

REPORT NUMBER: SINCAP-MGA-2016-008

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

**HONDA OF AMERICA MFG., INC.
2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
NHTSA No.: O20165302**

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



Test Date: June 17, 2015

Final Report Date: August 13, 2015

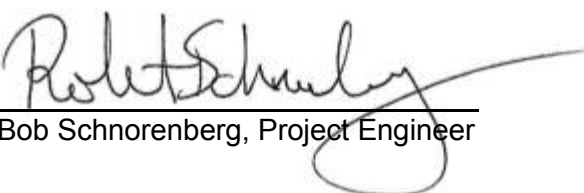
FINAL REPORT

**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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Approved by: 
Bob Schnorenberg, Project Engineer

Approval Date: August 13, 2015

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 2016 Acura ILX AcuraWatch Plus 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 June 17, 2015. The impact velocity of the Moving Deformable Barrier (MDB) was 62.3 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.5° C. The target vehicle post-test maximum crush was 236 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 colspan="2"></th> <th colspan="3">Driver ATD (ES-2re)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th colspan="2">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td colspan="2">234</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>44</td> <td colspan="2">24</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td colspan="2">636</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td colspan="2">2166</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2"></th> <th colspan="3">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th colspan="2">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td colspan="2">324</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td colspan="2">64</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td colspan="2">3111</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td colspan="2">40</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td colspan="2">46</td> </tr> </tbody> </table>						Driver ATD (ES-2re)			Measurement Description	Units	Threshold	Result		Head Injury Criteria (HIC ₃₆)	N/A	1000	234		Maximum Thorax Rib Deflection	mm	44	24		Total Abdominal Force	N	2500	636		Pubic Symphysis Force	N	6000	2166				Passenger ATD (SID-IIs)			Measurement Description	Units	Threshold	Result		Head Injury Criteria (HIC ₃₆)	N/A	1000	324		Resultant Lower Spine Acceleration	Gs	82	64		Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3111		Maximum Thoracic Rib Deflection	mm	38*	40		Maximum Abdomen Rib Deflection	mm	45*	46	
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The door on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite door did not open during the side impact event.																																																																				
17. Key Words New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																																																																		
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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2016 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-14-D-00353. The purpose of this test is to generate comparative side impact performance in a 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Laboratory Test Procedure dated September 2013.

SECTION 2 SUMMARY OF TEST RESULTS

A 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.3 km/h. 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 June 17, 2015. Pre-test and post-test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS NCAP Side Laboratory Test Procedure dated September 2013. The side impact event was documented by eleven (11) cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and Redundant Head CG Triaxial Accelerometers
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
Primary Head CG Angular Rate Sensors
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	234
Maximum Thorax Rib Deflection	mm	44	24
Total Abdominal Force	N	2500	636
Pubic Symphysis Force	N	6000	2166

	Passenger ATD (SID-IIs)		
Measurement Description	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	324
Resultant Lower Spine Acceleration	Gs	82	64
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3111
Maximum Thoracic Rib Deflection	mm	38*	40
Maximum Abdomen Rib Deflection	mm	45*	46

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

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

GENERAL COMMENTS

Left Lower A-Post Y has no valid data after 10ms.

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: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. 020165302
Test Date: 6/17/2015

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20165302	Traction Control System (TCS)	Yes
Model Year	2016	Auto-Leveling System	No
Make	Acura	Automatic Door Locks (ADL)	Yes
Model	ILX AcuraWatch Plus	Power Window Auto-Reverse	Yes
Body Style	4-Door Sedan	Other Optional Feature	N/A
VIN	19UDE2F38GA003024	Driver Front Airbag	Yes
Body Color	Graphite Luster	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	89 / 55	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.4	Driver Torso Airbag	No
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	8	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	Front	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	Yes	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	Yes	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
		Other Restraint Feature	N/A

Does owner's manual provide instruction to turn off automatic door locks?	Yes
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DATA FROM CERTIFICATION LABEL

Manufactured By	HONDA OF AMERICA MFG., INC.	GVWR (kg)	1815
Date of Manufacture	02/15	GAWR Front (kg)	1000
Vehicle Type	Passenger Car	GAWR Rear (kg)	815

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	(A)
Capacity Weight (VCW) (kg)				385	(B)
DSC x 68.04 kg				340	(A-B)
Rated Cargo and Luggage Weight (RCLW)				45	

VEHICLE SEAT TYPE

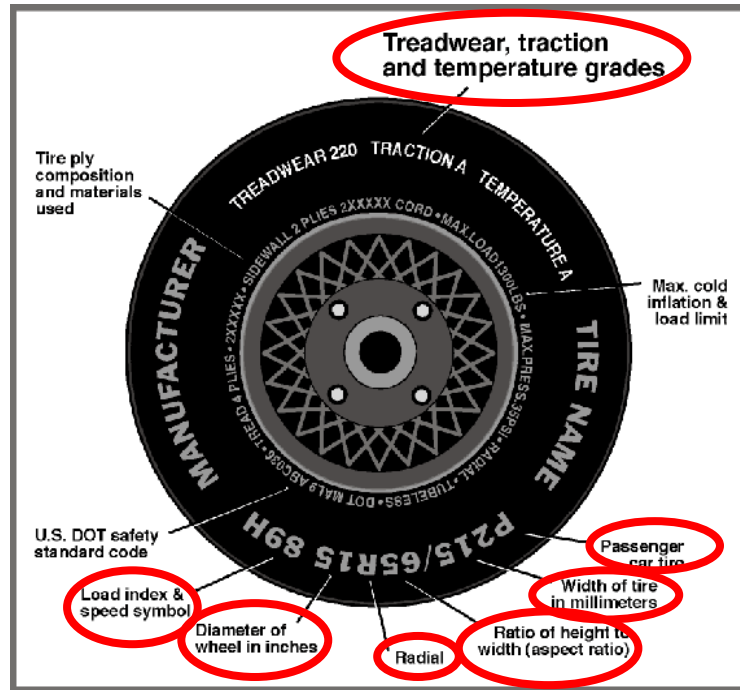
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					Passenger	Driver
Rear or Second Row				X	X		
Third Row Seat							

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. 020165302
 Test Date: 6/17/2015

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	230
Recommended Tire Size	215/45R17	215/45R17
Tire Size on Vehicle	215/45R17	215/45R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Pilot	Pilot
Treadwear	300	300
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	87V	87V
Tire Material	Rubber	Rubber
DOT Safety Code Left	B9NO U7LX 0515	B9NO U7LX 0515
DOT Safety Code Right	B9NO U7LX 0515	B9NO U7LX 0515

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. 020165302
 Test Date: 6/17/2015

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	262	255	262	262
Tire Placard	kPa	240	240	230	230
Owner's Manual	kPa	240	240	230	230
As Tested	kPa	240	240	230	230

MDB TIRE SPECIFICATIONS

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	449.5	257.0		491.5	323.0		489.0	331.0	
Right	kg	437.5	259.0		447.5	309.0		443.0	314.0	
Ratio	%	63.2	36.8		59.8	40.2		59.1	40.9	
Totals	kg	887.0	516.0	1403.0	939.0	632.0	1571.0	932.0	645.0	1577.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1403.0	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	45	(C)
Calculated Test Vehicle Target Weight (TVTW)	kg	1577.0	(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	656	652	Yes
Right Front	mm	668	665	Yes
Right Rear	mm	660	664	Yes
Left Rear	mm	647	656	Yes
Vehicle CG (Aft of Front Axle)	mm	1092	1074	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	5	28	

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

Test height adjustable suspension setting, if applicable:	Not Applicable
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DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan NHTSA No. O20165302
Test Program: NCAP Side MDB Impact Test Test Date: 6/17/2015

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Weight of Ballast, if any	0
None	

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015

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	28.2	21.0	24.6
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rear- most	Mid- Fore/Aft	Forward- Most
Driver Seat	24.6	0	Max	48	48	48
			Mid	24	24	24
			Min	0	0	0
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

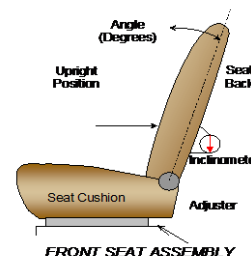
NHTSA No. O20165302
 Test Date: 6/17/2015

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	238		119	
Front Passenger Seat	240	25 (1 st as 1)	120	12 th (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is adjusted following Appendix C, "Positioning Dummies in the Test Vehicle" in the NCAP Laboratory Test Procedure dated September 2013. The rear center and non-struck side rear outboard seat backs are positioned to match the struck side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degrees	Detent
Driver Seat w/Seated Dummy	71.3		13.3	
Front Passenger Seat	63.1	30 (1 st as 1)	13.2	6 th (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	1.8	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	1.8	Fixed
Rear Center Seat	Fixed	Fixed	1.8	Fixed

Seat back angles measured on headrest post guide.

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. 020165302
 Test Date: 6/17/2015

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 th (uppermost as 0)
Rear Seat	Fixed	Not Applicable

HEAD RESTRAINT ADJUSTMENT

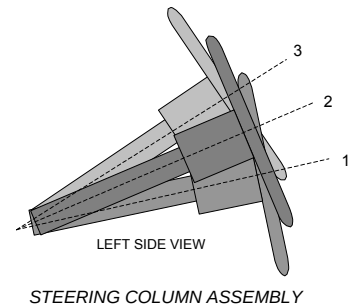
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	6	Highest
Rear Seat	2	Lowest

STEERING COLUMN ADJUSTMENT

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

	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	69.6	186
Geometric Center, Position 2	67.0	207
Uppermost, Position 3	64.4	228
Telescoping Steering Wheel Travel		42
Test Position	67.0	207

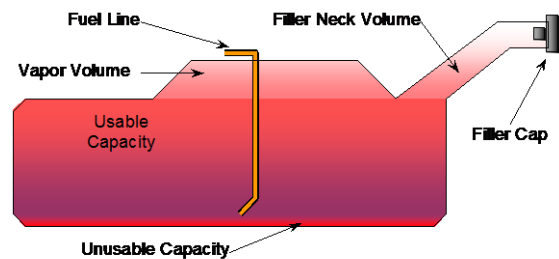


STEERING COLUMN ASSEMBLY

FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler pipe.

The electric fuel pump operates after the ignition key is turned from LOCK to ON position, and then the pressure is maintained. The fuel filler pipe is located on the left hand side of the vehicle.



VEHICLE FUEL TANK ASSEMBLY

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan NHTSA No. O20165302
 Test Program: NCAP Side MDB Impact Test Test Date: 6/17/2015

FUEL TANK CAPACITY DATA

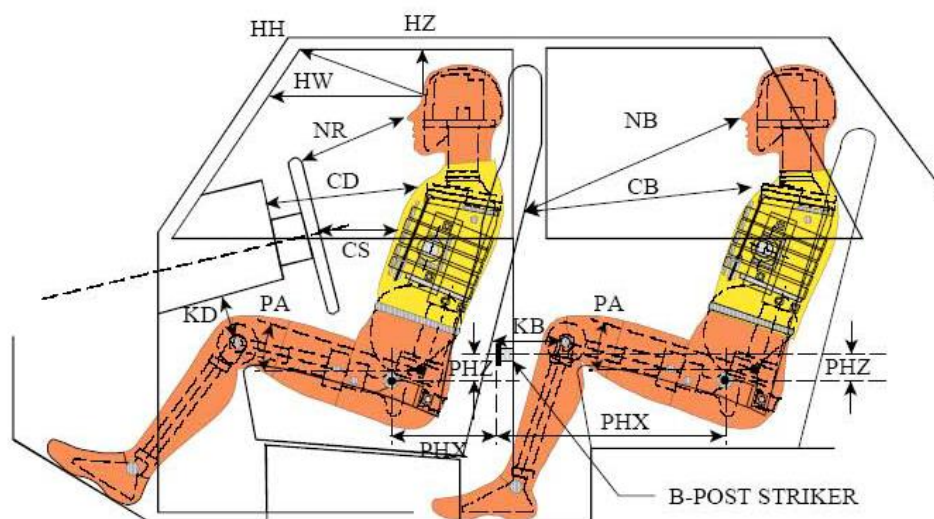
	Liters
Usable Capacity of "Standard" Tank (see Form No. 1)	50.0
Usable Capacity of "Optional" Tank (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	50.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	46.5
Actual Amount of Solvent Used	46.6
1/3 of Usable Capacity	16.7

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: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
Test Date: 6/17/2015



LEFT SIDE VIEW

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

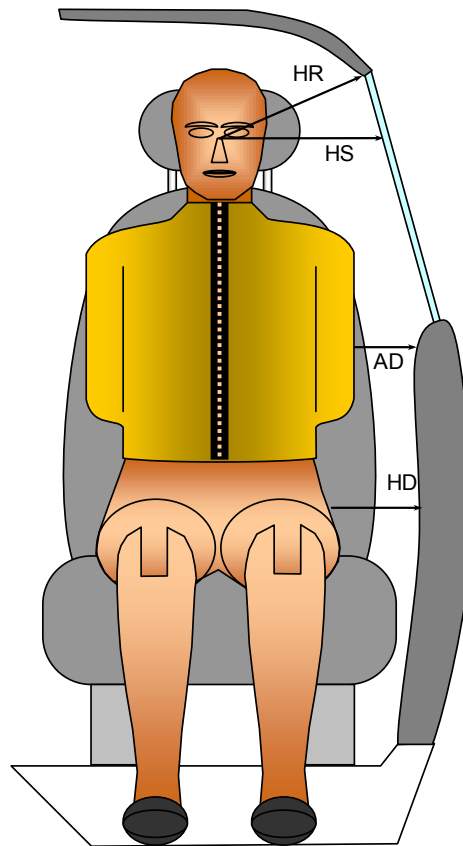
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle(°)	Length (mm)	Angle(°)
HH		Head to Header	383	9.4		
HW		Head to Windshield	616			
HZ	HZ	Head to Roof Liner	100		219	
NR	NB	Nose to Rim/Seat Back	476	11.1	525	13.5
CD	CB	Chest to Dashboard/Seat Back	592	12.1	498	2.4
CS		Chest to Steering Wheel	398	1.3		
KDL	KBL	Left Knee to Dash/Seat Back	147	26.7	229	16.5
KDR	KBR	Right Knee to Dash/Seat Back	148	27.1	233	17.1
PAX	PAX	Pelvic Tilt Angle X		22.6		27.5
	PAY	Pelvic Tilt Angle Y		-0.9		0.1
PHX	PHX	Hip Point to Striker (X-Axis)	205		278	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	184		287	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. Q20165302
 Test Date: 6/17/2015



FRONT VIEW OF DUMMY

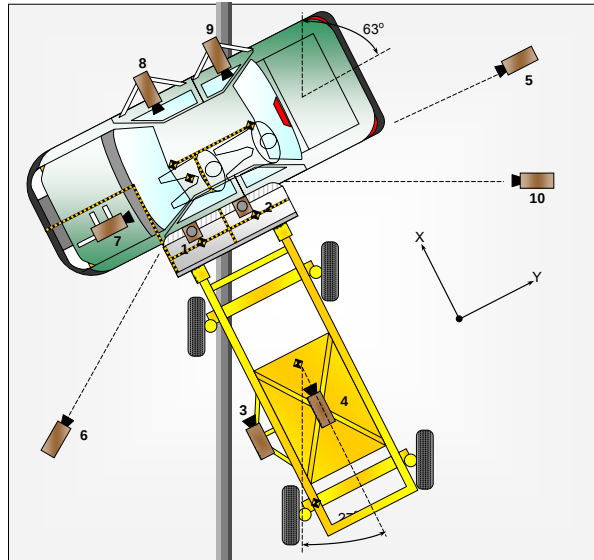
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	185	241
HS	Head to Side Window	mm	214	390
AD	Arm to Door	mm	95	170
HD	Hip Point to Door	mm	147	270

DATA SHEET NO. 5 CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. Q20165302
Test Date: 6/17/2015



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X*	Y*	Z*		
1	Overhead Overall	140	-190	-5040	14	1000
2	Overhead Close-Up	140	-290	-5090	20	1000
3	Left Impact Point (MDB)				50	1000
4	Side Overall (MDB)				16	1000
5	Rear	195	4640	-1300	24	1000
6	Left Front	2090	-4225	-1305	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

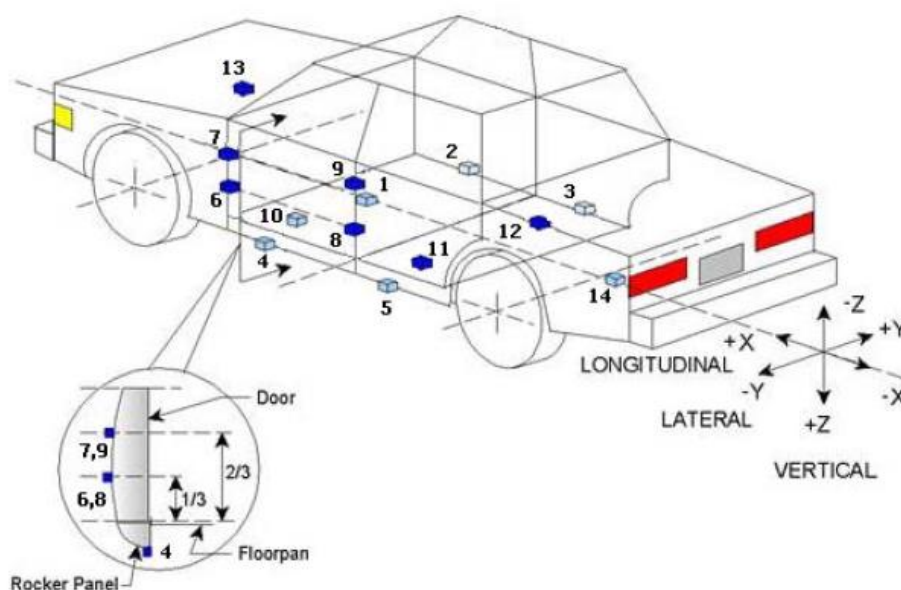
INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Passenger Dummy	19
Vehicle Structure	23
MDB Accelerometers	5
MDB Contacts	2
Total	65

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015



TEST VEHICLE ACCELEROMETER LOCATIONS

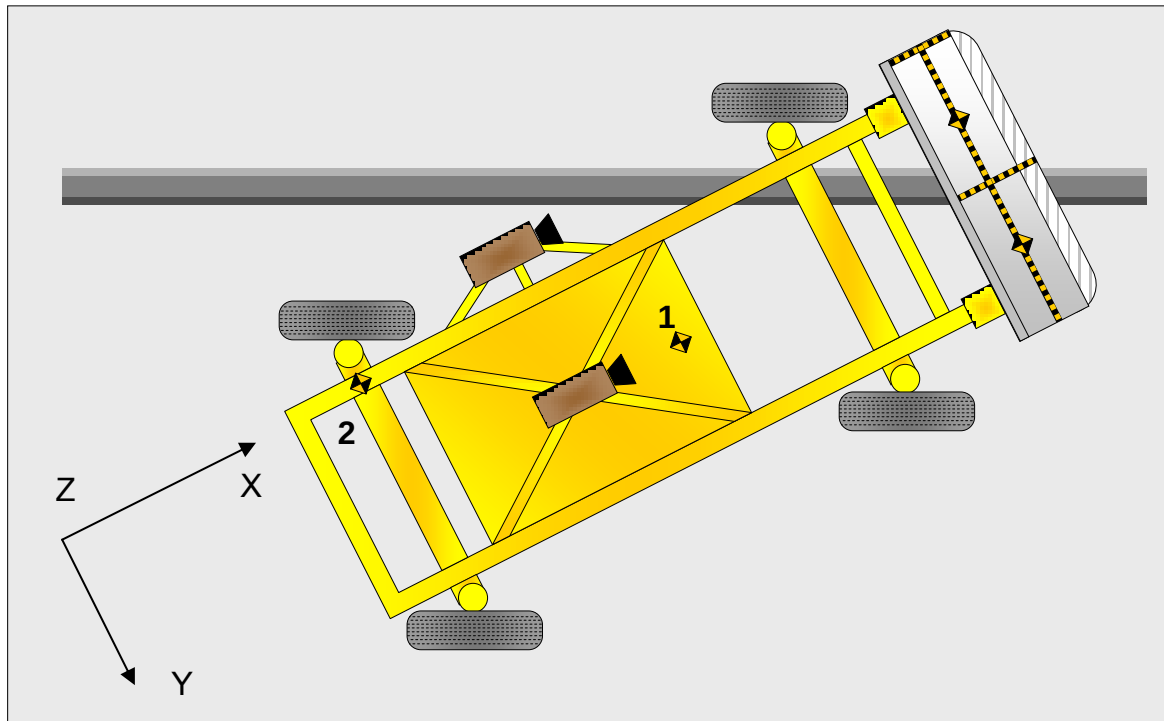
Accelerometer Location				
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2470	88	-245
2	Right Sill at Front Seat	2126	740	-200
3	Right Sill at Rear Seat	1379	740	-190
4	Left Sill at Front Door	2454	-740	-190
5	Left Sill at Rear Door	1572	-740	-205
6	Left Lower A-Post	3064	-794	-540
7	Left Middle A-Post	3083	-784	-713
8	Left Lower B-Post	1973	-706	-574
9	Left Middle B-Post	2001	-702	-744
10	Front Seat Track	2197	-340	-185
11	Rear Seat Structure	1730	-347	-327
12	Rt. Rear Occ. Compartment	1797	413	-204
13	Engine Block	3796	0	-858
14	Rear Above Axle	1013	110	-513

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: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. Q20165302
 Test Date: 6/17/2015



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: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. 020165302
Test Date: 6/17/2015

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Curtain Airbag, Headliner	Curtain Airbag, Headliner, Center Headrest
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Curtain Airbag, Headrest	Curtain Airbag, Center Headrest
Left Shoulder	Door Panel	Door Panel
Upper Torso	Side Airbag, Seatback	None
Lower Torso	Side Airbag, Seatback	Door Panel
Left Hip	Side Airbag	Door Panel, Seat Cushion
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	Fixed	No	Fixed
Seat Disengagement from Floor Pan	No	Fixed	No	Fixed
Seat Back Movement from Initial Position	No	Fixed	No	Fixed
Seat Back Collapse	No	Fixed	No	Fixed

POST-TEST STRUCTURAL OBSERVATIONS

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

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. 020165302
Test Date: 6/17/2015

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No			
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	
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		2670
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		395
Actual Impact Point (Aft of Front Axle)	mm		392
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	3
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	-16

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
Test Date: 6/17/2015

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Face	4115
Wheelbase of Framework Carriage	2588
CG Location aft of Front Axle	1138

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	406.0	283.3	
Right	kg	357.9	316.4	
Ratio	%	56.0	44.0	
Totals	kg	763.9	599.7	1363.5

SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.26
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.54
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.8
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27.2

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

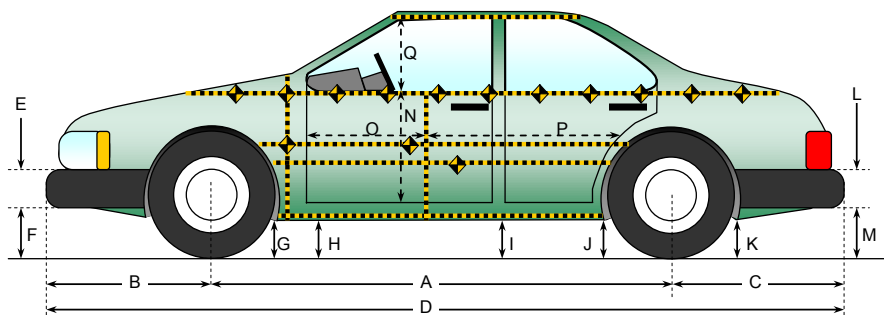
Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Left	131
B	Top of Bumper	533	800	Left	101
C	Mid-Level	686	800	Left	92
D	Top of Stack	813	800	Left	188

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No.
 Test Date:

020165302
6/17/2015



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

LEFT SIDE VIEW

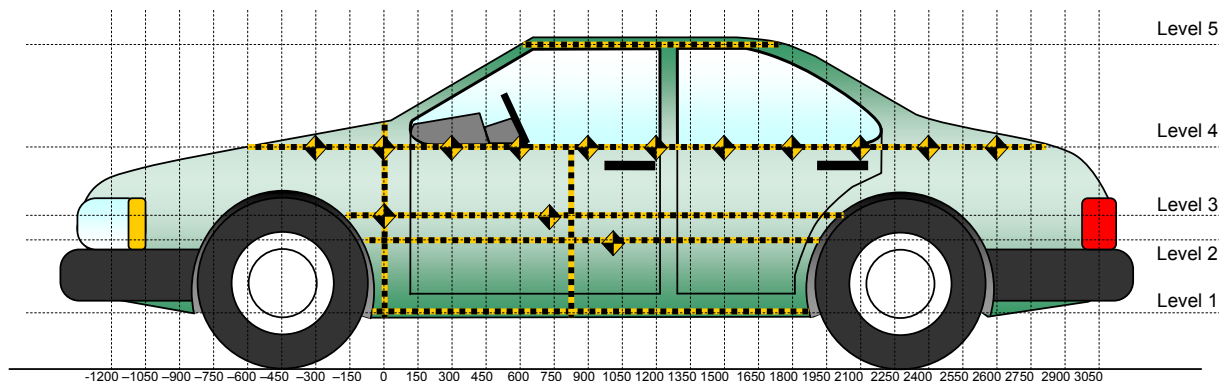
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2670	2685	-15
B	Front Axle to FSOV	1014	995	19
C	Rear Axle to RSOV	936	935	1
D	Total Length at Centerline	4620	4615	5
E	Front Bumper Thickness	140	140	0
F	Front Bumper Bottom to Ground	223	231	-8
G	Sill Height at Front Wheel Well	160	165	-5
H	Sill Height at Front Door Leading Edge	153	172	-19
I	Sill Height at B Pillar	164	200	-36
J1	Sill Height at Rear Wheel Well	161	189	-28
J2	Pinch Weld Height at Rear Wheel Well	152	178	-26
K	Sill Height Aft of Rear Wheel Well	226	225	1
L	Rear Bumper Thickness	120	120	0
M	Rear Bumper Bottom to Ground	282	270	12
N	Sill Height to Window Bottom Sill	710	645	65
O	Front Door Leading Edge to Impact CL	765	734	31
P	Rear Door Trailing Edge to Impact CL	1126	1087	39
Q	Front Window Opening	376	363	13
R	Right Side Length	3558	3558	0
S	Left Side Length	3558	3533	25
T	Vehicle Width at B Post	1742	1591	151

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015



All Measurements Shown in mm

LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	262	55	1050
2	Mid Door	475	205	1500
3	Occupant Hip Point	586	236	750
4	Window Sill	885	135	1500
5	Window Top	1325	8	1350

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

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050				610					605					-5	
-900				554					547					-7	
-750				494					488					-6	
-600				440					433					-7	
-450				389					384					-5	
-300				355					347					-8	
-150				329					331					2	
0			221	312				227	319				6	7	
150	245	217	225	306		255	216	367	322		10	-1	142	16	
300	246	227	225	294		277	362	409	350		31	135	184	56	
450	247	229	224	287		281	406	424	375		34	177	200	88	
600	245	229	222	277		291	423	434	406		46	194	212	129	
750	243	229	221	274		292	427	457	403		49	198	236	129	
900	243	227	220	272	489	294	414	448	397	487	51	187	228	125	-2
1050	244	227	220	272	480	299	418	418	391	482	55	191	198	119	2
1200	245	227	221	271	478	298	419	422	377	484	53	192	201	106	6
1350	247	229	223	271	480	298	417	448	404	488	51	188	225	133	8
1500	248	230	226	269	486	302	435	450	404	490	54	205	224	135	4
1650	250	232	228	268	491	298	429	451	389	493	48	197	223	121	2
1800	247	233	225	265	504	302	424	452	361	497	55	191	227	96	-7
1950		226	216	260	518		412	335	313	509		186	119	53	-9
2100		219		260	541		337		280	531		118		20	-10
2250				261					284					23	
2400				270					273					3	
2550				283					277					-6	

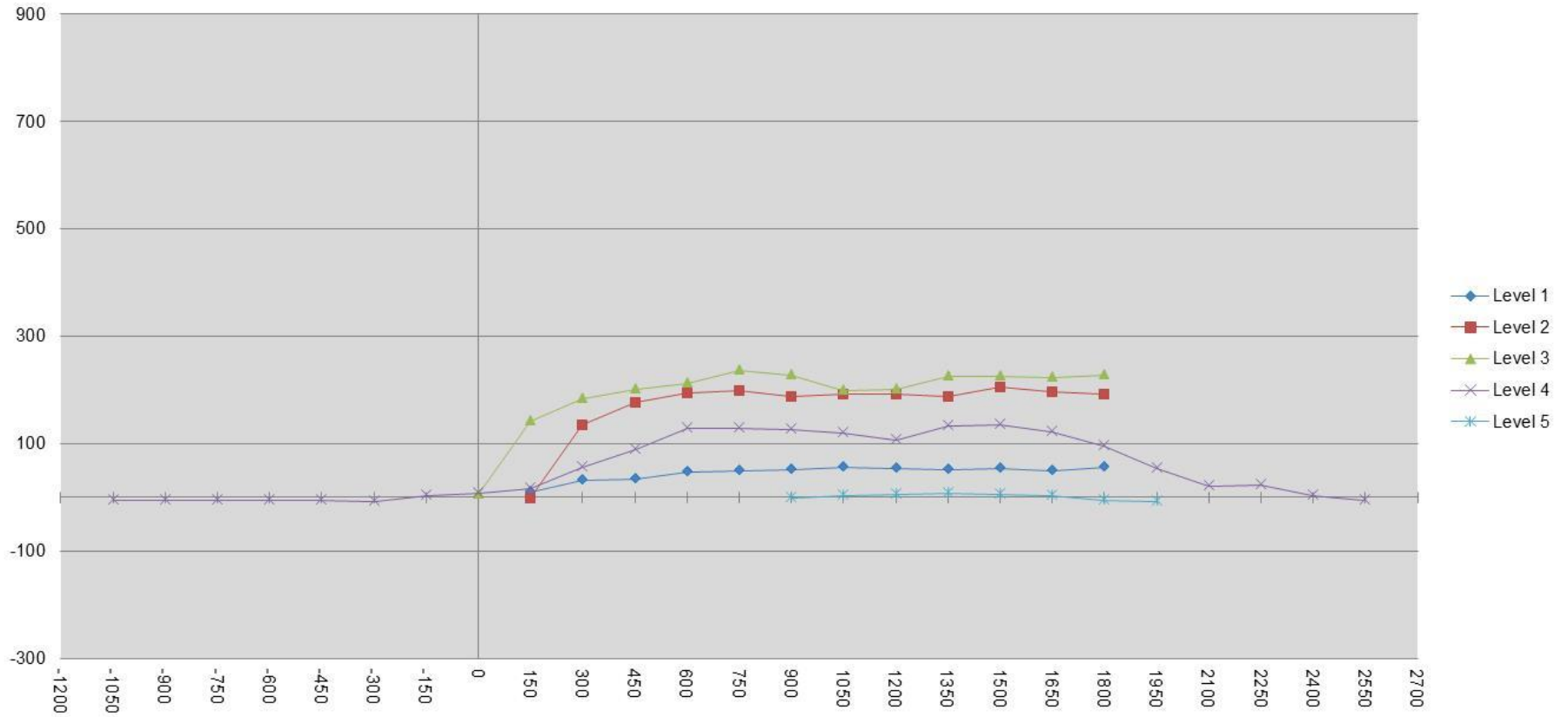
NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
Test Date: 6/17/2015

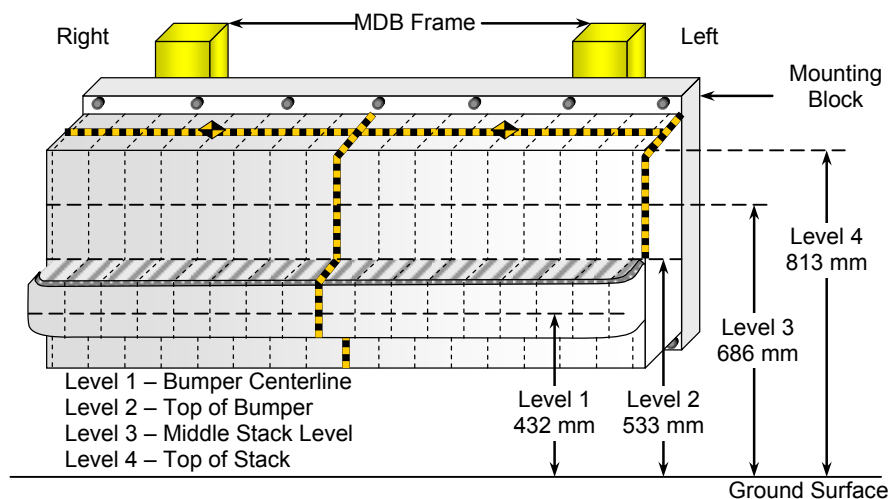
24



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015



FRONT VIEW

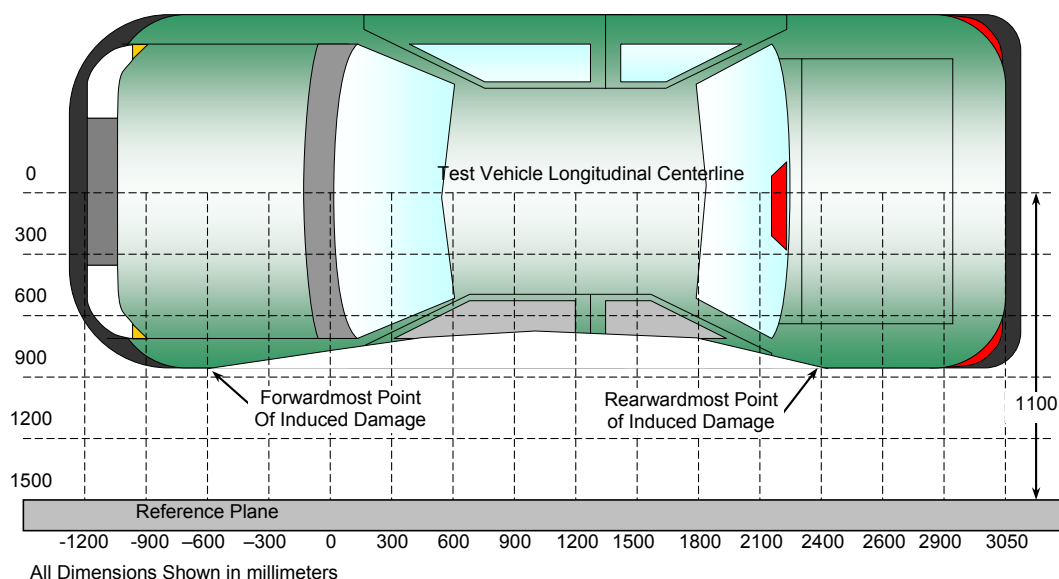
DEFORMABLE BARRIER STATIC CRUSH

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	85	61	46	47	46	69	100	63	41	30	33	35	41	47	71	71	131
3	50	33	20	20	27	50	70	63	40	24	16	15	16	16	34	56	101
2	70	66	65	66	67	65	60	64	55	54	56	61	66	72	75	83	92
1	155	143	160	166	168	178	168	159	152	147	147	149	153	154	156	174	188

DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015



TOP VIEW

VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2000	3	216	298	82
2	1610	3	228	453	225
3	1220	3	221	424	203
4	830	3	221	461	240
5	440	3	224	425	201
6	50	3	221	234	13

MDB DAMAGE PROFILE DISTANCES

DPD	Distance from Center of MDB	Level	Post-Test (mm)
1	800 mm right of center	1	155
2	480 mm right of center	1	166
3	160 mm right of center	1	168
4	160 mm left of center	1	147
5	480 mm left of center	1	154
6	800 mm left of center	1	188

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

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

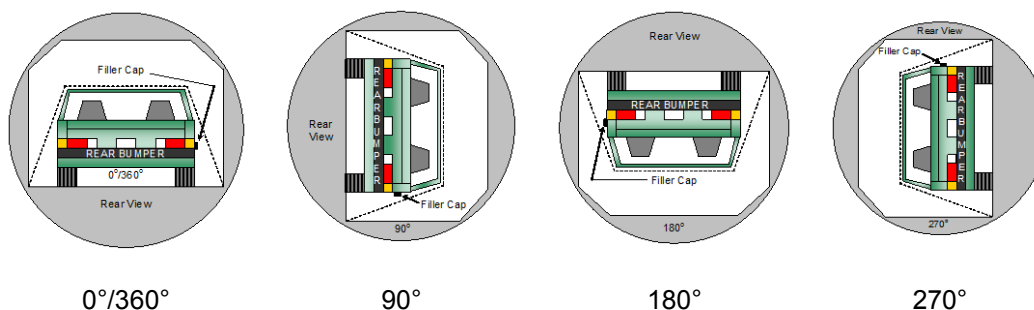
NHTSA No. O20165302
 Test Date: 6/17/2015

Test Time: 1:59 pm

Temperature: 21.5° C

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

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	121	300	421
90° to 180°	115	300	415
180° to 270°	114	300	414
270° to 360°	109	300	409

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

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

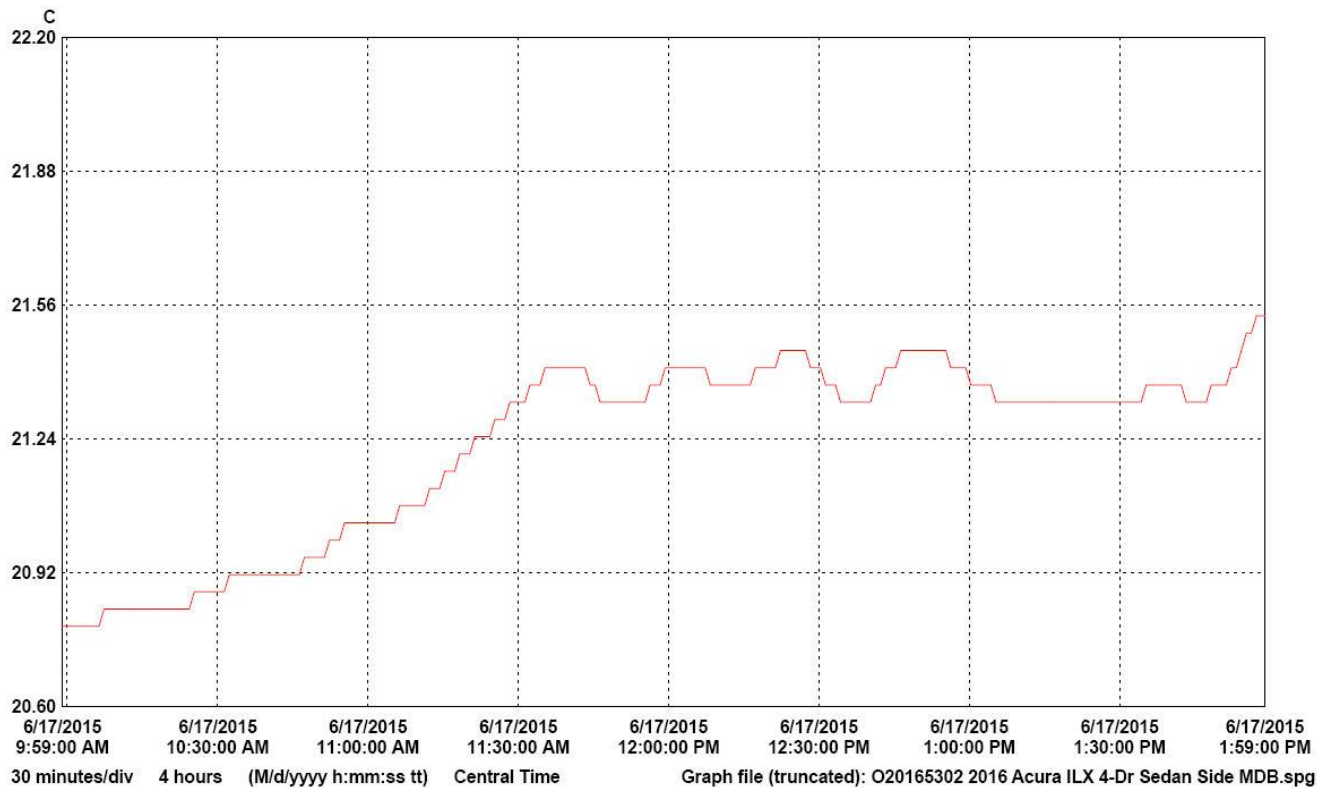
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 15
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2016 Acura ILX AcuraWatch Plus 4-Dr Sedan
 Test Program: NCAP Side MDB Impact Test

NHTSA No. O20165302
 Test Date: 6/17/2015



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	05122082	Crash	1		21.53	21.23	20.79	C	Temperature	05122082_Crash.spl

**APPENDIX A
PHOTOGRAPHS**

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Photo No. 001 - As Delivered Right Front Three-Quarter View of Test Vehicle



Photo No. 002 - As Delivered Left Rear Three-Quarter View of Test Vehicle

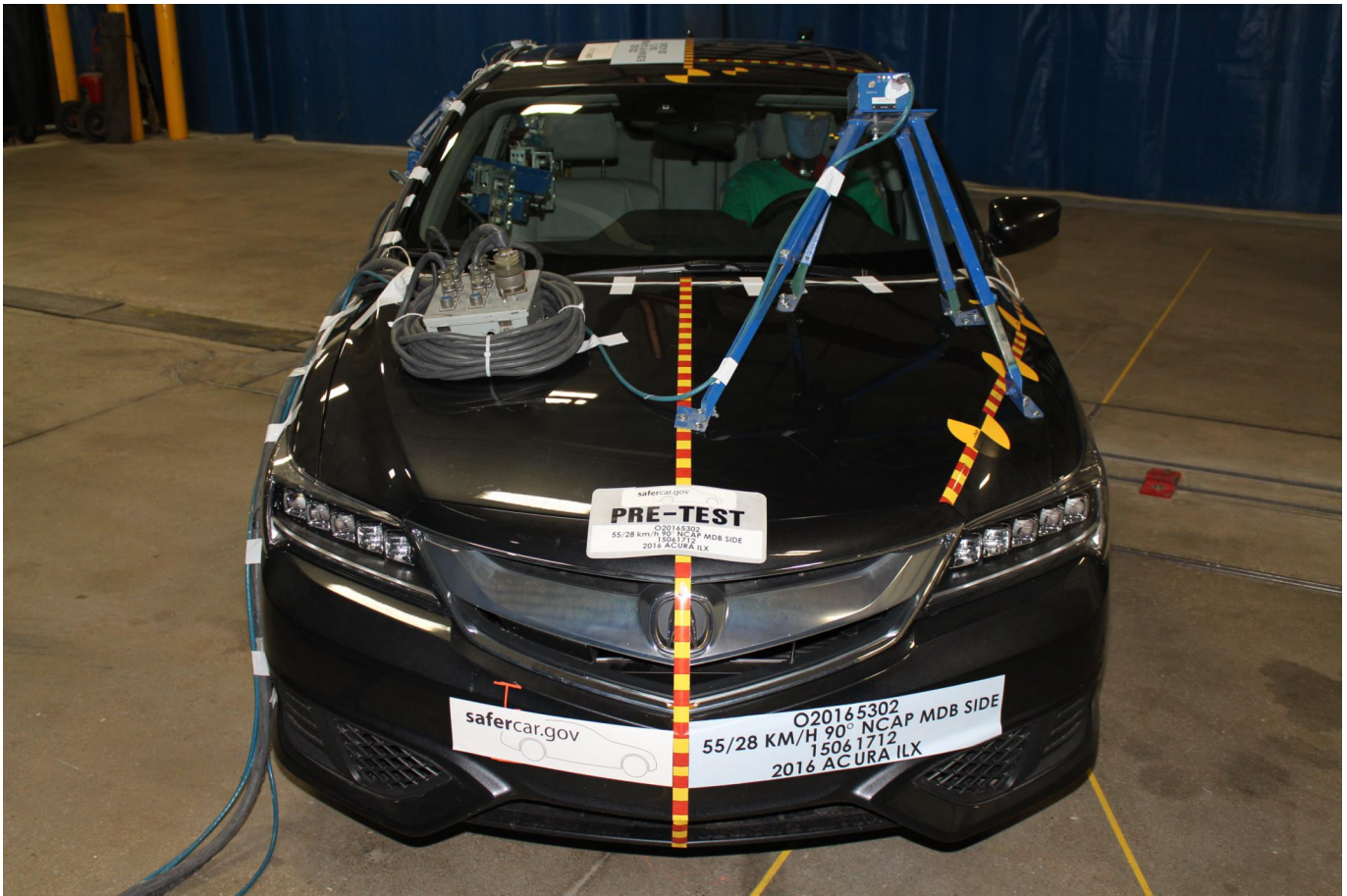


Photo No. 003 - Pre-Test Frontal View of Test Vehicle

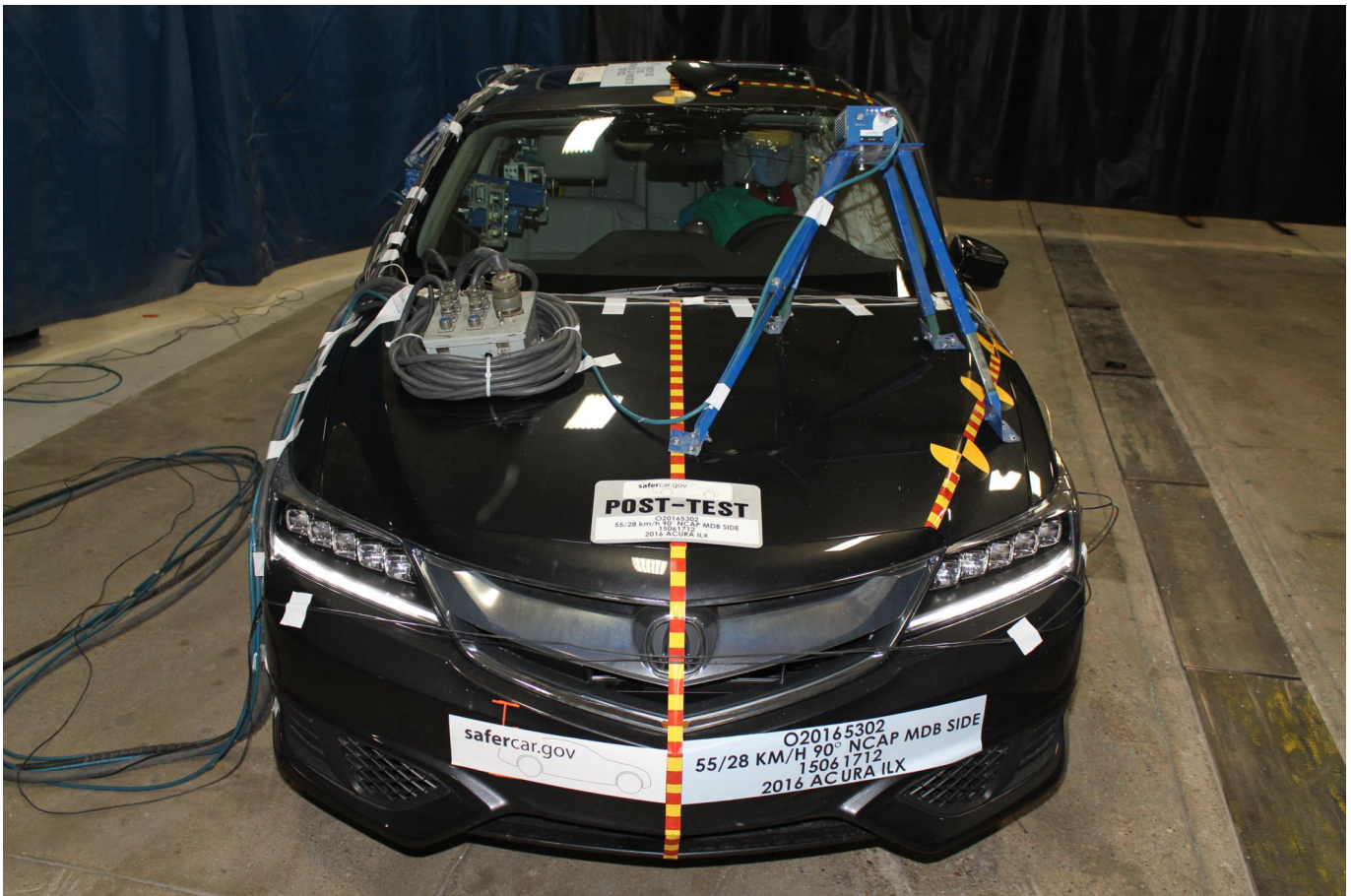


Photo No. 004 - Post-Test Frontal View of Test Vehicle



Photo No. 005 - Pre-Test Left Front Three-Quarter View of Test Vehicle



Photo No. 006 - Post-Test Left Front Three-Quarter View of Test Vehicle



Photo No. 007 - Pre-Test Left Side View of Test Vehicle



Photo No. 008 - Post-Test Left Side View of Test Vehicle



Photo No. 009 - Pre-Test Left Three-Quarter Rear View of Test Vehicle



Photo No. 010 - Post-Test Left Three-Quarter Rear View of Test Vehicle



Photo No. 011 - Pre-Test Rear View of Test Vehicle



Photo No. 012 - Post-Test Rear View of Test Vehicle



Photo No. 013 - Pre-Test Right Side View of Test Vehicle



Photo No. 014 - Post-Test Right Side View of Test Vehicle



Photo No. 015 - Pre-Test Overhead View of Test Area



Photo No. 016 - Post-Test Overhead View of Test Area



Photo No. 017 - Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle



Photo No. 018 - Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle



Photo No. 019 - Pre-Test Close-Up View of Impact Point Target



Photo No. 020 - Post-Test Close-Up View of Impact Point Target



Photo No. 021 - Pre-Test Left Front Door Latch Close-Up



Photo No. 022 - Post-Test Left Front Door Latch Close-Up



Photo No. 023 - Pre-Test Left Rear Door Latch Close-Up



Photo No. 024 - Post-Test Left Rear Door Latch Close-Up



Photo No. 025 - Pre-Test Front Close-Up View of Driver Dummy



Photo No. 026 - Post-Test Front Close-Up View of Driver Dummy



Photo No. 027 - Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking

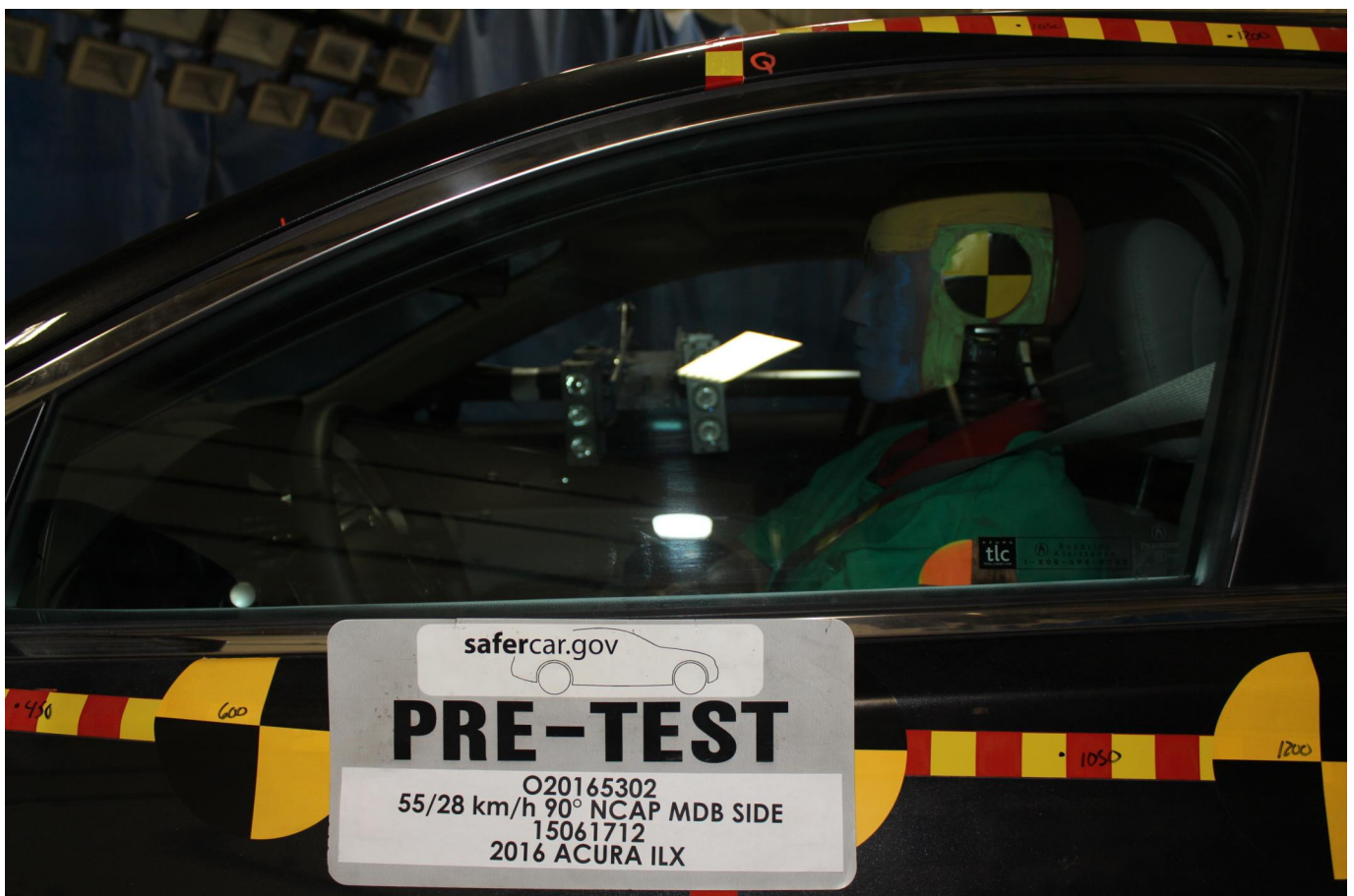


Photo No. 028 - Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



Photo No. 029 - Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



Photo No. 030 - Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



Photo No. 031 - Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



Photo No. 032 - Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



Photo No. 033 - Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



Photo No. 034 - Pre-Test Placement of Driver Dummy's Feet



Photo No. 035 - Pre-Test View of Belt Anchorage for Driver Dummy



Photo No. 036 - Pre-Test Left Side View of Steering Wheel



Photo No. 037 - Pre-Test View of Disengaged Parking Brake



Photo No. 038 - Pre-Test View of Parking Brake

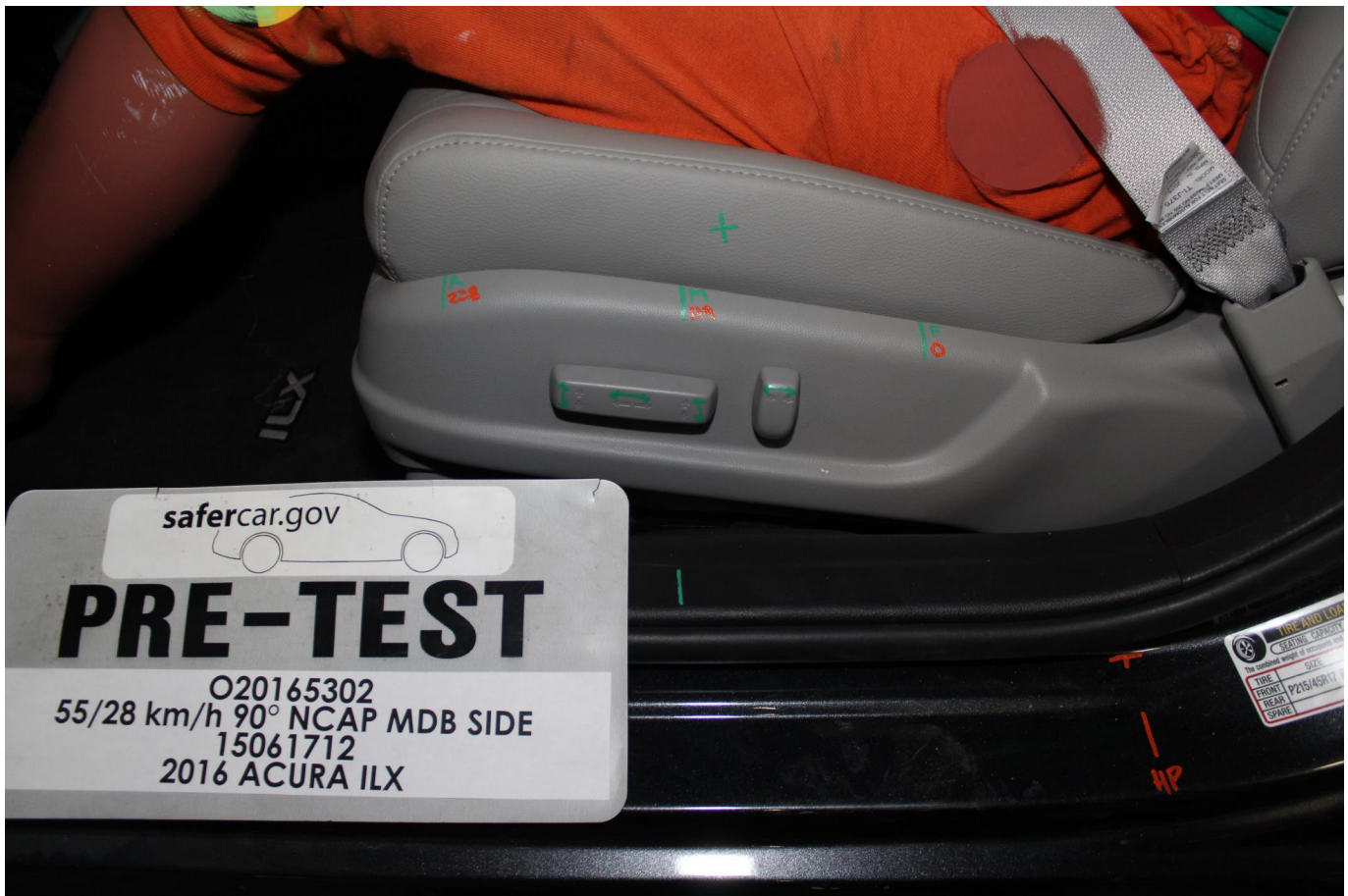


Photo No. 039 - Pre-Test Close-Up Left Side View of Driver Seat Track



Photo No. 040 - Pre-Test Close-Up Left Side View of Driver Seat Back



Photo No. 041 - Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Photo No. 042 - Pre-Test Driver Dummy and Door Clearance View



Photo No. 043 - Post-Test Driver Dummy and Door Clearance View



Photo No. 044 - Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Photo No. 045 - Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Photo No. 046 - Pre-Test Driver Inner Door Panel View



Photo No. 047 - Post-Test Driver Inner Door Panel View



Photo No. 048 - Post-Test Driver Dummy Close-up Head Contact with Vehicle Interior View



Photo No. 049 - Post-Test Driver Dummy Close-up Head Contact with Side Airbag View



Photo No. 050 - Post-Test Driver Dummy Close-up Torso Contact with Vehicle Interior View



Photo No. 051 - Post-Test Driver Dummy Close-up Torso Contact with Side Airbag View



Photo No. 052 - Post-Test Driver Dummy Close-up Pelvis Contact with Vehicle Interior View



Photo No. 053 - Post-Test Driver Dummy Close-up Pelvis Contact with Side Airbag View



Photo No. 054 - Post-Test Driver Dummy Close-up Knee Contact View



Photo No. 055 - Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking



Photo No. 056 - Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View

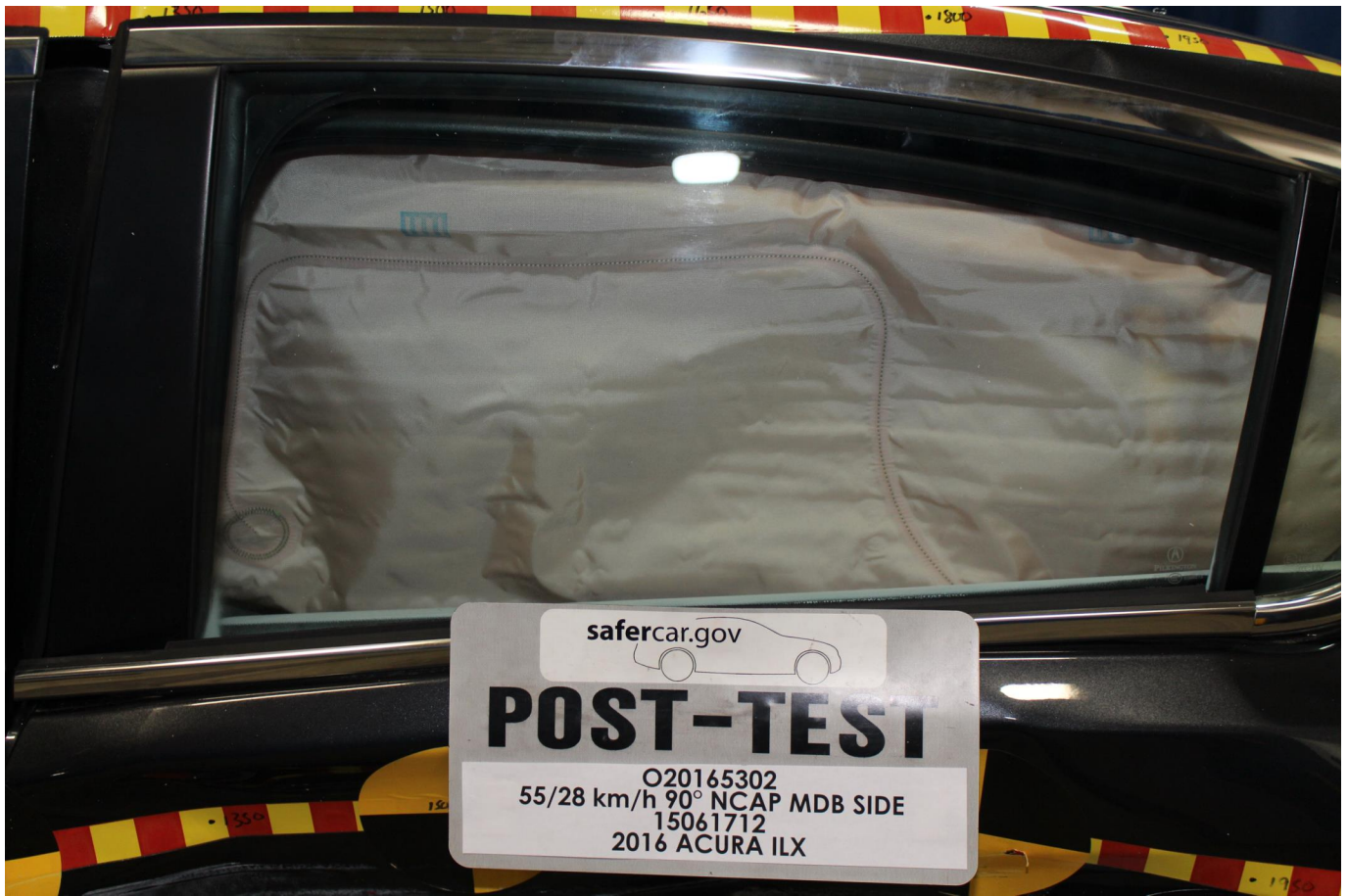


Photo No. 057 - Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Photo No. 058 - Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



Photo No. 059 - Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head

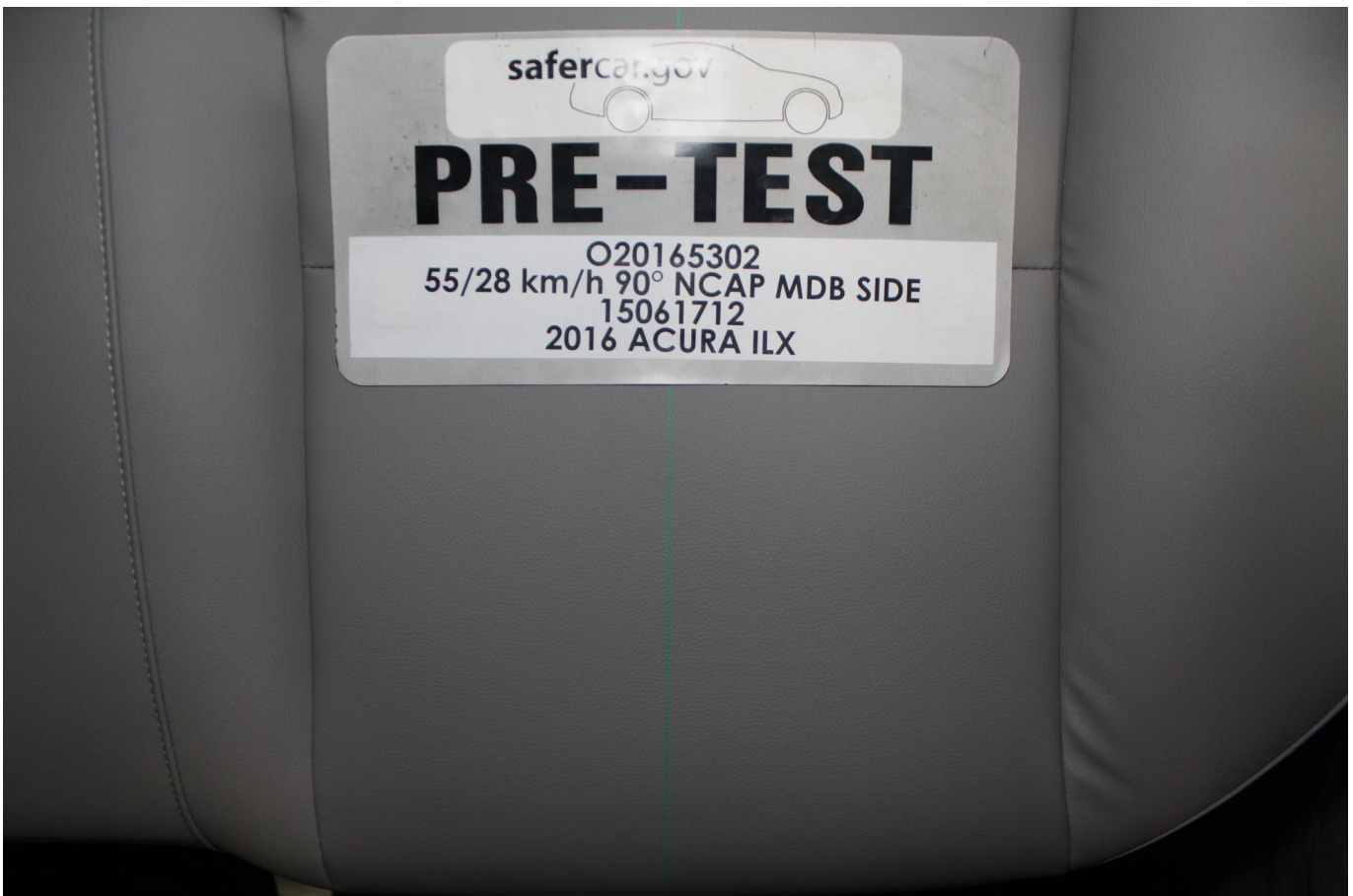


Photo No. 060 - Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



Photo No. 061 - Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



Photo No. 062 - Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck



Photo No. 063 - Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Photo No. 064 - Pre-Test Placement of Rear Passenger Dummy's Feet



Photo No. 065 - Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Photo No. 066 - Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



Photo No. 067 - Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



Photo No. 068 - Pre-Test Close-up View of Rear Passenger Seat Back or Head Restraint



Photo No. 069 - Pre-Test Rear Passenger Dummy and Door Clearance View

PHOTOGRAPH NOT AVAILABLE

Photo No. 070 - Post-Test Rear Passenger Dummy and Door Clearance View



Photo No. 071 - Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant



Photo No. 072 - Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant



Photo No. 073 - Pre-Test Rear Passenger Inner Door Panel View



Photo No. 074 - Post-Test Rear Passenger Inner Door Panel View



Photo No. 075 - Post-Test Rear Passenger Dummy Close-up Head Contact with Vehicle Interior View



Photo No. 076 - Post-Test Rear Passenger Dummy Close-up Head Contact with Side Airbag View



Photo No. 077 - Post-Test Rear Passenger Dummy Close-up Torso Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Photo No. 078 - Post-Test Rear Passenger Dummy Close-up Torso Contact with Side Airbag View



Photo No. 079 - Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Photo No. 080 - Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Side Airbag View



Photo No. 081 - Post-Test Rear Passenger Dummy Close-up Knee Contact View



Photo No. 082 - Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Photo No. 083 - Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Photo No. 084 - Pre-Test Front View of MDB Impactor Face



Photo No. 085 - Post-Test Front View of MDB Impactor Face



Photo No. 086 - Pre-Test Top View of MDB Impactor Face



Photo No. 087 - Post-Test Top View of MDB Impactor Face



Photo No. 088 - Pre-Test Left Side View of MDB Impactor Face



Photo No. 089 - Post-Test Left Side View of MDB Impactor Face



Photo No. 090 - Pre-Test Right Side View of MDB Impactor Face



Photo No. 091 - Post-Test Right Side View of MDB Impactor Face

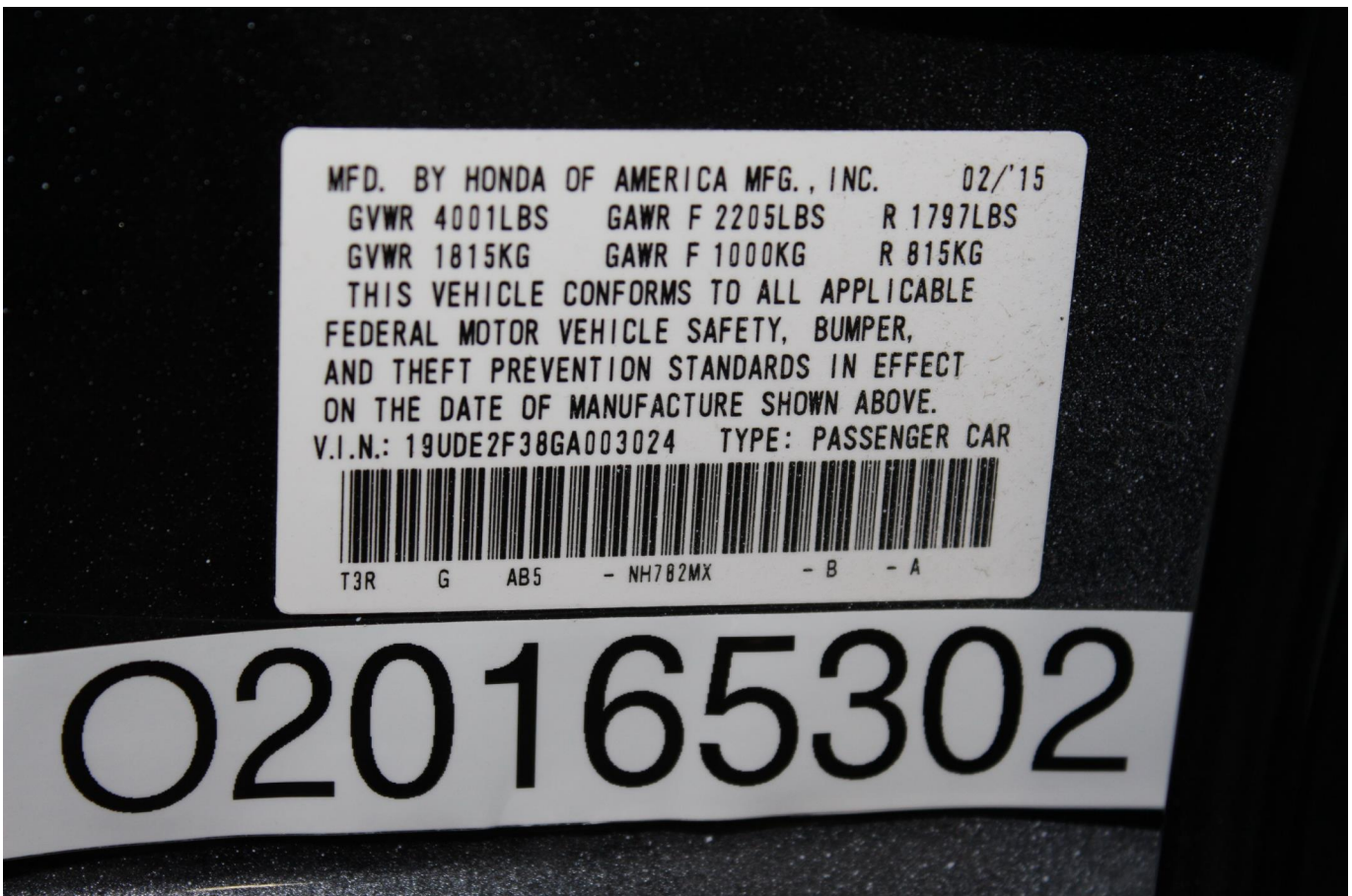


Photo No. 092 - Close-Up View of Vehicle's Certification Label



Photo No. 093 - Close-Up View of Vehicle's Tire Information Placard or Label



Photo No. 094 - Pre-Test Ballast View



Photo No. 095 - Post-Test Primary and Redundant Speed Trap Read-Out



Photo No. 096 - FMVSS No. 301 Static Rollover 0 Degrees

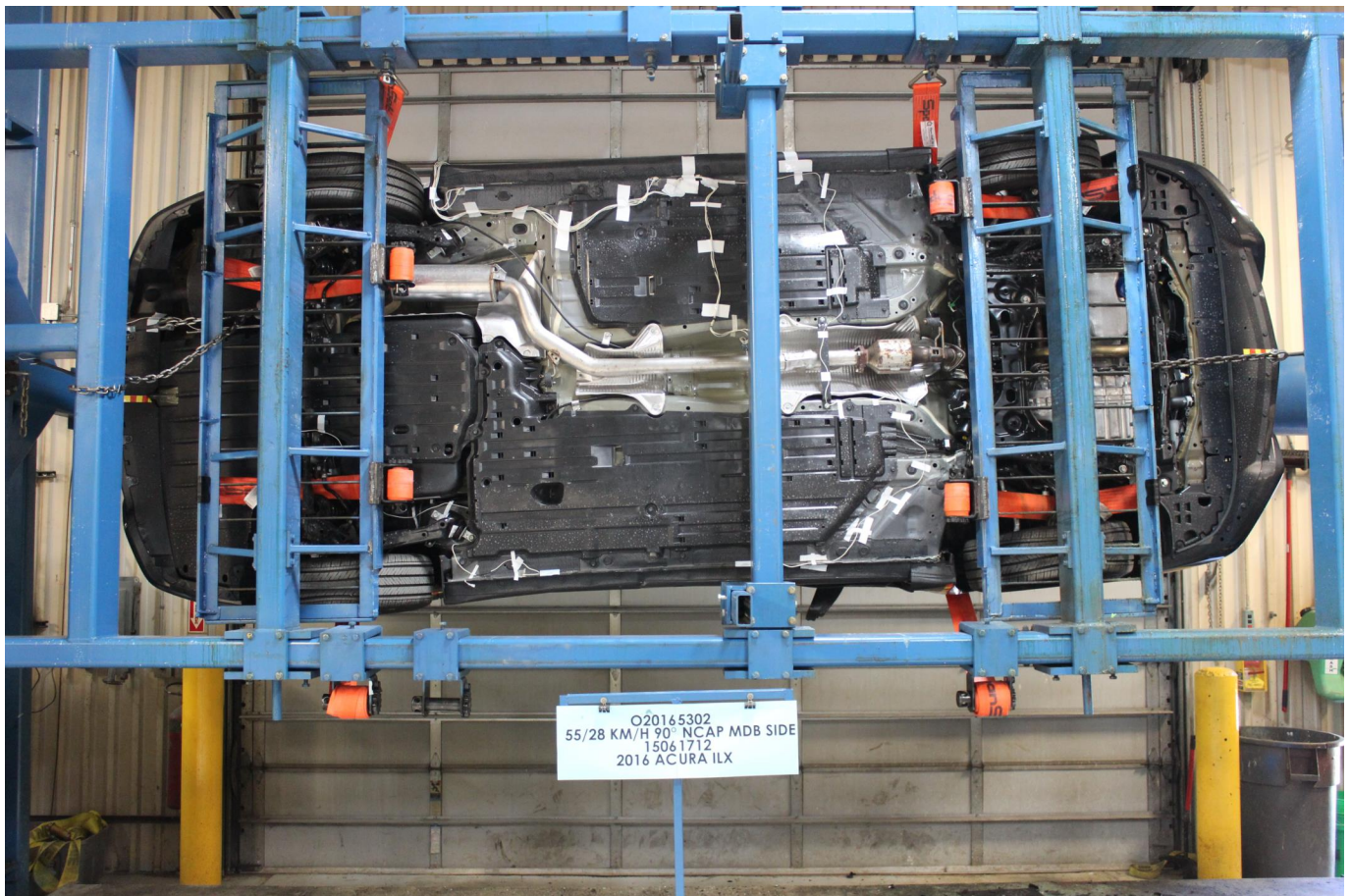


Photo No. 097 - FMVSS No. 301 Static Rollover 90 Degrees

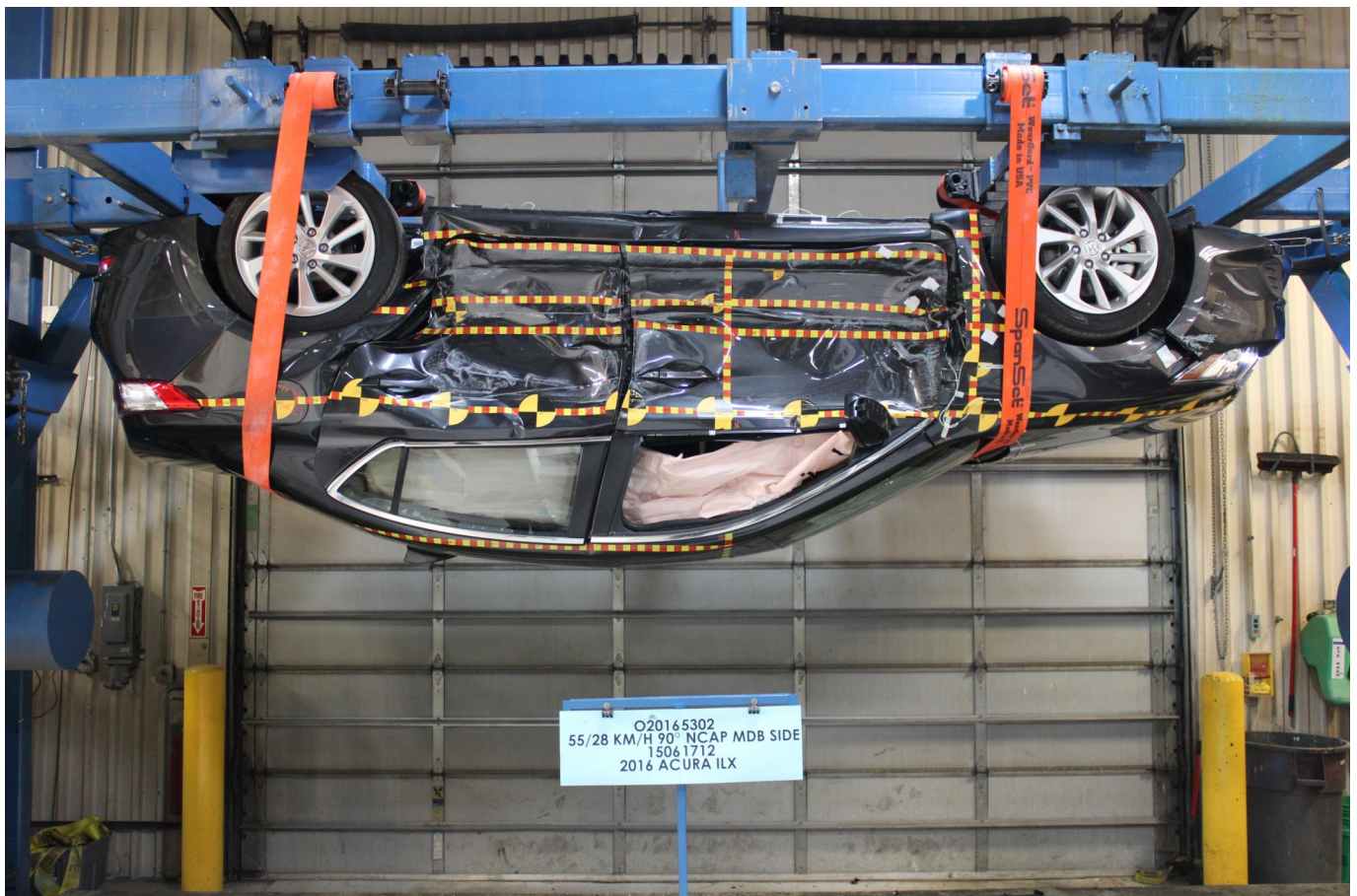


Photo No. 098 - FMVSS No. 301 Static Rollover 180 Degrees



Photo No. 099 - FMVSS No. 301 Static Rollover 270 Degrees



Photo No. 100 - FMVSS No. 301 Static Rollover 360 Degrees



Photo No. 101 - Impact Event

2016 ILX ACURAWATCH PLUS

EXT: GRAPHITE LUSTER M. ENGINE NUMBER: K24V7-1003503
INT: GRAYSTONE

STANDARD EQUIPMENT AT NO EXTRA COST

- TECHNICAL FEATURES***
 - 201hp 2.4-Liter DOHC 16-Valve
 - i-VTEC 4-Cylinder Engine
 - 8-Speed Dual-Clutch Transmission
 - 4-Wheel Disc Brakes
 - 4-Wheel Independent Suspension
 - Electric Power-Assisted Rack-and-Pinion Steering
 - Immobilizer Theft-Deterrent System
- SAFETY FEATURES***
 - Driver's and Front Passenger's Dual-Stage Airbags (SRS)
 - Driver's and Front Passenger's Side Airbags
 - Vehicle Stability Assist (VSA)
 - Anti-Lock Braking System (ABS)
 - Electronic Brake Distribution (EBD)
 - Brake Assist
 - Tire Pressure Monitoring System
 - LED Day Time Running Lights
 - ACE Body Structure
 - LATCH System for Child Seats

- INTERIOR FEATURES***
 - Acura Sound System with 6 Speakers and AM/FM/In-Dash/CD
 - USB Audio Interface
 - Driver's 8-Way Power Seat
 - Heated Front Seats
 - Multi-View Rear Camera Display
 - Dual-Zone Auto Climate Control with Air Filtration System
 - Push-Button Ignition
 - Bluetooth Hands-FreeLink
 - Steering Wheel-Mounted Controls
 - Power Windows and Door Locks
- EXTERIOR FEATURES***
 - Power Moonroof with Tilt Feature
 - 17" x 7.5" Alloy Wheels
 - P215/45 R17 All-Season Tires
 - Jewel Eye LED Headlights
 - LED Illuminated Tail Lights
 - Heated Power Door Mirrors
 - Tire Sealant and Inflator Kit (in place of spare tire)
 - Keyless Access System with Smart Entry
- ACURAWATCH PLUS PACKAGE***
 - Adaptive Cruise Control
 - Collision Mitigation Braking
 - Road Departure Mitigation
 - Forward Collision Warning
 - Lane Keeping Assist System
 - Lane Departure Warning
 - Color Meter Display Screen

Manufacturer's Suggested Retail Price **\$29,200.00**

MSRP Includes:
-6YR/70K Mile Powertrain Warranty
-4YR/50K Mile Ltd Vehicle Warranty
-Full Tank of Fuel

Destination and Handling 920.00

TOTAL VEHICLE PRICE (includes Pre-Delivery Service)
\$30,120.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

ACURA OF BROOKFIELD
19180 BLUEMOUND RD
WAUKESHA, WI 53186

PORT OF ENTRY: MARYSVILLE
DELIVERY POINT: CHICAGO

ROW/SPACE: 608-002
TRANS METHOD: TRUCK

VIN: 19UDE2F38GA003024

ORIG. DLR: 251015
REF NO: 40698
HN CODE: AL-6420
EMISSION: 50 STATE
CONTROL NO: 767190
DEALER: 251015

Fuel Economy and Environment

Fuel Economy
29 MPG
combined city highway
3.4 gallons per 100 miles

Compact cars range from 14 to 116 MPG. The best vehicle rates 115 MPG.

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

Annual fuel cost \$1,700

Fuel Economy & Greenhouse Gas Rating (tailpipe only) Smog Rating (tailpipe only)
1 7 10 1 5 10
Best Worst

This vehicle emits 395 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

fuelconomy.gov
Calculate personalized estimates and compare vehicles

PARTS CONTENT INFORMATION
FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: **60 %**
Major Sources of Foreign Parts Content: **JAPAN 25 %**

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

FOR THIS VEHICLE
Final Assembly Point: **MARYSVILLE, OHIO USA**
Country of Origin: Engine: **U.S.**
Transmission: **JAPAN**

GOVERNMENT 5-STAR SAFETY RATING

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

Crash	Driver Passenger	Not Rated
Frontal	Not Rated	Not Rated
Side	Front seat Rear seat	Not Rated Not Rated
Rollover	Not Rated	Not Rated

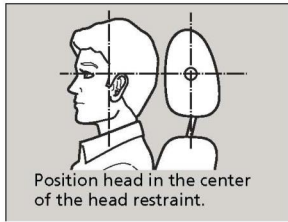
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.
Based on the risk of injury in a side impact. Should ONLY be compared to other vehicles of similar size and weight.
Based on the risk of rollover in a single vehicle crash.

Star Ratings range from 1 to 5 stars (**) with 5 being the highest.**
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

This vehicle is equipped with a front bumper of a type that has been tested at an impact speed of 5 miles per hour, and a rear bumper of a type that has been tested at an impact speed of 2.5 miles per hour, resulting in no damage to the vehicle's body and safety systems and minimal damage to the bumper and attachment hardware. "Minimal damage to the bumper" means minor cosmetic damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the vehicle will require repair after a low-speed collision. This vehicle exceeds the current federal bumper standard of 2.5 miles per hour.

Photo No. 102 - Monroney Label

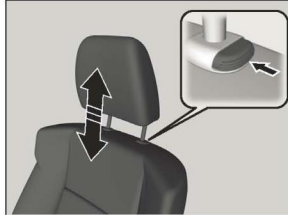
■ Adjusting the Head Restraints



Your vehicle is equipped with head restraints in all seating positions.

Head restraints are most effective for protection against whiplash and other rear-impact crash injuries when the center of the back of the occupant's head rests against the center of the restraint. The tops of the occupant's ears should be level with the center height of the restraint.

■ Adjusting the front and rear outer head restraint positions



To raise the head restraint: Pull it upward.
To lower the head restraint: Push it down while pressing the release button.

►► Adjusting the Head Restraints

⚠ WARNING

Improperly positioning head restraints reduces their effectiveness and increases the likelihood of serious injury in a crash.

Make sure head restraints are in place and positioned properly before driving.

In order for the head restraint system to work properly:

- Do not hang any items on the head restraints, or from the restraint legs.
- Do not place any object between an occupant and the seat-back.
- Install each restraint in its proper location.

Controls

Continued

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Photo No. 103 - 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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Figure No. 1.	Driver Head Acceleration (X) Primary vs. Time	B-1
Figure No. 2.	Driver Head Acceleration (Y) Primary vs. Time	B-1
Figure No. 3.	Driver Head Acceleration (Z) Primary vs. Time	B-1
Figure No. 4.	Driver Head Resultant Acceleration Primary vs. Time	B-1
Figure No. 5.	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
Figure No. 6.	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
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Figure No. 18.	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-6
Figure No. 19.	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-6
Figure No. 20.	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-6
Figure No. 21.	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-6
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Figure No. 23.	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-7
Figure No. 24.	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

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

Passenger Head Angular Velocity (X)
Passenger Head Angular Velocity (Y)
Passenger Head Angular Velocity (Z)
Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

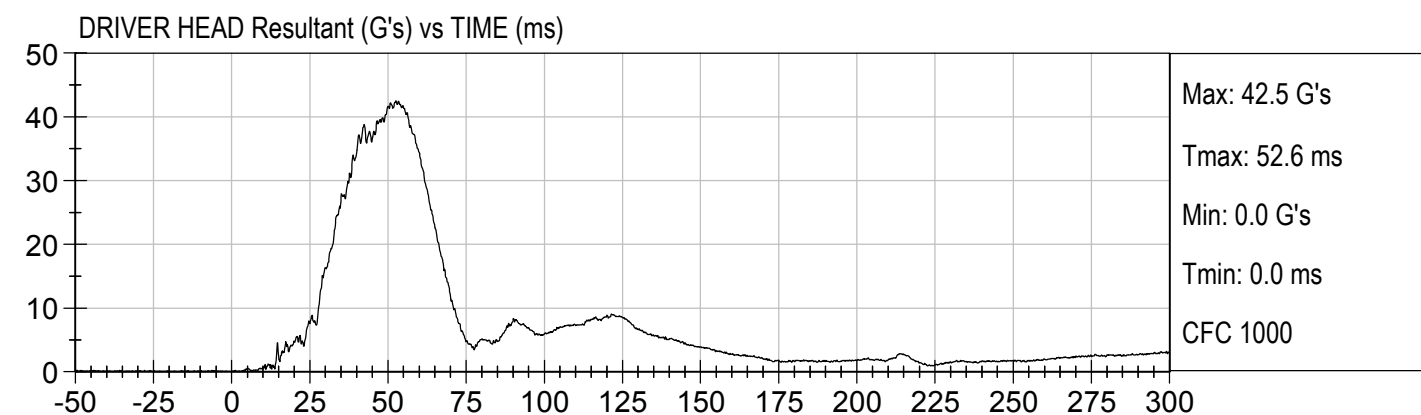
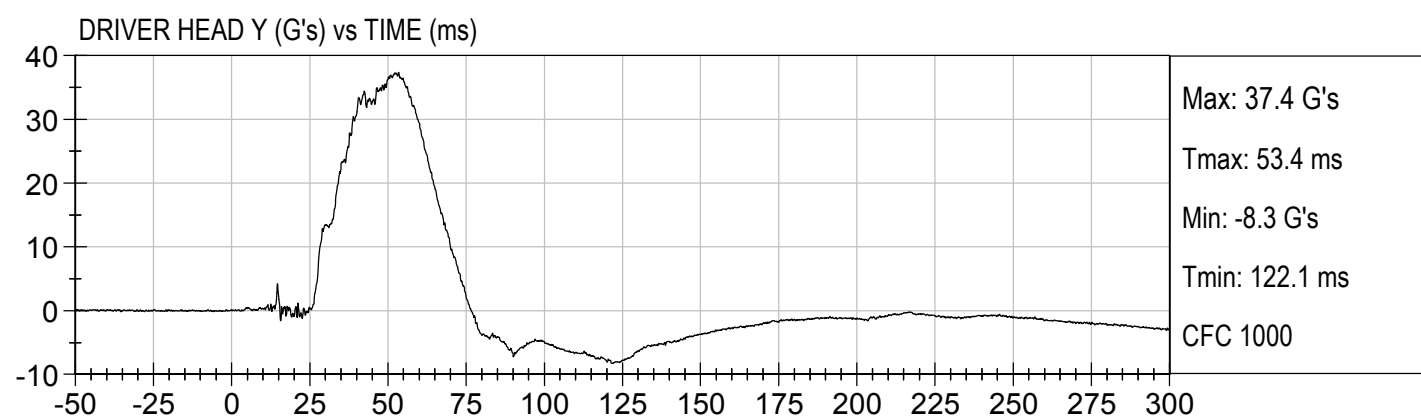
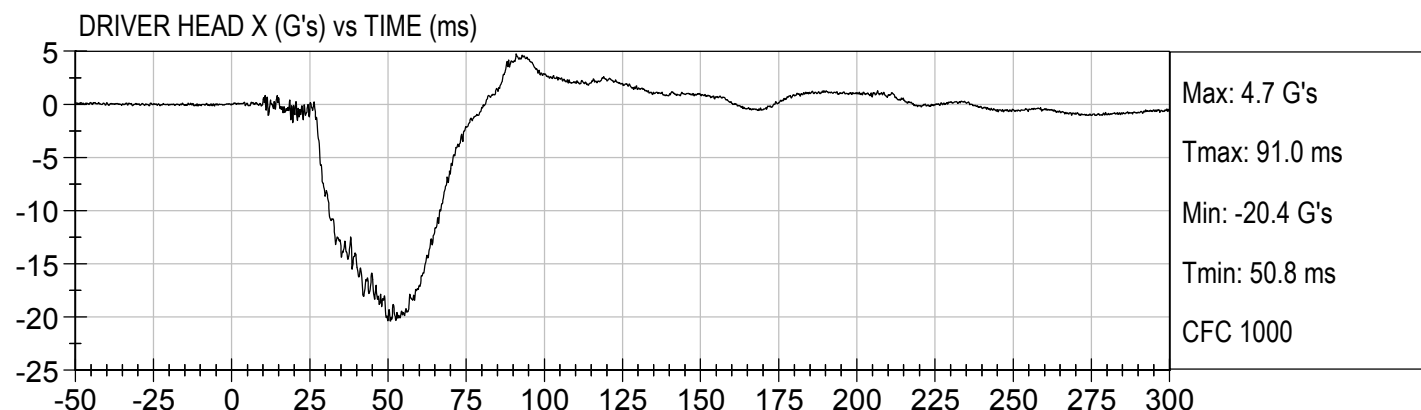
MDB Center of Gravity Acceleration (Z)

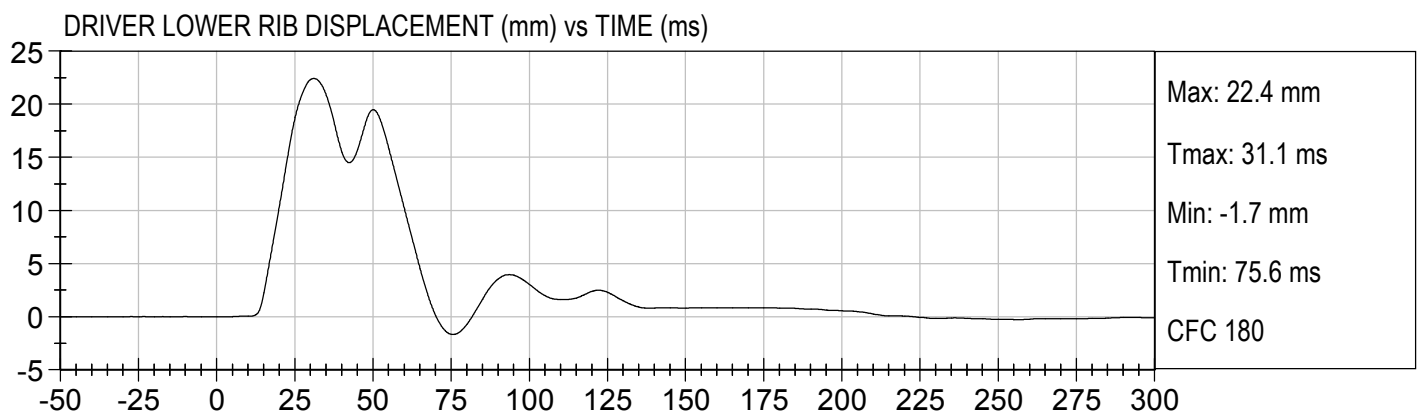
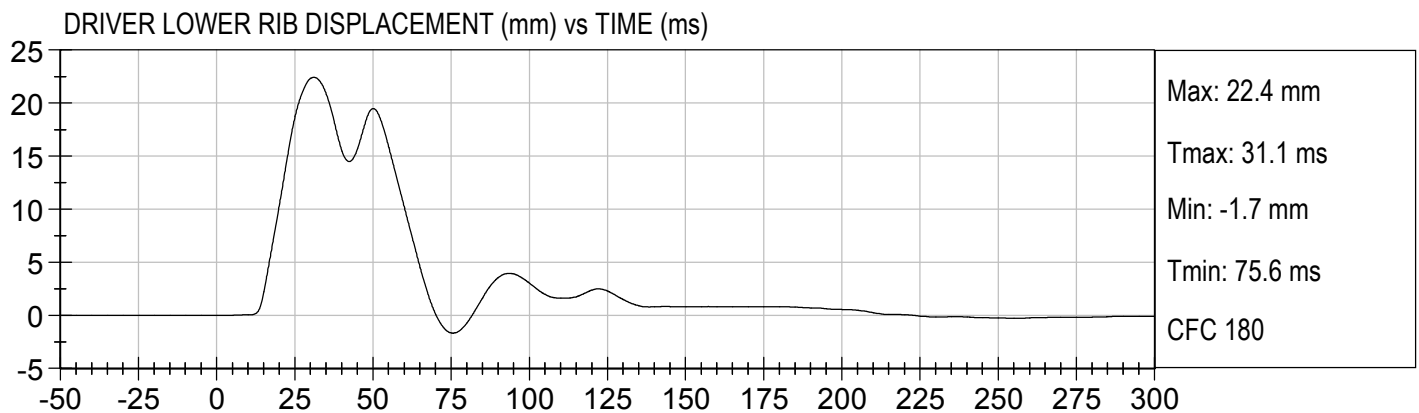
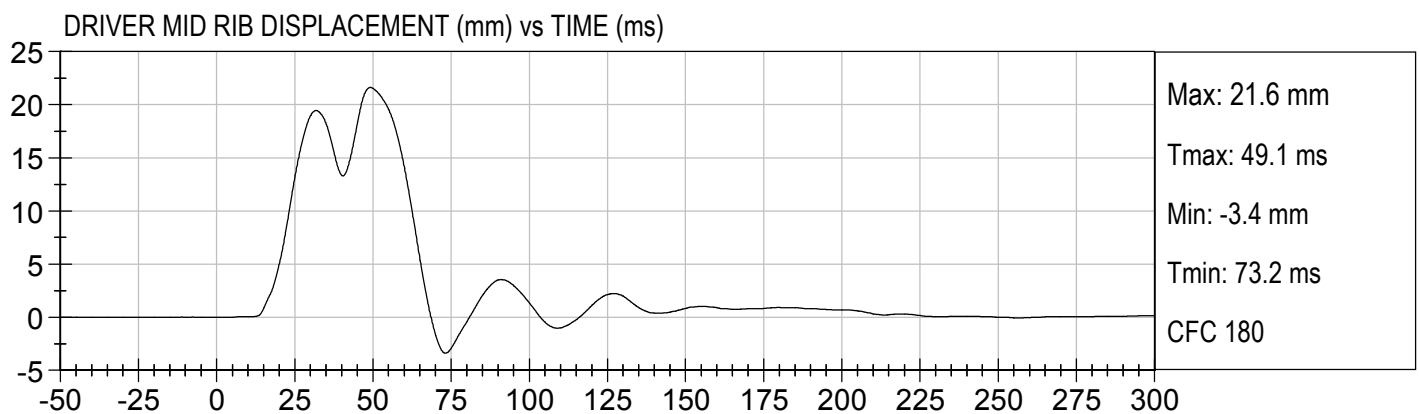
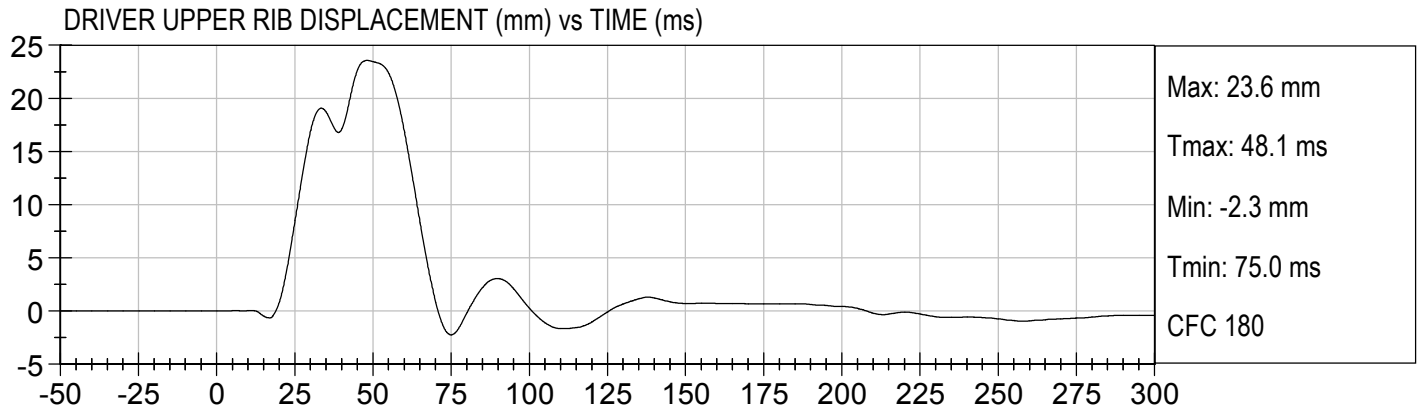
MDB Rear Acceleration (X)

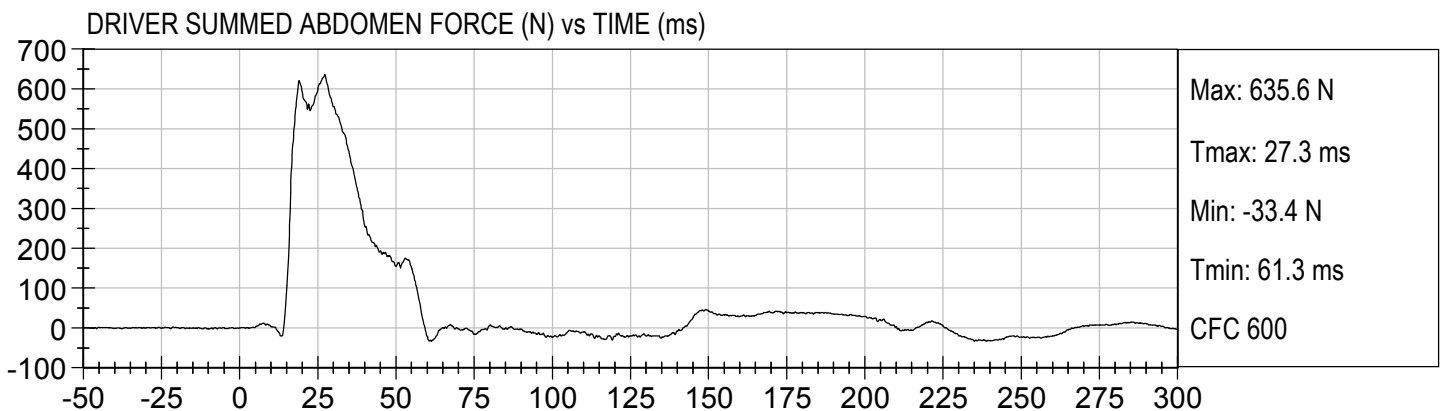
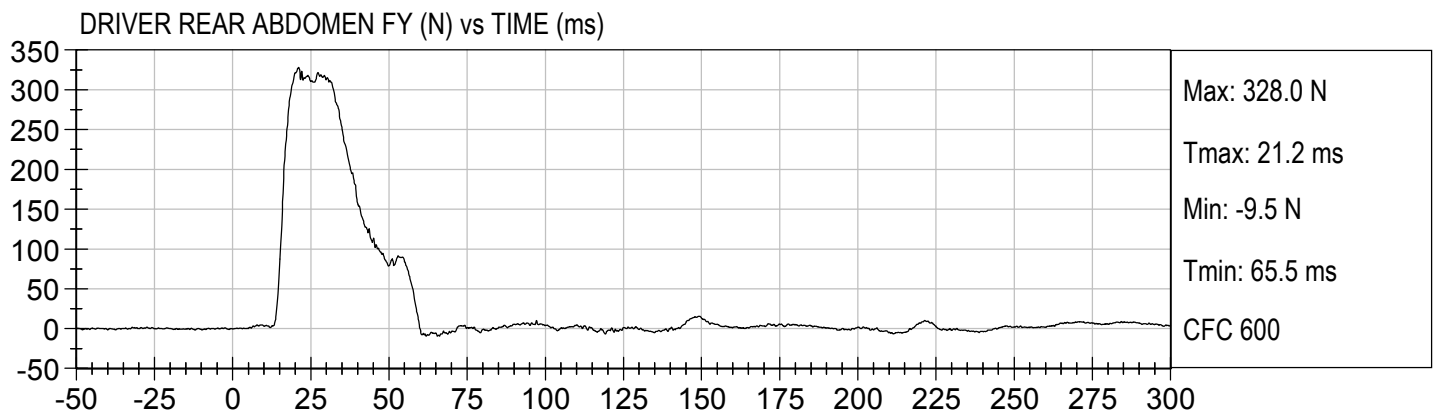
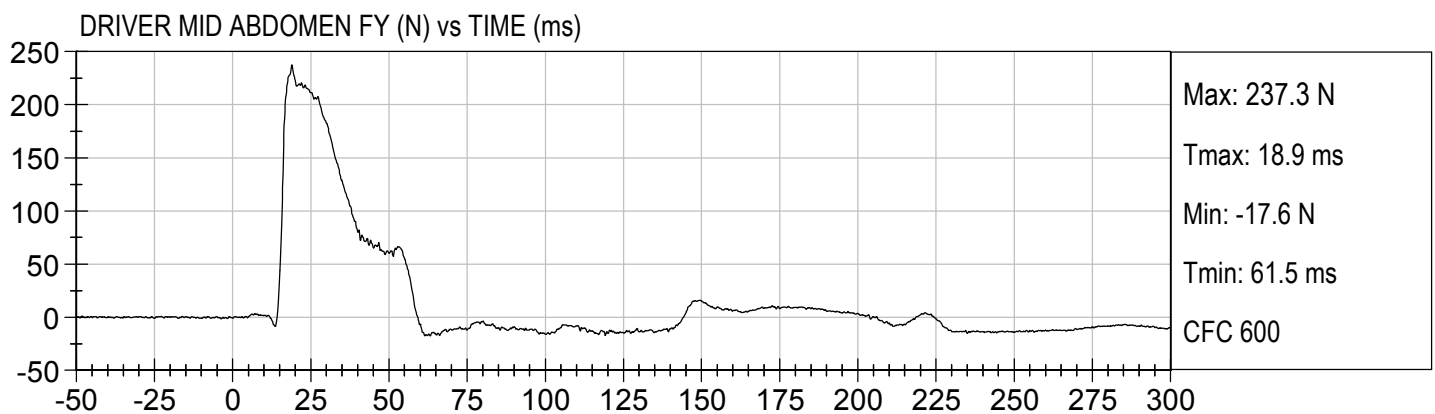
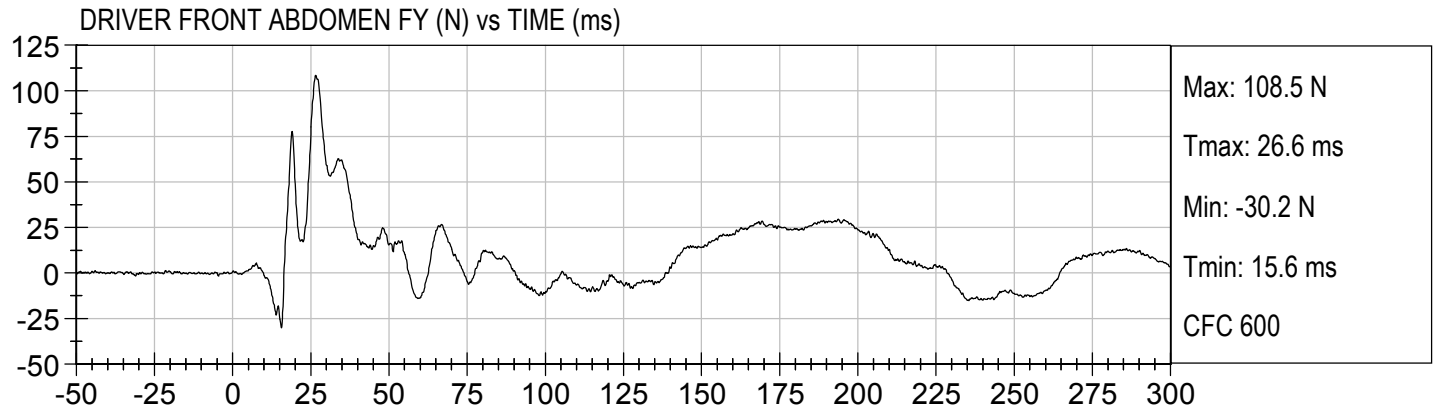
MDB Rear Acceleration (Y)

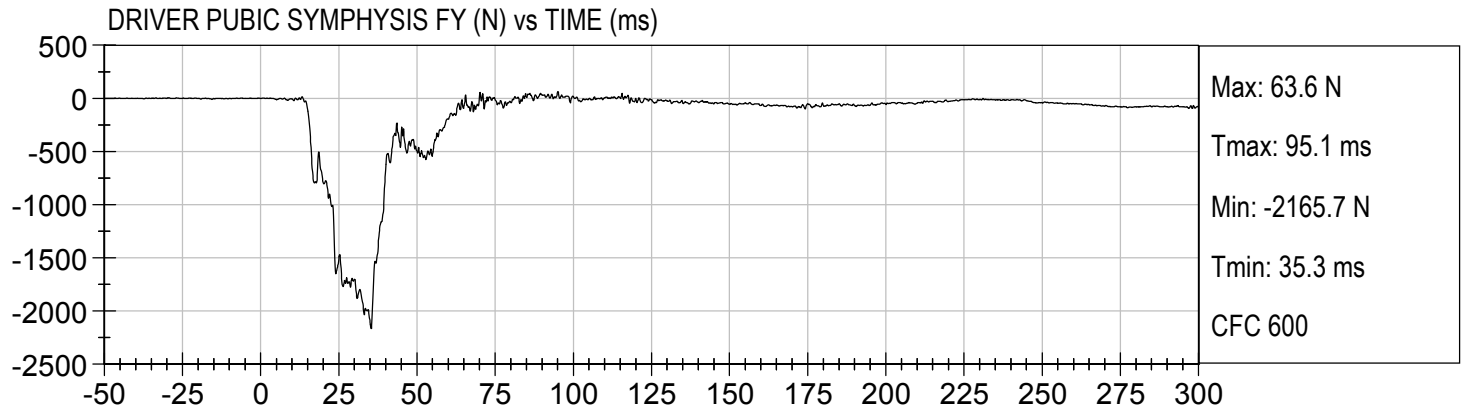
Left MDB Contact Switch

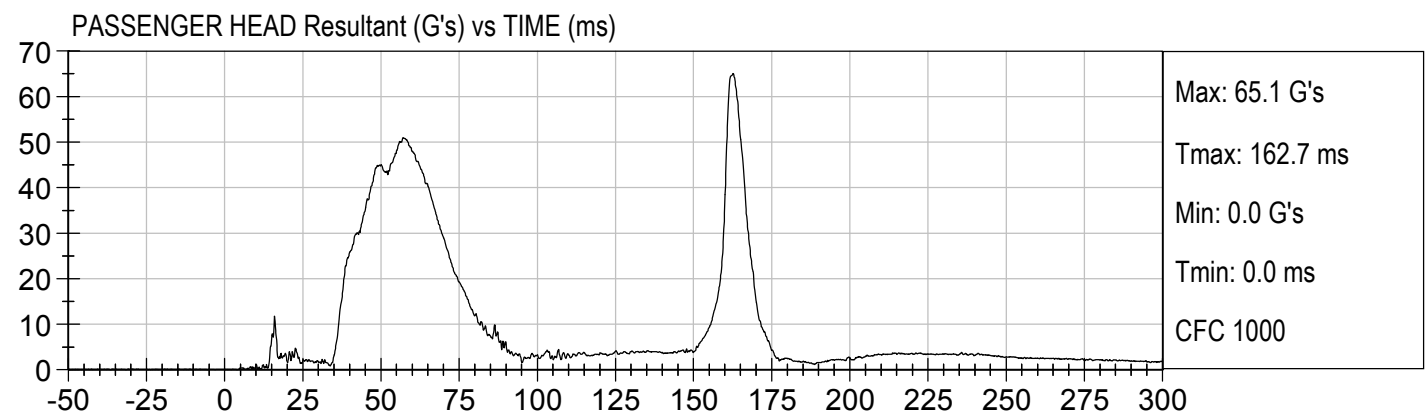
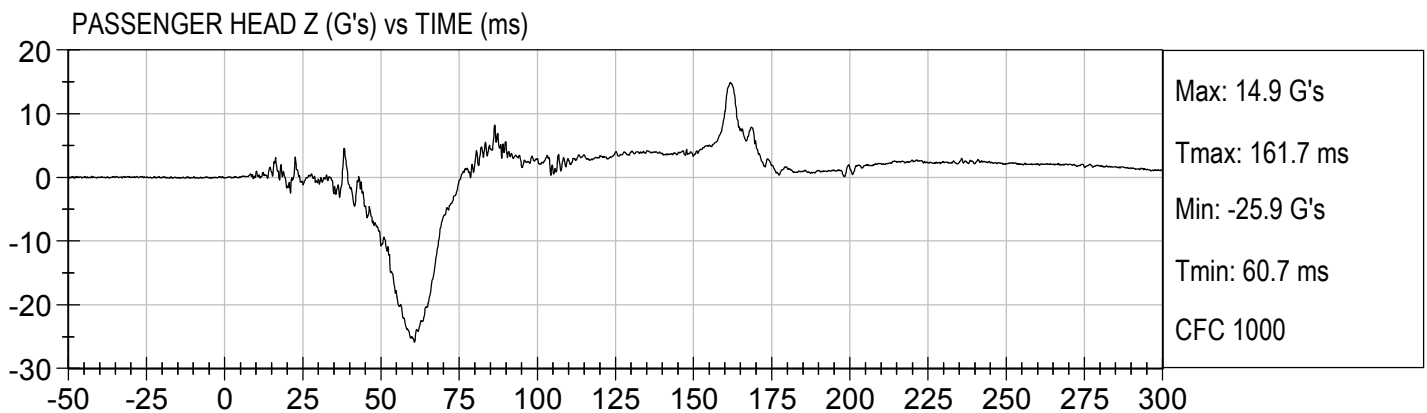
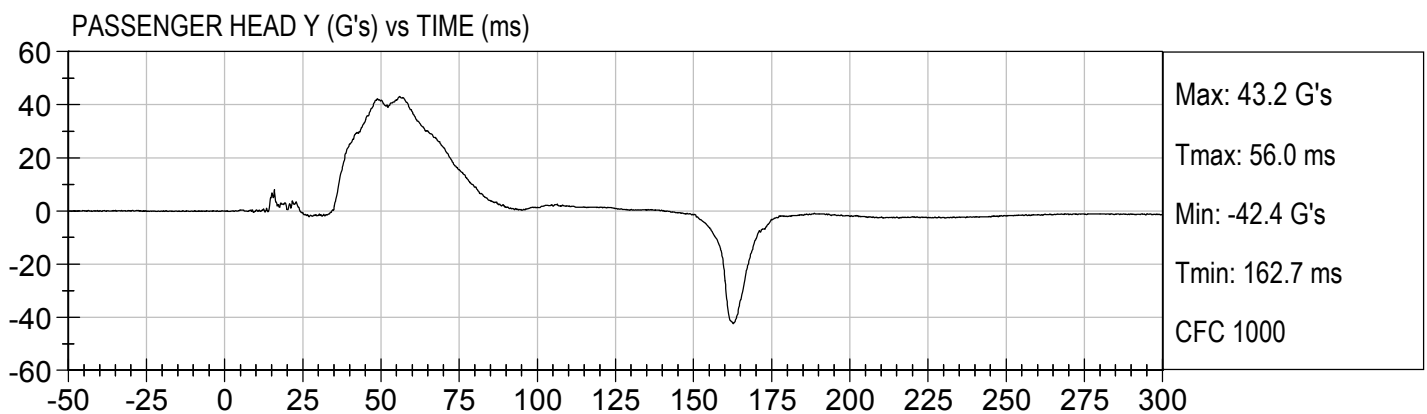
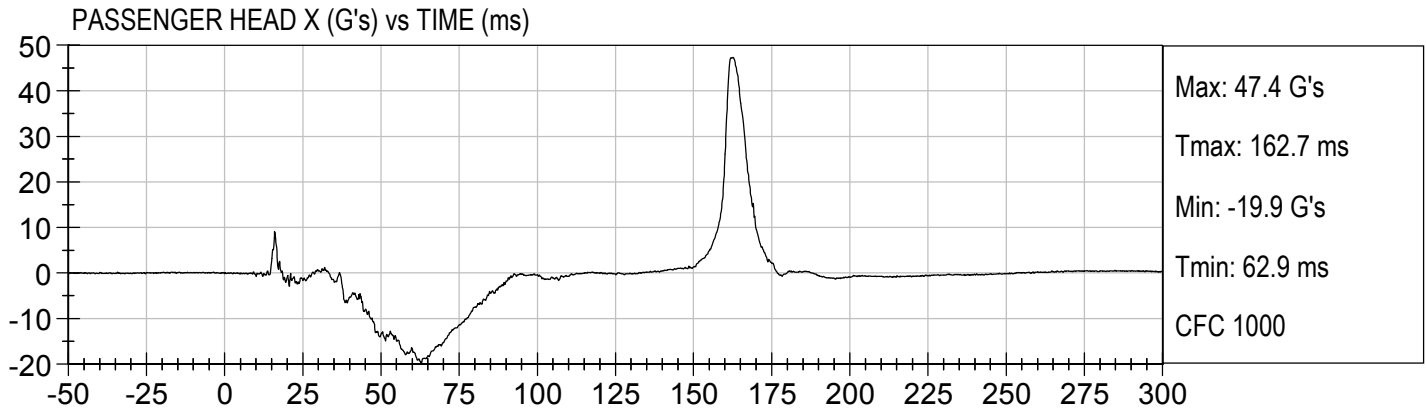
Right MDB Contact Switch

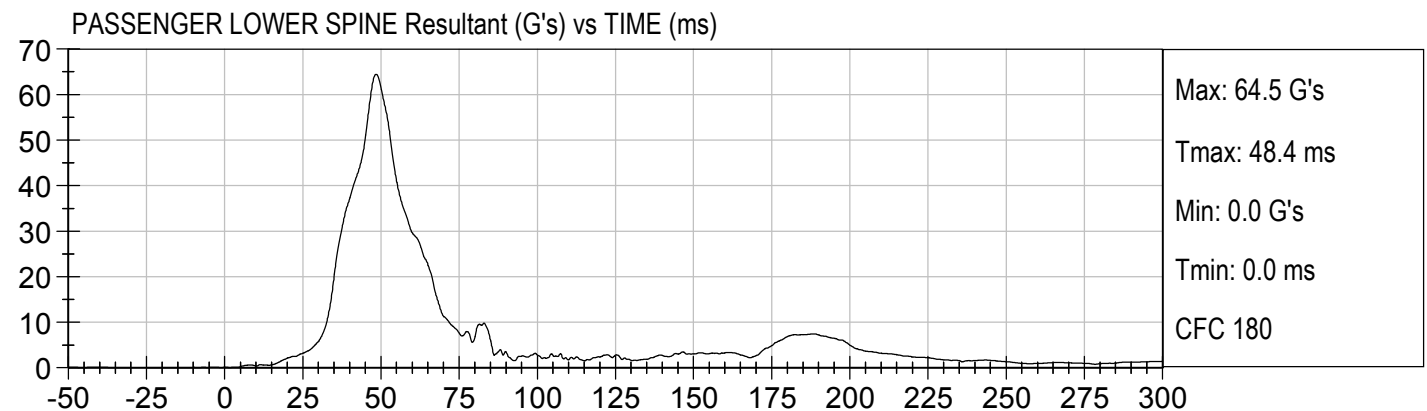
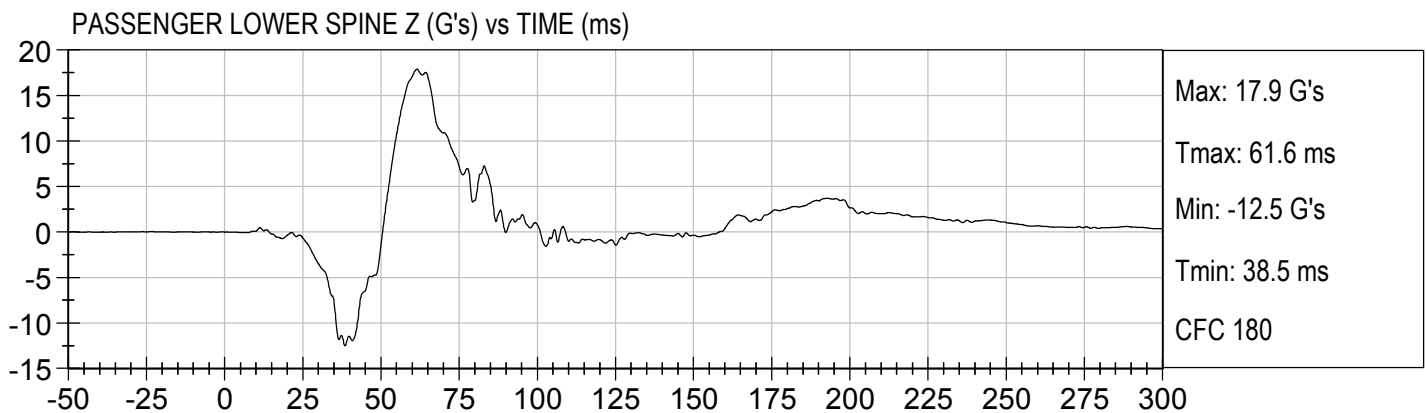
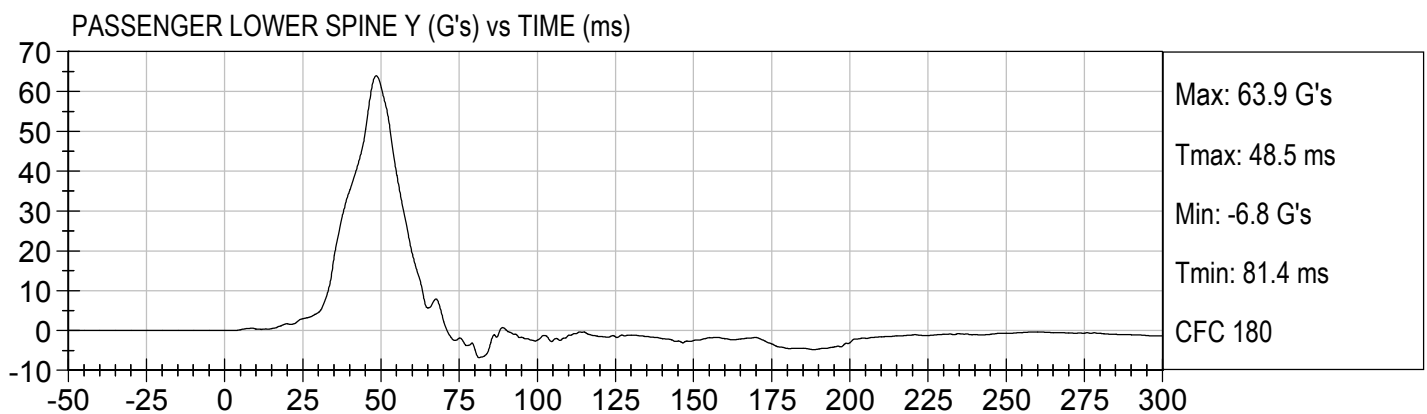
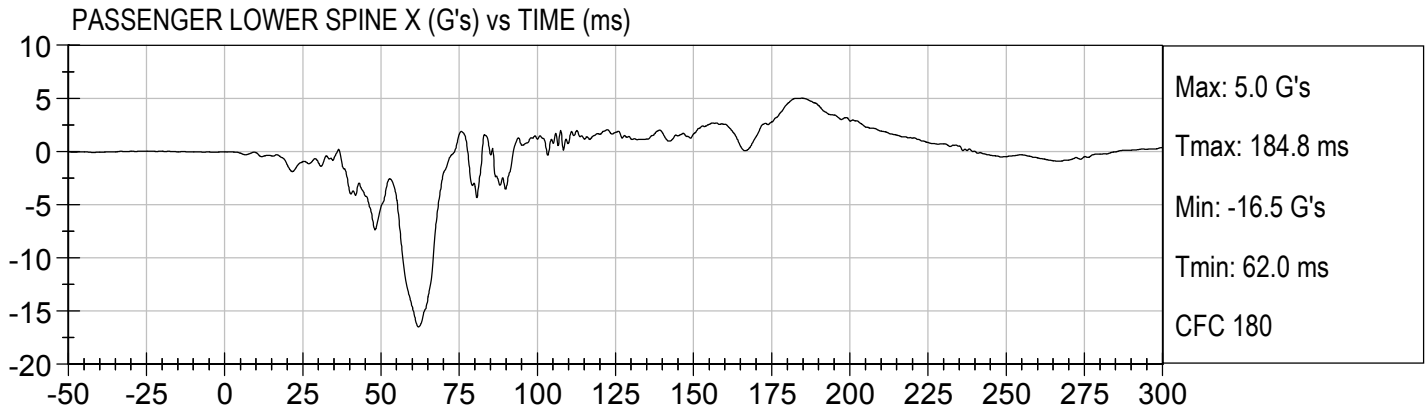


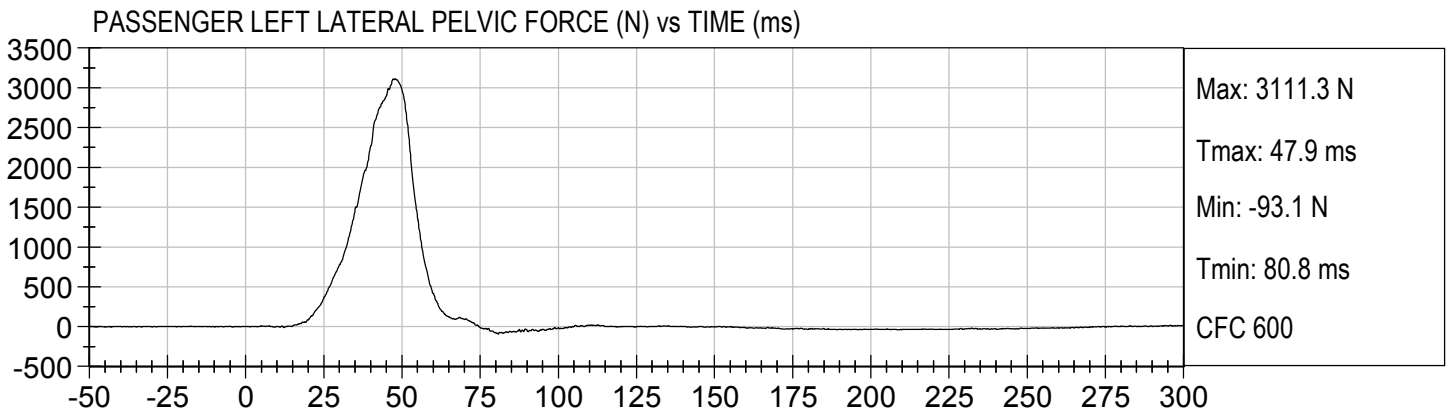
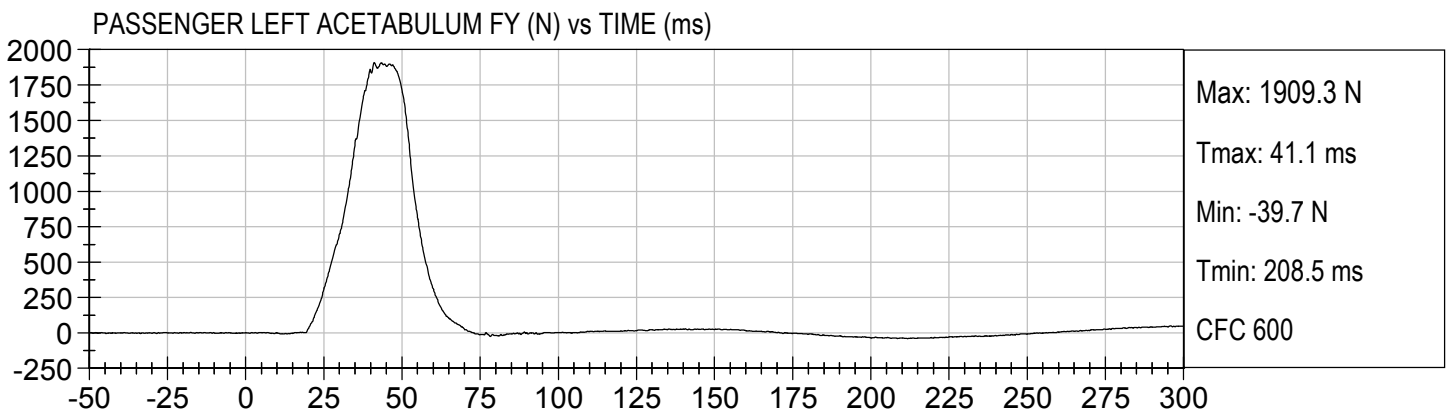
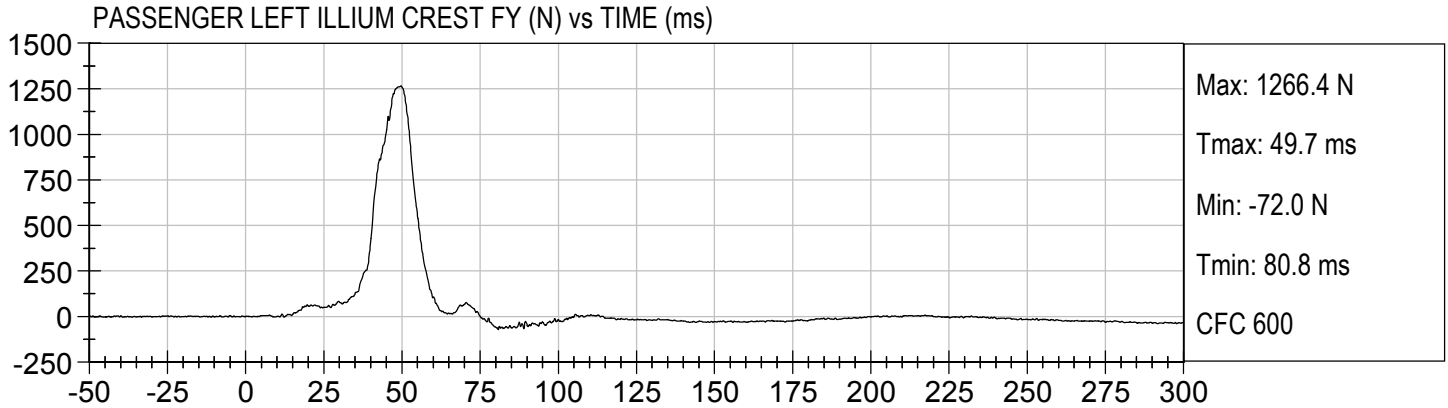












APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

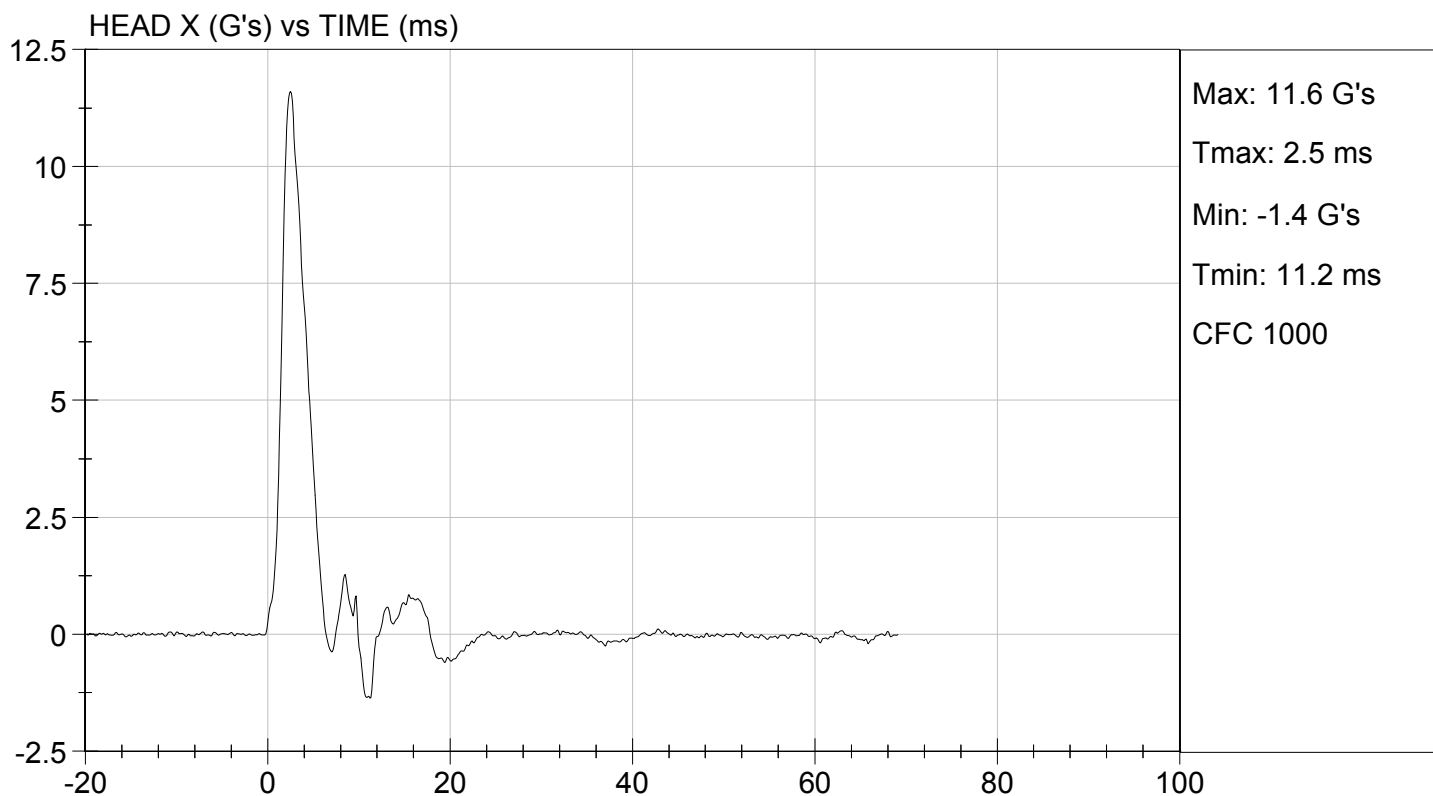
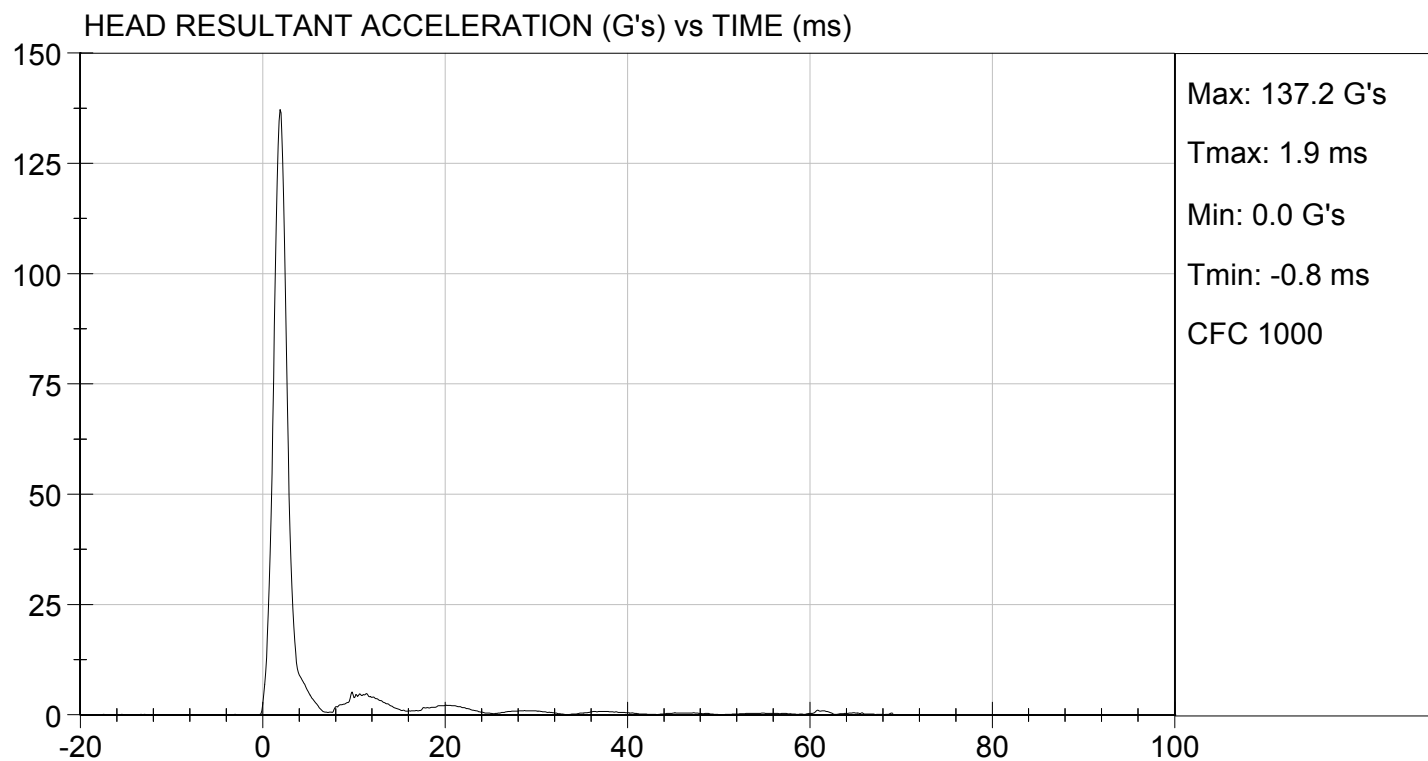
Test ID: D151641

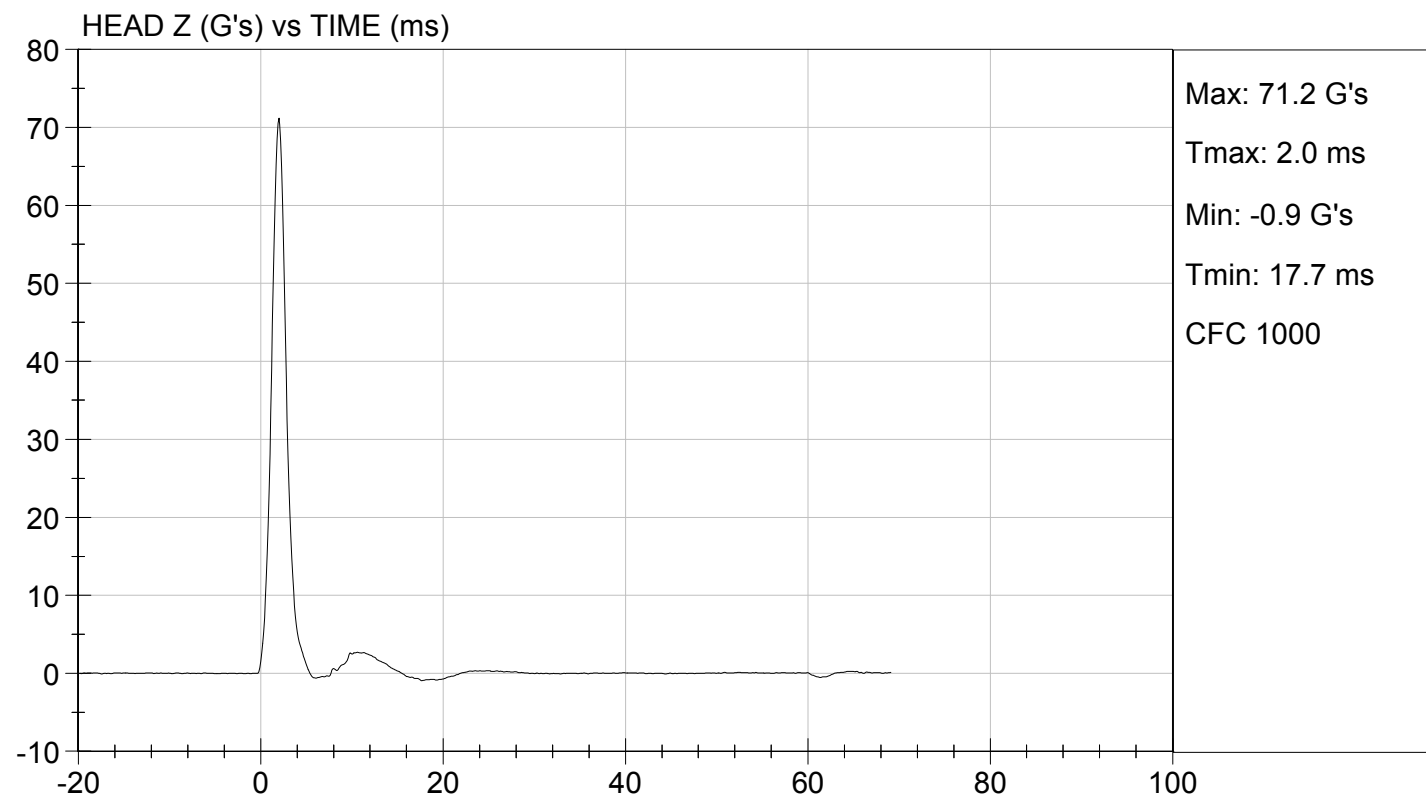
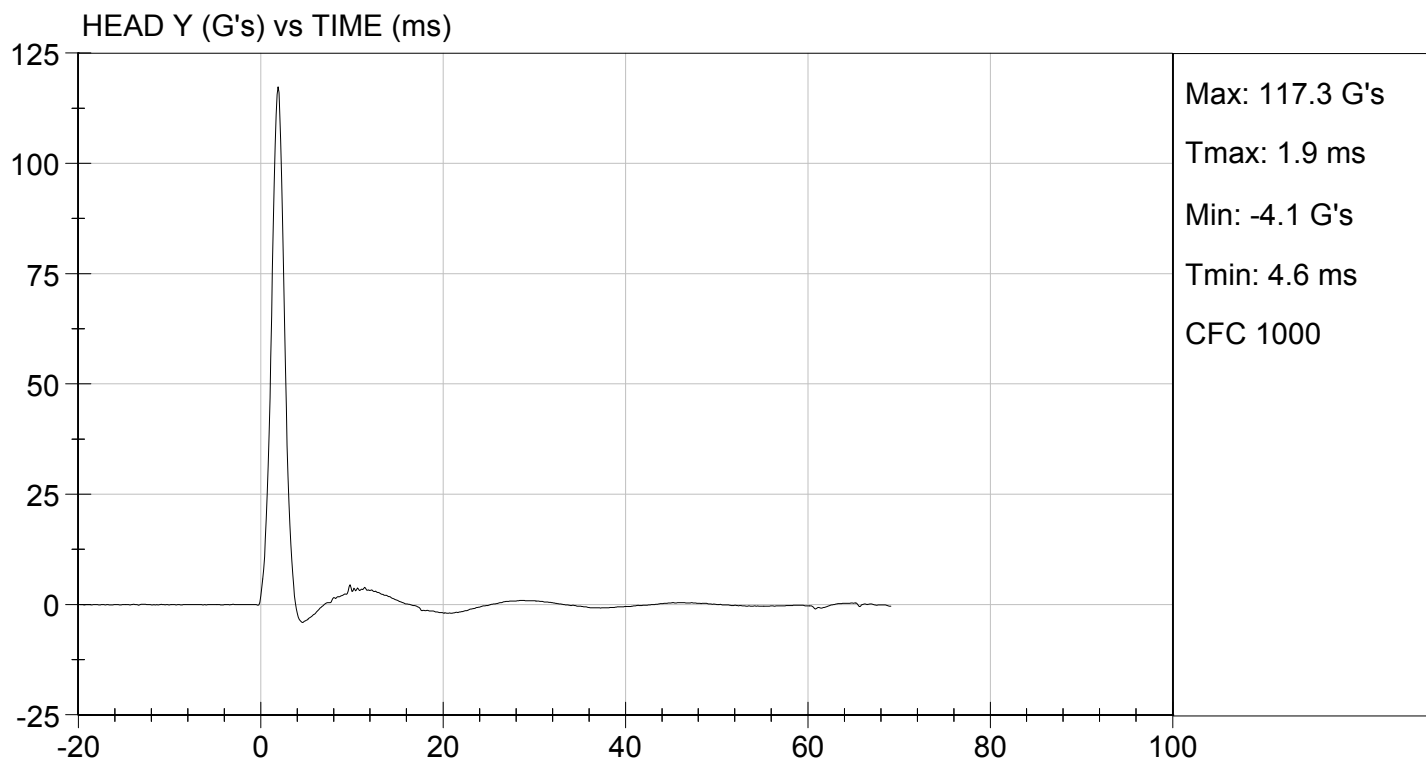
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	125 to 155	137	Pass
Peak Longitudinal Acceleration	G's	<= +/- 15.0	11.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

06/10/2015
Test Date


Approved By





MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151642

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	48	Pass
Pendulum Speed		m/s	3.30 to 3.50	3.48	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.03	Pass
	3 ms	m/s	-0.25 to -0.375	-0.33	Pass
	14 ms	m/s	-3.20 to -3.70	-3.33	Pass
	17 ms	m/s	>= -3.70	-3.52	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	49.9	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	57.8	Pass
Head Rotation Decay Time to 0 Degree		ms	53.0 to 88.0	55.7	Pass
Overall Results					Pass

David Schoedel
Laboratory Technician

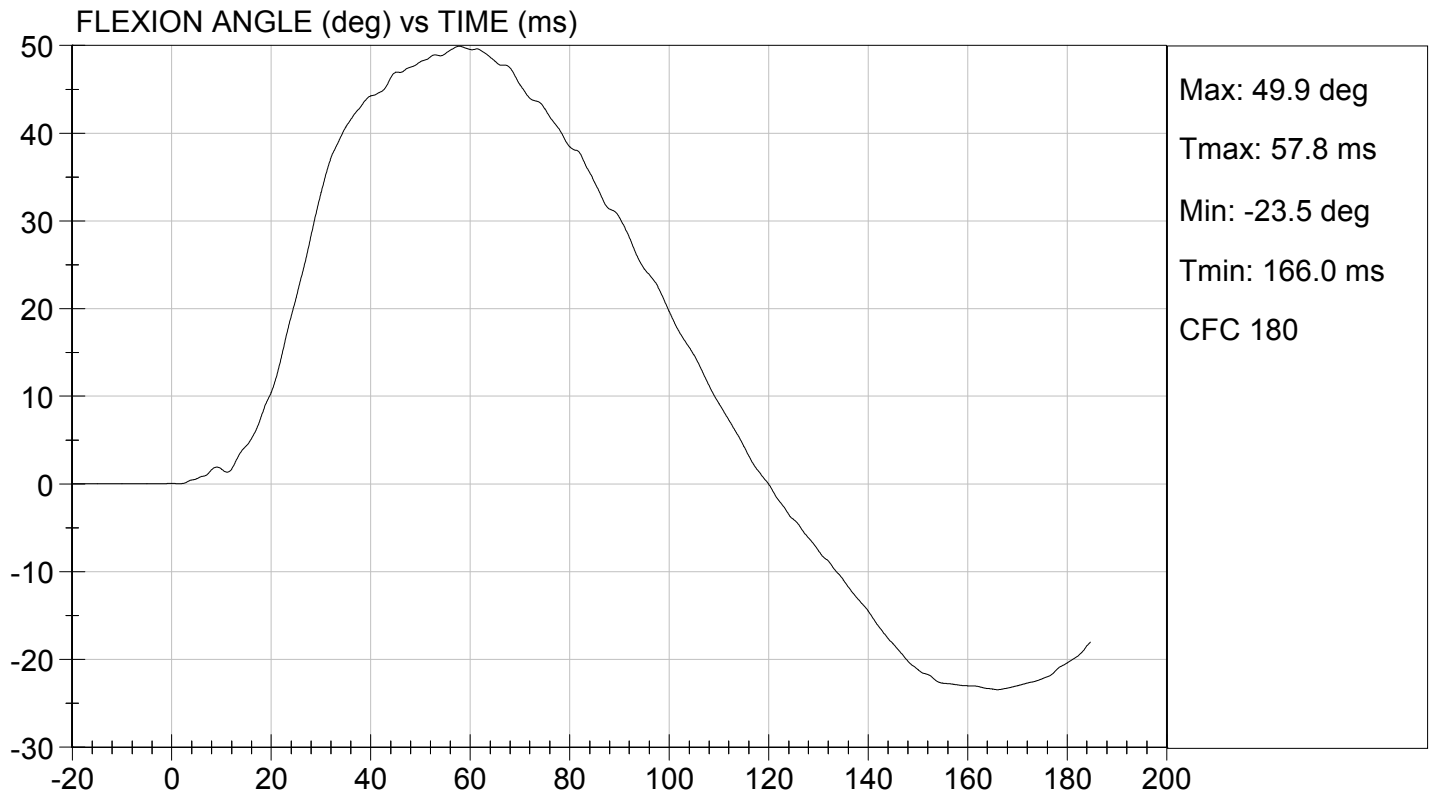
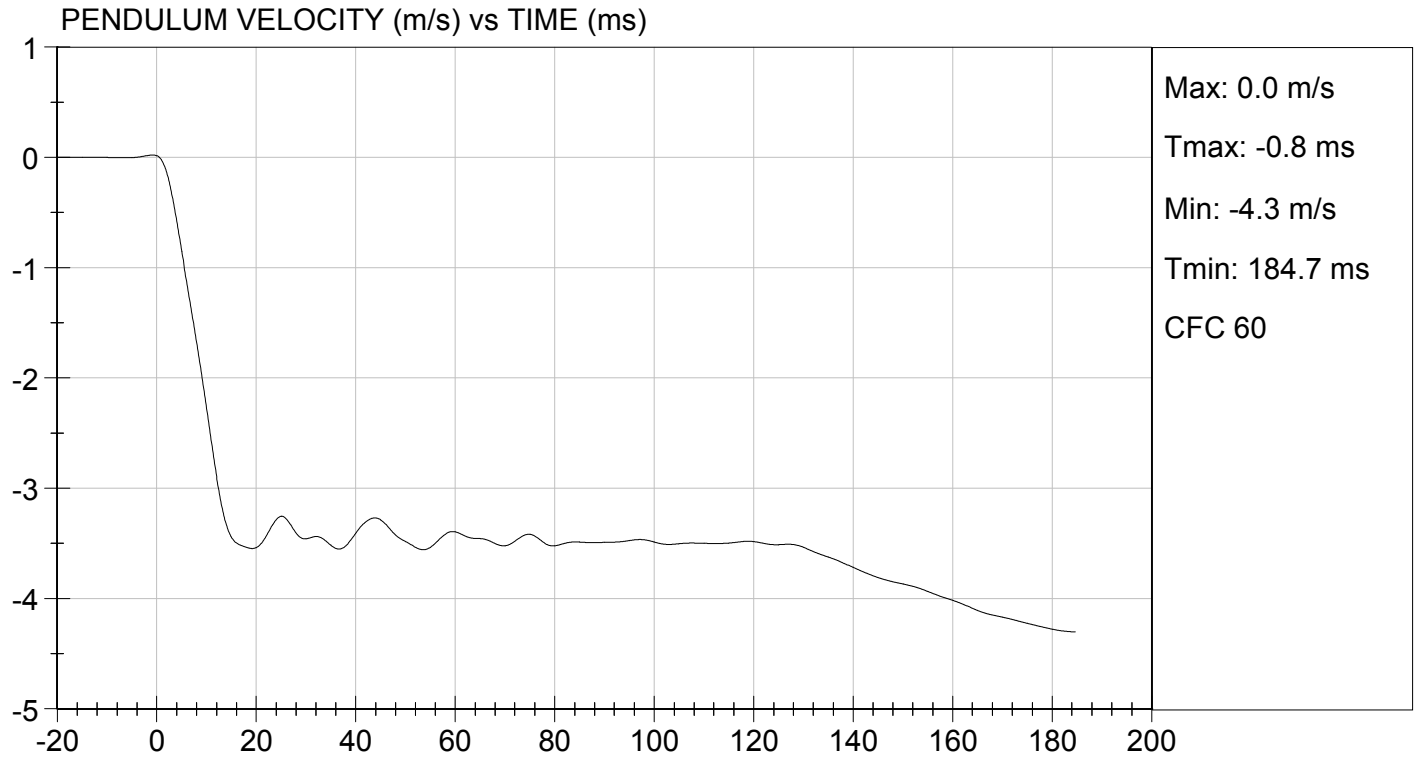
06/10/2015
Test Date

Jessica Hall
Approved By



TEST DESC: NECK BENDING
VELOCITY: 11.42 ft/s, 3.48 m/s

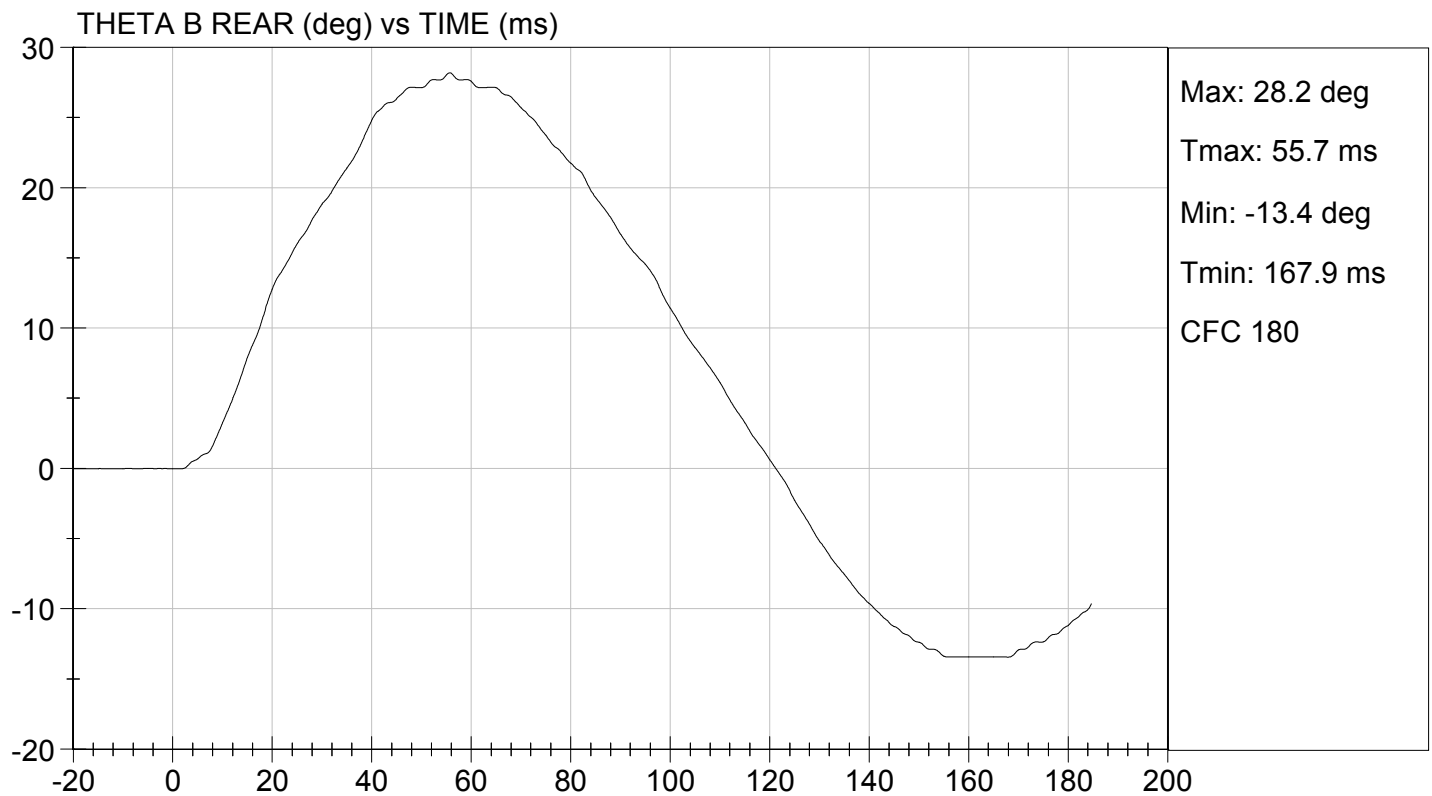
TEST DATE: 06/10/2015
TEST #: D151642





TEST DESC: NECK BENDING
VELOCITY: 11.42 ft/s, 3.48 m/s

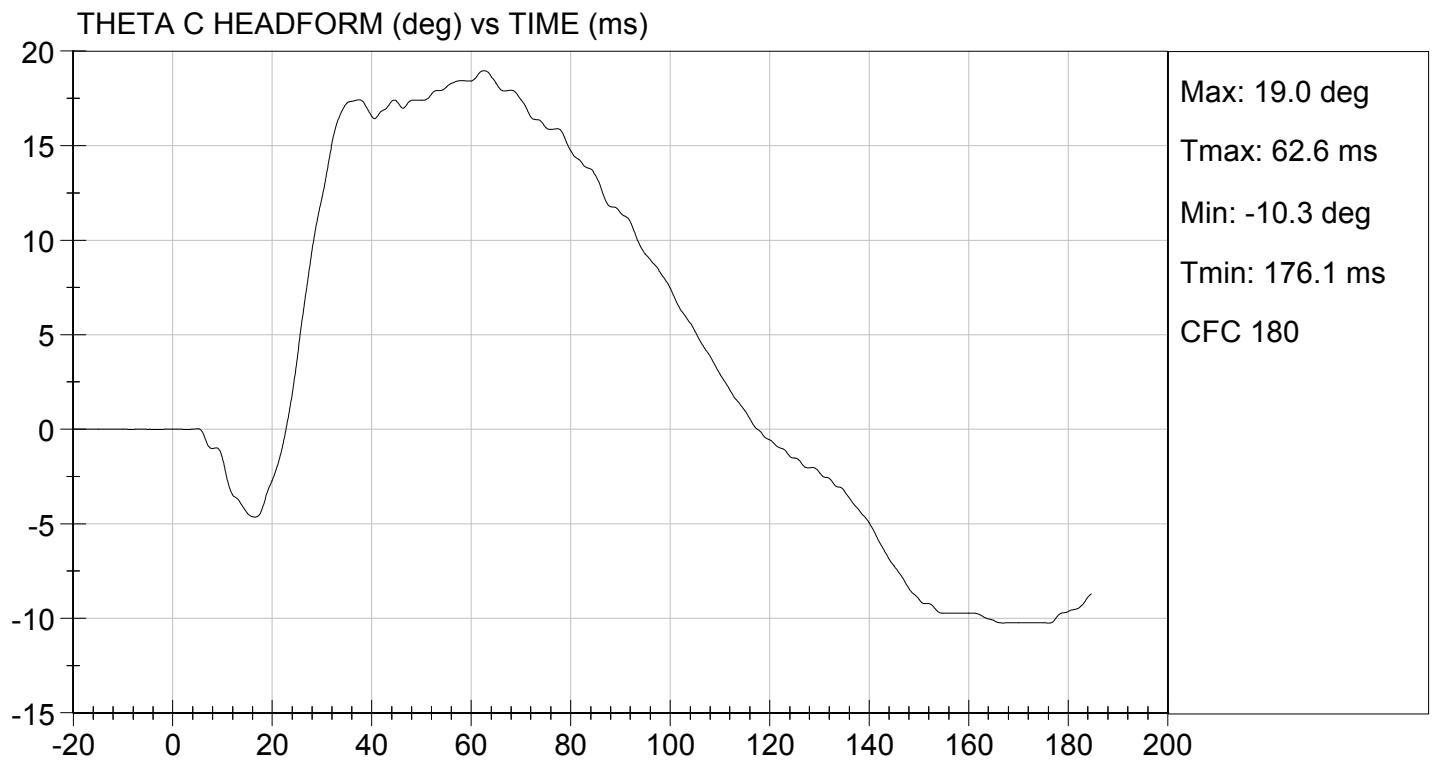
TEST DATE: 06/10/2015
TEST #: D151642





TEST DESC: NECK BENDING
VELOCITY: 11.42 ft/s, 3.48 m/s

TEST DATE: 06/10/2015
TEST #: D151642



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151643

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Pendulum Speed	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	7.8	Pass
Overall Test Results				Pass


Laboratory Technician

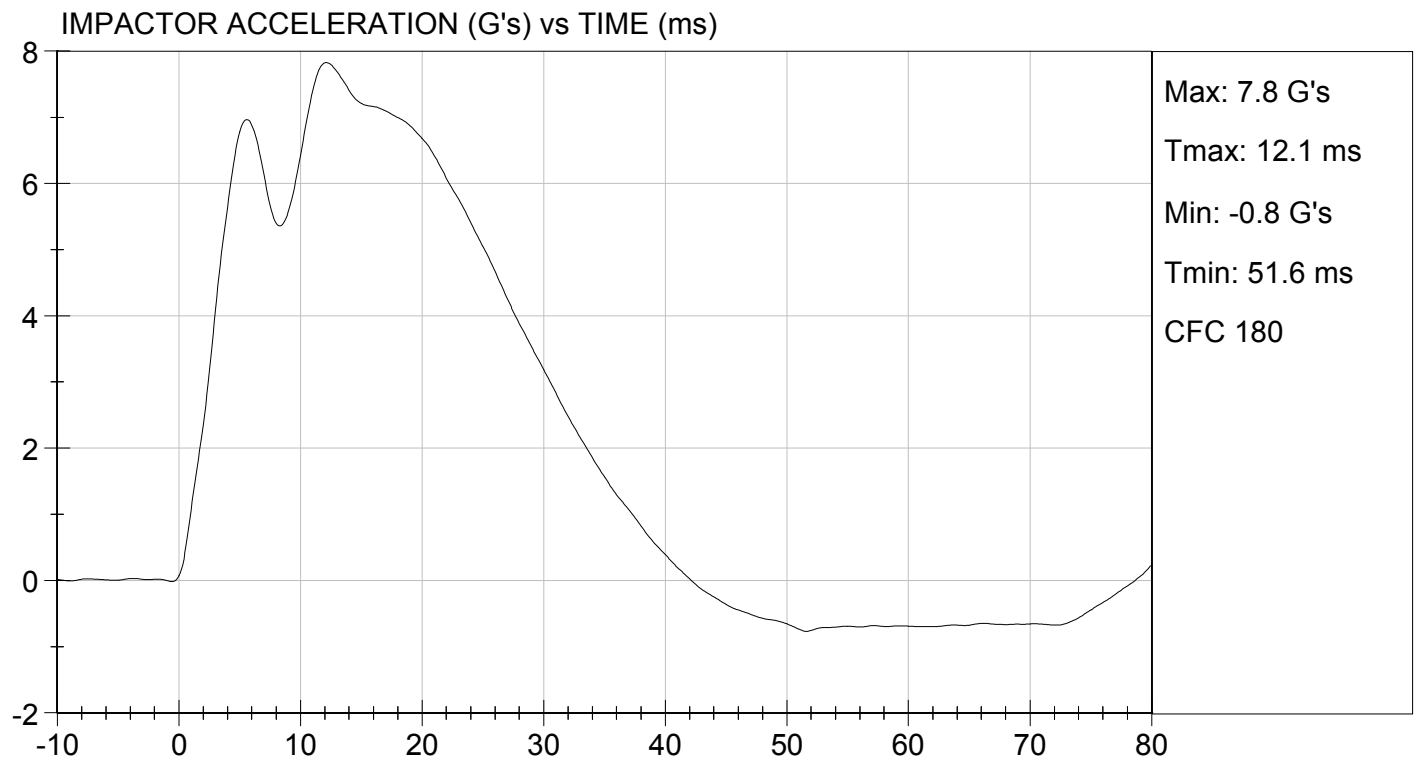
06/10/2015
Test Date


Approved By



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

TEST DATE: 06/10/2015
TEST #: D151643



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151644

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	49	Pass
Displacement at 459 mm	mm	36.0 to 40.0	39.3	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.4	Pass
Overall Test Results			Pass	

Maxime Chamberland
Laboratory Technician

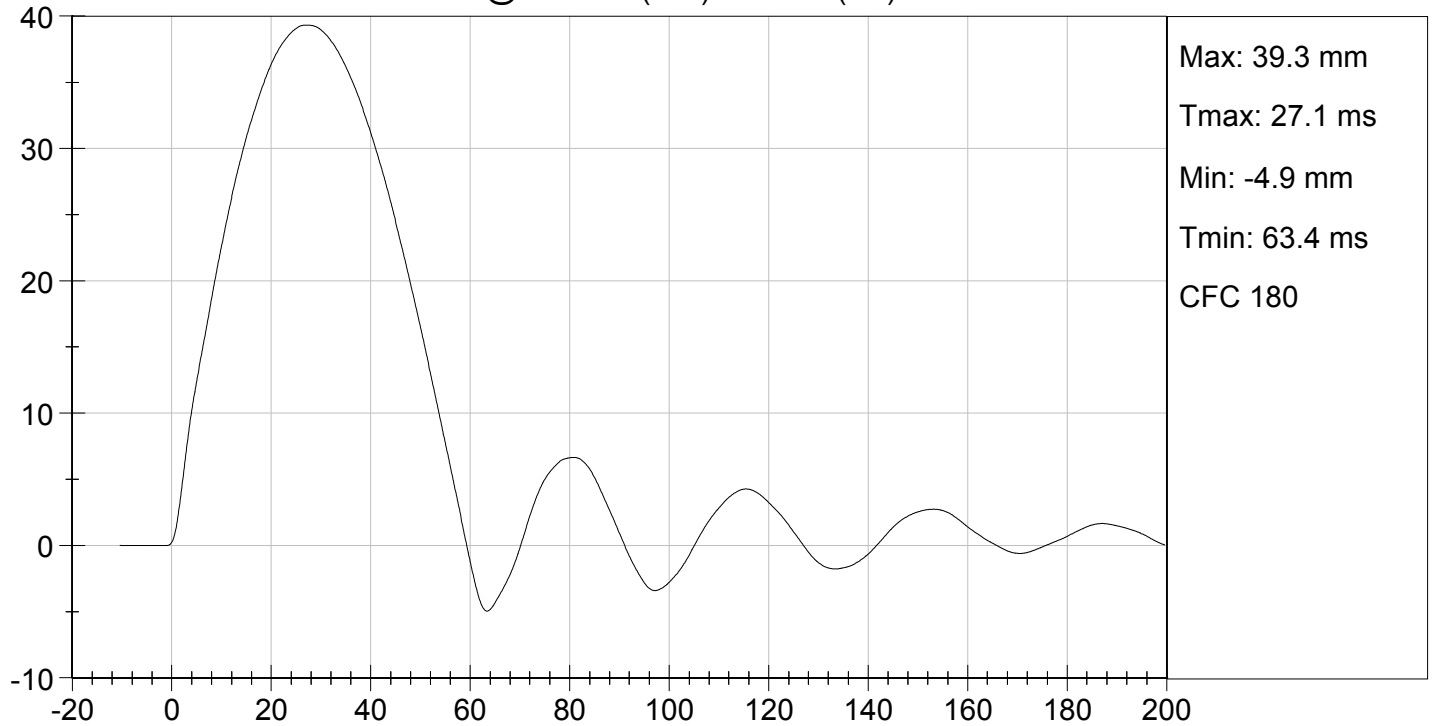
06/10/2015

Test Date

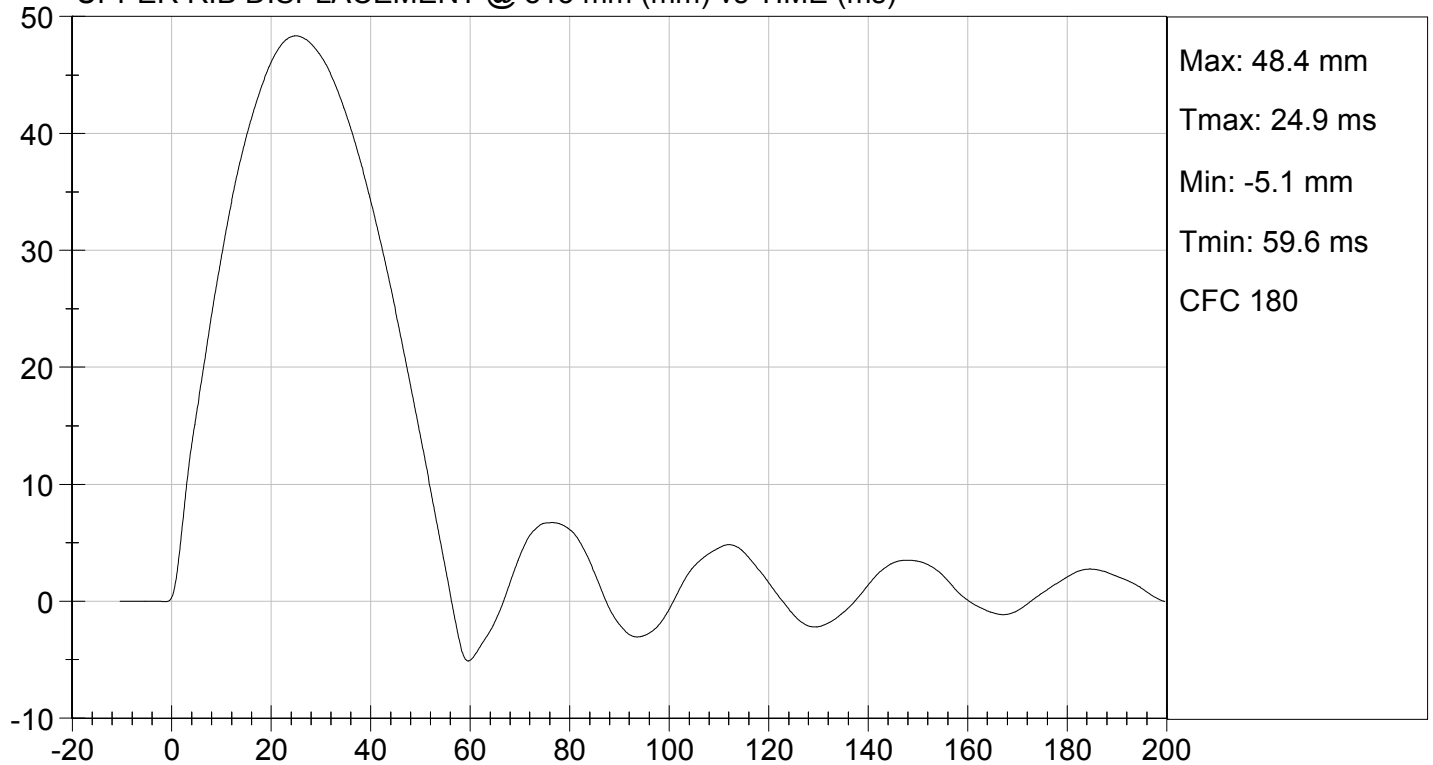
Jessica Hall
Approved By



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



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



MGA RESEARCH CORPORATION

**MID RIB TEST
ES-2re DUMMY**

ATD Serial No: 032

Test I.D: D151645

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	49	Pass
Displacement at 459 mm	mm	36.0 to 40.0	39.0	Pass
Displacement at 815 mm	mm	46.0 to 51.0	47.6	Pass
Overall Test Results				Pass

Maxime Chamberland
Laboratory Technician

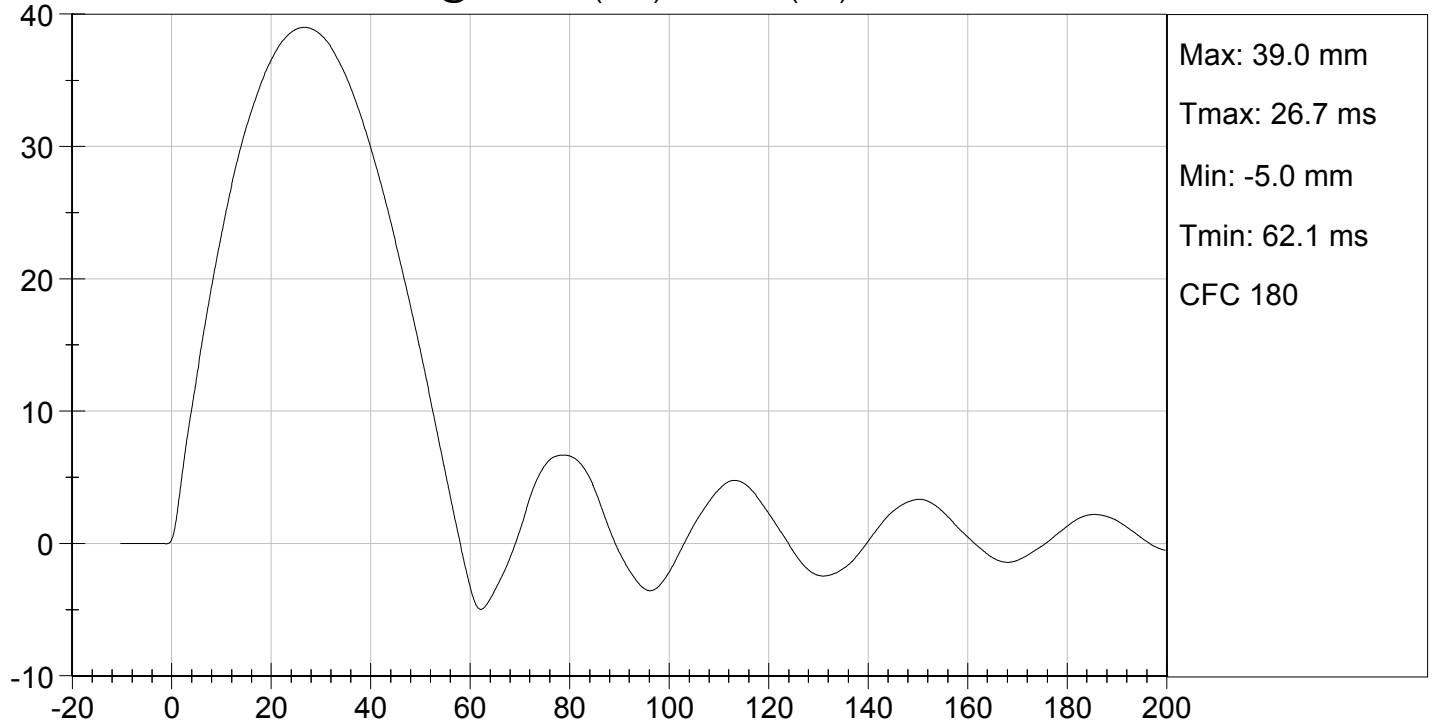
06/10/2015

Test Date

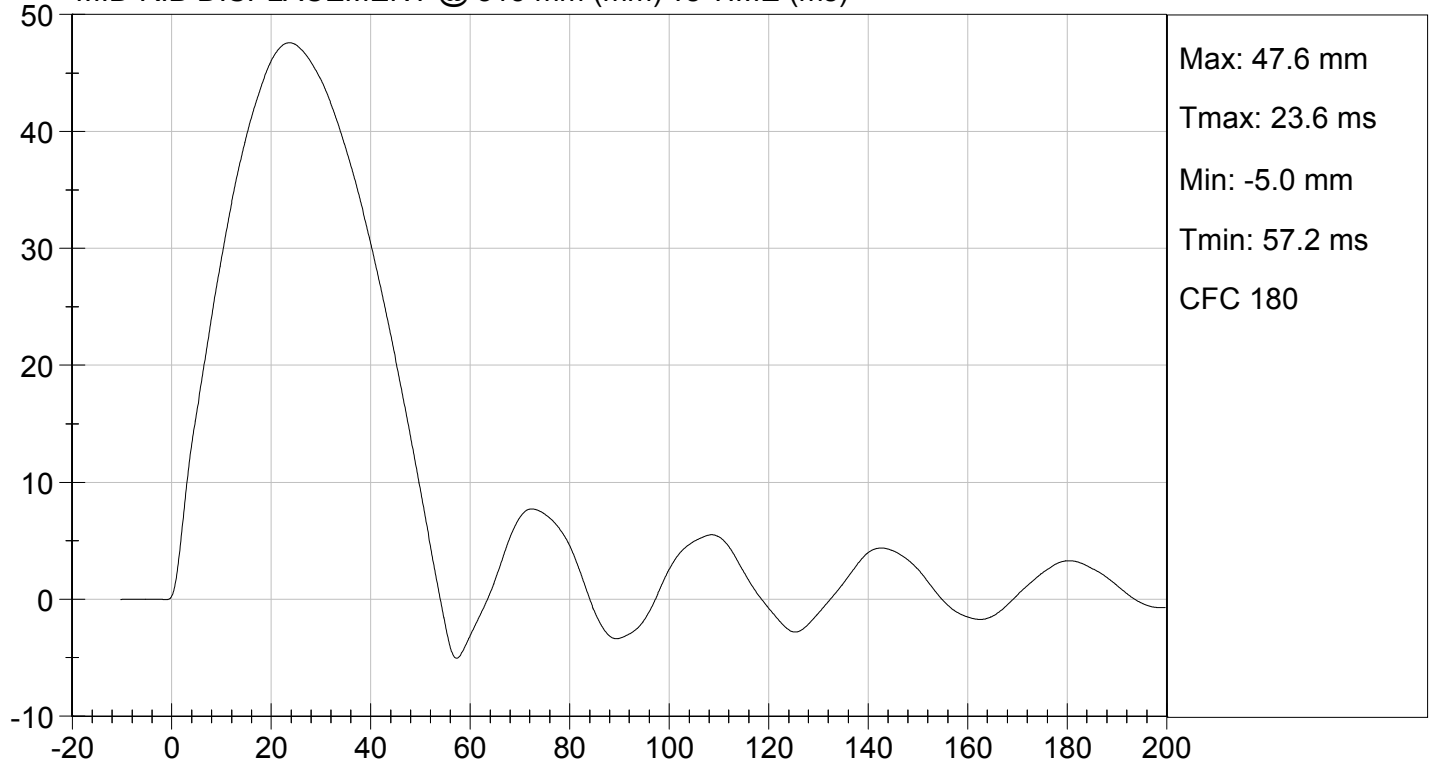
Jessica Hall
Approved By



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: D151646

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	49	Pass
Displacement at 459 mm	mm	36.0 to 40.0	39.5	Pass
Displacement at 815 mm	mm	46.0 to 51.0	50.3	Pass
Overall Test Results			Pass	

Maxime Chamberland
Laboratory Technician

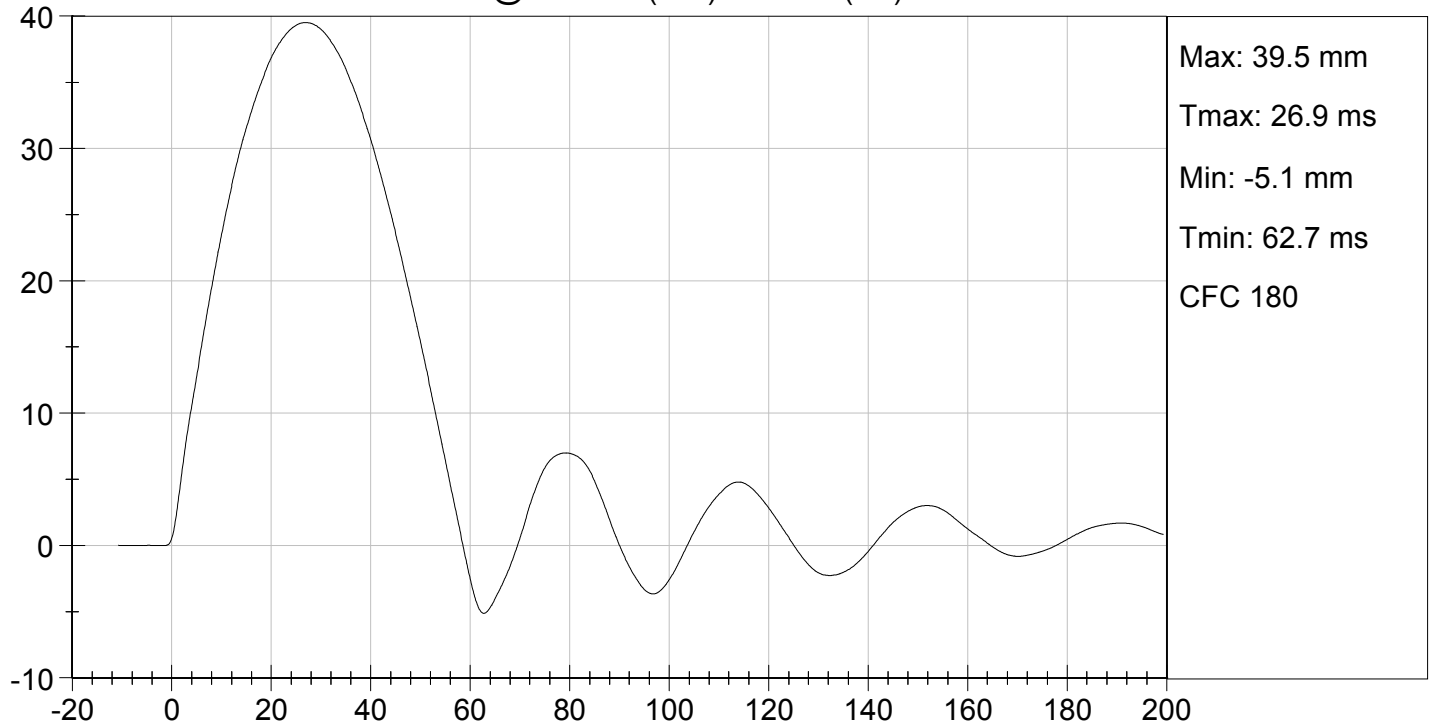
06/10/2015

Test Date

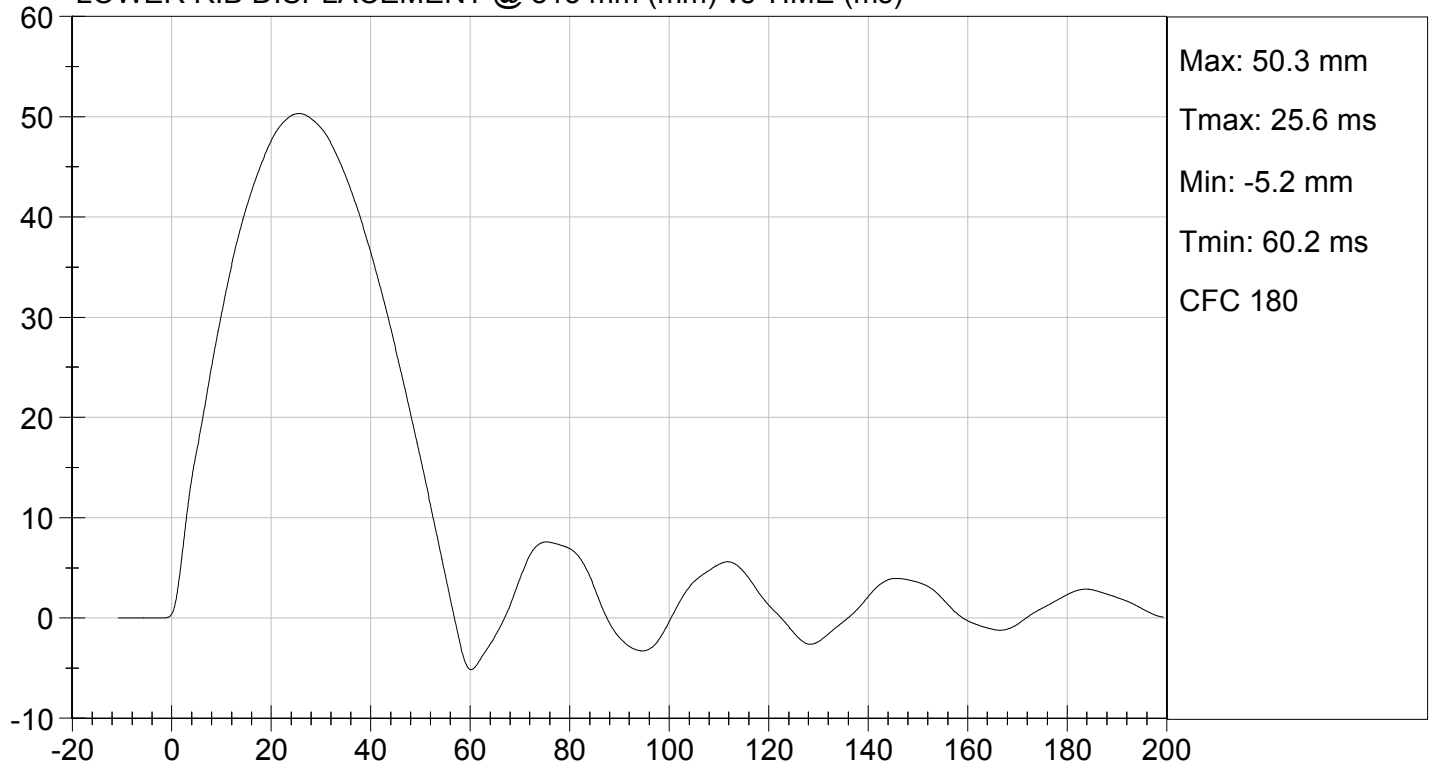
Jessica Hall
Approved By



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: D151640

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	45	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	N	5100 to 6200	5486	Pass
Upper Rib Displacement	mm	34.0 to 41.0	38.1	Pass
Middle Rib Displacement	mm	37.0 to 45.0	41.4	Pass
Lower Rib Displacement	mm	37.0 to 44.0	41.7	Pass
Overall Test Results				Pass


Laboratory Technician

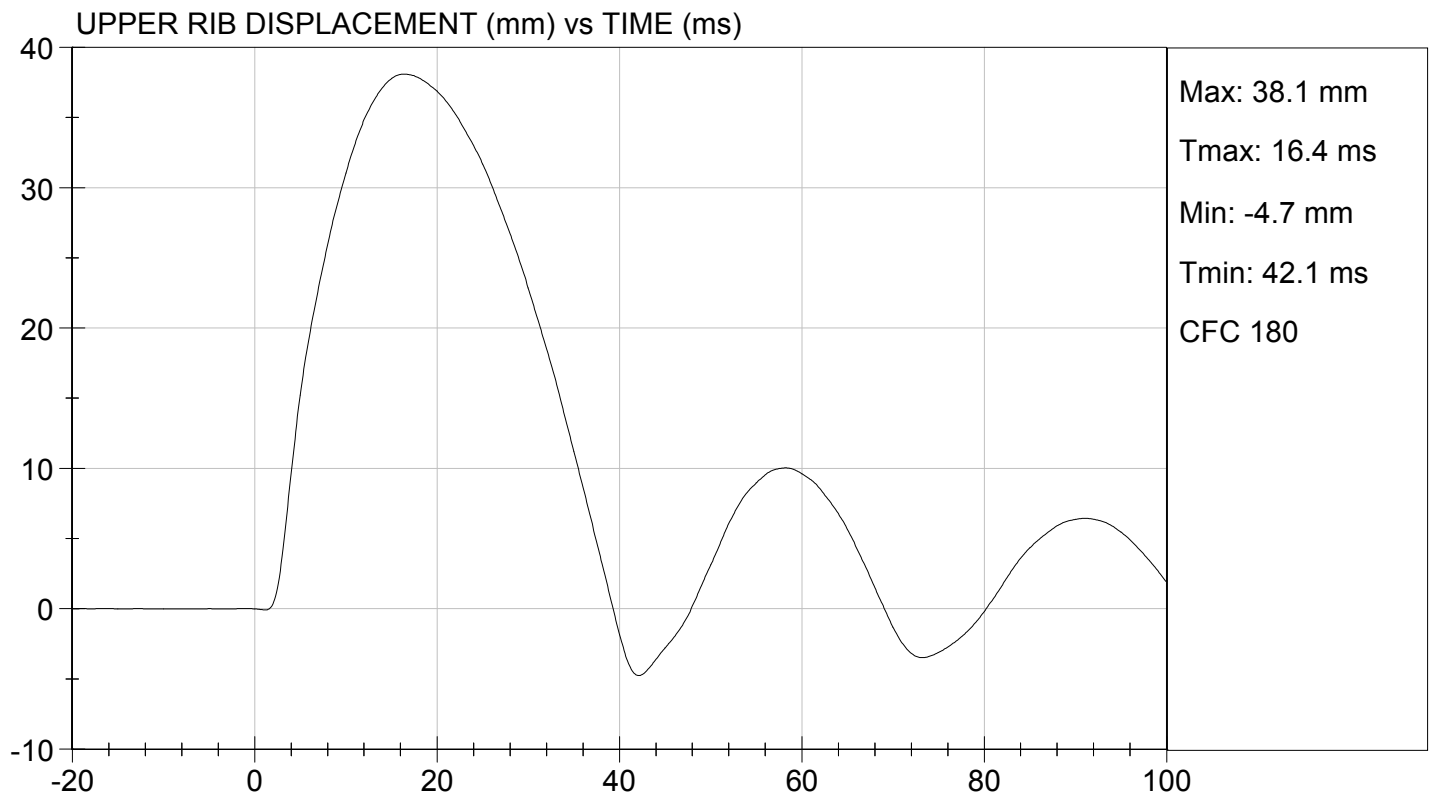
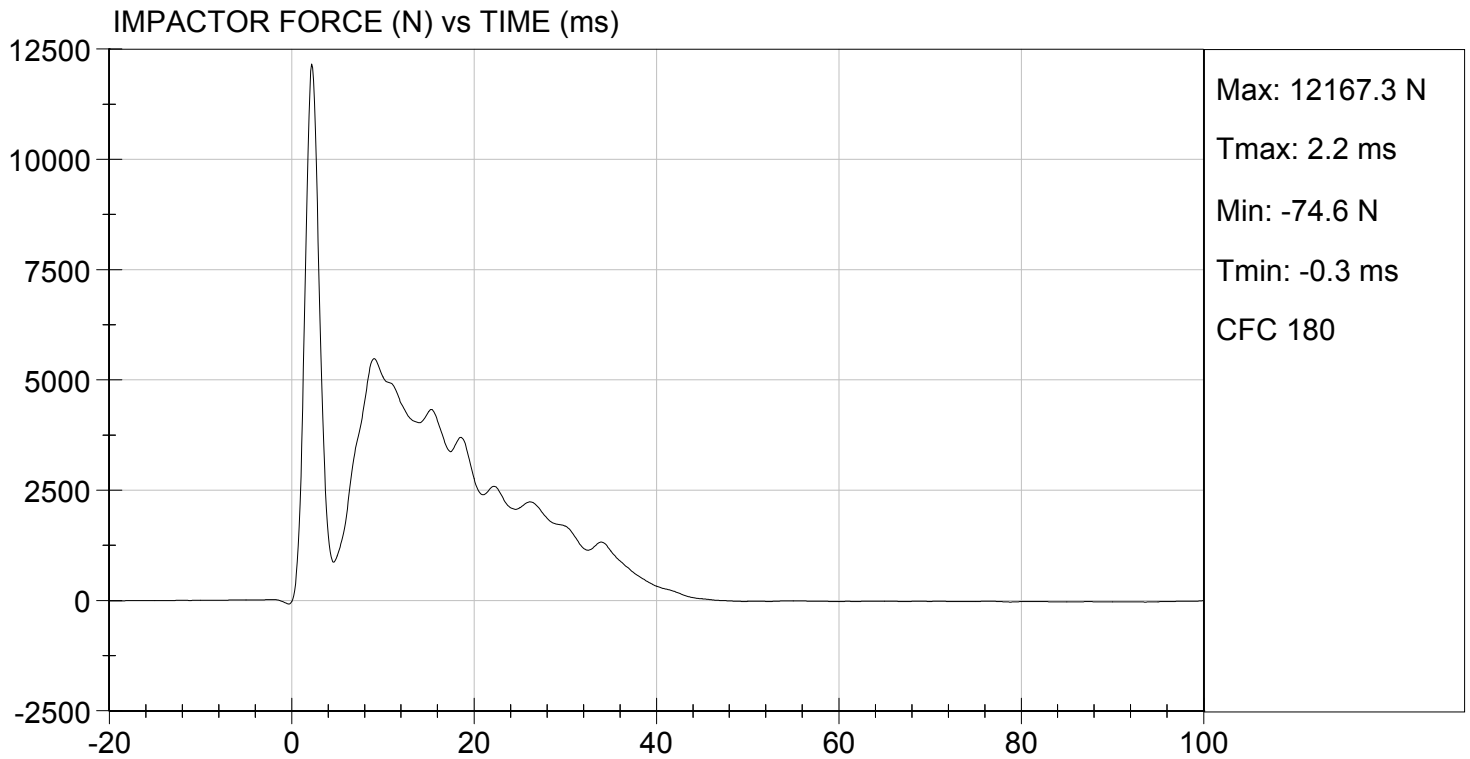
06/10/2015
Test Date


Approved By



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

TEST DATE: 06/10/2015
TEST #: D151640

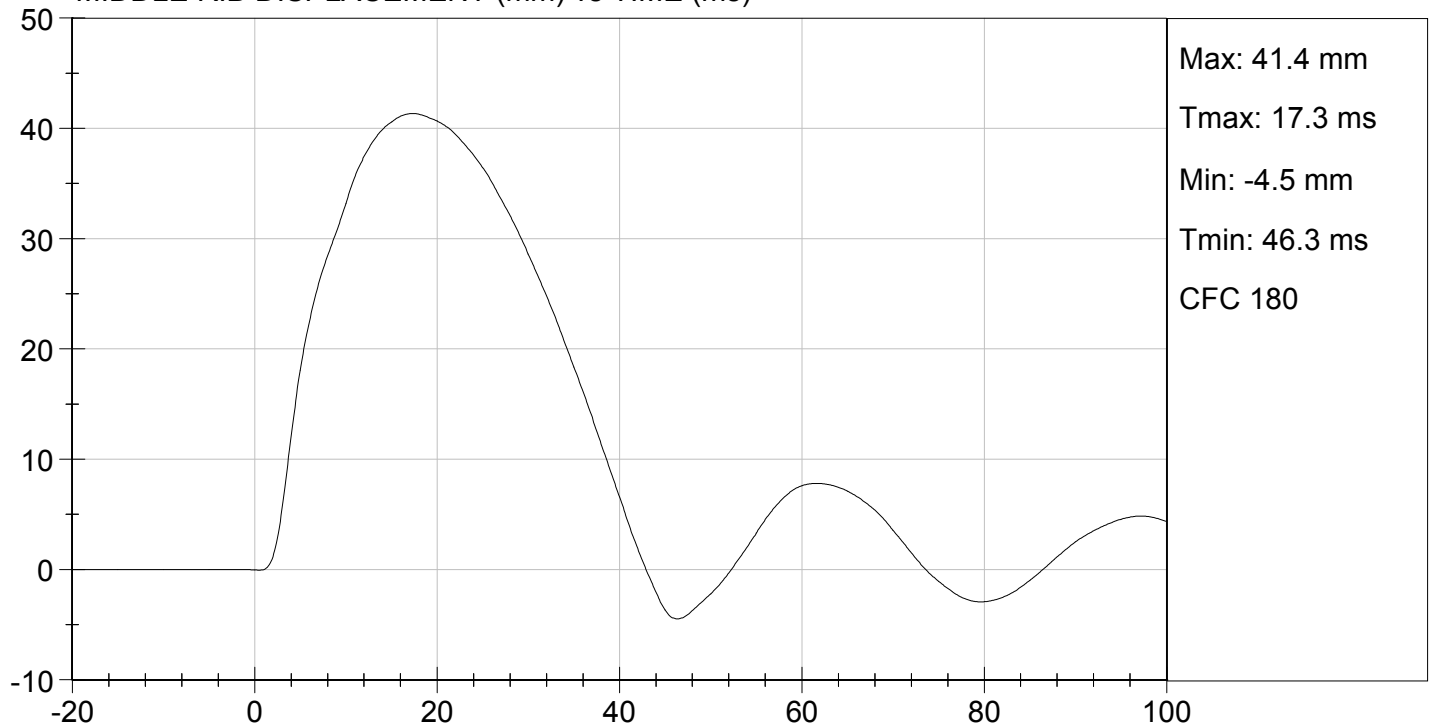




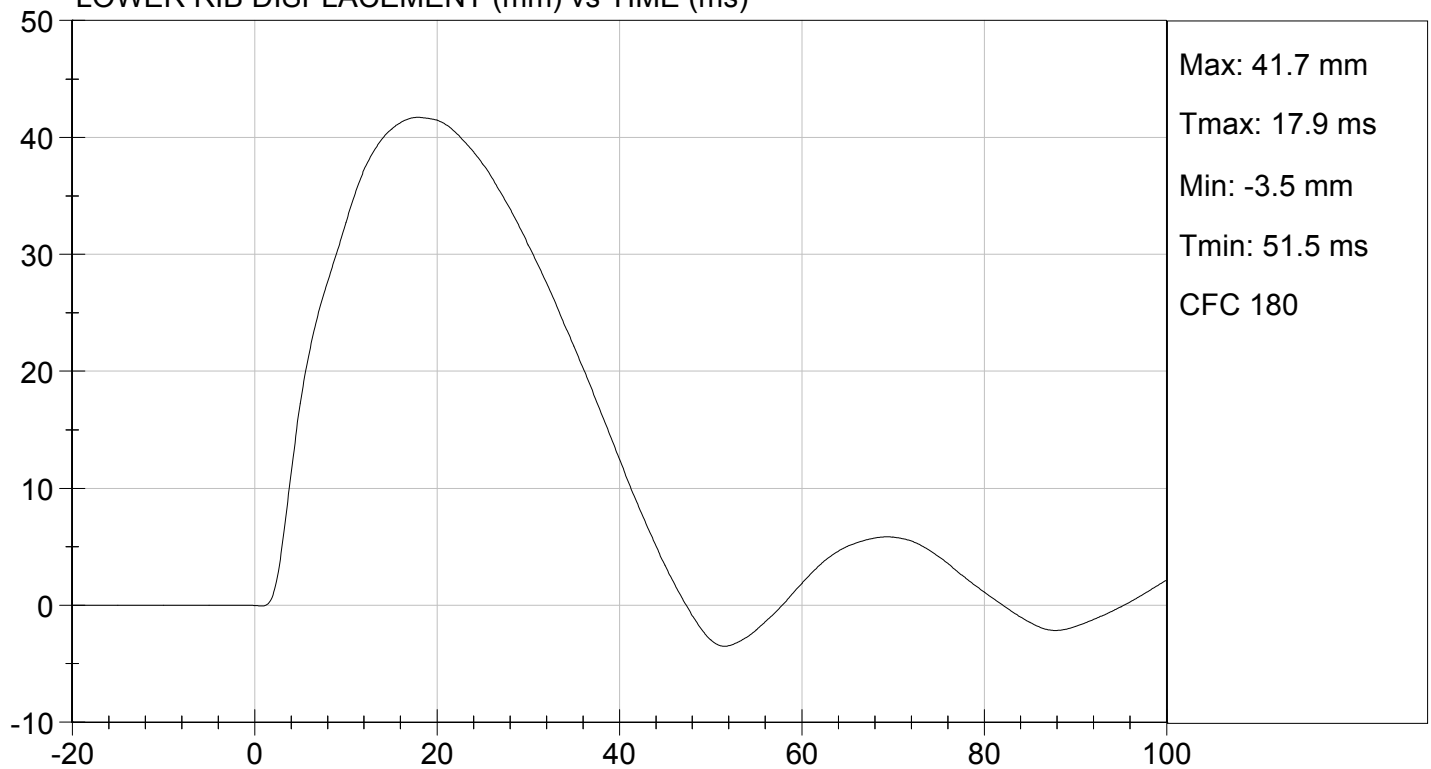
TEST DESC: THORAX IMPACT
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 06/10/2015
TEST #: D151640

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: D151647

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Speed	m/s	3.90 to 4.10	4.06	Pass
Maximum Impactor Force	N	4000 to 4800	4379	Pass
Time of Maximum Impactor Force	ms	10.6 to 13.0	11.9	Pass
Maximum Total Abdomen Force	N	2200 to 2700	2361	Pass
Time of Maximum Abdomen Force	ms	10.0 to 12.3	11.5	Pass
Overall Test Results				Pass


Laboratory Technician

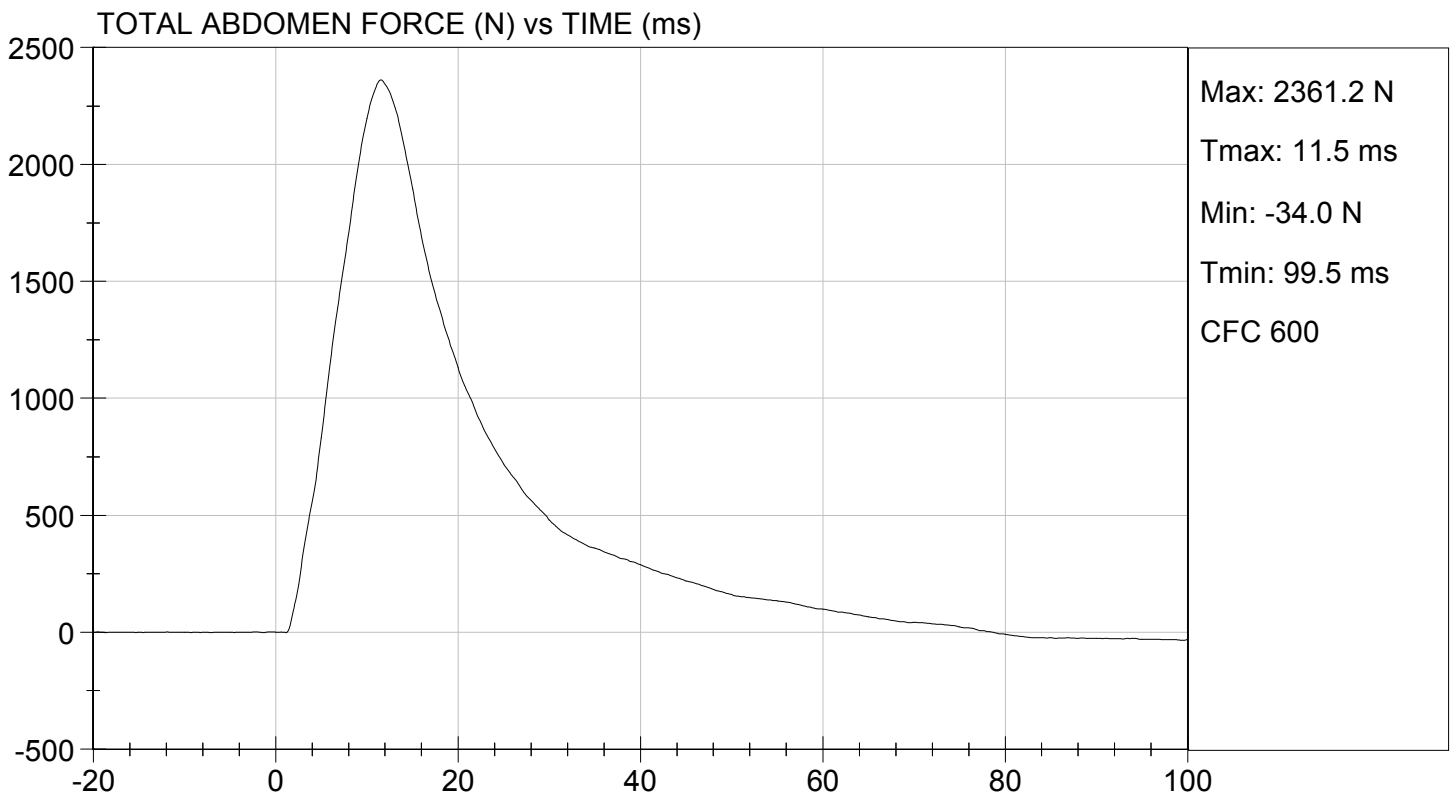
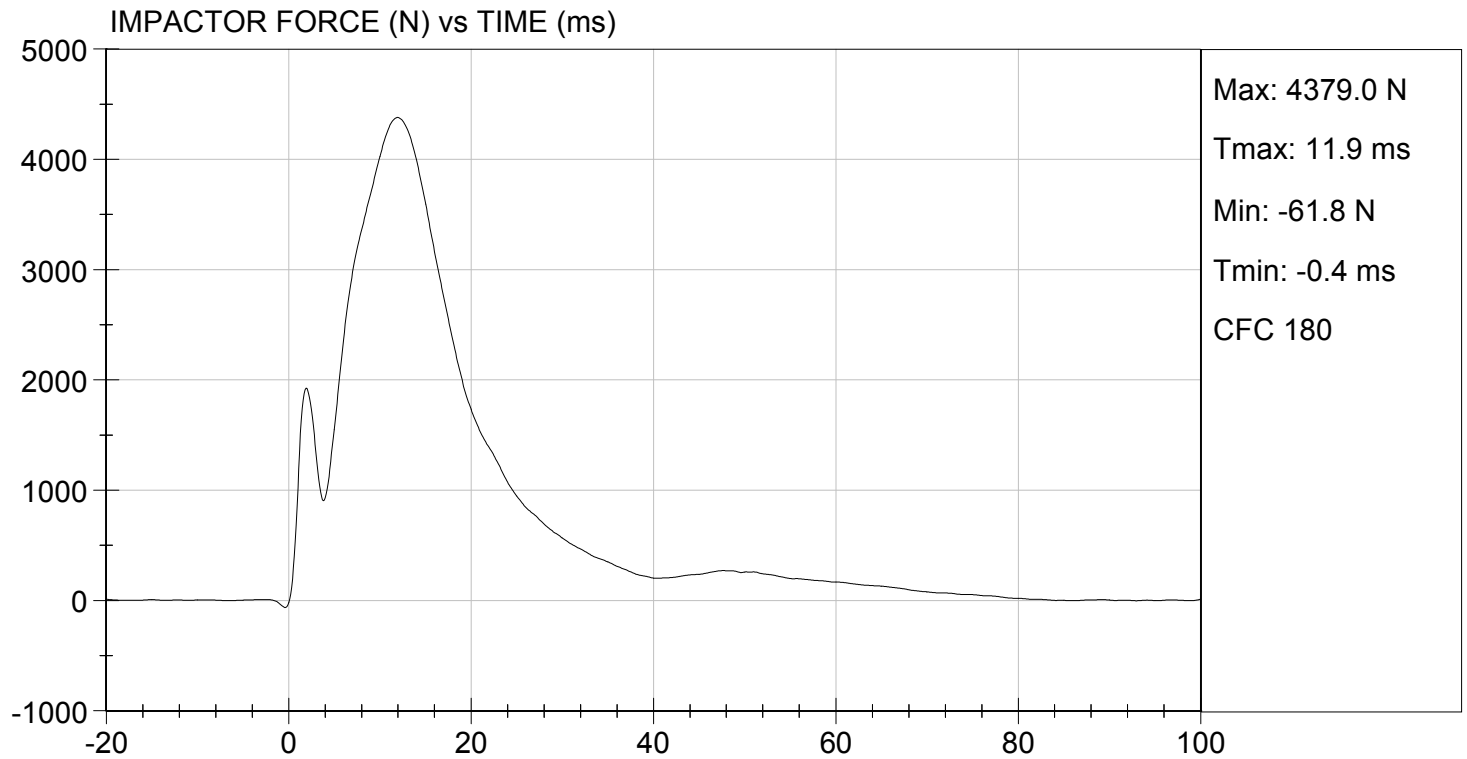
06/10/2015
Test Date


Approved By



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

TEST DATE: 06/10/2015
TEST #: D151647

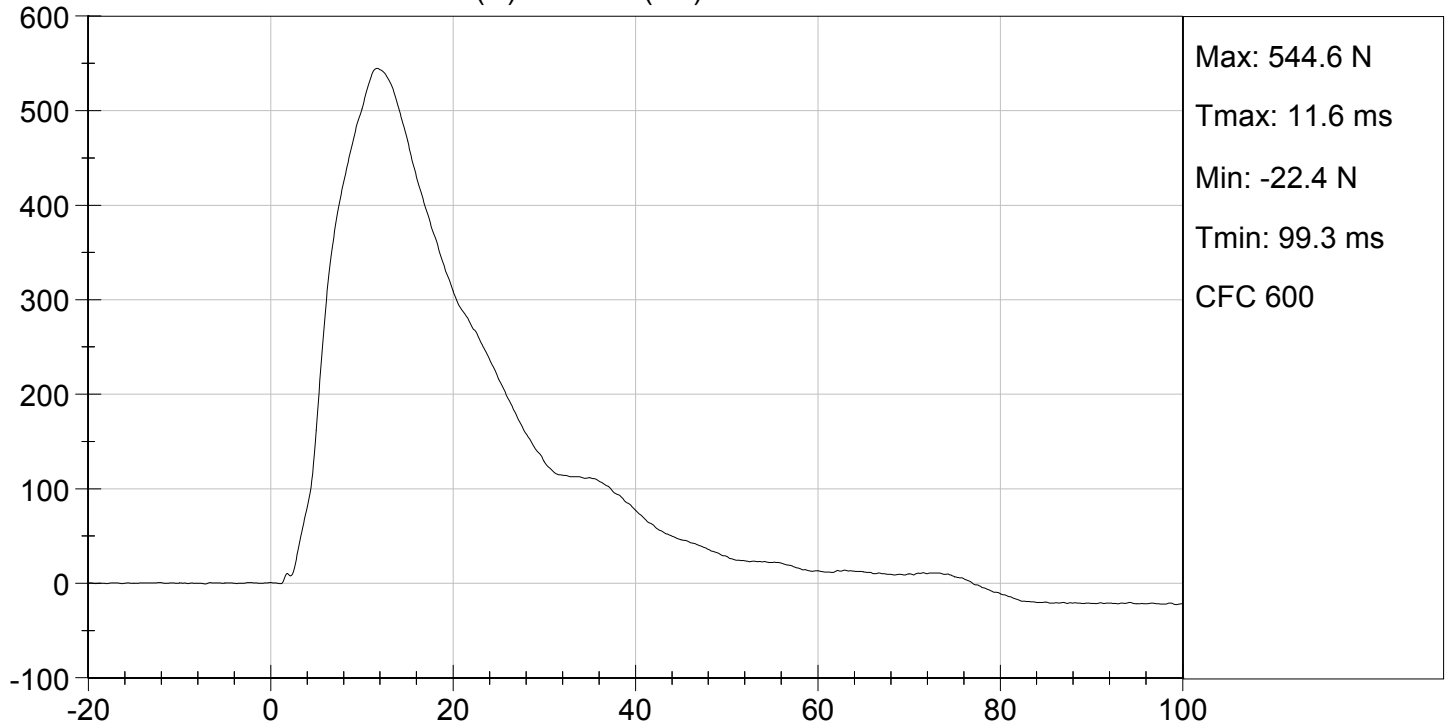




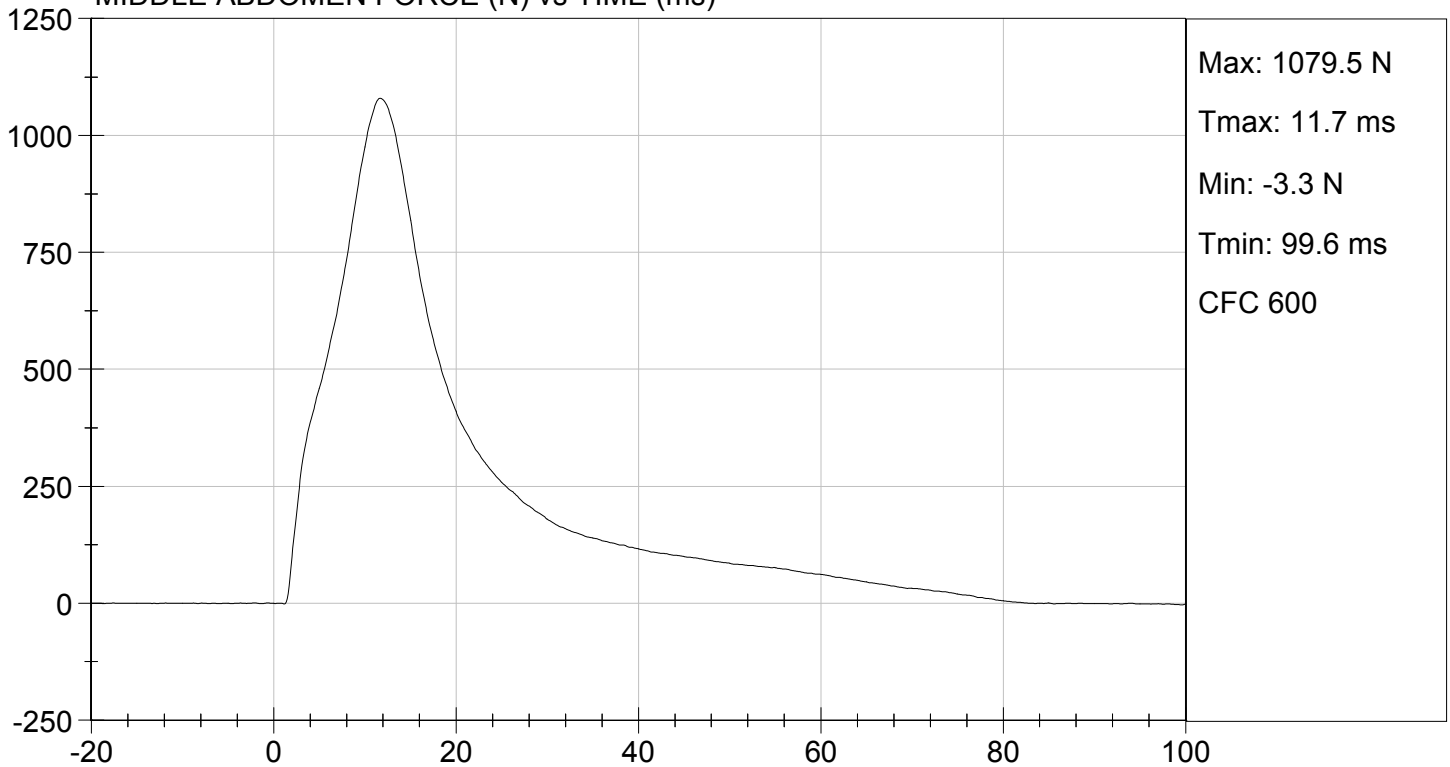
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.33 ft/s, 4.06 m/s

TEST DATE: 06/10/2015
TEST #: D151647

FRONT ABDOMEN FORCE (N) vs TIME (ms)



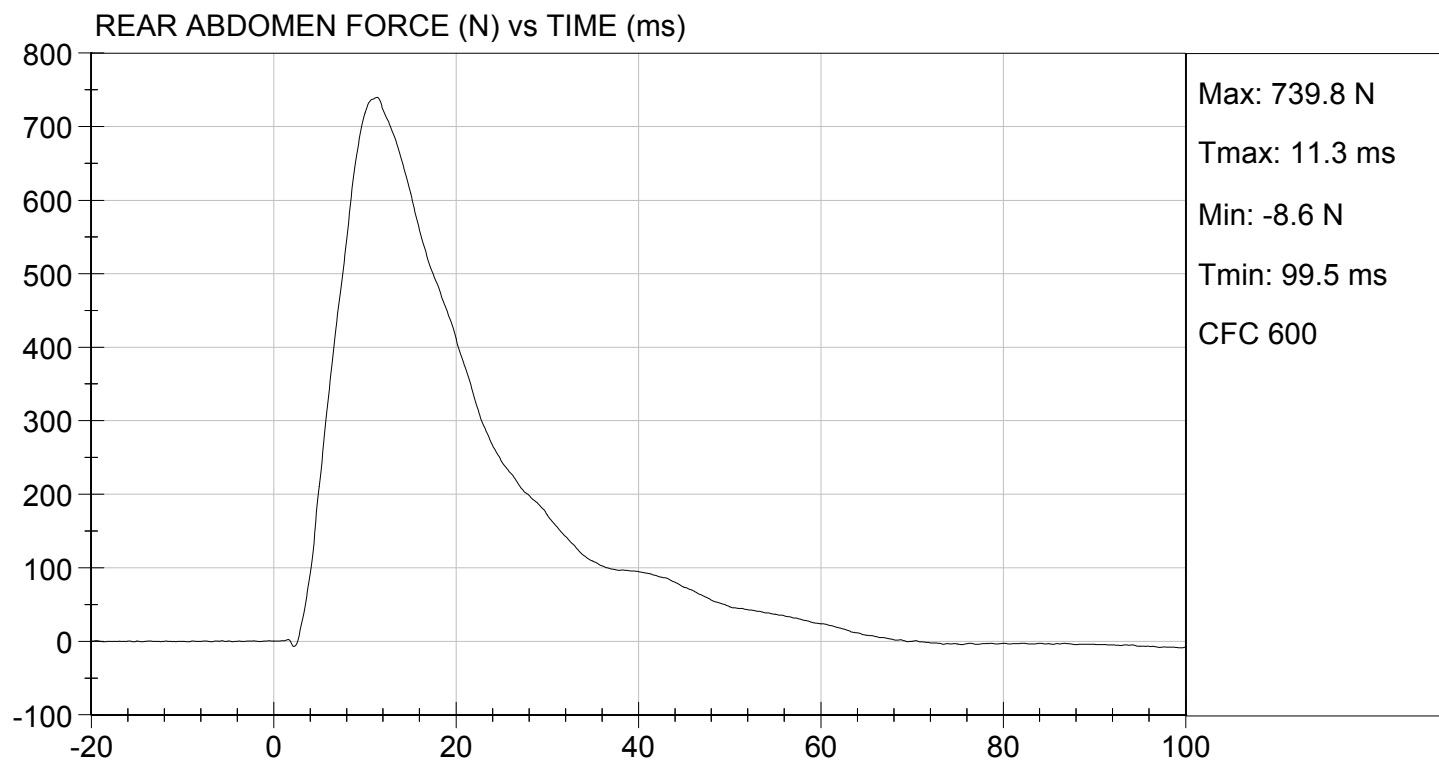
MIDDLE ABDOMEN FORCE (N) vs TIME (ms)





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

TEST DATE: 06/10/2015
TEST #: D151647



MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151648

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	48	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	-0.382	Pass
	27 ms	m/s	-6.50 to -5.80	-5.90	Pass
	30 ms	m/s	>= -6.50	-6.30	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	48.5	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	49.6	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	45	Pass
Overall Results					Pass

David Schoedel
Laboratory Technician

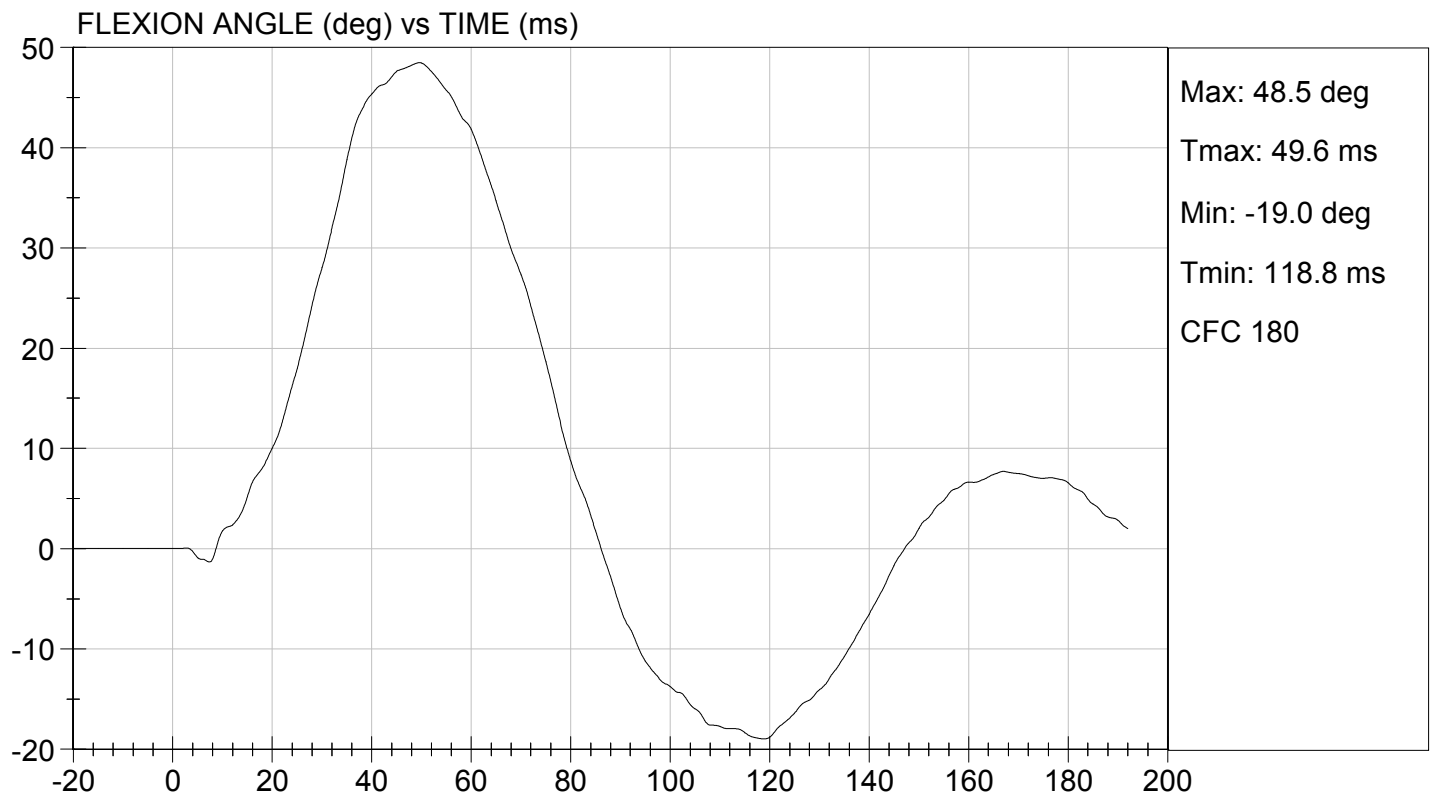
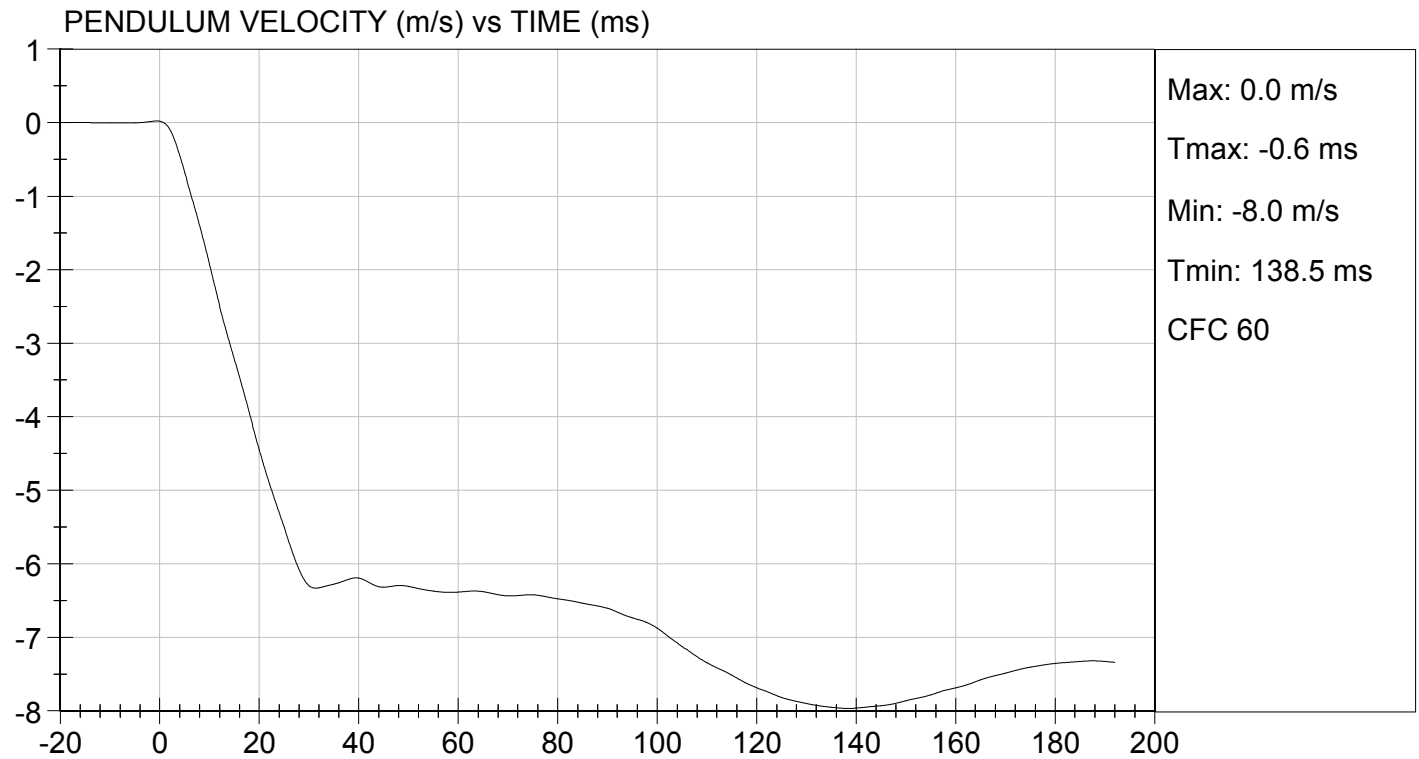
06/10/2015
Test Date

Jessica Hall
Approved By



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

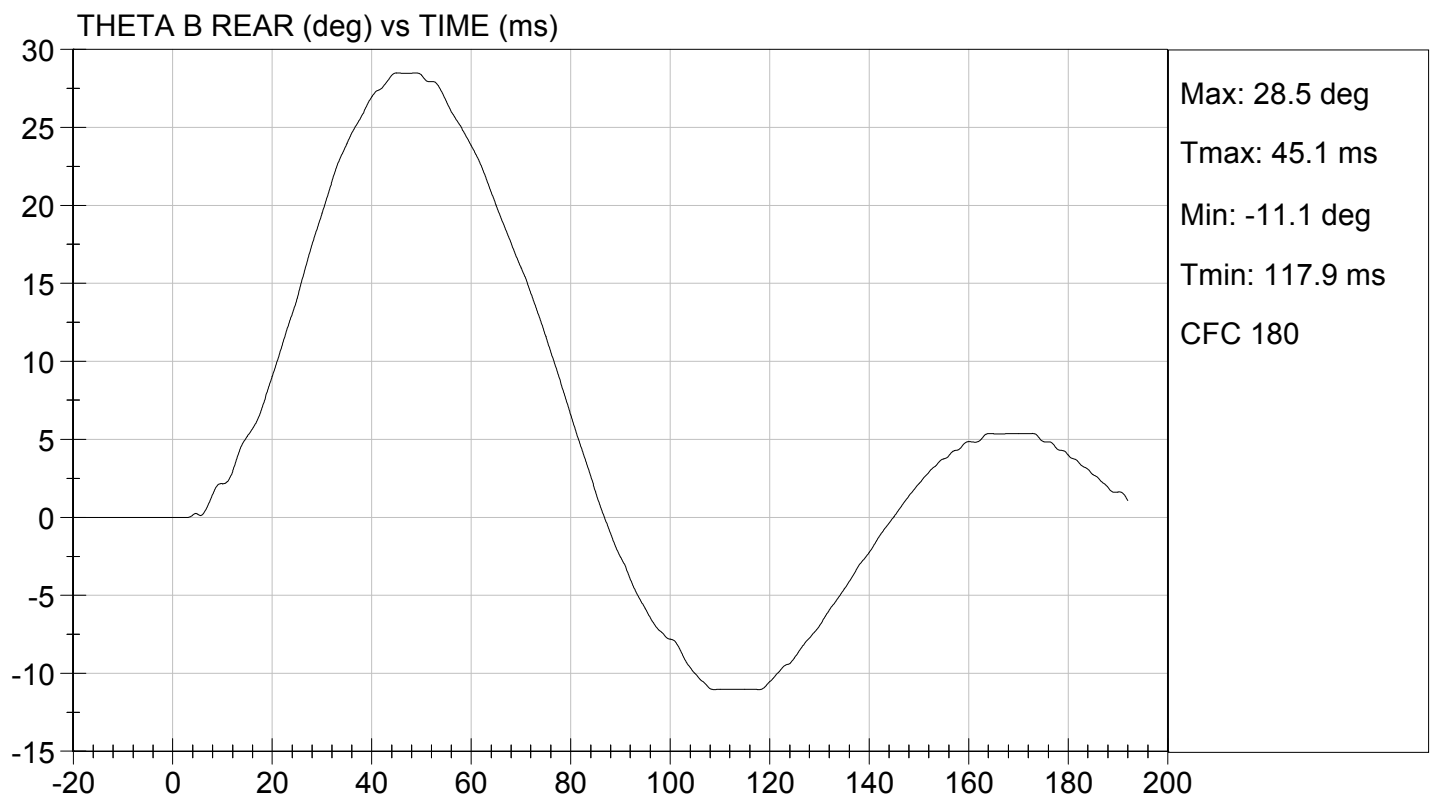
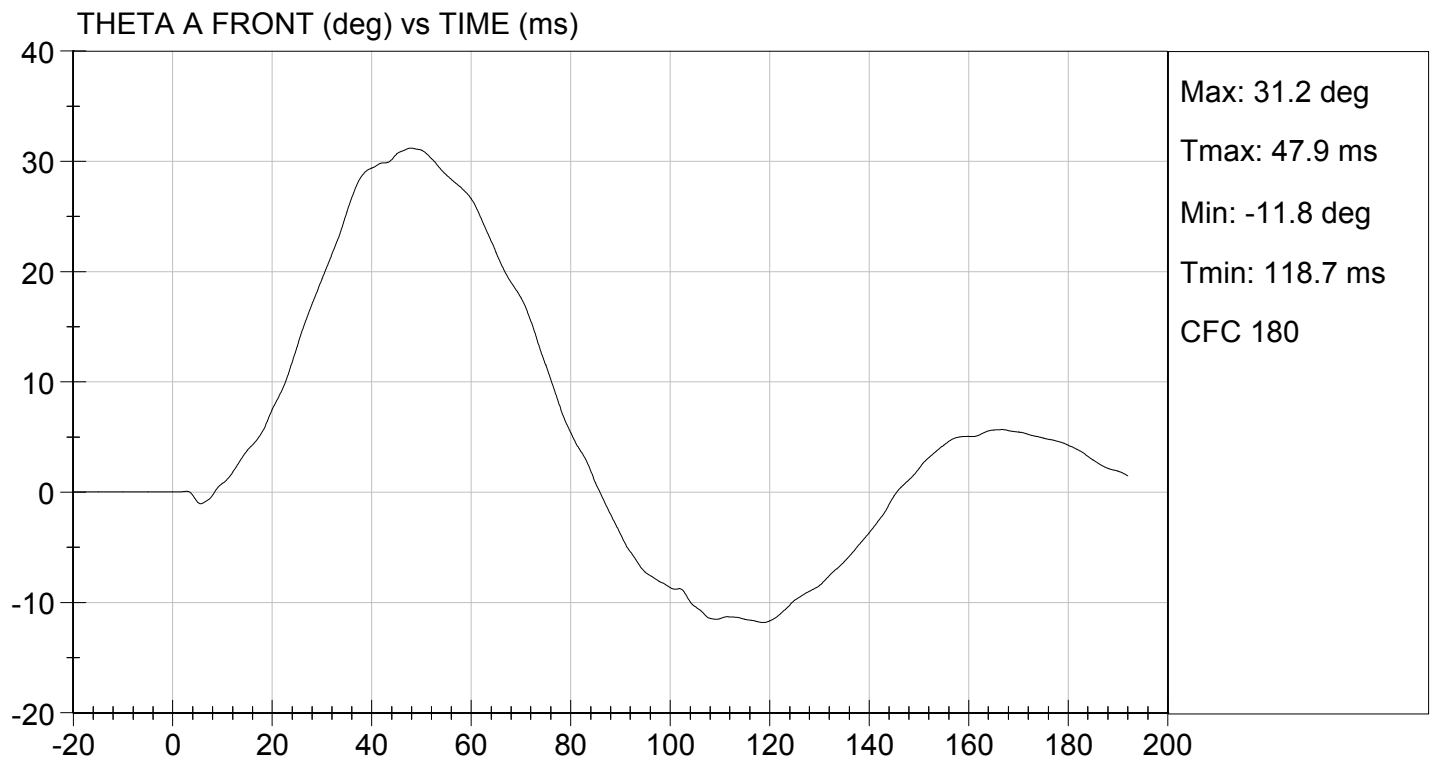
TEST DATE: 06/10/2015
TEST #: D151648





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

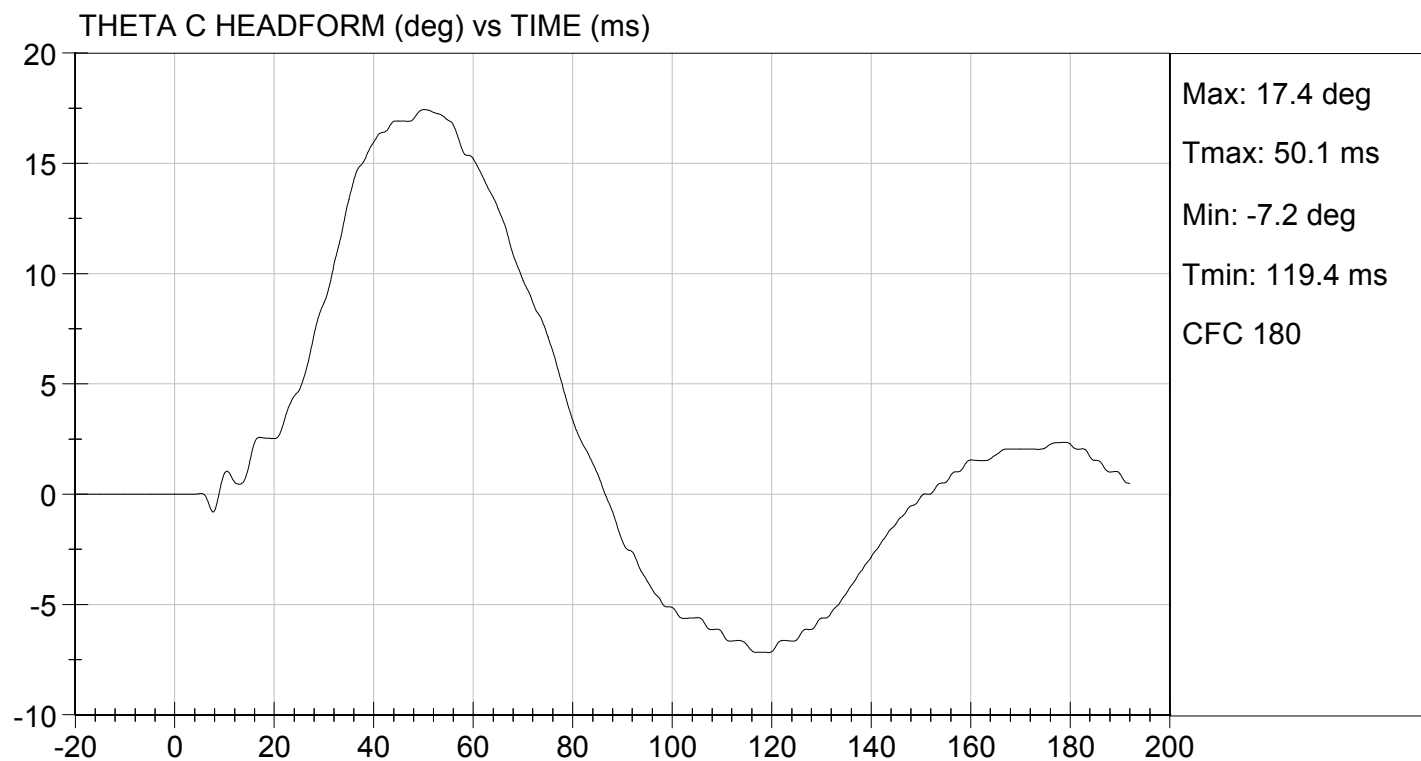
TEST DATE: 06/10/2015
TEST #: D151648





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

TEST DATE: 06/10/2015
TEST #: D151648



MGA RESEARCH CORPORATION**PELVIS TEST
ES-2re DUMMY****ATD Serial No:** 032**Test I.D:** D151649

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Speed	m/s	4.20 to 4.40	4.30	Pass
Maximum Impactor Force	N	4700 to 5400	4975	Pass
Time of Maximum Impactor Force	ms	11.8 to 16.1	14.3	Pass
Maximum Pubic Force	N	1230 to 1590	1292	Pass
Time of Maximum Pubic Force	ms	12.2 to 17.0	13.7	Pass
Overall Test Results				Pass


Laboratory Technician

06/10/2015

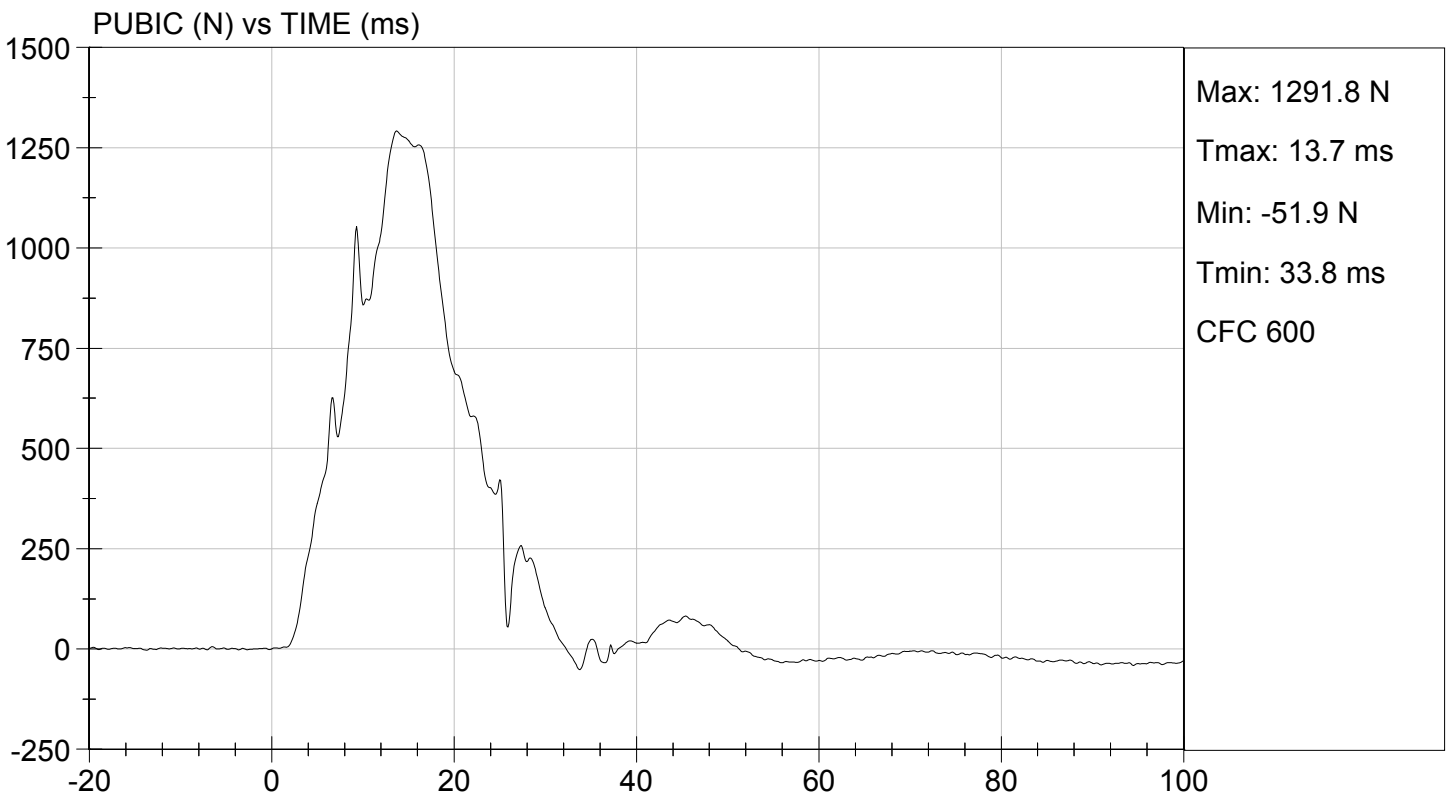
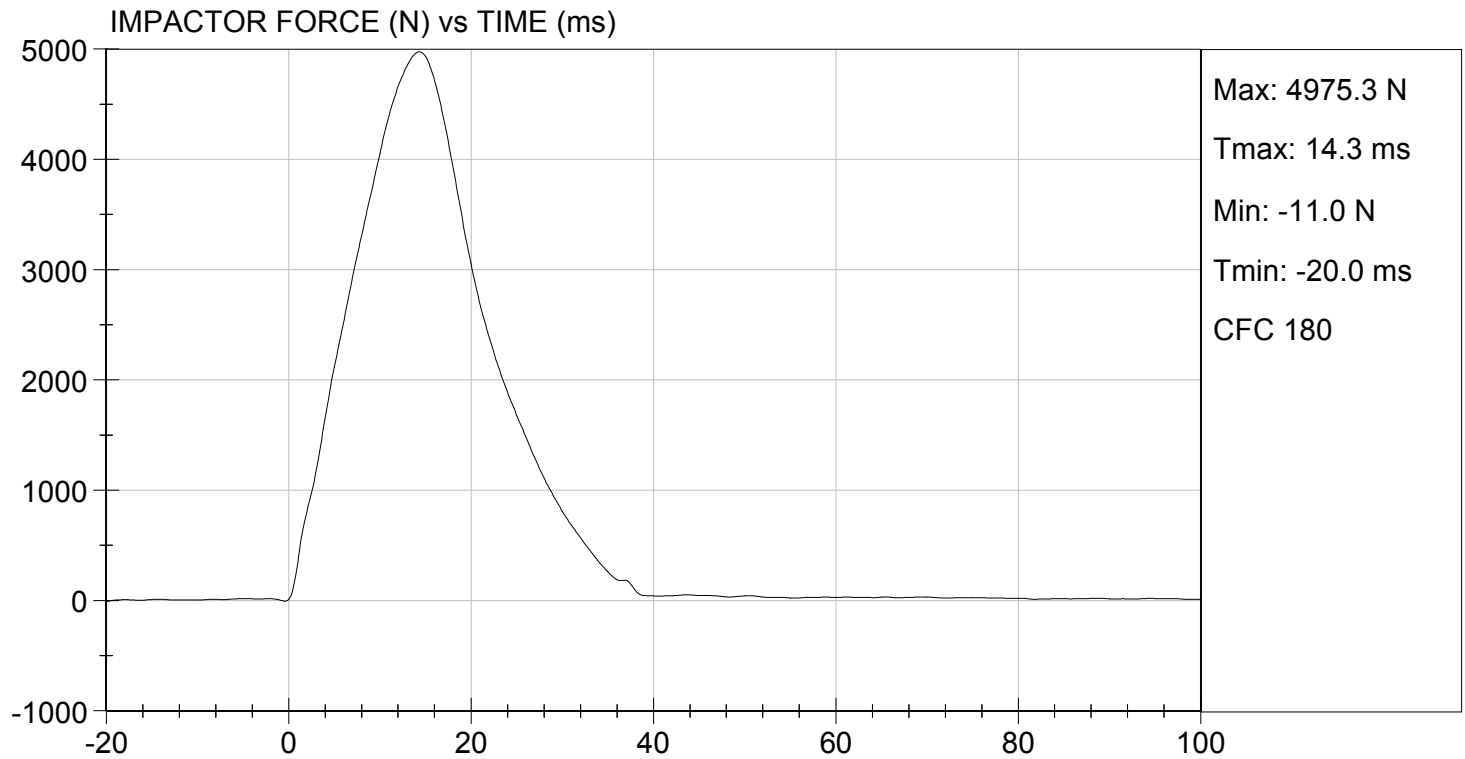
Test Date


Approved By



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

TEST DATE: 06/10/2015
TEST #: D151649



MGA RESEARCH CORPORATION
HEAD DROP TEST
ES-2re DUMMY

ATD Serial No: 032

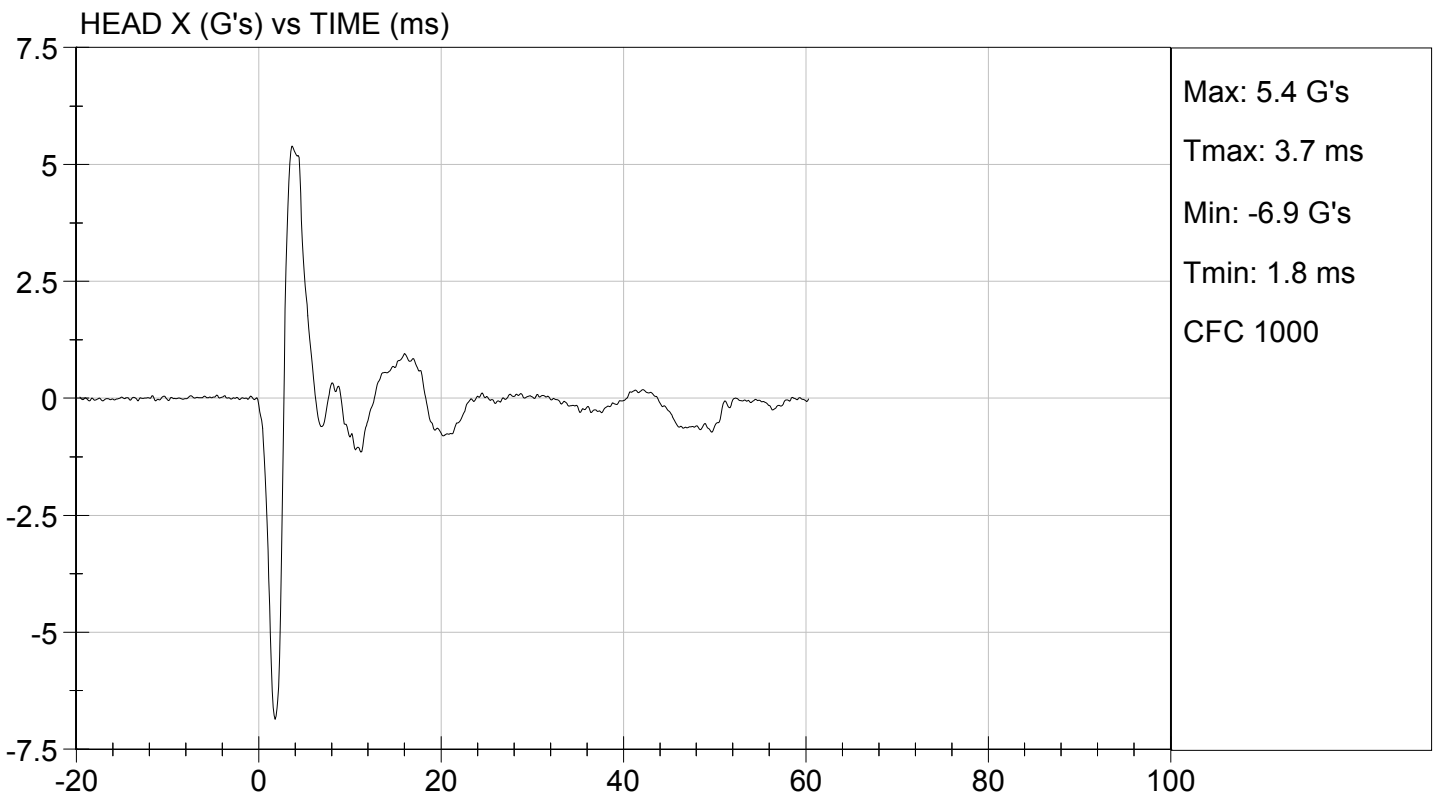
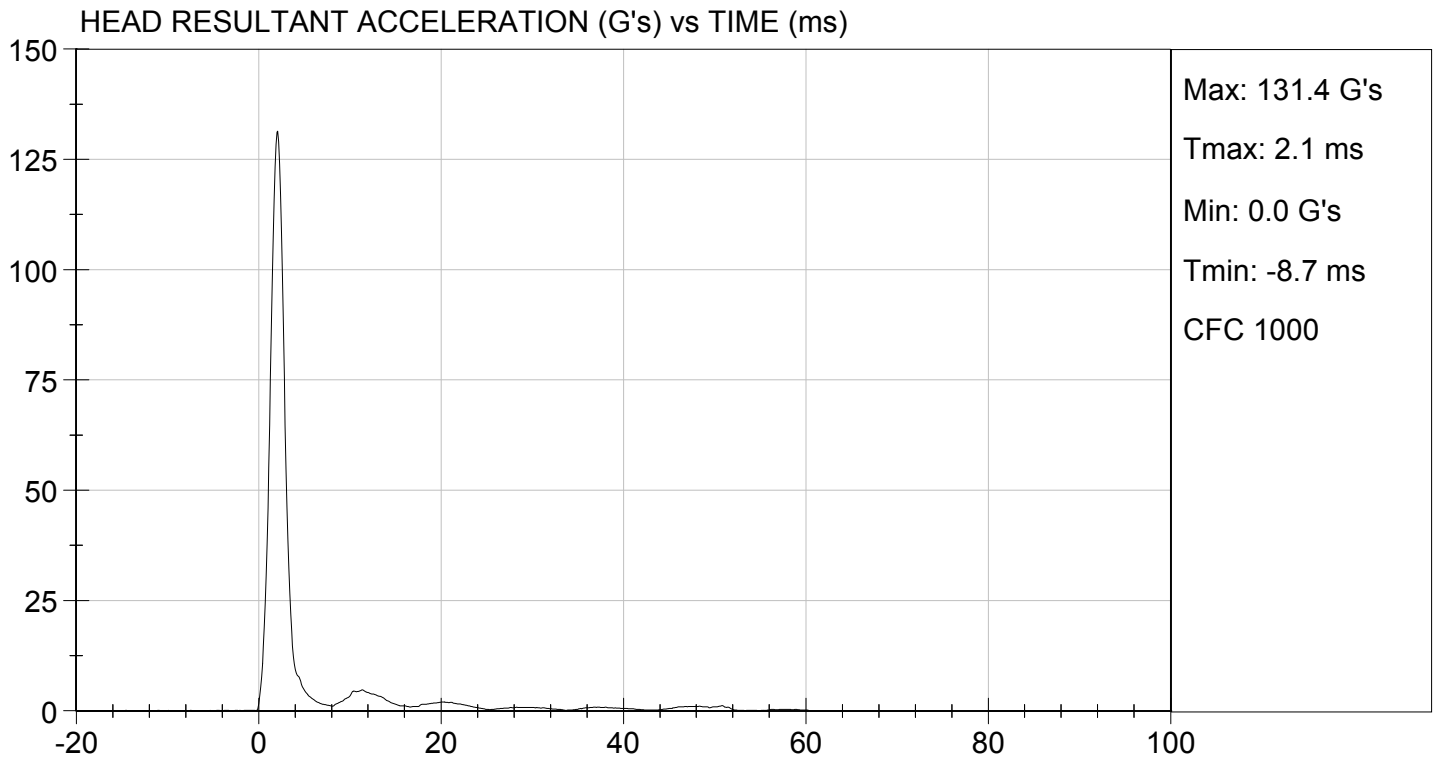
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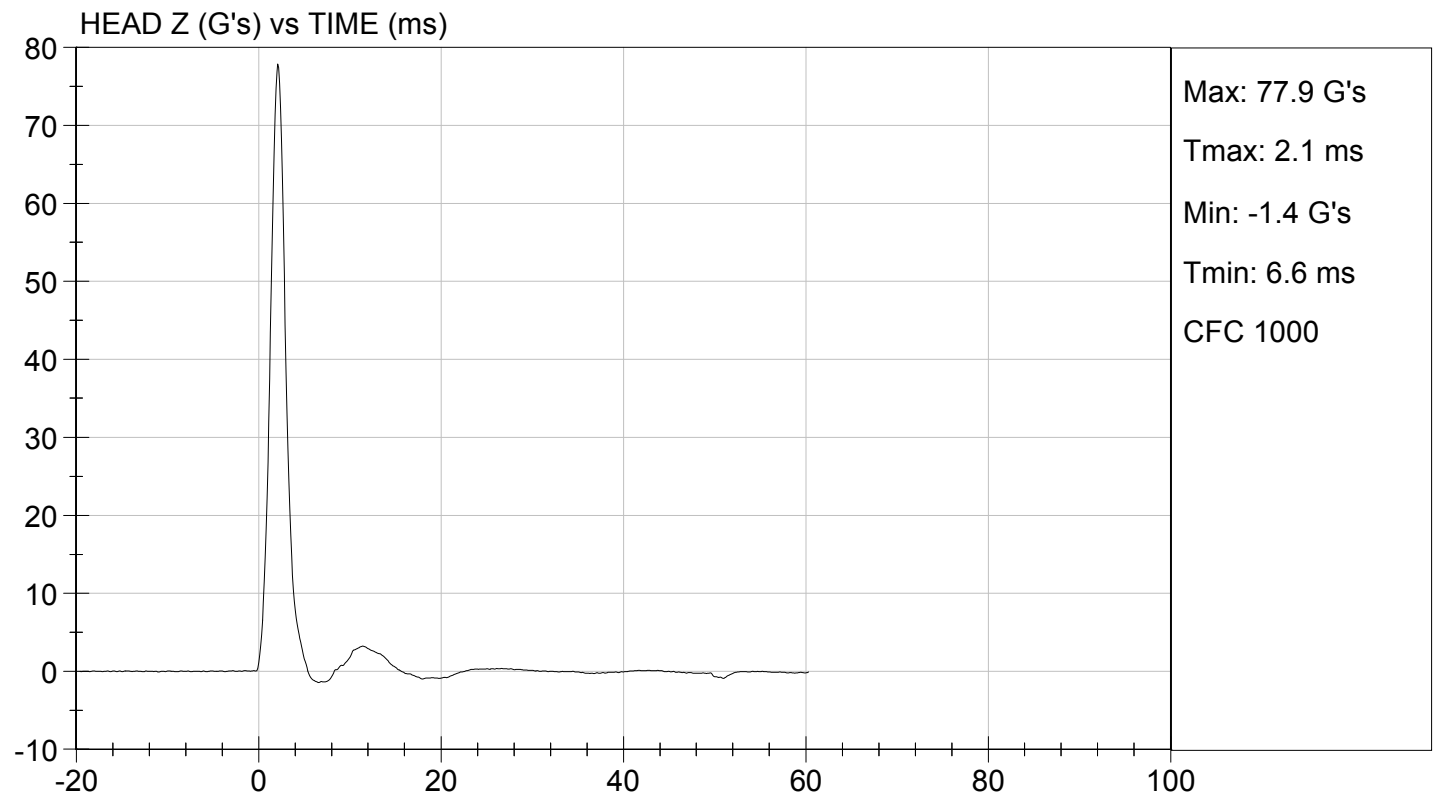
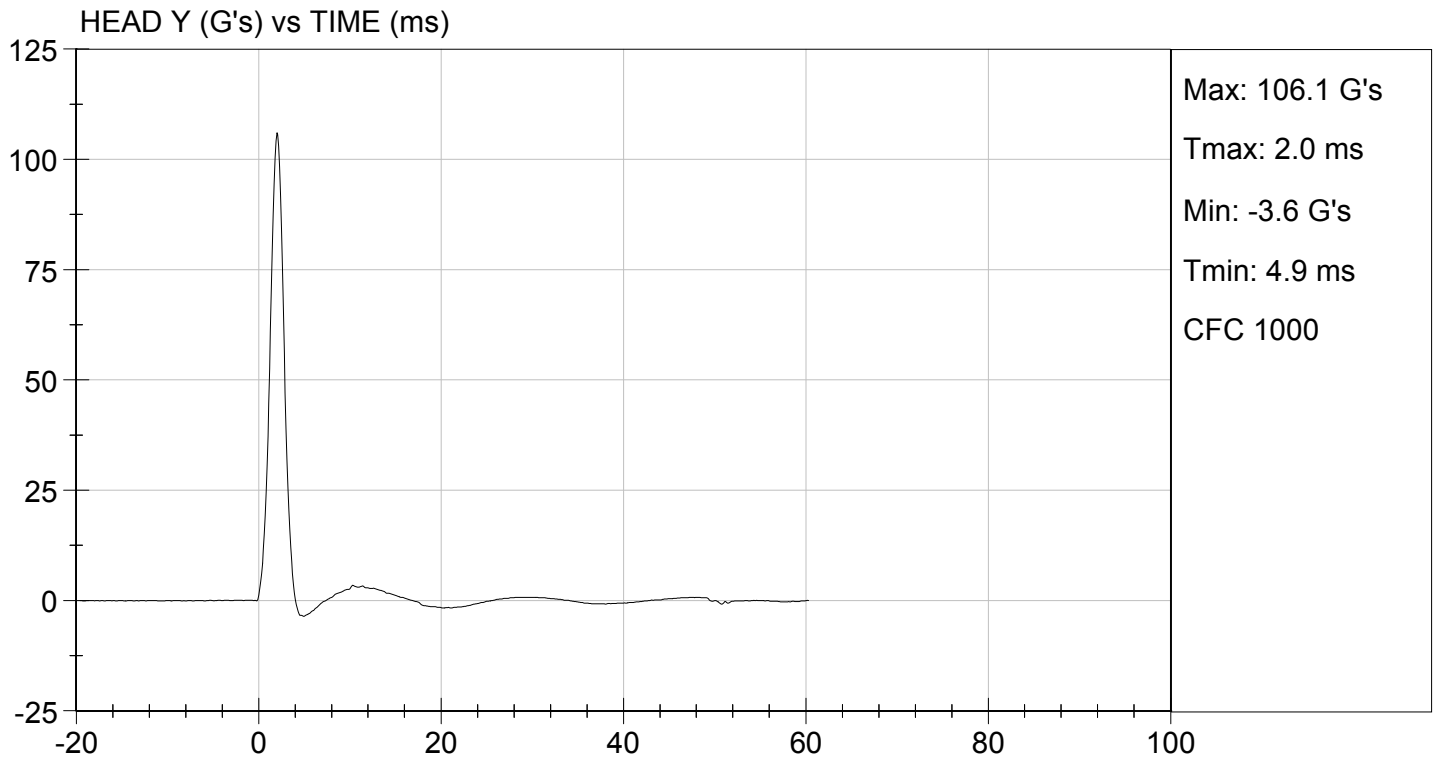
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	125 to 155	131	Pass
Peak Longitudinal Acceleration	G's	<= +/- 15.0	-6.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/17/2015
Test Date

Jessica Hall
Approved By





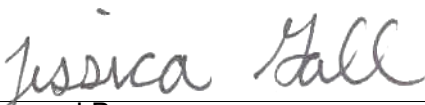
MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY

ATD Serial No: 032

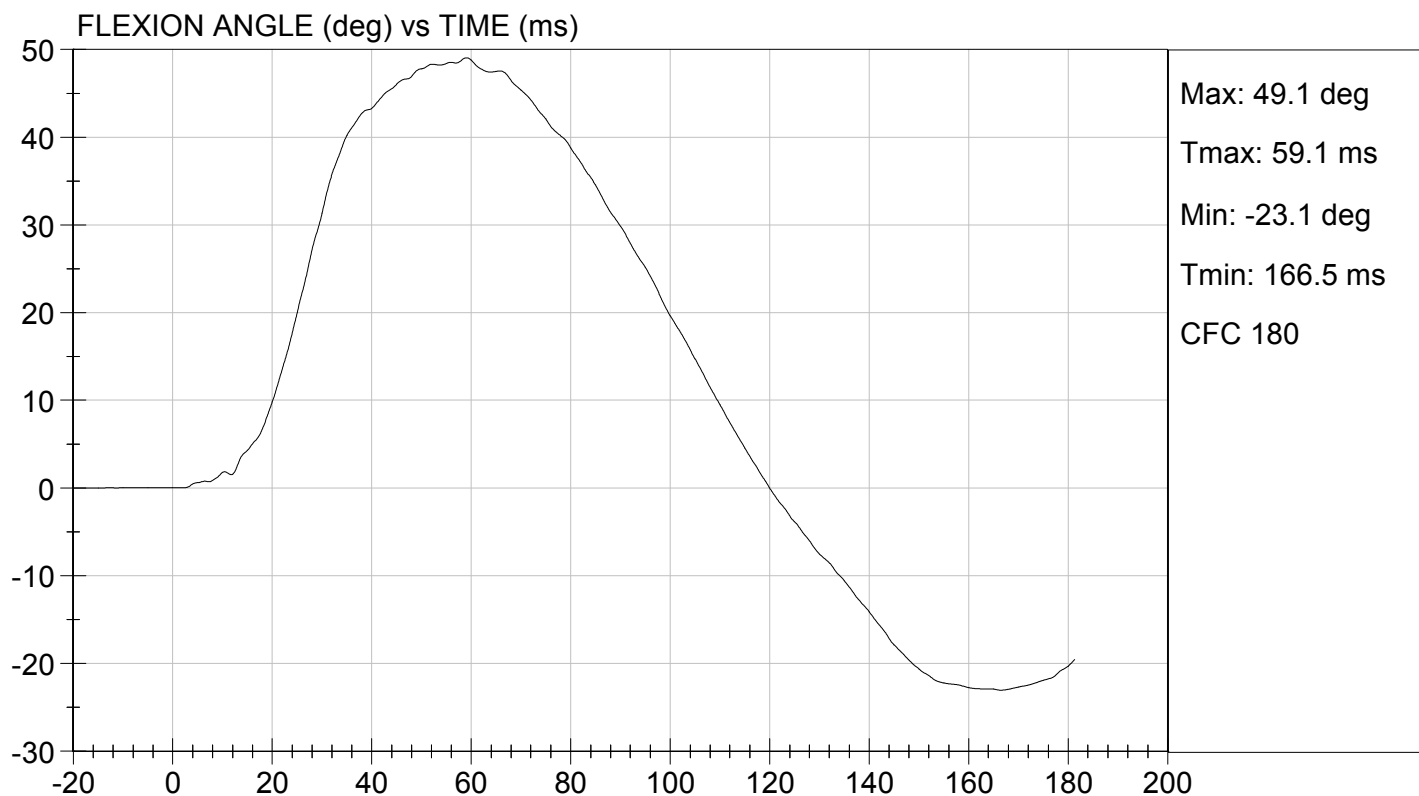
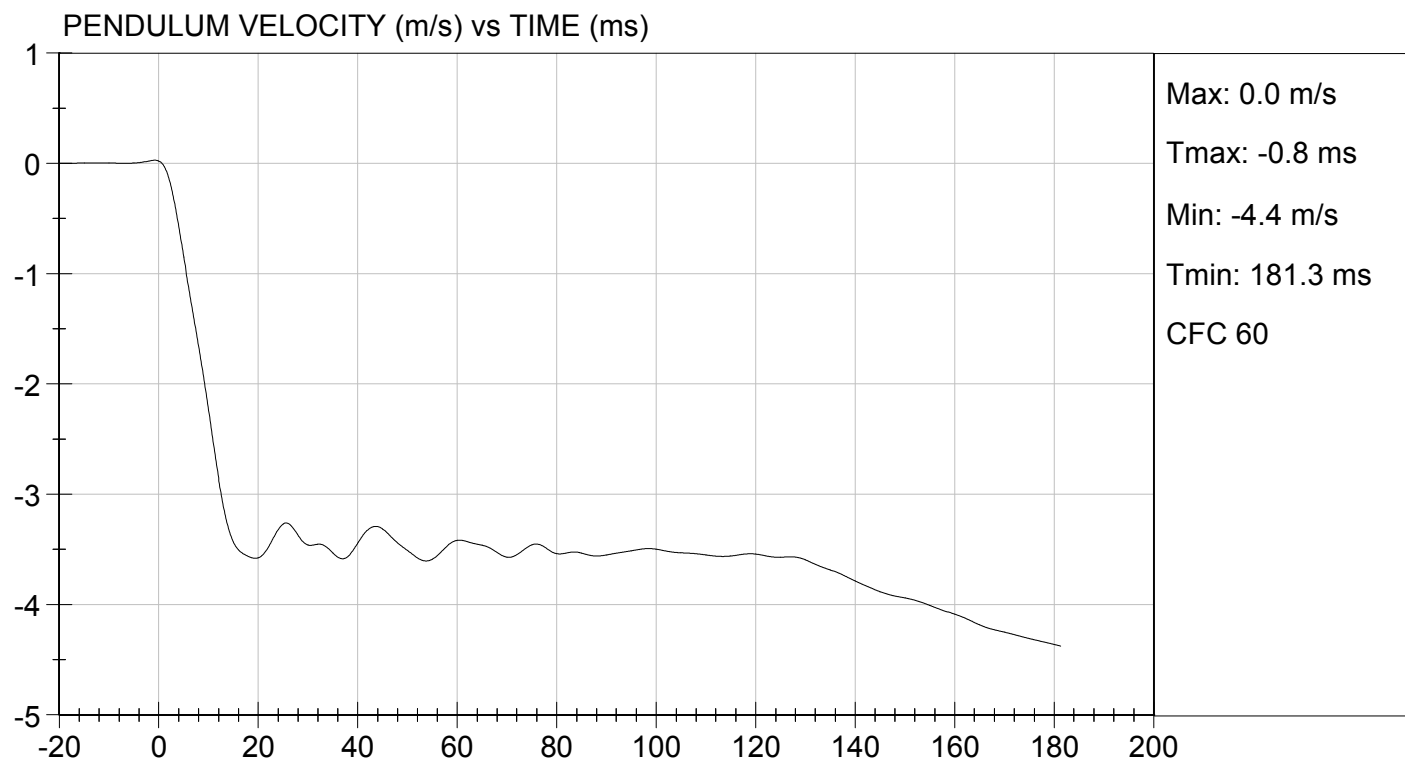
Test I.D: D151782

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	45	Pass
Pendulum Speed		m/s	3.30 to 3.50	3.34	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	-3.31	Pass
	17 ms	m/s	>= -3.70	-3.54	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	49.1	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	59.1	Pass
Head Rotation Decay Time to 0 Degree		ms	53.0 to 88.0	57.7	Pass
Overall Results					Pass


 Laboratory Technician


 Approved By

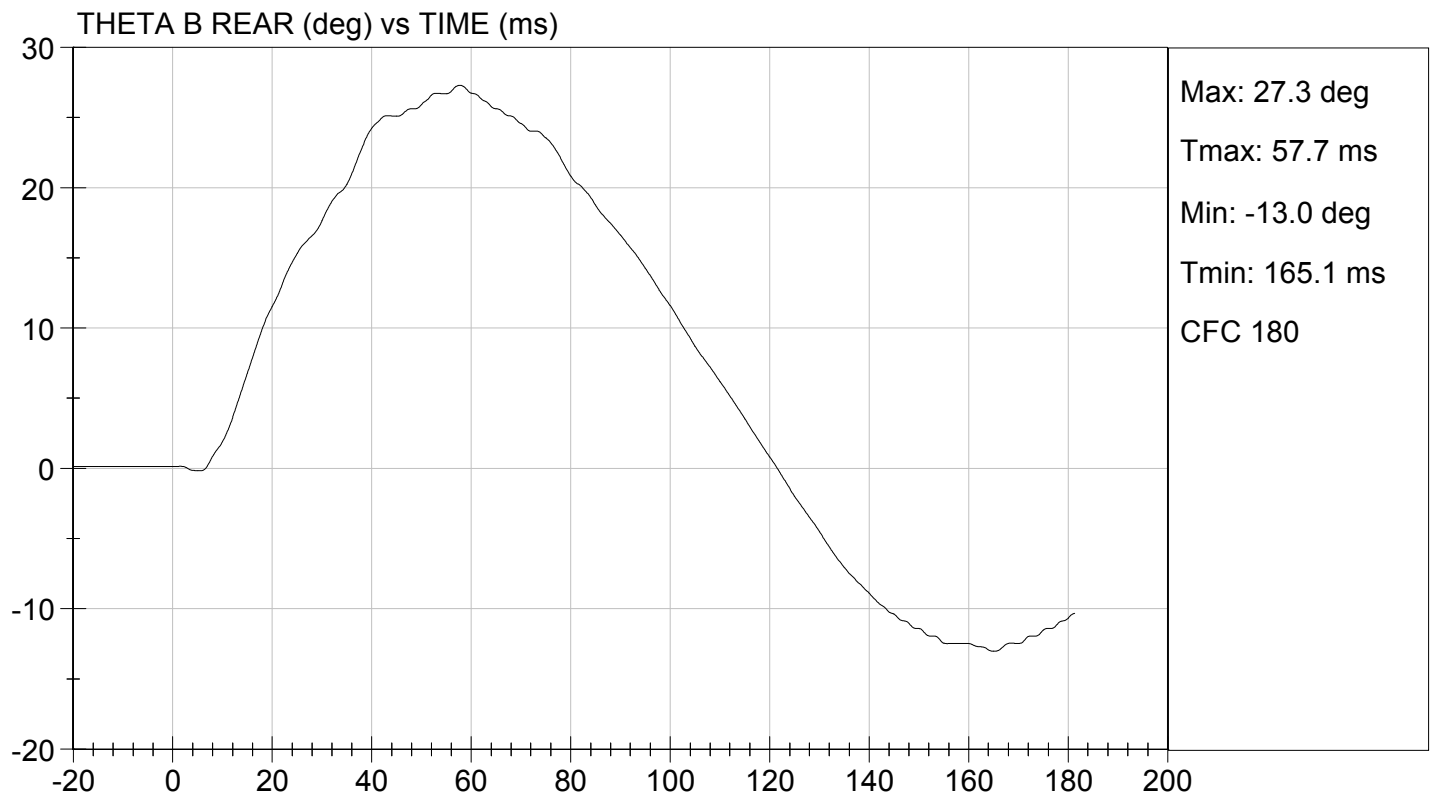
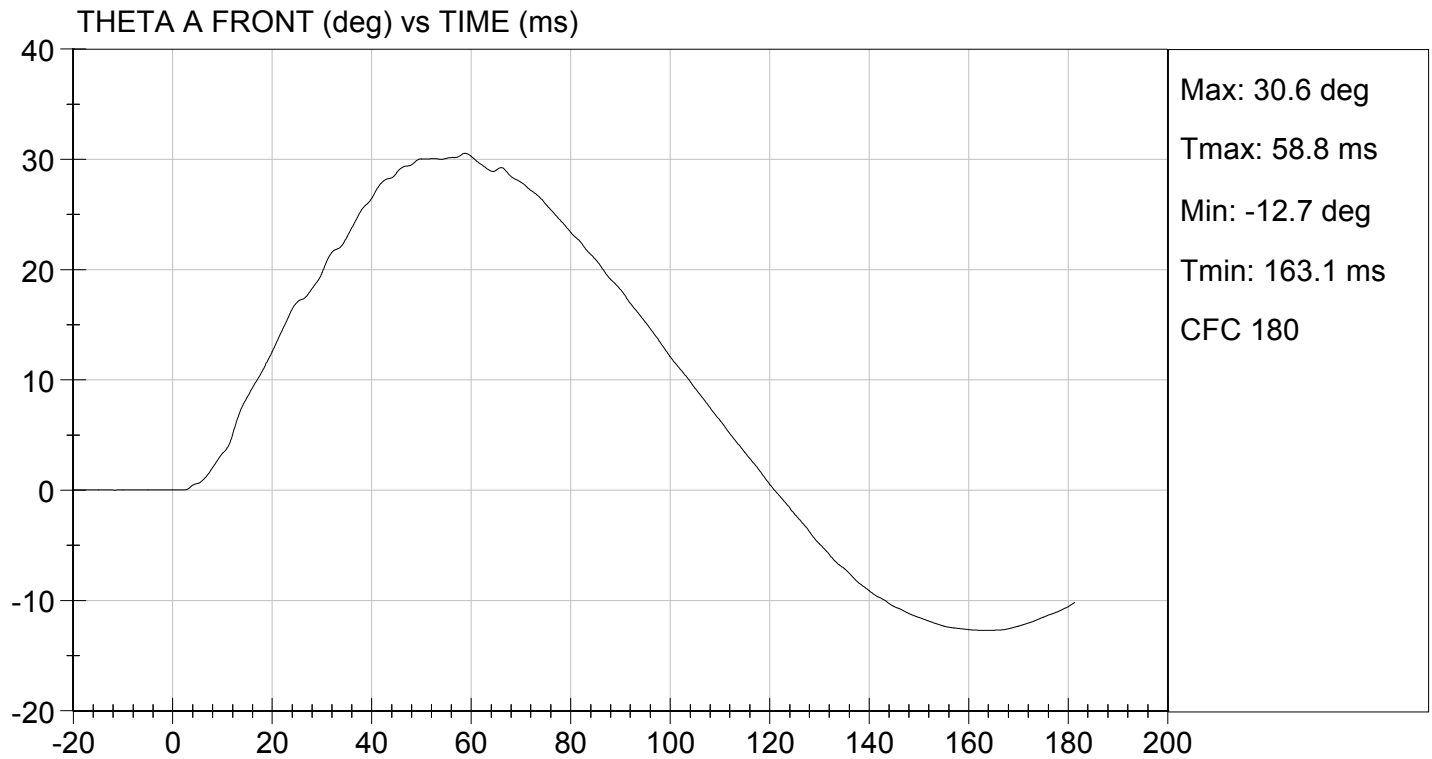
06/17/2015
 Test Date





TEST DESC: NECK BENDING
VELOCITY: 10.96 ft/s, 3.34 m/s

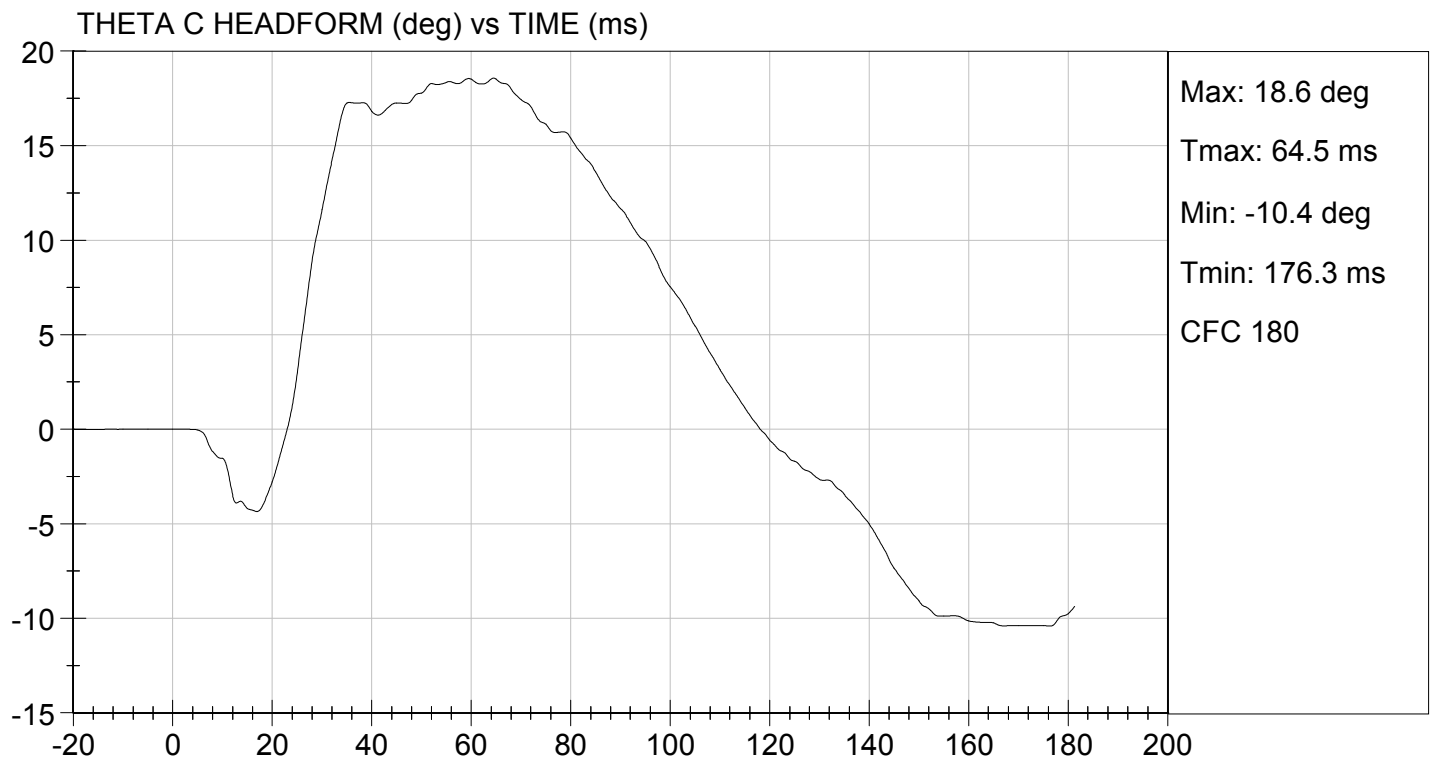
TEST DATE: 06/17/2015
TEST #: D151782





TEST DESC: NECK BENDING
VELOCITY: 10.96 ft/s, 3.34 m/s

TEST DATE: 06/17/2015
TEST #: D151782



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151783

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	48	Pass
Pendulum Speed	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.3	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

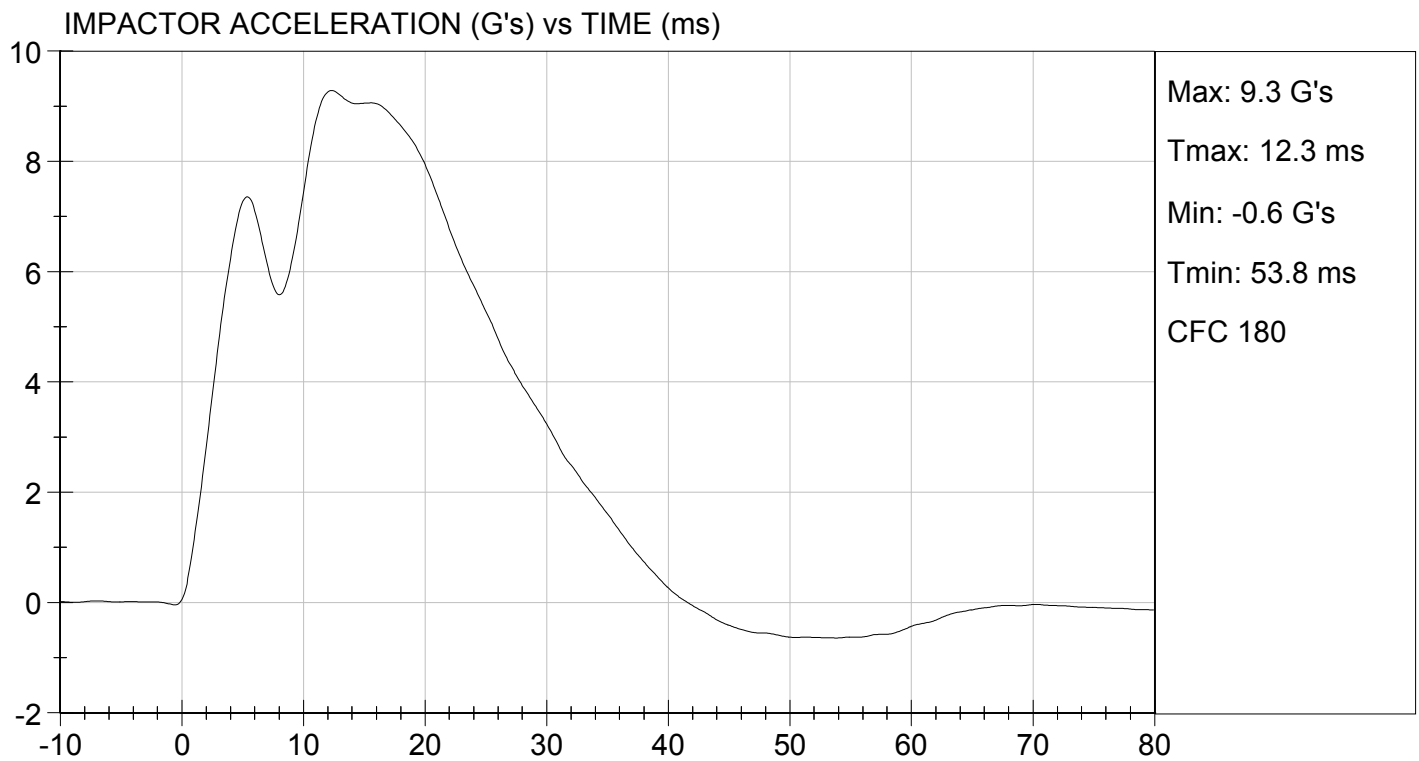
06/18/2015

Test Date



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 06/18/2015
TEST #: D151783



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151784

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	44	Pass
Displacement at 459 mm	mm	36.0 to 40.0	37.6	Pass
Displacement at 815 mm	mm	46.0 to 51.0	49.1	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

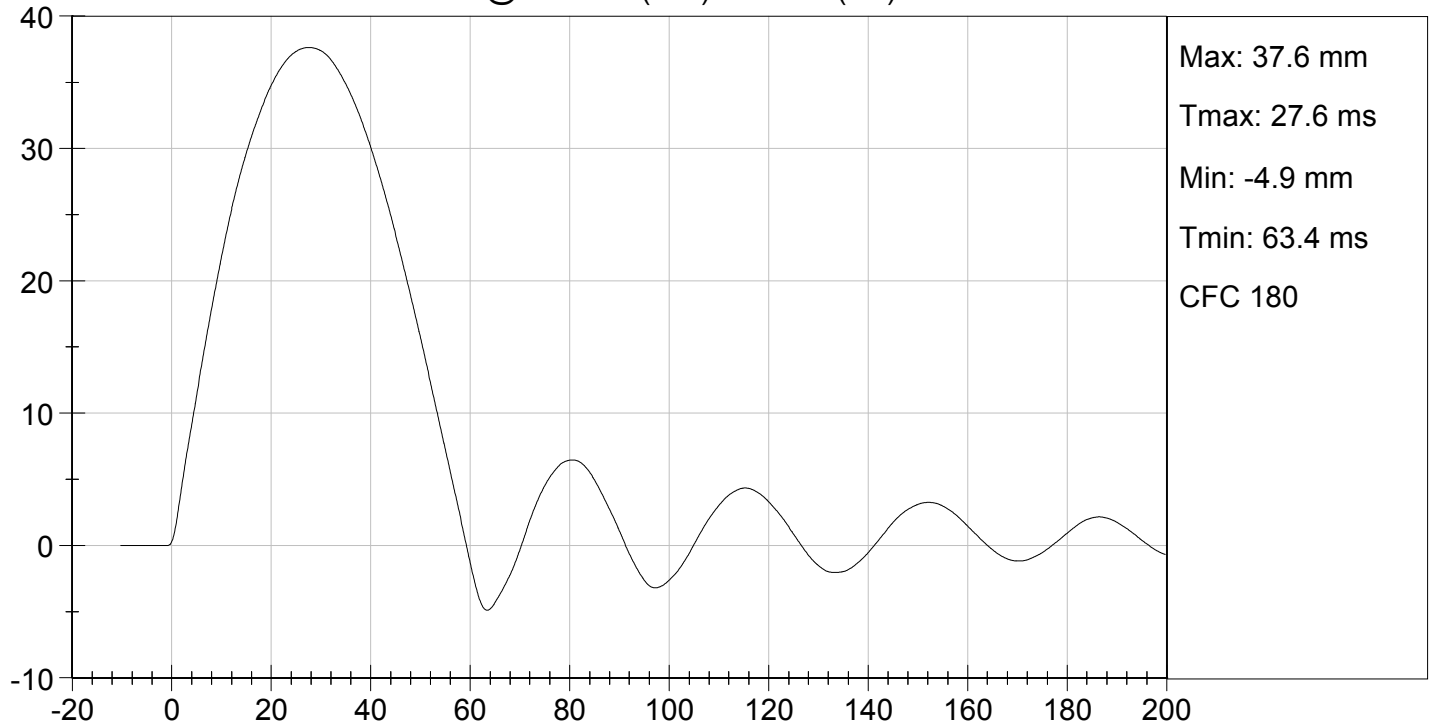
06/17/2015

Test Date

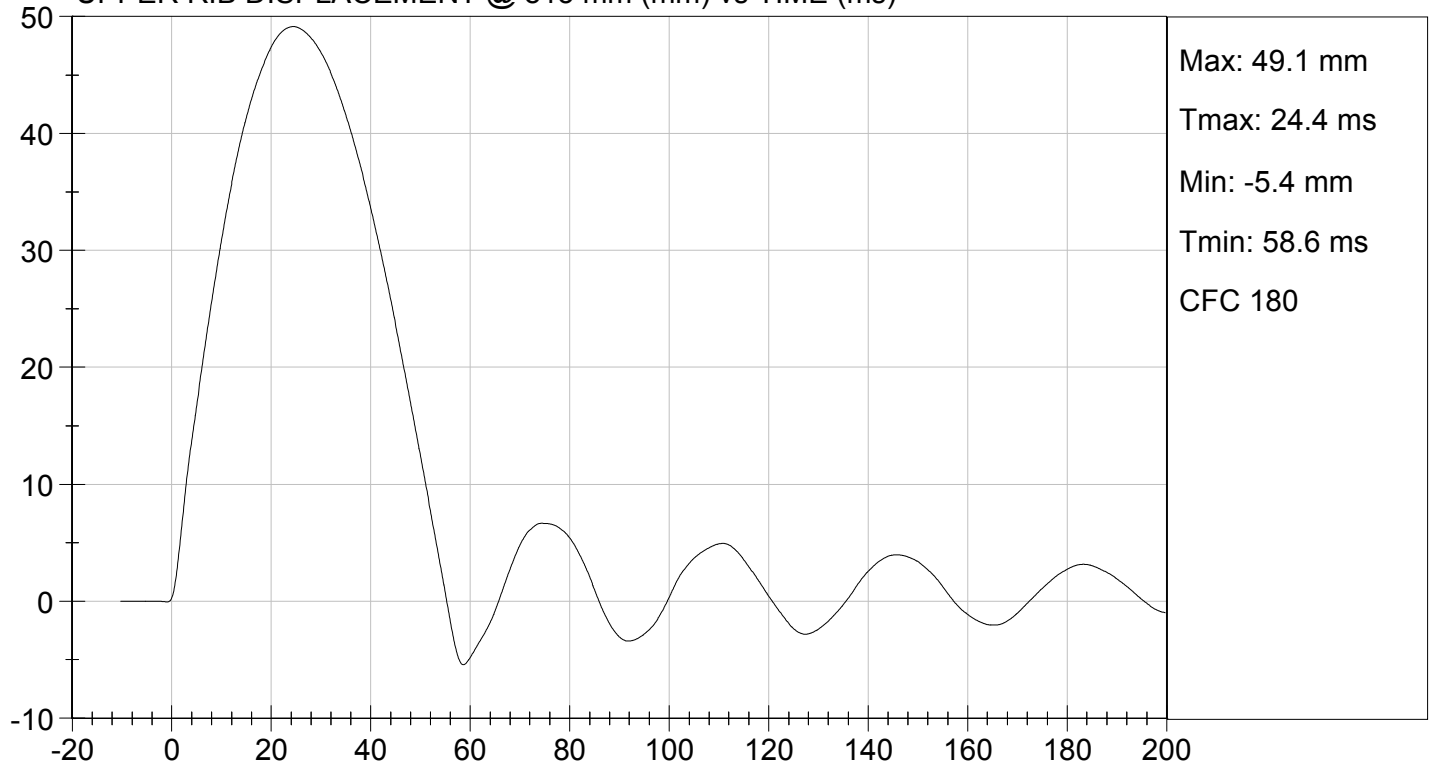
Jessica Hall
Approved By



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



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



MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D151785

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	44	Pass
Displacement at 459 mm	mm	36.0 to 40.0	37.4	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.0	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

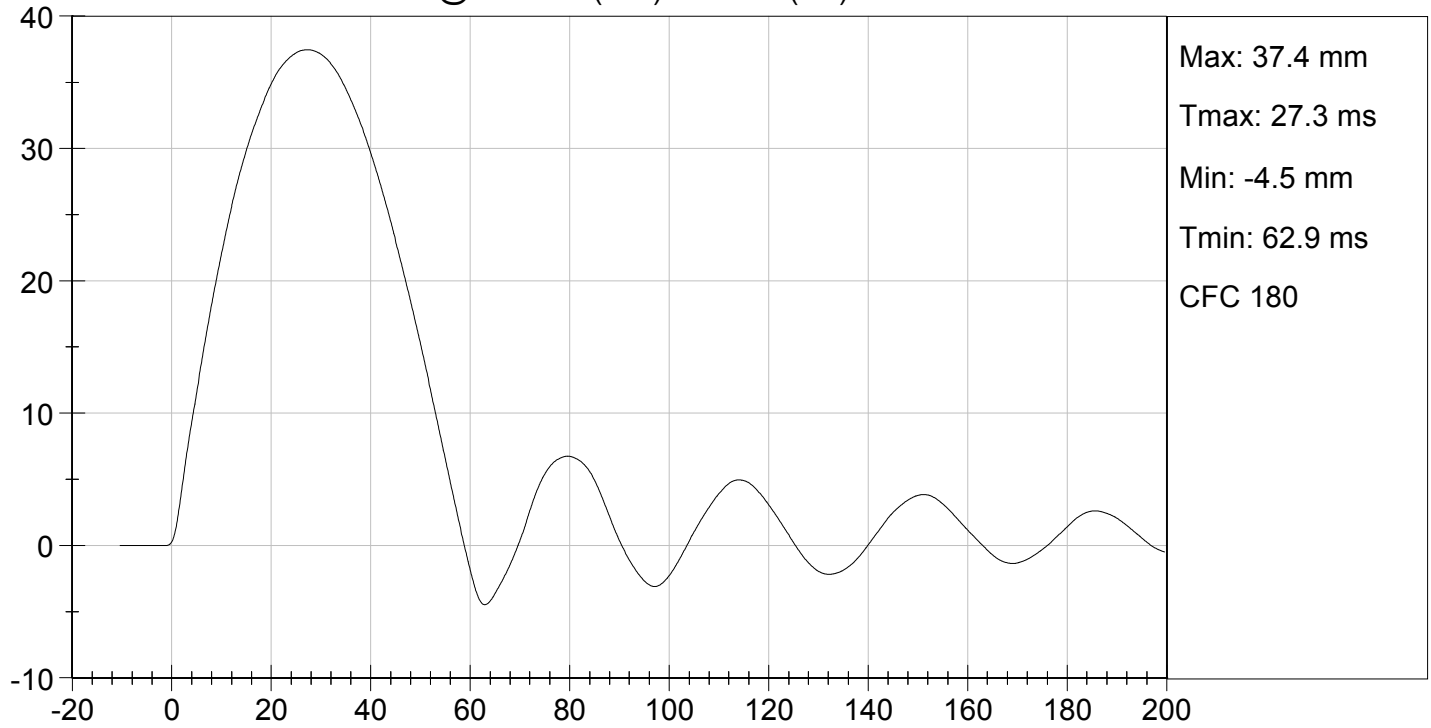
06/17/2015

Test Date

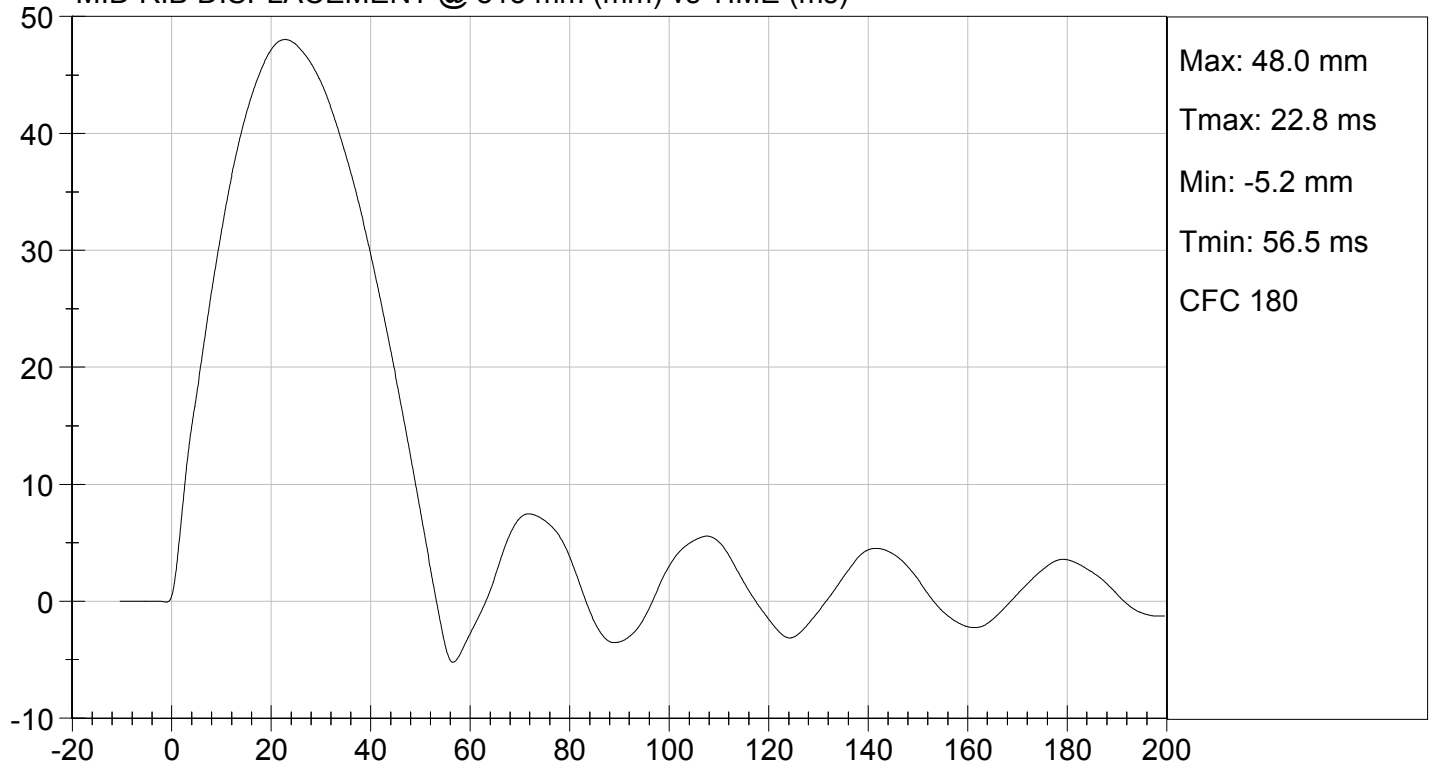
Jessica Hall
Approved By



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: D151786

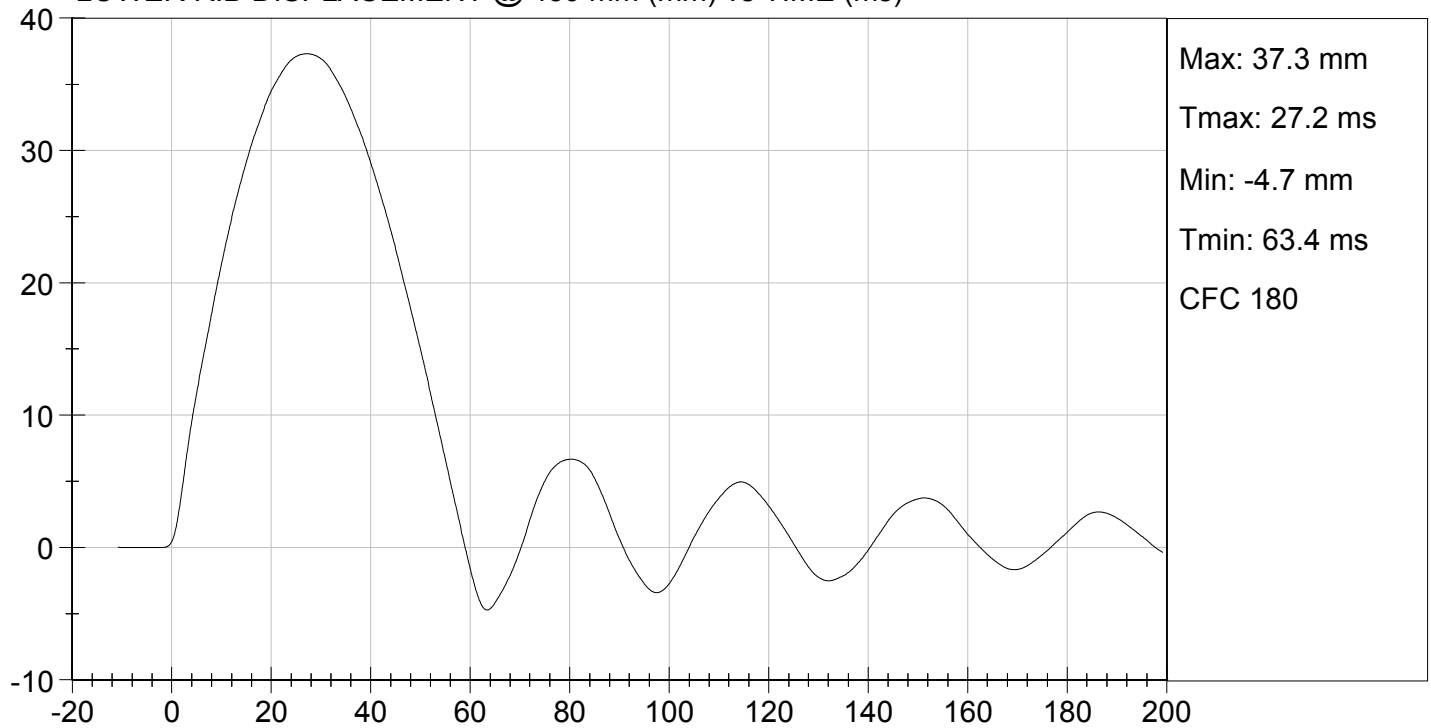
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Displacement at 459 mm	mm	36.0 to 40.0	37.3	Pass
Displacement at 815 mm	mm	46.0 to 51.0	48.4	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

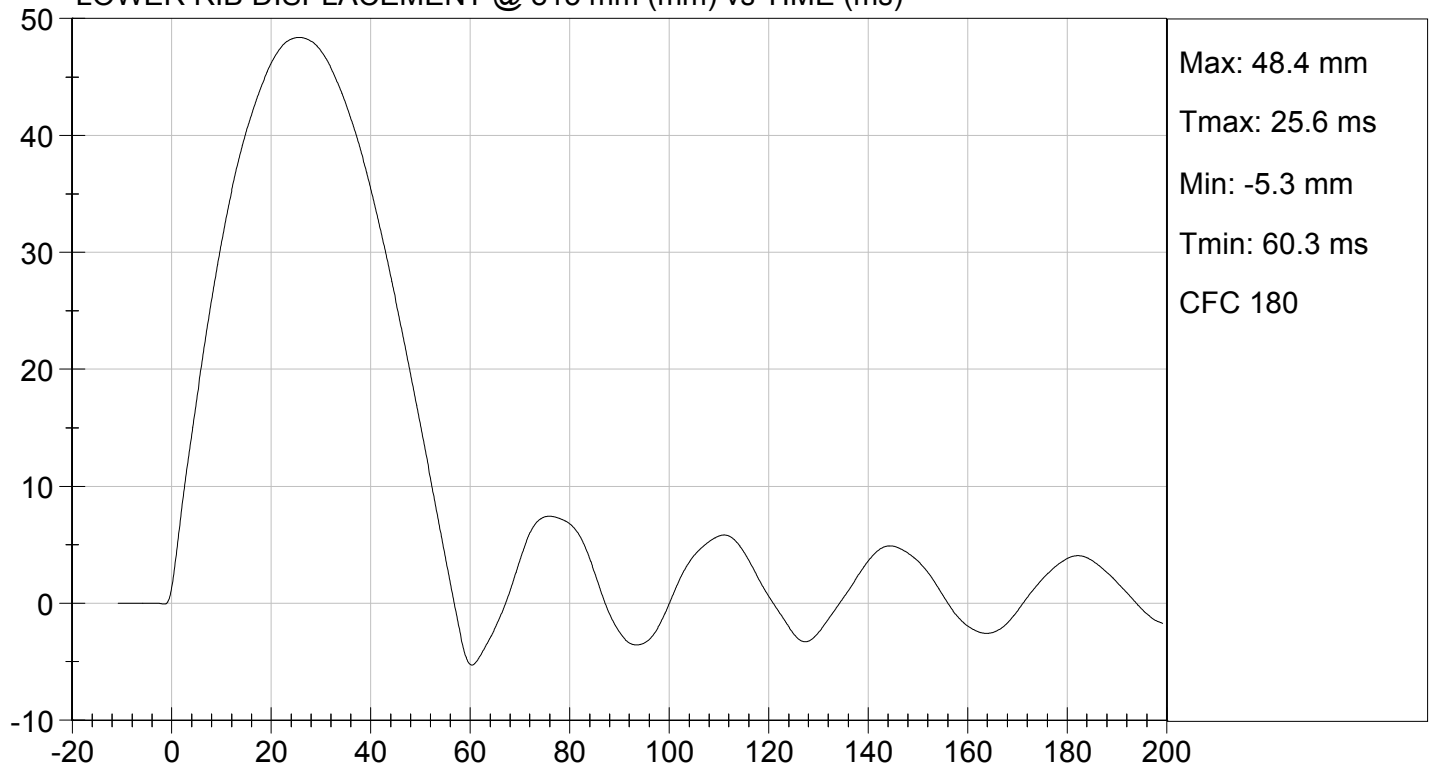
06/17/2015
Test Date

Jessica Hall
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: D151780

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	N	5100 to 6200	5252	Pass
Upper Rib Displacement	mm	34.0 to 41.0	39.4	Pass
Middle Rib Displacement	mm	37.0 to 45.0	41.5	Pass
Lower Rib Displacement	mm	37.0 to 44.0	41.3	Pass
Overall Test Results				Pass


Laboratory Technician

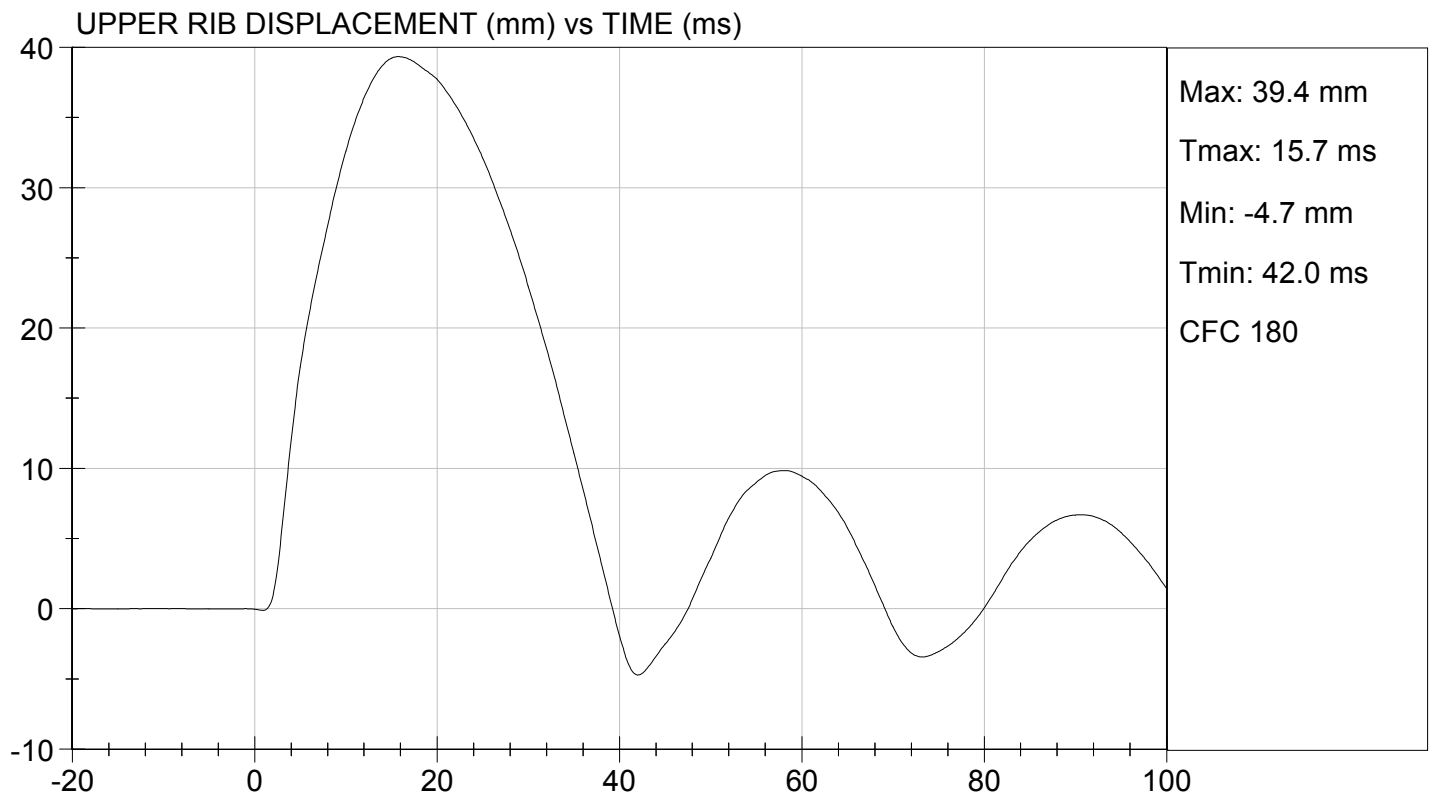
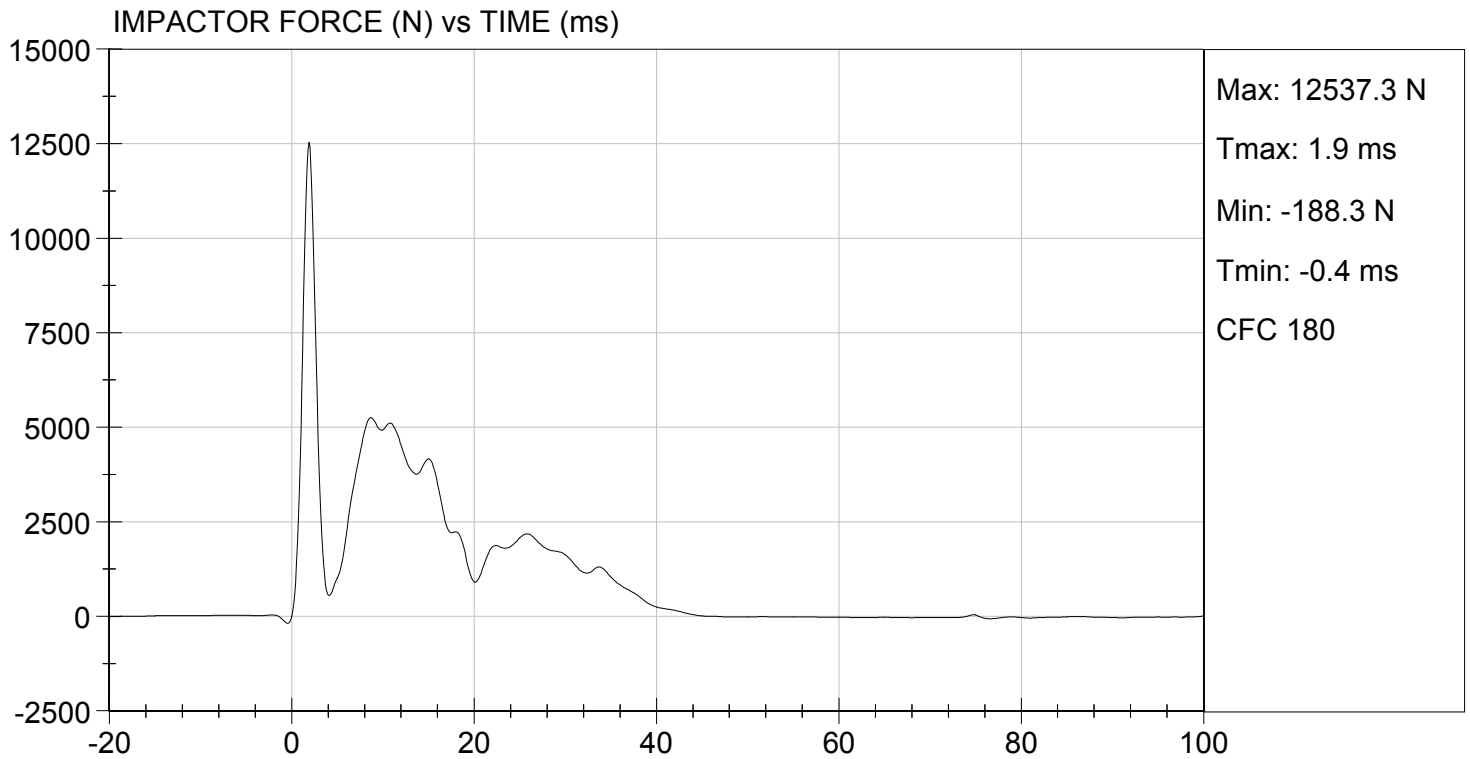
06/18/2015
Test Date


Approved By



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

TEST DATE: 06/18/2015
TEST #: D151780

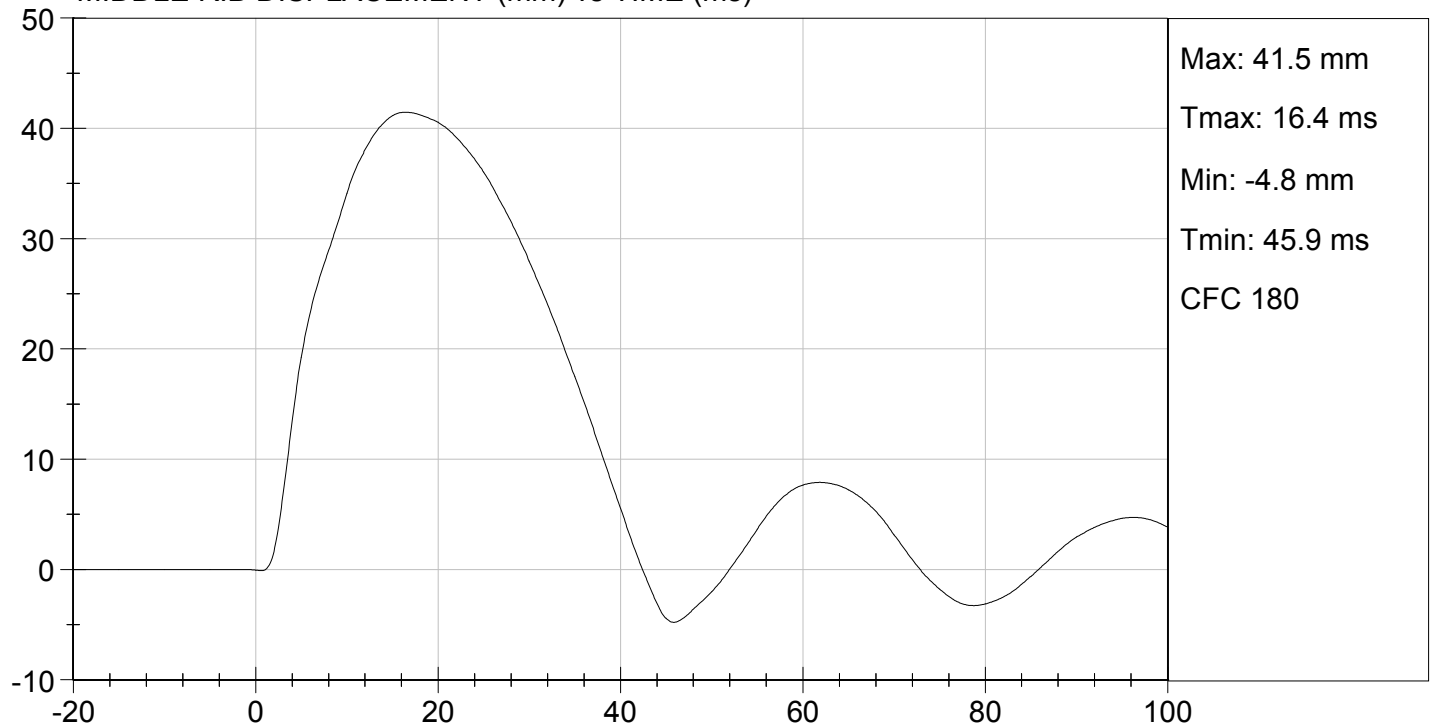




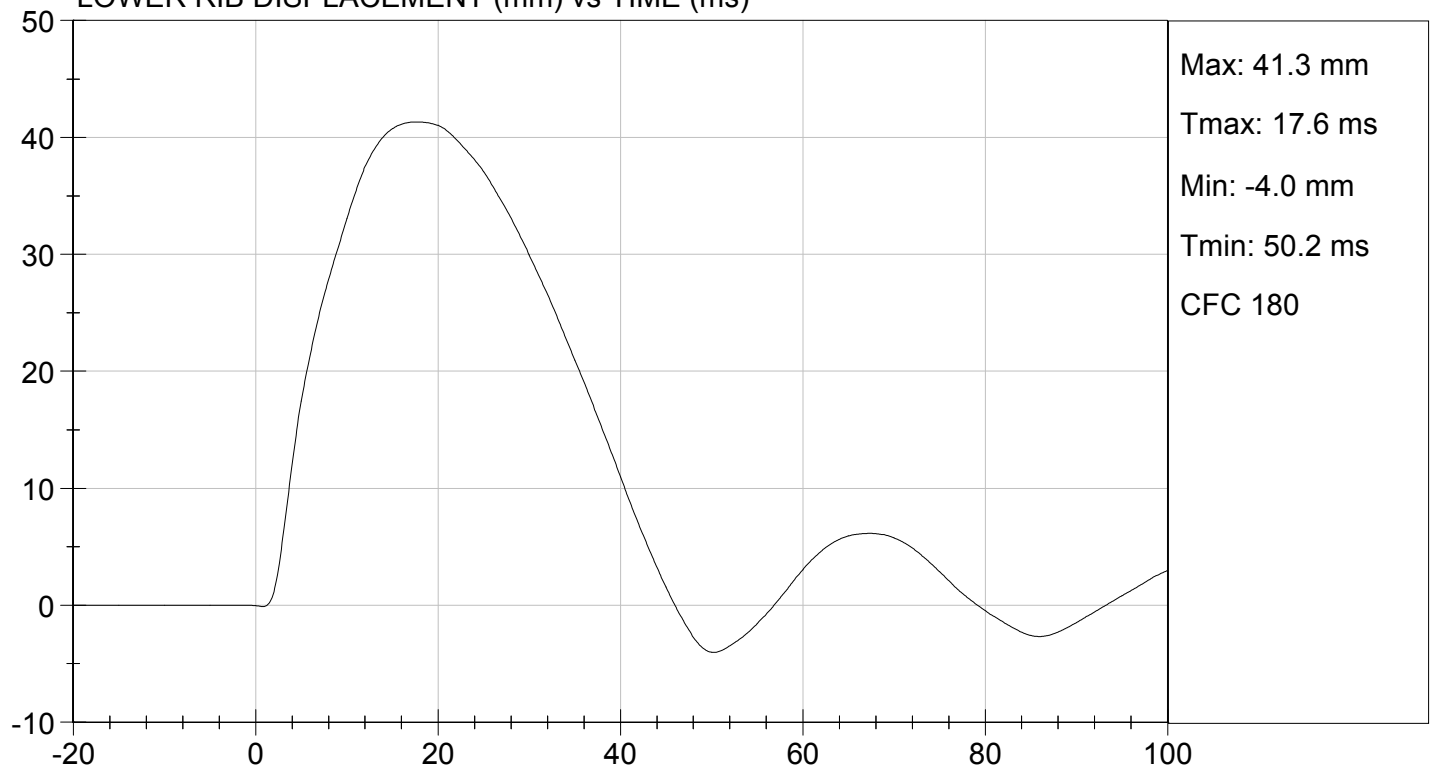
TEST DESC: THORAX IMPACT
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 06/18/2015
TEST #: D151780

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: D151787

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	48	Pass
Probe Speed	m/s	3.90 to 4.10	4.06	Pass
Maximum Impactor Force	N	4000 to 4800	4510	Pass
Time of Maximum Impactor Force	ms	10.6 to 13.0	11.8	Pass
Maximum Total Abdomen Force	N	2200 to 2700	2355	Pass
Time of Maximum Abdomen Force	ms	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass


Laboratory Technician

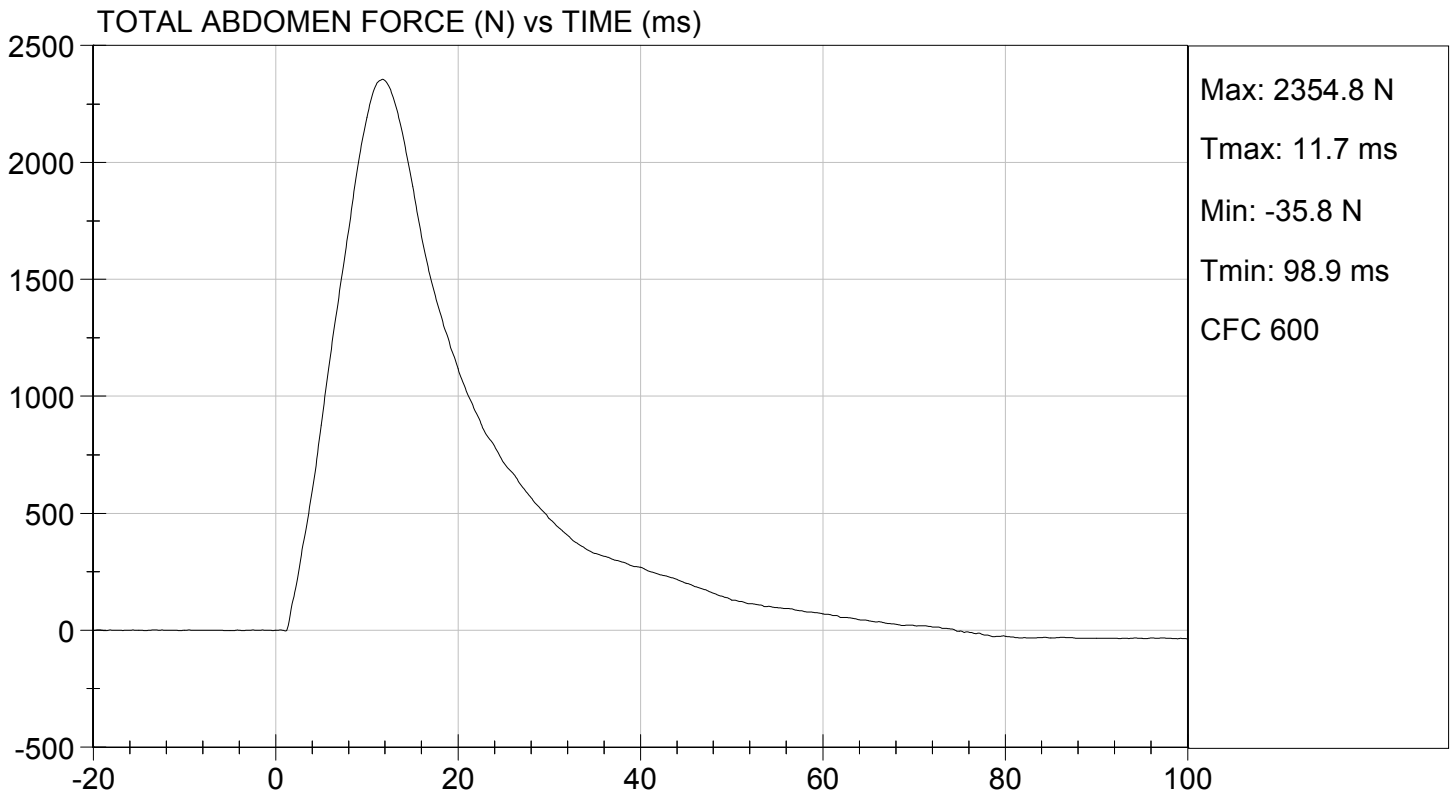
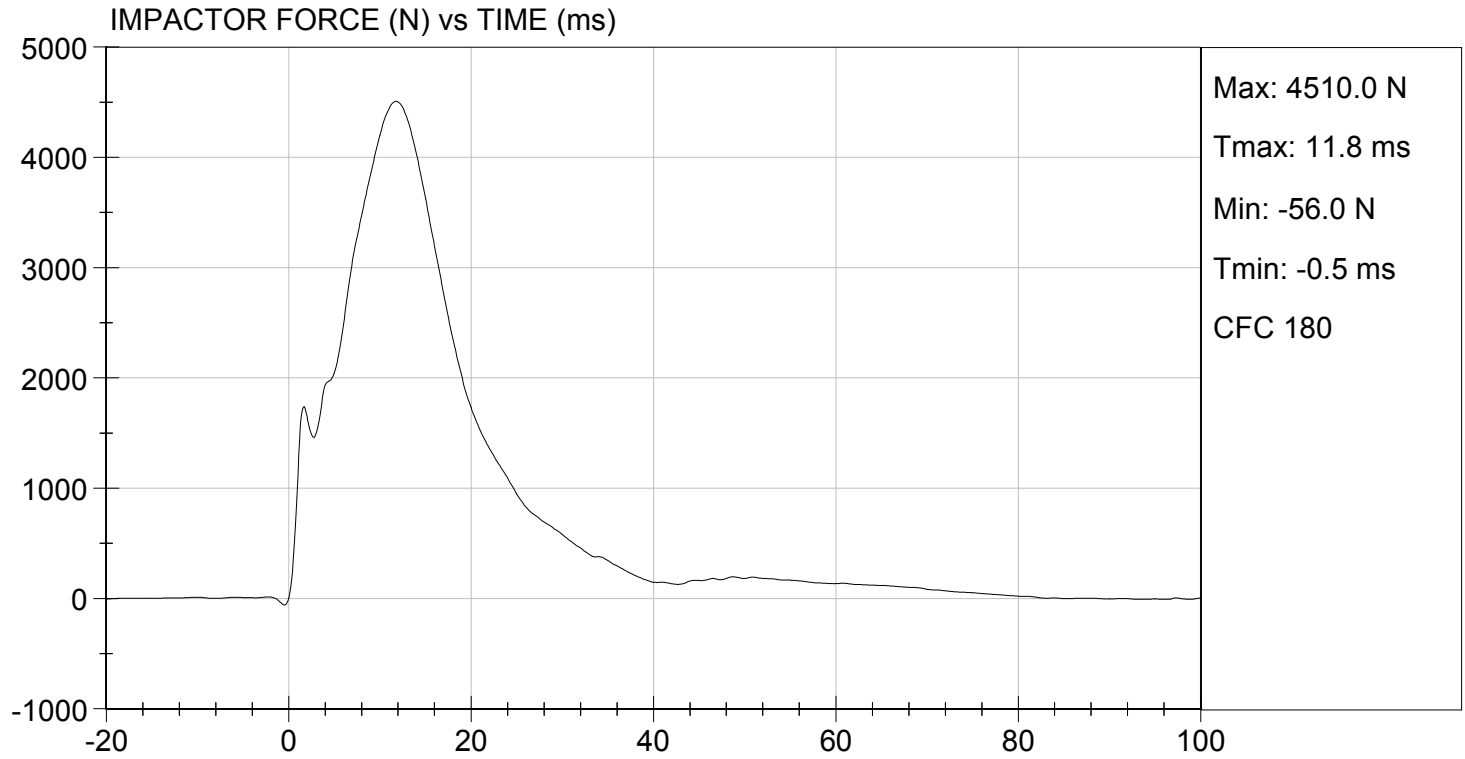
06/18/2015
Test Date


Approved By



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

TEST DATE: 06/18/2015
TEST #: D151787

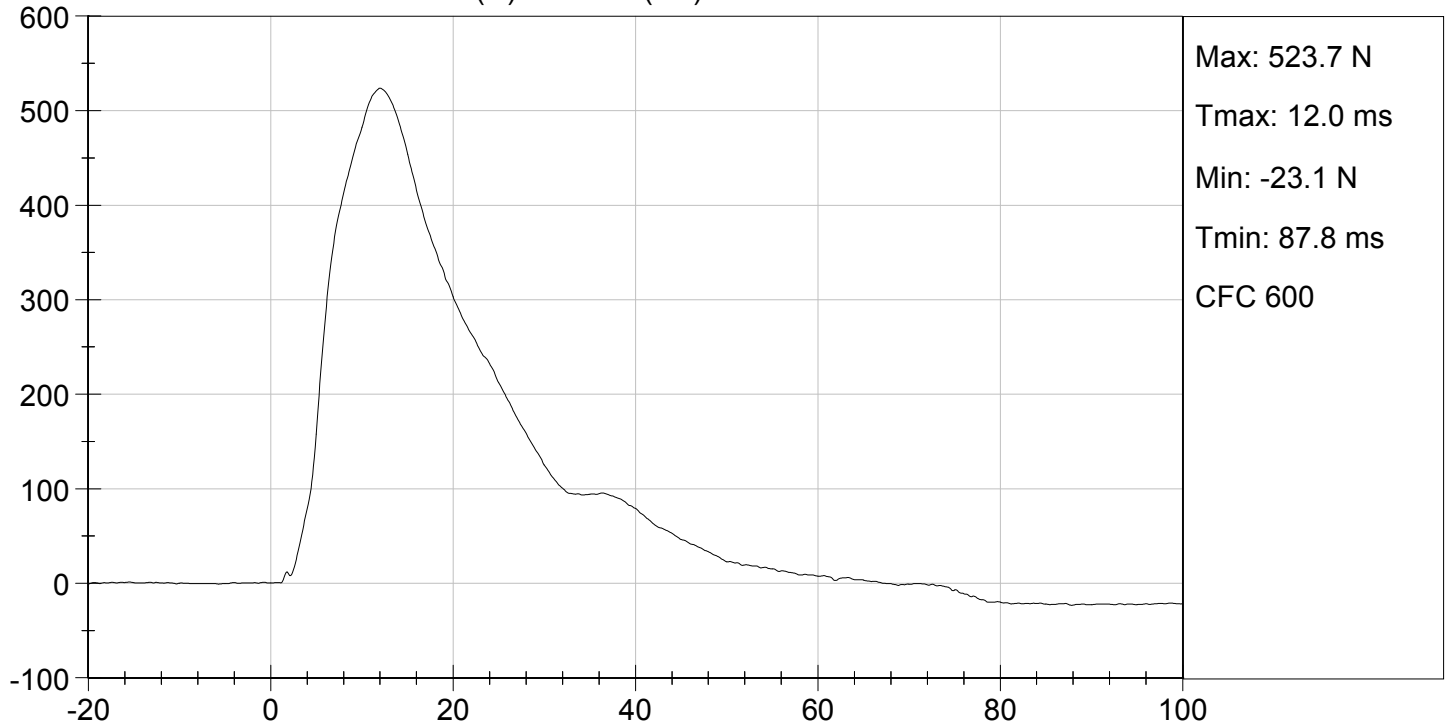




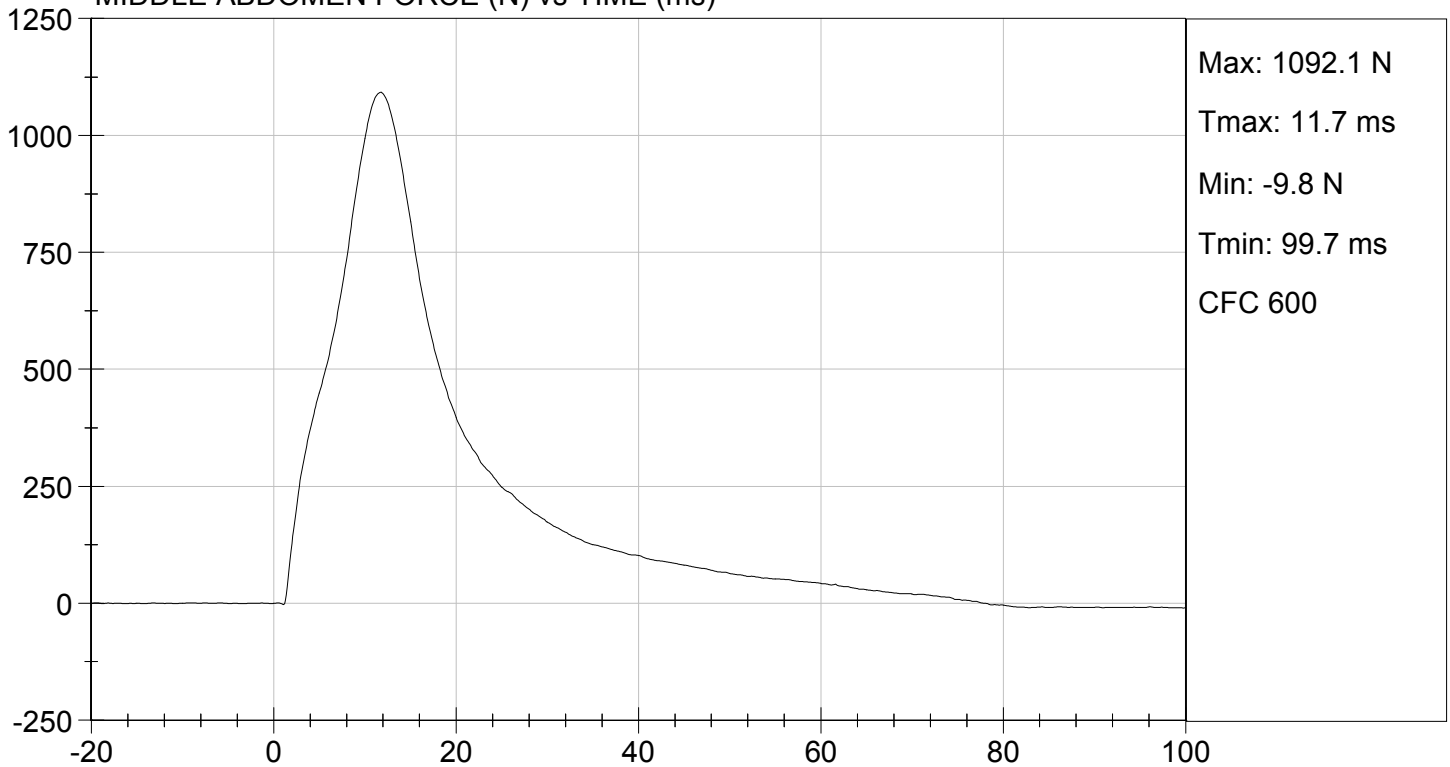
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.33 ft/s, 4.06 m/s

TEST DATE: 06/18/2015
TEST #: D151787

FRONT ABDOMEN FORCE (N) vs TIME (ms)



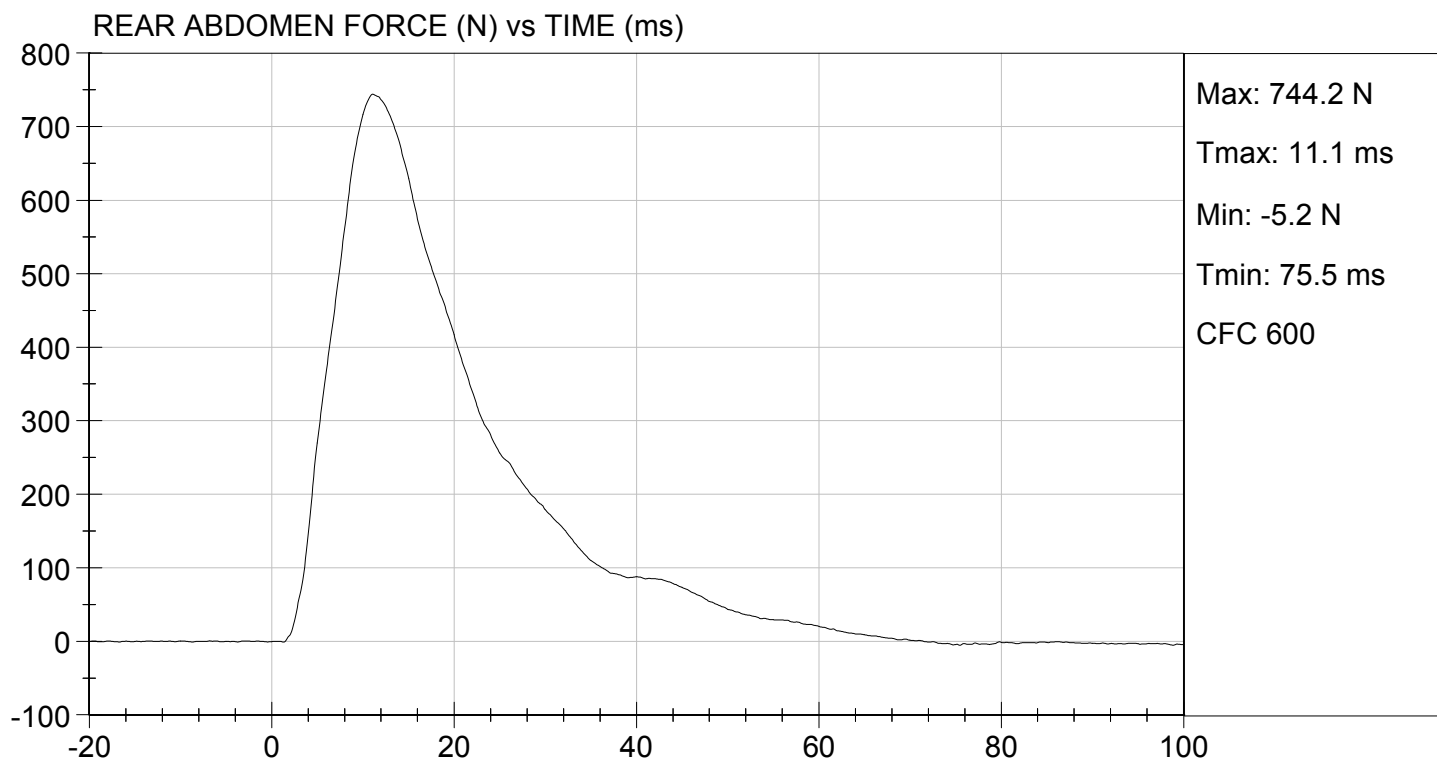
MIDDLE ABDOMEN FORCE (N) vs TIME (ms)





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

TEST DATE: 06/18/2015
TEST #: D151787



MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

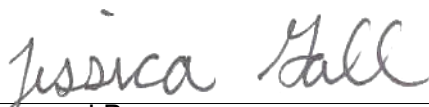
ATD Serial No: 032

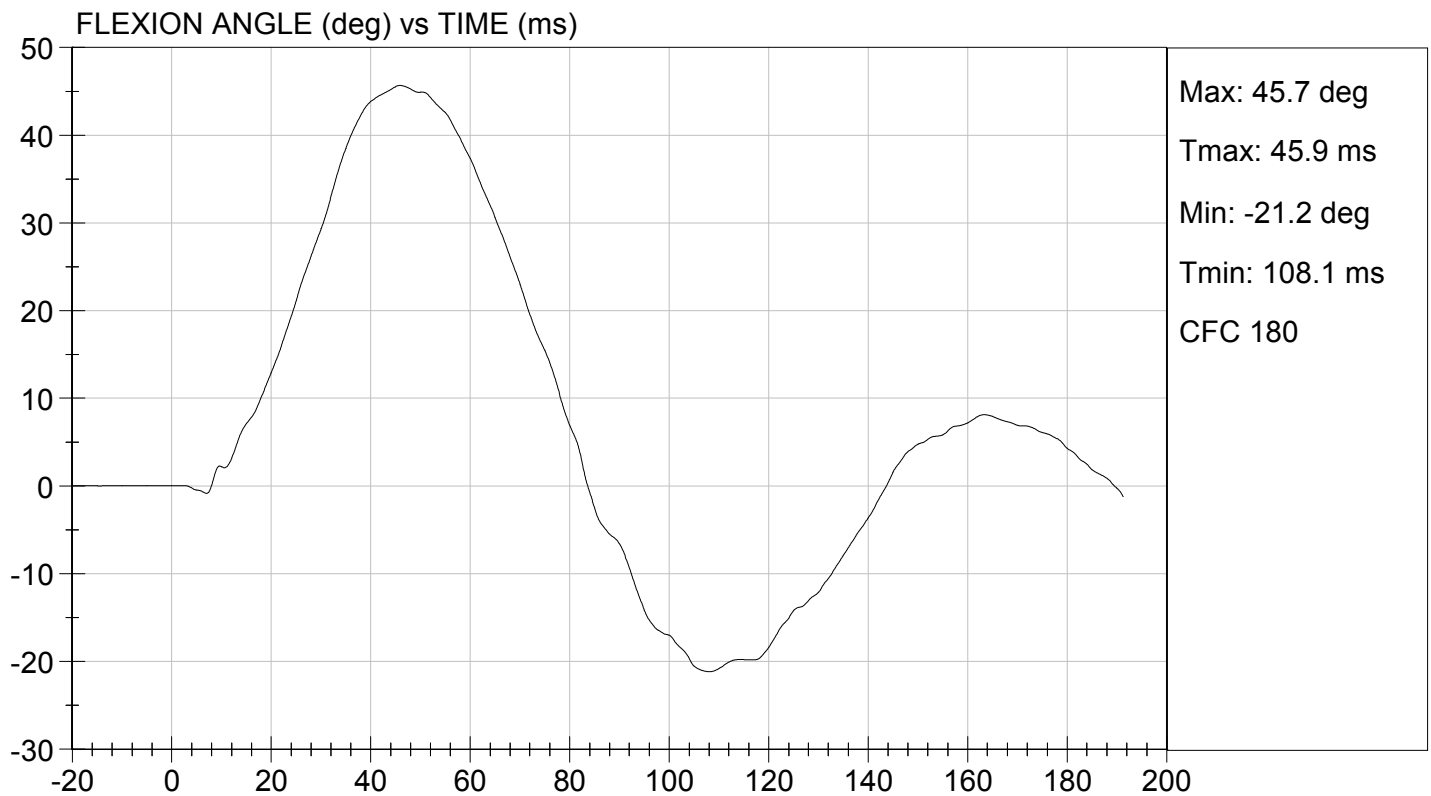
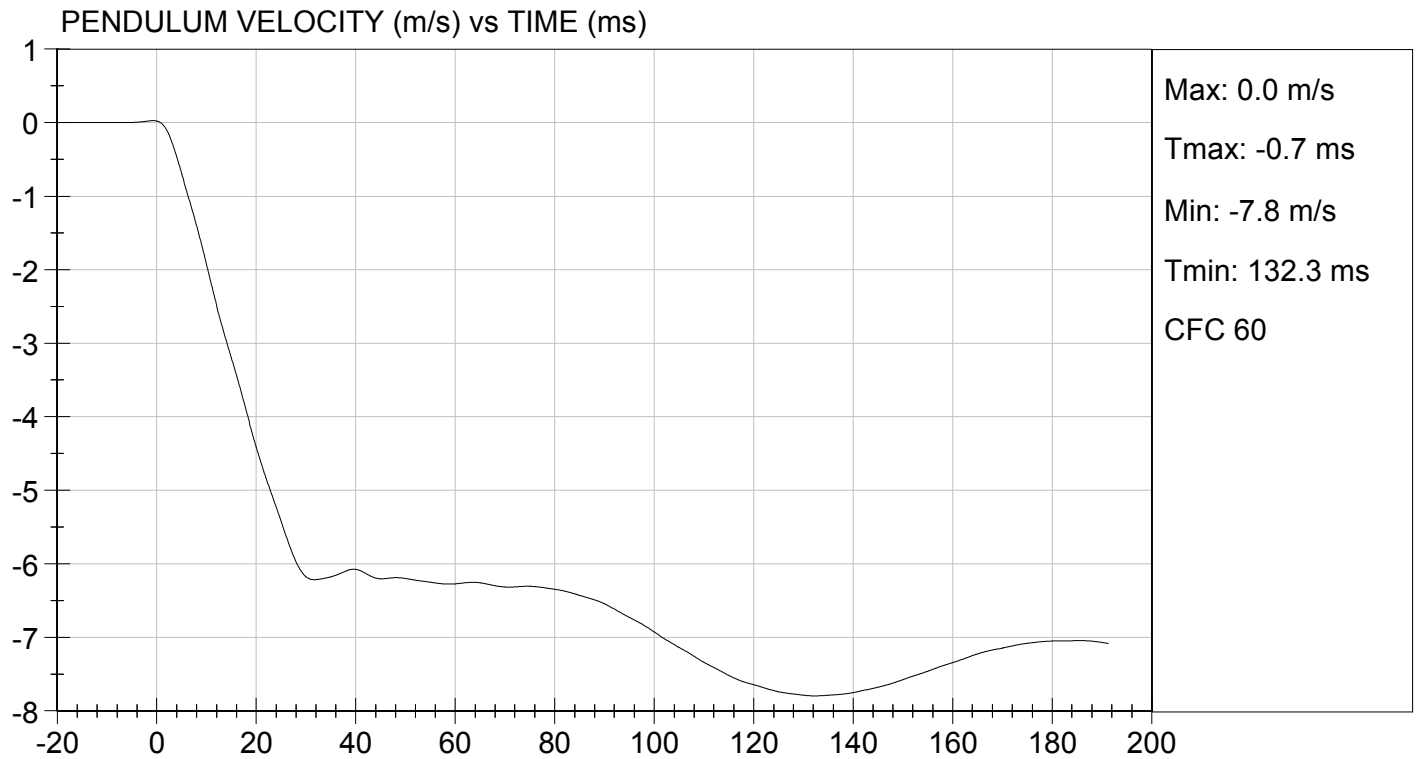
Test I.D: D151788

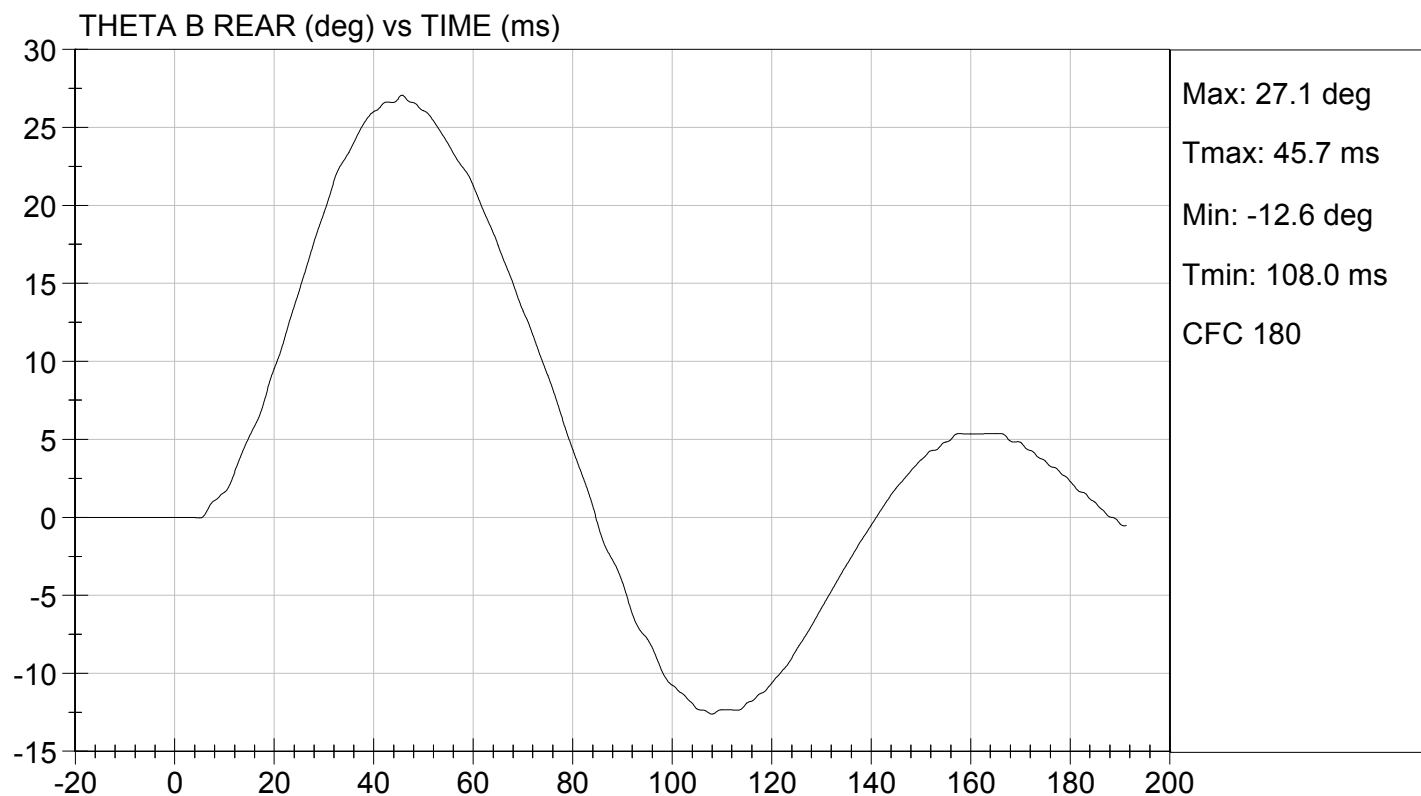
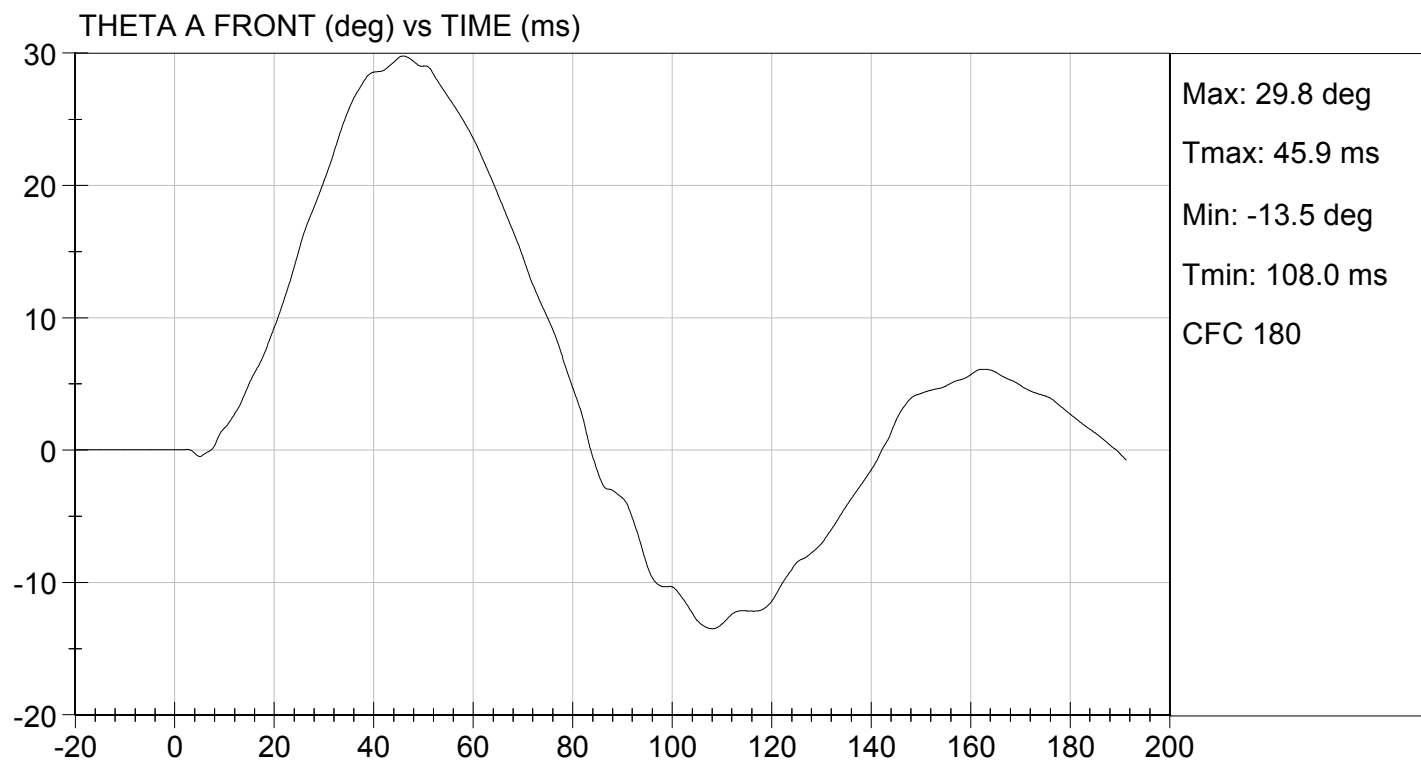
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.05	Pass
Pendulum Velocity	1 ms	m/s	-0.05 to 0.00	-0.01	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.402	Pass
	27 ms	m/s	-6.50 to -5.80	-5.81	Pass
	30 ms	m/s	>= -6.50	-6.18	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	45.7	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	45.9	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	46	Pass
Overall Results					Pass


 Laboratory Technician

06/17/2015
 Test Date


 Approved By

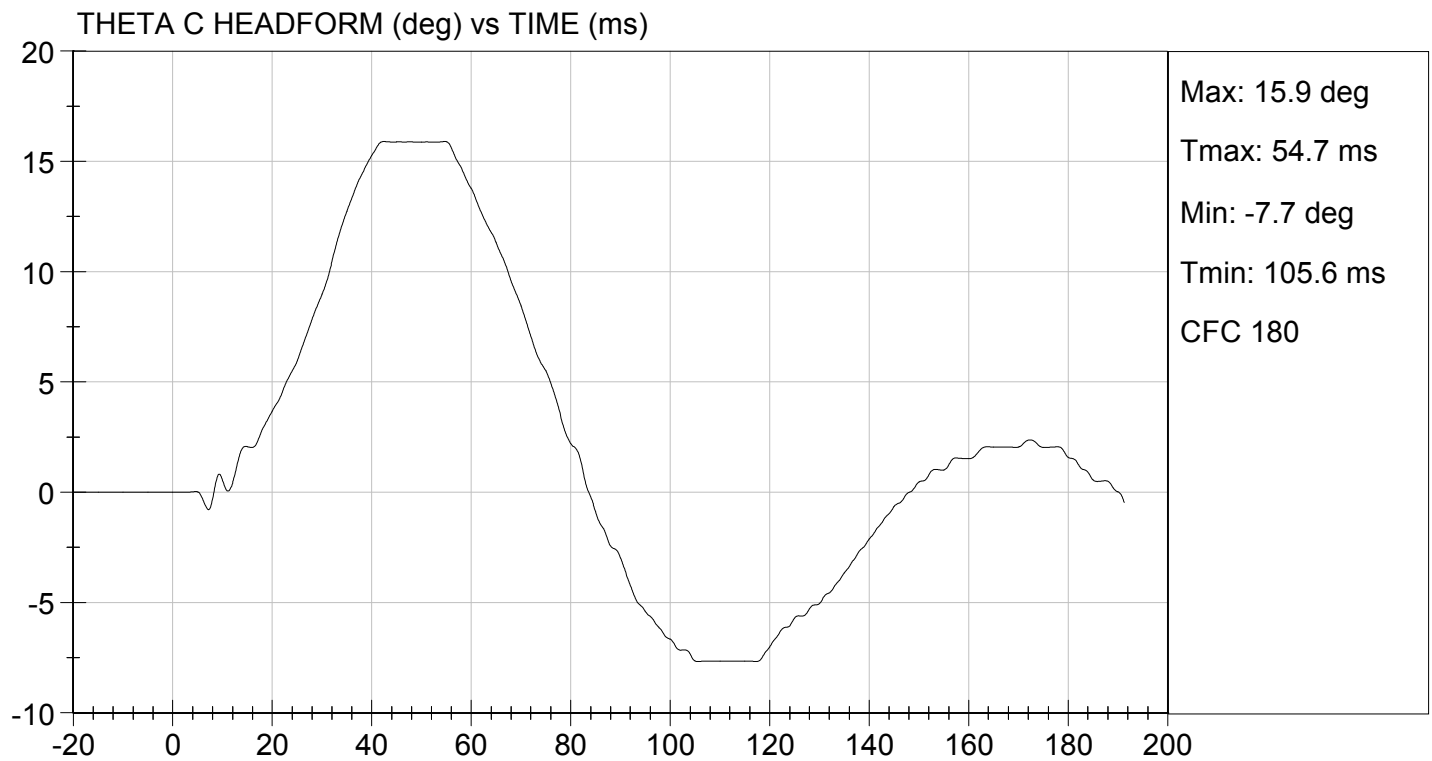






TEST DESC: LUMBAR BENDING
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 06/17/2015
TEST #: D151788



MGA RESEARCH CORPORATION

**PELVIS TEST
ES-2re DUMMY**

ATD Serial No: 032

Test I.D: D151789

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	48	Pass
Probe Speed	m/s	4.20 to 4.40	4.27	Pass
Maximum Impactor Force	N	4700 to 5400	4887	Pass
Time of Maximum Impactor Force	ms	11.8 to 16.1	14.4	Pass
Maximum Pubic Force	N	1230 to 1590	1255	Pass
Time of Maximum Pubic Force	ms	12.2 to 17.0	14.0	Pass
Overall Test Results				Pass


Laboratory Technician

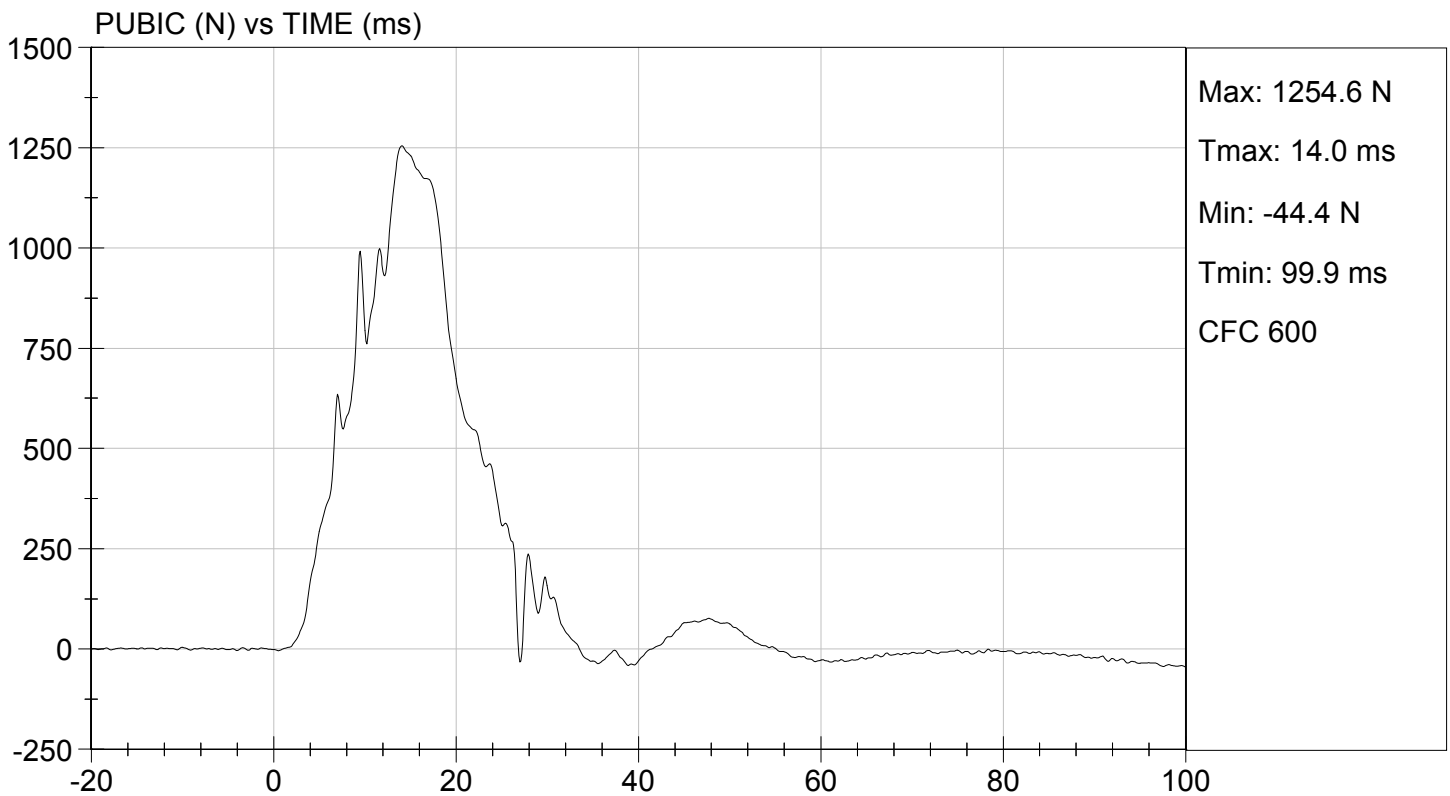
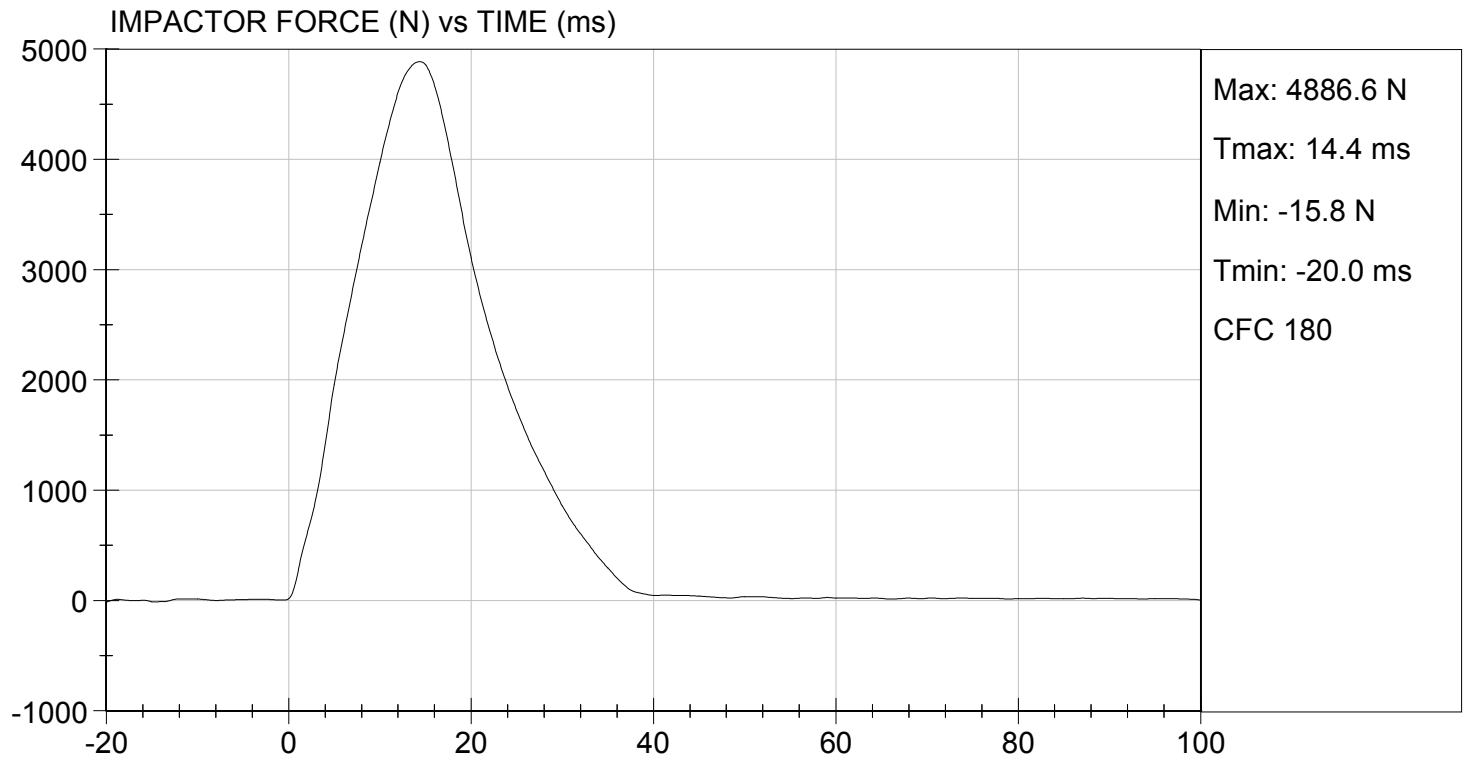
06/18/2015
Test Date


Approved By



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

TEST DATE: 06/18/2015
TEST #: D151789



SID-IIsD External Measurements
SN: 296

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

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

ATD Serial No: 296

Test ID: D151631

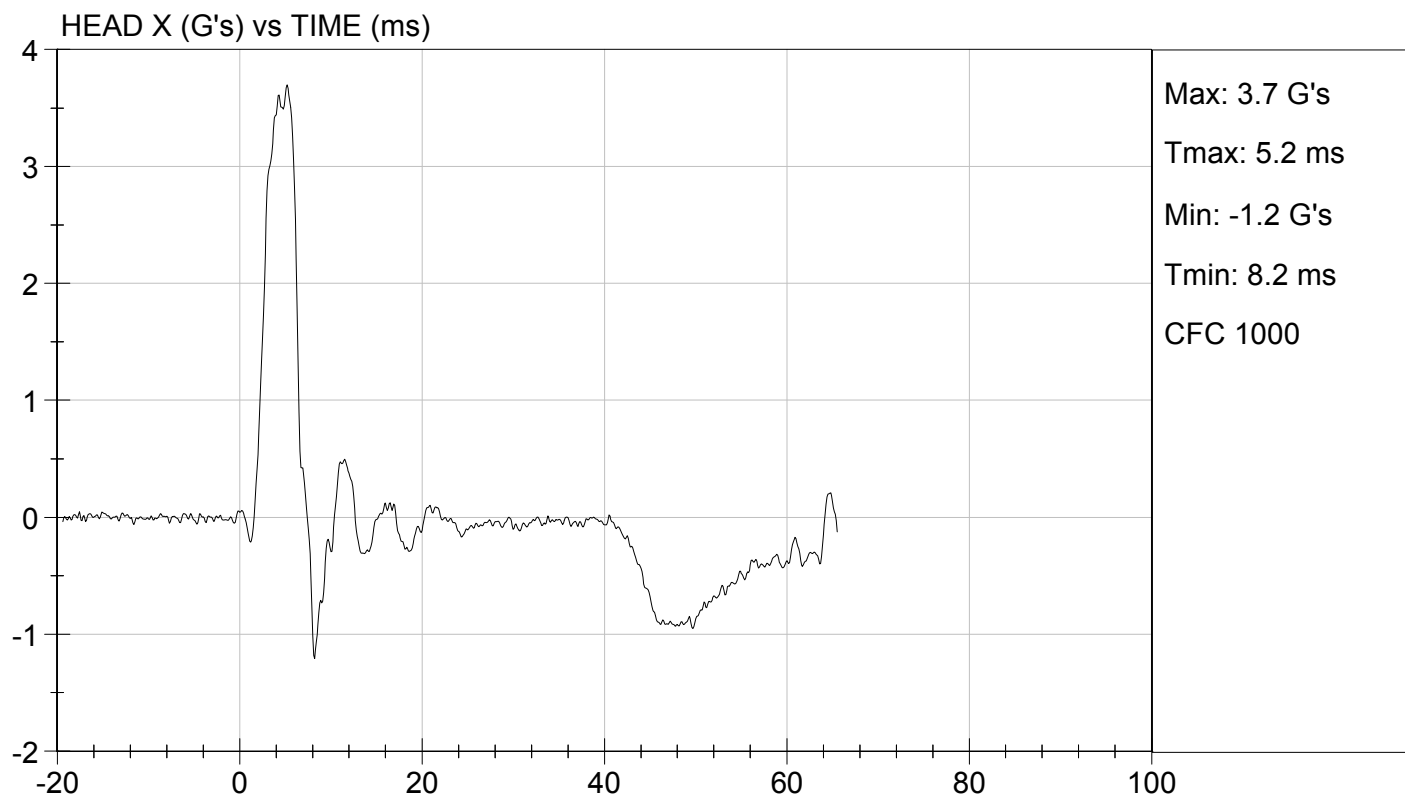
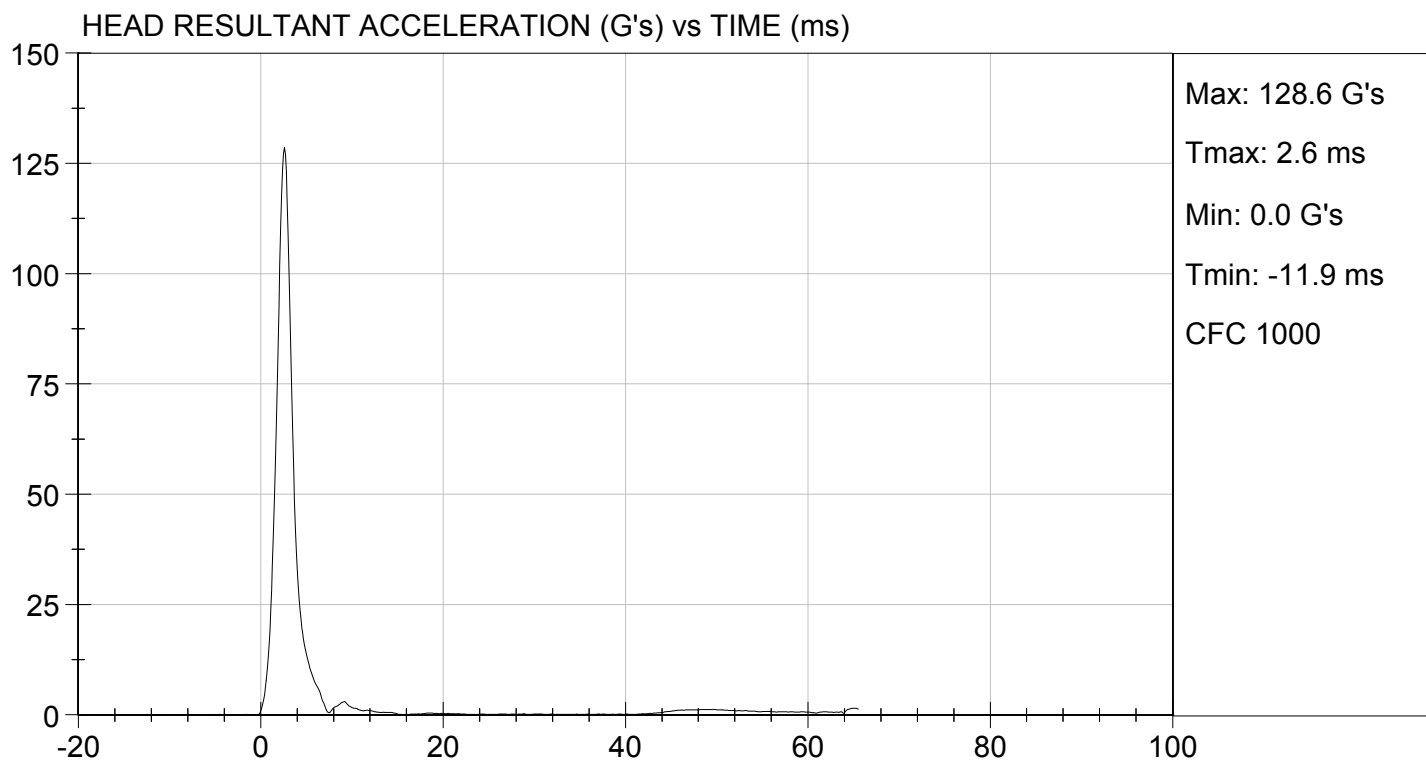
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	115 to 137	129	Pass
Peak Longitudinal Acceleration	G's	+/- 15	3.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results			Pass	

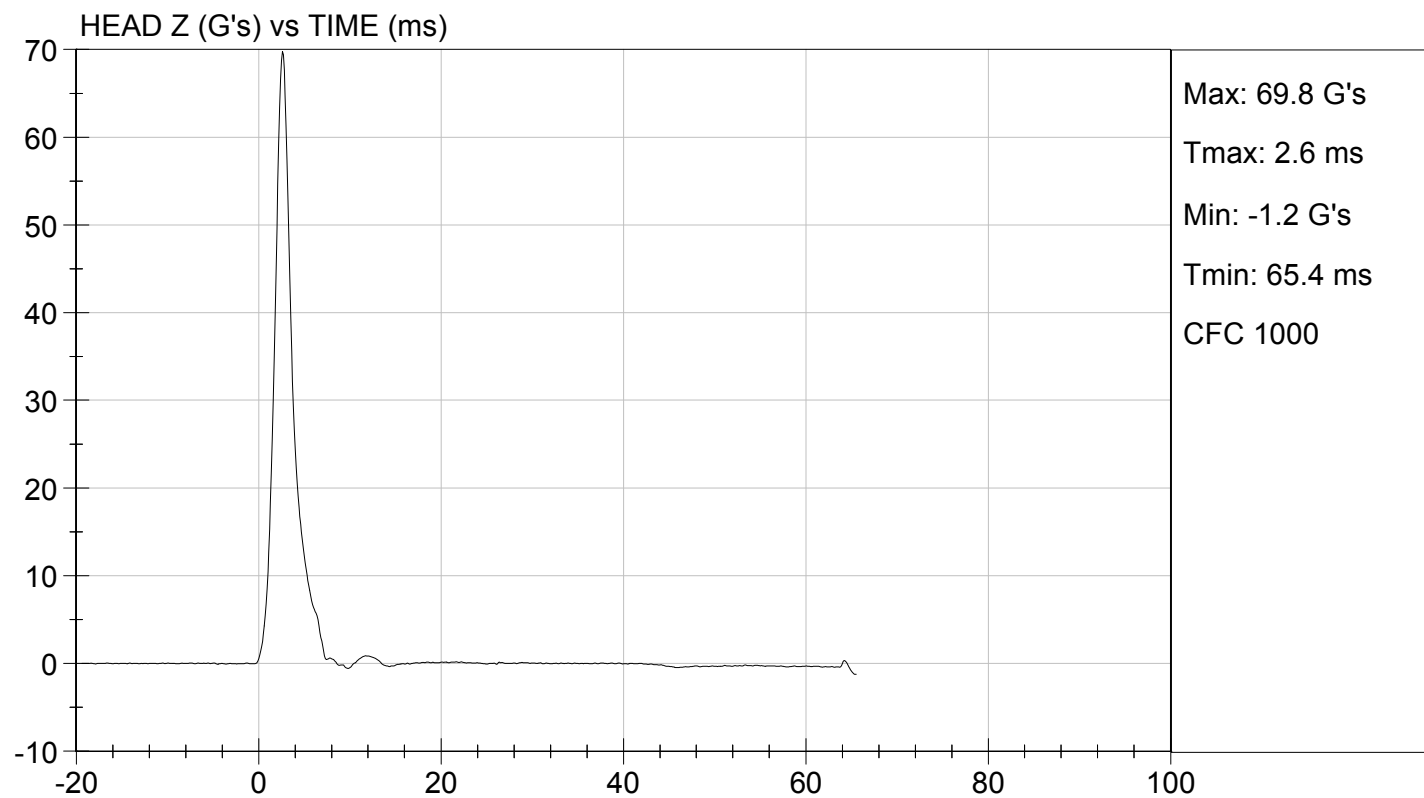
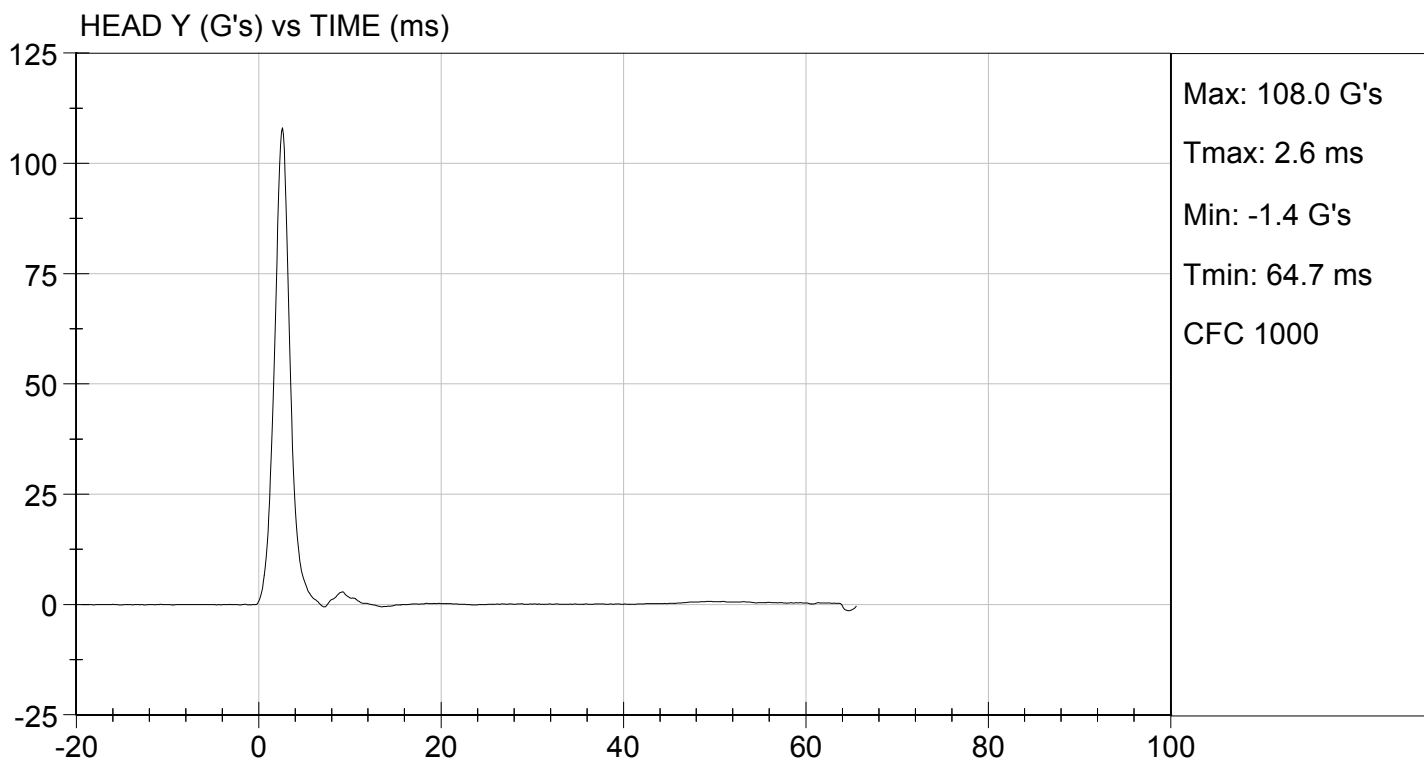

Laboratory Technician

06/10/2015

Test Date


Approved By





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

ATD Serial No: 296

Test I.D: D151632

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.5	Pass
Humidity		%	10 to 70	48	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.38	Pass
	15 ms	m/s	3.30 to 4.10	3.60	Pass
	20 ms	m/s	4.40 to 5.40	4.74	Pass
	25 ms	m/s	5.40 to 6.10	5.68	Pass
	25-100 ms	m/s	5.50 to 6.20	6.19	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	63	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-39	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	119	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

06/10/2015

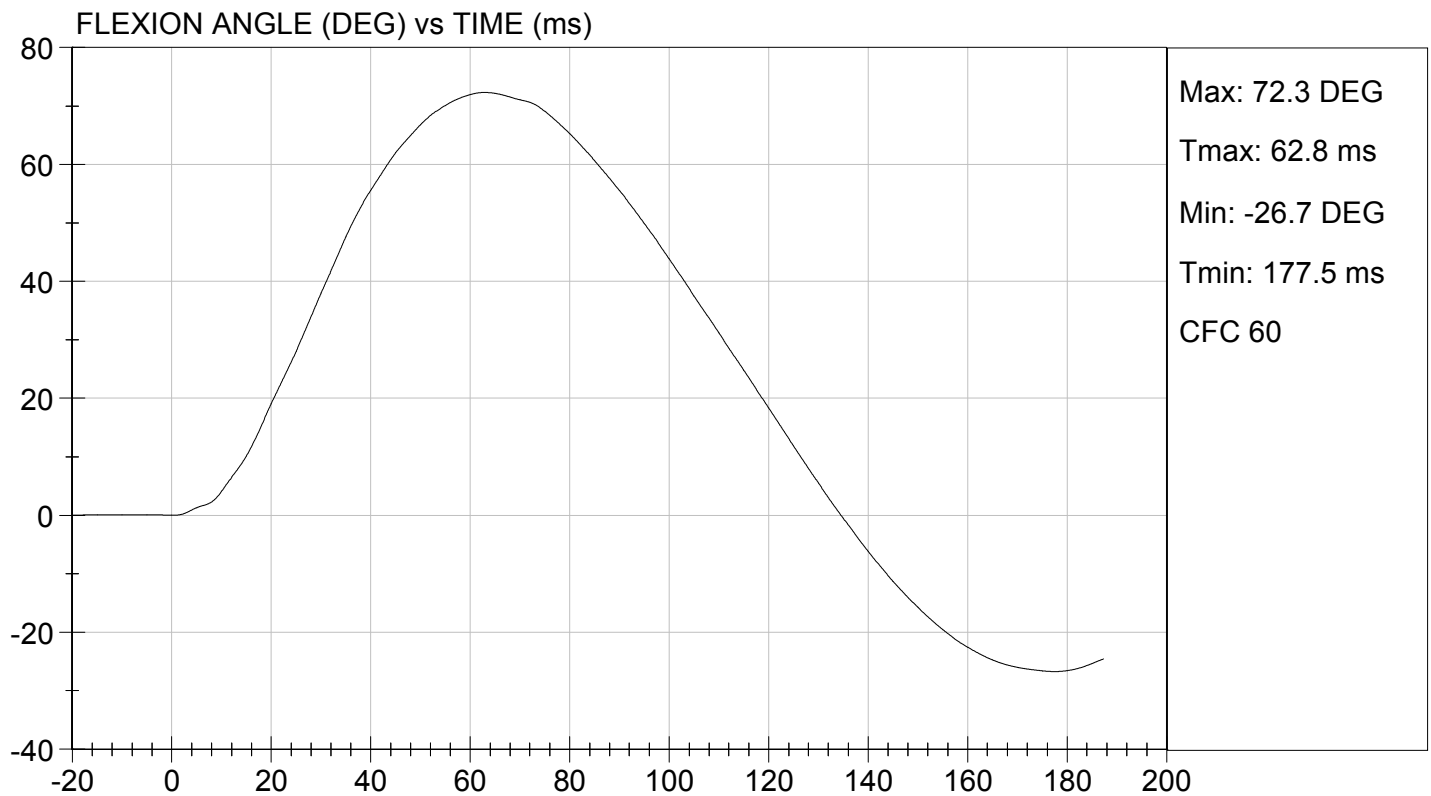
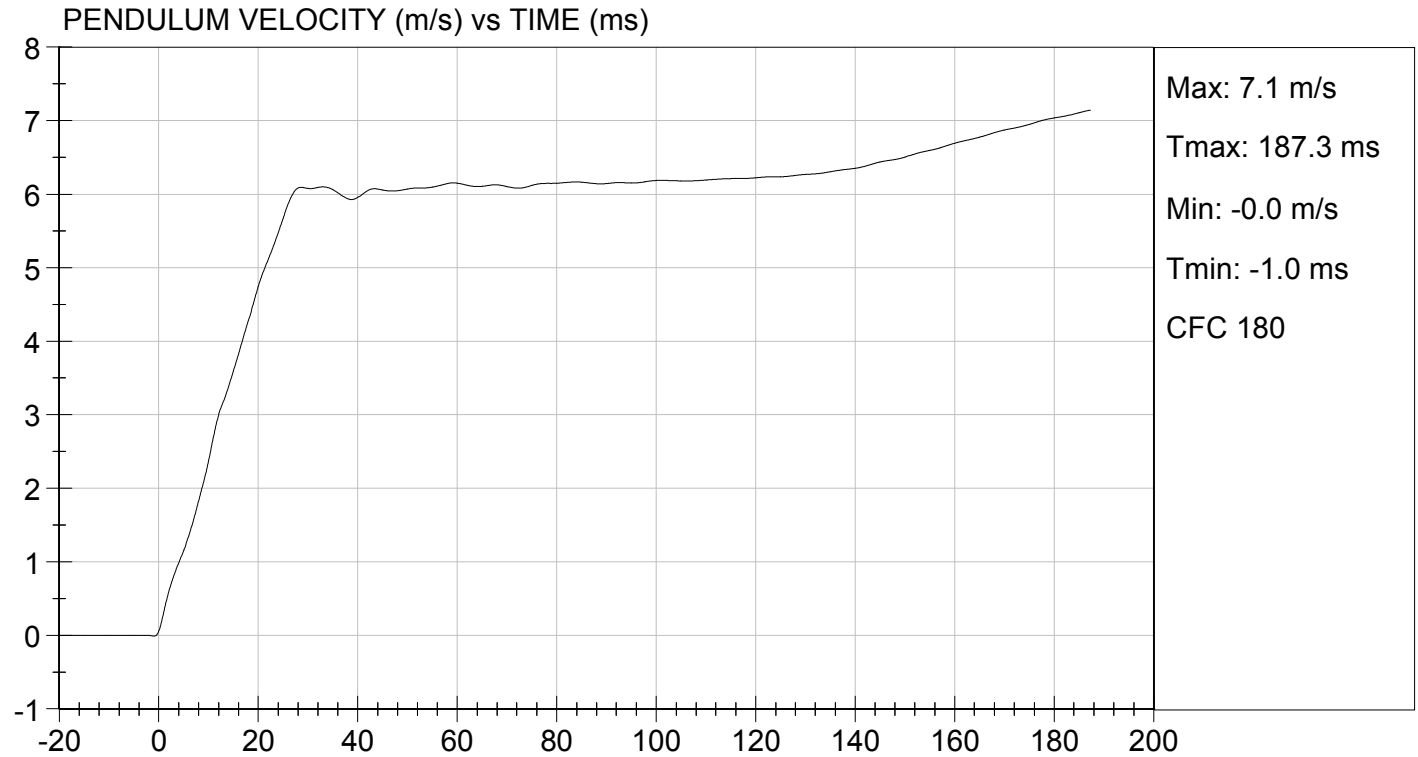
Test Date

Jessica Hall
Approved By



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

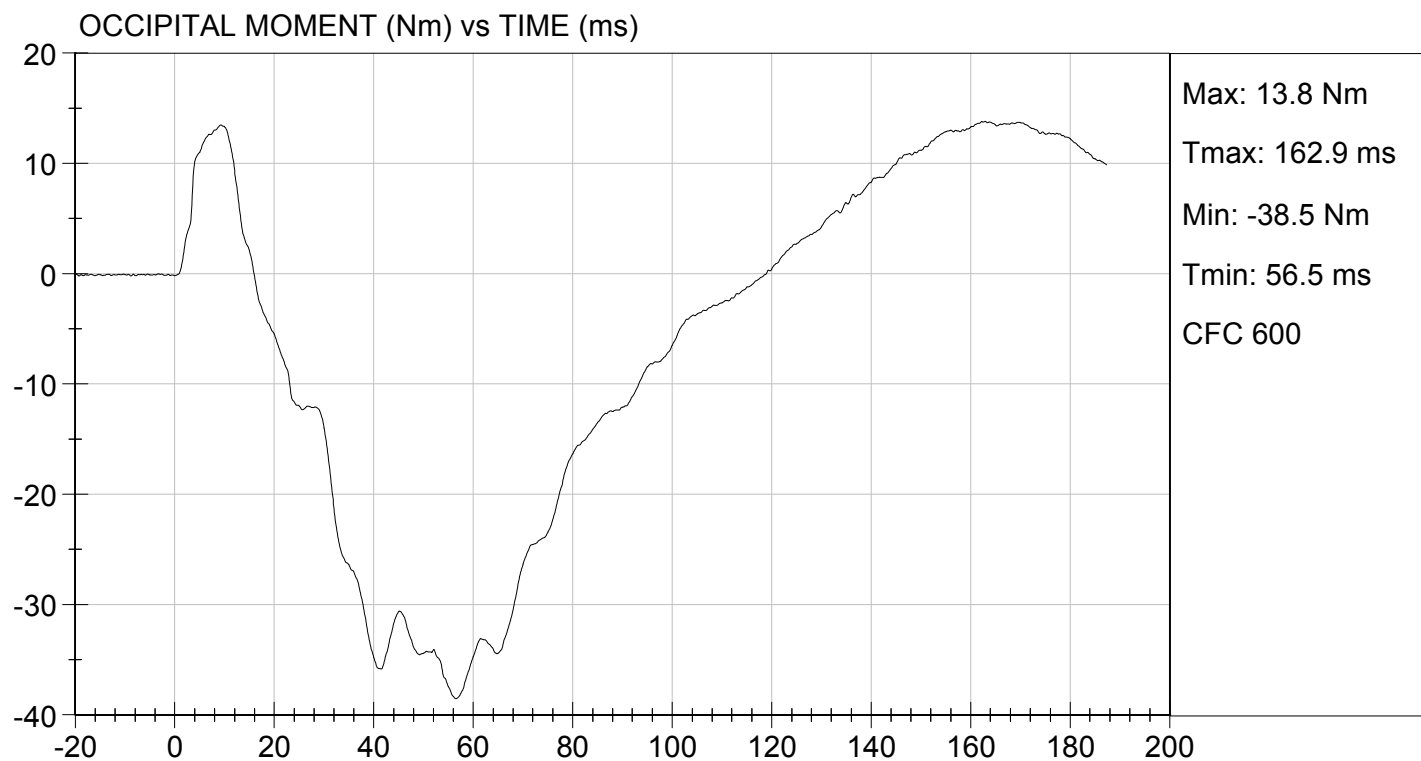
TEST DATE: 06/10/2015
TEST #: D151632





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

TEST DATE: 06/10/2015
TEST #: D151632



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

ATD Serial No: 296

Test ID: D151633

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	45	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	30	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/09/2015

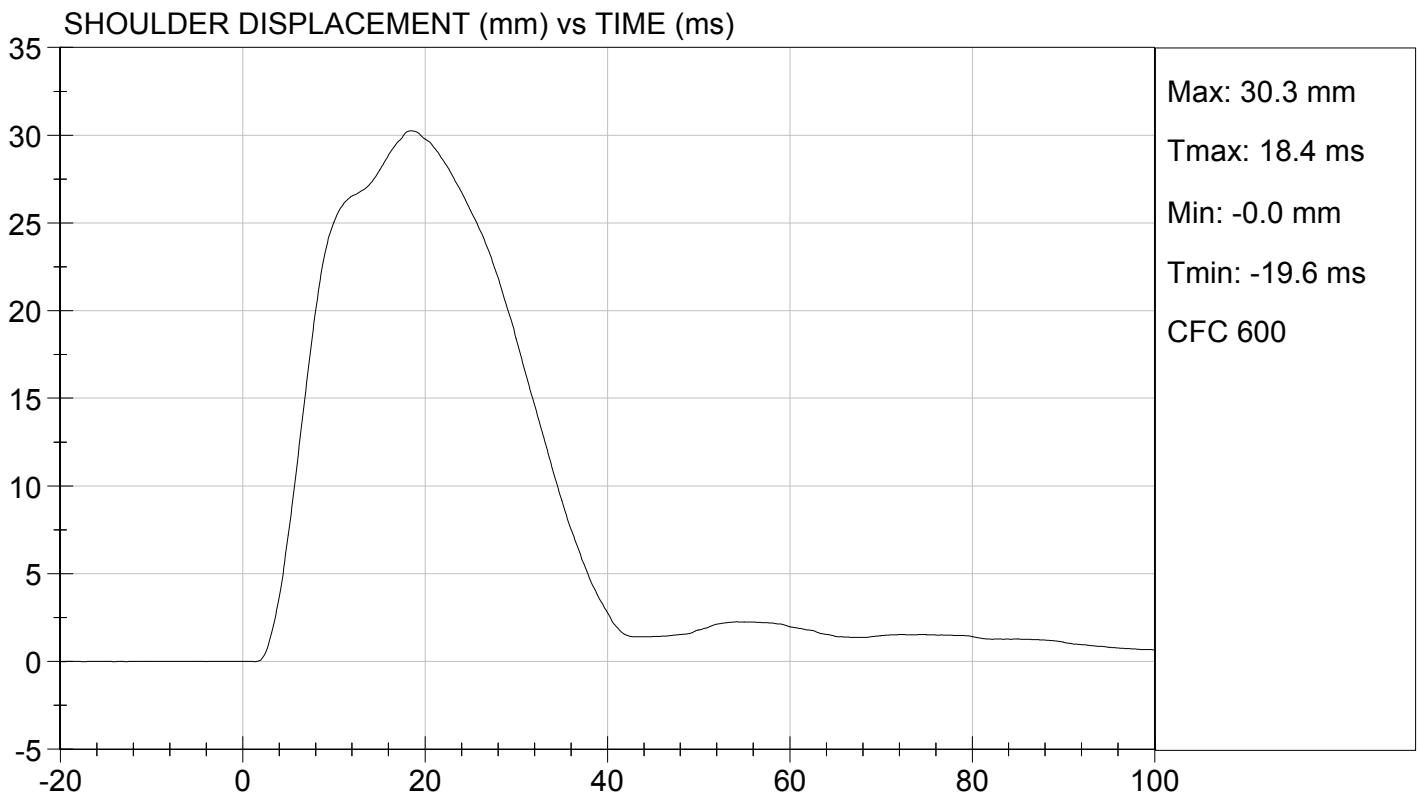
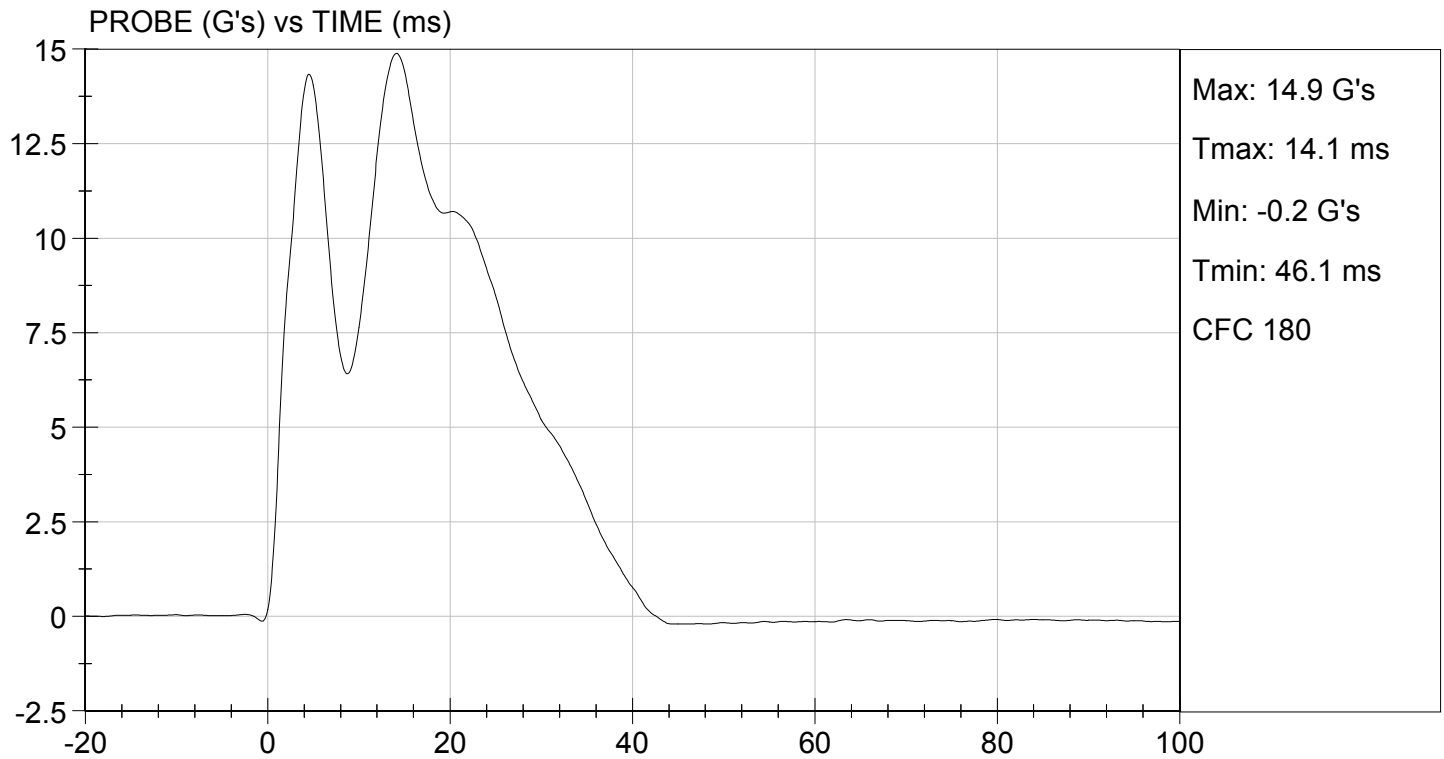
Test Date

Jessica Hall
Approved By



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

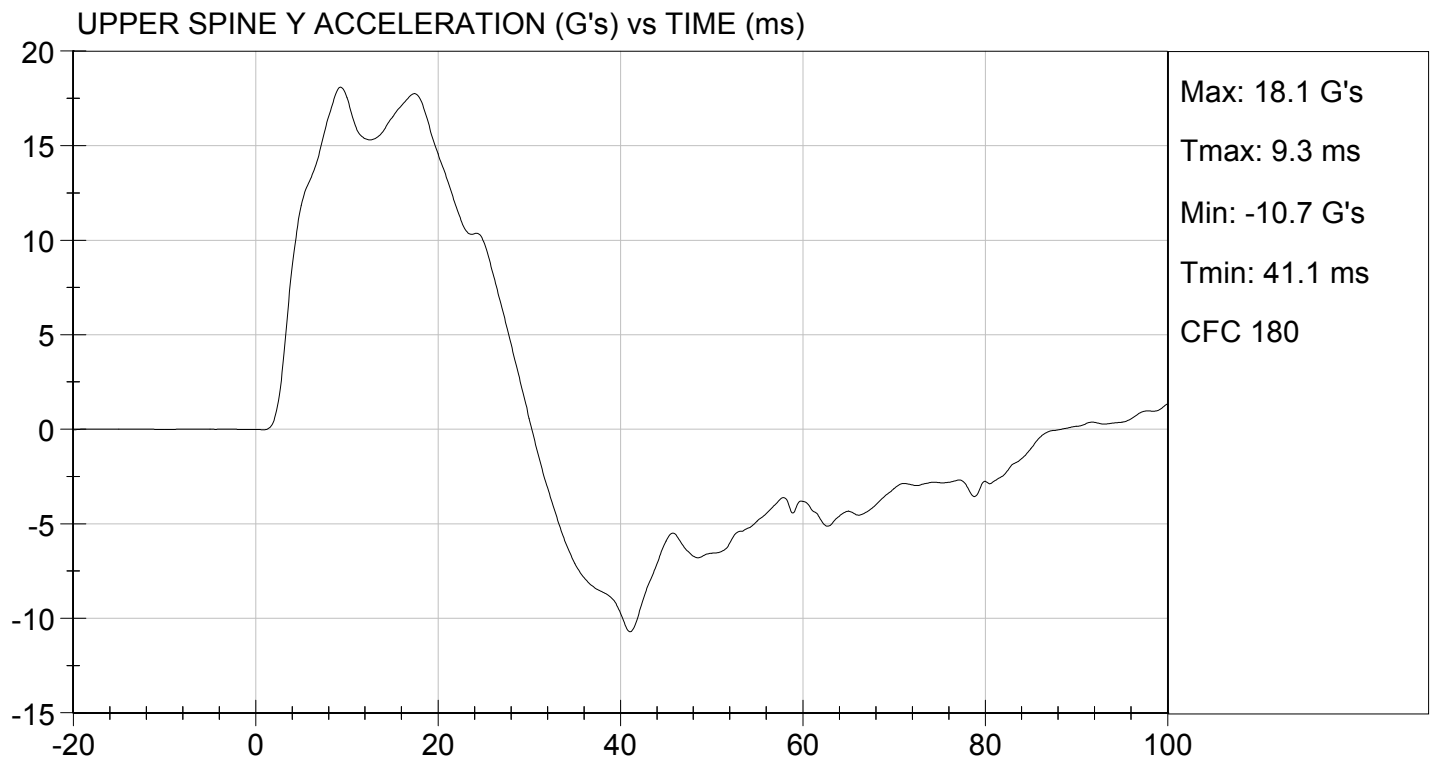
TEST DATE: 06/09/2015
TEST #: D151633





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

TEST DATE: 06/09/2015
TEST #: D151633



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

ATD Serial No: 296

Test I.D: D151634

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	48	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	38	Pass
Upper Rib Displacement	mm	25 to 32	29	Pass
Middle Rib Displacement	mm	30 to 36	35	Pass
Lower Rib Displacement	mm	32 to 38	32	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	35	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/10/2015

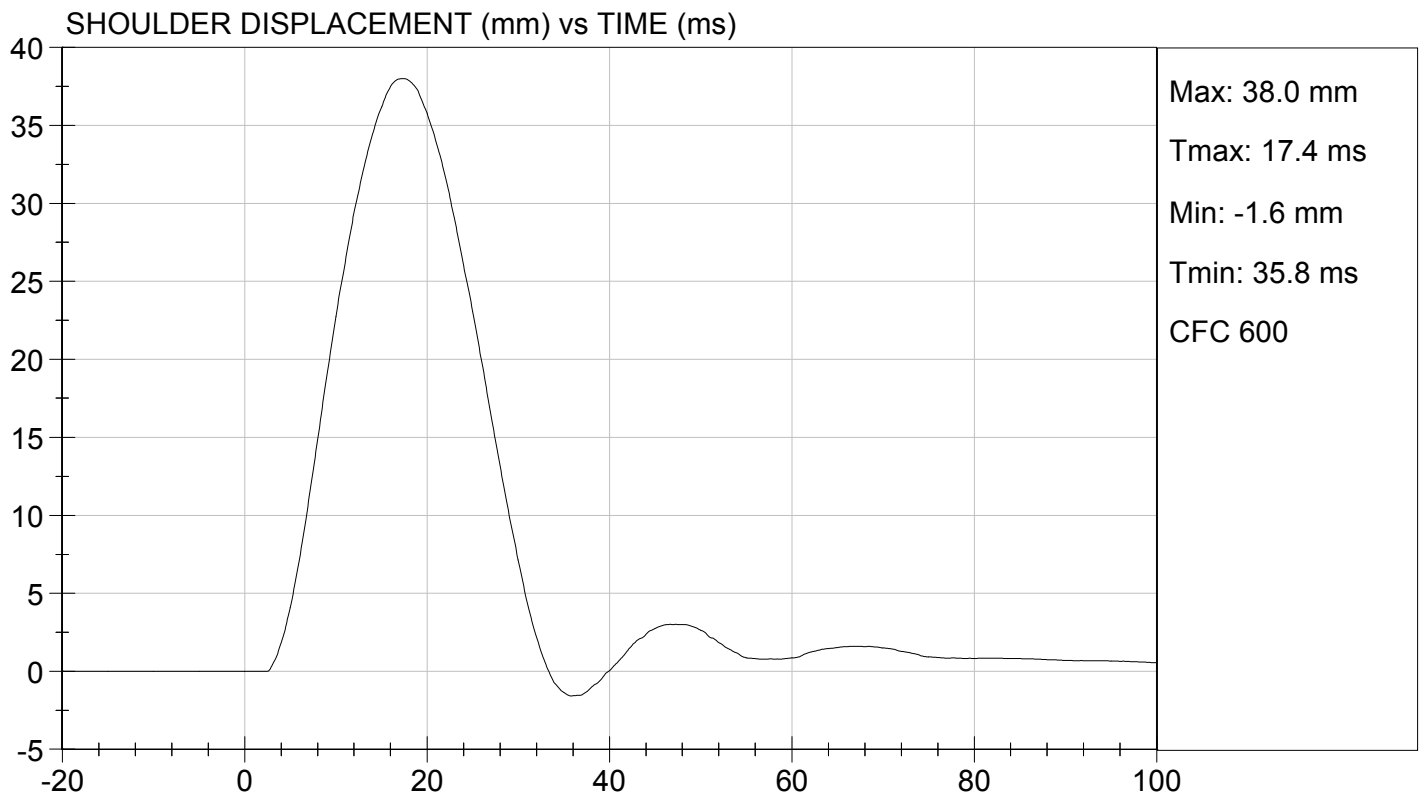
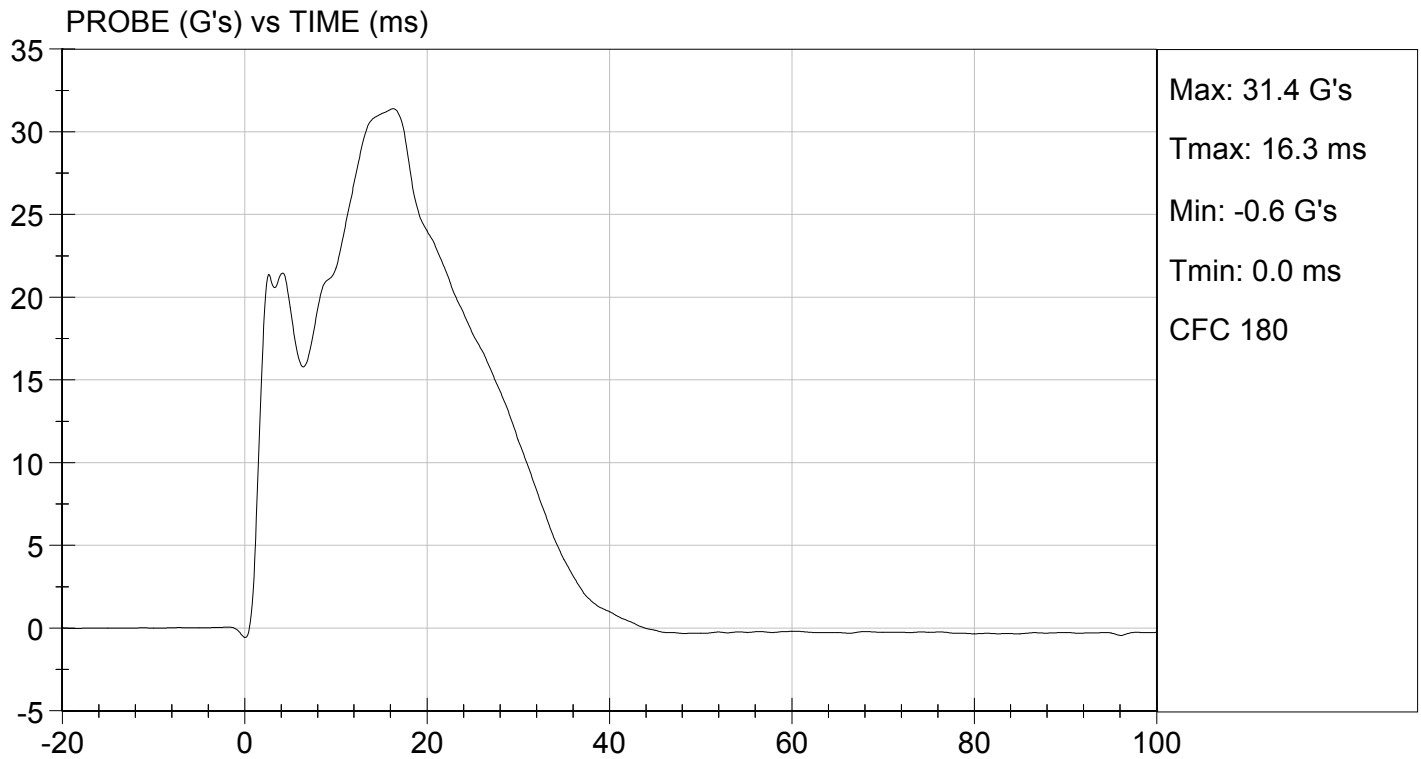
Test Date

Jessica Hall
Approved By



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

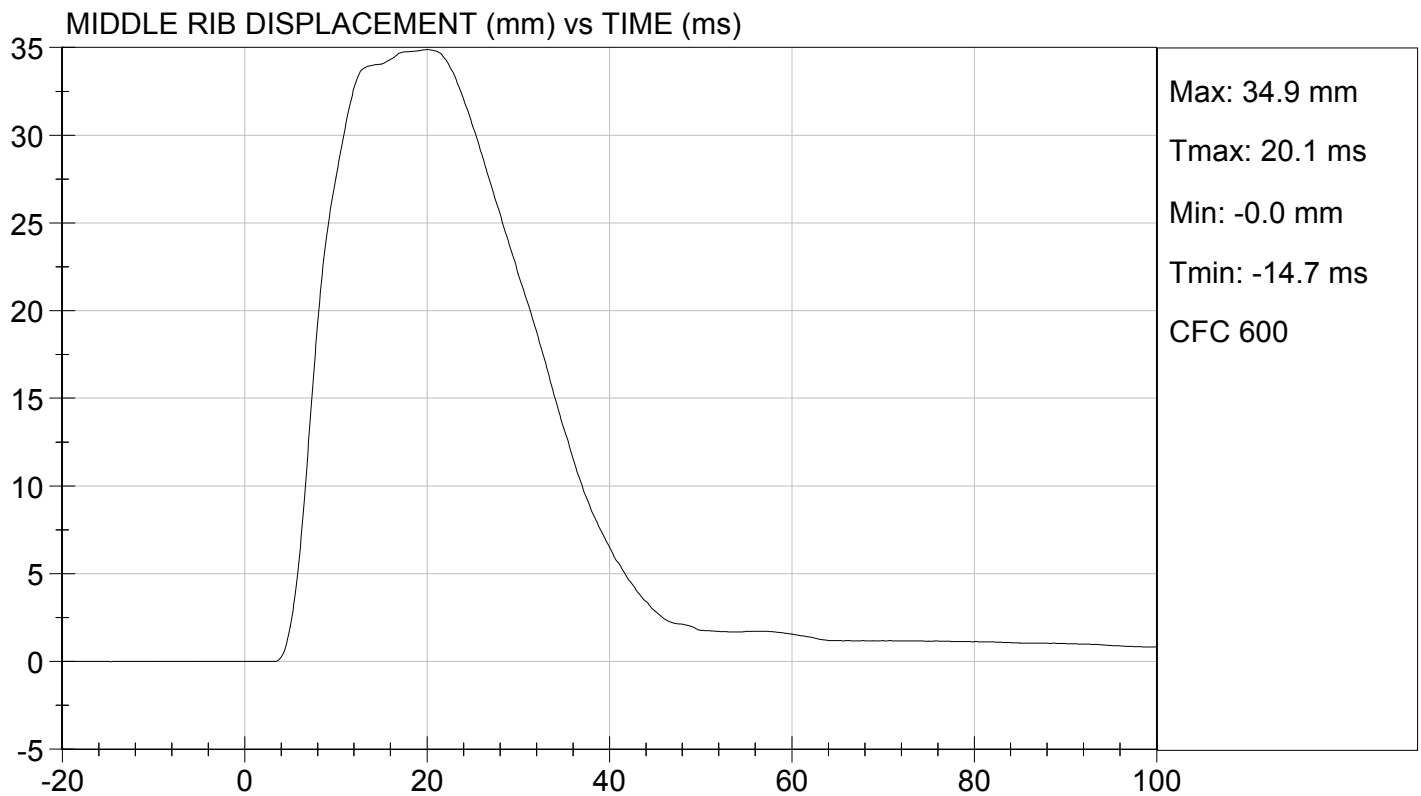
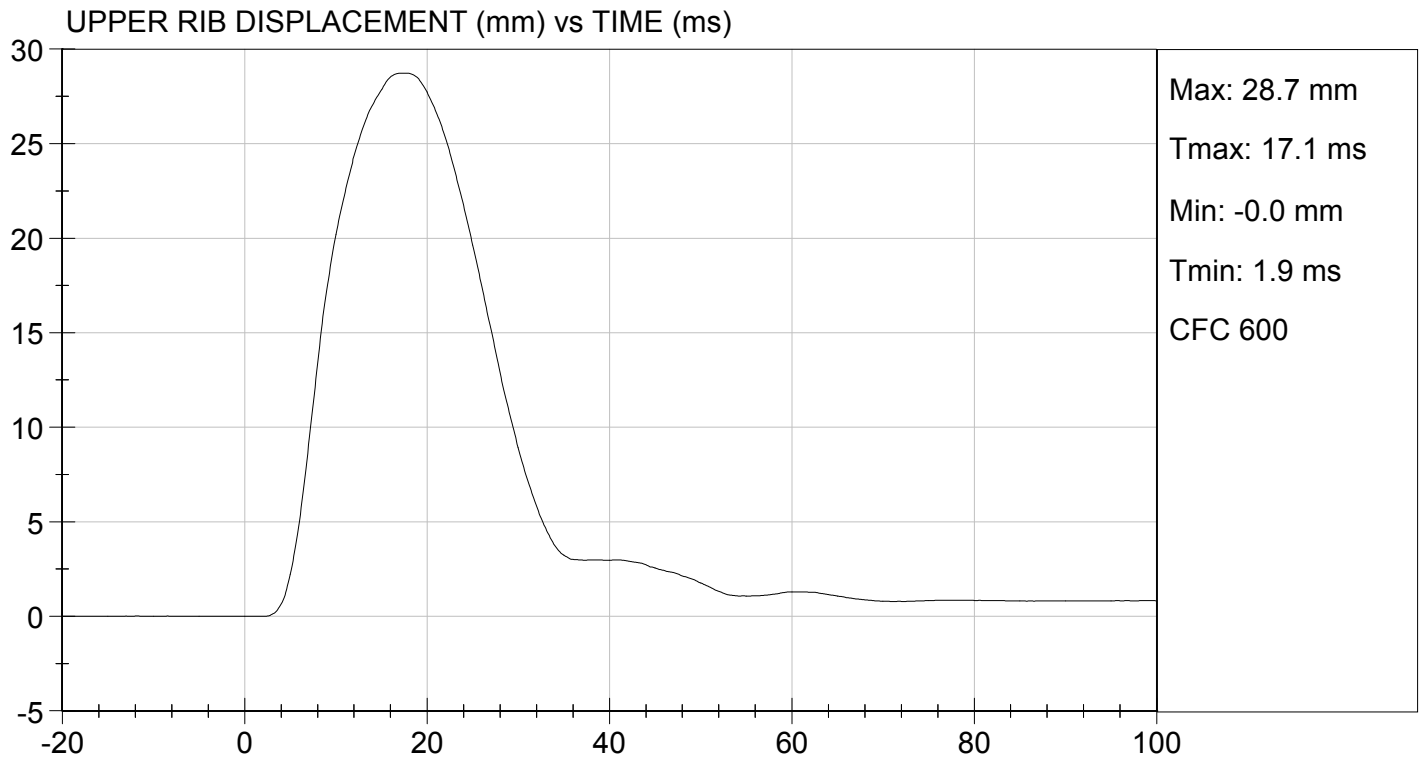
TEST DATE: 06/10/2015
TEST #: D151634





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

TEST DATE: 06/10/2015
TEST #: D151634

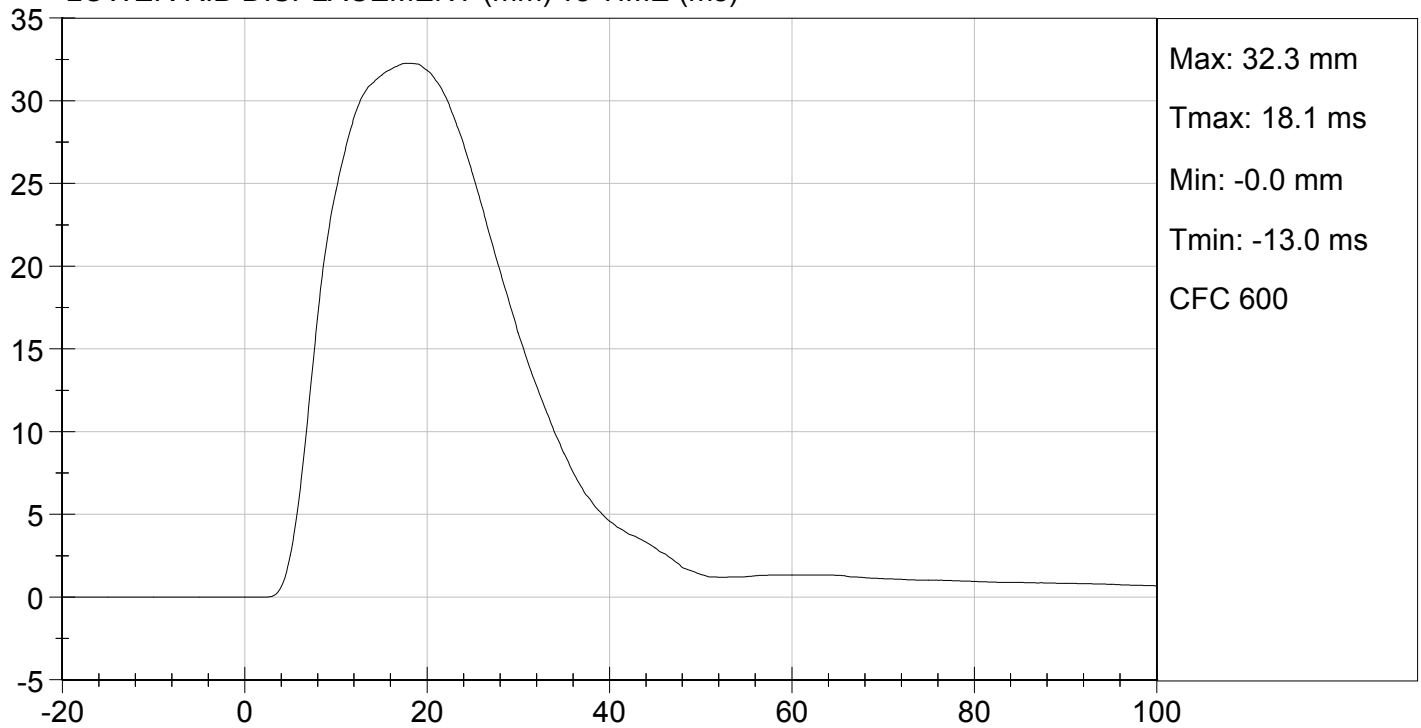




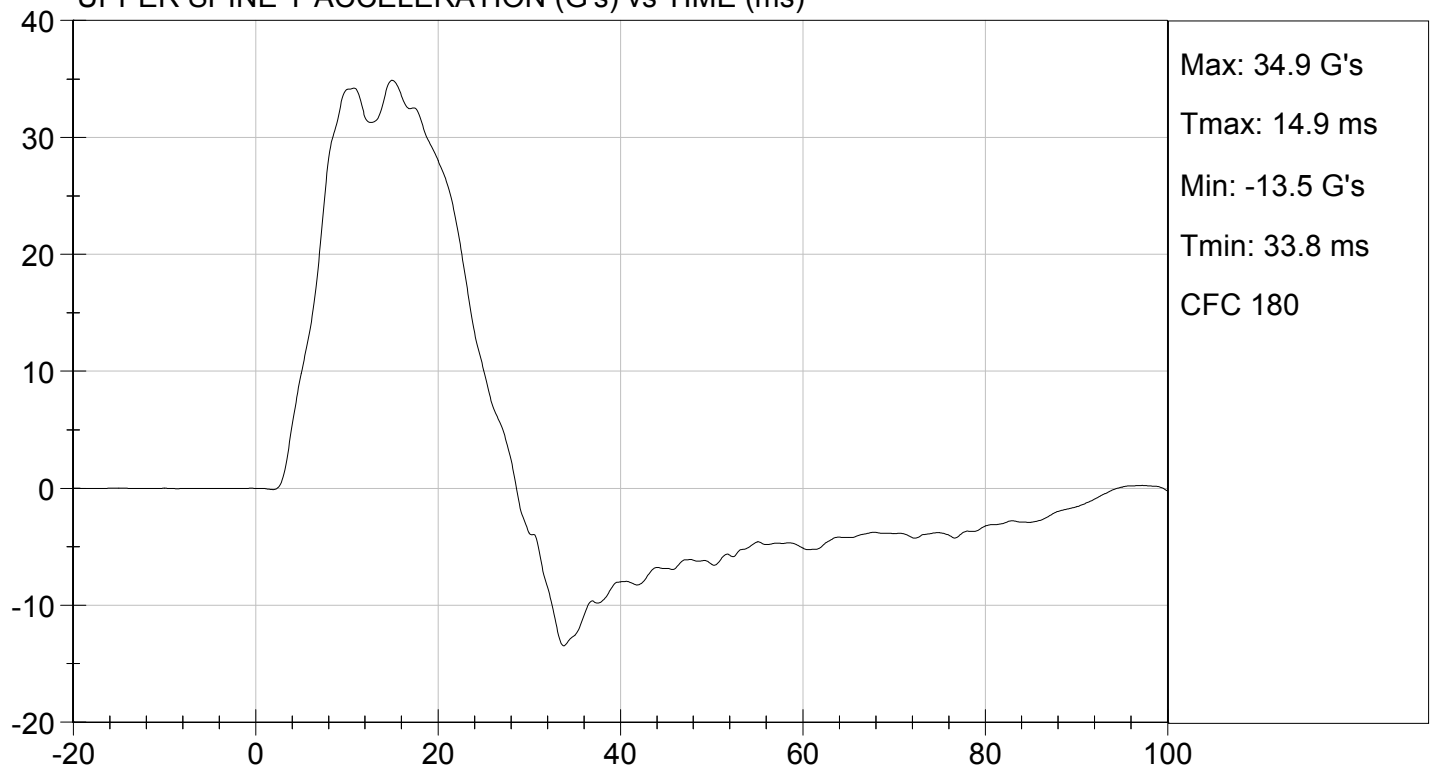
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 06/10/2015
TEST #: D151634

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



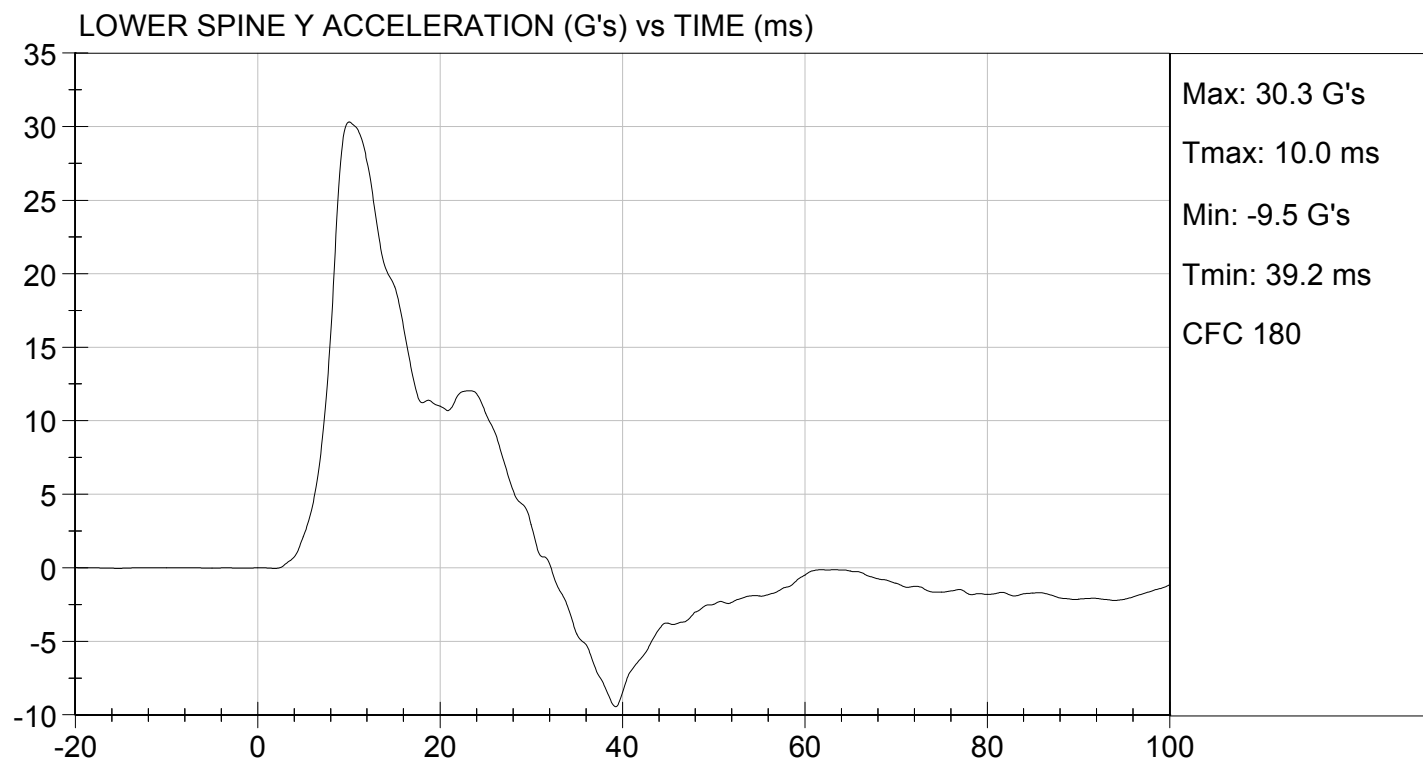
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)





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

TEST DATE: 06/10/2015
TEST #: D151634



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

ATD Serial No: 296

Test I.D: D151635

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	14 to 18	14	Pass
Upper Rib Displacement	mm	32 to 40	37	Pass
Middle Rib Displacement	mm	39 to 45	44	Pass
Lower Rib Displacement	mm	35 to 43	43	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

David Schoedel
Laboratory Technician

06/10/2015

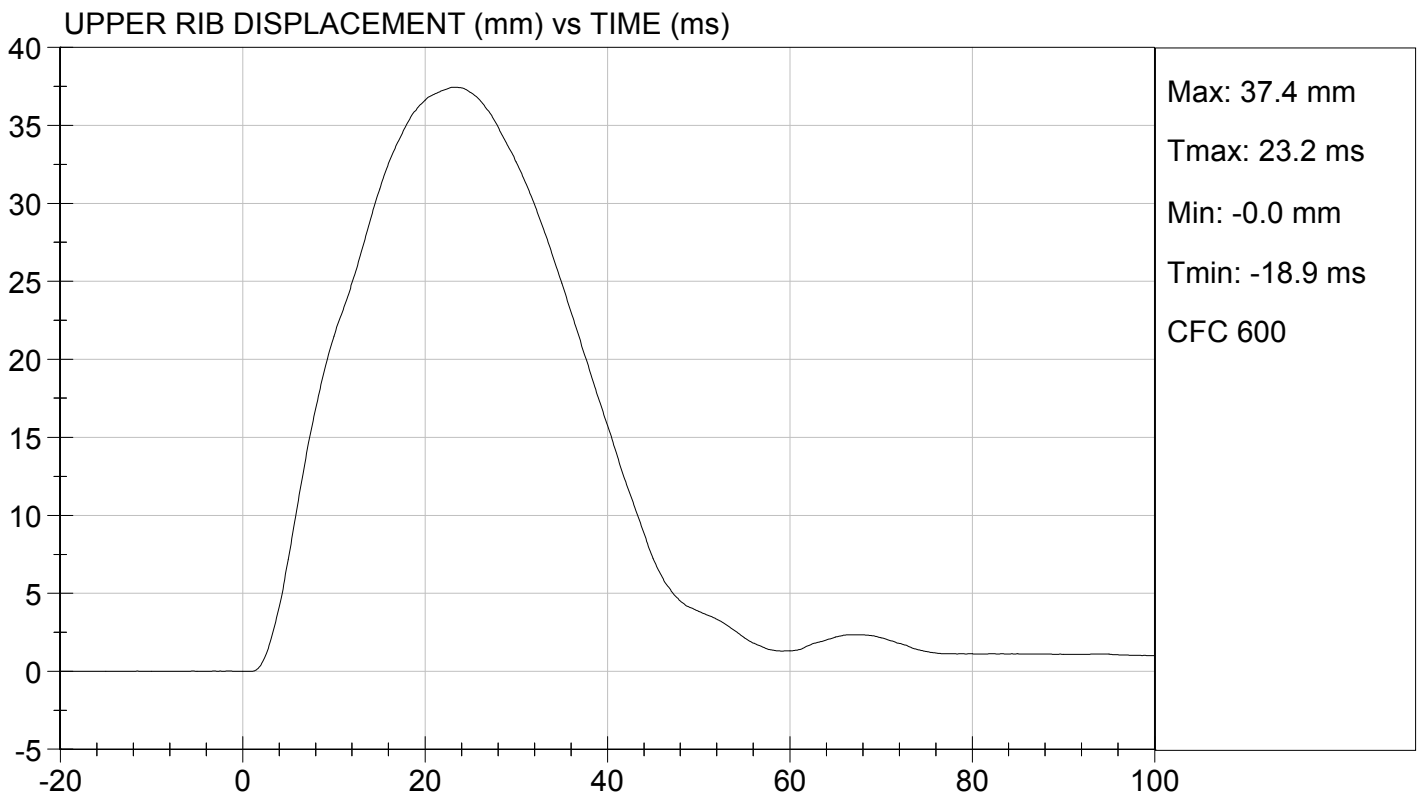
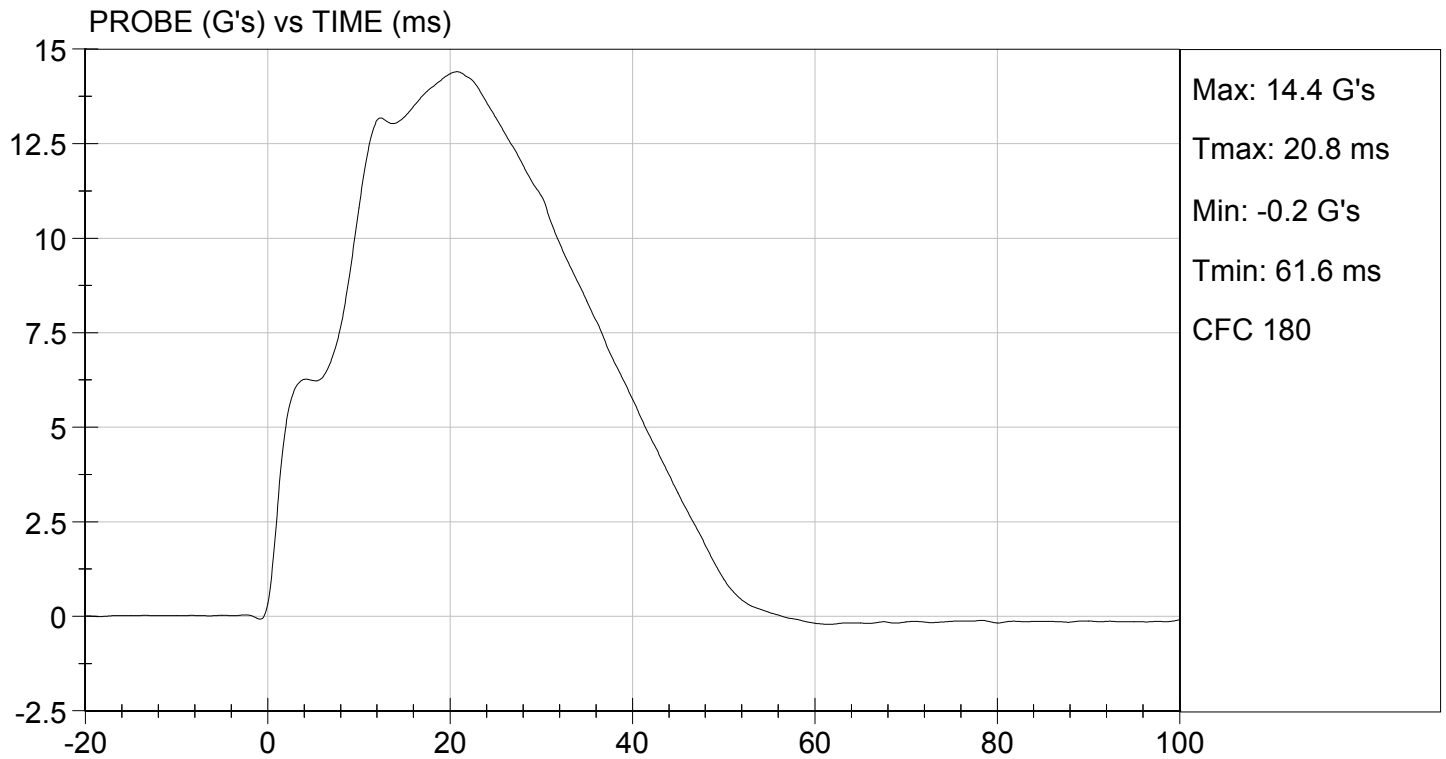
Test Date

Jessica Hall
Approved By



TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 06/10/2015
TEST #: D151635

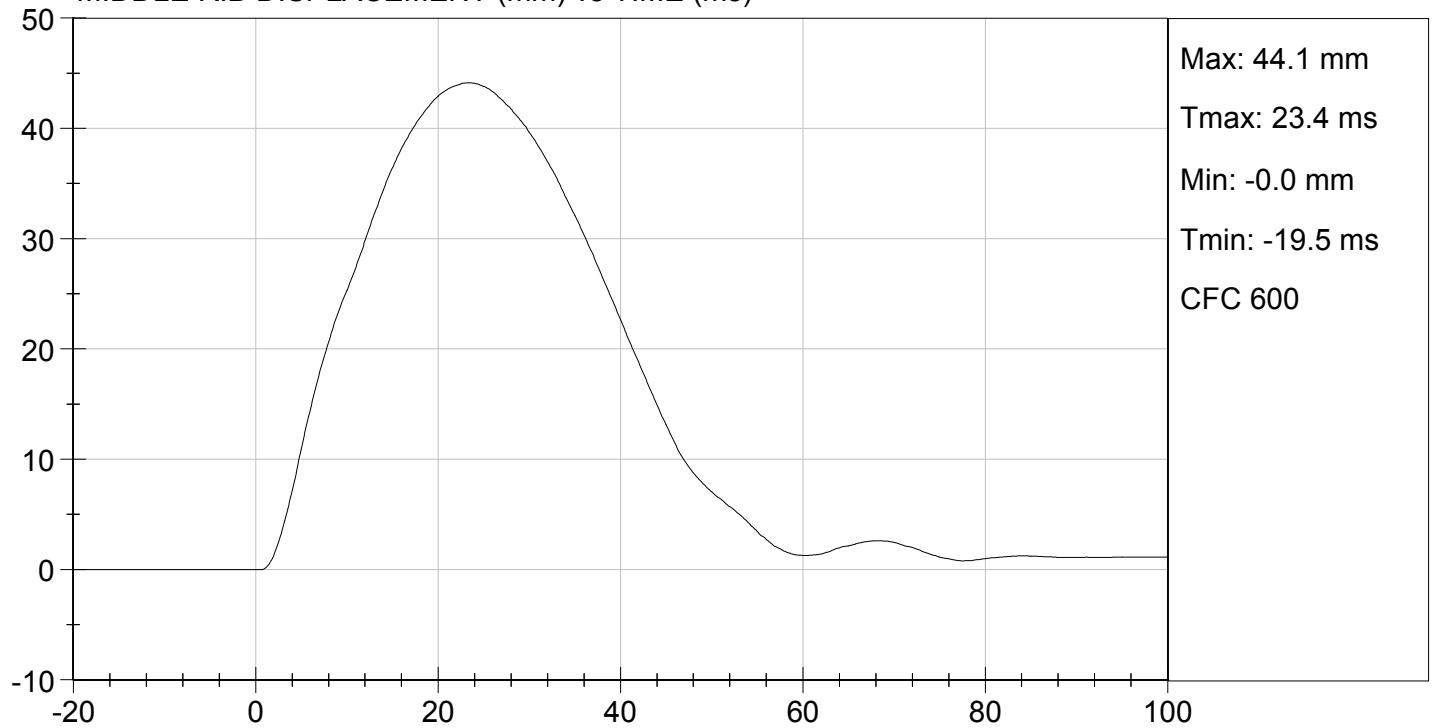




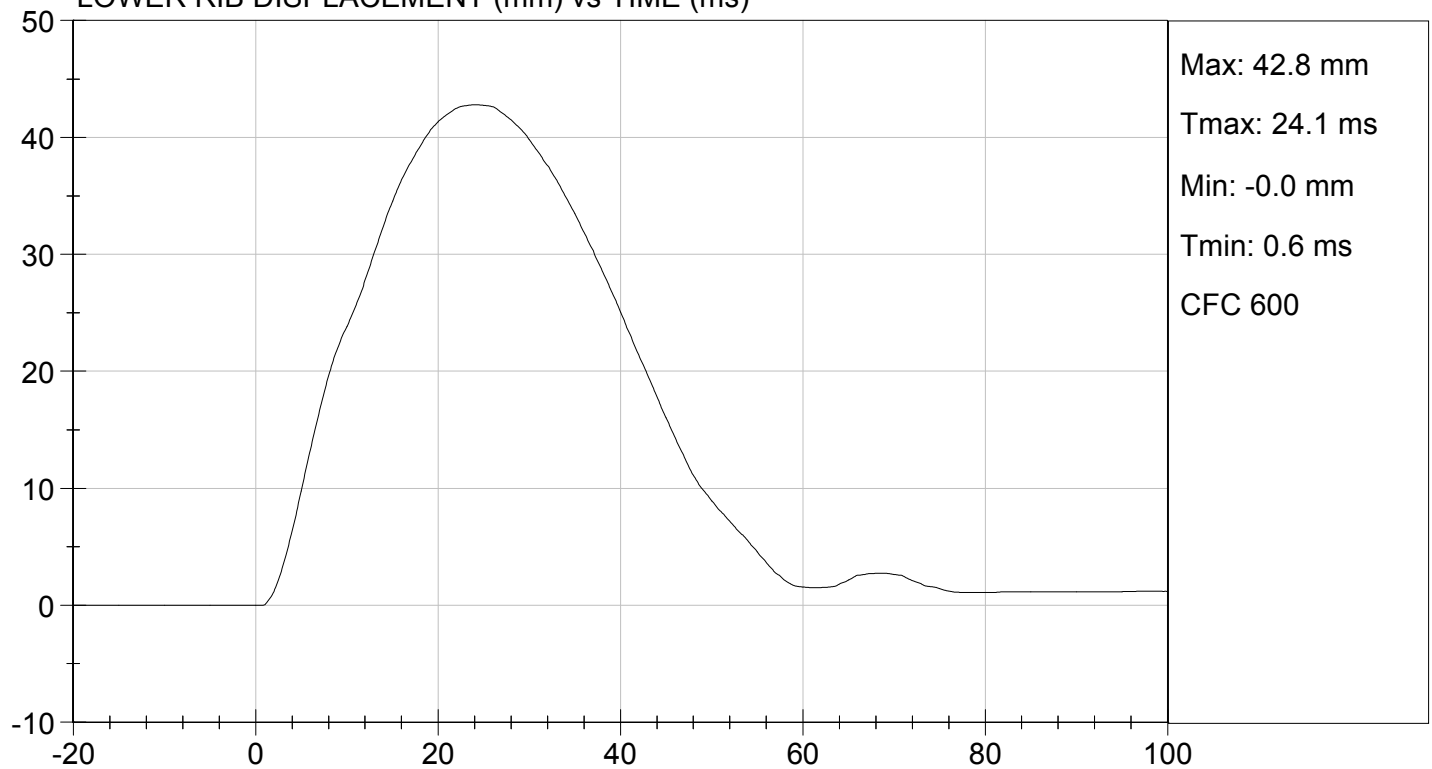
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 06/10/2015
TEST #: D151635

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

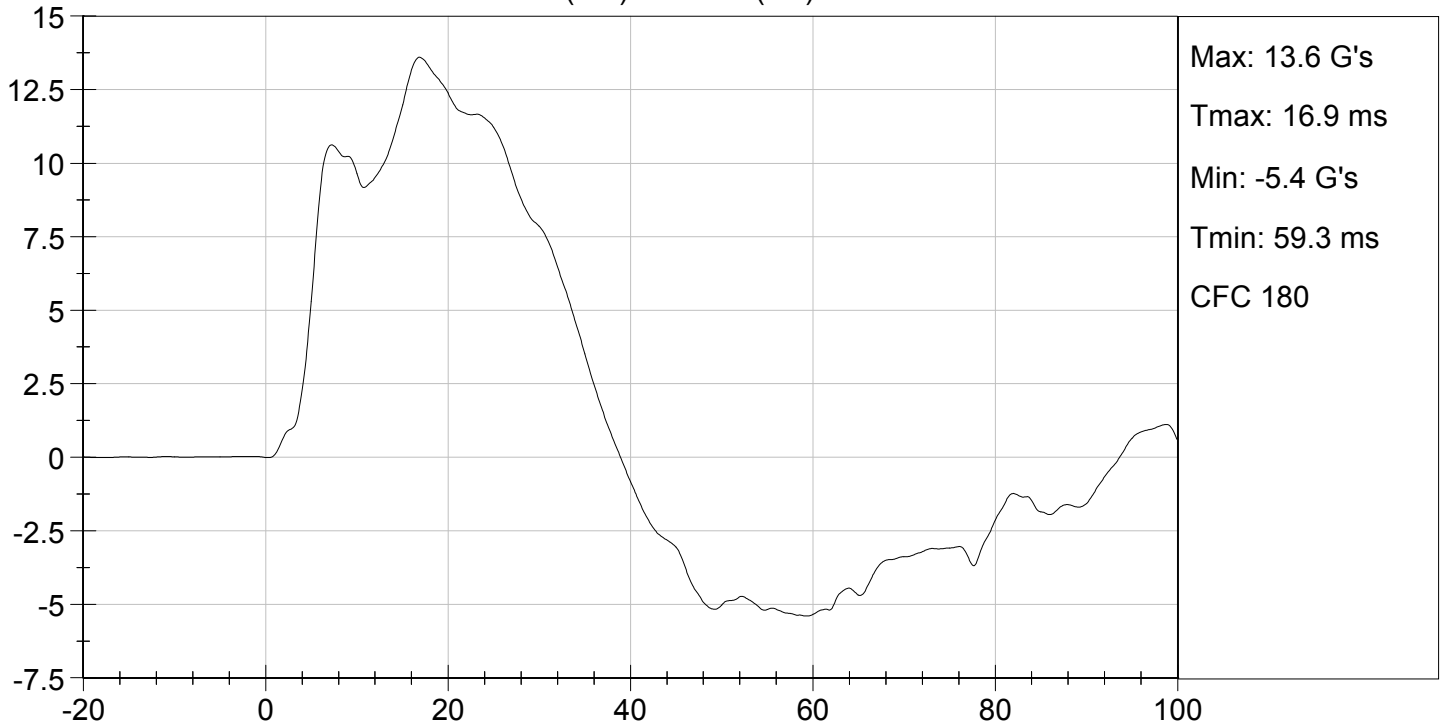




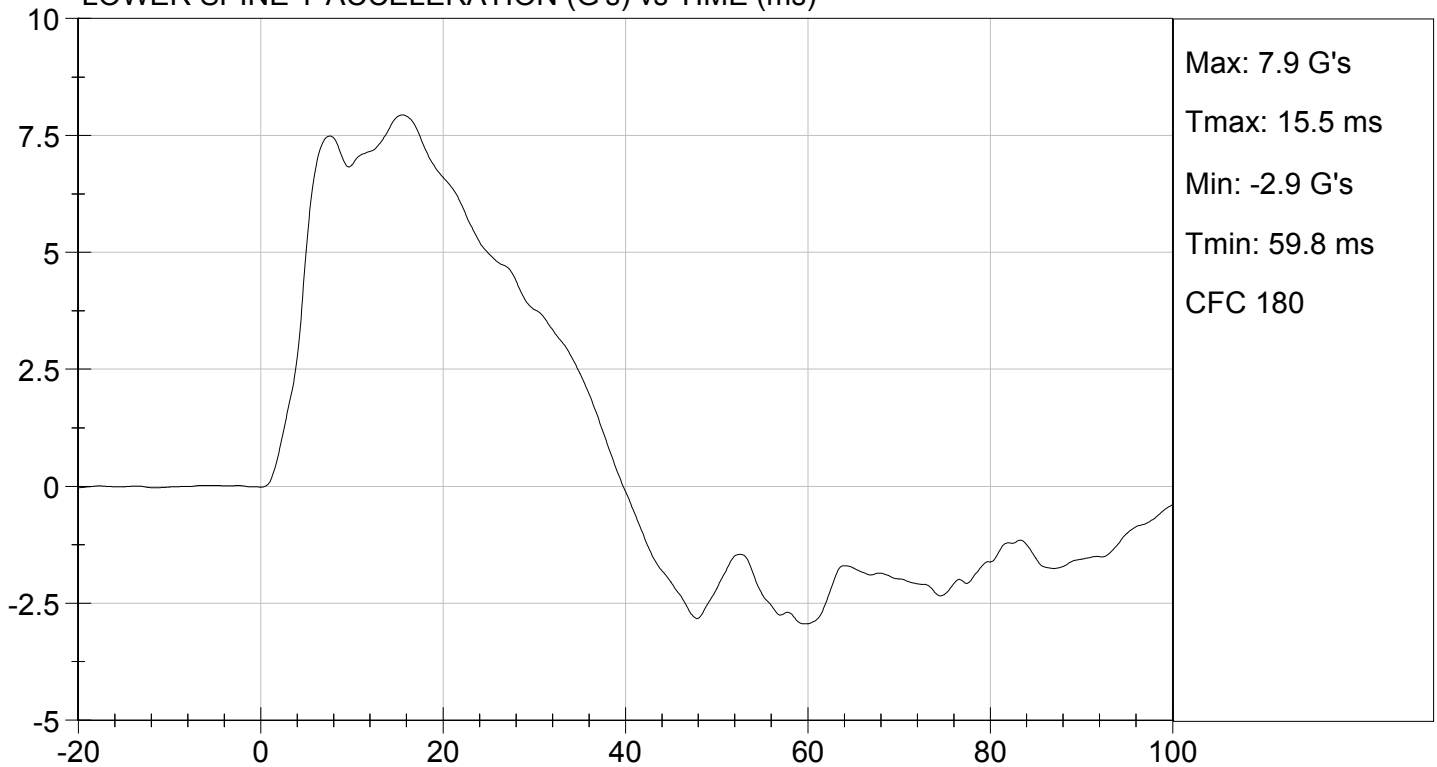
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 06/10/2015
TEST #: D151635

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D151636

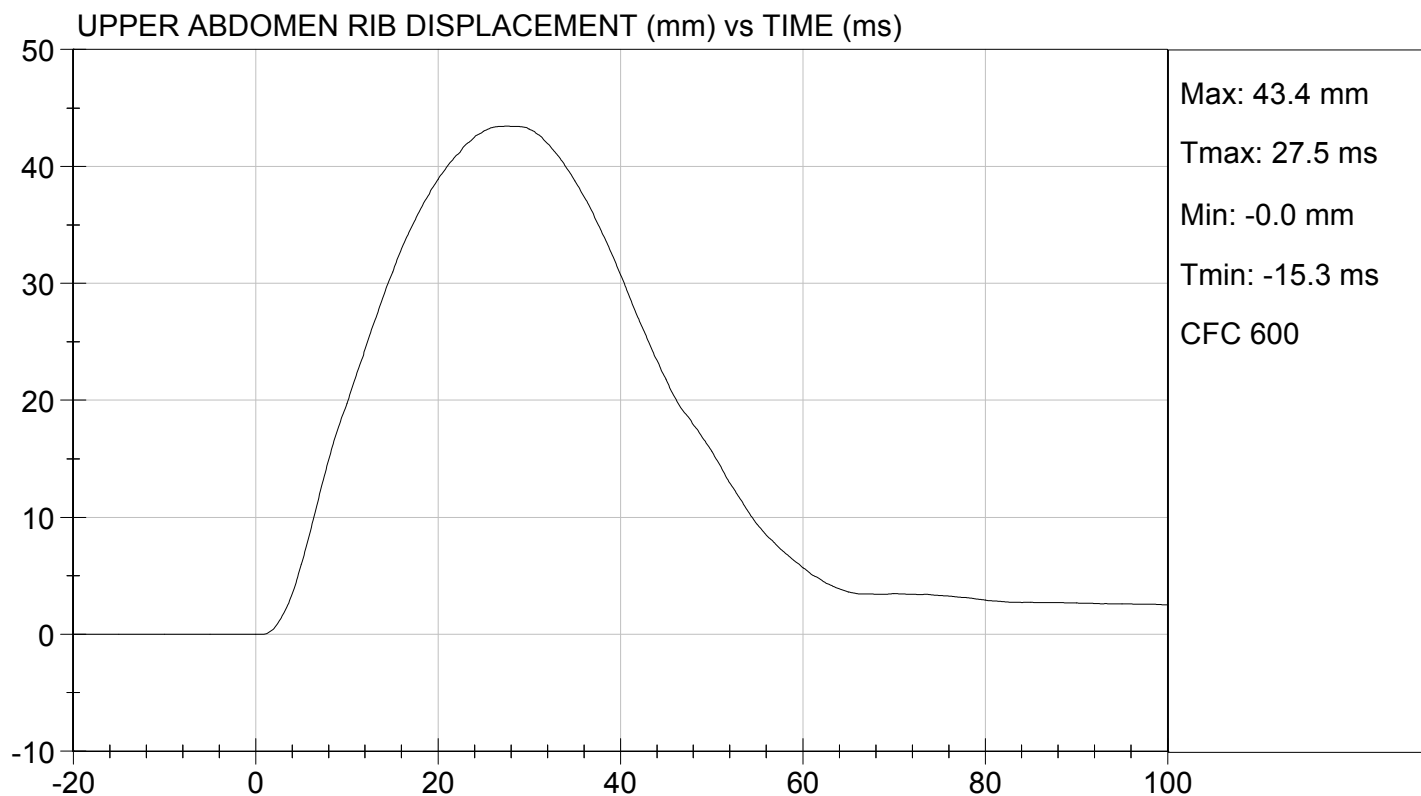
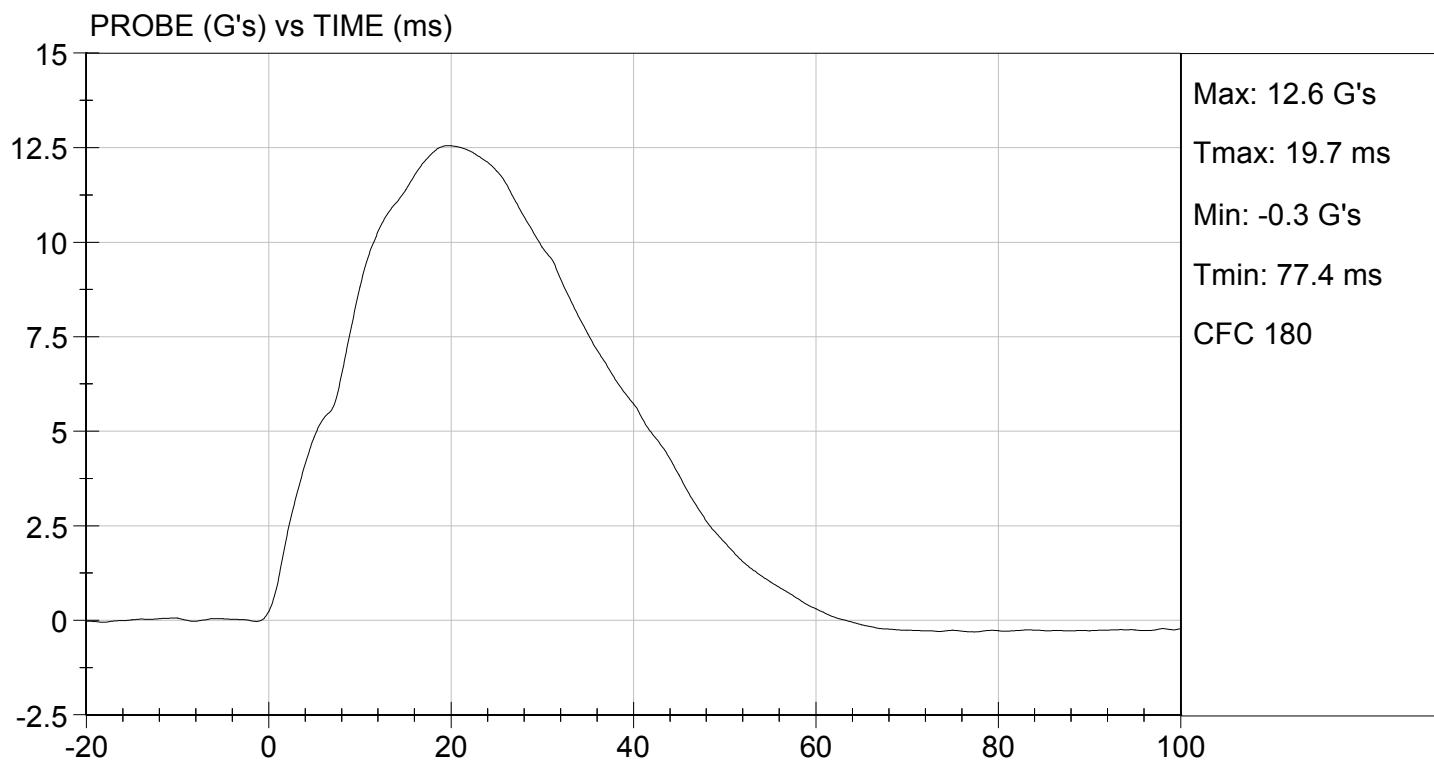
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	43	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	40	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/09/2015

Test Date

Jessica Hall
Approved By

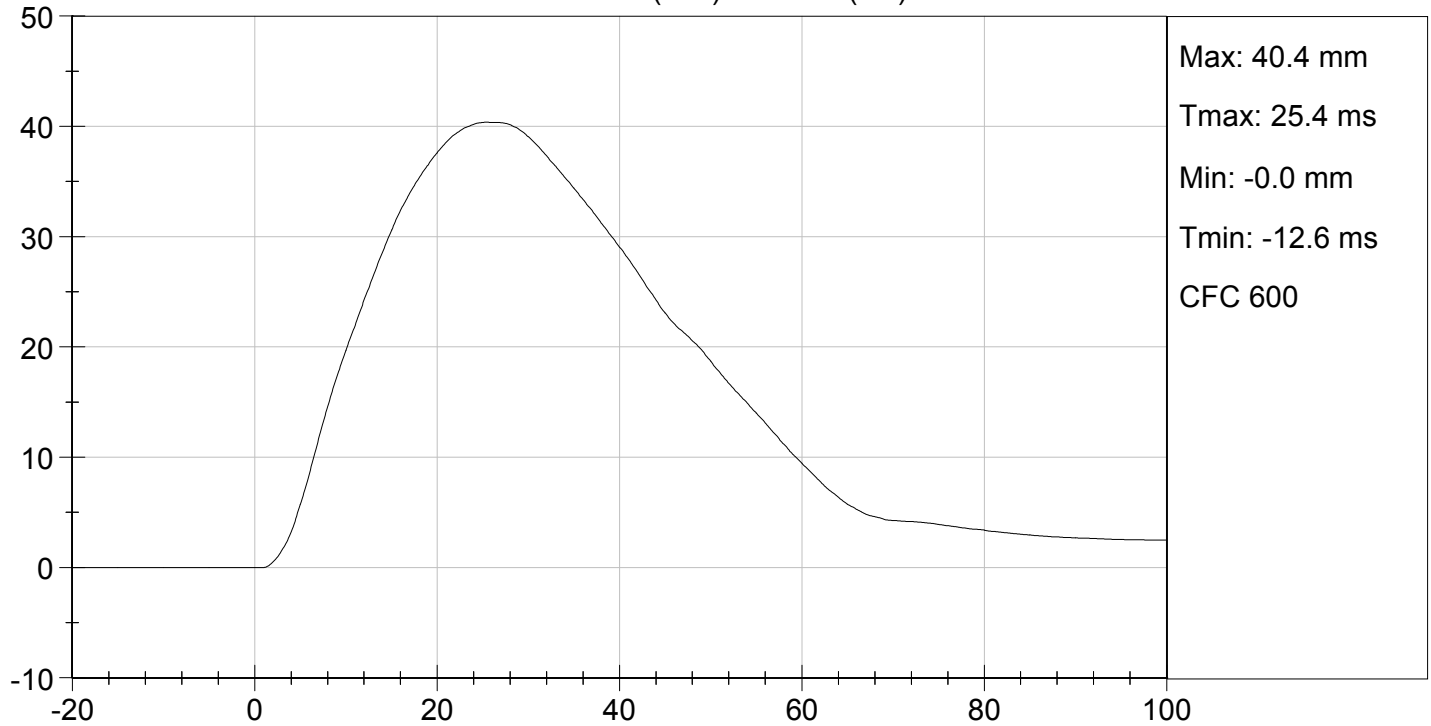




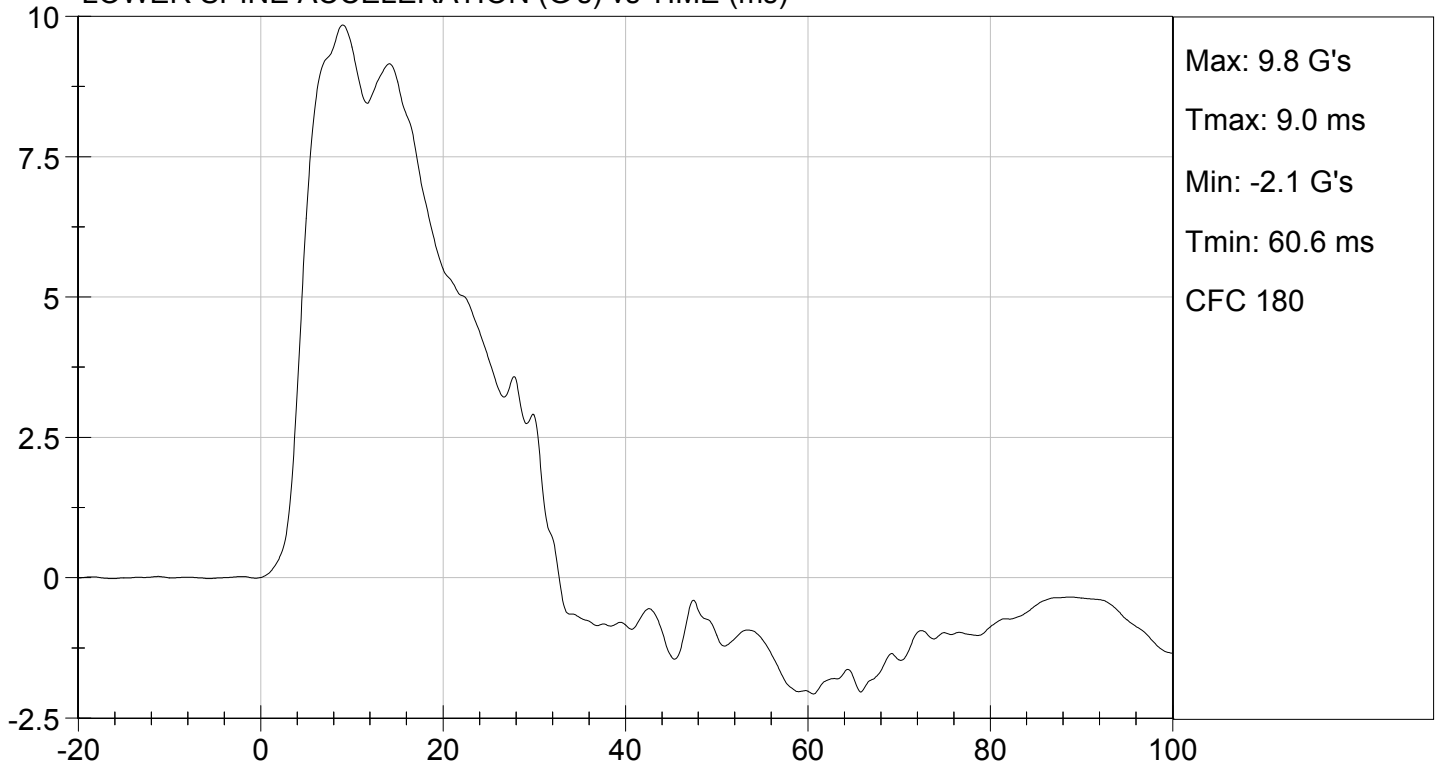
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 06/09/2015
TEST #: D151636

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D151637

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	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	4,000	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/09/2015

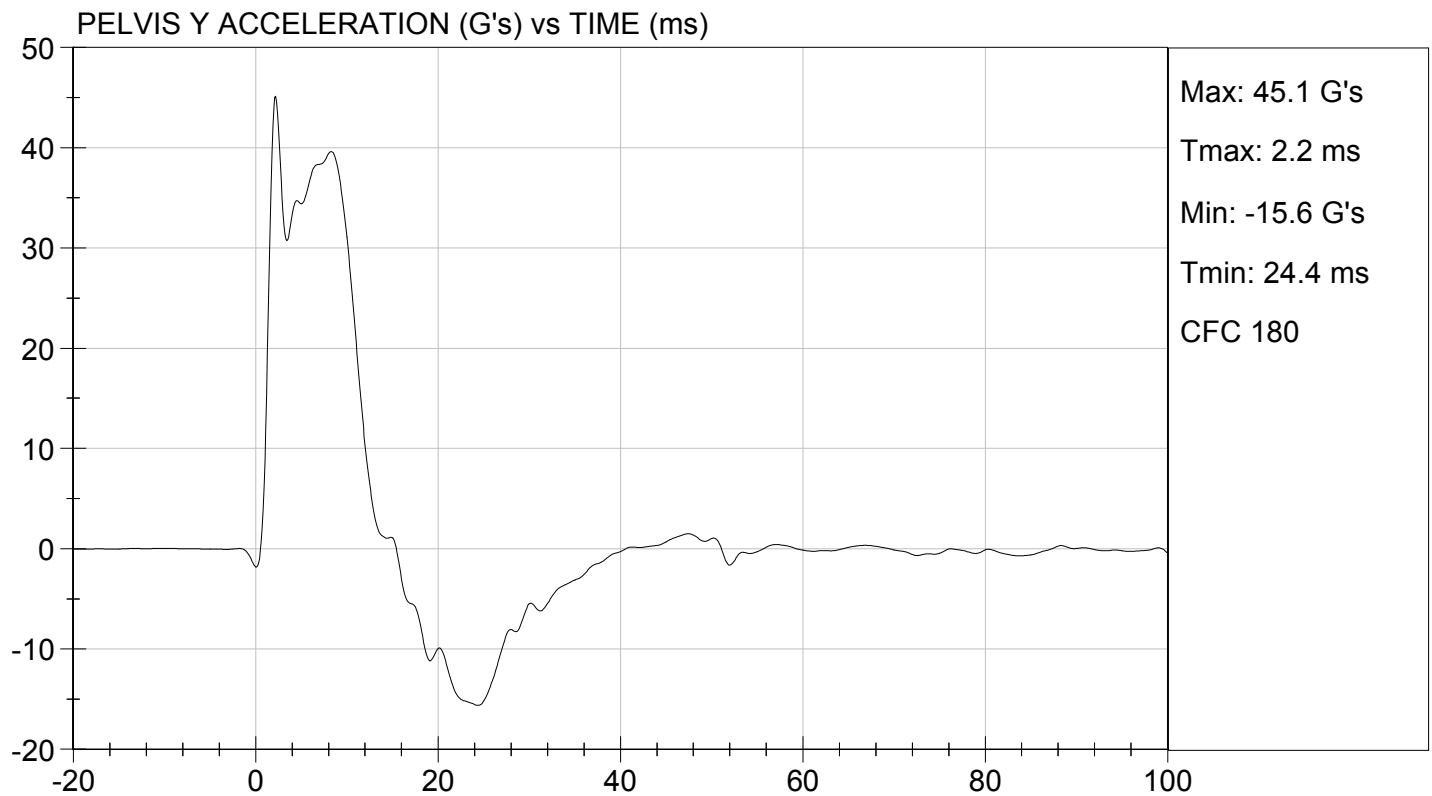
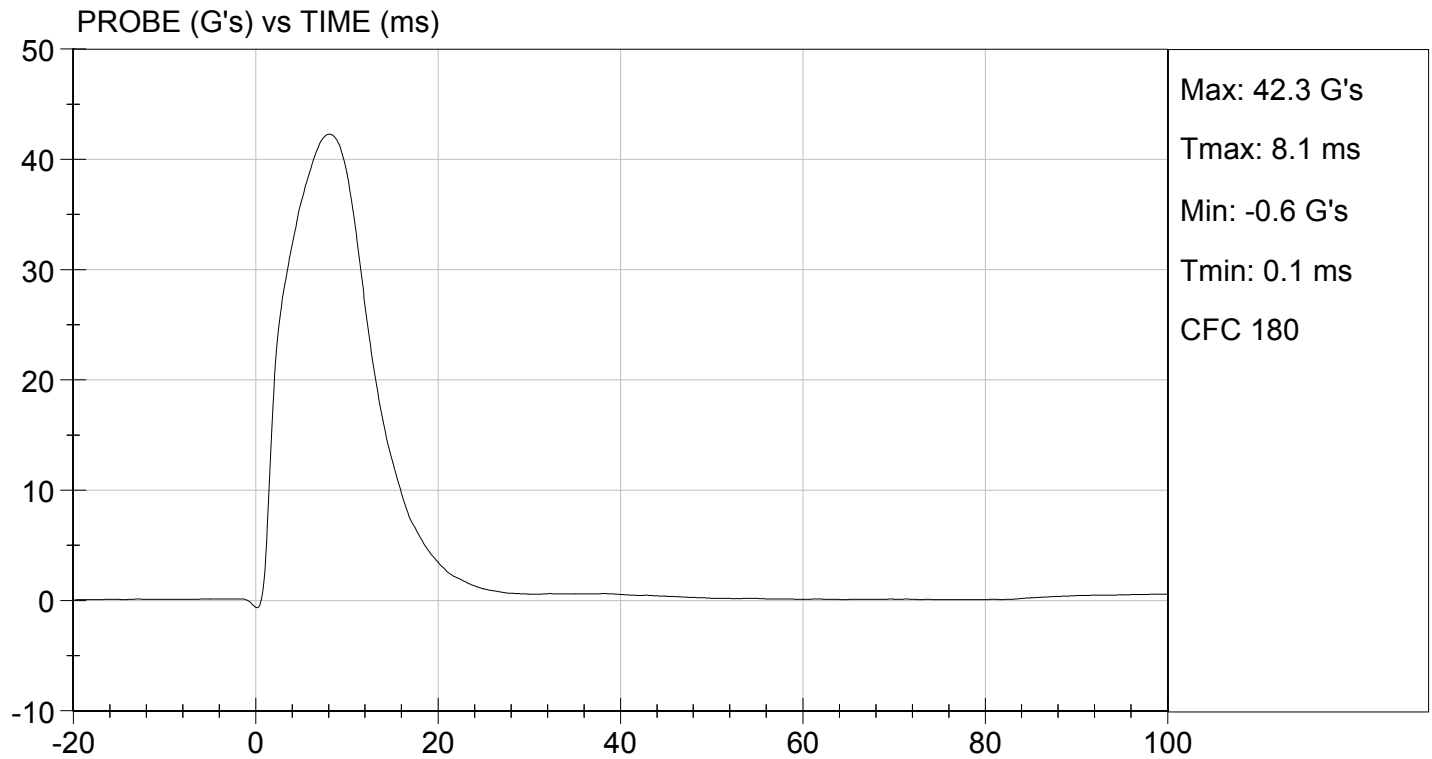
Test Date

Jessica Hall
Approved By



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

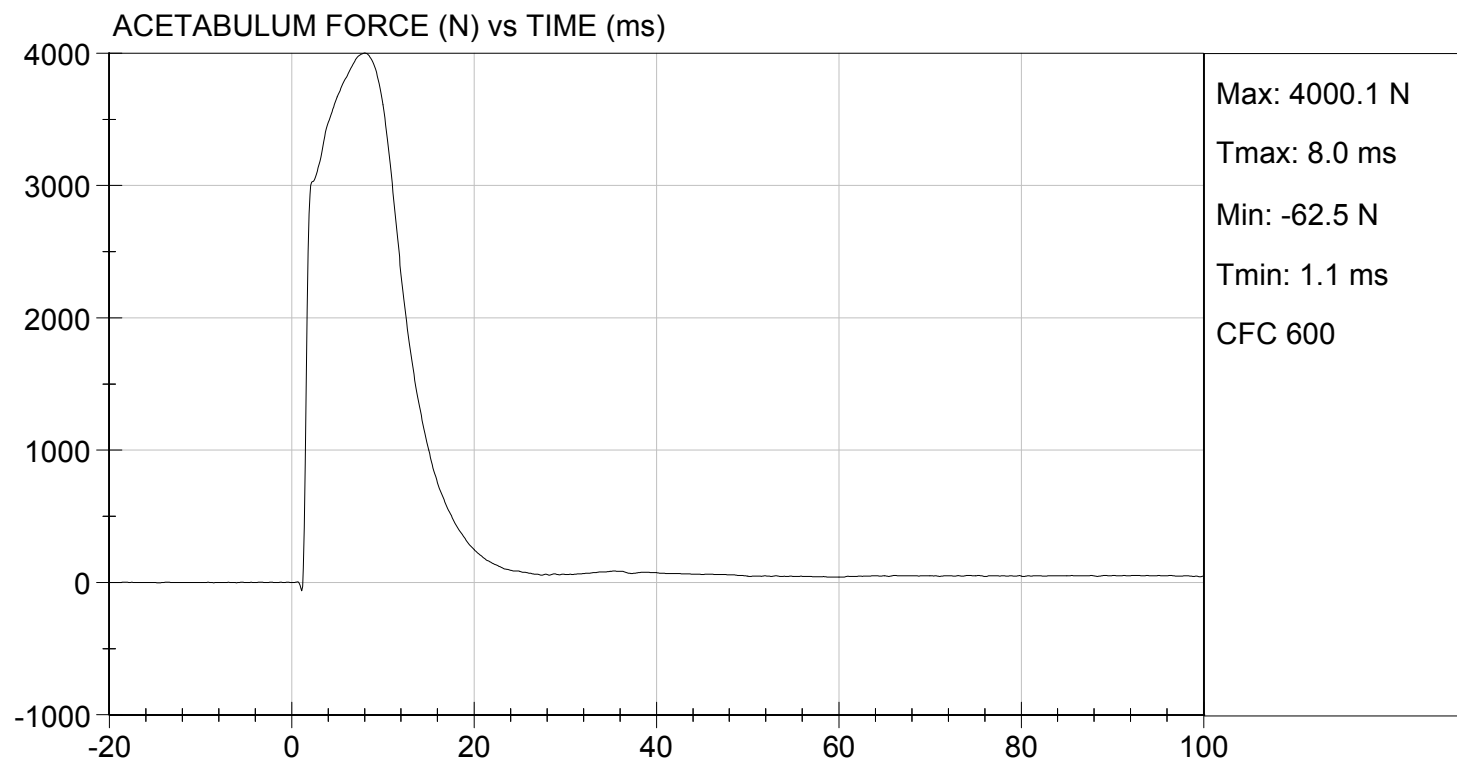
TEST DATE: 06/09/2015
TEST #: D151637





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

TEST DATE: 06/09/2015
TEST #: D151637



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D151638

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	29	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,596	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/10/2015

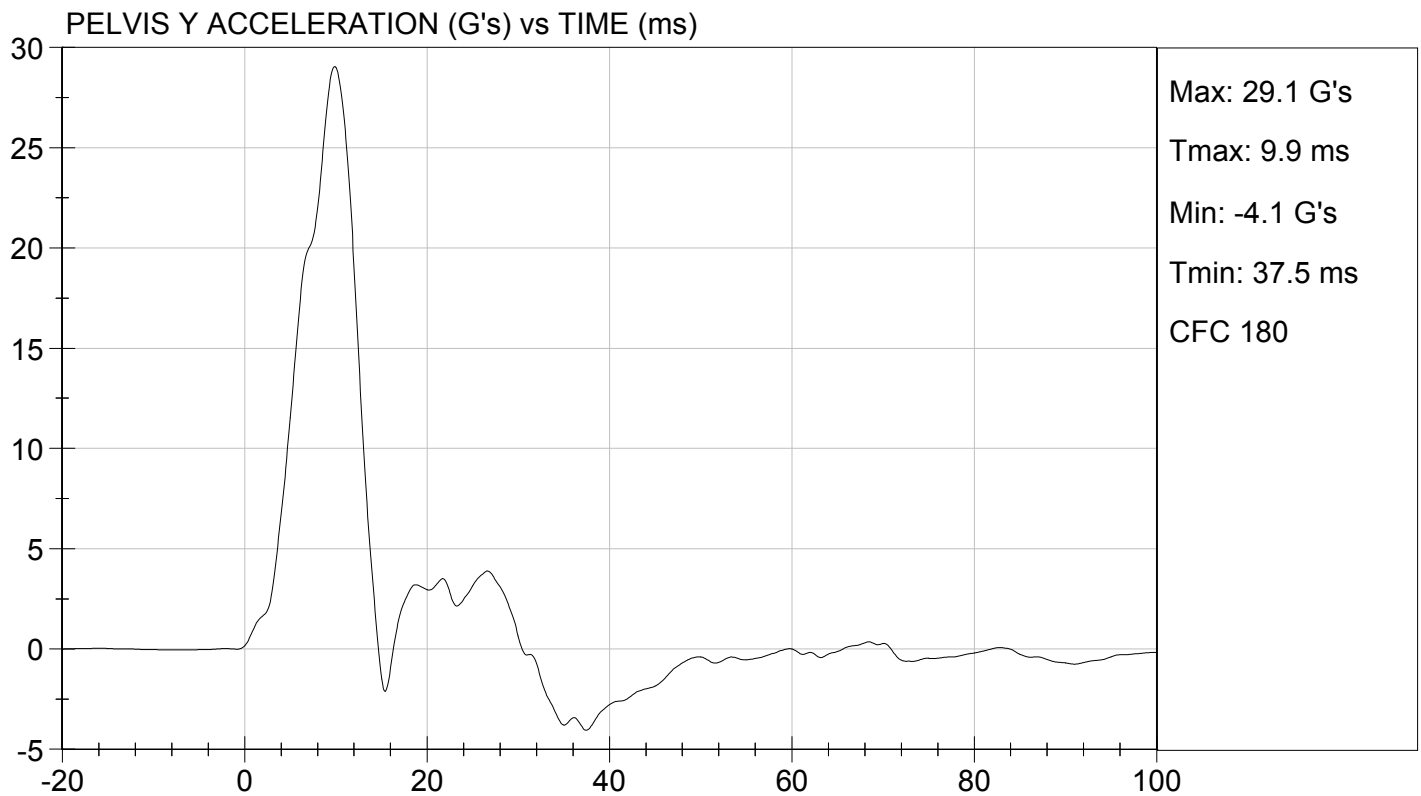
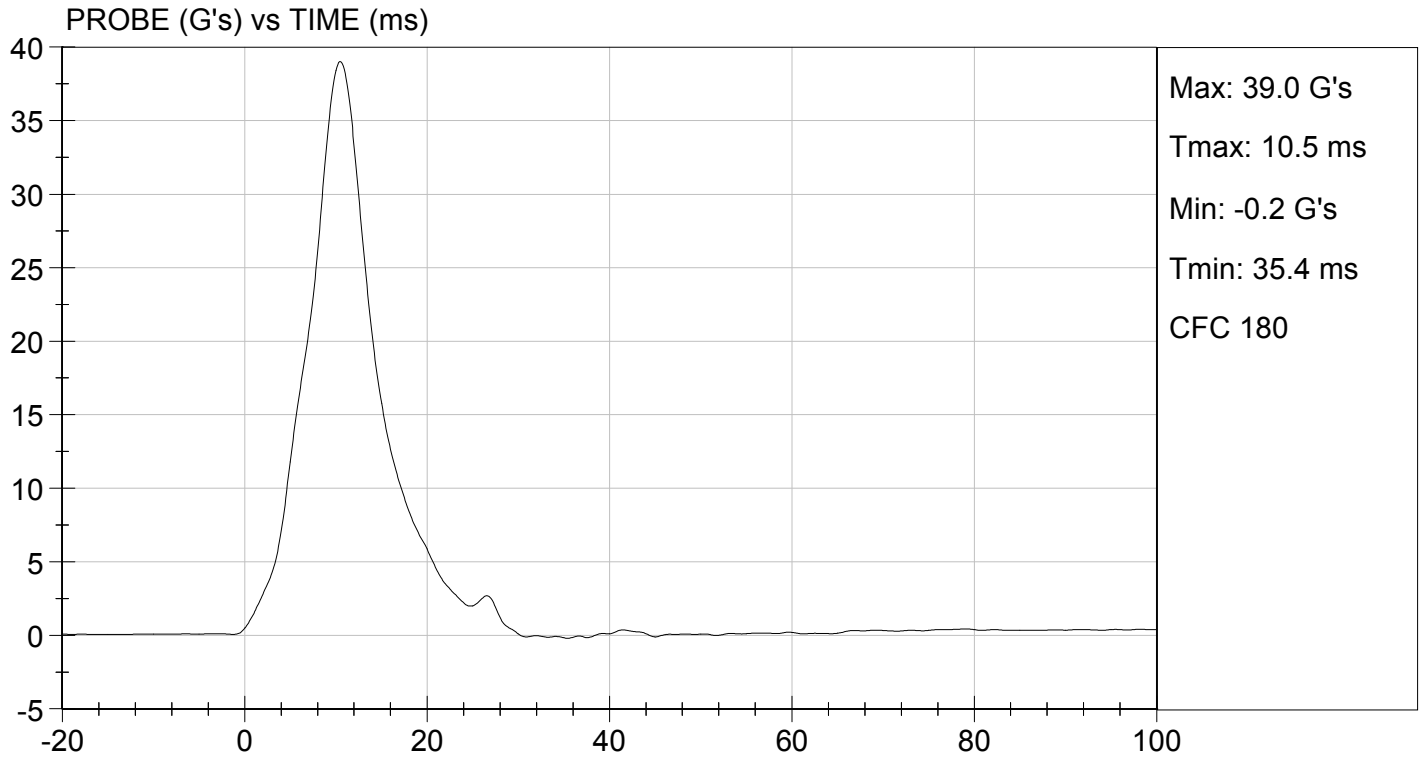
Test Date

Jessica Hall
Approved By



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

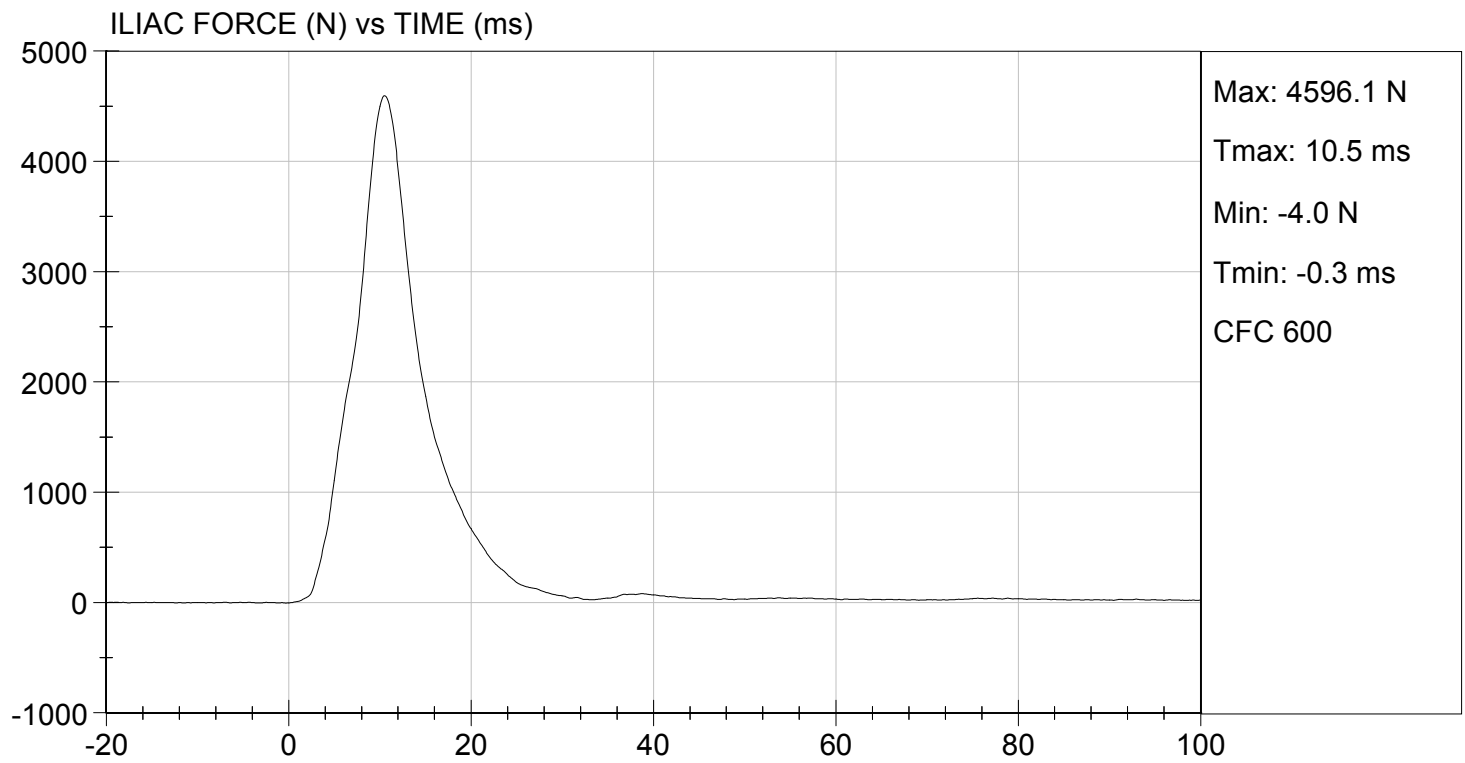
TEST DATE: 06/10/2015
TEST #: D151638





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

TEST DATE: 06/10/2015
TEST #: D151638



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

ATD Serial No: 296

Test ID: D151771

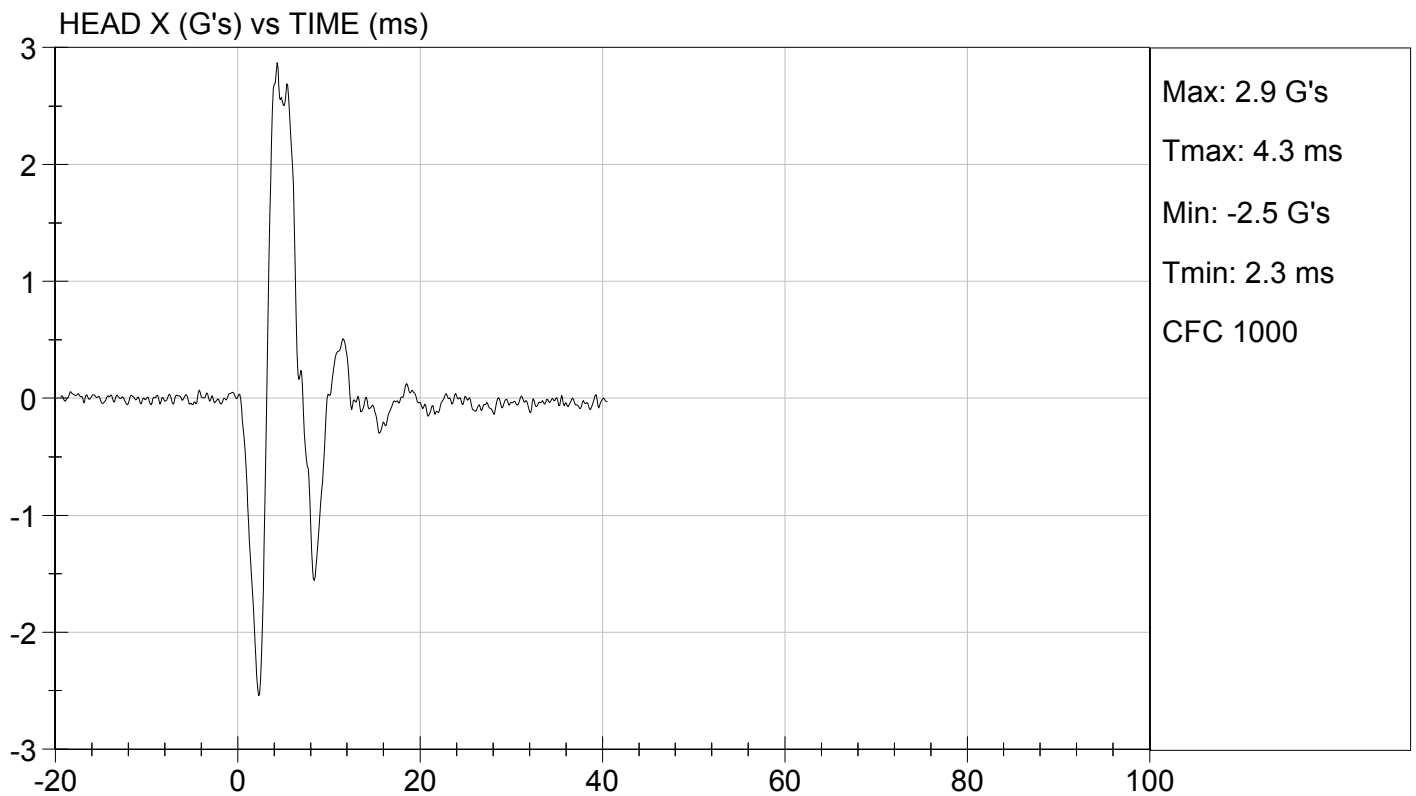
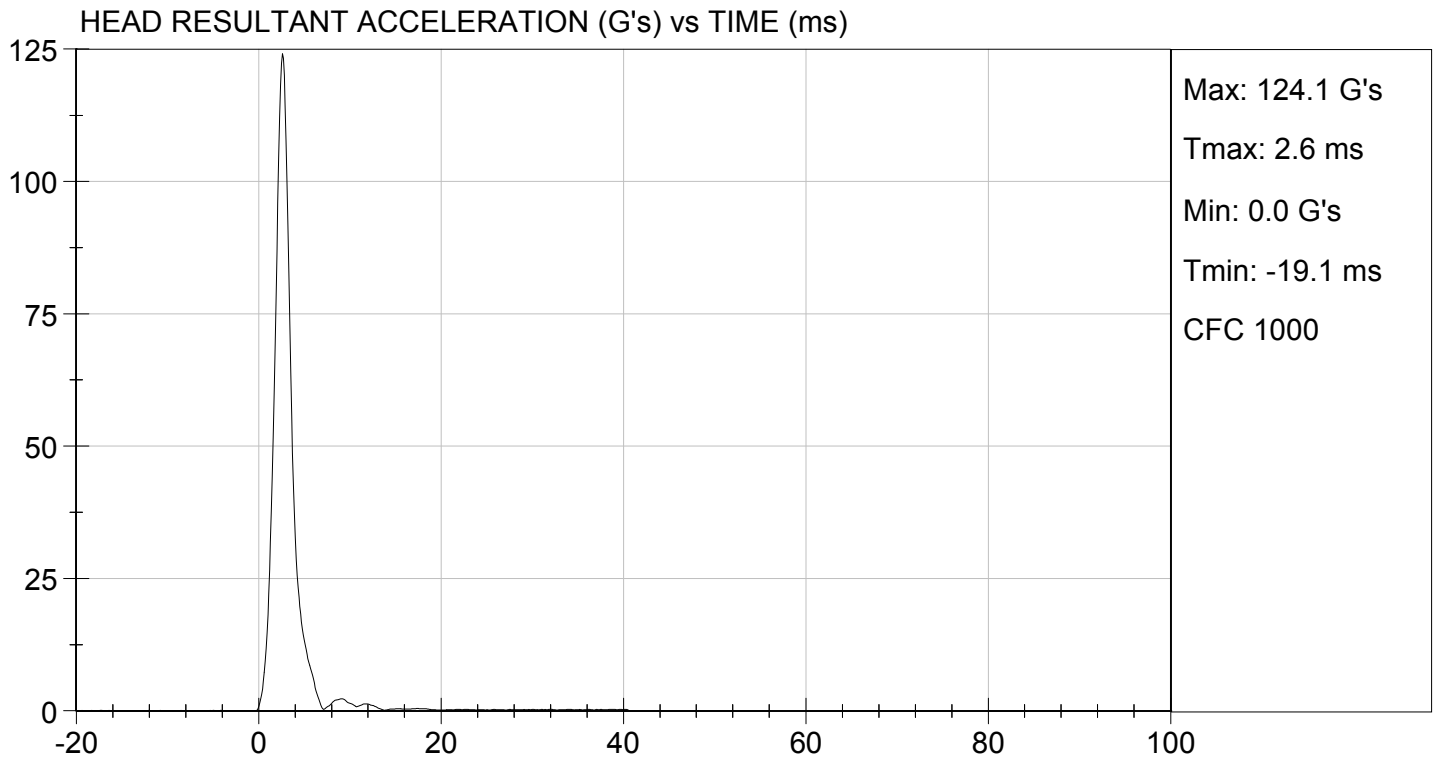
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	115 to 137	124	Pass
Peak Longitudinal Acceleration	G's	+/- 15	2.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
			Overall Test Results	Pass

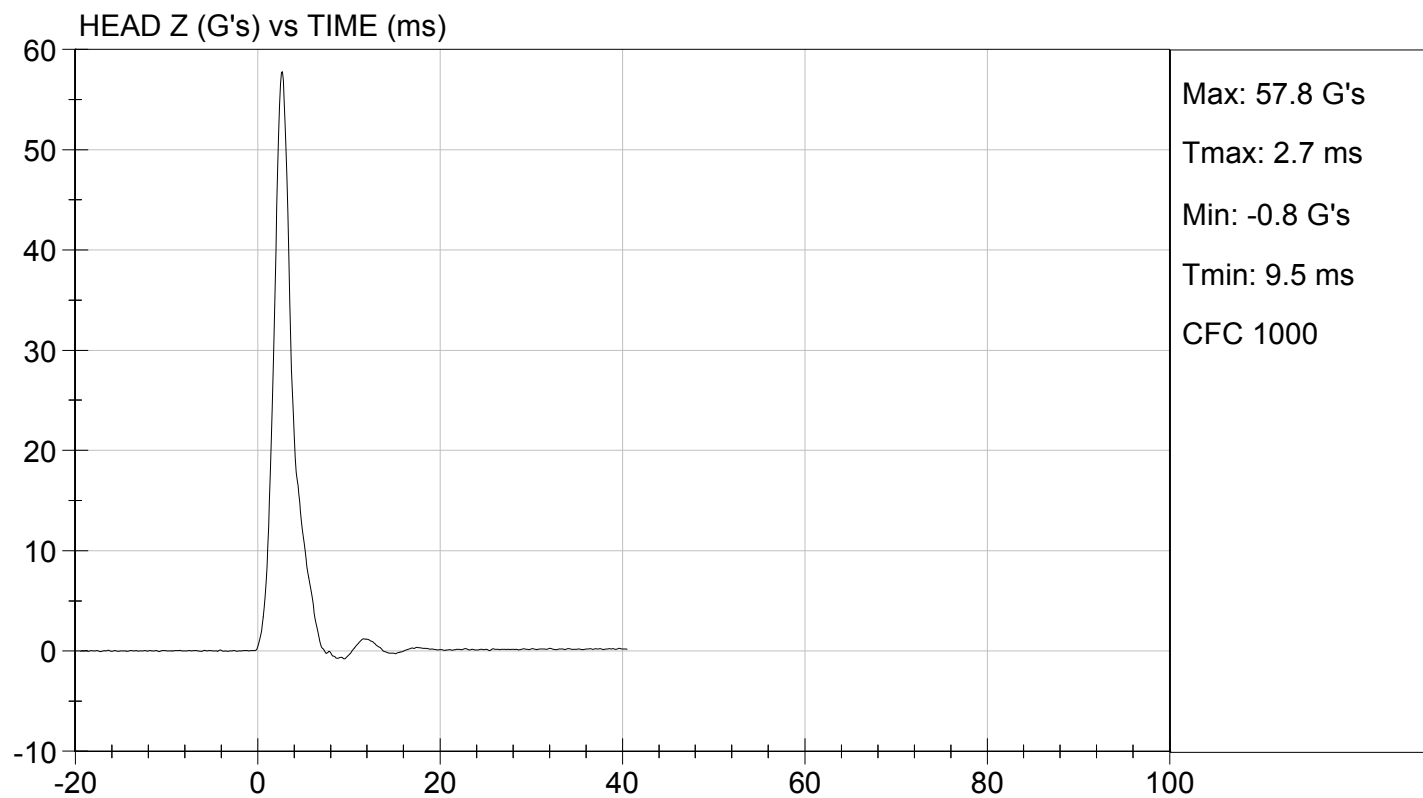
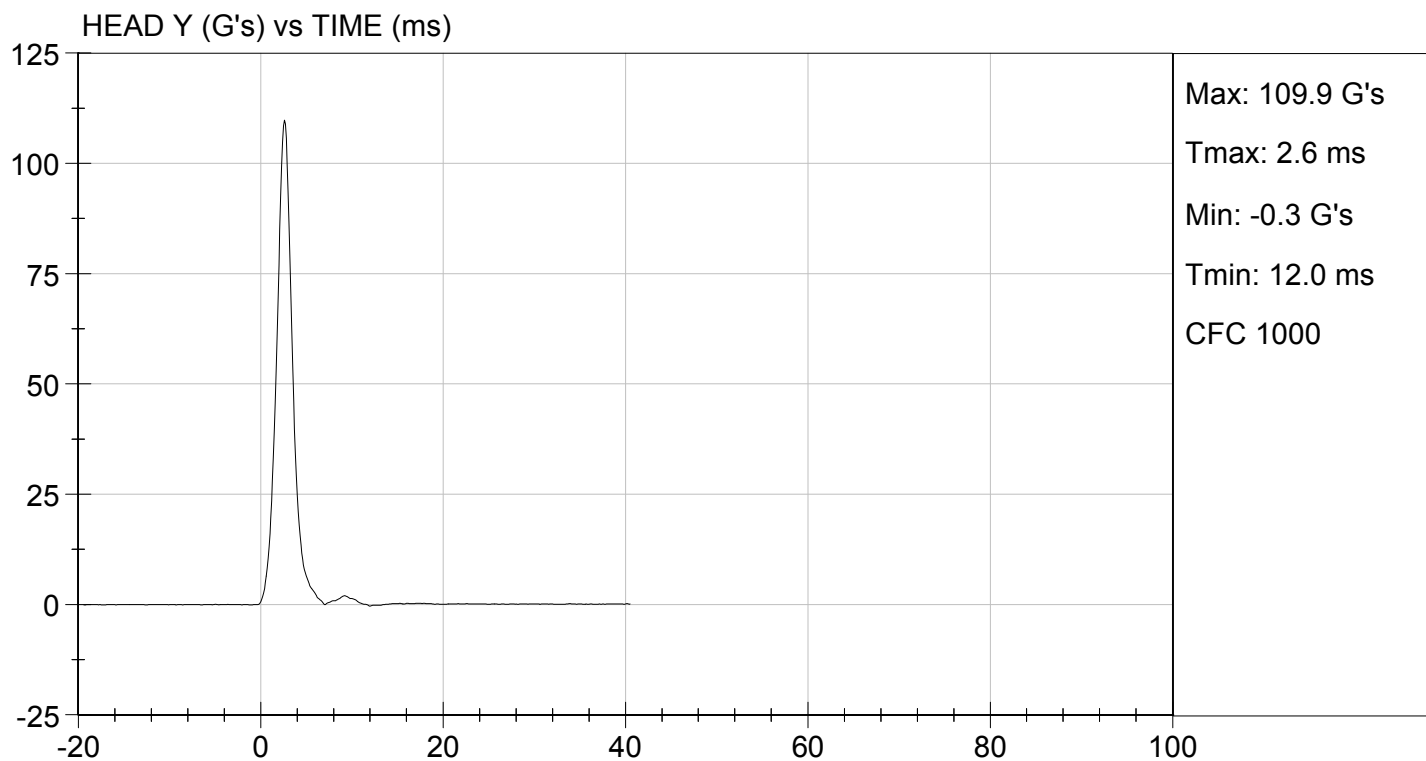
David Schoedel
Laboratory Technician

06/17/2015

Test Date

Jessica Hall
Approved By





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

ATD Serial No: 296

Test I.D: D151772

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.6	Pass
Humidity		%	10 to 70	45	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.45	Pass
	15 ms	m/s	3.30 to 4.10	3.43	Pass
	20 ms	m/s	4.40 to 5.40	4.55	Pass
	25 ms	m/s	5.40 to 6.10	5.44	Pass
	25-100 ms	m/s	5.50 to 6.20	5.71	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	-38	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	115	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

06/17/2015

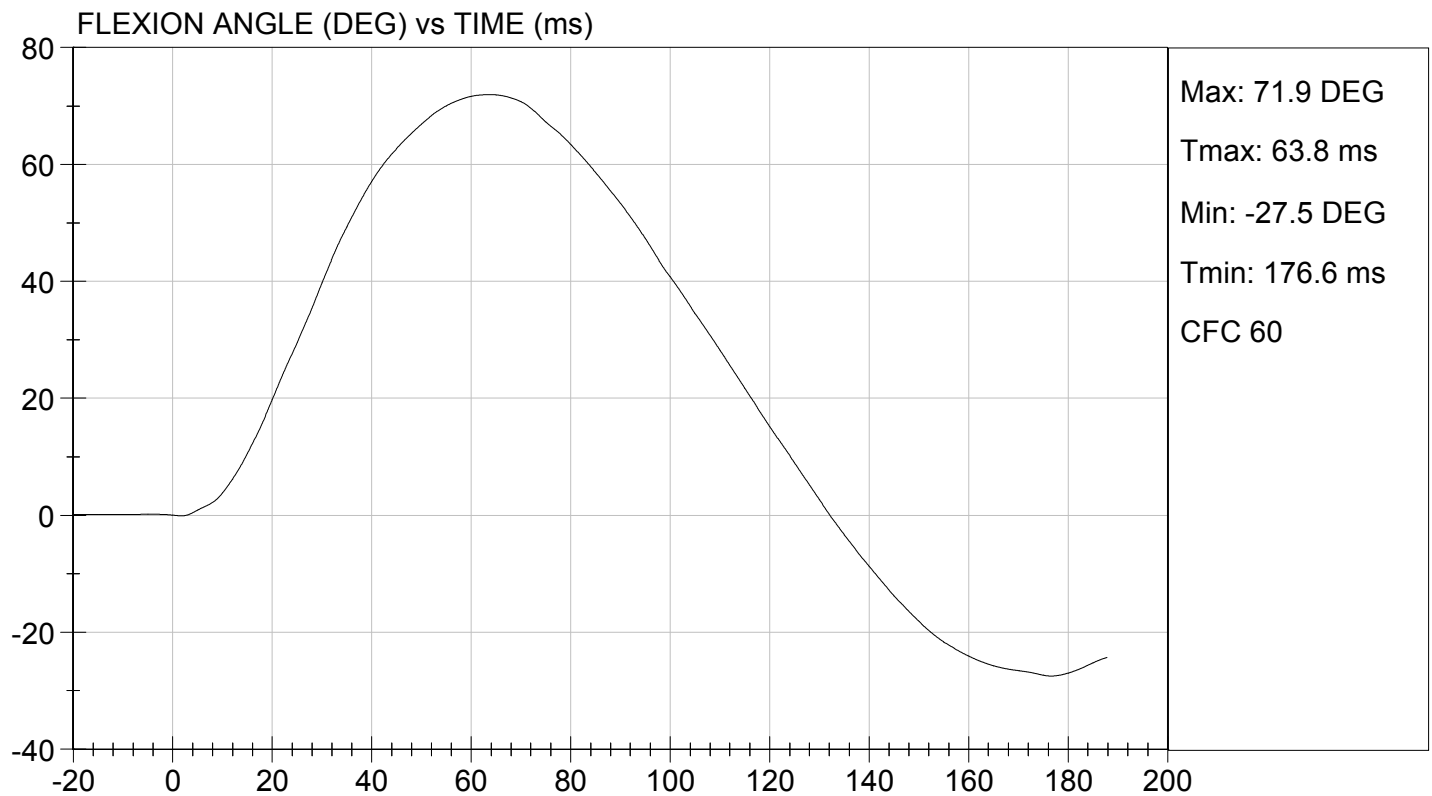
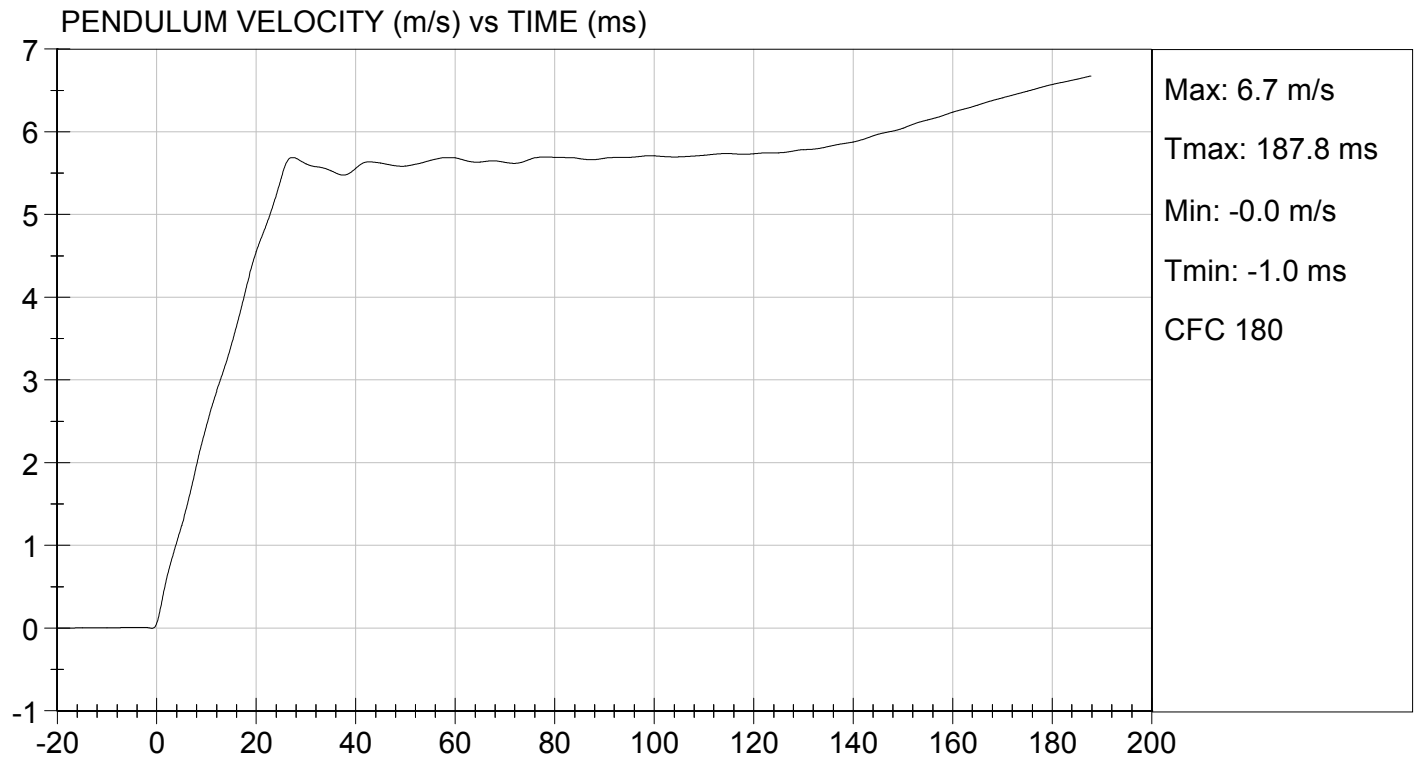
Test Date

Jessica Hall
Approved By



TEST DESC: NECK BENDING
VELOCITY: 18.32 ft/s, 5.58 m/s

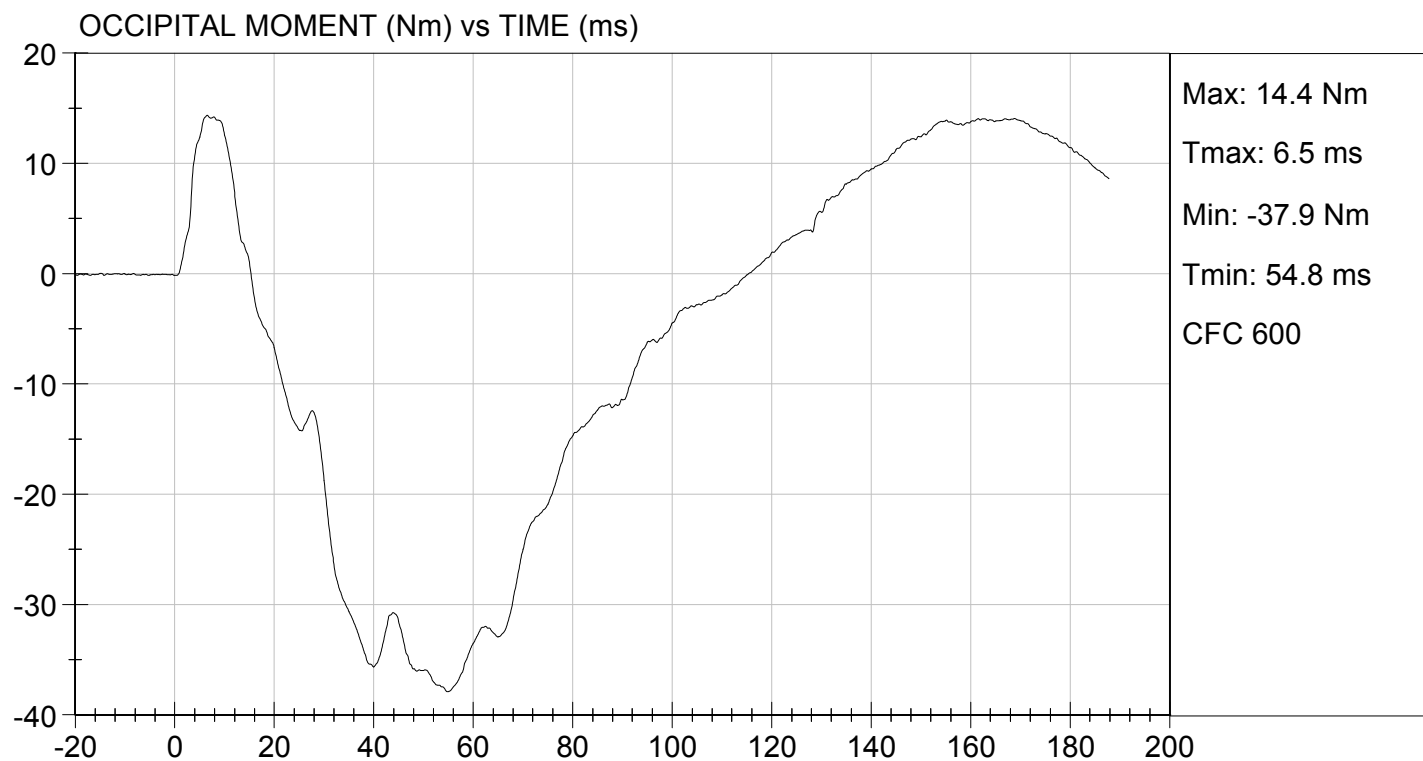
TEST DATE: 06/17/2015
TEST #: D151772





TEST DESC: NECK BENDING
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 06/17/2015
TEST #: D151772



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

ATD Serial No: 296

Test ID: D151773

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

David Schoedel
Laboratory Technician

06/17/2015

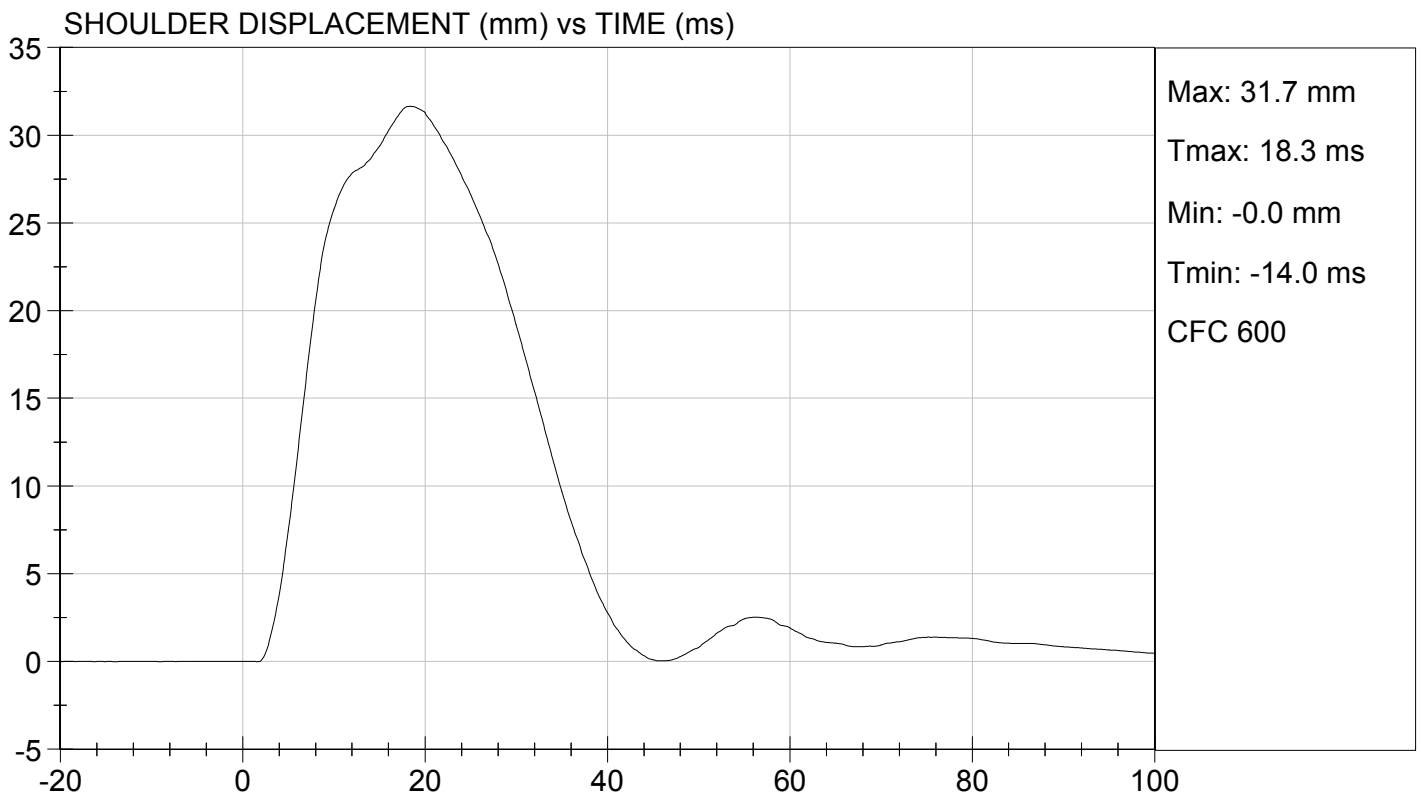
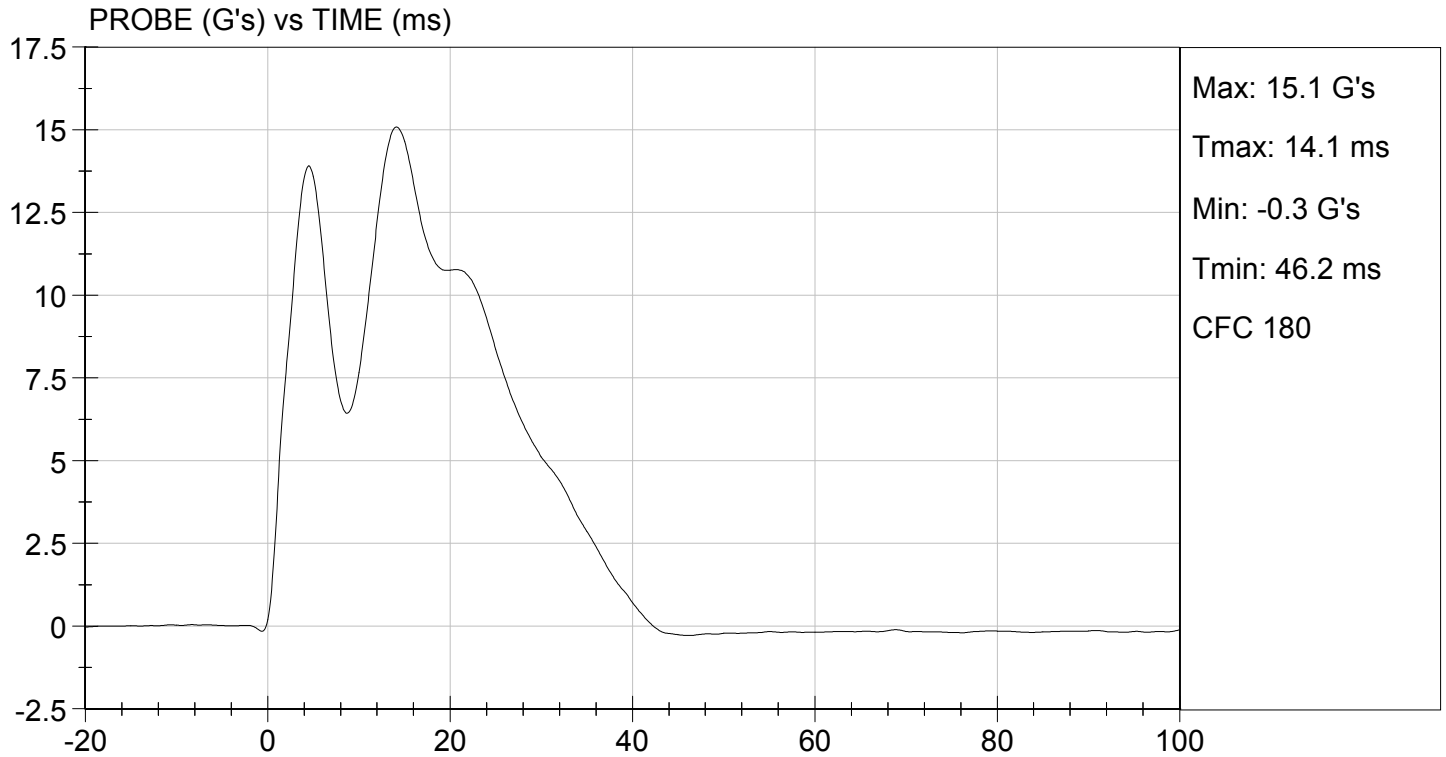
Test Date

Jessica Hall
Approved By



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

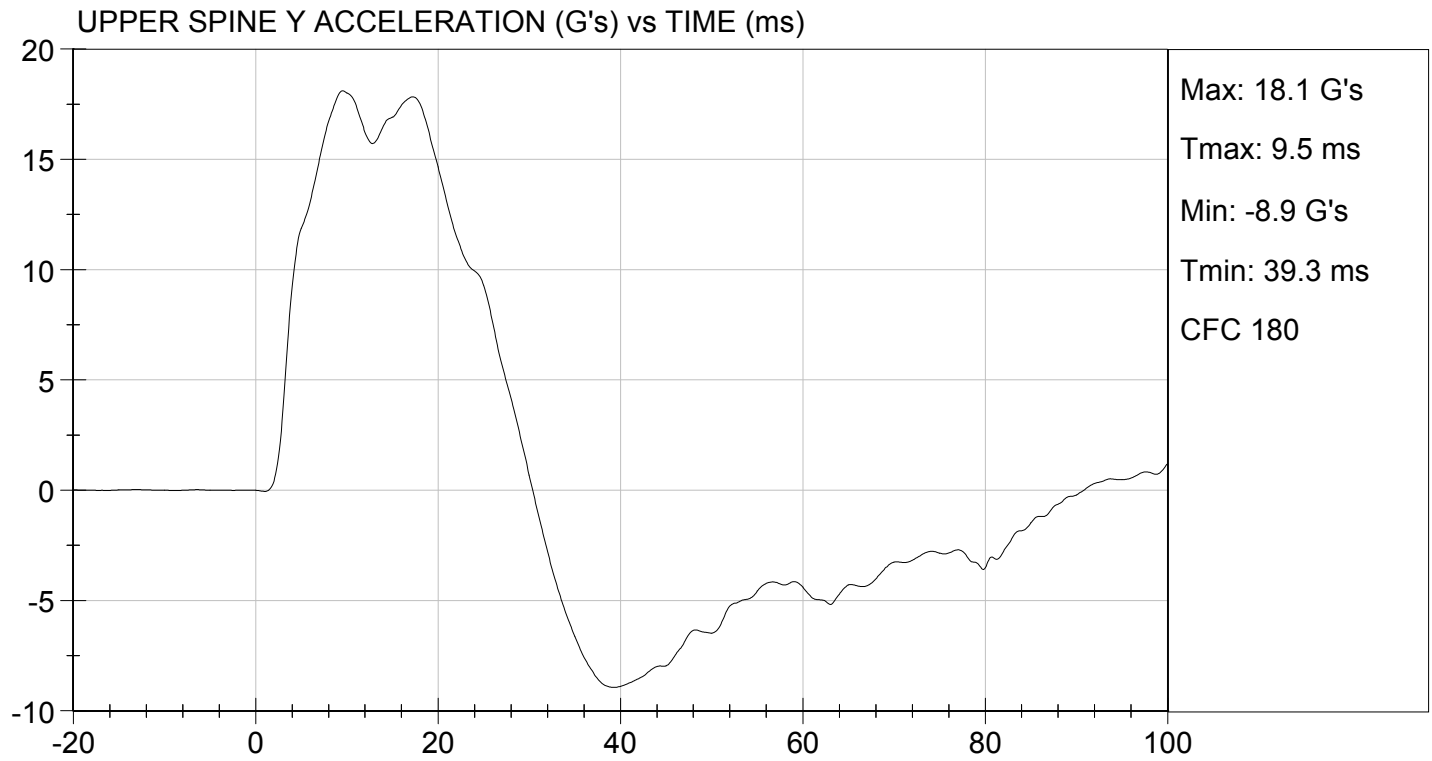
TEST DATE: 06/17/2015
TEST #: D151773





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

TEST DATE: 06/17/2015
TEST #: D151773



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

ATD Serial No: 296

Test I.D: D151774

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	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	40	Pass
Upper Rib Displacement	mm	25 to 32	31	Pass
Middle Rib Displacement	mm	30 to 36	34	Pass
Lower Rib Displacement	mm	32 to 38	36	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	35	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/17/2015

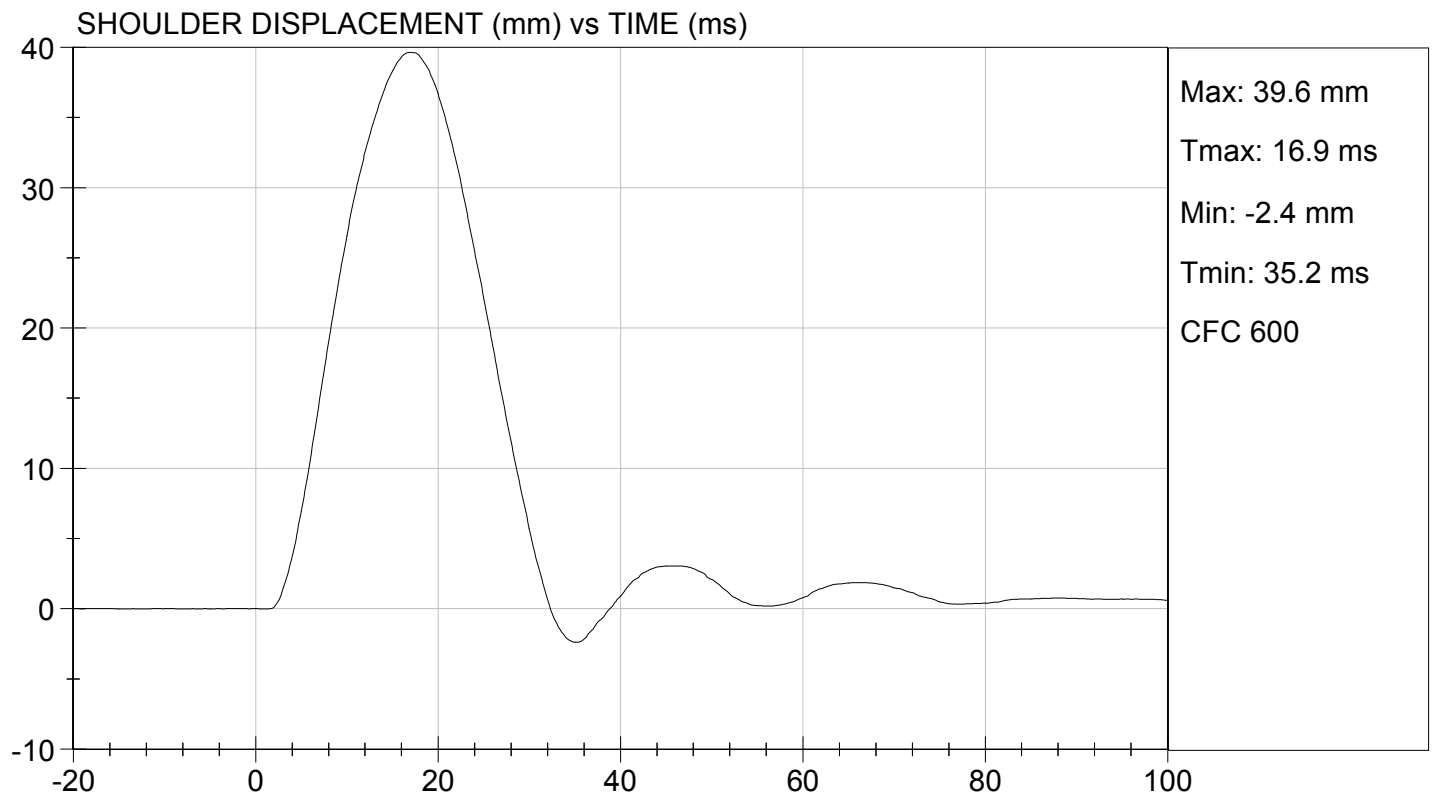
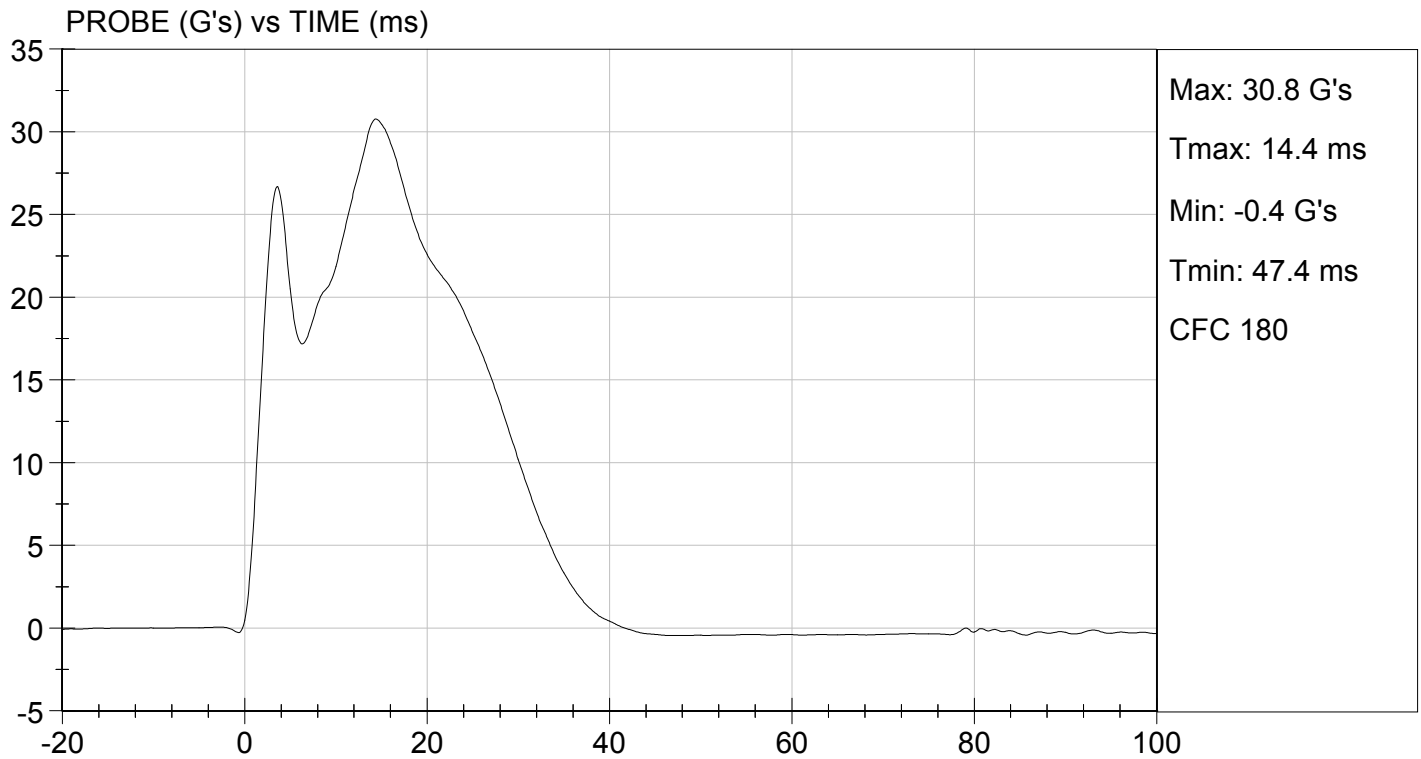
Test Date

Jessica Gall
Approved By



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

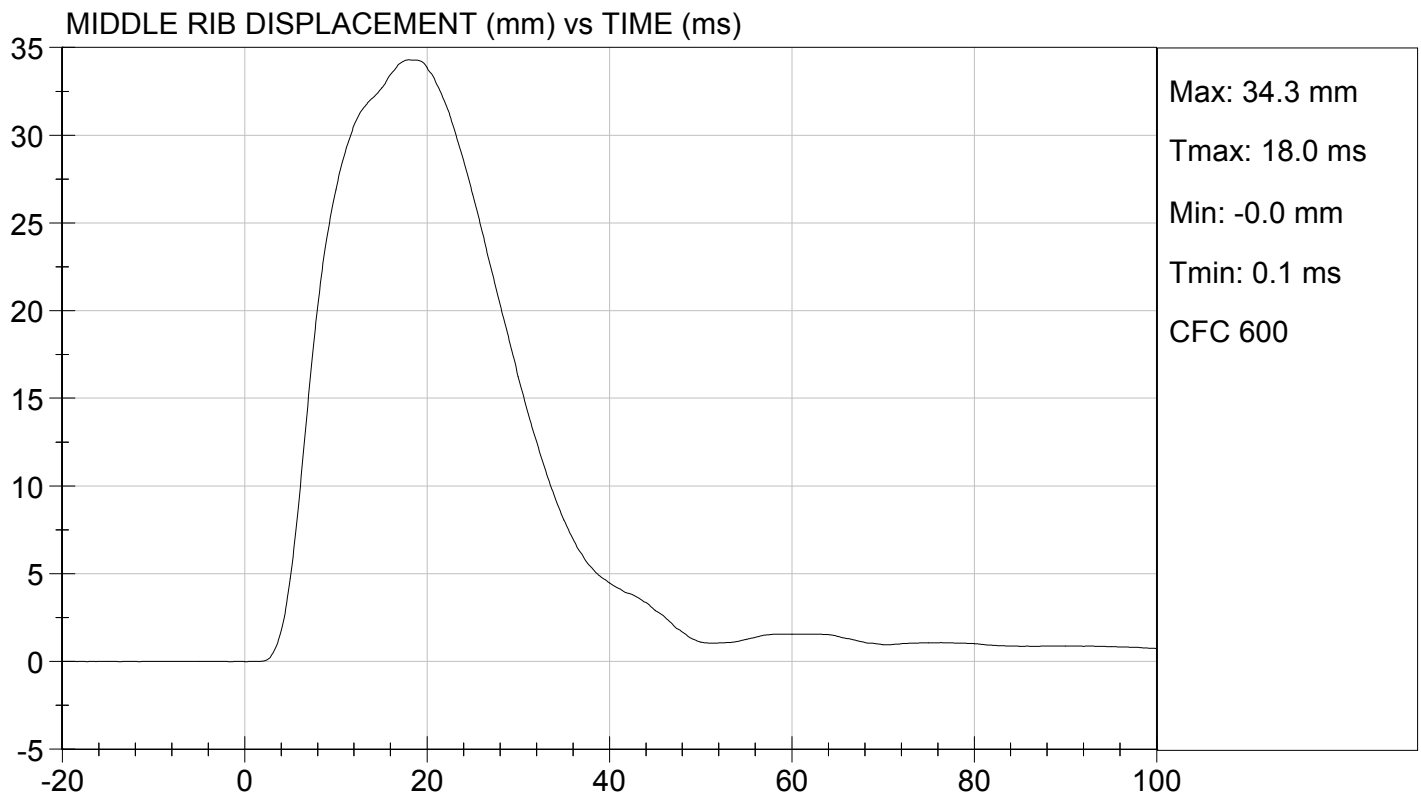
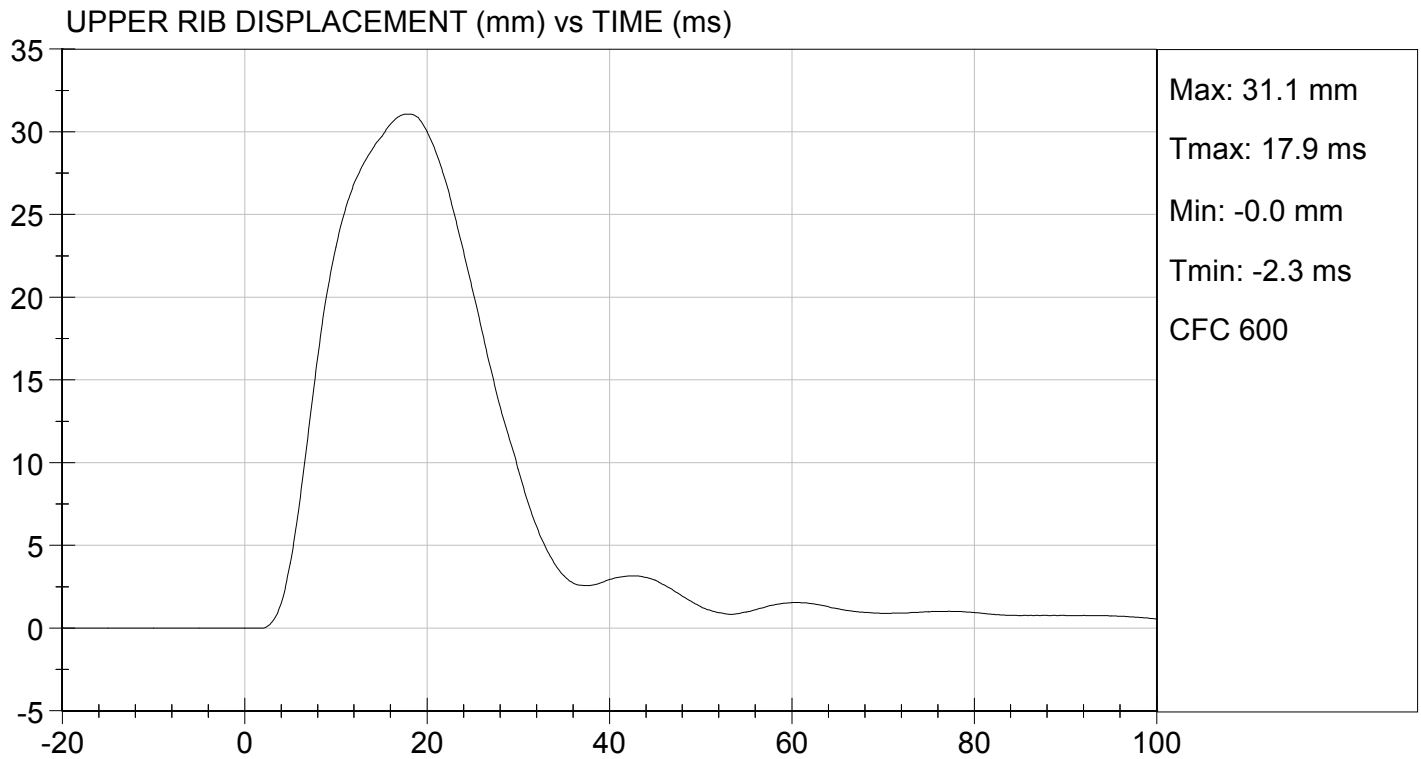
TEST DATE: 06/17/2015
TEST #: D151774





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

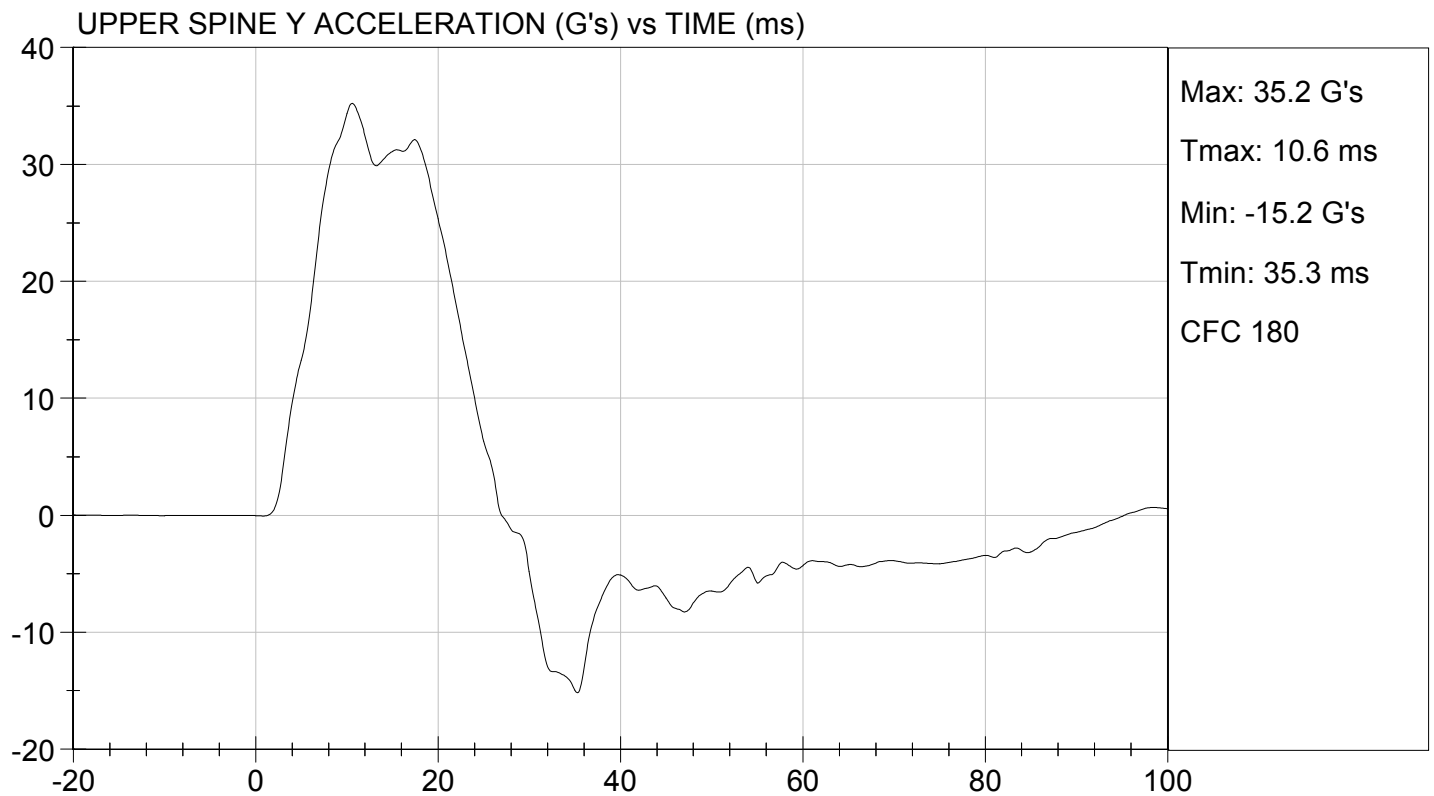
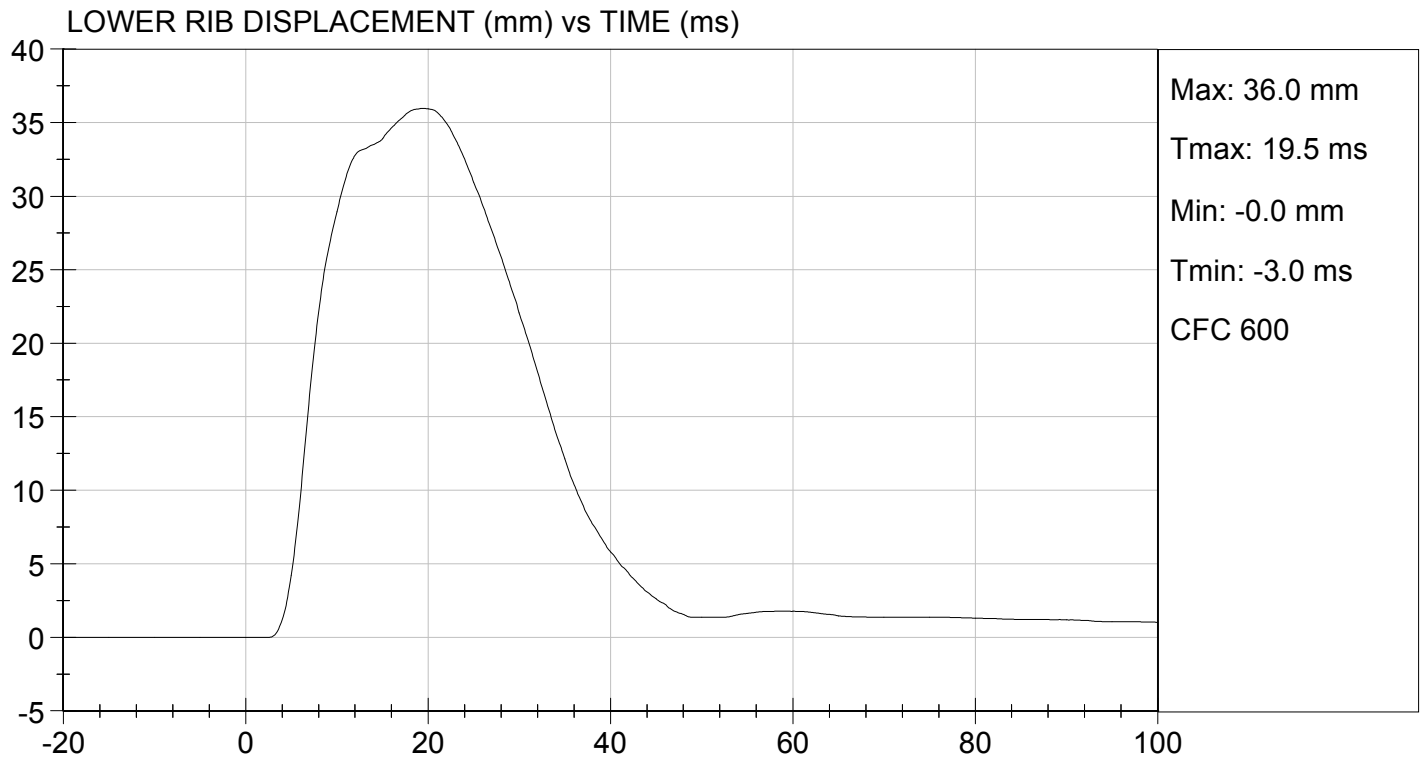
TEST DATE: 06/17/2015
TEST #: D151774





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

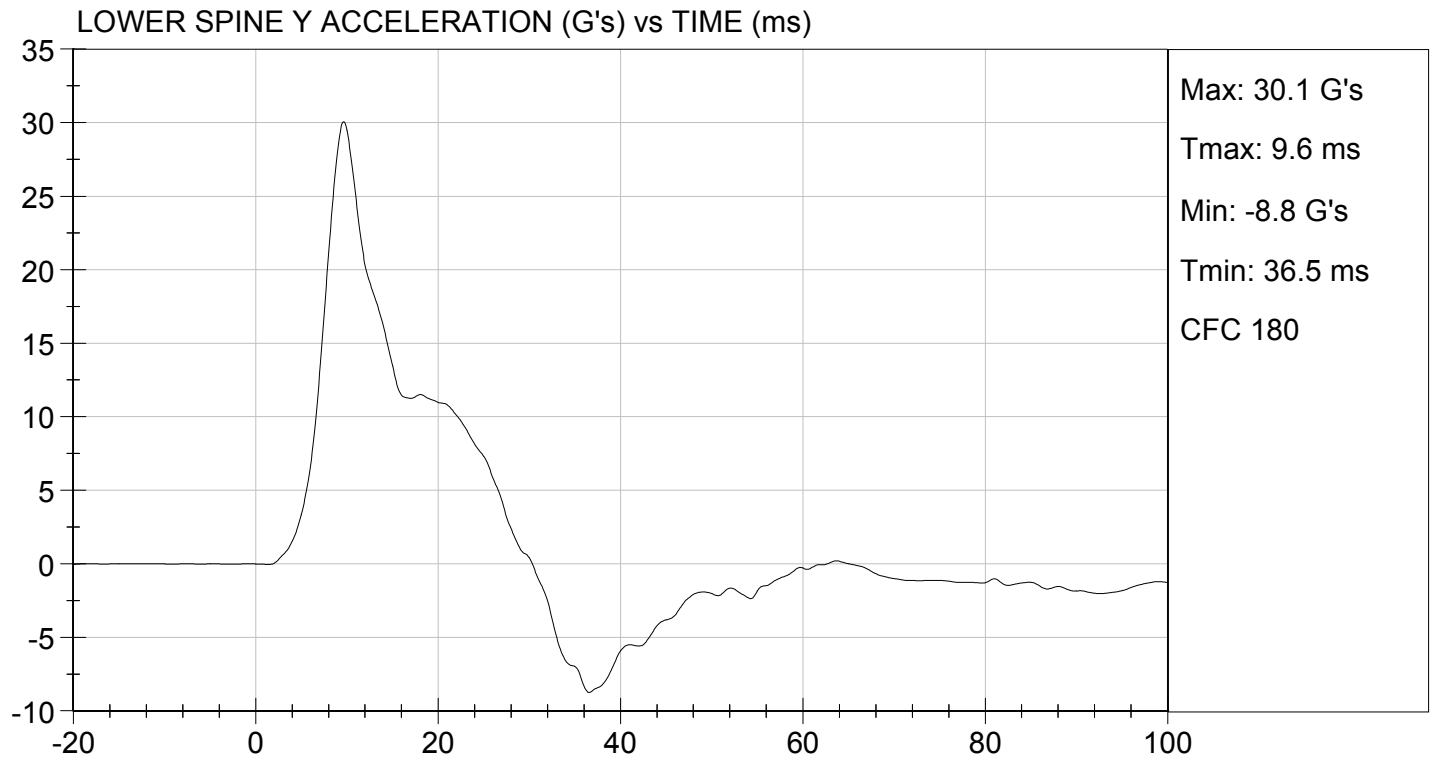
TEST DATE: 06/17/2015
TEST #: D151774





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

TEST DATE: 06/17/2015
TEST #: D151774



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

ATD Serial No: 296

Test I.D: D151775

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	14 to 18	14	Pass
Upper Rib Displacement	mm	32 to 40	38	Pass
Middle Rib Displacement	mm	39 to 45	45	Pass
Lower Rib Displacement	mm	35 to 43	43	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

David Schoedel
Laboratory Technician

06/17/2015

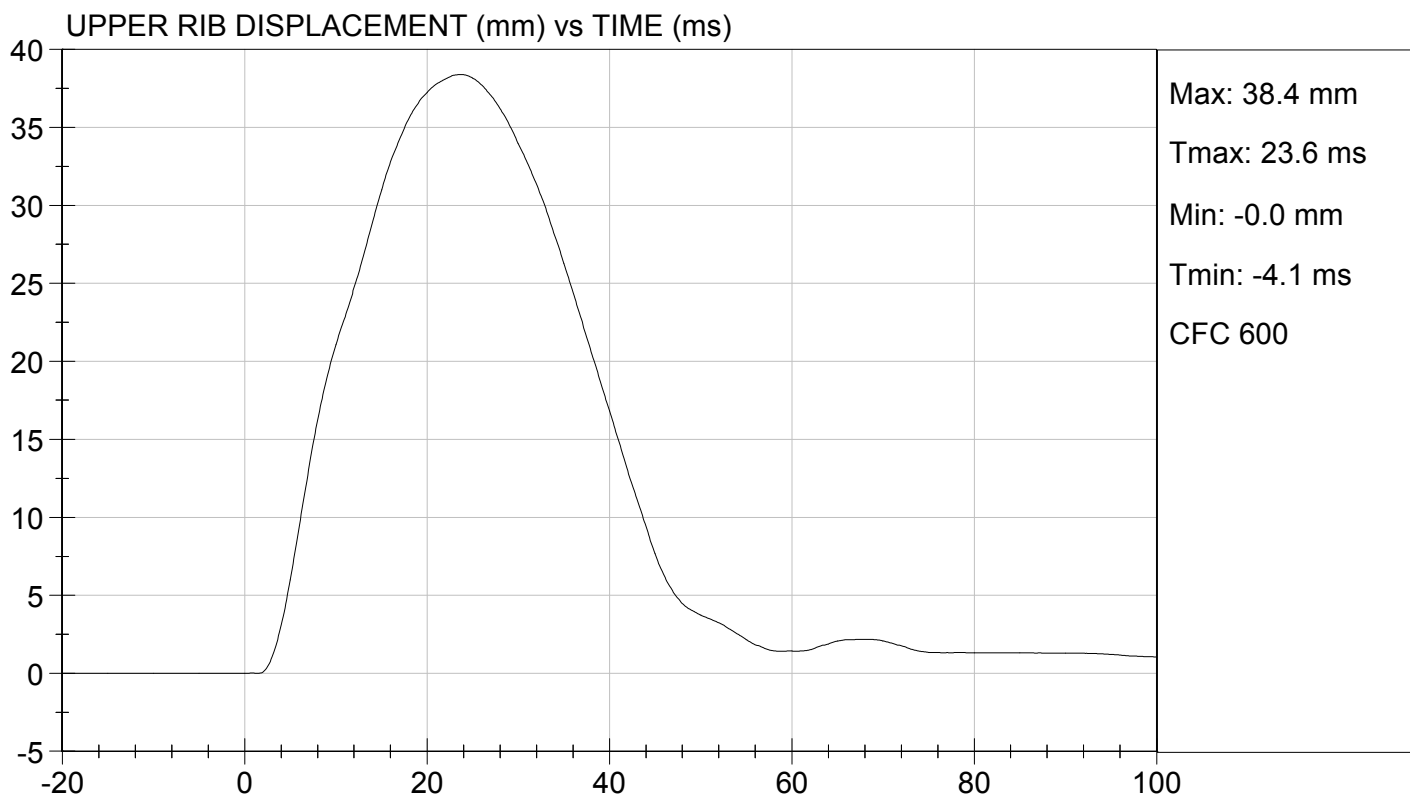
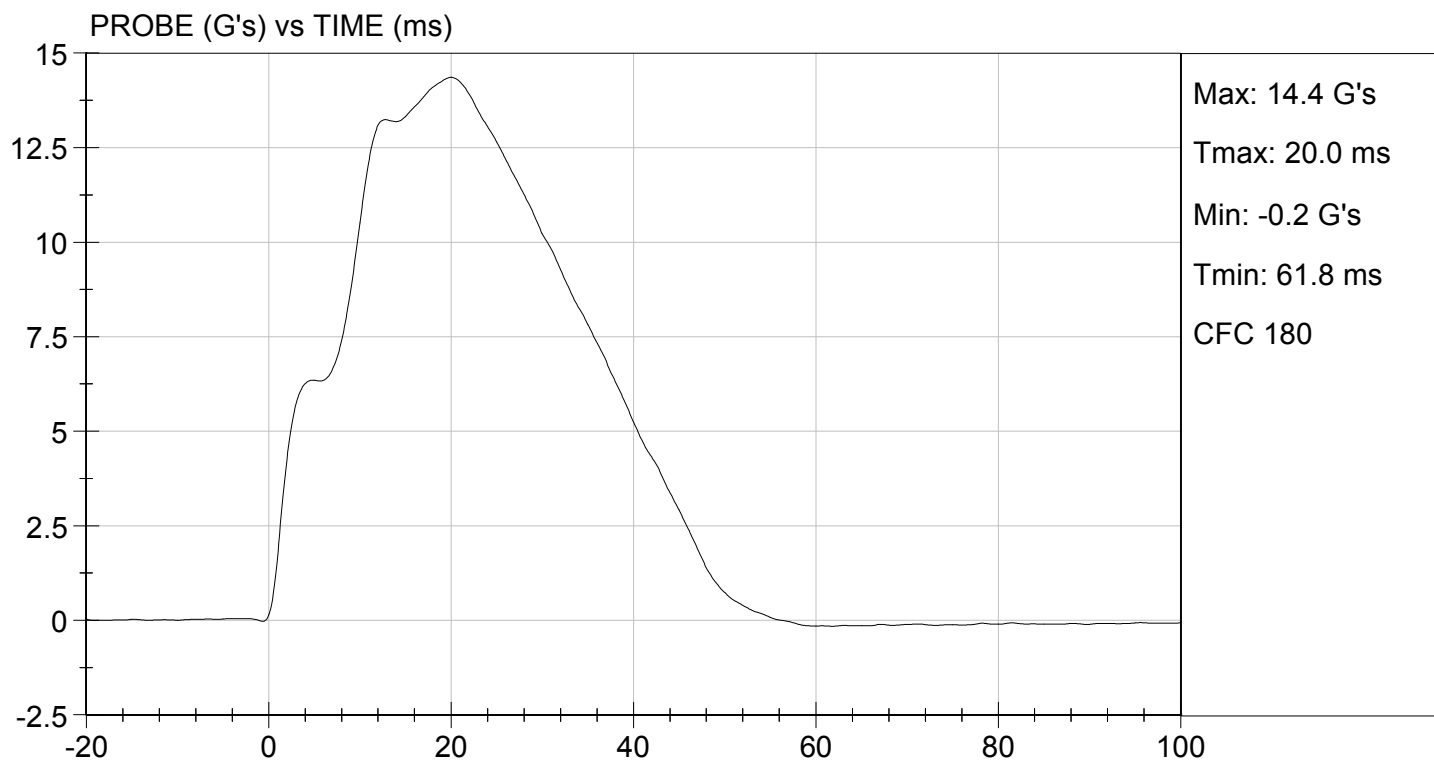
Test Date

Jessica Hall
Approved By



TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 06/17/2015
TEST #: D151775

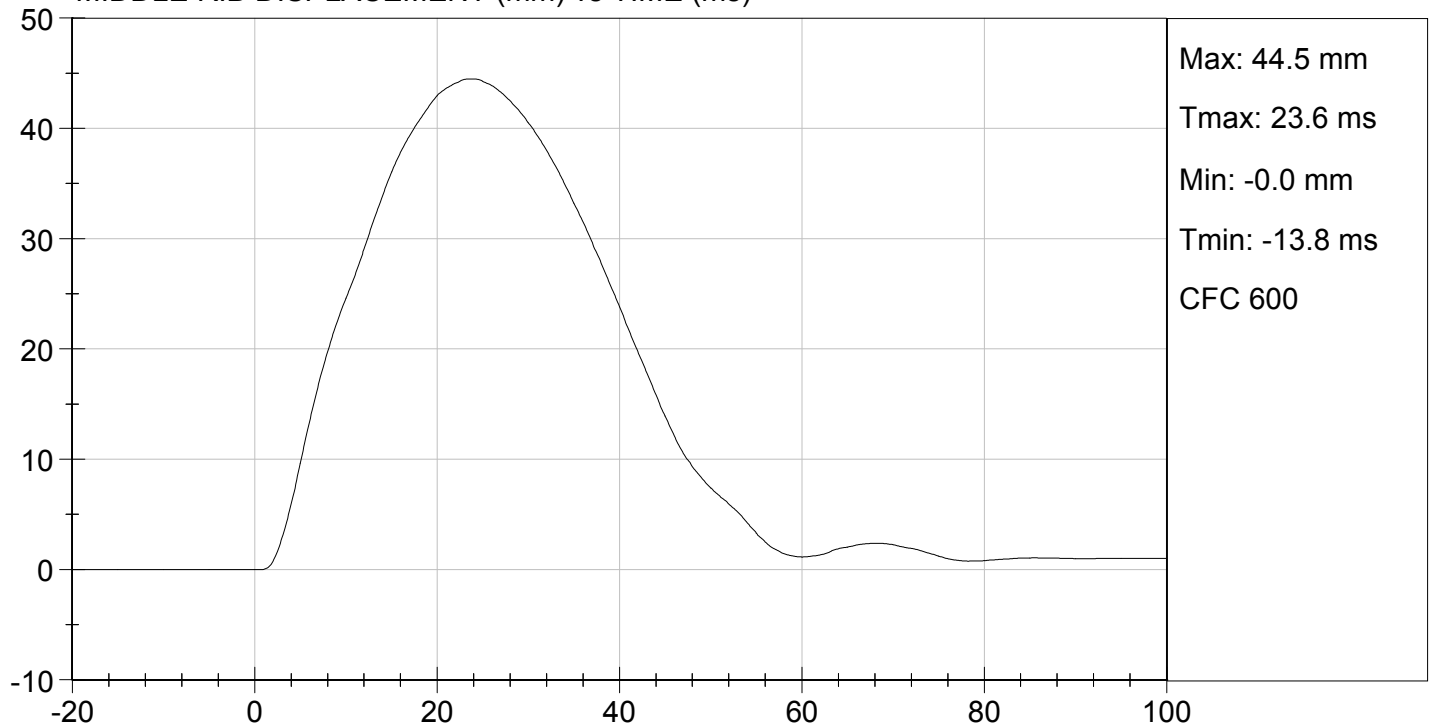




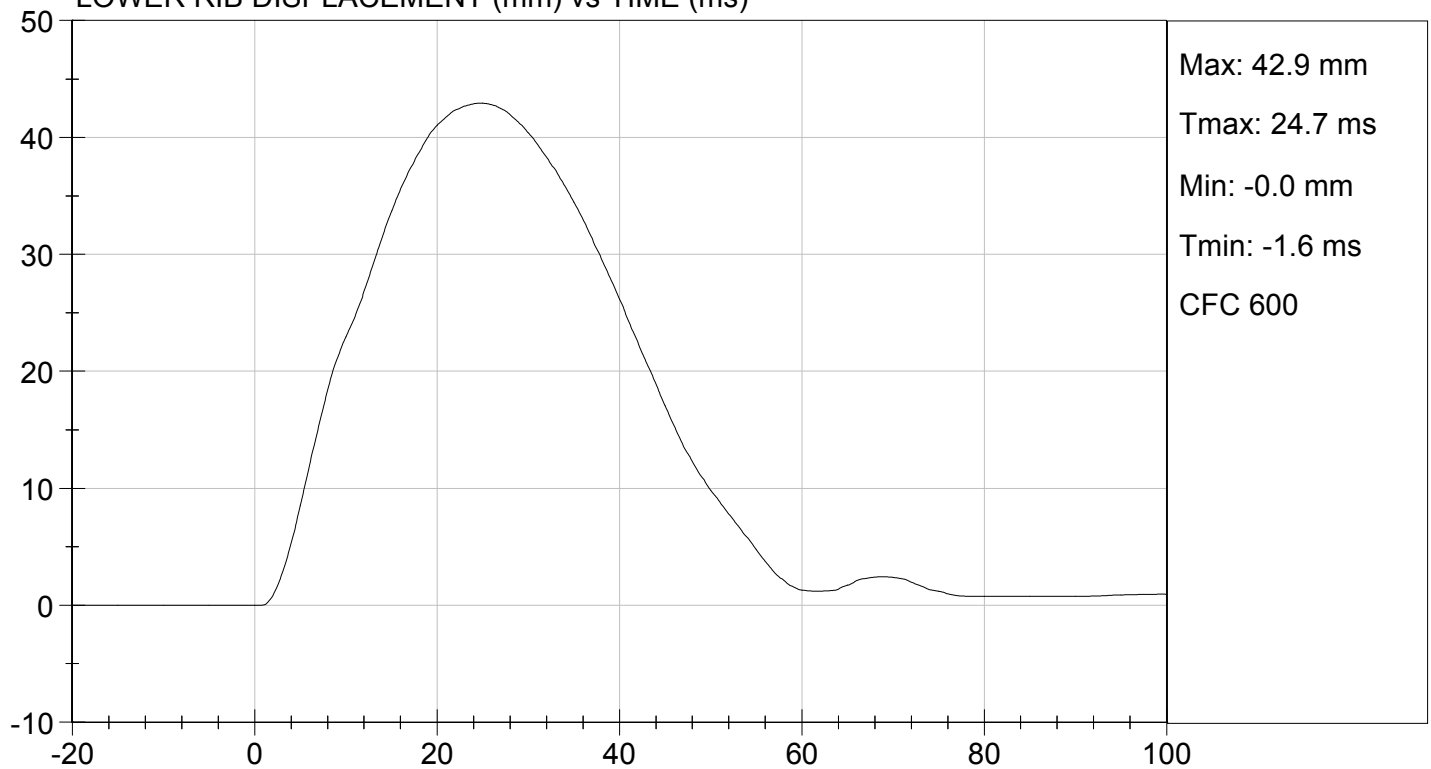
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 06/17/2015
TEST #: D151775

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

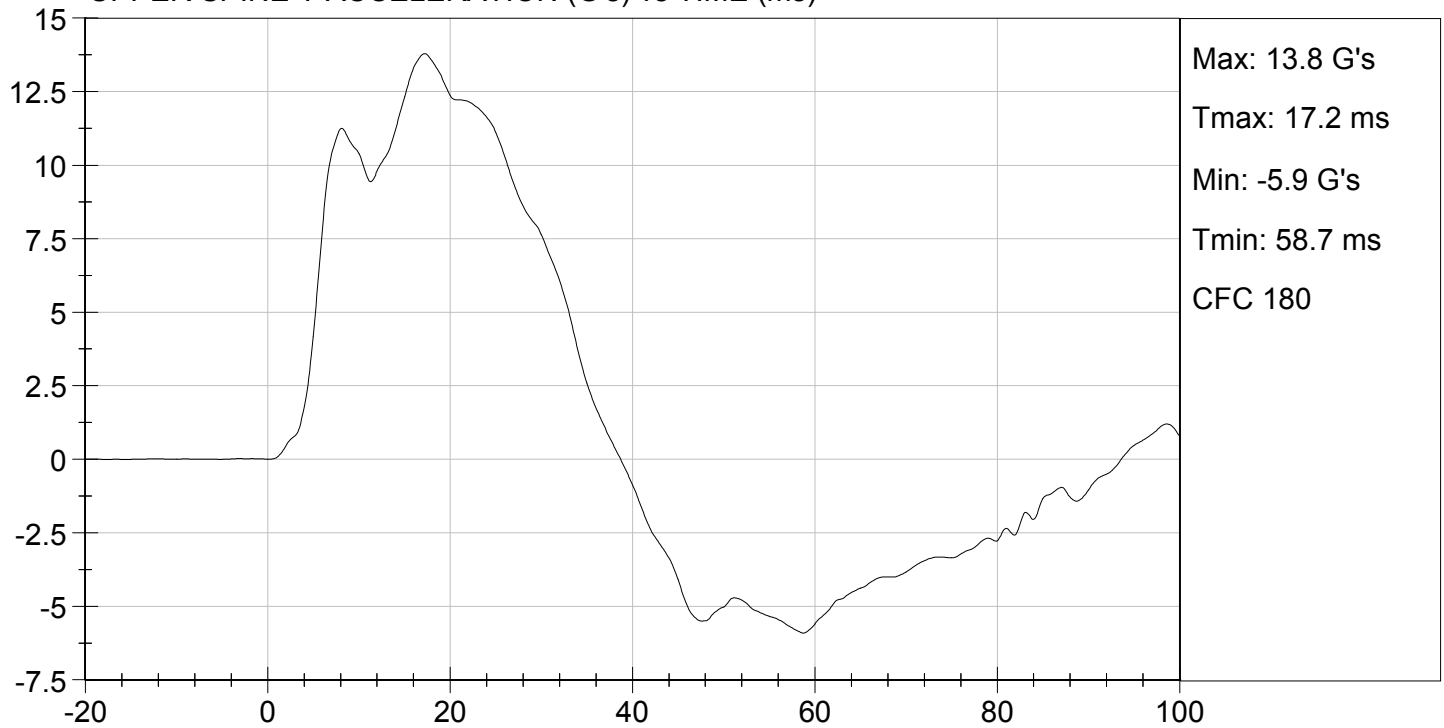




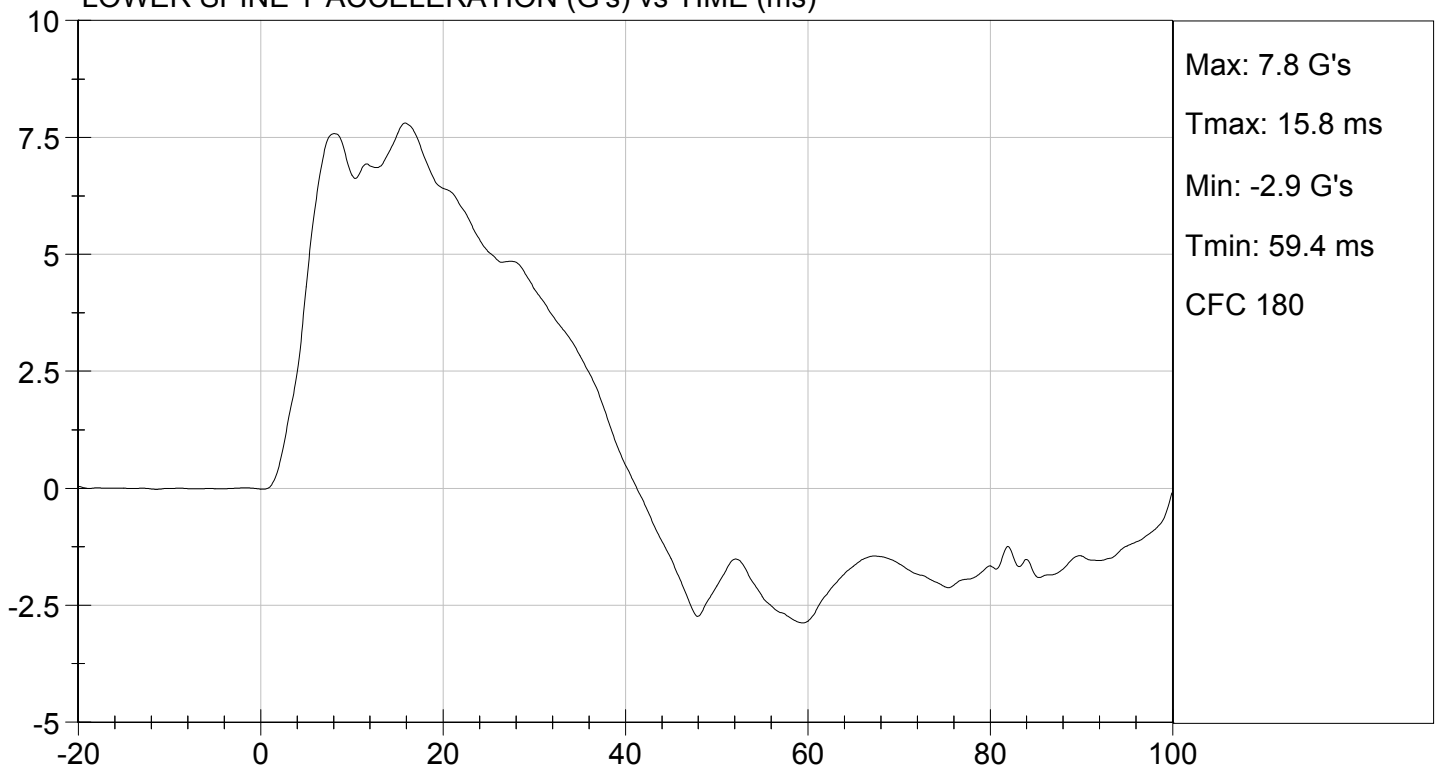
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 06/17/2015
TEST #: D151775

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D151776

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	43	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	44	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/17/2015

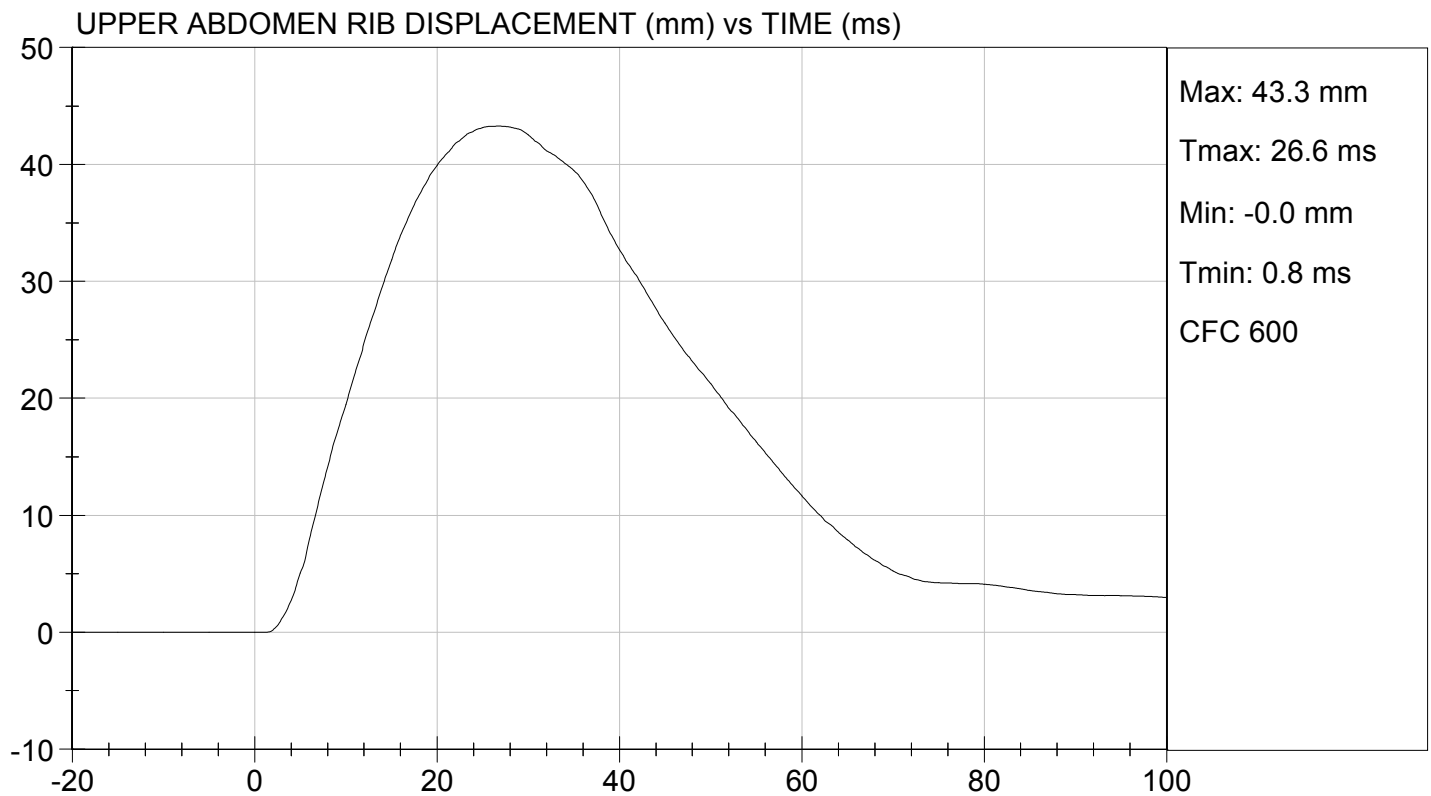
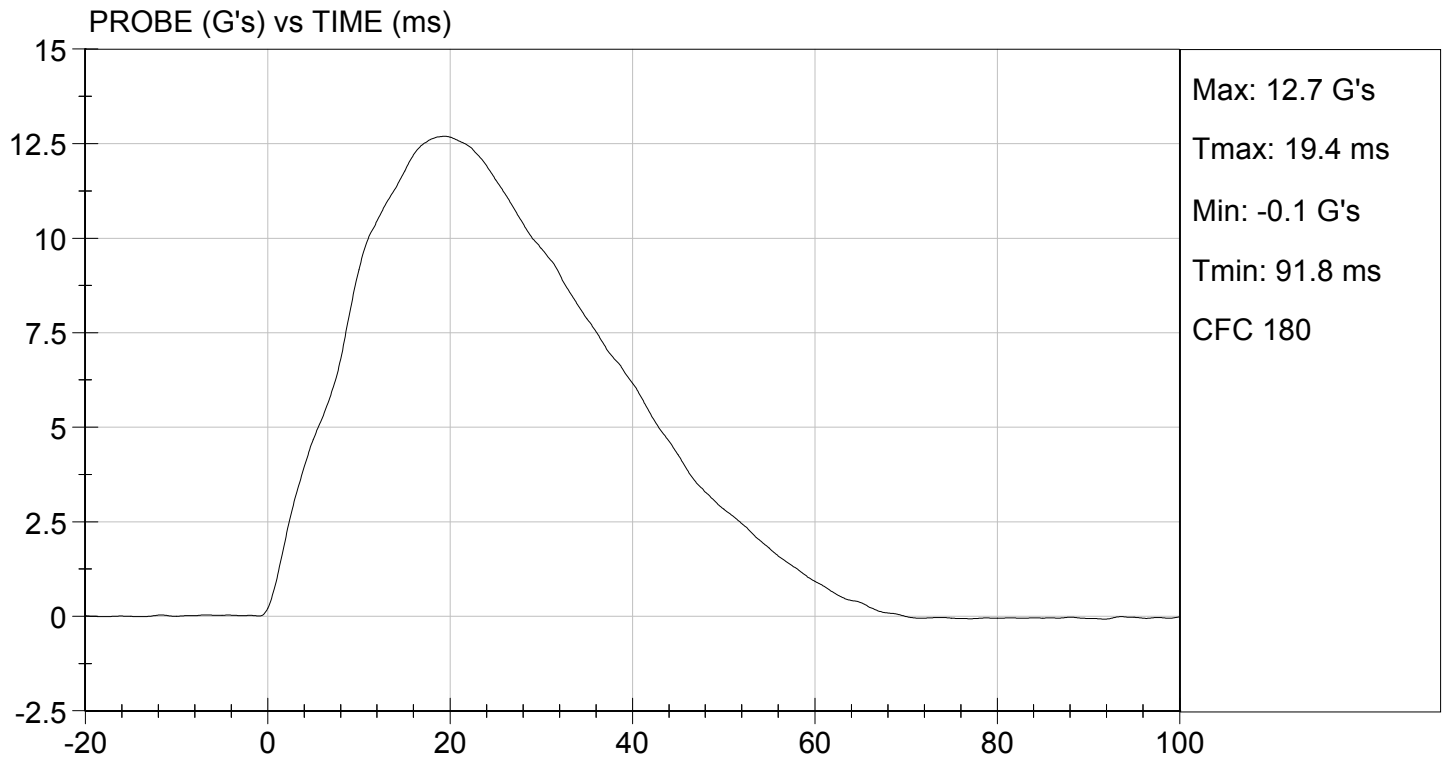
Test Date

Jessica Hall
Approved By



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

TEST DATE: 06/17/2015
TEST #: D151776

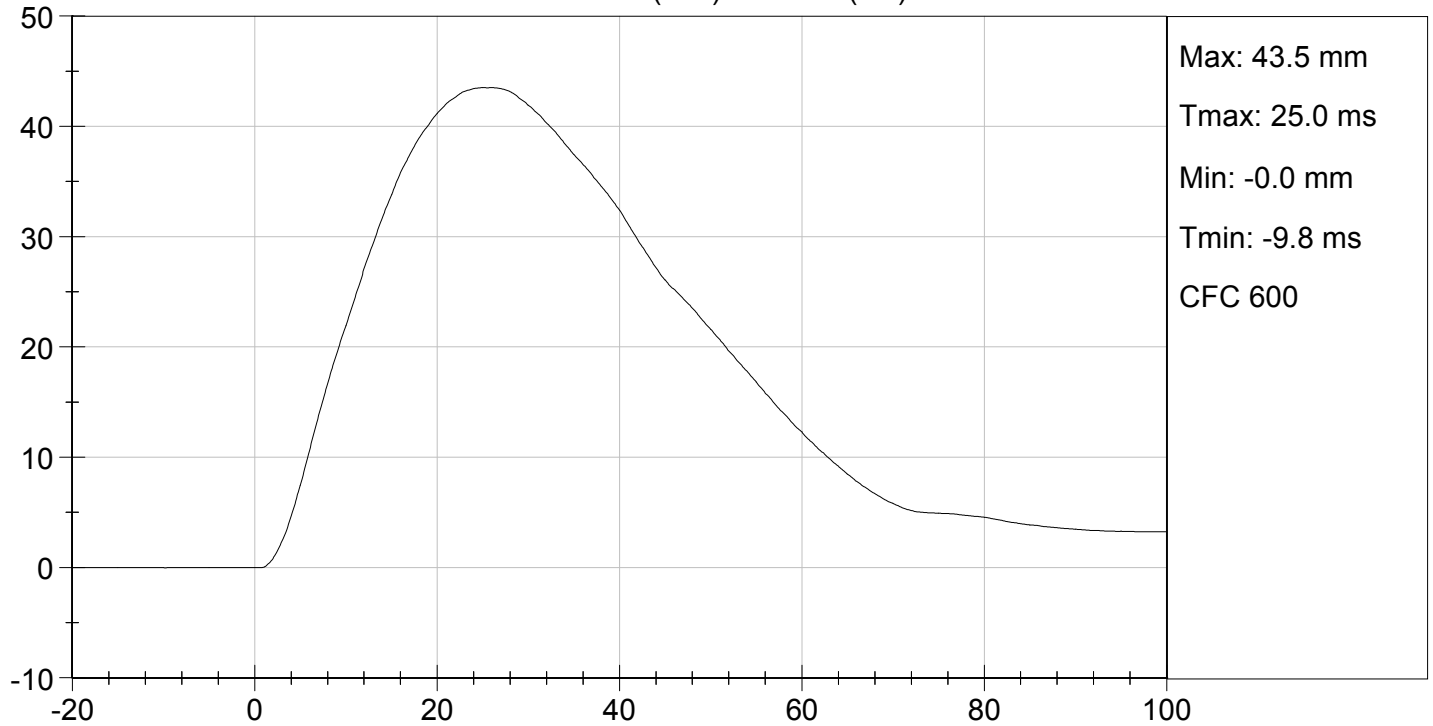




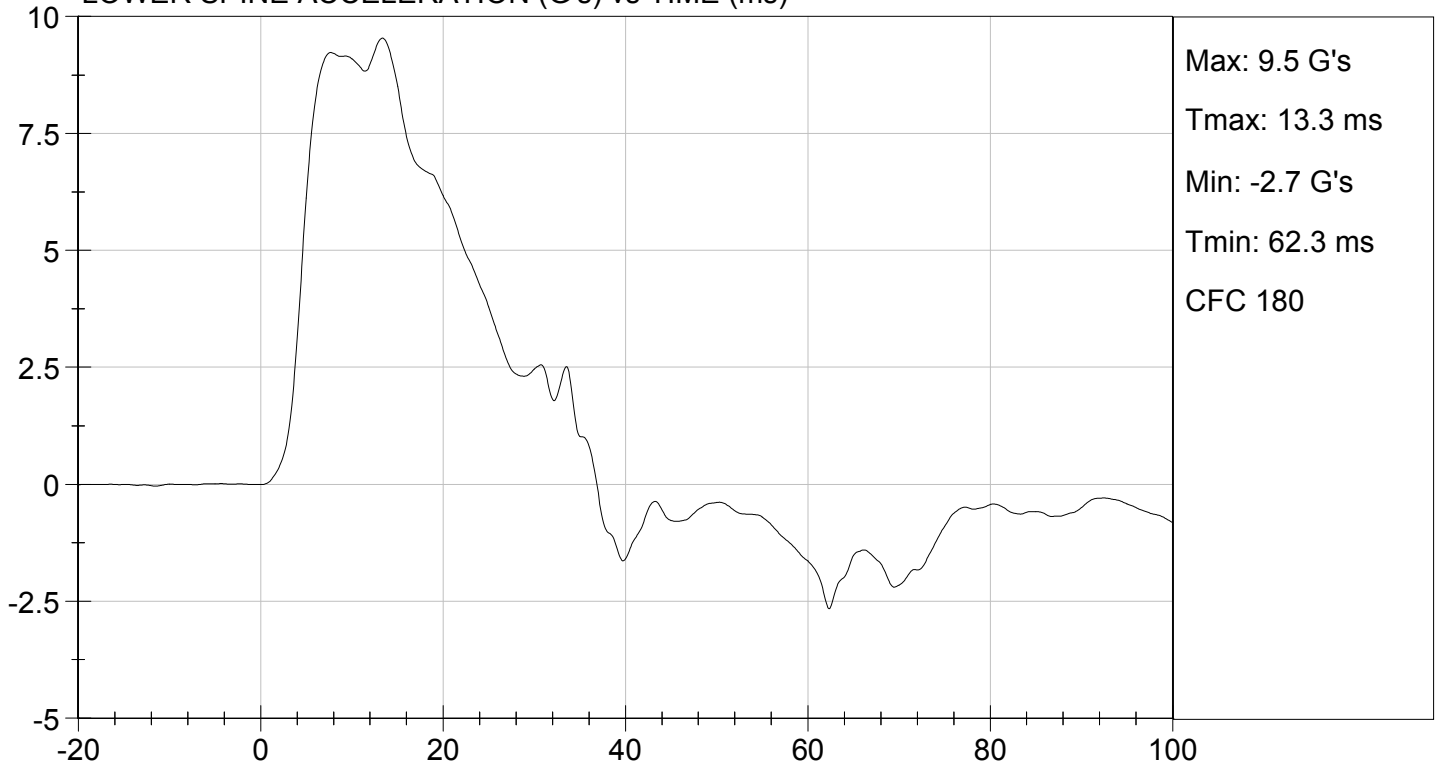
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 06/17/2015
TEST #: D151776

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D151777

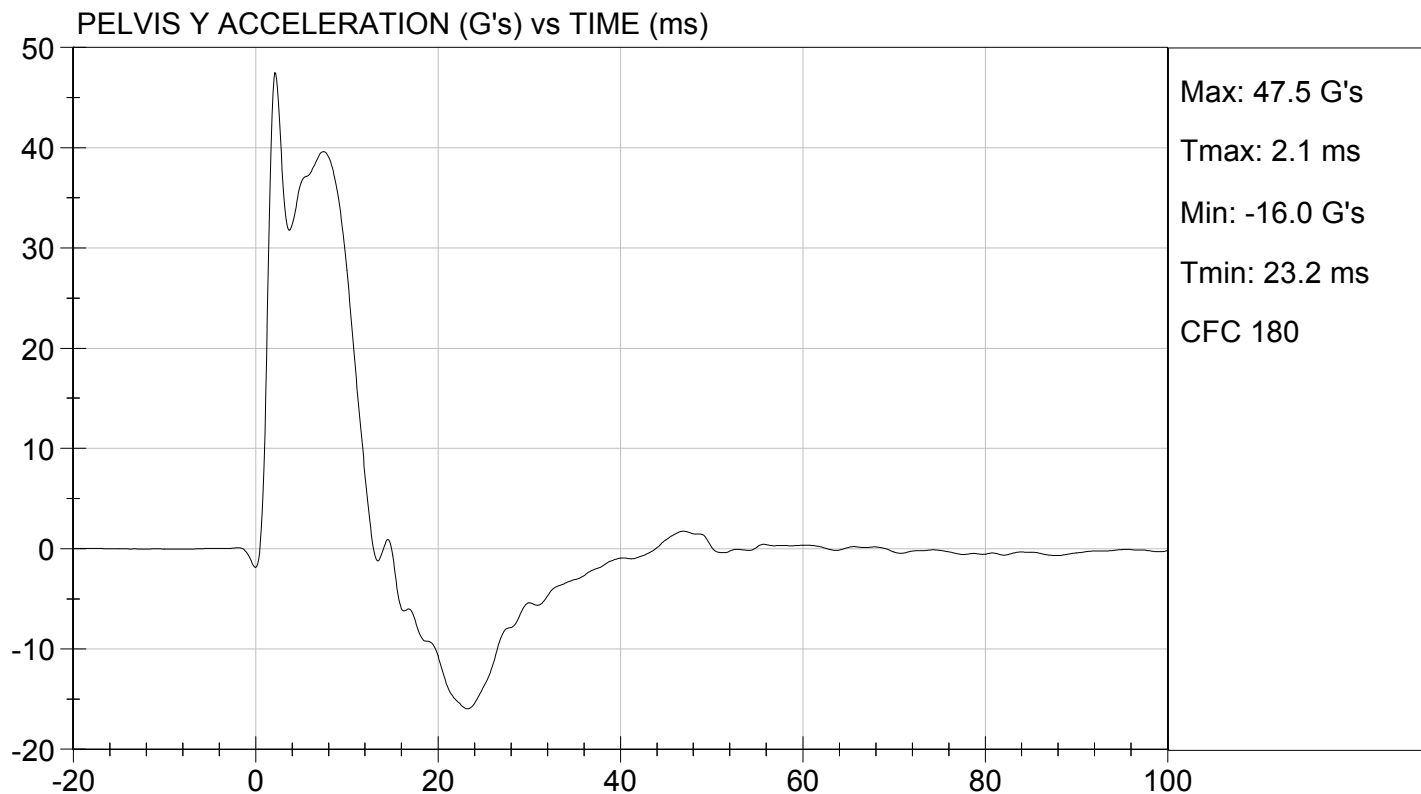
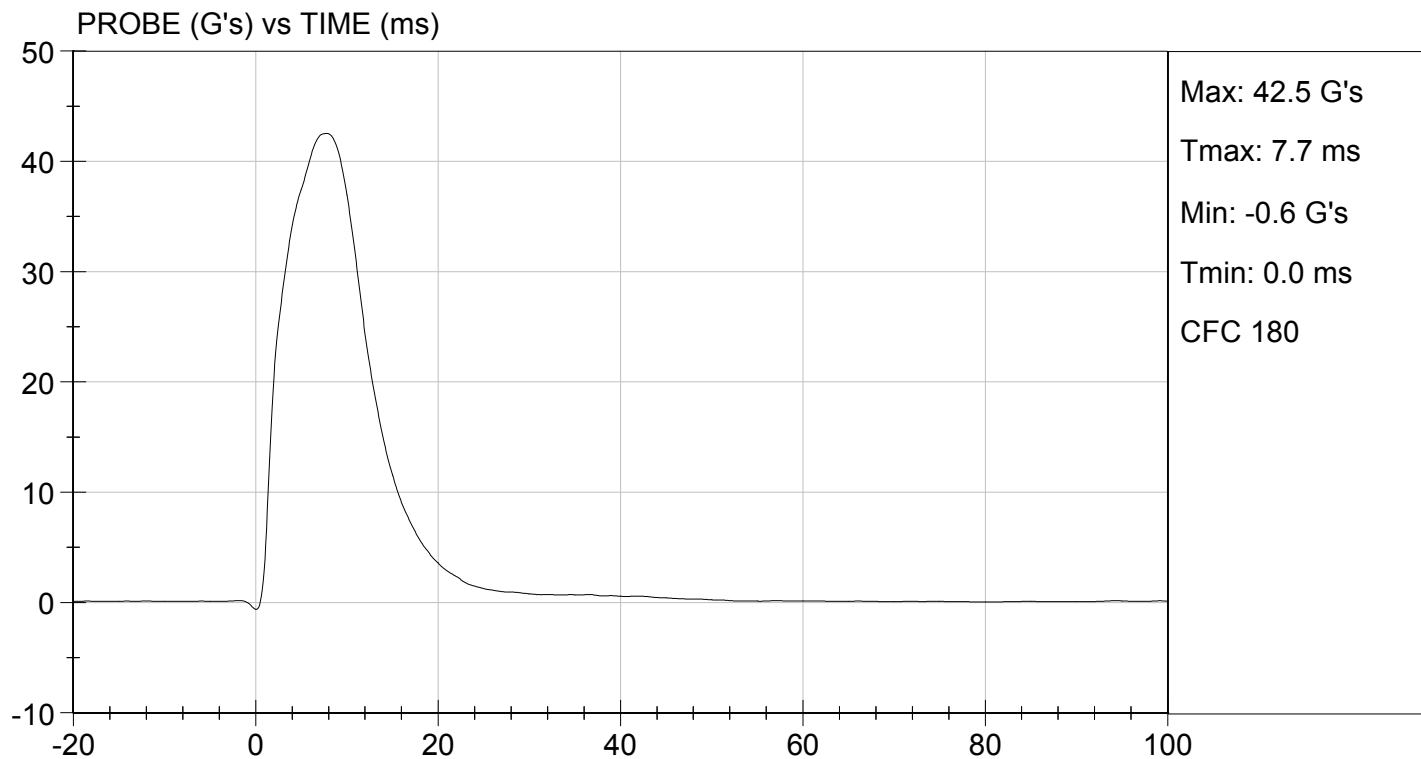
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	43	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	4,139	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/17/2015

Test Date

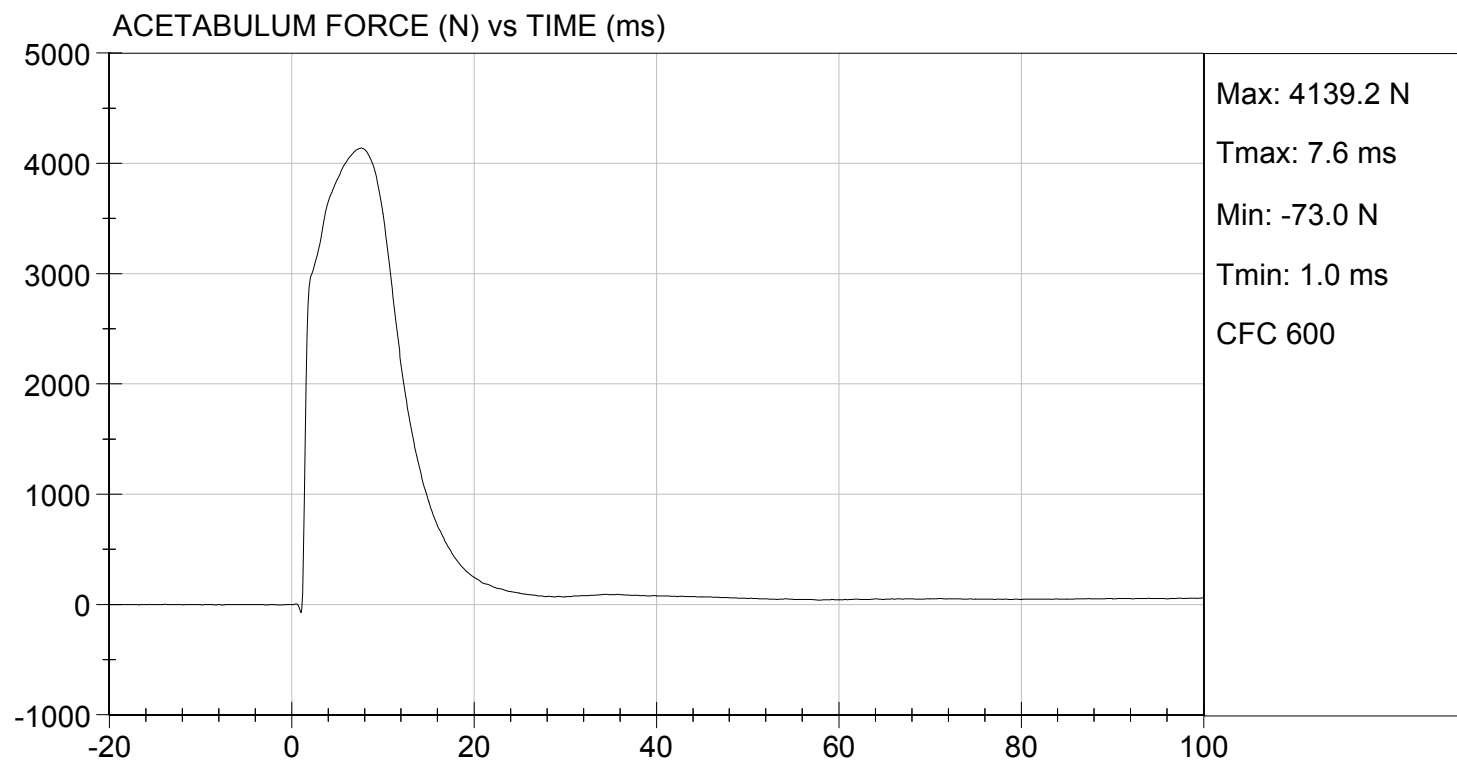
Jessica Hall
Approved By





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

TEST DATE: 06/17/2015
TEST #: D151777



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D151778

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	36 to 45	42	Pass
Pelvis Y Acceleration	G's	28 to 39	34	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	5,055	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/17/2015

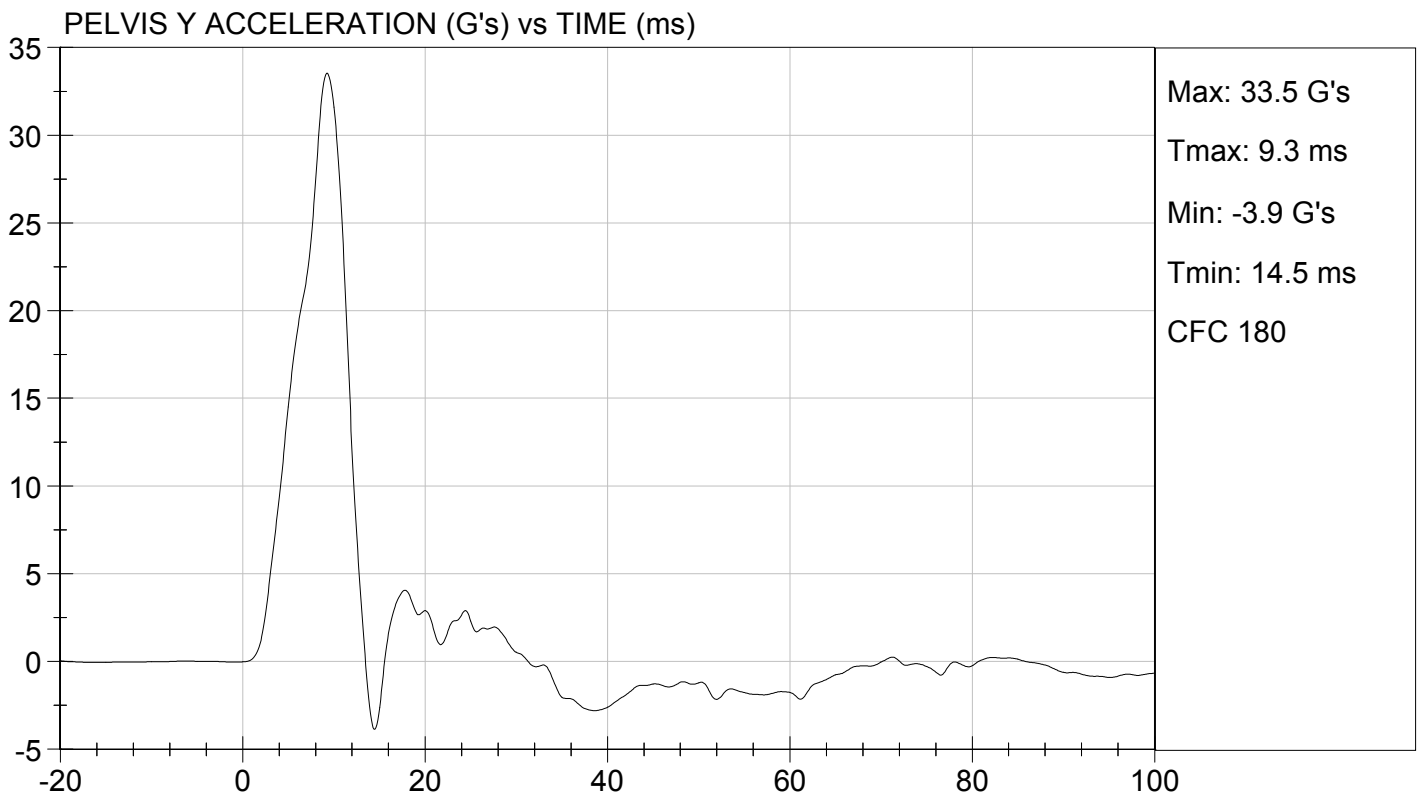
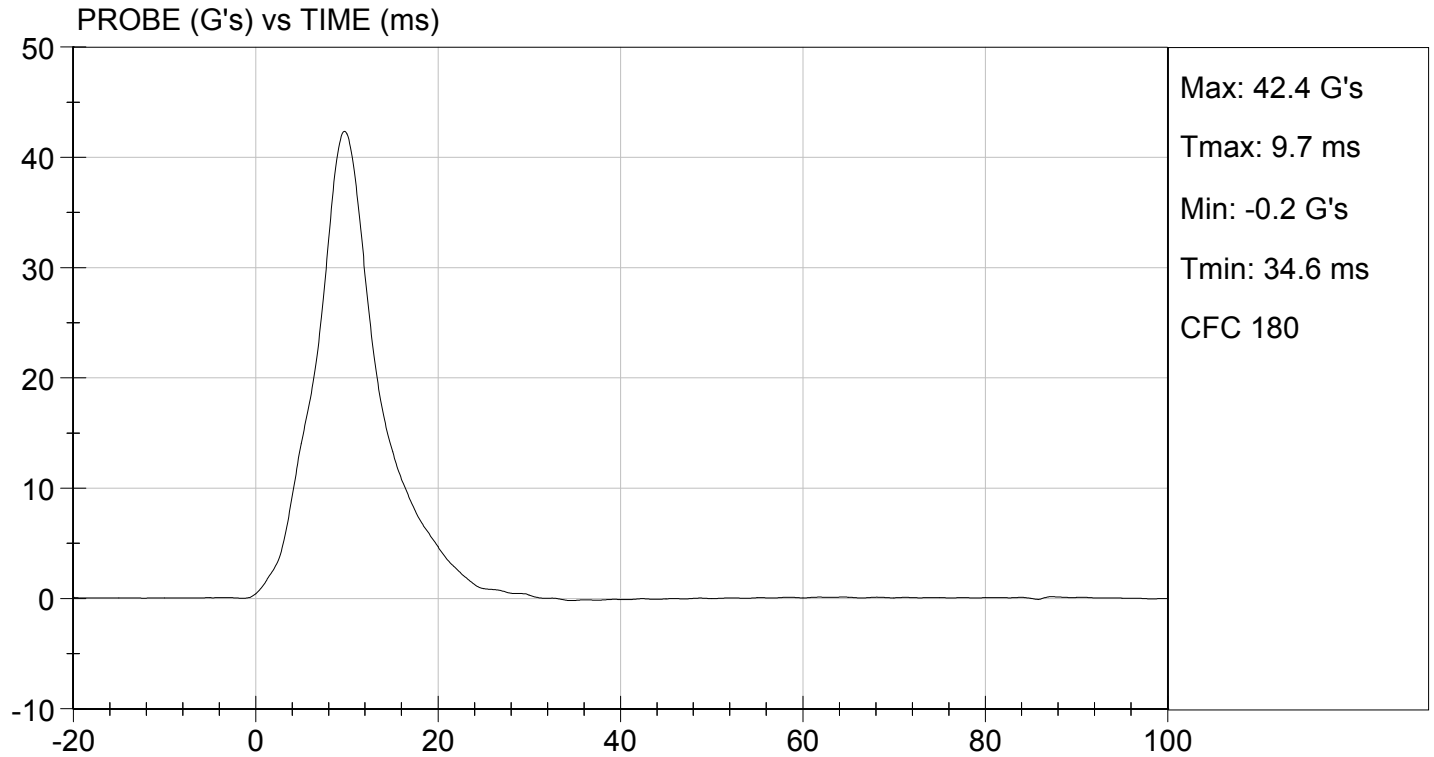
Test Date

Jessica Hall
Approved By



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

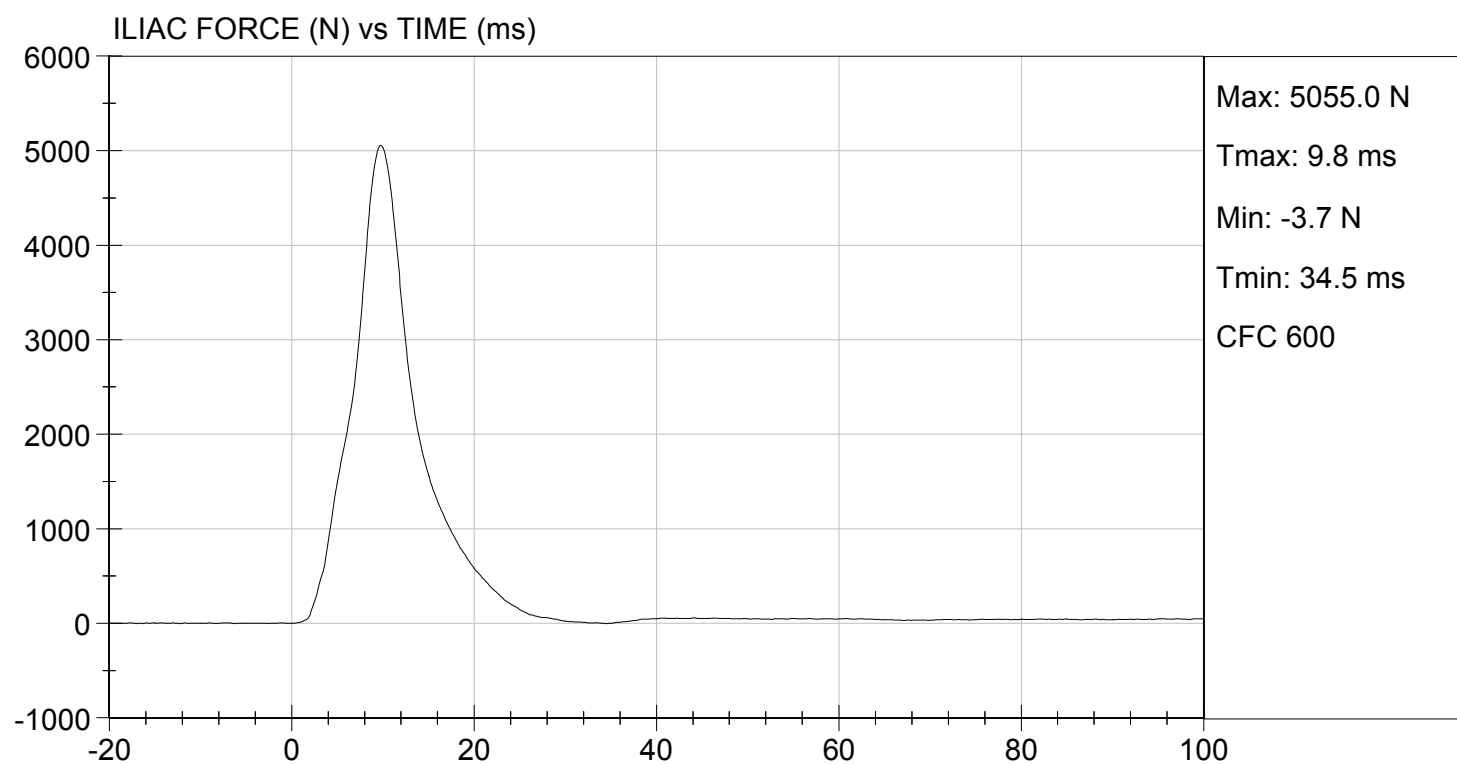
TEST DATE: 06/17/2015
TEST #: D151778



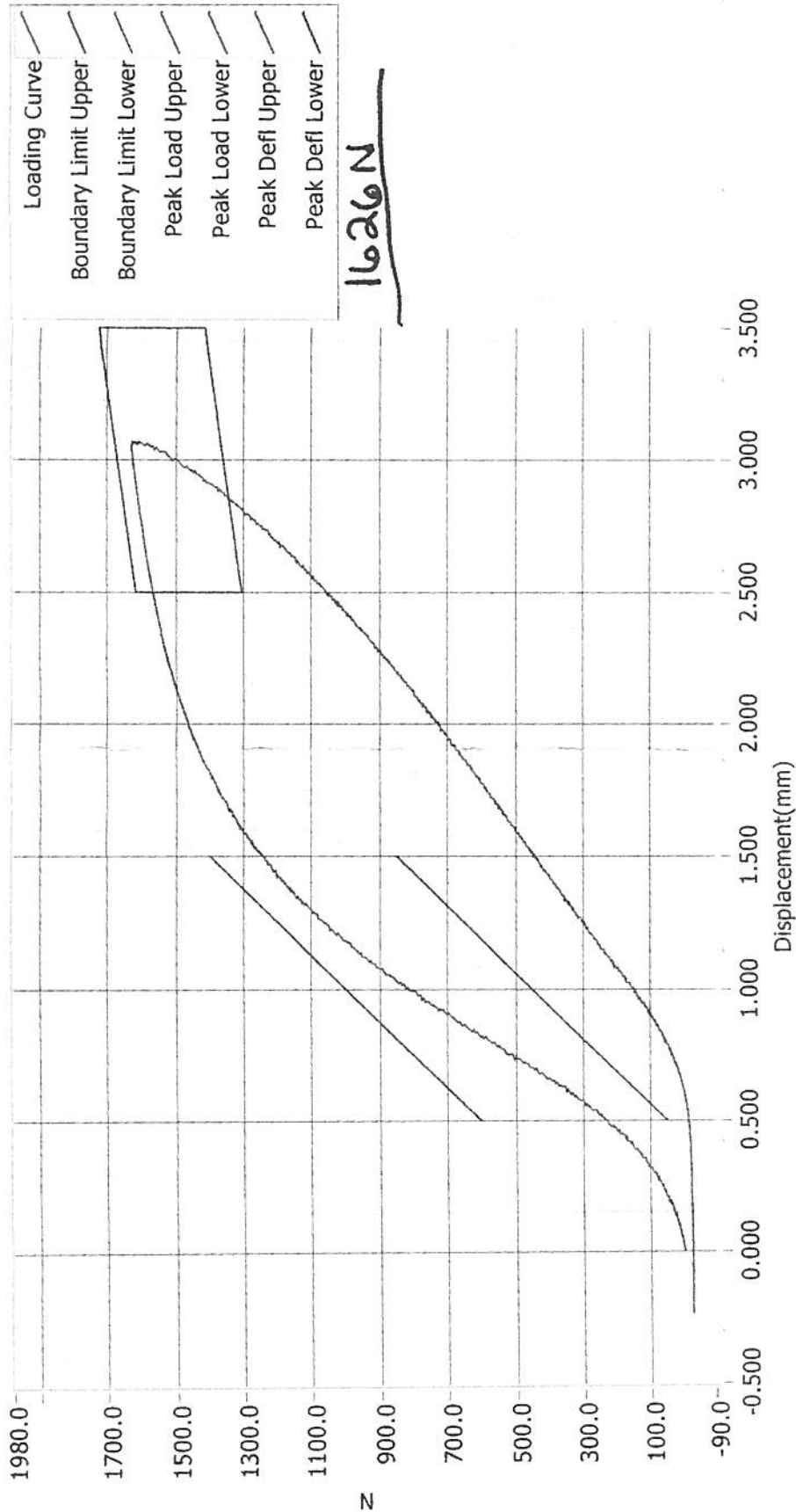


TEST DESC: ILLIAC
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 06/17/2015
TEST #: D151778



Resultant Data - SIDIIs Plug Compression



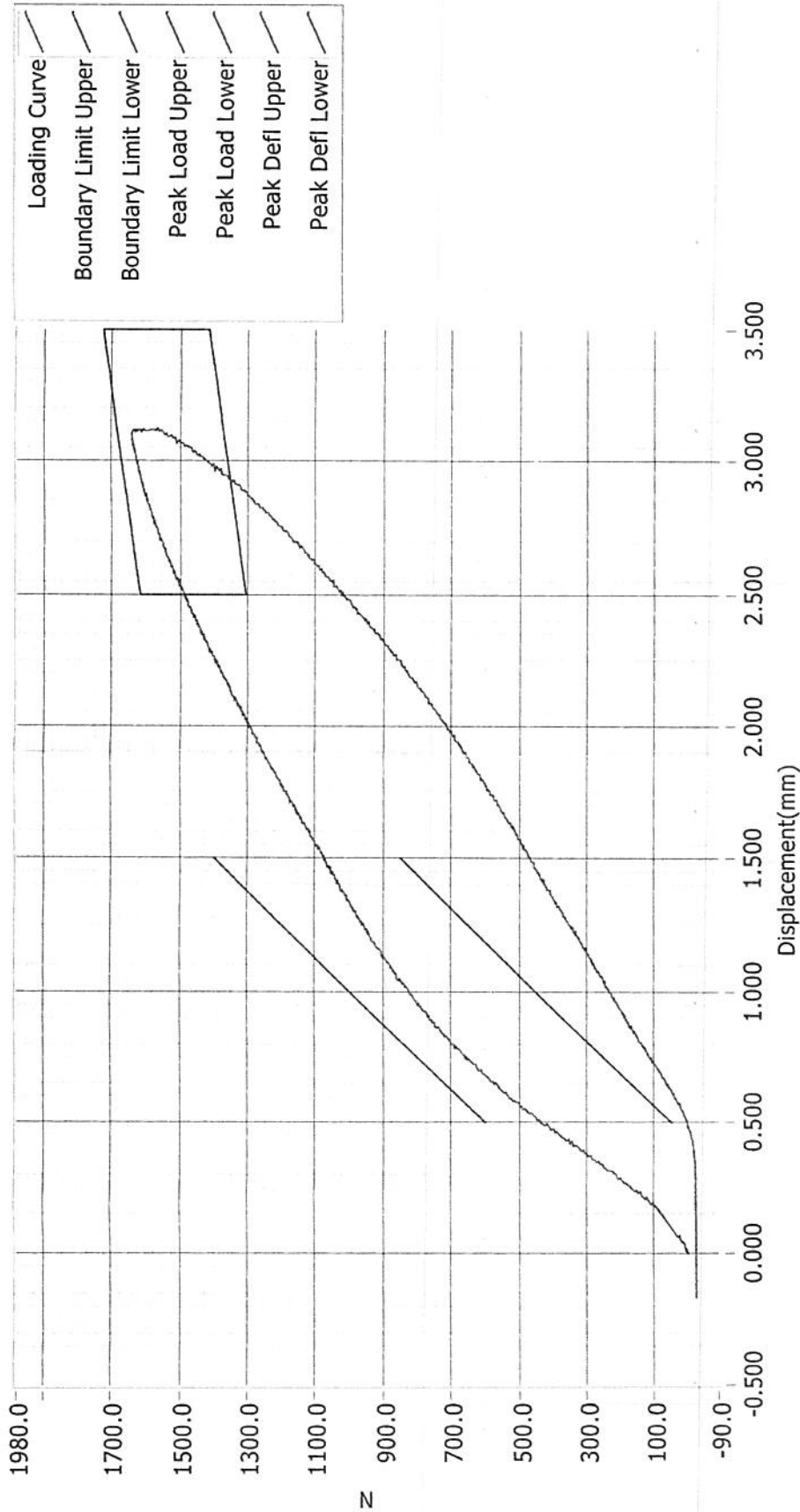
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	63184	1/23/2013	7:59 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 1/23/2013

Current Time : 19:59:58

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	79120	10/23/2014	3:07 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 10/23/2014

Current Time : 15:08:56

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	P84436	Endevco	01/28/15
		Y	P84439	Endevco	01/28/15
		Z	P84440	Endevco	01/28/15
		Xr	P84450	Endevco	01/28/15
		Yr	P84456	Endevco	01/28/15
		Zr	P84457	Endevco	01/28/15
Thorax Rib Displacement Potentiometers	Upper	Y	G176	Honeywell	01/30/15
	Middle	Y	G169	Honeywell	01/30/15
	Lower	Y	G164	Honeywell	01/30/15
Abdomen Load Cells	Forward	Y	ABG1513	Denton	12/15/14
	Middle	Y	ABG1531	Denton	12/15/14
	Rear	Y	ABG1536	Denton	12/15/14
Lower Spine Accelerometers (T12)		X	P79783	Endevco	02/19/15
		Y	P79598	Endevco	01/07/15
		Z	P79600	Endevco	01/07/15
Public Symphysis Load Cell		Y	PG462	Denton	12/15/14

Table 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 296			
				Serial Number	Manufacturer	Calibration Date	
Head CG Accelerometers				X	P83220	Endevco	01/27/15
				Y	P83221	Endevco	01/27/15
				Z	P83222	Endevco	01/27/15
				Xr	P83223	Endevco	01/27/15
				Yr	P83224	Endevco	01/27/15
				Zr	P83225	Endevco	01/27/15
Head Angular Rate Sensors				X	ARS7413	DTS	07/15/14
				Y	ARS7421	DTS	07/15/14
				Z	ARS7423	DTS	07/15/14
Displacement Potentiometers	Thoracic Rib	Upper	Y	G012	Servo	01/28/15	
		Middle	Y	G1163	FTSS	01/28/15	
		Lower	Y	G1158	FTSS	01/28/15	
	Abdominal Rib	Upper	Y	G1146	FTSS	01/28/15	
		Lower	Y	G1126	FTSS	01/28/15	
Lower Spine Accelerometers (T12)				X	P86751	Endevco	01/22/15
				Y	P86752	Endevco	01/22/15
				Z	P86753	Endevco	01/22/15
Acetabulum Load Cell				Y	ACG268	Denton	01/06/15
Iliac Wing Load Cell				Y	IWG282	Denton	01/06/15
Pelvis Plug (struck side)					63184	FTSS	01/23/13
Pelvis Plug (non-struck side)					79120	FTSS	10/23/14

Table 3 – Vehicle Instrumentation

			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P73961	Endevco	02/27/2015
	Vehicle Center of Gravity	Y	P73960	Endevco	02/27/2015
	Vehicle Center of Gravity	Z	P73962	Endevco	02/27/2015
2	Right Sill at Front Seat	X	P78767	Endevco	02/26/2015
	Right Sill at Front Seat	Y	P78769	Endevco	02/26/2015
	Right Sill at Front Seat	Z	P78768	Endevco	02/26/2015
3	Right Sill at Rear Seat	X	P86818	Endevco	03/31/2015
	Right Sill at Rear Seat	Y	P86820	Endevco	03/31/2015
	Right Sill at Rear Seat	Z	P86819	Endevco	03/31/2015
4	Left Sill at Front Door	Y	P78810	Endevco	02/24/2015
5	Left Sill at Rear Door	Y	P79809	Endevco	05/29/2015
6	Left A-Post Lower	Y	P78969	Endevco	02/05/2015
7	Left A-Post Middle	Y	P66596	Endevco	05/04/2015
8	Left B-Post Lower	Y	P83055	Endevco	01/06/2015
9	Left B-Post Middle	Y	P78943	Endevco	04/23/2015
10	Front Seat Track	Y	P78992	Endevco	01/05/2015
11	Rear Seat Track or Structure	Y	P78983	Endevco	01/23/2015
12	Right Rear Occ. Compartment	Y	P74653	Endevco	04/22/2015
13	Engine Block	X	P86810	Endevco	03/20/2015
	Engine Block	Y	P85025	Endevco	03/24/2015
14	Rear Floorpan Above Axle	X	P75544	Endevco	02/26/2015
	Rear Floorpan Above Axle	Y	P75542	Endevco	02/26/2015
	Rear Floorpan Above Axle	Z	P75543	Endevco	02/26/2015

Table 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P85036	Endevco	01/16/2015
MDB Center of Gravity	Y	P85037	Endevco	01/16/2015
MDB Center of Gravity	Z	P85038	Endevco	01/16/2015
Left Frame at Rear Axle Centerline	X	P67517	Endevco	01/16/2015
Left Frame at Rear Axle Centerline	Y	P67518	Endevco	01/16/2015