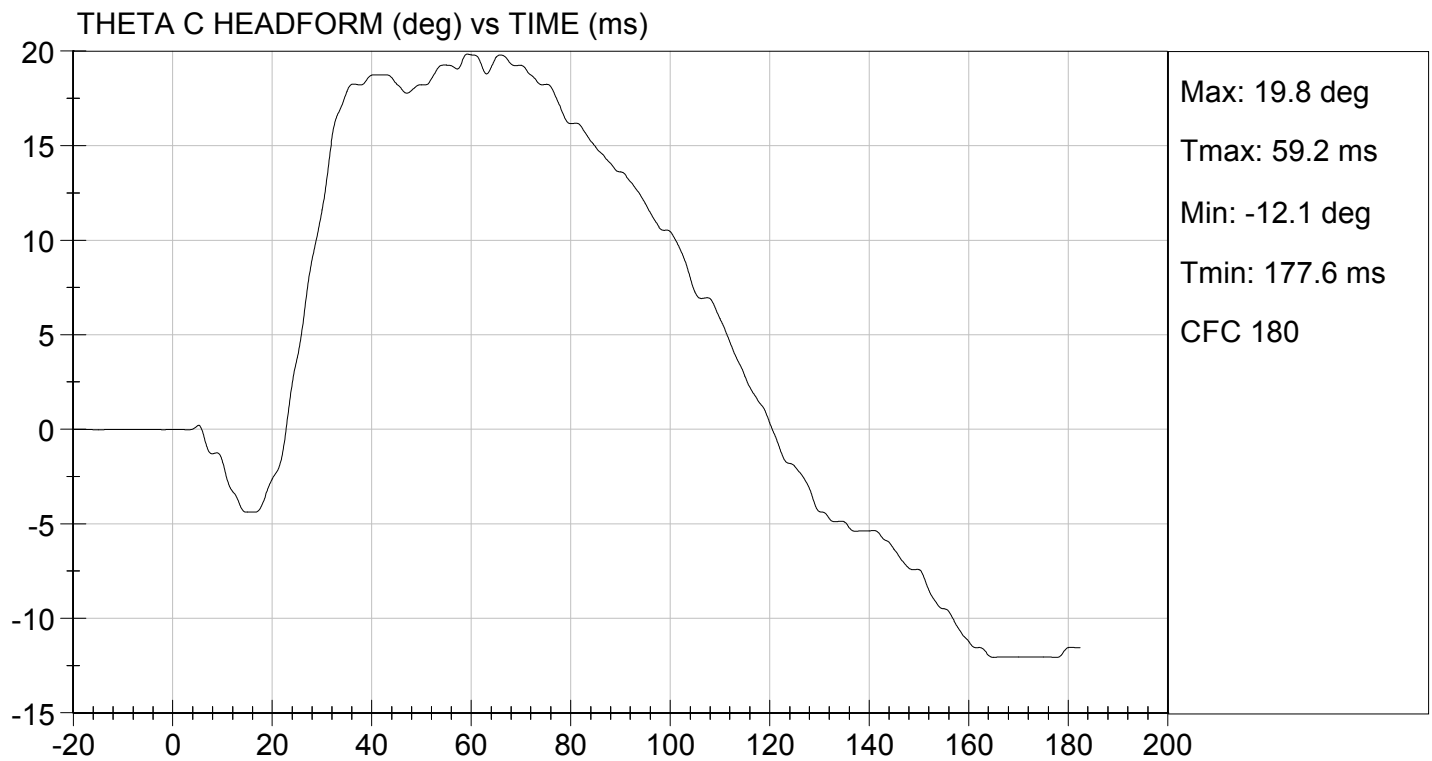
TEST DATE: 07/30/2013
TEST #: D132482





TEST DESC: NECK BENDING
VELOCITY: 11.04 ft/s, 3.36 m/s

TEST DATE: 07/30/2013
TEST #: D132482



MGA RESEARCH CORPORATION

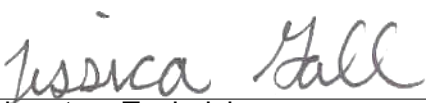
SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132483

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Pendulum Speed	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.0	Pass
Overall Test Results				Pass


Laboratory Technician

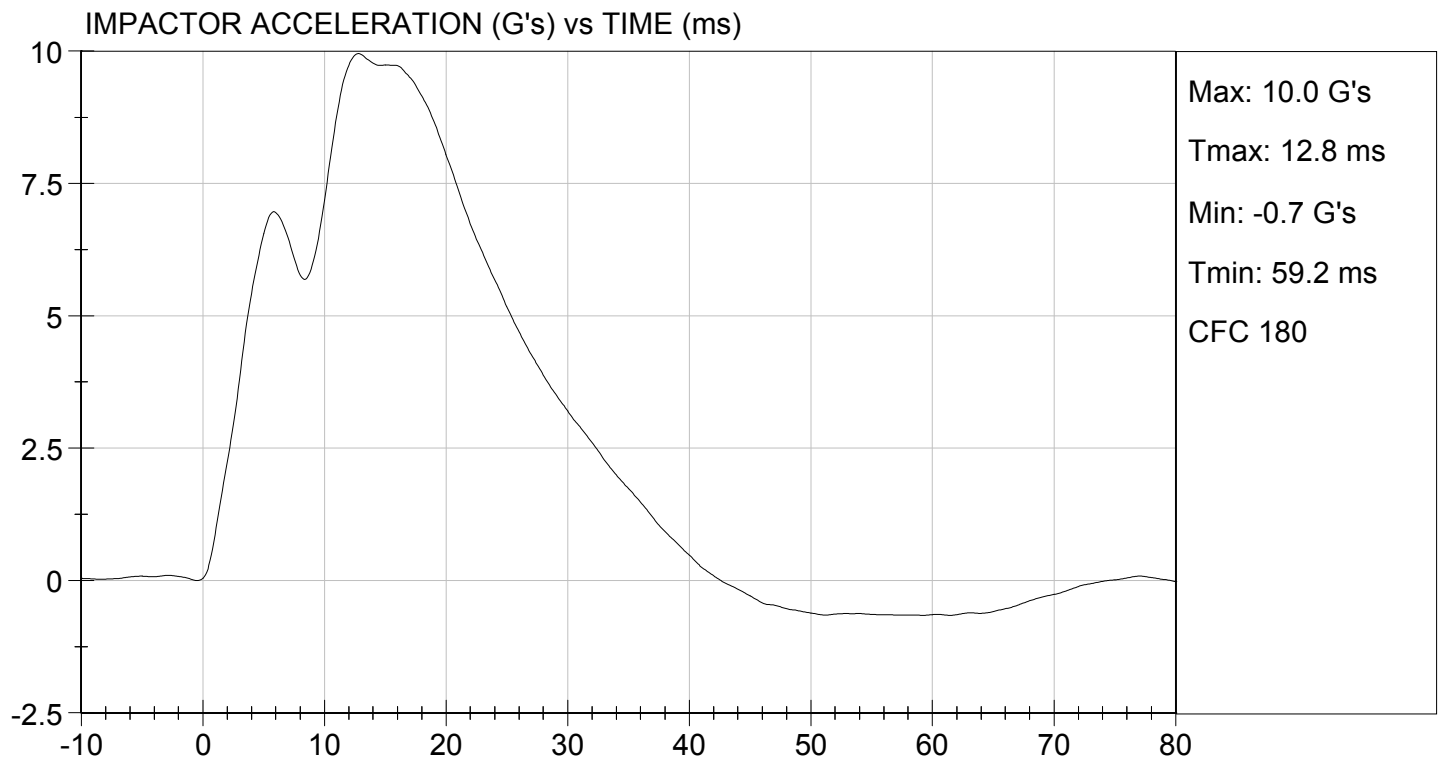
07/30/2013
Test Date


Approved By



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

TEST DATE: 07/30/2013
TEST #: D132483



MGA RESEARCH CORPORATION

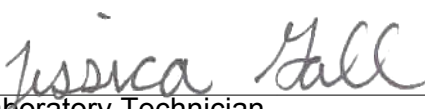
UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132484

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Displacement at 459 mm	mm	36.0 to 40.0	38.0	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.5	Pass
Overall Test Results				Pass

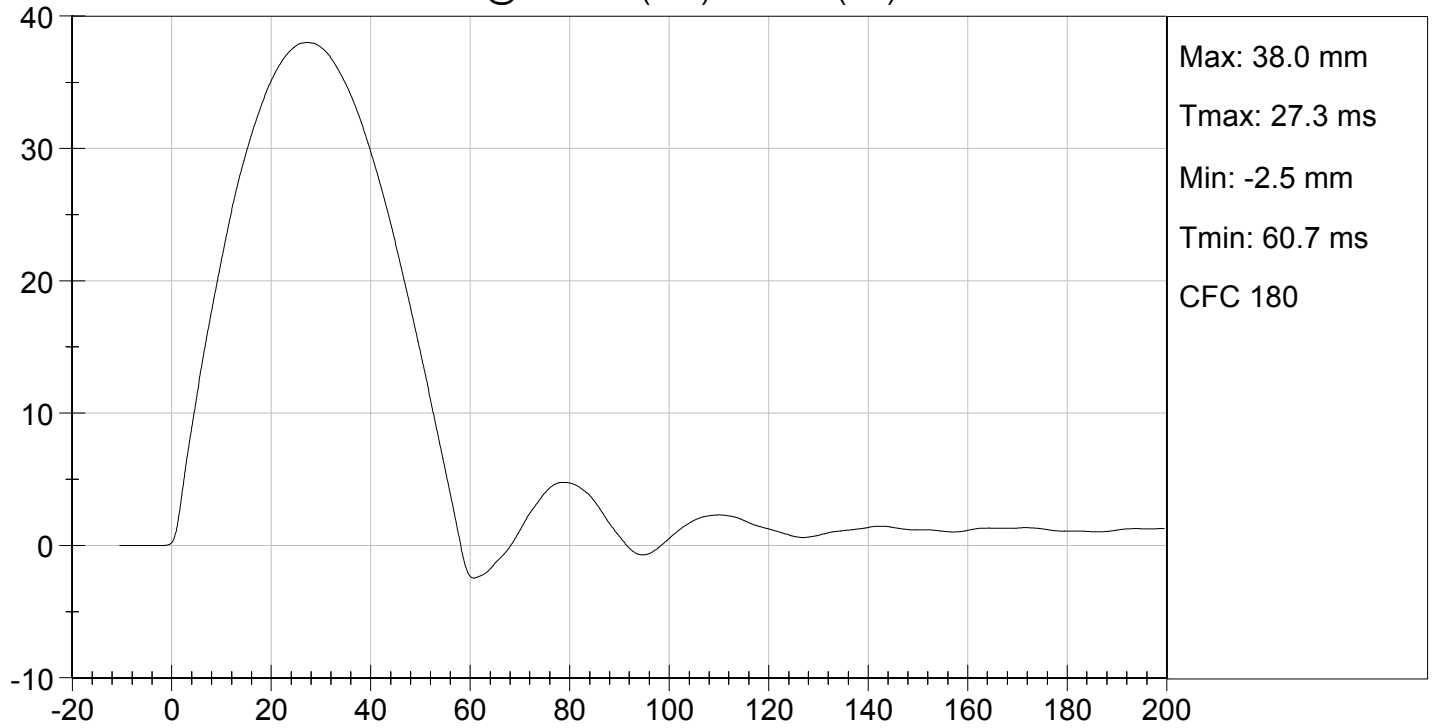

Laboratory Technician

07/30/2013
Test Date

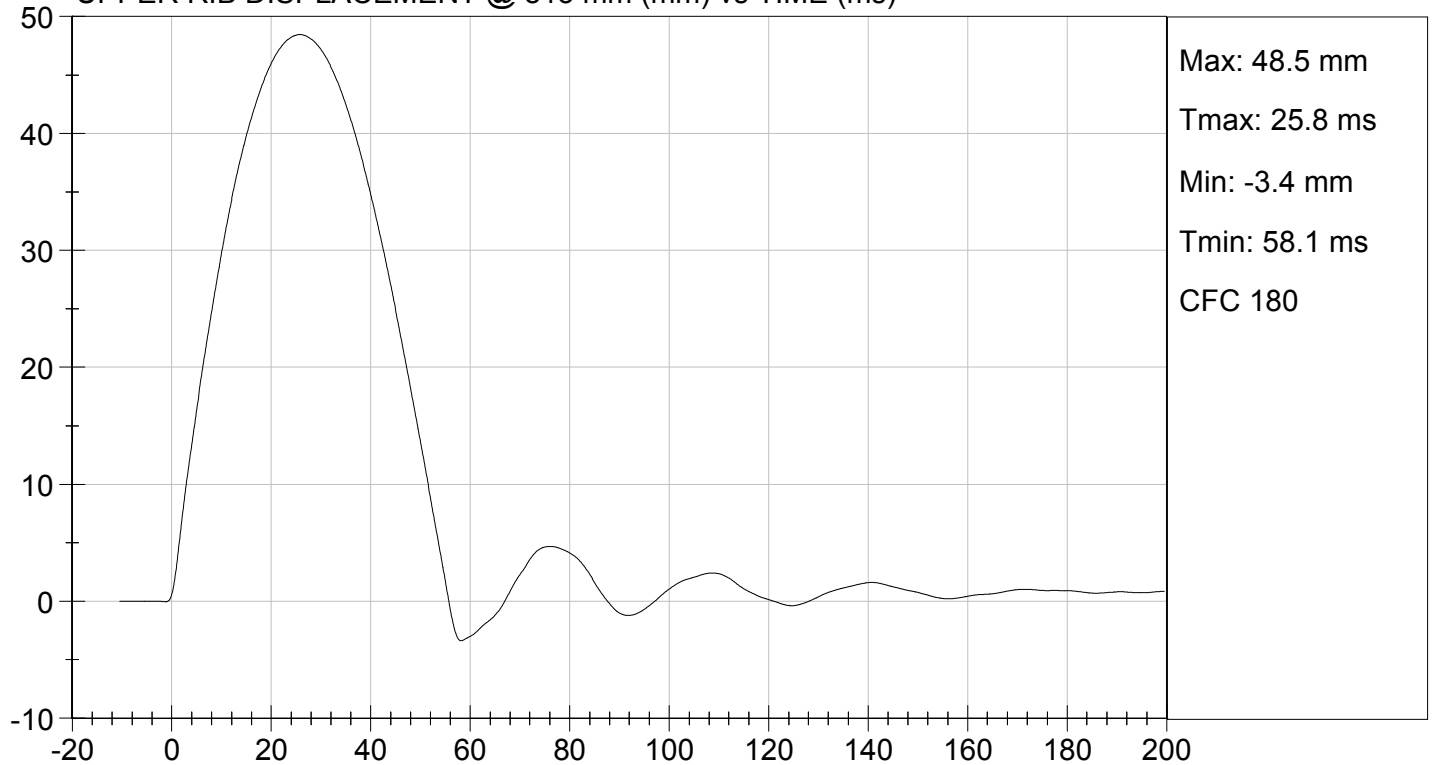

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UPPER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



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: D132485

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Displacement at 459 mm	mm	36.0 to 40.0	38.8	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.9	Pass
Overall Test Results				Pass

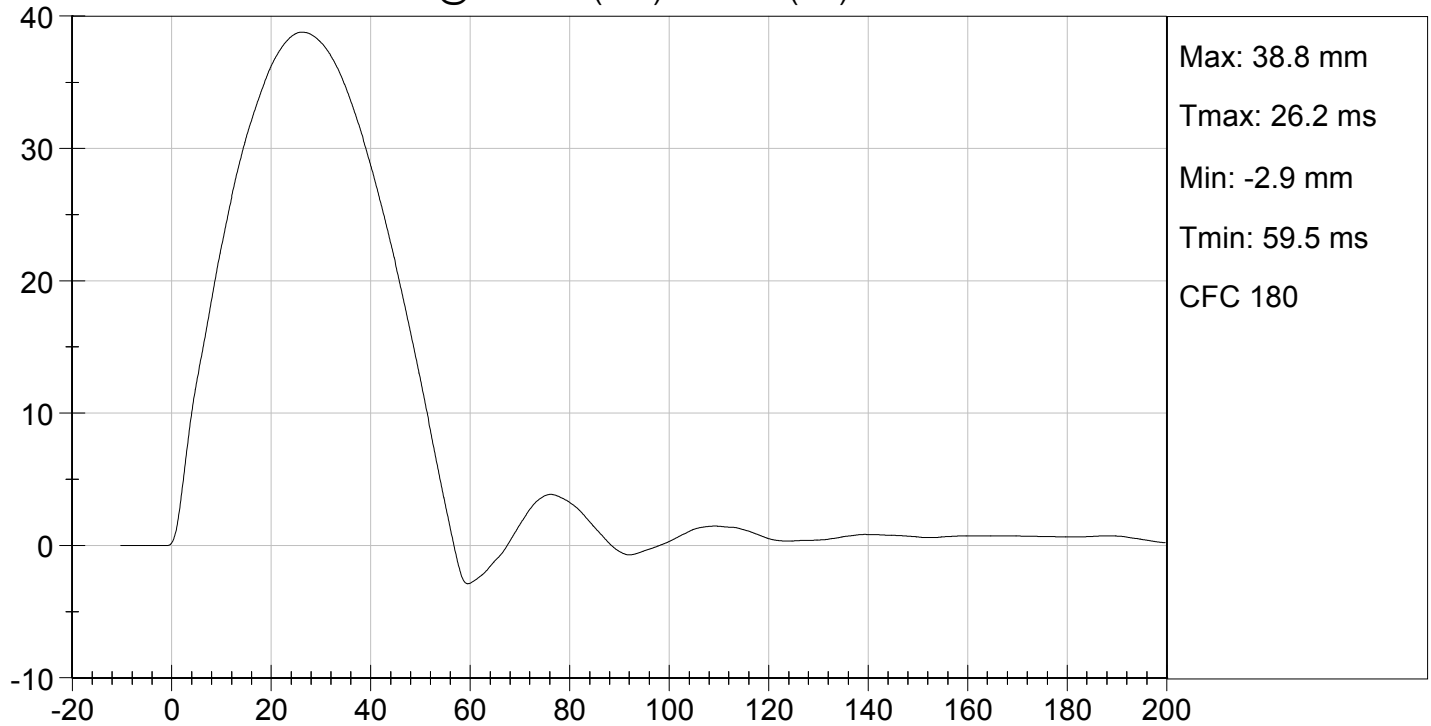

Laboratory Technician

07/30/2013
Test Date

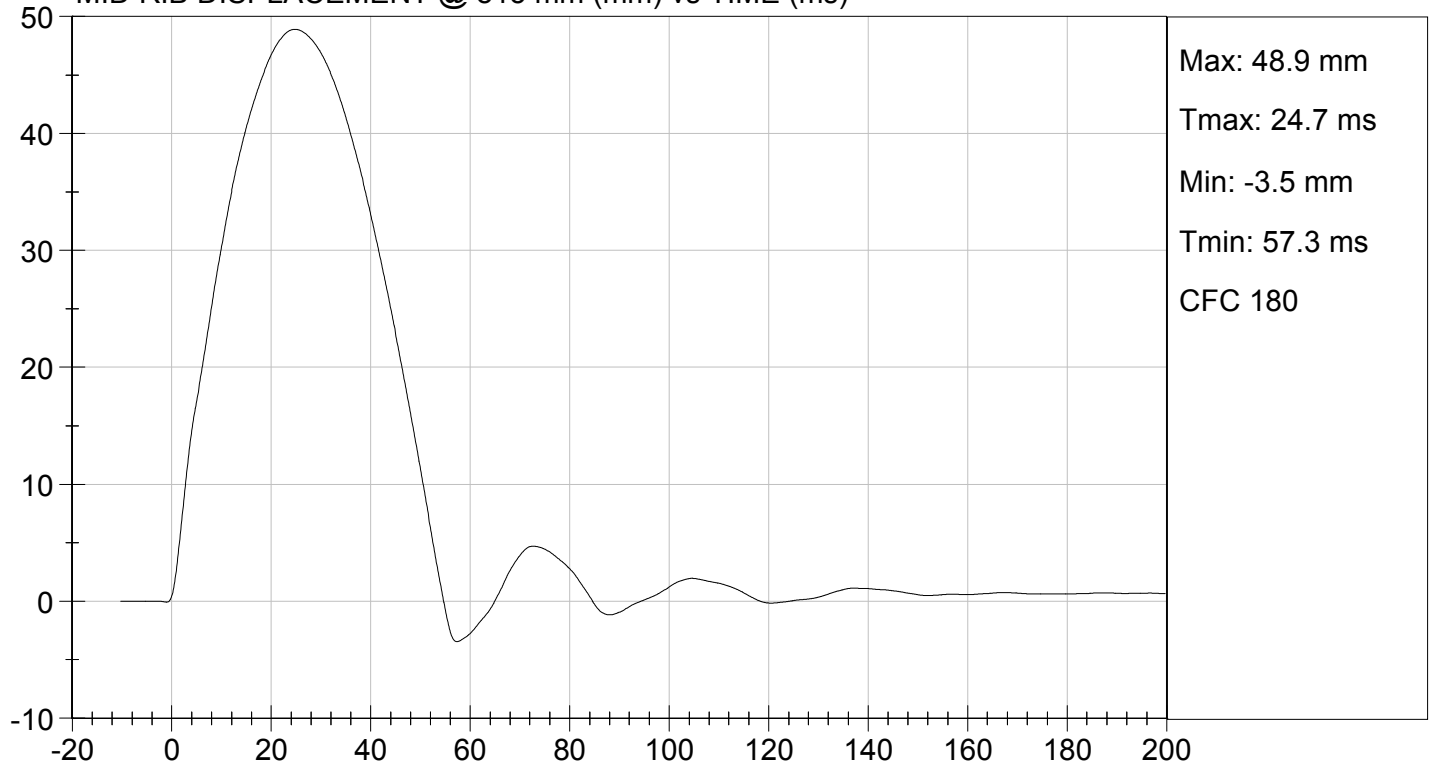

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MID RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



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



MGA RESEARCH CORPORATION

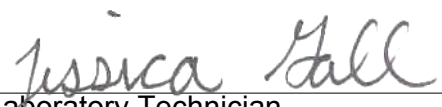
LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

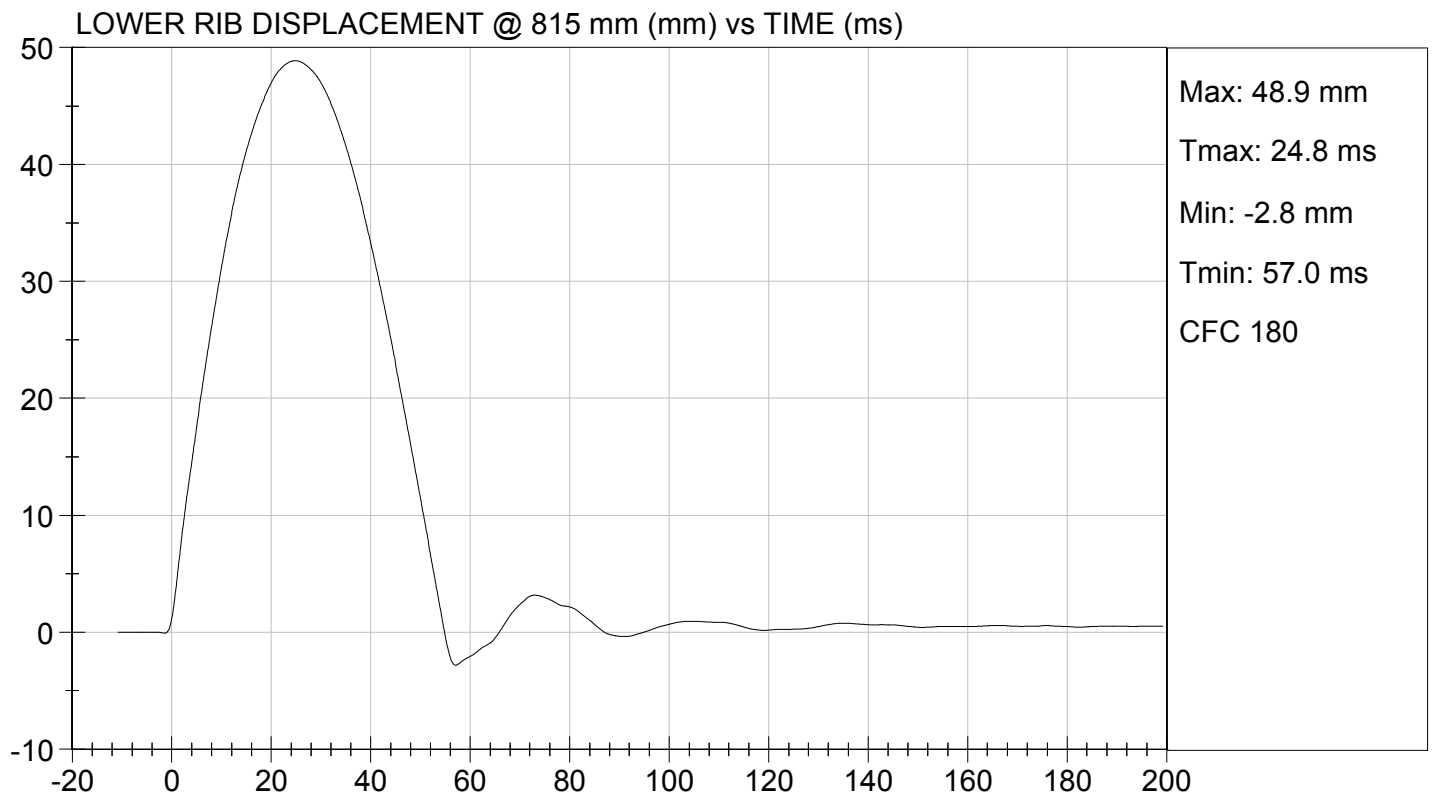
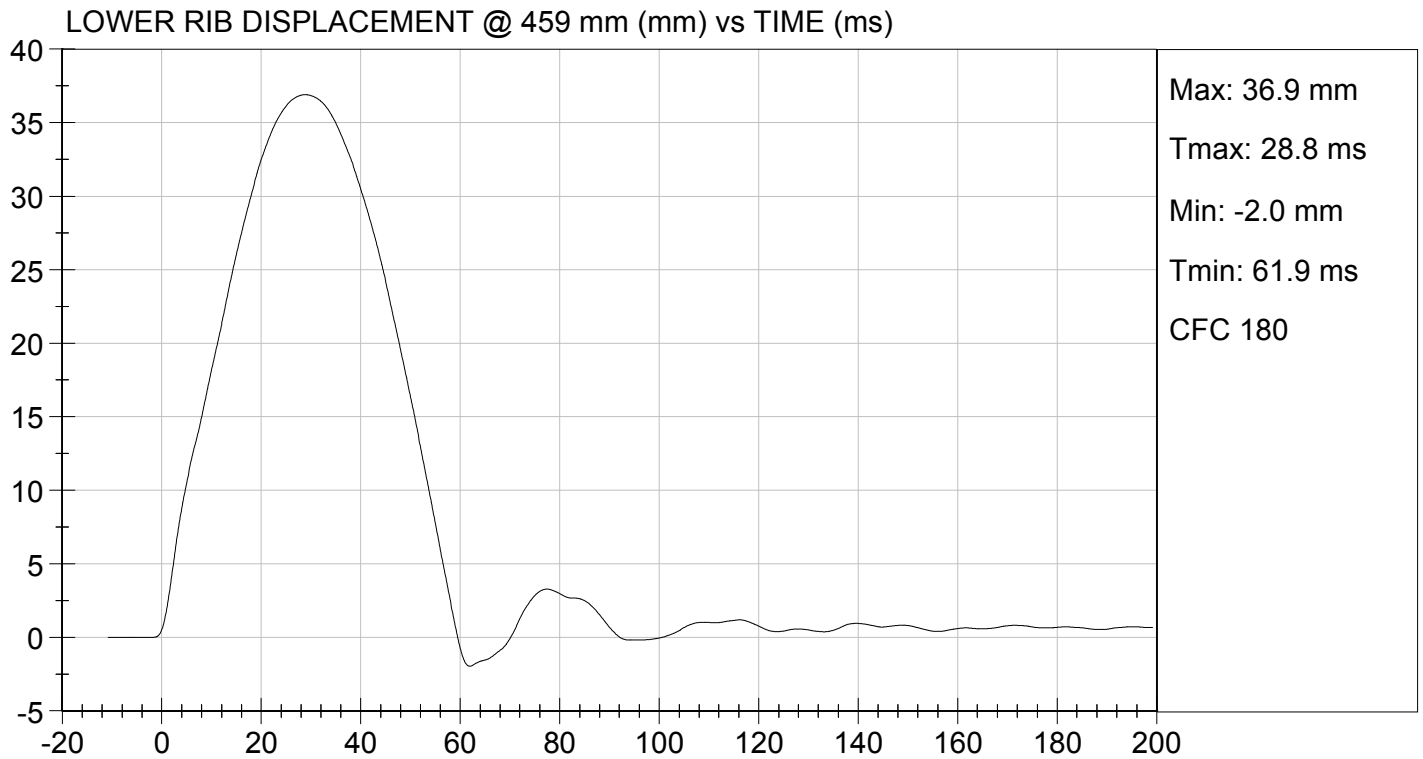
Test I.D: D132486

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Displacement at 459 mm	mm	36.0 to 40.0	36.9	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.9	Pass
Overall Test Results			Pass	


Laboratory Technician

07/30/2013
Test Date


Approved By



MGA RESEARCH CORPORATION**THORAX IMPACT TEST****ES-2re DUMMY****ATD Serial No:** 032**Test I.D:** D132480

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	N	5100 to 6200	6039	Pass
Upper Rib Displacement	mm	34.0 to 41.0	36.1	Pass
Middle Rib Displacement	mm	37.0 to 45.0	38.7	Pass
Lower Rib Displacement	mm	37.0 to 44.0	38.8	Pass
Overall Test Results				Pass


Laboratory Technician

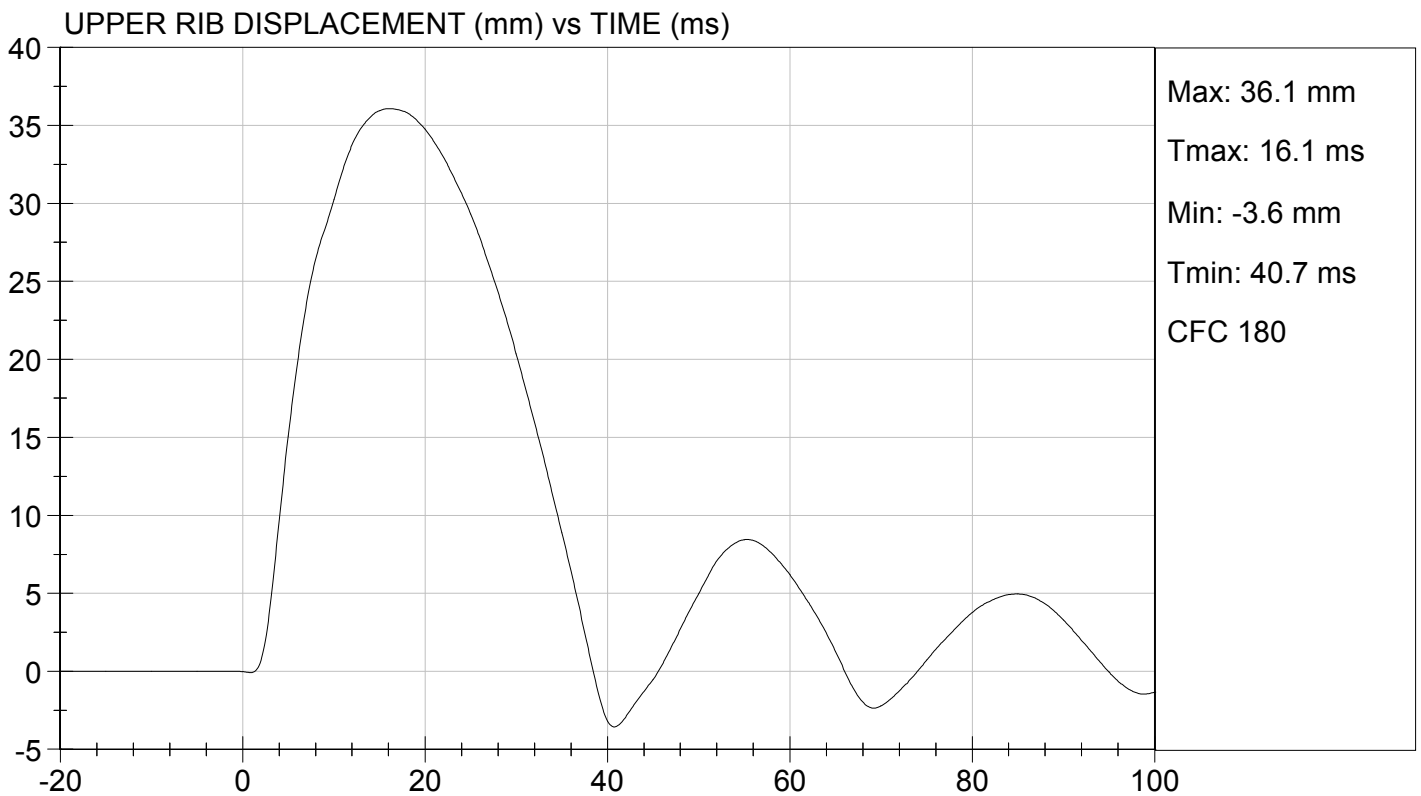
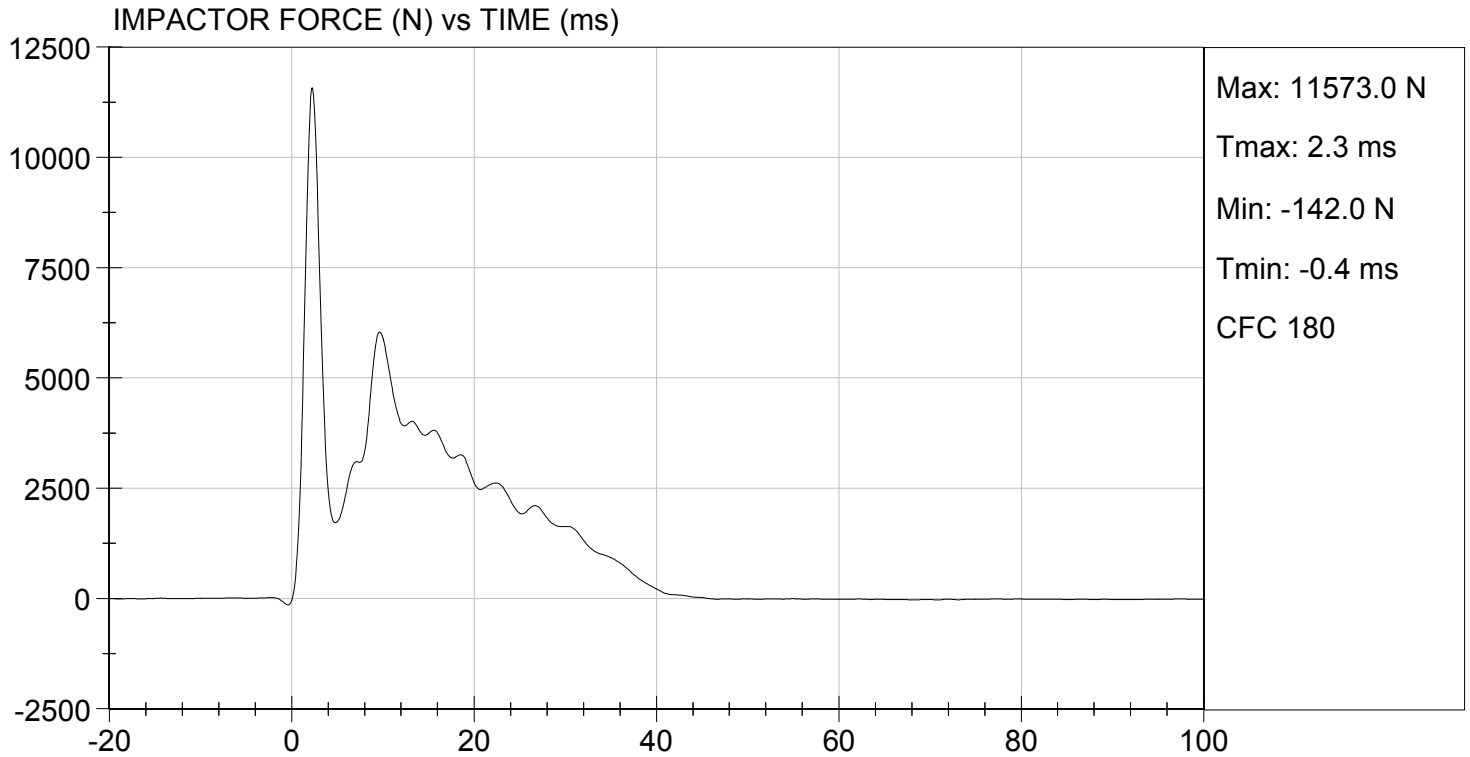
07/30/2013
Test Date


Approved By



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

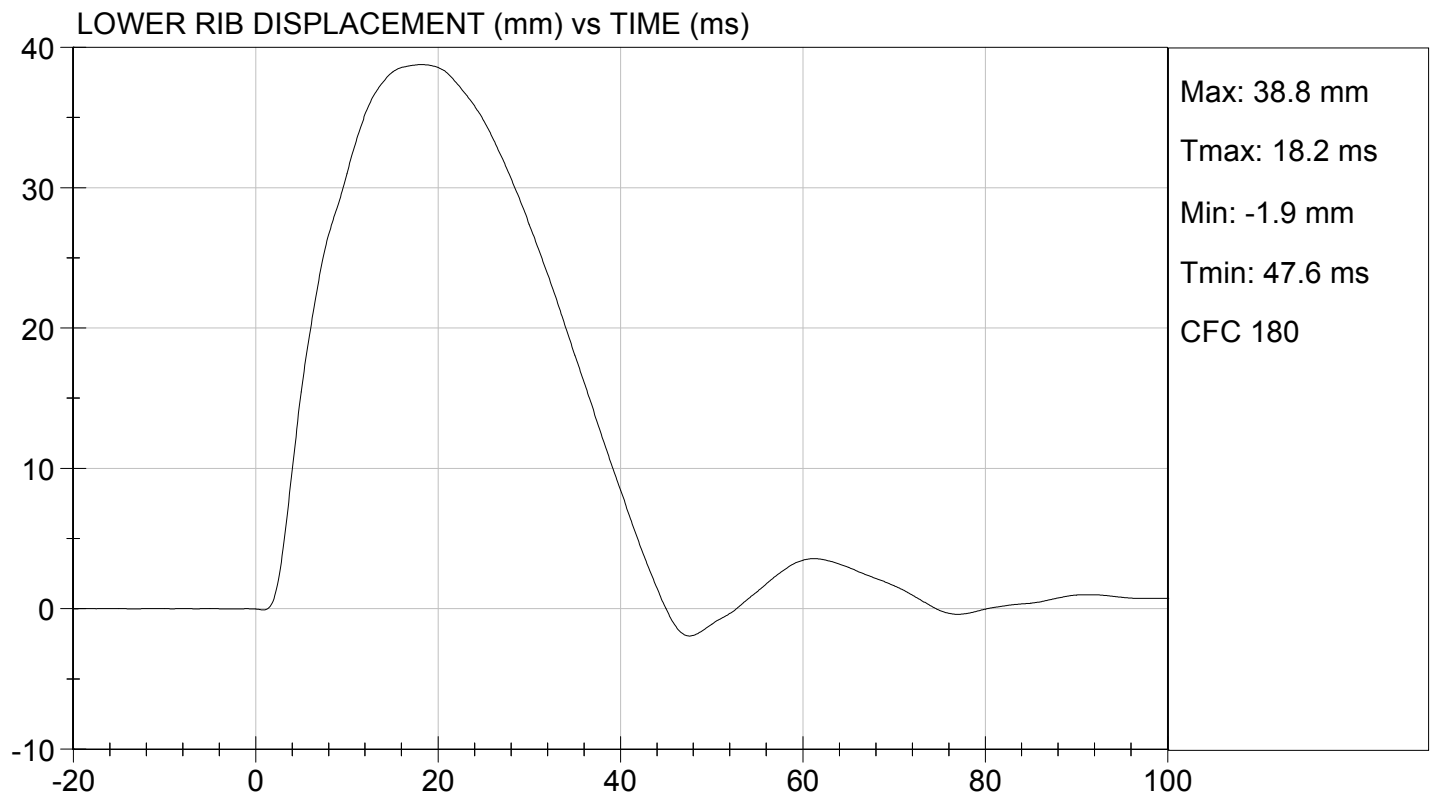
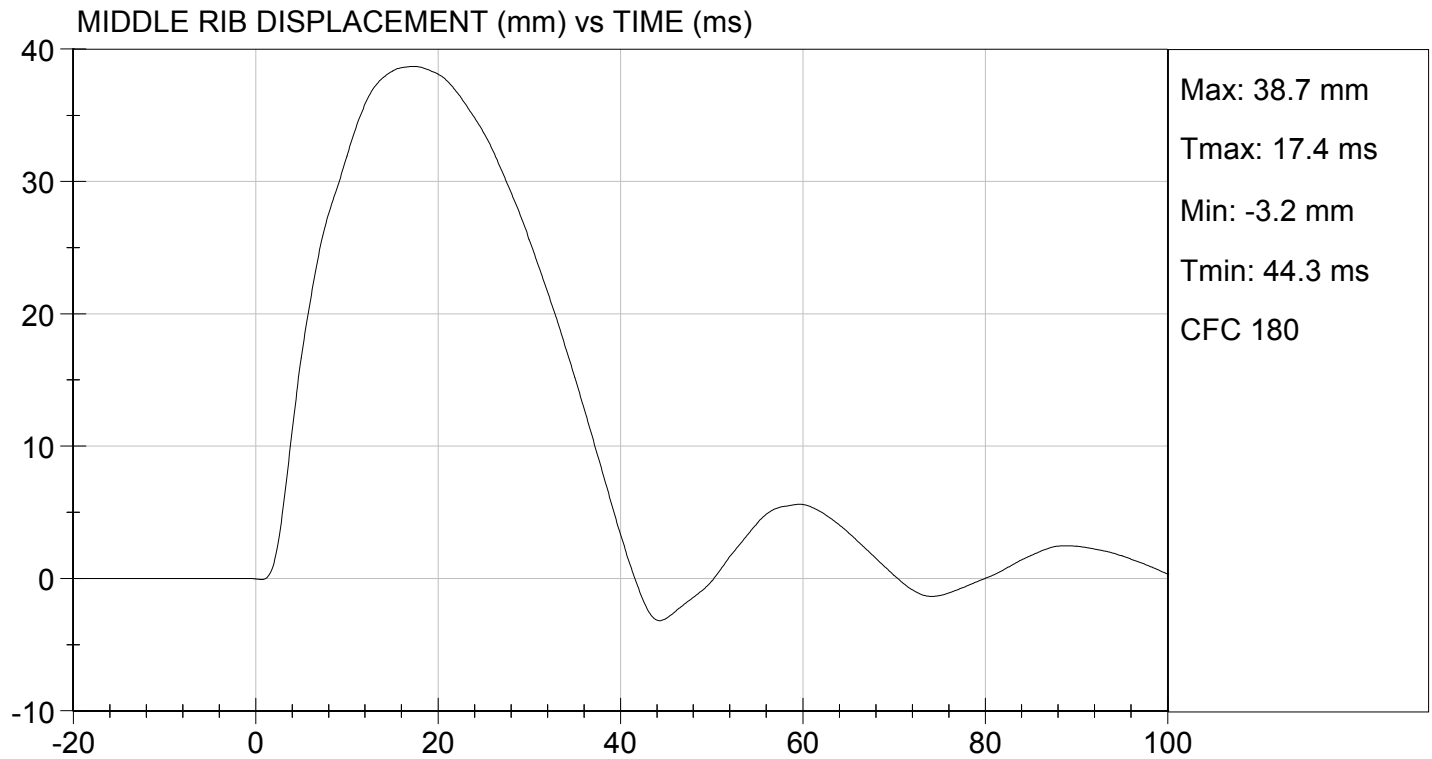
TEST DATE: 07/30/2013
TEST #: D132480





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

TEST DATE: 07/30/2013
TEST #: D132480



MGA RESEARCH CORPORATION

ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132487

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	3.90 to 4.10	3.91	Pass
Maximum Impactor Force	N	4000 to 4800	4349	Pass
Time of Maximum Impactor Force	ms	10.6 to 13.0	11.3	Pass
Maximum Total Abdomen Force	N	2200 to 2700	2509	Pass
Time of Maximum Abdomen Force	ms	10.0 to 12.3	11.4	Pass
Overall Test Results				Pass


Laboratory Technician

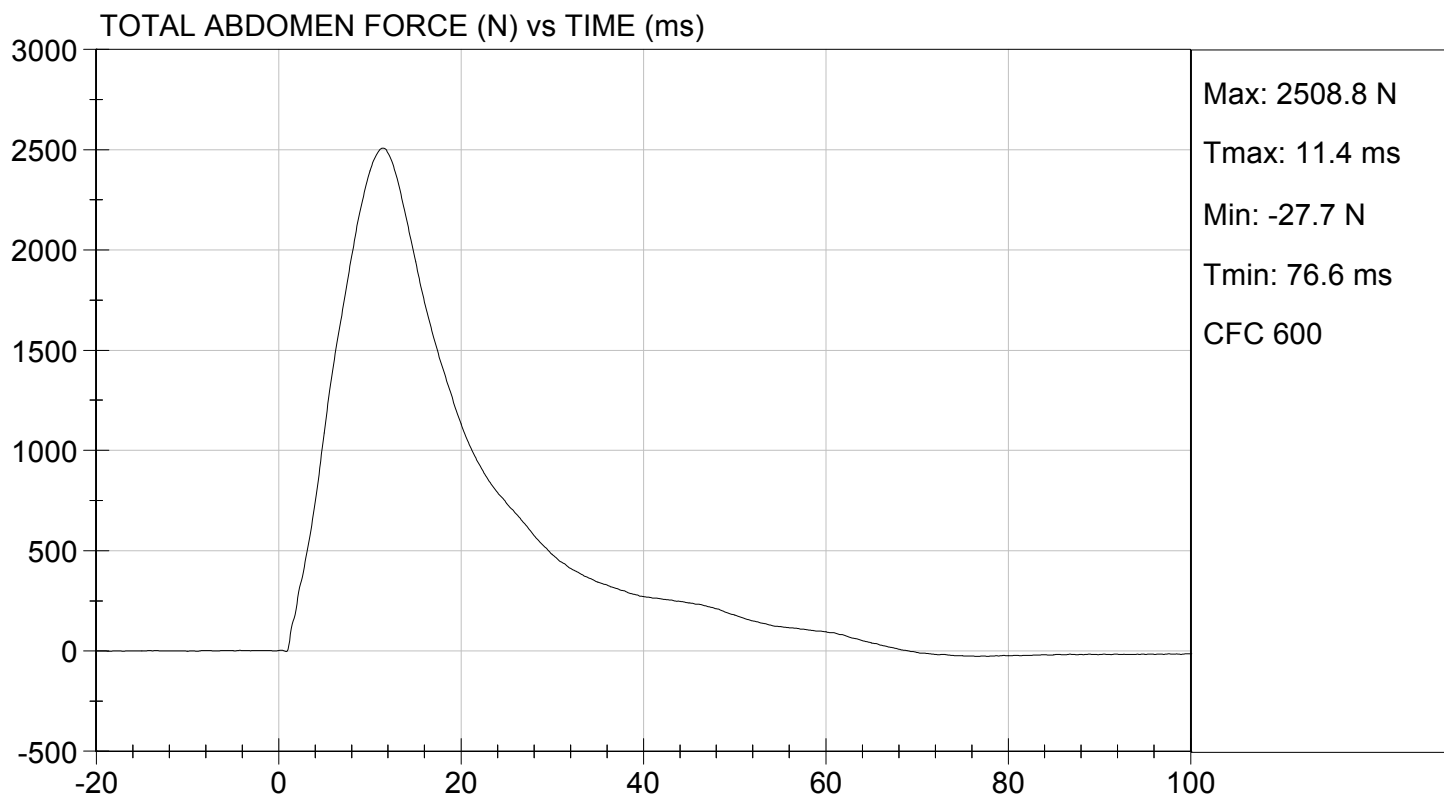
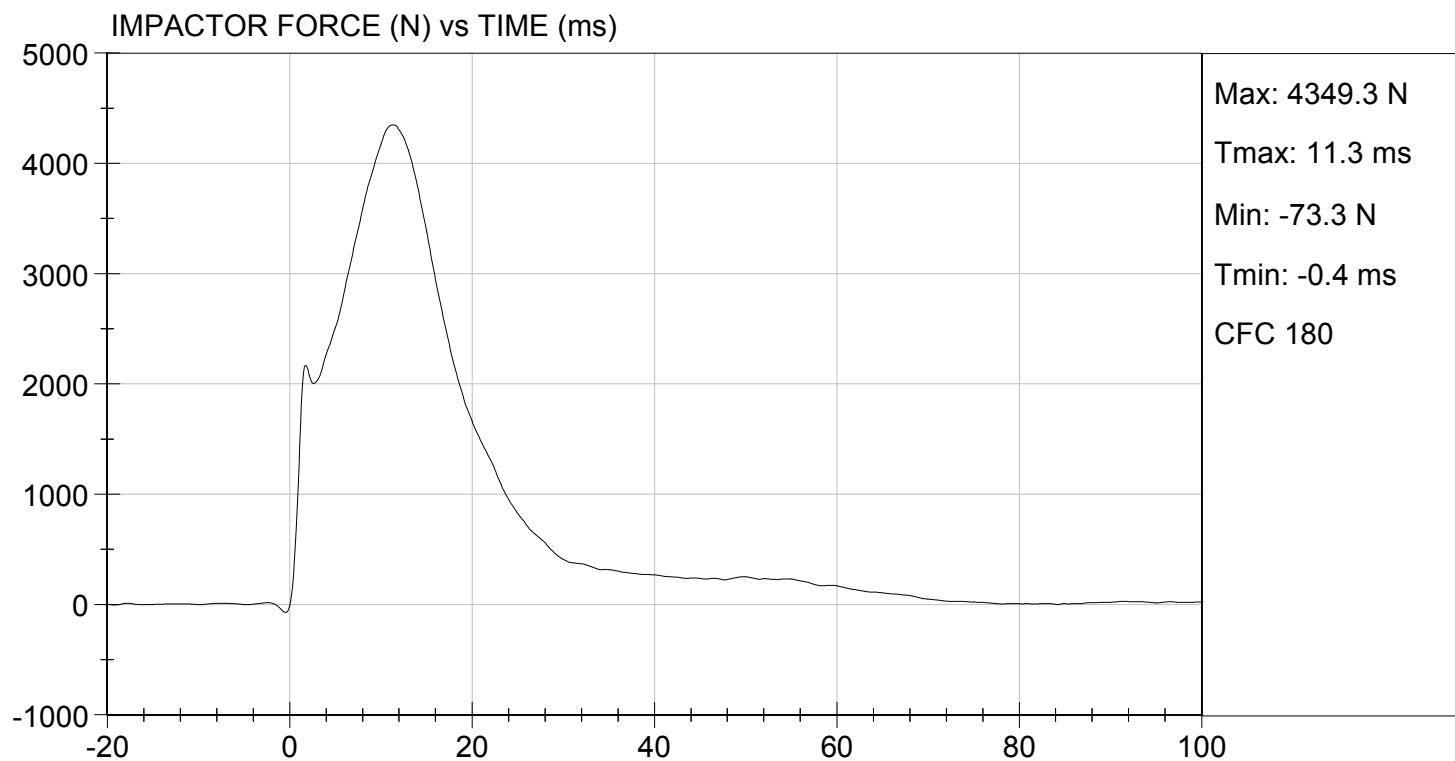
07/30/2013
Test Date


Approved By



TEST DESC: ABDOMEN IMPACT
VELOCITY: 12.82 ft/s, 3.91 m/s

TEST DATE: 07/30/2013
TEST #: D132487

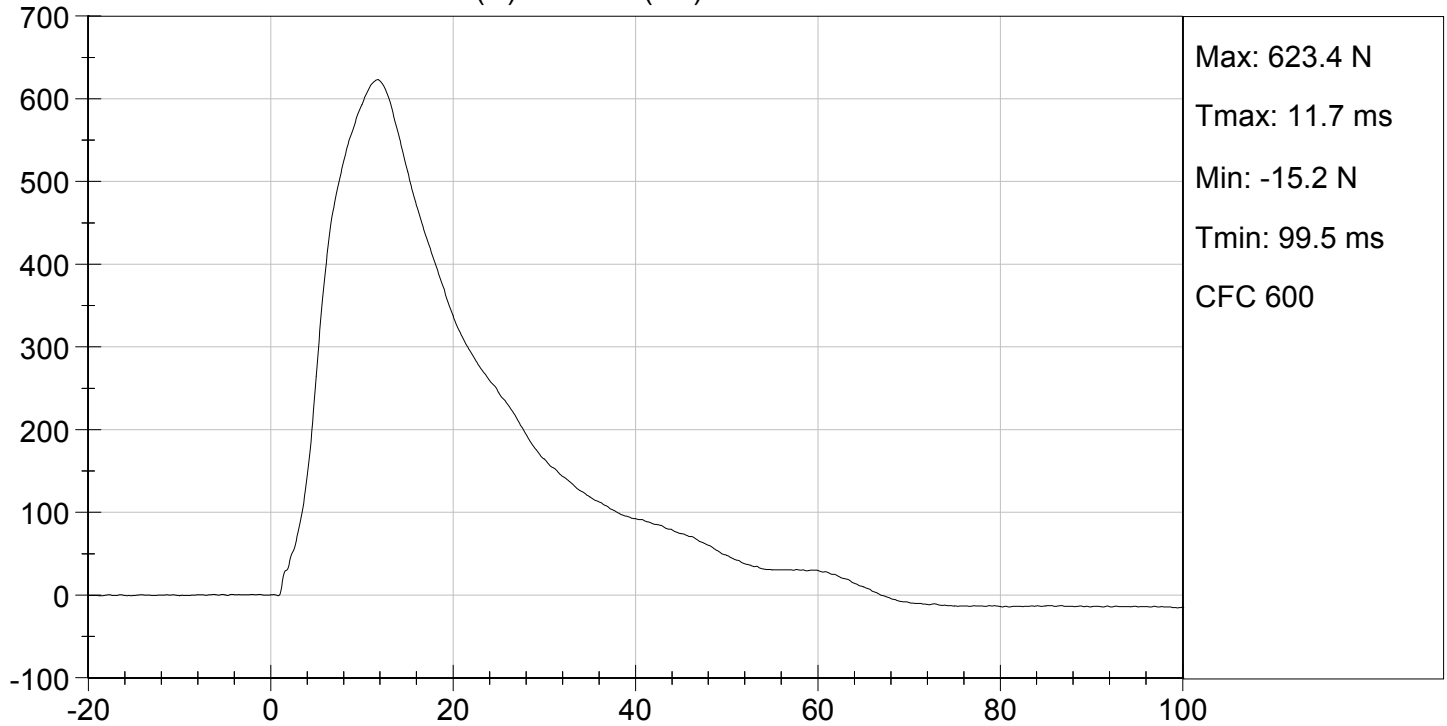




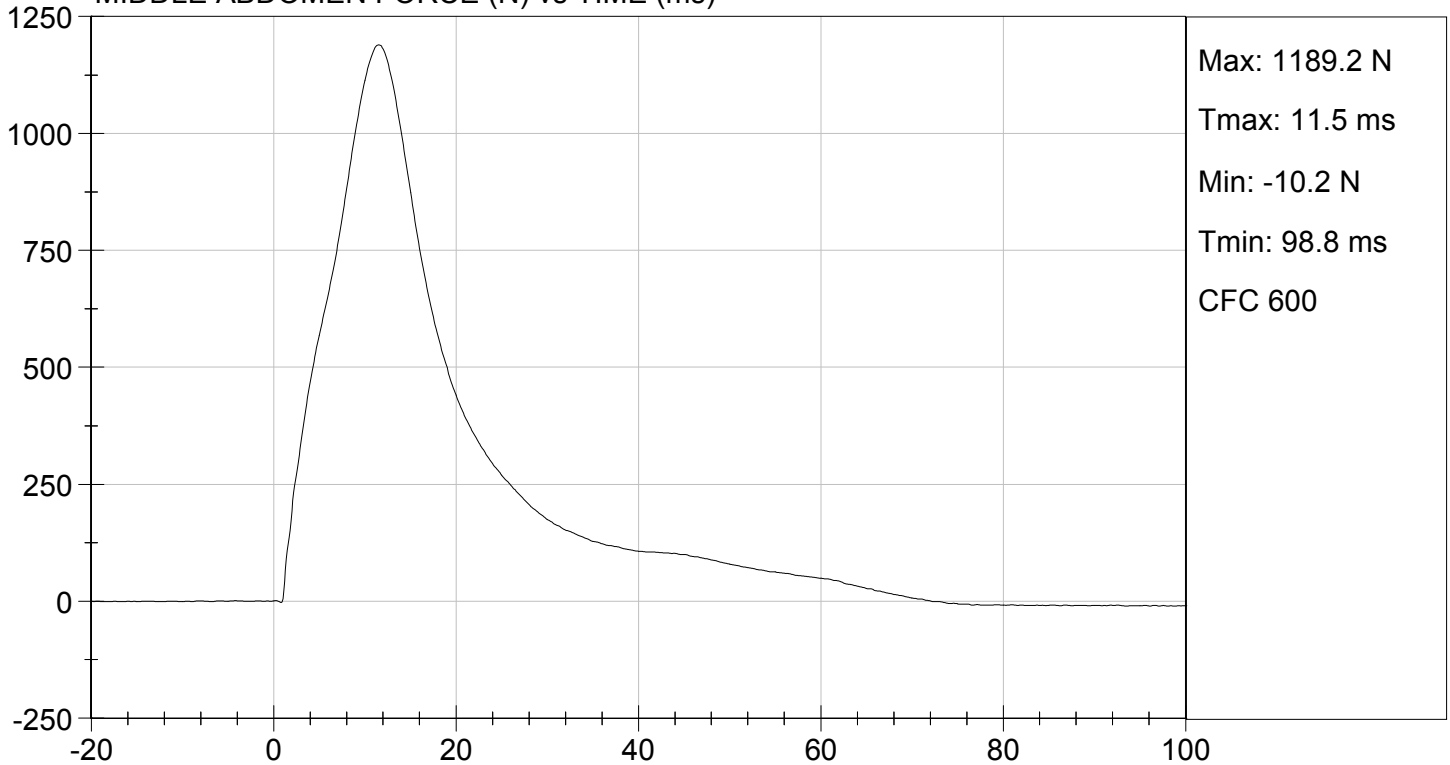
TEST DESC: ABDOMEN IMPACT
VELOCITY: 12.82 ft/s, 3.91 m/s

TEST DATE: 07/30/2013
TEST #: D132487

FRONT ABDOMEN FORCE (N) vs TIME (ms)



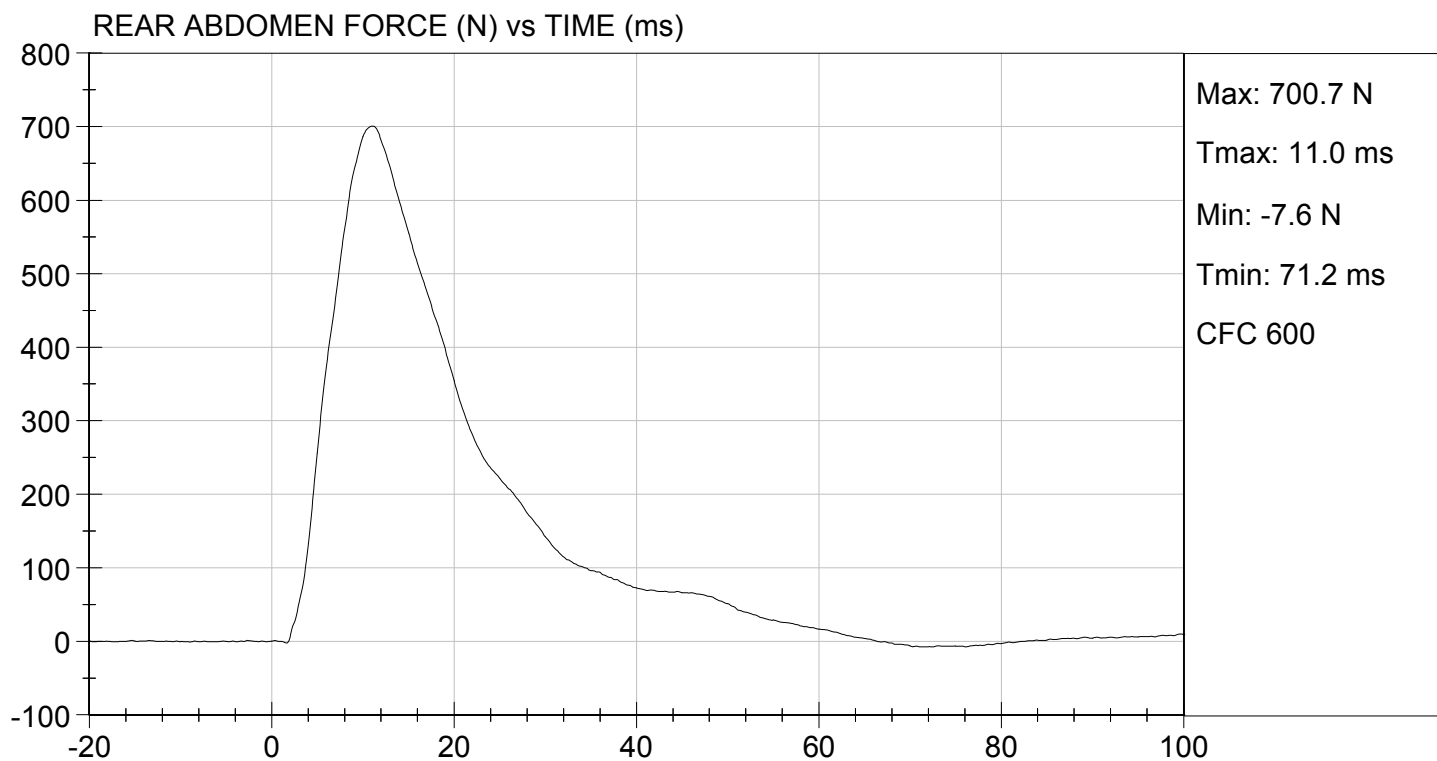
MIDDLE ABDOMEN FORCE (N) vs TIME (ms)





TEST DESC: ABDOMEN IMPACT
VELOCITY: 12.82 ft/s, 3.91 m/s

TEST DATE: 07/30/2013
TEST #: D132487



MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132488

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.01	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.423	Pass
	27 ms	m/s	-6.50 to -5.80	-5.90	Pass
	30 ms	m/s	>= -6.50	-6.38	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	45.8	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	45.0	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	45	Pass
Overall Results					Pass


 Laboratory Technician

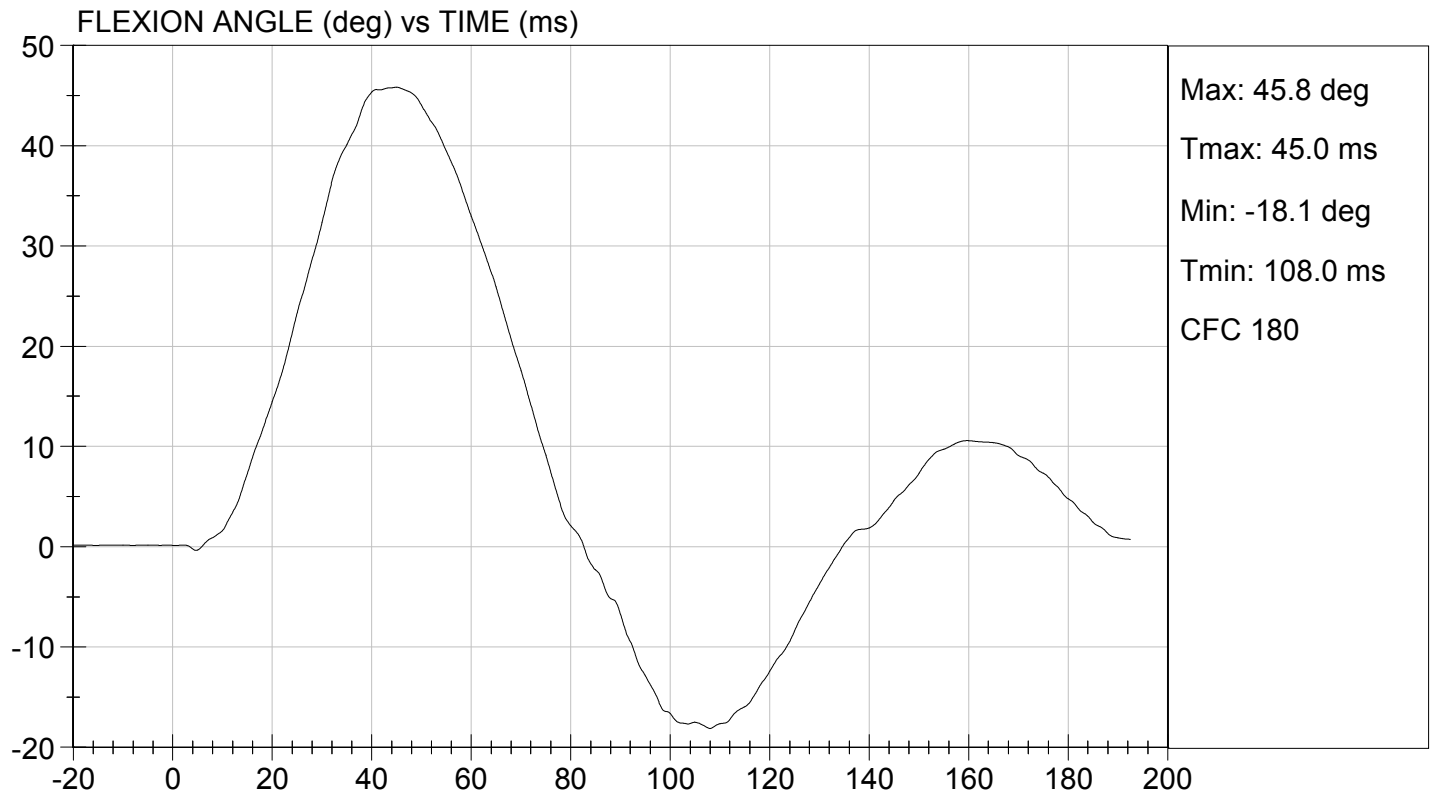
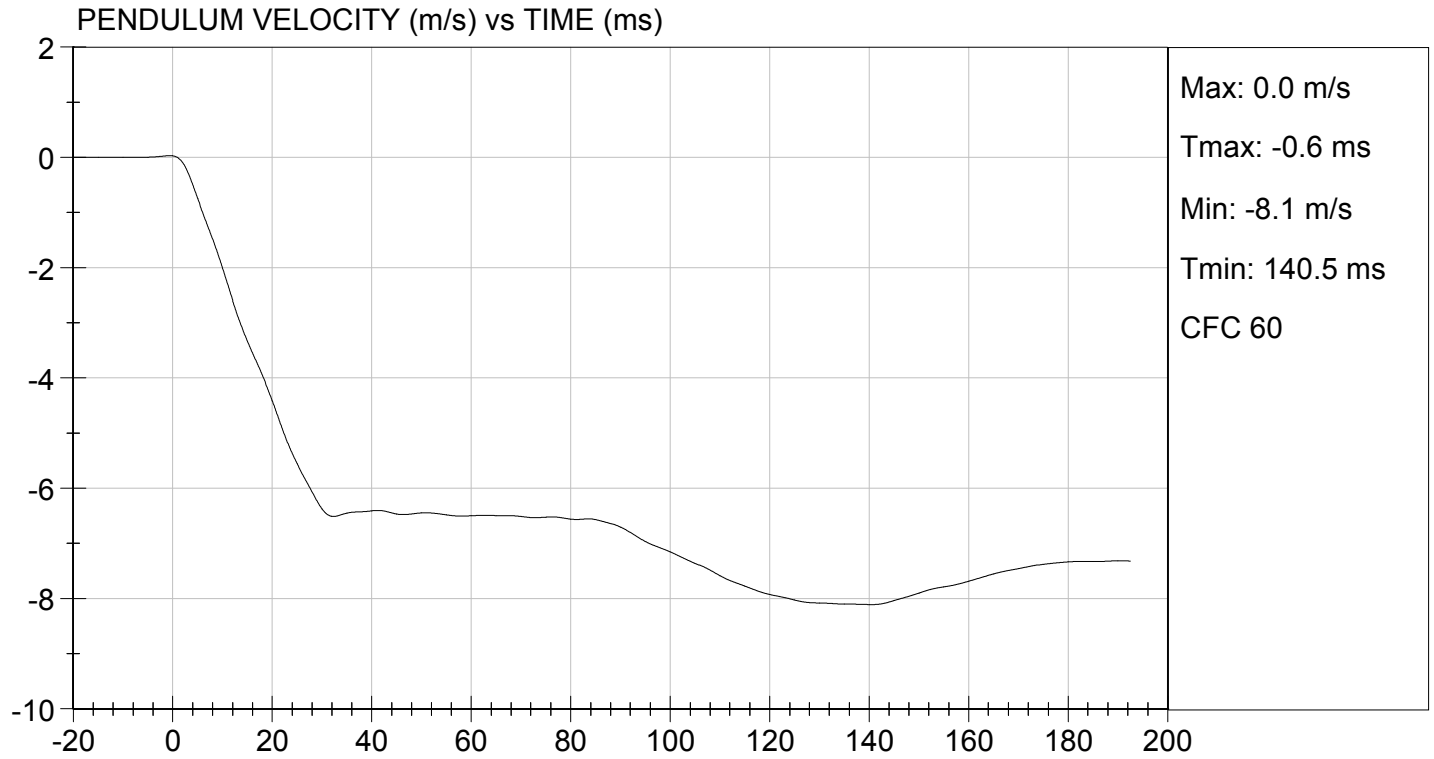
07/30/2013
 Test Date


 Approved By



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

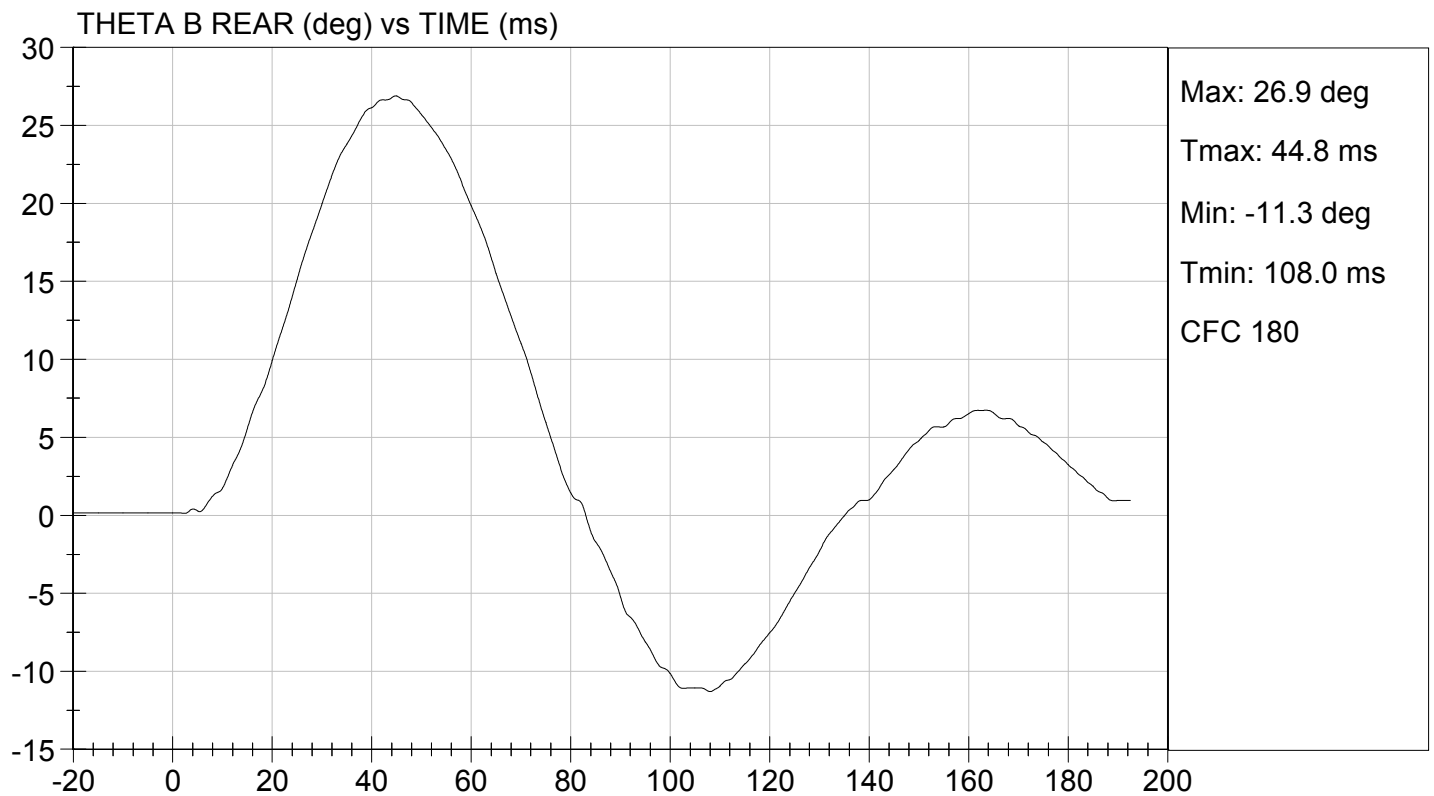
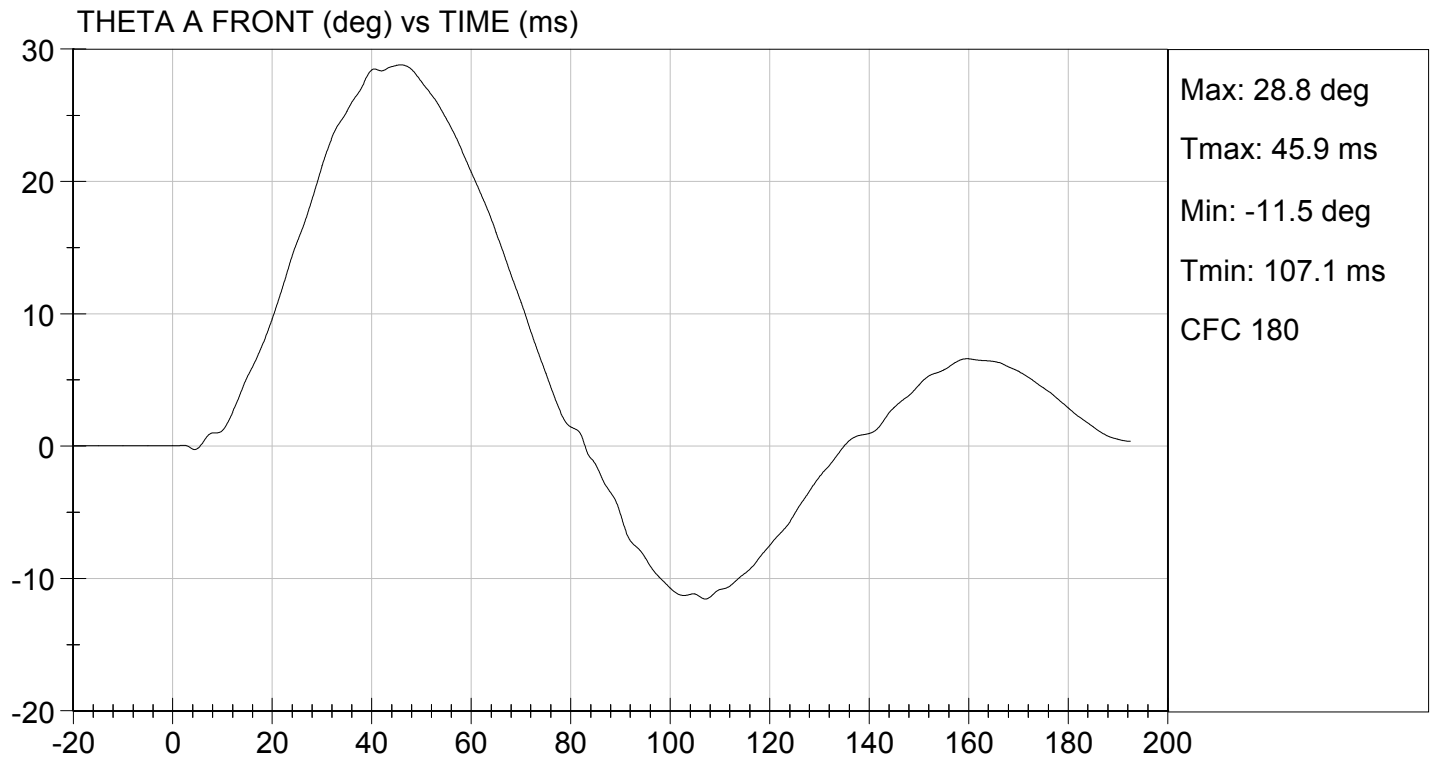
TEST DATE: 07/30/2013
TEST #: D132488





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

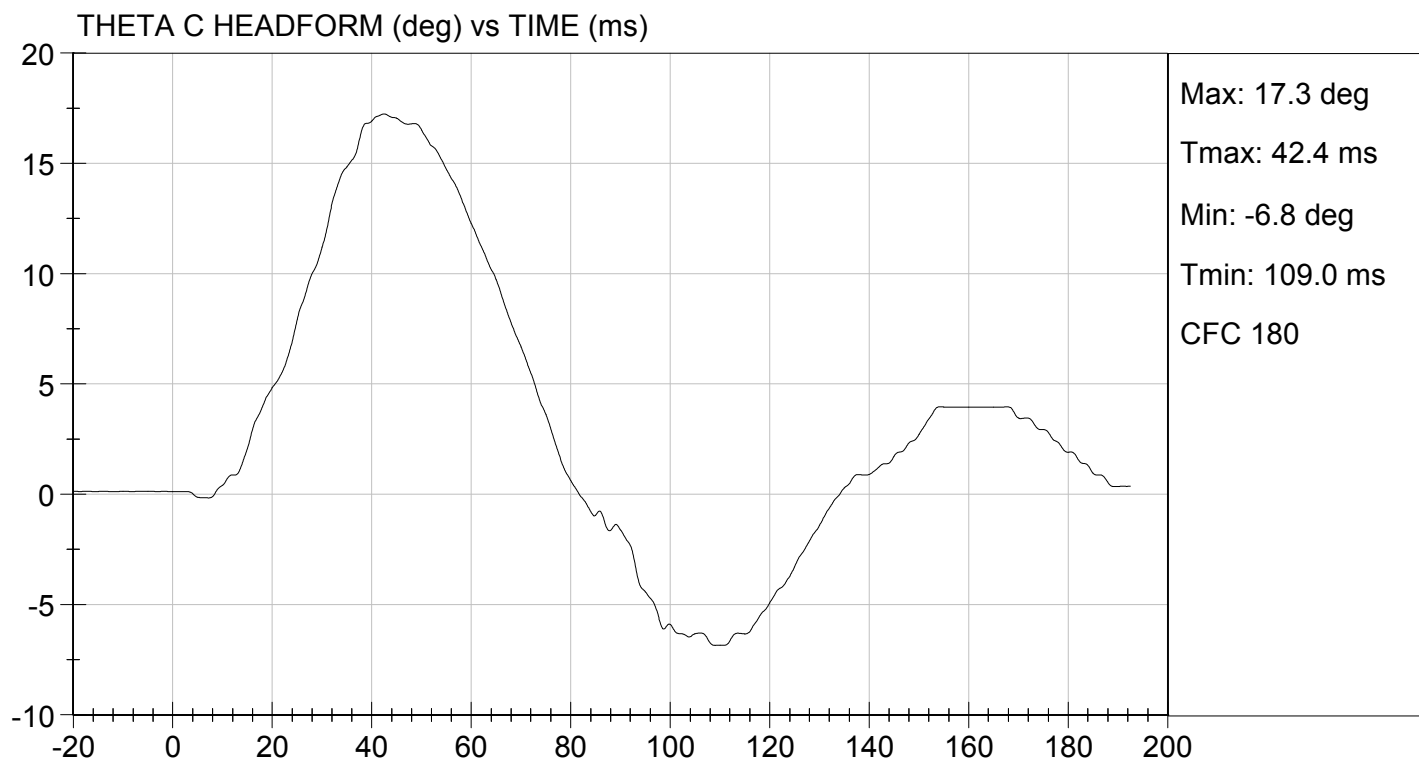
TEST DATE: 07/30/2013
TEST #: D132488





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

TEST DATE: 07/30/2013
TEST #: D132488



MGA RESEARCH CORPORATION

**PELVIS TEST
ES-2re DUMMY**

ATD Serial No: 032

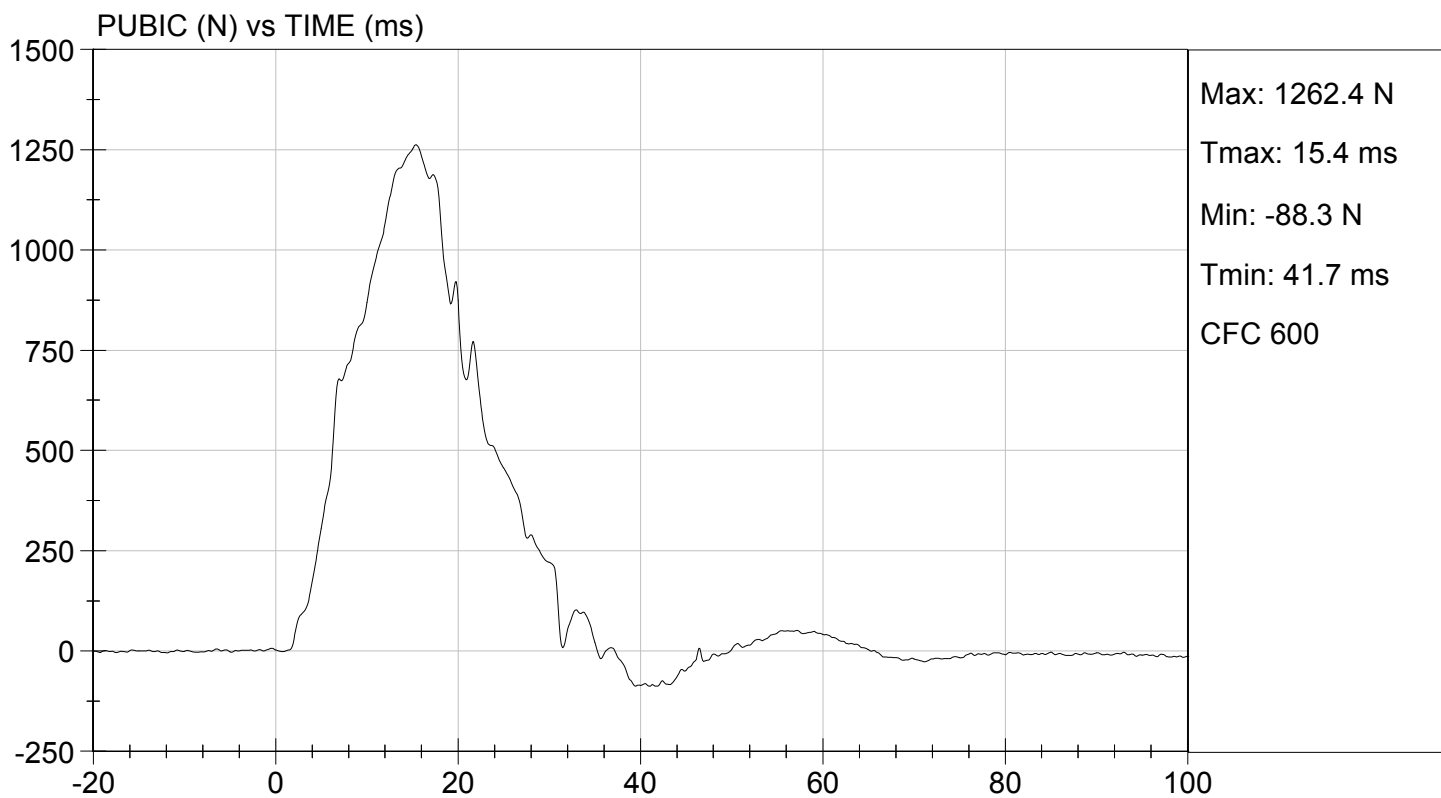
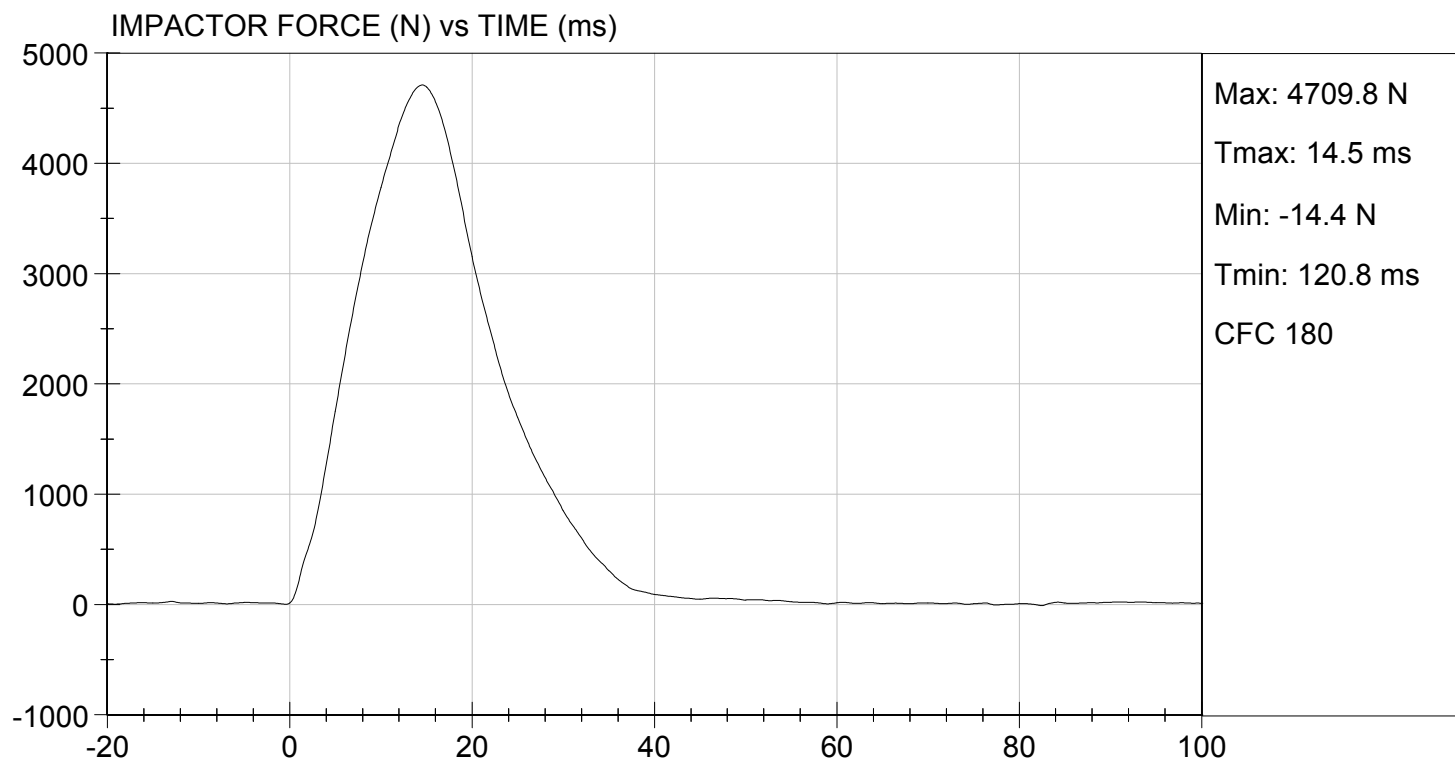
Test I.D: D132489

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	4.20 to 4.40	4.38	Pass
Maximum Impactor Force	N	4700 to 5400	4710	Pass
Time of Maximum Impactor Force	ms	11.8 to 16.1	14.5	Pass
Maximum Pubic Force	N	1230 to 1590	1262	Pass
Time of Maximum Pubic Force	ms	12.2 to 17.0	15.4	Pass
Overall Test Results				Pass


Laboratory Technician

07/30/2013
Test Date


Approved By



MGA RESEARCH CORPORATION**HEAD DROP TEST****ES-2re DUMMY**ATD Serial No: 032Test ID: D132701

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	43	Pass
Peak Resultant Acceleration	G's	125 to 155	145	Pass
Peak Longitudinal Acceleration	G's	<= +/- 15.0	-10.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results				Pass

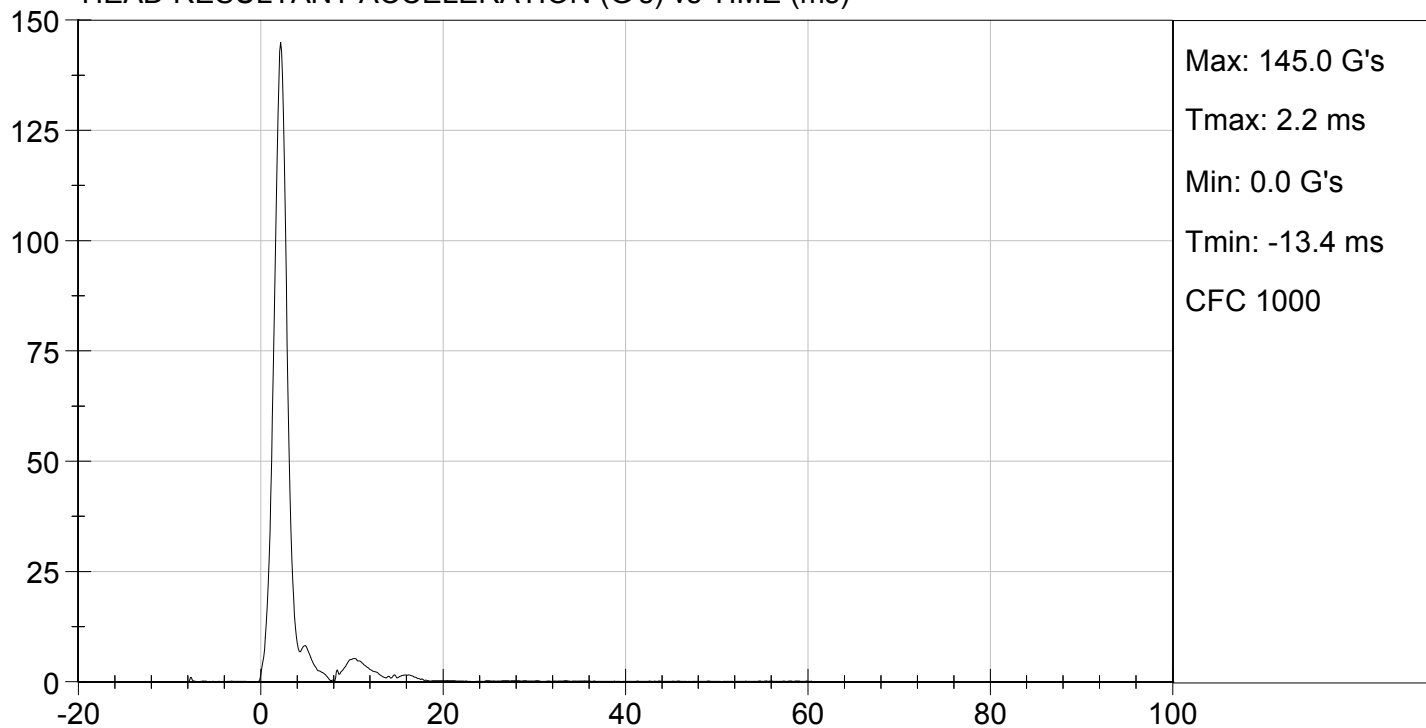

Laboratory Technician

08/14/2013
Test Date

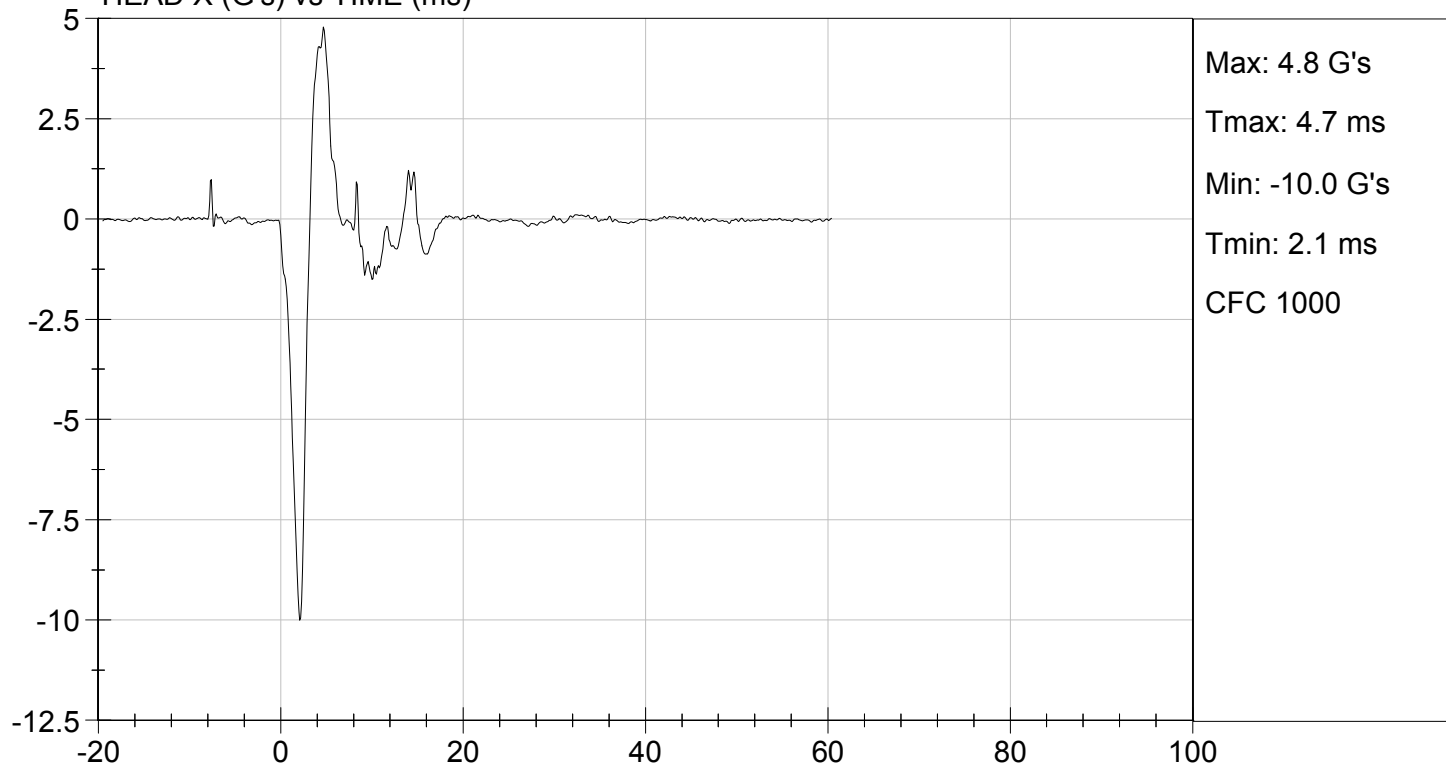

Approved By

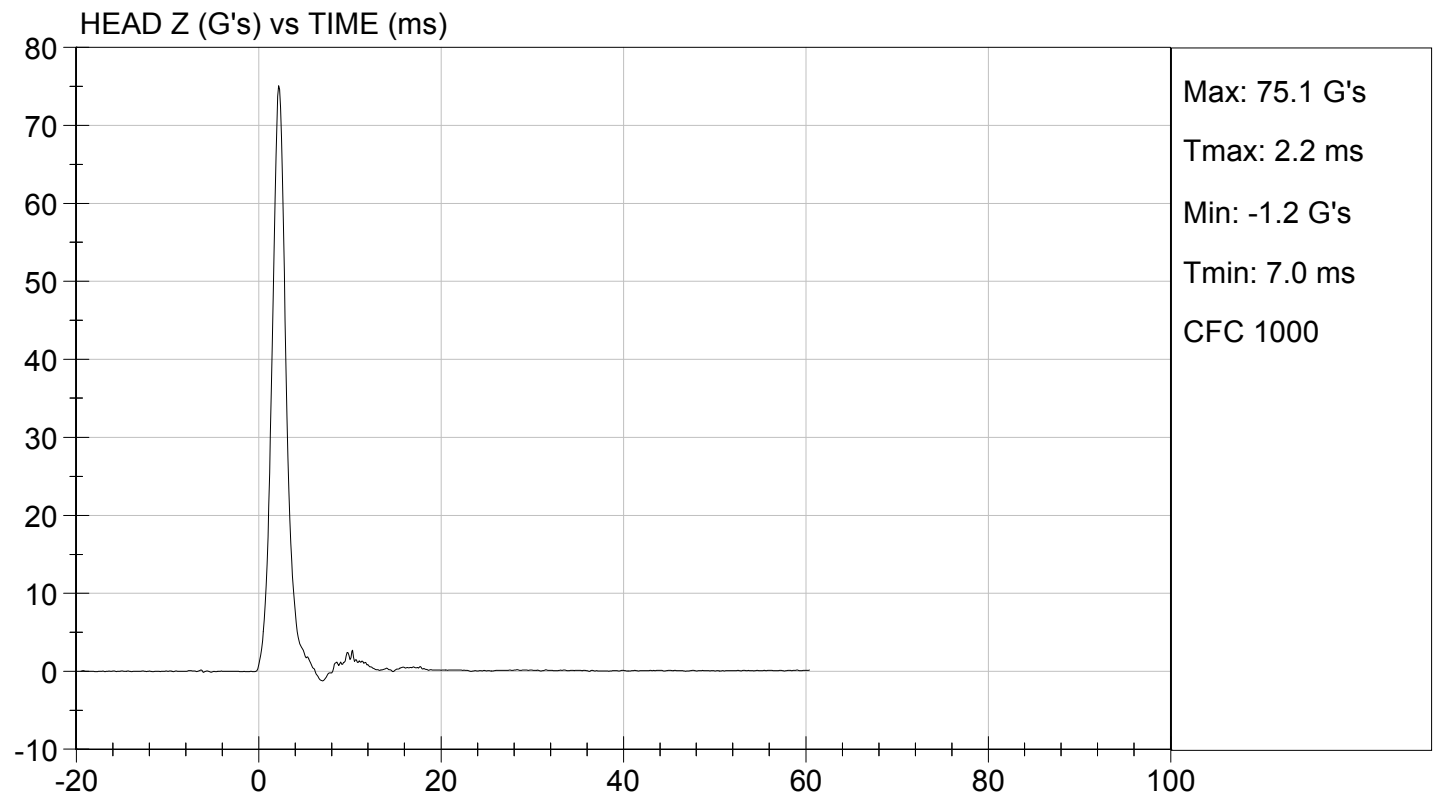
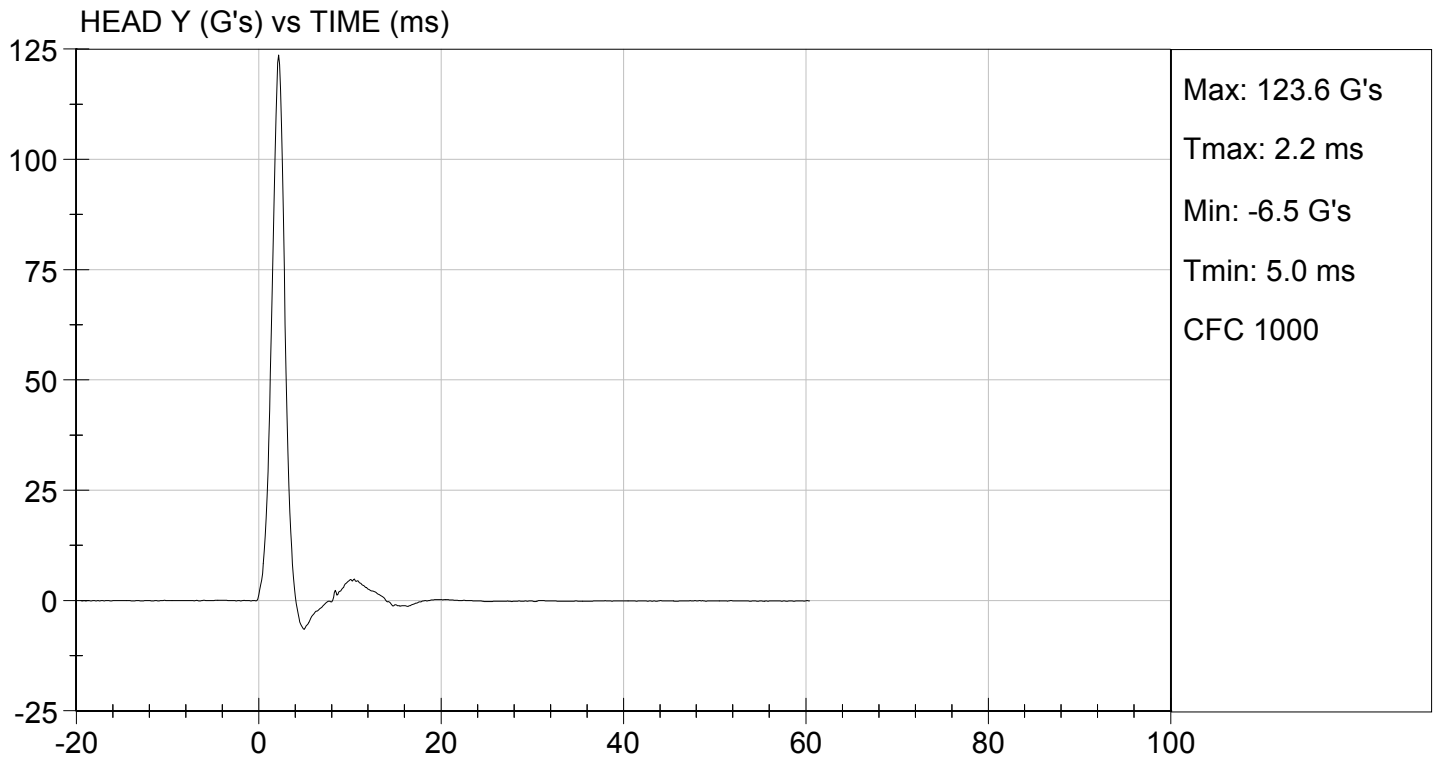


HEAD RESULTANT ACCELERATION (G's) vs TIME (ms)



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



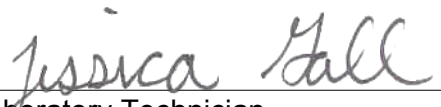


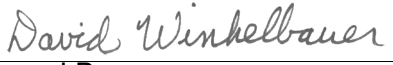
MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132702

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	41	Pass
Pendulum Speed		m/s	3.30 to 3.50	3.41	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.32	Pass
	14 ms	m/s	-3.20 to -3.70	-3.20	Pass
	17 ms	m/s	>= -3.70	-3.25	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	53.3	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	59.9	Pass
Head Rotation Decay Time to 0 Degree		ms	53.0 to 88.0	57.2	Pass
Overall Results					Pass


 Laboratory Technician

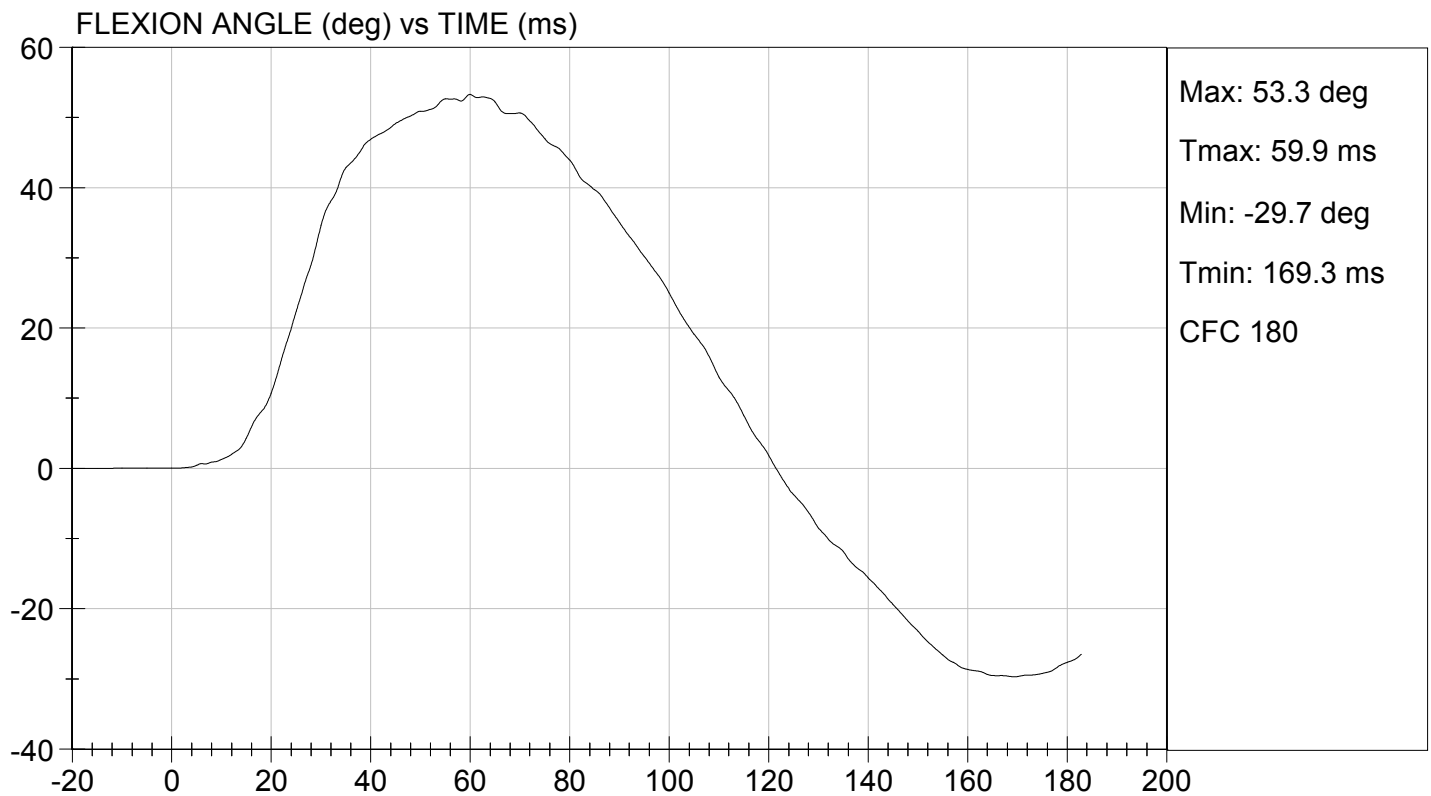
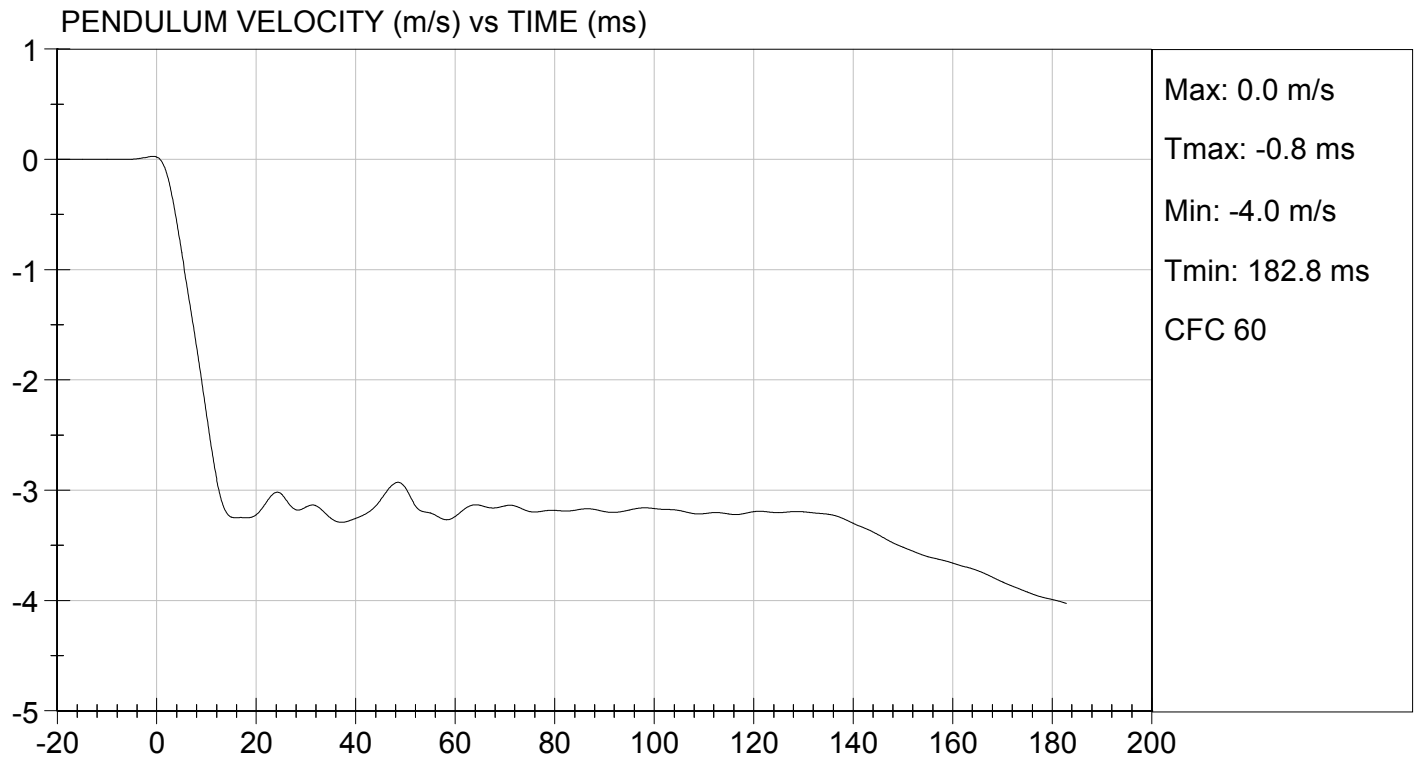

 Approved By

08/14/2013
 Test Date



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

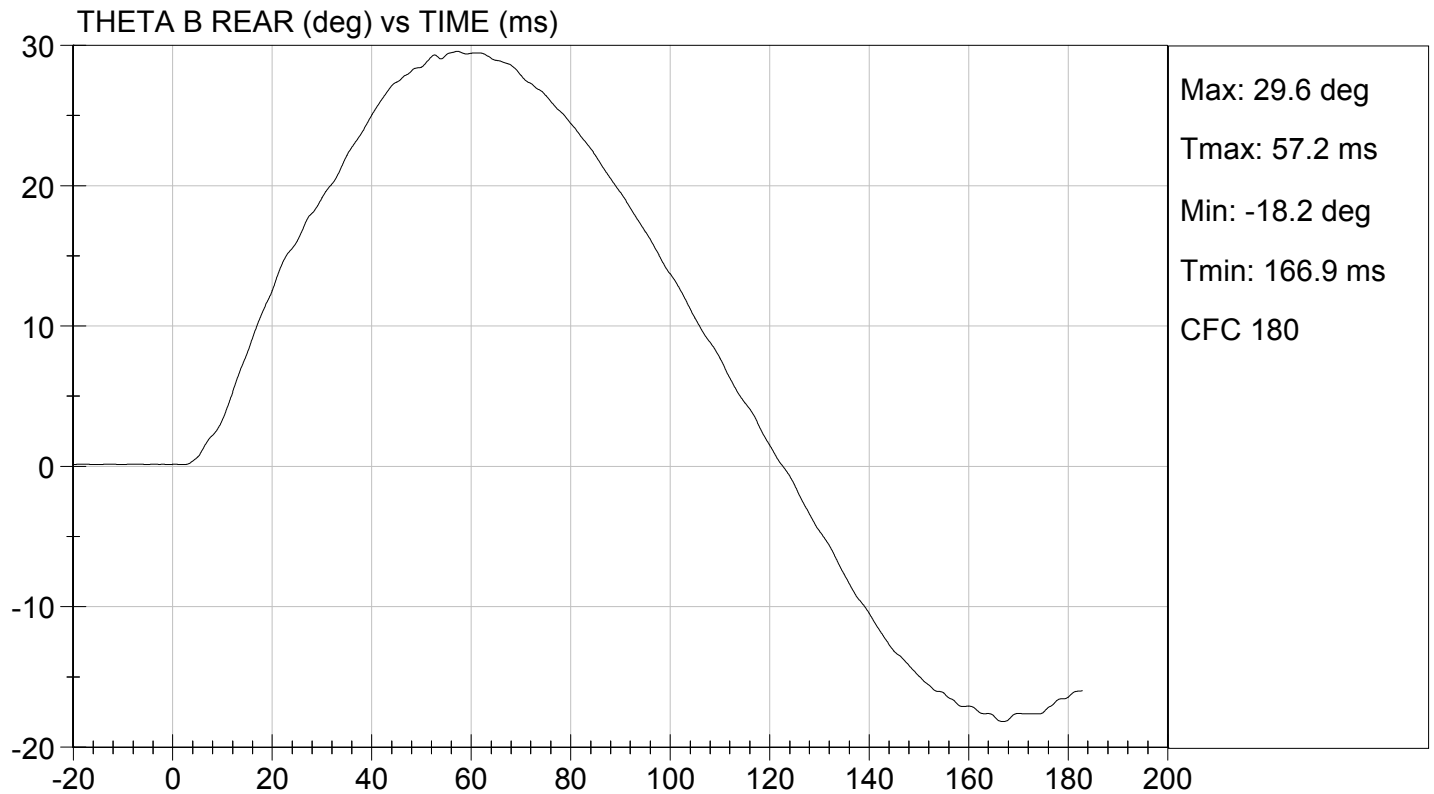
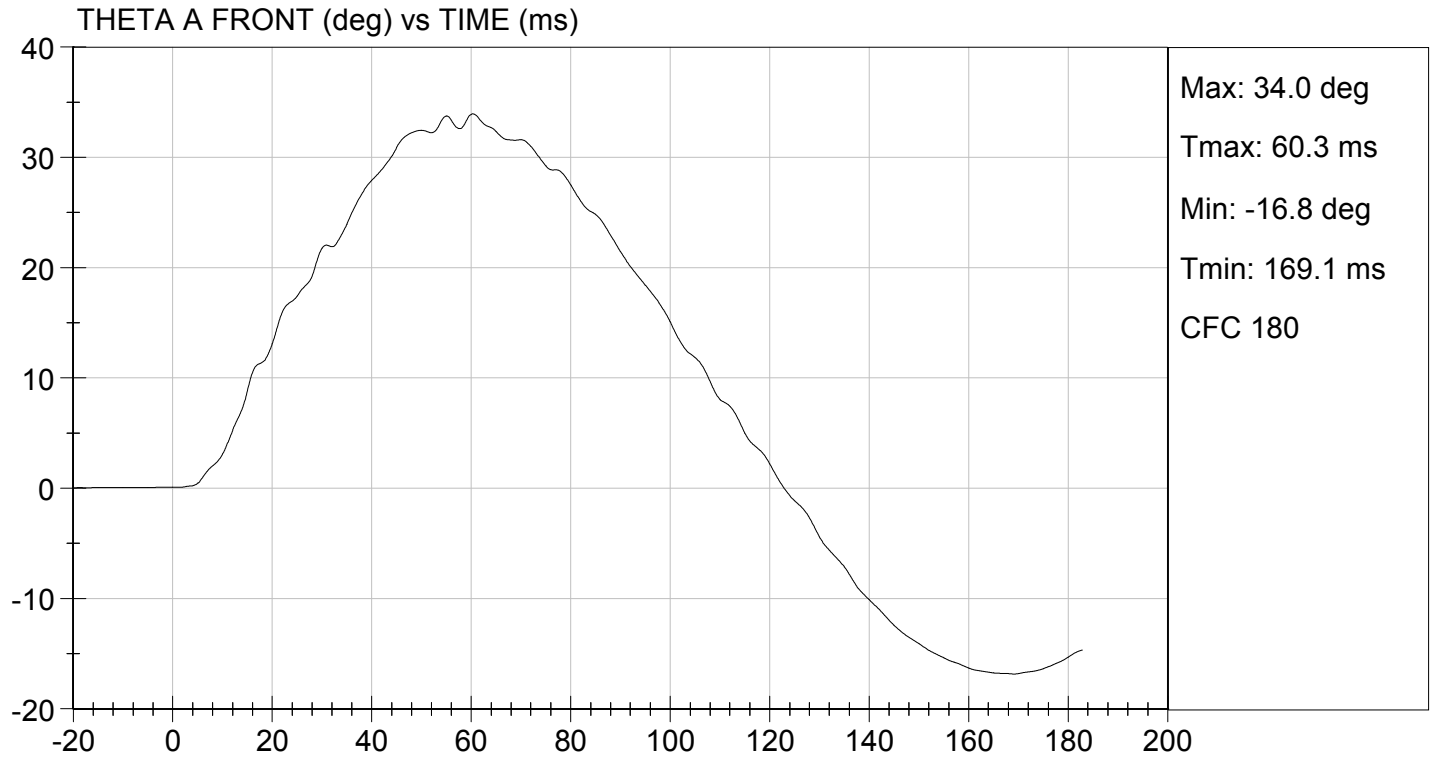
TEST DATE: 08/14/2013
TEST #: D132702





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

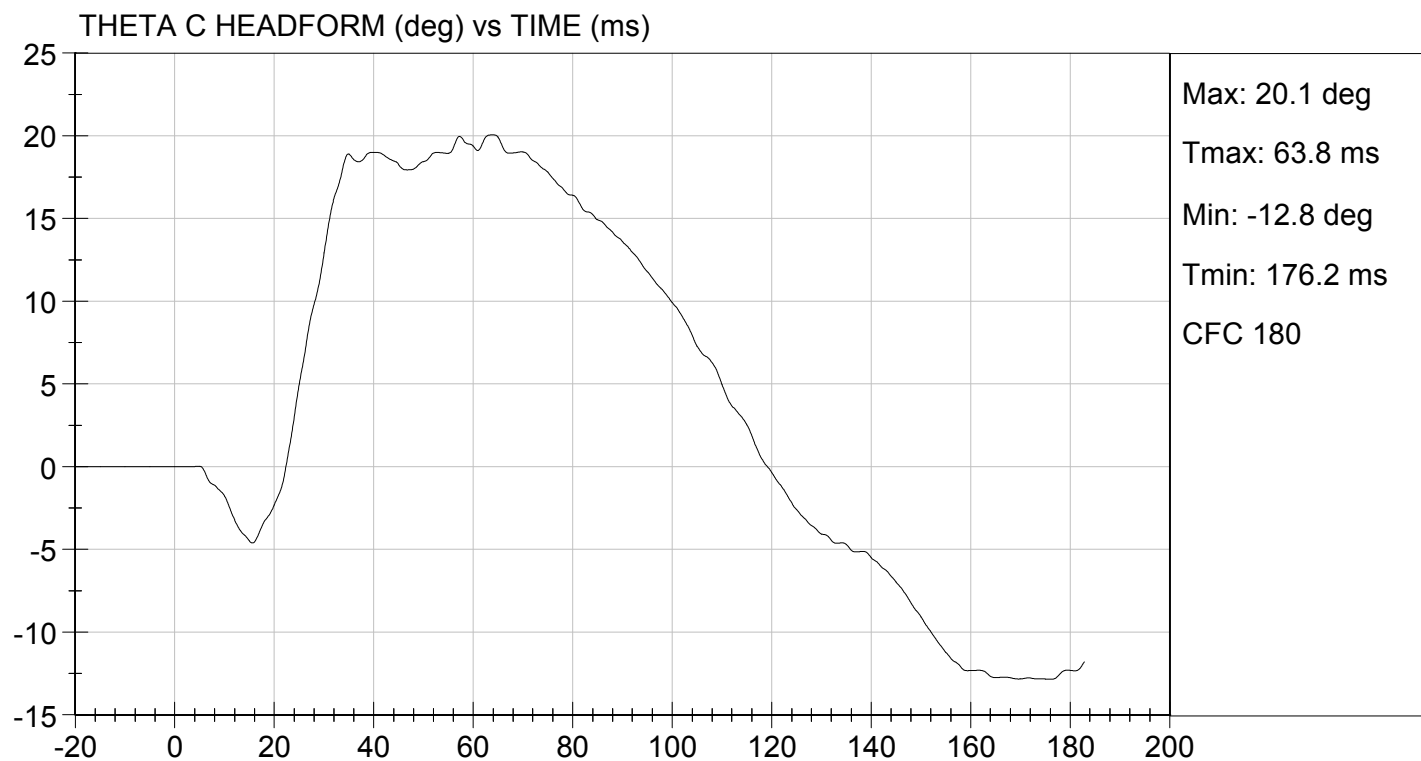
TEST DATE: 08/14/2013
TEST #: D132702





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

TEST DATE: 08/14/2013
TEST #: D132702



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132703

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	42	Pass
Pendulum Speed	m/s	4.20 to 4.40	4.23	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.0	Pass
Overall Test Results				Pass


Laboratory Technician

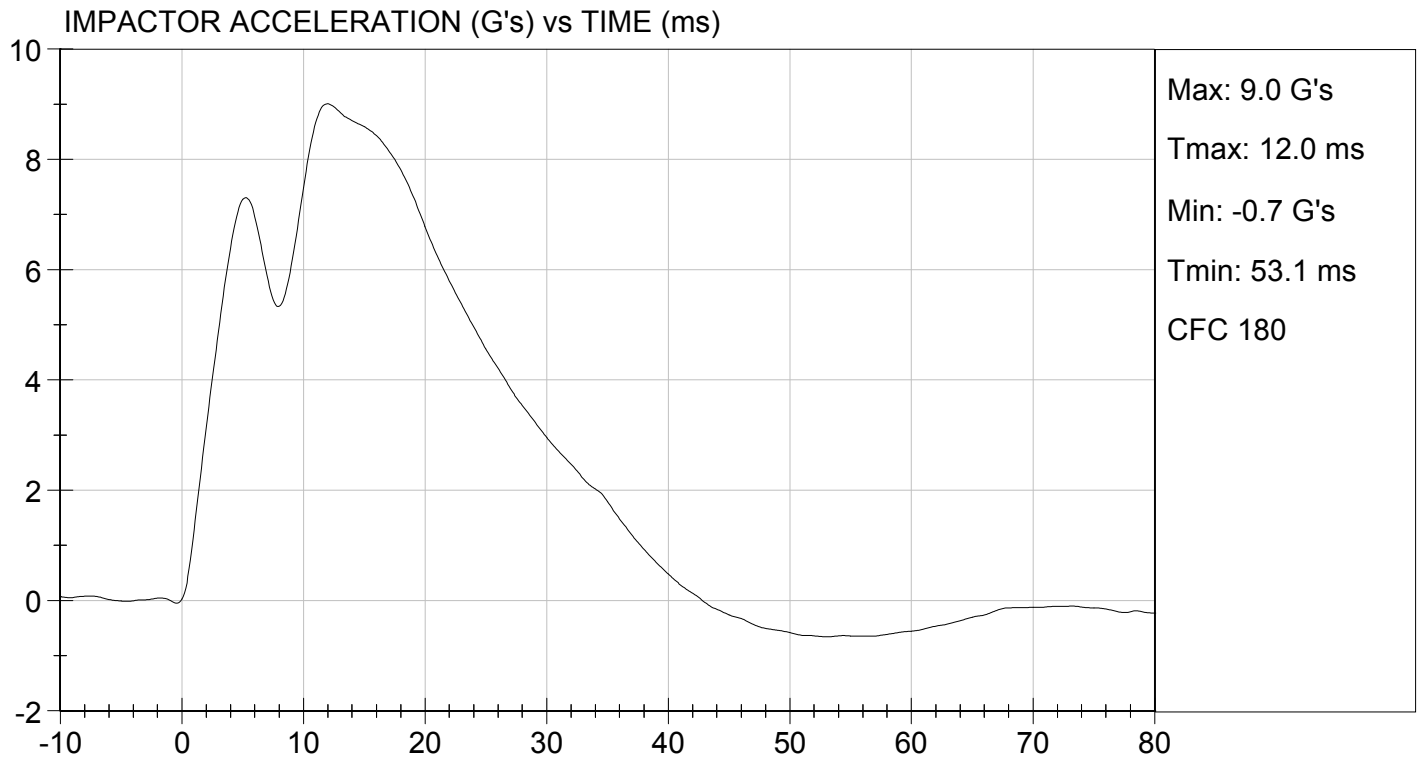
08/14/2013
Test Date


Approved By



TEST DESC: SHOULDER IMPACT
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 08/14/2013
TEST #: D132703



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132704

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	43	Pass
Displacement at 459 mm	mm	36.0 to 40.0	38.1	Pass
Displacement at 815 mm	mm	46.0 to 51.0	49.6	Pass
Overall Test Results				Pass

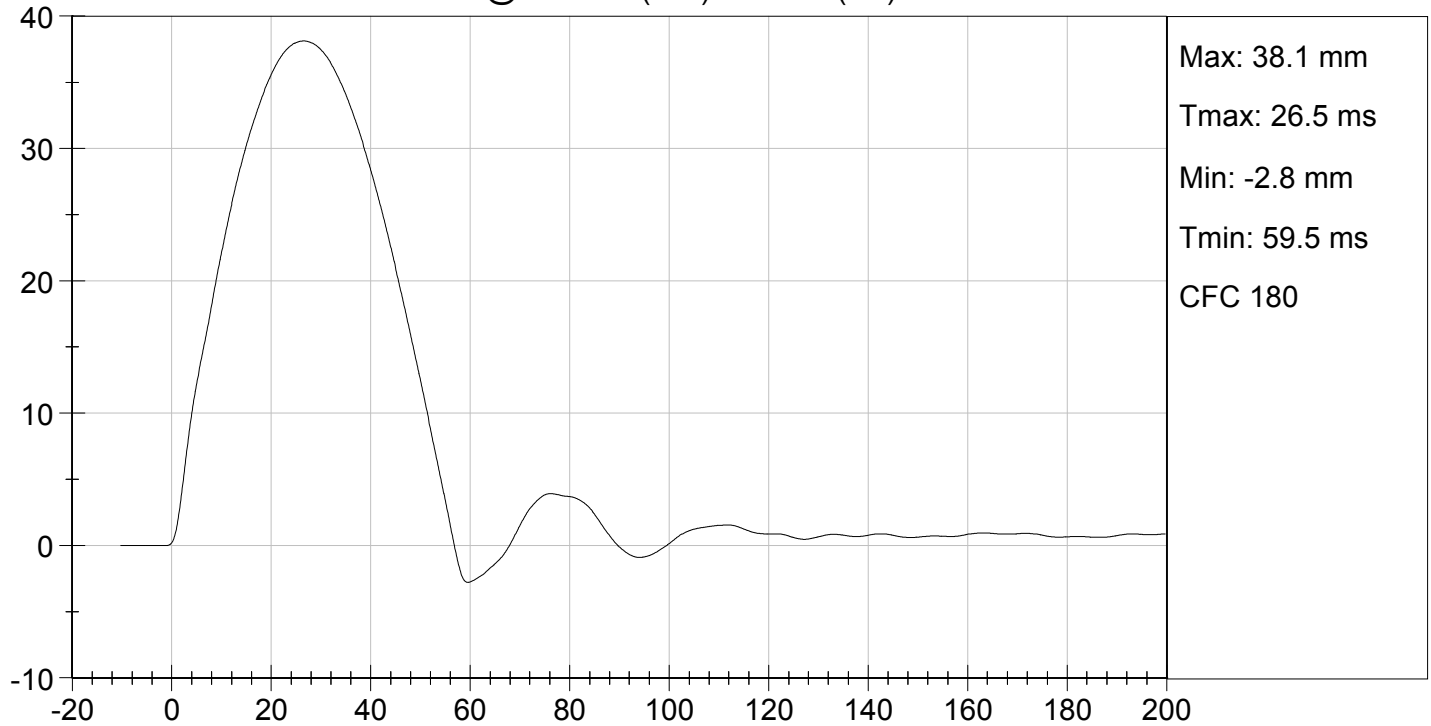

Laboratory Technician


Approved By

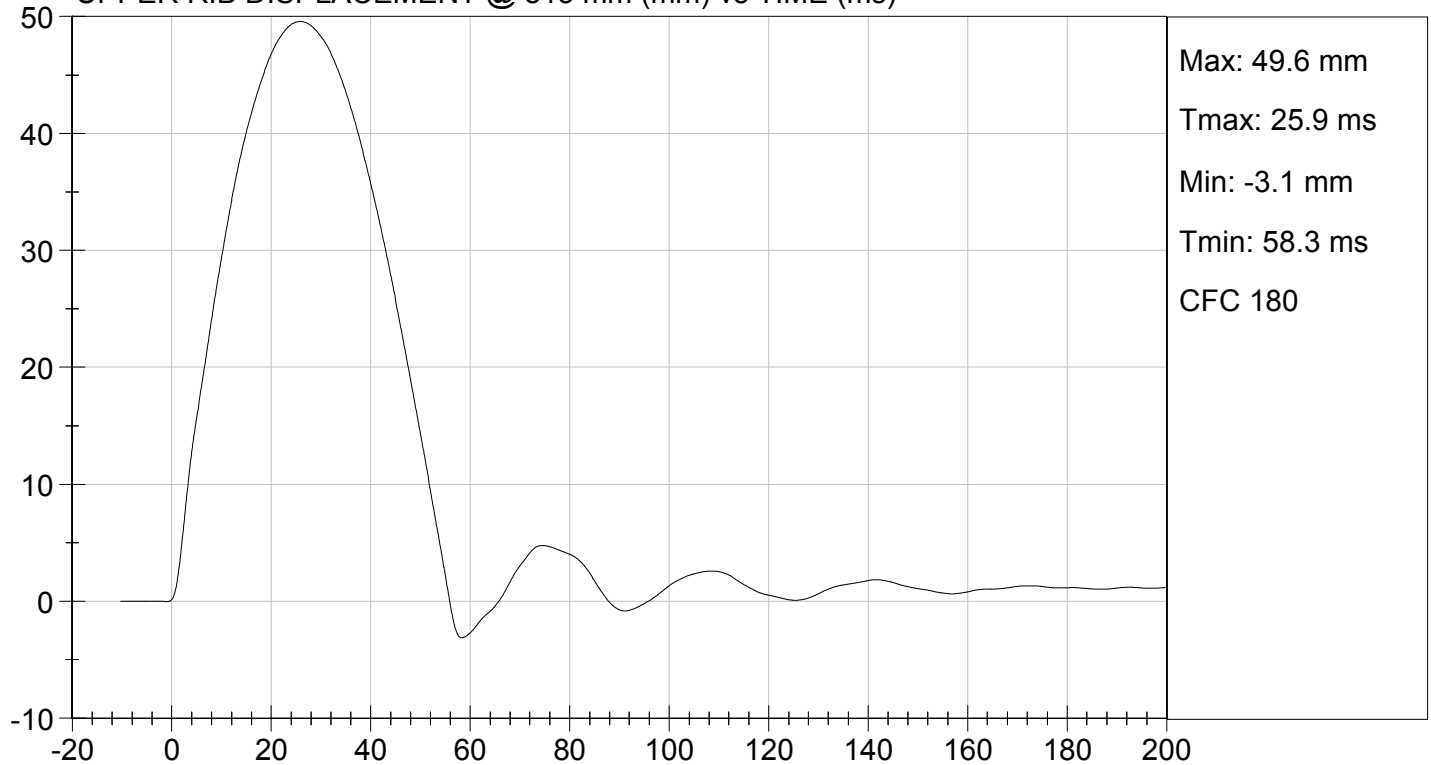
08/14/2013
Test Date



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: D132705

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	43	Pass
Displacement at 459 mm	mm	36.0 to 40.0	39.1	Pass
Displacement at 815 mm	mm	46.0 to 51.0	49.1	Pass
Overall Test Results				Pass

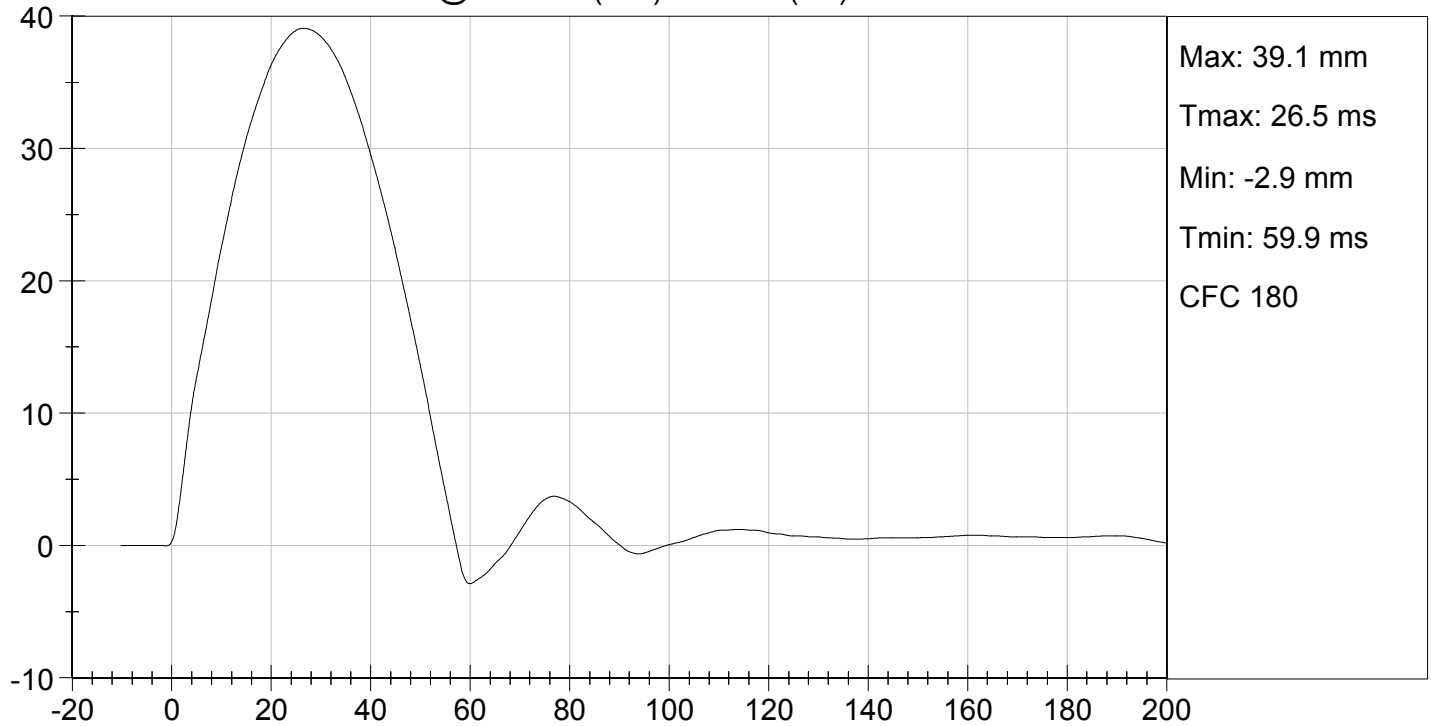

Laboratory Technician

08/14/2013
Test Date

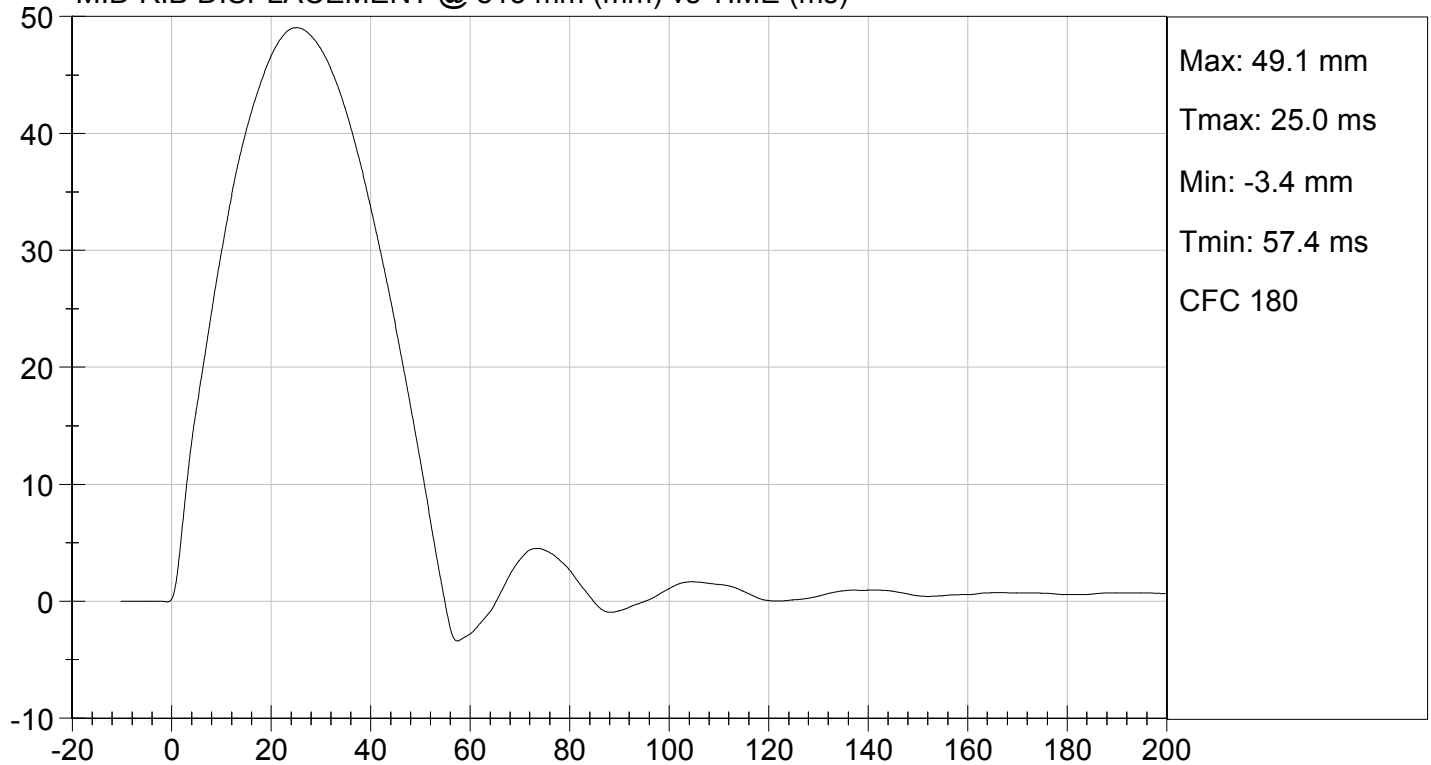

Approved By



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



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



MGA RESEARCH CORPORATION

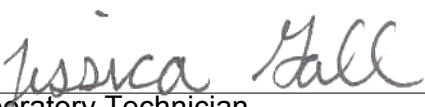
LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132706

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	43	Pass
Displacement at 459 mm	mm	36.0 to 40.0	38.9	Pass
Displacement at 815 mm	mm	46.0 to 51.0	49.7	Pass
			Overall Test Results	Pass

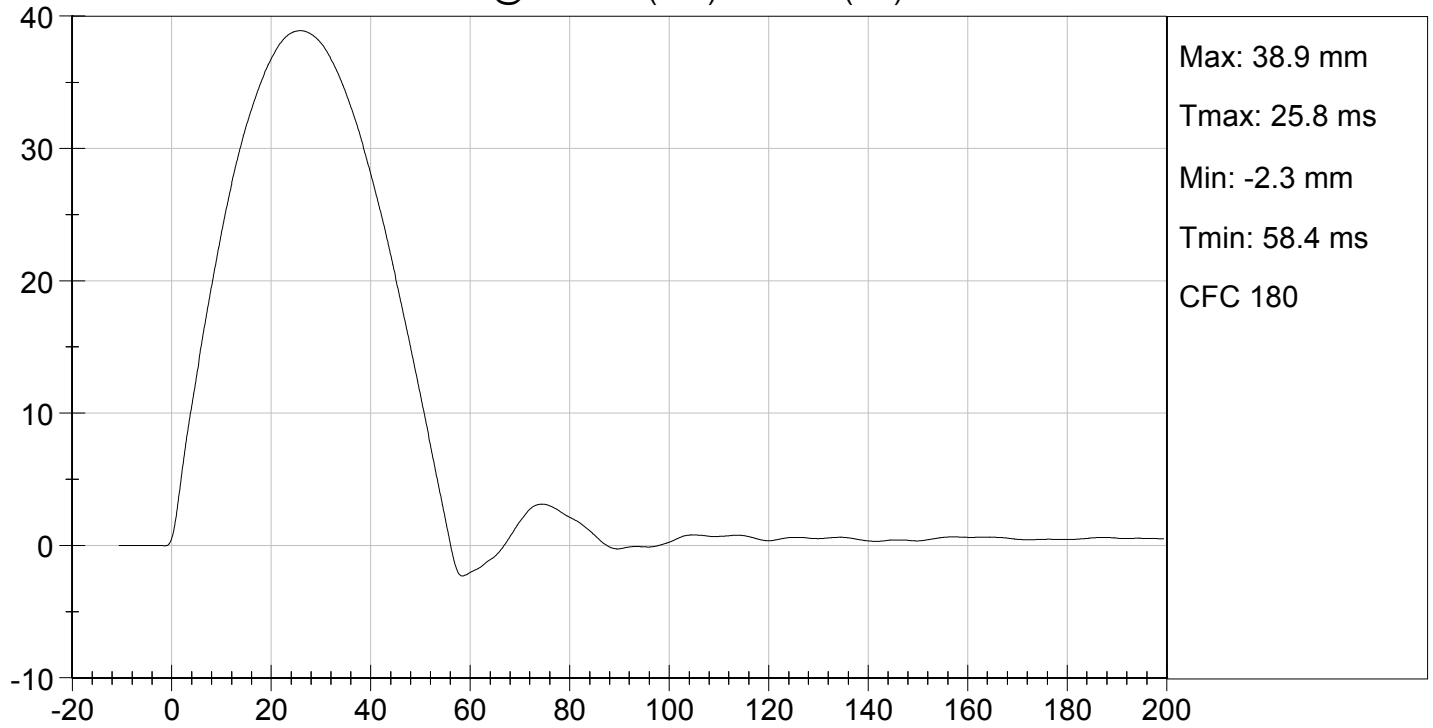

Laboratory Technician

08/14/2013
Test Date

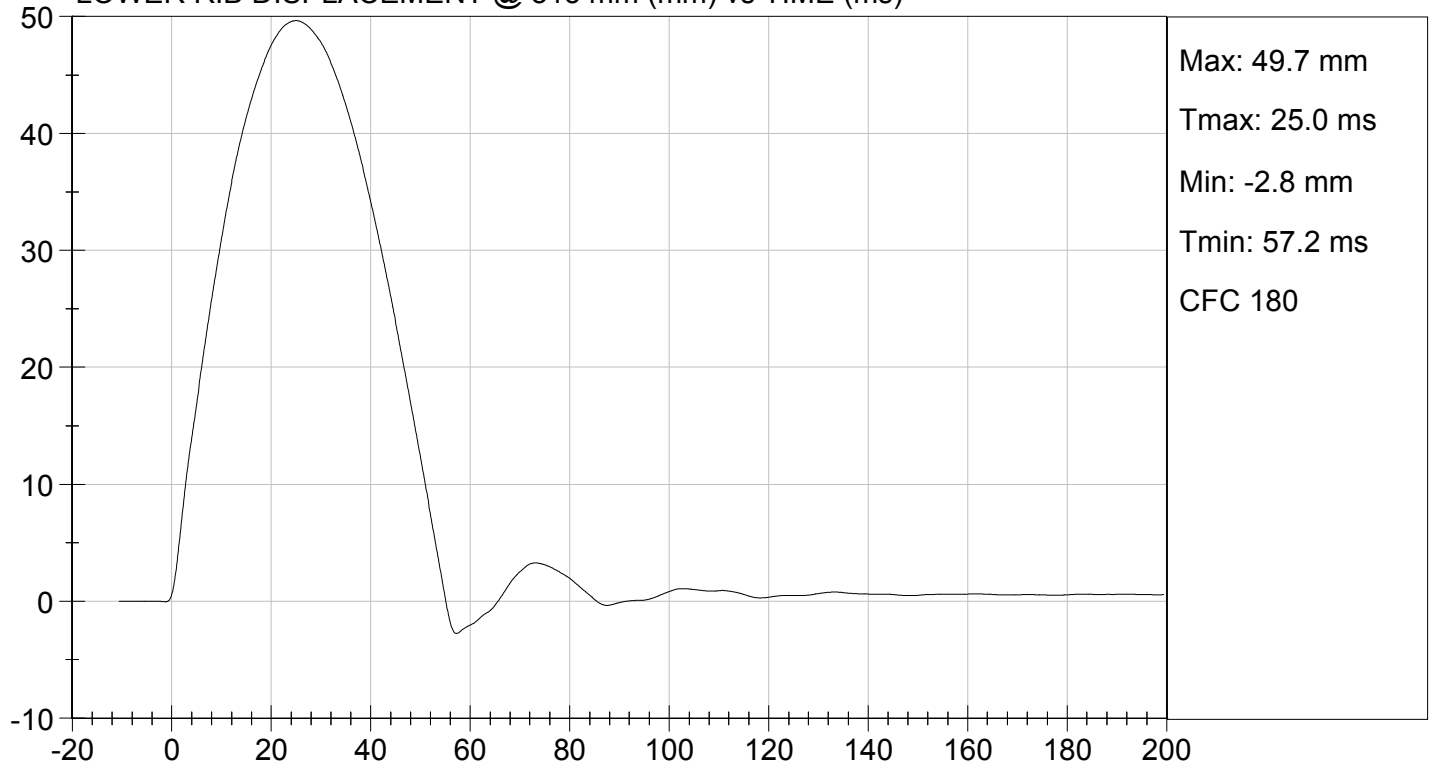

Approved By



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



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



MGA RESEARCH CORPORATION

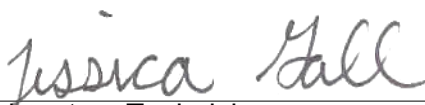
THORAX IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D132700

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	N	5100 to 6200	5800	Pass
Upper Rib Displacement	mm	34.0 to 41.0	36.9	Pass
Middle Rib Displacement	mm	37.0 to 45.0	39.3	Pass
Lower Rib Displacement	mm	37.0 to 44.0	39.4	Pass
Overall Test Results				Pass


Laboratory Technician

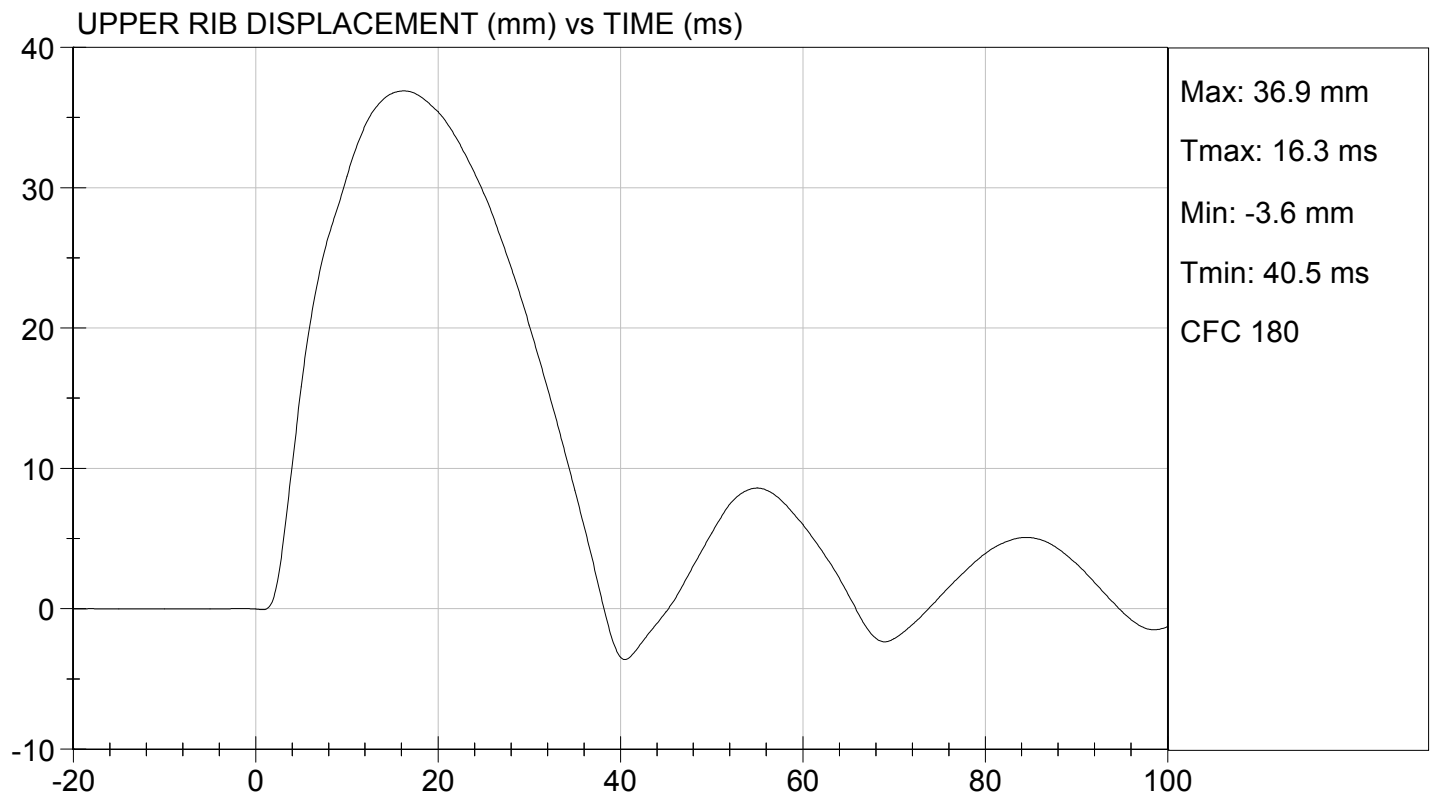
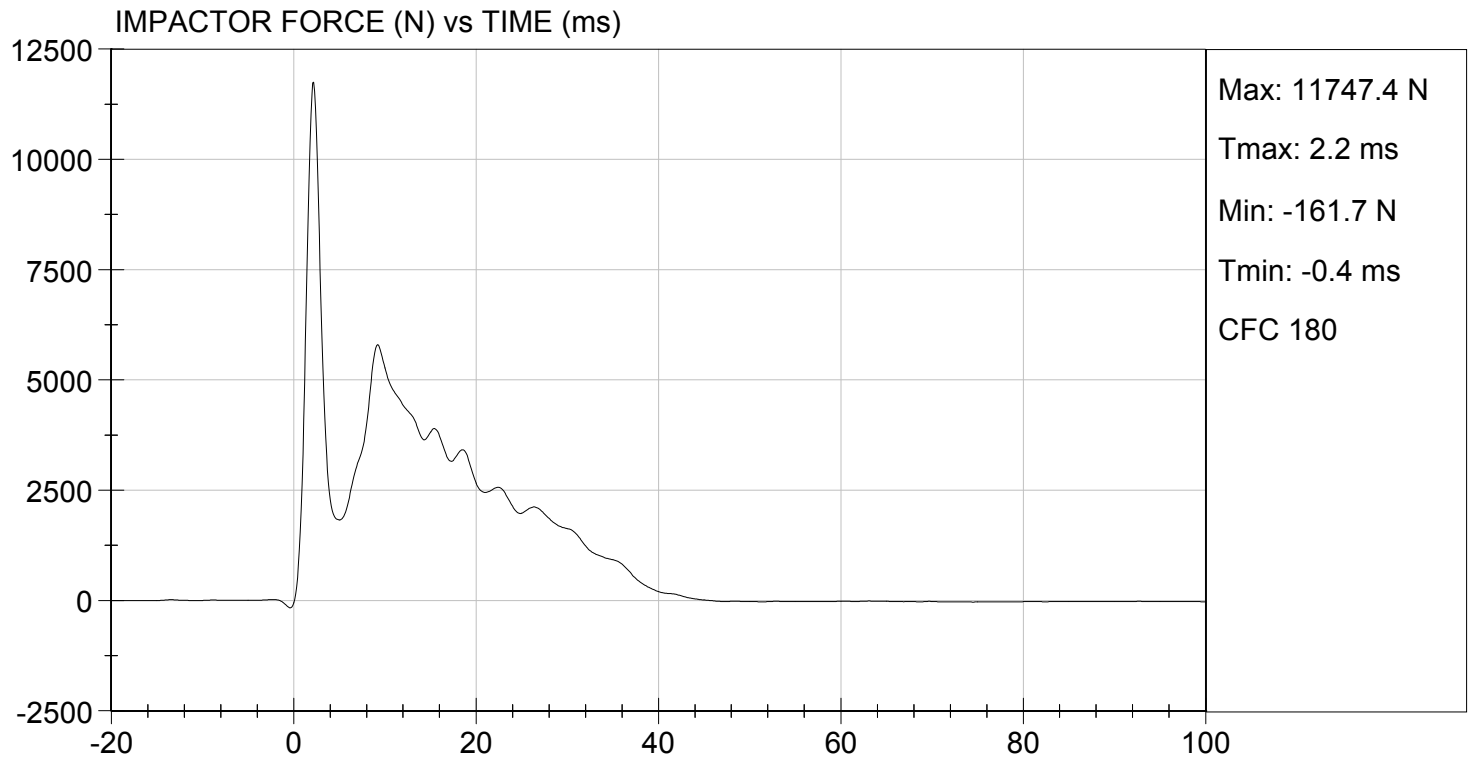
08/14/2013
Test Date


Approved By



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

TEST DATE: 08/14/2013
TEST #: D132700

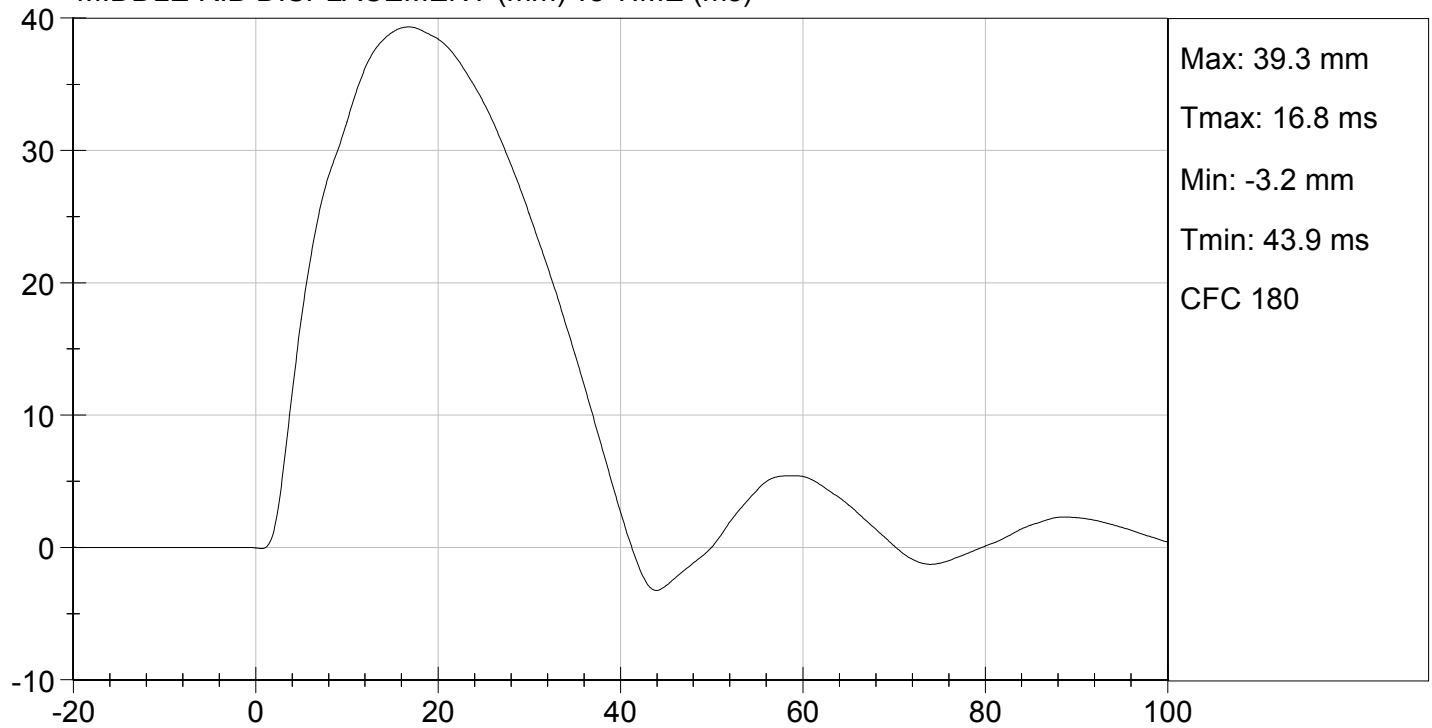




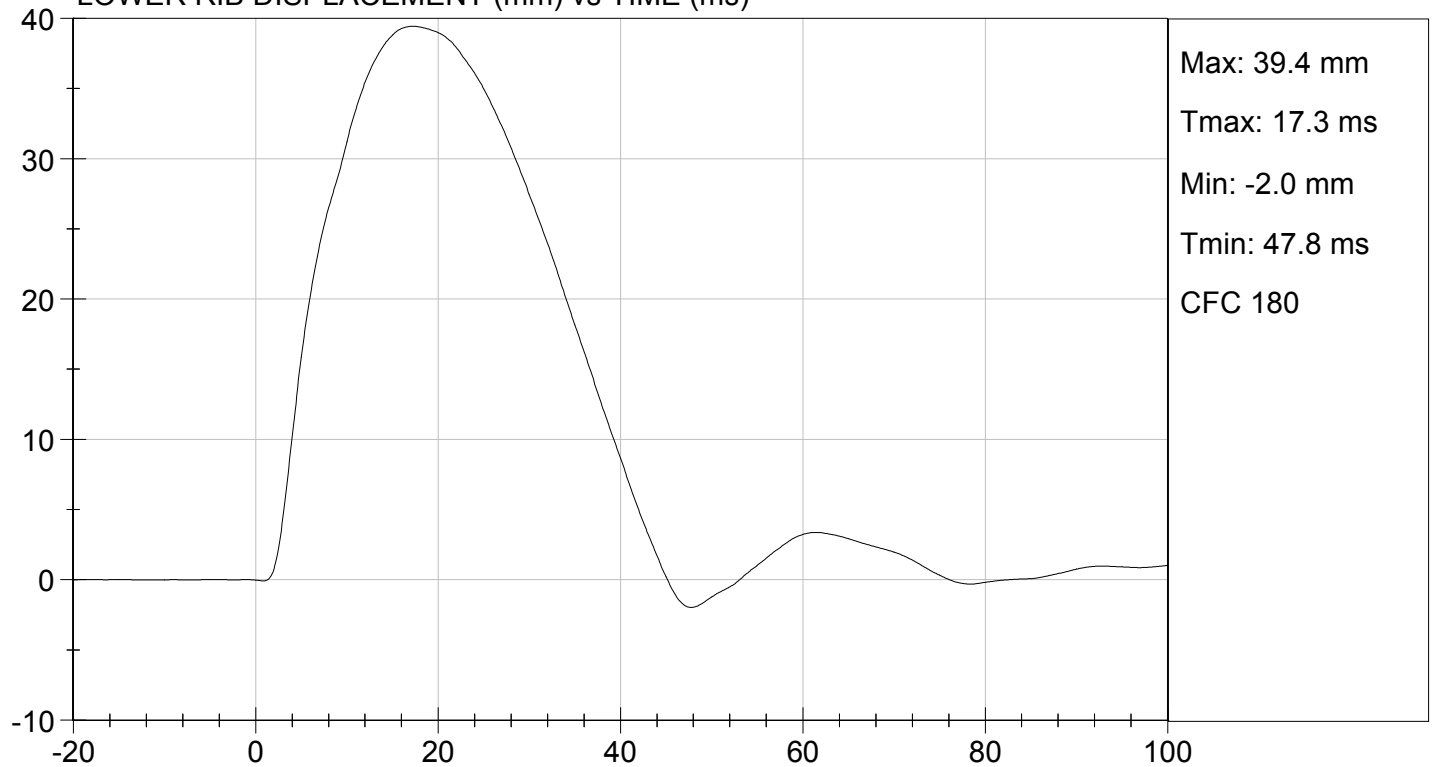
TEST DESC: THORAX IMPACT
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 08/14/2013
TEST #: D132700

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:** D132707

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	42	Pass
Probe Speed	m/s	3.90 to 4.10	4.00	Pass
Maximum Impactor Force	N	4000 to 4800	4362	Pass
Time of Maximum Impactor Force	ms	10.6 to 13.0	11.4	Pass
Maximum Total Abdomen Force	N	2200 to 2700	2438	Pass
Time of Maximum Abdomen Force	ms	10.0 to 12.3	11.6	Pass
Overall Test Results				Pass


Laboratory Technician

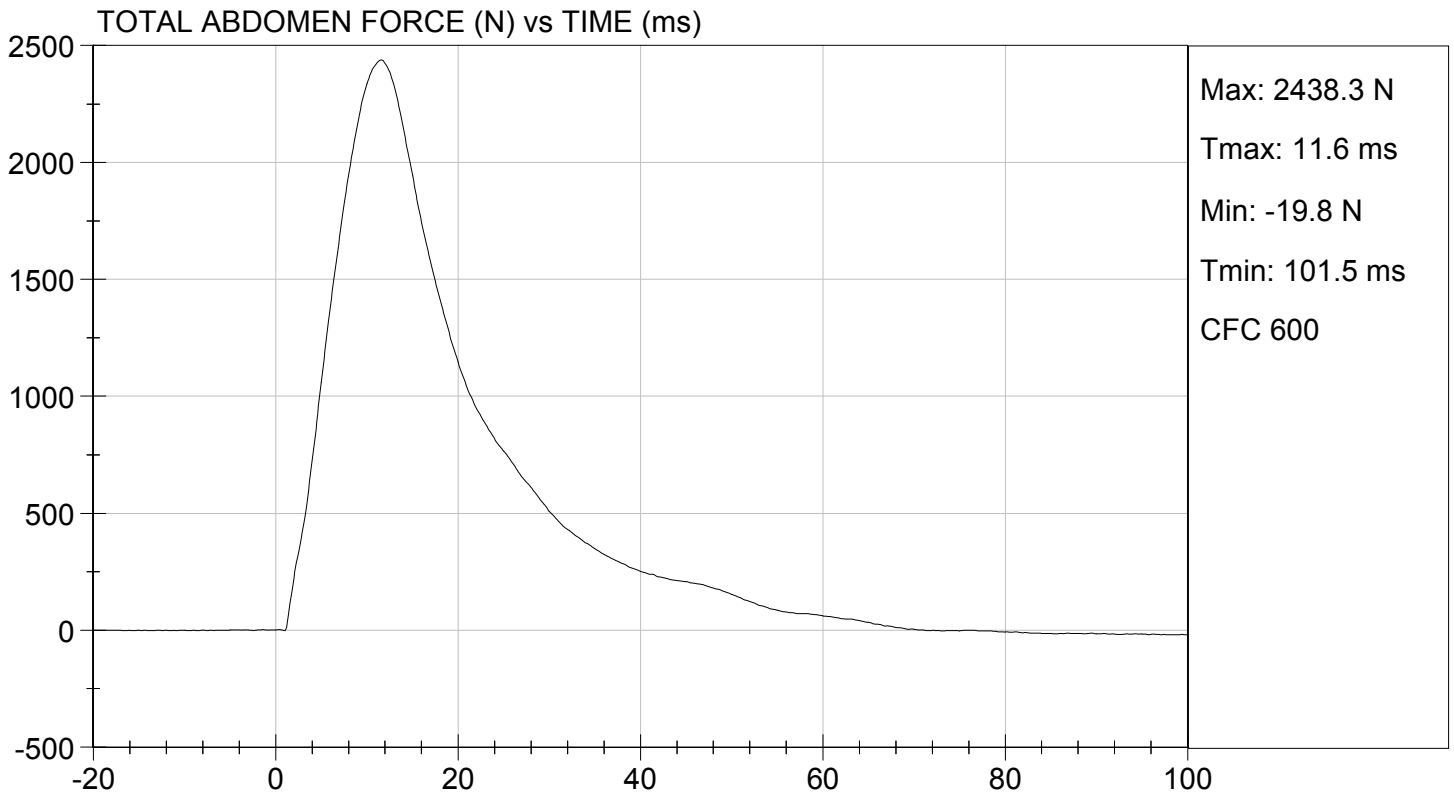
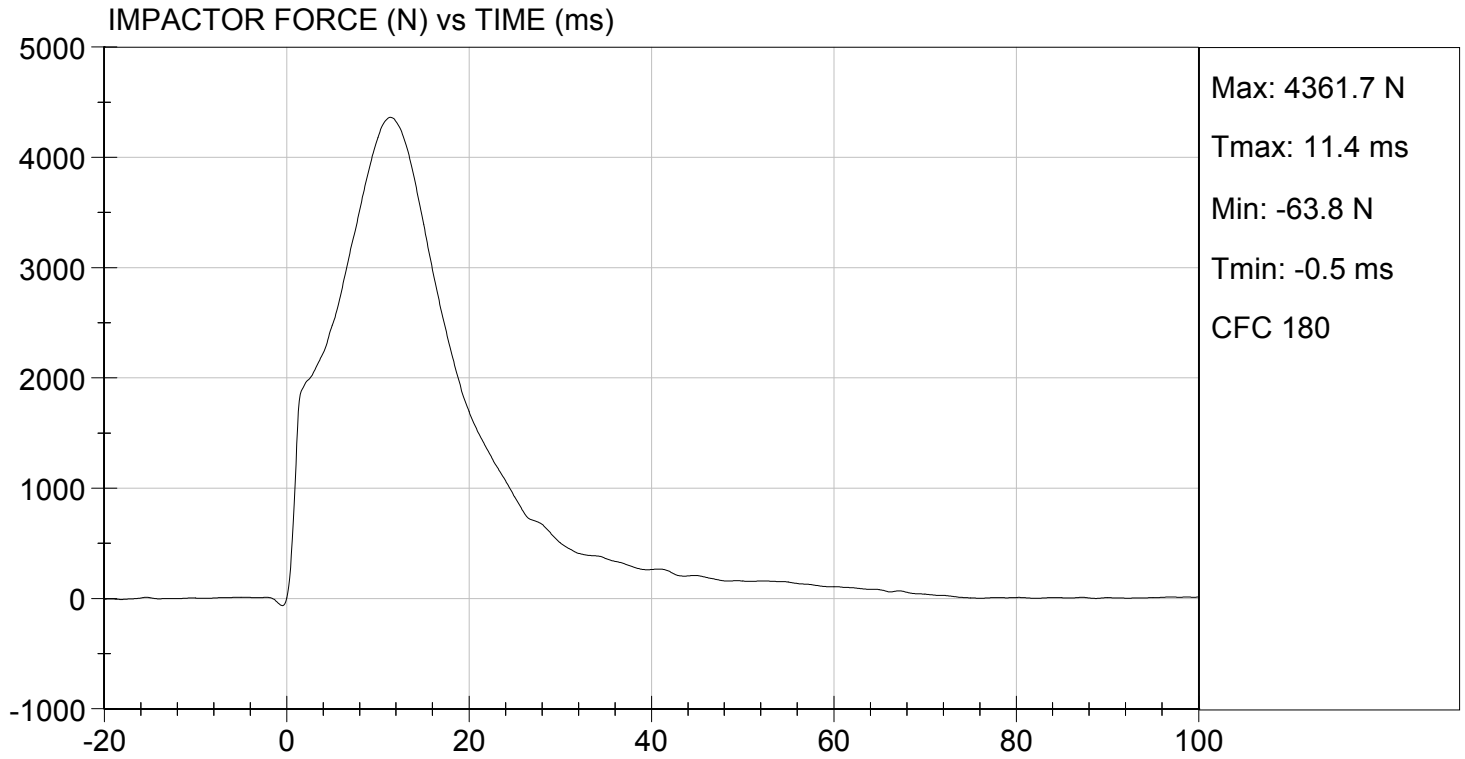
08/14/2013
Test Date


Approved By



TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.12 ft/s, 4.00 m/s

TEST DATE: 08/14/2013
TEST #: D132707

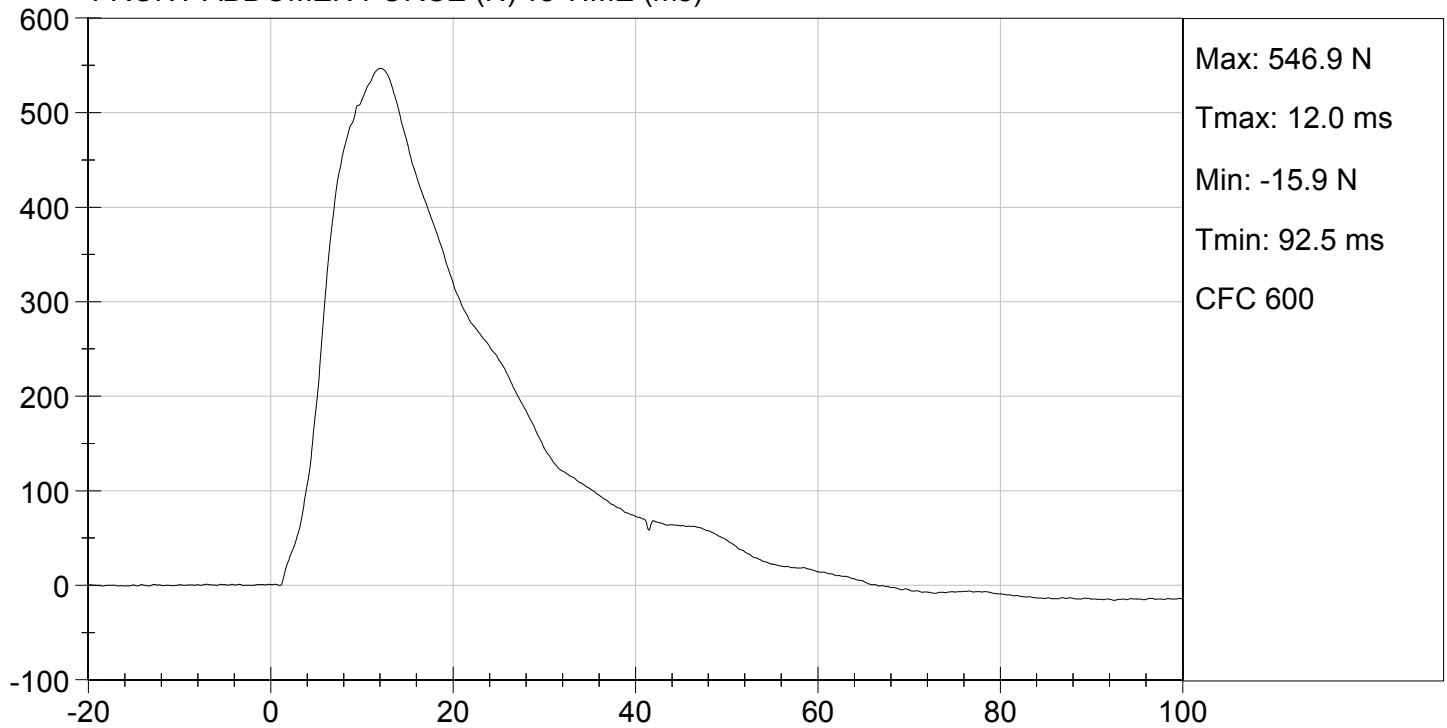




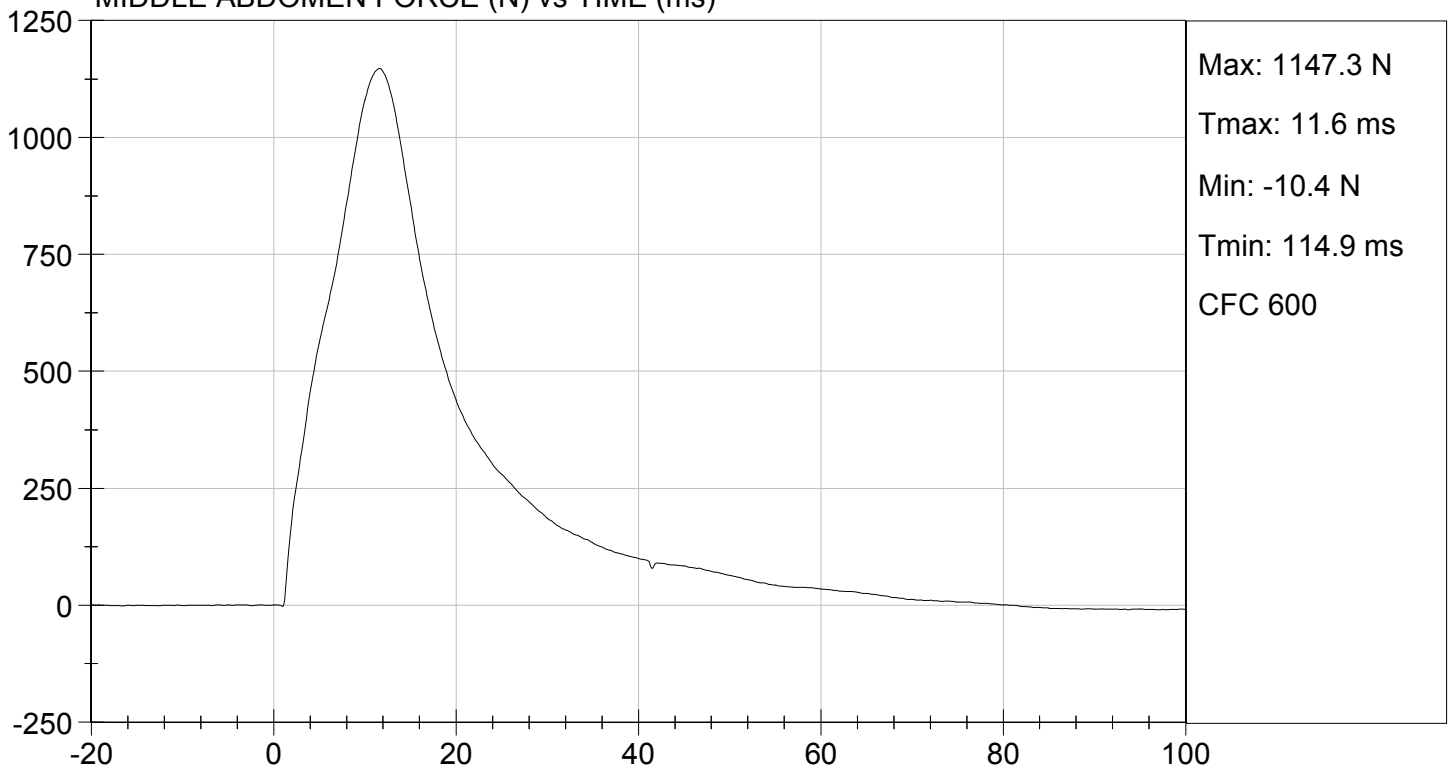
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.12 ft/s, 4.00 m/s

TEST DATE: 08/14/2013
TEST #: D132707

FRONT ABDOMEN FORCE (N) vs TIME (ms)



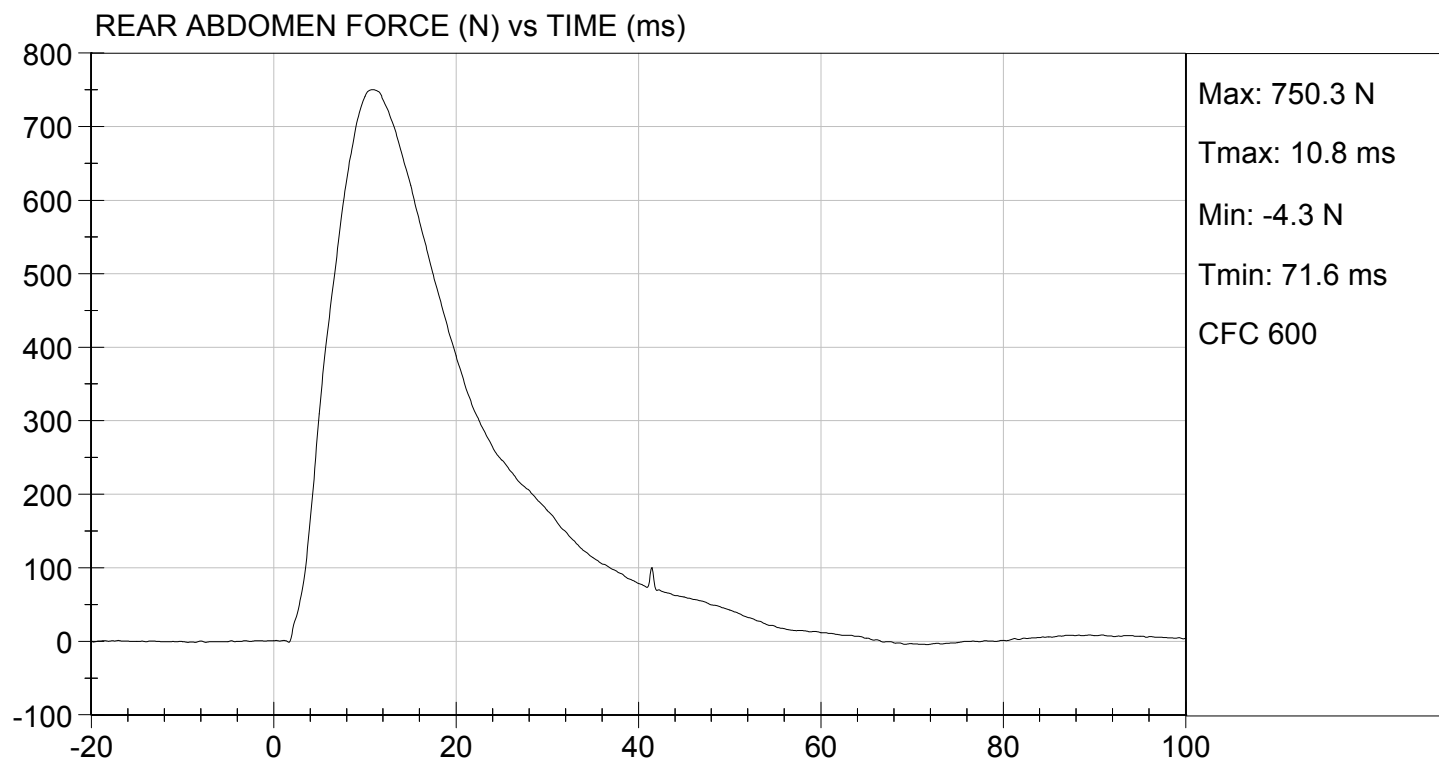
MIDDLE ABDOMEN FORCE (N) vs TIME (ms)





TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.12 ft/s, 4.00 m/s

TEST DATE: 08/14/2013
TEST #: D132707



MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

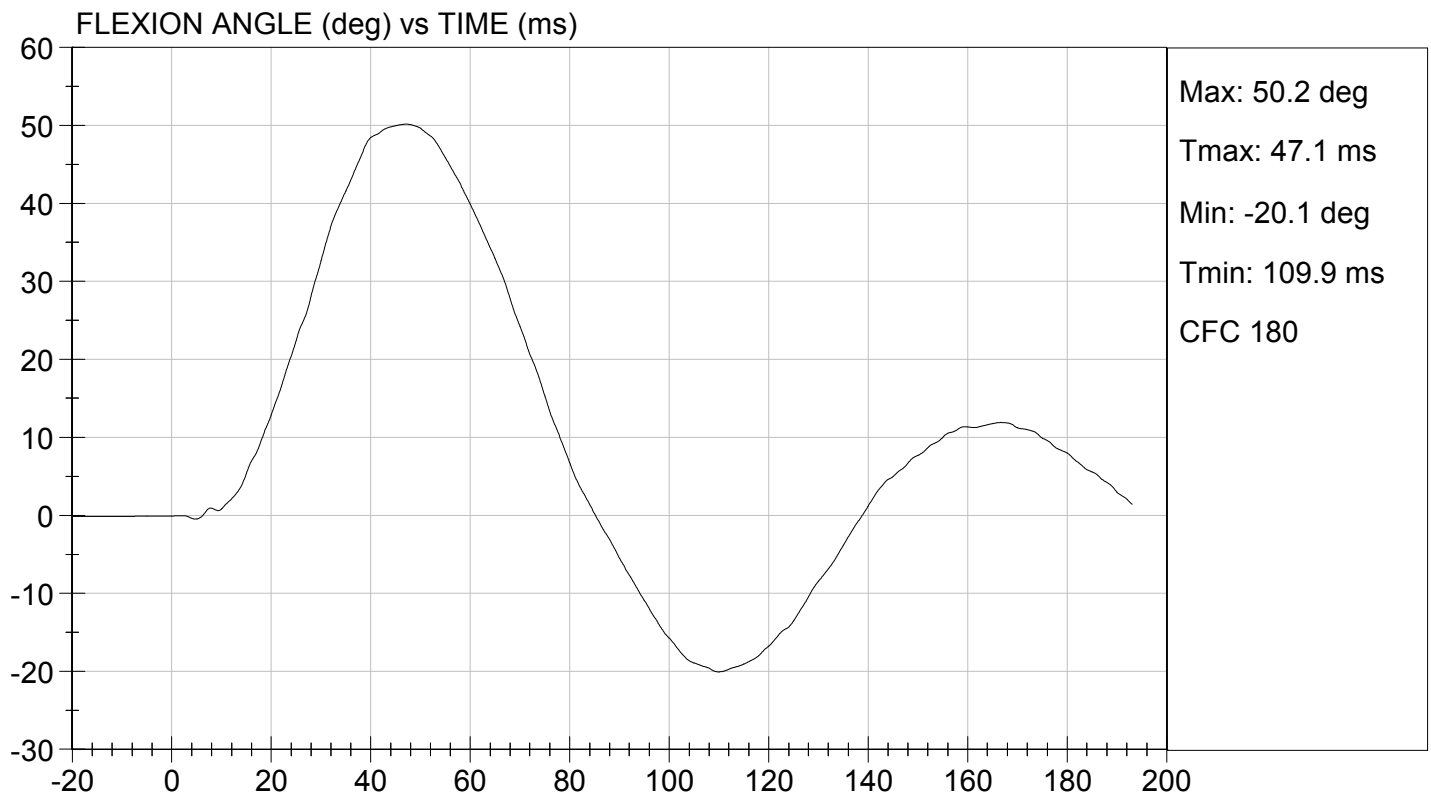
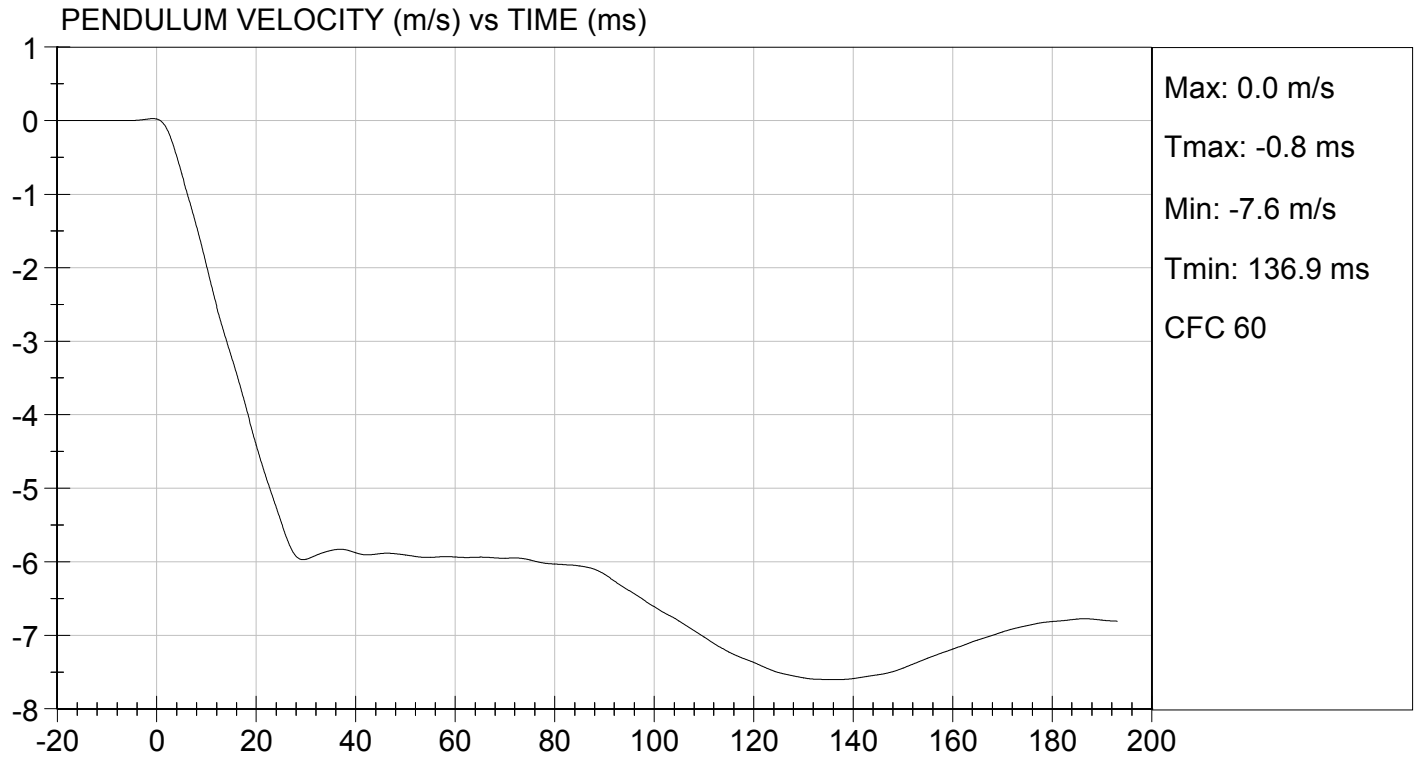
Test I.D: D132708

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	41	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	-0.421	Pass
	27 ms	m/s	-6.50 to -5.80	-5.82	Pass
	30 ms	m/s	>= -6.50	-5.96	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	50.2	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	47.1	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	46	Pass
Overall Results					Pass


Laboratory Technician

08/14/2013
Test Date

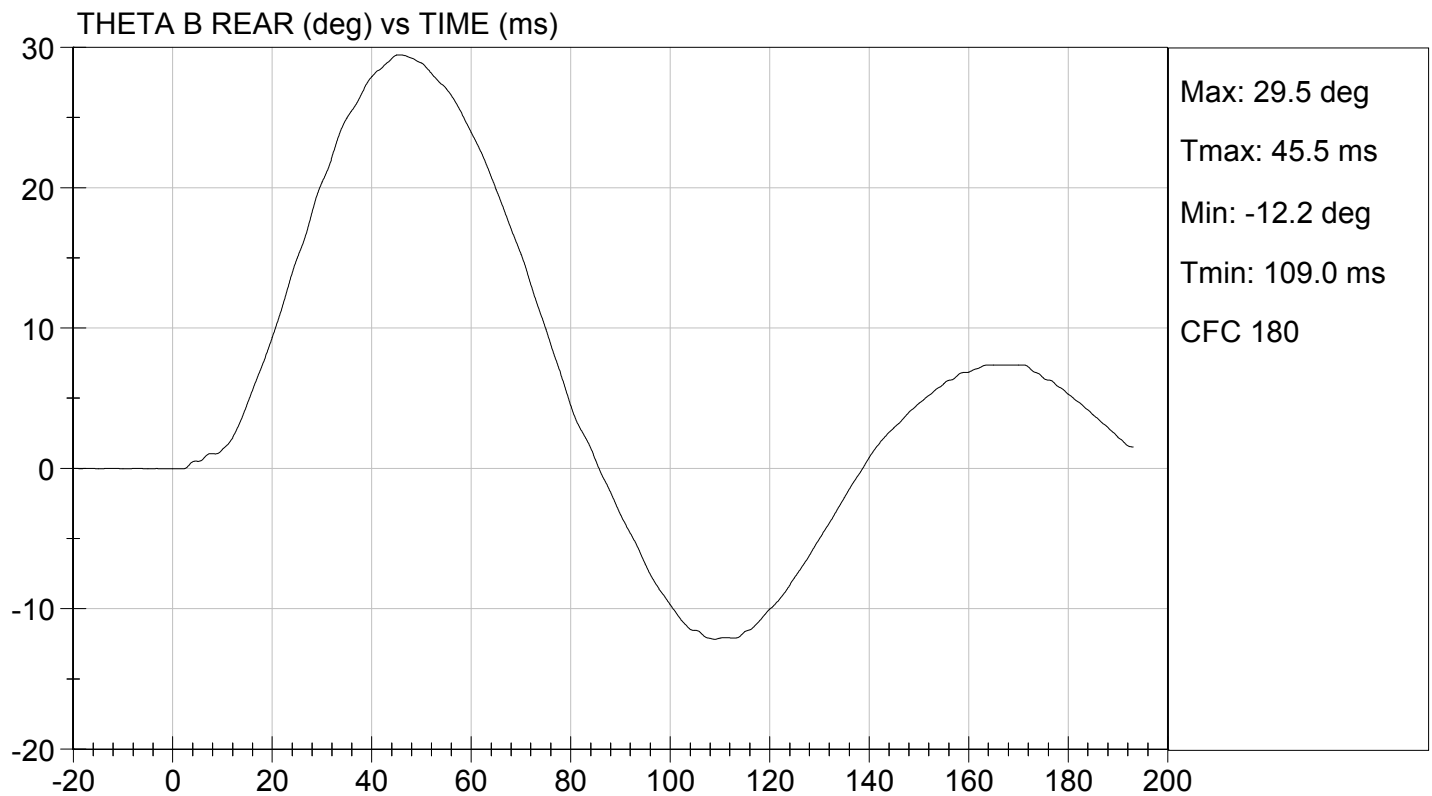
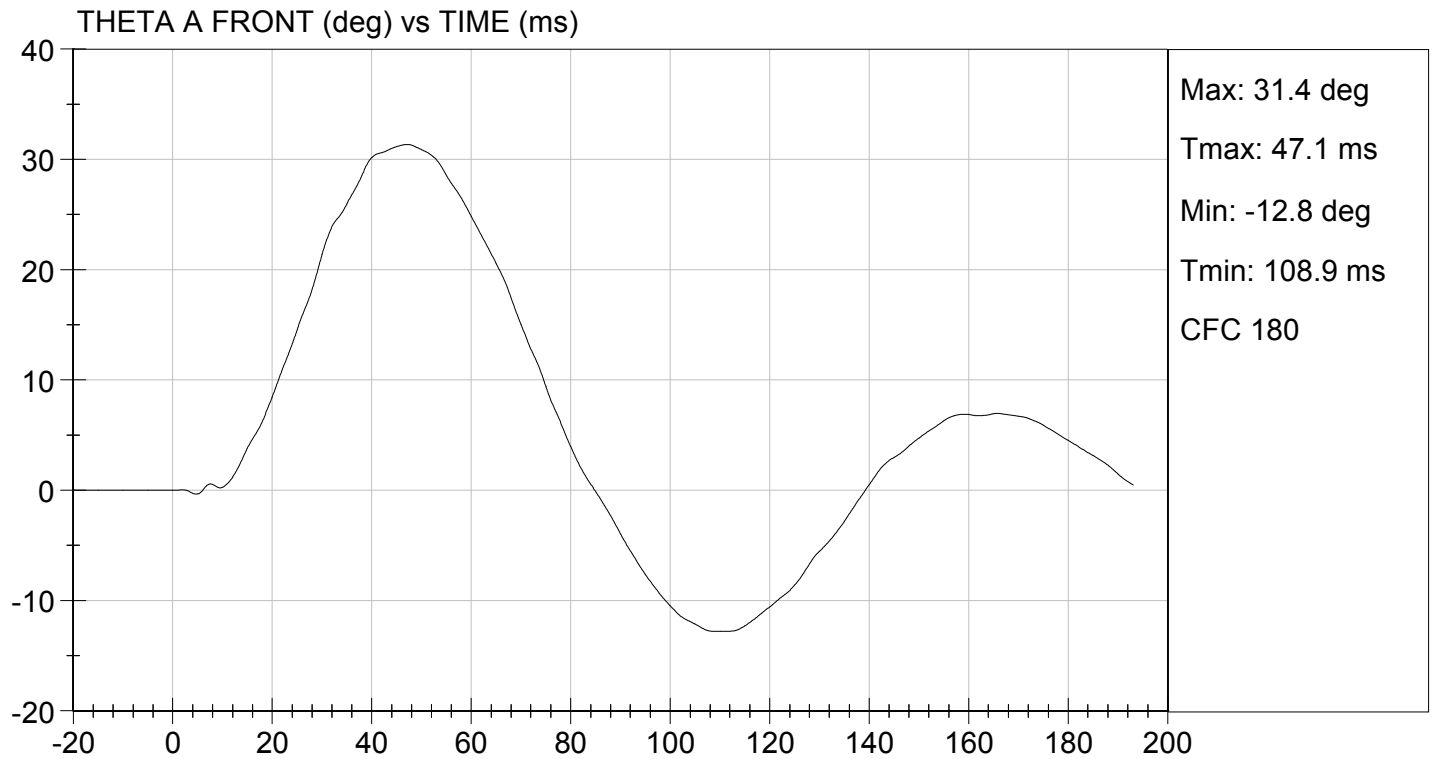

Approved By





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

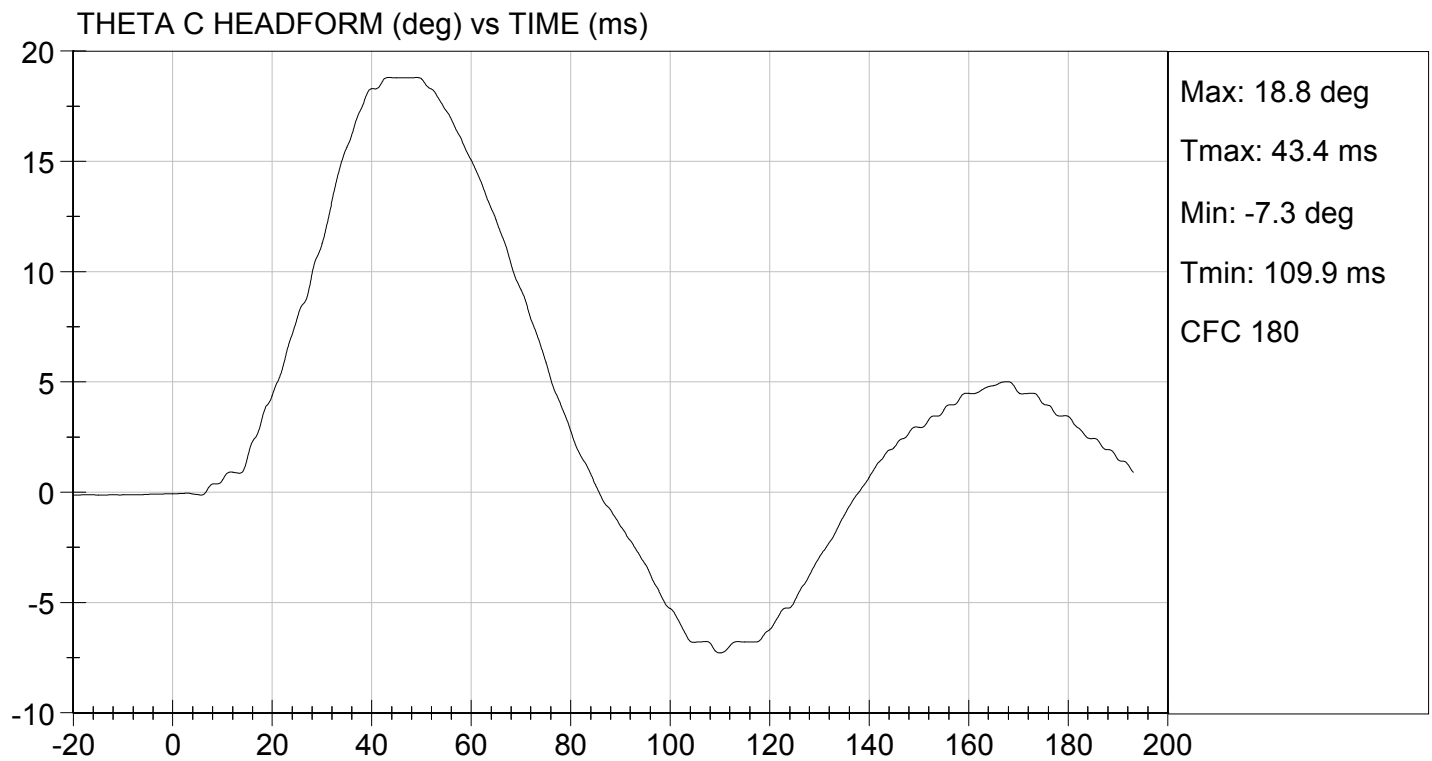
TEST DATE: 08/14/2013
TEST #: D132708





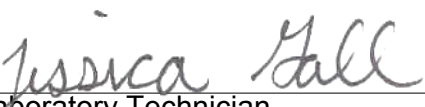
TEST DESC: LUMBAR BENDING
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 08/14/2013
TEST #: D132708



MGA RESEARCH CORPORATION**PELVIS TEST
ES-2re DUMMY****ATD Serial No:** 032**Test I.D:** D132709

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	42	Pass
Probe Speed	m/s	4.20 to 4.40	4.23	Pass
Maximum Impactor Force	N	4700 to 5400	4826	Pass
Time of Maximum Impactor Force	ms	11.8 to 16.1	14.0	Pass
Maximum Pubic Force	N	1230 to 1590	1383	Pass
Time of Maximum Pubic Force	ms	12.2 to 17.0	14.7	Pass
Overall Test Results				Pass


Laboratory Technician

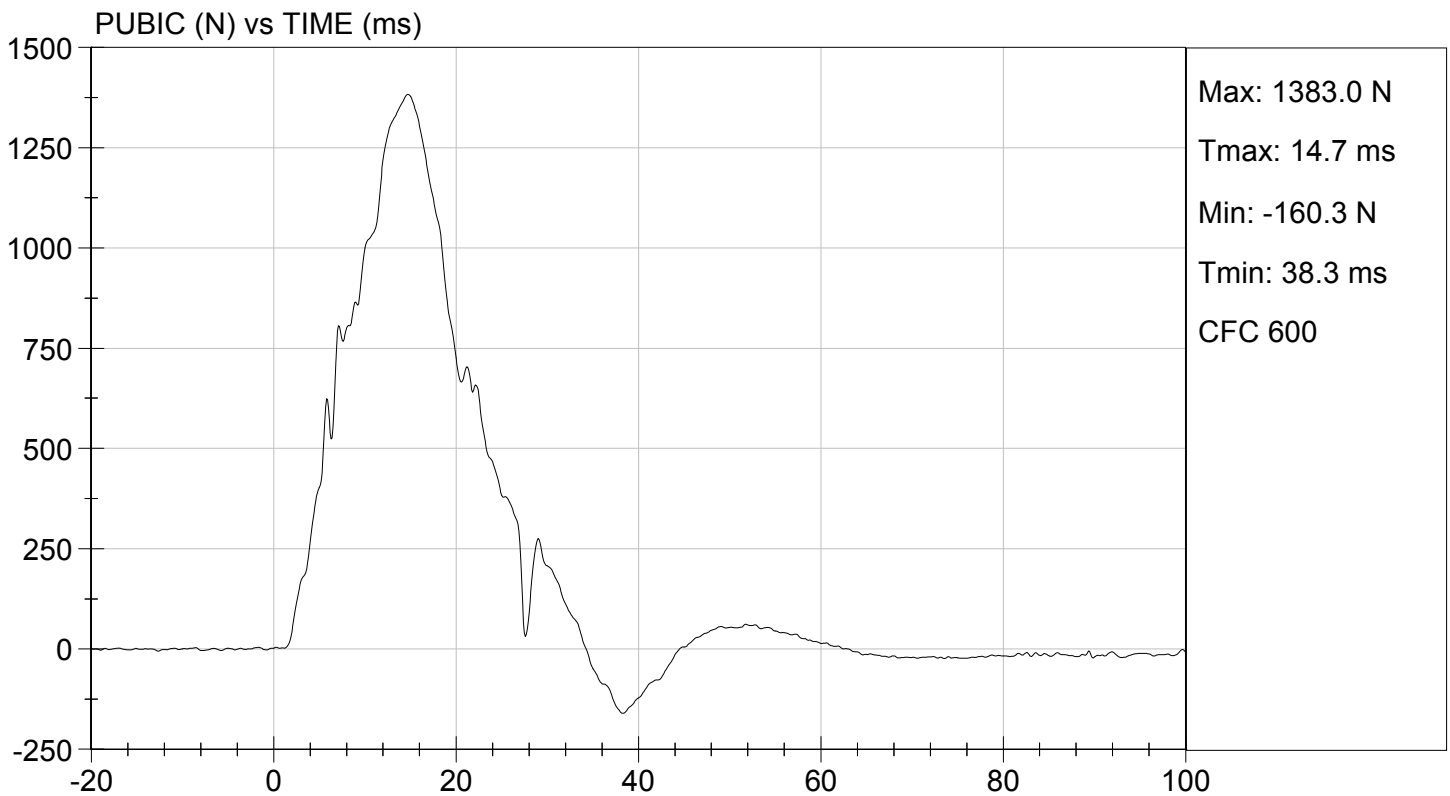
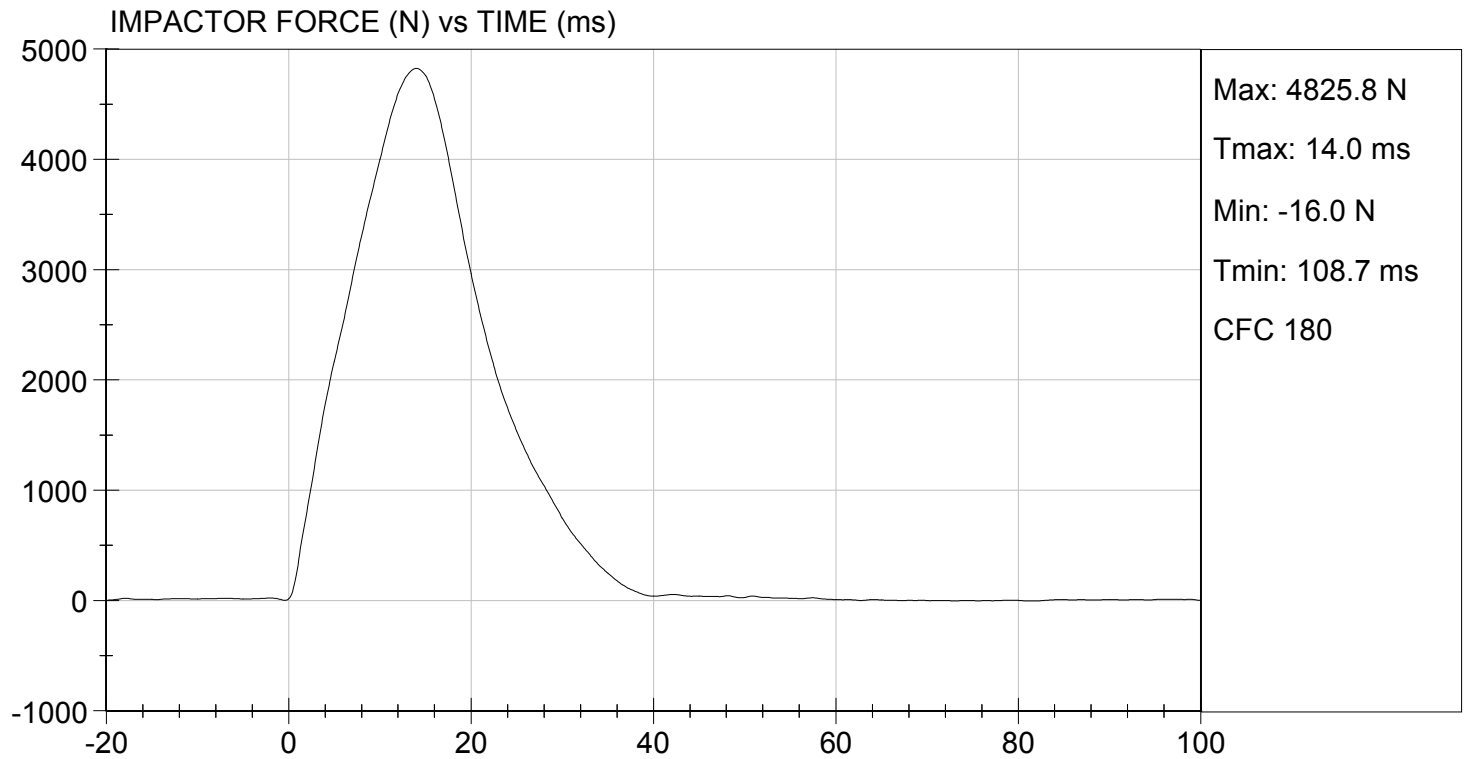
08/14/2013
Test Date


Approved By



TEST DESC: PELVIS IMPACT
VELOCITY: 13.88 ft/s, 4.23 m/s

TEST DATE: 08/14/2013
TEST #: D132709



SID-IIsD External Measurements
SN: 306

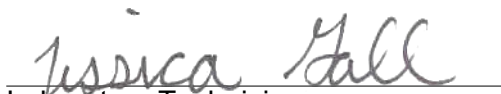
No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148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

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

ATD Serial No: 306

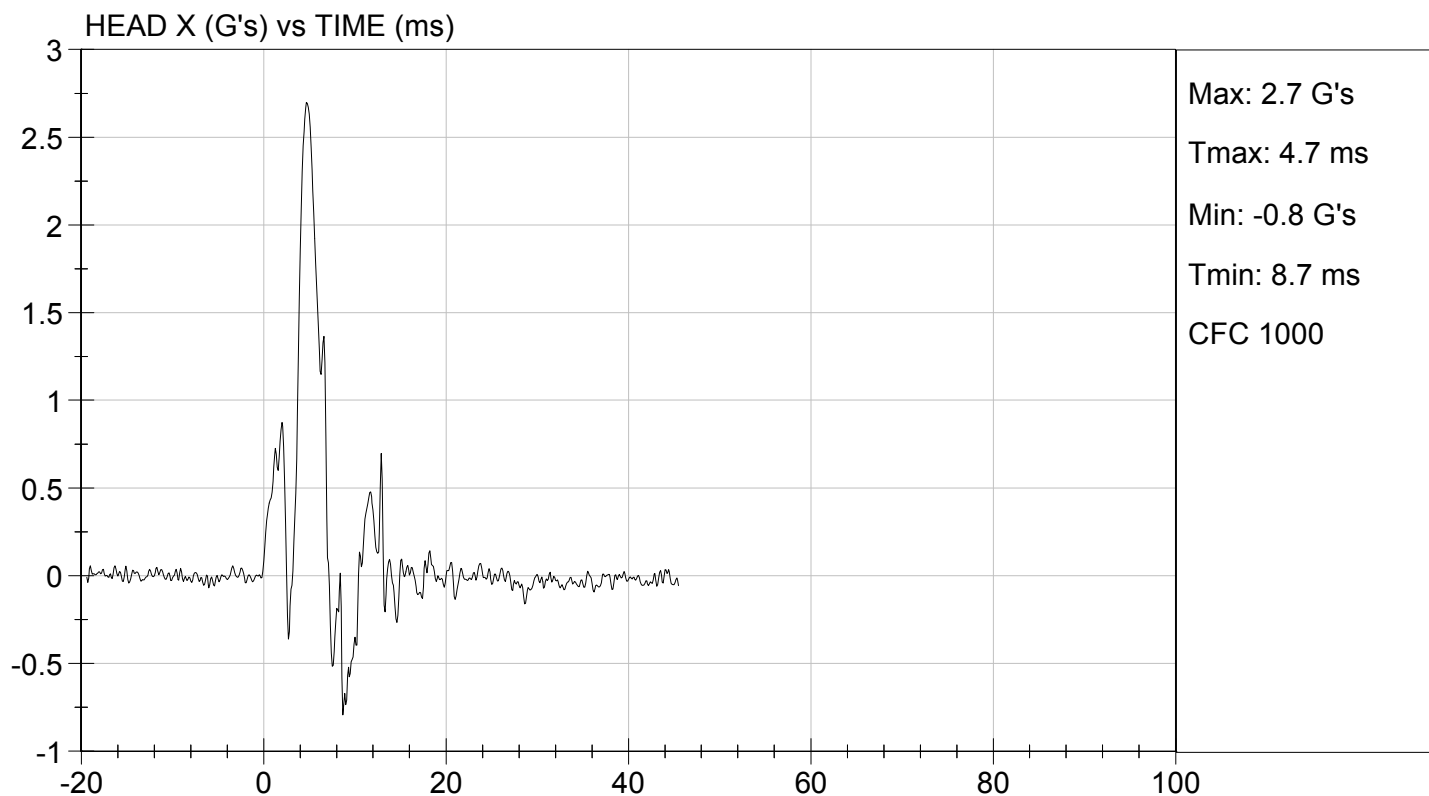
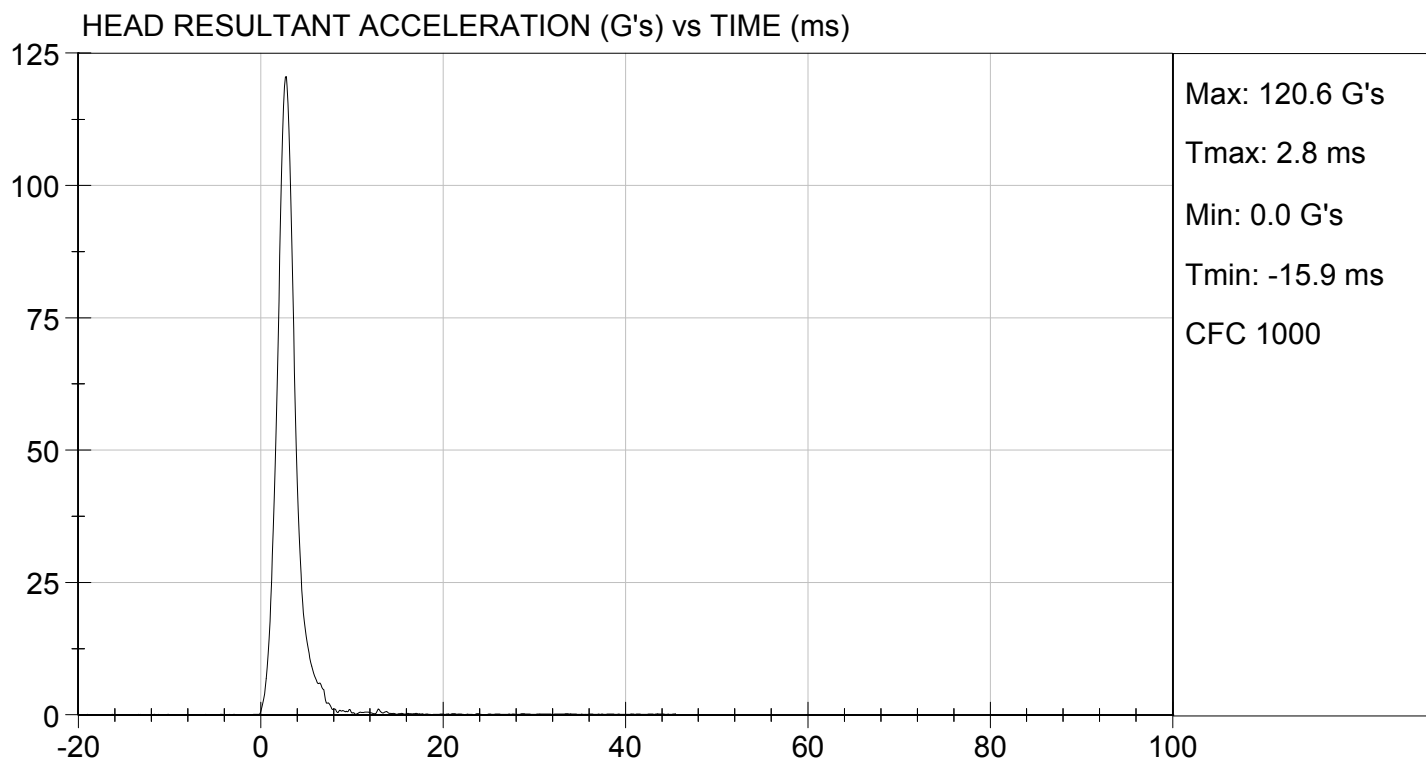
Test ID: D132491

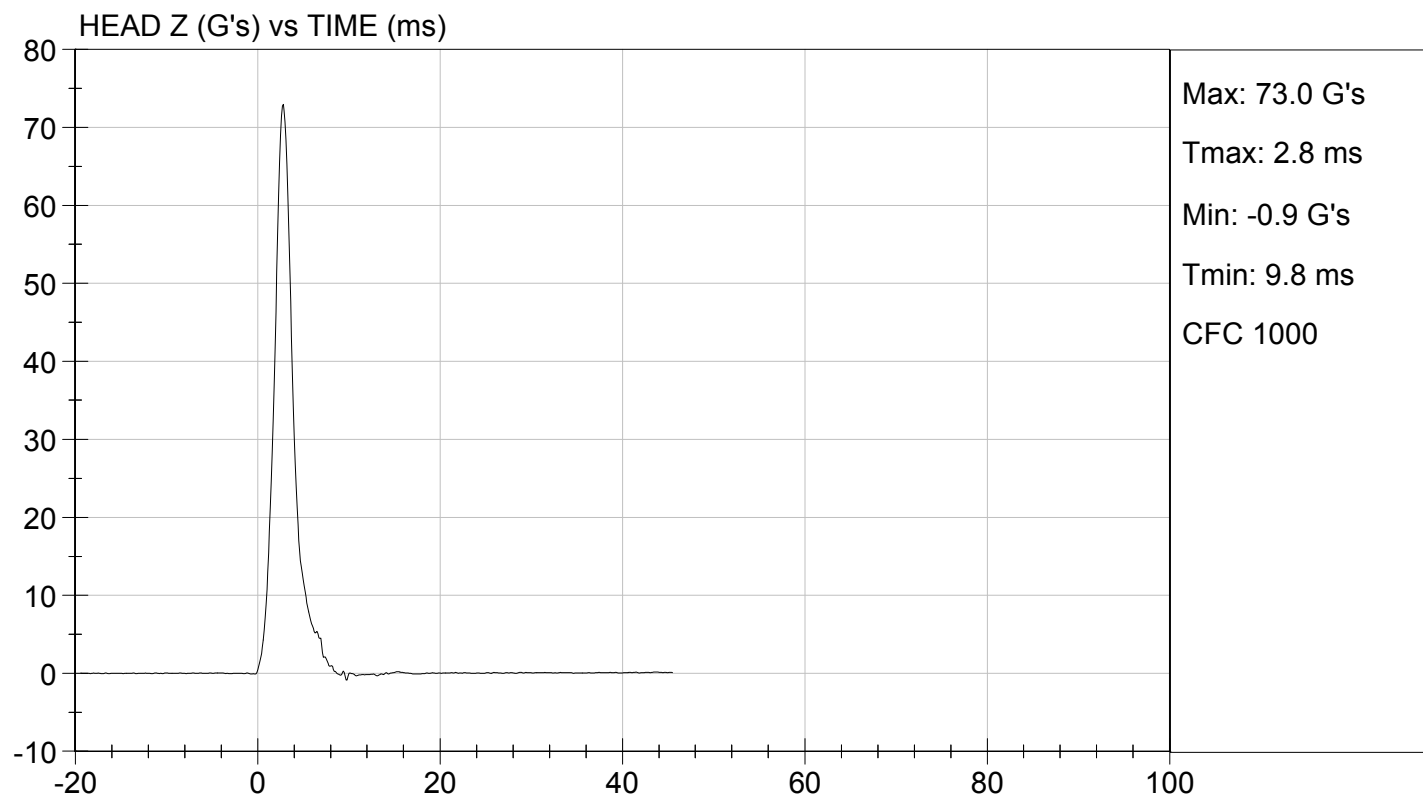
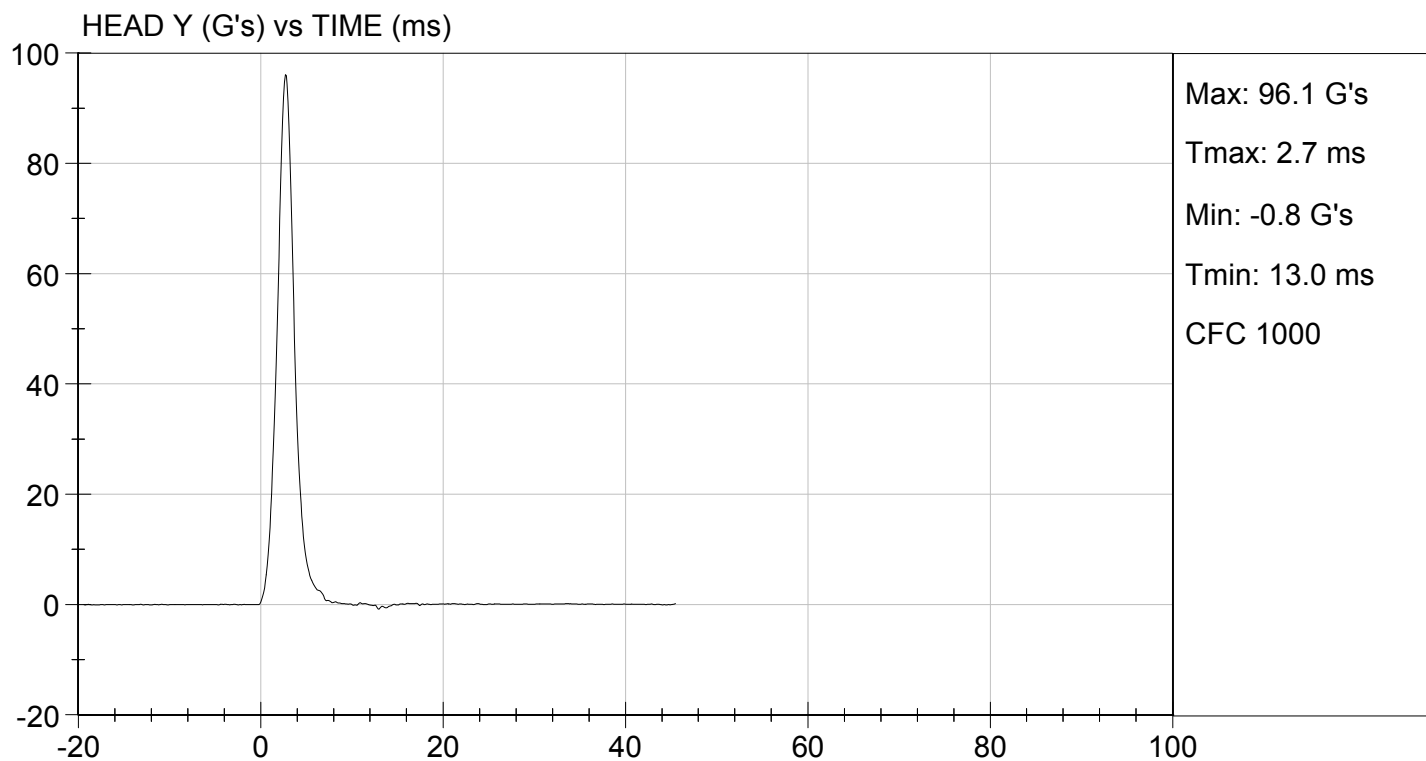
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Peak Resultant Acceleration	G's	115 to 137	121	Pass
Peak Longitudinal Acceleration	G's	+/- 15	2.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results			Pass	


Laboratory Technician

07/30/2013
Test Date


Approved By



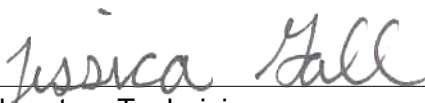


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132492

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.4	Pass
Humidity		%	10 to 70	47	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.34	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	5.43	Pass
	25-100 ms	m/s	5.50 to 6.20	5.67	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	62	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-39	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	113	Pass
Overall Test Results					Pass


 Laboratory Technician

07/30/2013

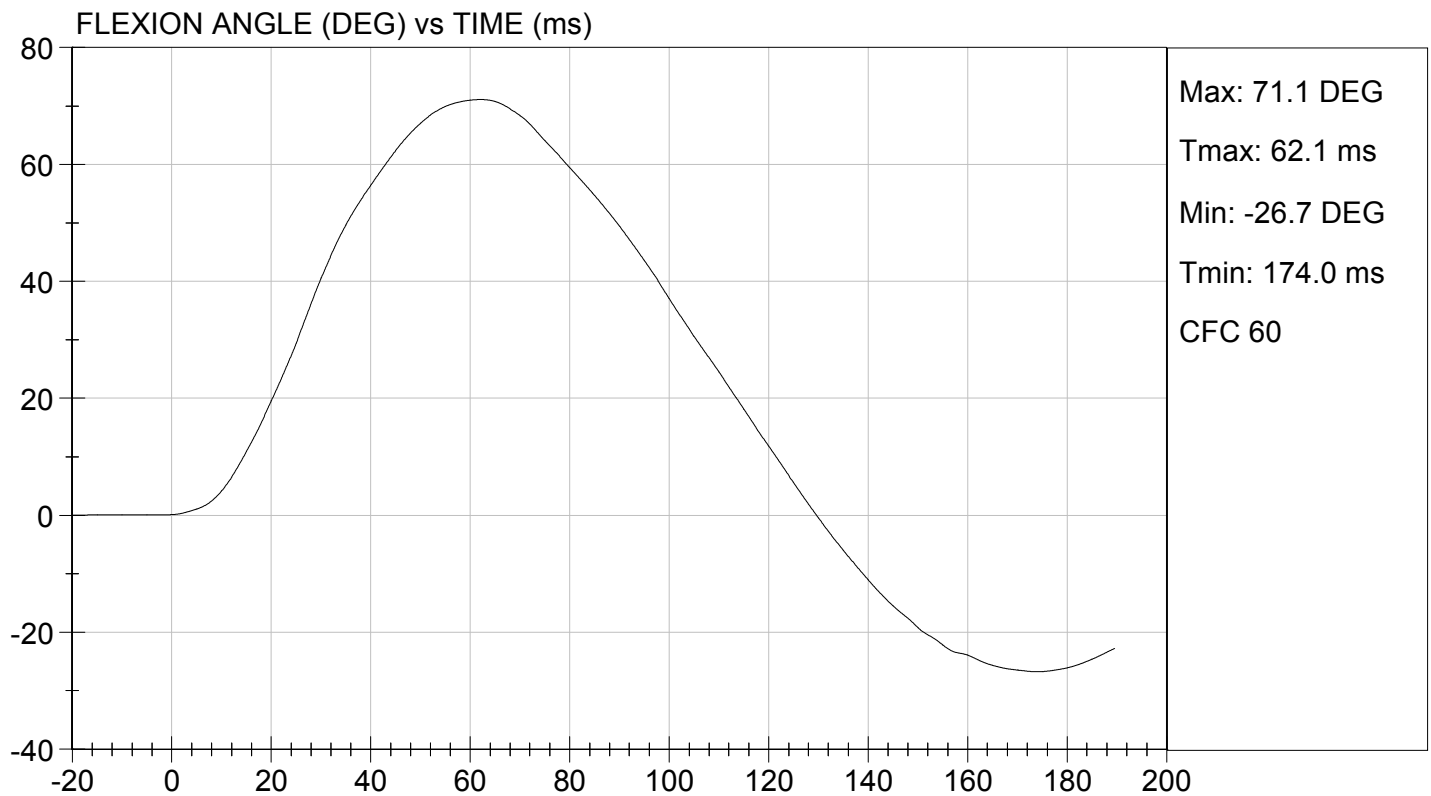
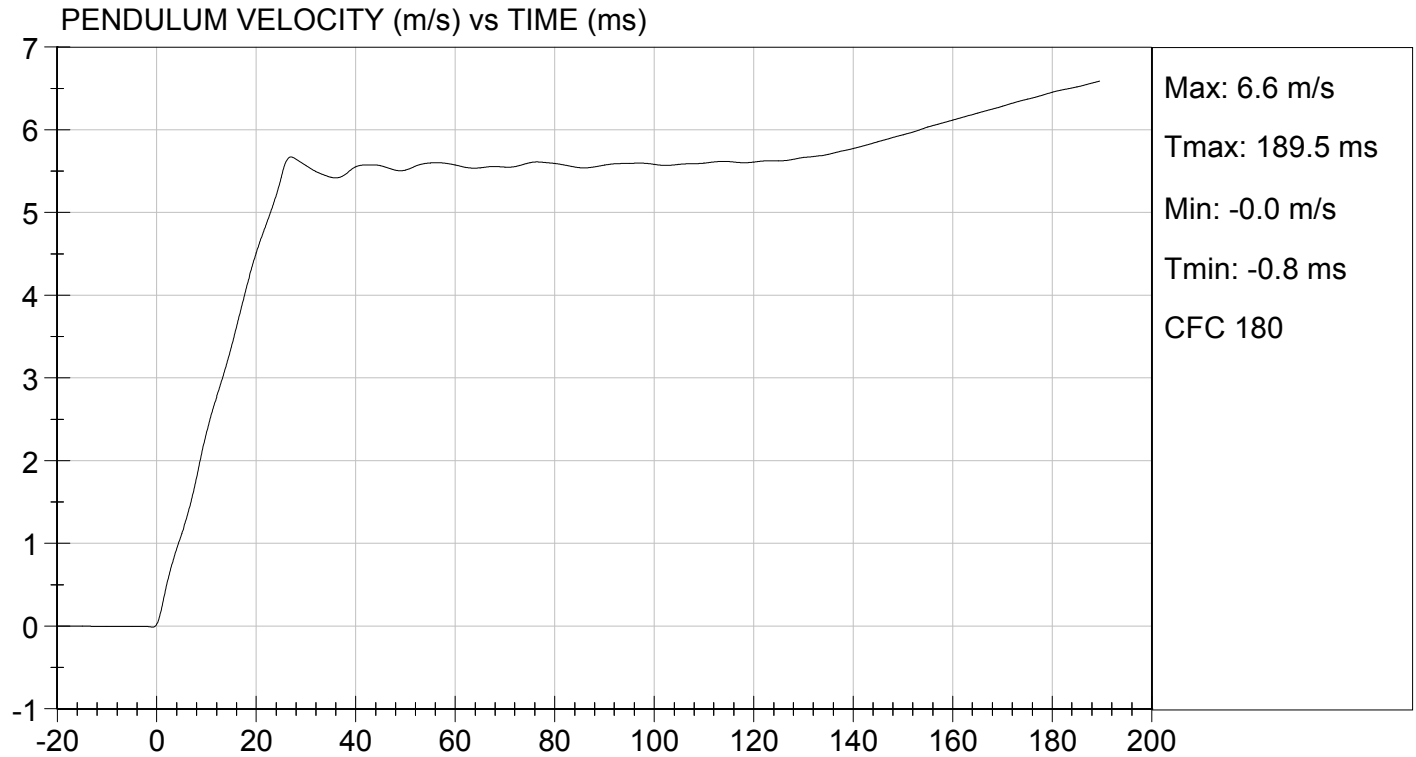
Test Date


 Approved By



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

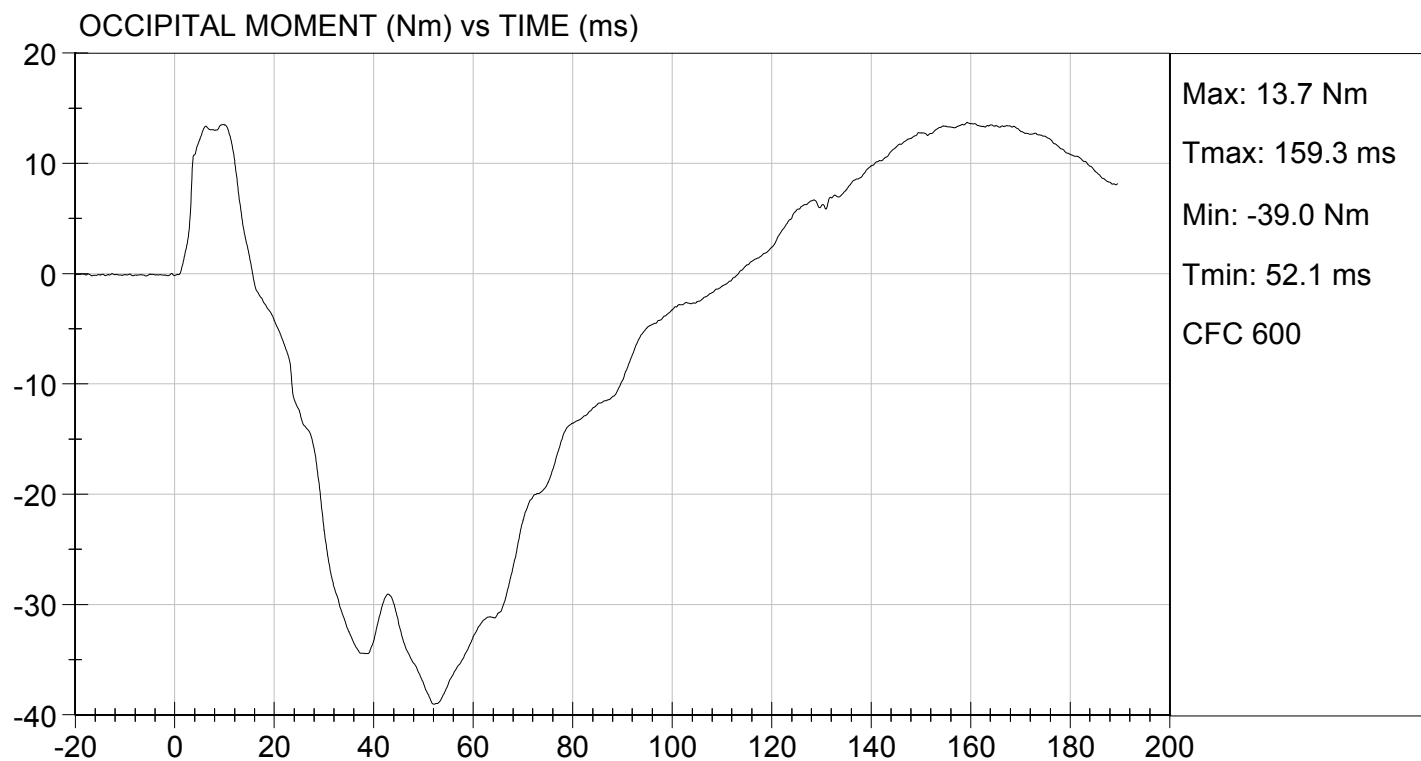
TEST DATE: 07/30/2013
TEST #: D132492





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

TEST DATE: 07/30/2013
TEST #: D132492



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

ATD Serial No: 306

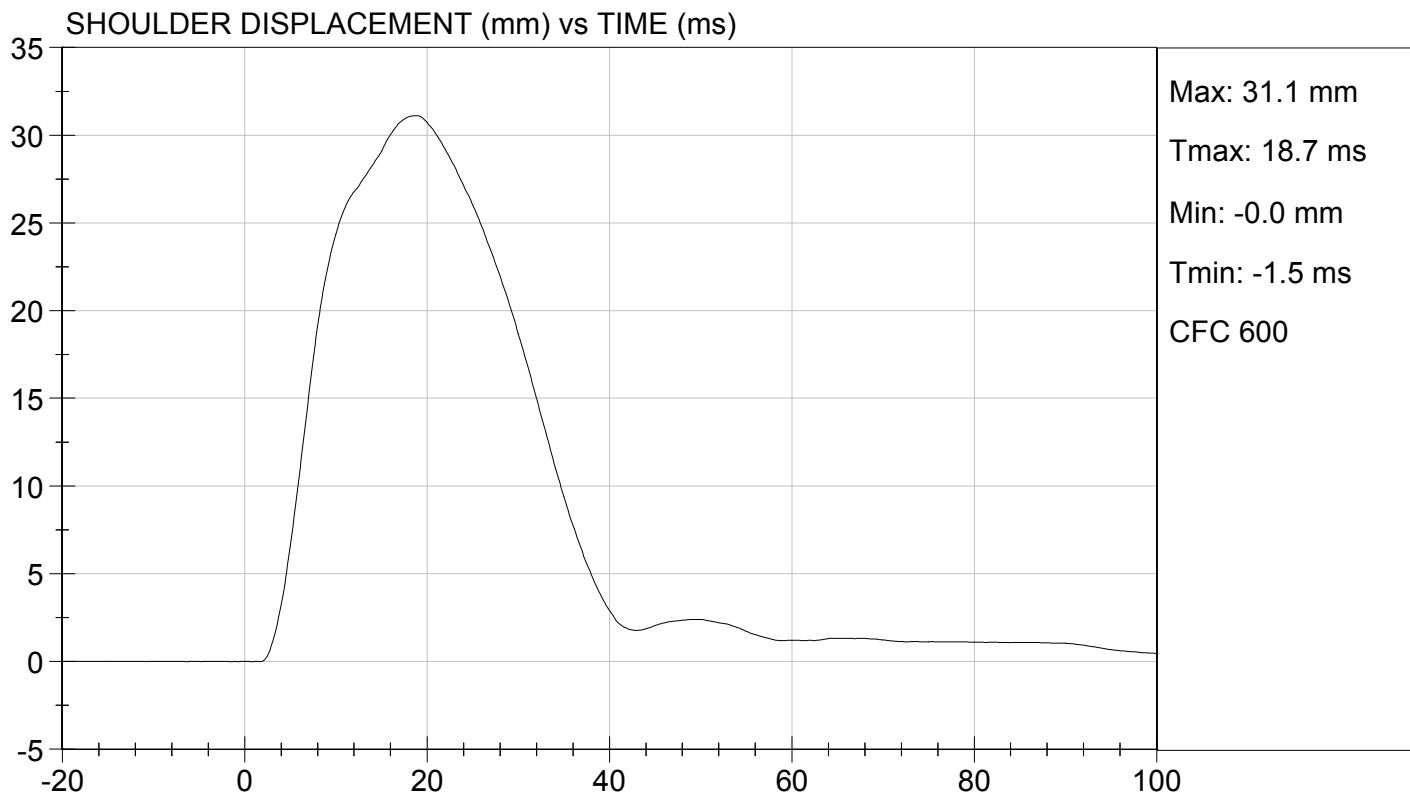
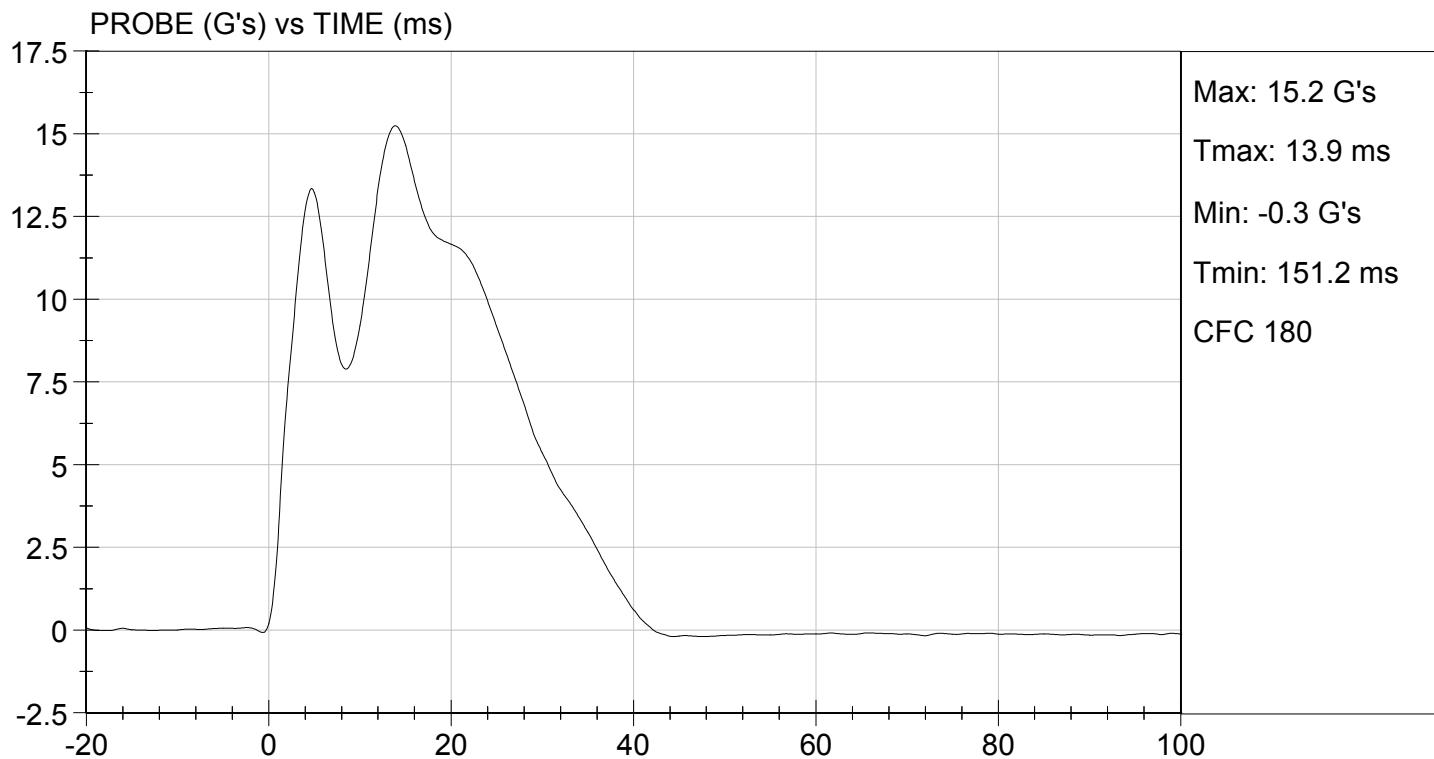
Test ID: D132493

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	47	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	31	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

07/30/2013
Test Date

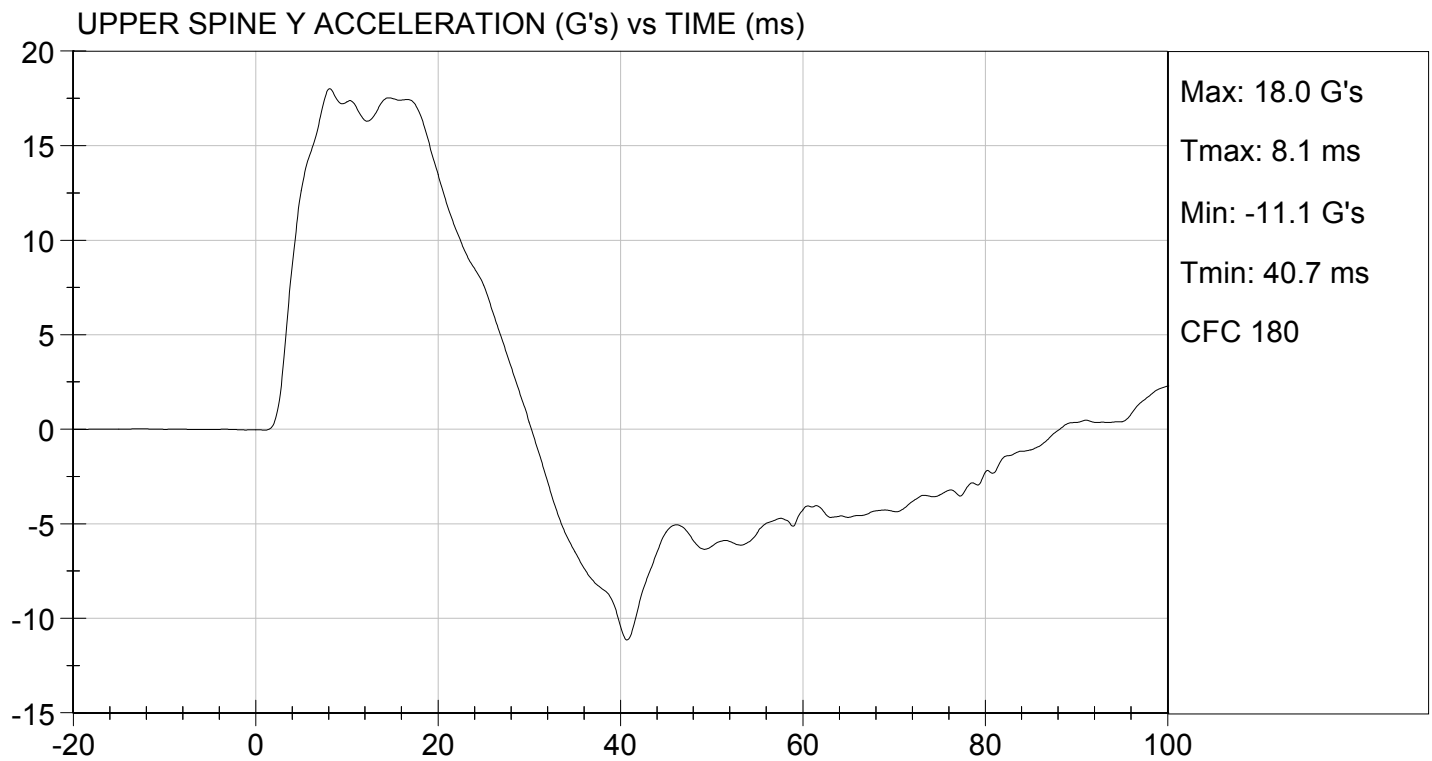
David Winkelbauer
Approved By





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

TEST DATE: 07/30/2013
TEST #: D132493

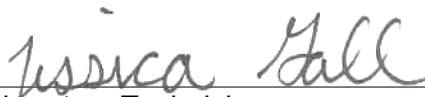


MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132494

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.6	Pass
Humidity	%	10 to 70	47	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	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	31	Pass
Overall Test Results				Pass


 Laboratory Technician

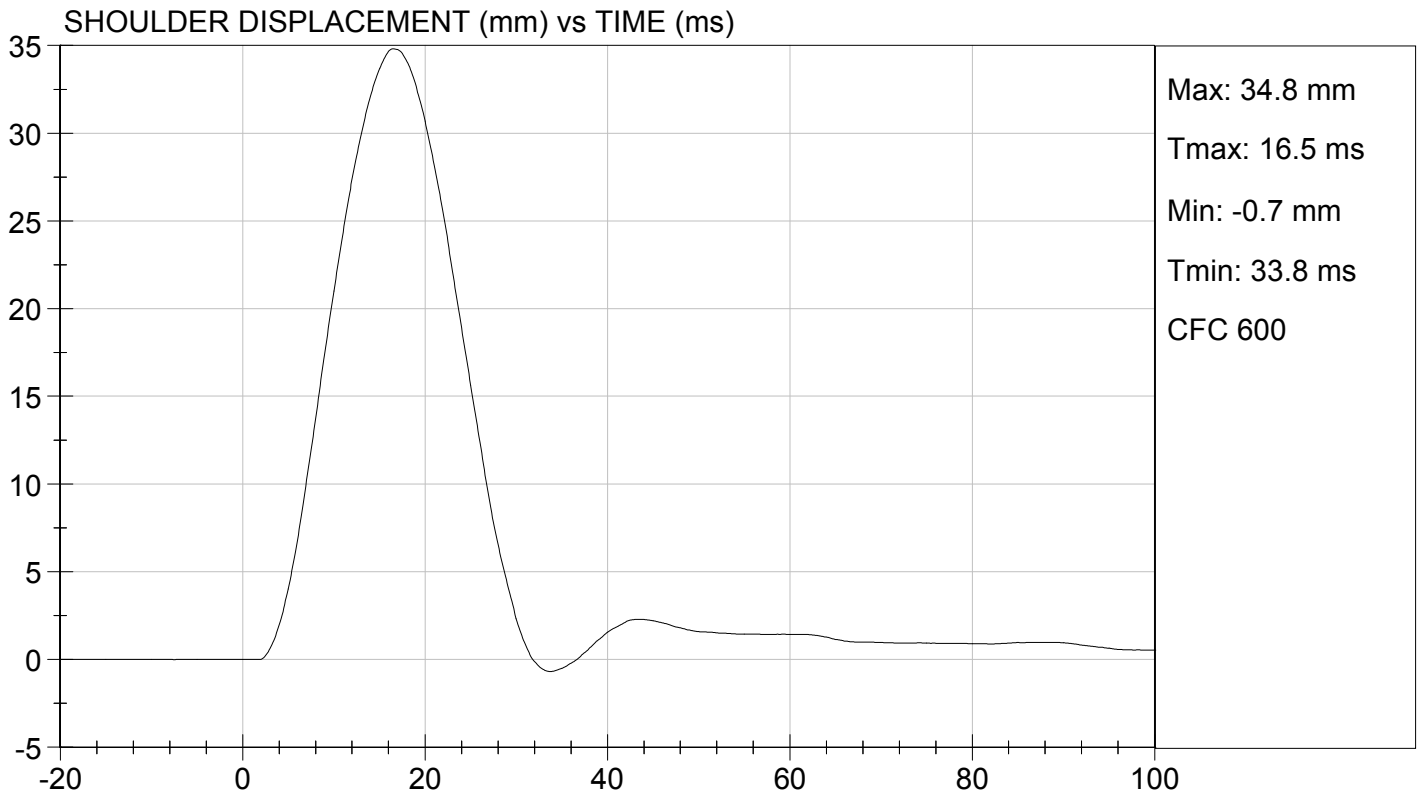
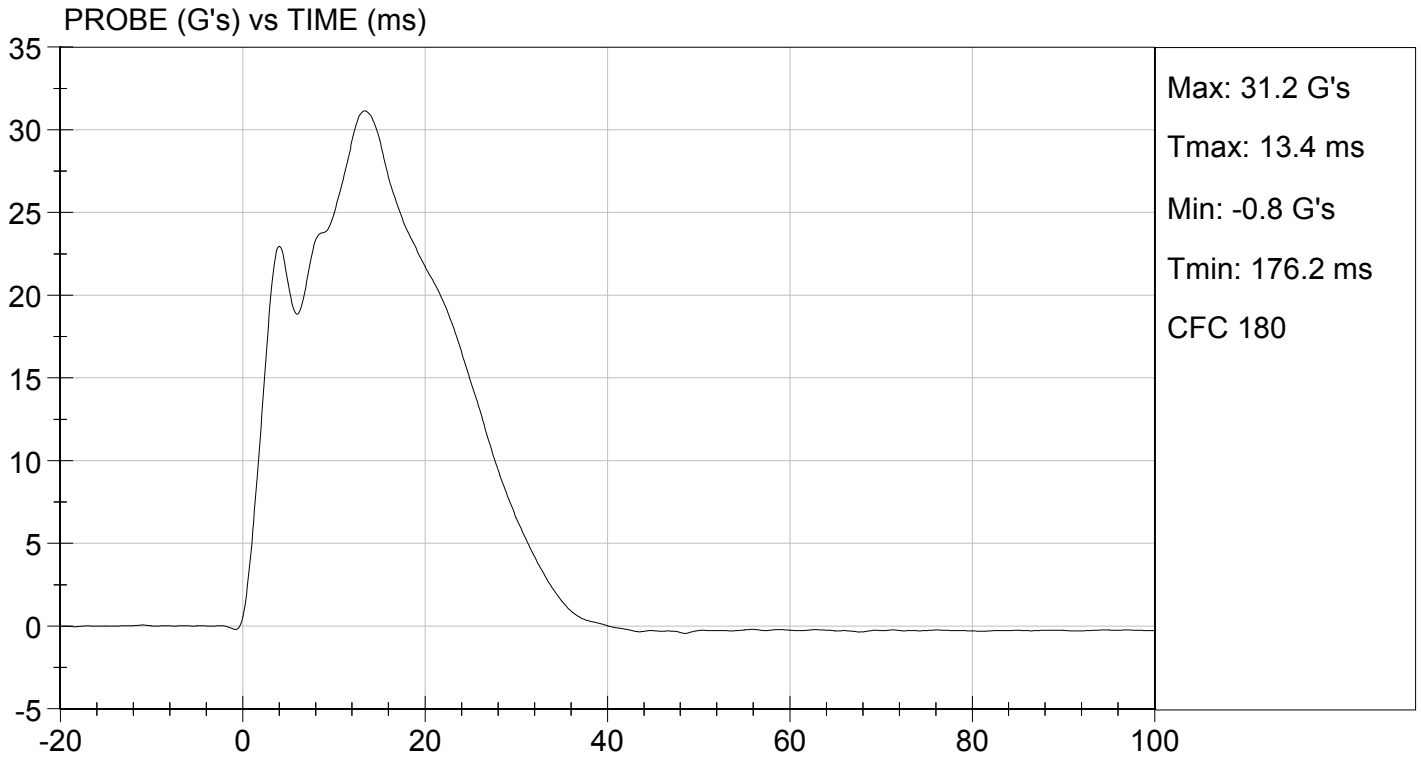
07/30/2013
 Test Date


 Approved By



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

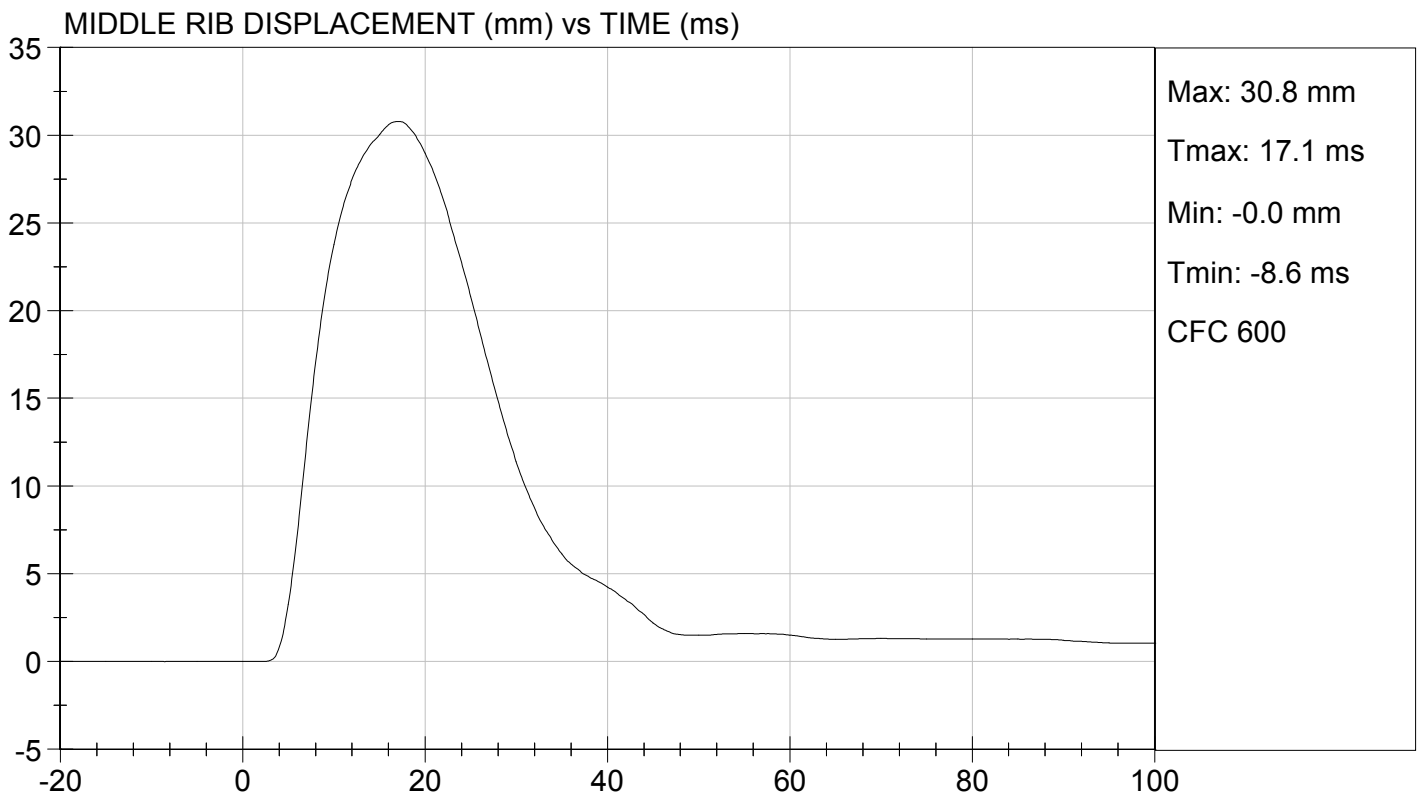
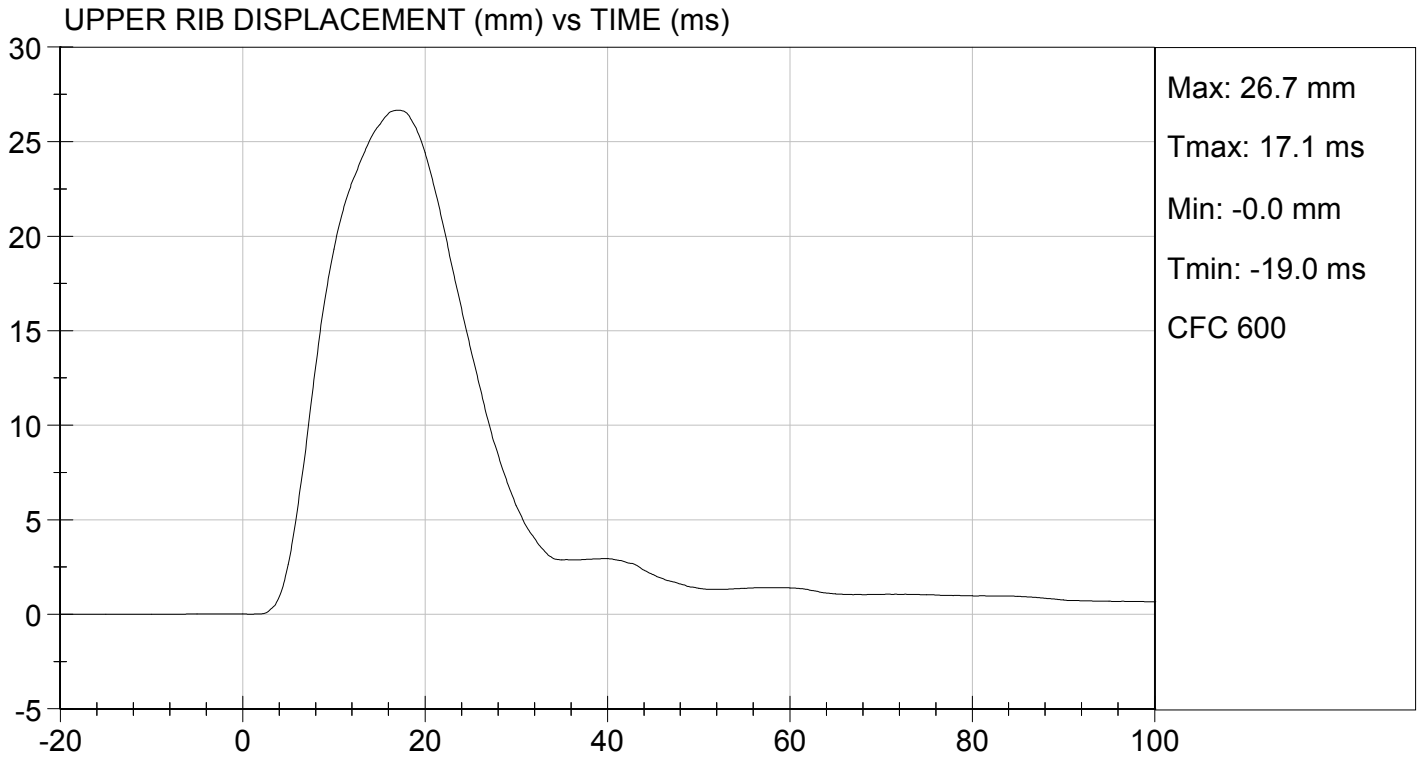
TEST DATE: 07/30/2013
TEST #: D132494





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

TEST DATE: 07/30/2013
TEST #: D132494

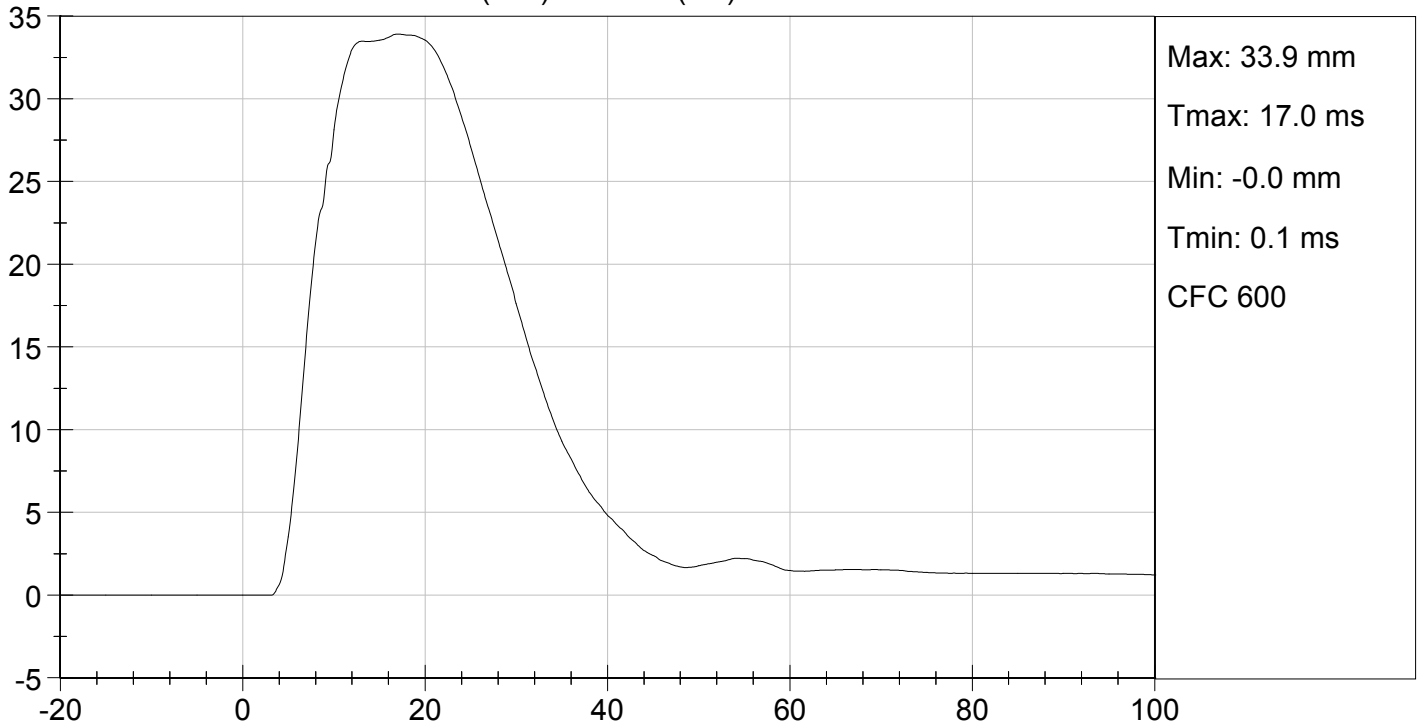




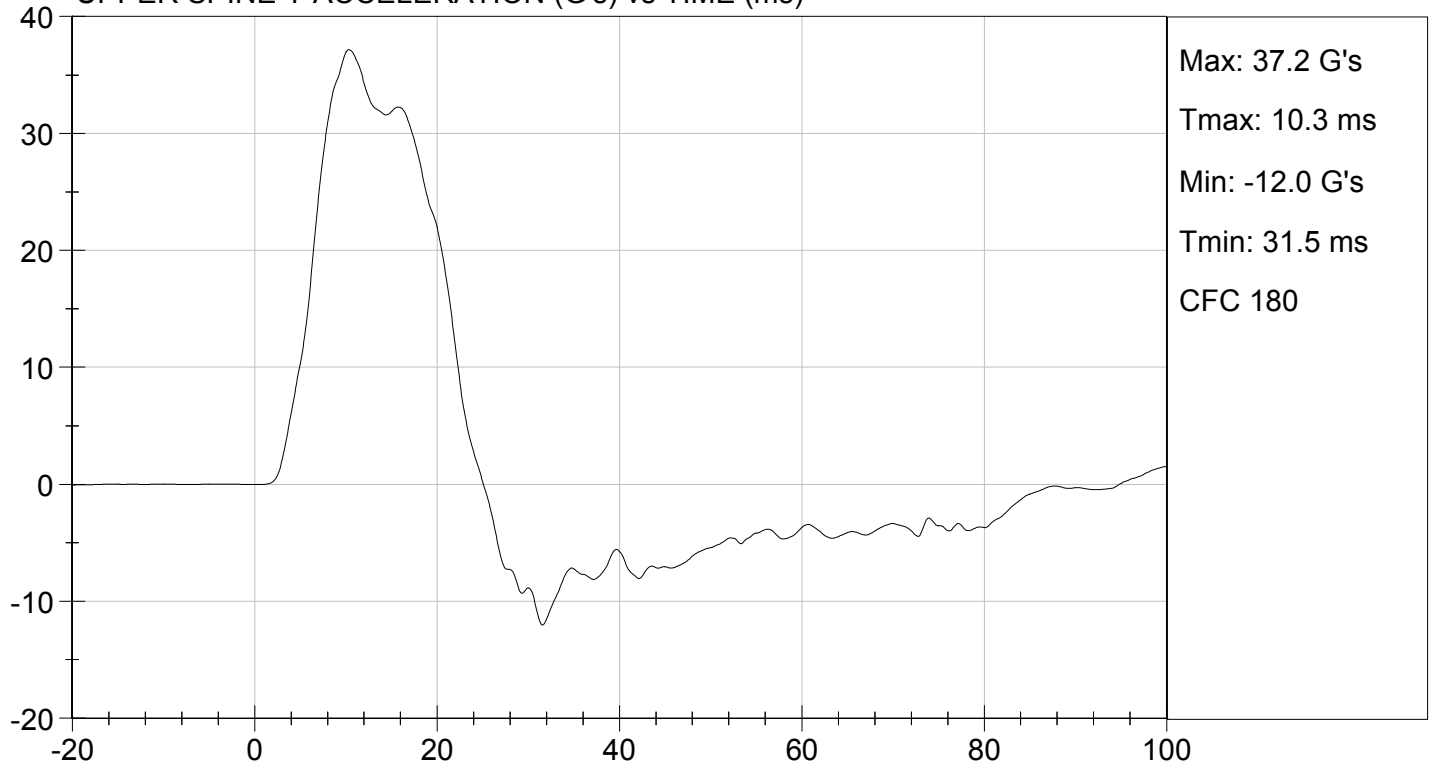
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 07/30/2013
TEST #: D132494

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



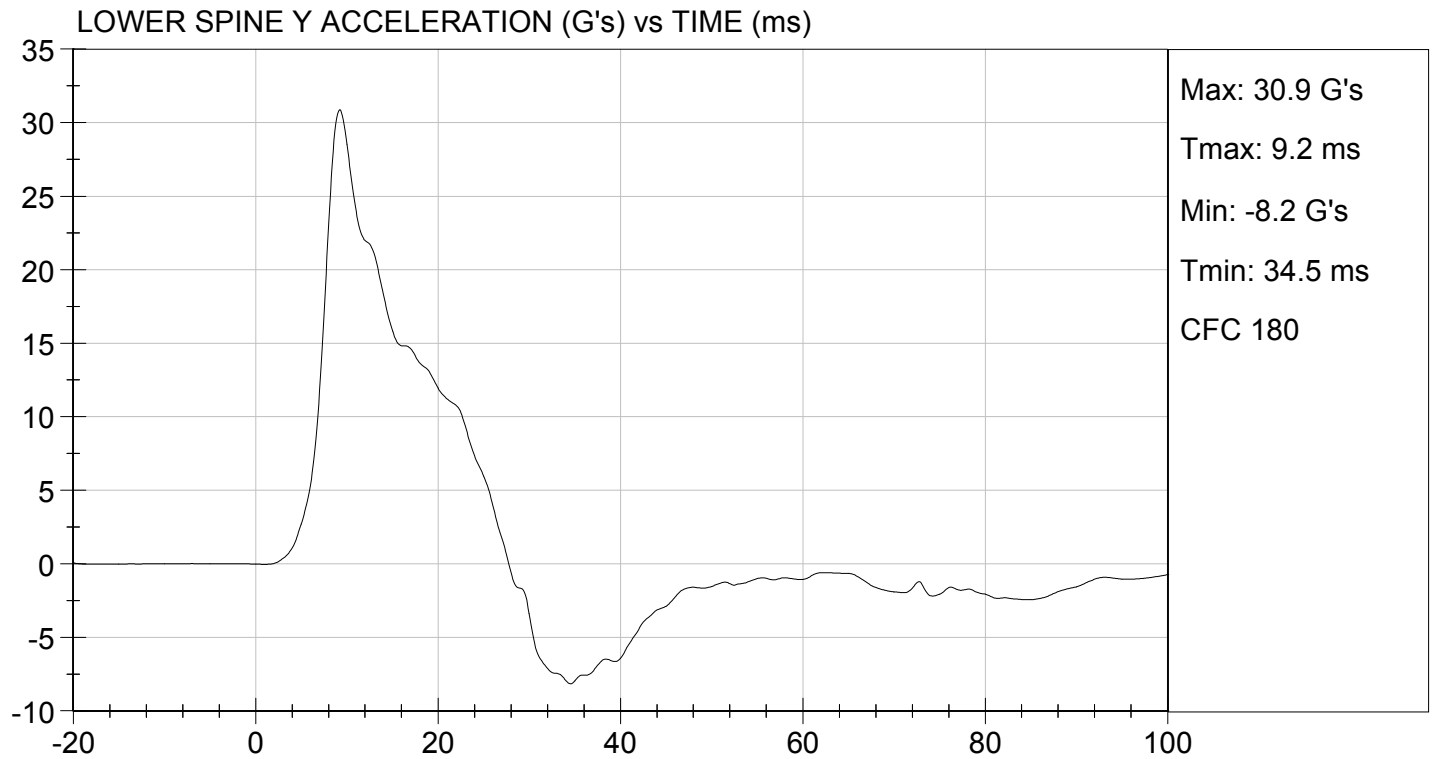
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)





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

TEST DATE: 07/30/2013
TEST #: D132494

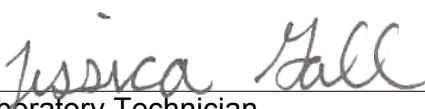


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132495

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.6	Pass
Humidity	%	10 to 70	47	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	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	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	8	Pass
Overall Test Results				Pass


 Laboratory Technician

07/30/2013

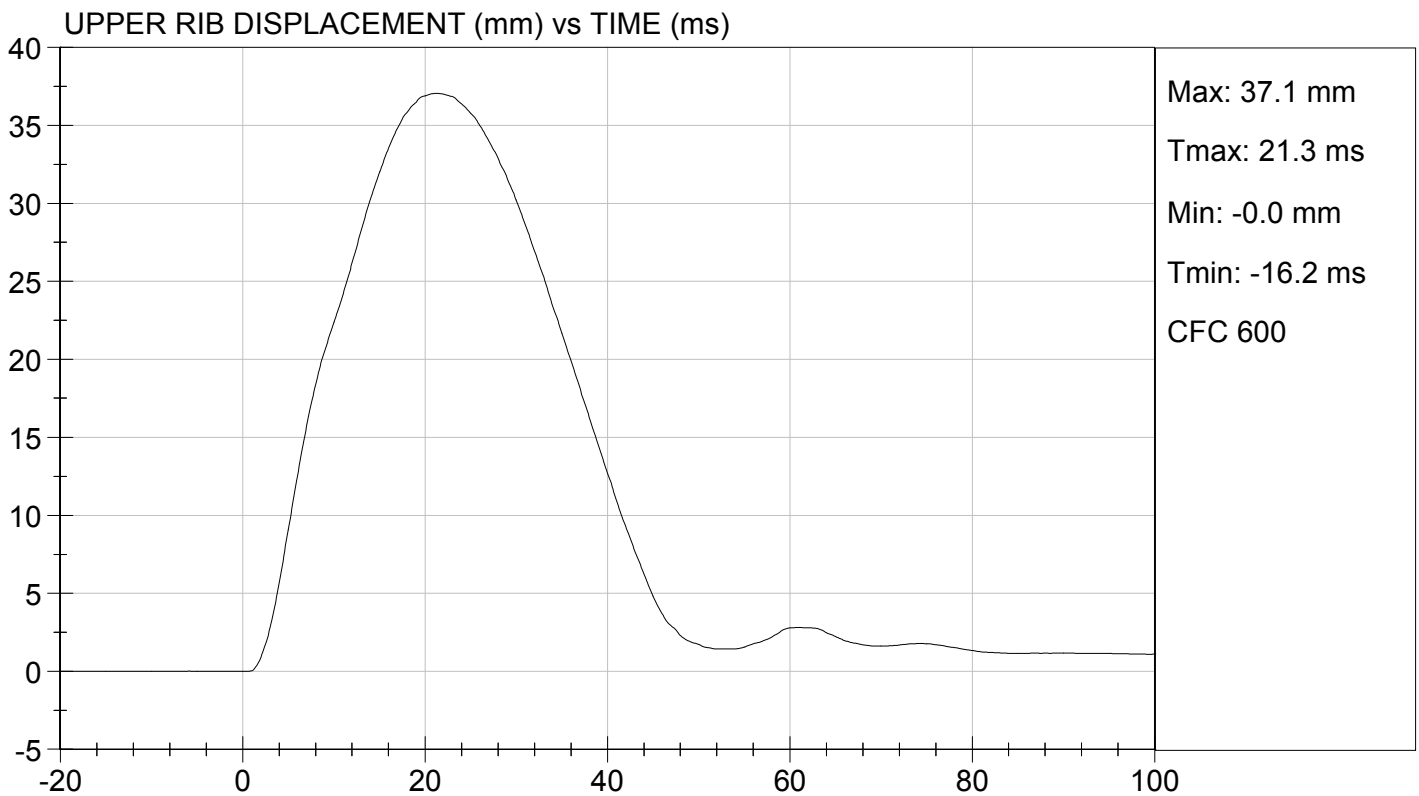
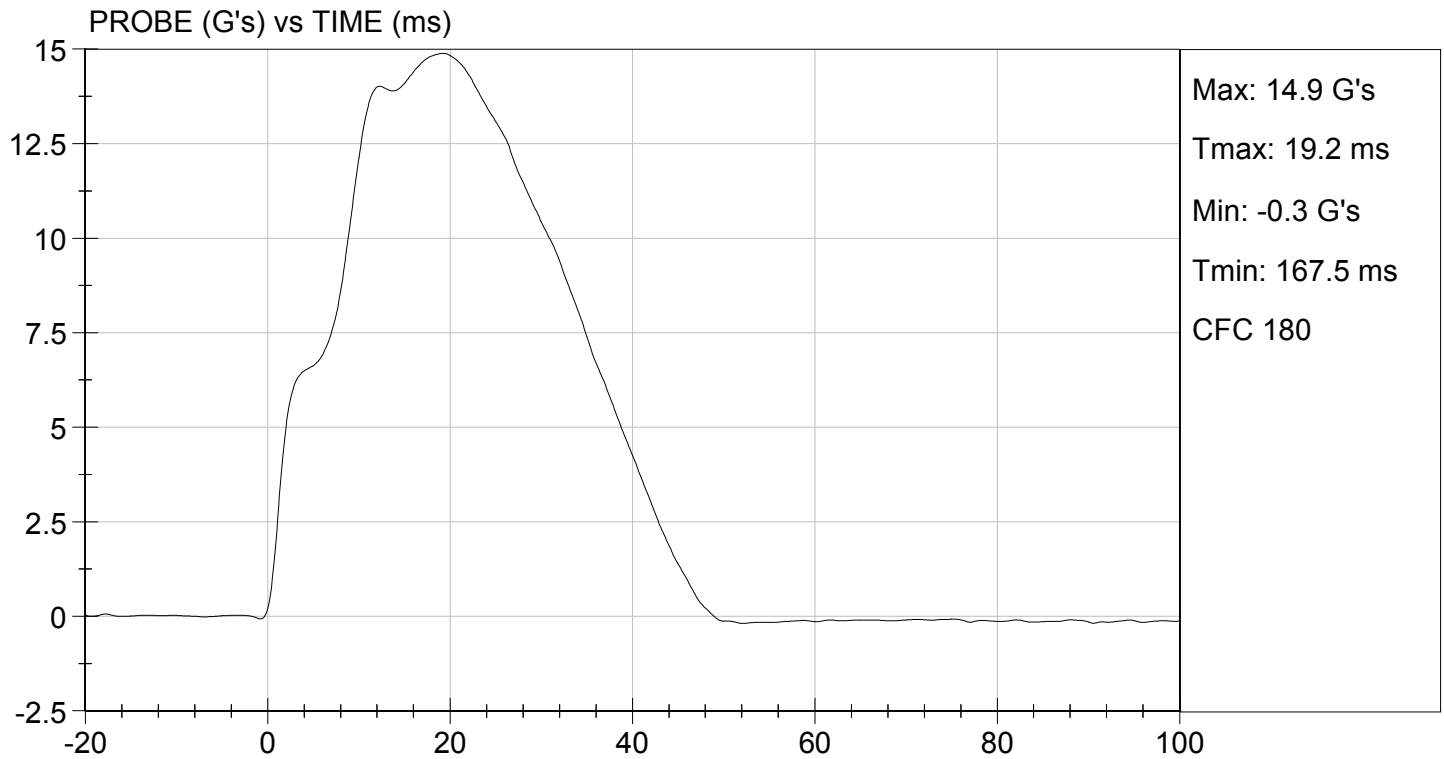
Test Date


 Approved By



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

TEST DATE: 07/30/2013
TEST #: D132495

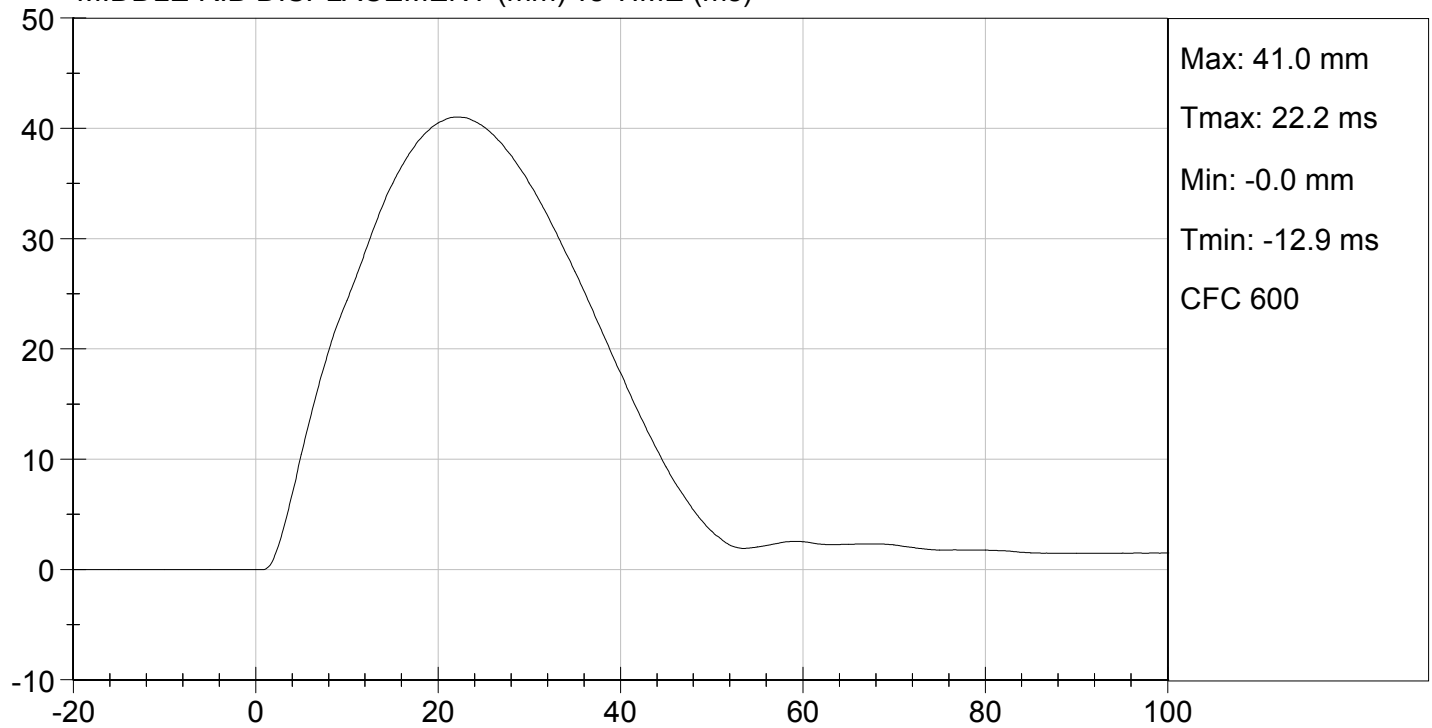




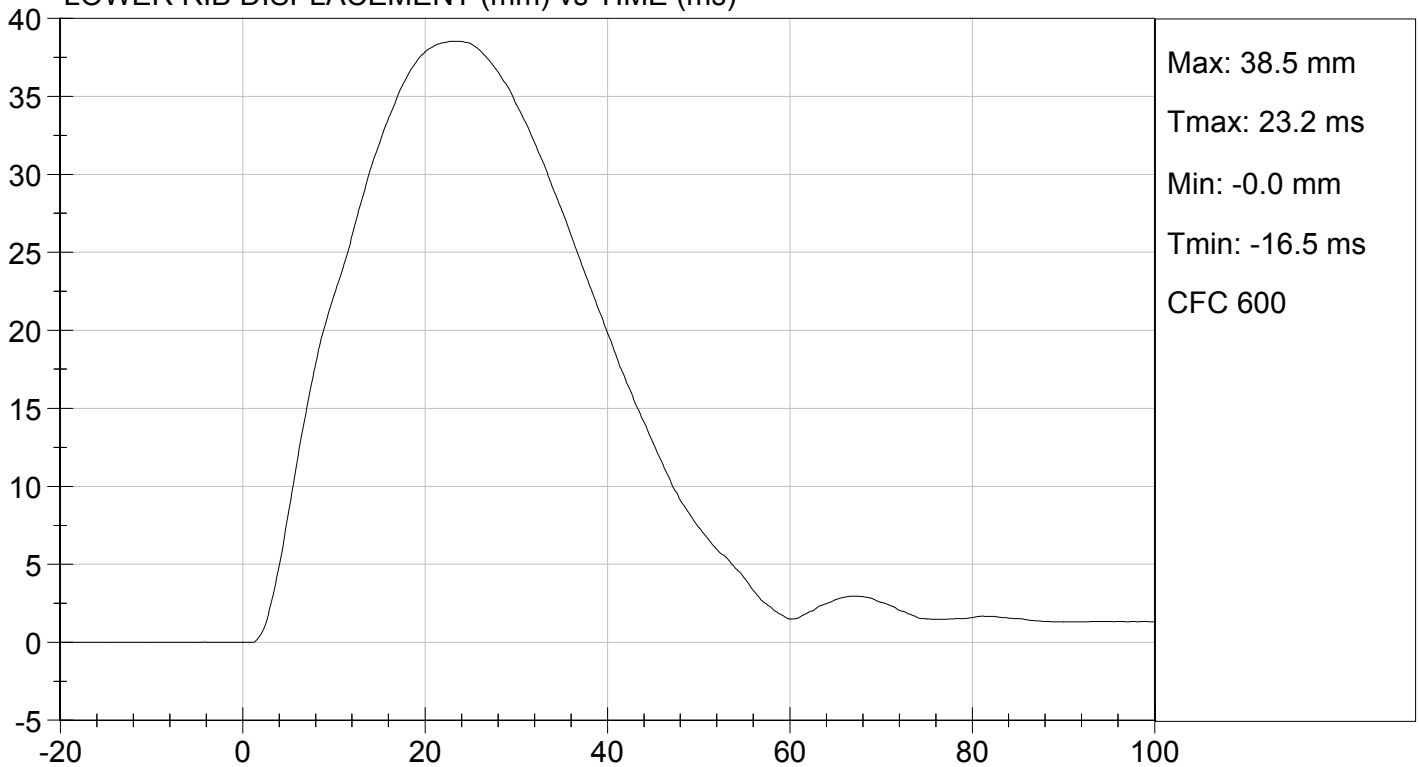
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 07/30/2013
TEST #: D132495

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

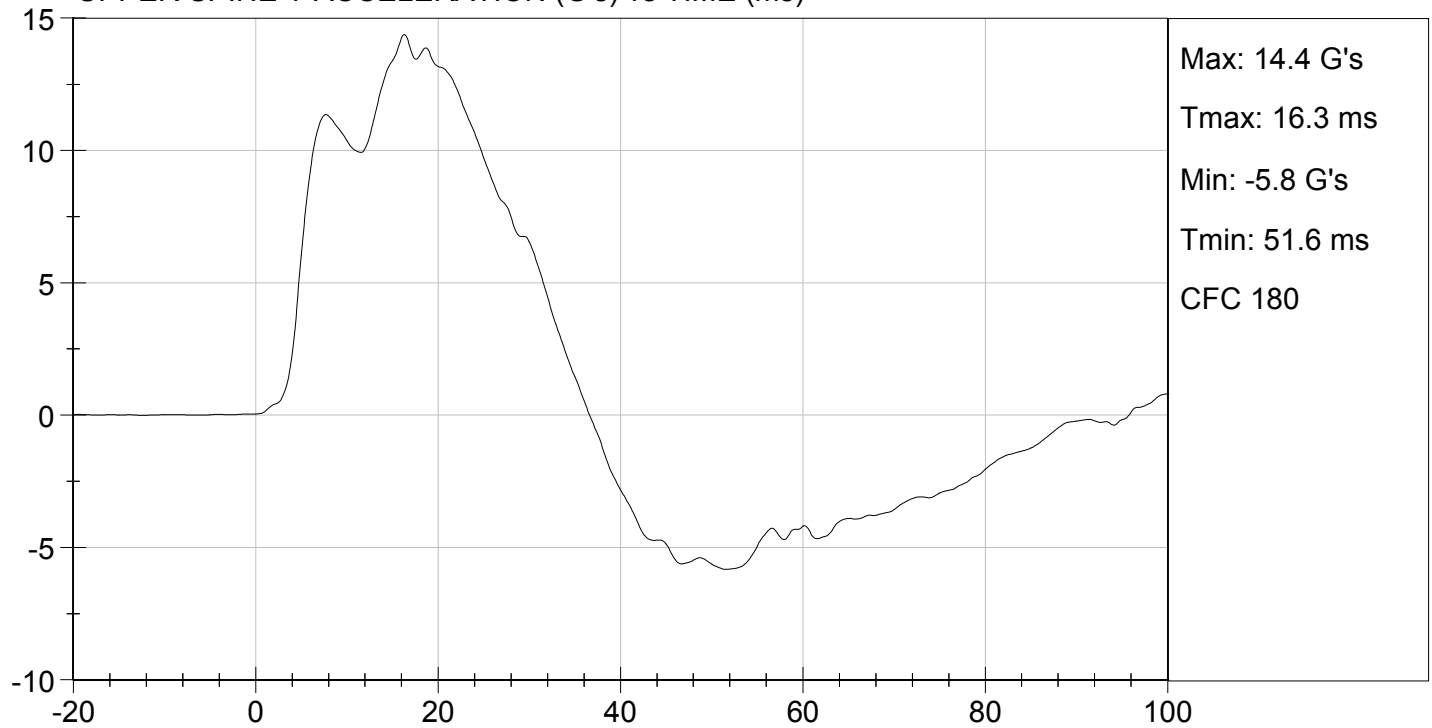




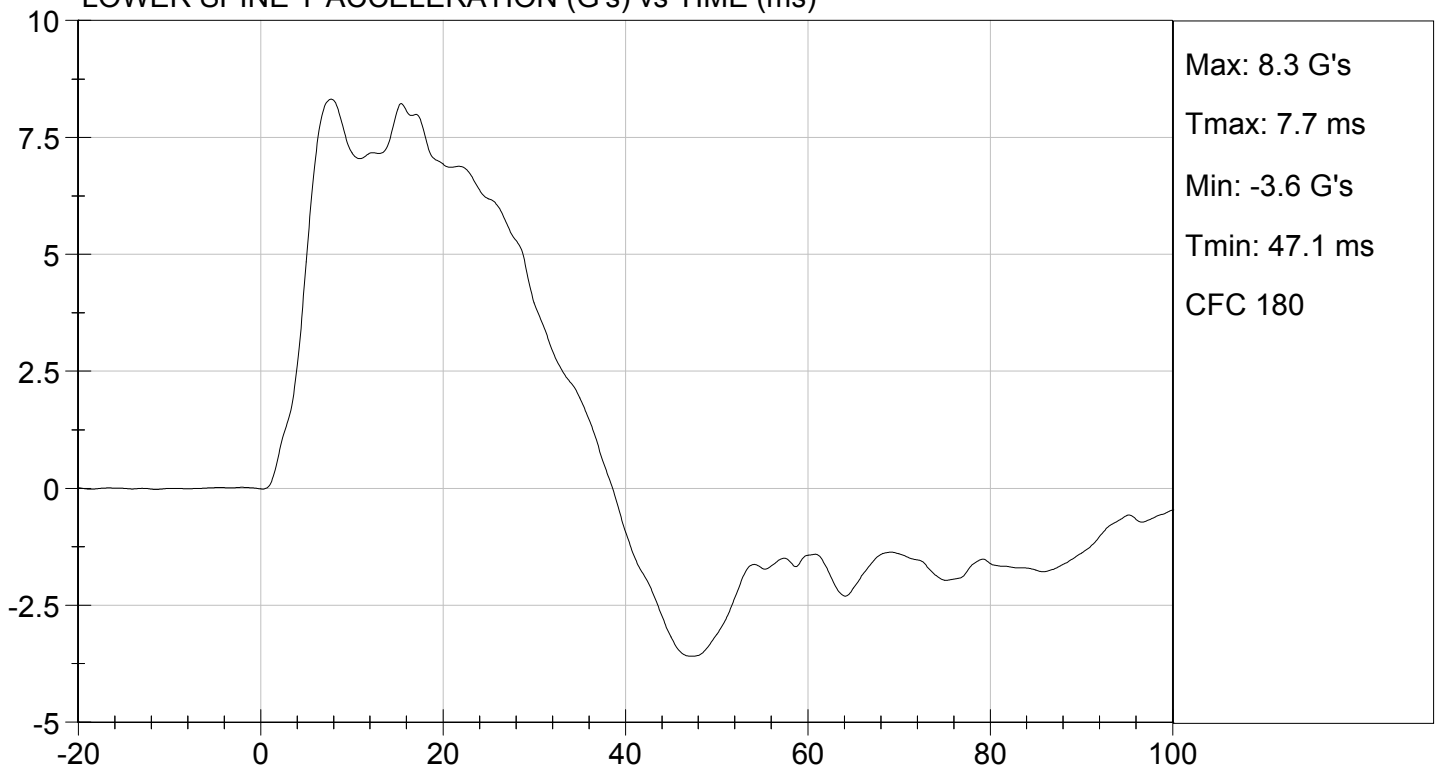
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 07/30/2013
TEST #: D132495

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



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



MGA RESEARCH CORPORATION

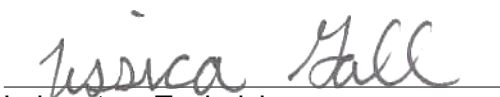
ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132496

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.6	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	40	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	36	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass


Laboratory Technician

07/30/2013

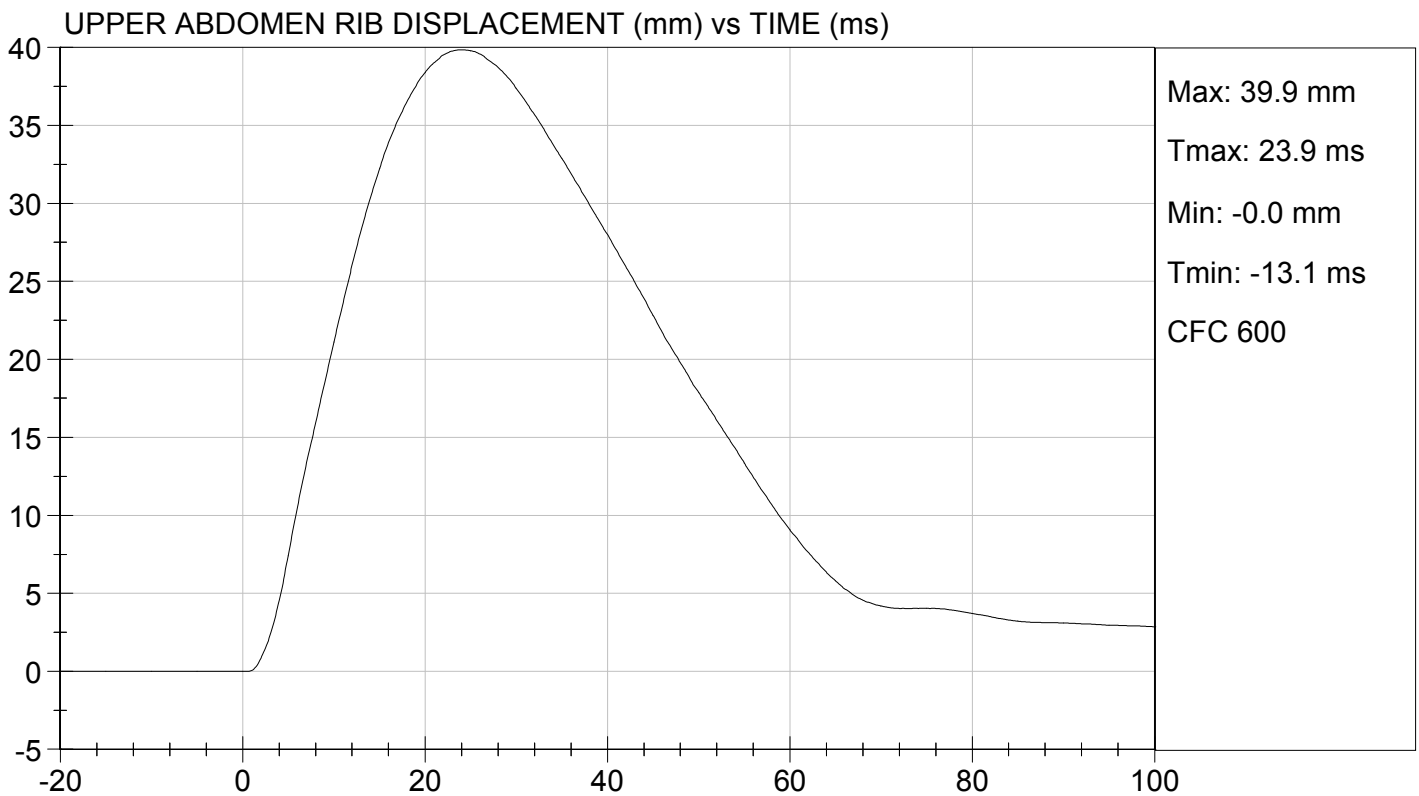
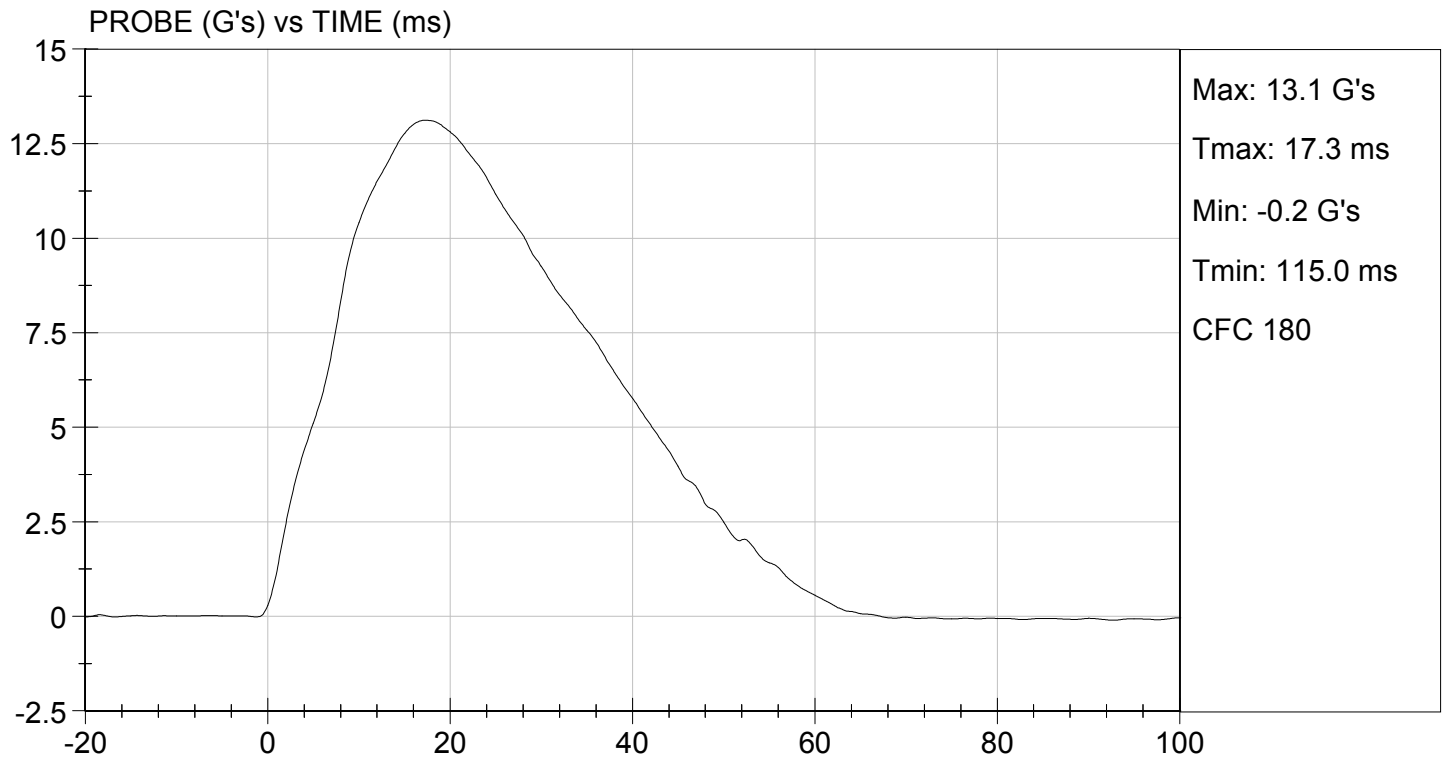
Test Date


Approved By



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

TEST DATE: 07/30/2013
TEST #: D132496

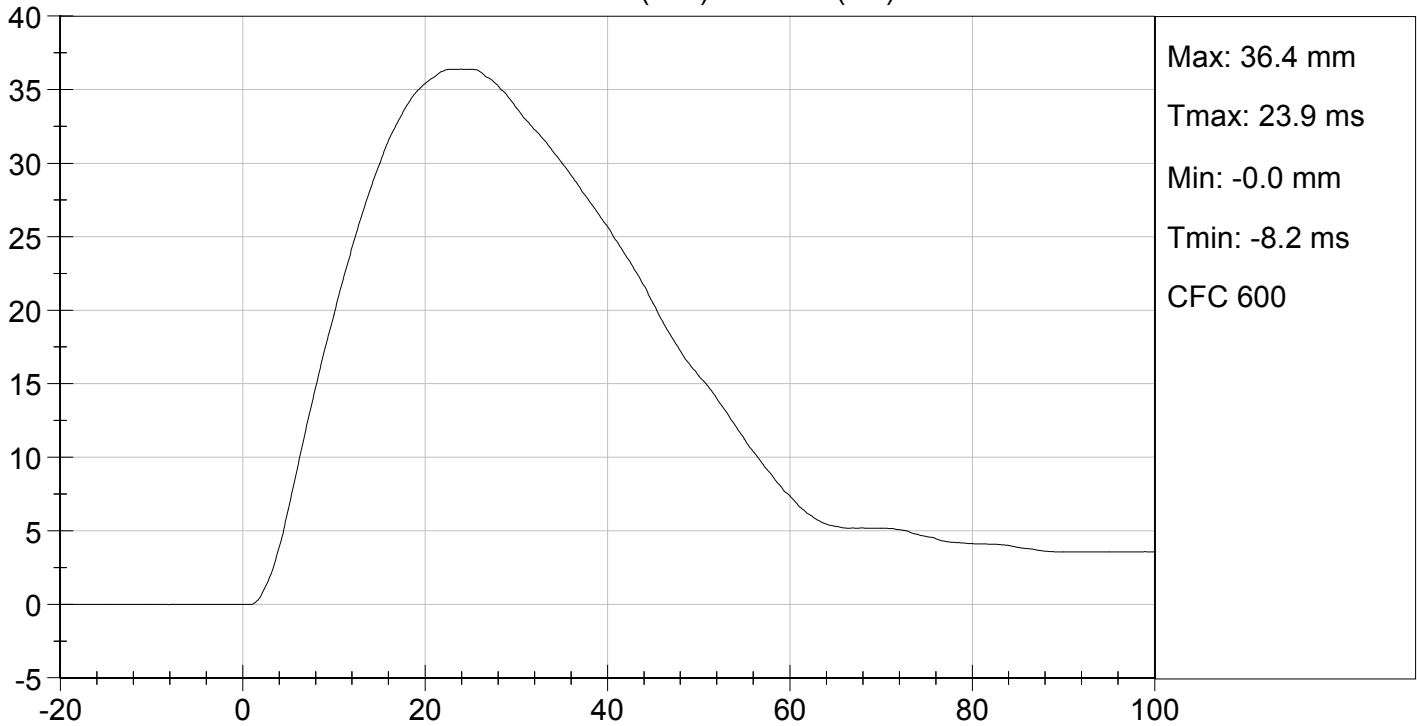




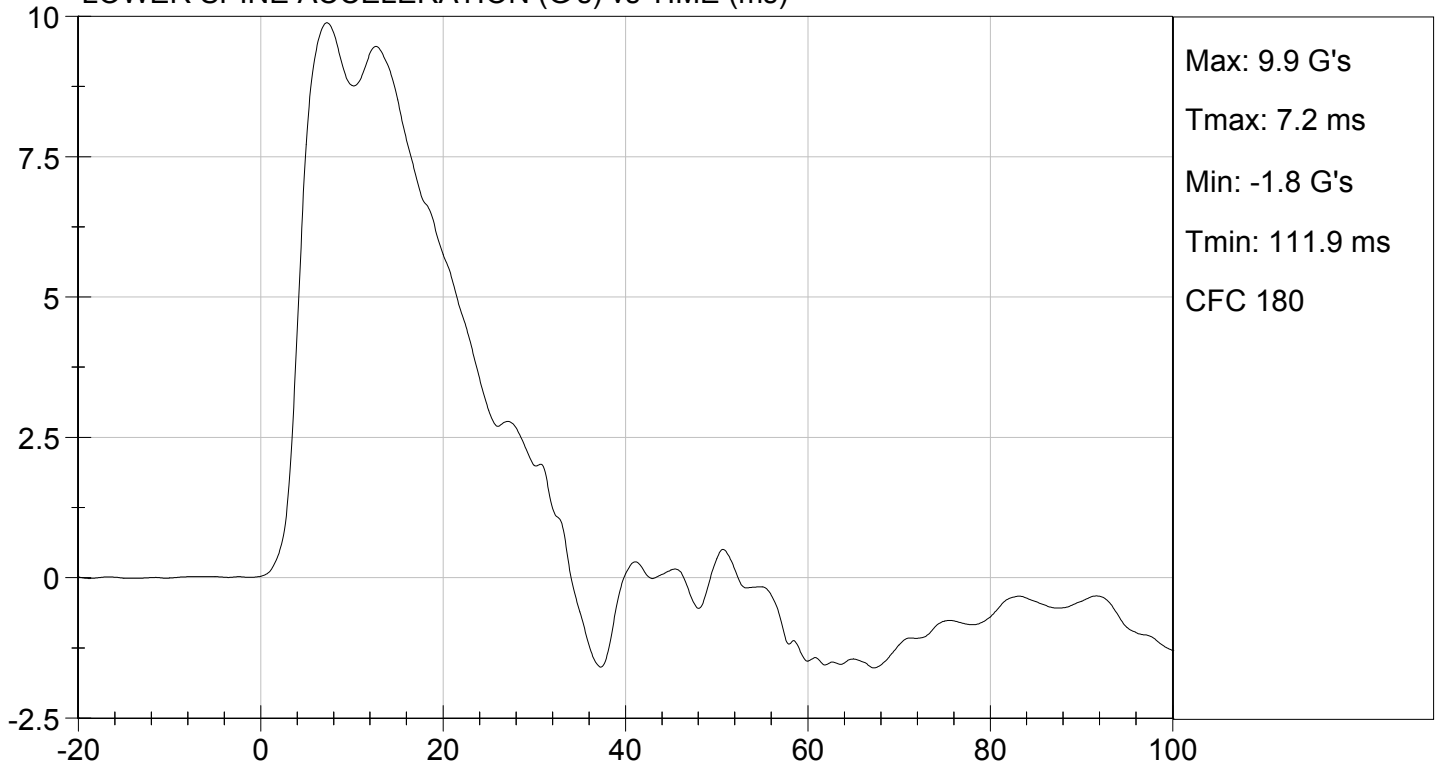
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 07/30/2013
TEST #: D132496

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132497

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.6	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	3,753	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

07/30/2013

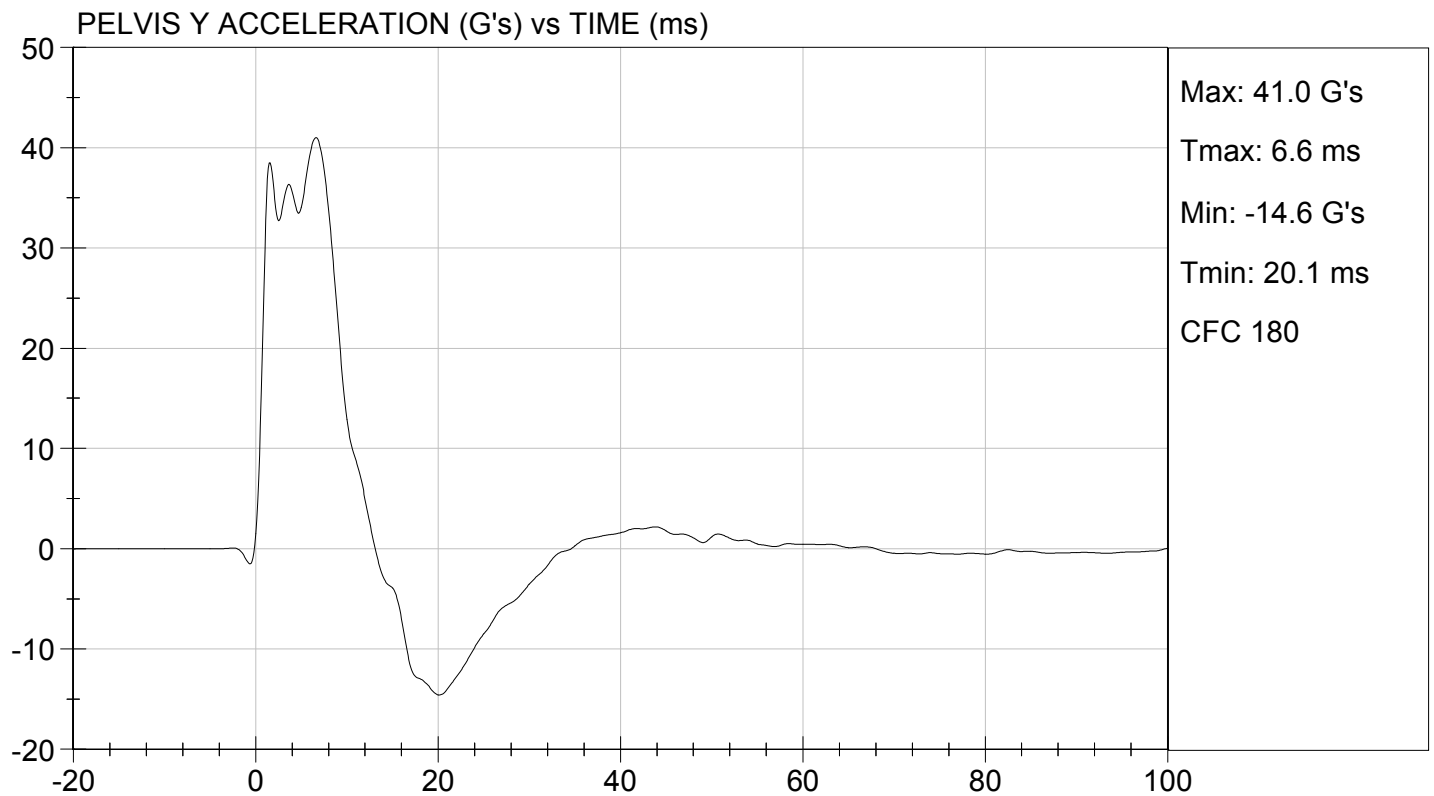
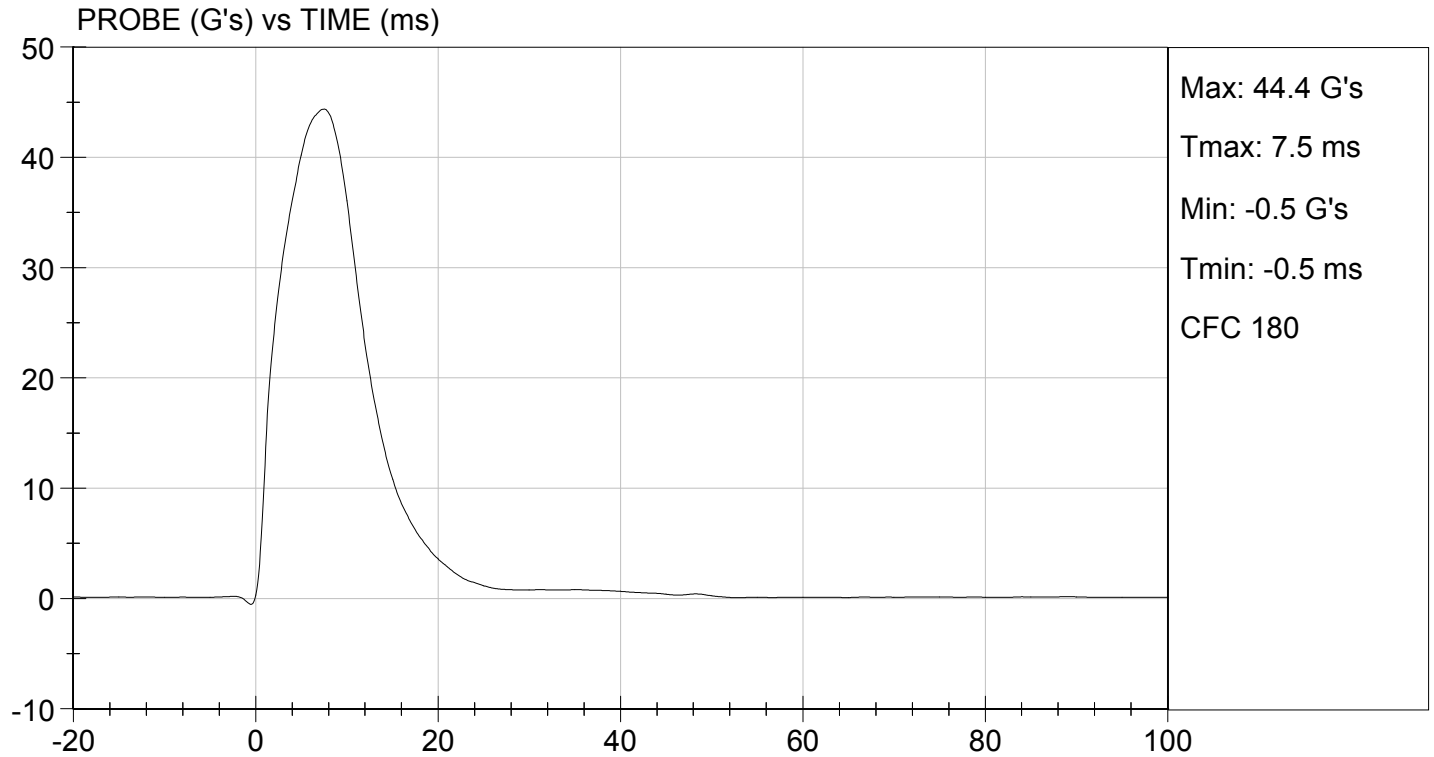
Test Date

David Winkelbauer
Approved By



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

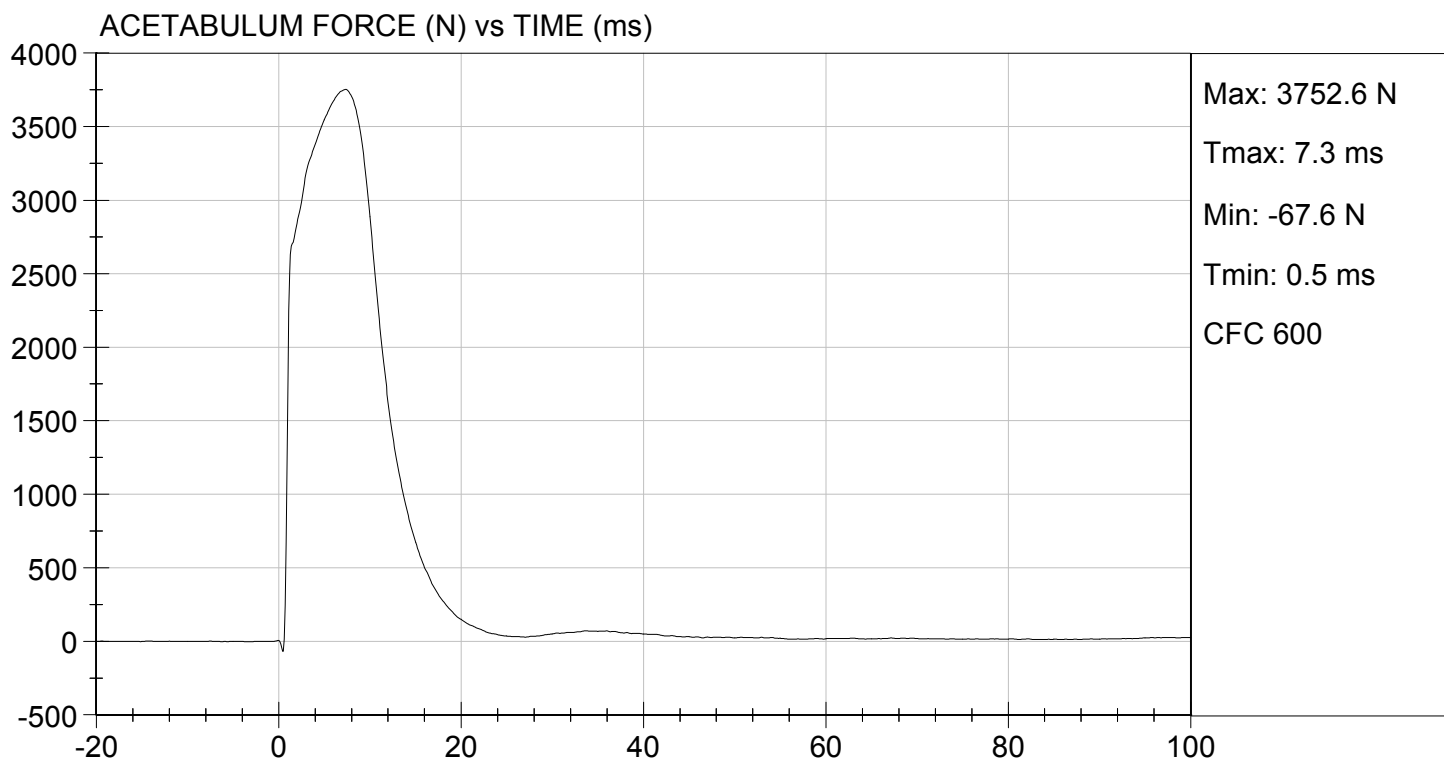
TEST DATE: 07/30/2013
TEST #: D132497





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

TEST DATE: 07/30/2013
TEST #: D132497



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132498

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.6	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	36 to 45	37	Pass
Pelvis Y Acceleration	G's	28 to 39	30	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,411	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

07/30/2013

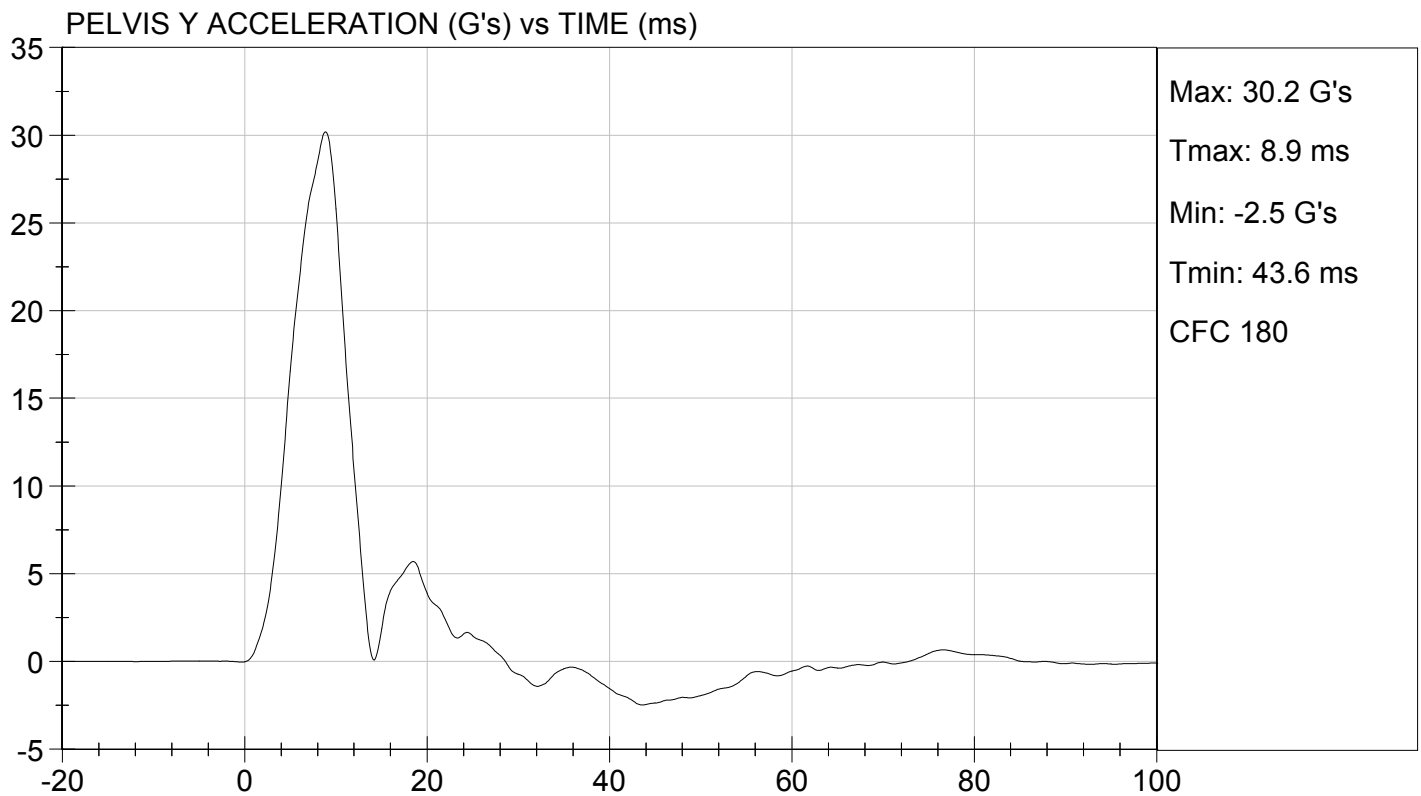
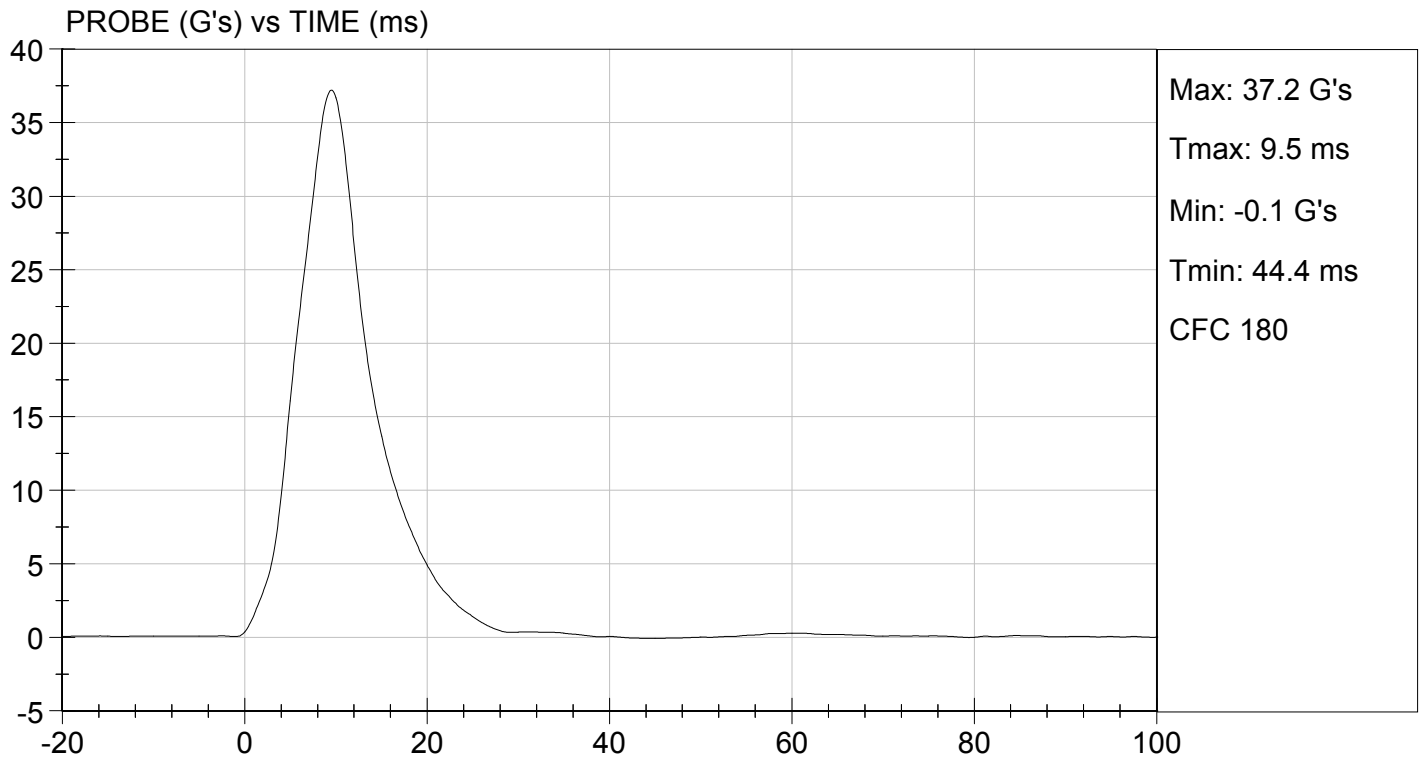
Test Date

David Winkelbauer
Approved By



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

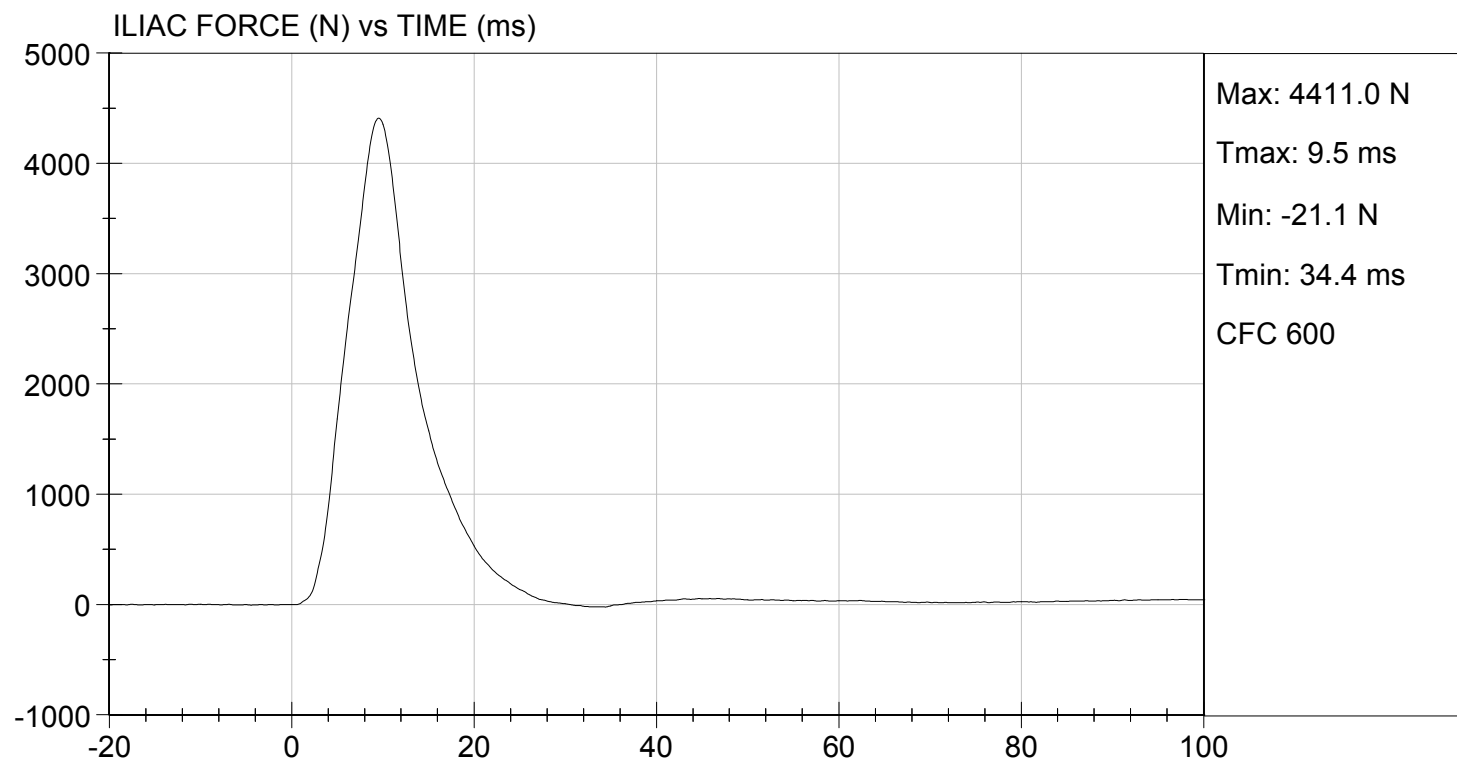
TEST DATE: 07/30/2013
TEST #: D132498





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

TEST DATE: 07/30/2013
TEST #: D132498

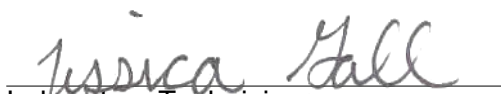


MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test ID: D132711

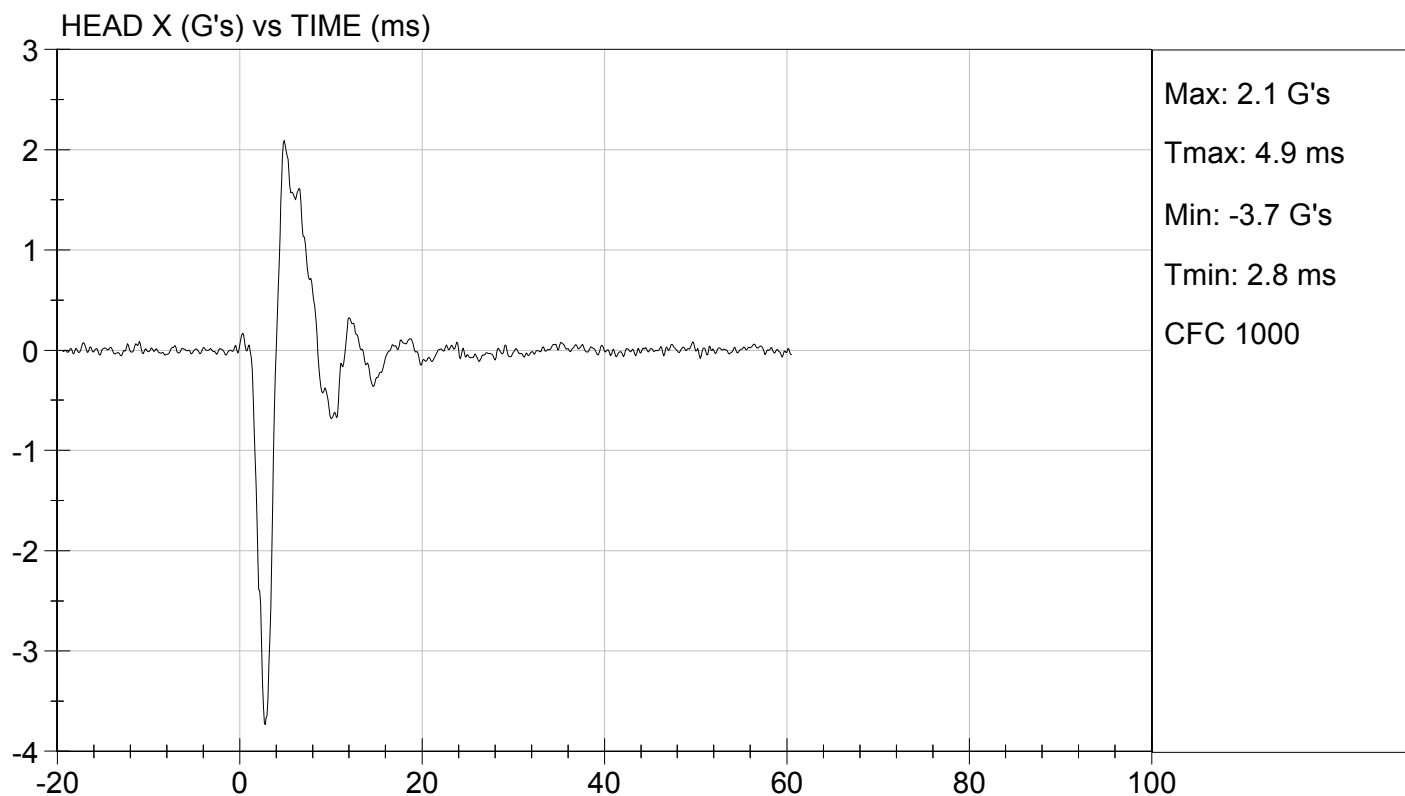
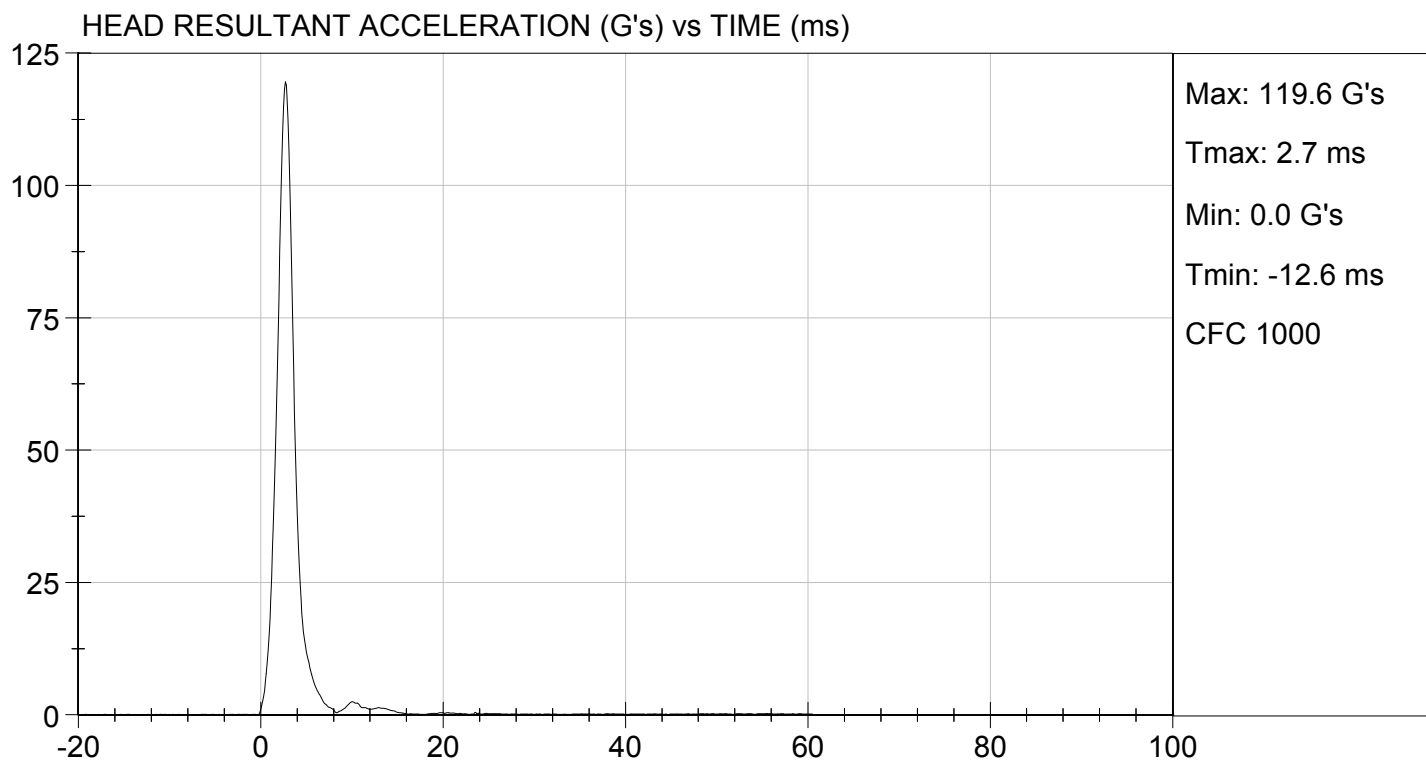
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	115 to 137	120	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-3.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
			Overall Test Results	Pass

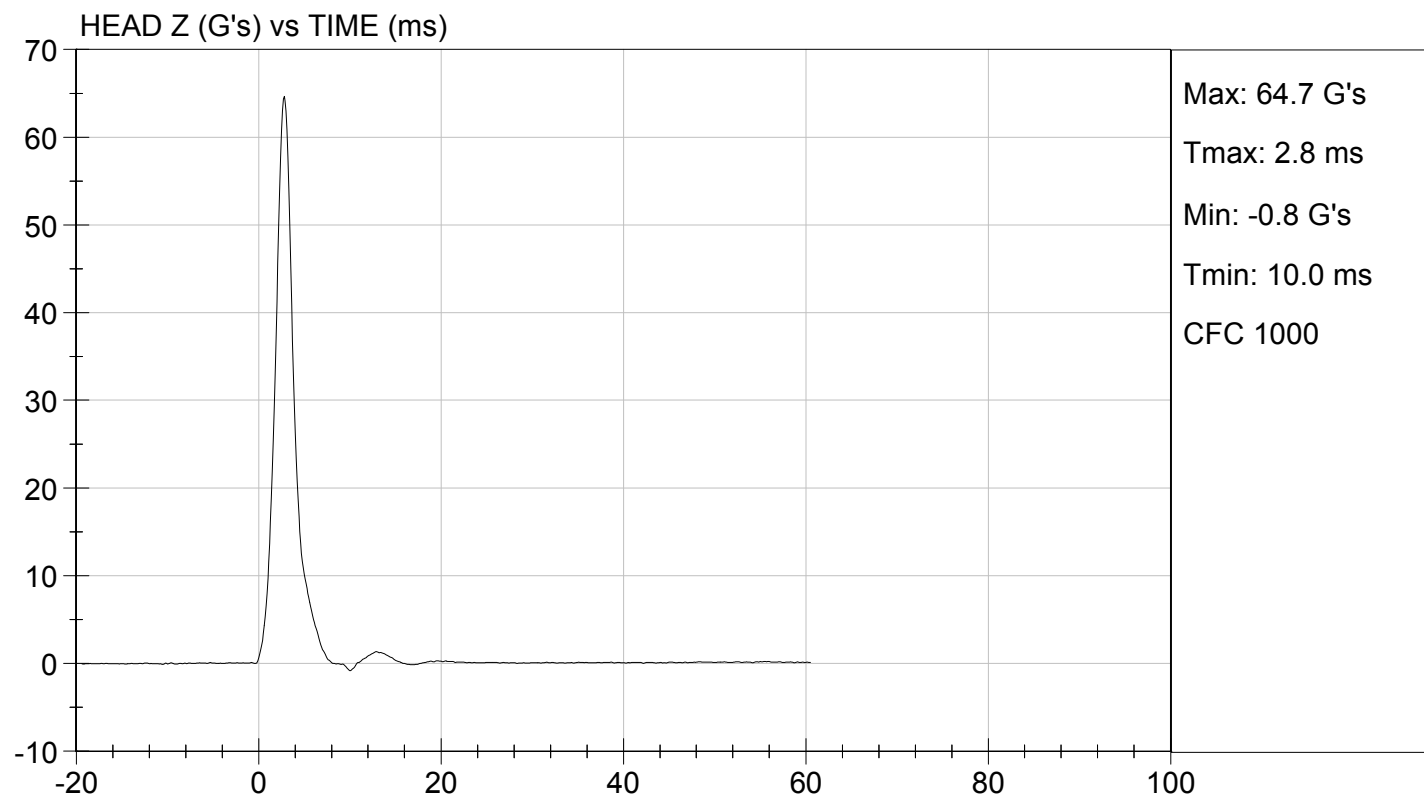
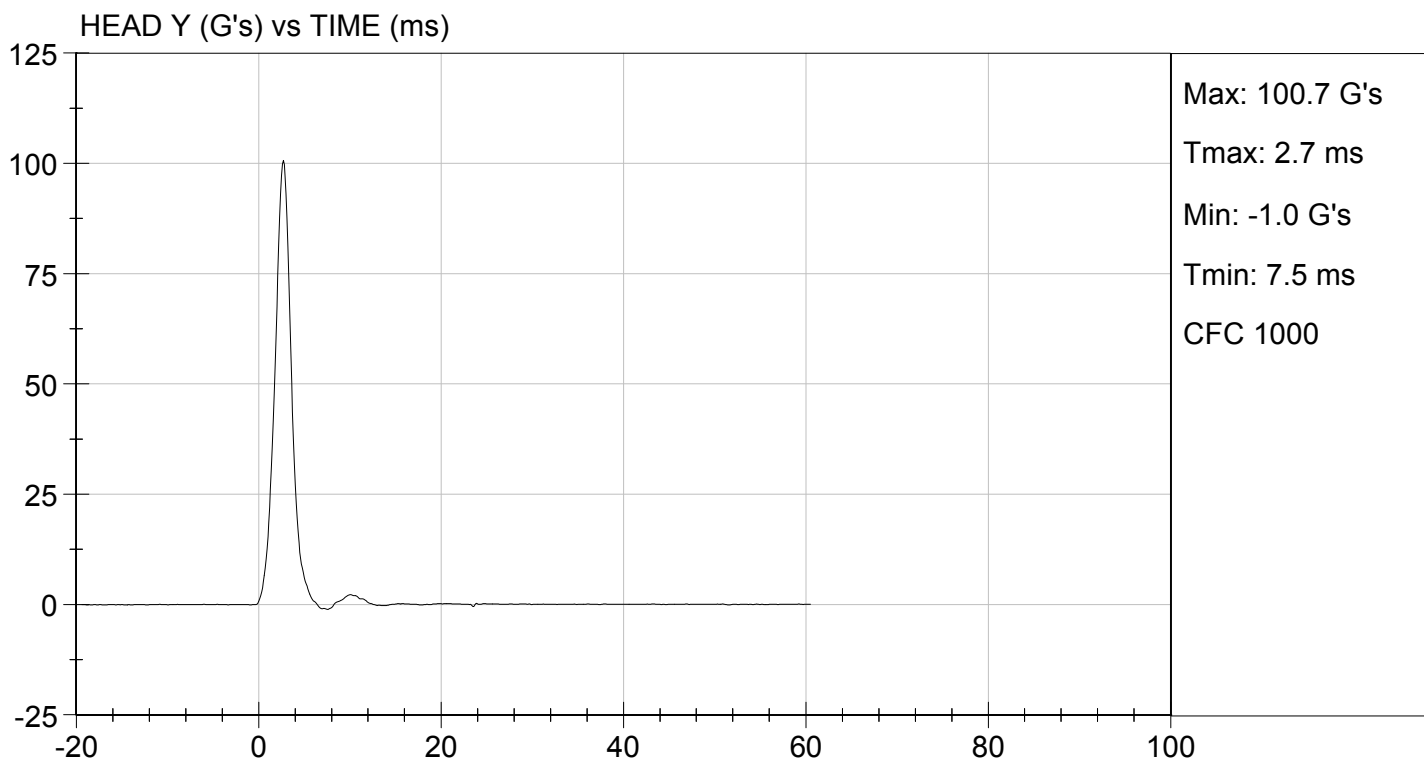

Laboratory Technician

08/14/2013

Test Date


Approved By



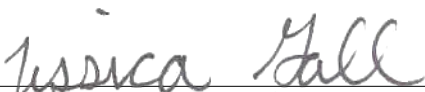


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132712

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.5	Pass
Humidity		%	10 to 70	45	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.41	Pass
	15 ms	m/s	3.30 to 4.10	3.38	Pass
	20 ms	m/s	4.40 to 5.40	4.47	Pass
	25 ms	m/s	5.40 to 6.10	5.41	Pass
	25-100 ms	m/s	5.50 to 6.20	5.78	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	64	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-37	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	115	Pass
Overall Test Results					Pass


 Laboratory Technician

08/14/2013

Test Date

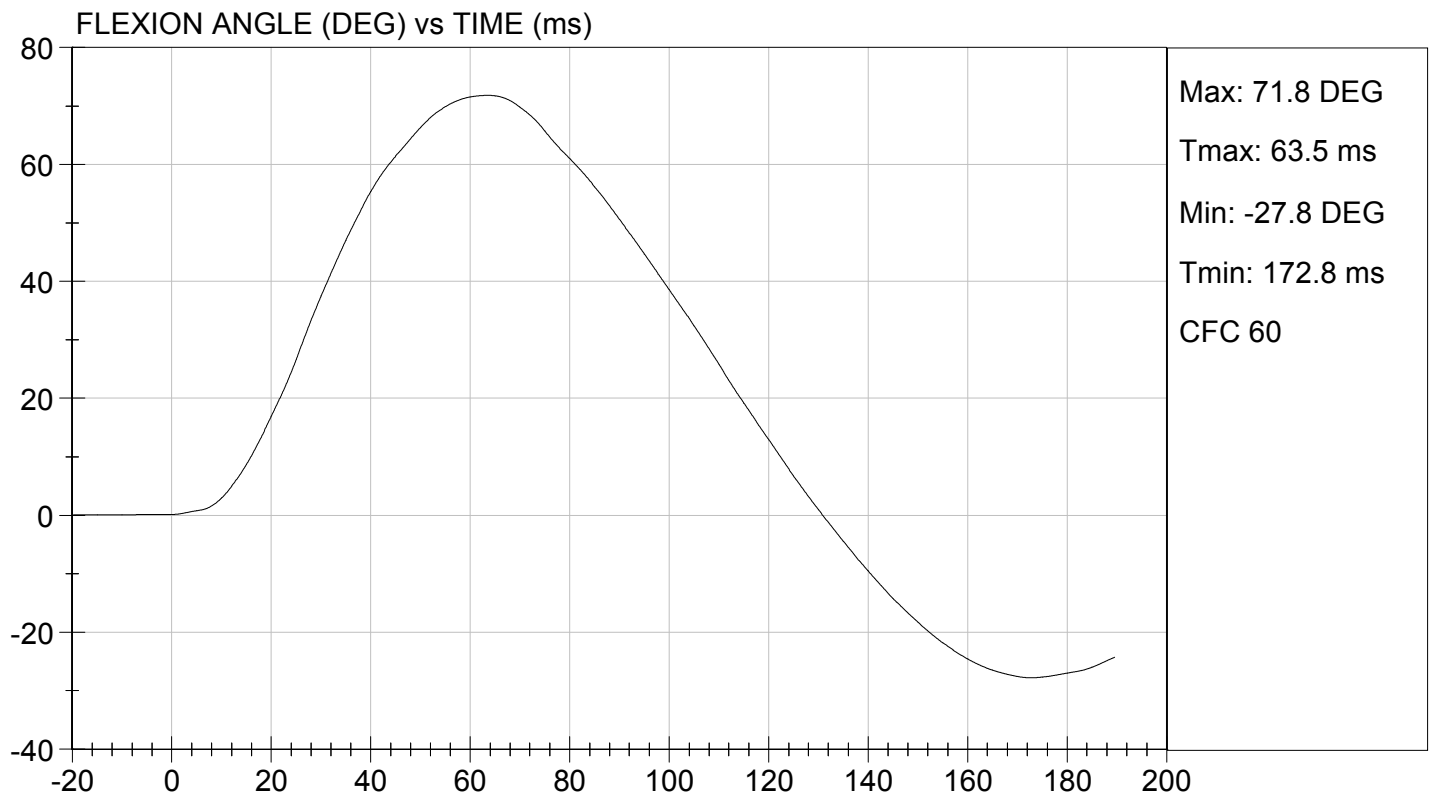
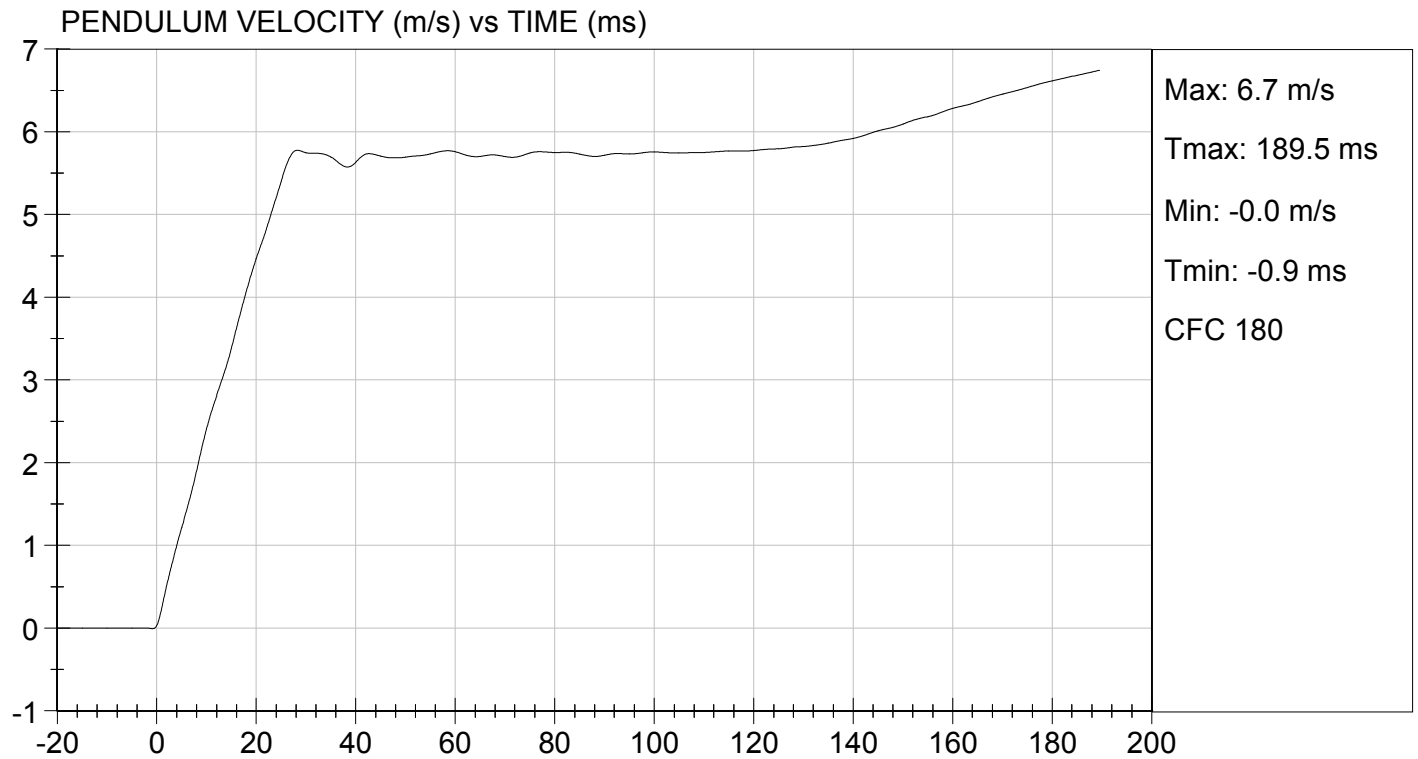

 Approved By



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

TEST DATE: 08/14/2013

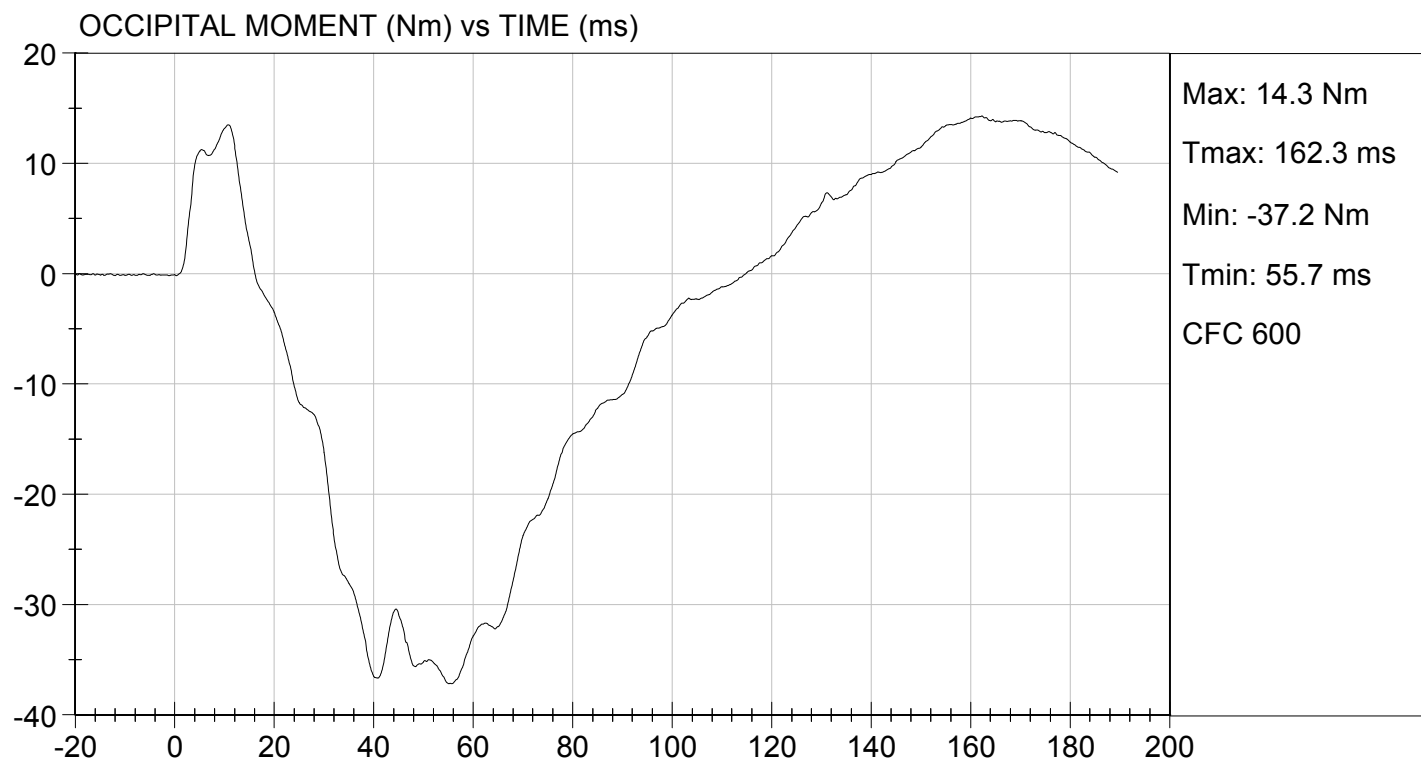
TEST #: D132712





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

TEST DATE: 08/14/2013
TEST #: D132712



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

ATD Serial No: 306

Test ID: D132713

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	44	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	31	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	17	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

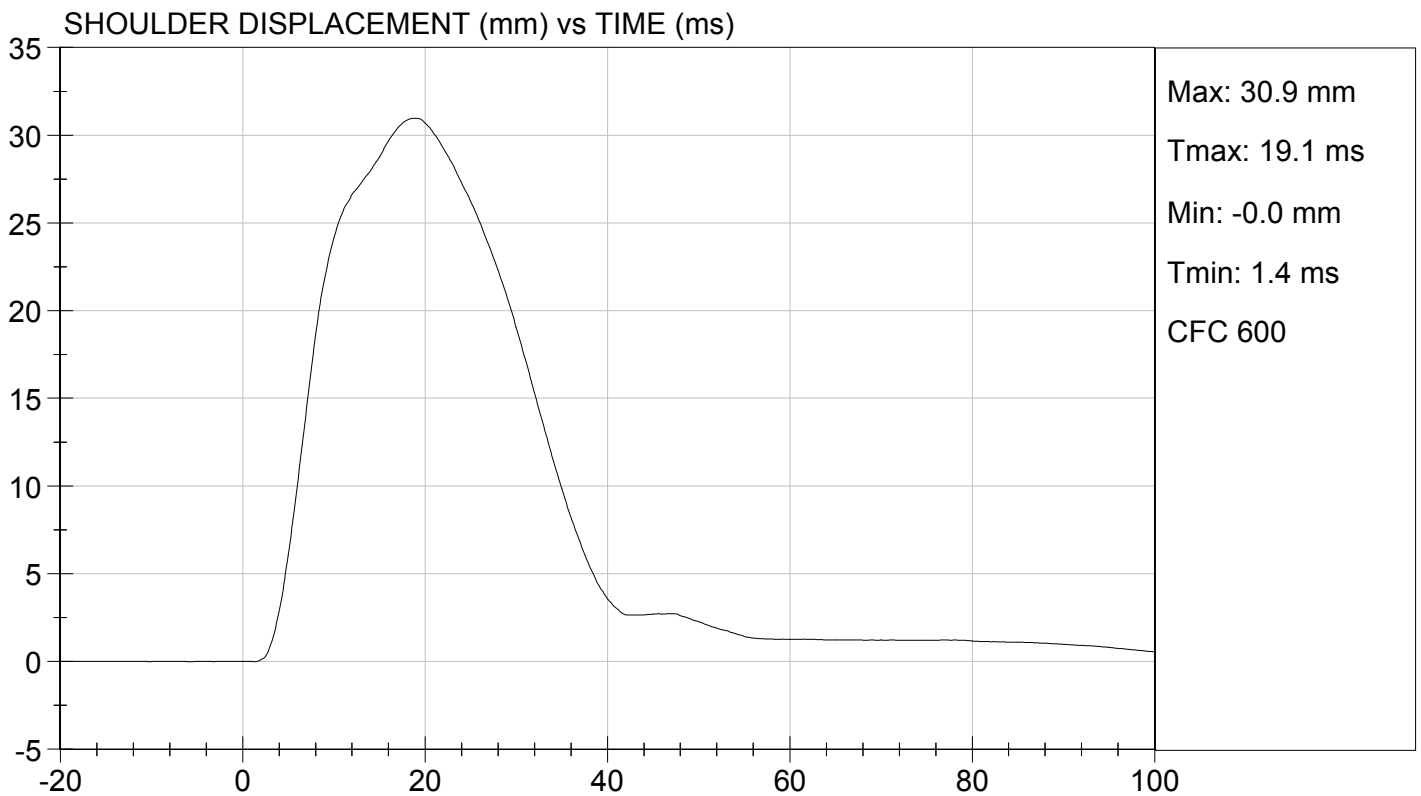
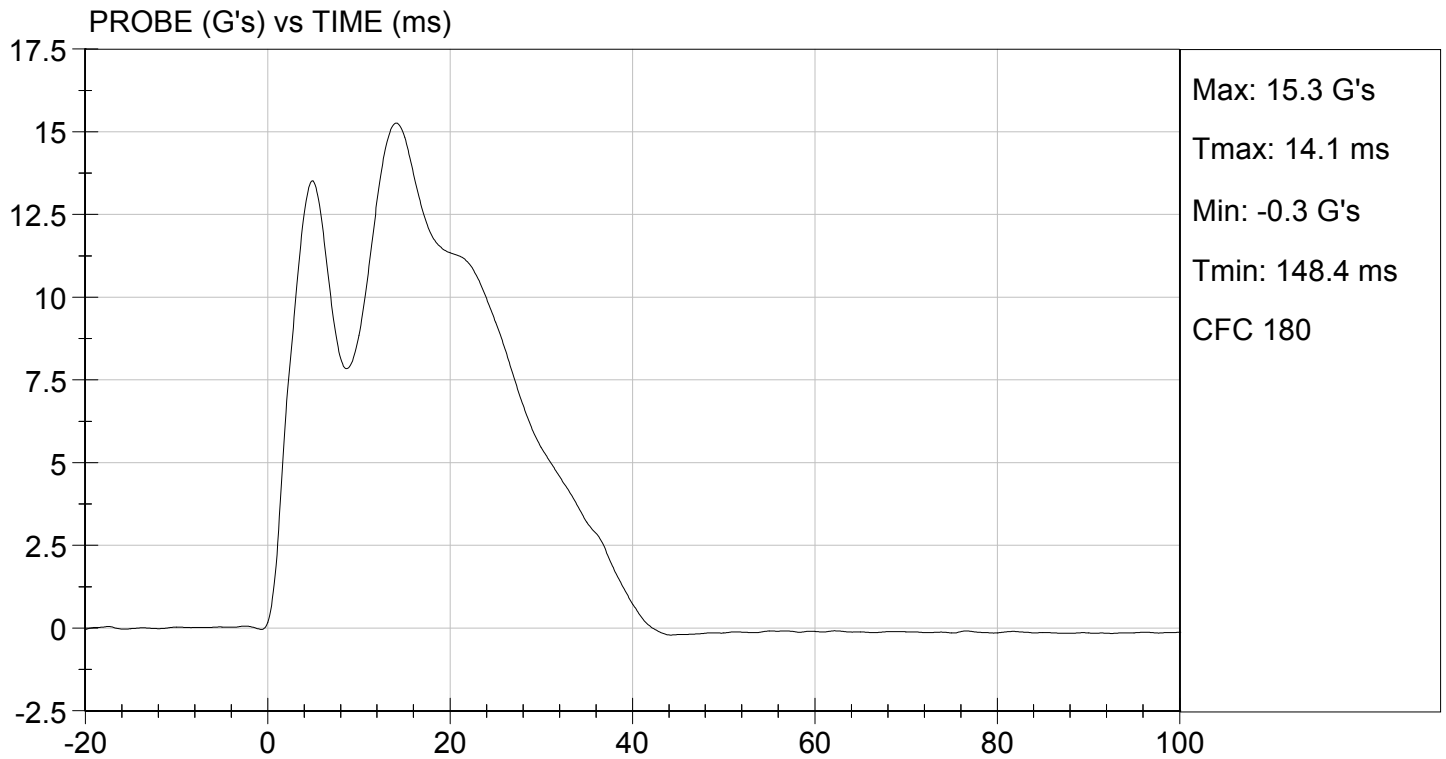
08/14/2013
Test Date

David Winkelbauer
Approved By



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

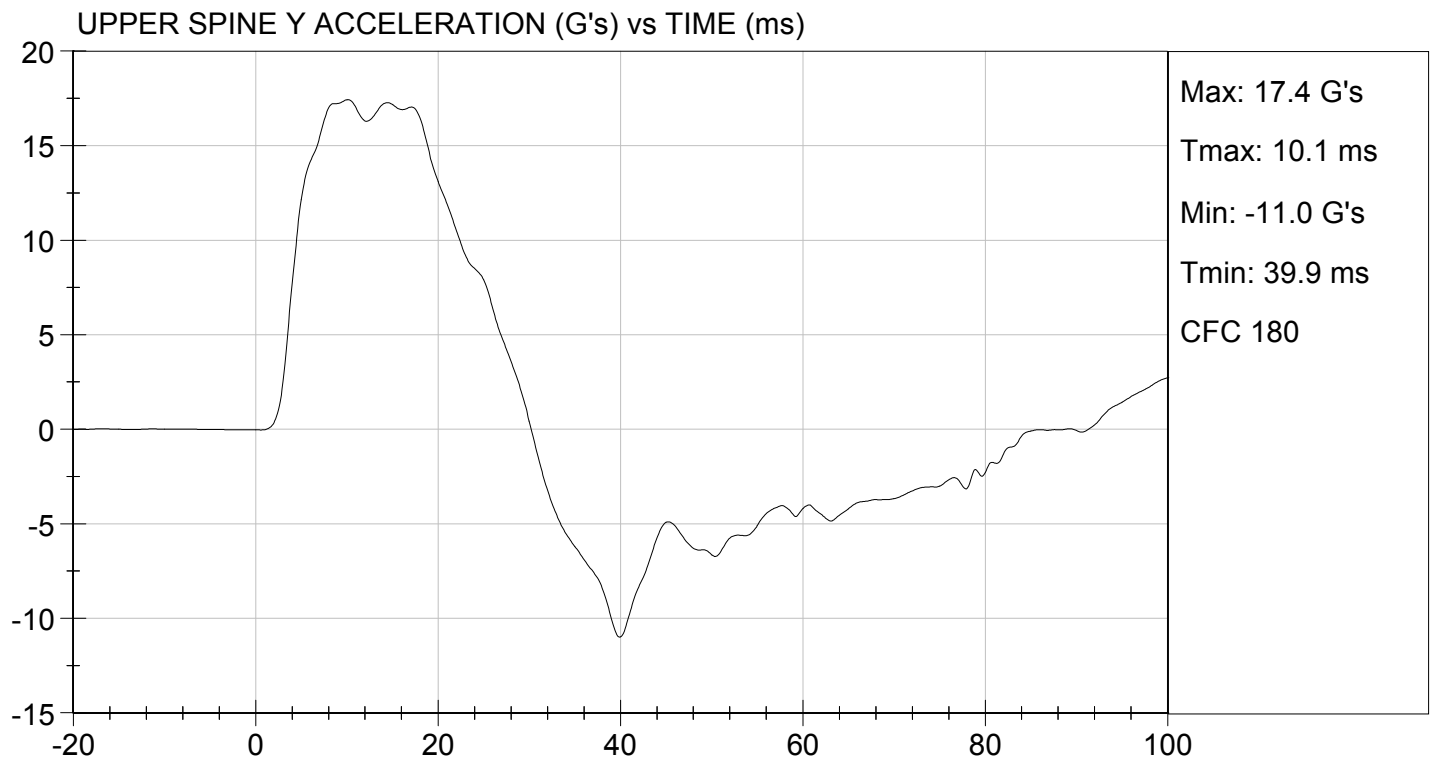
TEST DATE: 08/14/2013
TEST #: D132713





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

TEST DATE: 08/14/2013
TEST #: D132713

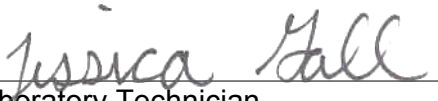


MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

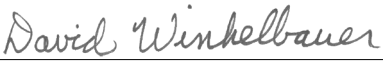
ATD Serial No: 306

Test I.D: D132714

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	44	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	34	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results				Pass


 Laboratory Technician

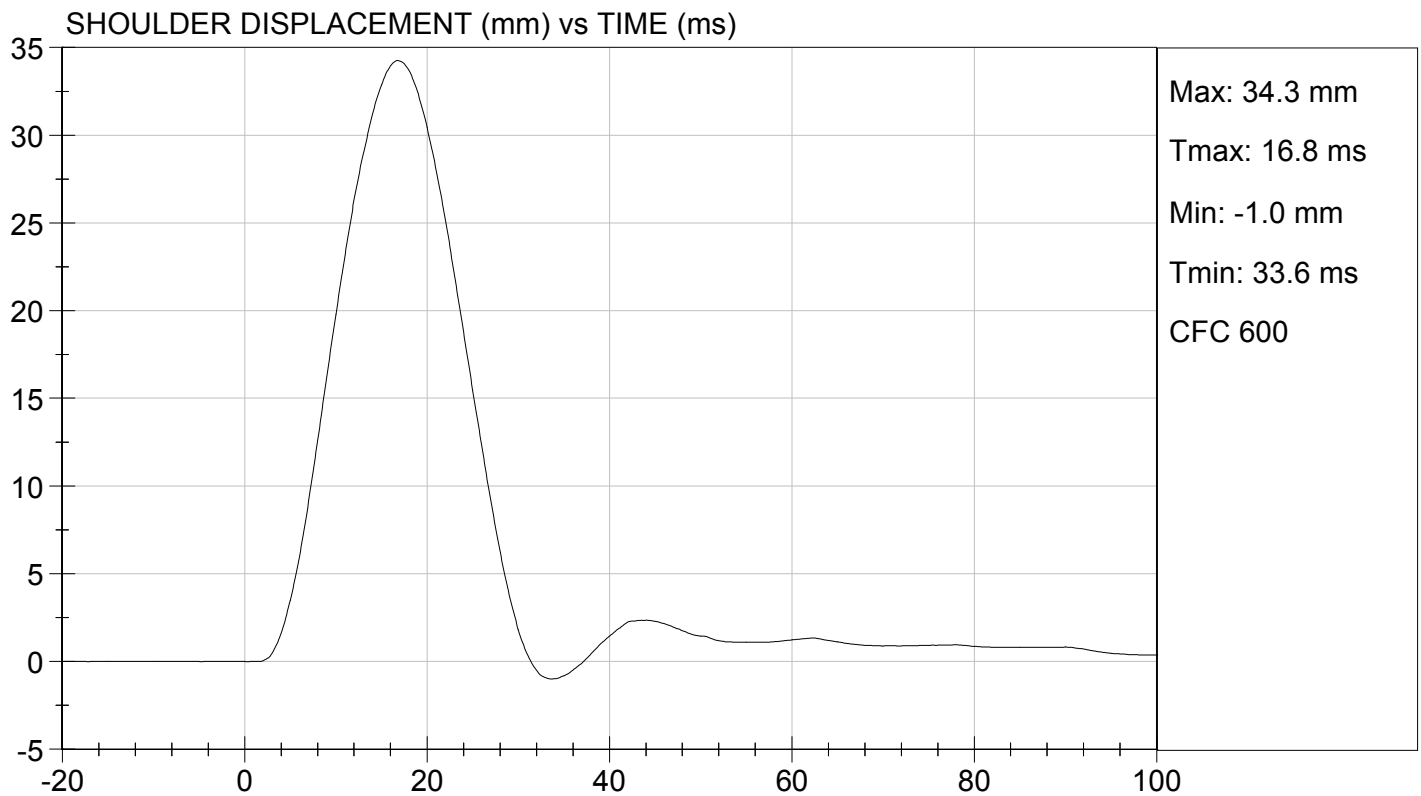
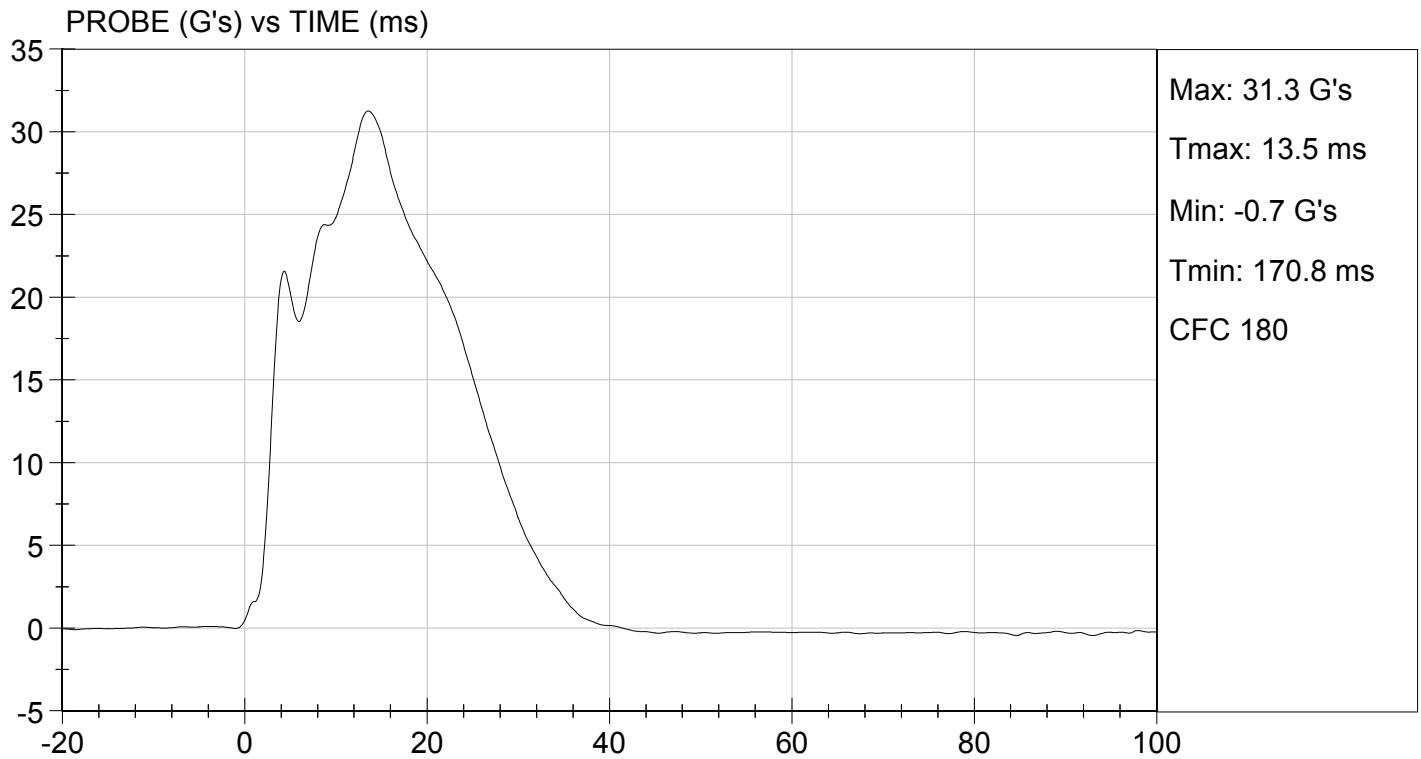
08/14/2013
 Test Date


 Approved By



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

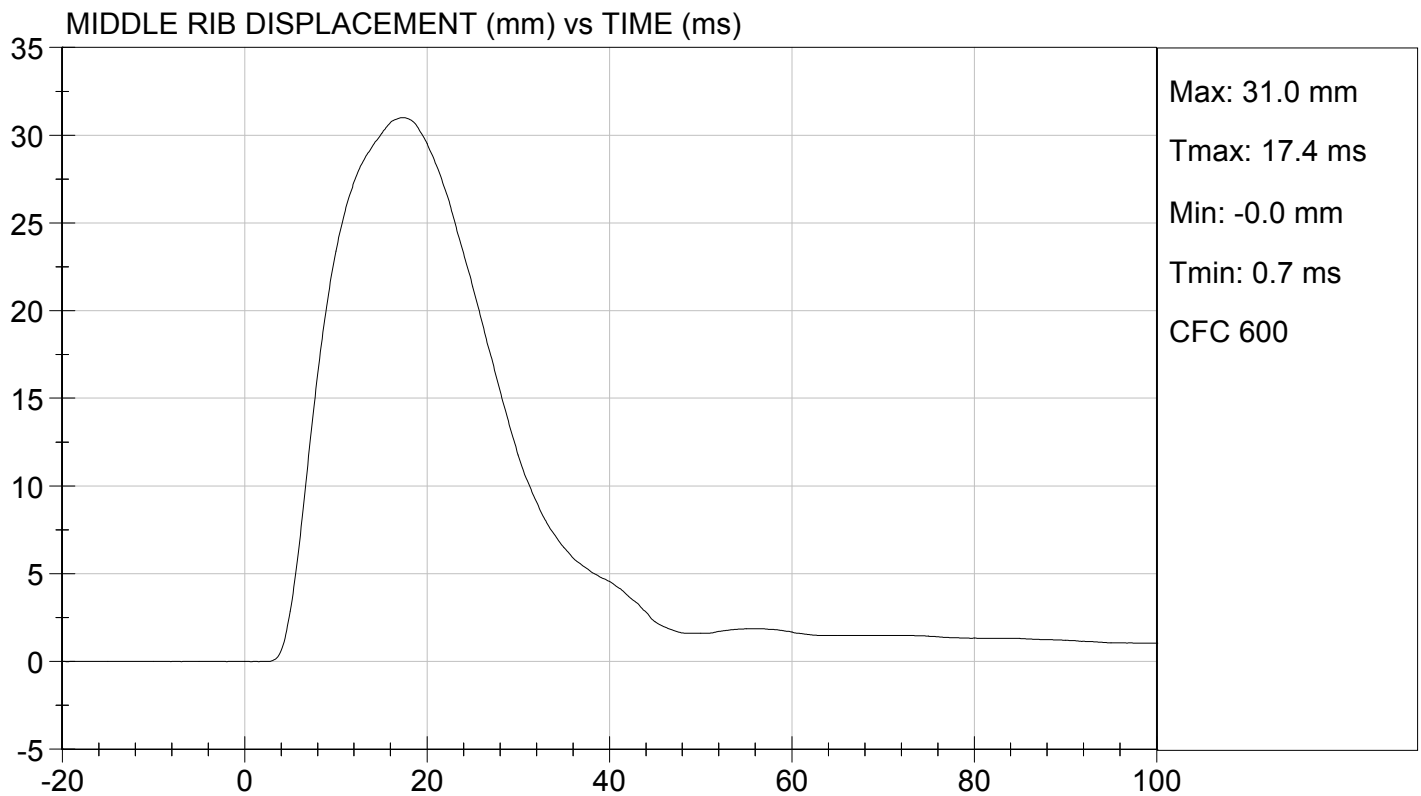
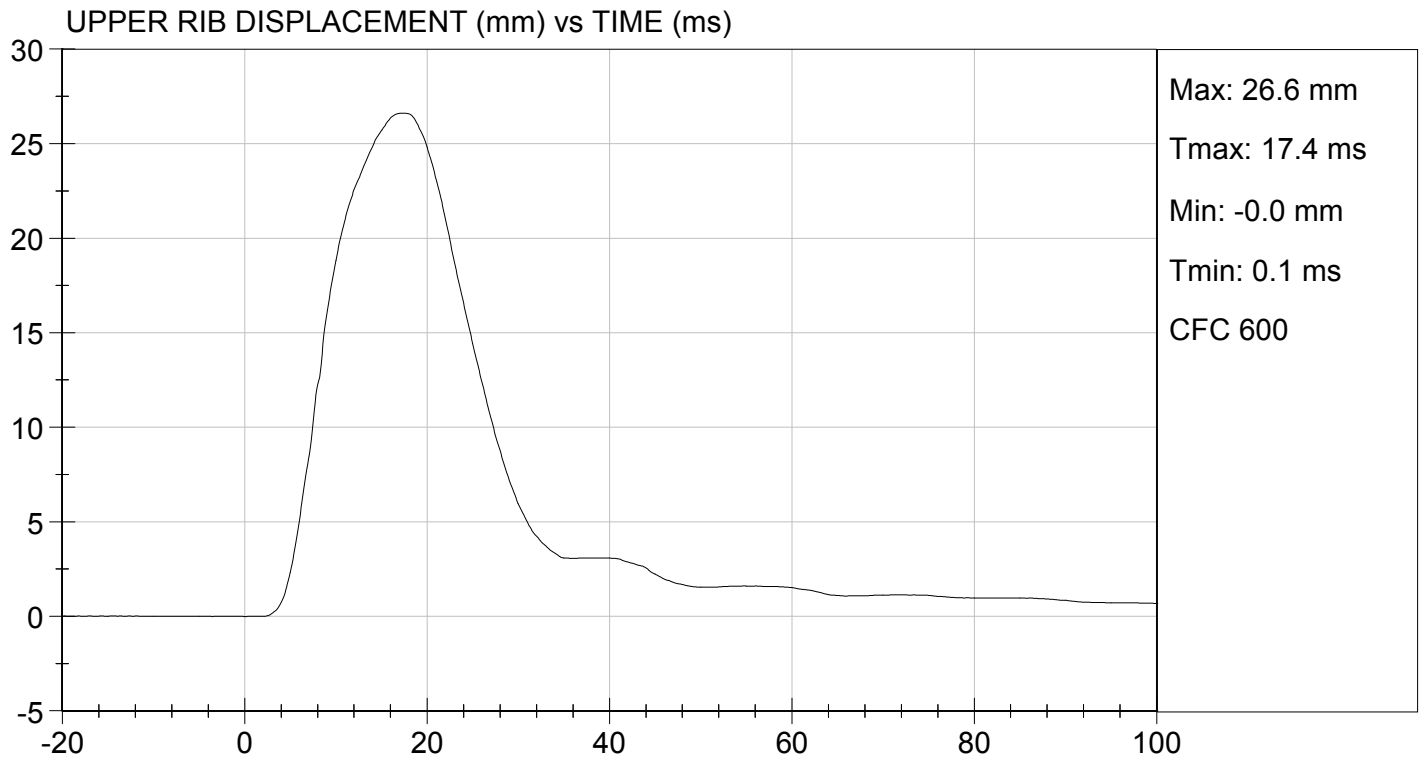
TEST DATE: 08/14/2013
TEST #: D132714





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

TEST DATE: 08/14/2013
TEST #: D132714

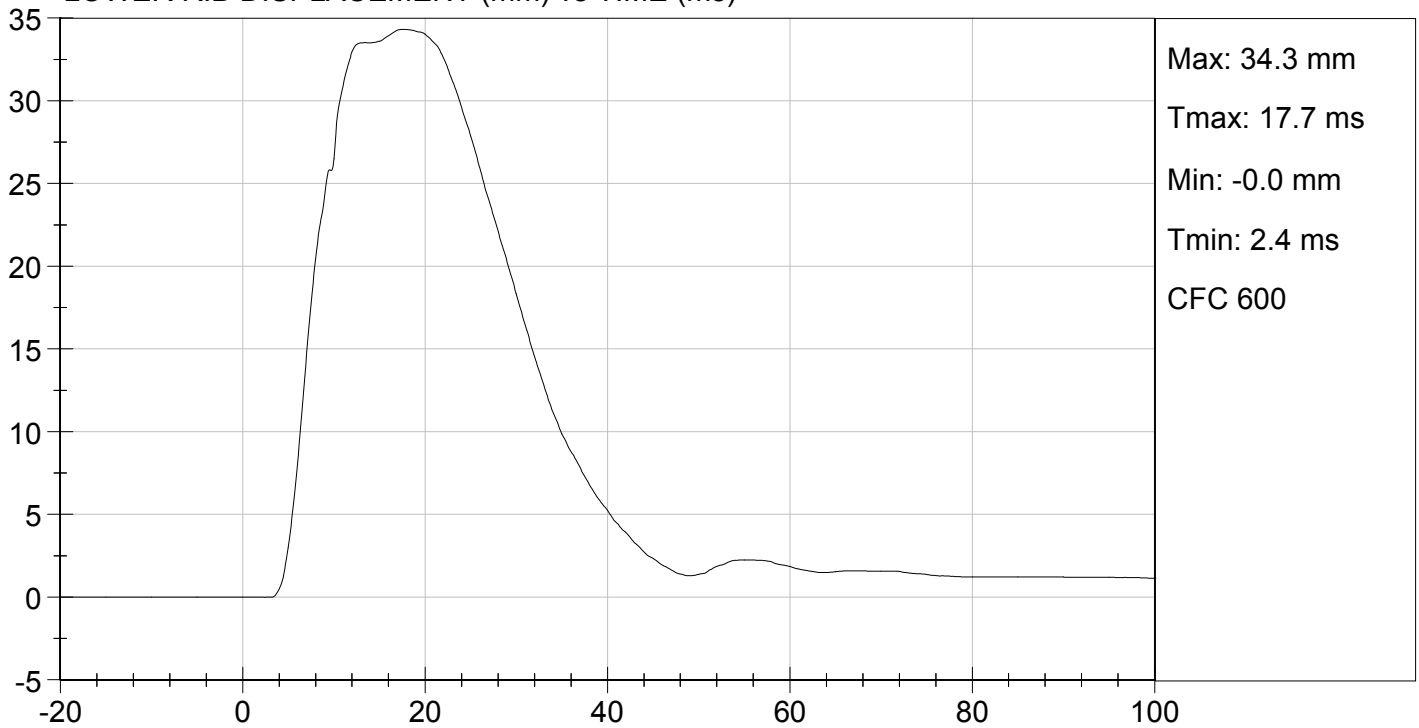




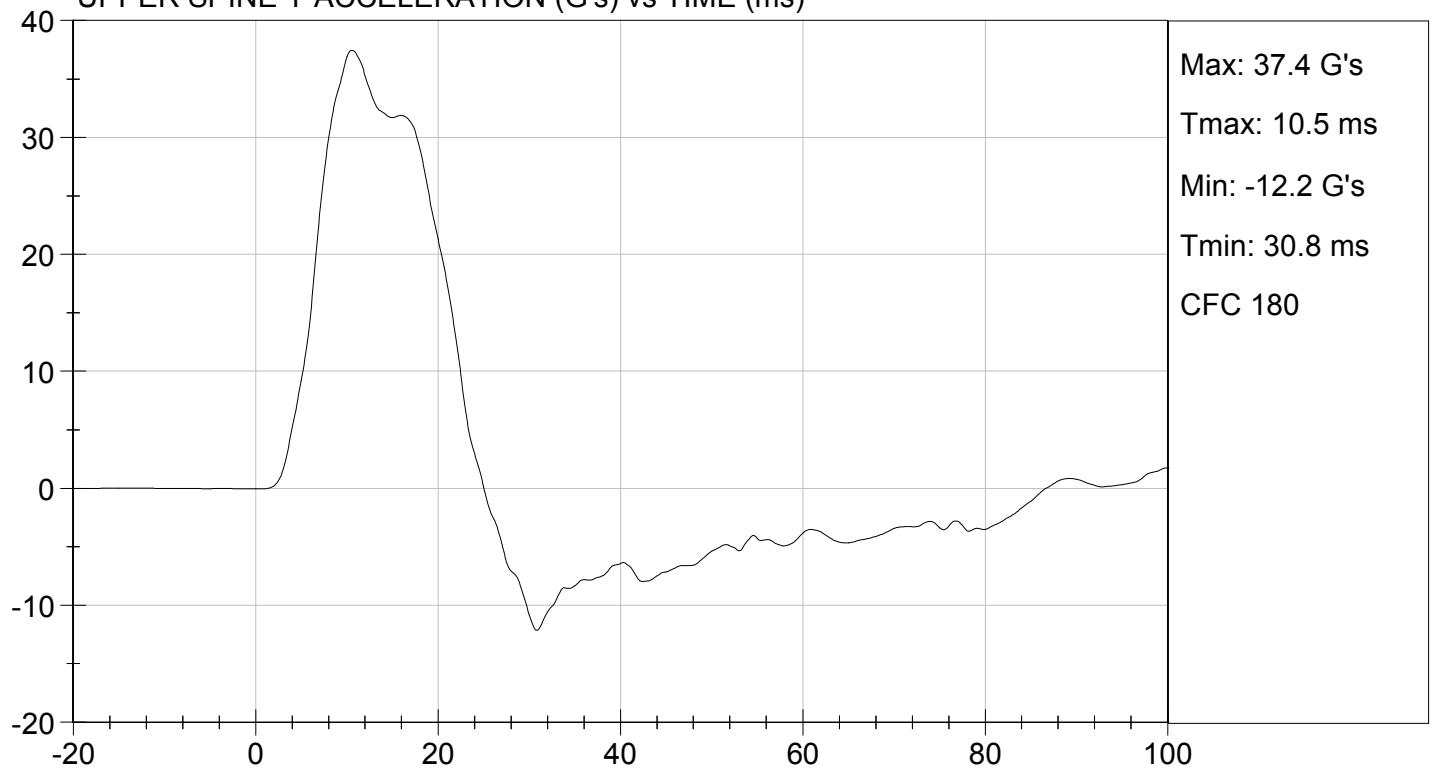
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 08/14/2013
TEST #: D132714

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



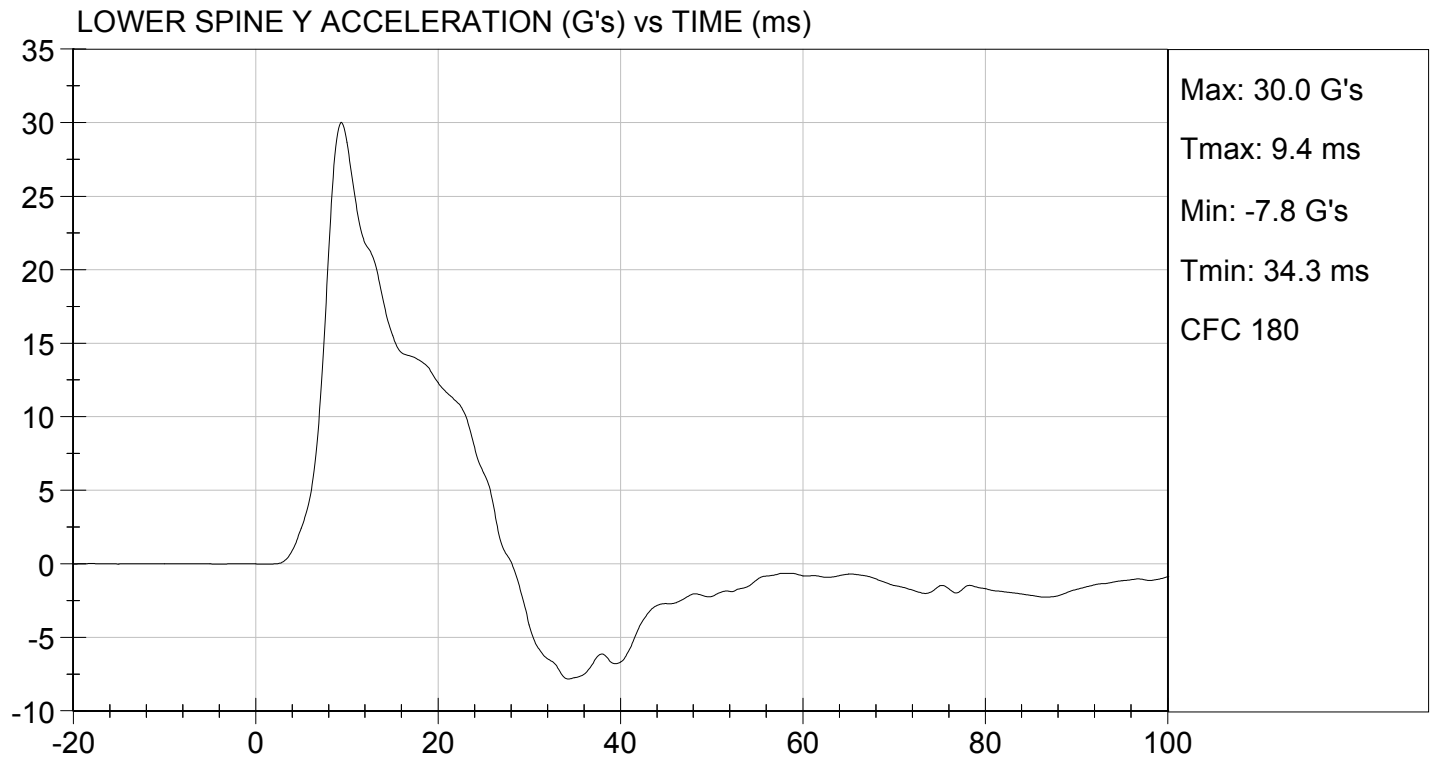
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)





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

TEST DATE: 08/14/2013
TEST #: D132714



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

ATD Serial No: 306

Test I.D: D132715

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	44	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	41	Pass
Lower Rib Displacement	mm	35 to 43	39	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	8	Pass
Overall Test Results				Pass


 Laboratory Technician

08/14/2013

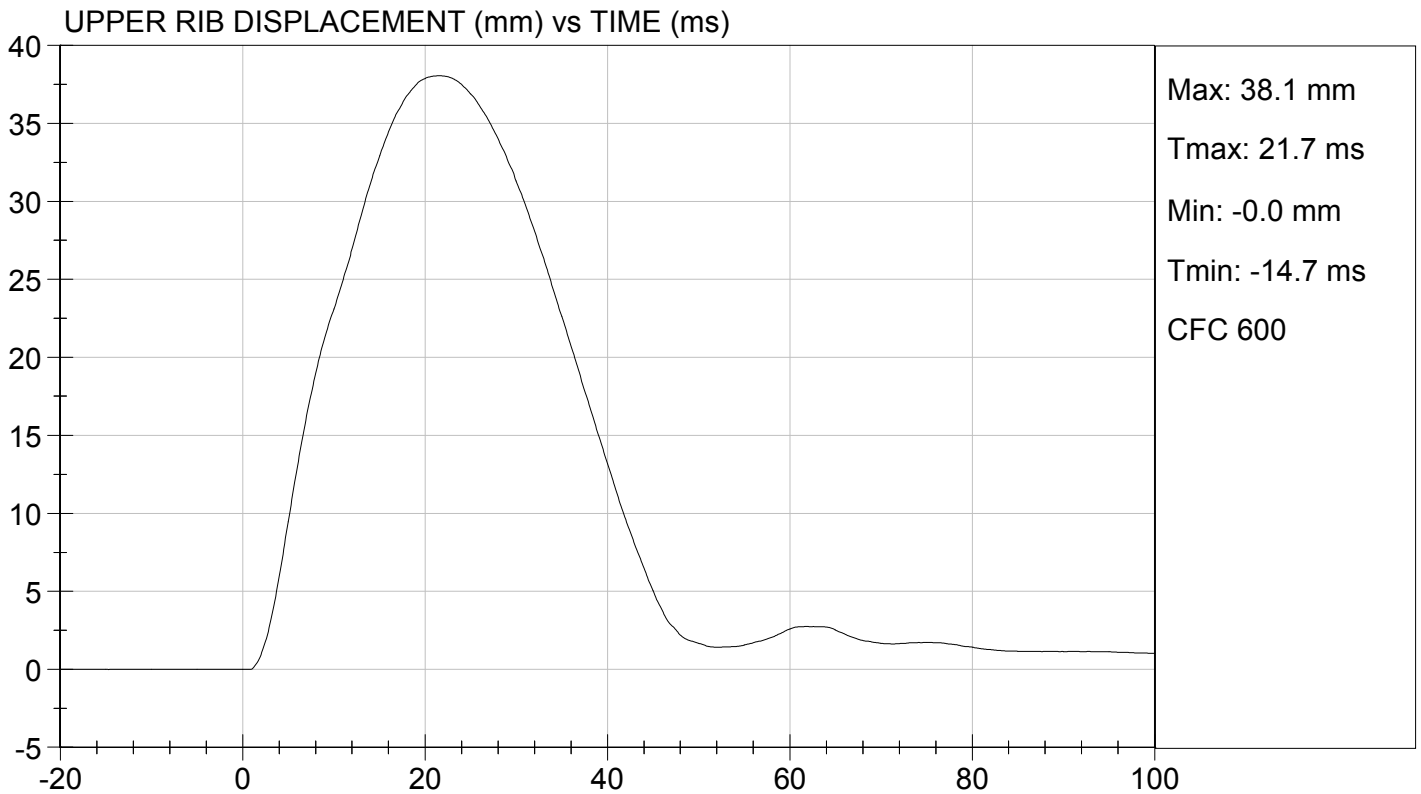
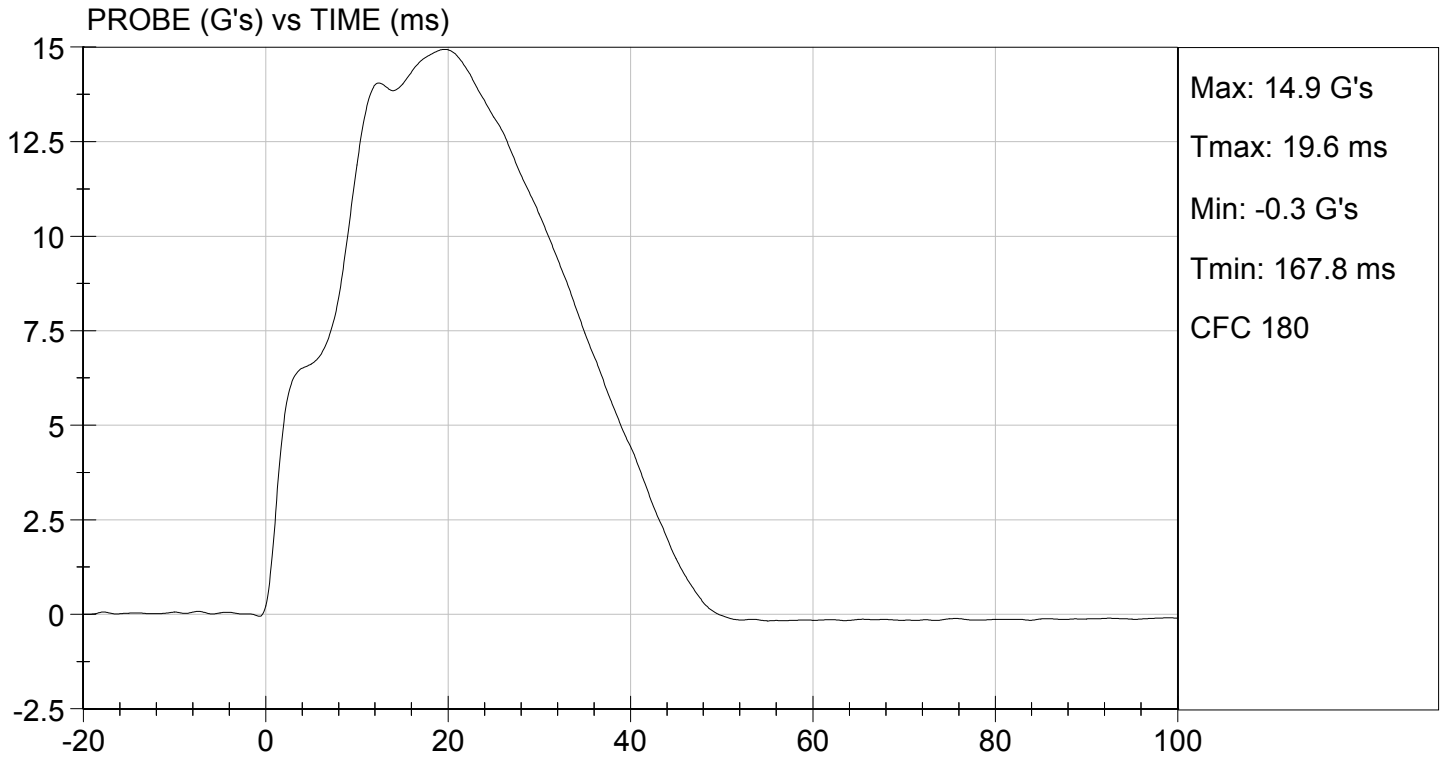
Test Date


 Approved By



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

TEST DATE: 08/14/2013
TEST #: D132715

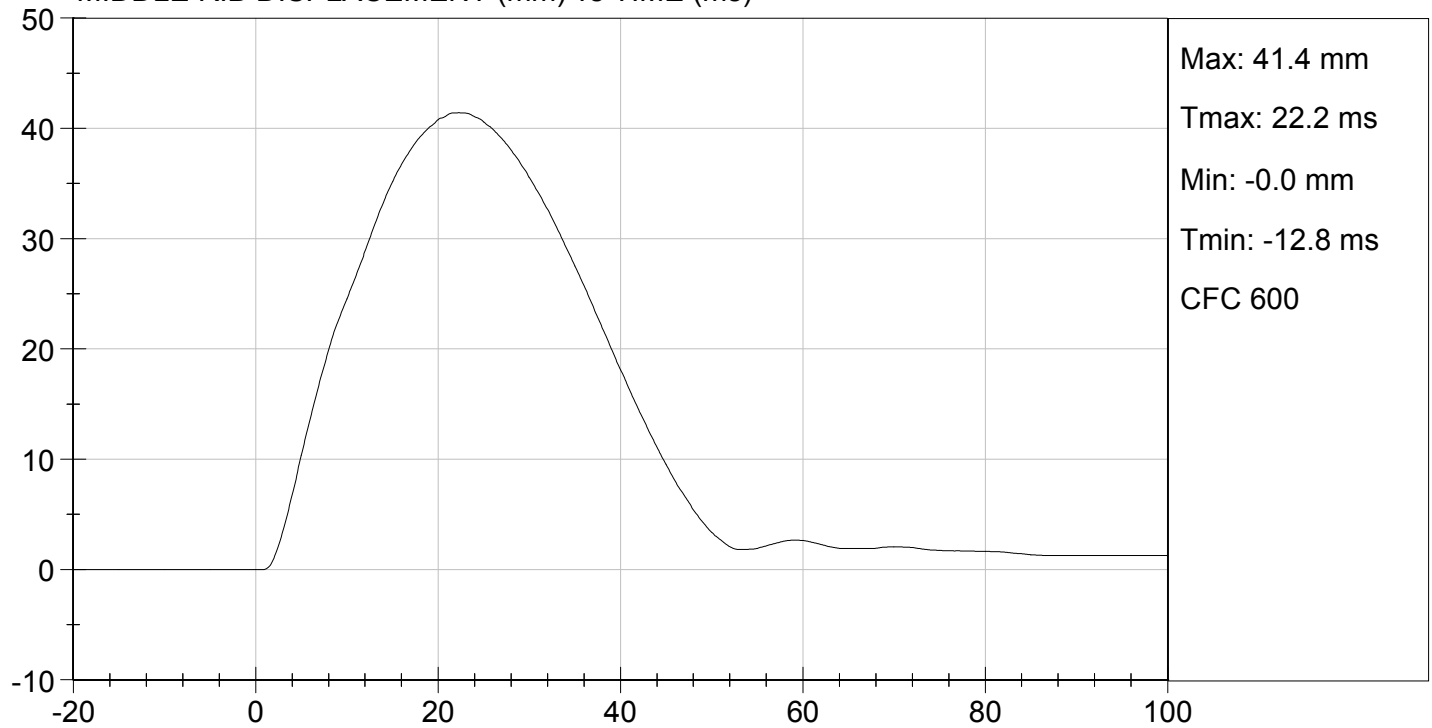




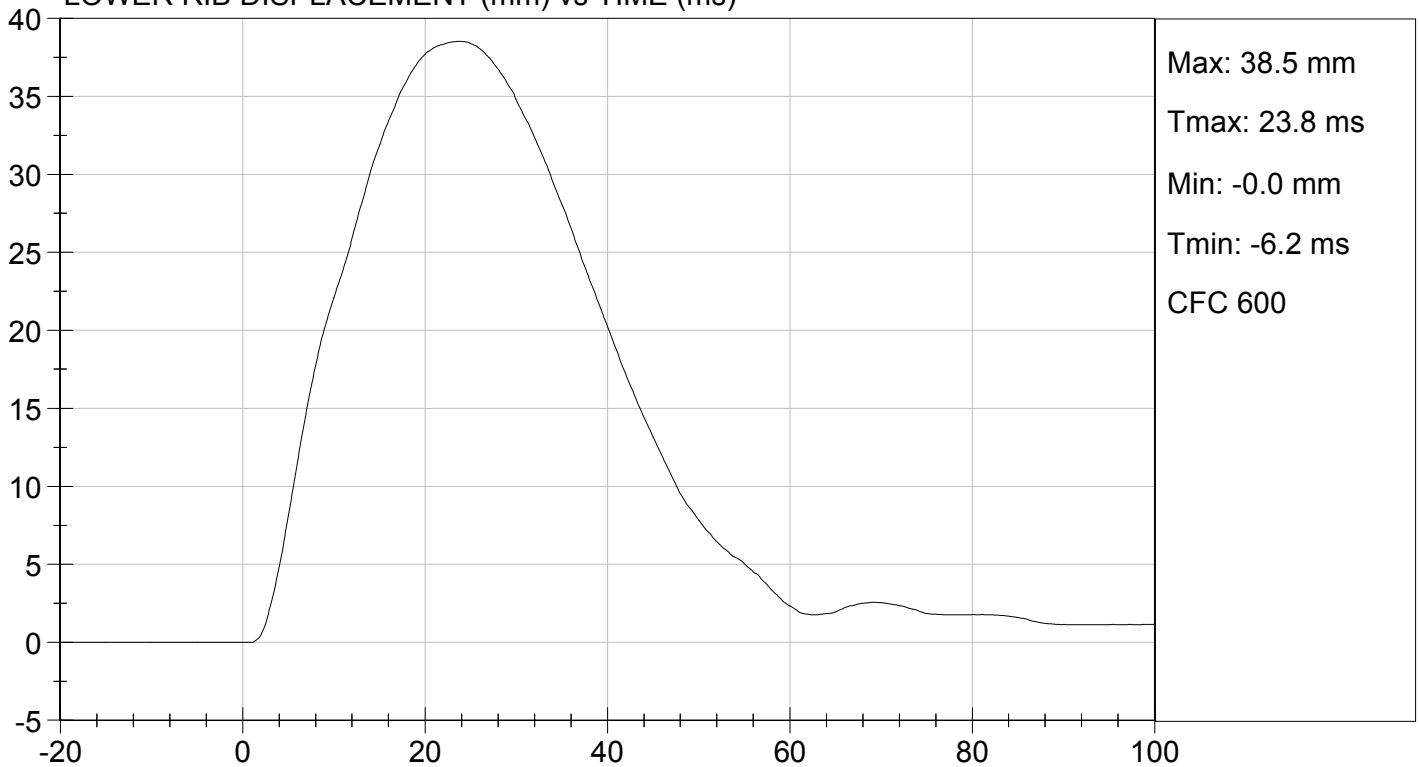
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 08/14/2013
TEST #: D132715

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

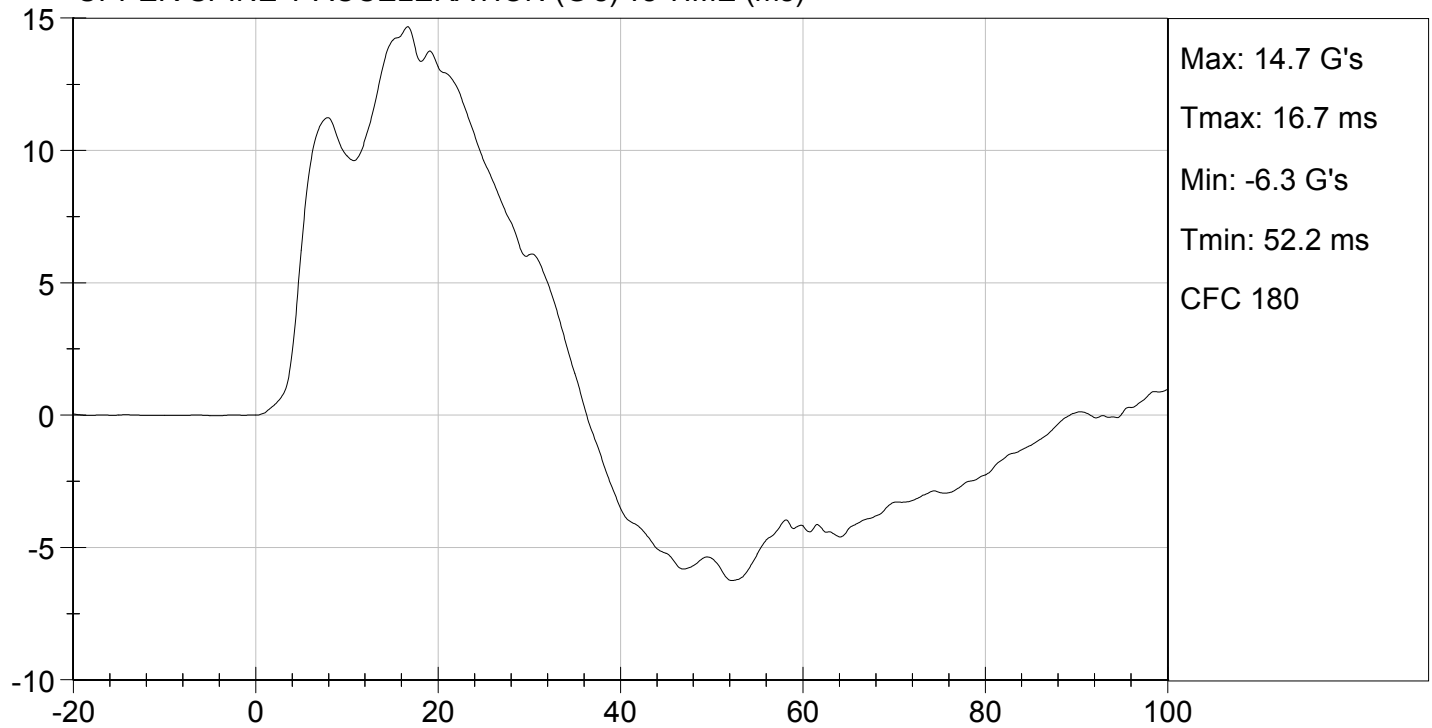




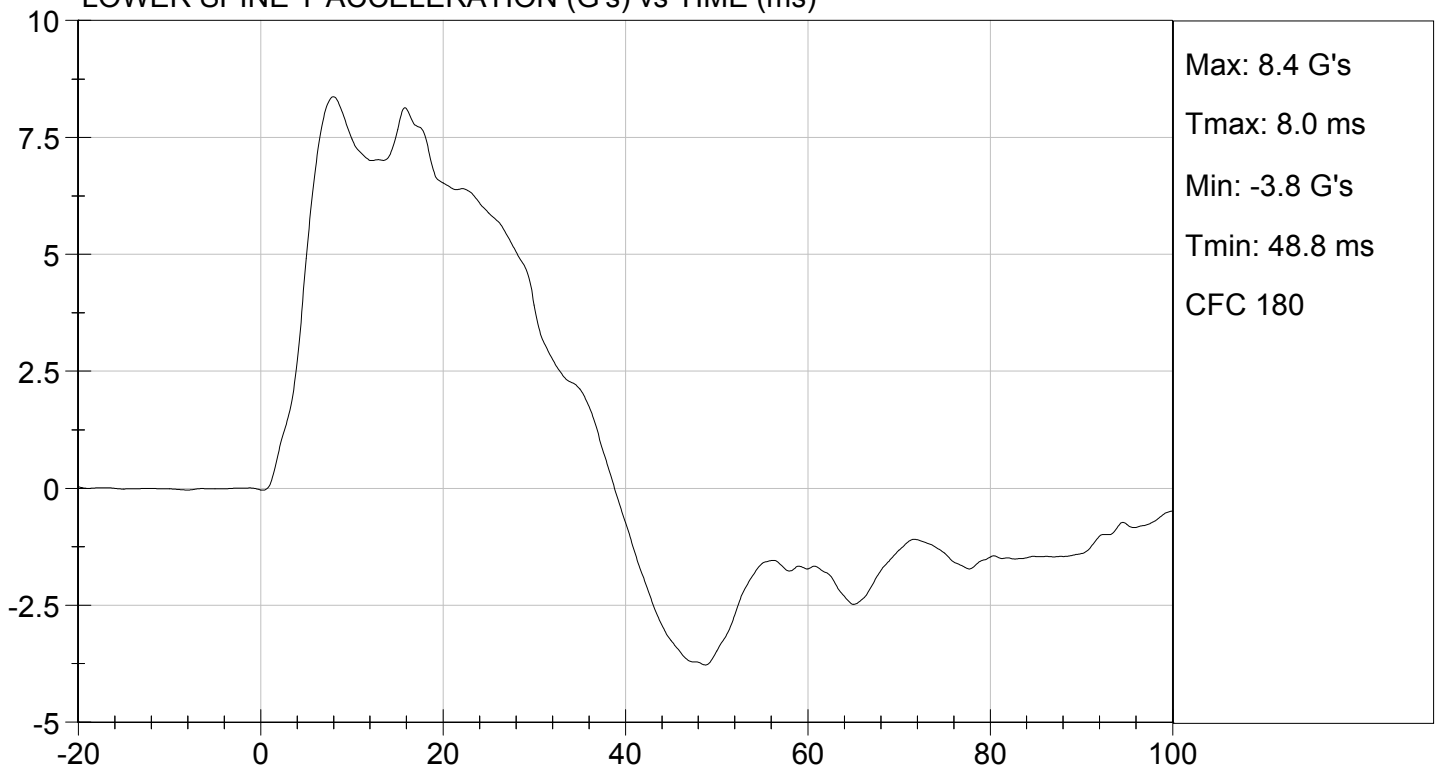
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 08/14/2013
TEST #: D132715

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: 306

Test I.D: D132716

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	41	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	37	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

08/14/2013

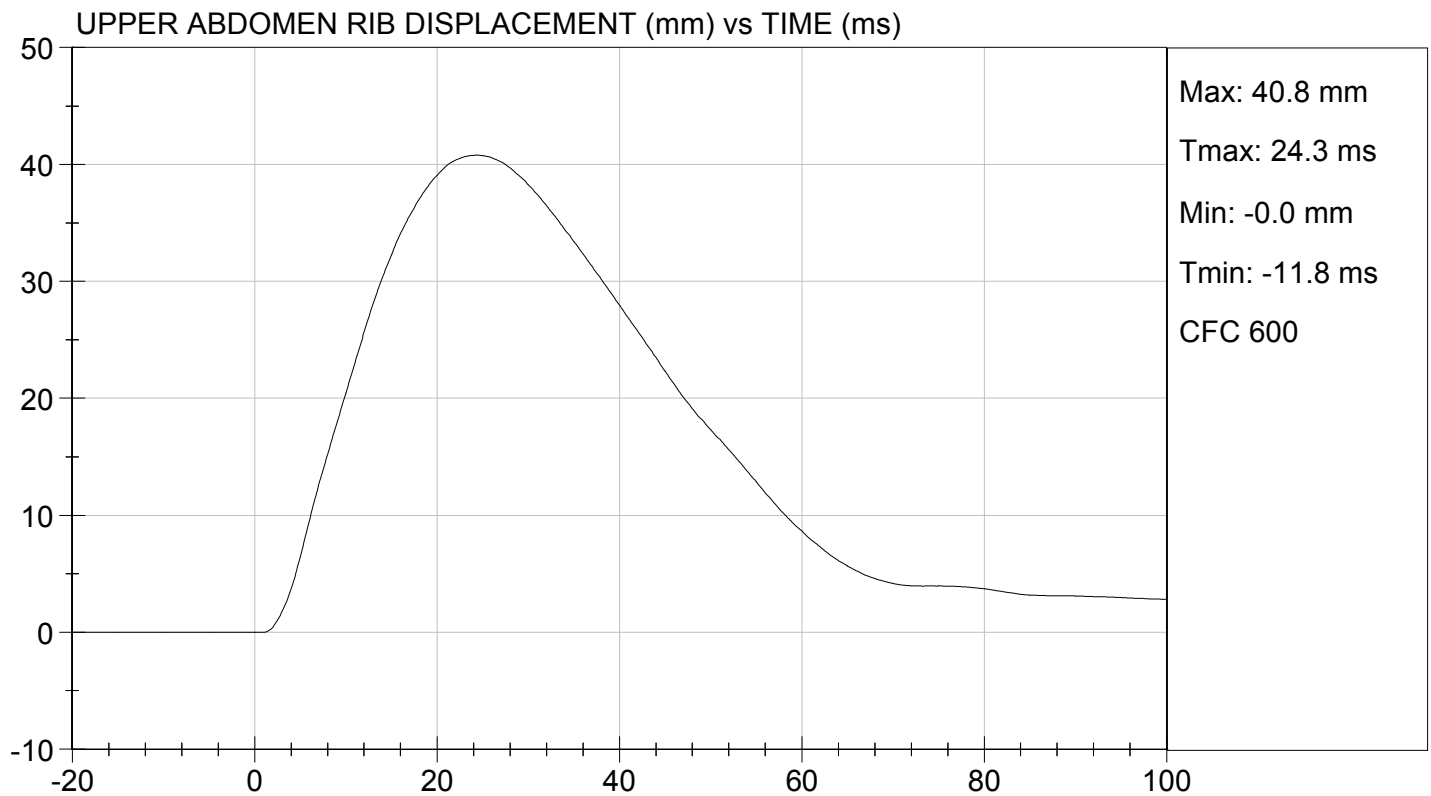
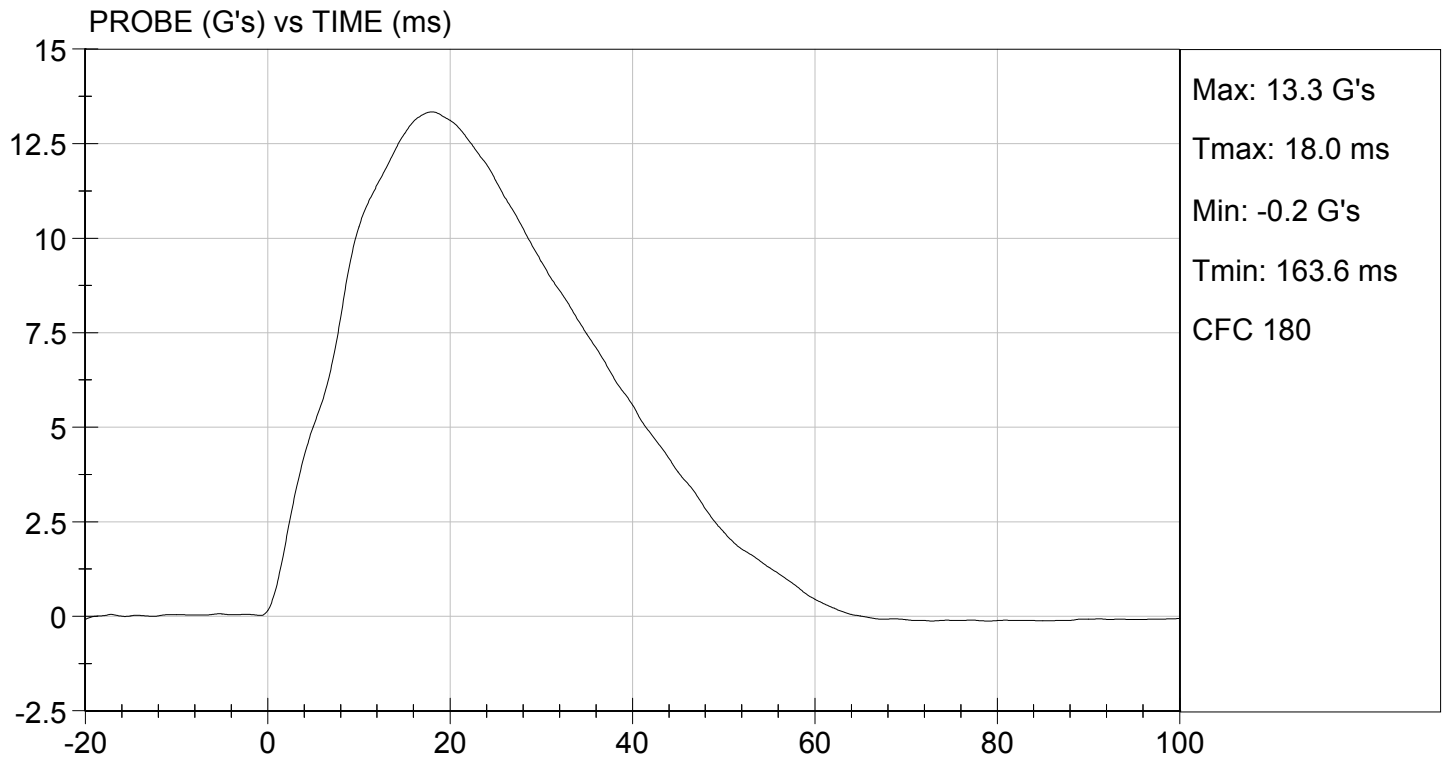
Test Date

David Winkelbauer
Approved By



TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 08/14/2013
TEST #: D132716

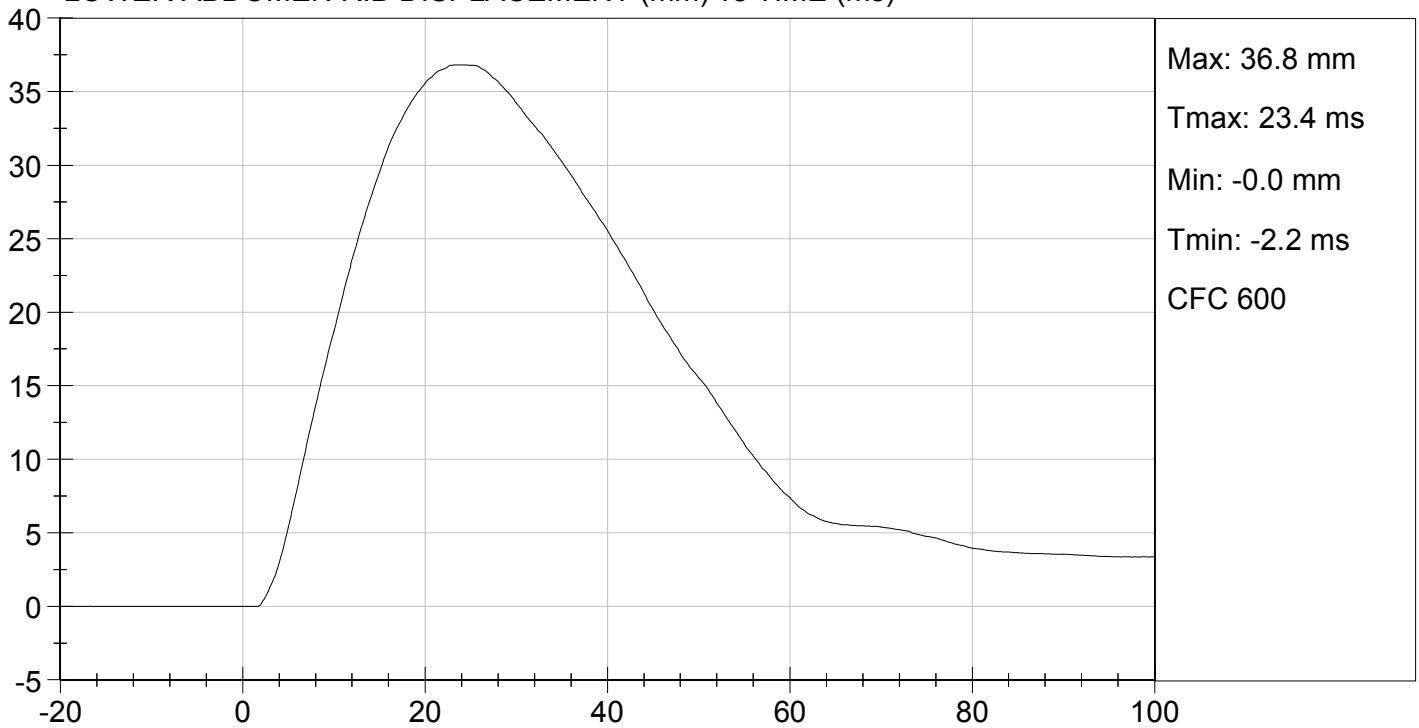




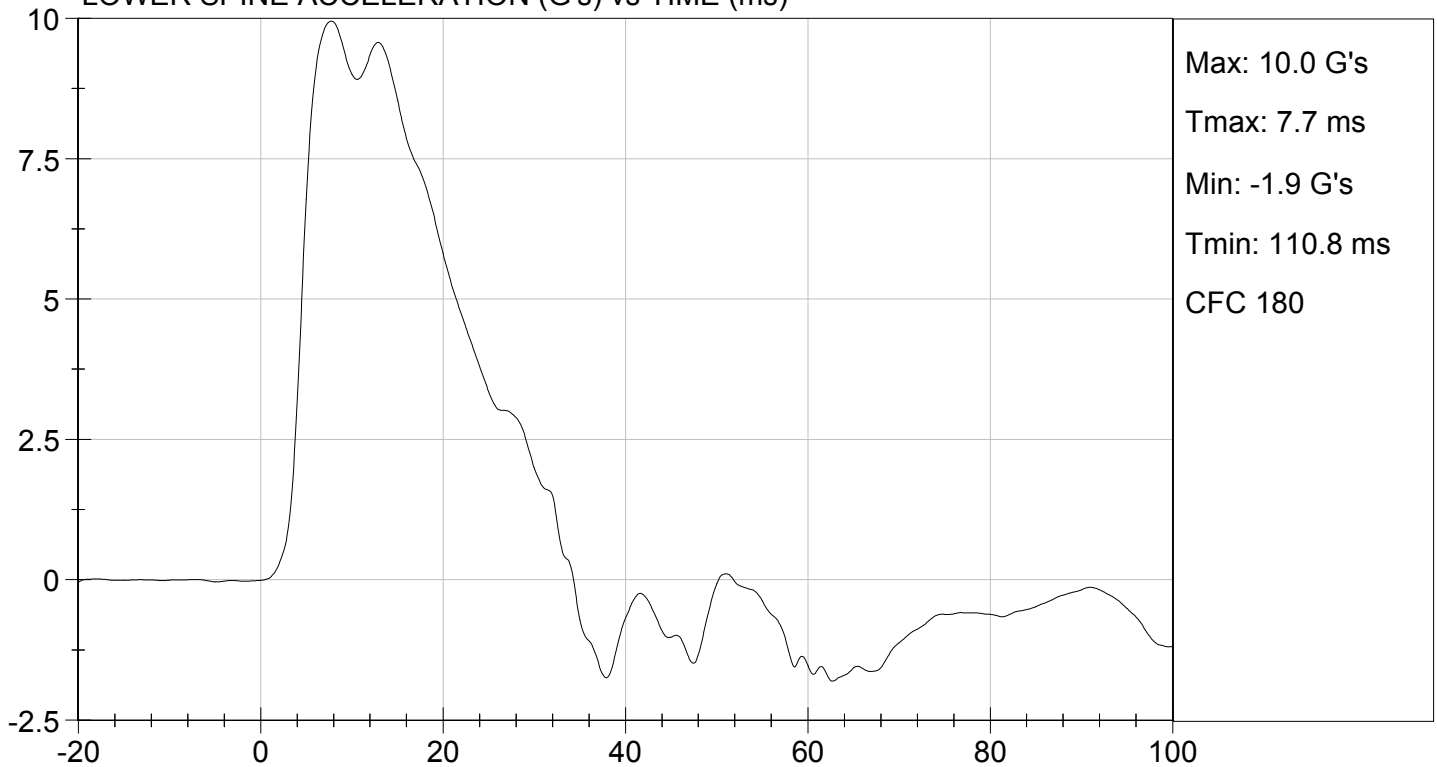
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 08/14/2013
TEST #: D132716

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D132717

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	45	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	35	Pass
Peak Acetabulum Force	N	3600 to 4300	3,852	Pass
Overall Test Results				Pass


Laboratory Technician

08/14/2013

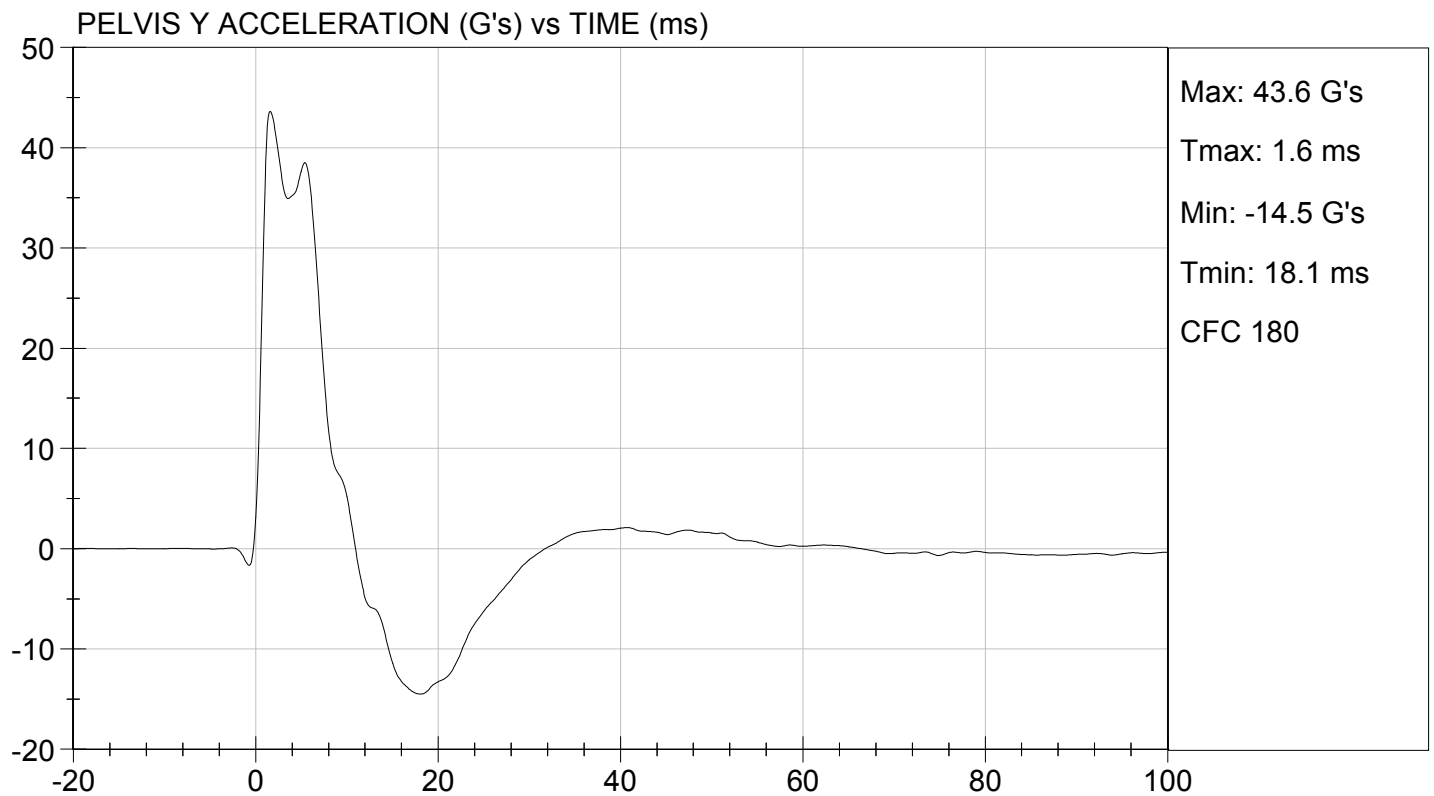
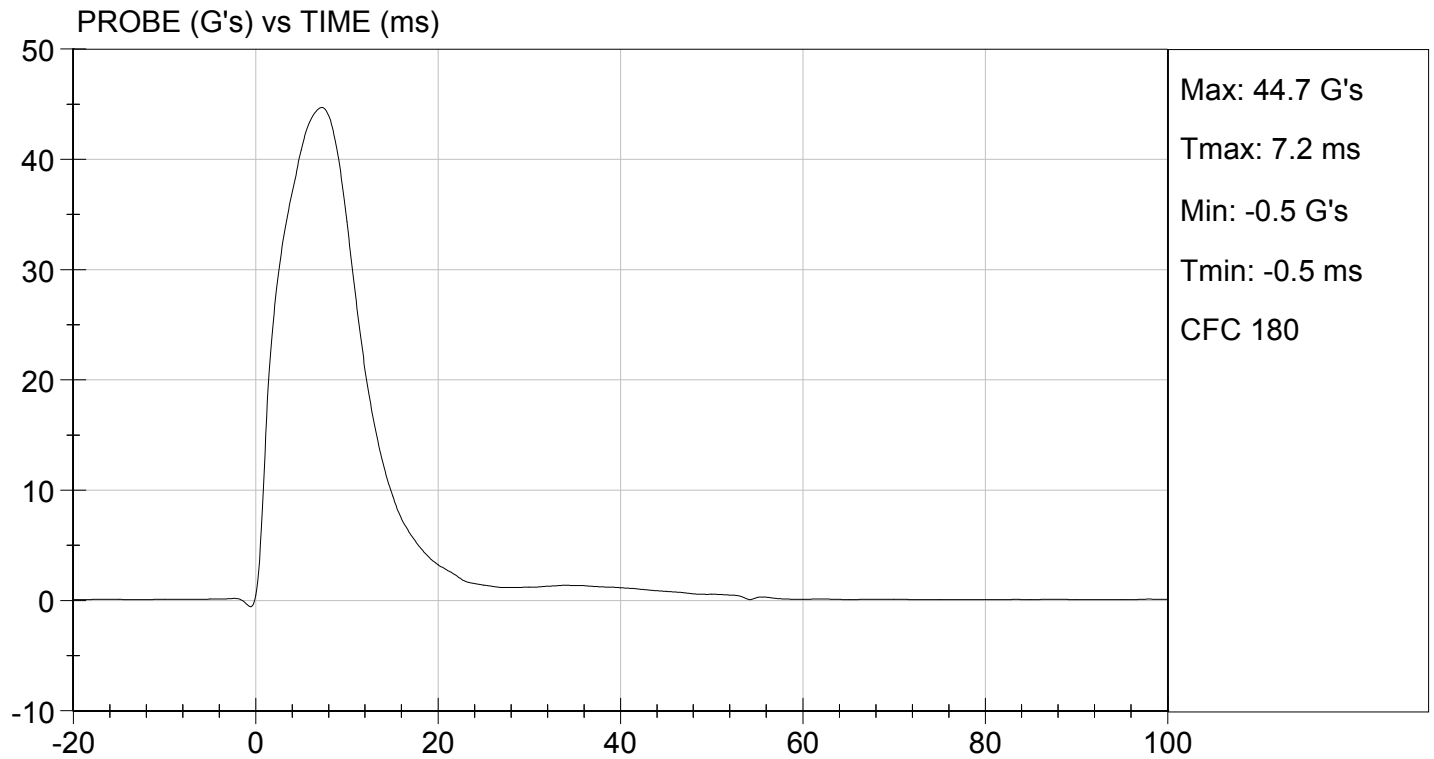
Test Date


Approved By



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

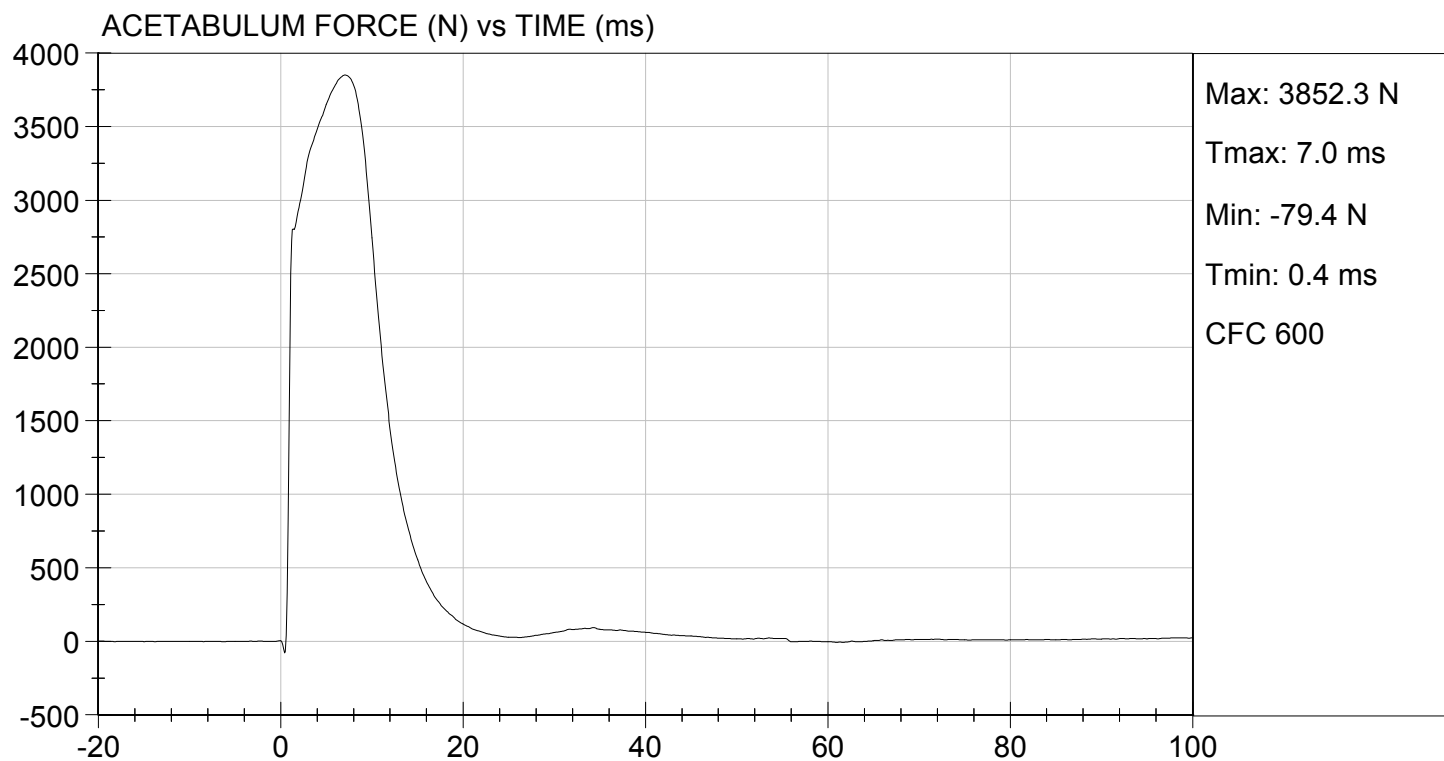
TEST DATE: 08/14/2013
TEST #: D132717





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

TEST DATE: 08/14/2013
TEST #: D132717



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

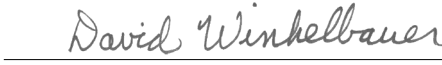
Test I.D: D132718

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	38	Pass
Pelvis Y Acceleration	G's	28 to 39	28	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,584	Pass
Overall Test Results				Pass


Laboratory Technician

08/14/2013

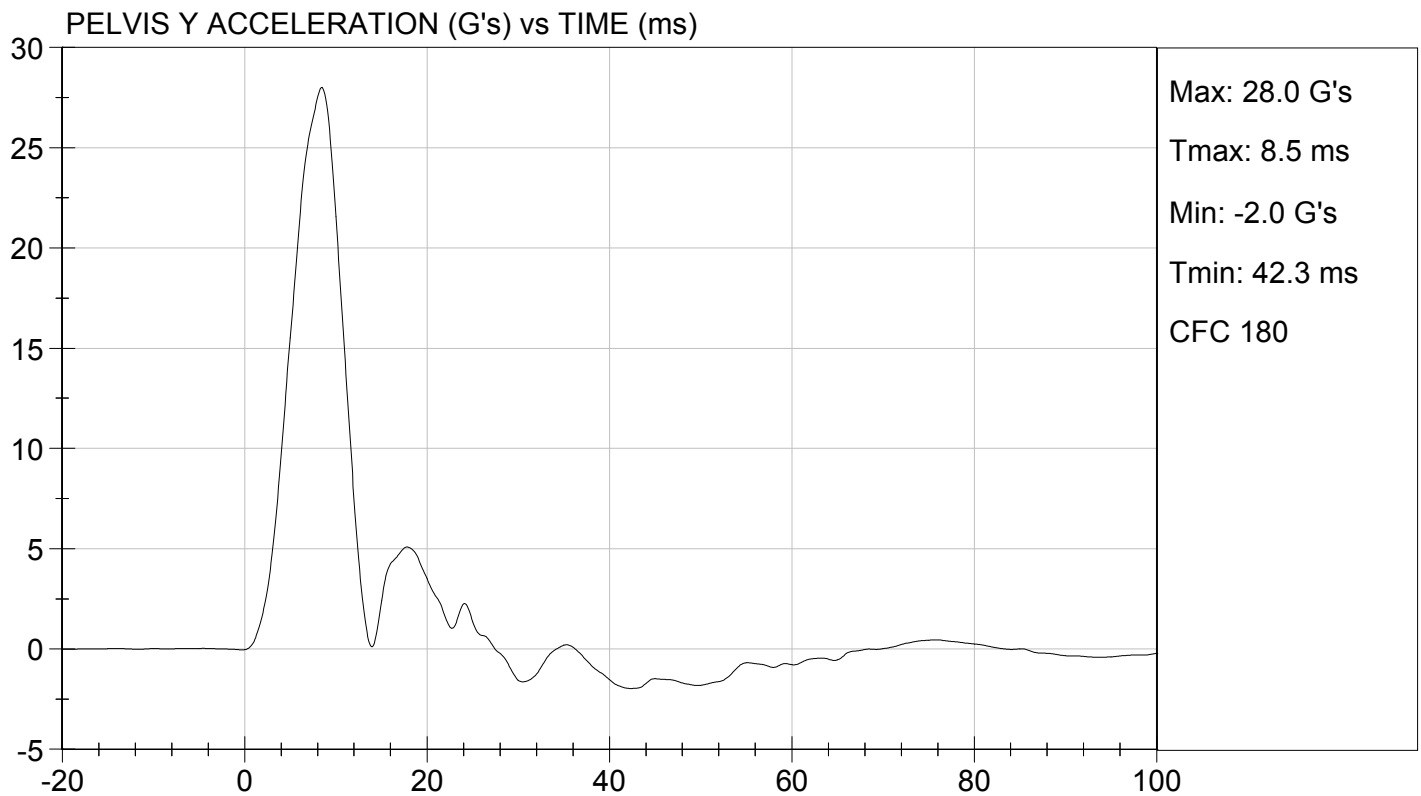
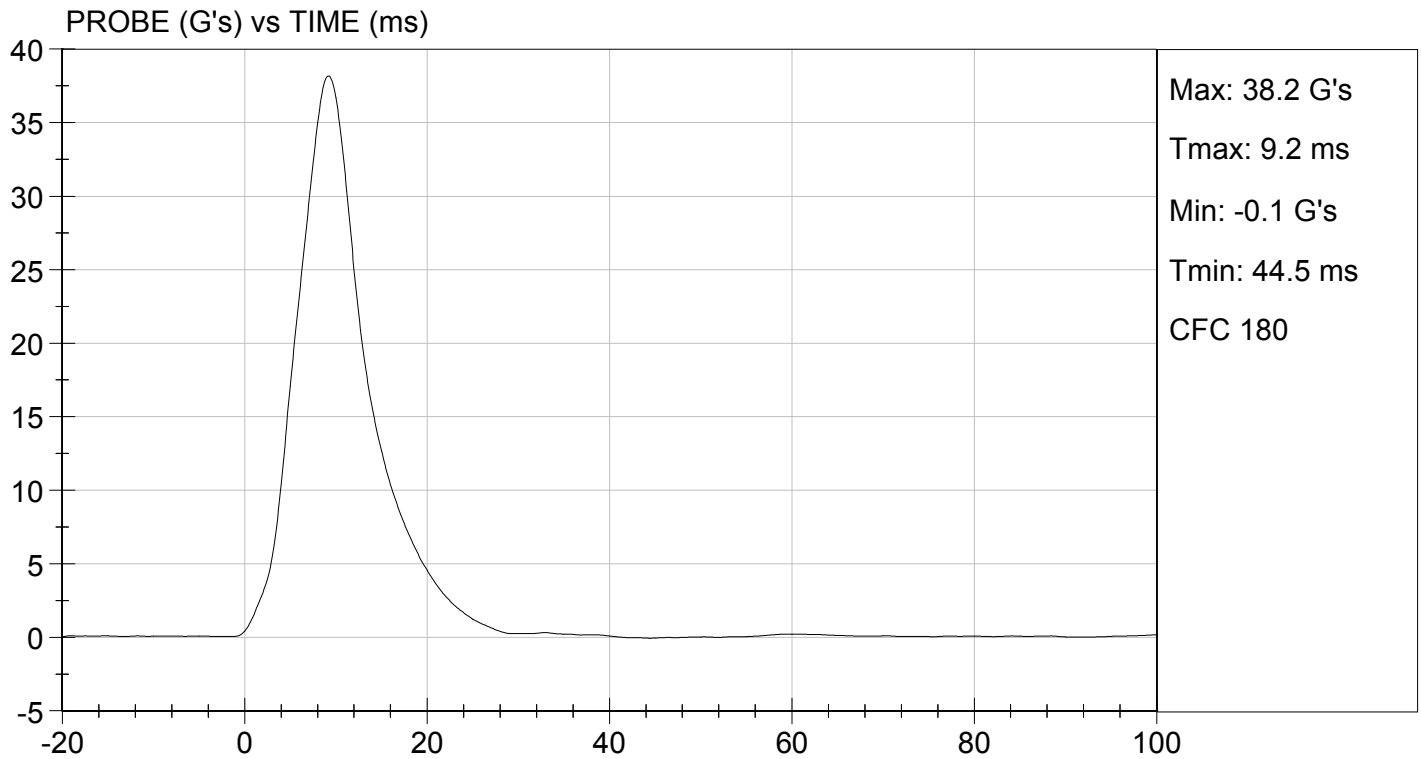
Test Date


Approved By



TEST DESC: ILLIAC
VELOCITY: 13.88 ft/s, 4.23 m/s

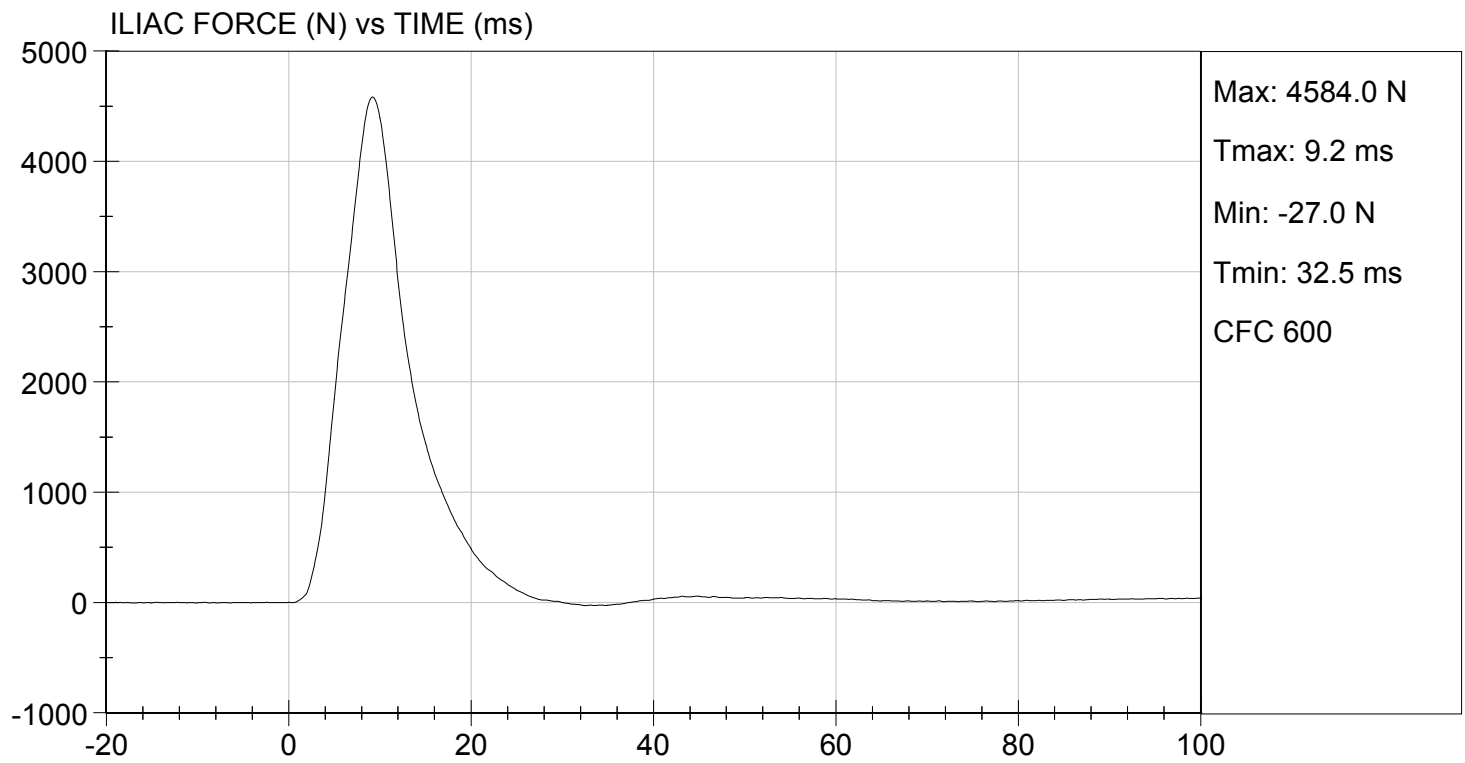
TEST DATE: 08/14/2013
TEST #: D132718



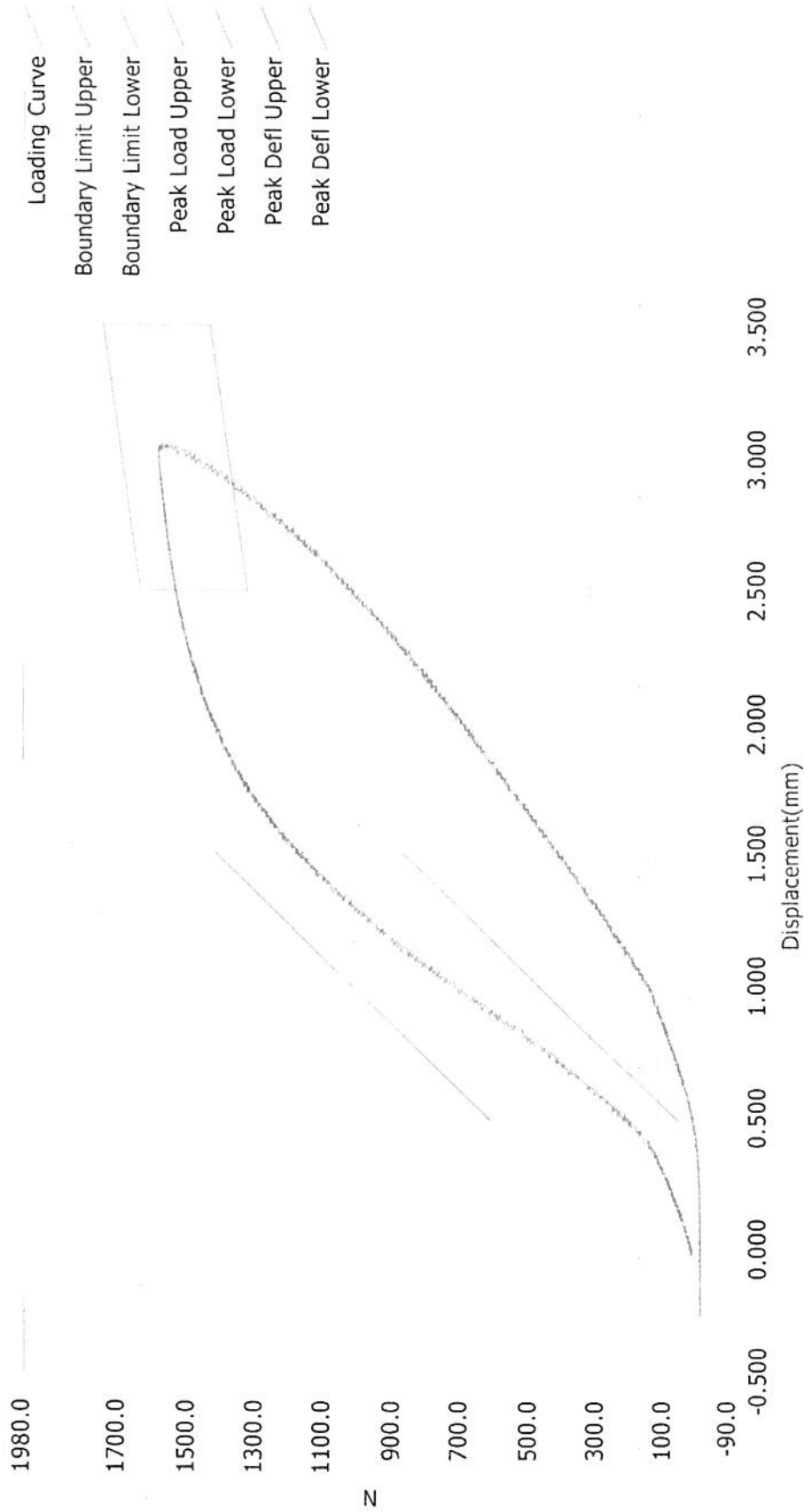


TEST DESC: ILLIAC
VELOCITY: 13.88 ft/s, 4.23 m/s

TEST DATE: 08/14/2013
TEST #: D132718



Resultant Data - SIDIIs Plug Compression



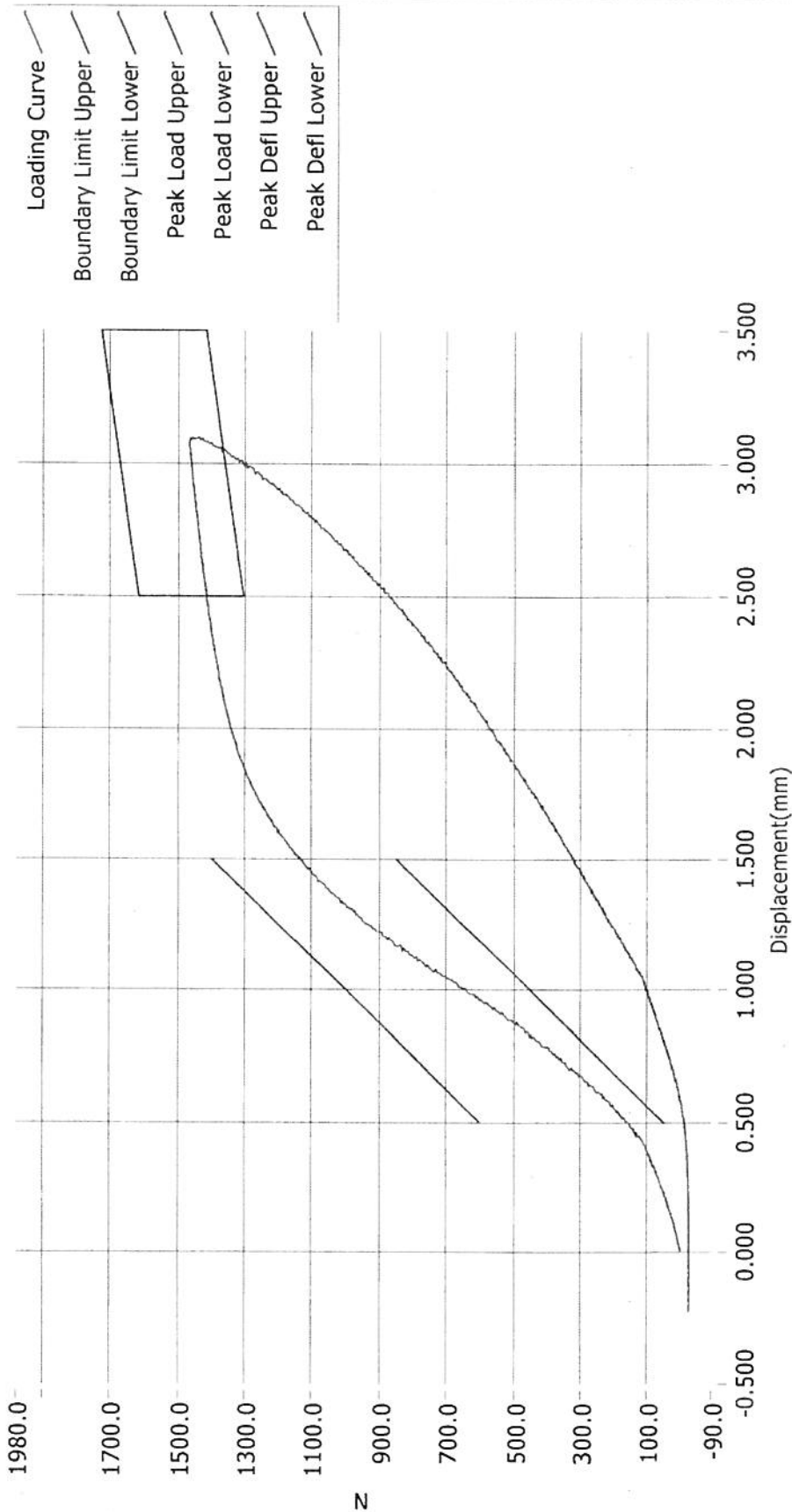
ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	47031	10/15/2011	11:58 AM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 10/15/2011

Current Time : 11:59:14

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	49020	12/7/2011	1:04 AM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 12/7/2011 Current Time : 01:04:42

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	P73178	Endevco	03/25/13
		Y	P73688	Endevco	03/25/13
		Z	P73689	Endevco	03/25/13
		Xr	P72856	Endevco	03/25/13
		Yr	P73703	Endevco	03/25/13
		Zr	P73704	Endevco	03/25/13
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	04/12/13
	Middle	Y	G169	Honeywell	04/12/13
	Lower	Y	G164	Honeywell	04/12/13
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	P80121	Endevco	04/05/13
		Y	P80122	Endevco	04/05/13
		Z	P80123	Endevco	04/05/13
Public Symphysis Load Cell		Y	PG461	Denton	01/03/13

Table 2 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N 306			
			Serial Number	Manufacturer	Calibration Date	
Head CG Accelerometers			X	P79727	Endevco	07/08/13
			Y	P79728	Endevco	07/08/13
			Z	P79730	Endevco	07/08/13
			Xr	P79733	Endevco	07/08/13
			Yr	P79734	Endevco	07/08/13
			Zr	P79735	Endevco	07/08/13
9 Axis Head X			Y	P79715	Endevco	07/08/13
			Z	P79716	Endevco	07/08/13
9 Axis Head Y			X	P79717	Endevco	07/08/13
			Z	P79718	Endevco	07/08/13
9 Axis Head Z			X	P79720	Endevco	07/08/13
			Y	P79726	Endevco	07/08/13
Displacement Potentiometers	Thoracic Rib	Upper	Y	G1187	FTSS	04/19/13
		Middle	Y	G1261	FTSS	04/19/13
		Lower	Y	G1270	FTSS	04/19/13
	Abdominal Rib	Upper	Y	G032	FTSS	04/19/13
		Lower	Y	G1304	FTSS	04/19/13
Lower Spine Accelerometers (T12)			X	P79668	Endevco	04/19/13
			Y	P79669	Endevco	04/19/13
			Z	P79672	Endevco	04/19/13
Acetabulum Load Cell			Y	ACG111	FTSS	04/26/13
Iliac Wing Load Cell			Y	IWG226	FTSS	04/26/13
Pelvis Plug (struck side)				47031	FTSS	10/15/11
Pelvis Plug (non-struck side)				49020	FTSS	12/07/11

Table 3 – Vehicle Instrumentation

			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P66678	Endevco	06/06/13
	Vehicle Center of Gravity	Y	P66680	Endevco	06/06/13
	Vehicle Center of Gravity	Z	P66679	Endevco	06/06/13
2	Right Sill at Front Seat	X	P63346	Endevco	06/06/13
	Right Sill at Front Seat	Y	P67364	Endevco	06/07/13
	Right Sill at Front Seat	Z	P67365	Endevco	06/07/13
3	Right Sill at Rear Seat	X	P67942	Endevco	07/23/13
	Right Sill at Rear Seat	Y	P67943	Endevco	07/23/13
	Right Sill at Rear Seat	Z	P67441	Endevco	04/29/13
4	Left Sill at Front Door	Y	P67948	Endevco	07/23/13
5	Left Sill at Rear Door	Y	P59327	Endevco	06/06/13
6	Left A-Post Lower	Y	P63542	Endevco	07/23/13
7	Left A-Post Middle	Y	P67878	Endevco	07/23/13
8	Left B-Post Lower	Y	P72720	Endevco	07/25/13
9	Left B-Post Middle	Y	P63348	Endevco	04/29/13
10	Front Seat Track	Y	P78917	Endevco	07/24/13
11	Rear Seat Track or Structure	Y	P78900	Endevco	04/03/13
12	Right Rear Occ. Compartment	Y	P77717	Endevco	03/04/13
13	Engine Block	X	P66510	Endevco	04/22/13
	Engine Block	Y	P66511	Endevco	04/22/13
14	Rear Floorpan Above Axle	X	P68892	Endevco	07/24/13
	Rear Floorpan Above Axle	Y	P66753	Endevco	03/15/13
	Rear Floorpan Above Axle	Z	P66754	Endevco	03/15/13

Table 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P66807	Endevco	06/07/13
MDB Center of Gravity	Y	P66808	Endevco	06/07/13
MDB Center of Gravity	Z	P66809	Endevco	06/07/13
MDB Rear	X	P67891	Endevco	07/10/13
MDB Rear	Y	P67892	Endevco	07/10/13