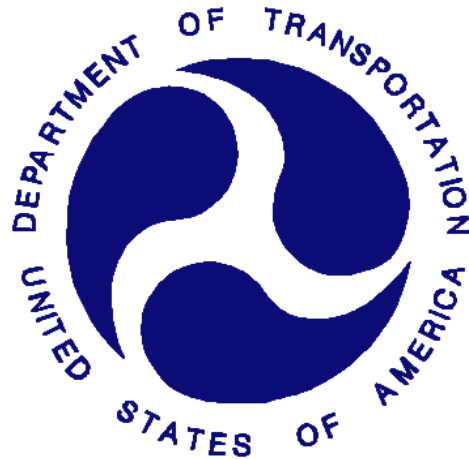


REPORT NUMBER: SPNCAP-MGA-2014-062

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test**

**GENERAL MOTORS DE MEXICO, S. DE R.L. DE C.V.
2014 Chevrolet Captiva Sport 1LS SUV
NHTSA No.: M20140107**

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



Test Date: May 9, 2014

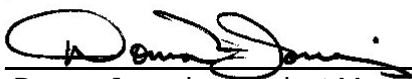
Final Report Date: May 29, 2014

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: May 29, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2014 Chevrolet Captiva Sport 1LS SUV, NHTSA No.: M20140107		5. Report Date May 29, 2014																													
		6. Performing Organization Code MGA																													
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer		8. Performing Organization Report No. SPNCAP-MGA-2014-062																													
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No.																													
		11. Contract or Grant No. DTNH22-09-D-00124																													
12. Sponsoring Agency Name and Address United States Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590		13. Type of Report and Period Covered: Final Test Report May 9, 2014 to May 29, 2014																													
		14. Sponsoring Agency Code NVS-111																													
15. Supplementary Notes																															
16. Abstract A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2014 Chevrolet Captiva Sport 1LS SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on May 9, 2014. The impact velocity was 32.2 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 22.0°C. The test vehicle post-test maximum crush was 427 mm at level 3. The test vehicle's performance was as follows: <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="4" style="text-align: left;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="text-align: left;">Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>266</td> </tr> <tr> <td style="text-align: left;">Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>55</td> </tr> <tr> <td style="text-align: left;">Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>3848</td> </tr> <tr> <td style="text-align: left;">Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>20</td> </tr> <tr> <td style="text-align: left;">Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td>31</td> </tr> </tbody> </table> *Proposed IARV The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				Driver ATD (SID-IIs)				Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	266	Resultant Lower Spine Acceleration	Gs	82	55	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3848	Maximum Thoracic Rib Deflection	mm	38*	20	Maximum Abdomen Rib Deflection	mm	45*	31
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																													
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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2014 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test is to generate comparative side impact performance in a 2014 Chevrolet Captiva Sport 1LS SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated September 2013.

SECTION 2 SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2014 Chevrolet Captiva Sport 1LS SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.2 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin, on May 9, 2014. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure dated September 2013. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Primary and Redundant Head CG Triaxial Accelerometers
Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
Abdomen Upper Rib and Lower Rib Displacement Potentiometers
Lower Spine (T12) Triaxial Accelerometers
Iliac Load Cell
Acetabulum Load Cell

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

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	266
Resultant Lower Spine Acceleration	Gs	82	55
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3848
Maximum Thoracic Rib Deflection	mm	38*	20
Maximum Abdominal Rib Deflection	mm	45*	31

*Proposed IARV

Supplemental restraint information is given below:

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

None

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

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
Test Date: 5/09/2014

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20140107	Traction Control System (TCS)	Yes
Model Year	2014	Auto-Leveling System	No
Make	Chevrolet	Automatic Door Locks (ADL)	Yes
Model	Captiva Sport	Power Window Auto-Reverse	No
Body Style	SUV	Other Optional Feature	N/A
VIN	3GNAL1EK5ES637484	Driver Front Airbag	Yes
Body Color	Silver Ice Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	47 / 29	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.4	Driver Torso Airbag	Yes
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	No
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	6	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	Front	Rear Pass. Torso Airbag	No
Roof Rack	Yes	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
		Other Safety Restraint	N/A

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

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors de Mexico, S. de R.L. de C.V.	GVWR (kg)	2189
Date of Manufacture	03/14	GAWR Front (kg)	1130
Vehicle Type	MPV	GAWR Rear (kg)	1280

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	(A)
Capacity Weight (VCW) (kg)				440	(B)
DSC x 68.04 kg				340	(A-B)
Rated Cargo and Luggage Weight (RCLW) (kg)				100	

VEHICLE SEAT TYPE

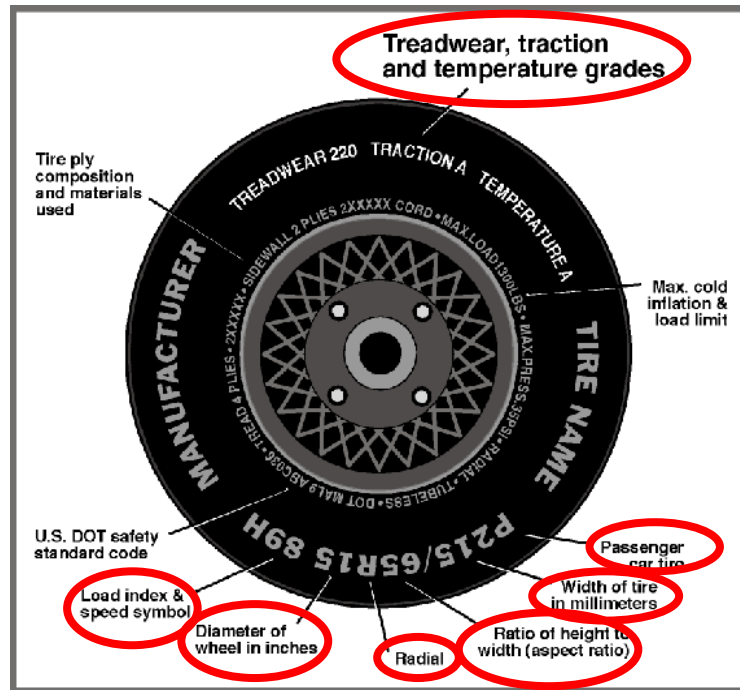
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					w/lever	
Rear or Second Row			X			w/lever	
Third Row Seat							

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P235/60R17	P235/60R17
Tire Size on Vehicle	P235/60R17	P235/60R17
Tire Manufacturer	Firestone	Firestone
Tire Model	Destination	Destination
Treadwear	480	480
Traction	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	100H	100H
Tire Material	Rubber	Rubber
DOT Safety Code Left	8X0U D18 3613	8X0U D18 3613
DOT Safety Code Right	8X0U D18 3613	8X0U D18 3613

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	234	240	234	240
Tire Placard	kpa	240	240	240	240
Owner's Manual	kpa				
As Tested	kpa	240	240	240	240

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	503.5	365.6		524.4	434.1		520.3	437.7	
Right	kg	474.5	364.2		399.6	494.9		475.4	427.3	
Ratio	%	57.3	42.7		49.9	50.1		53.5	46.5	
Totals	kg	978.0	729.8	1707.8	924.0	929.0	1853.0	995.7	865.0	1860.7

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1707.8	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	100	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1860.0	(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	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	deg	-0.4	-0.4	-0.2	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	-0.6	-0.5	-0.3	Yes
Front Bumper Angle (left-to-right)**	deg	-0.5	-0.5	-0.6	Yes
Rear Bumper Angle (left-to-right)**	deg	0.1	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1156	1356	1257	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	14	27	23	

*ND=Nose Down (-), NU=Nose Up (+) ** LD=Left Down (-), LU=Left Up (+)

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements.

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast (if any)	36.3
None	0.0

Test height adjustable suspension setting, if applicable:	Not Applicable
---	----------------

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	11.8	9.8	10.8
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	10.8	Fixed	Max	Fixed	Fixed	Fixed
	10.8	Fixed	Mid	Fixed	Fixed	Fixed
	10.8	Fixed	Min	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

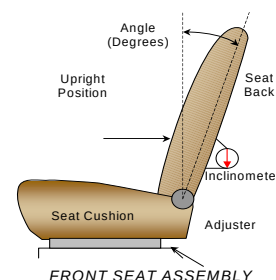
NHTSA No. M20140107
 Test Date: 5/09/2014

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	242	25 (1 st as 1)	0	0 (1 st as 0)
Front Passenger Seat	240	25 (1 st as 1)	0	0 (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1 for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degree	Detent
Driver Seat w/Seated Dummy	80.0	40 (1 st as 1)	-5.1	6 th (1 st as 0)
Front Passenger Seat	82.1	40 (1 st as 1)	-4.9	6 th (1 st as 0)
Front Center Seat				
Struck Side Rear Seat	13.8	5 (1 st as 1)	7.1	2 (1 st as 0)
Non-Struck Side Rear Seat	13.8	5 (1 st as 1)	7.1	2 (1 st as 0)
Rear Center Seat	13.8	5 (1 st as 1)	7.1	2 (1 st as 0)

Seat back angles measured on headrest post.

SEAT BELT ANCHORAGE ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	5 detents (1 st as 1)	0 (uppermost as 0)

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	6	Lowest

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

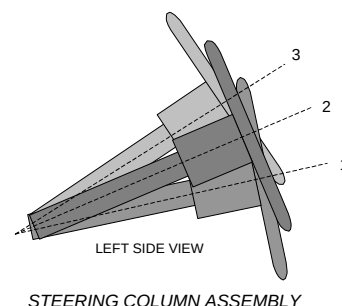
Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014

STEERING COLUMN ADJUSTMENT

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

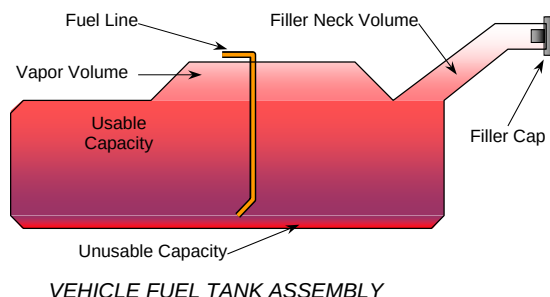
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	67.0	228
Geometric Center, Position 2	64.9	208
Uppermost, Position 3	62.8	188
Telescoping Steering Wheel Travel		40
Test Position	64.9	208



FUEL PUMP

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

The vehicle is equipped with an electric fuel pump. Pump will run when engine is running. Also, it will run briefly when ignition key is turned to the "on" position without starting the engine. The fuel pipe is on the left side.



FUEL TANK CAPACITY DATA

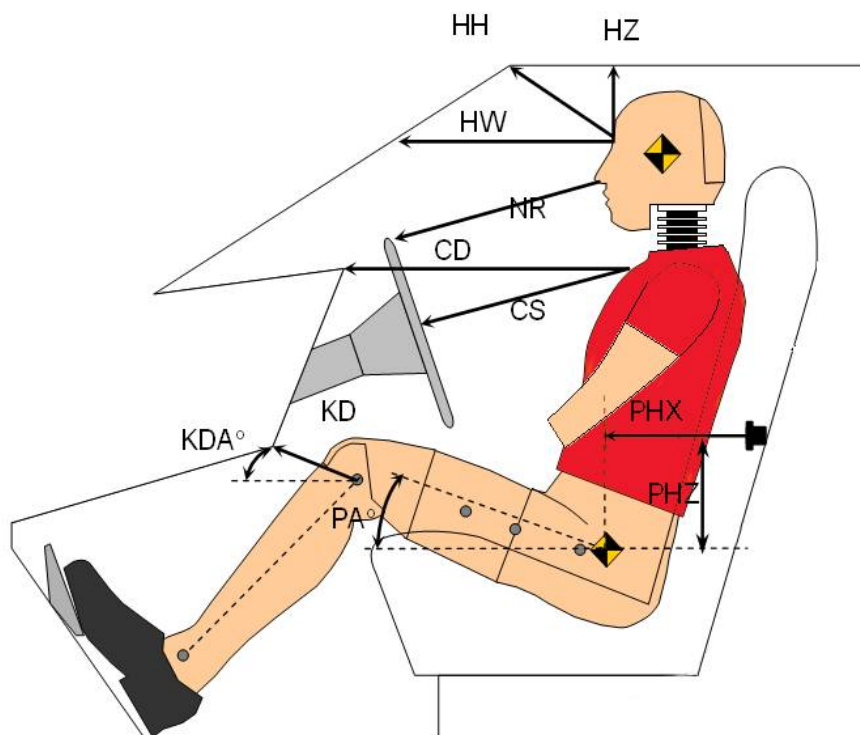
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	72.7
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	63.1
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	67.6
Actual Amount of Solvent Used	67.6
1/3 of Usable Capacity	24.2

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

.DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014



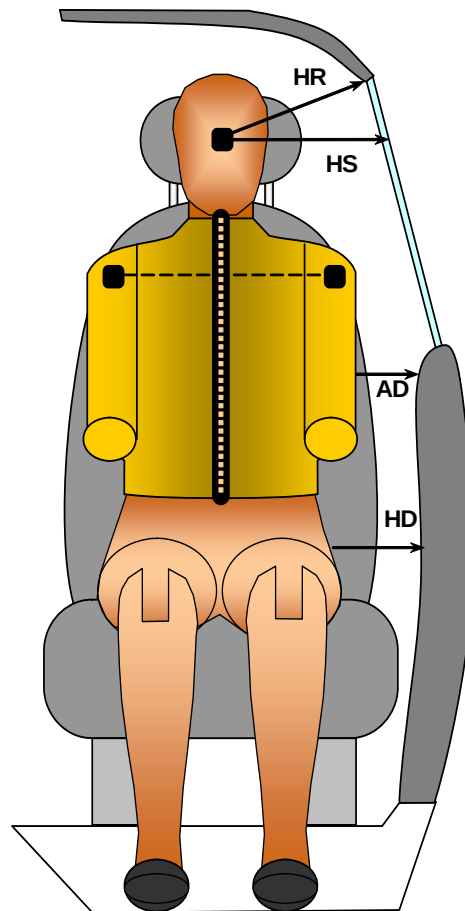
LEFT SIDE VIEW

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	252	
HW	Head to Windshield	564	
HZ	Head to Roof Liner	212	
NR	Nose to Rim	214	
CD	Chest to Dashboard	398	
CS	Chest to Steering Wheel	170	
KDL/KDAL°	Left Knee to Dash	96	27.9
KDR/KDAR°	Right Knee to Dash	114	30.6
PAX°	Pelvic Tilt Angle (X-Axis)		18.1
PAY°	Pelvic Tilt Angle (Y-Axis)		-1.4
PHX	Hip Point to Striker (X-Axis)	349	
PHZ	Hip Point to Striker (Z-Axis)	107	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014



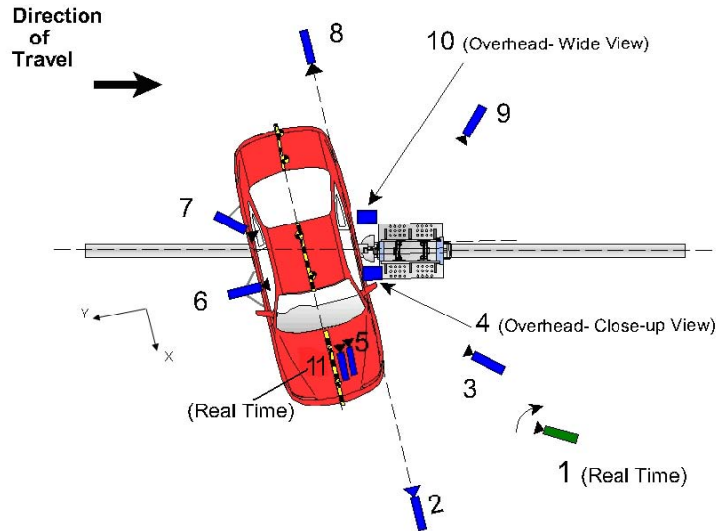
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver
		Length (mm)
HR	Head to Side Header	258
HS	Head to Side Window	361
AD	Arm to Door	160
HD	Hip Point to Door	198

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
Test Date: 5/09/2014



Reference: (from Point of Impact for X and Y; from Ground for Z):
+X = Forward of Impact, + Y = Right of Impact, +Z = Down

Camera No.	View	Coordinates (mm)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real-Time Pan View					30
2	Front Ground Level	-60	5310	-1670	24	1000
3	Impact Side 45° Forward	-2530	5310	-1670	20	1000
4	Overhead Closeup	50	0	-4520	50	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-60	-5450	-1690	24	1000
9	Impact Side 45° Rearward	-3400	-3270	-1760	20	1000
10	Overhead Wide View	540	0	-4620	14	1000
11	Real-Time Dummy Front View					30

* All measurements accurate to ± 6 mm

Note: Vehicle was at a 75° angle to the rigid pole.

Explain why camera(s) did not operate as intended: None

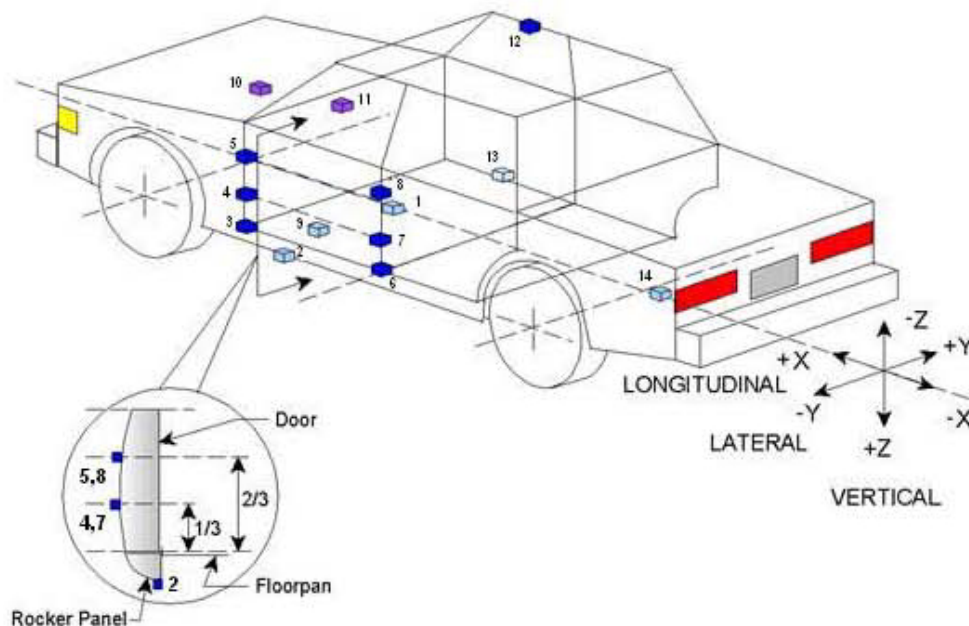
INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2276	0	381
2	Left Floor Sill	2848	-710	272
3	A Pillar Sill	3111	-710	273
4	A Pillar Low	3044	-805	621
5	A Pillar Mid	3054	-810	882
6	B Pillar Sill	2092	-708	273
7	B Pillar Low	1919	-678	668
8	B Pillar Mid	1919	-680	914
9	Driver Seat Track	2183	-359	386
10	Engine Top	3772	50	847
11	Firewall	3568	100	1030
12	Right Roof	2024	460	1648
13	Right Floor Sill	2837	710	270
14	Rear Floorpan	137	0	686

Reference:

X – Test Vehicle Rear Bumper (+forward)
 Y – Test Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
Test Date: 5/09/2014



254 mm Diameter Rigid Pole

Load Cell Locations	
ID	Height From Impact Surface (mm)
1	182
2	470
3	698
4	986
5	1212
6	1641
7	1854
8	2053

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
Test Date: 5/09/2014

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver SID-IIs Dummy
Face	Curtain Airbag, Headrest
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag, Seatback, Headrest
Back of Head	Curtain Airbag, Seatback
Left Shoulder	Side Airbag, Seatback
Upper Torso	None
Lower Torso	None
Left Hip	Door Panel, Seatpan
Left Knee	Door Panel

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

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

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
Test Date: 5/09/2014

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

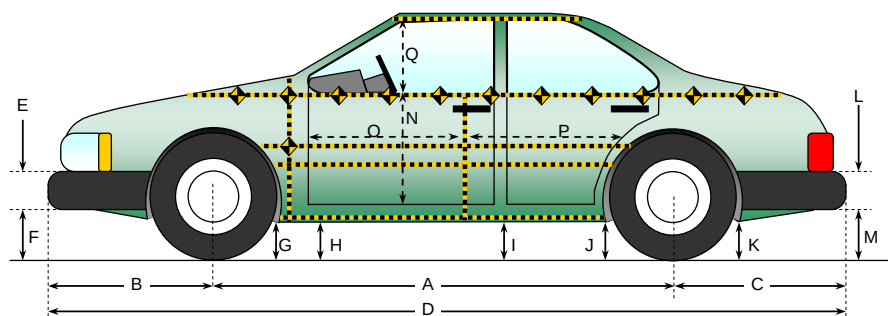
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1085
Actual Impact Point (Aft of Front Axle)	mm		1082
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	+3
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.20
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.25

DATA SHEET NO. 9 **VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
Test Date: 5/09/2014



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

LEFT SIDE VIEW

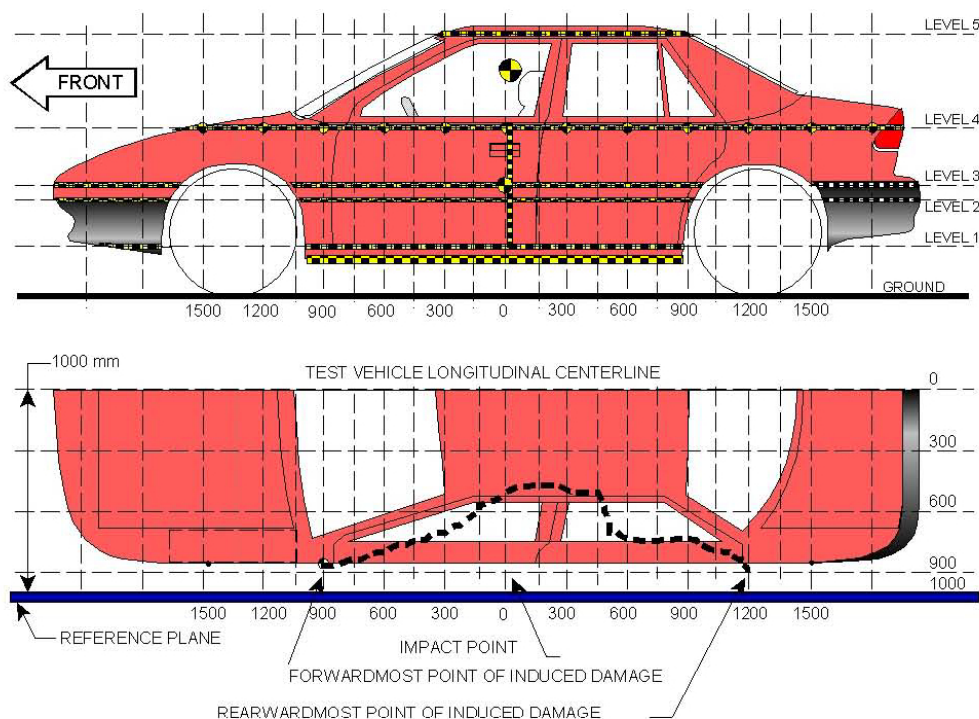
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2705	2659	46
B	Front Axle to FSOV	940	930	10
C	Rear Axle to RSOV	942	949	-7
D	Total Vehicle Length at Centerline	4587	4538	49
E	Front Bumper Thickness	150	150	0
F	Front Bumper Bottom to Ground	194	228	-34
G	Sill Height at Front Wheel Well	245	240	5
H	Sill Height at Front Door Leading Edge	246	240	6
I	Sill Height at B-Pillar	260	266	-6
J1	Sill Height at Rear Wheel Well	267	291	-24
J2	Pinch Weld Height at Rear Wheel Well	263	285	-22
K	Sill Height Aft of Rear Wheel Well	339	362	-23
L	Rear Bumper Thickness	150	150	0
M	Rear Bumper Bottom to Ground	389	393	-4
N	Sill Height to Bottom of Front Window Sill	819	820	-1
O	Front Door Leading Edge to Impact CL	578	568	10
P	Rear Door Trailing Edge to Impact CL	1304	1326	-22
Q	Front Window Opening	442	378	64
R	Right Side Length	3540	3555	-15
S	Left Side Length	3540	3390	150
T	Vehicle Width at B-Pillars	1786	1657	129

DATA SHEET NO. 10 **VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014



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

MAXIMUM EXTERIOR CRUSH MEAUREMENTS

Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	329	361	0
2	Occupant Hip Point	710	426	0
3	Mid Door	754	427	0
4	Window Sill	1084	393	0
5	Window Top	1600	166	0

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014

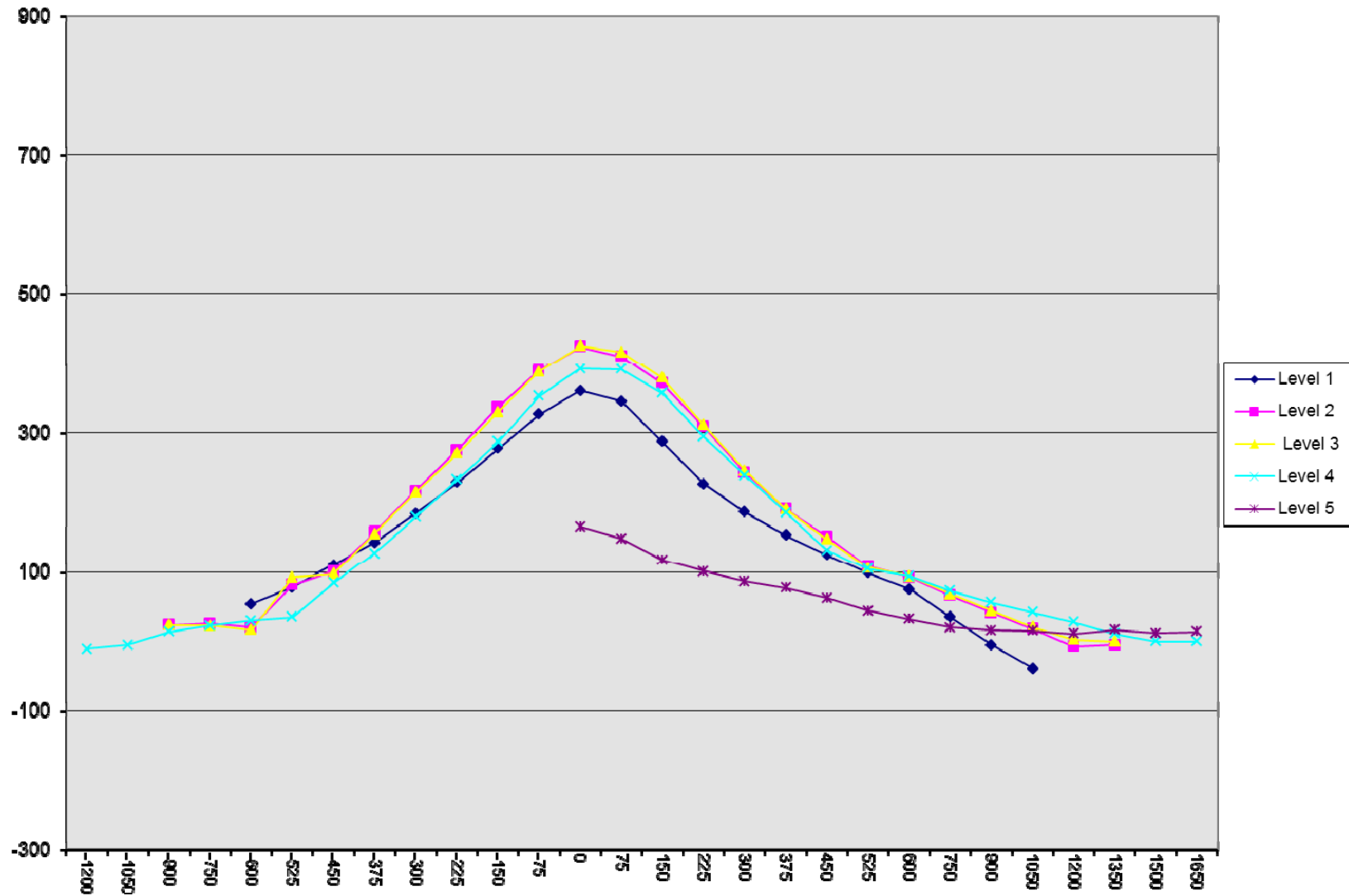
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1200				379					369					-10	
-1050				349					345					-4	
-900		176	178	324			201	203	339			25	25	15	
-750		194	195	303			221	219	327			27	24	24	
-600	237	207	200	290		292	228	218	321		55	21	18	31	
-525	245	211	210	289		324	293	303	325		79	82	93	36	
-450	251	211	210	277		362	312	308	362		111	101	98	85	
-375	261	211	210	271		404	369	366	399		143	158	156	128	
-300	261	212	210	266		445	428	424	445		184	216	214	179	
-225	260	212	210	260		488	487	480	492		228	275	270	232	
-150	263	212	210	255		540	549	540	542		277	337	330	287	
-75	263	212	210	250		589	602	599	603		326	390	389	353	
0	264	212	210	246	519	625	638	637	639	685	361	426	427	393	166
75	264	212	210	245	511	609	624	628	637	660	345	412	418	392	149
150	265	212	210	240	510	552	583	590	597	628	287	371	380	357	118
225	265	212	210	238	505	491	520	521	532	606	226	308	311	294	101
300	266	212	210	235	504	452	455	456	474	591	186	243	246	239	87
375	267	212	210	233	504	421	402	400	418	582	154	190	190	185	78
450	267	212	210	231	503	393	364	358	363	566	126	152	148	132	63
525	268	214	211	230	502	367	323	318	335	547	99	109	107	105	45
600	270	214	211	229	502	346	307	305	323	535	76	93	94	94	33
750	271	215	212	228	501	307	282	281	302	522	36	67	69	74	21
900	274	215	212	228	505	270	257	257	285	522	-4	42	45	57	17
1050	261	214	212	228	512	223	233	234	271	528	-38	19	22	43	16
1200		206	207	232	517		200	203	261	529		-6	4	29	12
1350		181	184	235	522		177	185	247	540		-4	1	12	18
1500				239	534				240	547				1	13
1650				247	545				248	560				1	15

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 pile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy's head.

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

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
Test Program: NCAP Side Pole Impact Test

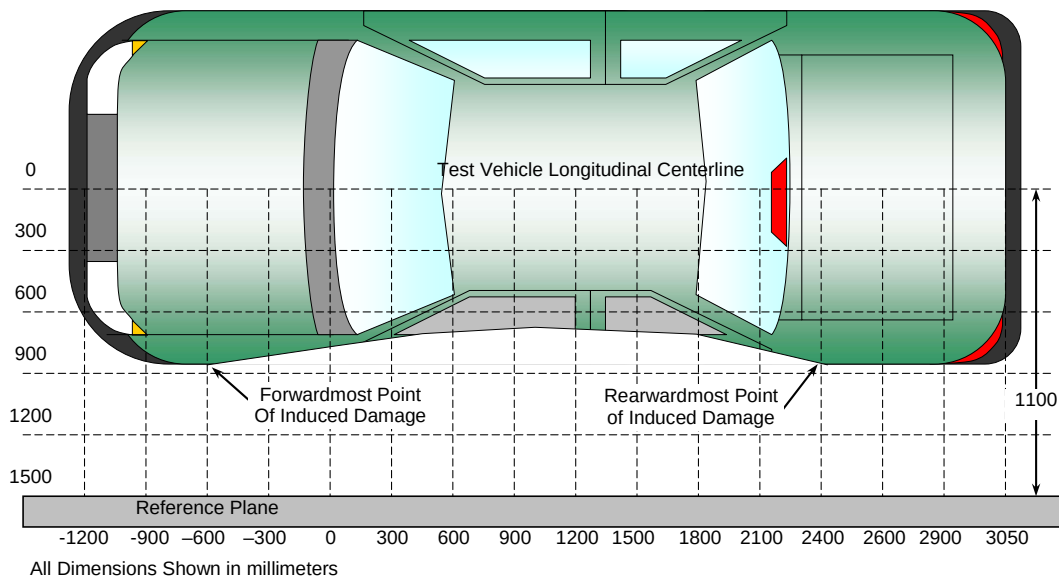
NHTSA No. M20140107
Test Date: 5/09/2014



DATA SHEET NO. 11 **VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	500	3	210	329	119
2	270	3	210	490	280
3	40	3	210	643	433
4	-190	3	210	518	308
5	-420	3	210	334	124
6	-650	3	200	222	22

DATA SHEET NO. 12
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

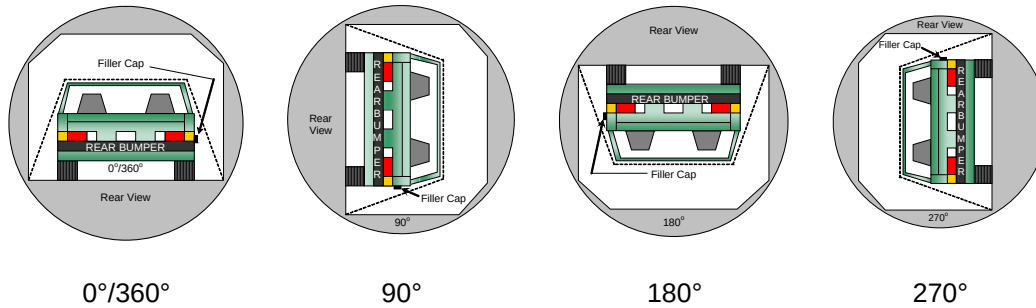
NHTSA No. M20140107
 Test Date: 5/09/2014

Test Time: 9:33 am

Temperature: 22.0°C

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

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	112	300	412
90° to 180°	111	300	411
180° to 270°	108	300	408
270° to 360°	111	300	411

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

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

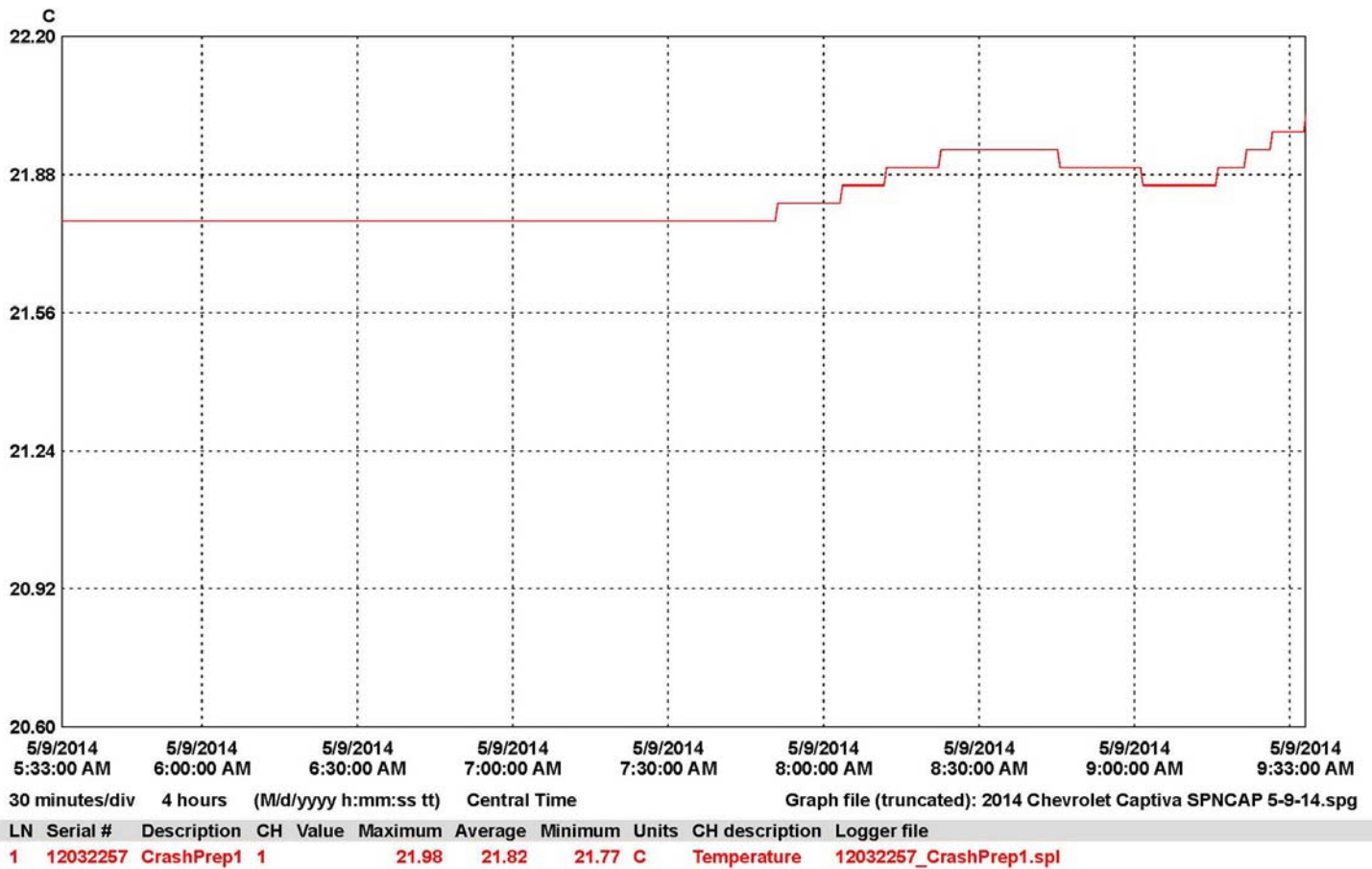
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 13
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2014 Chevrolet Captiva Sport 1LS SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20140107
 Test Date: 5/09/2014



APPENDIX A
PHOTOGRAPHS

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As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



Pre-Test Frontal View of Test Vehicle



Post-Test Frontal View of Test Vehicle



Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



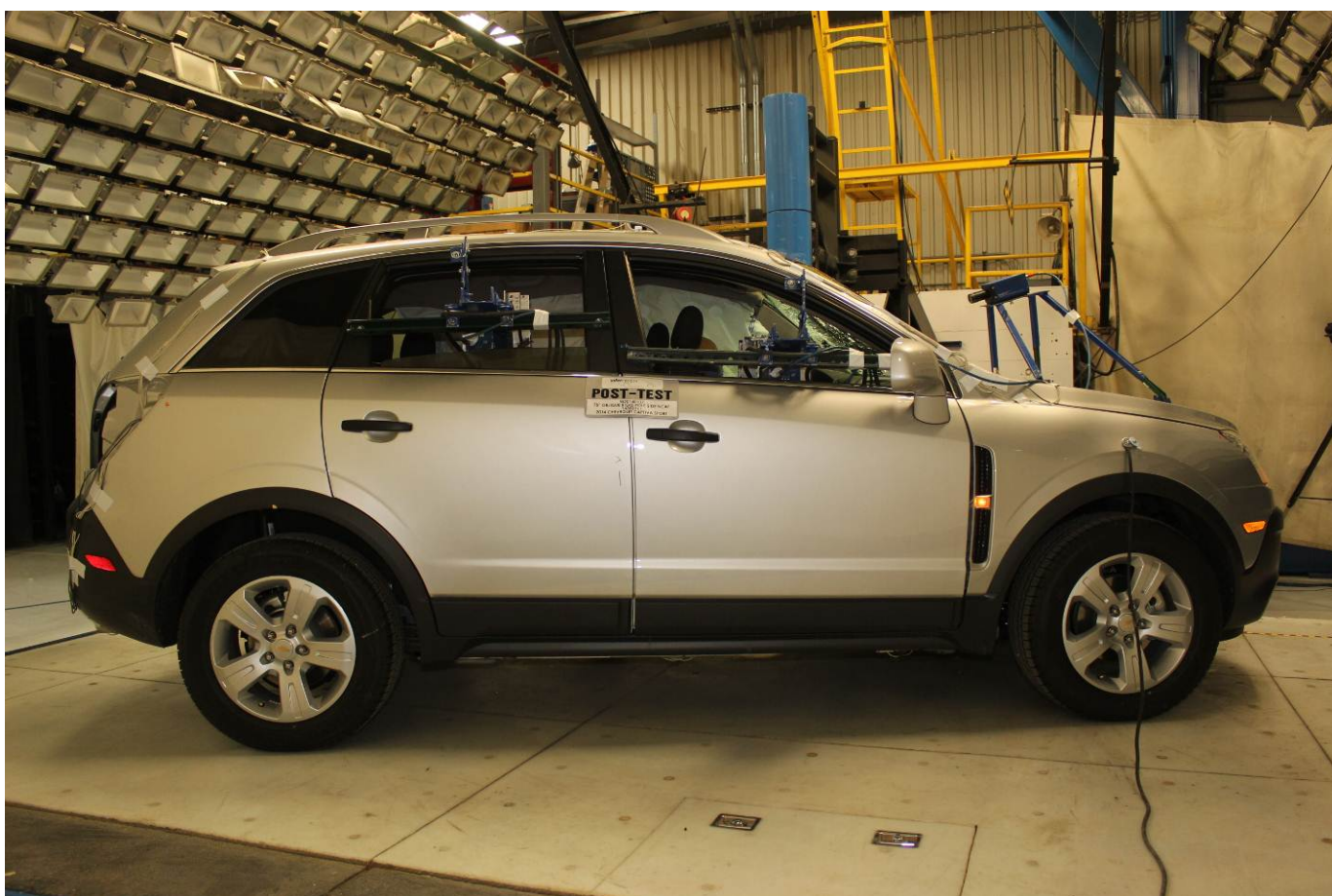
Pre-Test Rear View of Test Vehicle



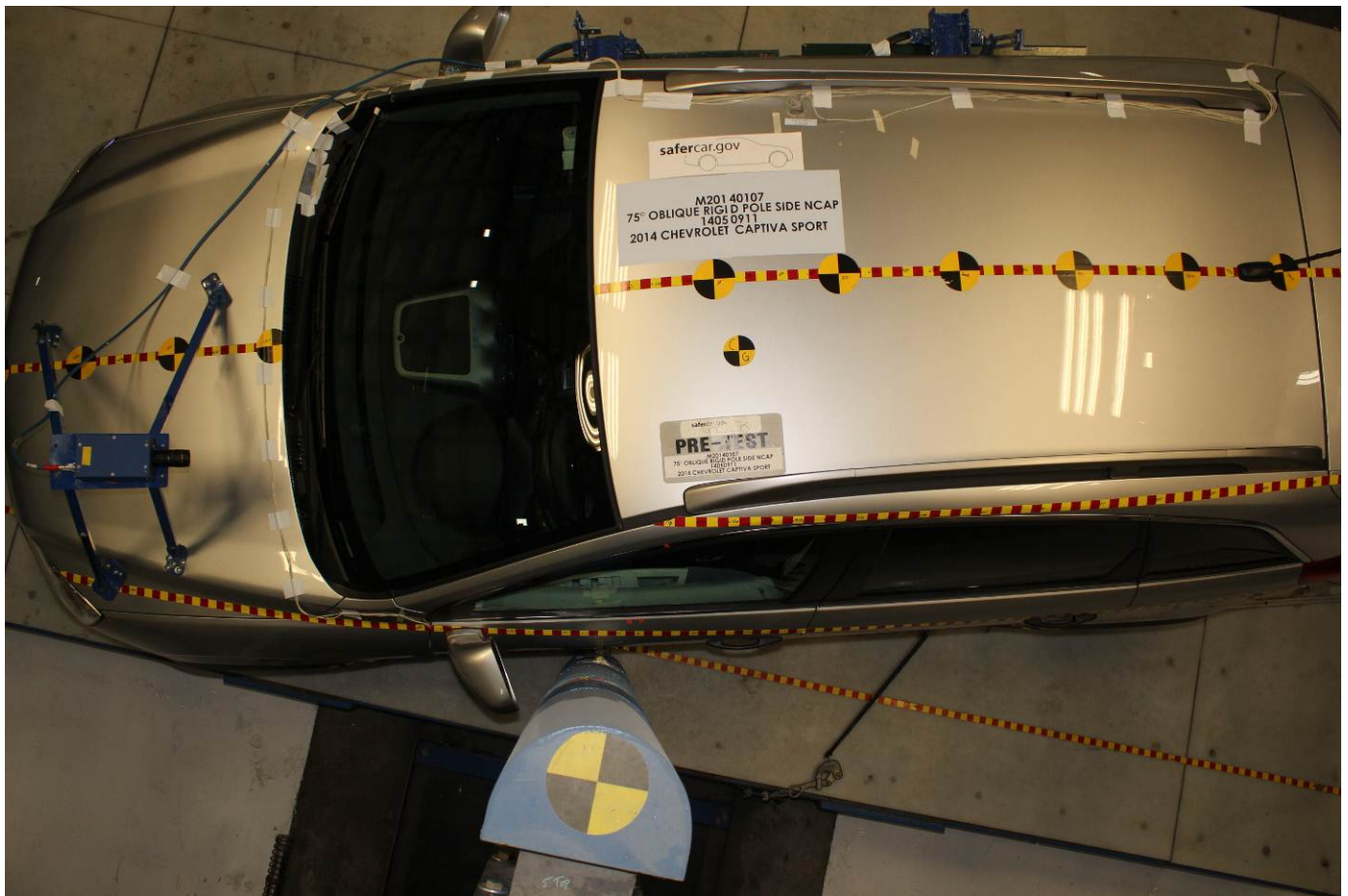
Post-Test Rear View of Test Vehicle



Pre-Test Right Side View of Test Vehicle



Post-Test Right Side View of Test Vehicle



Pre-Test Overhead View of Test Area



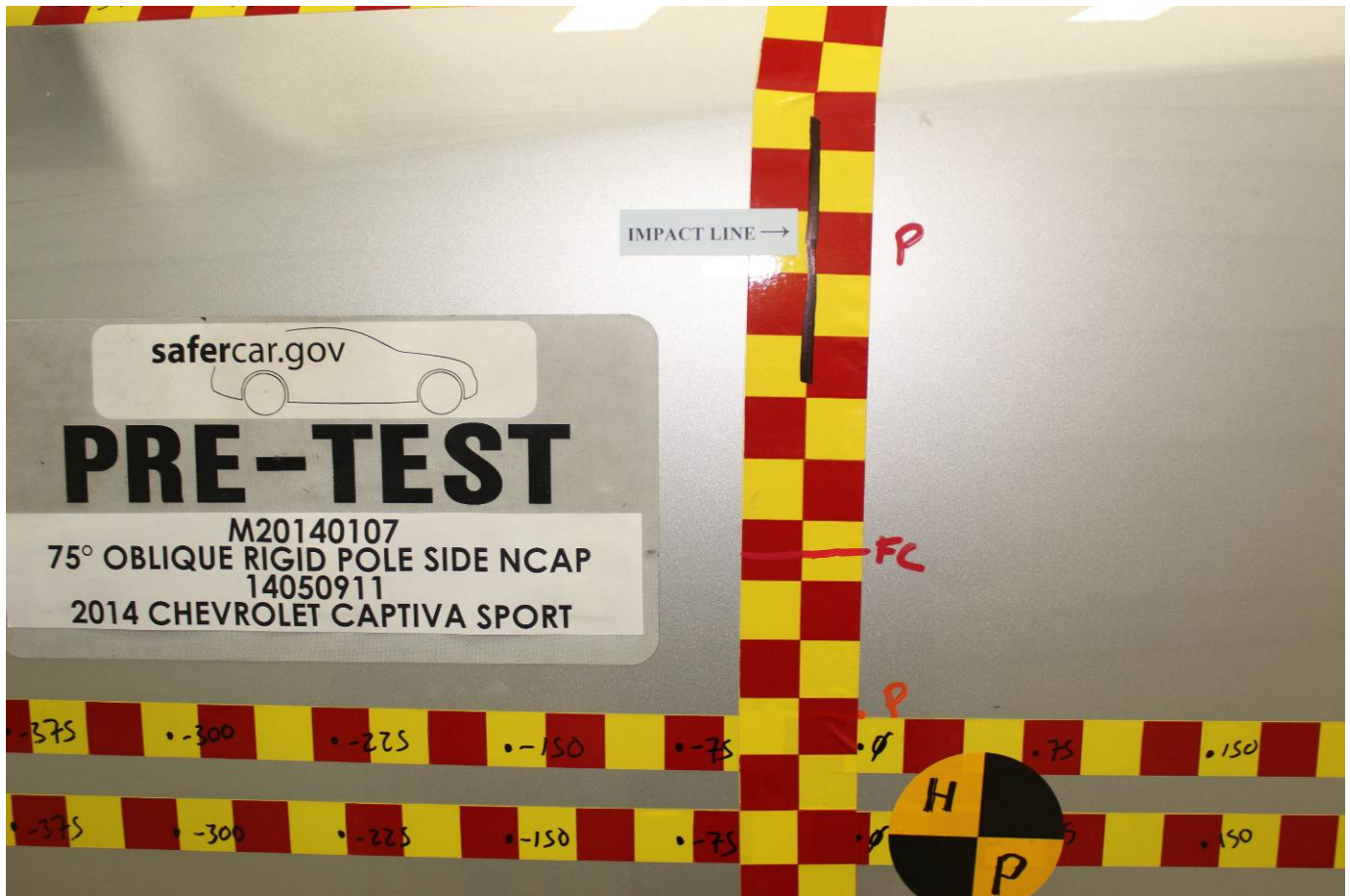
Post-Test Overhead View of Test Area



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



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



Pre-Test Close-Up View of Impact Point Target



Post-Test Close-Up View of Impact Point Target Showing Impact Location



Pre-Test Front Close-Up View of Dummy Head and Chest



Post-Test Front Close-Up View of Dummy



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



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



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



Pre-Test Front View of Seat Back Prior to Dummy Positioning



Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Front View of Seat Pan Prior to Dummy Positioning



Pre-Test Overhead View of Dummy Thighs on Seat Pan



Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket



Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



Pre-Test Placement of Dummy's Feet



Pre-Test View of Belt Anchorage for Dummy



Pre-Test Left Side View of Steering Wheel



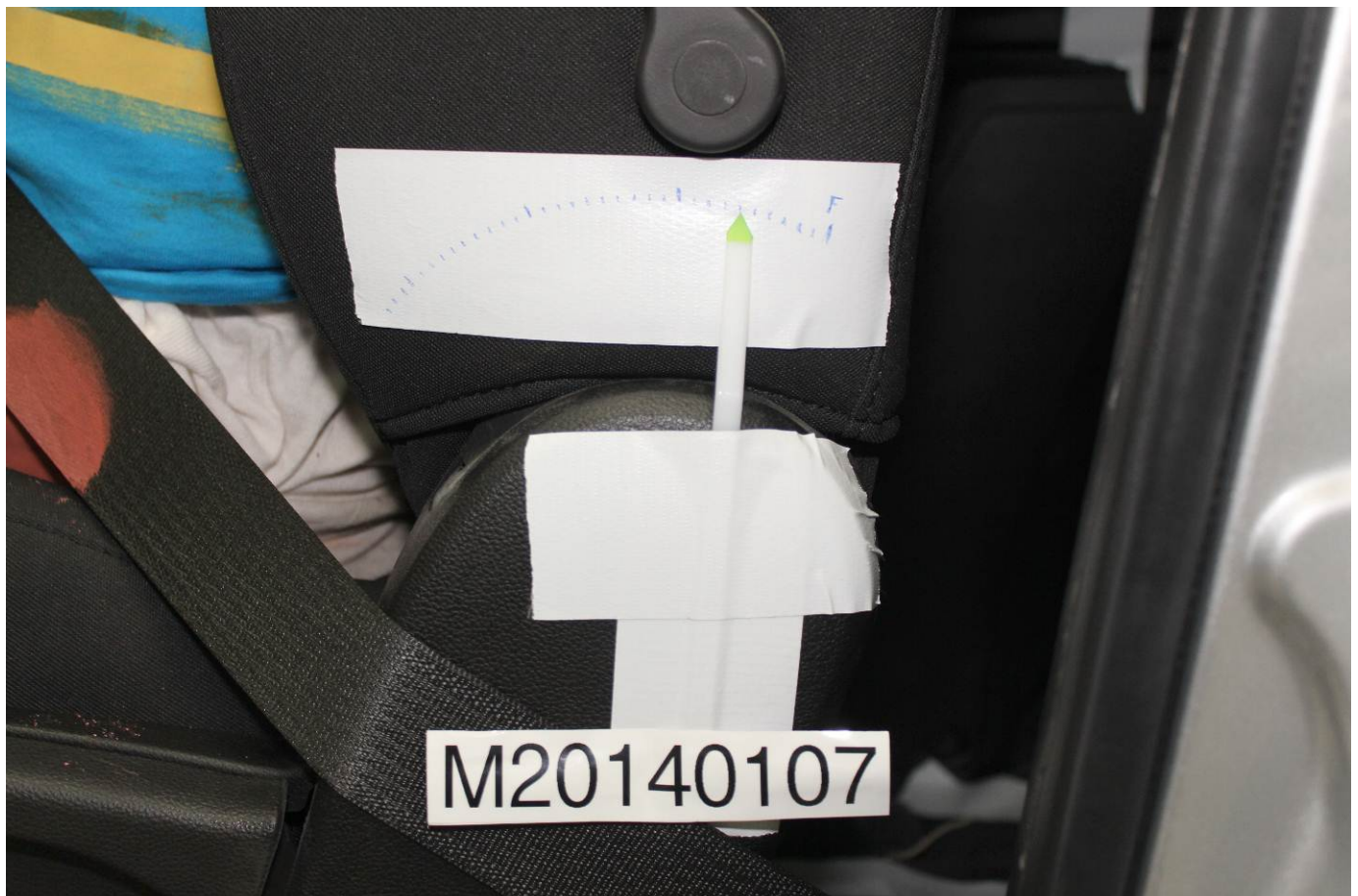
Pre-Test View of Disengaged Parking Brake



Pre-Test View of Parking Brake



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



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



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



Pre-Test Dummy and Door Clearance View



Post-Test Dummy and Door Clearance View



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



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



Pre-Test Inner Door Panel View



Post-Test Inner Door Panel View Showing Dummy Contact Location



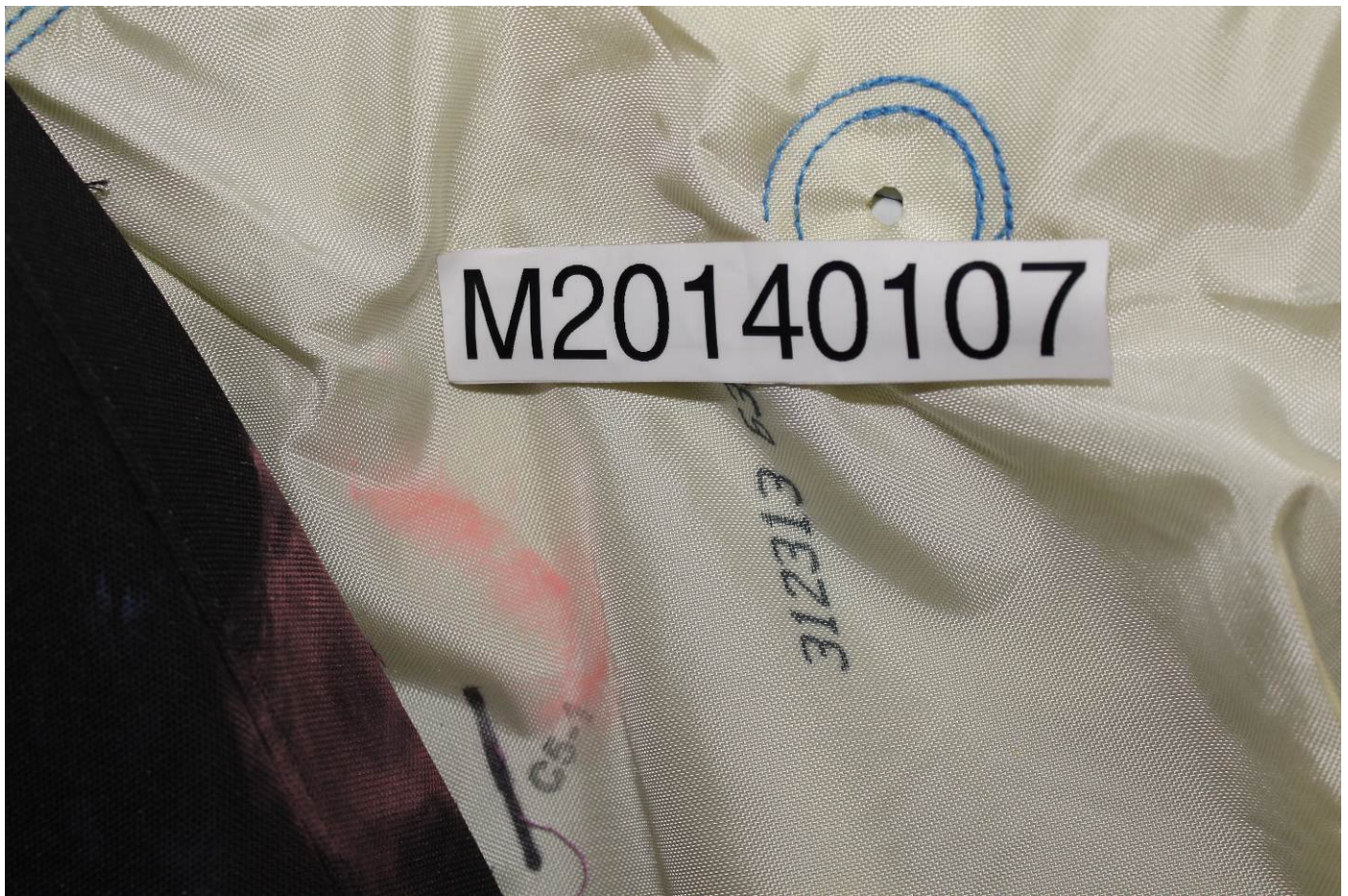
Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Post-Test Dummy Close-Up Head Contact with Side Air Bag View



Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Post-Test Dummy Close-Up Torso Contact with Side Air Bag View



Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Post-Test Dummy Close-Up Pelvis Contact with Side Air Bag View



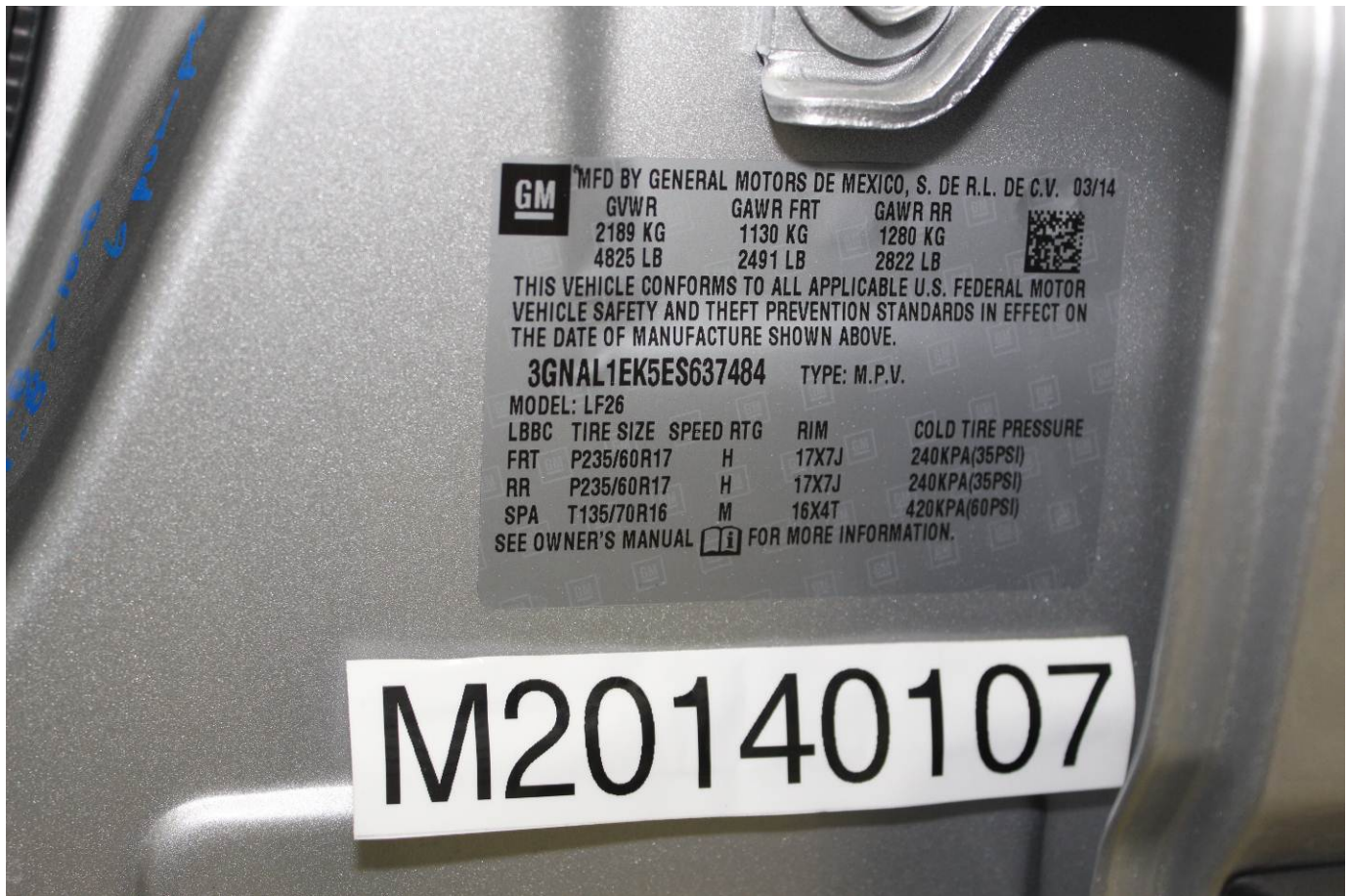
Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



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



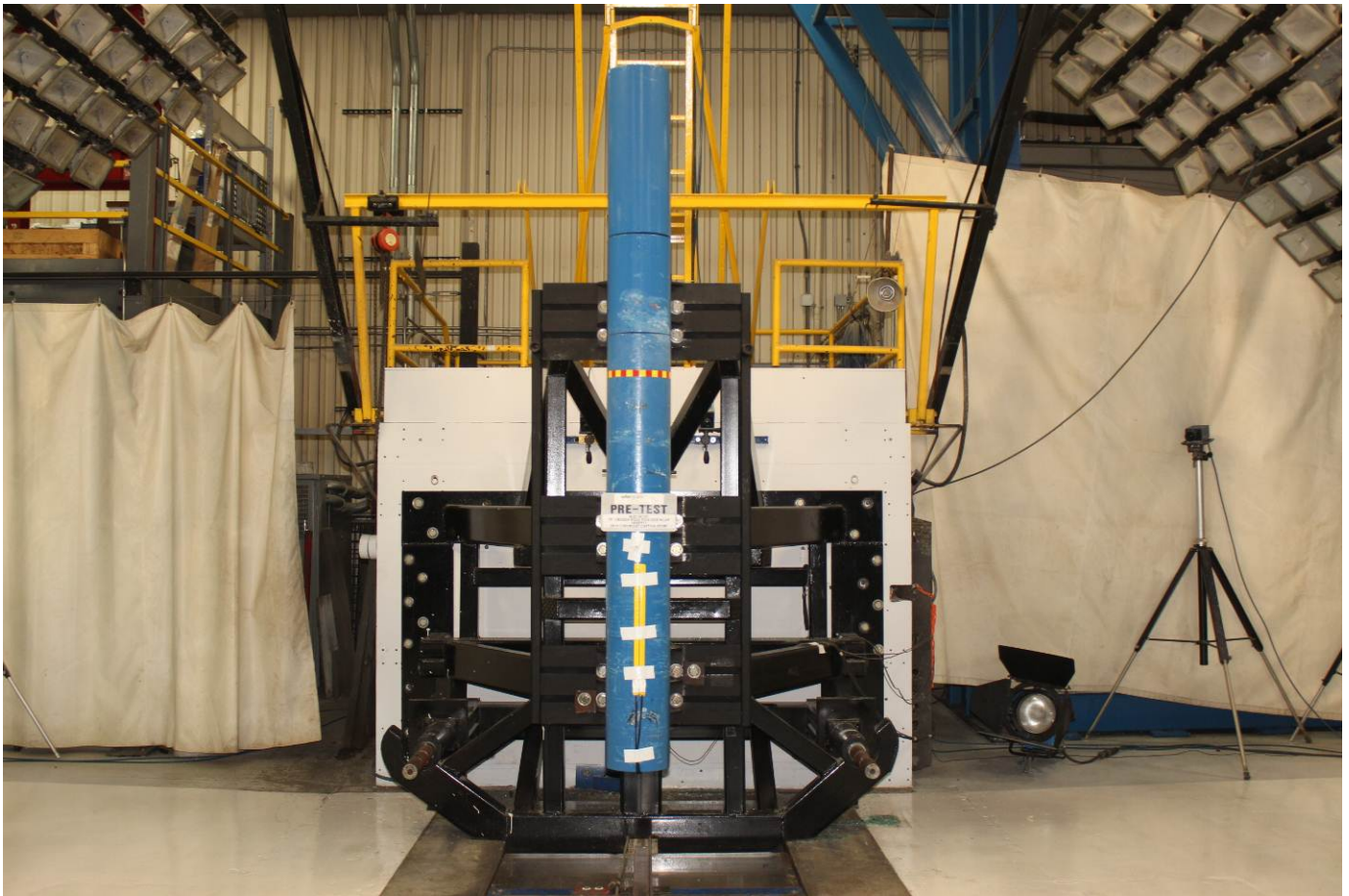
Post-Test View of Fuel Filler Cap or Fuel Filler Neck



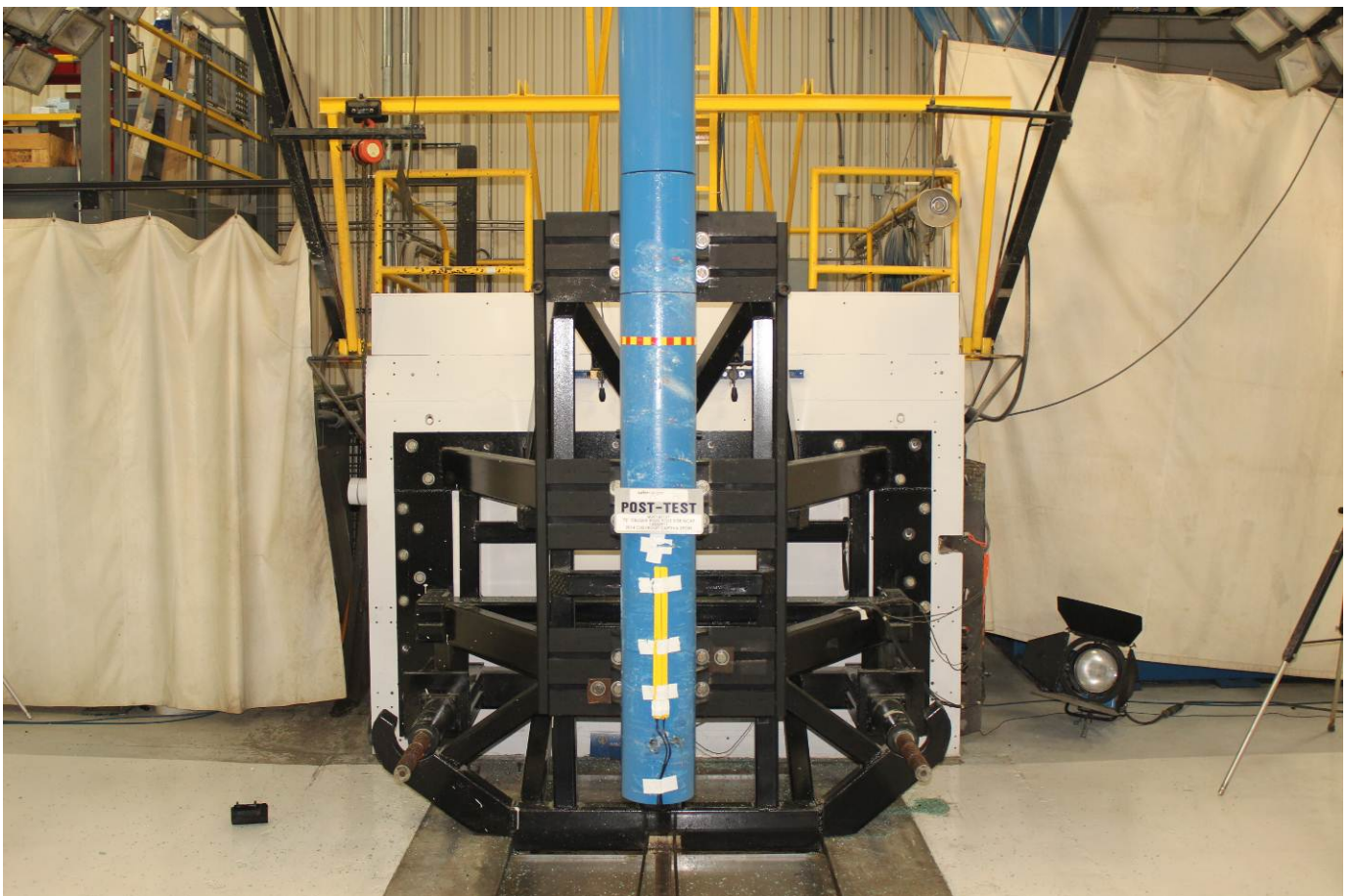
Close-Up View of Vehicle's Certification Label



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



Pre-Test Pole Barrier Front View



Post-Test Pole Barrier Front View



Pre-Test Pole Barrier Side View



Post-Test Pole Barrier Side View



Pre-Test Ballast View



Post-Test Primary and Redundant Speed Trap Read-Out



FMVSS No. 301 Static Rollover 0 Degrees



FMVSS No. 301 Static Rollover 90 Degrees



FMVSS No. 301 Static Rollover 180 Degrees



FMVSS No. 301 Static Rollover 270 Degrees



FMVSS No. 301 Static Rollover 360 Degrees



Impact Event



2014 CAPTIVA SPORT FWD 1LS



EXTERIOR: SILVER ICE METALLIC
INTERIOR: BLACK

ENGINE: 2.4L DOHC 4 CYL W/ VVT
6 SPD AUTOMATIC TRANSMISSION

Visit us at www.chevy.com

STANDARD EQUIPMENT

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

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

MECHANICAL

- TRANSMISSION, 6 SPD AUTOMATIC
- ENGINE, 2.4L DOHC 4 CYL WITH VVT
- OIL LIFE MONITOR SYSTEM
- COMPACT SPARE TIRE

SAFETY & SECURITY

- REMOTE KEYLESS ENTRY
- AIRBAGS, DRIVER & FRONT PASS: FRONT / SIDE IMPACT

AIRBAGS - SIDE HEAD CURTAIN

- THEFT DETERRENT SYSTEM
- DAYTIME RUNNING LAMPS
- STABILITRAK - STABILITY CONTROL SYSTEM W/ TRACTION CONTROL
- ANTI LOCK BRAKE SYSTEM
- 6 MTH ONSTAR(R) DIRECTIONS AND CONNECTIONS W/AUTOMATIC CRASH RESPONSE, TURN-BY-TURN NAV & 5-YEARS REMOTELINK APP KEY FOR SERVICES (ASK DEALER ABOUT GEOGRAPHIC COVERAGE)
- TIRE PRESSURE MONITOR SYSTEM (EXCL SPARE TIRE)

EXTERIOR

- MIRROR, MANUAL INSIDE RR VIEW
- POWER OUTSIDE MIRROR
- EXHAUST, STAINLESS STEEL
- LUGGAGE RACK SIDE RAILS, ROOF MOUNTED
- REAR WIPER WITH WASHER

- GLASS, TINTED
- WHEELS, 17" PAINTED ALUMINUM
- DOOR HANDLES, DARK GRAPHITE

INTERIOR

- SEAT, FRONT BUCKET
- FLOOR MATS, FRONT
- FLOOR MATS, REAR
- SEATS, FOLD FLAT FRONT PASS
- CONSOLE, FRONT FLOOR W/ ARMREST
- SEAT ADJUSTER, DRIVER MANUAL LUMBAR
- POWER WINDOWS, DRIVER EXPRESS DOWN
- BLUETOOTH FOR PHONE
- AM/FM STEREO CD PLAYER WITH AUX INPUT JACK
- AUDIO SYSTEM, 6 SPEAKER PREMIUM SOUND
- AIR CONDITIONING
- CRUISE CONTROL
- STEERING WHEEL CONTROLS

- XM RADIO + SERVICE SUBSCRIPTION SOLD SEPARATELY BY SIRIUSXM AFTER 3 MTHS
- REAR WINDOW DEFROSTER
- SEAT TRIM, CLOTH
- CONVENIENCE NET, TRUNK

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE

STANDARD VEHICLE PRICE **\$24,360.00**

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

GVWR RATING - 4,825 LBS INC.

TOTAL OPTIONS **\$0.00**

TOTAL VEHICLE & OPTIONS **\$24,360.00**

DESTINATION CHARGE **875.00**

TOTAL VEHICLE PRICE* \$25,235.00

EPA DOT Fuel Economy and Environment

Fuel Economy

23 MPG combined city/hwy

Small SUV's range from 16 to 30 MPG. The best vehicle rates 121 MPG. Values are based on gasoline and do not reflect performance and ratings based on E85.

You save \$0 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,300

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

Smog Rating (tailpipe only)

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 MPG and costs \$11,500 to fuel over 5 years. Cost estimates are based on 18,000 miles per year at \$3.50 per gallon. This is a dual-fueled automobile. 11 MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov

Calculate personalized estimates and compare vehicles.

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash	Driver Passenger	Not Rated
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.	Not Rated	Not Rated

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

Rollover ★★★★★

Based on the risk of rollover in a single-vehicle crash.

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

Equipped with the safety and connectivity of OnStar.

Push your blue button or visit onstar.com for details.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 70%

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

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
RAMOS ARIZPE, C2 MEXICO
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: MEXICO

© 2009 General Motors LLC
GMSL, PRICE 0029 - 03/11/2013

ORDER NO. 0000000000 SALES CODE R
SALES MODEL CODE 11009
DEALER NO 11461
FINAL ASSEMBLY:
RAMOS ARIZPE, C2 MEXICO
VIN 3GNAL1EK5E837484
DEALER TO WHOM DELIVERED
RAY CHEVROLET, INC.
38 N RTE 12
FOX LAKE, IL 60020-1222

CE
2CC1948218

Monroney Label

3-2 Seats and Restraints

Head Restraints

Warning

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

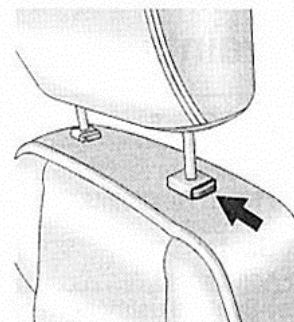


Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.

Front Seats

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

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



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

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

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



Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B
DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

		<u>Page No.</u>
Figure No. 1.	Driver Head CG Acceleration (X) vs. Time	B-1
Figure No. 2.	Driver Head CG Acceleration (Y) vs. Time	B-1
Figure No. 3.	Driver Head CG Acceleration (Z) vs. Time	B-1
Figure No. 4.	Driver Head CG Resultant Acceleration (X) vs. Time	B-1
Figure No. 5.	Driver Lower Spine T12 Acceleration (X) vs. Time	B-2
Figure No. 6.	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-2
Figure No. 7.	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-2
Figure No. 8.	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-2
Figure No. 9.	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-3
Figure No. 10.	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-3
Figure No. 11.	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-3

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

Additional Driver Dummy Instrumentation Data

Driver Head CG Redundant Acceleration (X) vs. Time

Driver Head CG Redundant Acceleration (Y) vs. Time

Driver Head CG Redundant Acceleration (Z) vs. Time

Driver Upper Thorax Rib Deflection (Y)

Driver Middle Thorax Rib Deflection (Y)

Driver Lower Thorax Rib Deflection (Y)

Driver Upper Abdomen Rib Deflection (Y)

Driver Lower Abdomen Rib Deflection (Y)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)

Vehicle Center of Gravity Acceleration (Y)

Vehicle Center of Gravity Acceleration (Z)

Left Floor Sill Acceleration (Y)

Left A-Pillar Sill Acceleration (Y)

Left Lower A-Pillar Acceleration (Y)

Left Mid A-Pillar Acceleration (Y)

Left B-Pillar Sill Acceleration (Y)

Left Lower B-Pillar Acceleration (Y)

Left Mid B-Pillar Acceleration (Y)

Driver Seat Track at Dummy Hip Point Acceleration (Y)

Engine Top Acceleration (X)

Engine Top Acceleration (Y)

Firewall Center Acceleration (Y)

Right Roof at Vertical Impact Reference Line Acceleration (Y)

Right Sill at Vertical Impact Reference Line Acceleration (Y)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)

Load Cell Pole Barrier #2 Force (Y)

Load Cell Pole Barrier #3 Force (Y)

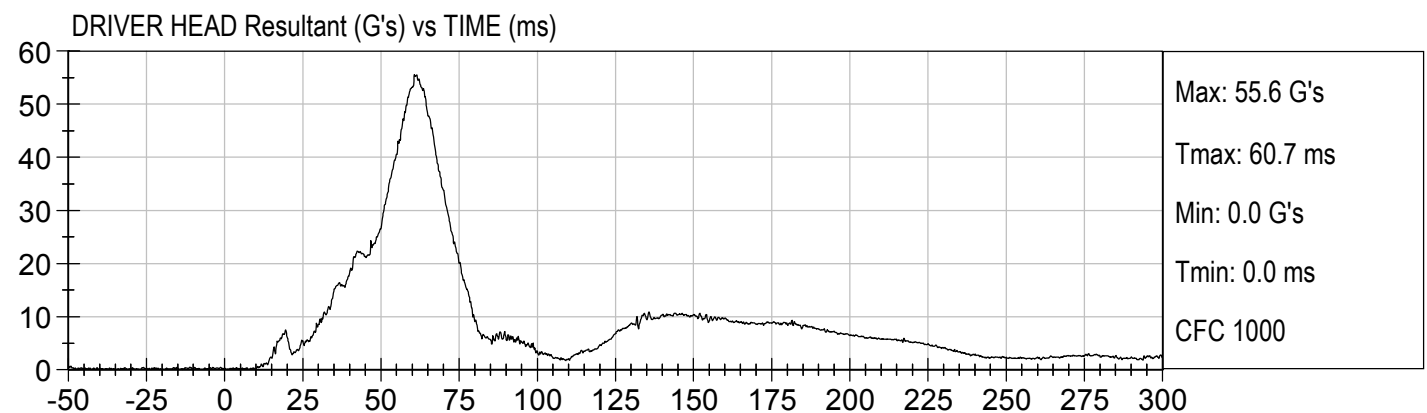
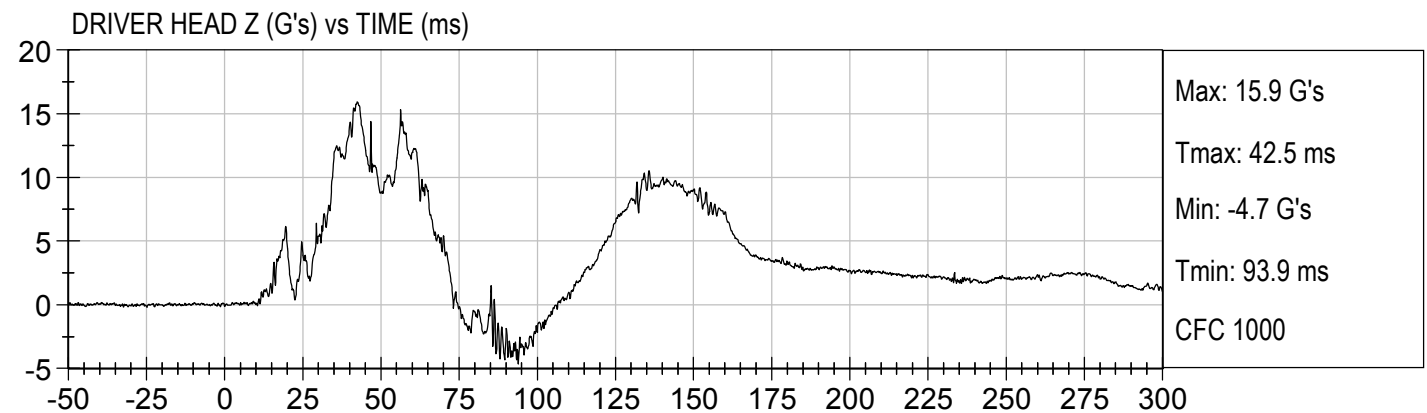
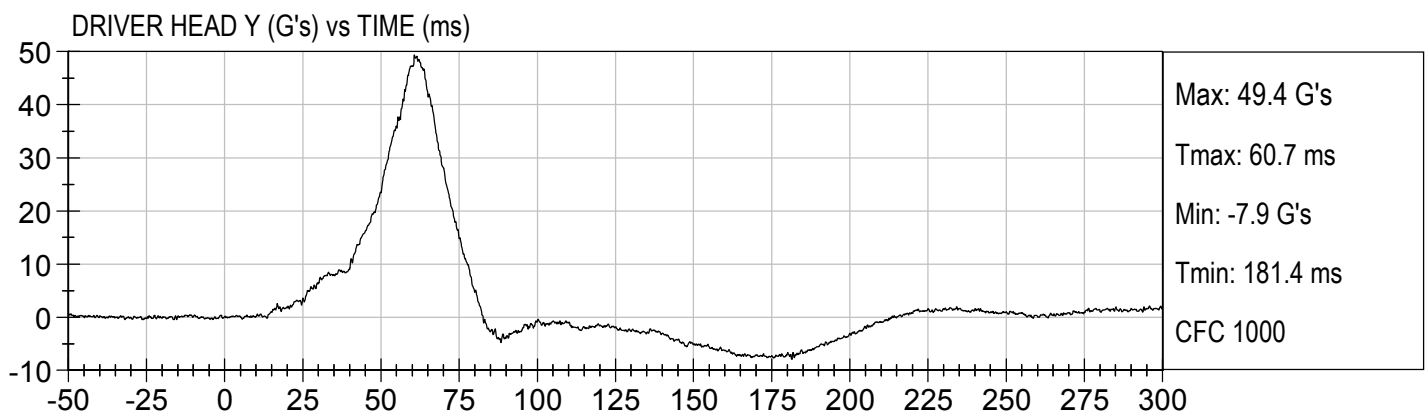
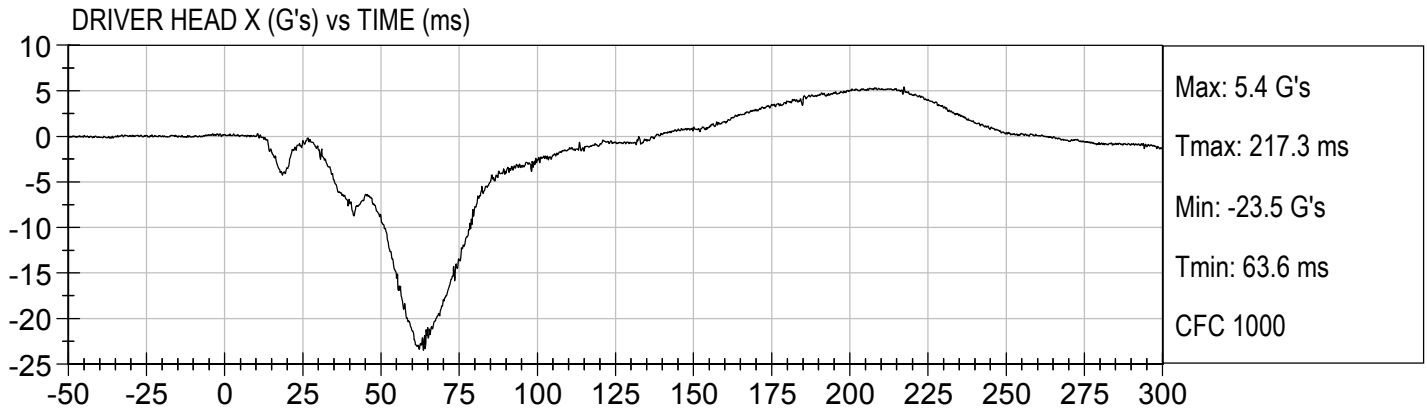
Load Cell Pole Barrier #4 Force (Y)

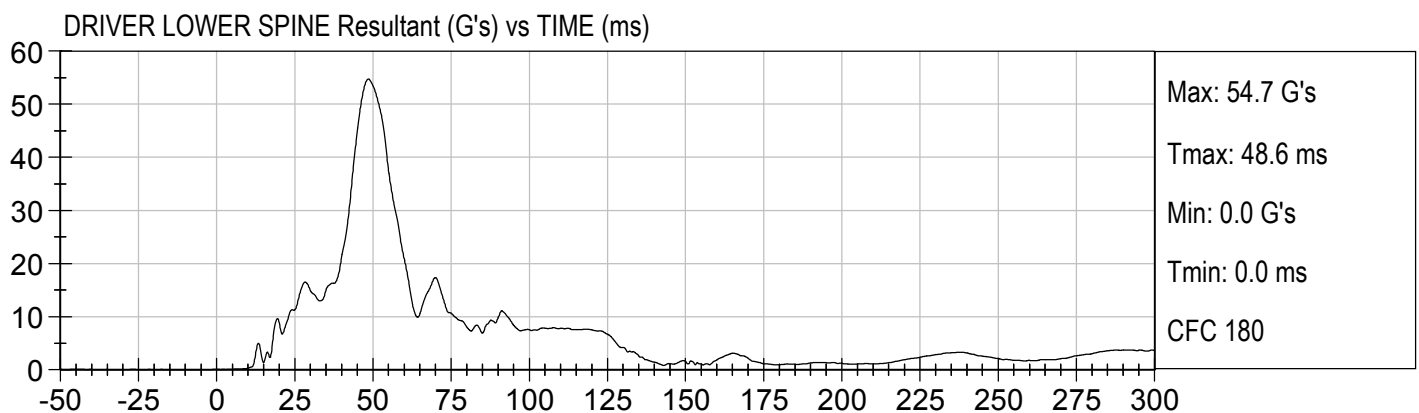
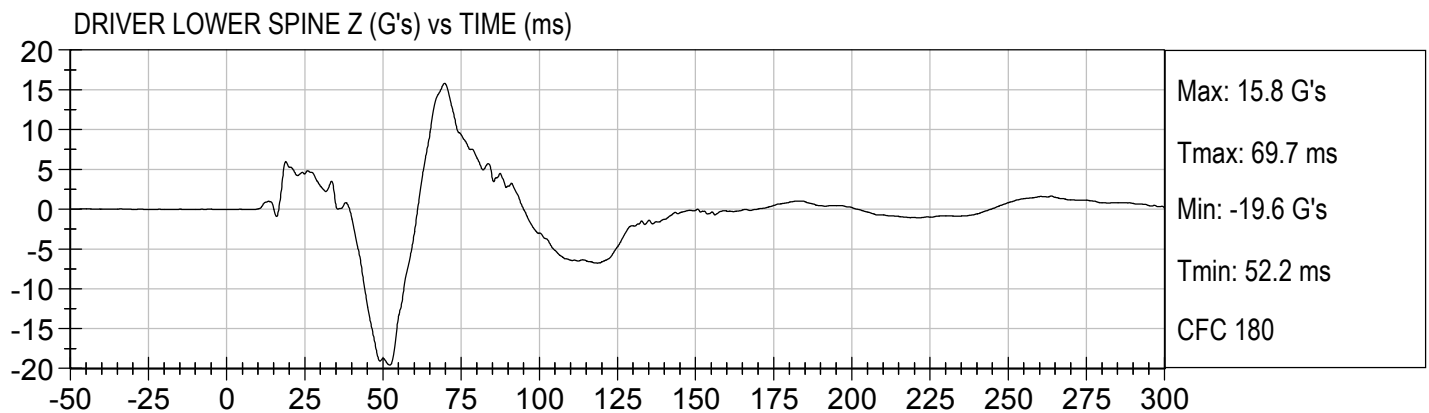
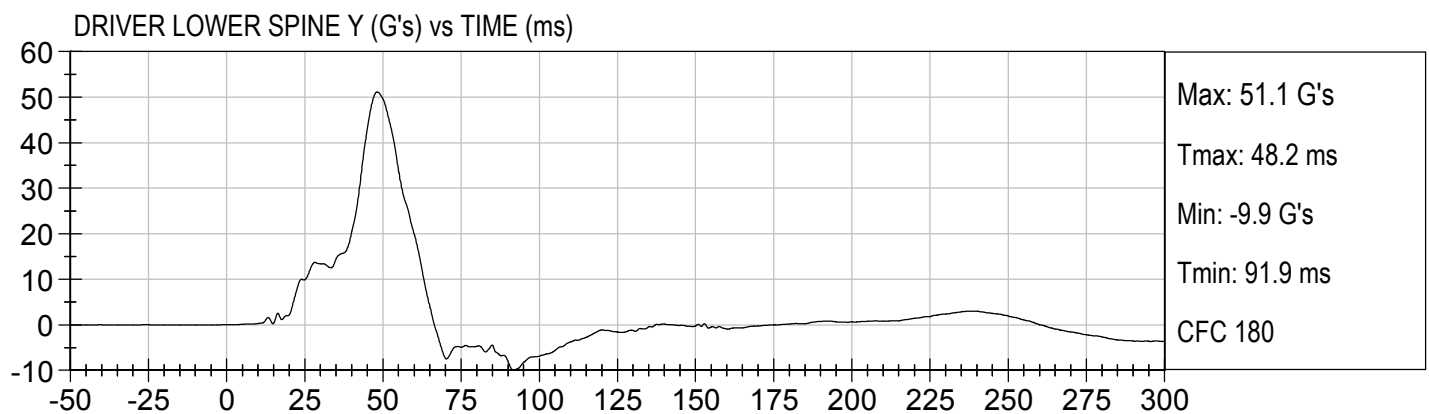
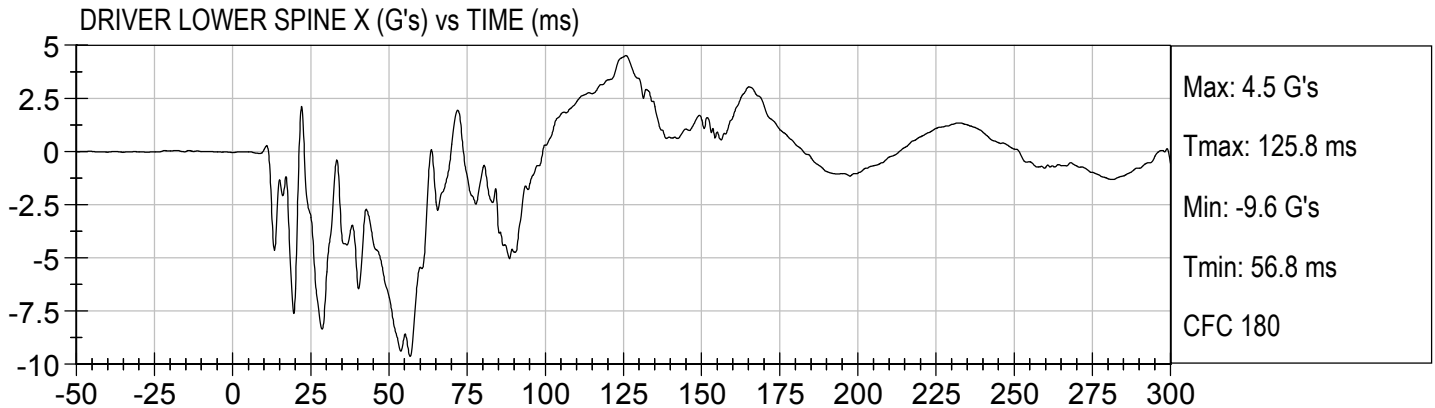
Load Cell Pole Barrier #5 Force (Y)

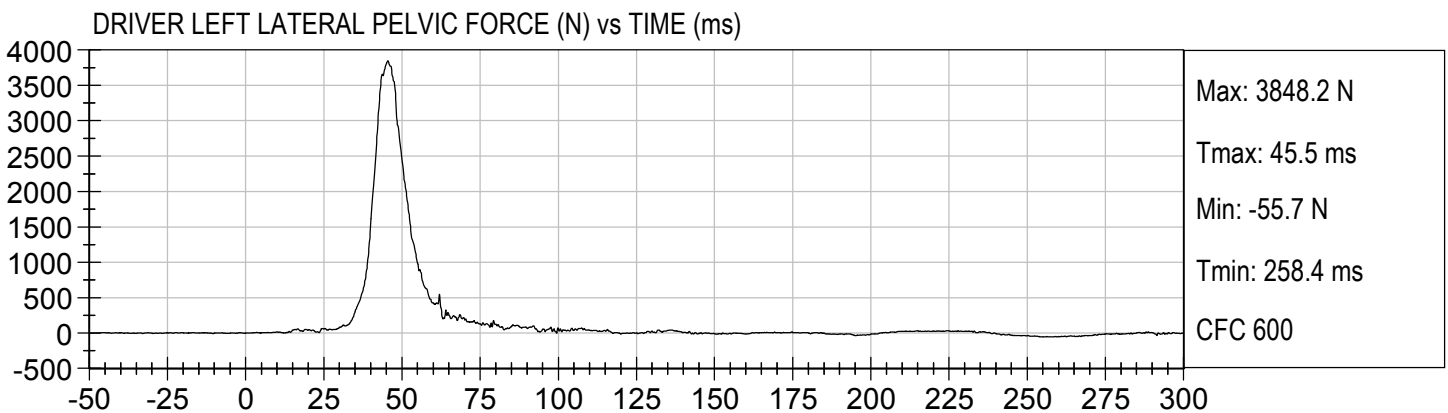
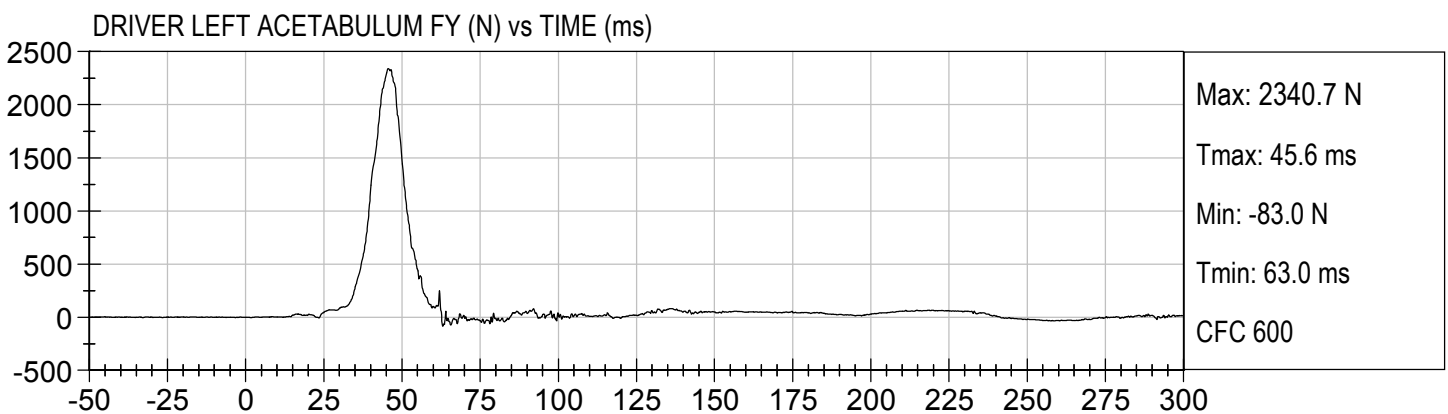
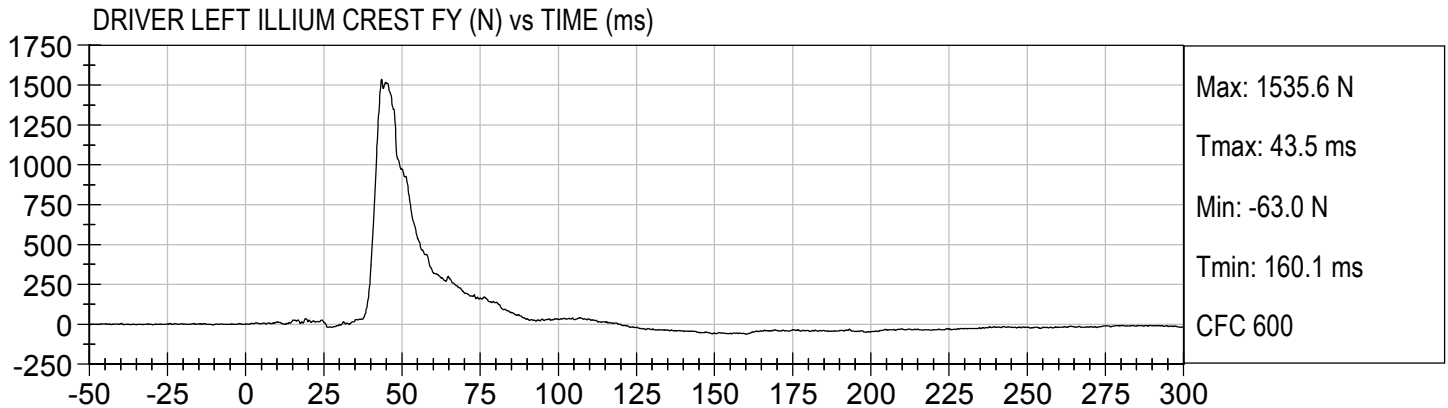
Load Cell Pole Barrier #6 Force (Y)

Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)







APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SID-IIsD External Measurements
SN: 306

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

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

ATD Serial No: 306

Test ID: D141711

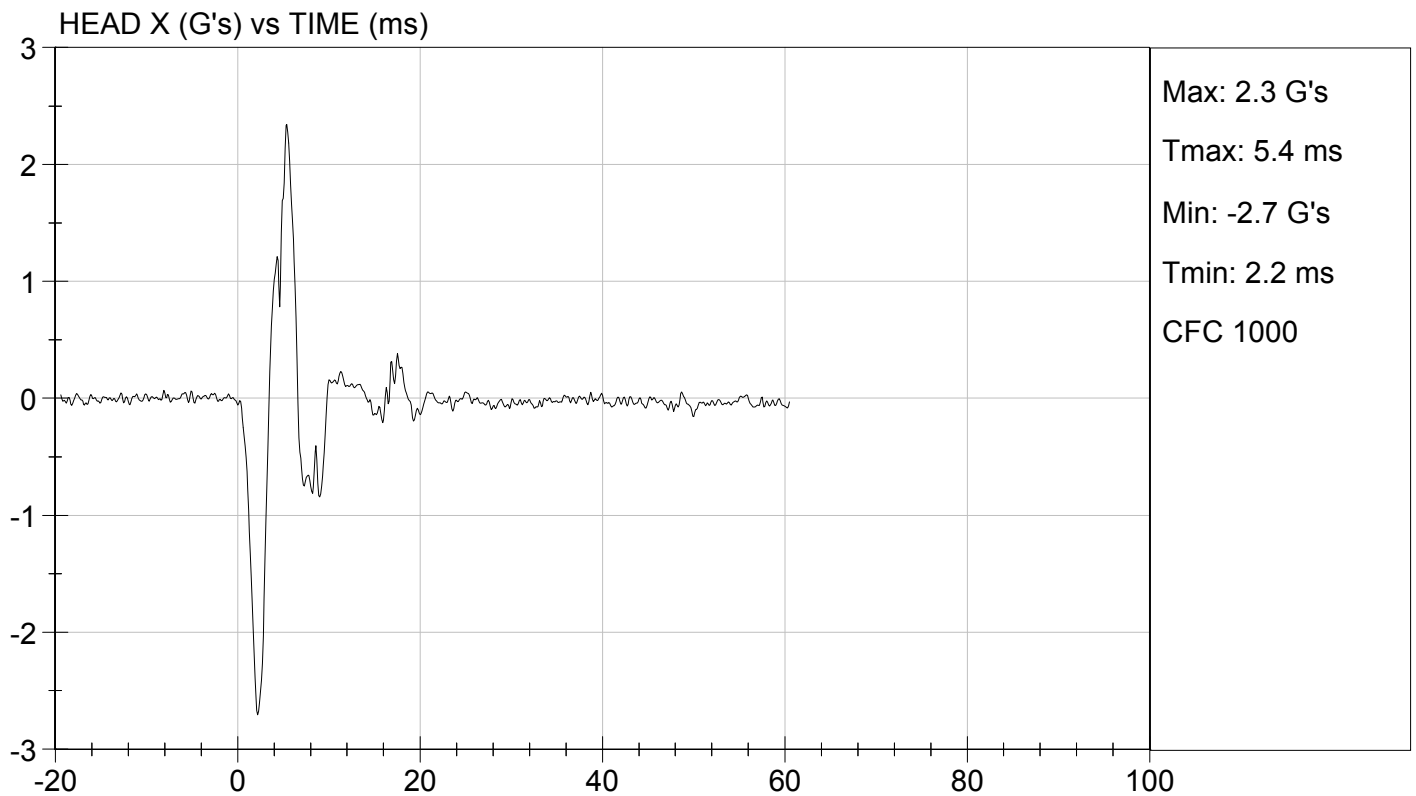
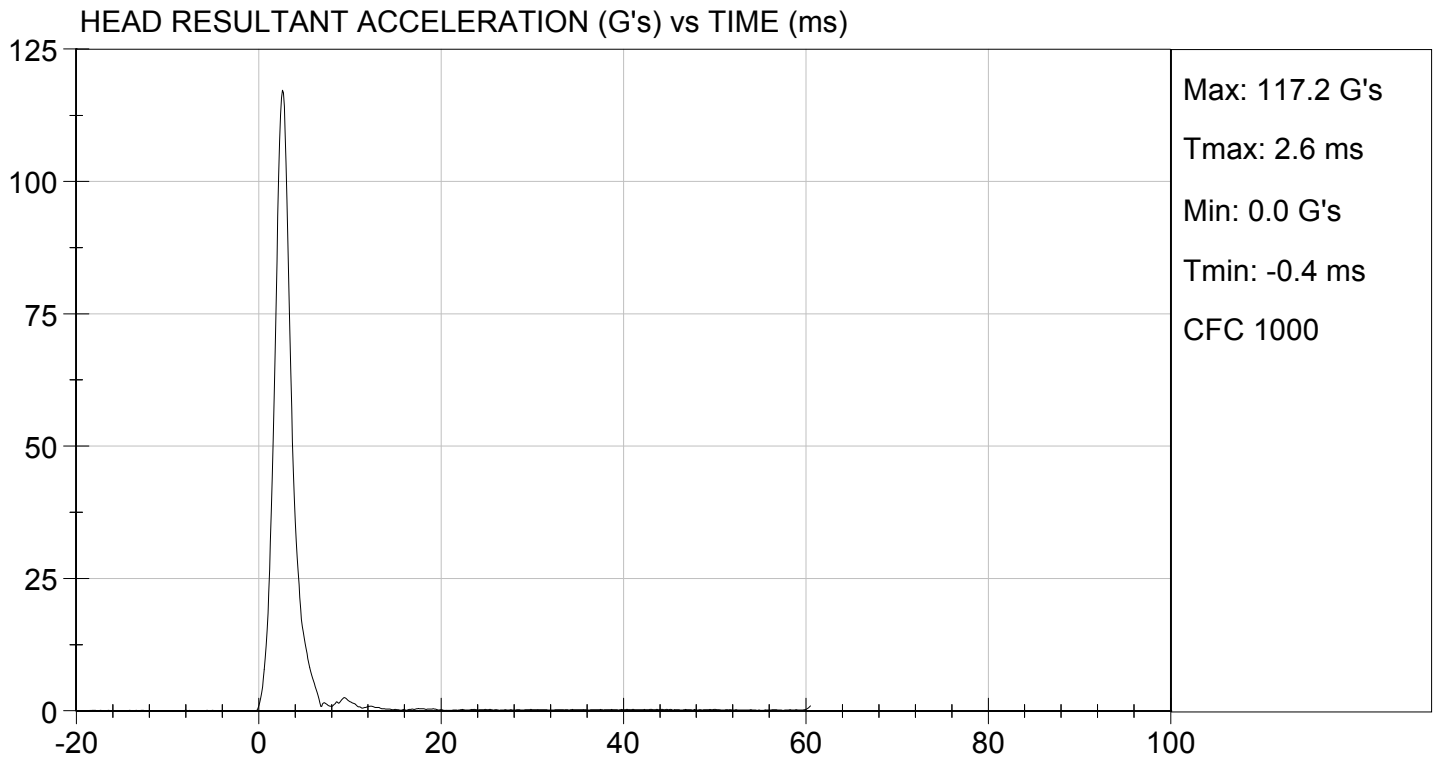
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	37	Pass
Peak Resultant Acceleration	G's	115 to 137	117	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-2.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results			Pass	

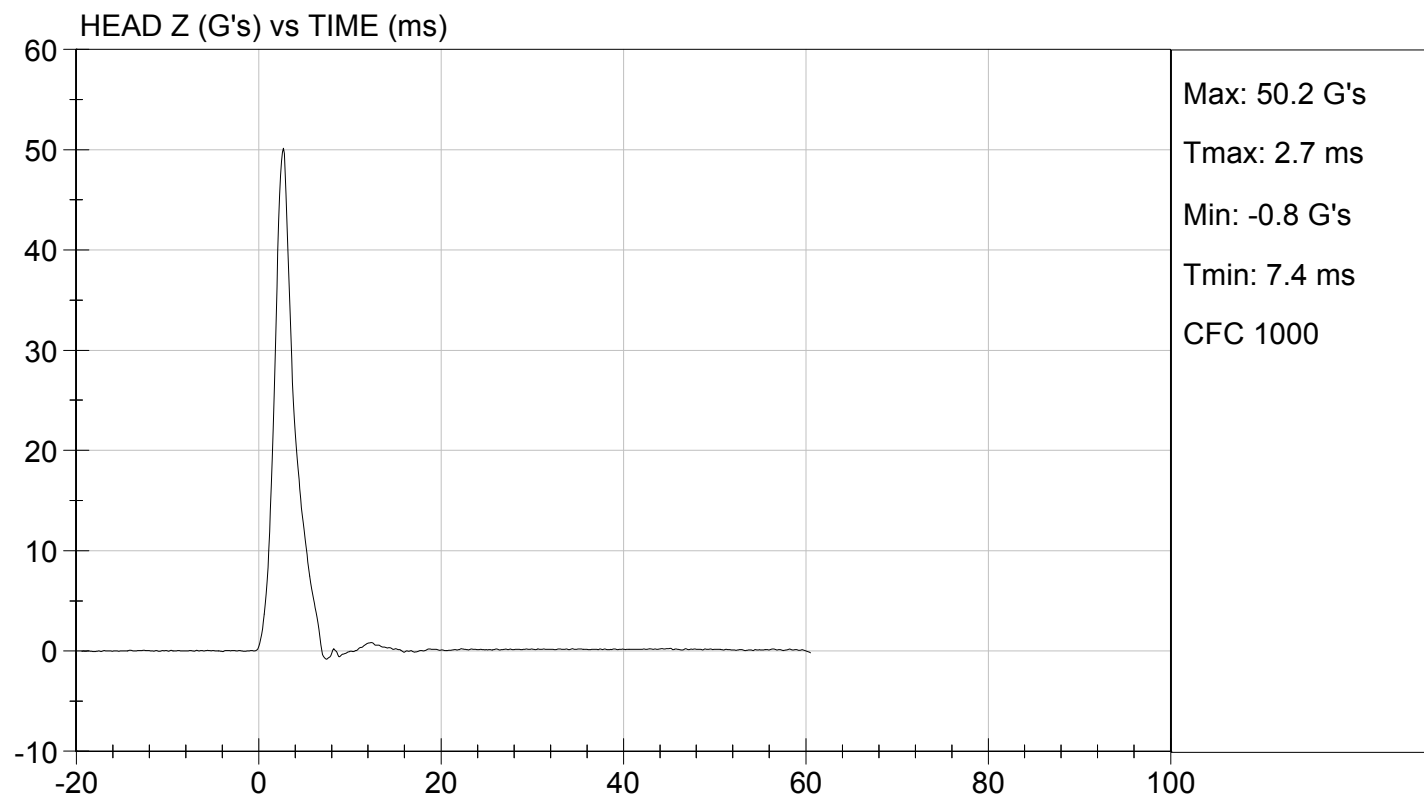
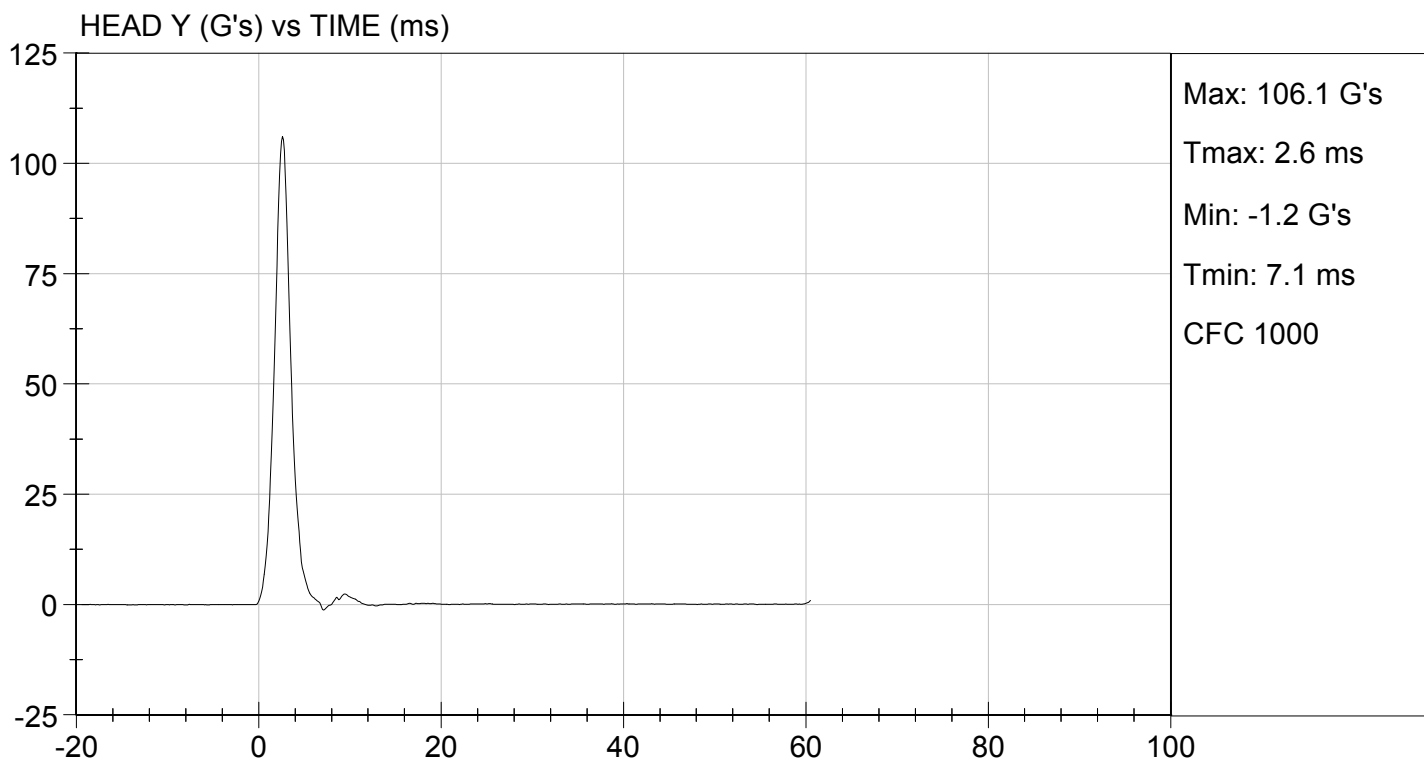

Laboratory Technician

05/02/2014

Test Date


Approved By



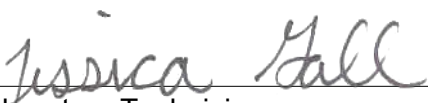


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141712

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.8	Pass
Humidity		%	10 to 70	37	Pass
Impact Velocity		m/s	5.51 to 5.63	5.61	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.65	Pass
	15 ms	m/s	3.30 to 4.10	3.73	Pass
	20 ms	m/s	4.40 to 5.40	4.95	Pass
	25 ms	m/s	5.40 to 6.10	5.51	Pass
	25-100 ms	m/s	5.50 to 6.20	5.51	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	59	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-43	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	118	Pass
Overall Test Results					Pass


 Laboratory Technician

05/02/2014

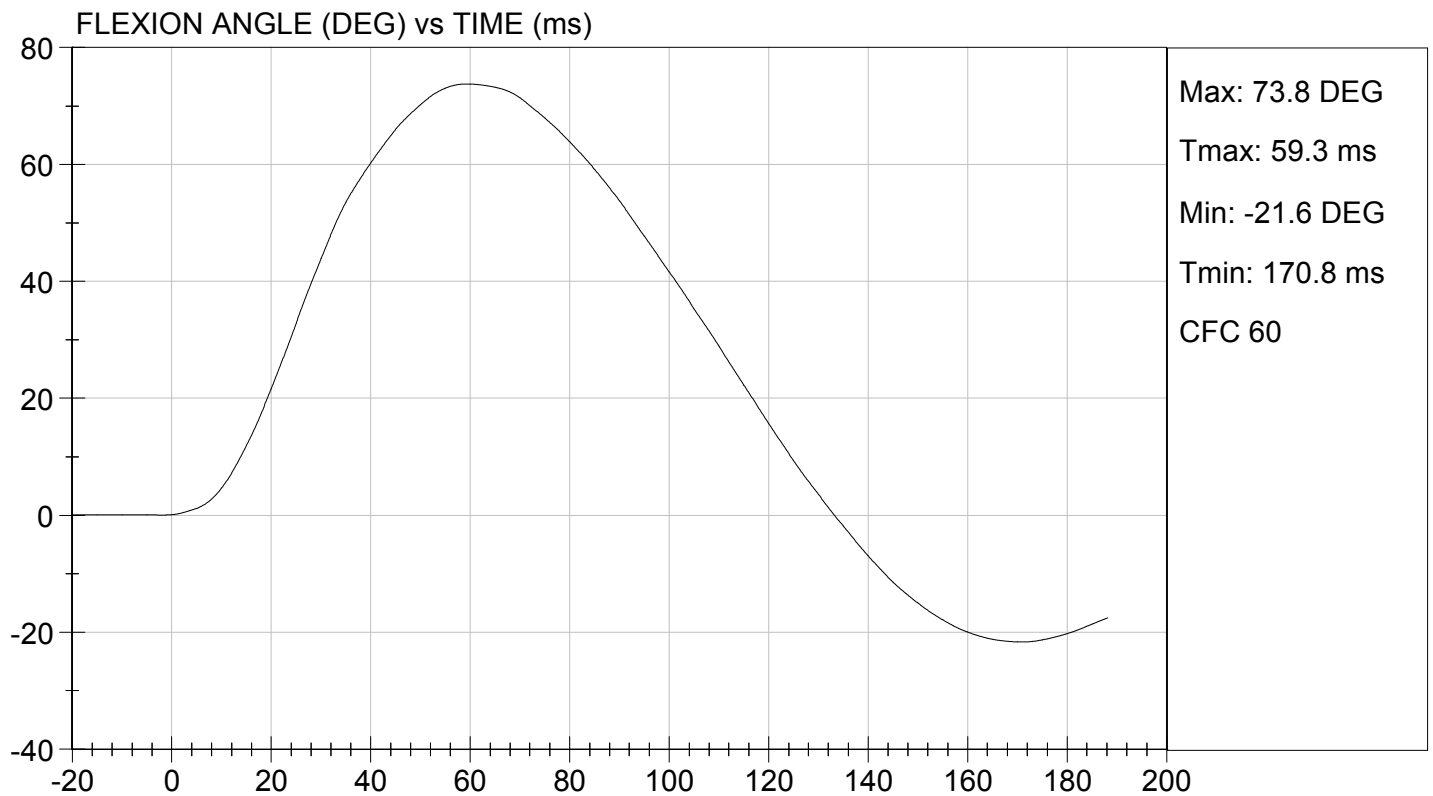
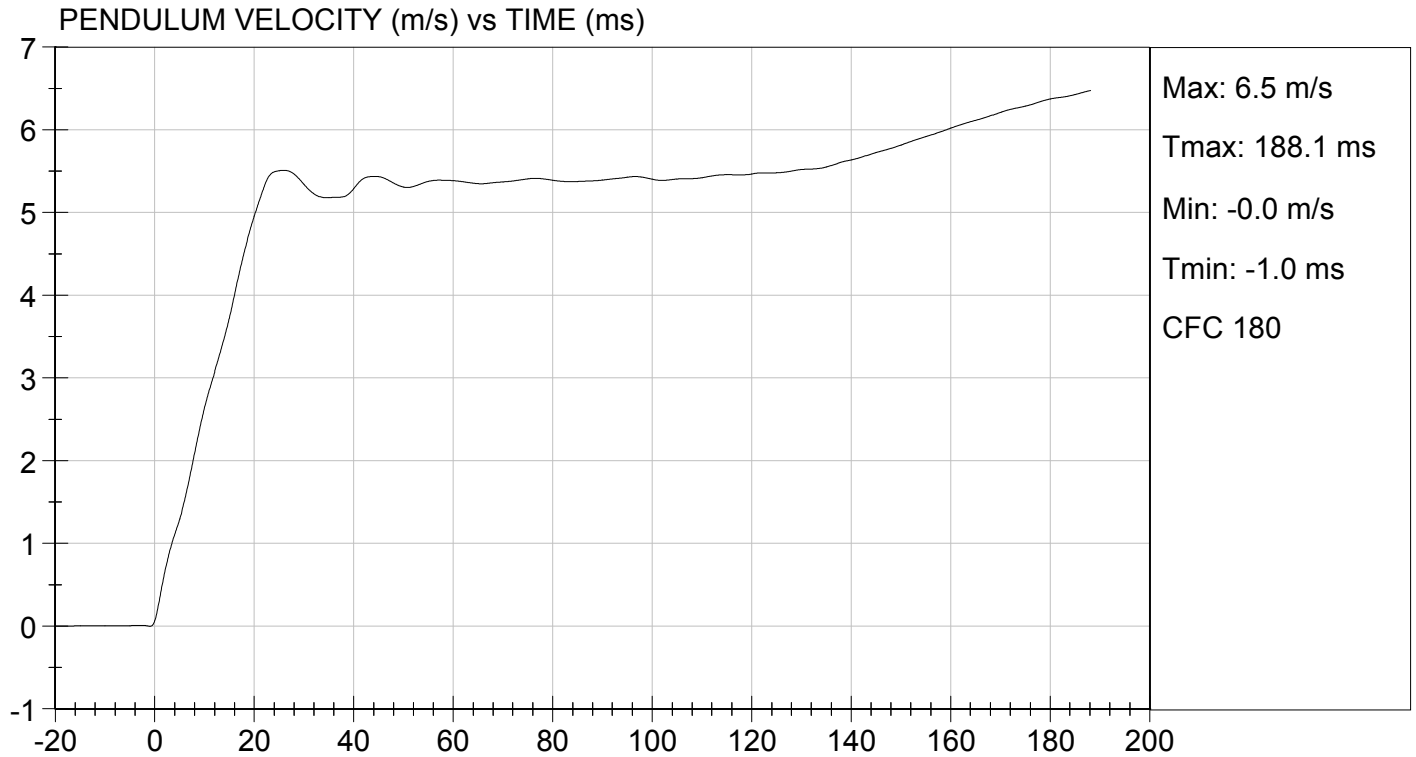
Test Date


 Approved By



TEST DESC: NECK BENDING
VELOCITY: 18.40 ft/s, 5.61 m/s

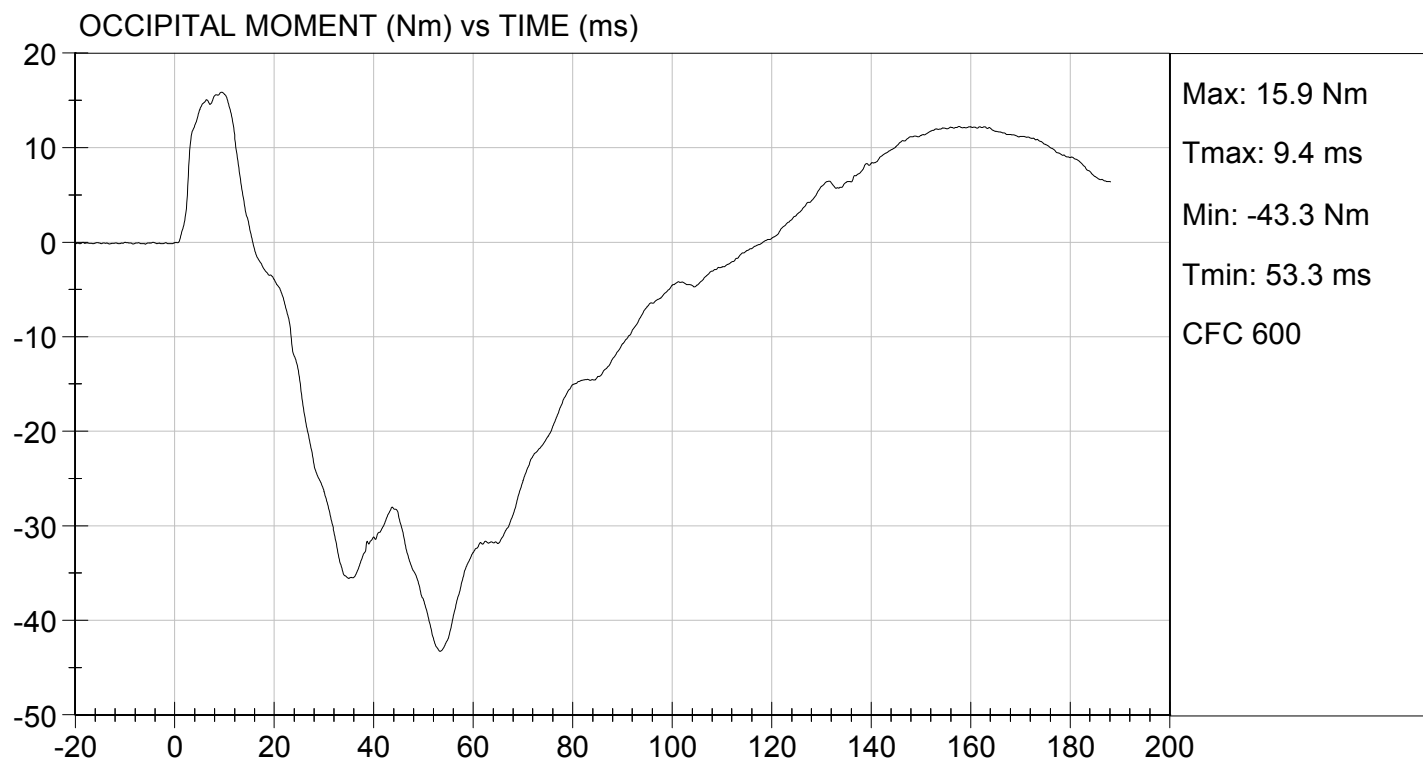
TEST DATE: 05/02/2014
TEST #: D141712





TEST DESC: NECK BENDING
VELOCITY: 18.40 ft/s, 5.61 m/s

TEST DATE: 05/02/2014
TEST #: D141712

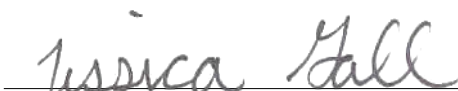


MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test ID: D141713

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	39	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	31	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results			Pass	


Laboratory Technician

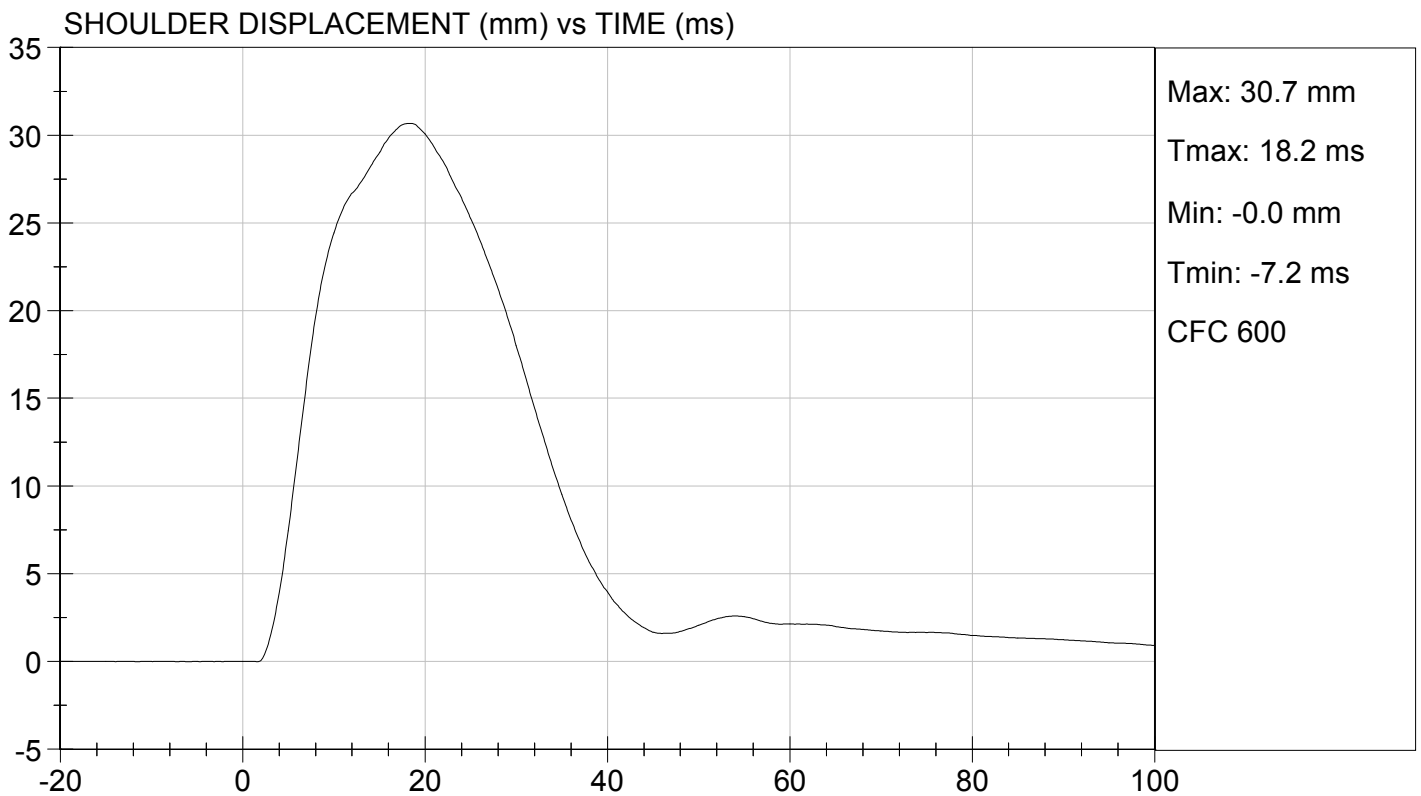
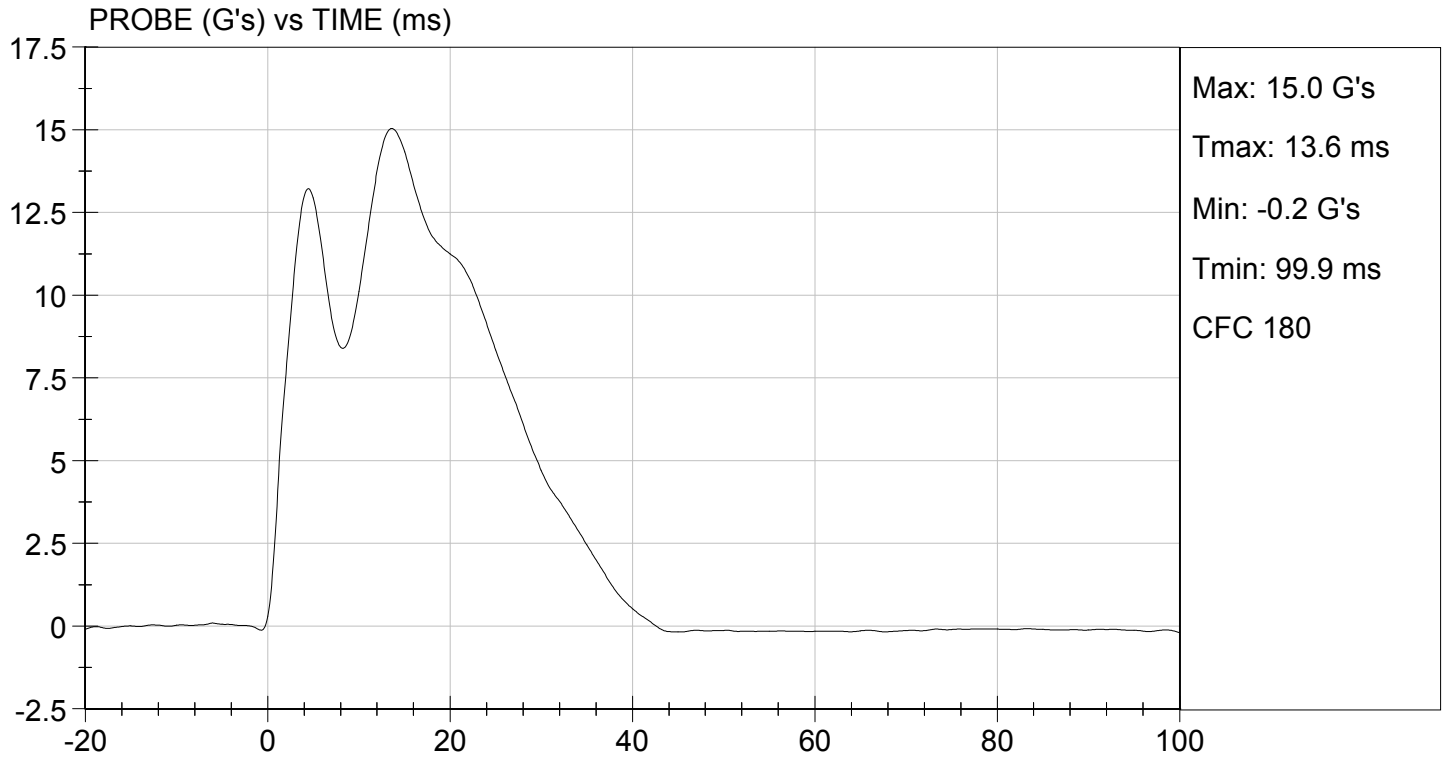
05/02/2014
Test Date


Approved By



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

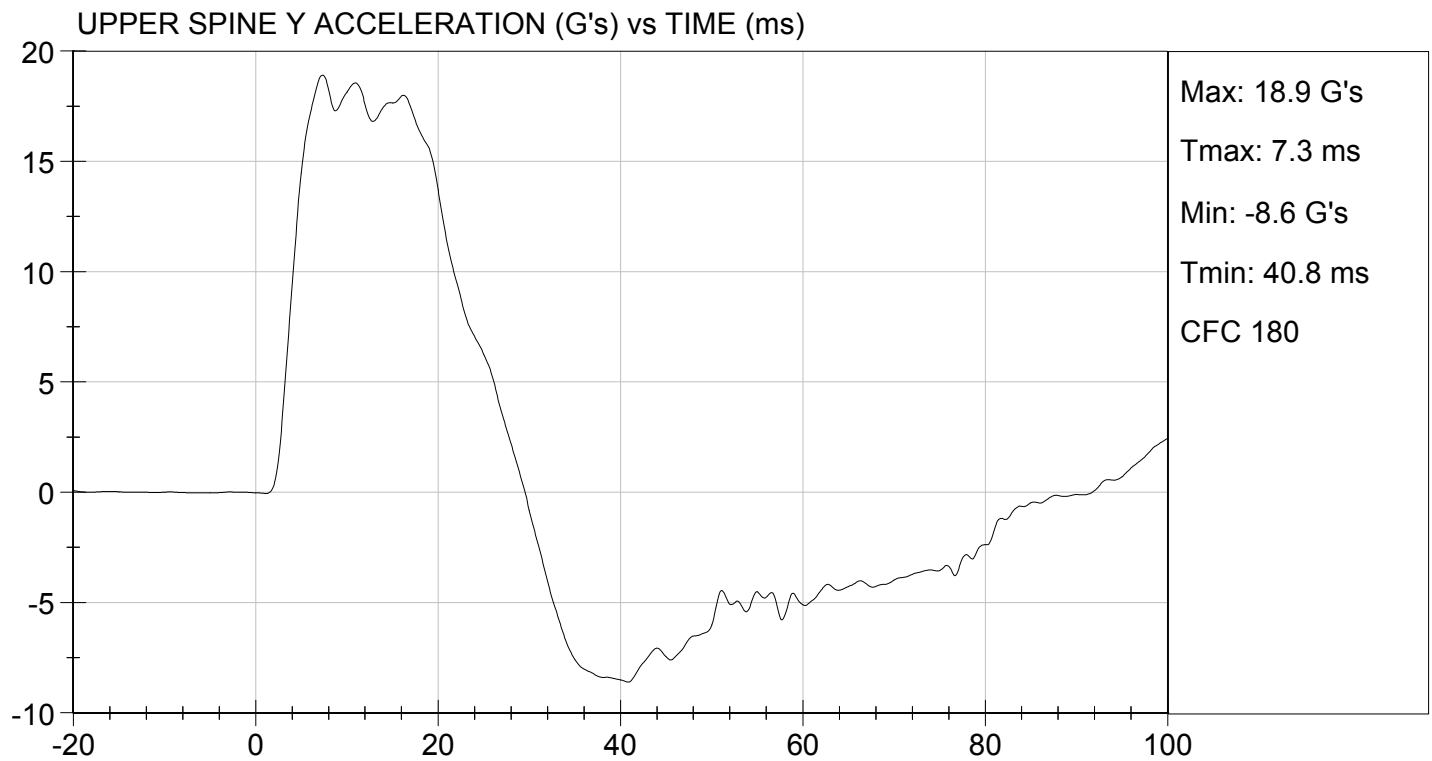
TEST DATE: 05/02/2014
TEST #: D141713





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

TEST DATE: 05/02/2014
TEST #: D141713

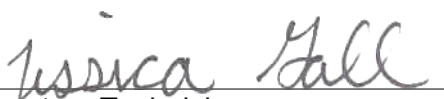


MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

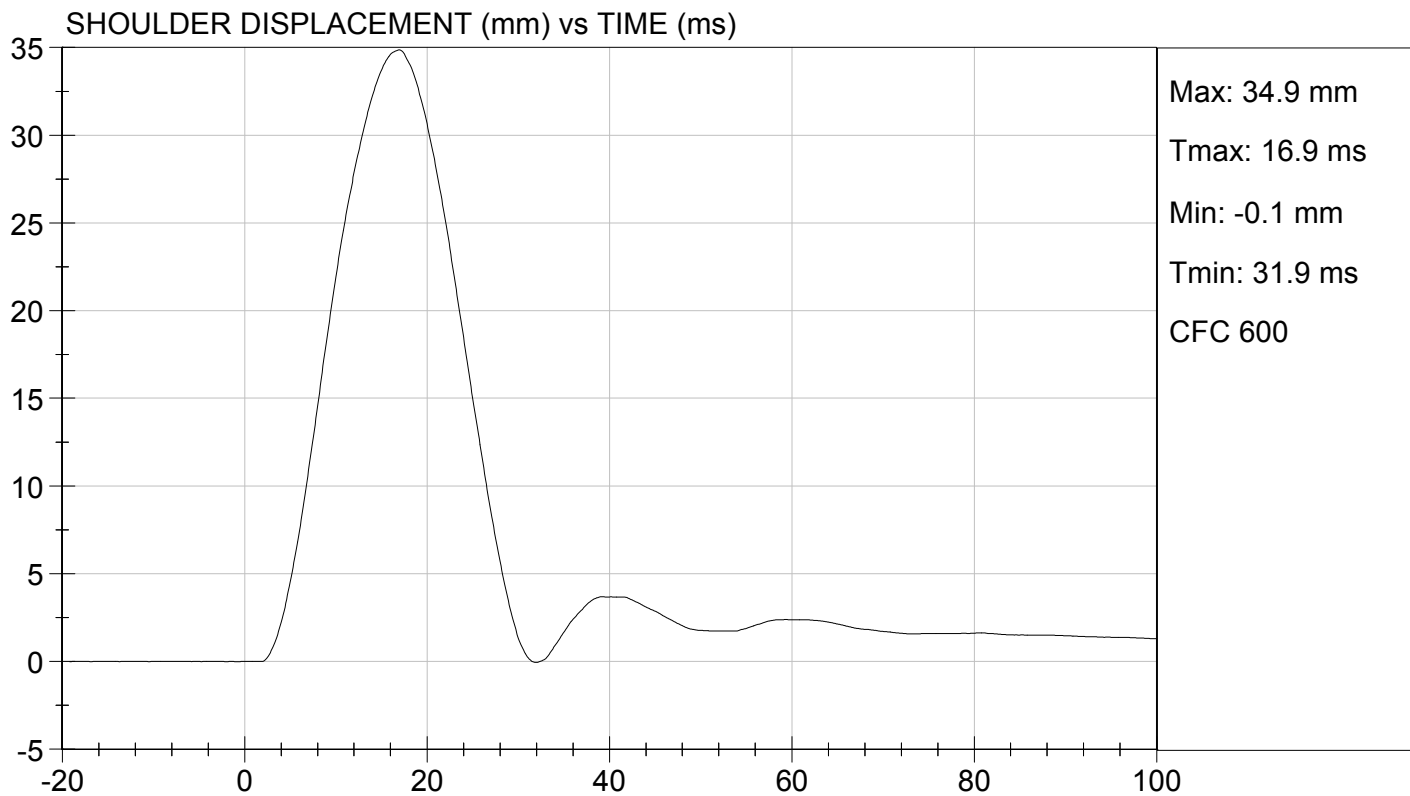
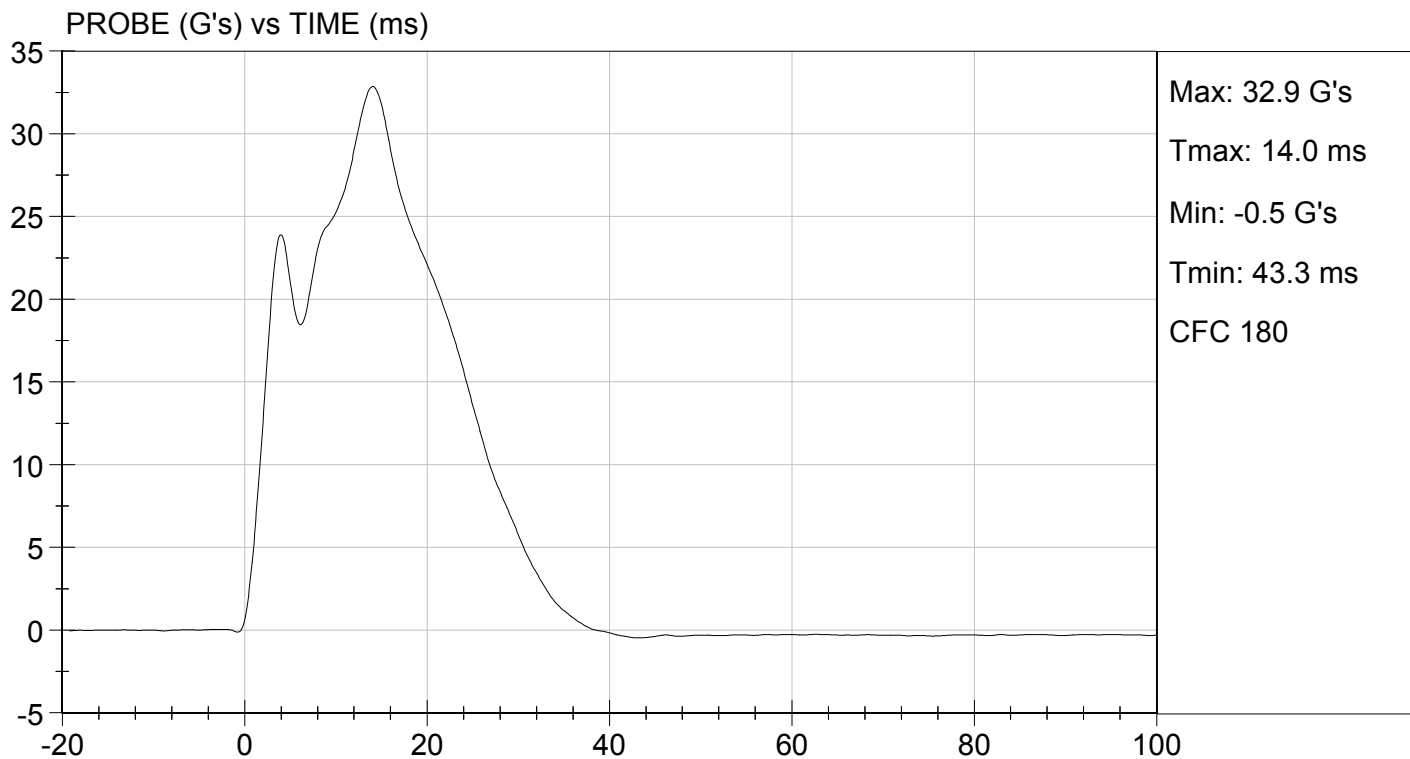
Test I.D: D141714

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	34	Pass
Overall Test Results				Pass


 Laboratory Technician

05/02/2014
 Test Date

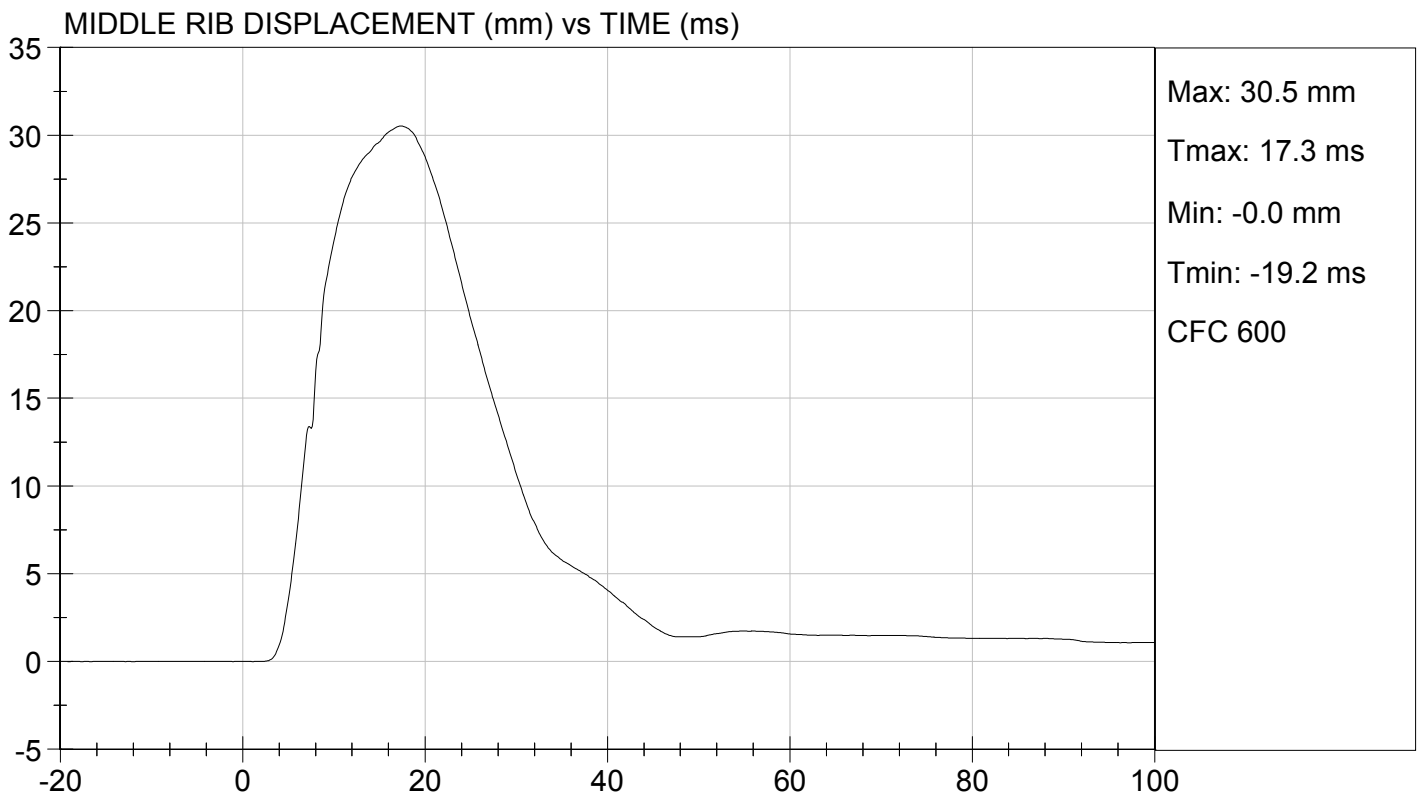
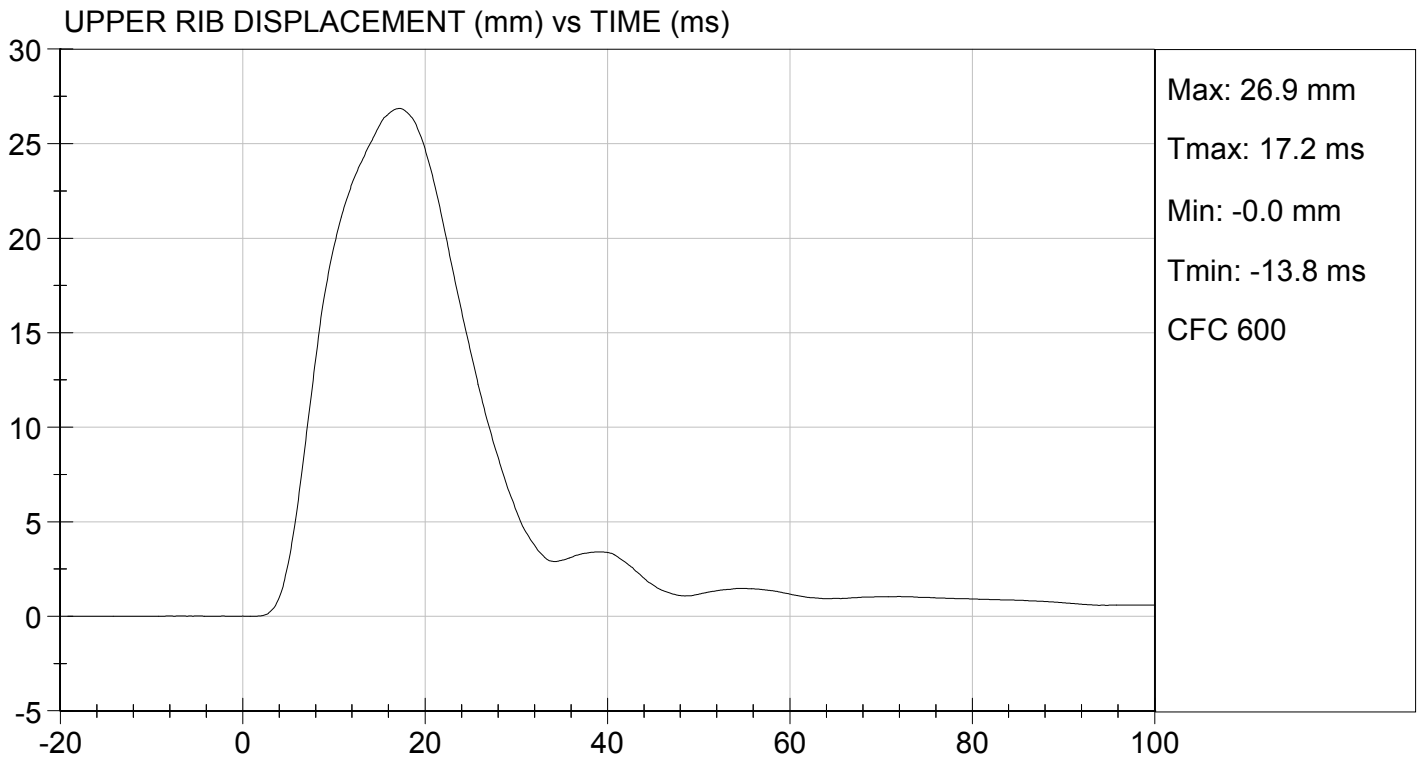

 Approved By





TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 05/02/2014
TEST #: D141714

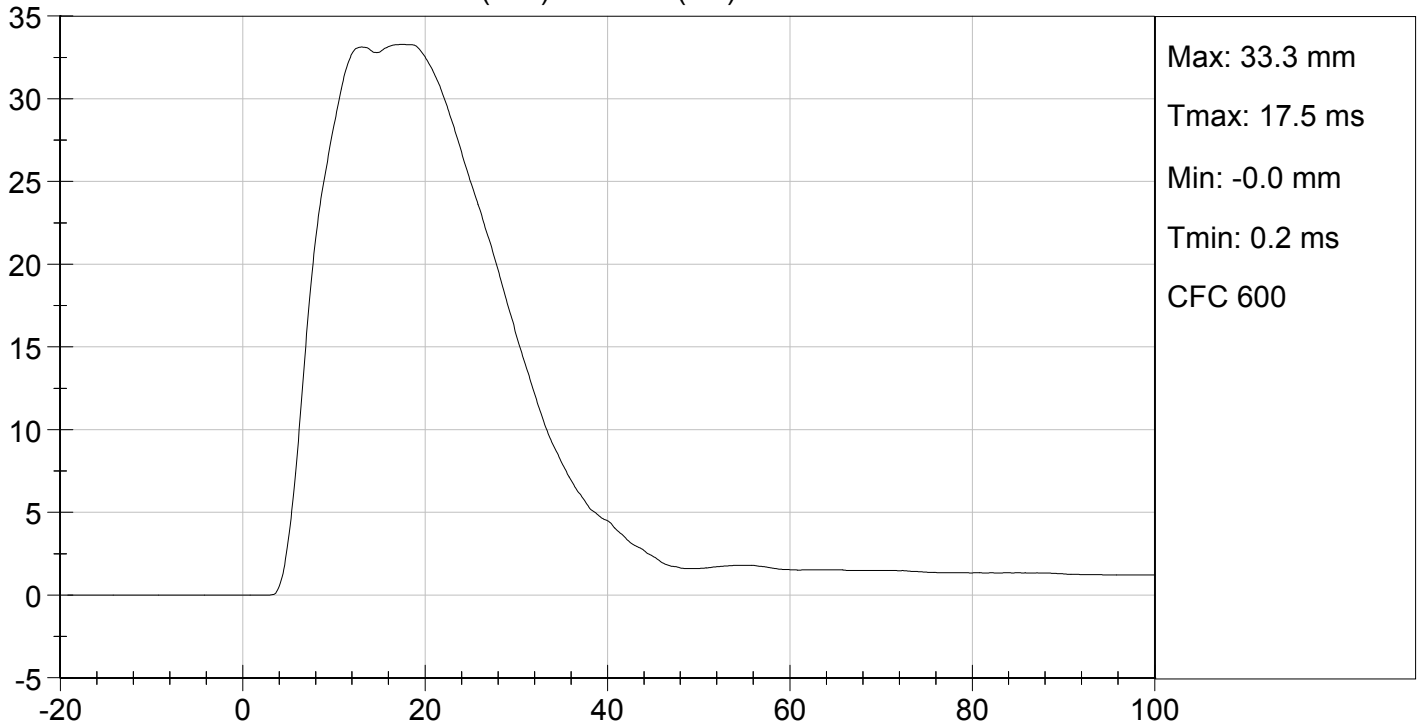




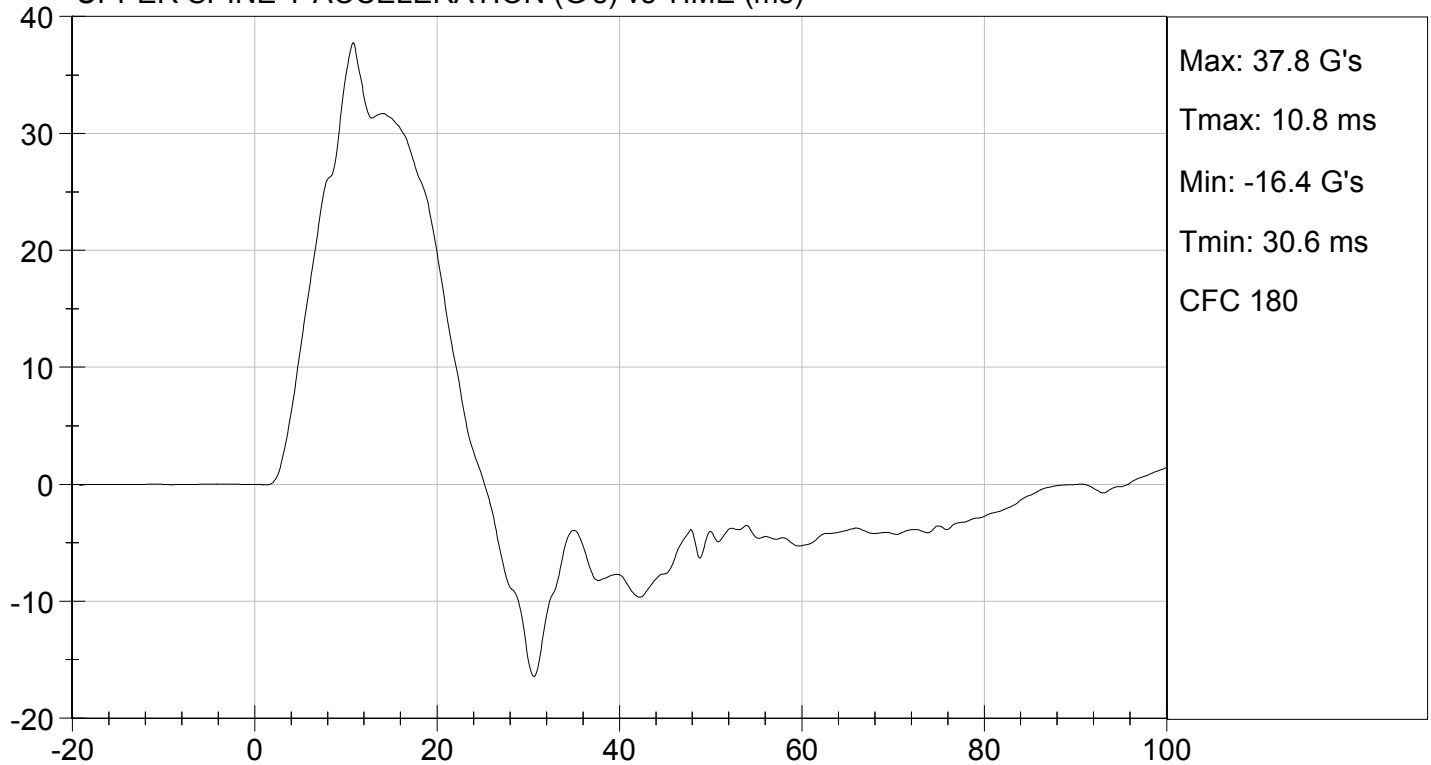
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 05/02/2014
TEST #: D141714

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



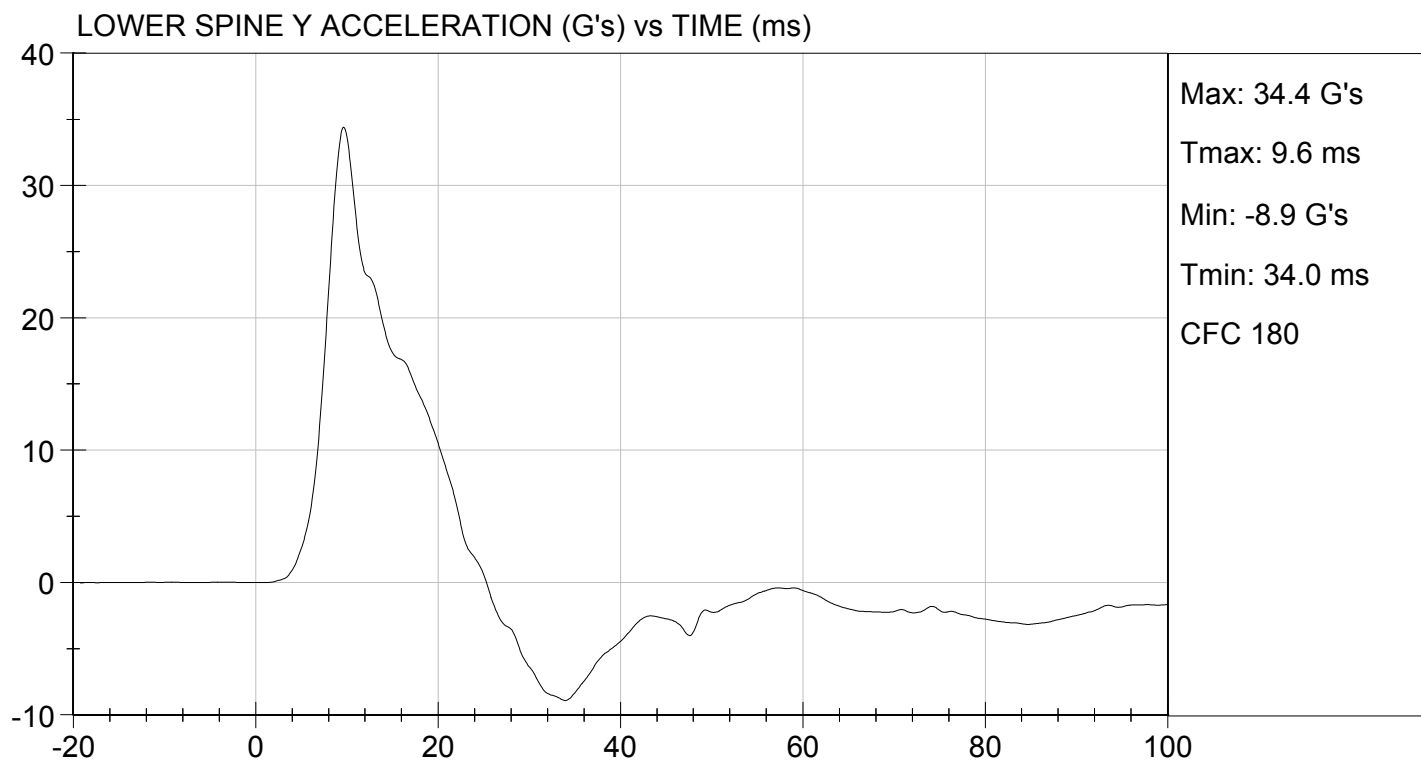
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)





TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 05/02/2014
TEST #: D141714

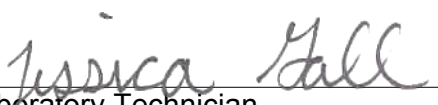


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141715

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	14 to 18	16	Pass
Upper Rib Displacement	mm	32 to 40	34	Pass
Middle Rib Displacement	mm	39 to 45	40	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
Overall Test Results				Pass


 Laboratory Technician

05/02/2014

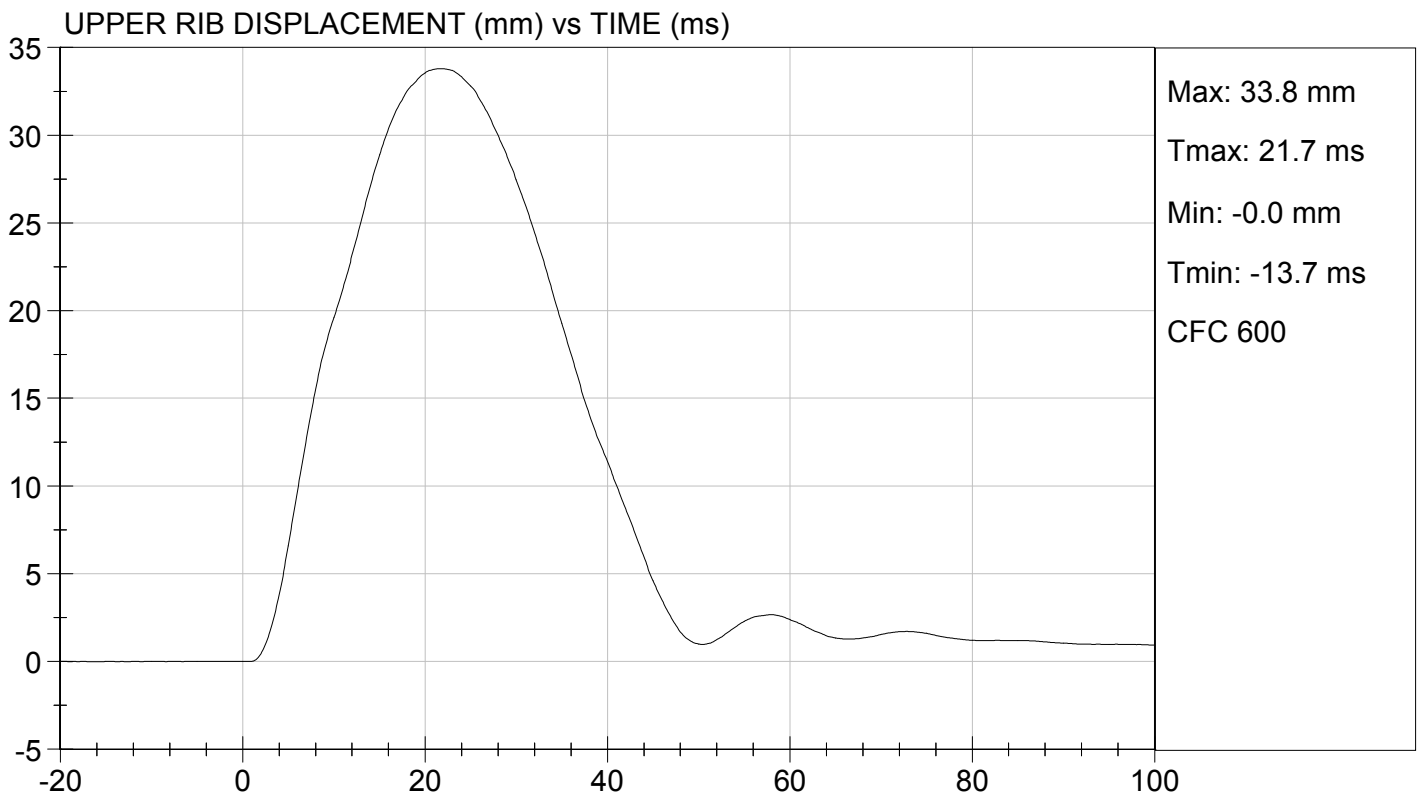
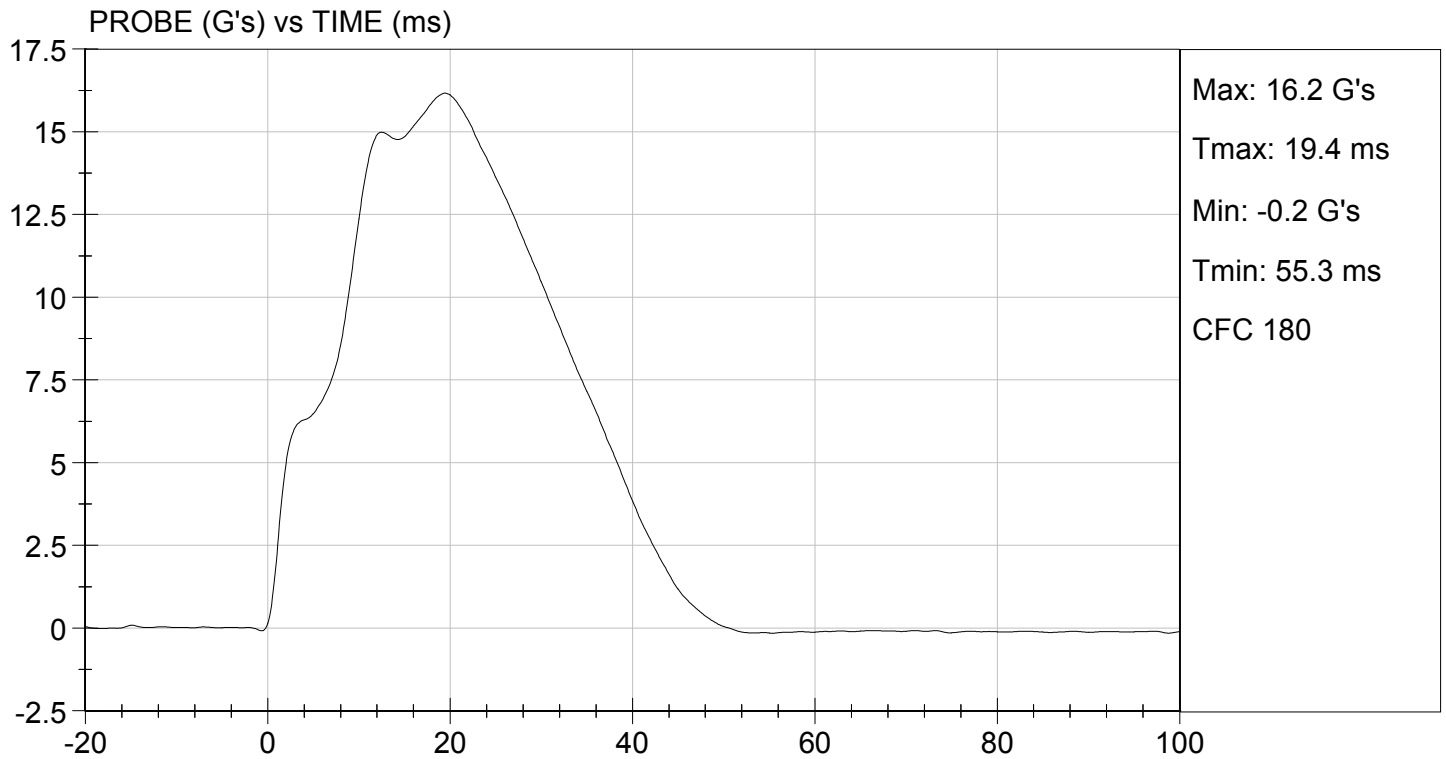
Test Date


 Approved By



TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.12 ft/s, 4.30 m/s

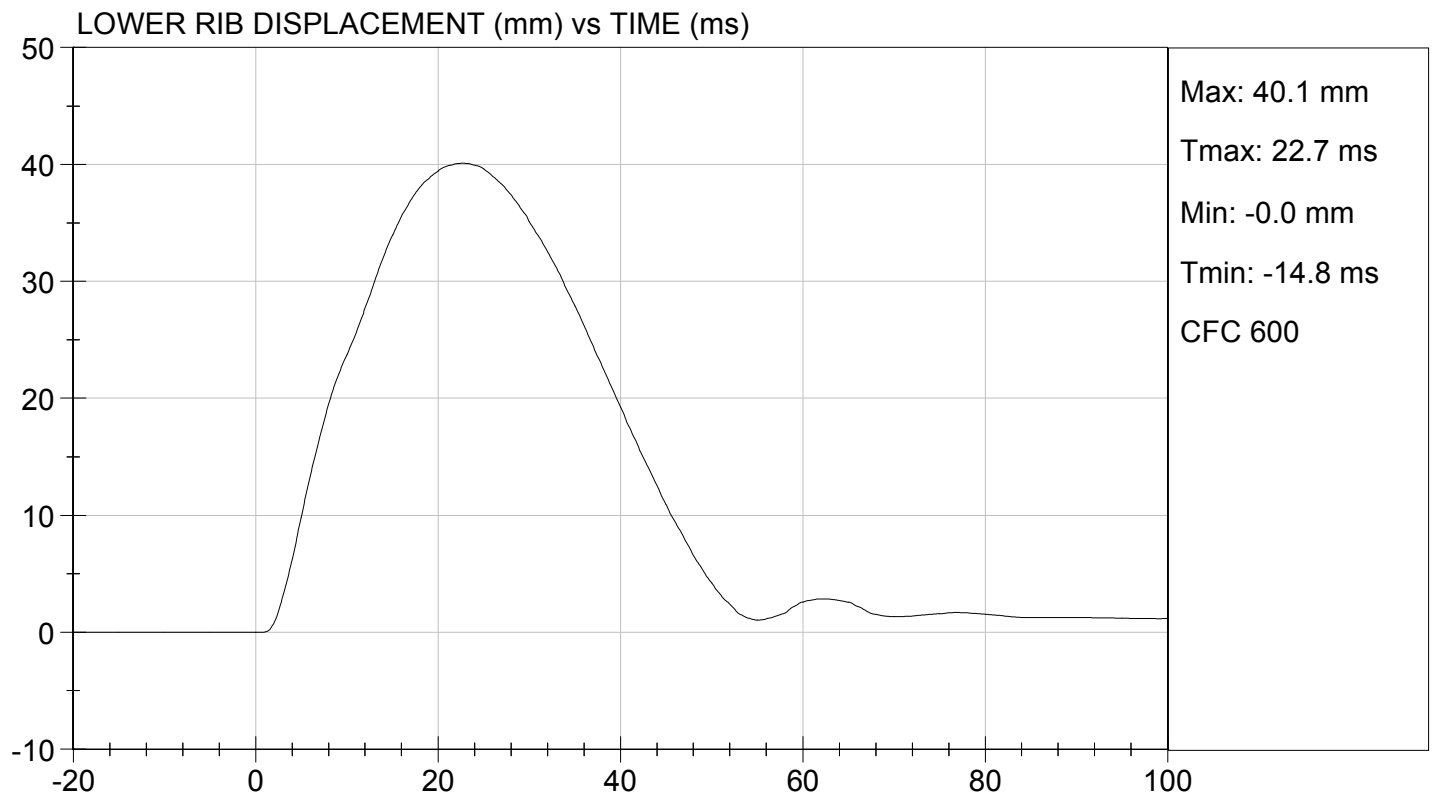
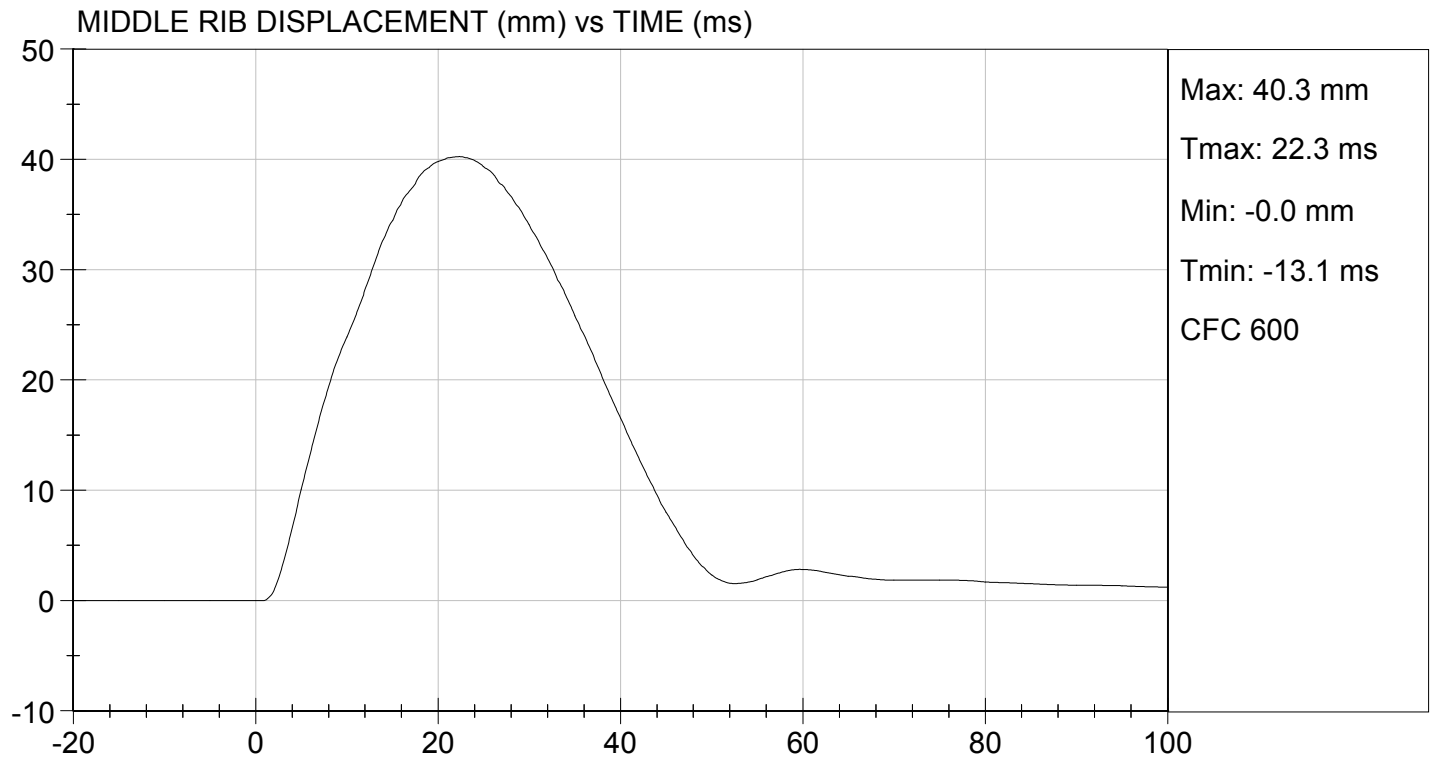
TEST DATE: 05/02/2014
TEST #: D141715





TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 05/02/2014
TEST #: D141715

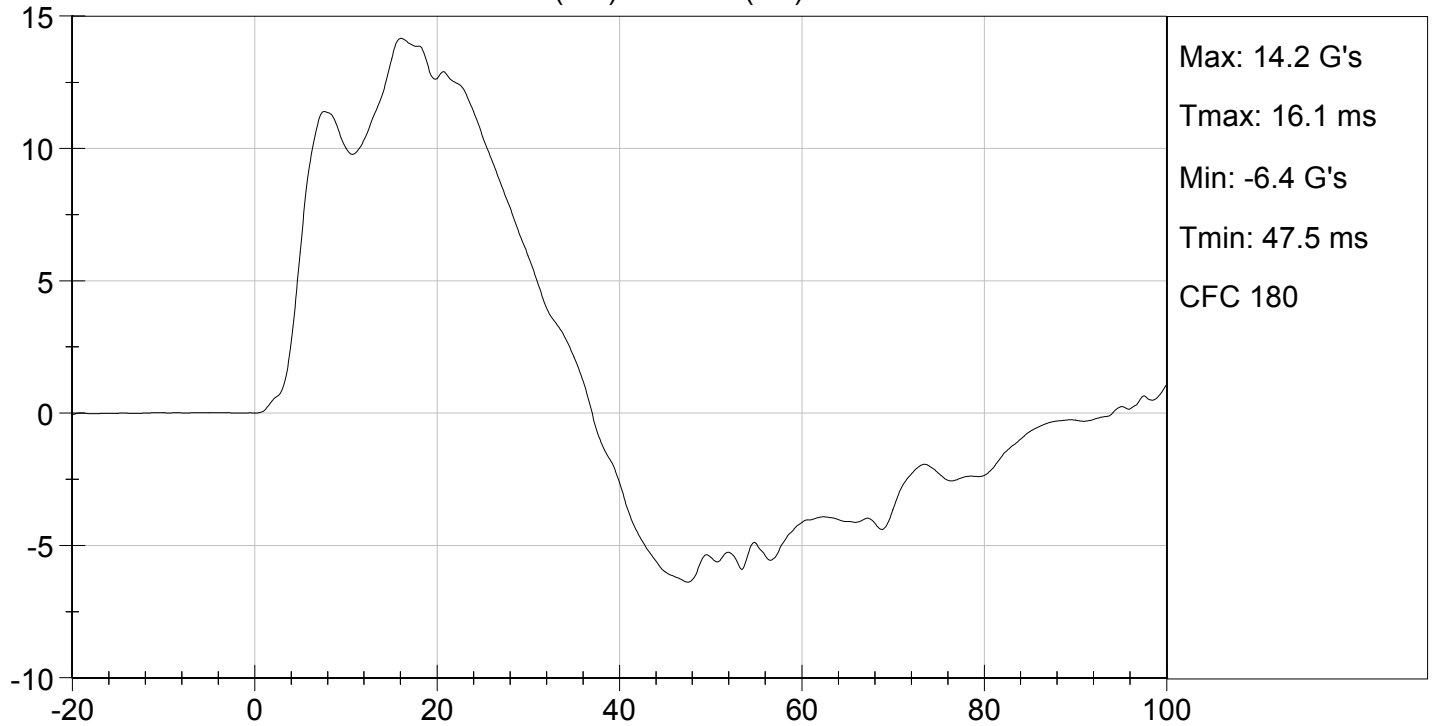




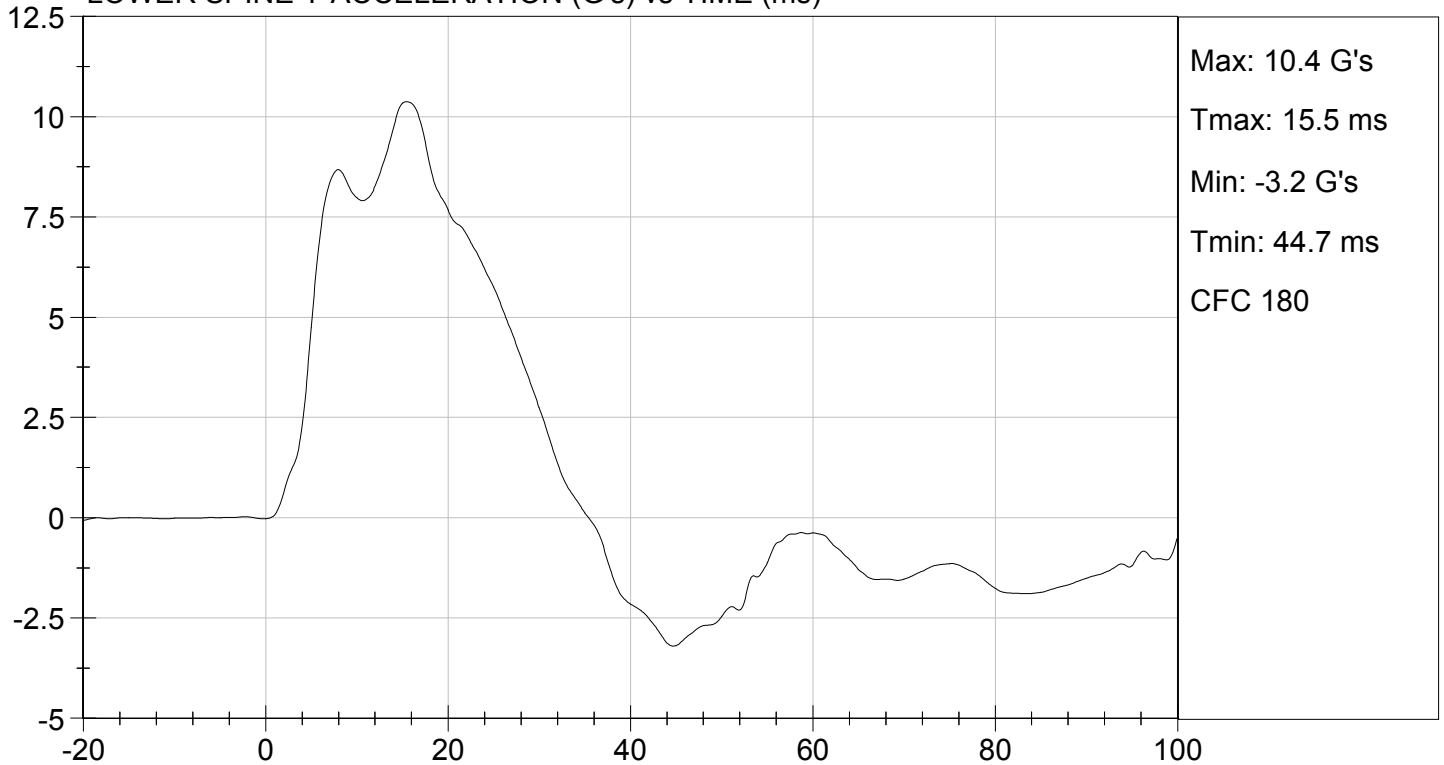
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 05/02/2014
TEST #: D141715

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



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



MGA RESEARCH CORPORATION

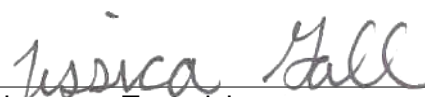
ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141716

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	40	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	43	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass


Laboratory Technician

05/02/2014

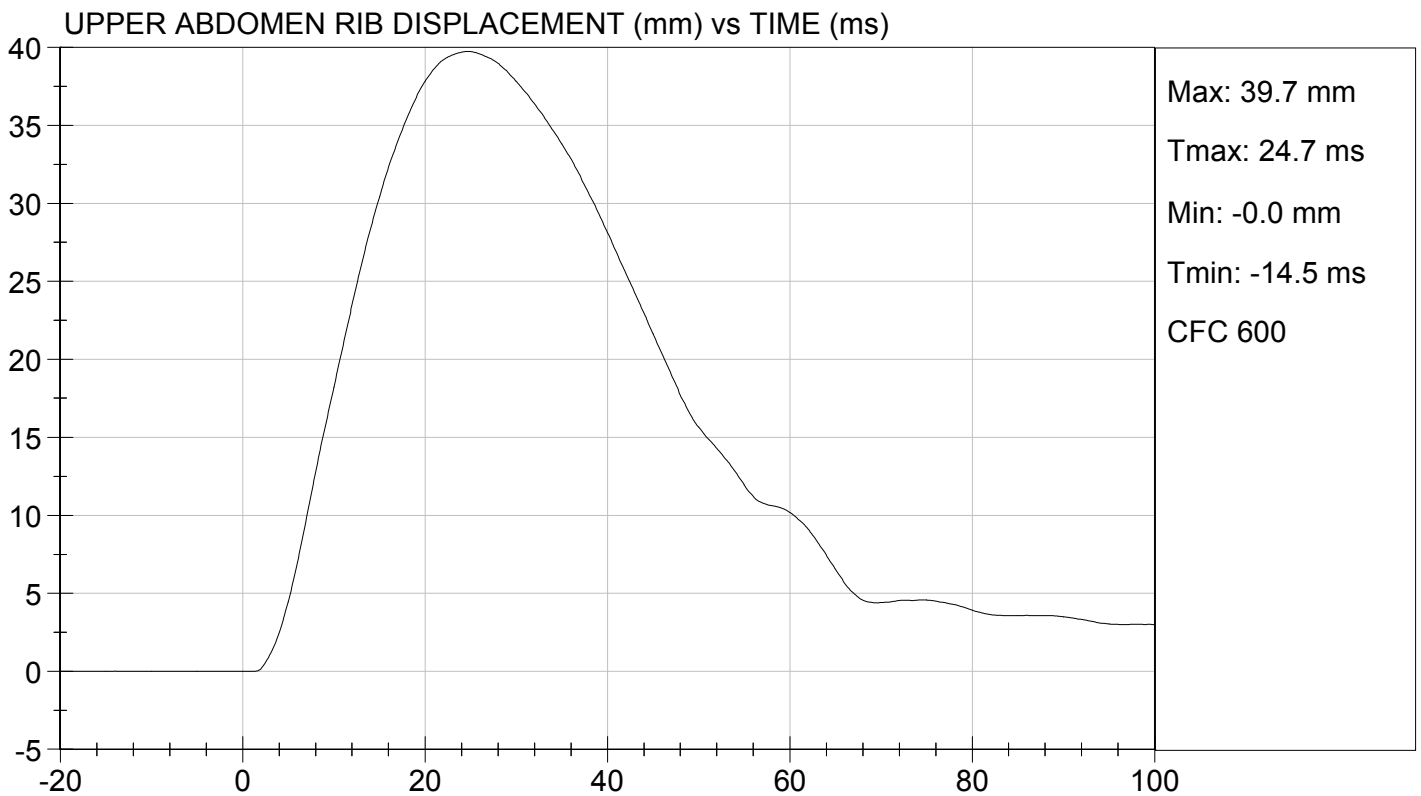
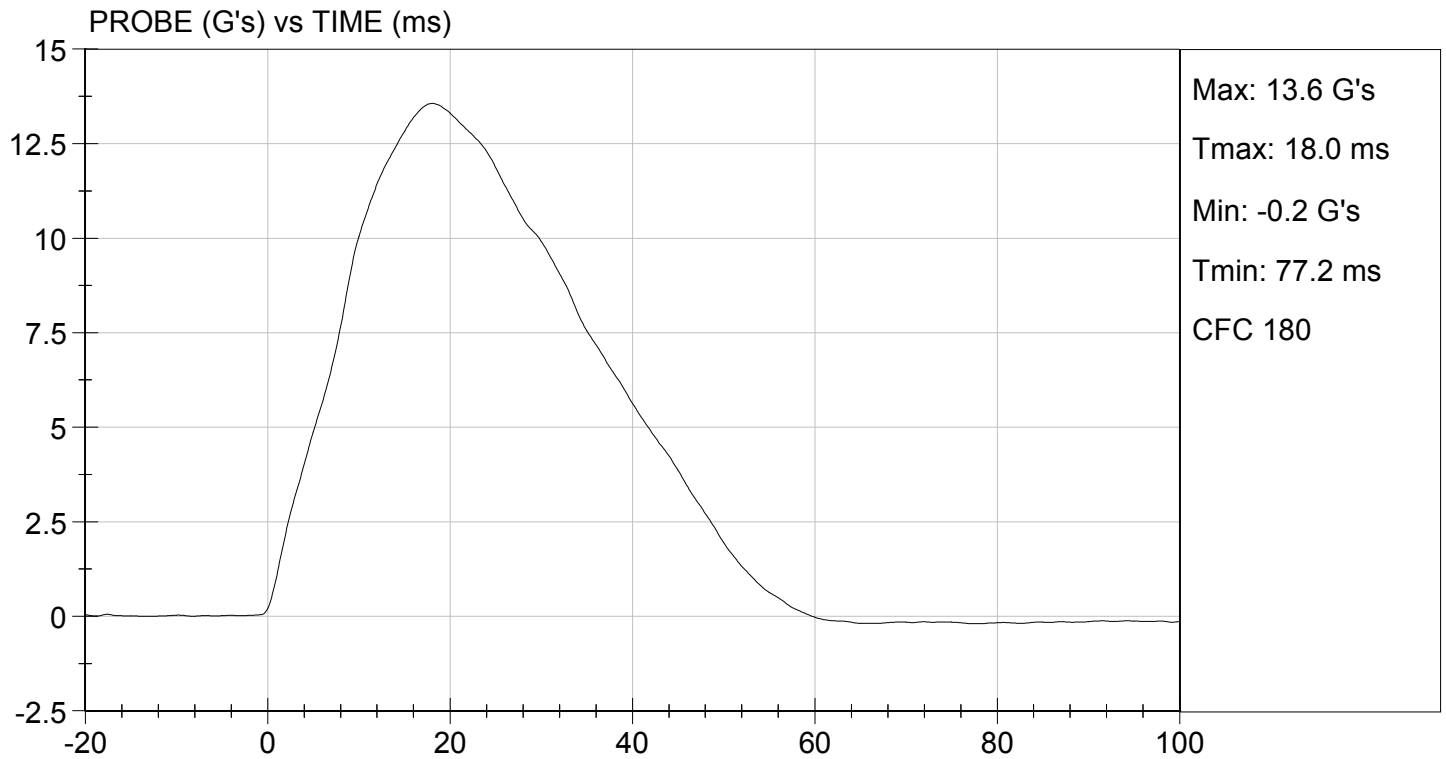
Test Date


Approved By



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

TEST DATE: 05/02/2014
TEST #: D141716

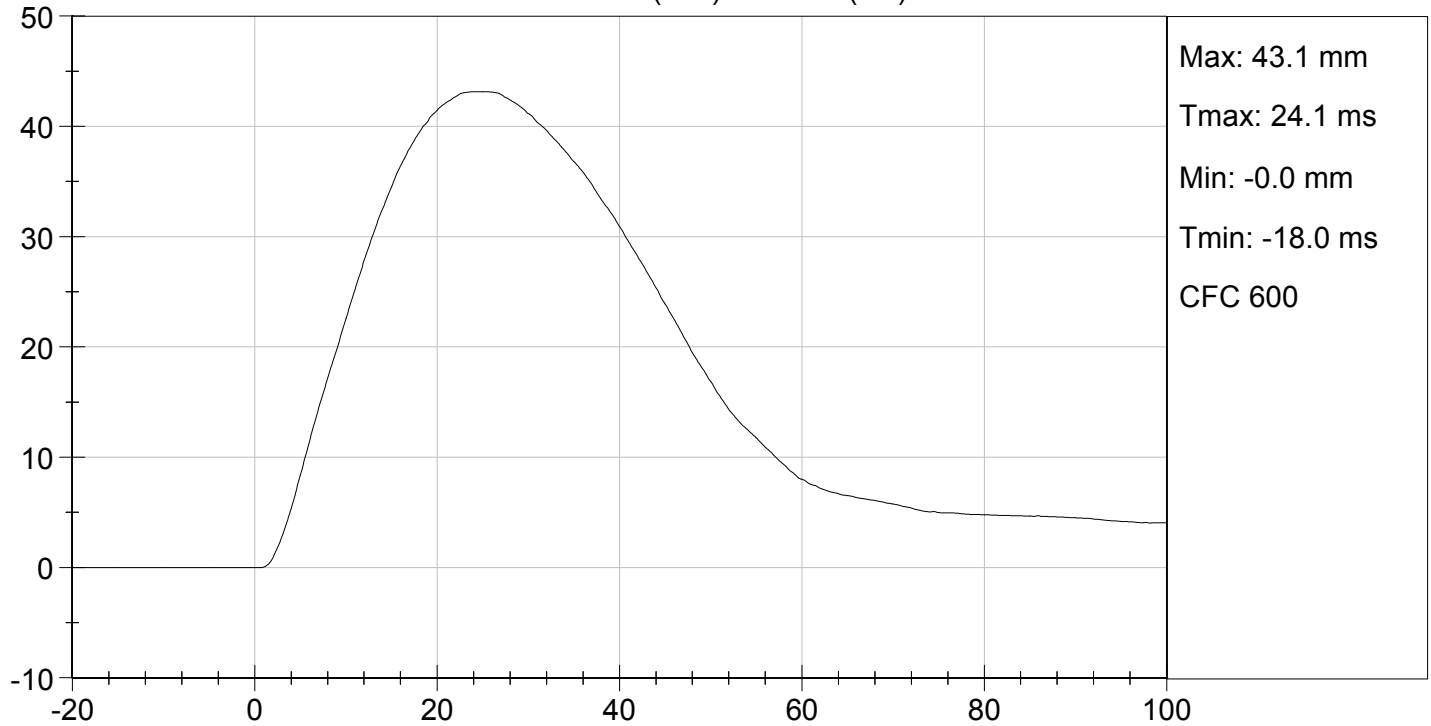




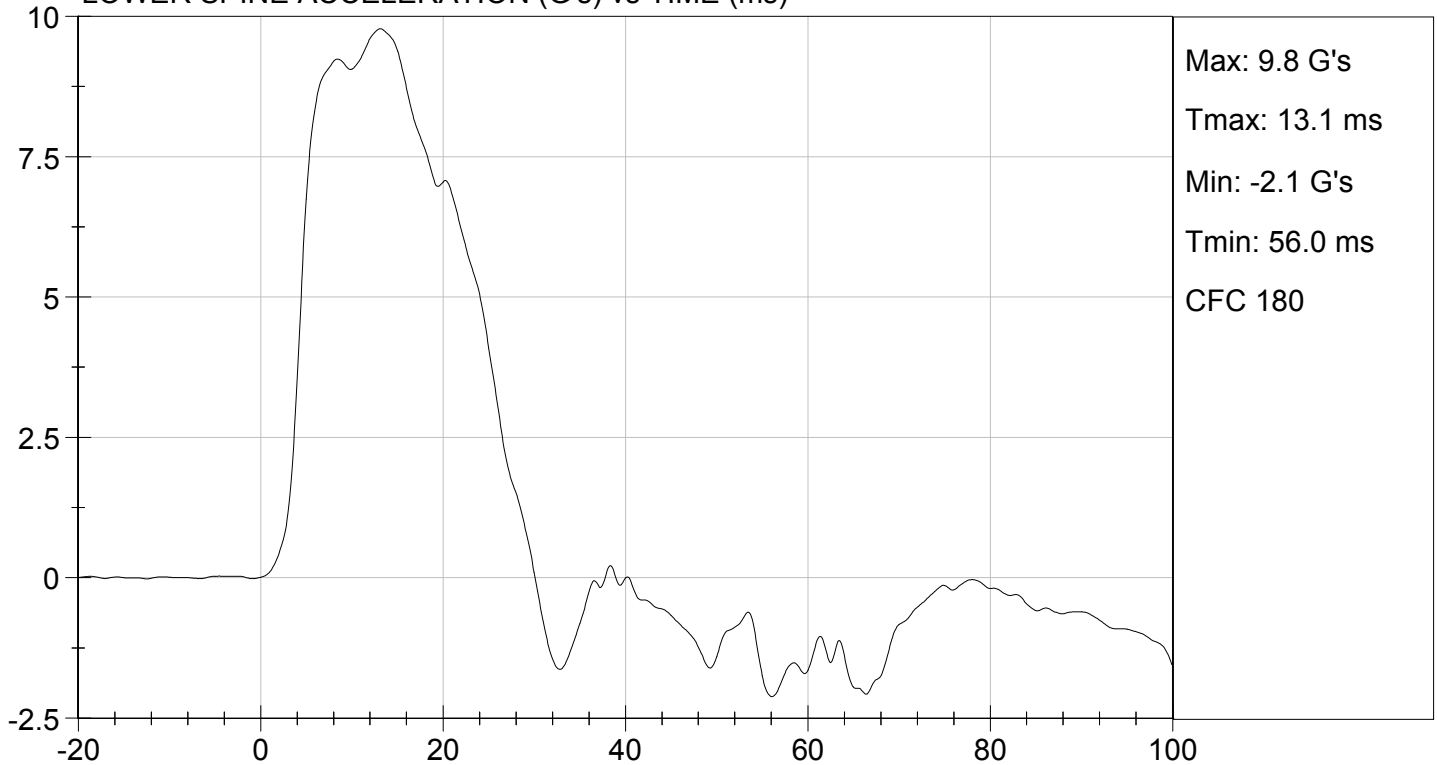
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 05/02/2014
TEST #: D141716

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



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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141717

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	42	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	45	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4,287	Pass
Overall Test Results				Pass


Laboratory Technician

05/05/2014

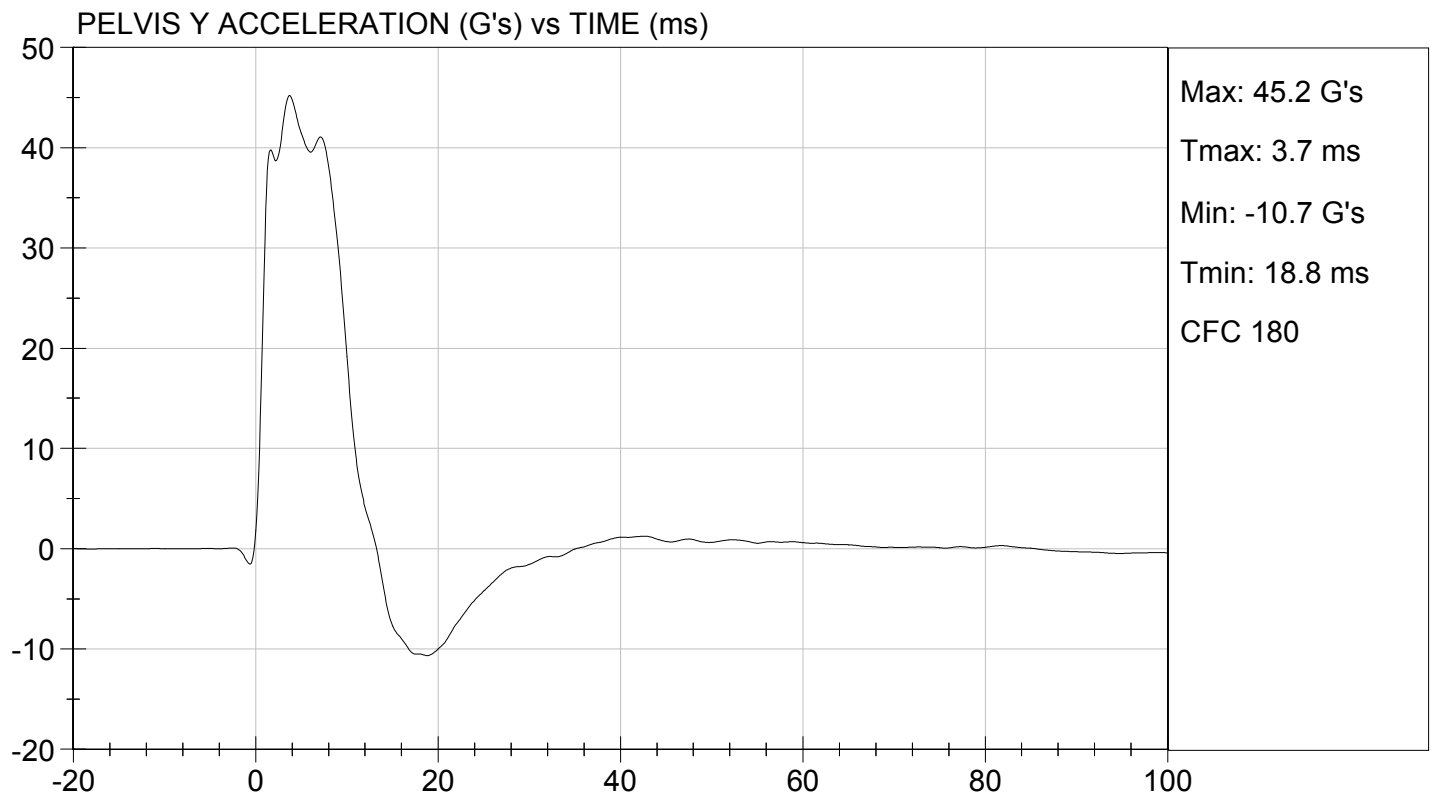
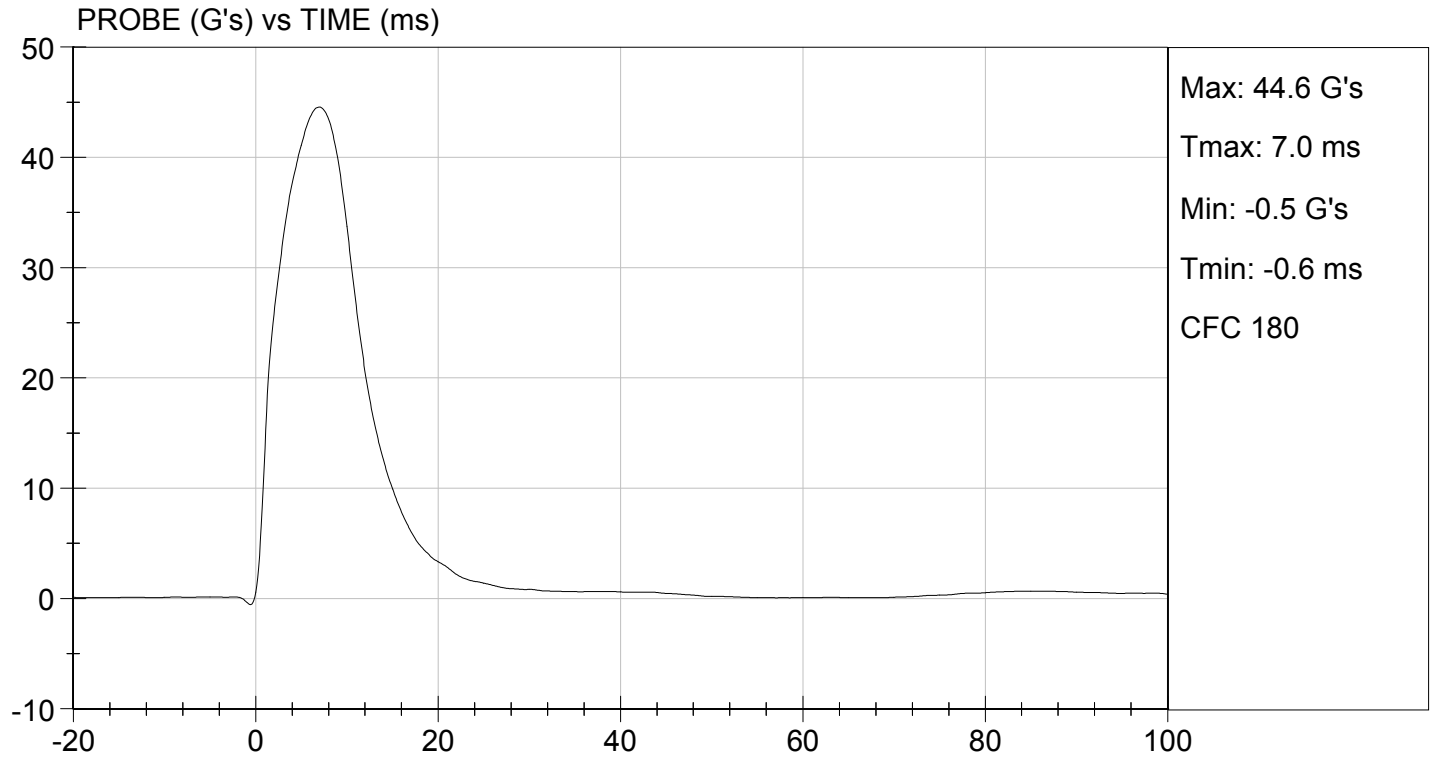
Test Date


Approved By



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

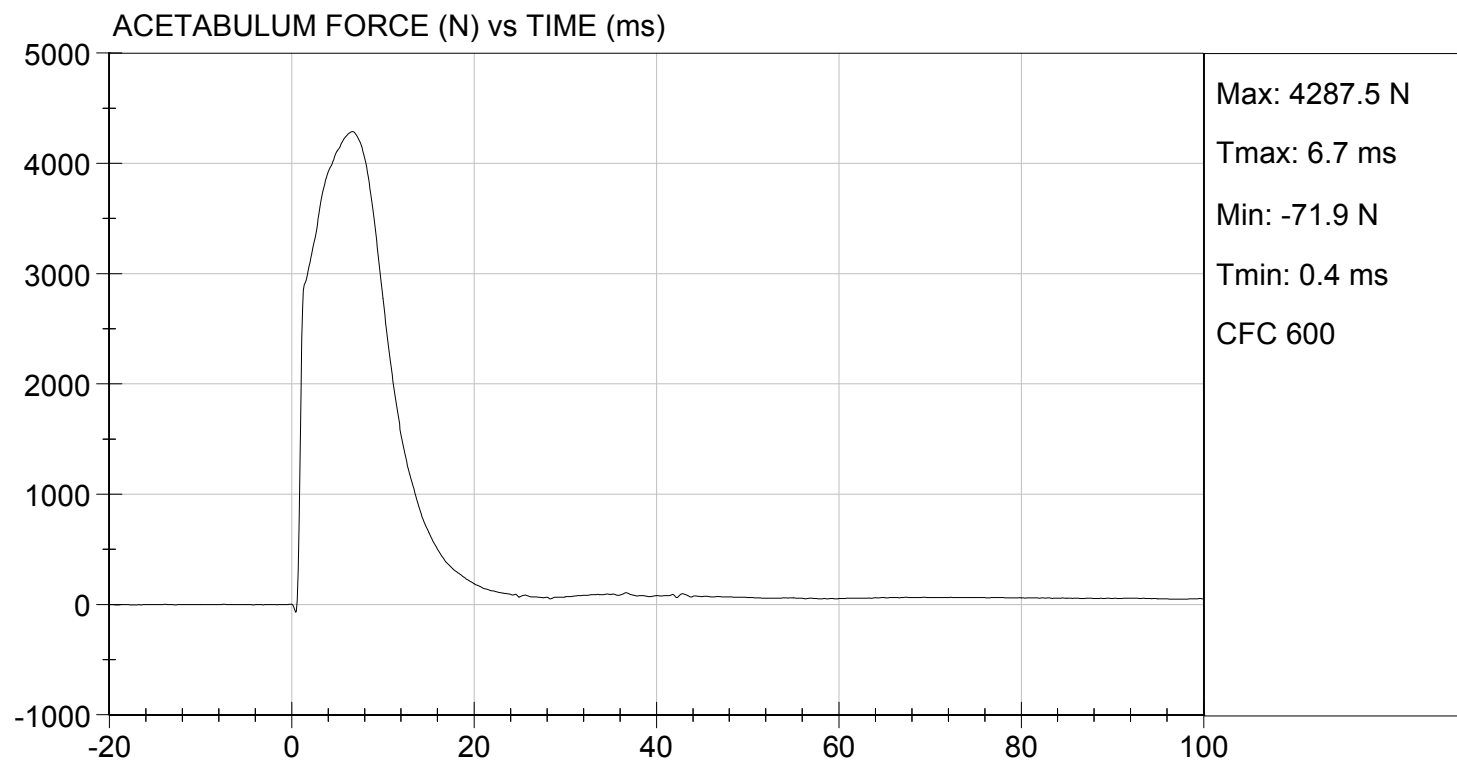
TEST DATE: 05/05/2014
TEST #: D141717





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

TEST DATE: 05/05/2014
TEST #: D141717



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141718

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	31	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,564	Pass
Overall Test Results				Pass


Laboratory Technician

05/02/2014

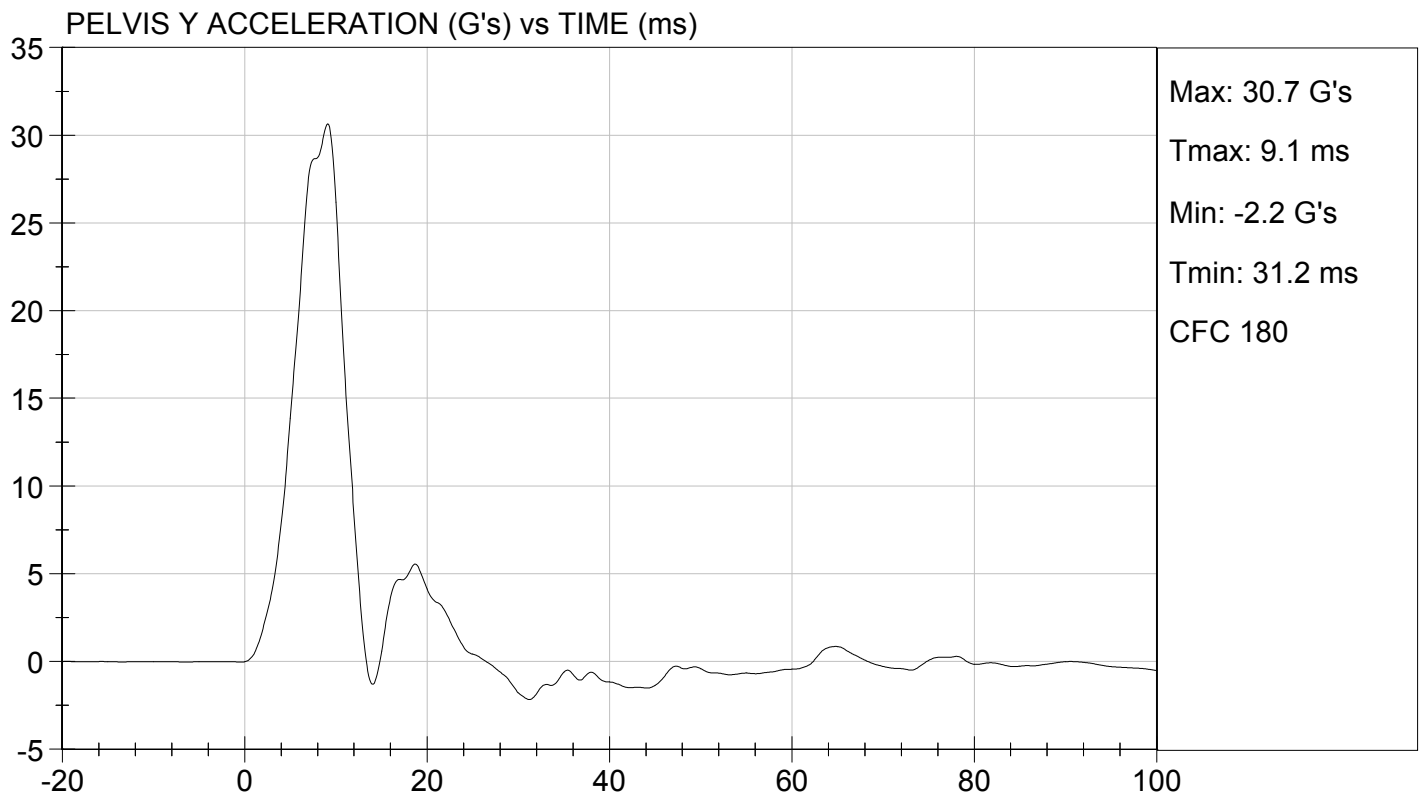
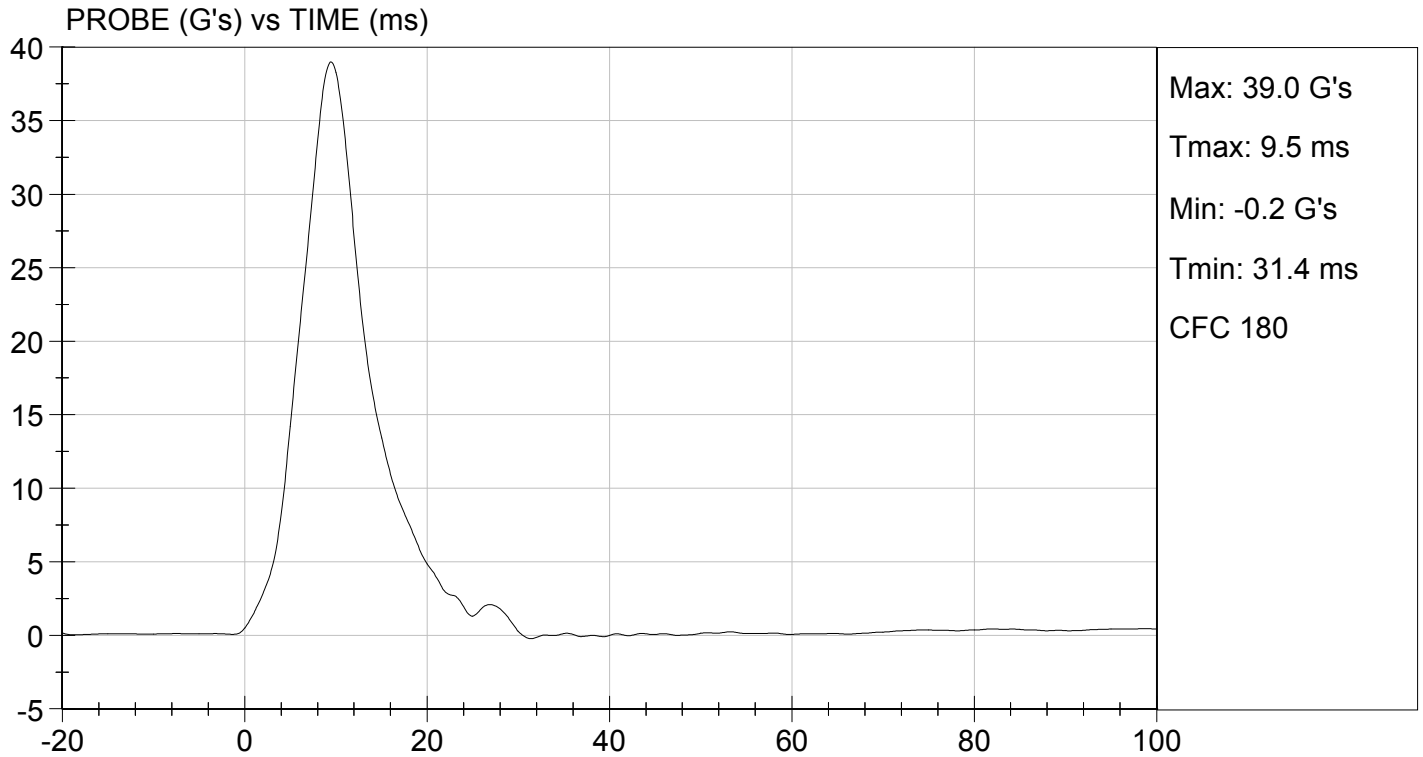
Test Date


Approved By



TEST DESC: ILLIAC
VELOCITY: 14.01 ft/s, 4.27 m/s

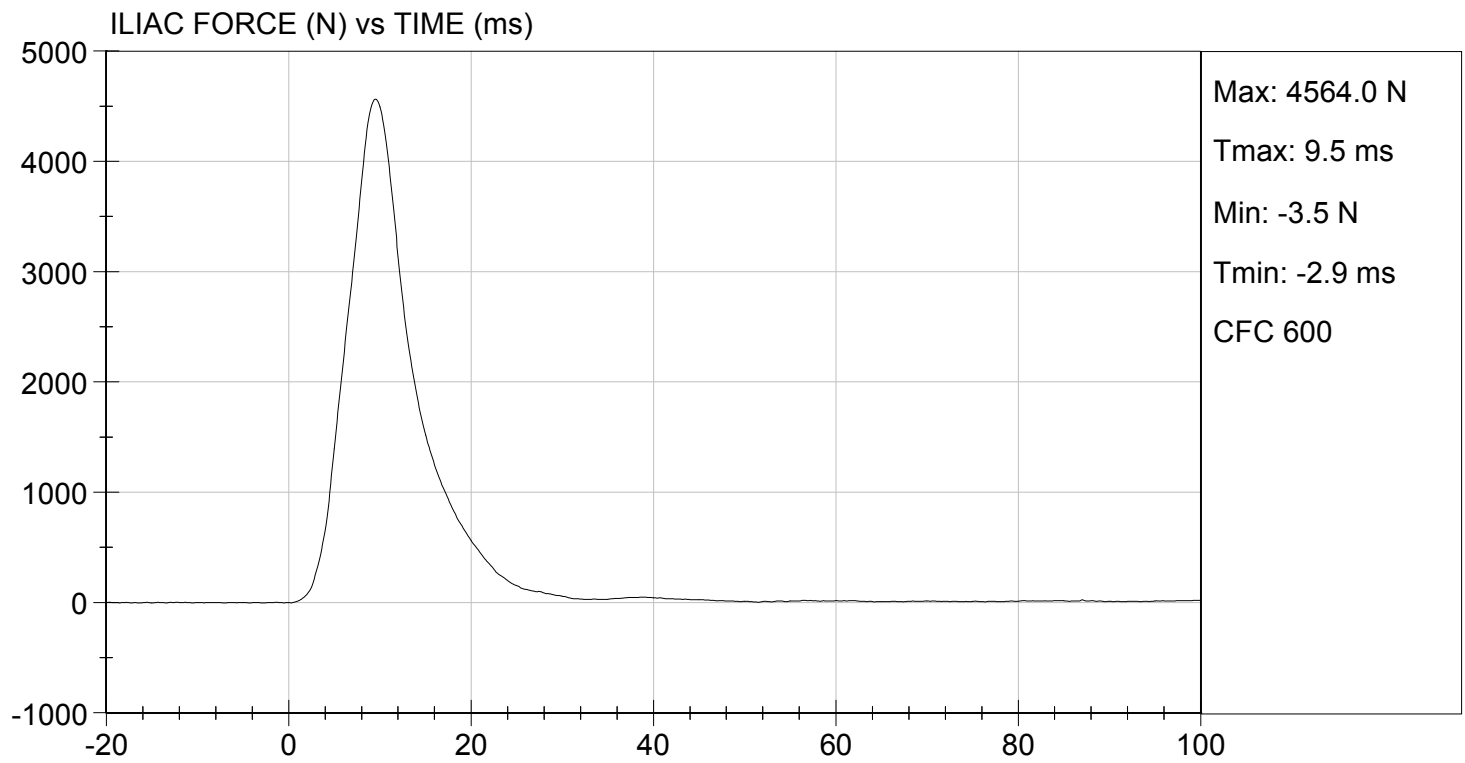
TEST DATE: 05/02/2014
TEST #: D141718





TEST DESC: ILLIAC
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 05/02/2014
TEST #: D141718



SID-IIsD External Measurements
SN: 306

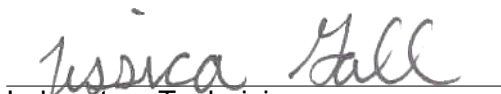
No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148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

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

ATD Serial No: 306

Test ID: D141781

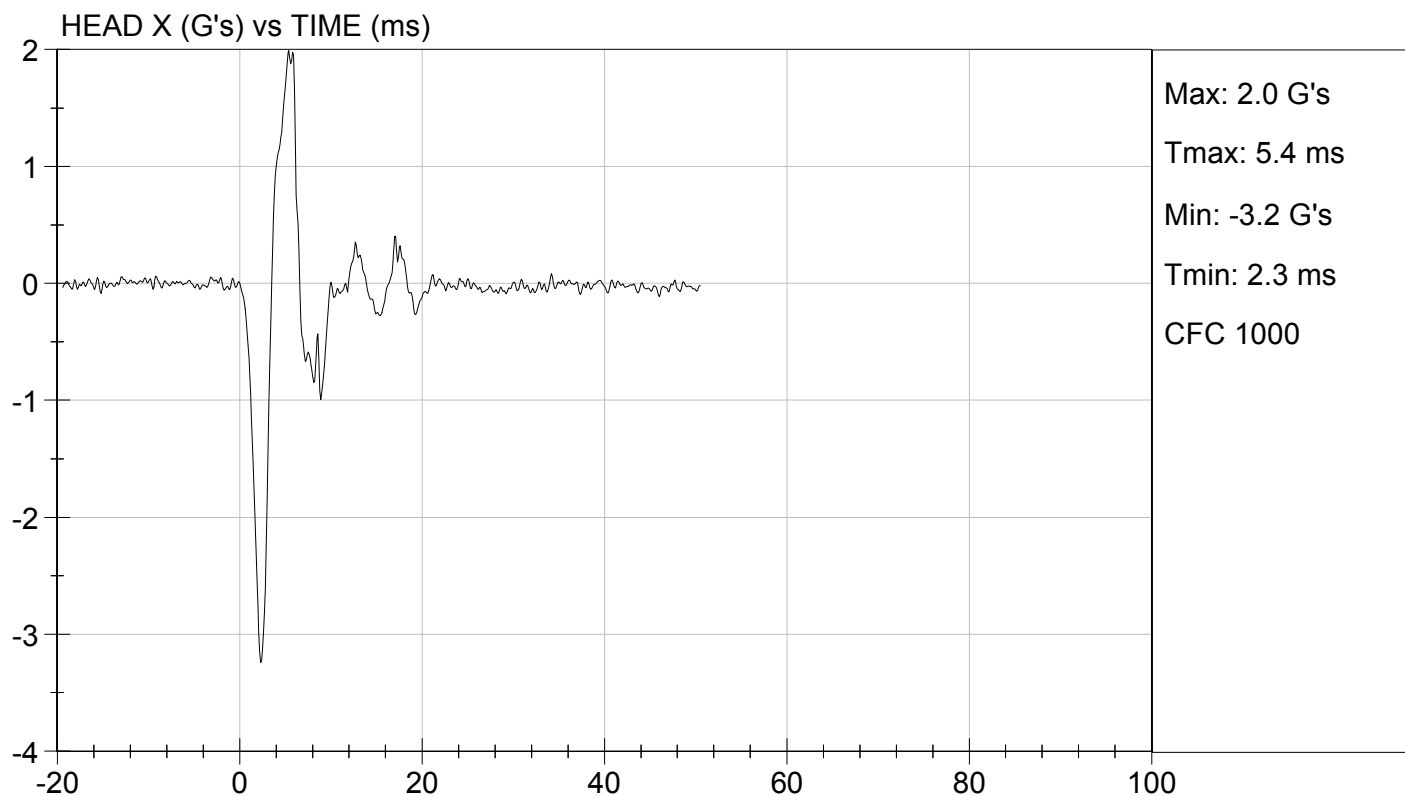
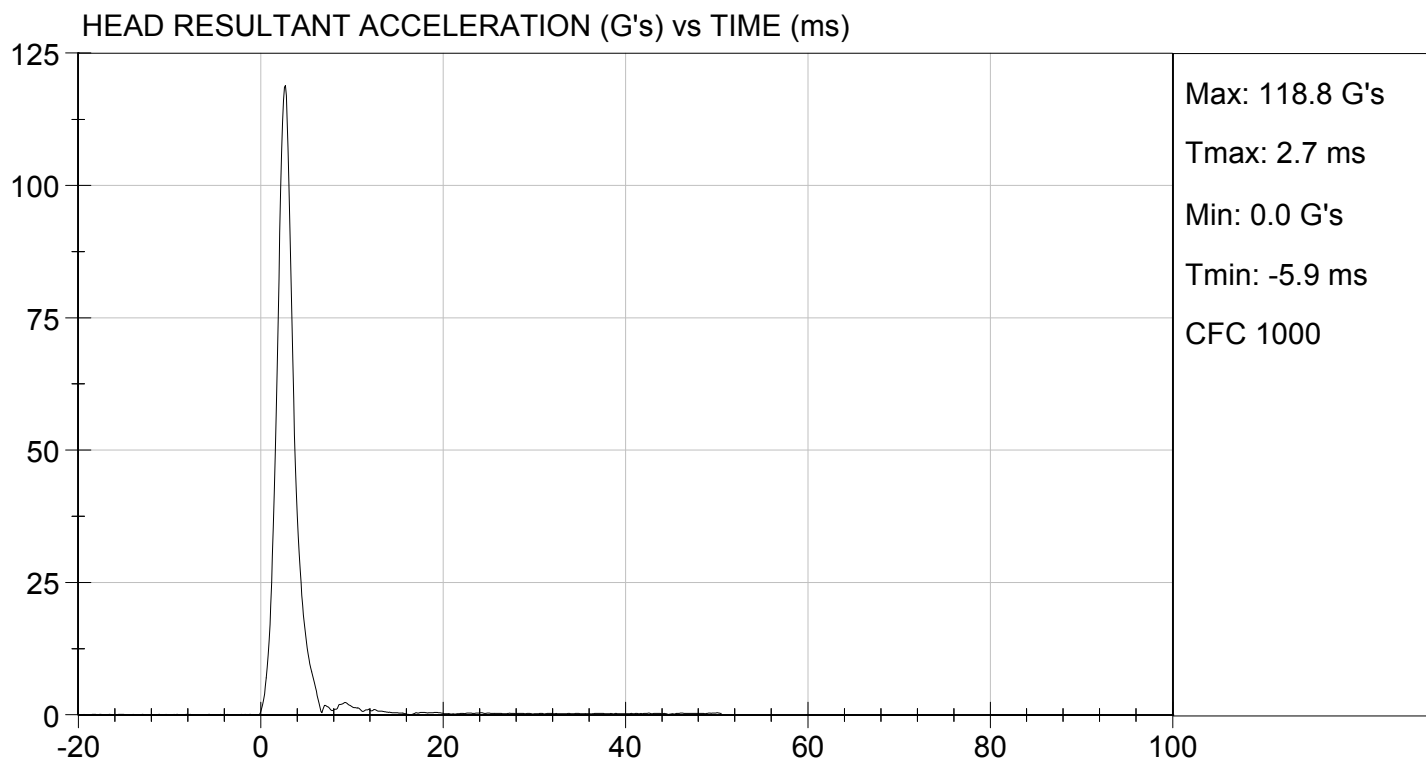
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	50	Pass
Peak Resultant Acceleration	G's	115 to 137	119	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-3.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
			Overall Test Results	Pass

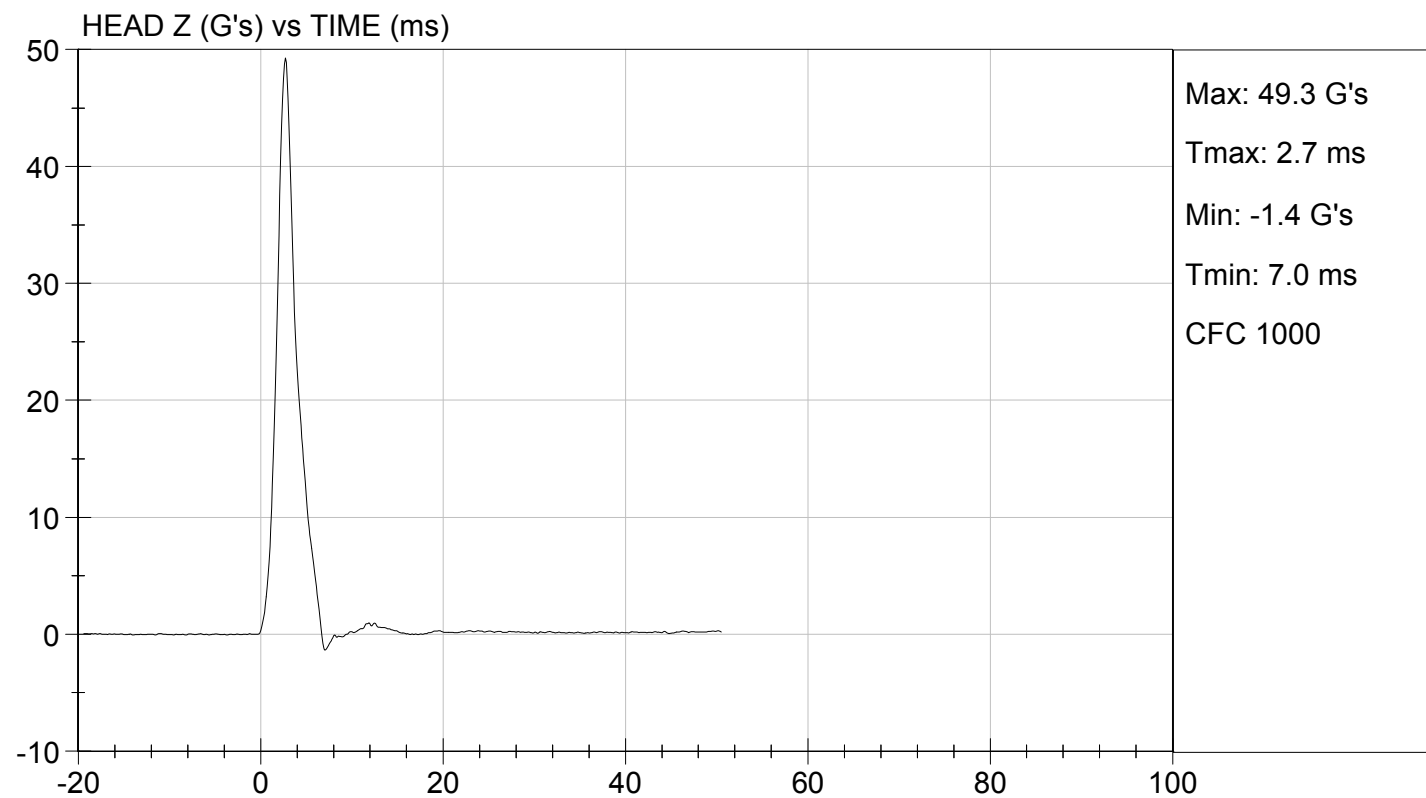
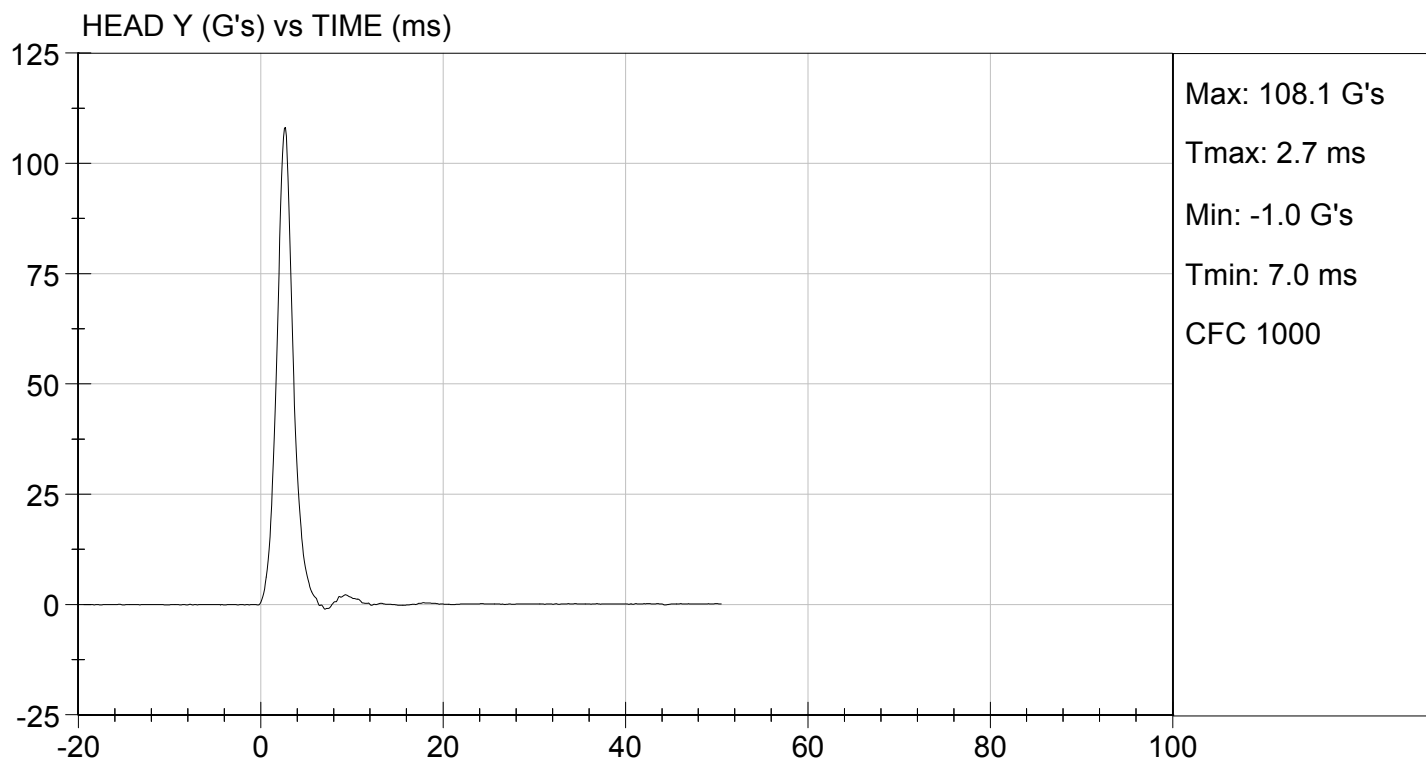

Laboratory Technician

05/09/2014

Test Date


Approved By



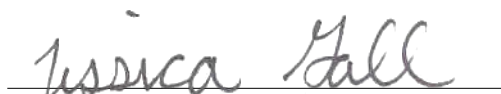


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141782

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.0	Pass
Humidity		%	10 to 70	50	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.36	Pass
	15 ms	m/s	3.30 to 4.10	3.42	Pass
	20 ms	m/s	4.40 to 5.40	4.56	Pass
	25 ms	m/s	5.40 to 6.10	5.48	Pass
	25-100 ms	m/s	5.50 to 6.20	5.54	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	61	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-41	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	117	Pass
Overall Test Results				Pass	


 Laboratory Technician

05/09/2014

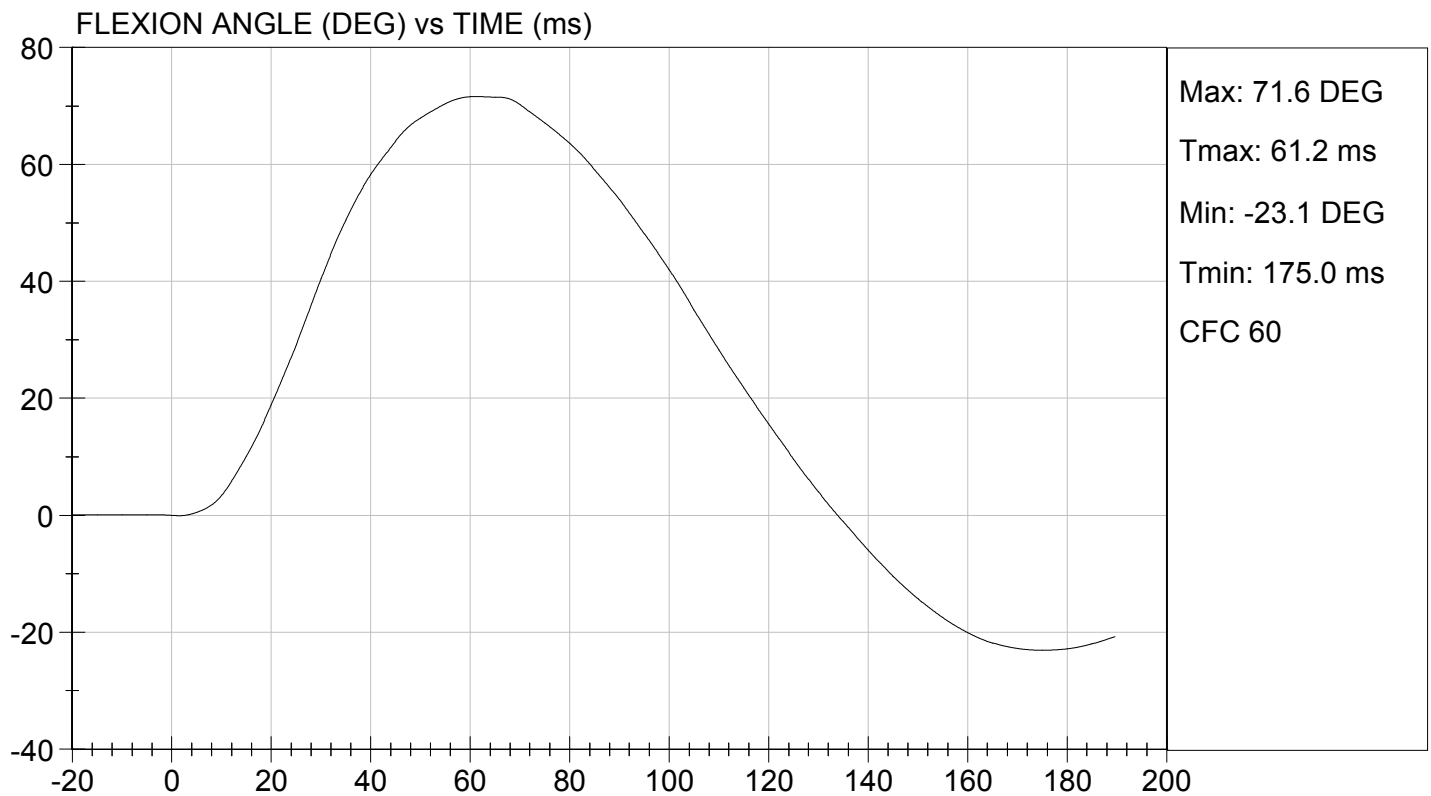
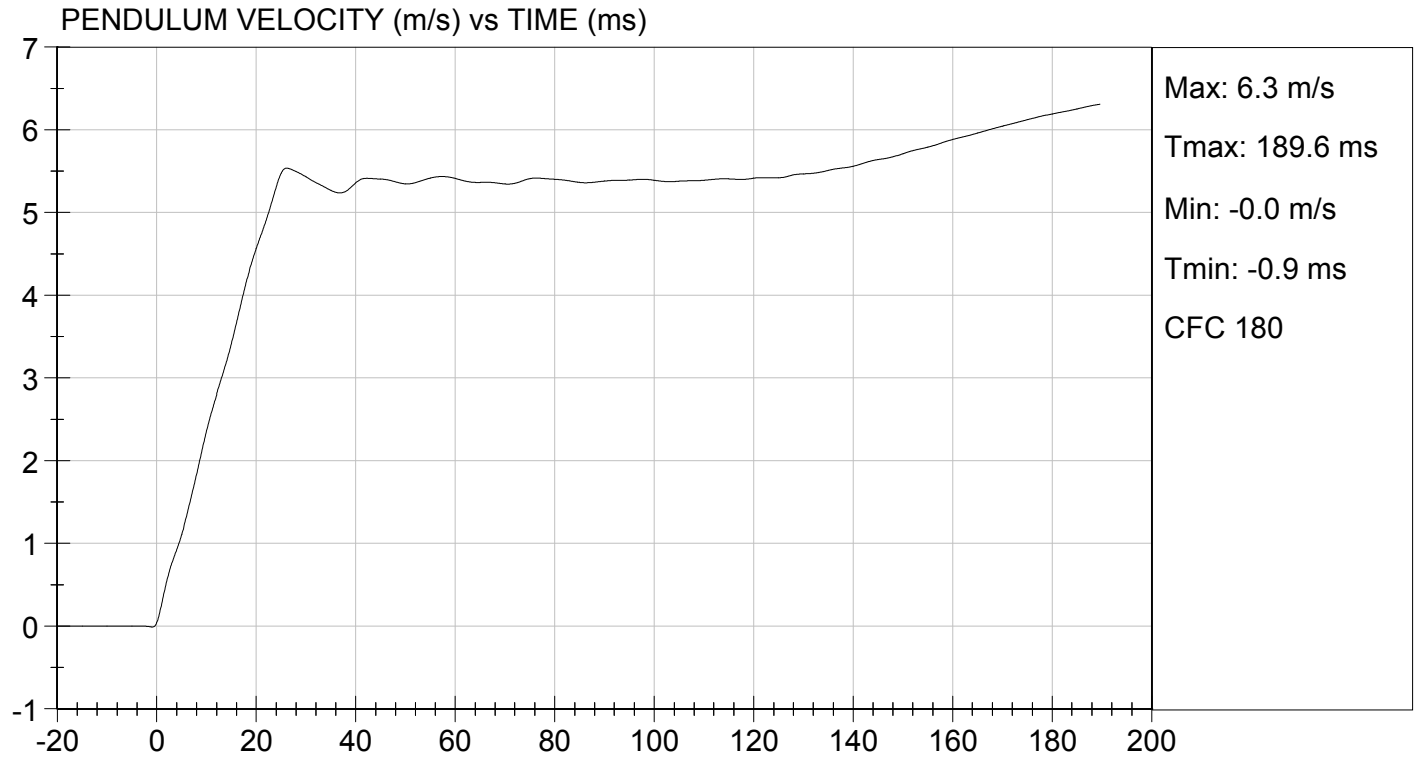
Test Date


 Approved By



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

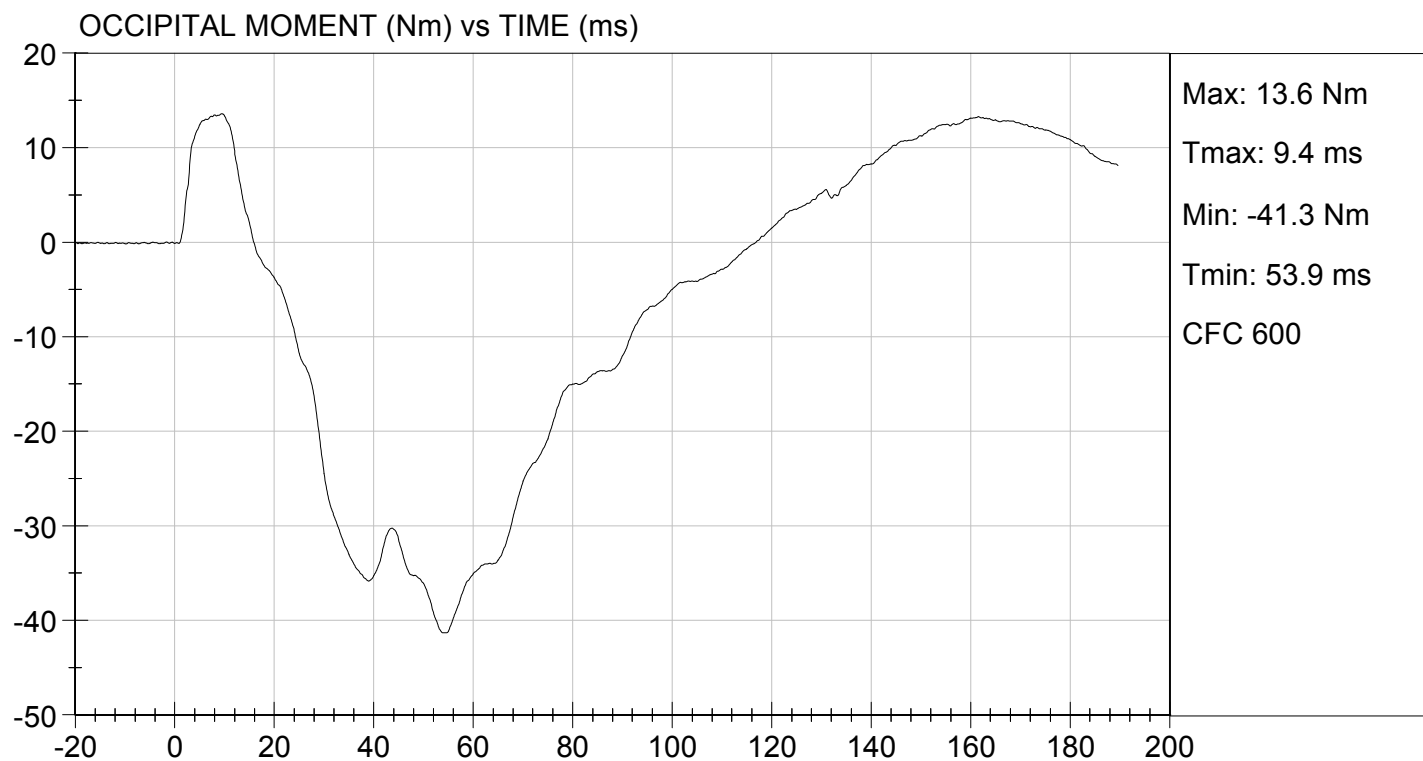
TEST DATE: 05/09/2014
TEST #: D141782





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

TEST DATE: 05/09/2014
TEST #: D141782



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

ATD Serial No: 306

Test ID: D141783

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	49	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	19	Pass
			Overall Test Results	Pass


Laboratory Technician

05/09/2014

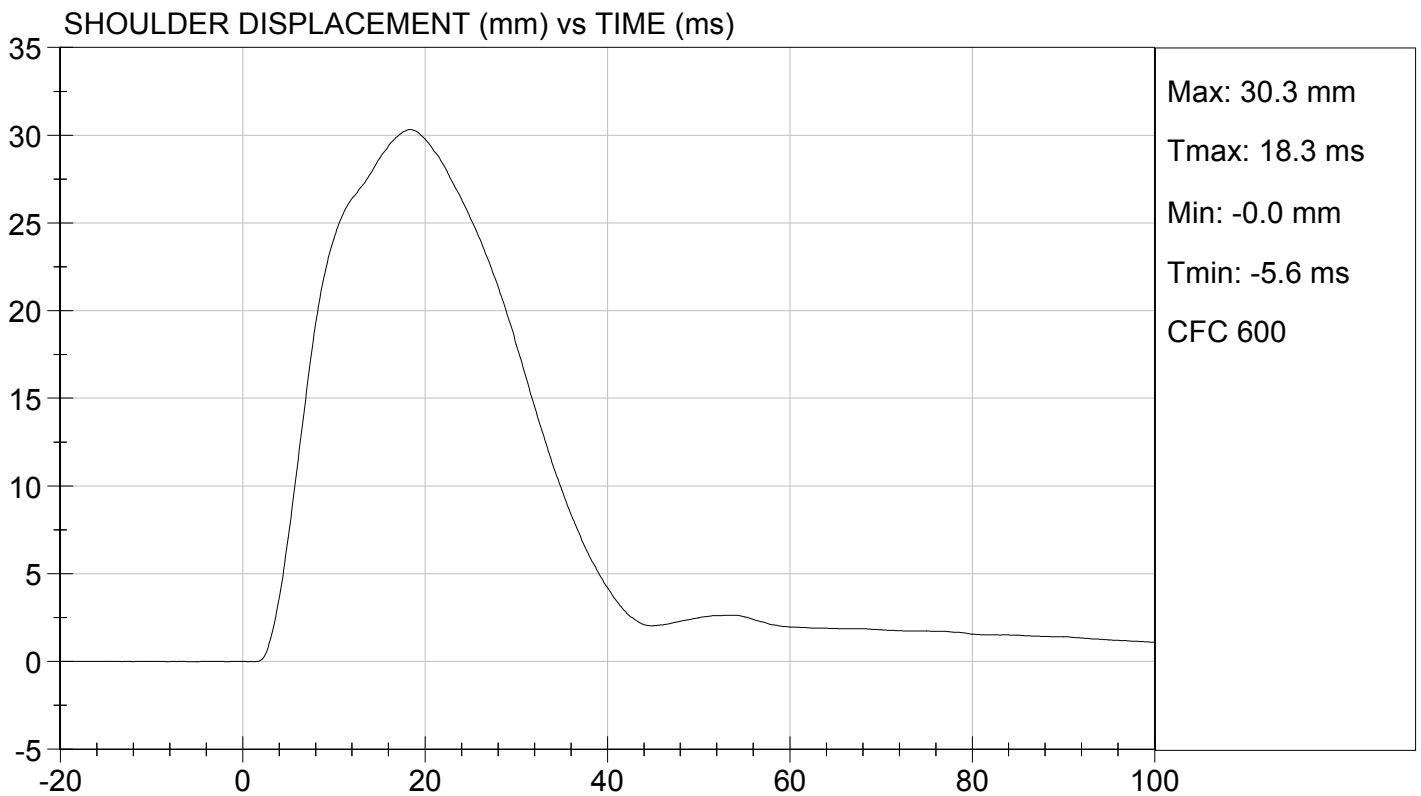
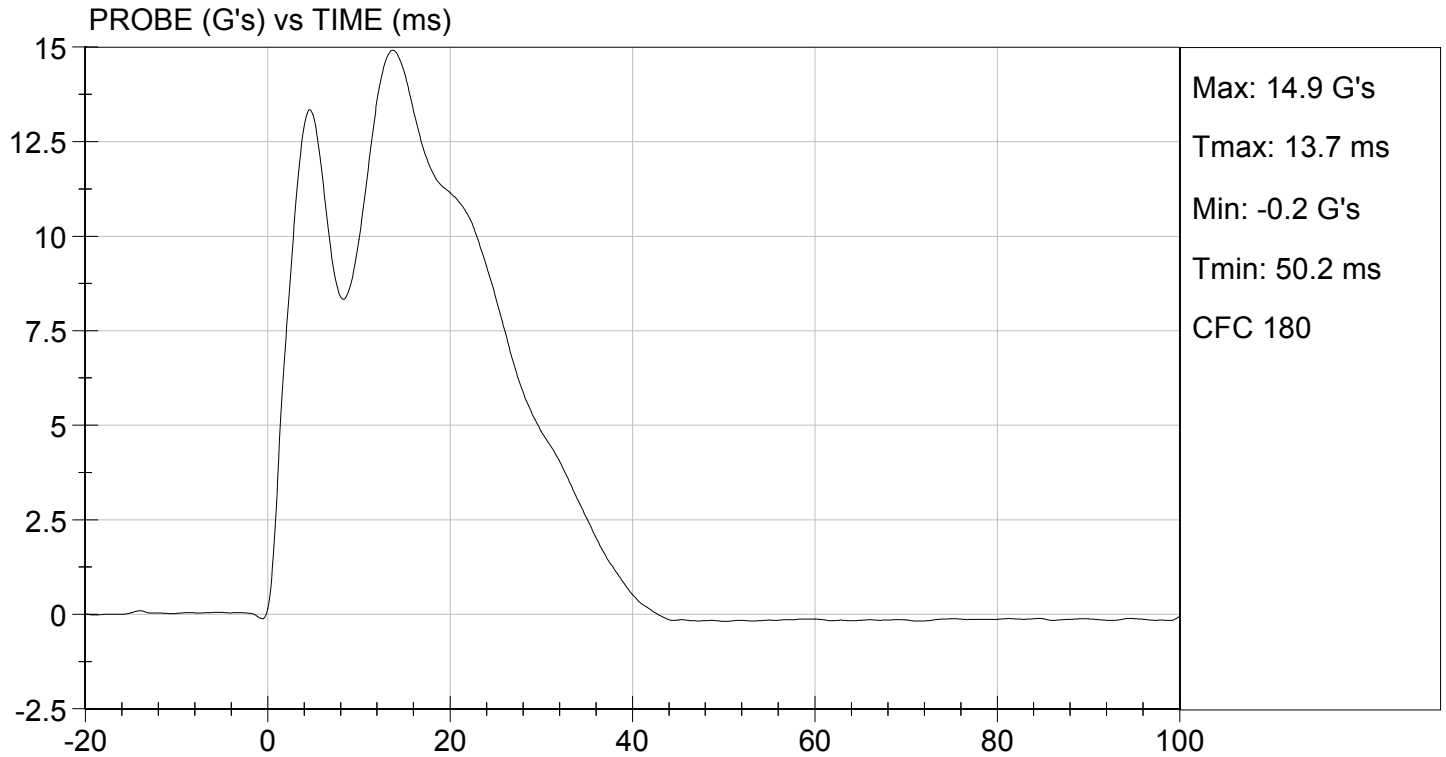
Test Date


Approved By



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

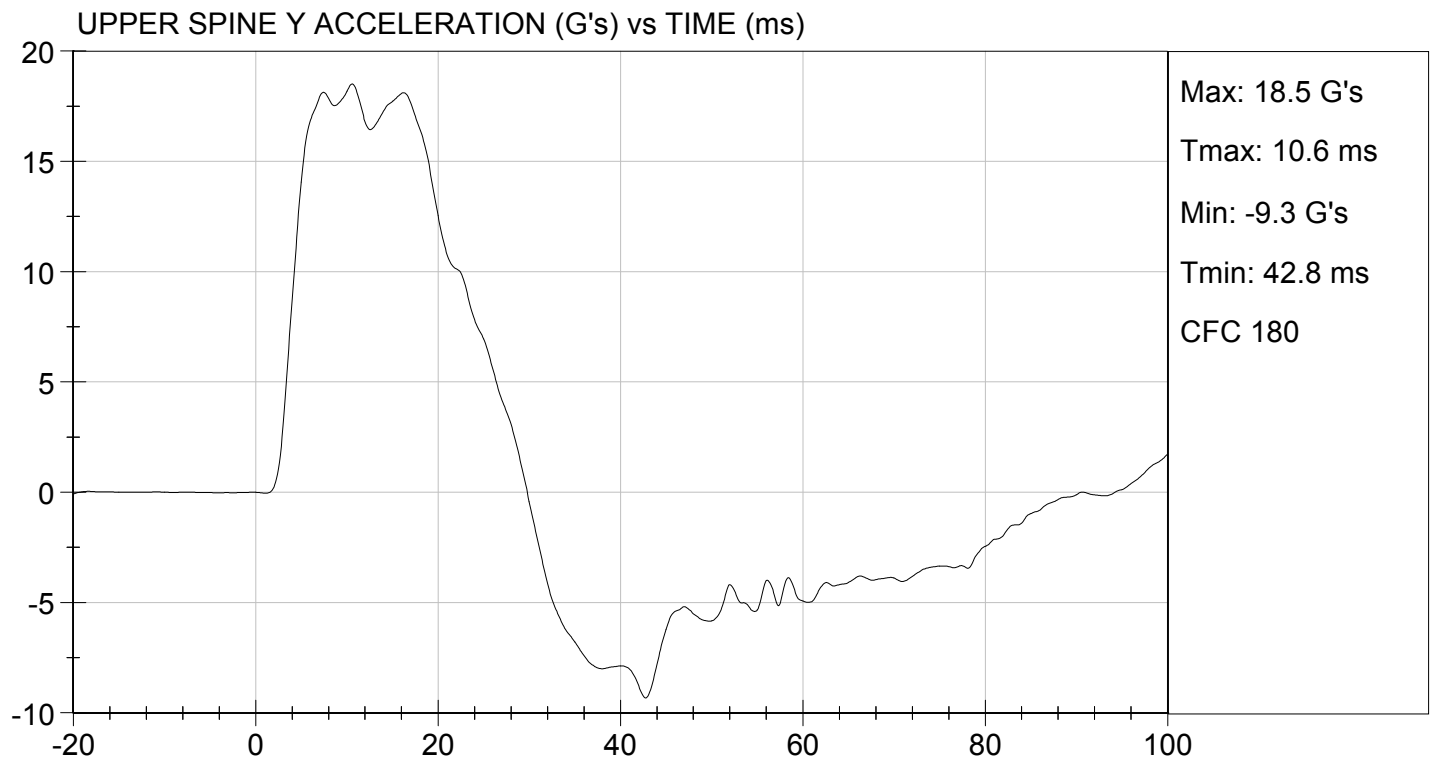
TEST DATE: 05/09/2014
TEST #: D14173





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

TEST DATE: 05/09/2014
TEST #: D141783



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

ATD Serial No: 306

Test I.D: D141784

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	32	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	39	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
Overall Test Results				Pass


 Laboratory Technician

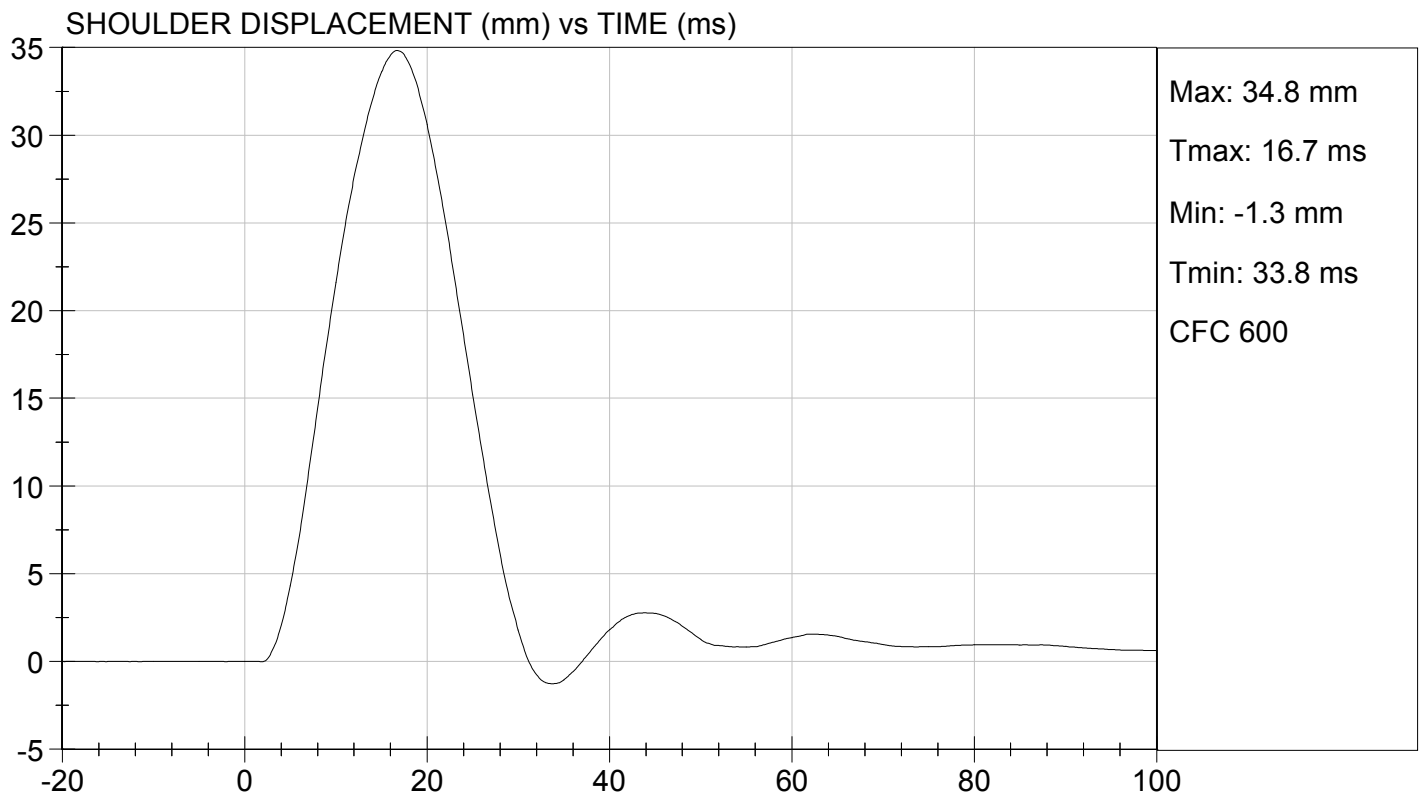
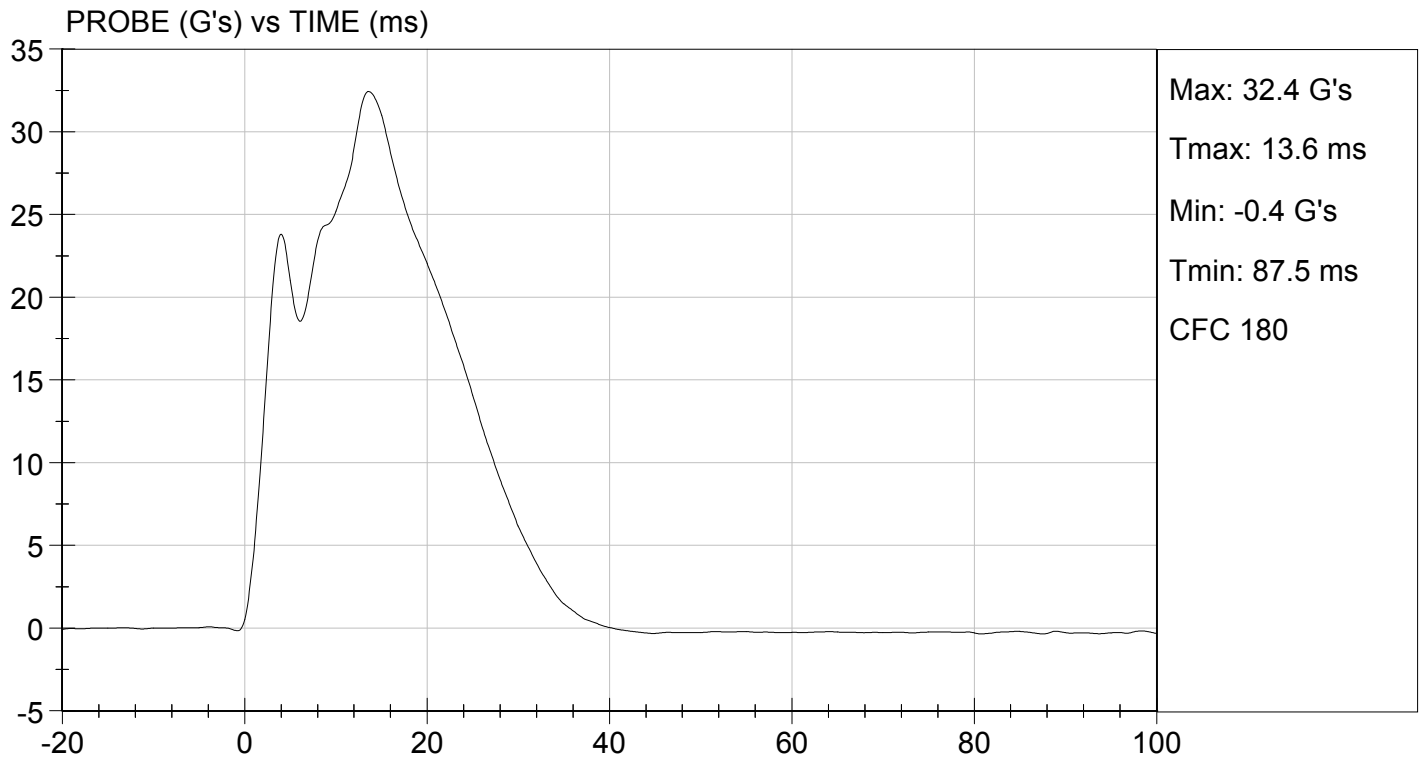
05/09/2014
 Test Date


 Approved By



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

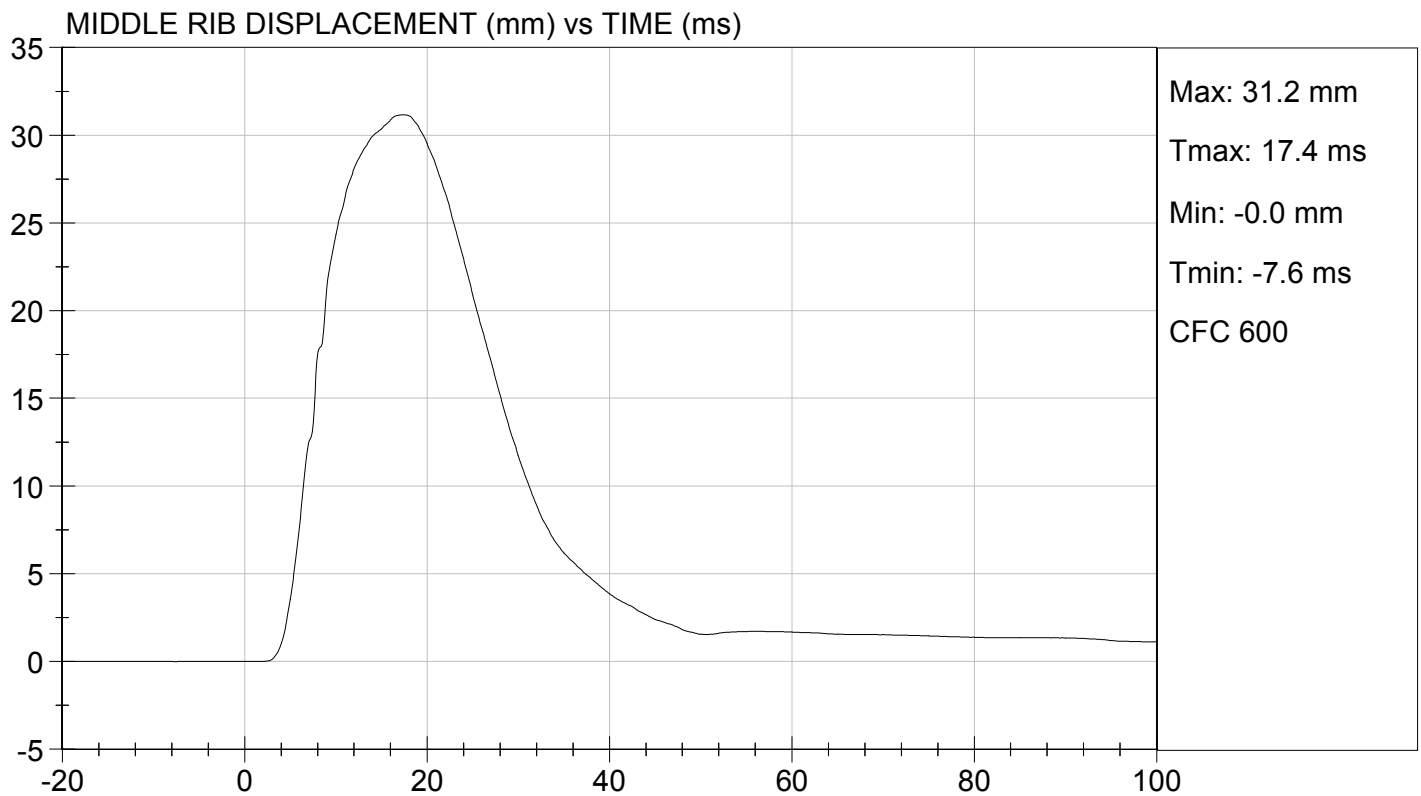
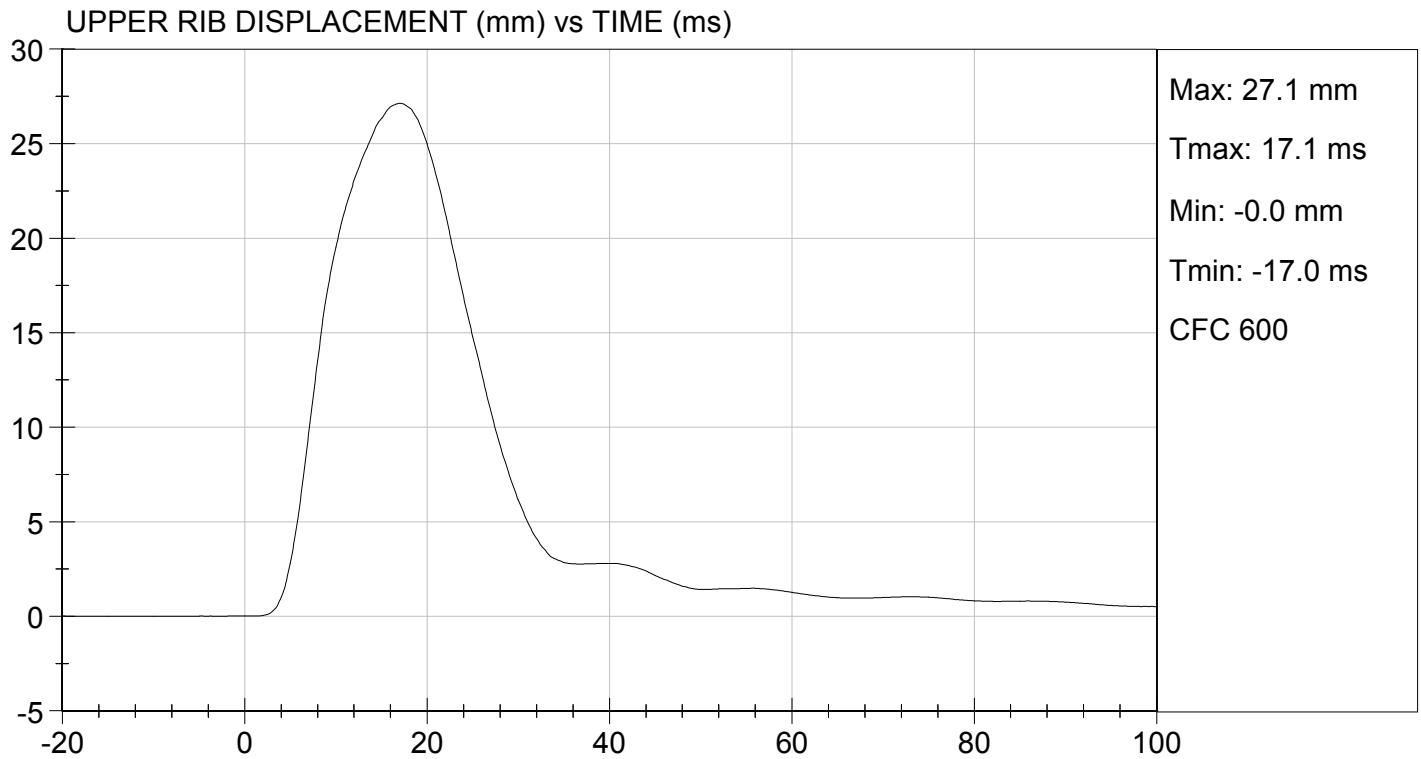
TEST DATE: 05/09/2014
TEST #: D141784





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

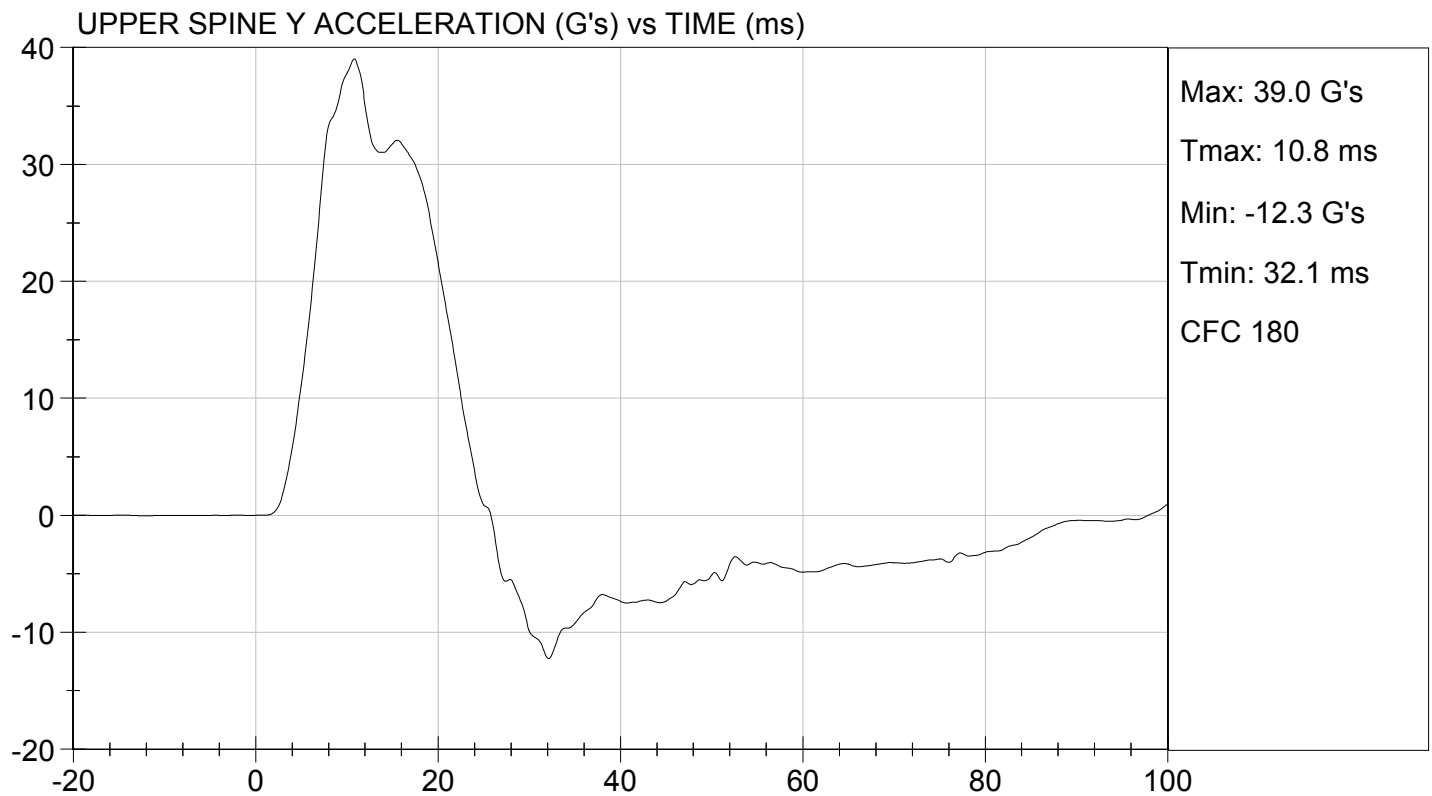
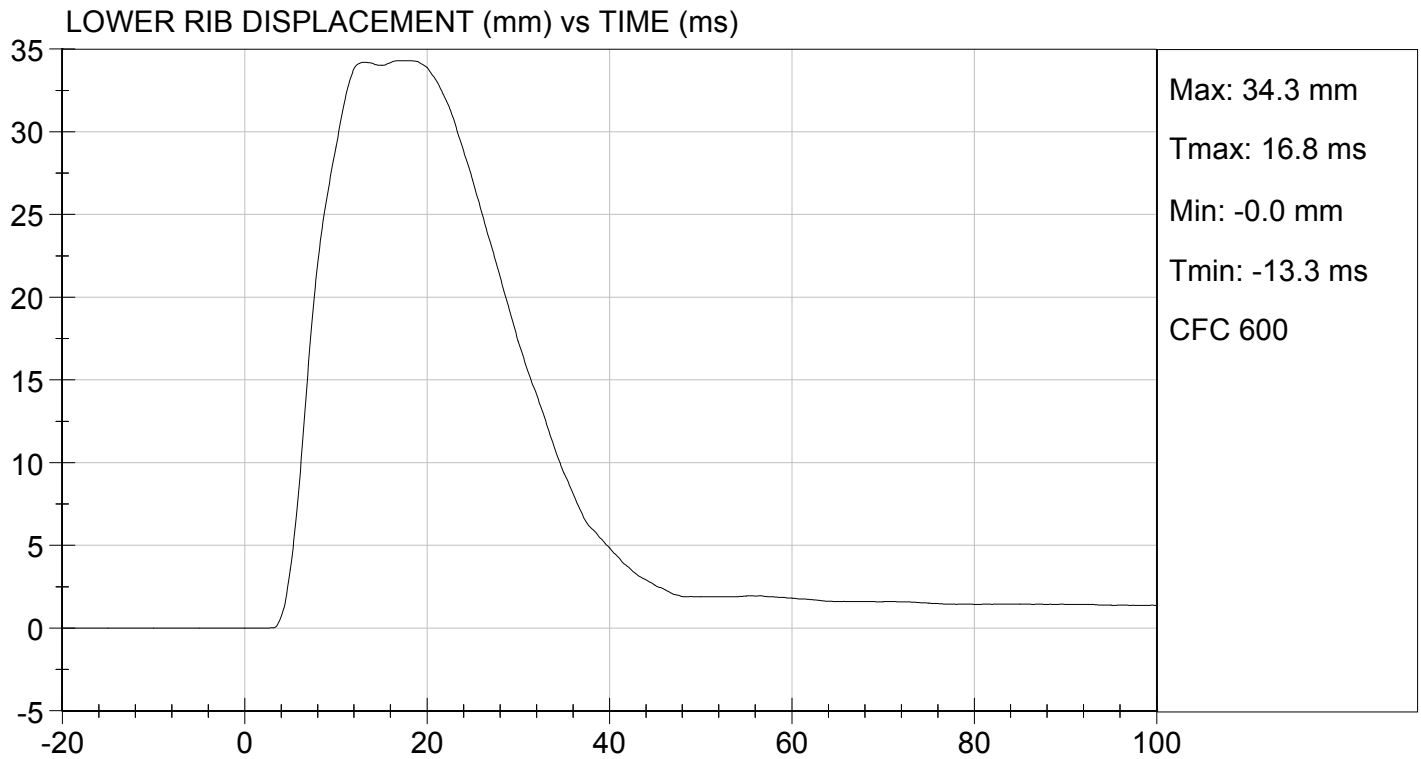
TEST DATE: 05/09/2014
TEST #: D141784





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

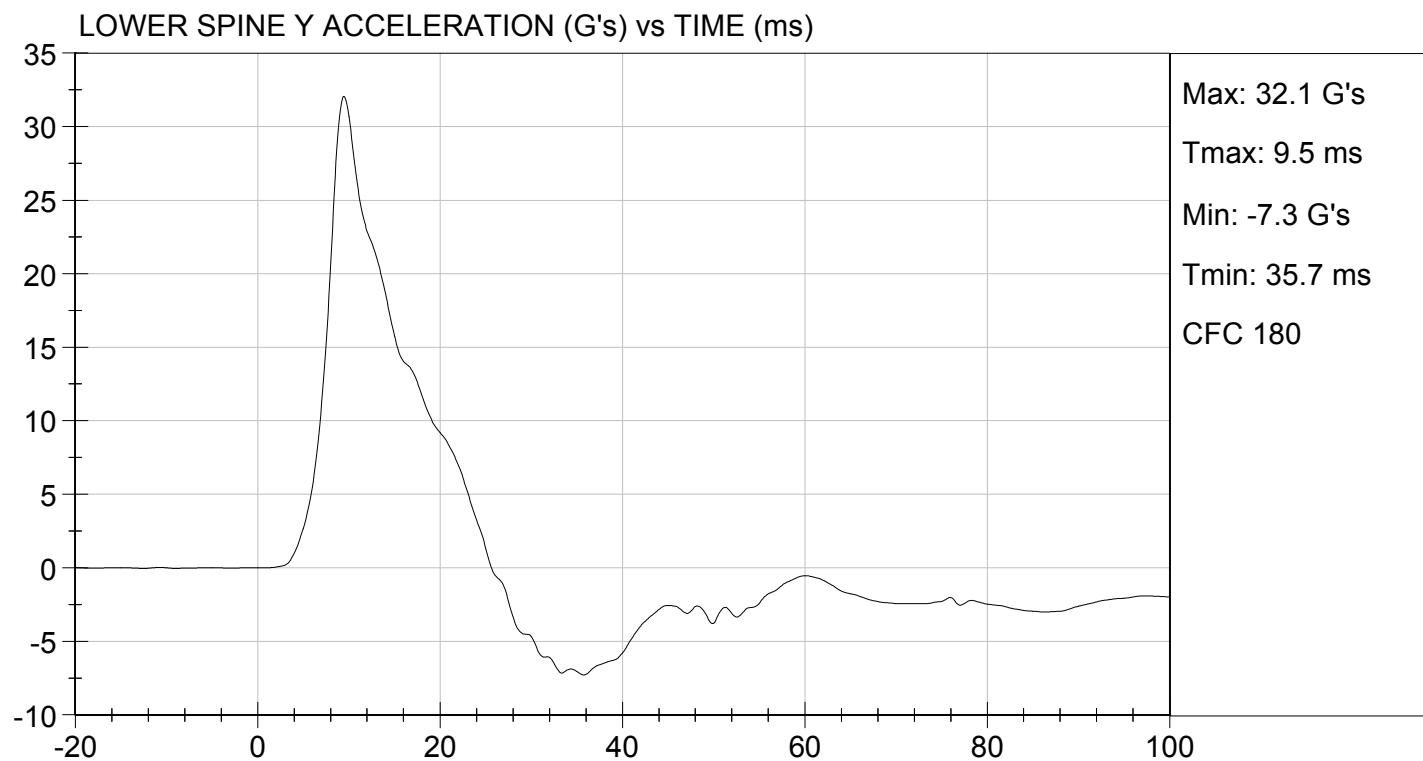
TEST DATE: 05/09/2014
TEST #: D141784





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

TEST DATE: 05/09/2014
TEST #: D141784

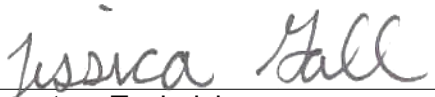


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141785

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	39	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	39	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass


 Laboratory Technician

05/09/2014

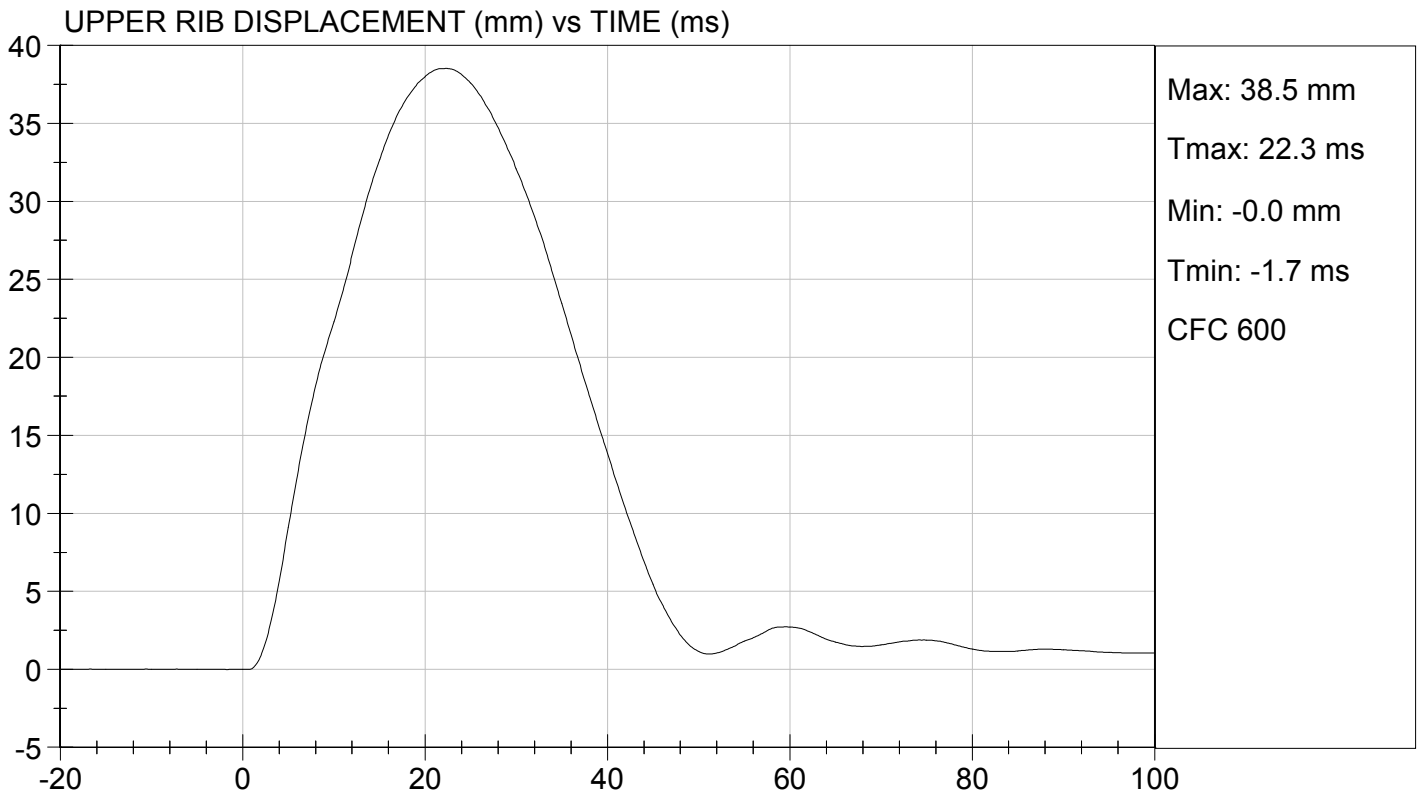
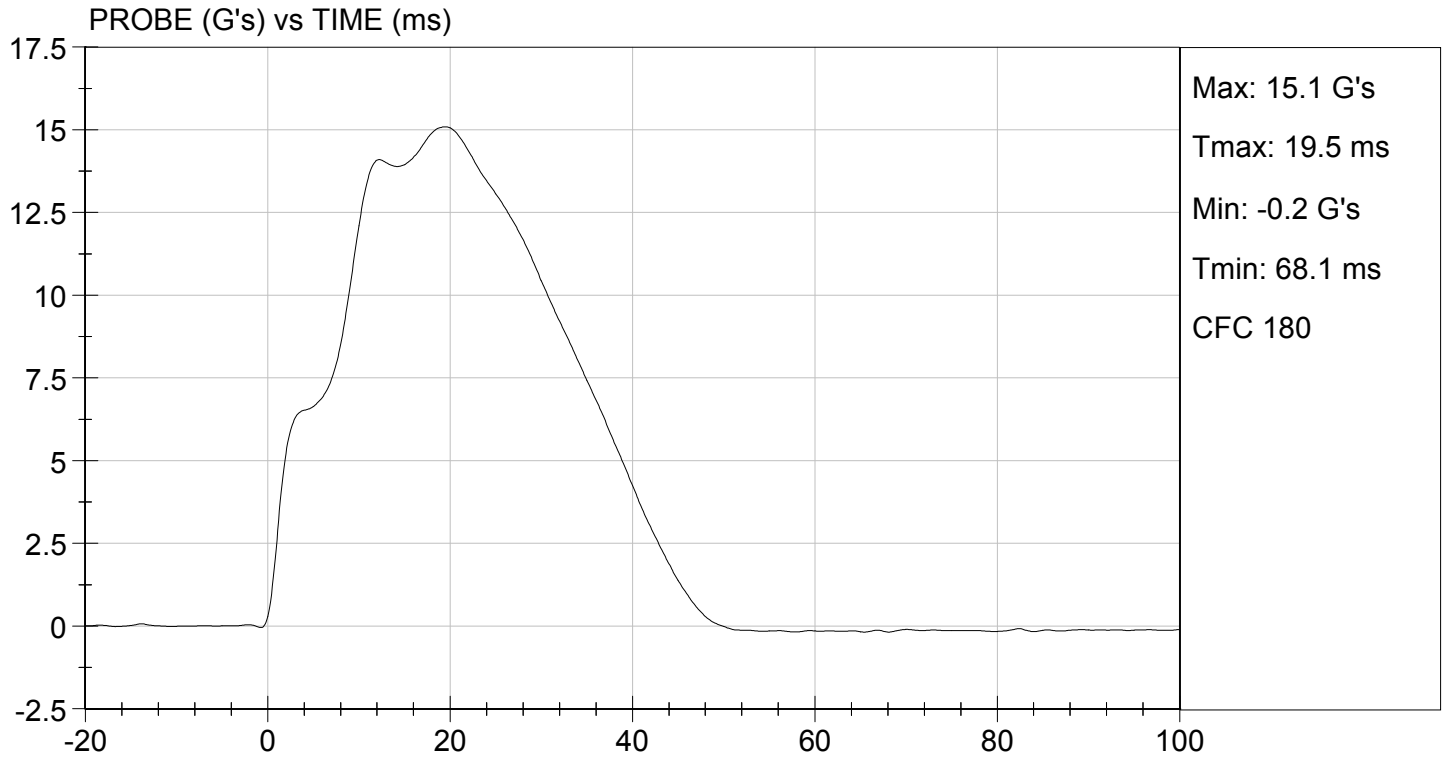
Test Date


 Approved By



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

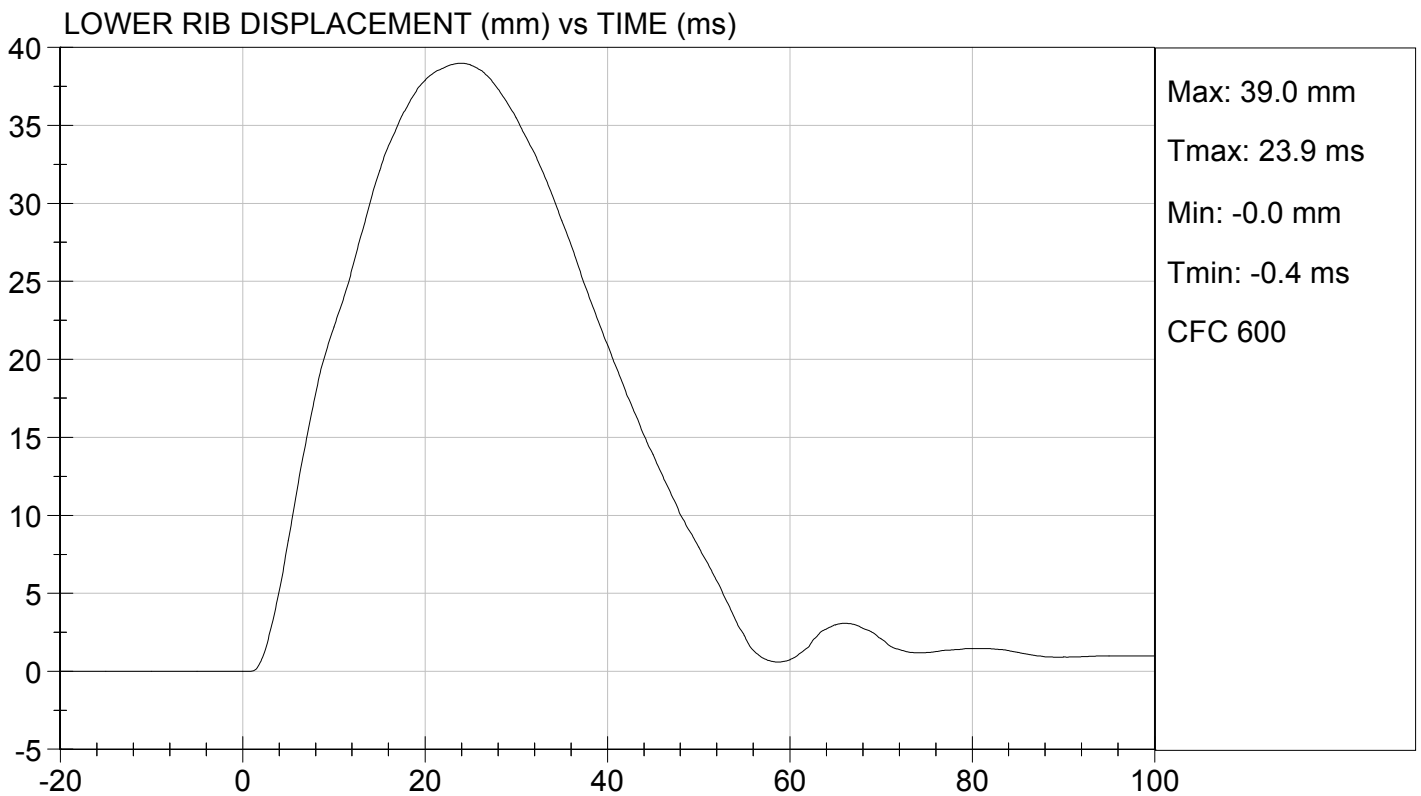
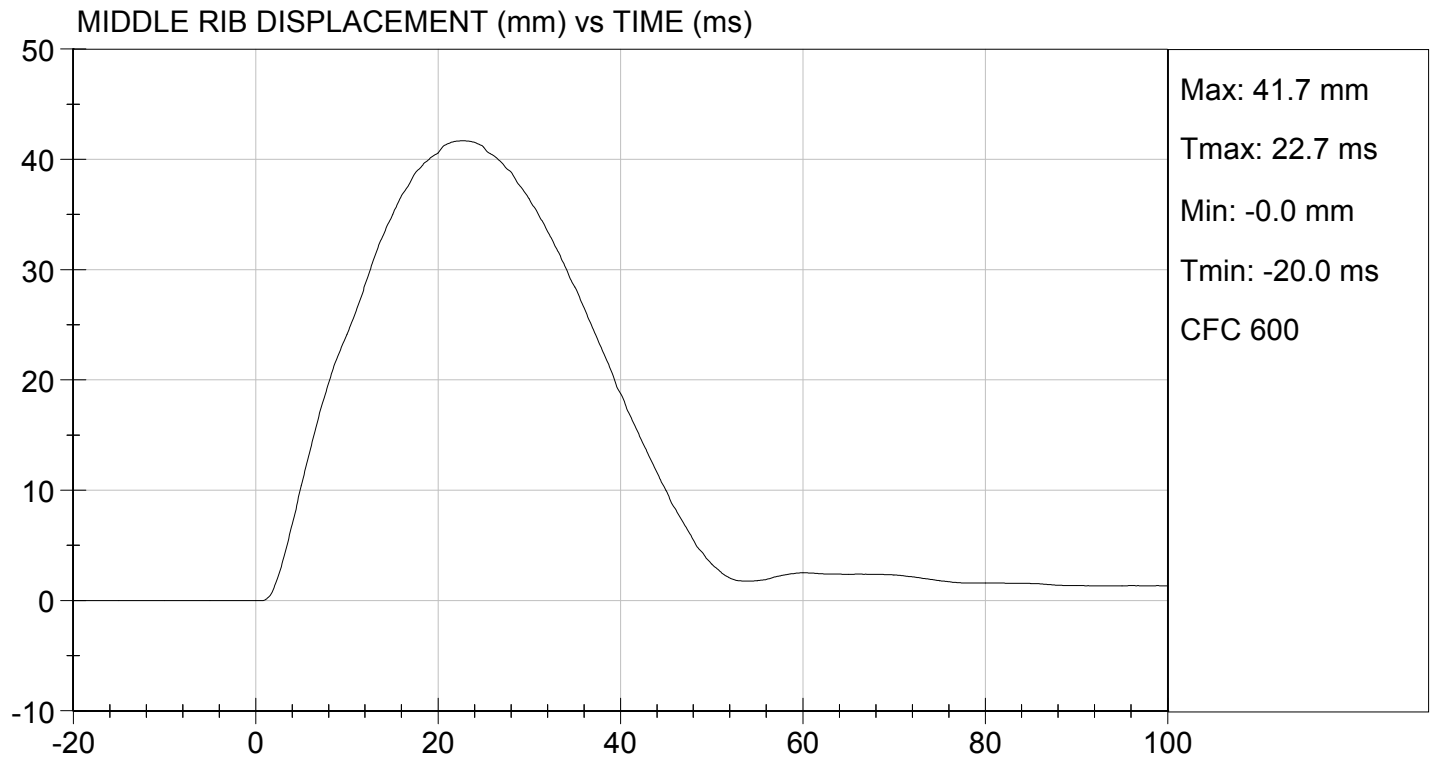
TEST DATE: 05/09/2014
TEST #: D141785





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

TEST DATE: 05/09/2014
TEST #: D141785

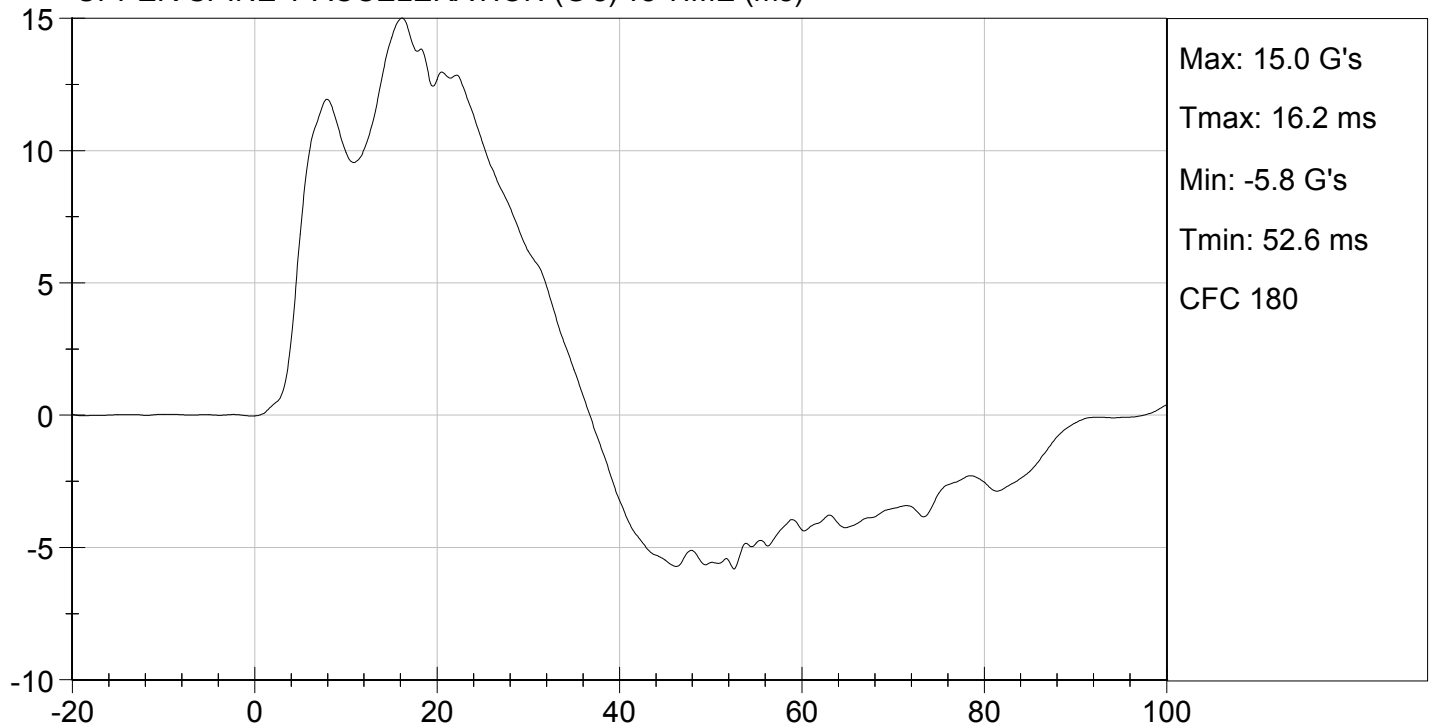




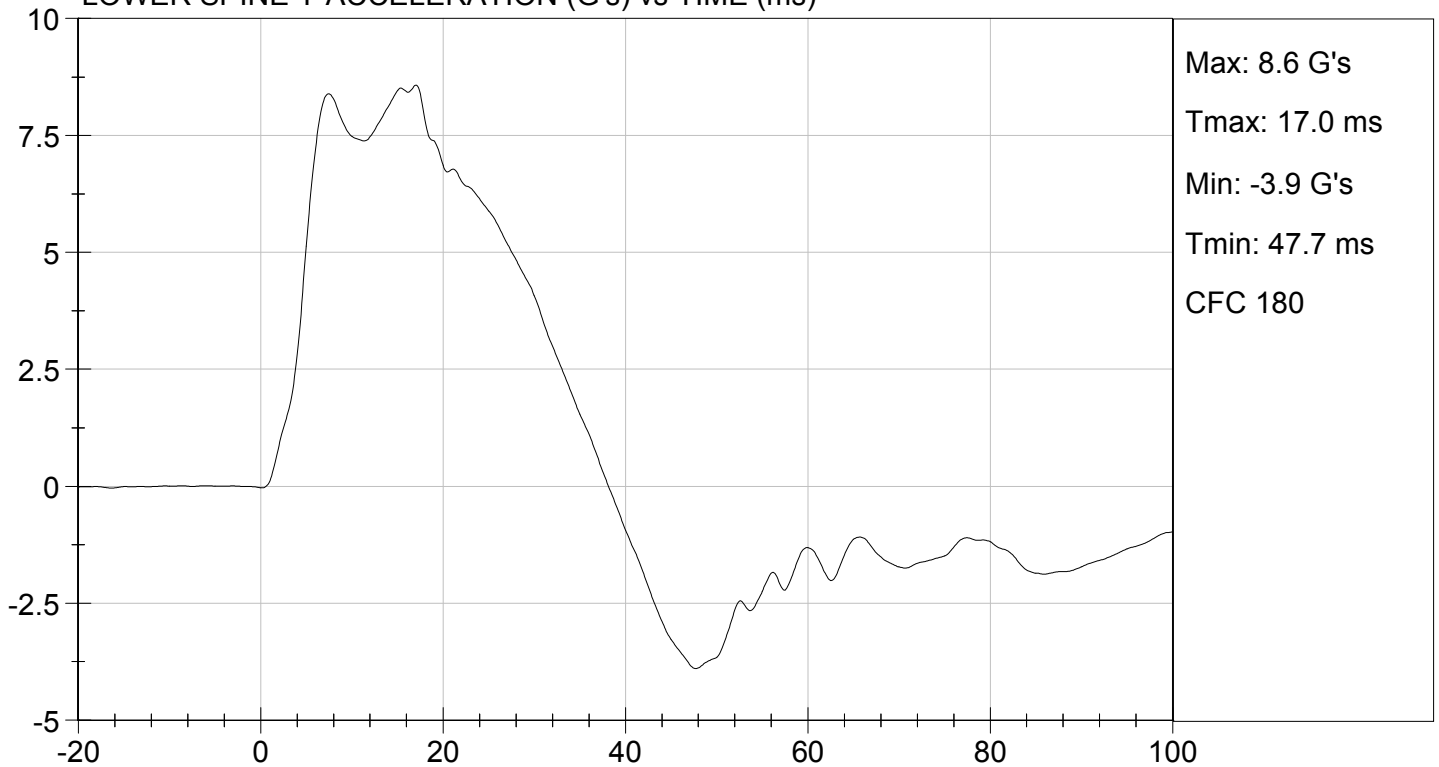
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 05/09/2014
TEST #: D141785

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141786

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	49	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	41	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

05/09/2014

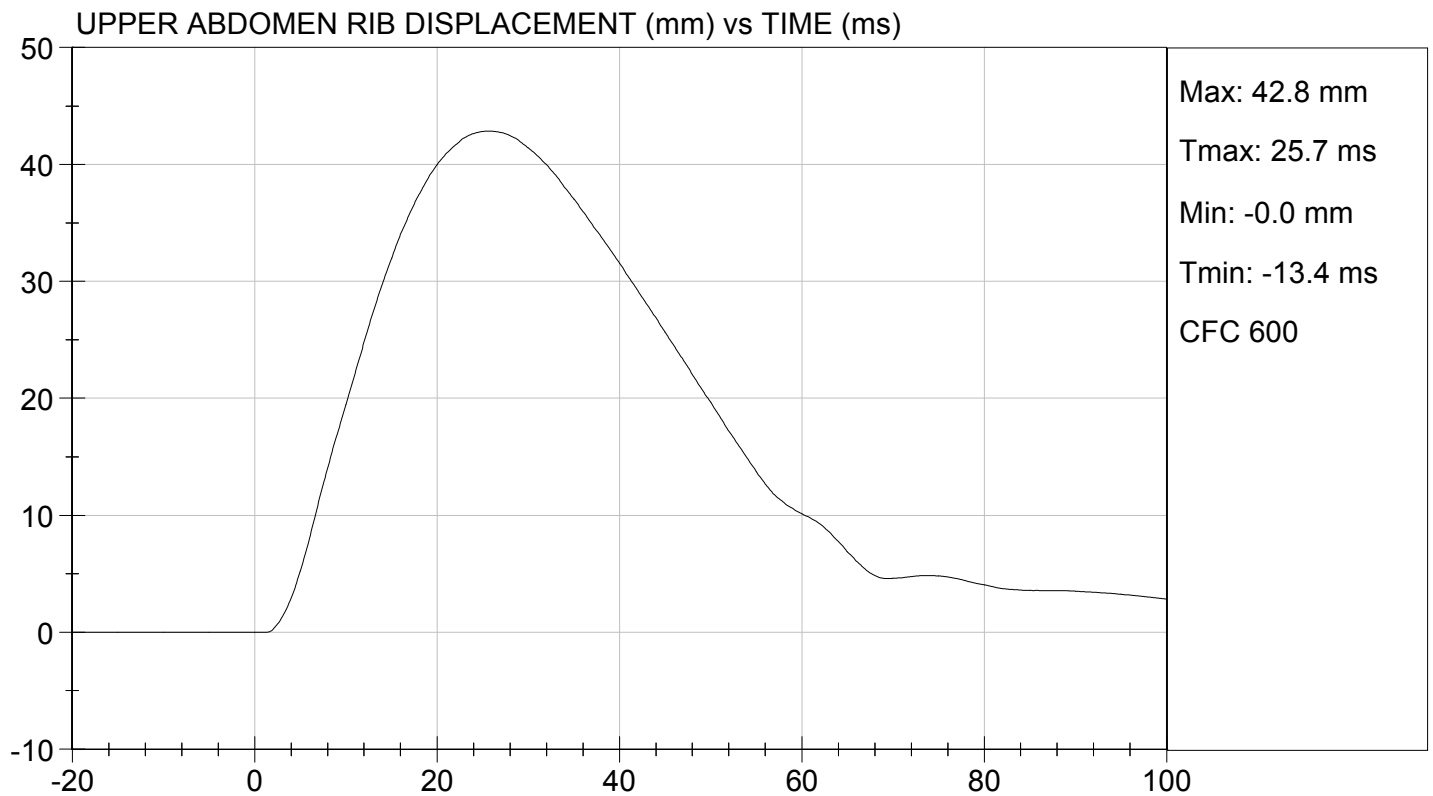
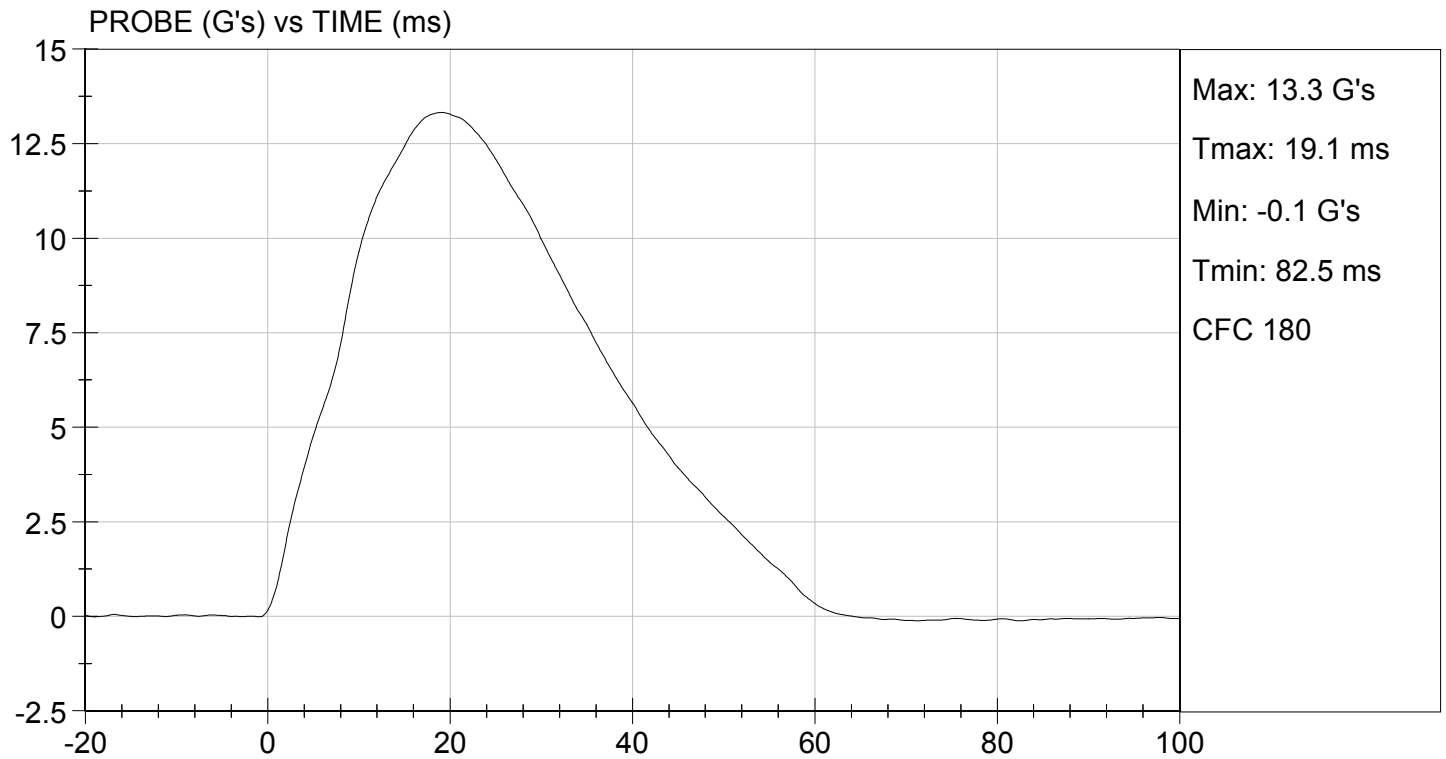
Test Date

David Winkelbauer
Approved By



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

TEST DATE: 05/09/2014
TEST #: D141786

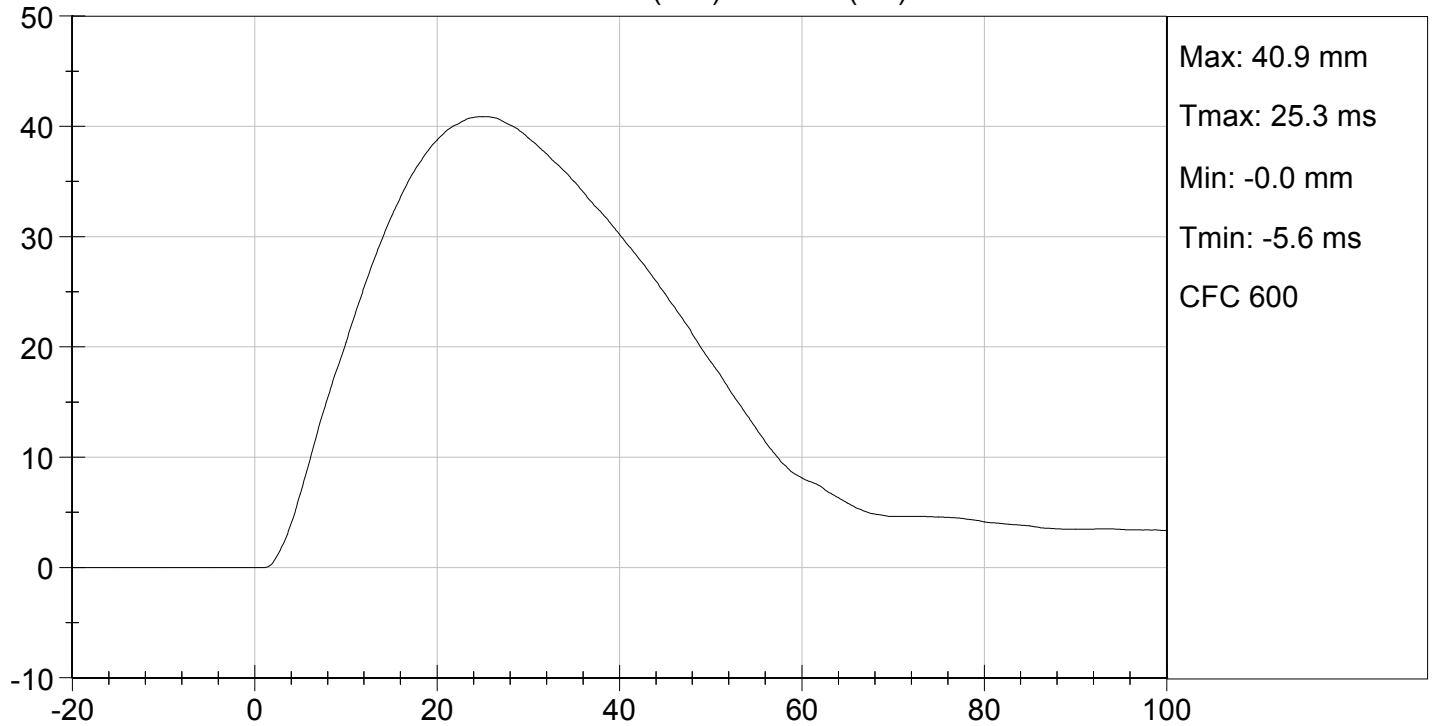




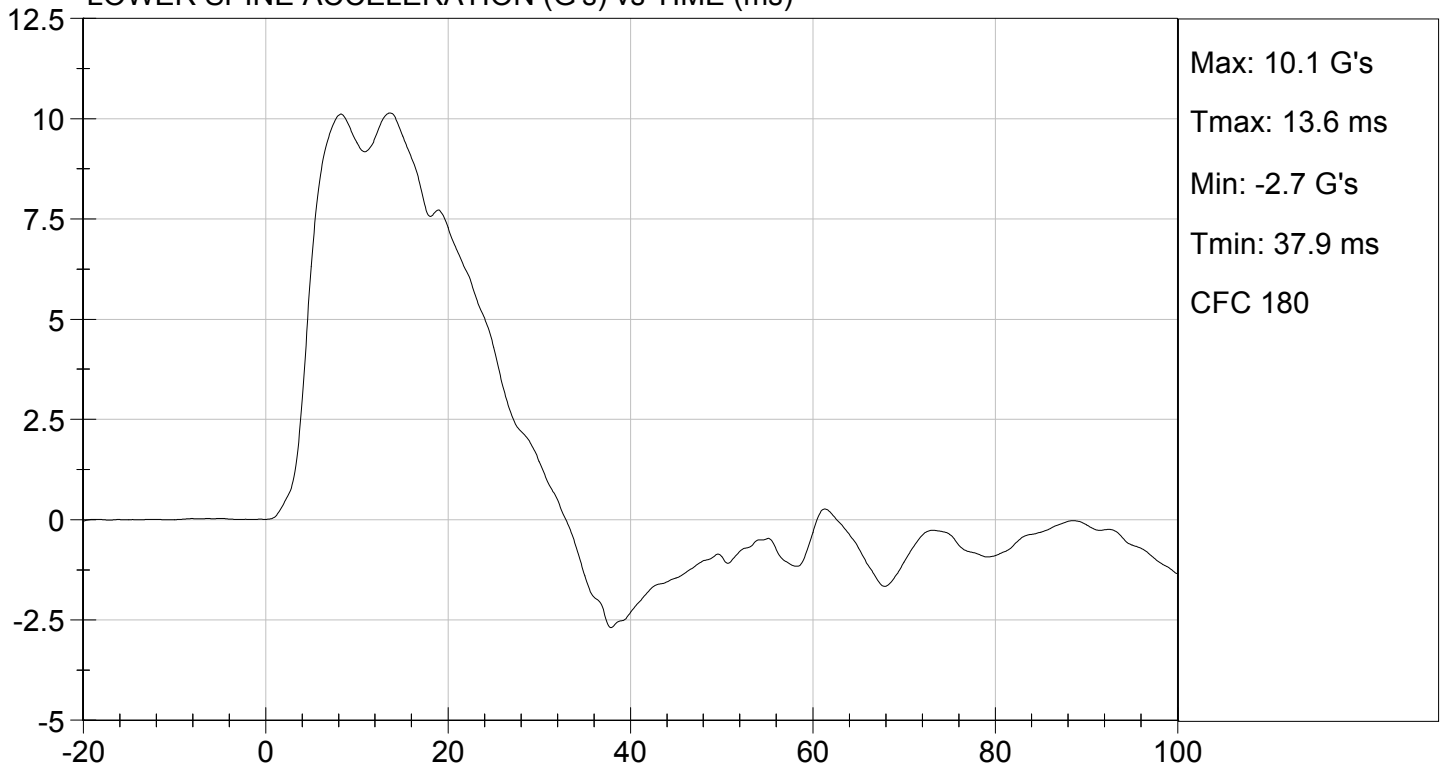
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 05/09/2014
TEST #: D141786

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



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



MGA RESEARCH CORPORATION

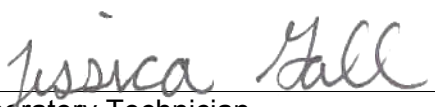
PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D141787

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4,260	Pass
Overall Test Results				Pass


Laboratory Technician

05/09/2014

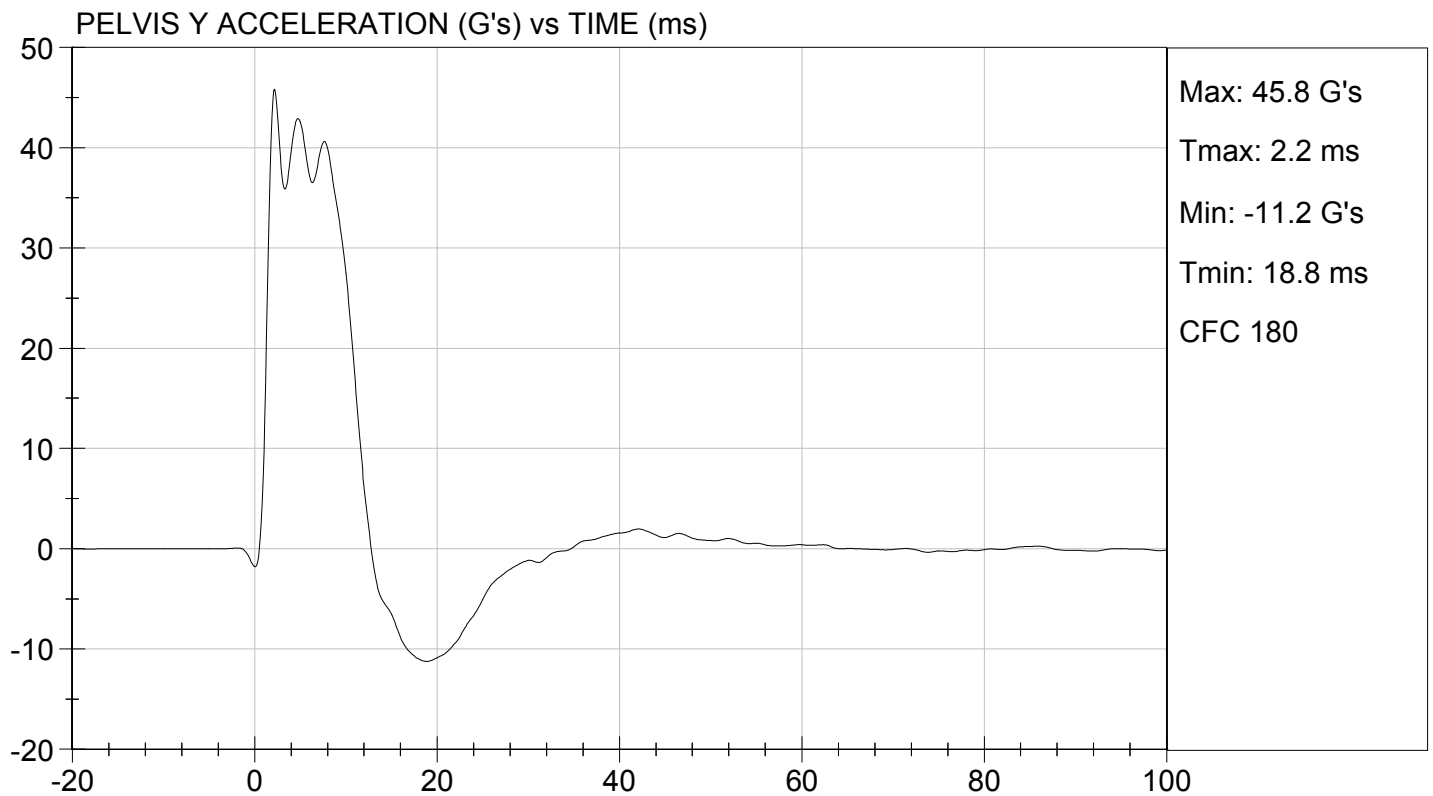
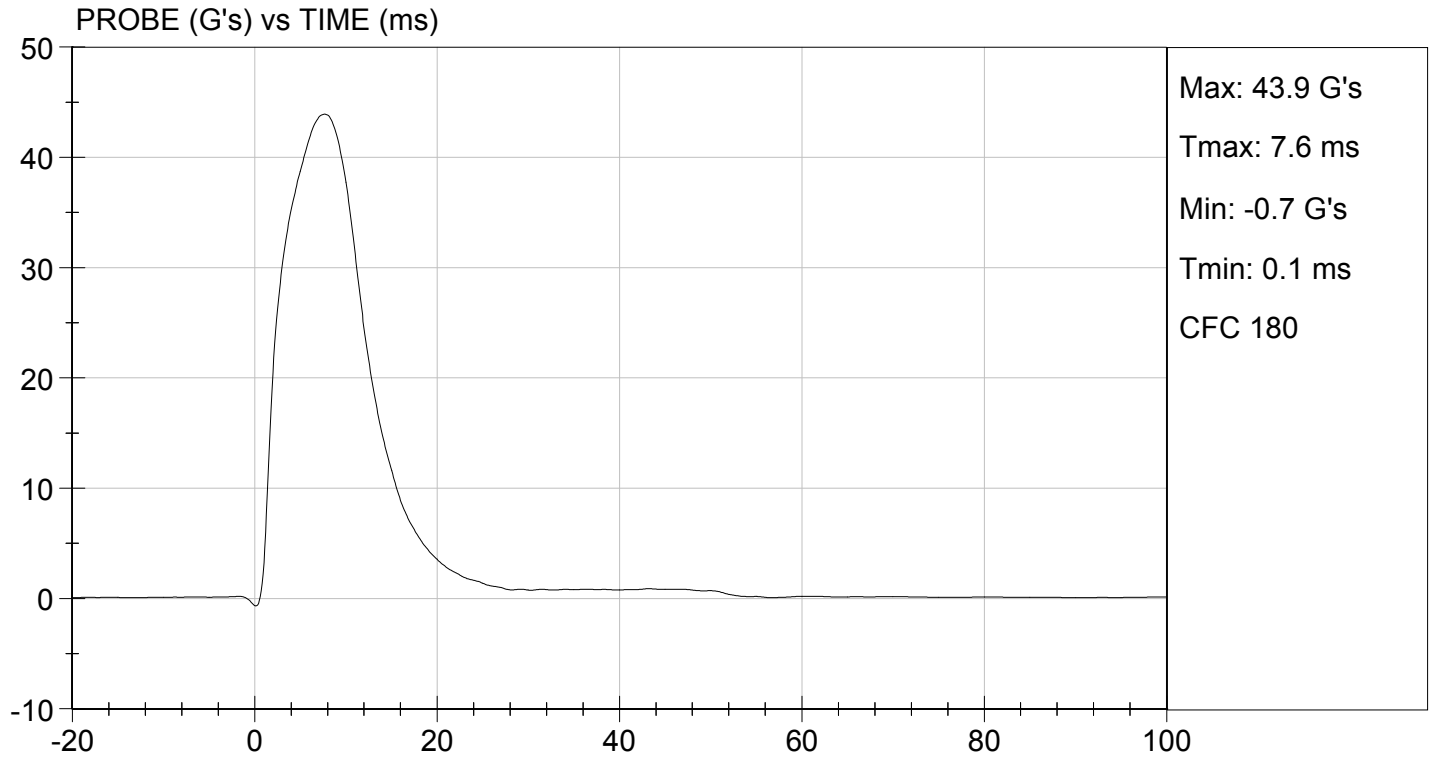
Test Date


Approved By



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

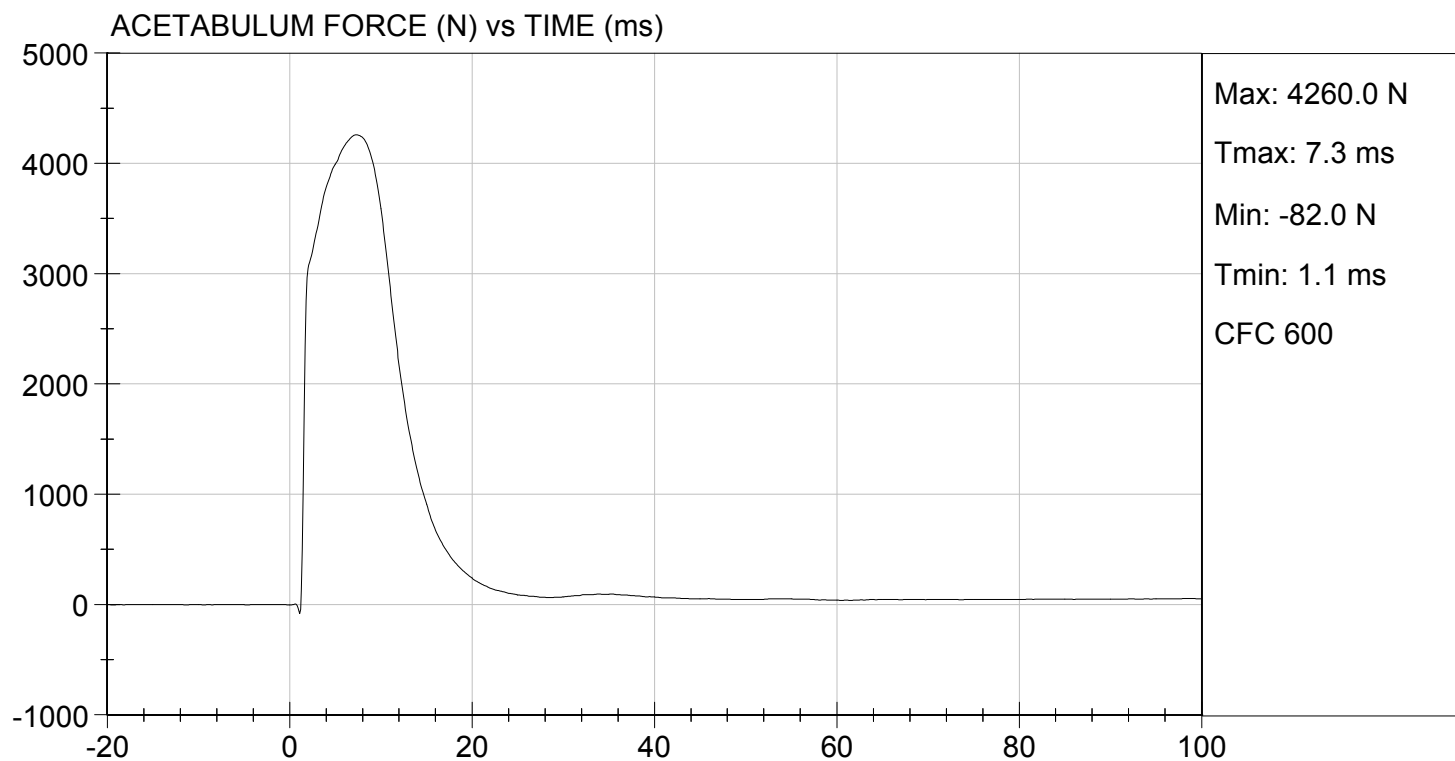
TEST DATE: 05/09/2014
TEST #: D141787





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

TEST DATE: 05/09/2014
TEST #: D141787



MGA RESEARCH CORPORATION

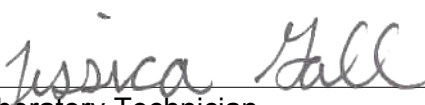
ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

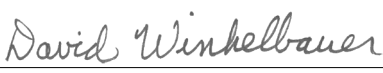
Test I.D: D141788

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	42	Pass
Pelvis Y Acceleration	G's	28 to 39	35	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,976	Pass
Overall Test Results				Pass


Laboratory Technician

05/09/2014

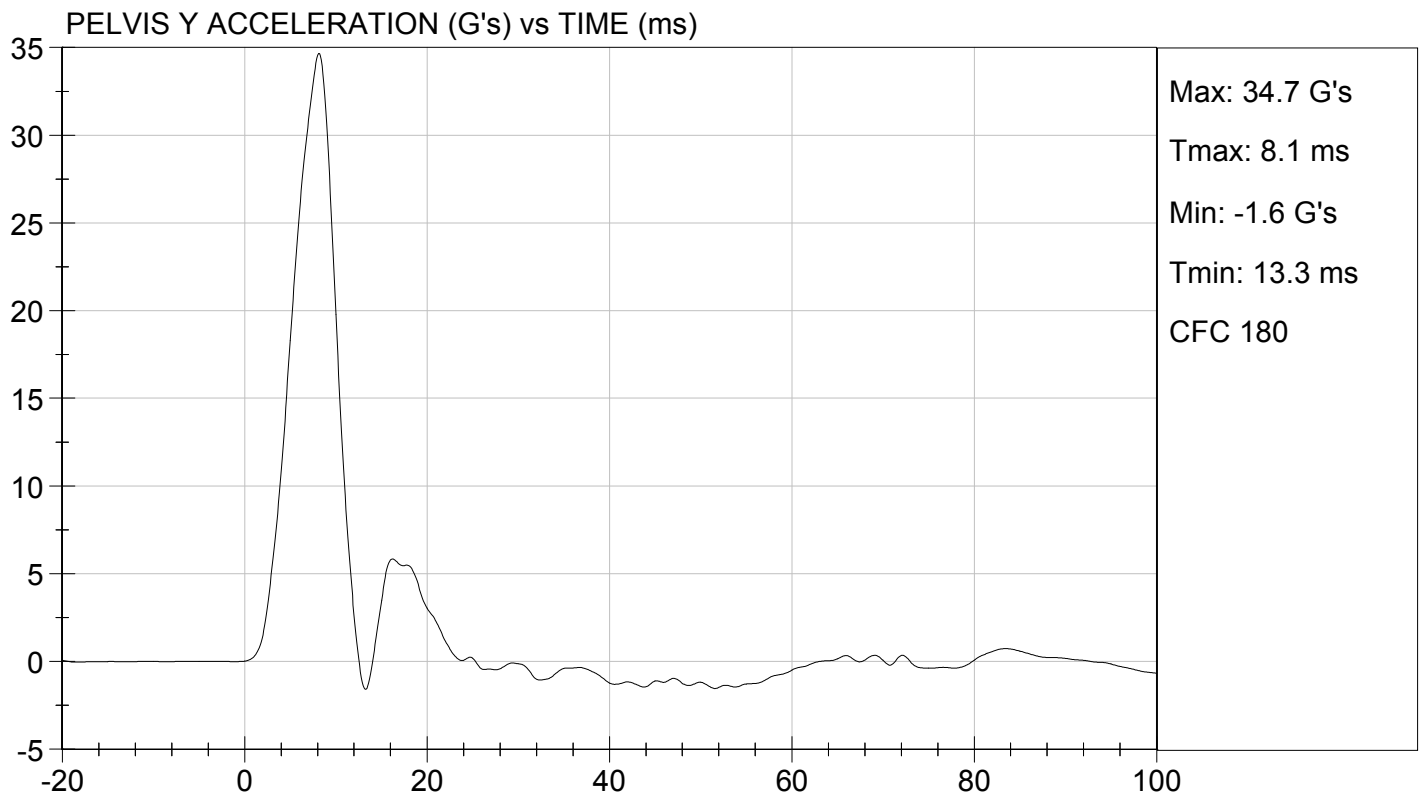
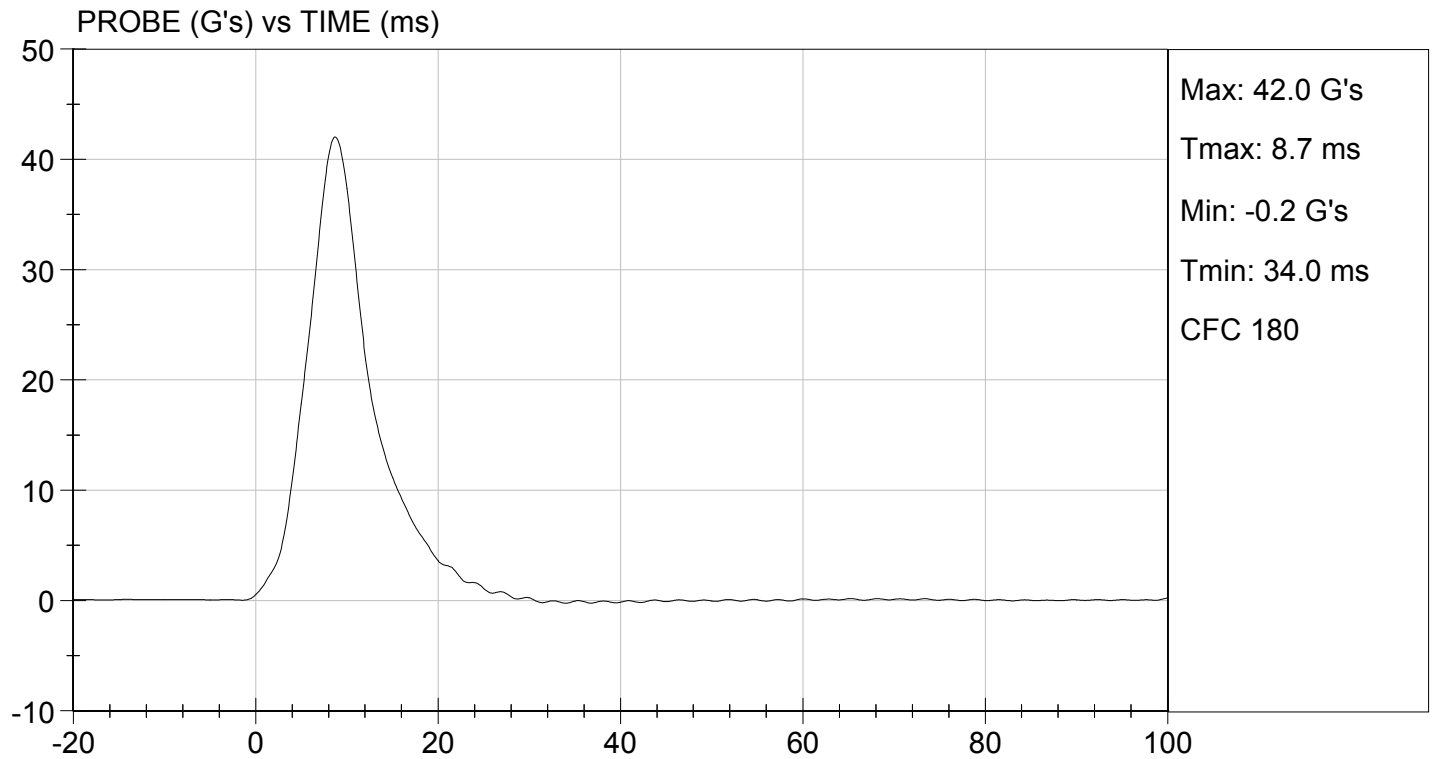
Test Date


Approved By



TEST DESC: ILLIAC
VELOCITY: 13.89 ft/s, 4.23 m/s

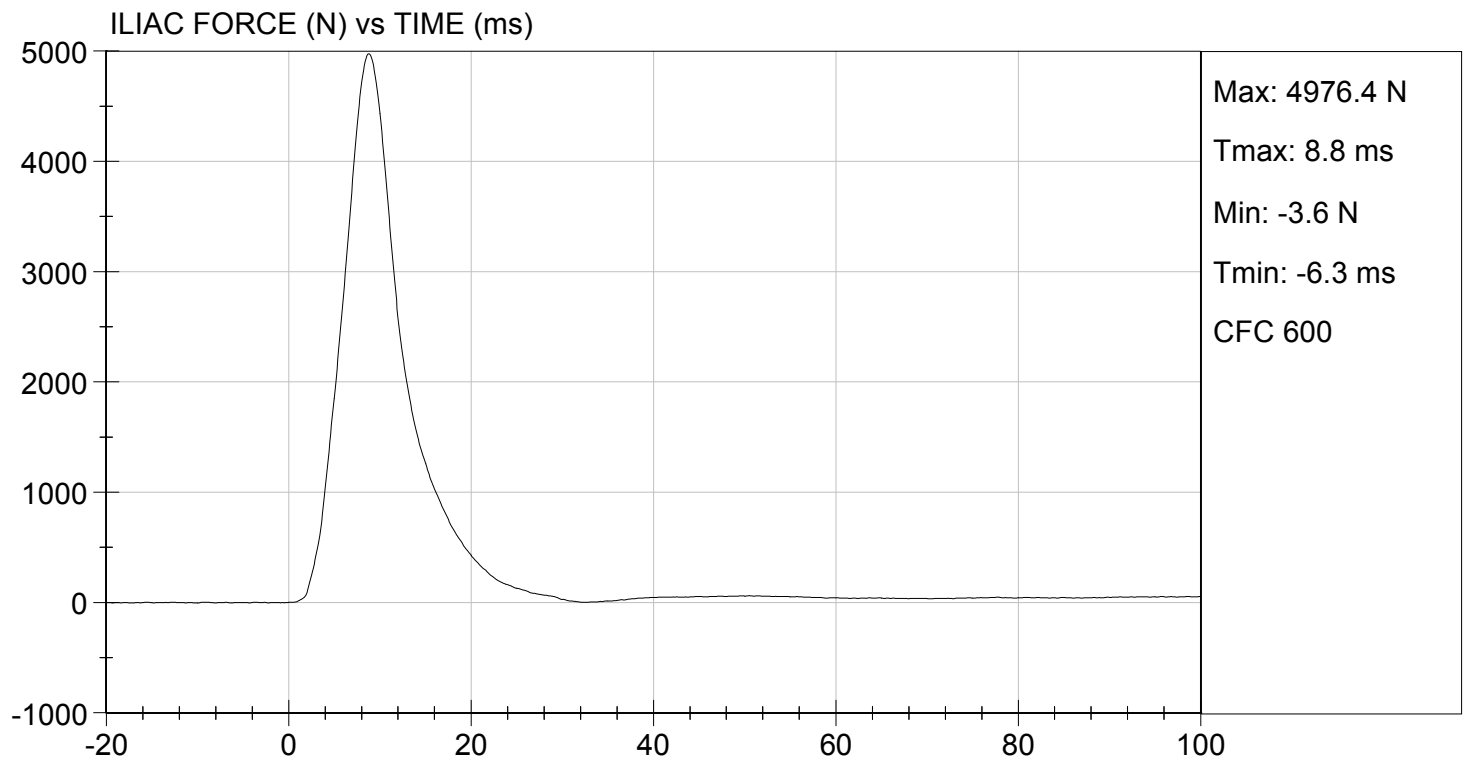
TEST DATE: 05/09/2014
TEST #: D141788



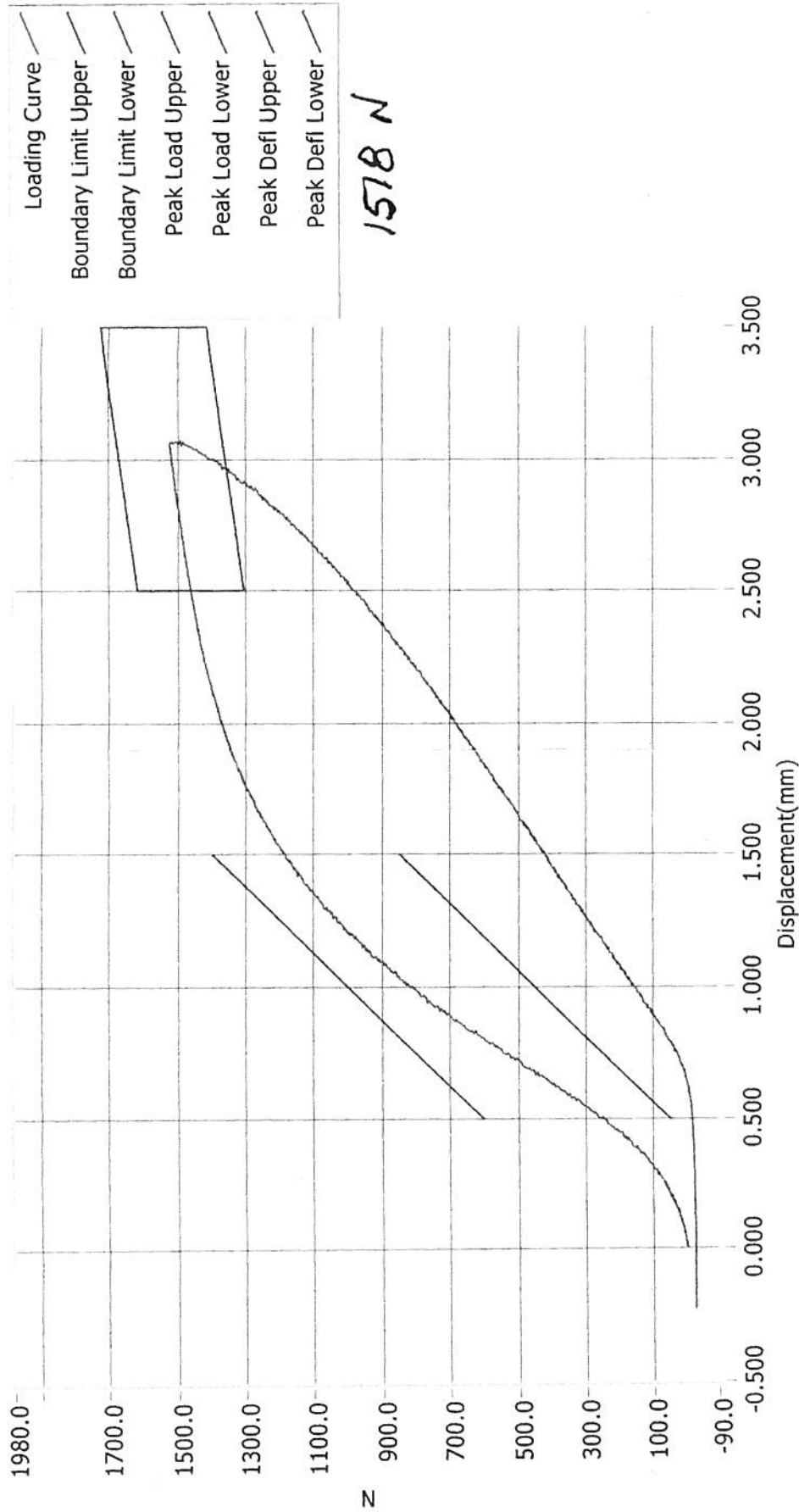


TEST DESC: ILLIAC
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 05/09/2014
TEST #: D141788



Resultant Data - SIDIIs Plug Compression



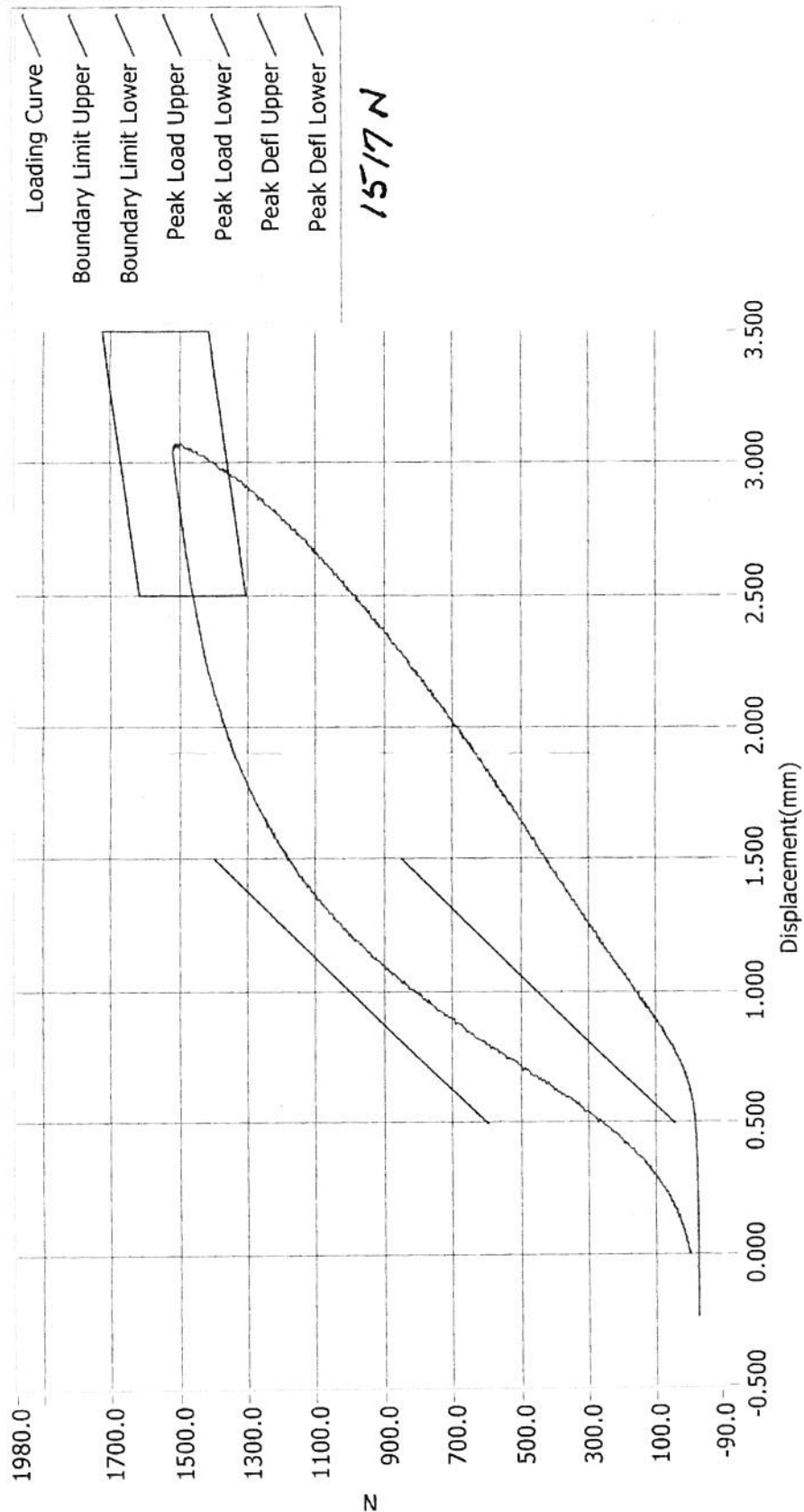
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	63288	1/24/2013	8:25 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 1/24/2013

Current Time : 20:26:05

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	63290	1/24/2013	8:36 PM
Cert ID	ATD Serial Number	ATD Type	SIDIIs
	N/A		

Current Date : 1/24/2013 Current Time : 20:36:57

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation

				SID-IIs S/N 306			
				Serial Number	Manufacturer	Calibration Date	
Head CG Accelerometers				X	P79575	Endevco	12/30/13
				Y	P79577	Endevco	12/30/13
				Z	P79578	Endevco	12/30/13
				Xr	P79799	Endevco	12/30/13
				Yr	P79802	Endevco	12/30/13
				Zr	P79803	Endevco	12/30/13
Displacement Potentiometers	Thoracic Rib	Upper	Y	G033	FTSS	04/17/14	
		Middle	Y	G1261	FTSS	04/17/14	
		Lower	Y	G1270	FTSS	04/17/14	
	Abdominal Rib	Upper	Y	G032	FTSS	04/17/14	
		Lower	Y	G1304	FTSS	04/17/14	
Lower Spine Accelerometers (T12)				X	P79441	Endevco	04/10/14
				Y	P79442	Endevco	04/10/14
				Z	P79443	Endevco	04/10/14
Acetabulum Load Cell				Y	ACG111	FTSS	04/03/14
Iliac Wing Load Cell				Y	IWG226	FTSS	04/03/14
Pelvis Plug (struck side)					63288	FTSS	01/24/13
Pelvis Plug (non-struck side)					63290	FTSS	01/29/13

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P74592	Endevco	01/14/14
Vehicle Center of Gravity	Y	P74593	Endevco	01/14/14
Vehicle Center of Gravity	Z	P74594	Endevco	01/14/14
Left Floor Sill	Y	P74326	Endevco	01/14/14
A-Pillar Sill	Y	P67886	Endevco	01/15/14
A-Pillar Low	Y	P63538	Endevco	12/18/13
A-Pillar Mid	Y	P67439	Endevco	12/23/13
B-Pillar Sill	Y	P72792	Endevco	03/19/14
B-Pillar Low	Y	P74305	Endevco	03/19/14
B-Pillar Mid	V	P68853	Endevco	03/19/14
Driver Seat	Y	P66535	Endevco	12/23/13
Engine Top	X	P66772	Endevco	03/27/14
Engine Top	Y	P66773	Endevco	04/23/14
Firewall	Y	P78881	Endevco	01/06/14
Right Roof	Y	P74653	Endevco	01/06/14
Right Floor Sill	Y	P63343	Endevco	12/11/13
Rear Floorpan	X	P73983	Endevco	03/14/14
Rear Floorpan	Y	P73984	Endevco	02/26/14

Table 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DG6277	FTSS	08/16/13
Load Cell 2	DG6278	FTSS	08/16/13
Load Cell 3	DG6279	FTSS	08/19/13
Load Cell 4	DG6280	FTSS	08/19/13
Load Cell 5	DG6281	FTSS	08/19/13
Load Cell 6	DG6283	FTSS	08/19/13
Load Cell 7	DG6284	FTSS	08/19/13
Load Cell 8	DG6582	FTSS	08/19/13