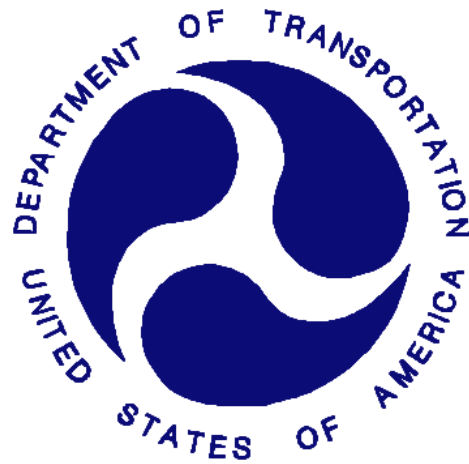


**REPORT NUMBER: SPNCAP-MGA-2016-030**

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

**FCA ITALY S.p.A.  
2016 Jeep Renegade Latitude FWD 5-Door SUV  
NHTSA No.: M20160311**

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



**Test Date: January 6, 2016**

**Final Report Date: January 13, 2016**

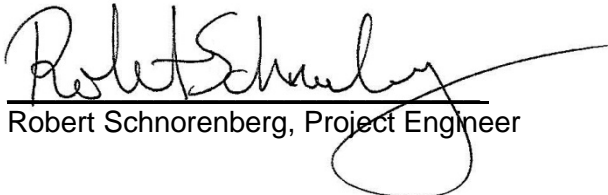
**FINAL REPORT**

**U.S. DEPARTMENT OF TRANSPORTATION  
National Highway Traffic Safety Administration  
Office of Crashworthiness Standards  
Mail Code: NRM-110  
1200 New Jersey Ave, SE  
Room W43-410  
Washington, DC 20590**

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Prepared by:   
Ben Fischer, Project Engineer

Approved by:   
Robert Schnorenberg, Project Engineer

Approval Date: February 17, 2016

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

<b>1. Report No.</b> SPNCAP-MGA-2016-030	<b>2. Government Accession No.</b>	<b>3. Recipient's Catalog No.</b>																												
<b>4. Title and Subtitle</b> Final Report of New Car Assessment Program Side Impact Pole Testing of a 2016 Jeep Renegade Latitude FWD 5-Door SUV, NHTSA No.: M20160311		<b>5. Report Date</b> January 13, 2016																												
		<b>6. Performing Organization Code</b> MGA																												
<b>7. Author(s)</b> Ben Fischer, Project Engineer		<b>8. Performing Organization Report No.</b> SPNCAP-MGA-2016-030																												
<b>9. Performing Organization Name and Address</b> MGA Research Corporation 5000 Warren Road Burlington, WI 53105		<b>10. Work Unit No.</b>																												
		<b>11. Contract or Grant No.</b> DTNH22-14-D-00353																												
<b>12. Sponsoring Agency Name and Address</b> United States Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590		<b>13. Type of Report and Period Covered:</b> Final Test Report January 6, 2016 to January 13, 2016																												
		<b>14. Sponsoring Agency Code</b> NRM-110																												
<b>15. Supplementary Notes</b>																														
<b>16. Abstract</b> A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2016 Jeep Renegade Latitude FWD 5-Door 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 January 6, 2016.  The impact velocity was 32.25 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.3°C. The test vehicle post-test maximum crush was 338 mm at level 3. The test vehicle's performance was as follows:																														
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Measurement Description</th> <th colspan="3" style="text-align: center;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="text-align: center;">Units</th> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC<sub>36</sub>)</td> <td style="text-align: center;">N/A</td> <td style="text-align: center;">1000</td> <td style="text-align: center;">222</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">Gs</td> <td style="text-align: center;">82</td> <td style="text-align: center;">41</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">2640</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">38*</td> <td style="text-align: center;">20</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">45*</td> <td style="text-align: center;">11</td> </tr> </tbody> </table>				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC <sub>36</sub> )	N/A	1000	222	Resultant Lower Spine Acceleration	Gs	82	41	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2640	Maximum Thoracic Rib Deflection	mm	38*	20	Maximum Abdomen Rib Deflection	mm	45*	11
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*Proposed IARV																														
The 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.																														
<b>17. Key Words</b> New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		<b>18. Distribution Statement</b> 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: <a href="mailto:tis@nhtsa.dot.gov">tis@nhtsa.dot.gov</a> FAX: 202-493-2833																												
<b>19. Security Classification of Report</b> Unclassified	<b>20. Security Classification of Page</b> Unclassified	<b>21. No. of Pages</b> 136	<b>22. Price</b>																											

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**SECTION 1**  
**TEST PURPOSE AND PROCEDURE**

This 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 Jeep Renegade Latitude FWD 5-Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated October 2015.

## SECTION 2 SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2016 Jeep Renegade Latitude FWD 5-Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.25 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on January 6, 2016. 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 October 2015. 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 <sub>36</sub> )	N/A	1000	222
Resultant Lower Spine Acceleration	Gs	82	41
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2640
Maximum Thoracic Rib Deflection	mm	38*	20
Maximum Abdominal Rib Deflection	mm	45*	11

\*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	Yes	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](http://www.nhtsa.dot.gov)

### **GENERAL COMMENTS**

Left B-Post @ Sill Y had no valid data after 20ms.  
Left Mid B-Post Y had questionable 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 SHEET NO. 1  
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA No.	M20160311	Traction Control System (TCS)	Yes
Model Year	2016	Auto-Leveling System	No
Make	Jeep	Automatic Door Locks (ADL)	Yes
Model	Renegade Latitude	Power Window Auto-Reverse	No
Body Style	5-Door SUV	Other Optional Feature	N/A
VIN	ZACCJABT1GPC44431	Driver Front Airbag	Yes
Body Color	Colorado Red	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	237km / 147mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.4	Driver Torso Airbag	No
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	9	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	FWD	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 Restraint Feature	N/A

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

**DATA FROM CERTIFICATION LABEL**

Manufactured By	FCA ITALY S.p.A.	GVWR (kg)	1940
Date of Manufacture	09/15	GAWR Front (kg)	1050
Vehicle Type	MPV	GAWR Rear (kg)	900

**VEHICLE SEATING AND WEIGHT CAPACITY DATA**

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				390	(A)
DSC x 68.04 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				50	(A-B)

**VEHICLE SEAT TYPE**

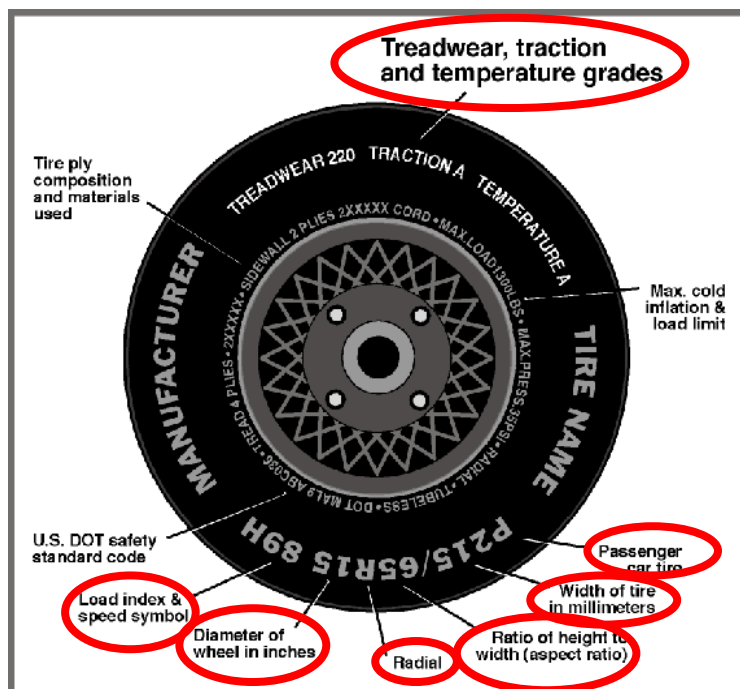
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					w/ lever	
Rear or Second Row				X	X		
Third Row Seat							

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**VEHICLE TIRE INFORMATION**



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	340	340
Cold Pressure (kPa)	240	240
Recommended Tire Size	215/60R17	215/60R17
Tire Size on Vehicle	215/60R17	215/60R17
Tire Manufacturer	Kumho	Kumho
Tire Model	Crugen	Crugen
Treadwear	440	440
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	2 Steel , 2 Polyester, 2 Nylon	2 Steel , 2 Polyester, 2 Nylon
Load Index/Speed Symbol	100V	100V
Tire Material	Rubber	Rubber
DOT Safety Code Left	H2ED YCNH 2115	H2ED YCNH 2115
DOT Safety Code Right	H2ED YCNH 2115	H2ED YCNH 2115

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**TEST PRESSURES**

	Units	LF	RF	LR	RR
As Delivered	kpa	195	200	195	195
Tire Placard	kpa	240	240	240	240
Owner's Manual	kpa	240	240	240	240
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	456.0	287.0		473.5	326.5		471.0	330.0	
Right	kg	438.0	273.5		446.5	303.0		443.5	312.0	
Ratio	%	61.5	38.5		59.4	40.6		58.8	41.2	
Totals	kg	894.0	560.5	1454.5	920.0	629.5	1549.5	914.5	642.0	1556.5

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1454.5	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	50	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1556.5	(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	0.2	0.3	0.7	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	0.0	0.2	0.5	Yes
Front Bumper Angle (left-to-right)**	deg	0.4	0.4	0.3	Yes
Rear Bumper Angle (left-to-right)**	deg	0.2	0.2	0.1	Yes
Vehicle CG (Aft of Front Axle)	mm	988	1041	1058	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	17	25	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)	
None	

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: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**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	21.3	16.1	18.7
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 SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-most	Mid-Fore/Aft	Forward-Most
Driver Seat	18.7	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
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 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

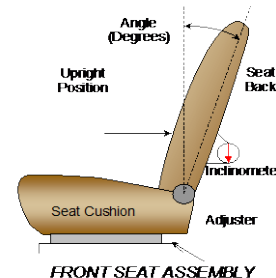
NHTSA No. M20160311  
 Test Date: 1/6/2016

**SEAT FORE/AFT POSITIONS**

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	230	24 (1 <sup>st</sup> as 1)	0	0 <sup>th</sup> (1 <sup>st</sup> as 0)
Front Passenger Seat	260	27 (1 <sup>st</sup> as 1)	0	0 <sup>th</sup> (1 <sup>st</sup> as 0)
Front Center Seat				
Struck Side Rear Seat	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	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 5<sup>th</sup> 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	70.3	37 (1 <sup>st</sup> as 1)	-6.5	16 <sup>th</sup> (1 <sup>st</sup> as 0)
Front Passenger Seat	109.2	N/A	-5.7	N/A
Front Center Seat				
Struck Side Rear Seat	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	Fixed		Fixed	

Seat back angles measured on outboard 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 <sup>st</sup> as 1)	2 <sup>nd</sup> (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	4 (1 <sup>st</sup> as 1)	0 <sup>th</sup> (Lowest as 0)

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

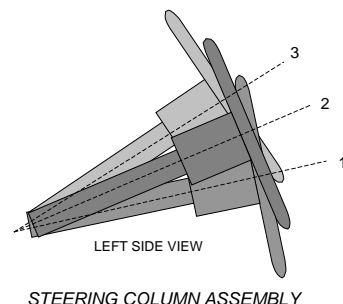
Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**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.

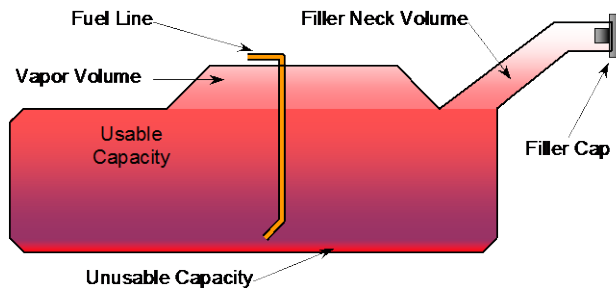
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	66.3	248
Geometric Center, Position 2	63.8	273
Uppermost, Position 3	61.2	298
Telescoping Steering Wheel Travel		50
Test Position	63.8	273



**FUEL PUMP**

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

the filler neck is located on the passenger's side.



**VEHICLE FUEL TANK ASSEMBLY**

**FUEL TANK CAPACITY DATA**

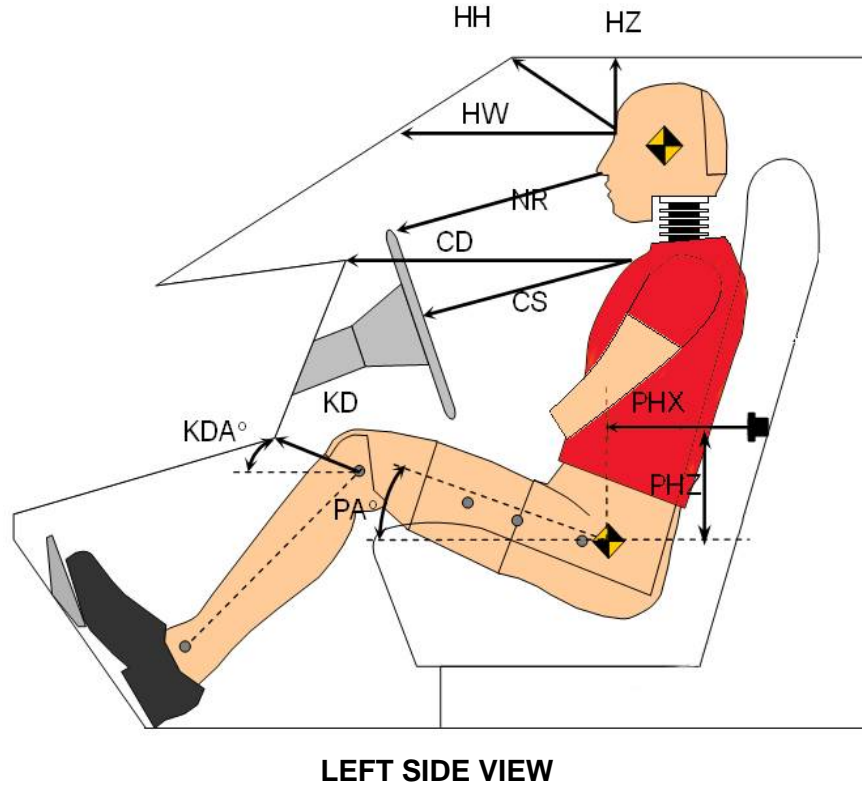
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	48.1
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	48.1
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	44.7
Actual Amount of Solvent Used	44.7
1/3 of Usable Capacity	16.0

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 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

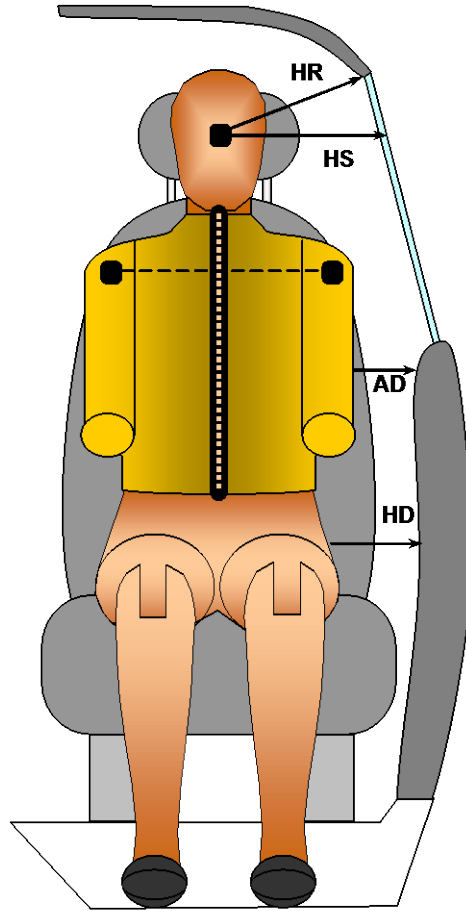


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	435	
HW	Head to Windshield	733	
HZ	Head to Roof Liner	311	
NR	Nose to Rim	260	
CD	Chest to Dashboard	446	
CS	Chest to Steering Wheel	195	
KDL/KDAL°	Left Knee to Dash	139	26.9
KDR/KDAR°	Right Knee to Dash	136	27.2
PAX°	Pelvic Tilt Angle (X-Axis)		21.3
PAY°	Pelvic Tilt Angle (Y-Axis)		-1.1
PHX	Hip Point to Striker (X-Axis)	278	
PHZ	Hip Point to Striker (Z-Axis)	101	

**DATA SHEET NO. 4  
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



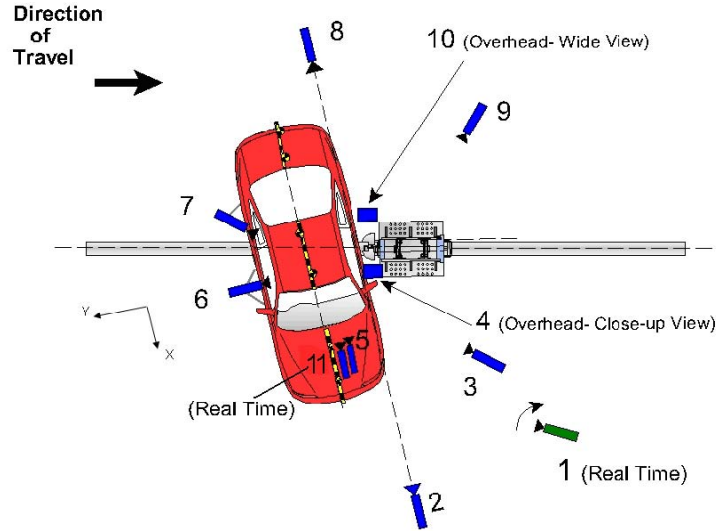
**FRONT VIEW OF DUMMY**

Code	Measurement Description	Driver
		Length (mm)
HR	Head to Side Header	296
HS	Head to Side Window	400
AD	Arm to Door	176
HD	Hip Point to Door	165

**DATA SHEET NO. 5  
CAMERA AND INSTRUMENTATION DATA**

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



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	5430	-40	-1970	24	1000
3	Impact Side 45° Forward	4600	-1630	-1900	20	1000
4	Overhead Closeup	0	0	-4890	50	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-6170	-70	-1990	24	1000
9	Impact Side 45° Rearward	-3210	-3600	-1950	20	1000
10	Overhead Wide View	50	420	-4910	14	1000
11	Real-Time Dummy Front View					30

\*All measurements accurate to  $\pm 6$  mm

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

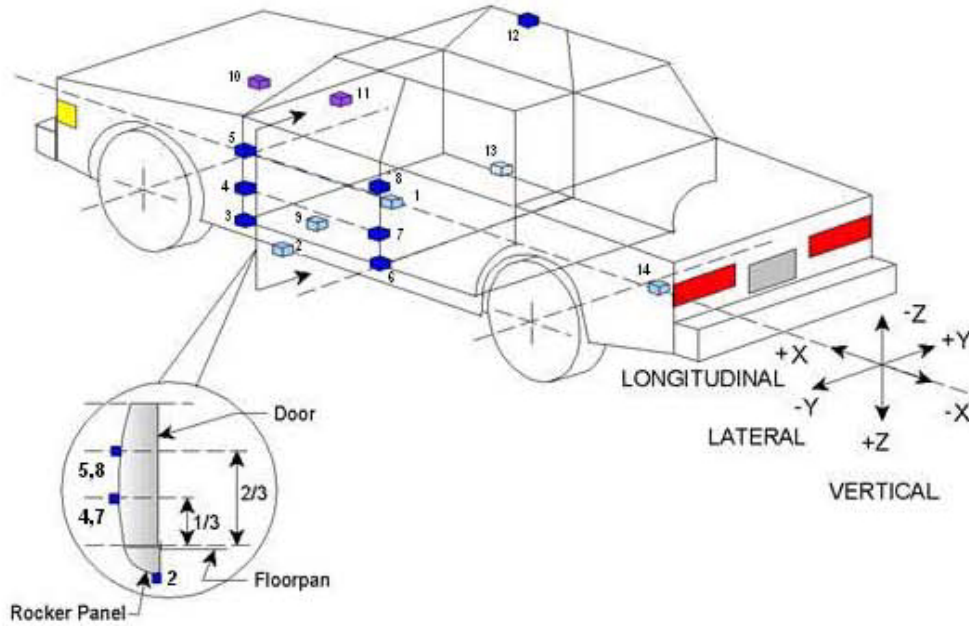
Explain why camera(s) did not operate as intended: None

INSTRUMENTATION	Number of Channels
Driver Dummy	19
Vehicle Structure	18
Pole Load Cells	8
<b>TOTAL</b>	<b>45</b>

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2169	0	-372
2	Left Floor Sill	2594	-700	-269
3	A Pillar Sill	2885	-692	-285
4	A Pillar Low	2829	-803	-616
5	A Pillar Mid	2836	-786	-840
6	B Pillar Sill	1560	-697	-274
7	B Pillar Low	1812	-712	-647
8	B Pillar Mid	1755	-718	-884
9	Driver Seat Track	2020	-352	-320
10	Engine Top	3570	0	-900
11	Firewall	3335	0	-995
12	Right Roof	1800	510	-1651
13	Right Floor Sill	2594	700	-272
14	Rear Floorpan	215	0	-433

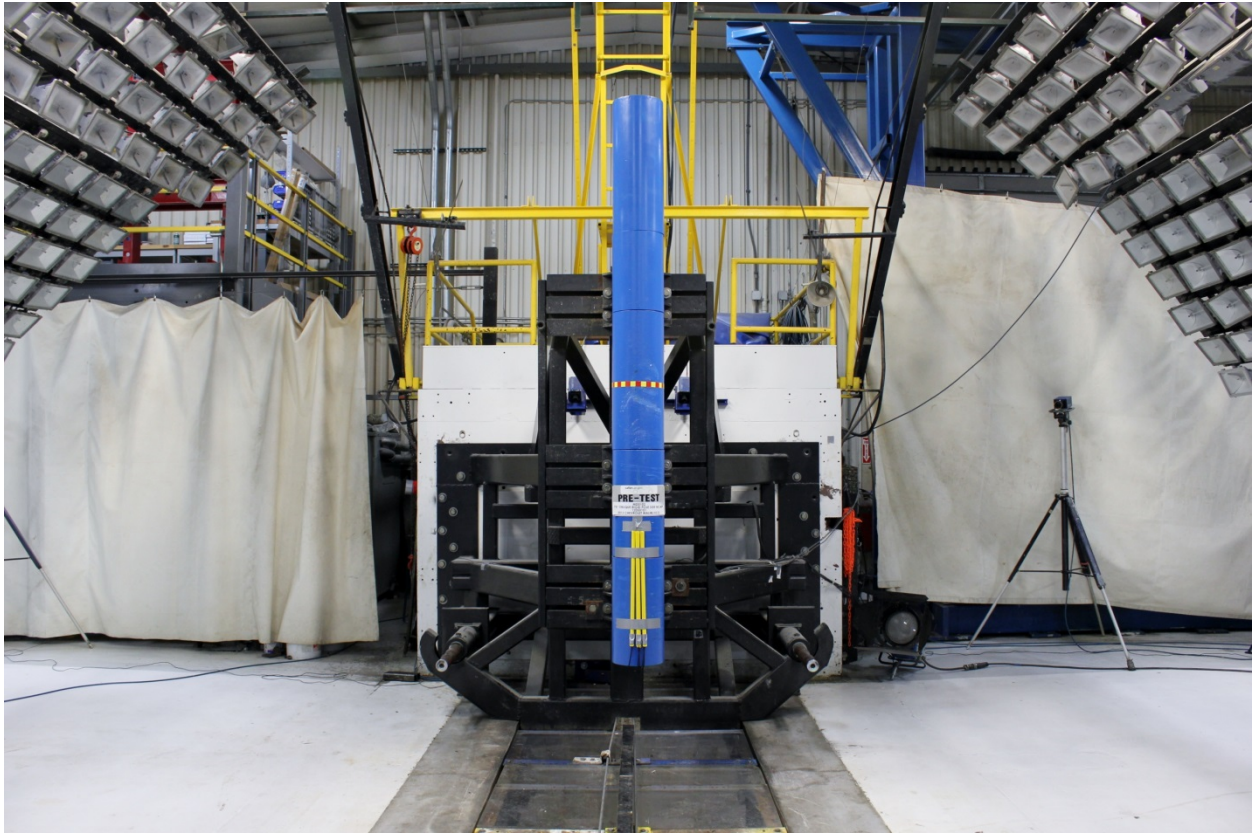
Reference:

- 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: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
Test Date: 1/6/2016



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: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**TEST DUMMY INFORMATION AND CONTACT POINTS**

Description	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Side Airbag, Seatback
Upper Torso	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag, Seat Cushion
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 Cracked
Other Notable Effects	None

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

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

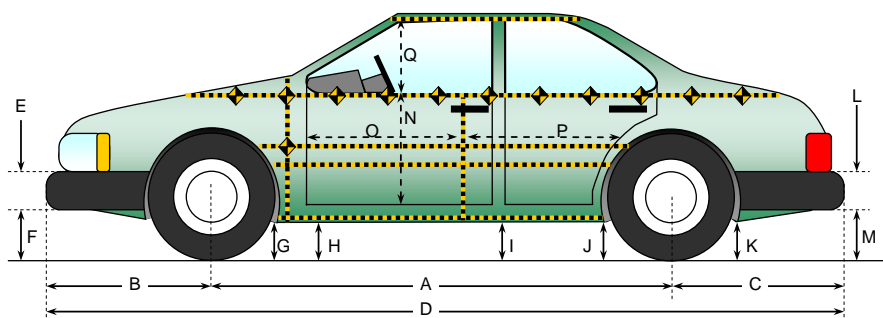
**VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA**

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1077
Actual Impact Point (Aft of Front Axle)	mm		1076
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	1
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	32.25
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.29

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



All measurements in (mm) with tolerance of  $\pm 3$  mm

**LEFT SIDE VIEW**

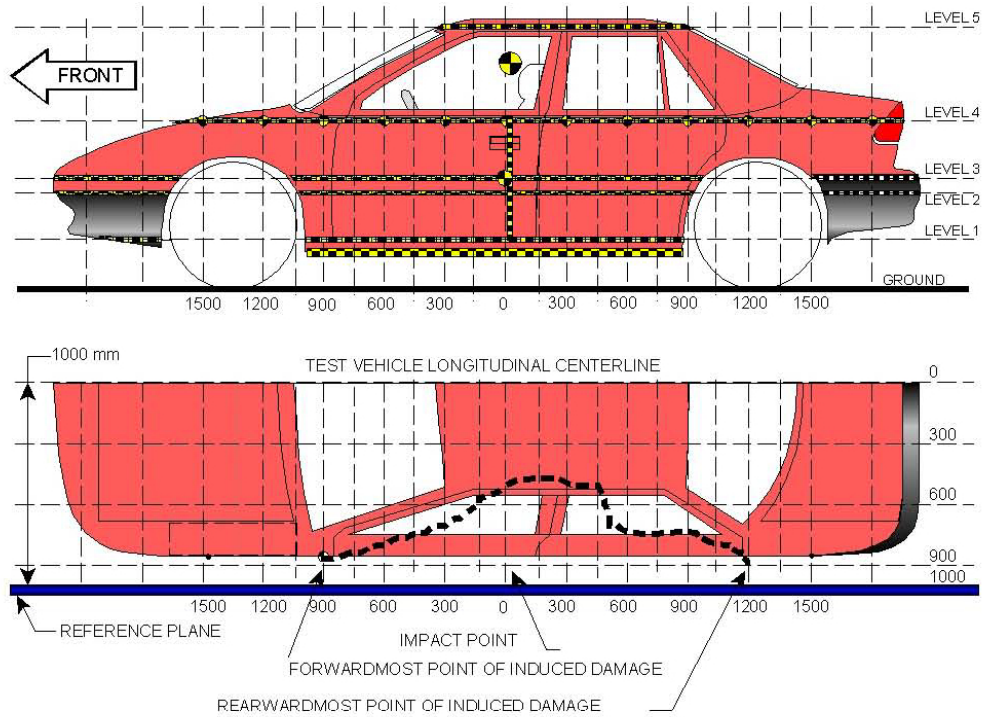
**VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION**

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2564	2495	69
B	Front Axle to FSOV	874	921	-47
C	Rear Axle to RSOV	793	788	5
D	Total Vehicle Length at Centerline	4231	4204	27
E	Front Bumper Thickness	130	130	0
F	Front Bumper Bottom to Ground	170	171	-1
G	Sill Height at Front Wheel Well	254	234	20
H	Sill Height at Front Door Leading Edge	254	219	35
I	Sill Height at B-Pillar	254	224	30
J1	Sill Height at Rear Wheel Well	248	263	-15
J2	Pinch Weld Height at Rear Wheel Well	250	271	-21
K	Sill Height Aft of Rear Wheel Well	254	258	-4
L	Rear Bumper Thickness	125	125	0
M	Rear Bumper Bottom to Ground	253	250	3
N	Sill Height to Bottom of Front Window Sill	806	821	-15
O	Front Door Leading Edge to Impact CL	662	529	133
P	Rear Door Trailing Edge to Impact CL	1221	1137	84
Q	Front Window Opening	466	426	40
R	Right Side Length	3680	3674	6
S	Left Side Length	3680	3574	106
T	Vehicle Width at B-Pillars	1768	1669	99

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



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 MEASUREMENTS**

Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	390	299	0
2	Occupant Hip Point	660	337	0
3	Mid Door	698	338	0
4	Window Sill	1065	287	0
5	Window Top	1560	169	0

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016

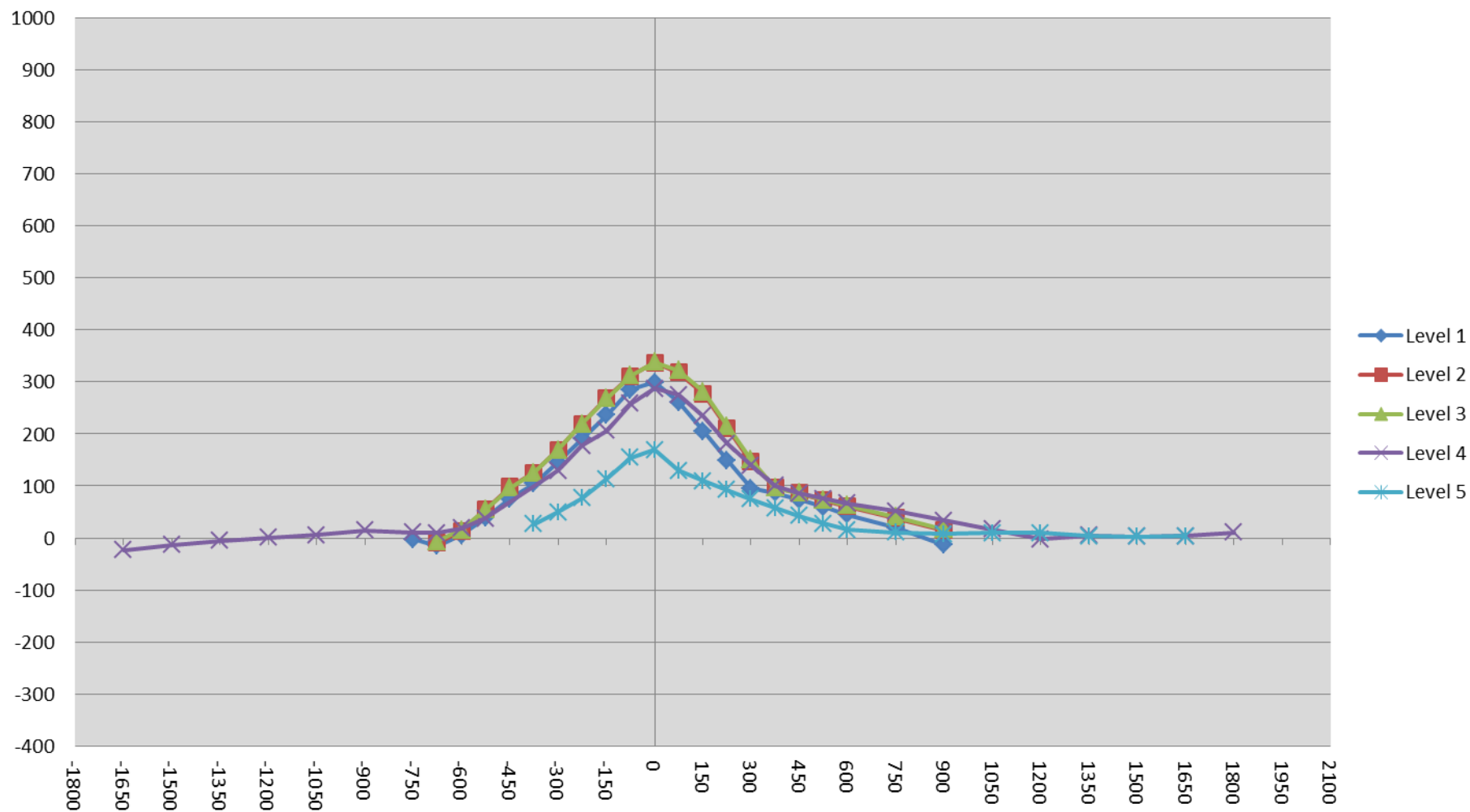
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-2700															
-2550															
-2400															
-2250															
-2100															
-1950															
-1800															
-1650				410					387					-23	
-1500				381					368					-13	
-1350				360					355					-5	
-1200				344					345					1	
-1050				329					335					6	
-900				314					329					15	
-825															
-750	227			300		224			310		-3			10	
-675	220	203	203	293		204	193	196	302		-16	-10	-7	9	
-600	222	214	214	287		228	228	230	306		6	14	16	19	
-525	231	219	219	289		270	274	274	327		39	55	55	38	
-450	235	222	221			311	320	317			76	98	96		
-375	236	222	221		482	340	347	346		509	104	125	125		27
-300	236	221	220	288	469	381	390	389	417	519	145	169	169	129	50
-225	235	221	220	285	464	425	440	439	462	541	190	219	219	177	77
-150	234	219	219	283	457	470	488	487	489	570	236	269	268	206	113
-75	233	219	218	281	453	518	530	530	539	607	285	311	312	258	154
0	233	218	217	278	450	532	555	555	565	619	299	337	338	287	169
75	233	218	216	278	447	494	536	538	553	576	261	318	322	275	129
150	233	217	216	275	445	438	494	497	509	554	205	277	281	234	109
225	232	216	216	275	444	381	427	431	456	536	149	211	215	181	92
300	231	216	215	273	442	326	362	365	412	517	95	146	150	139	75
375	233	217	217	270	441	319	314	313	370	499	86	97	96	100	58
450	233	219	218	270	441	307	305	304	355	484	74	86	86	85	43
525	233	220	219	268	440	293	293	293	344	468	60	73	74	76	28
600	234	220	219	267	440	279	281	282	334	456	45	61	63	67	16
675															
750	228	220	219	266	440	248	259	260	318	451	20	39	41	52	11
825															
900	227	211	212	266	441	214	226	229	300	449	-13	15	17	34	8
1050				269	442				286	452				17	10
1200				271	446				269	456				-2	10
1350				275	452				280	456				5	4
1500				280	460				283	463				3	3
1650				289	475				293	479				4	4
1800				302					313					11	
1950															
2100															
2250															
2400															
2550															
2700															

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: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

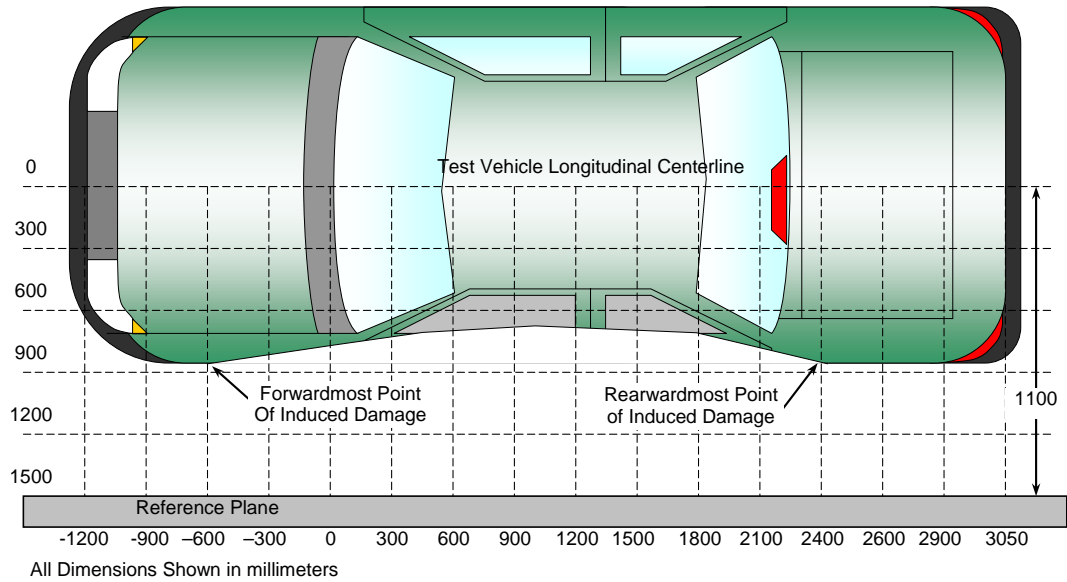
NHTSA No. M20160311  
Test Date: 1/6/2016



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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



**TOP VIEW**

**DAMAGE PROFILE DISTANCES**

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	400	3	217	314	97
2	180	3	216	470	254
3	-40	3	217	546	329
4	-260	3	220	414	194
5	-480	3	220	300	80
6	-700	3	203	196	-7

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

Test Vehicle: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

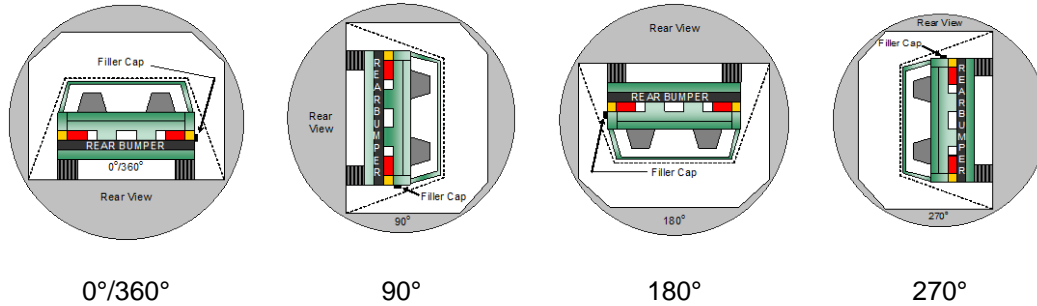
NHTSA No. M20160311  
Test Date: 1/6/2016

Test Time: 10:02 a.m.

Temperature: 21.3°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°	111	300	411
90° to 180°	109	300	409
180° to 270°	108	300	408
270° to 360°	112	300	412

**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

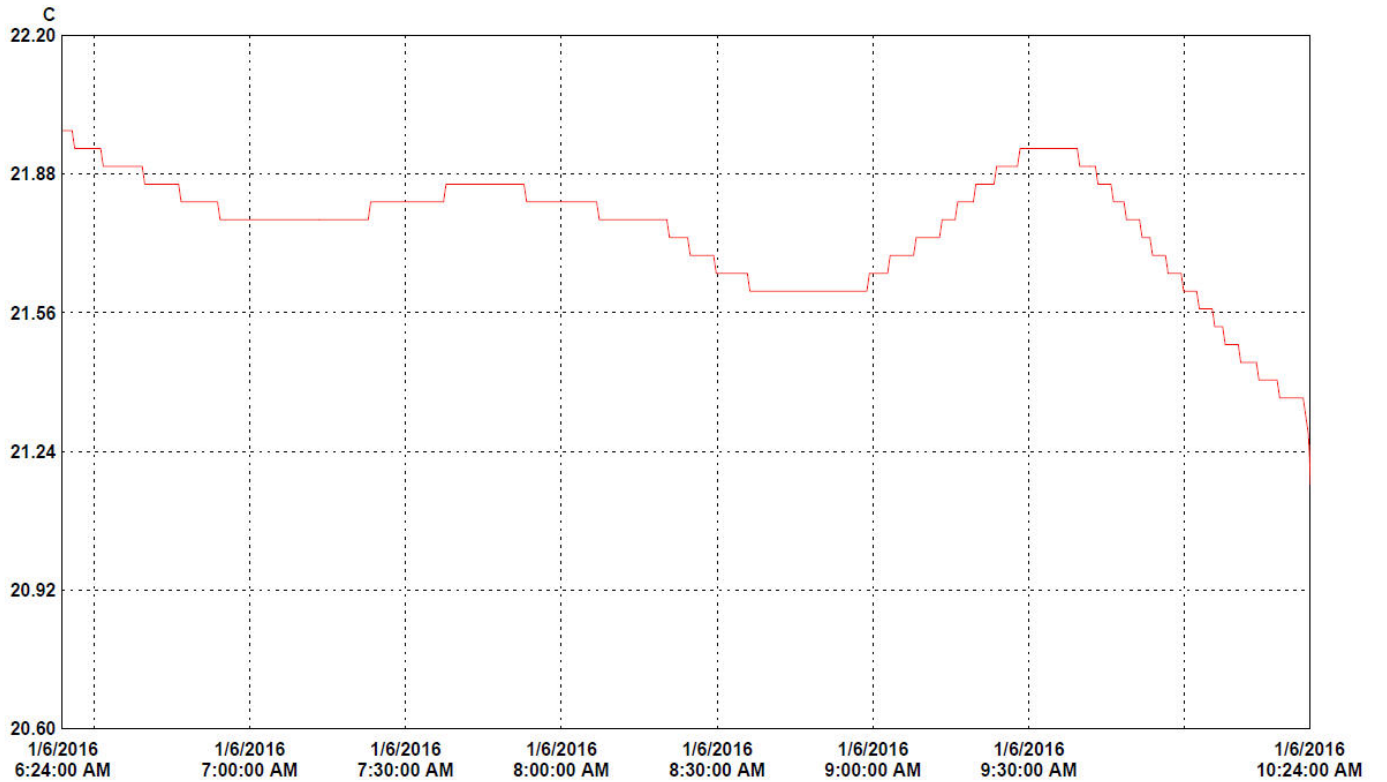
**ROLLOVER SOLVENT SPILLAGE LOCATION TABLE**

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: 2016 Jeep Renegade Latitude FWD 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. M20160311  
 Test Date: 1/6/2016



30 minutes/div 4 hours (M/d/yyyy h:mm:ss tt) Central Time Graph file (truncated): M20160311 2016 Jeep Renegade Latitude FWD 5-Dr SUV SPNCAP.

LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	12032257	CrashPrep1	1	21.98	21.75	21.28	C	Temperature	12032257_CrashPrep1.spl	

**APPENDIX A  
PHOTOGRAPHS**

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Photo No. 001 - As Delivered Right Front  $\frac{3}{4}$  View of Test Vehicle



Photo No. 002 - As Delivered Left Rear  $\frac{3}{4}$  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  $\frac{3}{4}$  View of Test Vehicle



Photo No. 006 - Post-Test Left Front  $\frac{3}{4}$  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 Rear  $\frac{3}{4}$  View of Test Vehicle



Photo No. 010 - Post-Test Left Rear  $\frac{3}{4}$  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 Pole Positioned Against Side of Vehicle



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

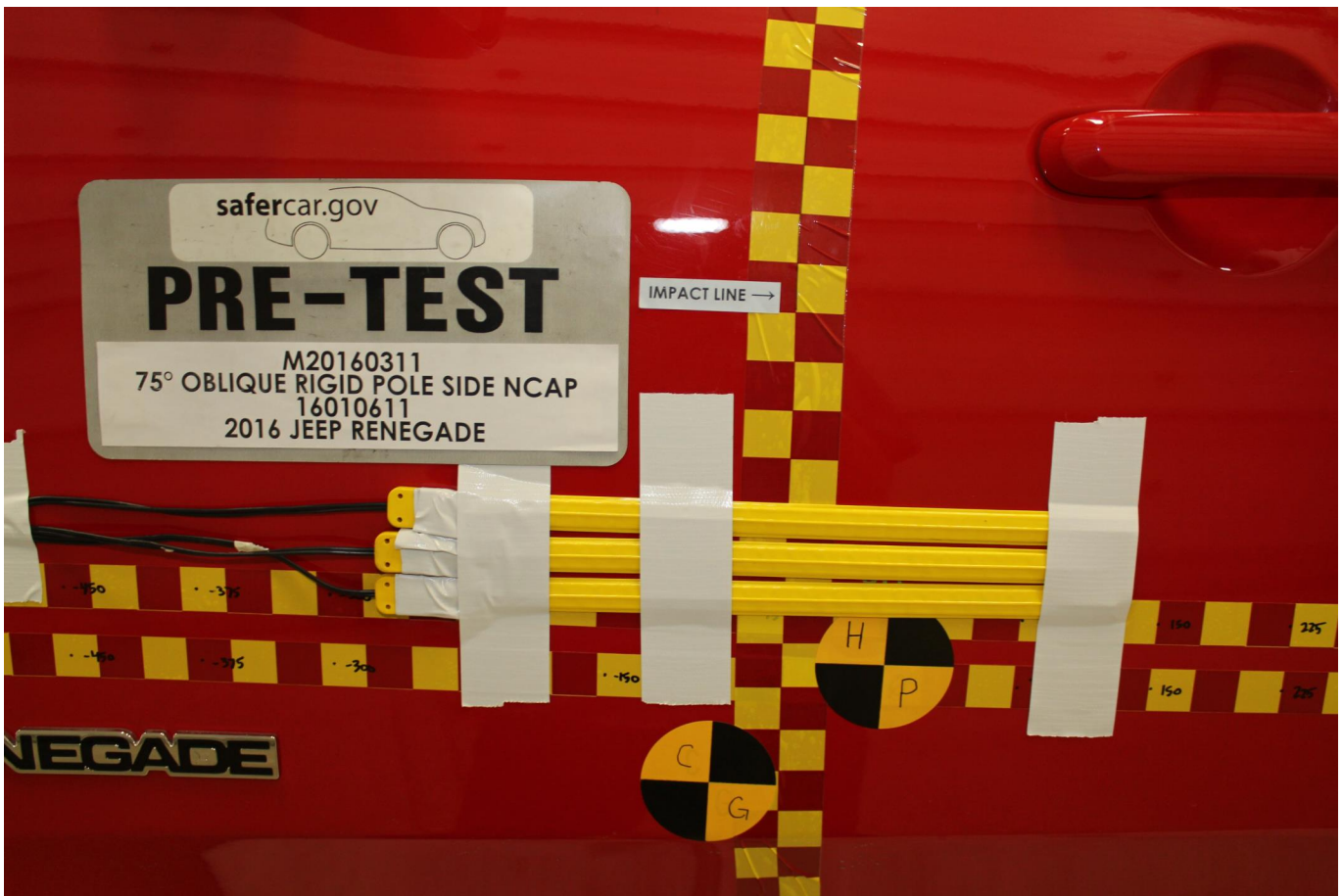


Photo No. 019 - Pre-Test Close-Up View of Impact Point Target



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



Photo No. 021 - Pre-Test Front Close-Up View of Dummy Head and Chest



Photo No. 022 - Post-Test Front Close-Up View of Dummy



Photo No. 023 - Pre-Test Left Side View of Dummy Showing Belt and Chalking



Photo No. 024 - Pre-Test Left Side View of Dummy Shoulder and Door Top View



Photo No. 025 - Post-Test Left Side View of Dummy Shoulder and Door Top View



Photo No. 026 - Pre-Test Front View of Seat Back Prior to Dummy Positioning



Photo No. 027 - Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



Photo No. 028 - Pre-Test Front View of Seat Pan Prior to Dummy Positioning



Photo No. 029 - Pre-Test Overhead View of Dummy Thighs on Seat Pan



Photo No. 030 - Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket



Photo No. 031 - Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



Photo No. 032 - Pre-Test Placement of Dummy's Feet



Photo No. 033 - Pre-Test View of Belt Anchorage for Dummy



Photo No. 034 - Pre-Test Left Side View of Steering Wheel



Photo No. 035 - Pre-Test View of Disengaged Parking Brake



Photo No. 036 - Pre-Test View of Parking Brake



Photo No. 037 - Pre-Test Close-Up Left Side View of Driver Seat Track



Photo No. 038 - Pre-Test Close-Up Left Side View of Driver Seat Back



Photo No. 039 - Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Photo No. 040 - Pre-Test Dummy and Door Clearance View



Photo No. 041 - Post-Test Dummy and Door Clearance View



Photo No. 042 - Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Photo No. 043 - Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Photo No. 044 - Pre-Test Inner Door Panel View



Photo No. 045 - Post-Test Inner Door Panel View Showing Dummy Contact Location



Photo No. 046 - Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Photo No. 047 - Post-Test Dummy Close-Up Head Contact with Side Air Bag View

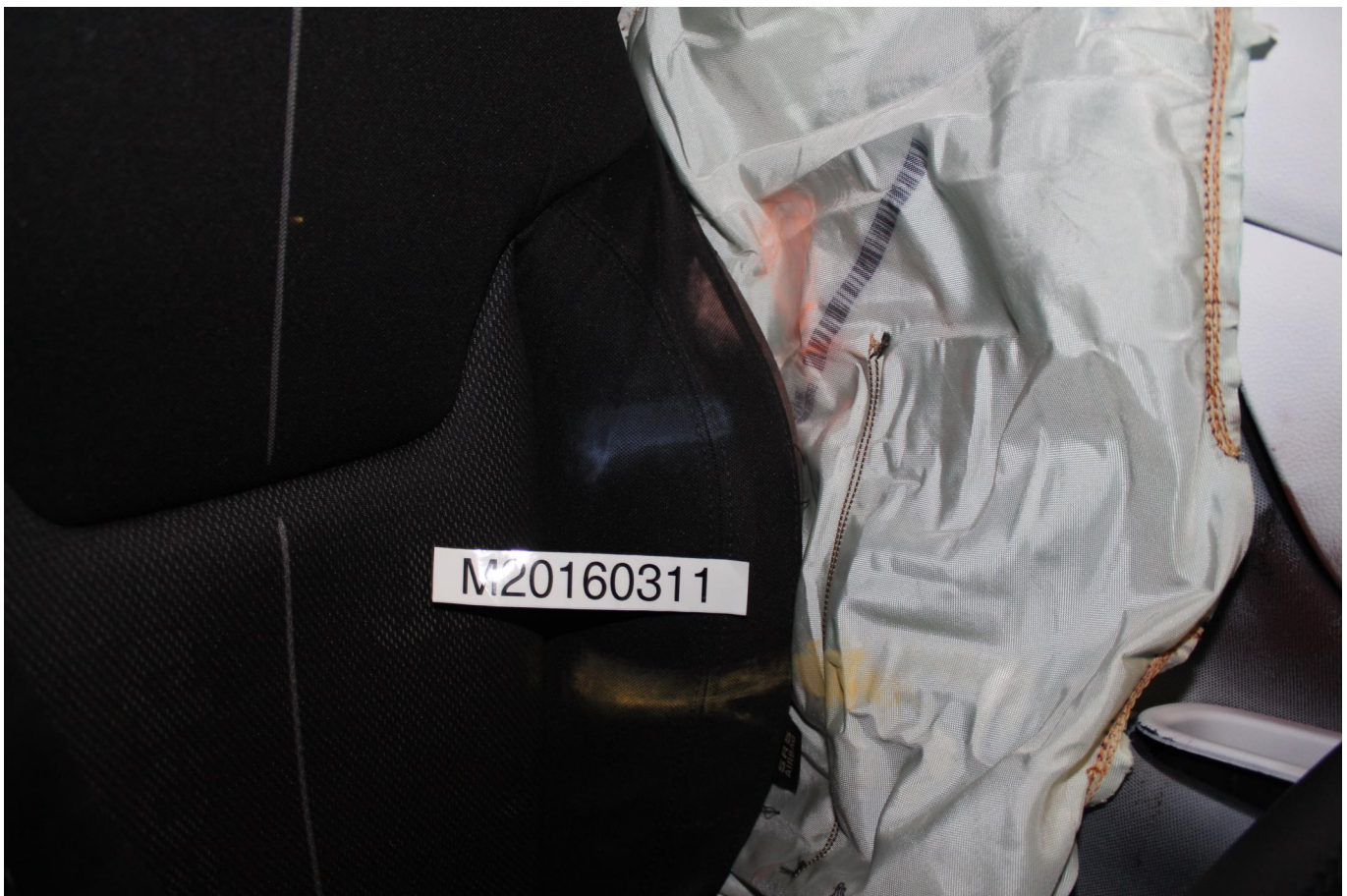


Photo No. 048 - Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Photo No. 049 - Post-Test Dummy Close-Up Torso Contact with Side Air Bag View



Photo No. 050 - Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



Photo No. 051 - Post-Test Dummy Close-Up Pelvis Contact with Side Air Bag View



Photo No. 052 - Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



Photo No. 053 - Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

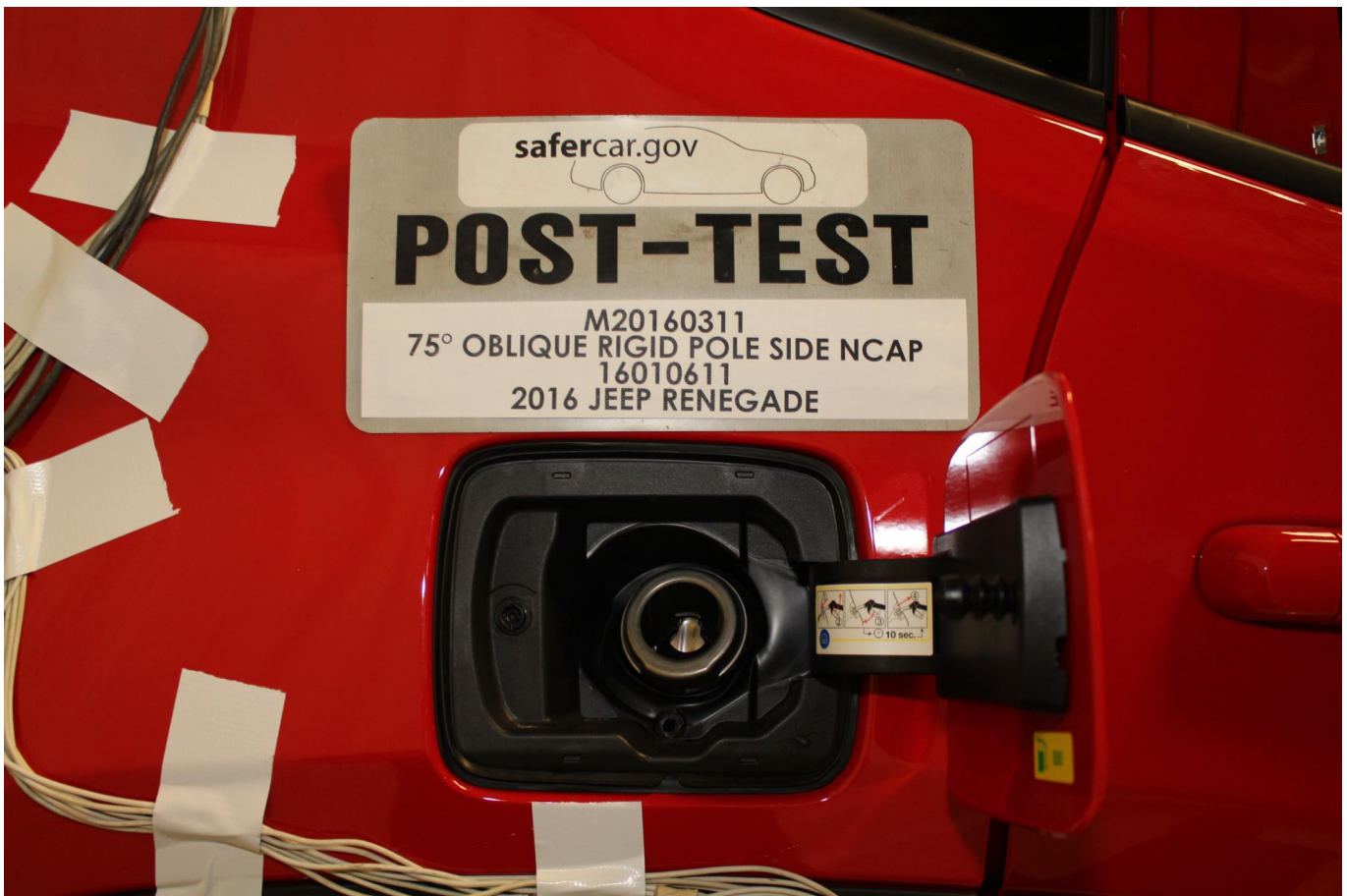


Photo No. 054 - Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Photo No. 055 - Close-Up View of Vehicle's Certification Label



Photo No. 056 - Close-Up View of Vehicle's Tire Information Placard or Label



Photo No. 057 - Pre-Test Pole Barrier Front View



Photo No. 058 - Post-Test Pole Barrier Front View



Photo No. 059 - Pre-Test Pole Barrier Side View



Photo No. 060 - Post-Test Pole Barrier Side View

PHOTOGRAPH NOT APPLICABLE

Photo No. 061 - Pre-Test Ballast View



Photo No. 062 - Post-Test Primary and Redundant Speed Trap Read-Out



Photo No. 063 - FMVSS No. 301 Static Rollover 0 Degrees



Photo No. 064 - FMVSS No. 301 Static Rollover 90 Degrees



Photo No. 065 - FMVSS No. 301 Static Rollover 180 Degrees



Photo No. 066 - FMVSS No. 301 Static Rollover 270 Degrees



Photo No. 067 - FMVSS No. 301 Static Rollover 360 Degrees



Photo No. 068 - Impact Event

# Jeep 2016 MODEL YEAR RENEGADE LATITUDE FWD

For more information visit: [www.jeep.com](http://www.jeep.com)  
or call 1-877-IAM-JEEP

FCA US LLC

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

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

Base Price: \$21,345

**JEOP RENEGADE LATITUDE 4X2**  
**Exterior Color:** Colorado Red Exterior Paint  
**Interior Color:** Black Interior Color  
**Interior:** Cloth Low-Back Buckled Seats  
**Engine:** 2.4-Liter I4 MultiAir® Engine  
**Transmission:** 9-Speed 948TE Automatic Transmission

**STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)**

**FUNCTIONAL/SAFETY FEATURES**  
 ParkView® Rear Back-Up Camera  
 Advanced Multitask Front Airbags  
 Supplemental Side-Curtain Front and Rear Airbags  
 Supplemental Front Seat-Mounted Side Airbags  
 Anti-Lock 4-Wheel Disc Brakes  
 Electronic Stability Control  
 Remote Keyless Entry  
 Electronic Roll Mitigation  
 All-Speed Traction Control  
 Speed Control  
 Capless Fuel Fill  
 Daytime Running Lamp System  
 Hill Start Assist  
 Cluster 3.5-inch TFT Monochrome Display  
 Tire Pressure Monitoring Display  
 Center Rear 3-Point Seat Belt

**INTERIOR FEATURES**  
 Uconnect® 5.0  
 5.0-inch Touchscreen Display  
 Integrated Voice Command with Bluetooth®  
 6 Speakers  
 SiriusXM® Sat. Radio w/1-Yr Radio Subscription  
 For More Information, Call 800-643-2112  
 Steering Wheel Mounted Audio Controls  
 Leather-Wrapped Steering Wheel  
 TR / Telescope Steering Column  
 Silver Shift Knob  
 Air Conditioning  
 Remote USB Port - Charge-Only  
 Media Hub (USB, Aux)  
 Ambient LED Interior Lighting  
 Manual 5-Way Driver Seat and 4-Way Pass Seat  
 Rear 60 / 40 Folding Seat

Assembly Plant/Port of Entry: BALTIMORE, MARYLAND, U.S.A.  
 VIN: ZAC-GJABT1GP-044431

250P0 4250 30  
 SCHEP BROS DODGE/CHRYSLER/DOODGE/REP  
 802 E GREENWAY AVE  
 FAIRFIELD, OH 43103-3008

300P0 4250 30  
 SCHEP BROS DODGE/CHRYSLER/DOODGE/REP  
 802 E GREENWAY AVE  
 FAIRFIELD, OH 43103-3008

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

Front Seat Back Map Pockets  
 Sun Visors with Illuminated Vanity Mirrors  
 Height Adjustable Rear Cargo Floor  
 Power Front Windows w/1-Touch Up and Down Feature

**EXTERIOR FEATURES**  
 Black Side Roof Rails  
 16-inch x 6.5-inch Aluminum Wheels  
 215/55R16 LBL All Season Tires  
 Tire Service Kit  
 Automatic Headlamps  
 Cornering Front Fog Lamps  
 Power Heated Mirrors

**OPTIONAL EQUIPMENT (May Replace Standard Equipment)**  
**Customer Pre-req Package Z74**  
 Passive Entry Keyless Enter™ In Go™ Package \$105  
 Passive Entry / Keyless Go™  
 9-Speed 948TE Automatic Transmission  
 Vinyl Shift Knob  
 2.4-Liter I4 MultiAir® Engine \$1,480  
 Engine Oil Cooler  
 17-inch x 7.0-inch Aluminum Wheels  
 Flex Fuel Vehicle  
 215/60R17 BSW All Season Touring Tires  
 Remote Start System \$105

**DESTINATION CHARGE \$395**

**TOTAL PRICE: \* \$24,030**

**WARRANTY COVERAGE**  
 5-year or 60,000-mile Powertrain Limited Warranty,  
 3-year or 36,000-mile Basic Limited Warranty,  
 Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

**5 YEAR / 60,000 MILE  
 POWERTRAIN WARRANTY**

**EPA DOT Fuel Economy and Environment** Flexible-Fuel Vehicle Gasoline-Ethanol (E85)

**Fuel Economy**  
**25 MPG** combined city/hwy  
 22 city 31 highway 4.0 gallons per 100 miles  
 Driving Range Estimated 217 miles  
 EPA est. EPA 241 miles

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

**Annual fuel COST \$1,800**

**Fuel Economy & Greenhouse Gas Rating (tailpipe only)** Smog Rating (tailpipe only)

This vehicle emits 304 grams CO2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions. Learn more at [fuel-economy.gov](http://fuel-economy.gov)

Actual fuel economy may vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average fuel economy for 2016 SUVs is 20 mpg city and 26 mpg highway. Fuel economy is based on 15,000 miles per year at 55 mph per gallon. This is a guide figure. Actual mileage may vary. Gasoline and ethanol (E85) have different properties. Fuel economy and emissions are significantly affected by vehicle condition and use.

**fuel-economy.gov**  
 Calculator for personal vehicles, fleets and company vehicles.

Smartphone QR Code

**GOVERNMENT 5-STAR SAFETY RATINGS**  
 This vehicle has not been rated by the government for frontal crash, side crash or rollover risk.

Source: National Highway Traffic Safety Administration (NHTSA)  
[www.safercar.gov](http://www.safercar.gov) or 1-888-321-4236

**PARTS CONTENT INFORMATION**  
 FOR VEHICLES IN THIS CARLINE:  
 U.S./CANADIAN PARTS CONTENT: 22%  
 MAJOR SOURCES OF FOREIGN PARTS CONTENT:  
 ITALY: 62%  
 NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

**FOR THIS VEHICLE:**  
 FINAL ASSEMBLY POINT:  
 MELFI, ITALY  
 COUNTRY OF ORIGIN:  
 ENGINE: UNITED STATES  
 TRANSMISSION: UNITED STATES

Photo No. 069 - Monroney Label

## GETTING STARTED

### HEAD RESTRAINTS

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

**WARNING!**

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

#### Front Head Restraints

Your vehicle is equipped with front driver and passenger head restraints.

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

**NOTE:**

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

**WARNING!**

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

#### Rear Head Restraints

Your vehicle is equipped with 2 outboard head restraints and 1 center head restraint for its rear passengers. The rear head restraints can be raised or lowered. When the center seat is being occupied, the head restraint should be in the raised position. When there are no occupants in the center seat, the head restraint can be lowered for maximum visibility for the driver.

To raise the head restraint, pull upward on the head restraint.

To lower the head restraint, push the adjustment button, located at the base of the head restraint, and push downward on the head restraint.

**NOTE:**

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

Photo No. 070 - Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



Photo No. 071 - 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](http://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 Head Angular Velocity X (Deg/Sec) vs. Time  
 Driver Head Angular Velocity Y (Deg/Sec) vs. Time  
 Driver Head Angular Velocity Z (Deg/Sec) 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)

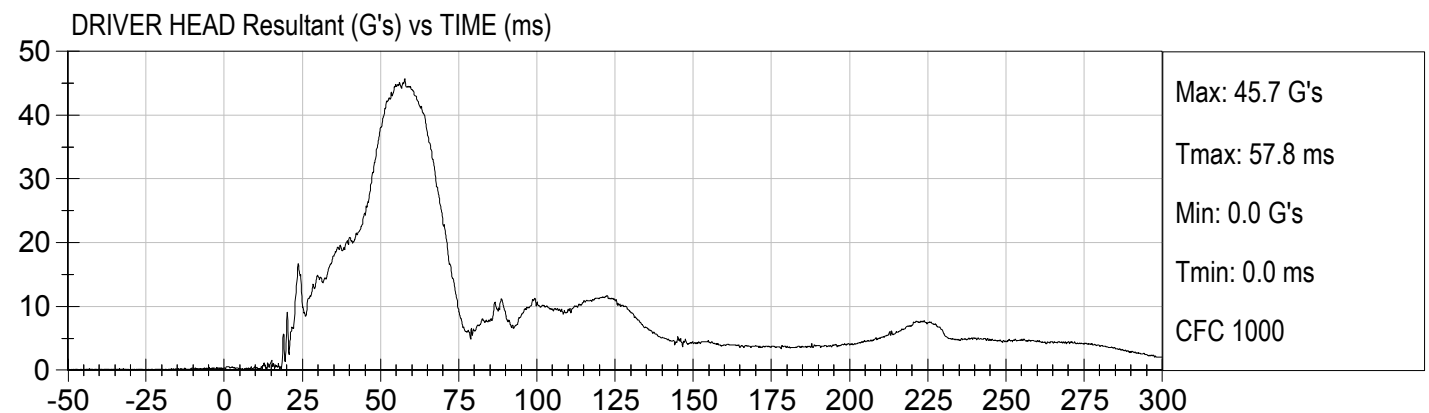
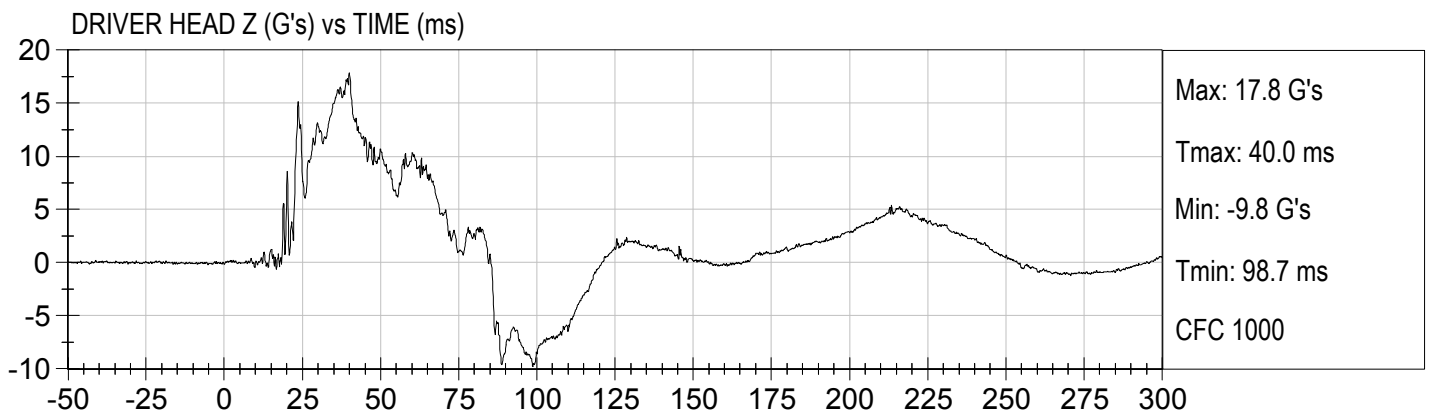
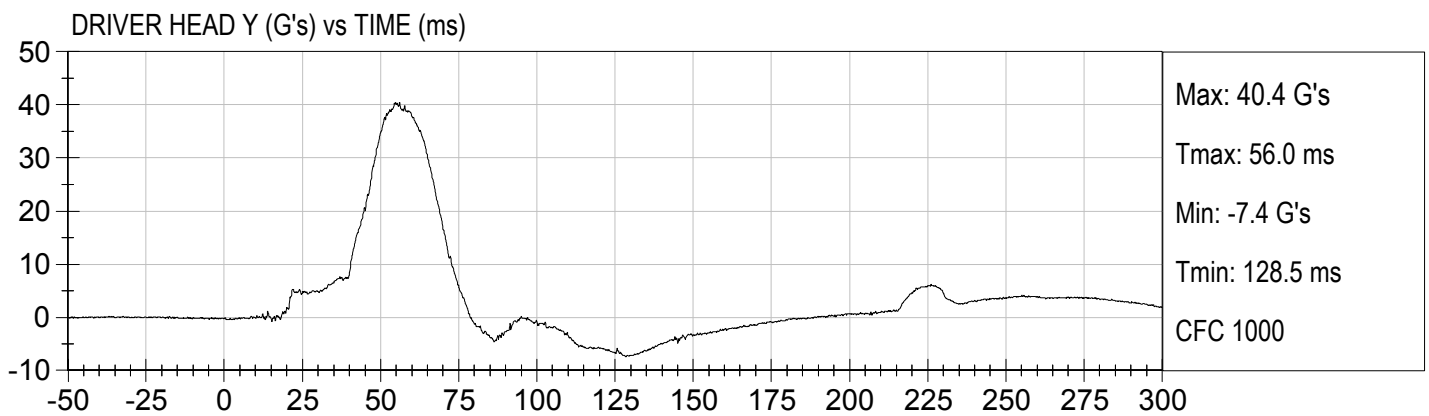
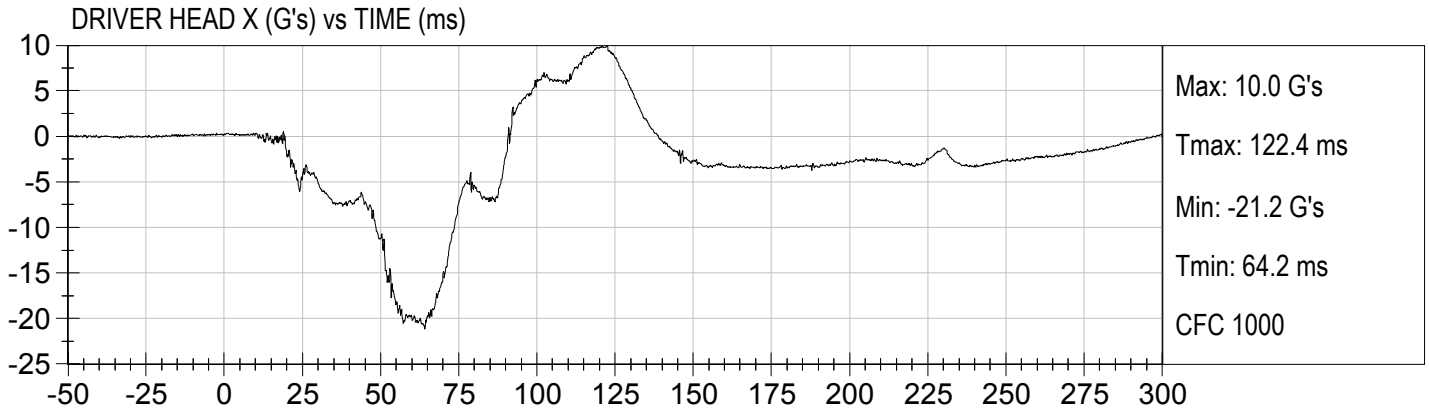
Load Cell Pole Barrier #4 Force (Y)

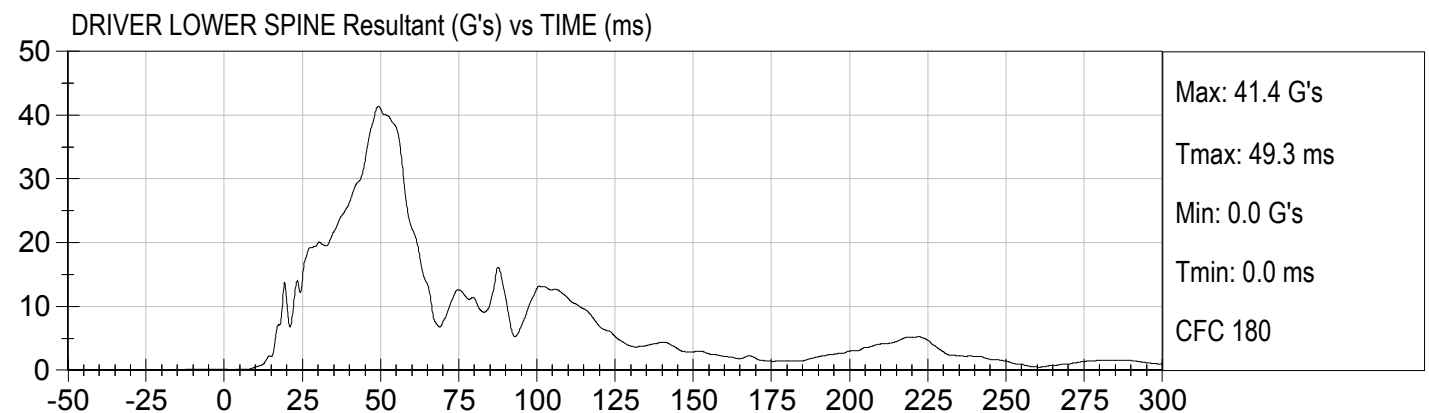
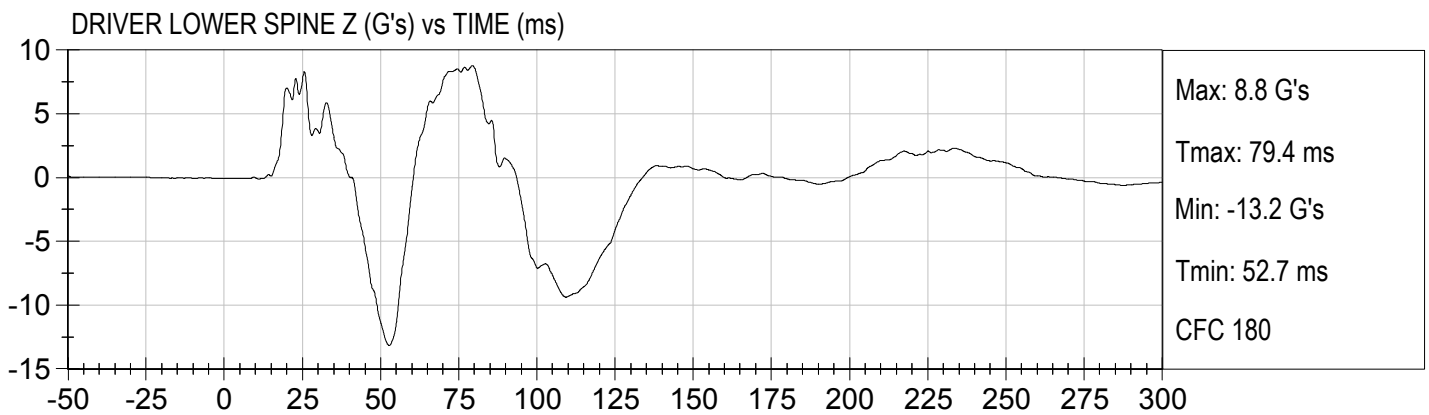
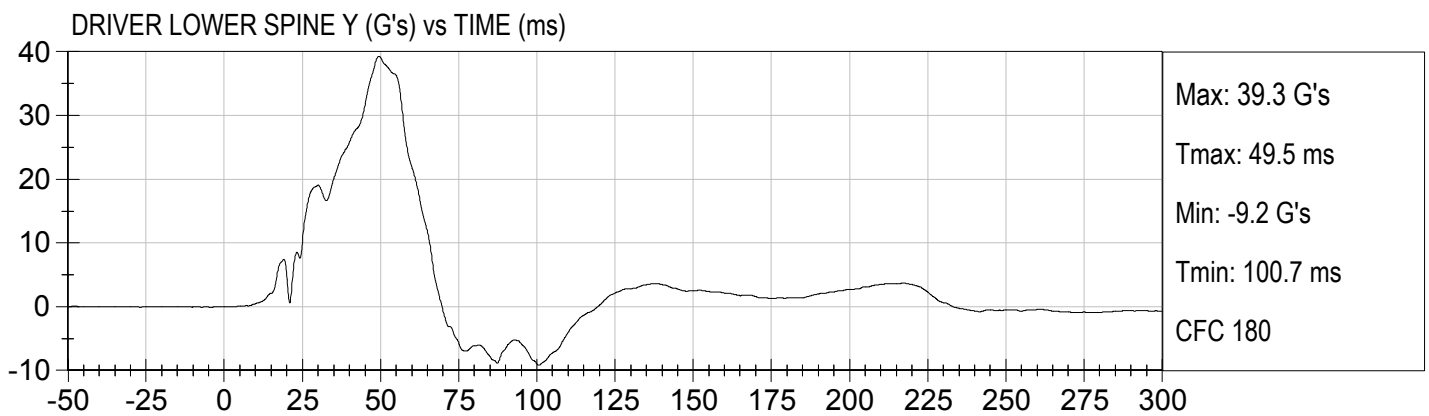
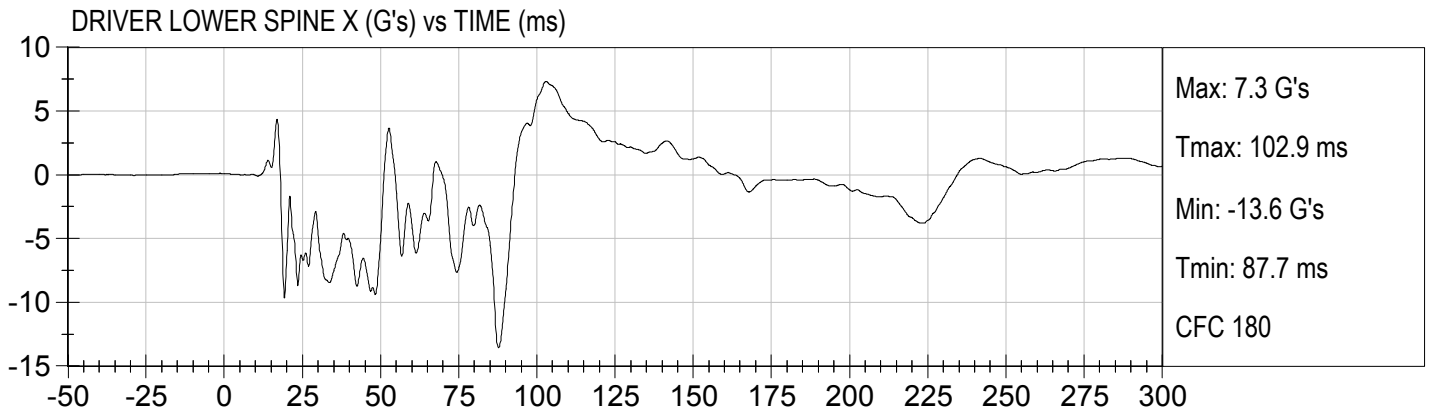
Load Cell Pole Barrier #5 Force (Y)

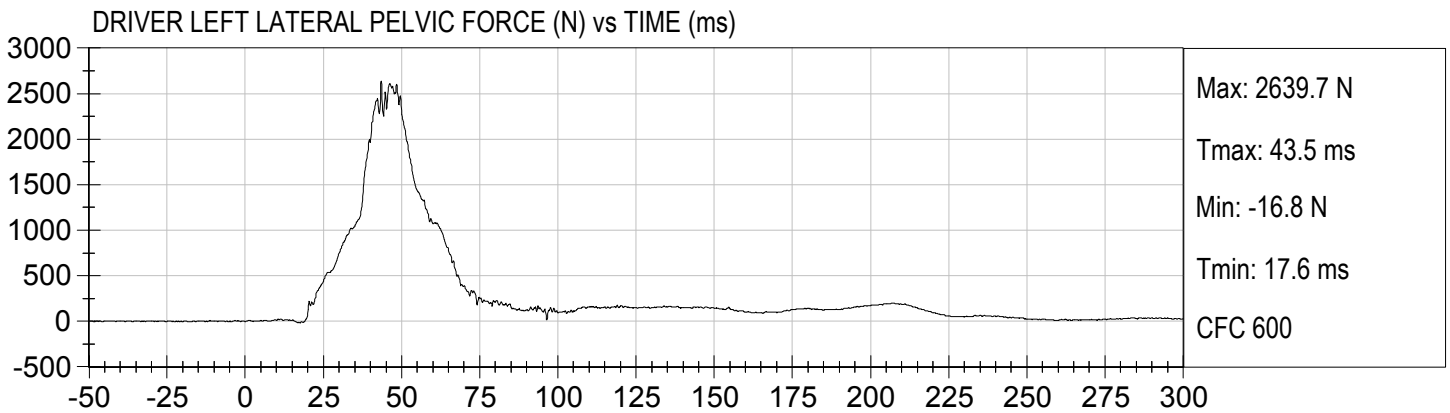
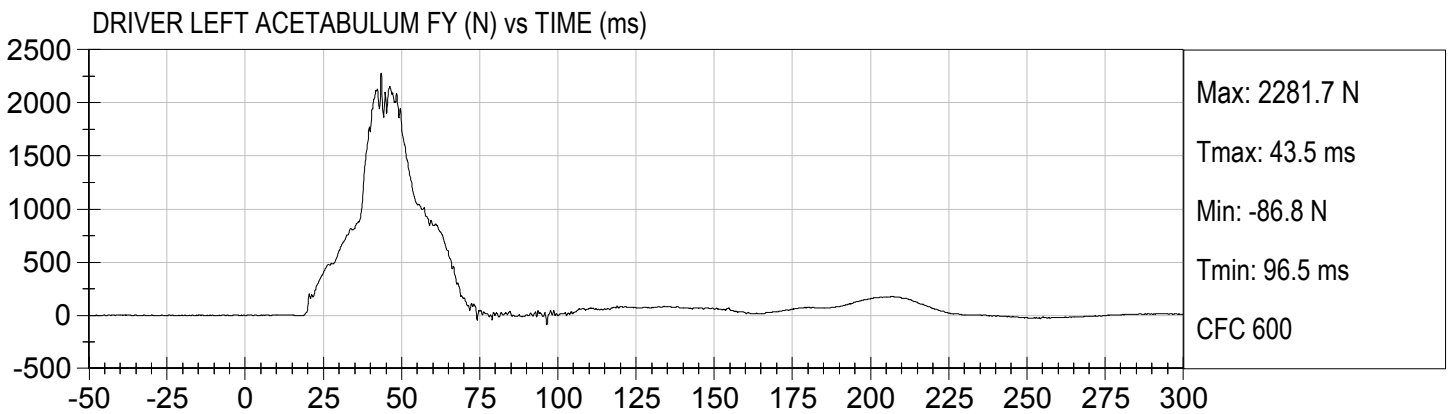
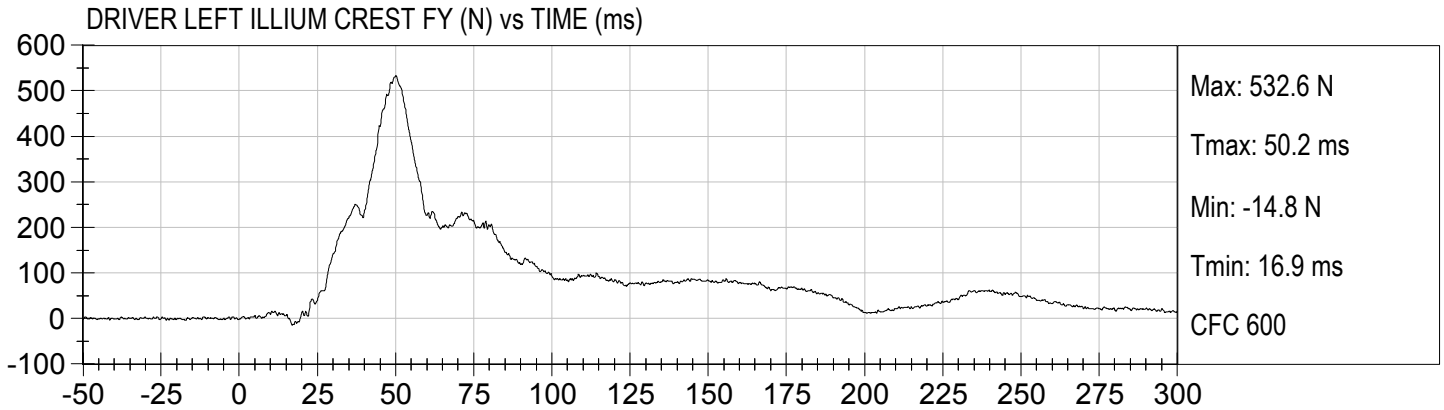
Load Cell Pole Barrier #6 Force (Y)

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**

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

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

ATD Serial No: 306

Test ID: D154071

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	33	Pass
Peak Resultant Acceleration	G's	115 to 137	125	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-4.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results				Pass

*David Schoedel*

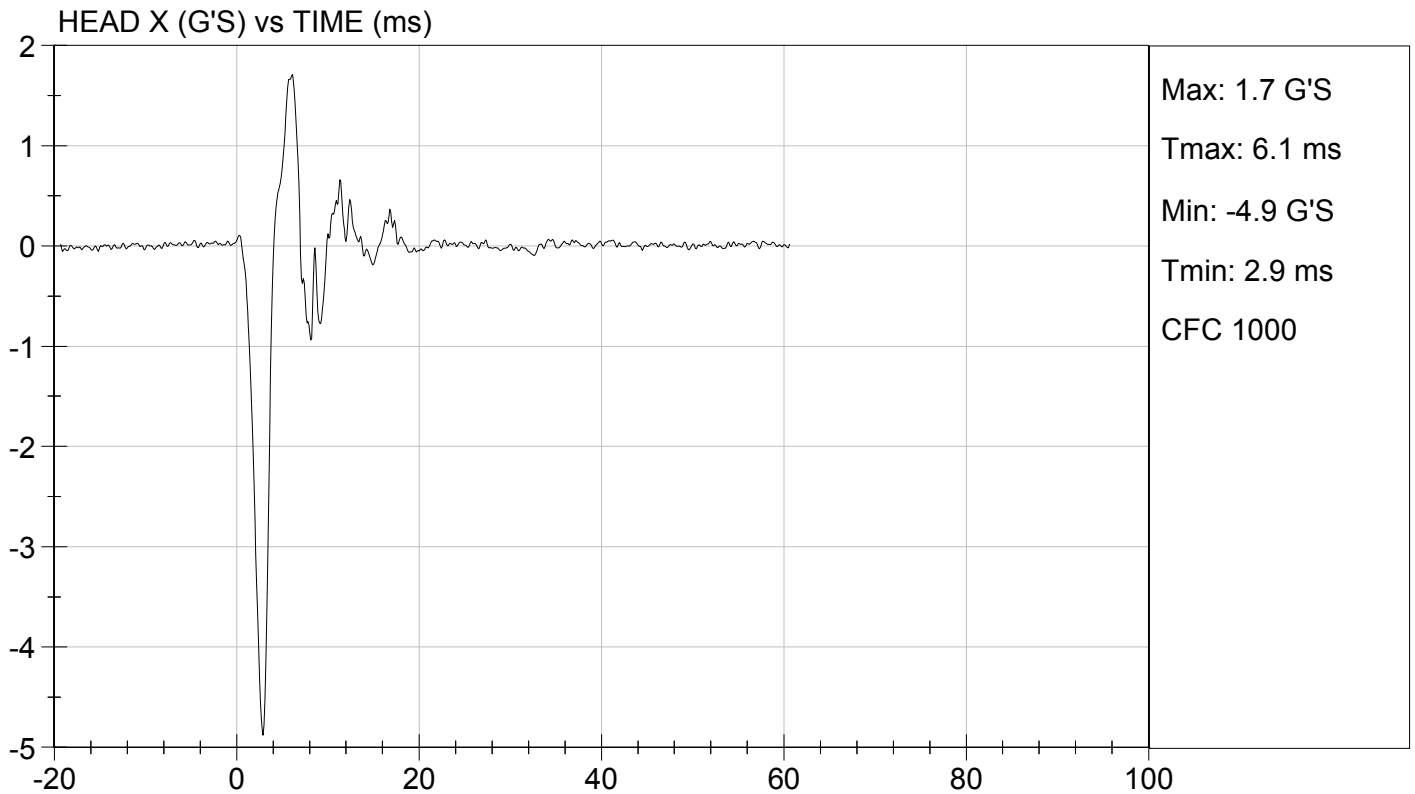
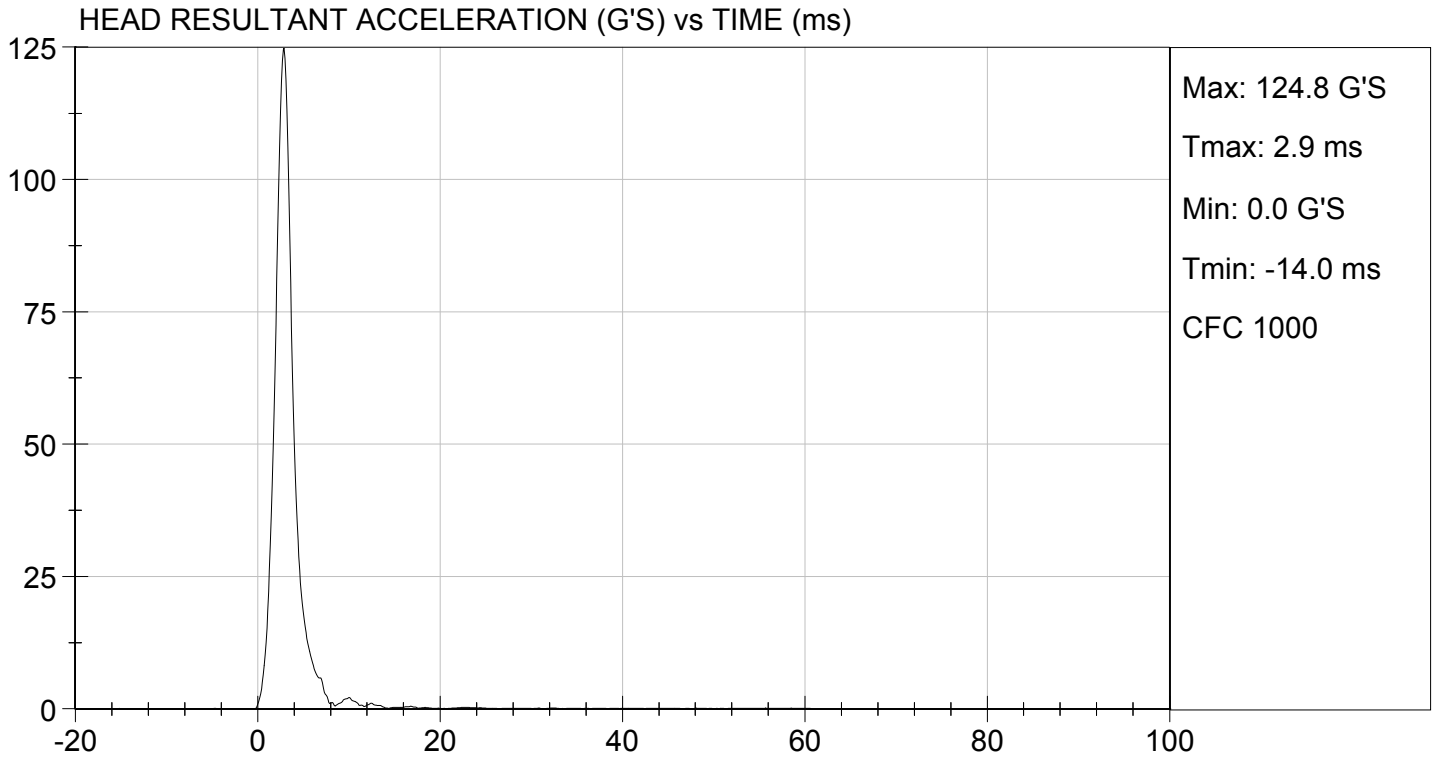
Laboratory Technician

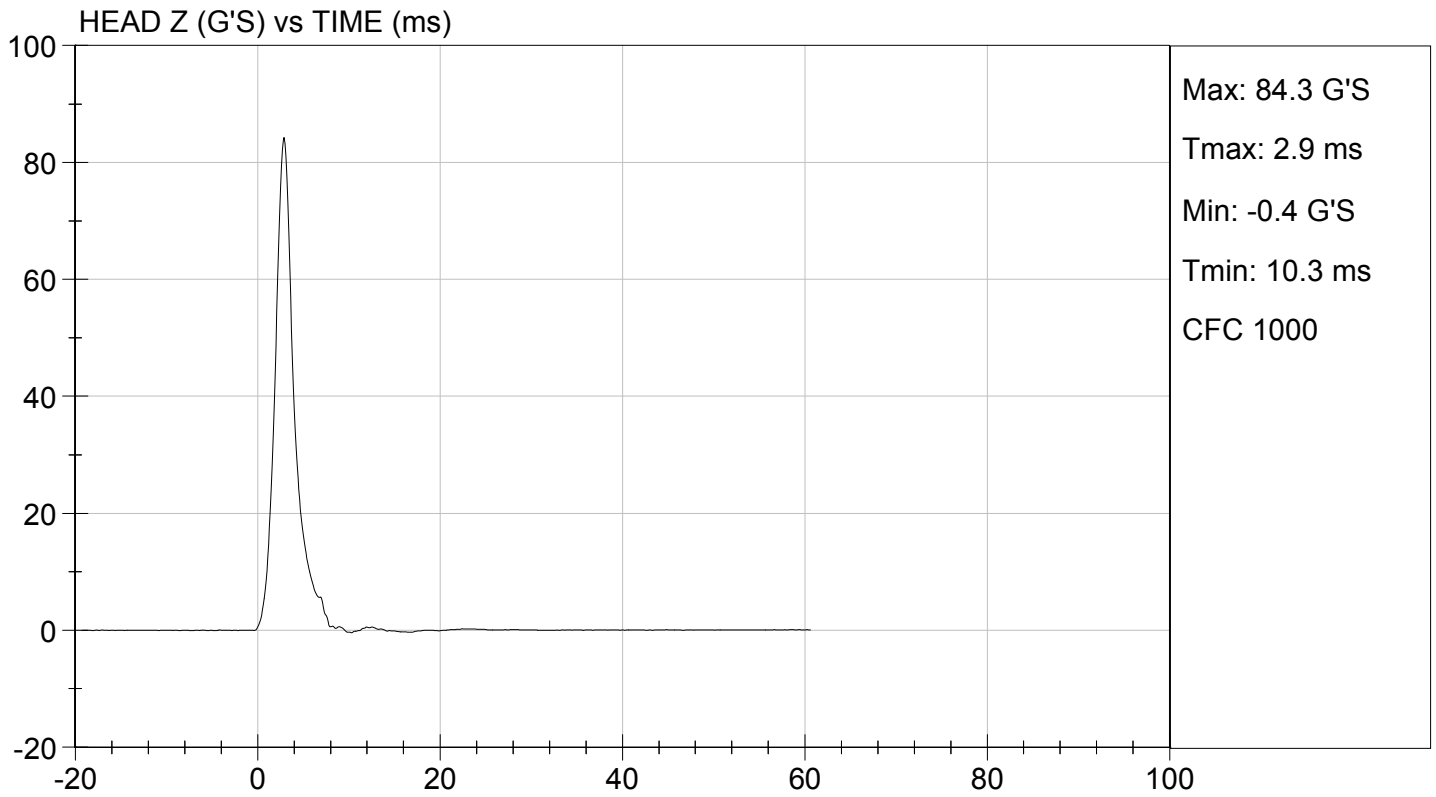
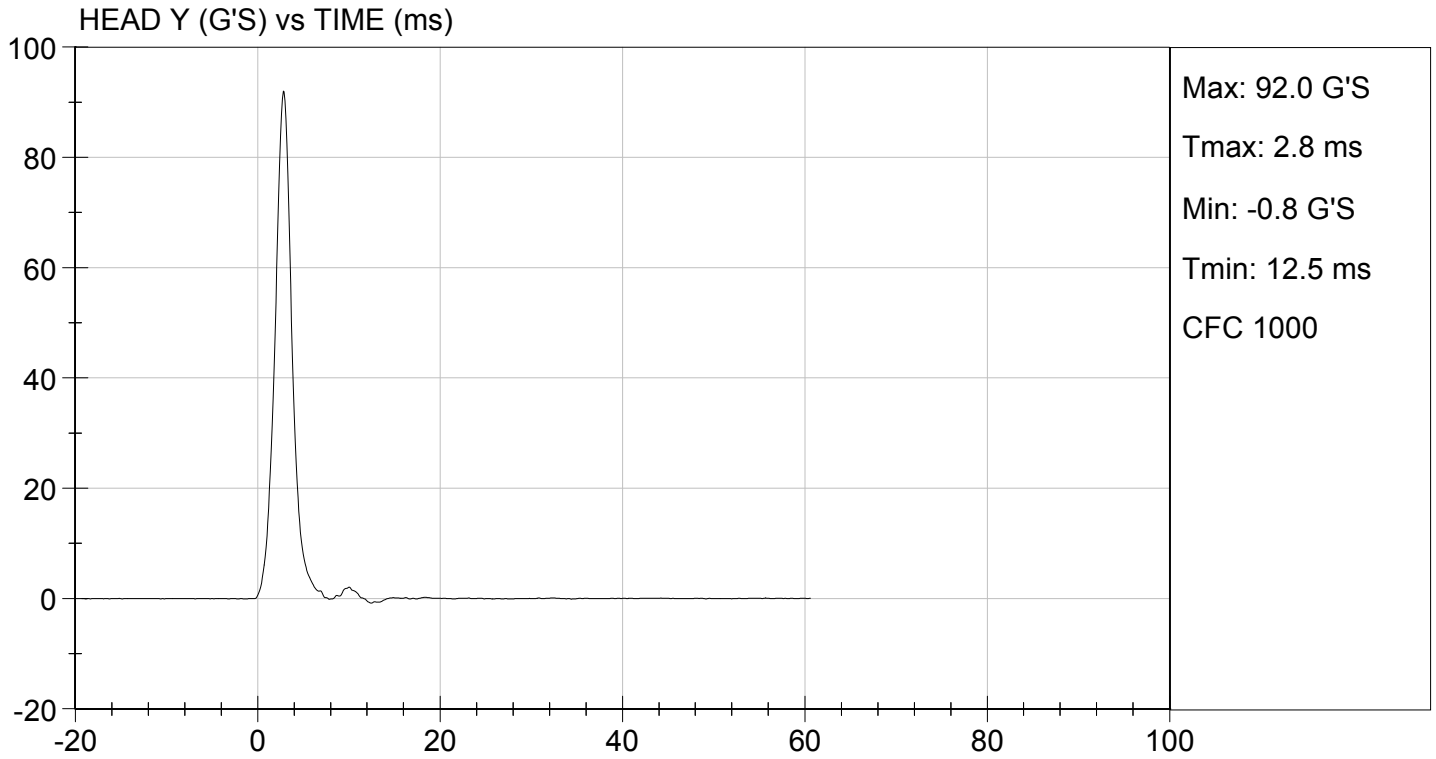
12/08/2015

Test Date

*Jessica Hall*

Approved By





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

**ATD Serial No:** 306

**Test I.D.:** D154072

Tested Parameter	Units	Specification	Result	Pass/Fail	
Temperature	deg C	20.6 to 22.2	21.6	Pass	
Humidity	%	10 to 70	33	Pass	
Impact Velocity	m/s	5.51 to 5.63	5.52	Pass	
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.61	Pass
	15 ms	m/s	3.30 to 4.10	3.74	Pass
	20 ms	m/s	4.40 to 5.40	5.00	Pass
	25 ms	m/s	5.40 to 6.10	5.79	Pass
	25-100 ms	m/s	5.50 to 6.20	5.80	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	-42	Pass	
Time of Moment Decay to 0 Nm	ms	102 to 126	118	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	

*David Schoedel*

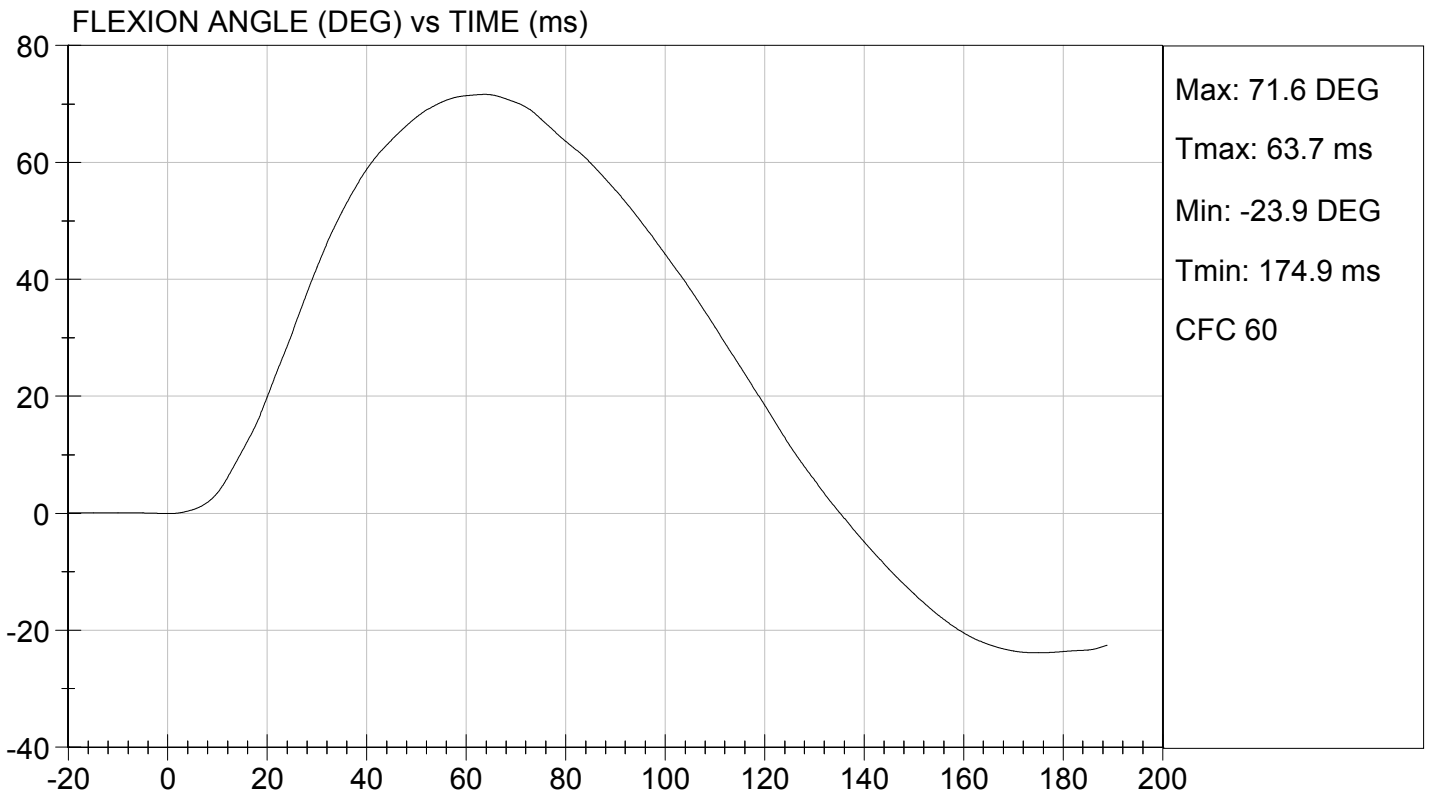
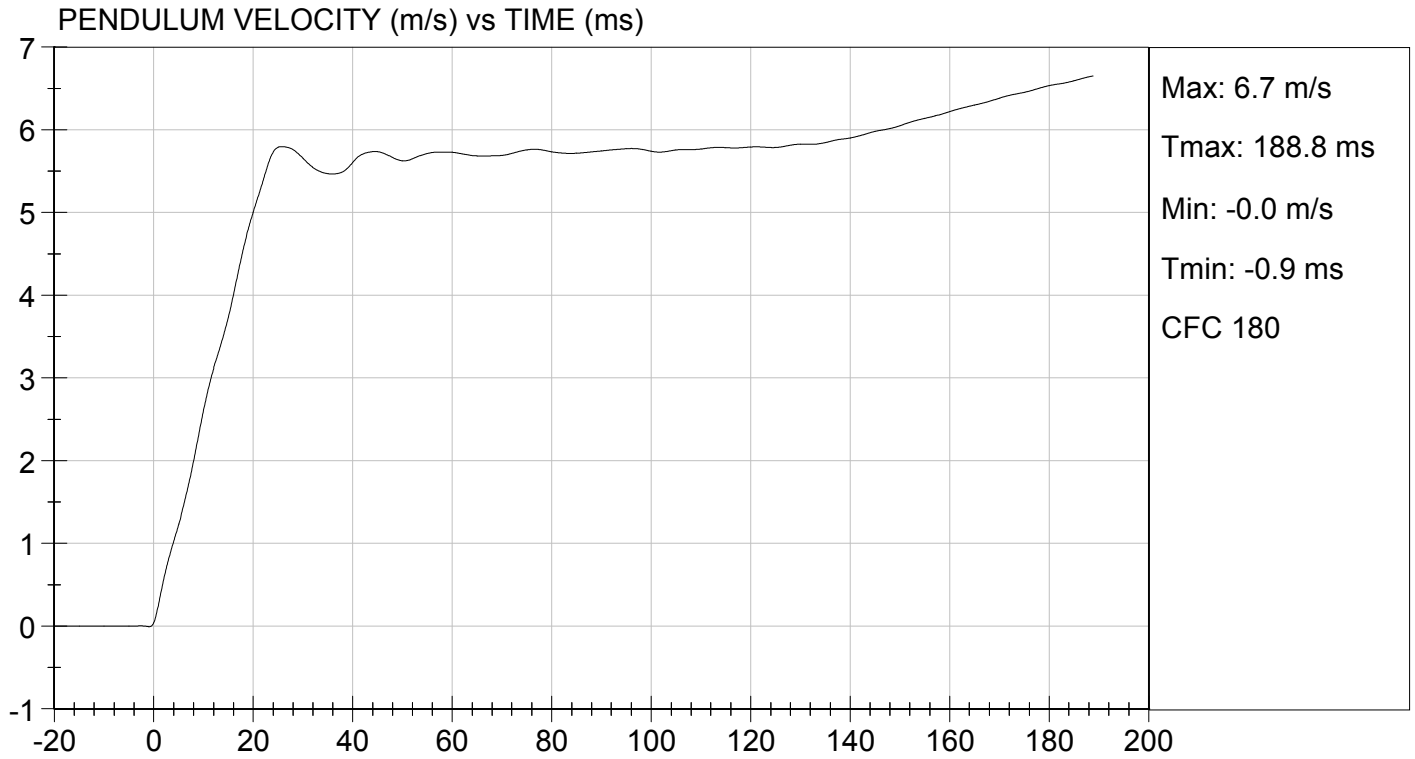
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12/08/2015

Test Date

*Jessica Hall*

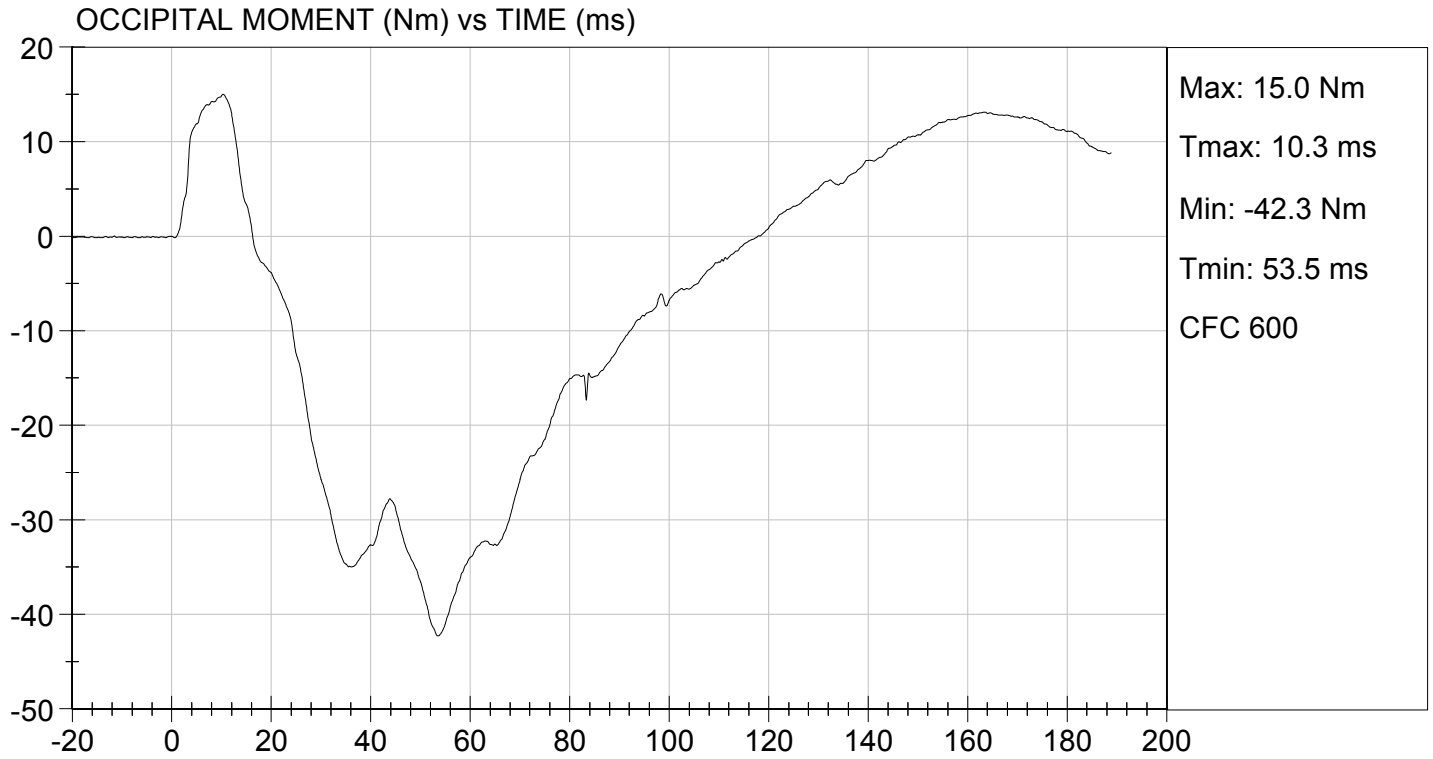
Approved By





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

TEST DATE: 12/08/2015  
TEST #: D154072



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

ATD Serial No: 306

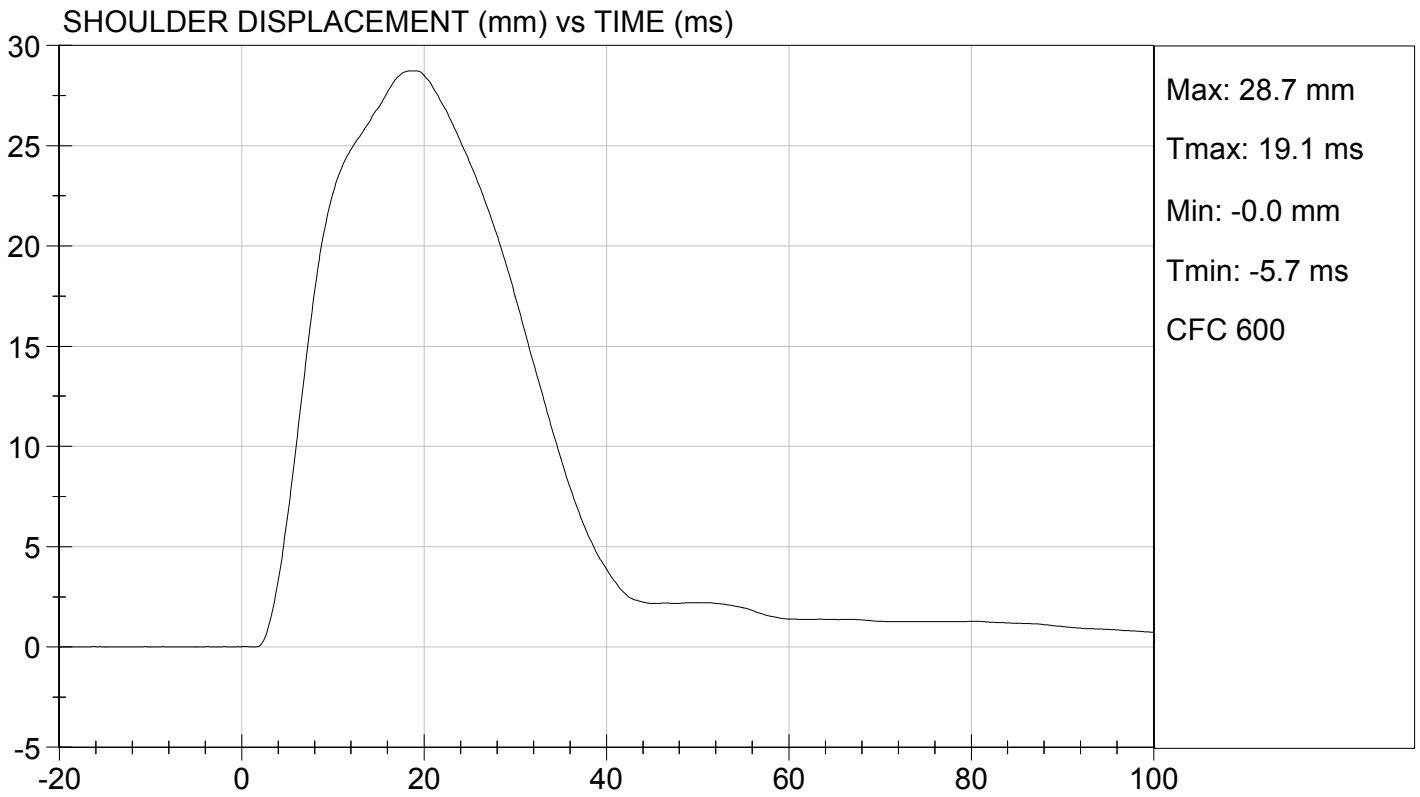
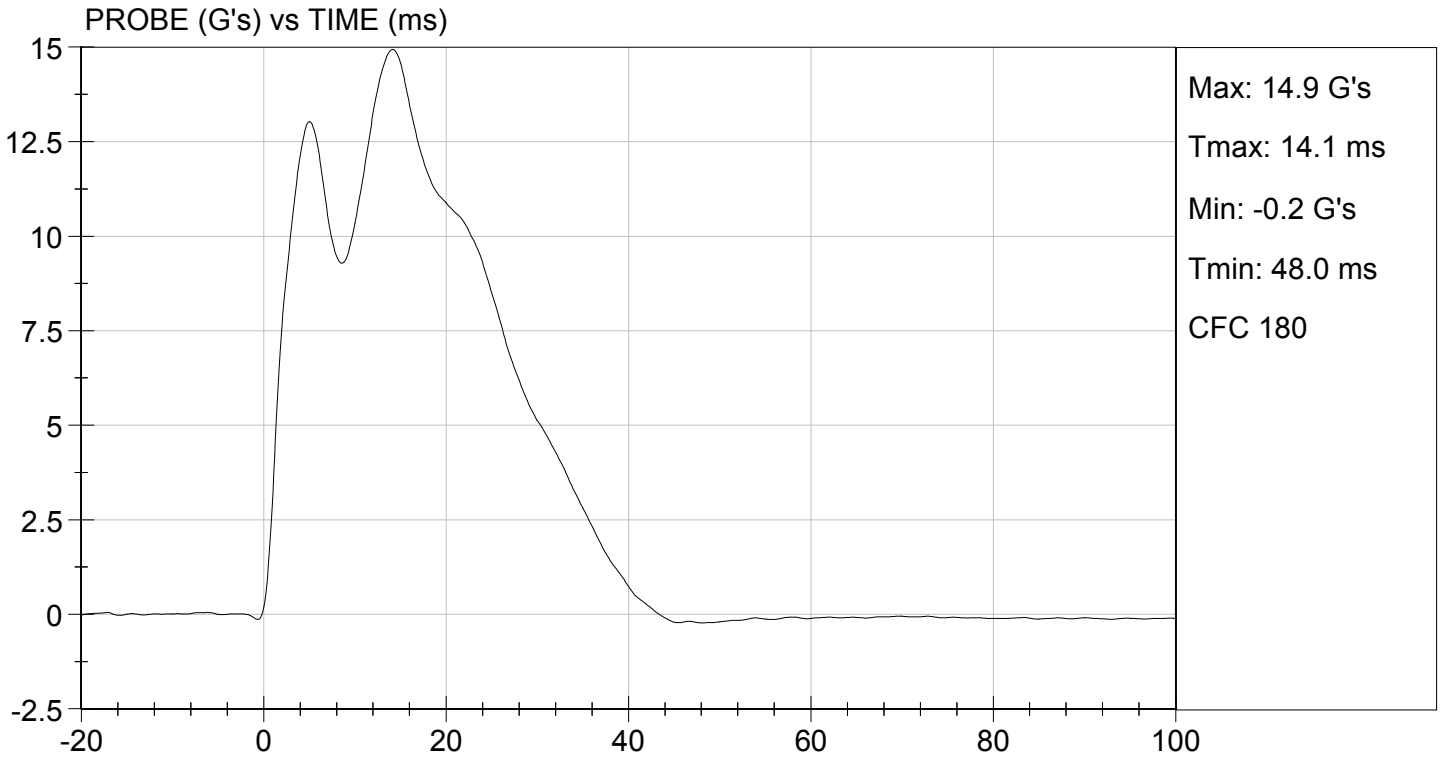
Test ID: D154073

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	36	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass

David Schoedel  
 Laboratory Technician

12/08/2015  
 Test Date

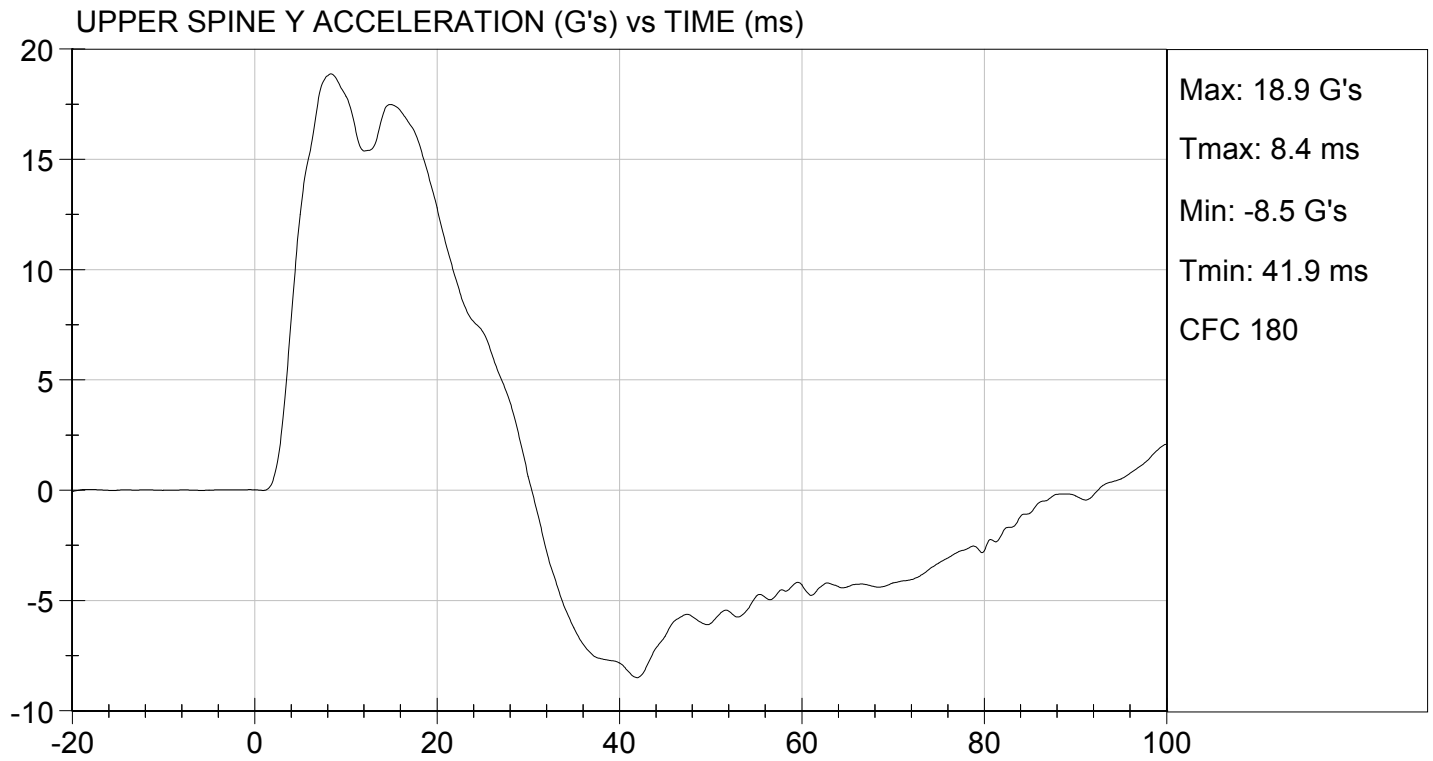
Jessica Hall  
 Approved By





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

TEST DATE: 12/08/2015  
TEST #: D154073



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

**ATD Serial No:** 306

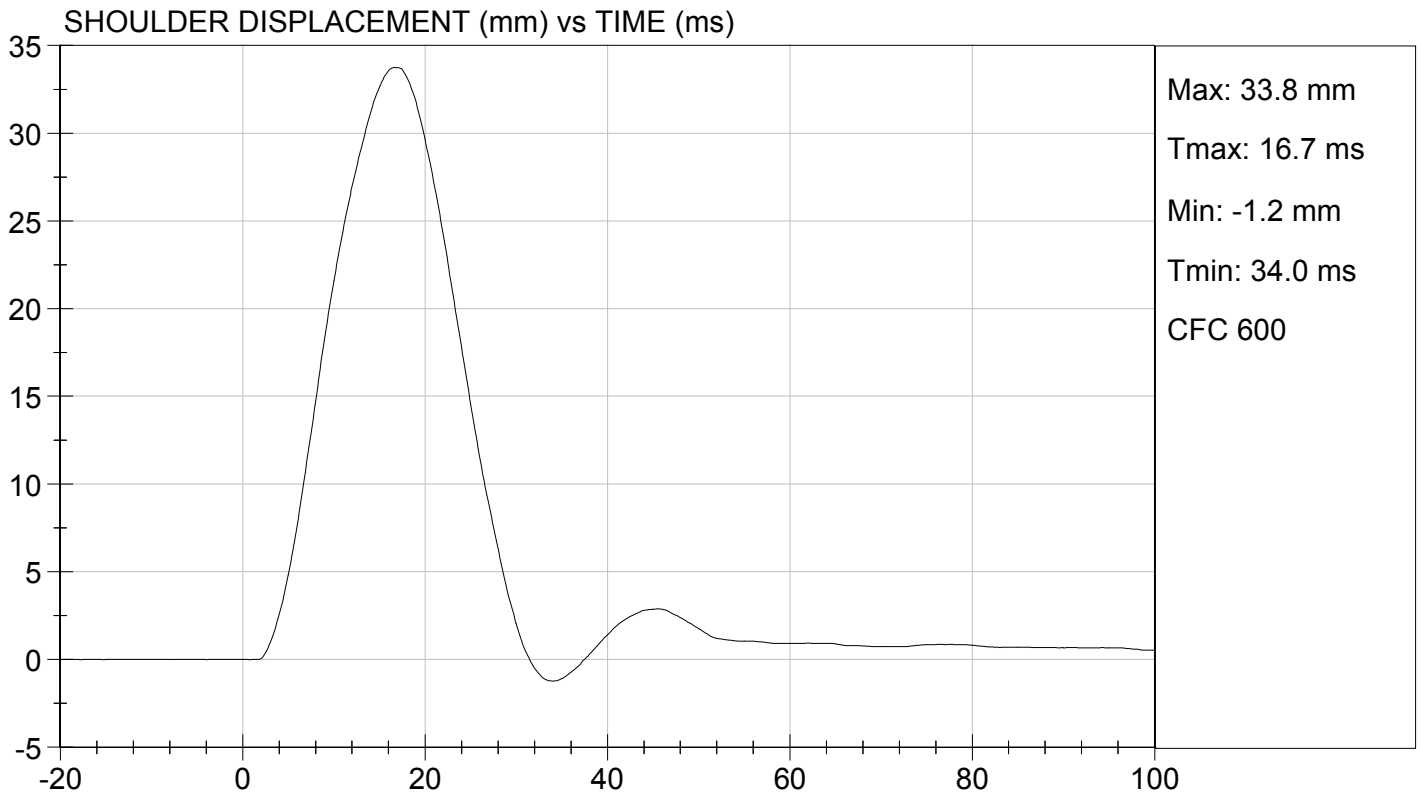
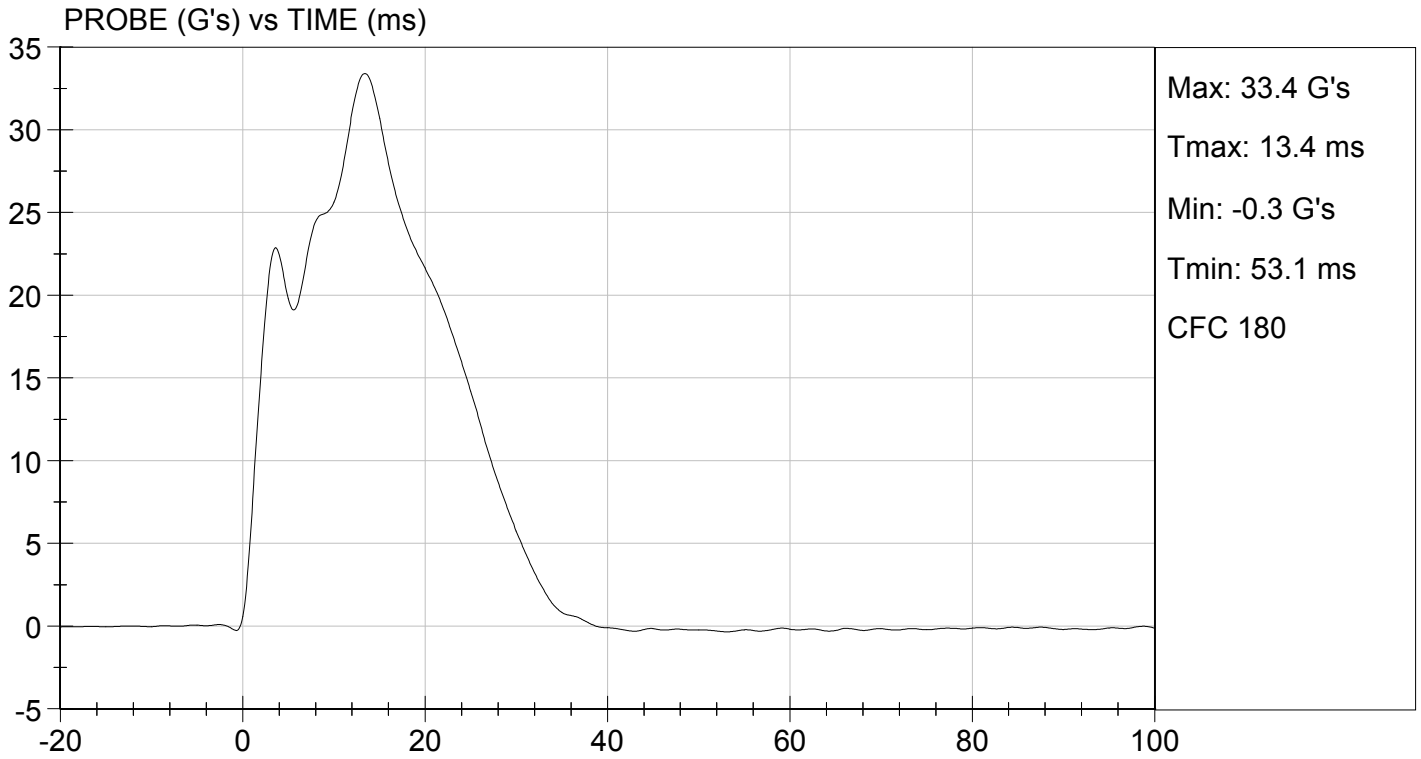
**Test I.D.:** D154074

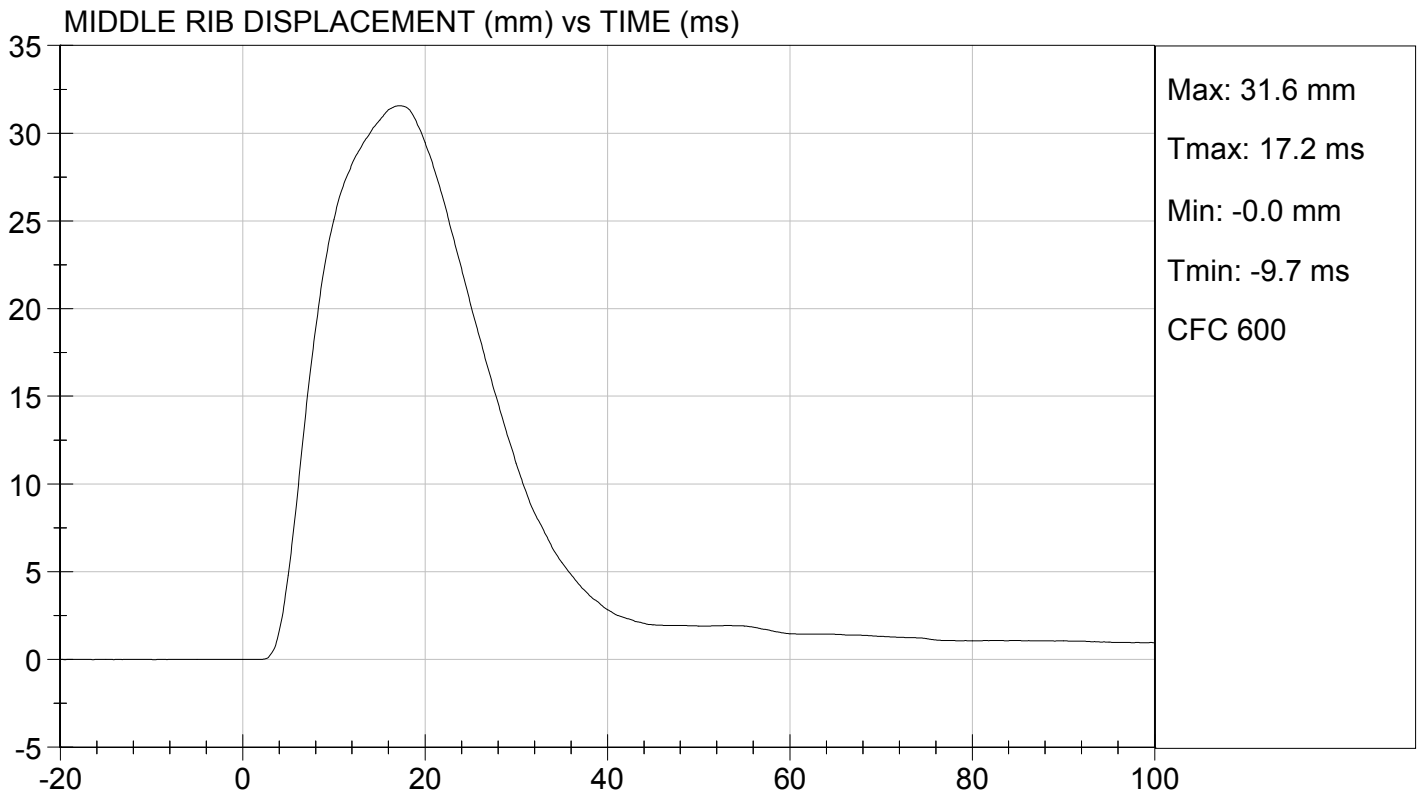
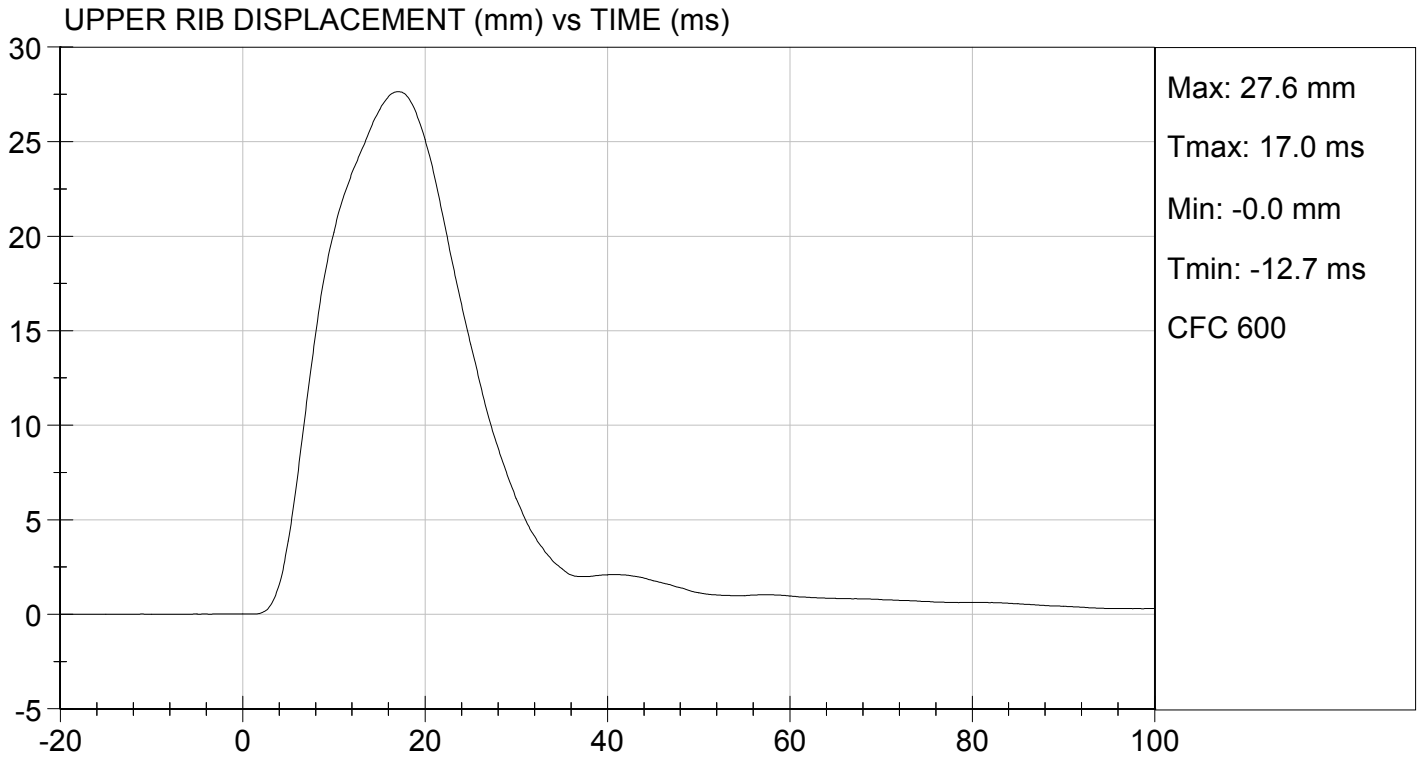
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	34	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle Rib Displacement	mm	30 to 36	32	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	34	Pass
Overall Test Results				Pass

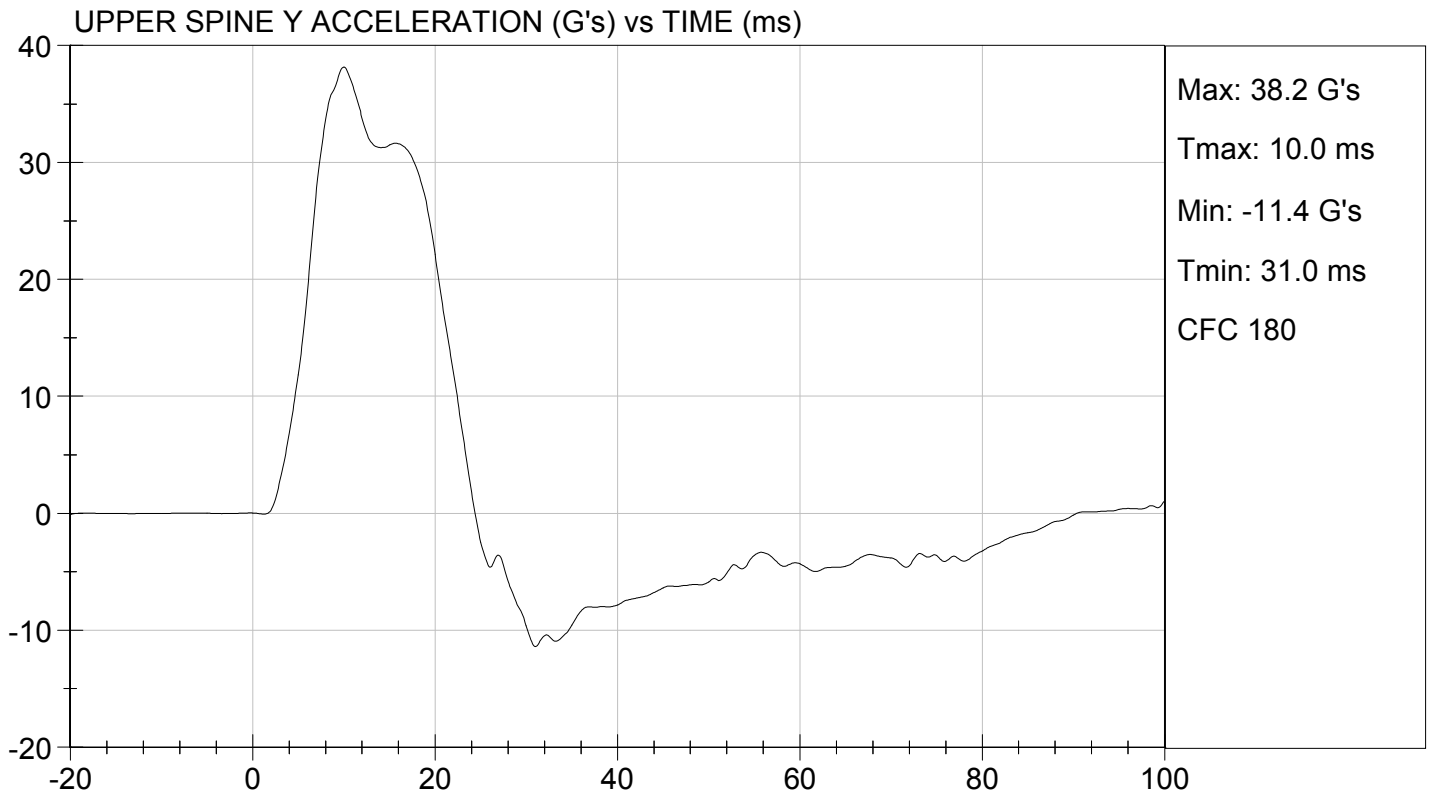
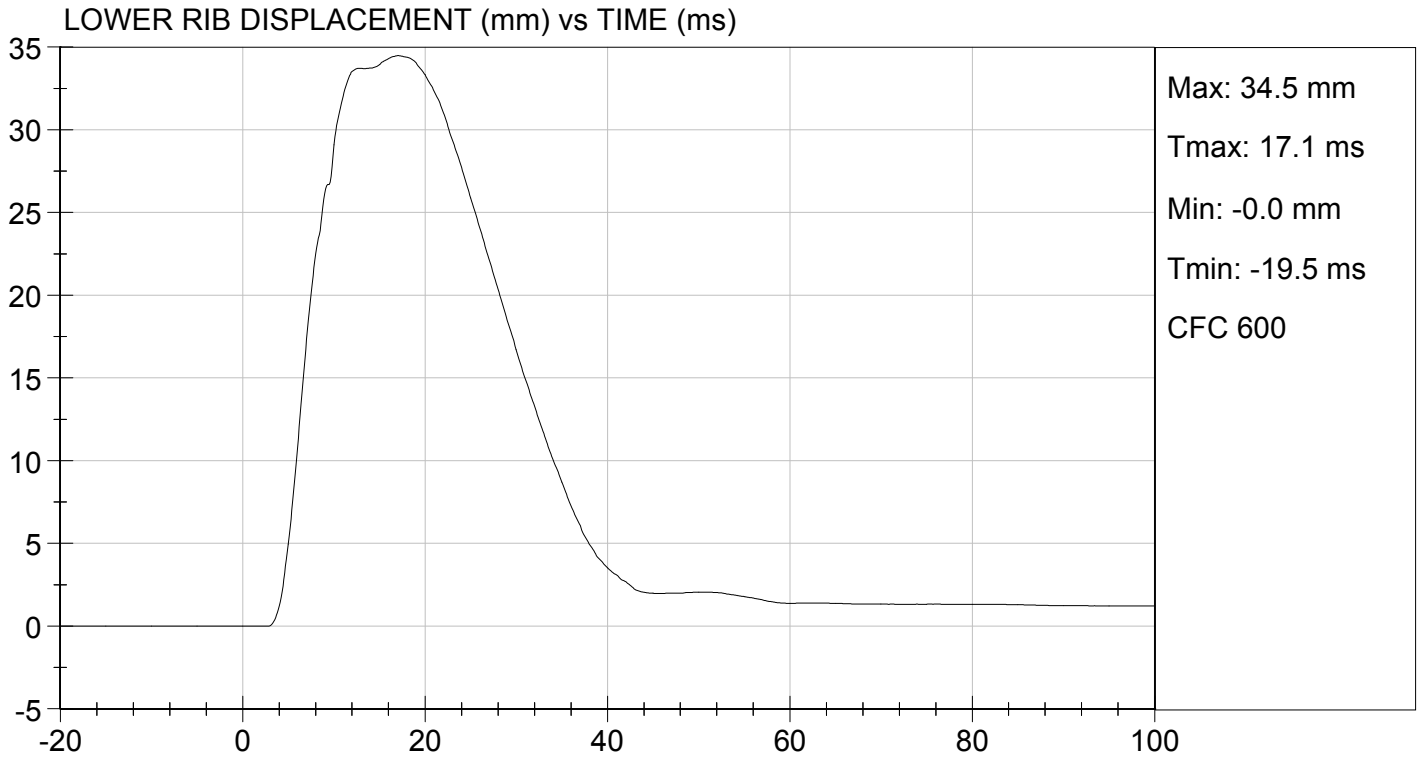
David Schoedel  
Laboratory Technician

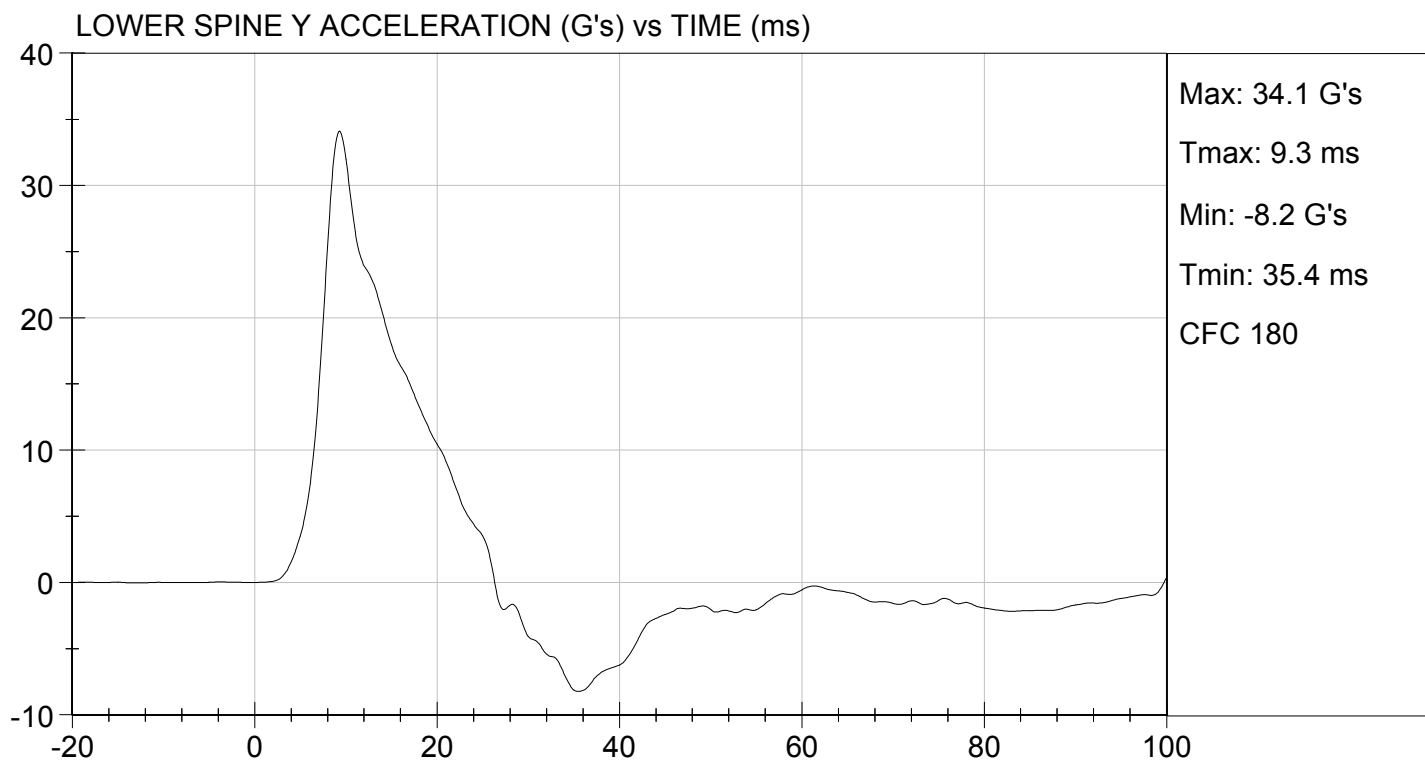
12/09/2015  
Test Date

Jessica Hall  
Approved By









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

**ATD Serial No:** 306

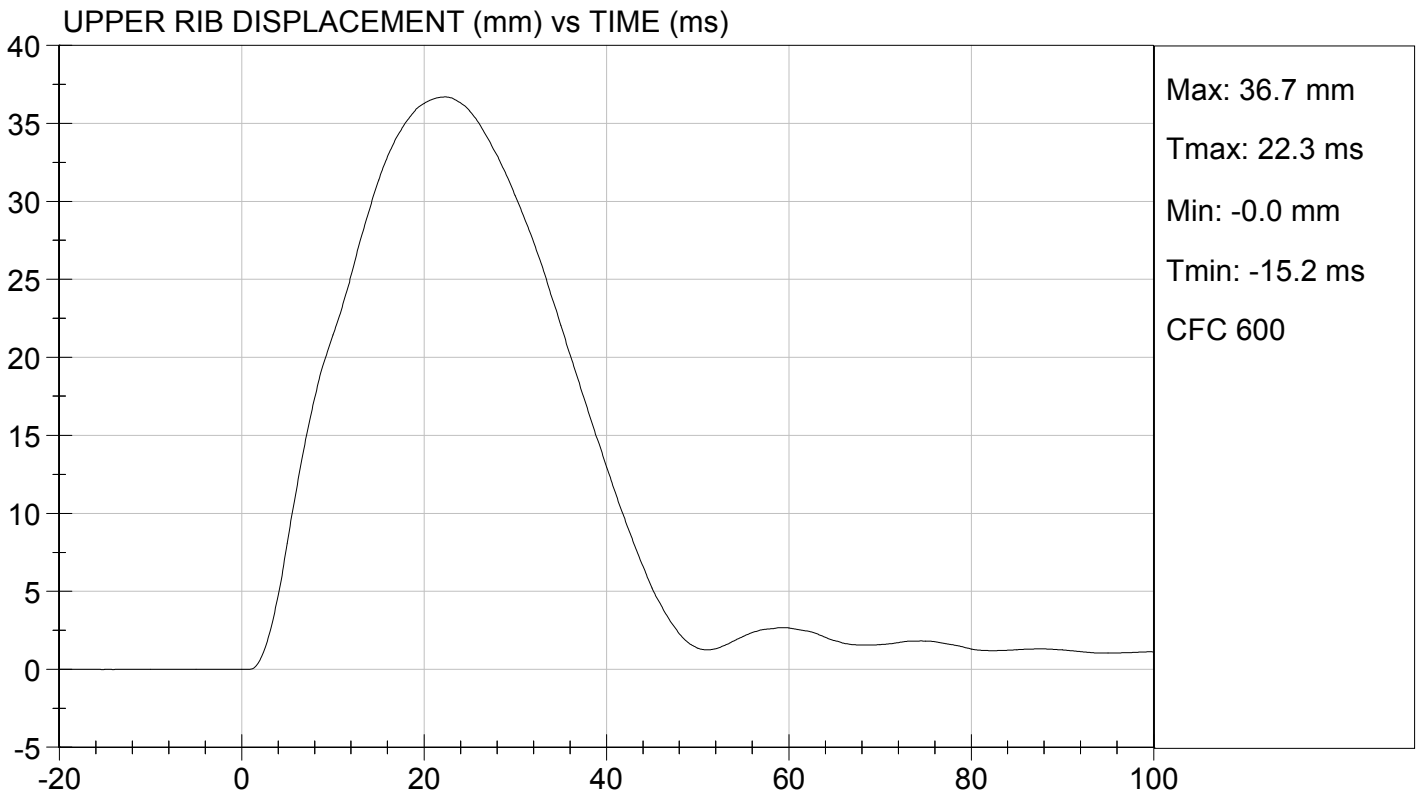
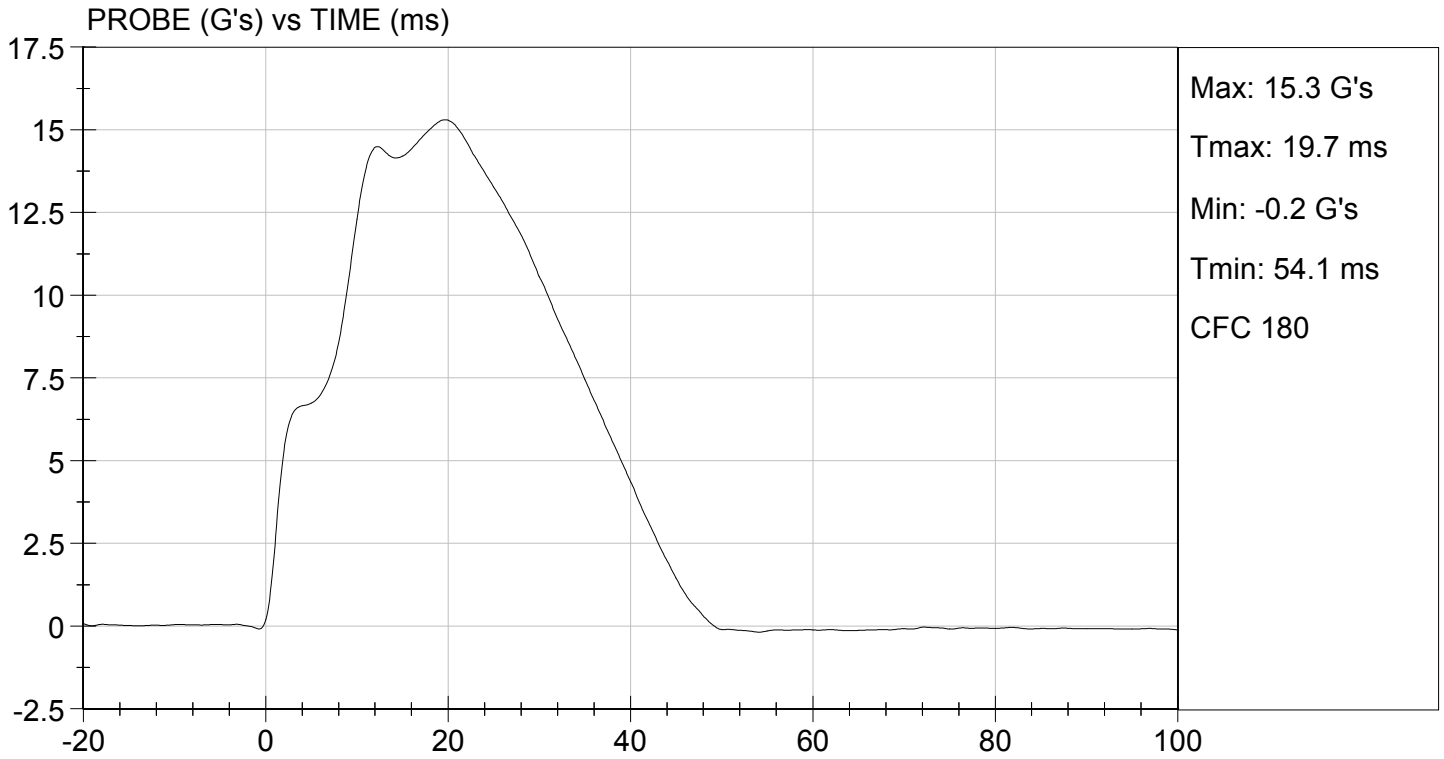
**Test I.D:** D154075

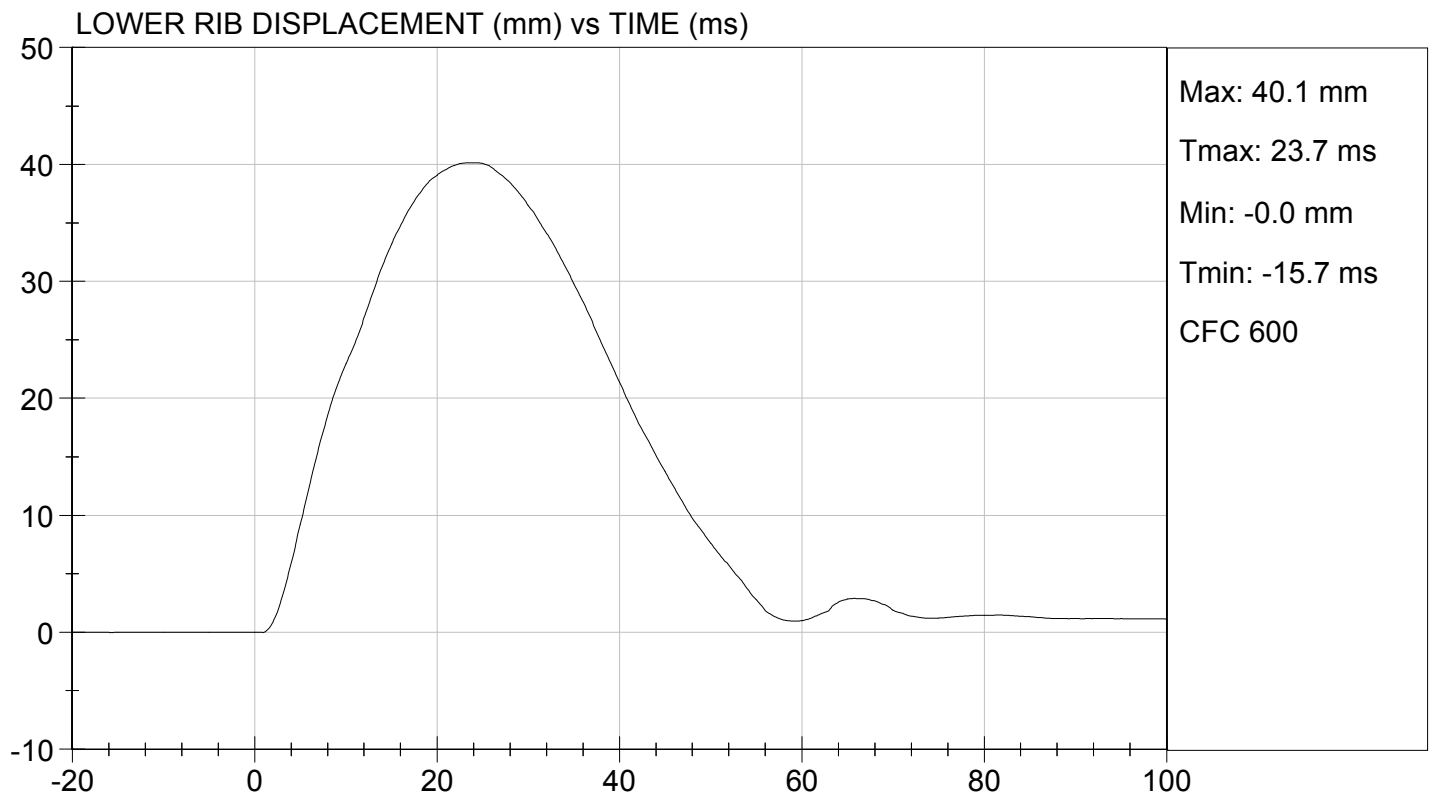
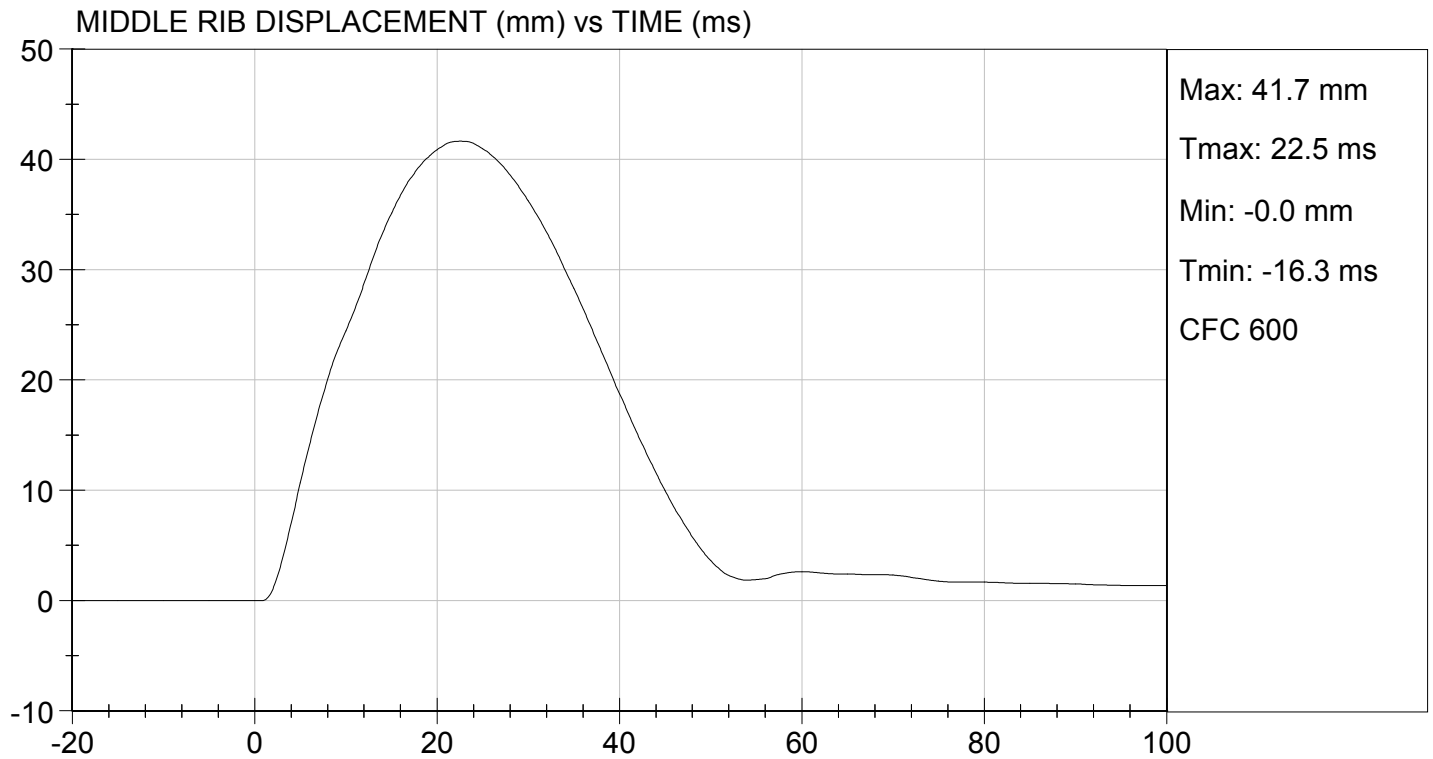
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	37	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	40	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
<b>Overall Test Results</b>				<b>Pass</b>

*David Schoedel*  
 \_\_\_\_\_  
 Laboratory Technician

12/09/2015  
 \_\_\_\_\_  
 Test Date

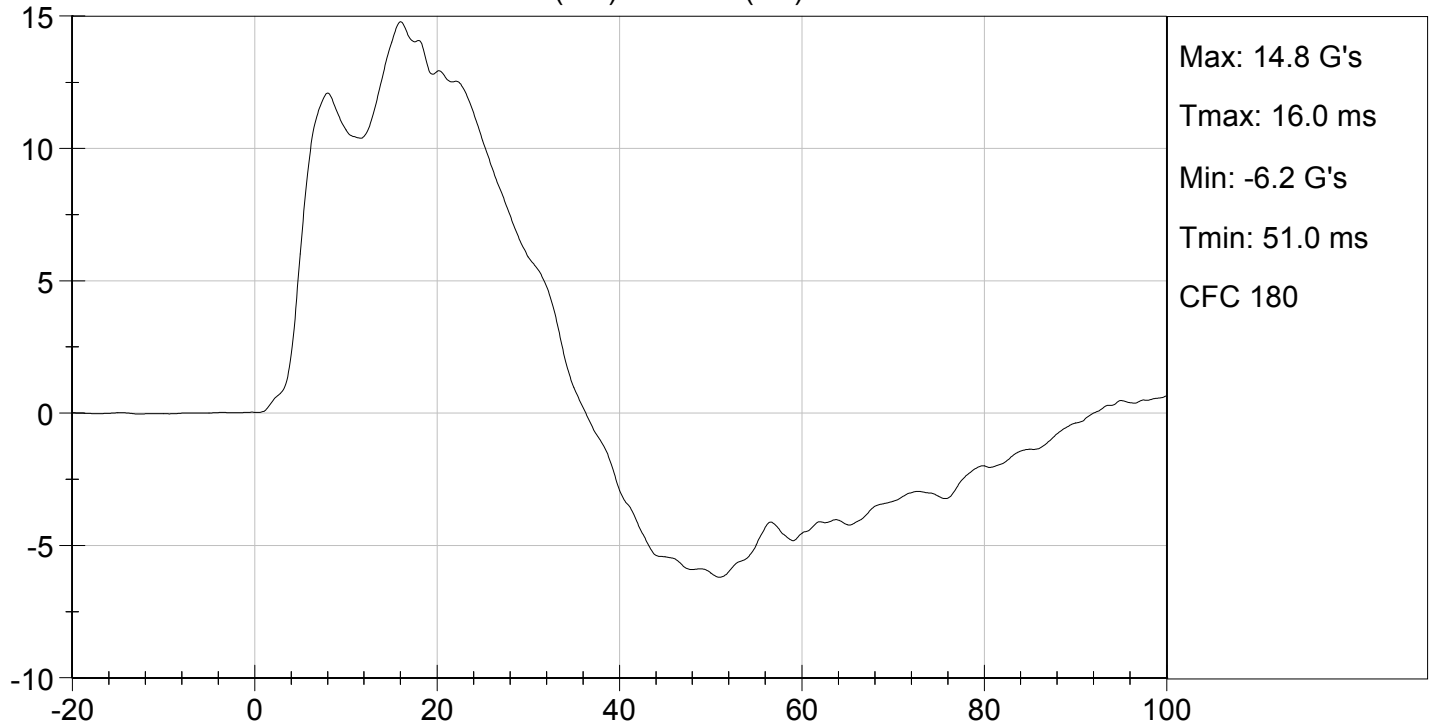
*Jessica Hall*  
 \_\_\_\_\_  
 Approved By



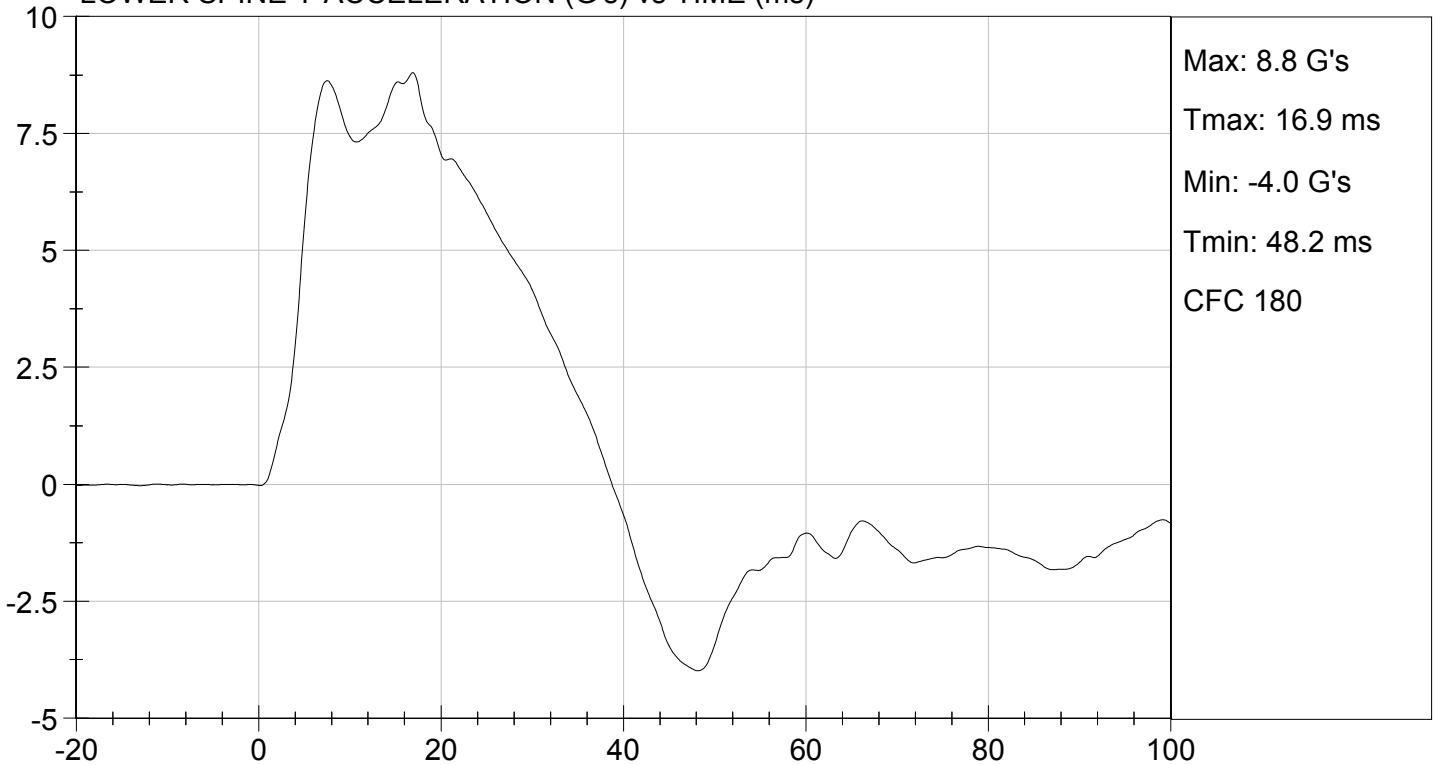




UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



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

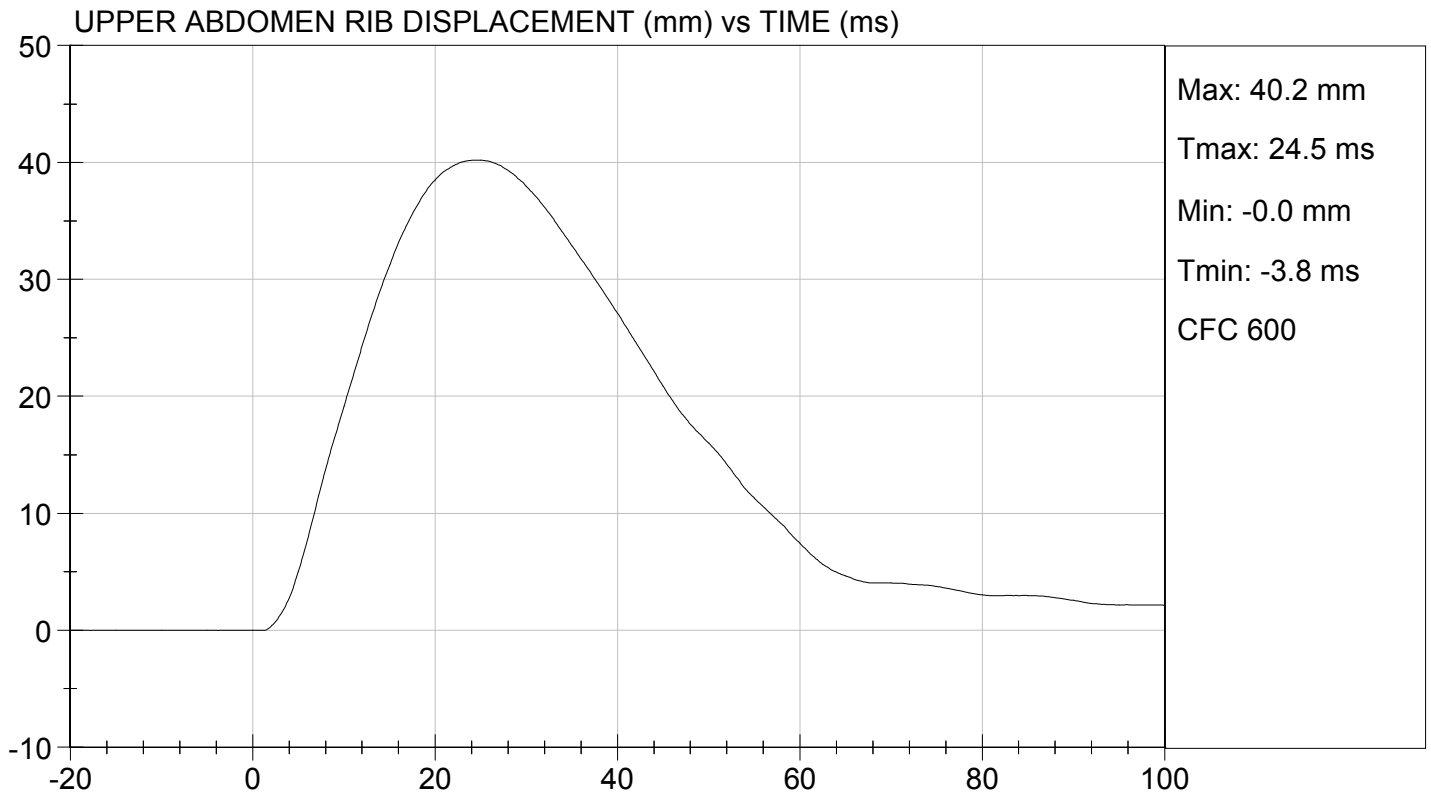
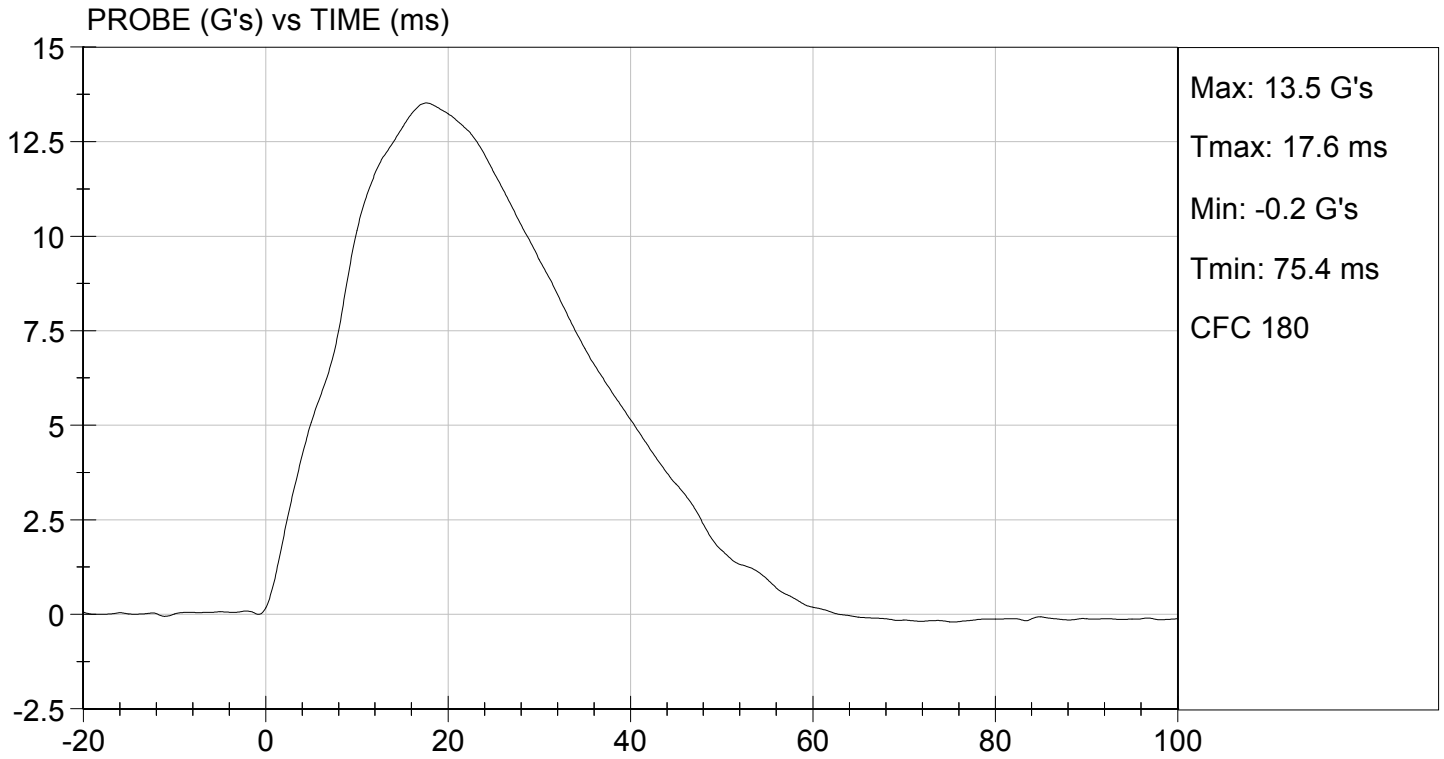
**Test I.D:** D154076

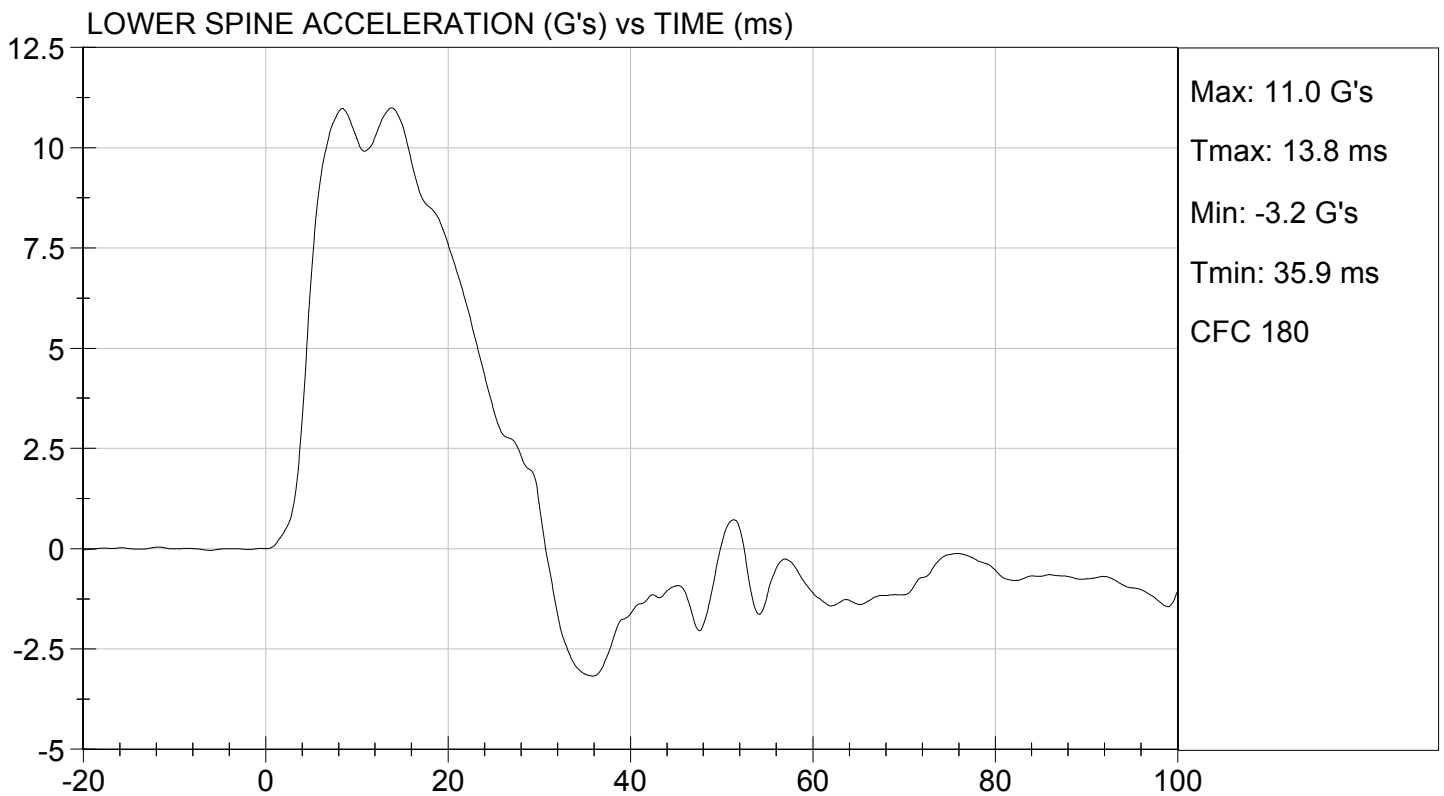
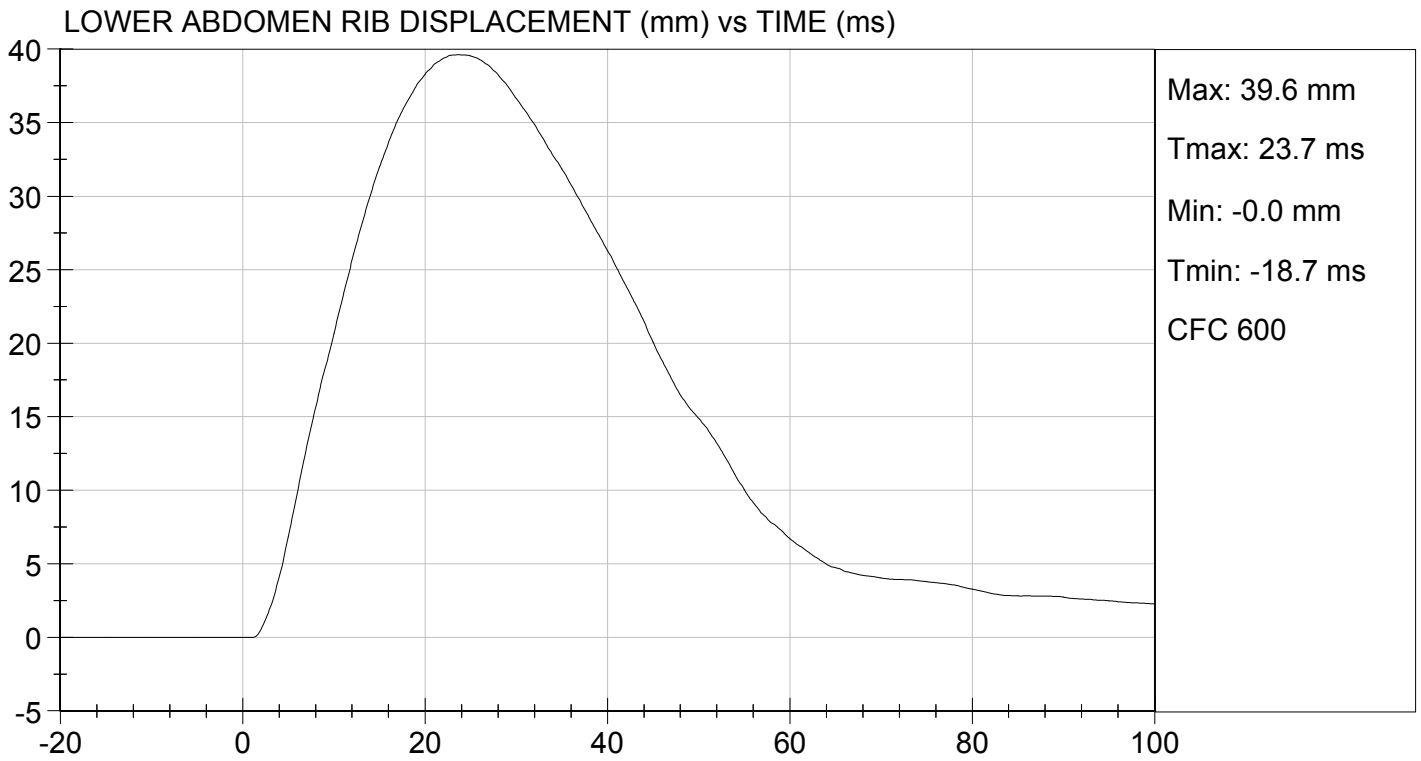
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	40	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	40	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass

*David Schoedel*  
 \_\_\_\_\_  
 Laboratory Technician

12/09/2015  
 \_\_\_\_\_  
 Test Date

*Jessica Hall*  
 \_\_\_\_\_  
 Approved By





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

**ATD Serial No:** 306

**Test I.D:** D154077

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	47	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	42	Pass
Peak Acetabulum Force	N	3600 to 4300	4,167	Pass
<b>Overall Test Results</b>				<b>Pass</b>

*David Schoedel*

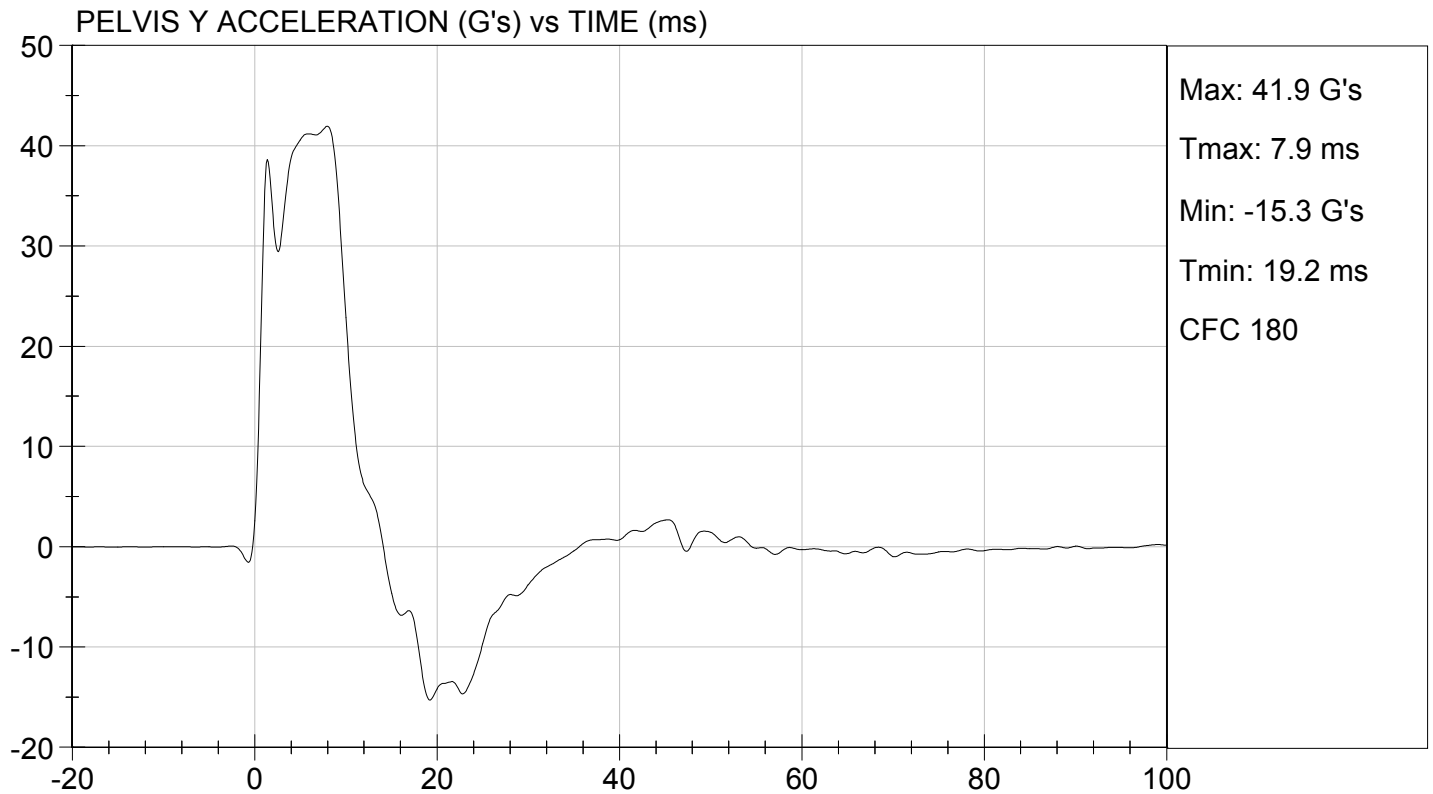
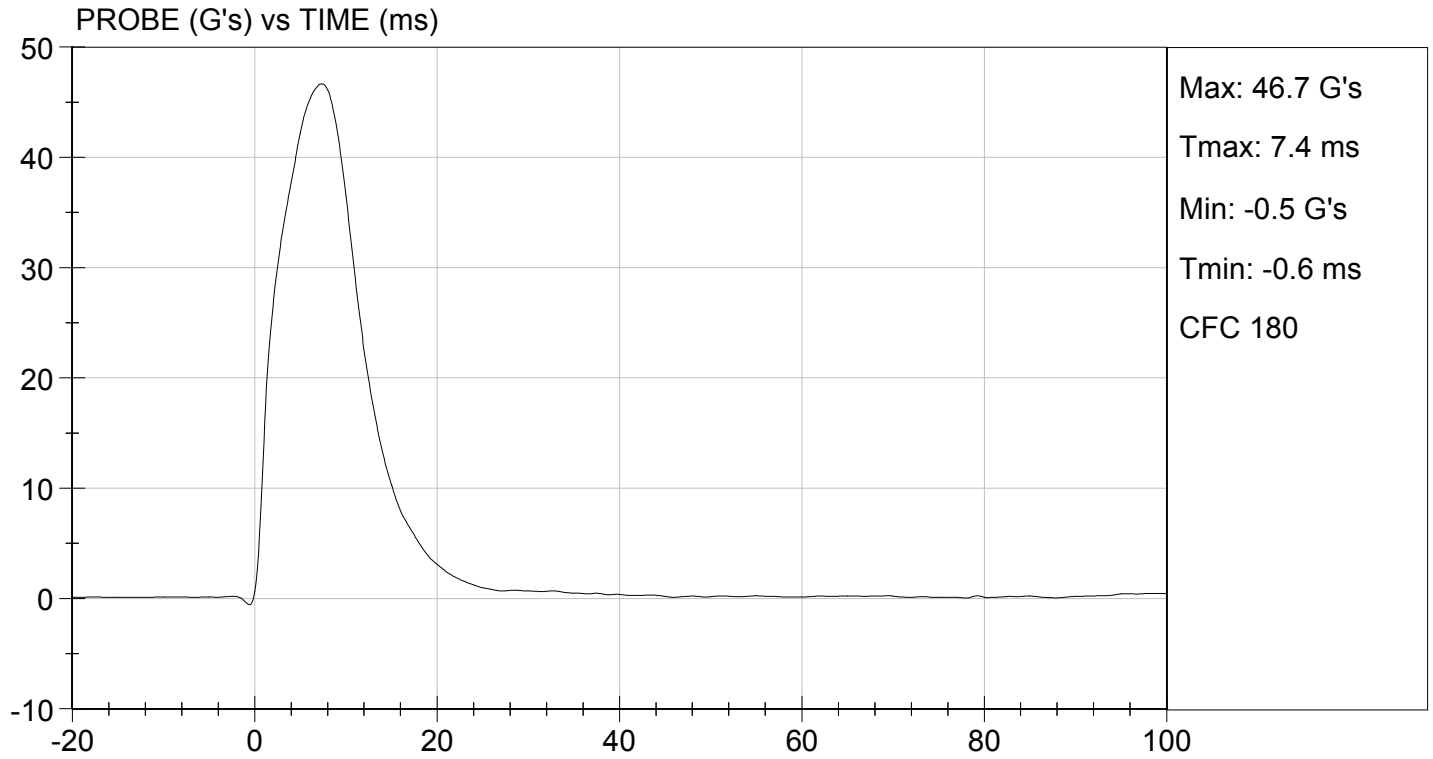
Laboratory Technician

12/09/2015

Test Date

*Jessica Hall*

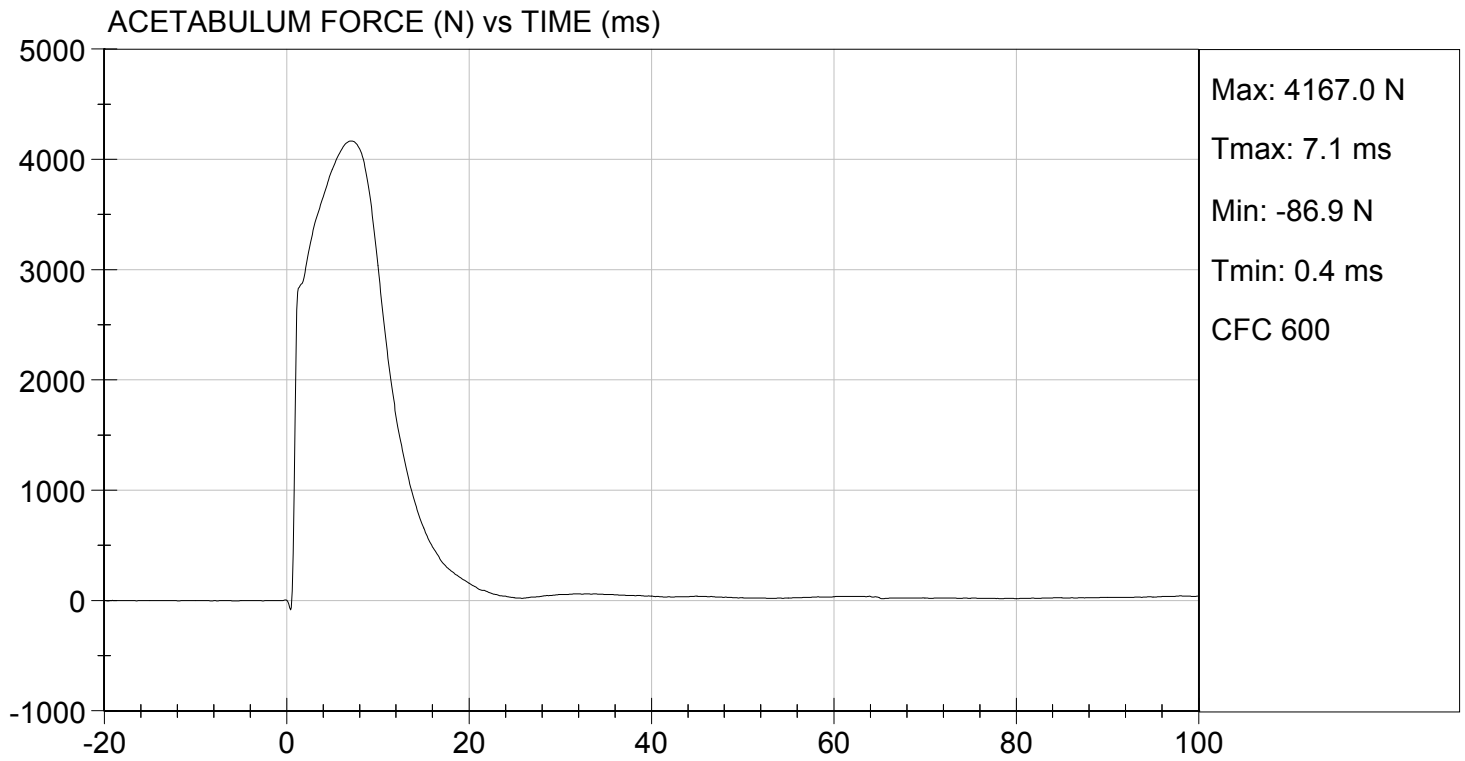
Approved By





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

TEST DATE: 12/09/2015  
TEST #: D154077



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

**ATD Serial No:** 306

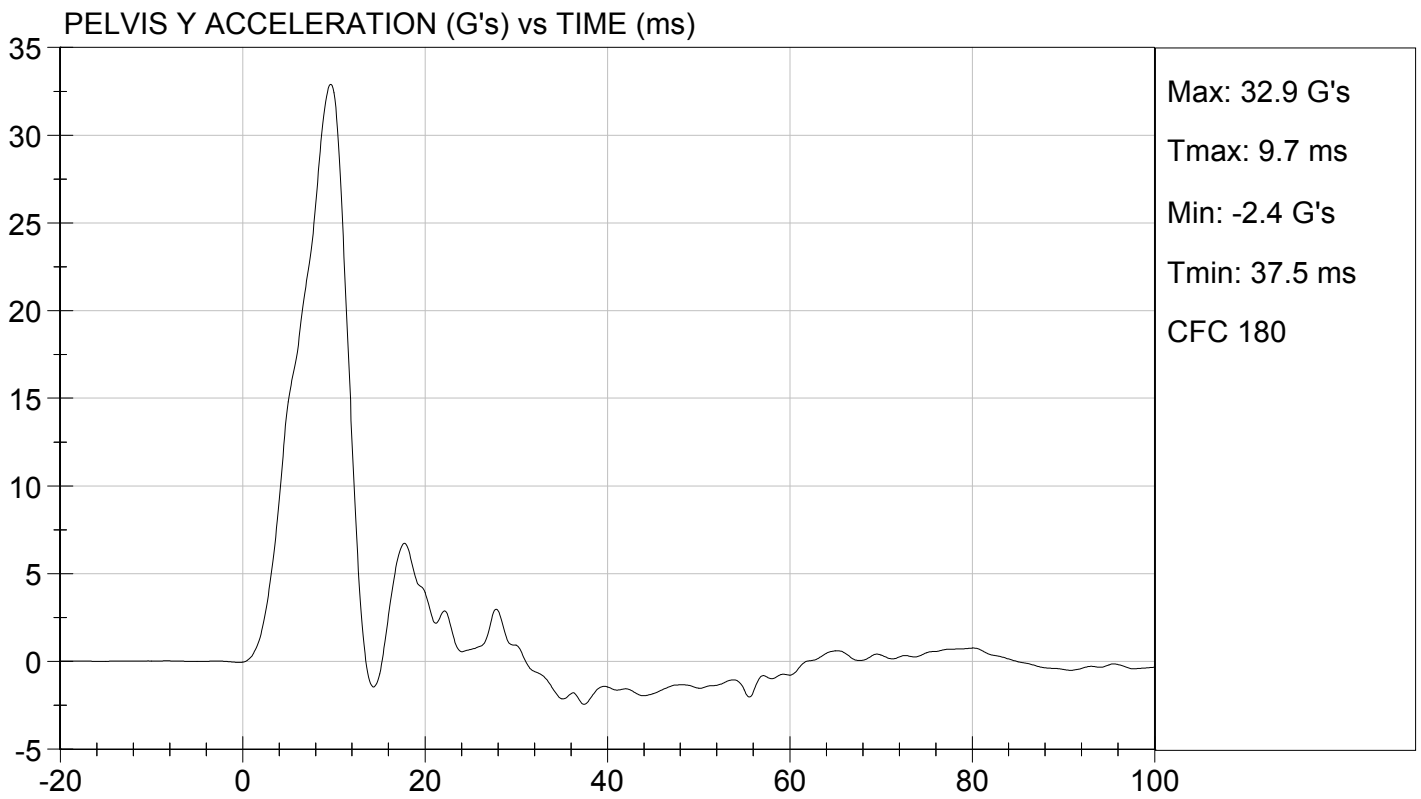
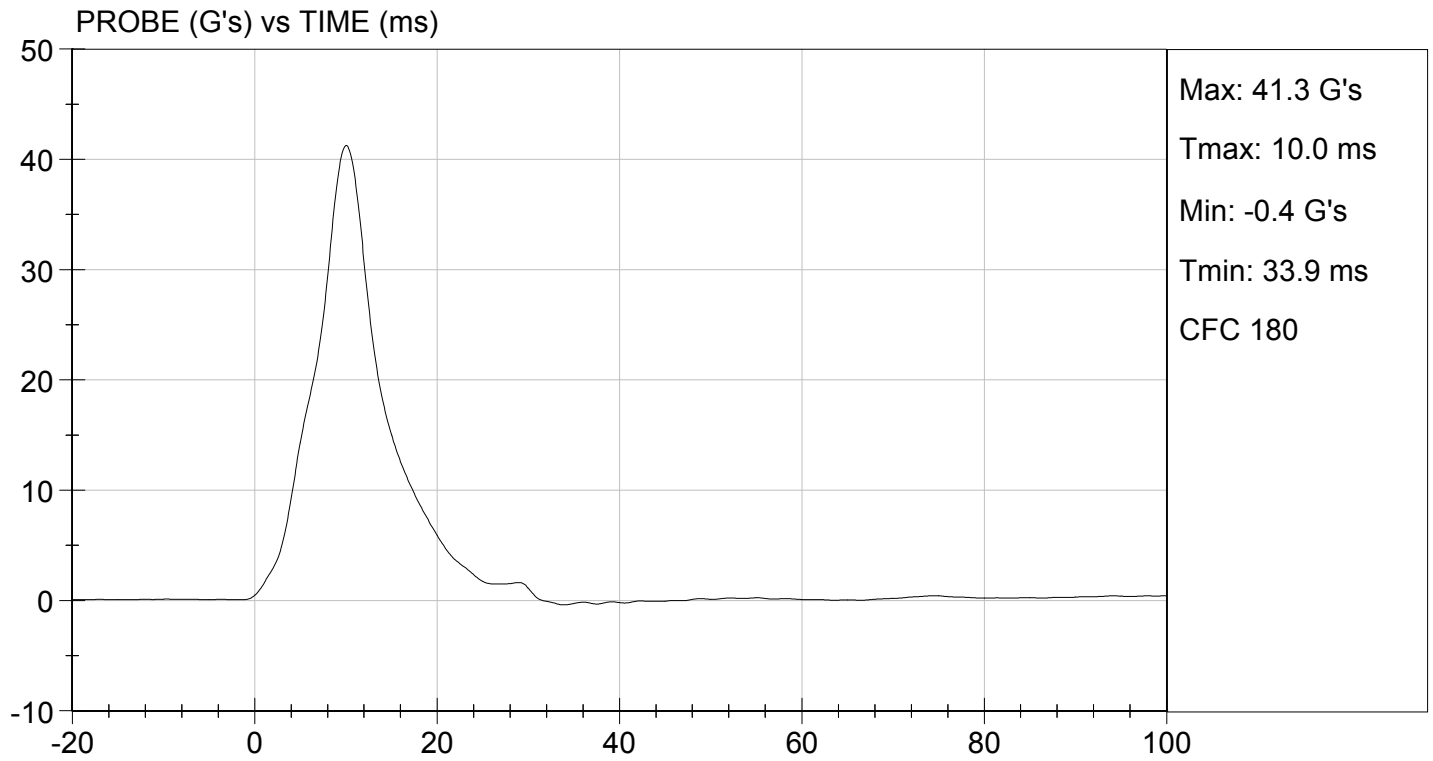
**Test I.D:** D154078

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	41	Pass
Pelvis Y Acceleration	G's	28 to 39	33	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,718	Pass
<b>Overall Test Results</b>				<b>Pass</b>

David Schoedel  
 Laboratory Technician

12/09/2015  
 Test Date

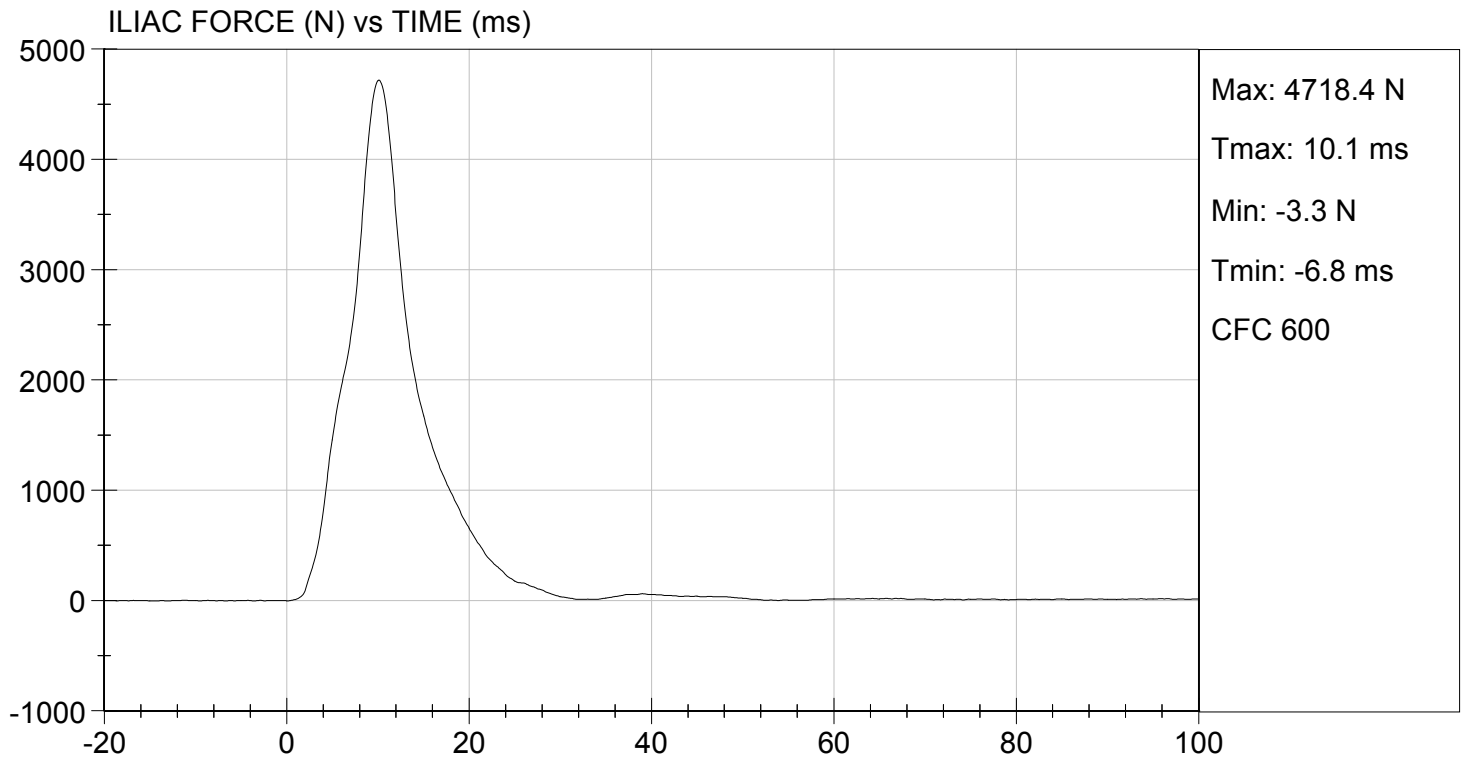
Jessica Hall  
 Approved By





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

TEST DATE: 12/09/2015  
TEST #: D154078



**SID-IIsD External Measurements**  
**SN: 306**

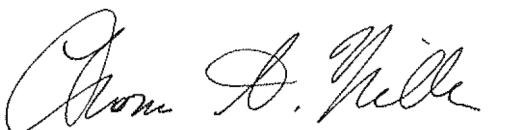
<b>No.</b>	<b>Name</b>	<b>Spec. (mm)</b>	<b>Result</b>	<b>Pass/Fail</b>
<b>A</b>	Sitting Height	772 - 788	785	Pass
<b>B</b>	Shoulder Pivot Height	437 - 453	449	Pass
<b>C</b>	H-point Height	79 - 89	86	Pass
<b>D</b>	H-point from Seatback	141 - 151	147	Pass
<b>E</b>	Shoulder Pivot from Backline	97 - 107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

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

**ATD Serial No:** 306

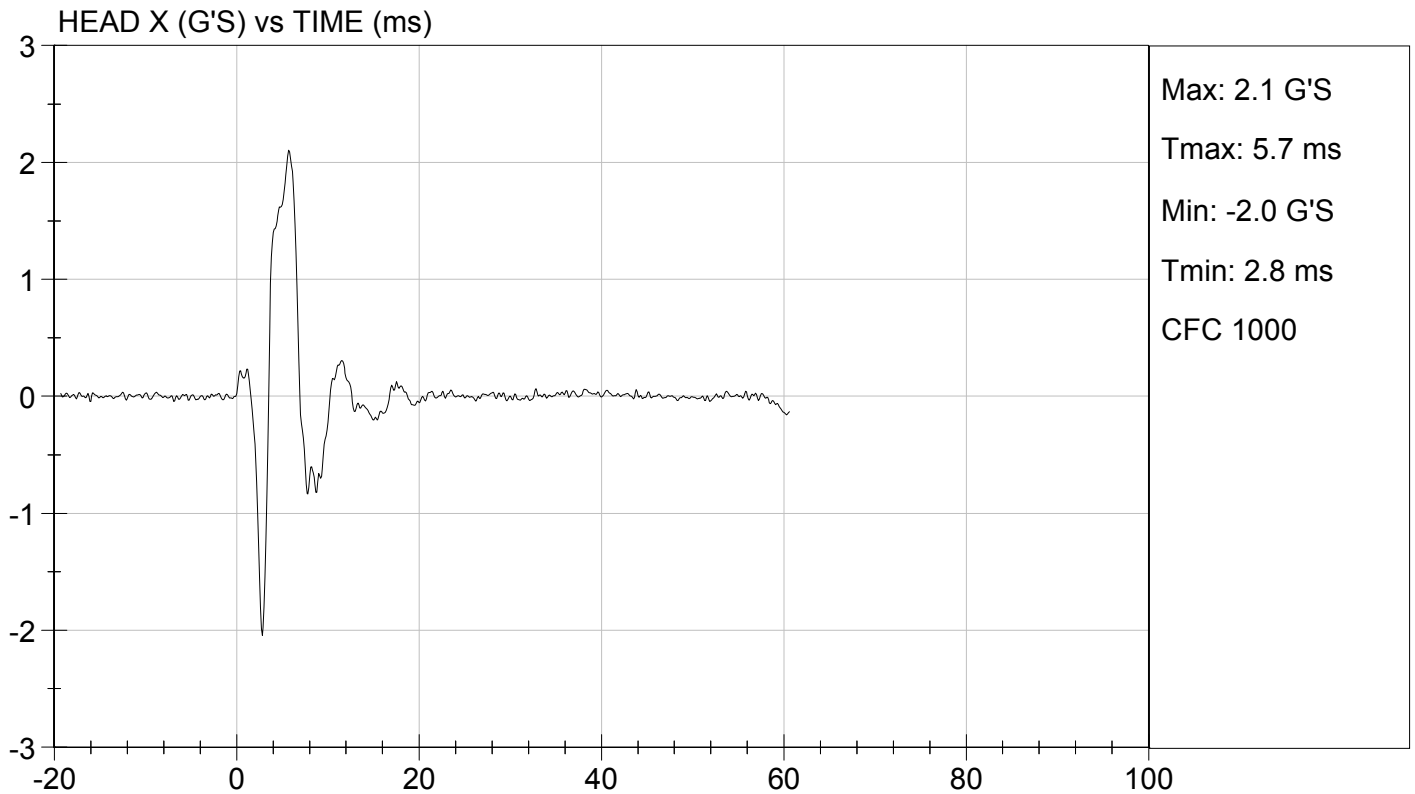
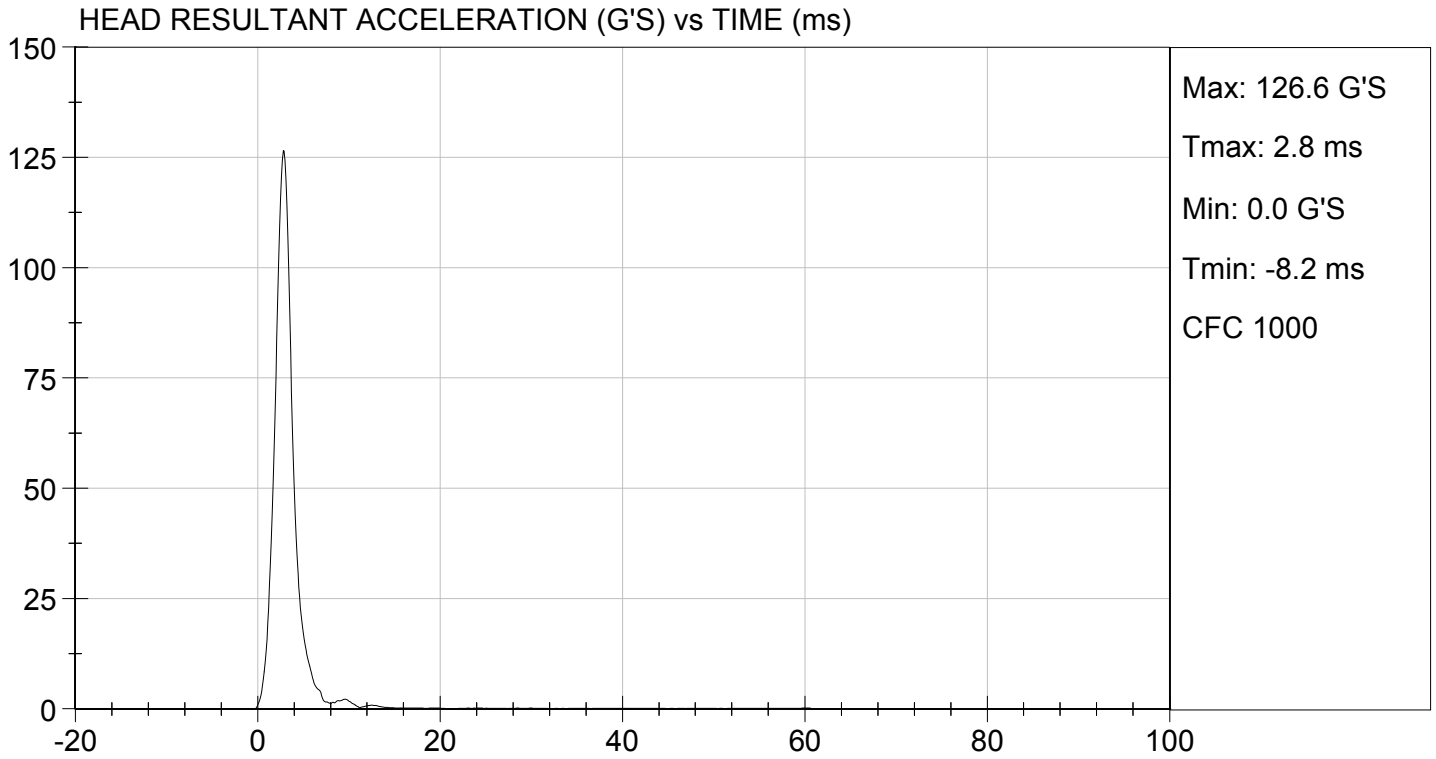
**Test ID:** D16051

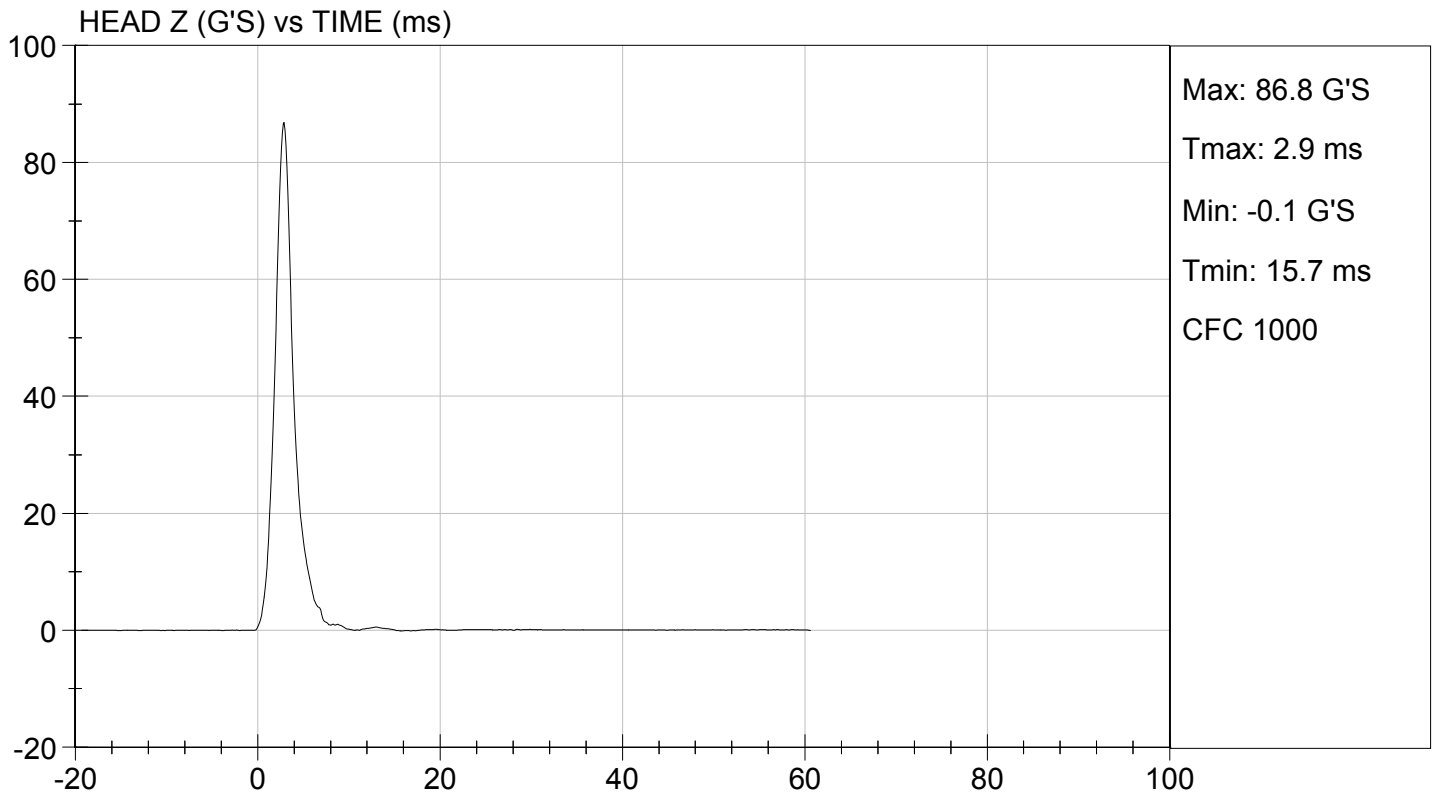
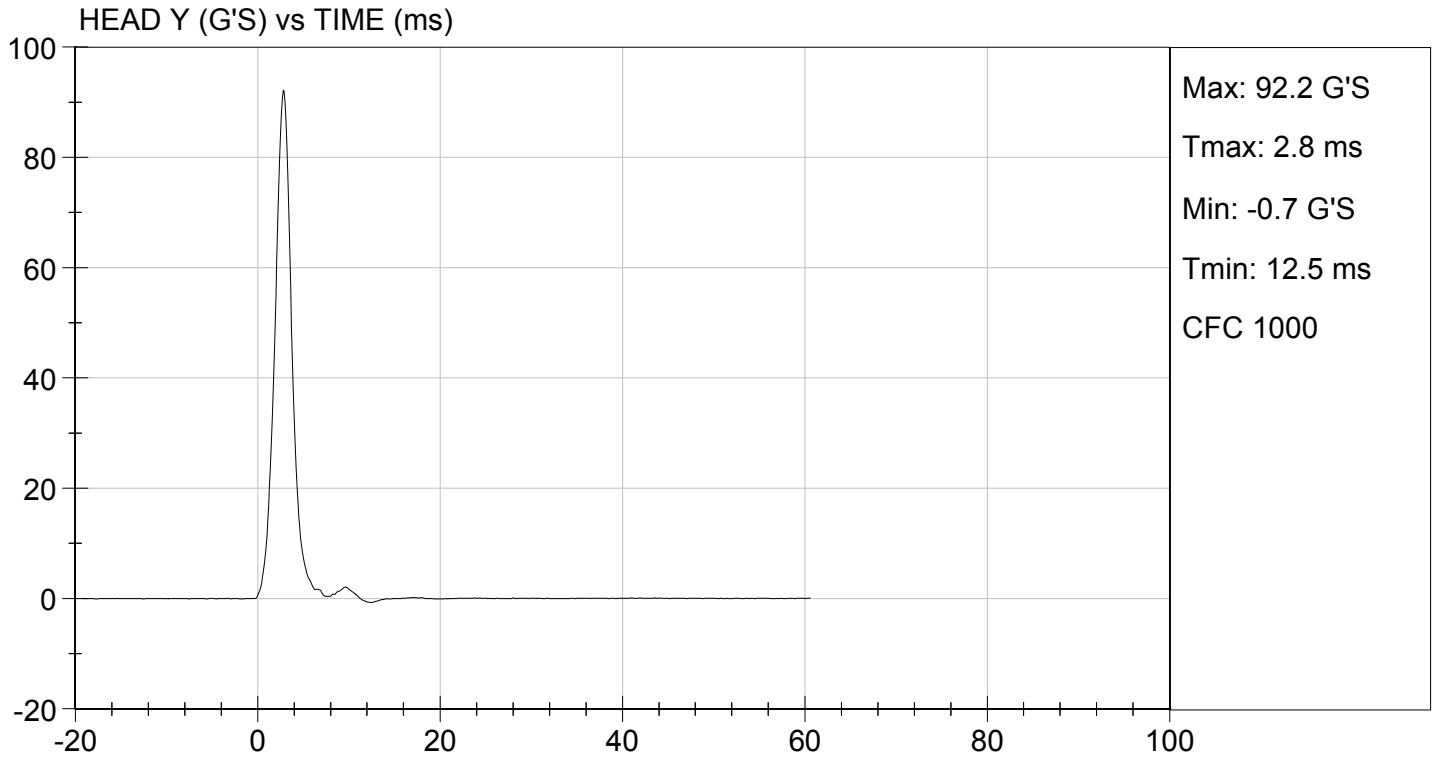
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Peak Resultant Acceleration	G's	115 to 137	127	Pass
Peak Longitudinal Acceleration	G's	+/- 15	2.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
<b>Overall Test Results</b>				<b>Pass</b>

  
Laboratory Technician

01/06/2016  
Test Date

  
Approved By



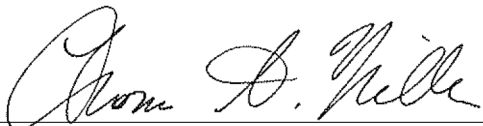


**MGA RESEARCH CORPORATION  
LATERAL NECK PENDULUM TEST  
SID-IIs BUILD LEVEL D DUMMY**

**ATD Serial No:** 306

**Test I.D.:** D16052

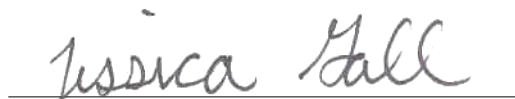
Tested Parameter	Units	Specification	Result	Pass/Fail	
Temperature	deg C	20.6 to 22.2	21.5	Pass	
Humidity	%	10 to 70	19	Pass	
Impact Velocity	m/s	5.51 to 5.63	5.58	Pass	
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.52	Pass
	15 ms	m/s	3.30 to 4.10	3.61	Pass
	20 ms	m/s	4.40 to 5.40	4.81	Pass
	25 ms	m/s	5.40 to 6.10	5.74	Pass
	25-100 ms	m/s	5.50 to 6.20	5.79	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	115	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	



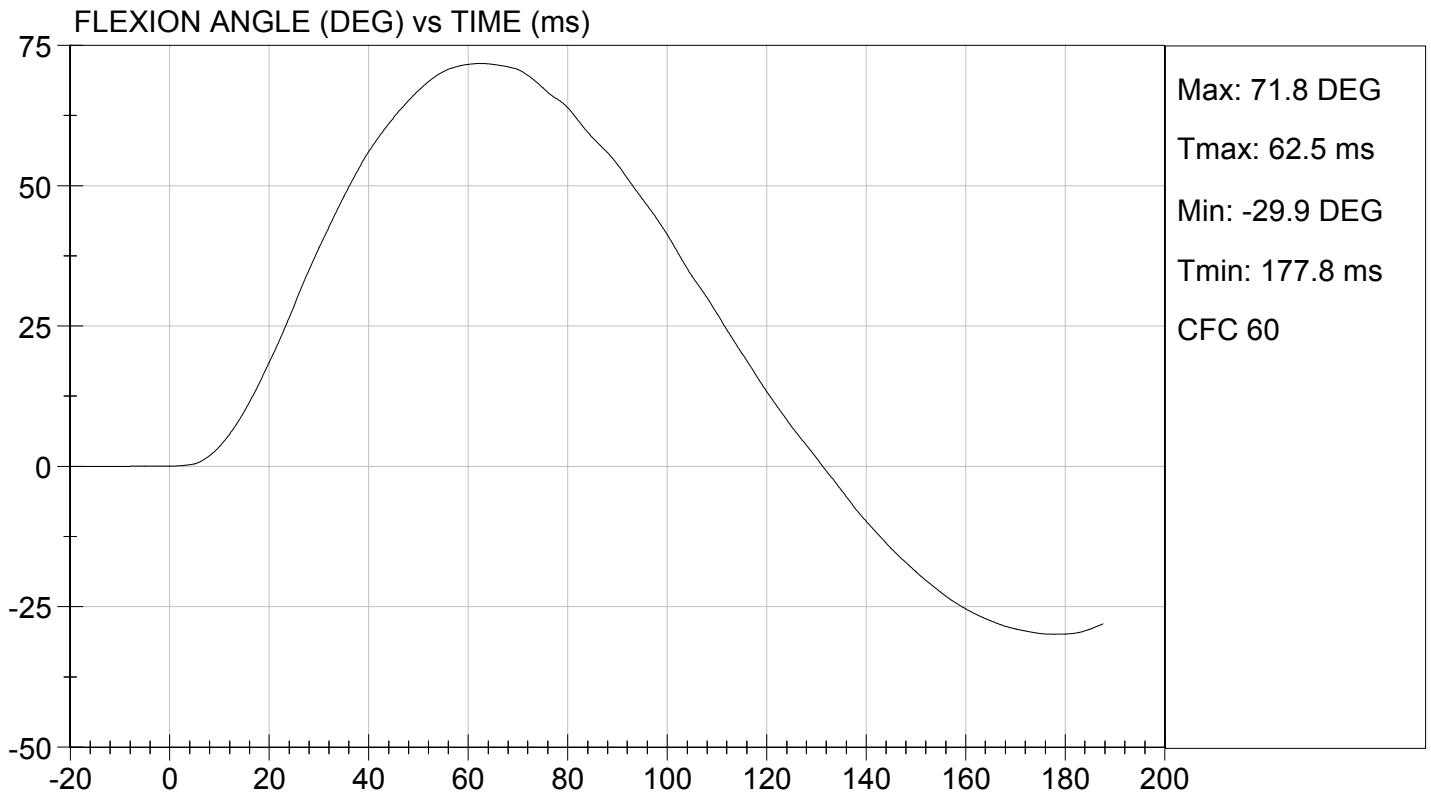
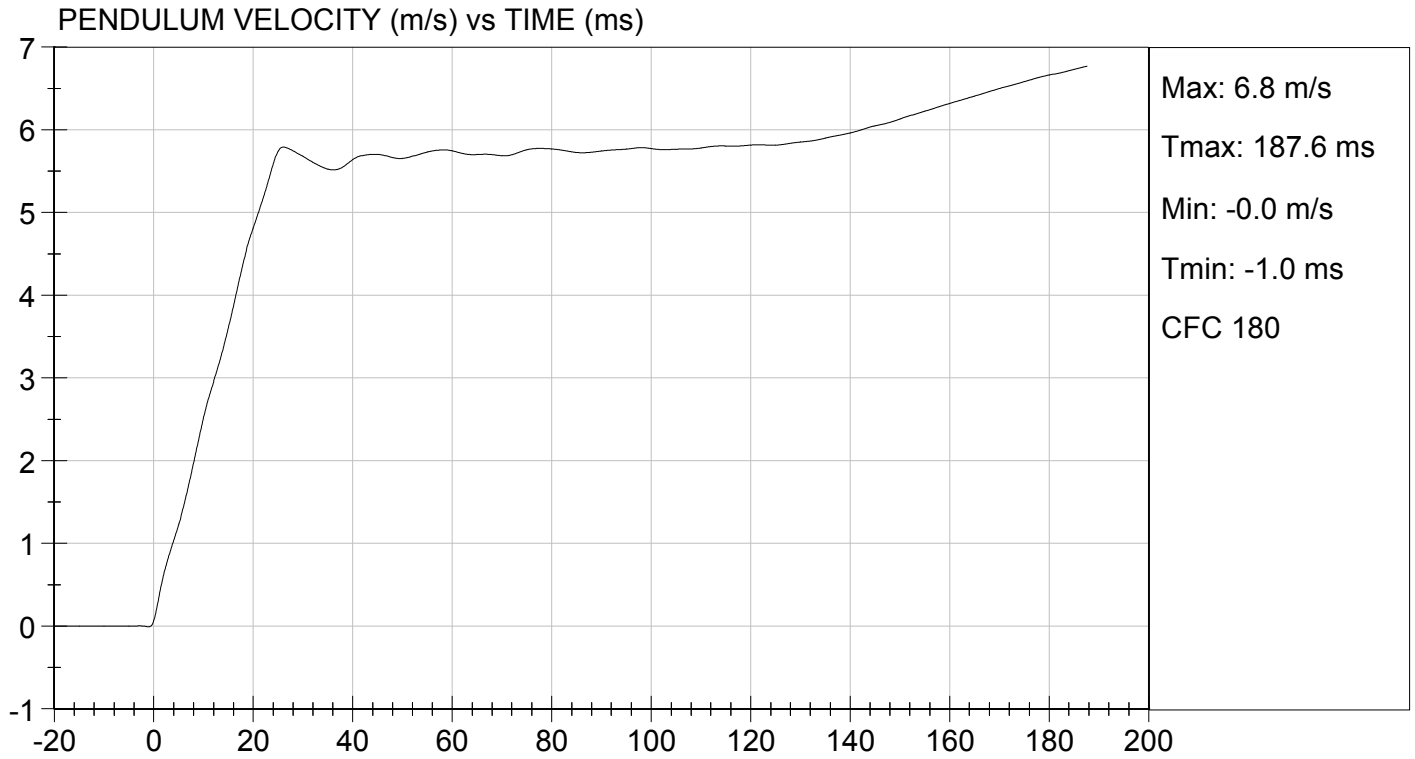
Laboratory Technician

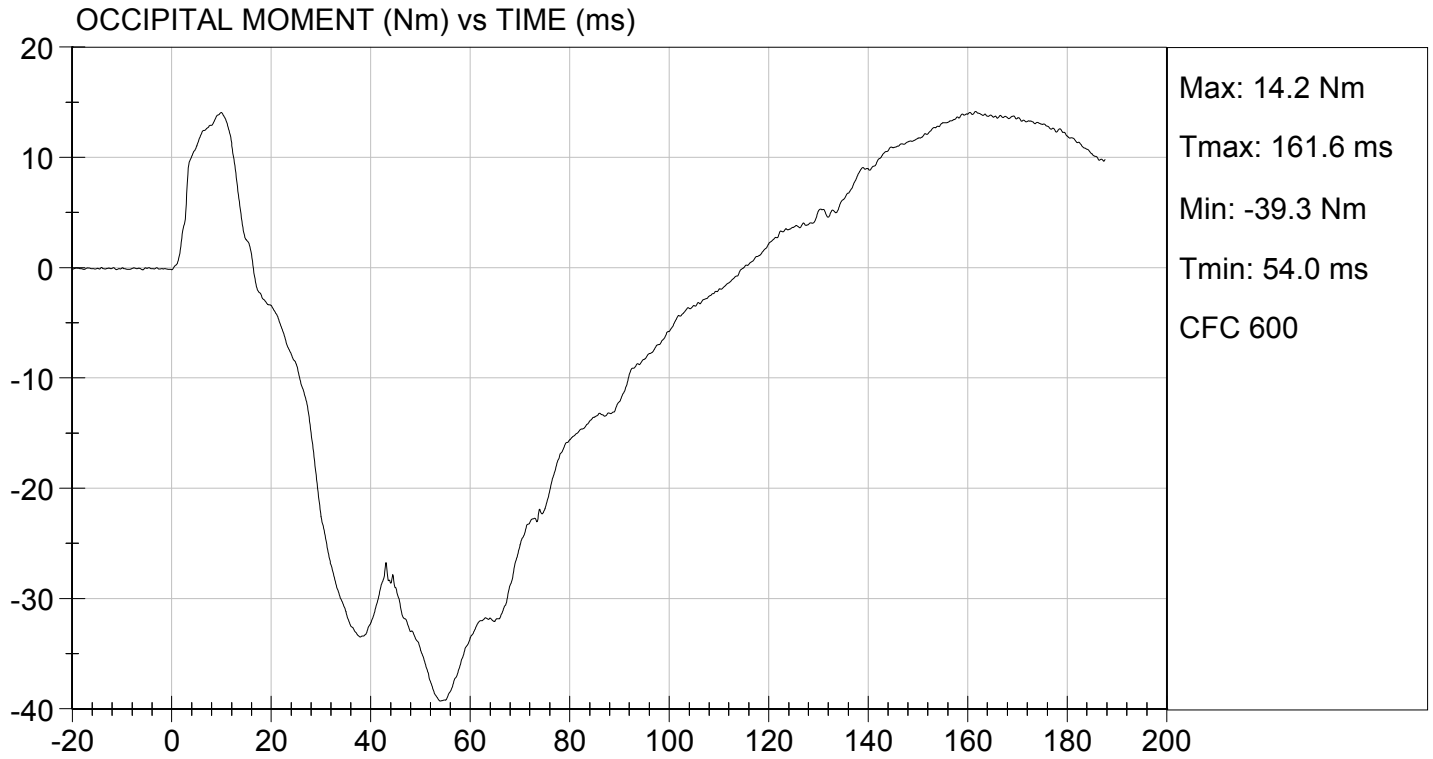
01/06/2016

Test Date



Approved By



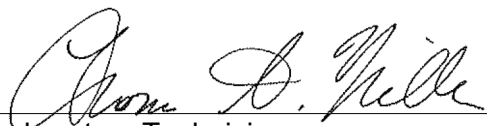


**MGA RESEARCH CORPORATION**  
**SHOULDER IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**

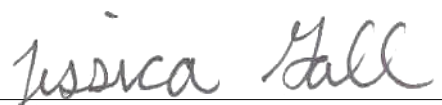
ATD Serial No: 306

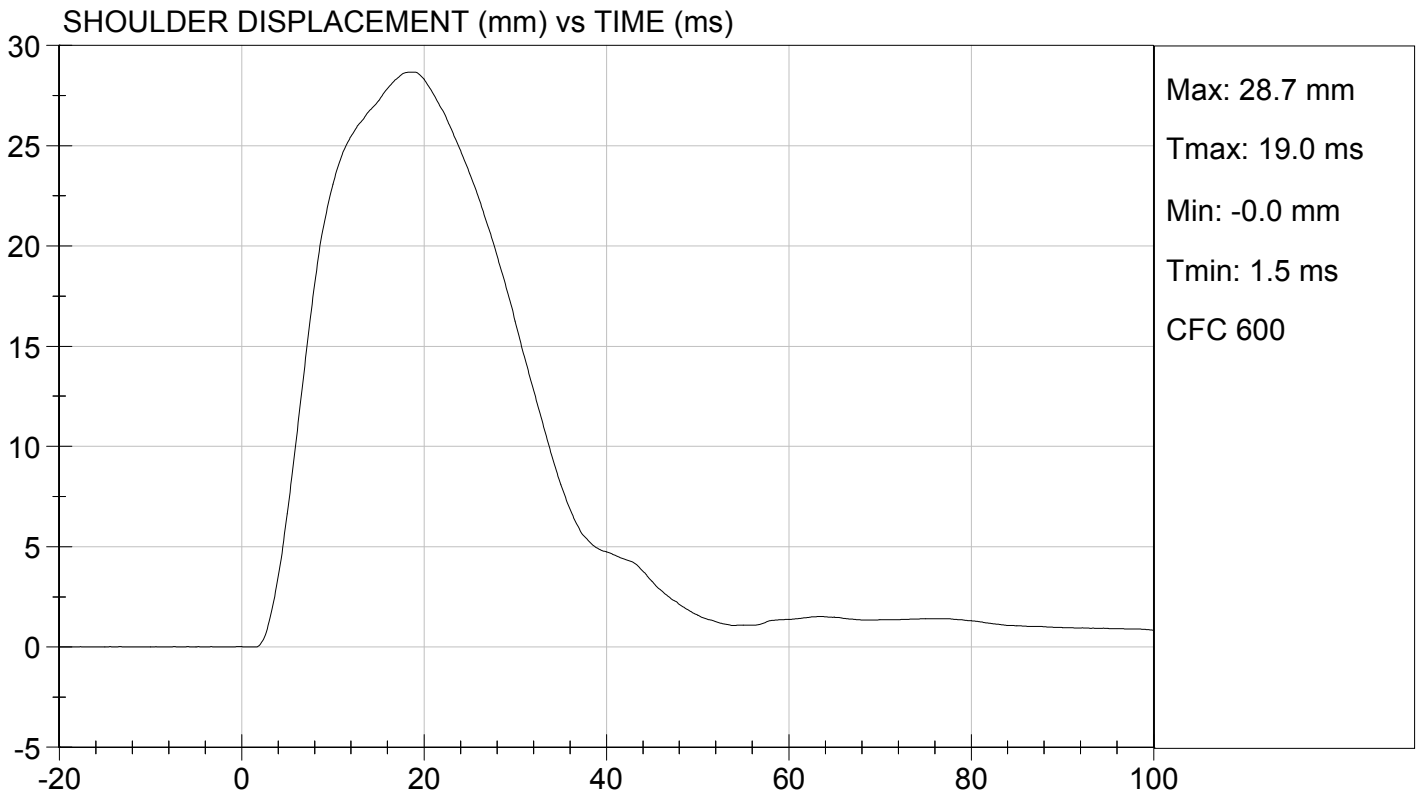
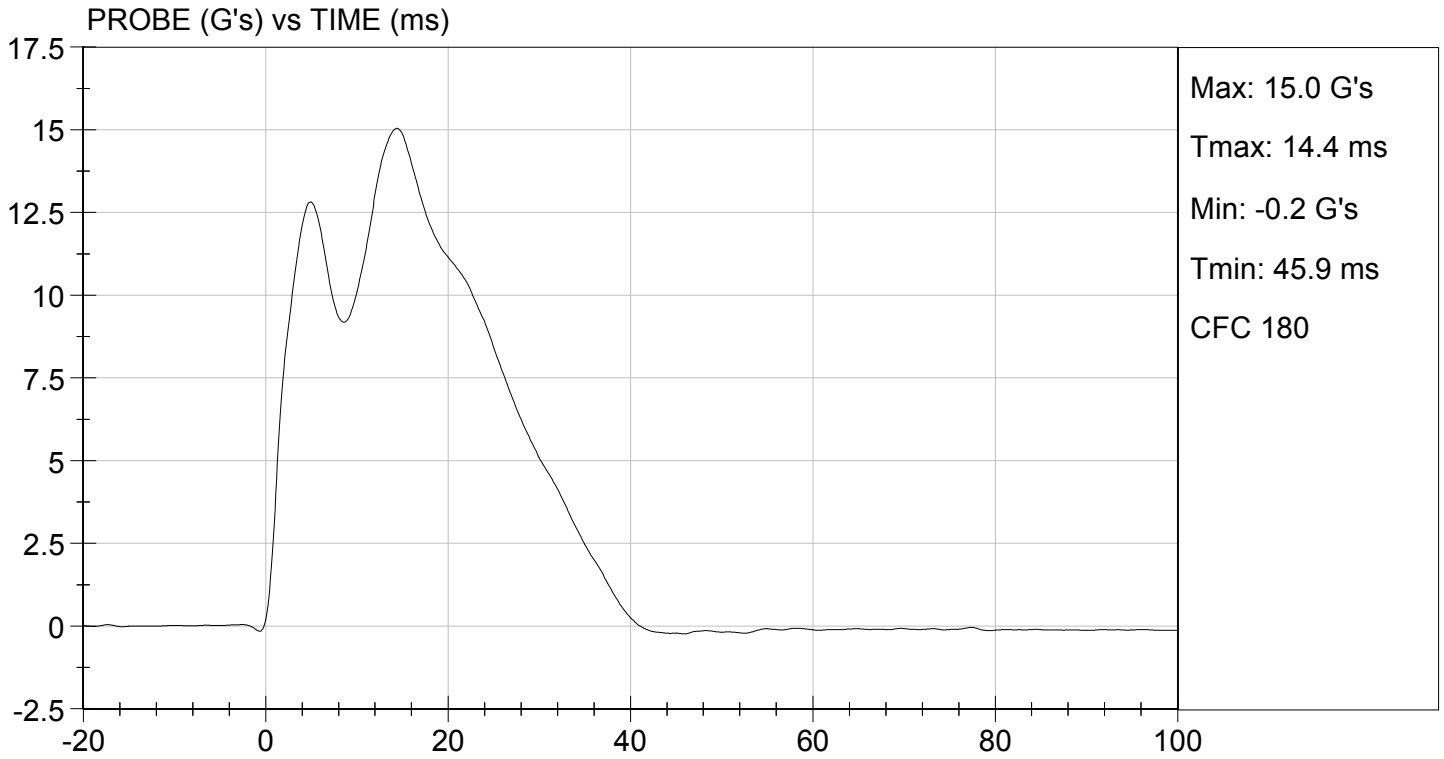
Test ID: D16053

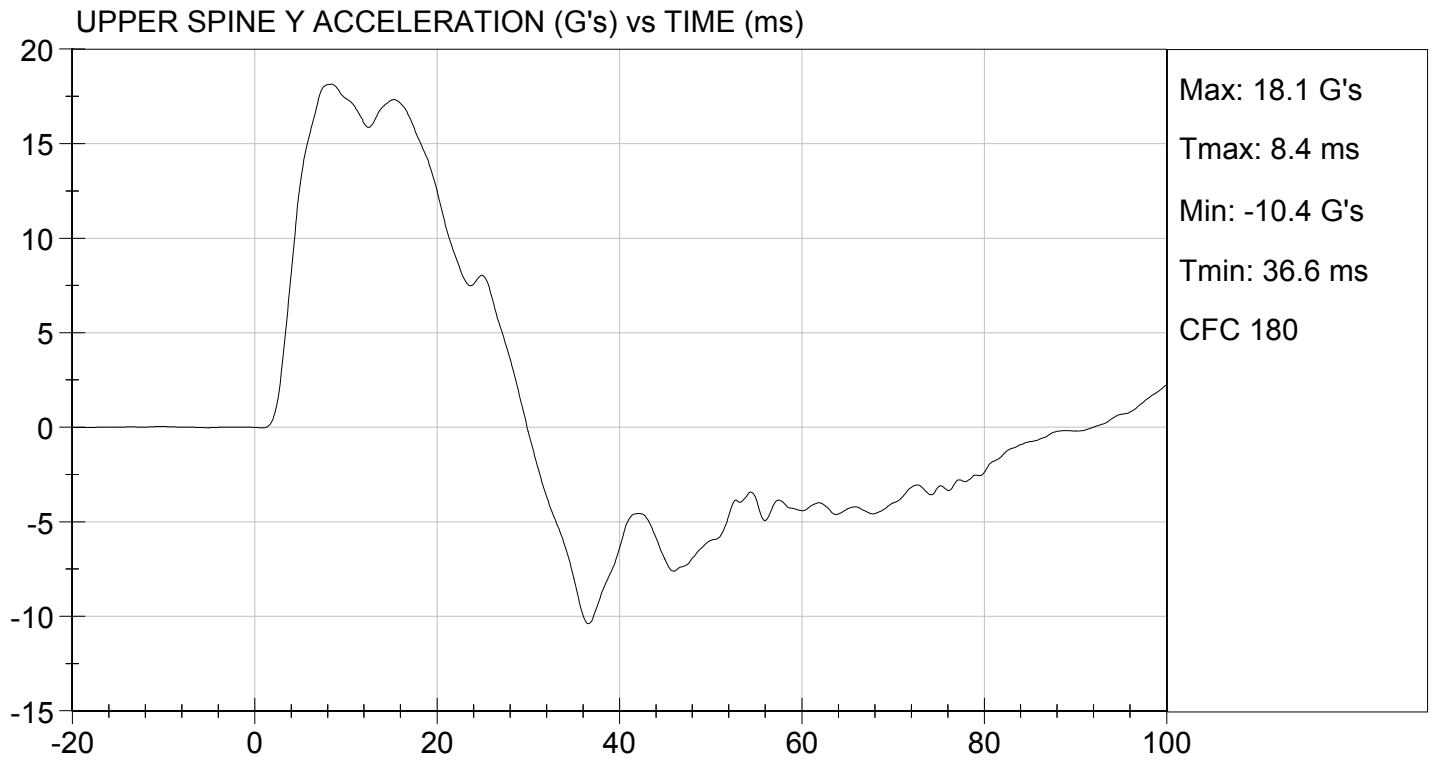
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

  
 Laboratory Technician

01/07/2016  
 Test Date

  
 Approved By





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

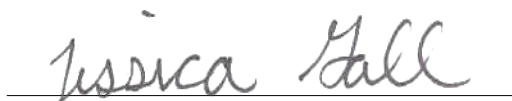
**ATD Serial No:** 306

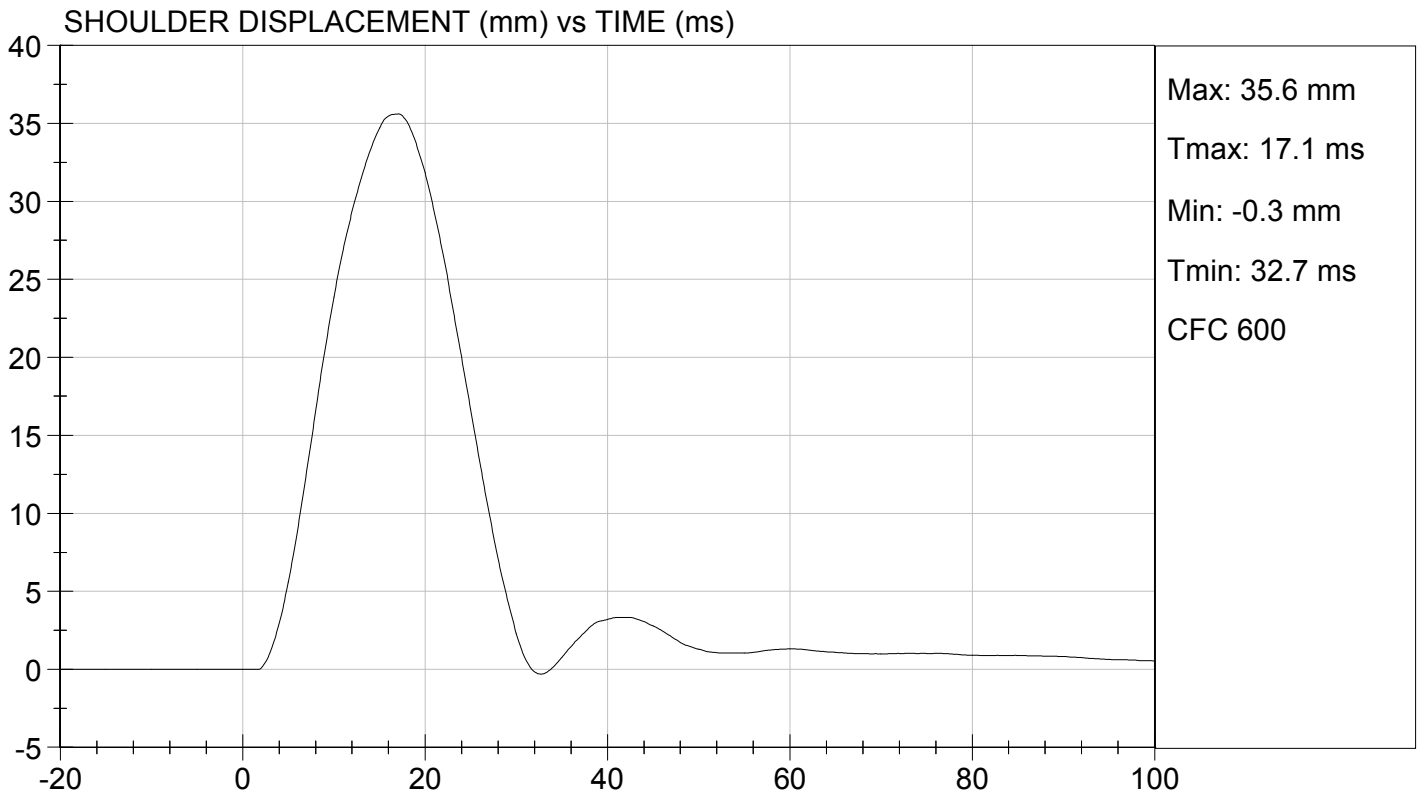
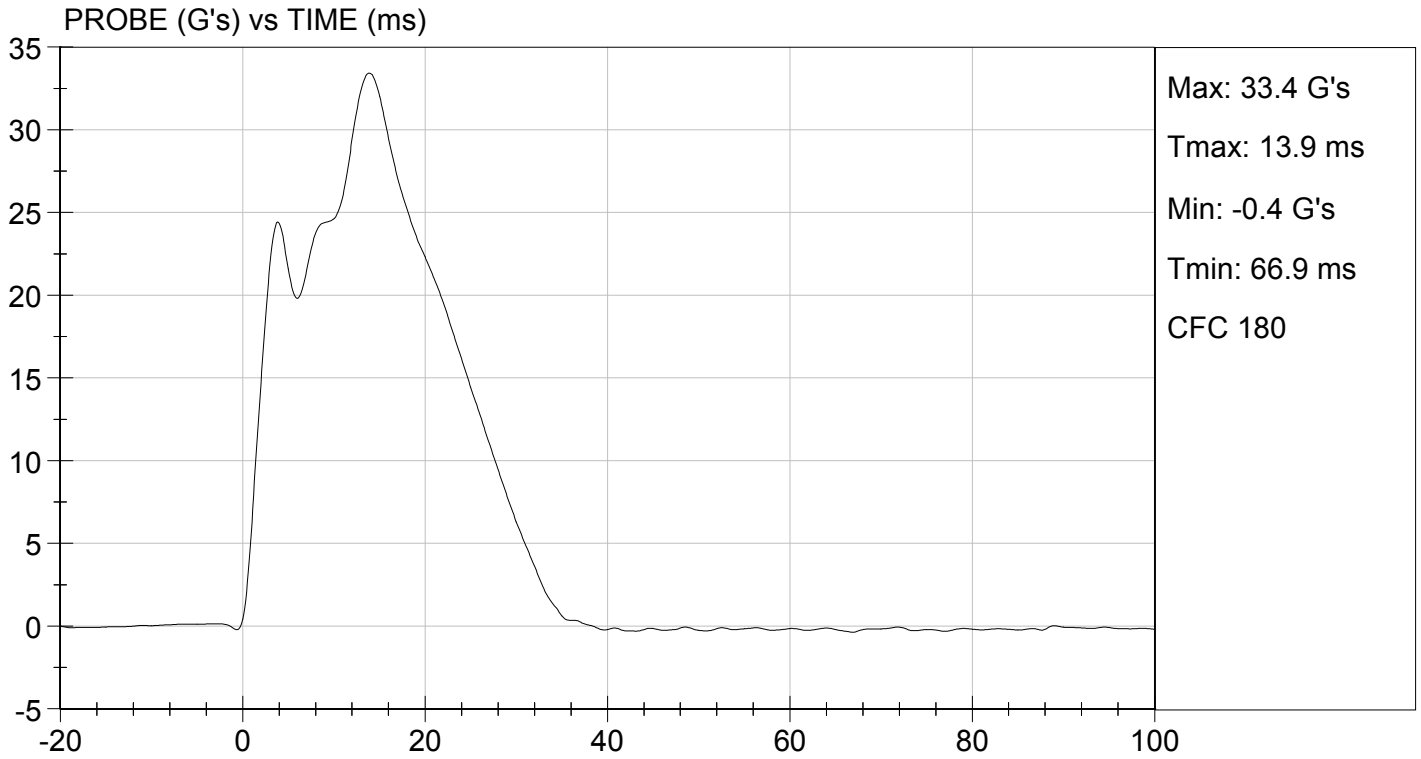
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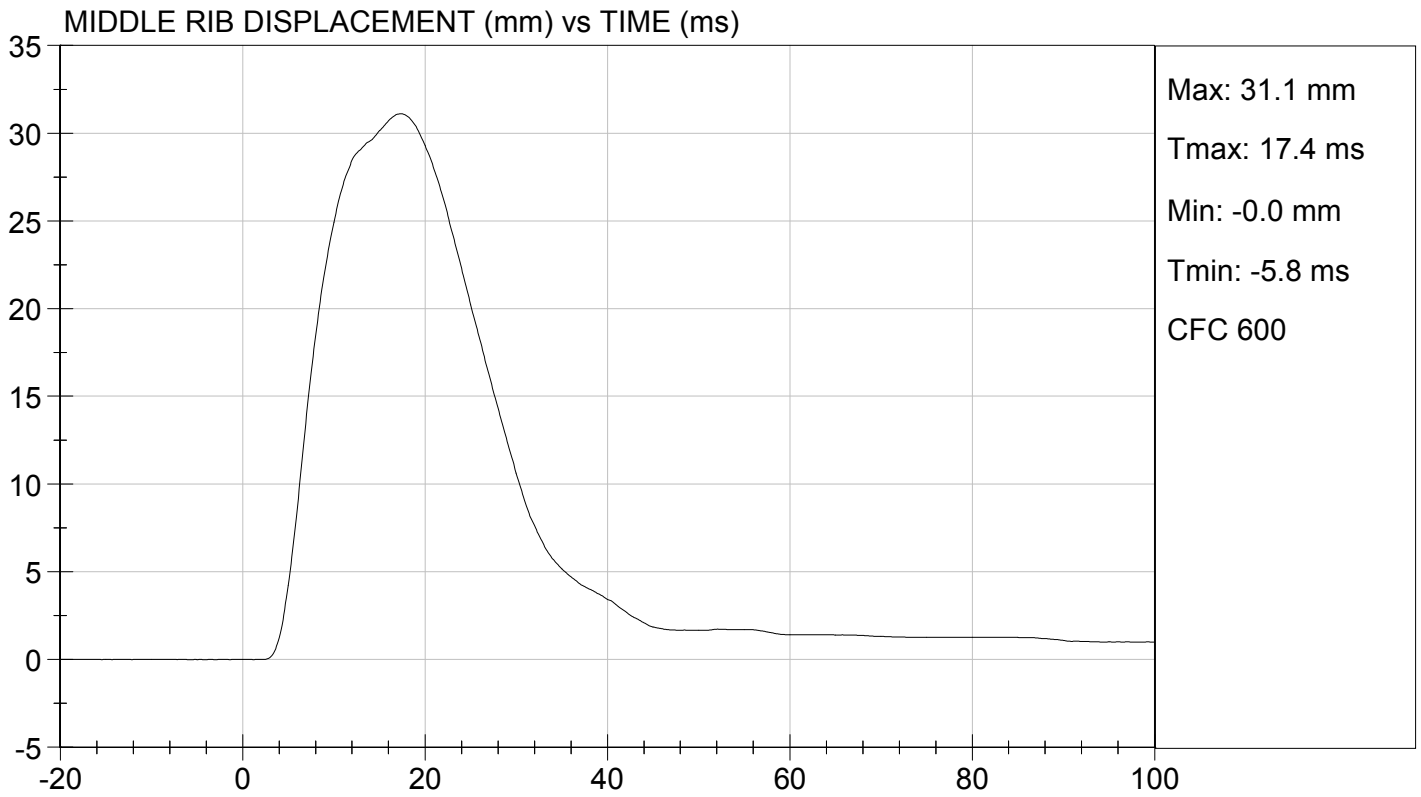
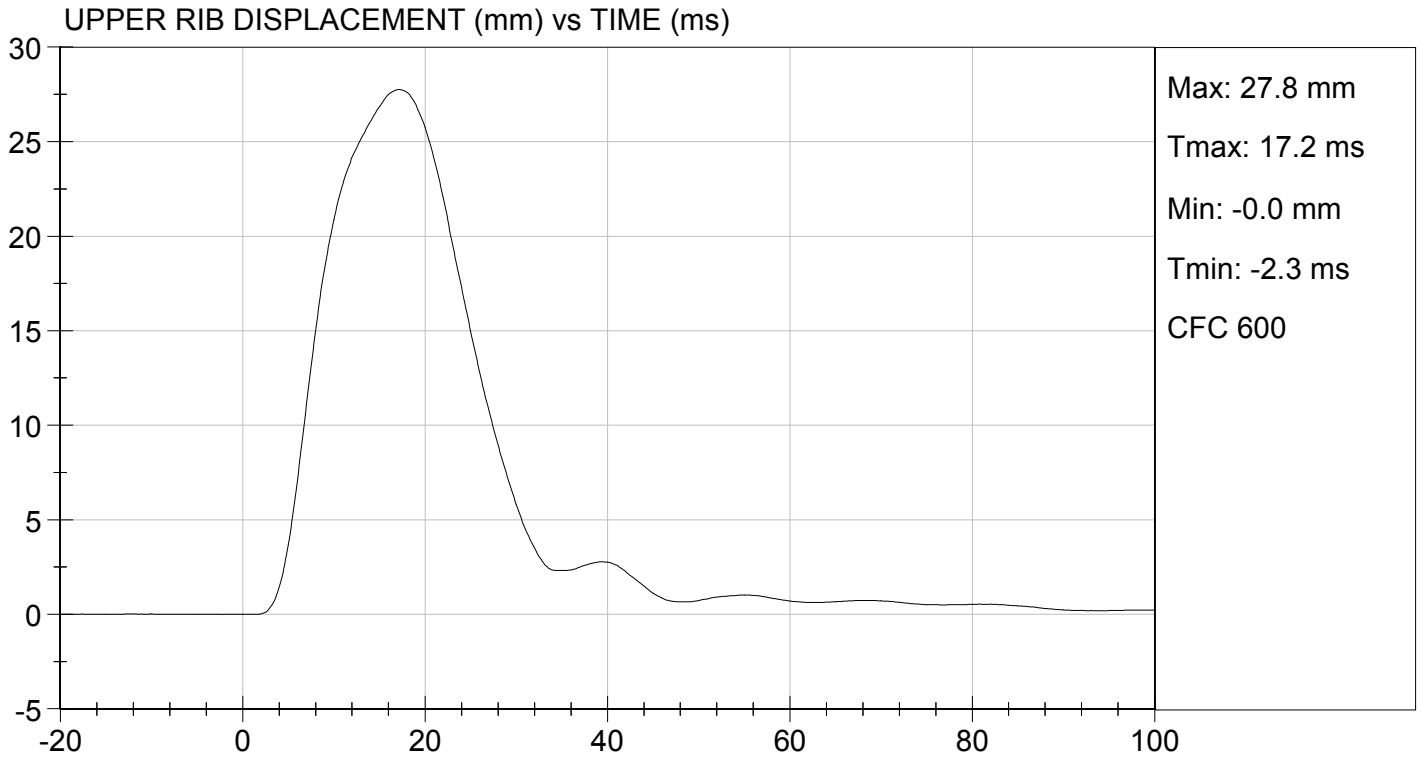
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	36	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle 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	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	35	Pass
<b>Overall Test Results</b>				<b>Pass</b>

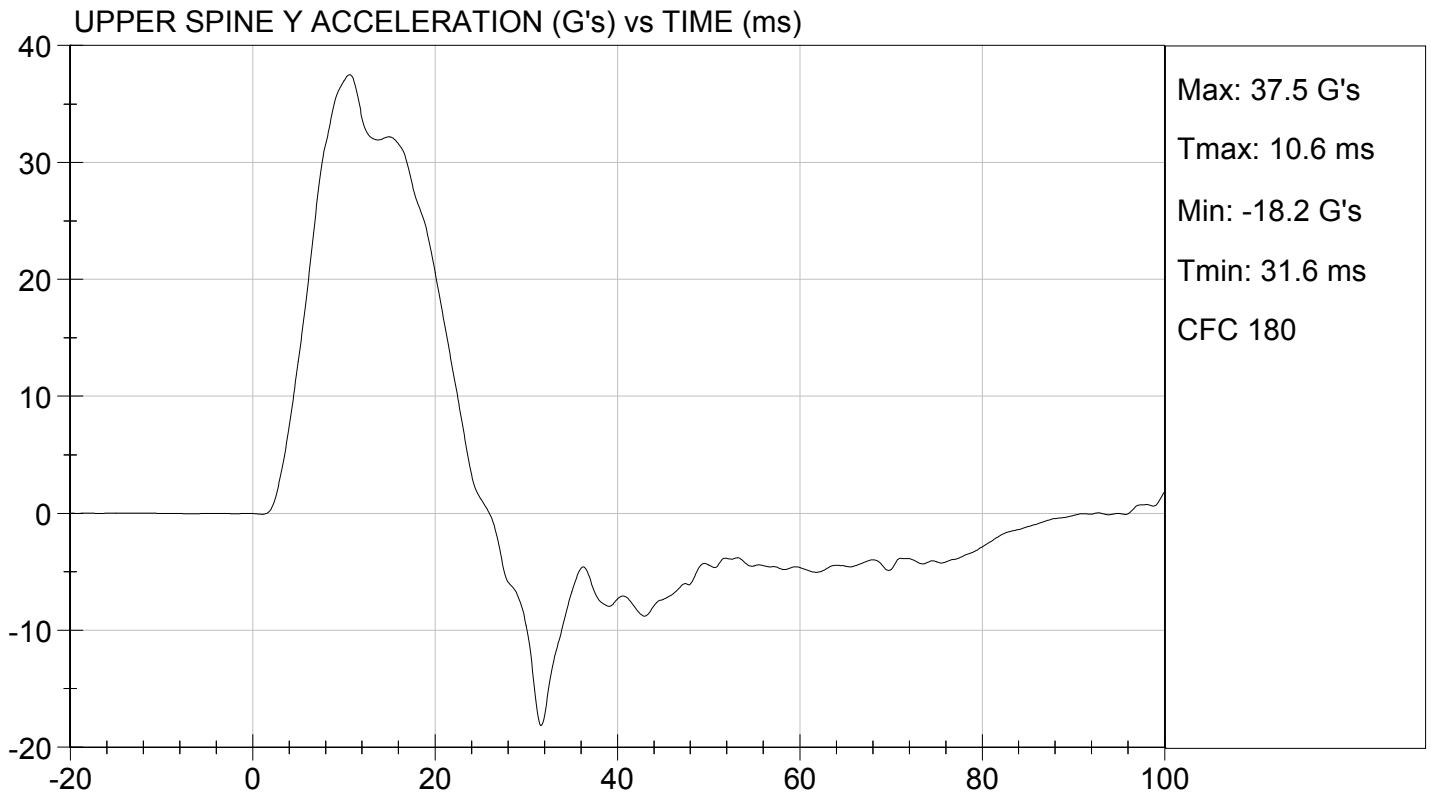
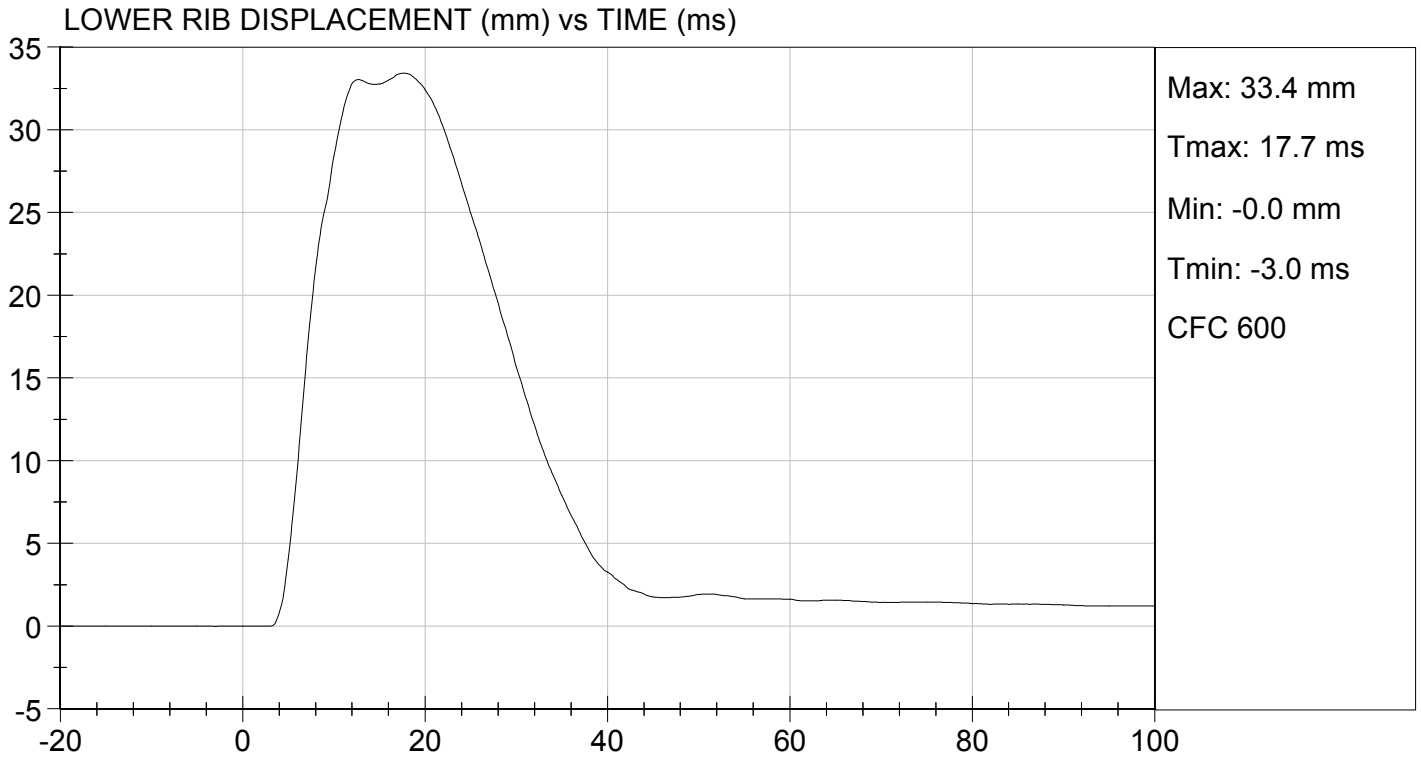
  
Laboratory Technician

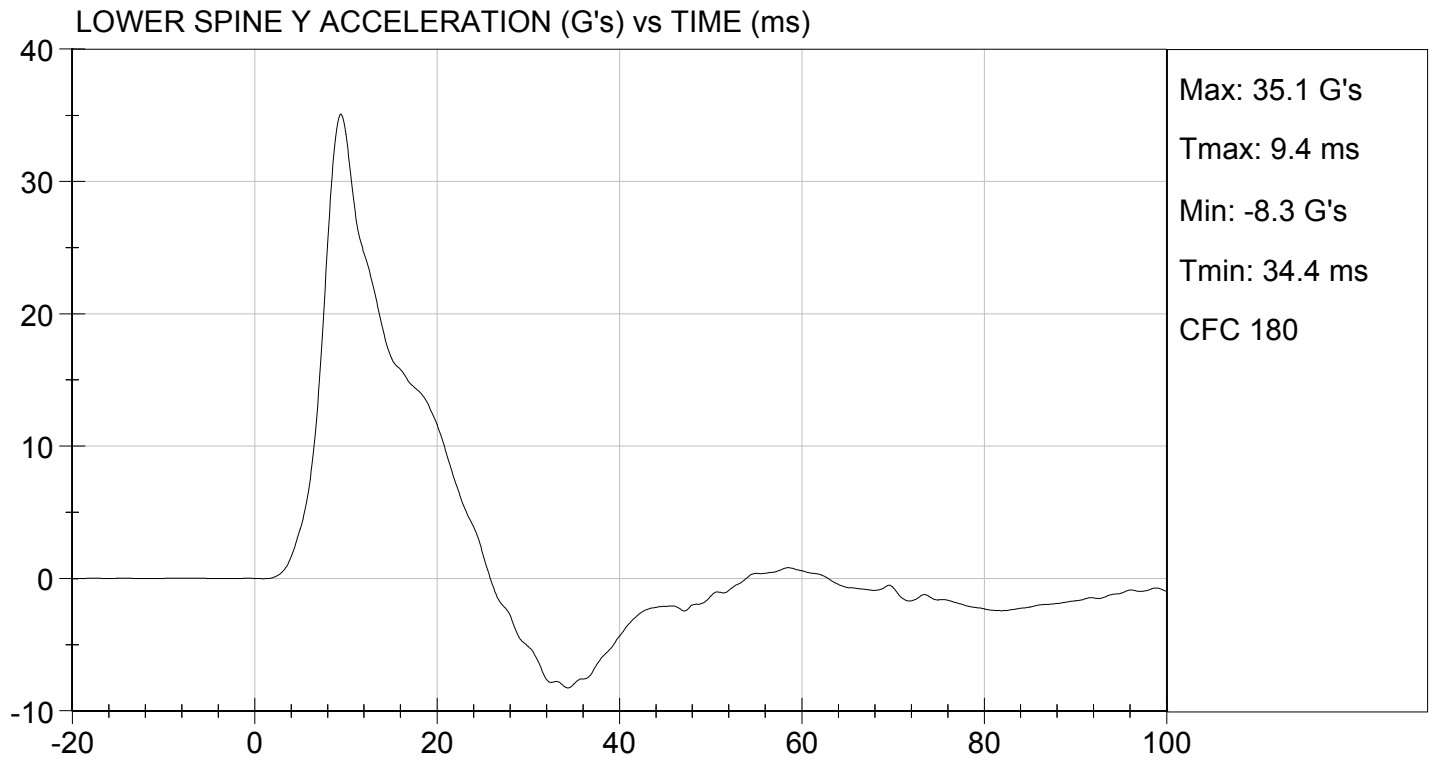
01/07/2016  
Test Date

  
Approved By









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

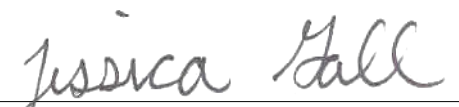
**ATD Serial No:** 306

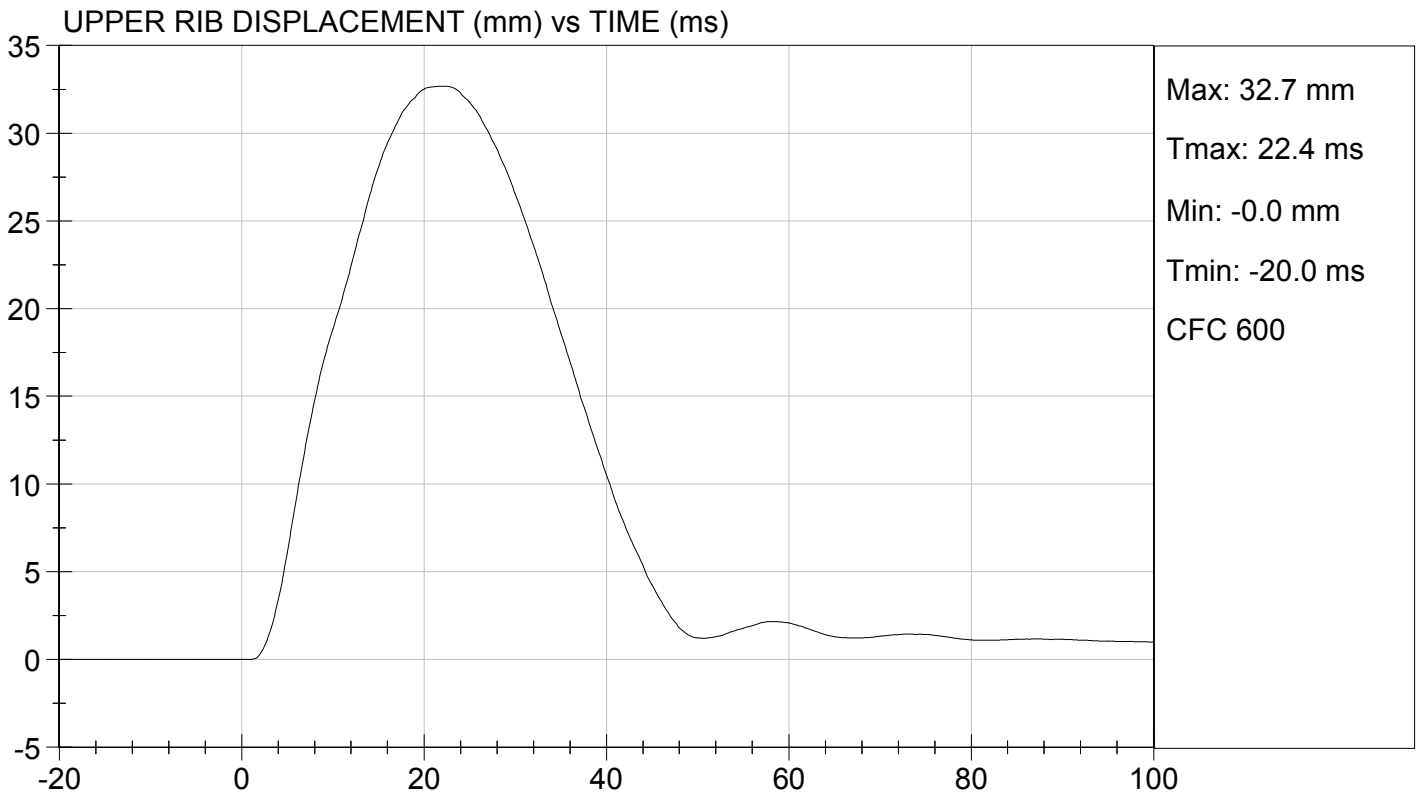
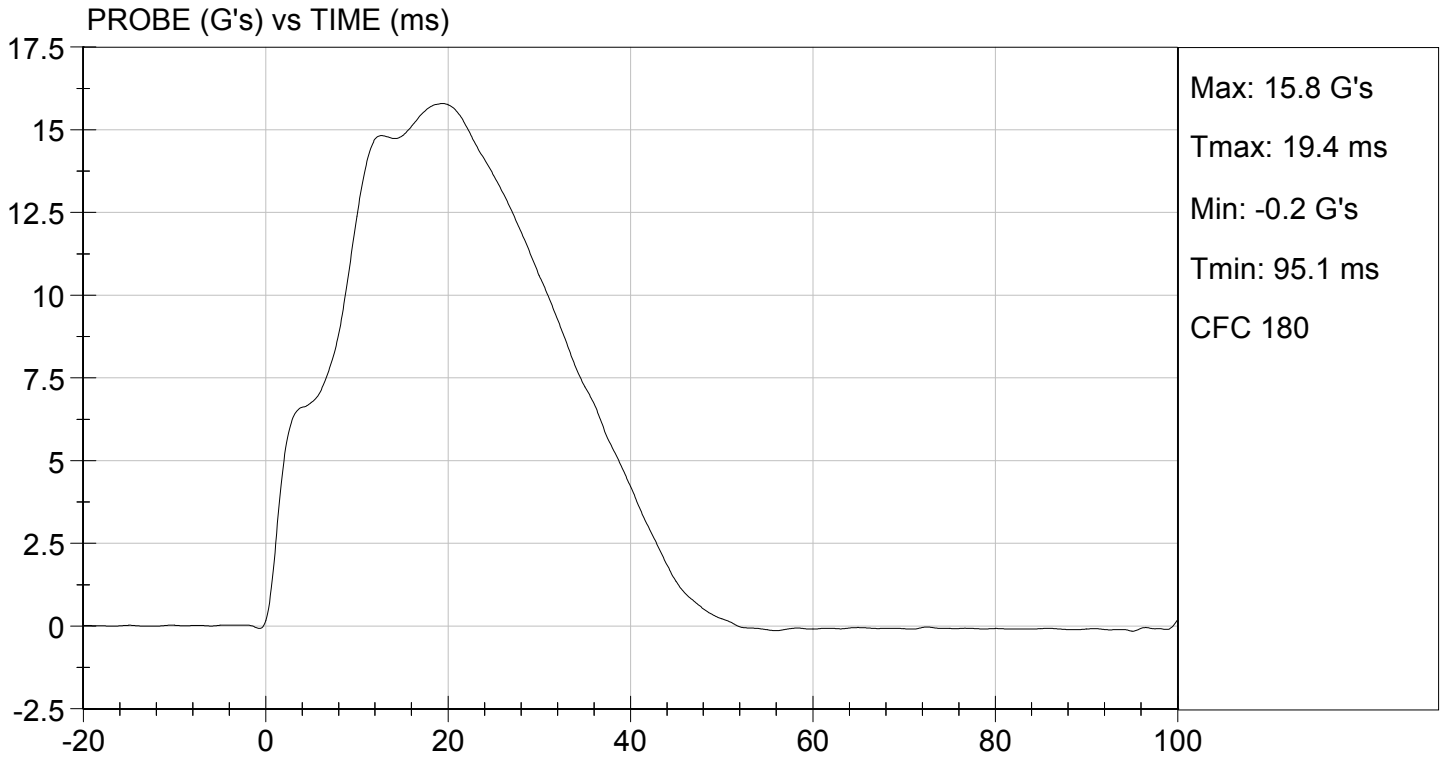
**Test I.D:** D16055

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	14 to 18	16	Pass
Upper Rib Displacement	mm	32 to 40	33	Pass
Middle Rib Displacement	mm	39 to 45	40	Pass
Lower Rib Displacement	mm	35 to 43	41	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
			<b>Overall Test Results</b>	<b>Pass</b>

  
 Laboratory Technician

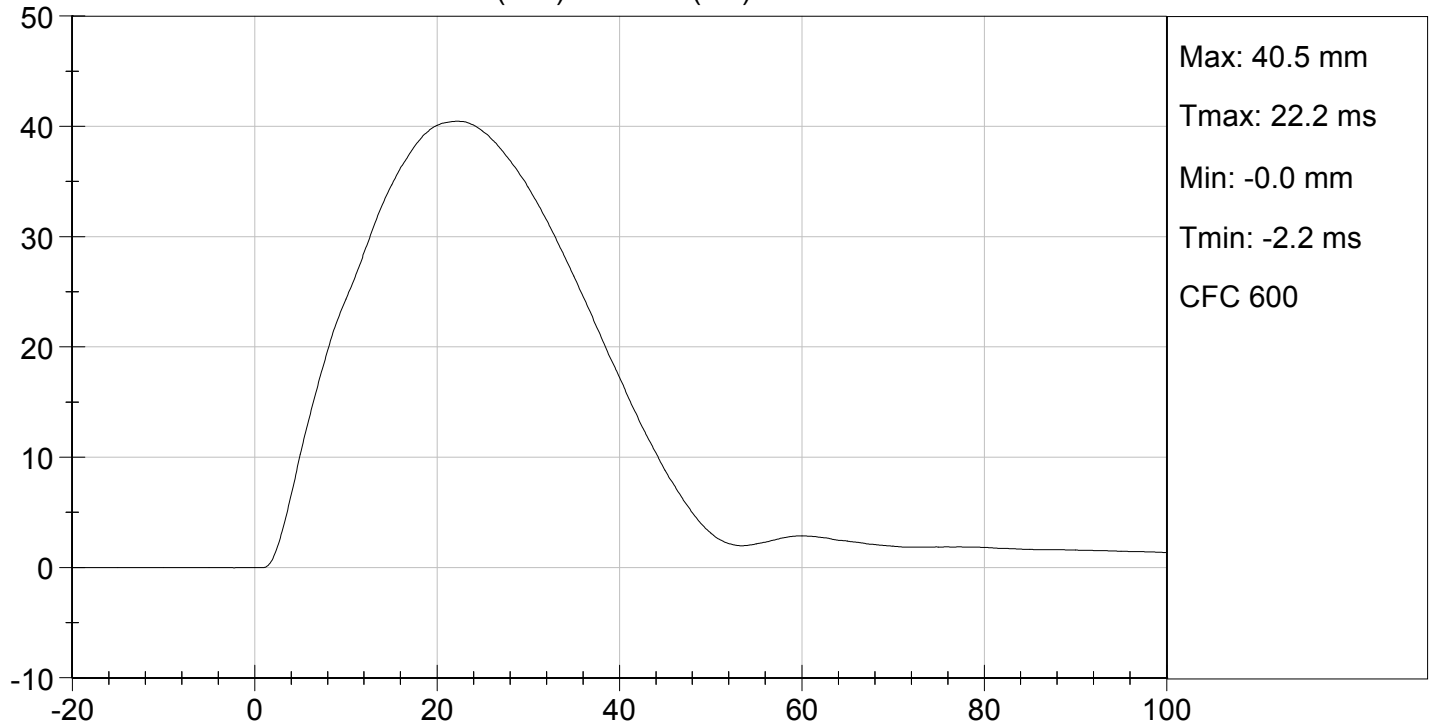
01/07/2016  
 Test Date

  
 Approved By

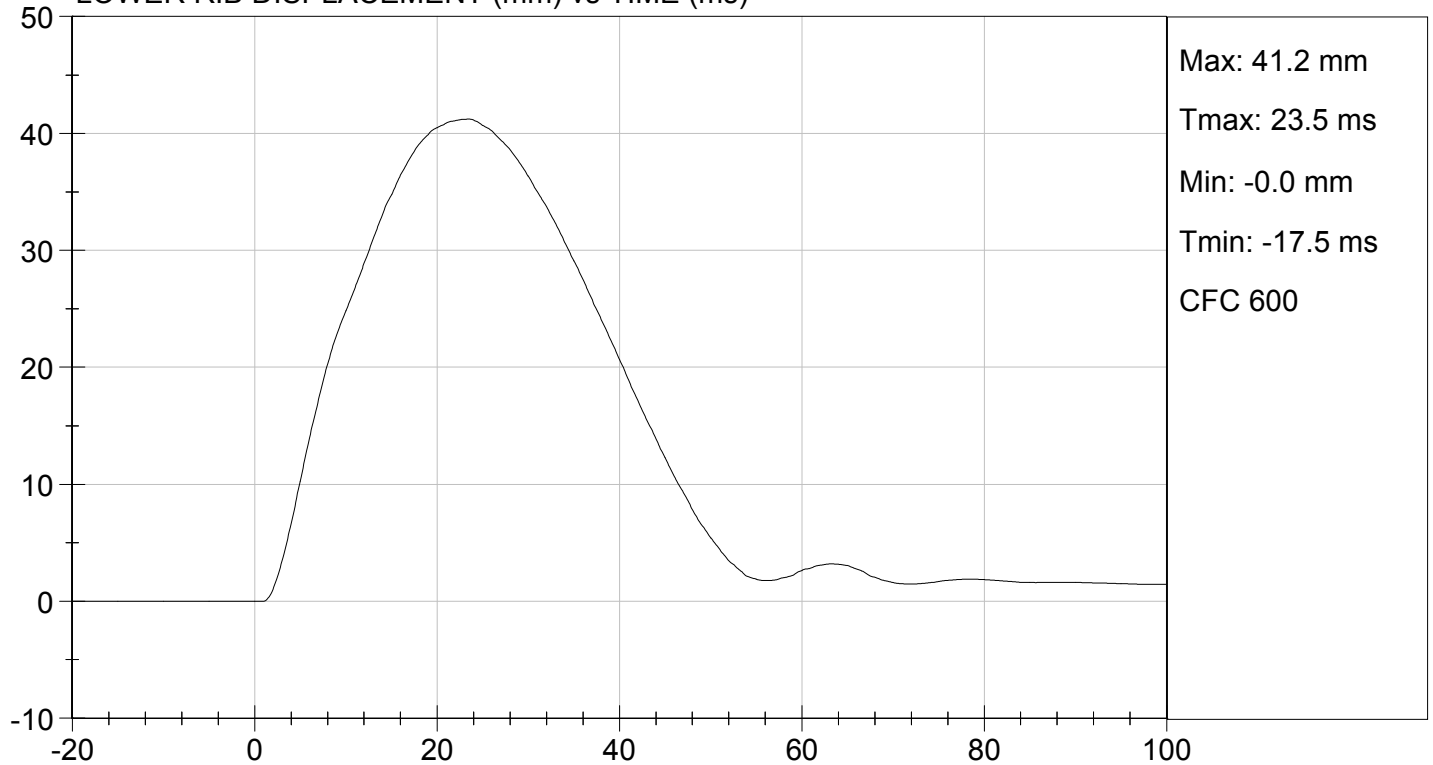




MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)

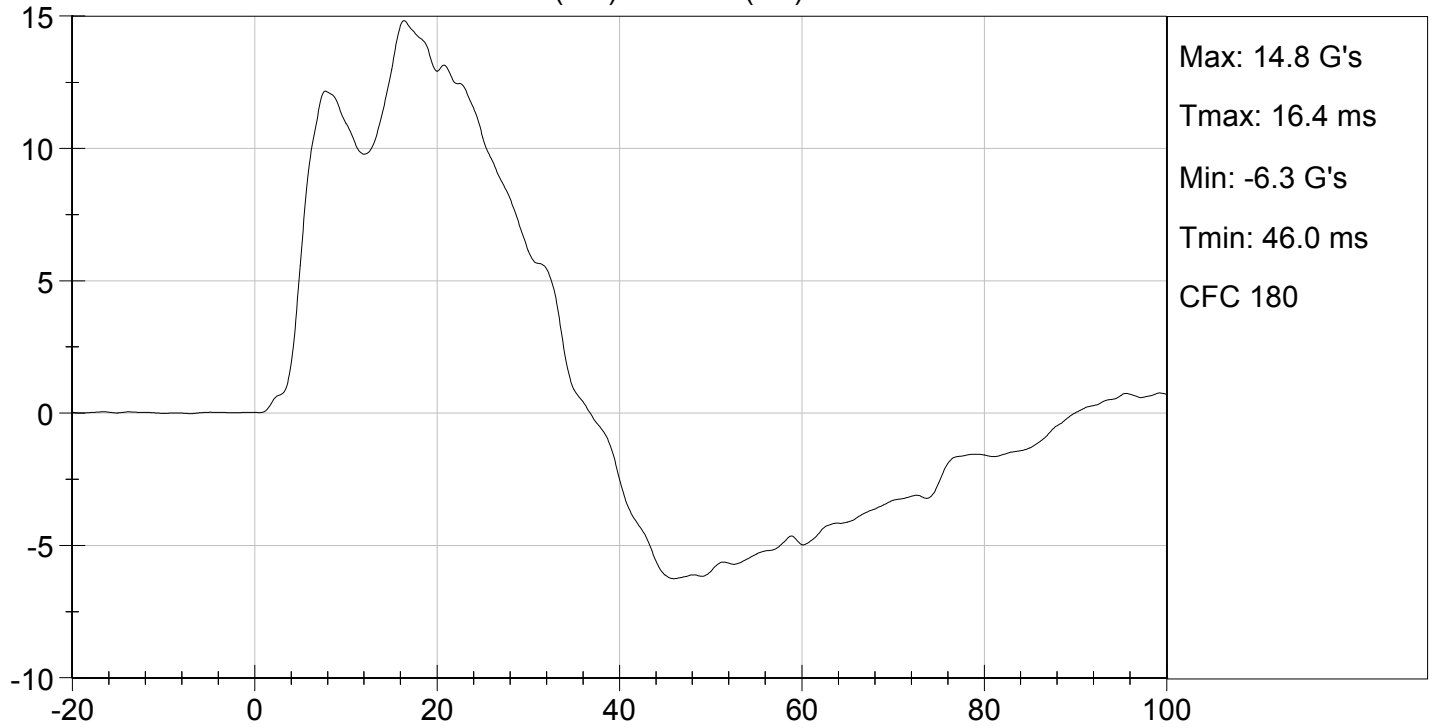


LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

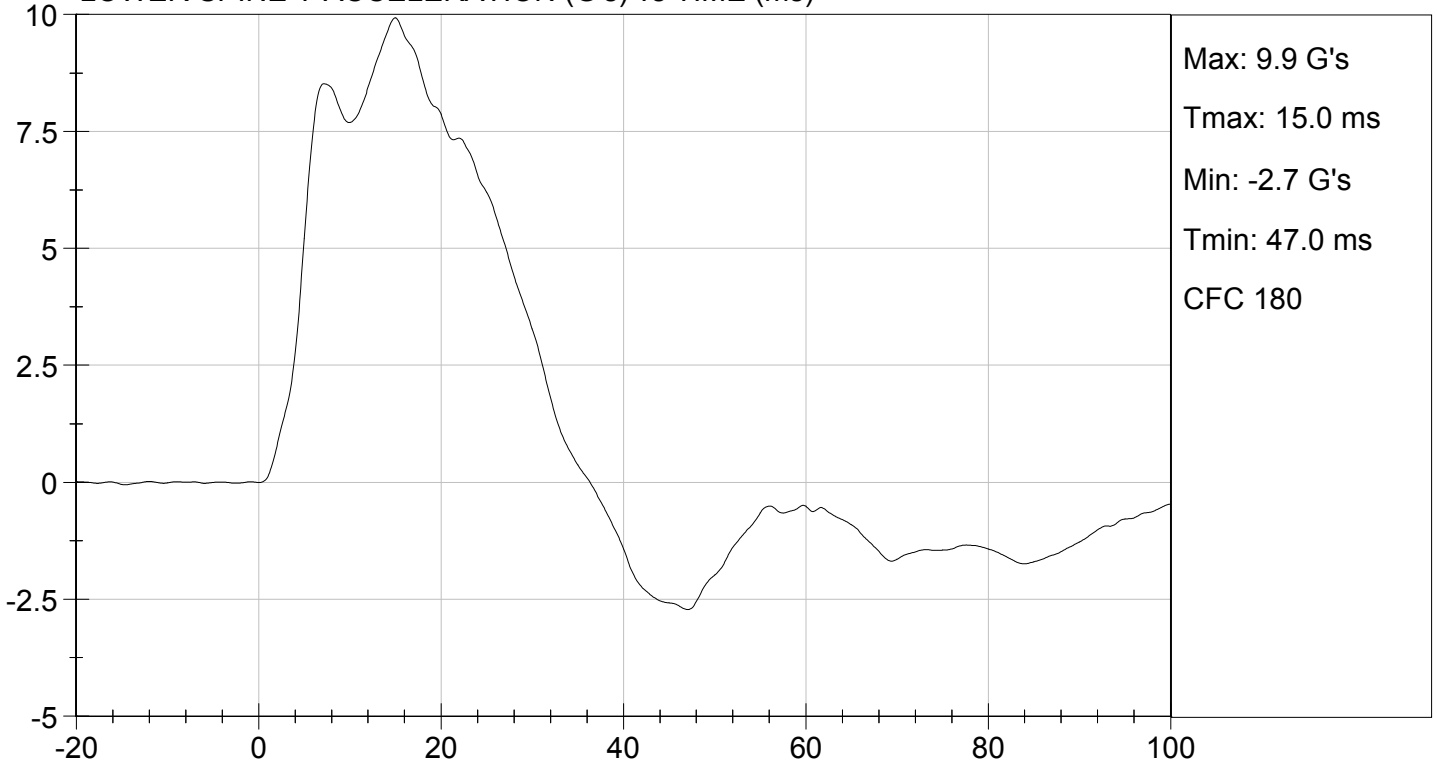




UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



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

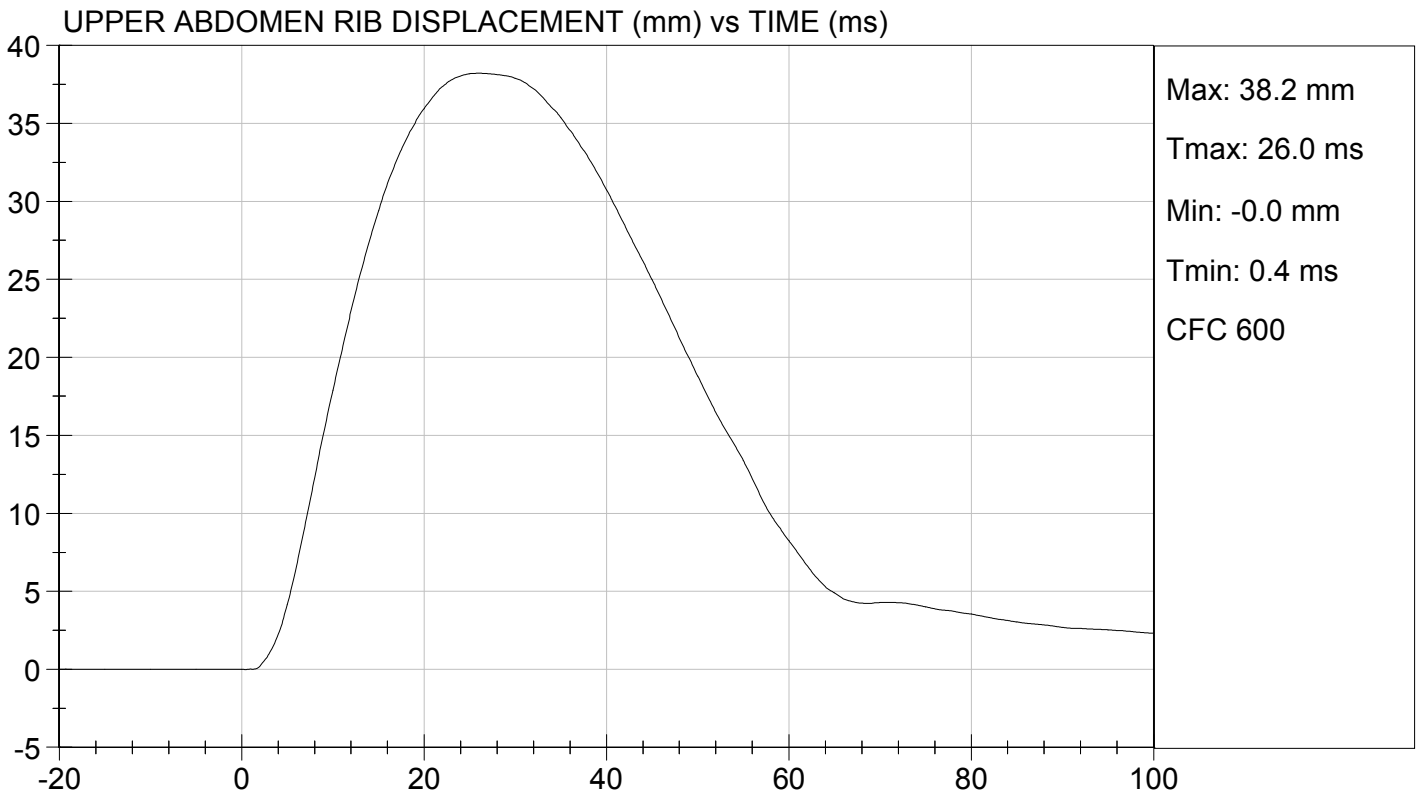
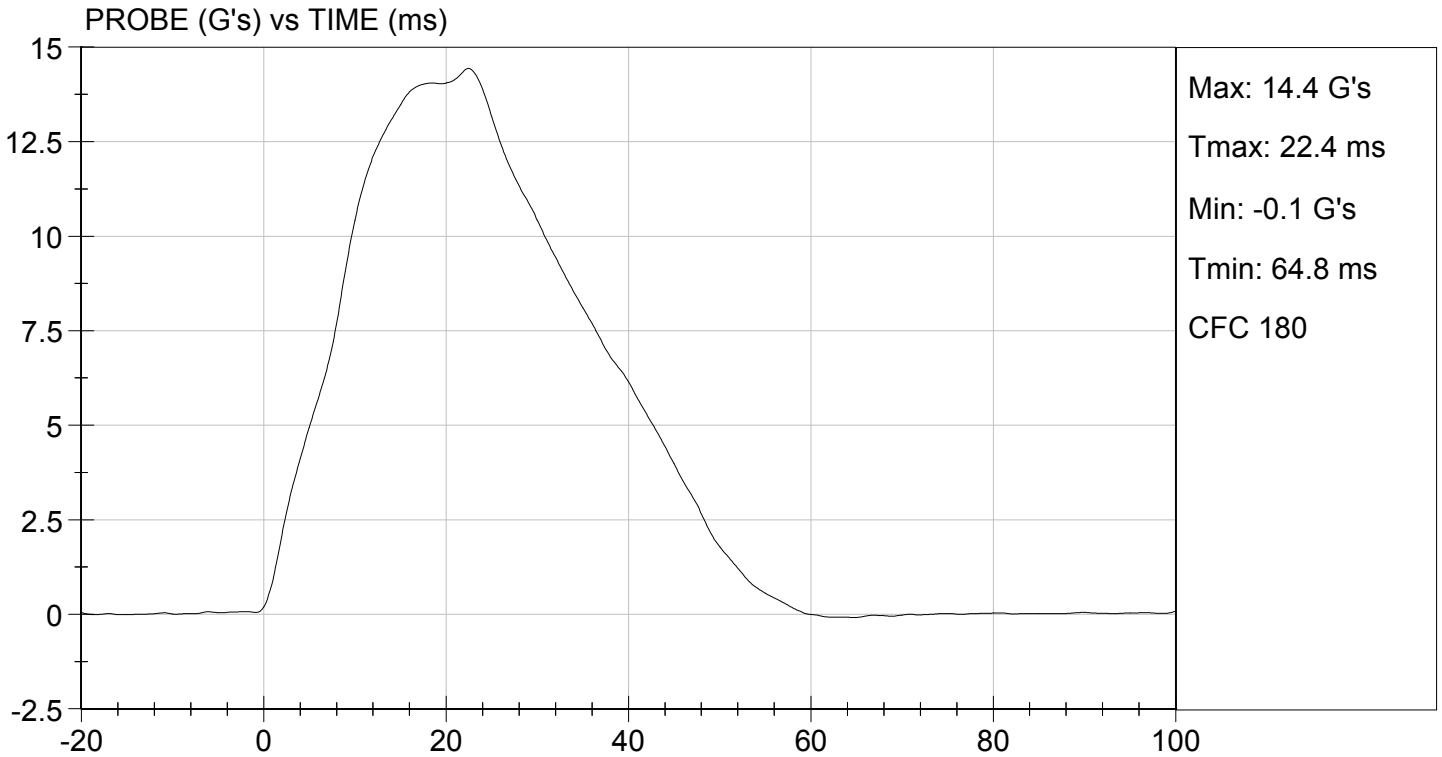
**Test I.D:** D16056

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	38	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	42	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass

  
 Laboratory Technician

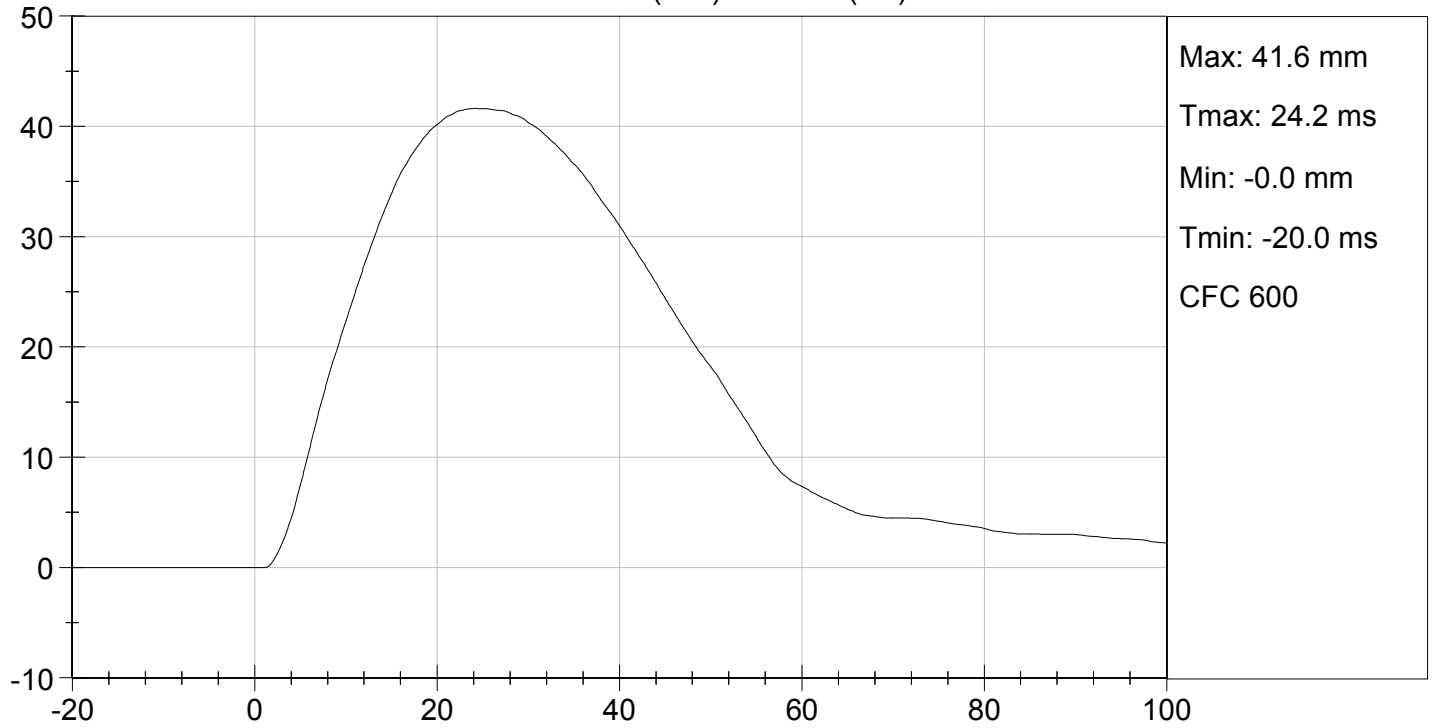
01/07/2016  
 Test Date

  
 Approved By

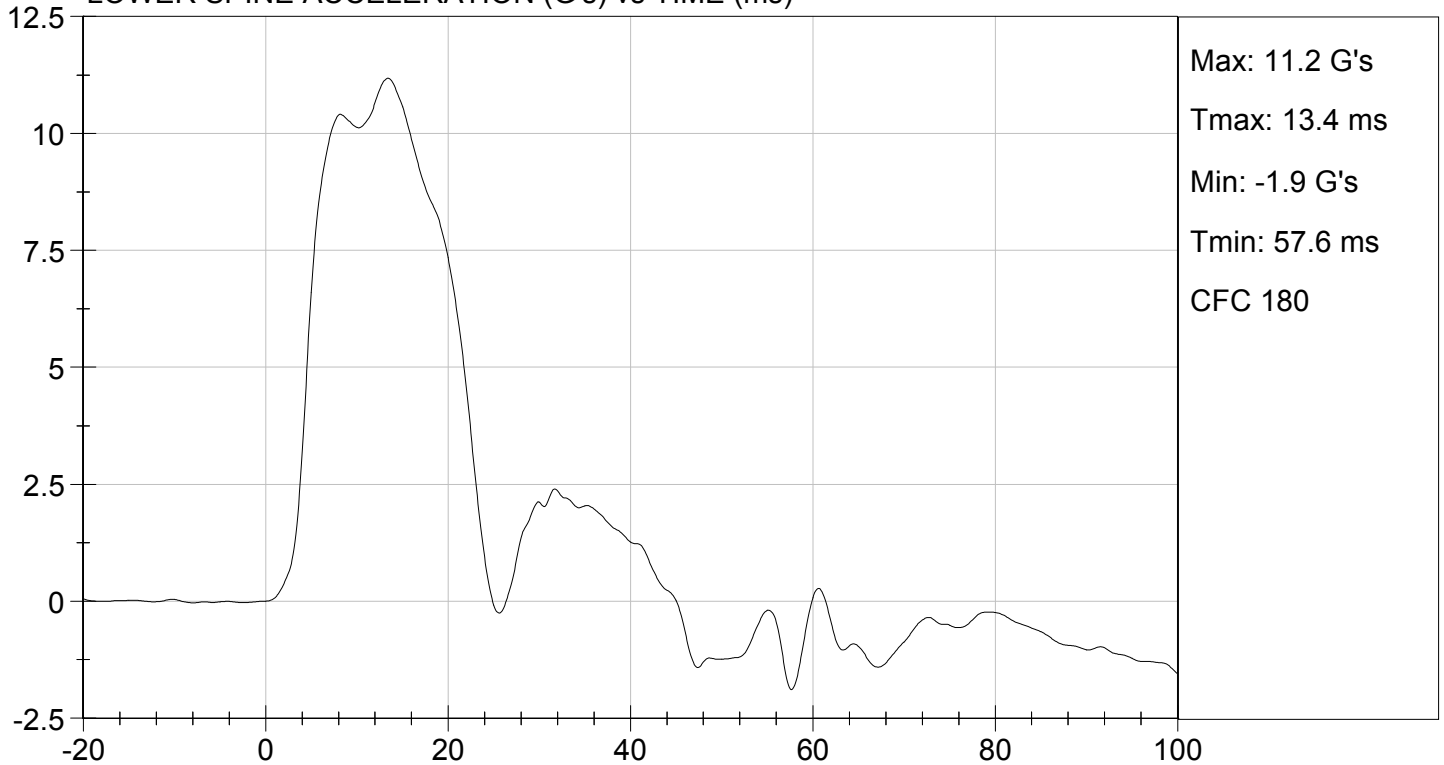




LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



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



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

ATD Serial No: 306

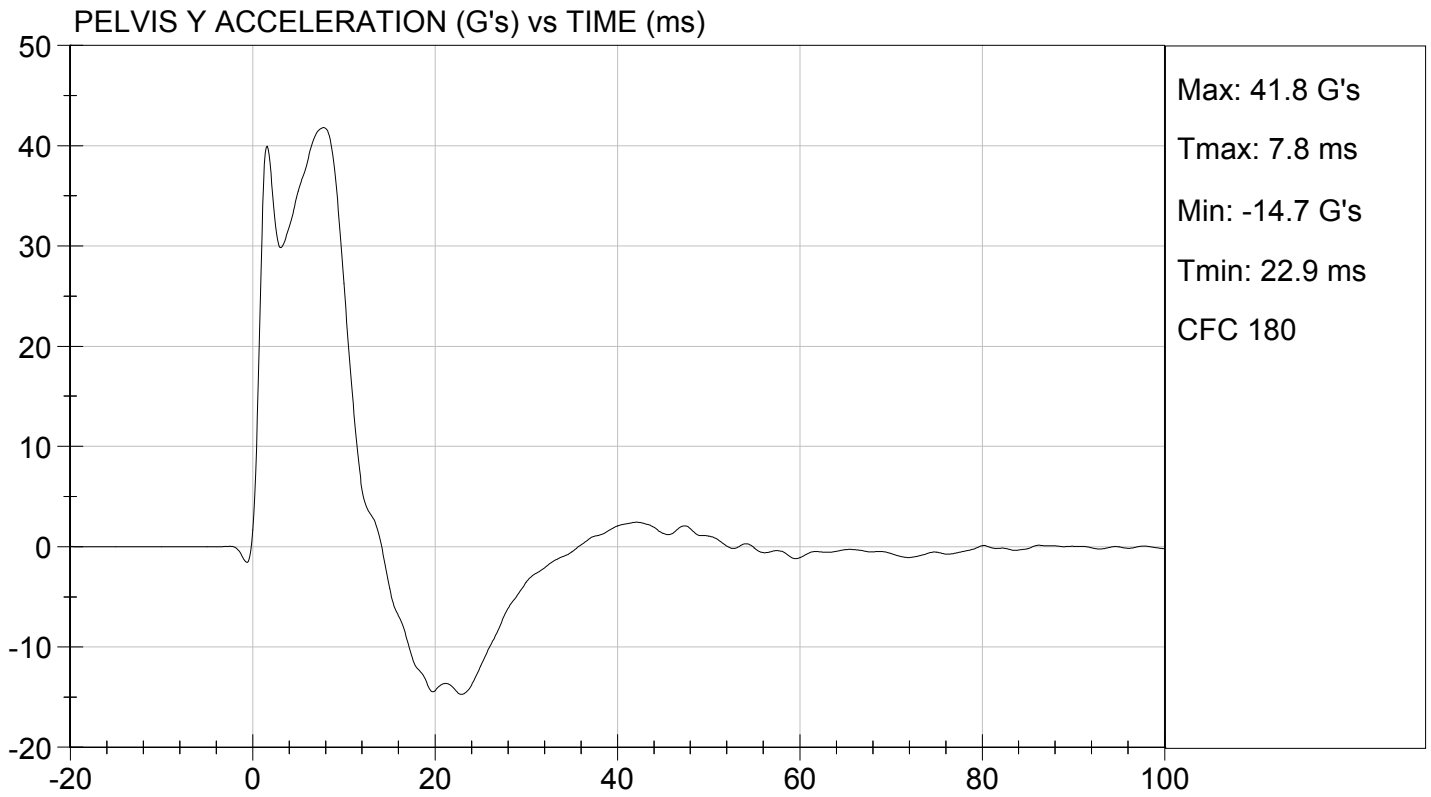
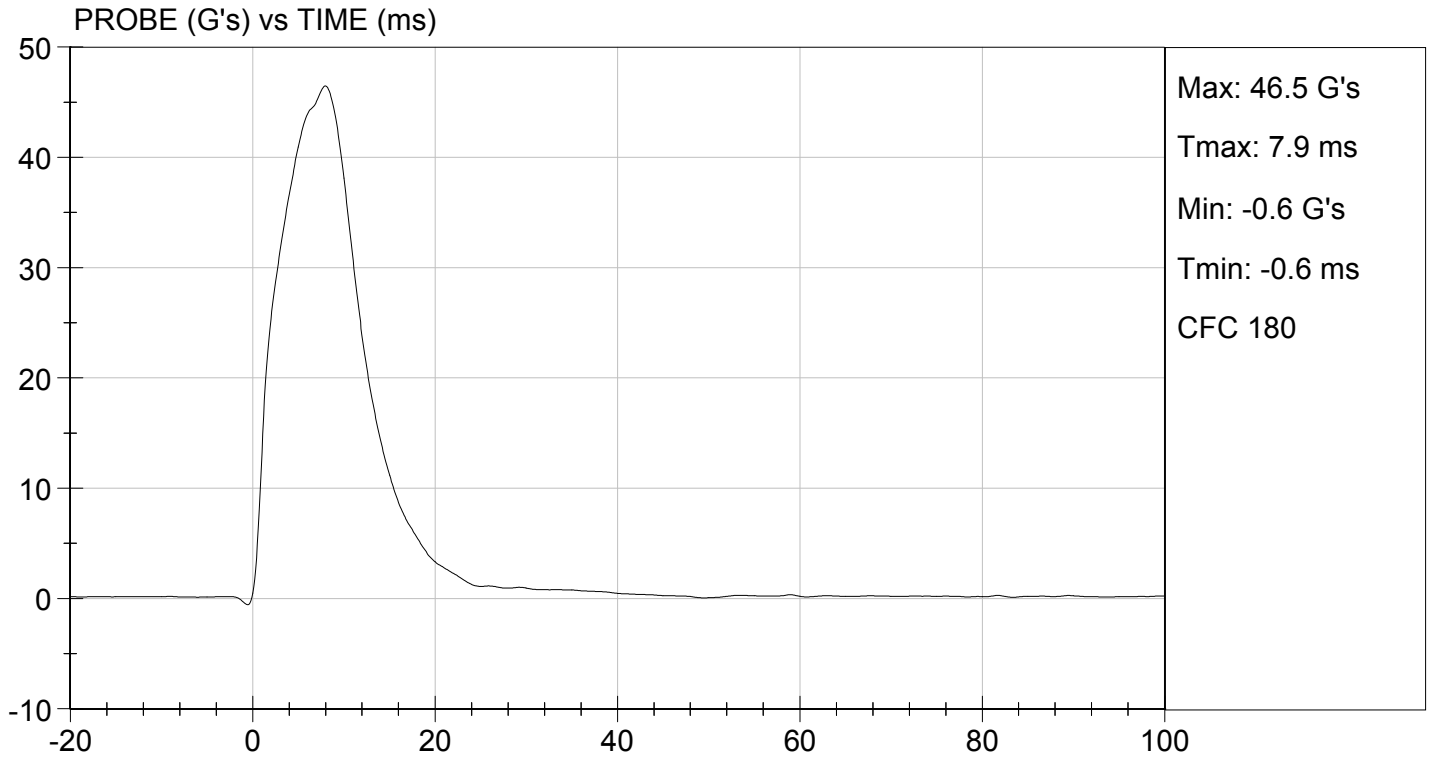
Test I.D: D16057

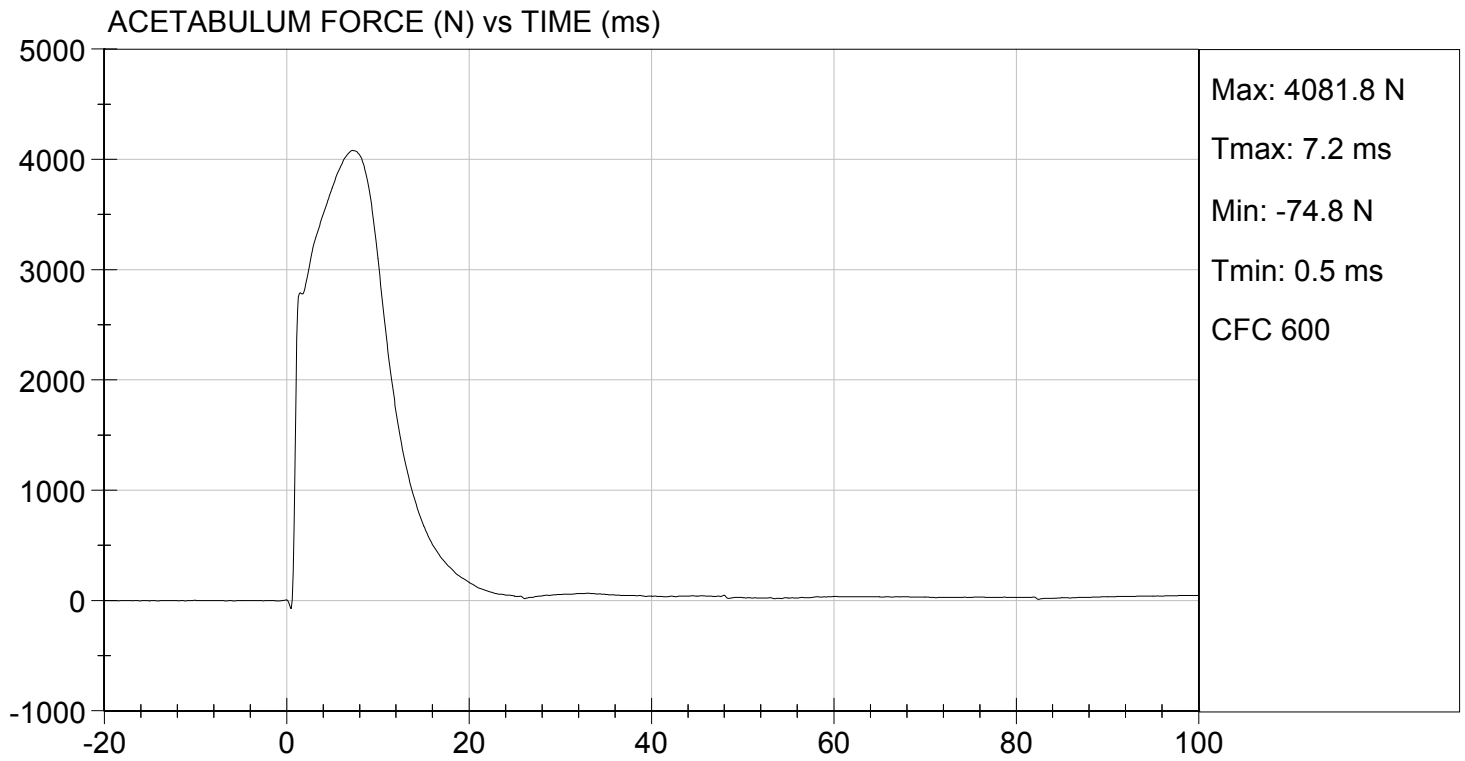
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	46	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	42	Pass
Peak Acetabulum Force	N	3600 to 4300	4,082	Pass
<b>Overall Test Results</b>				<b>Pass</b>

Jessica Hall  
 Laboratory Technician

01/07/2016  
 Test Date

Jessica Hall  
 Approved By





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

**ATD Serial No:** 306

**Test I.D:** D16058

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	36 to 45	41	Pass
Pelvis Y Acceleration	G's	28 to 39	31	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,580	Pass
<b>Overall Test Results</b>				<b>Pass</b>

*Jessica Hall*

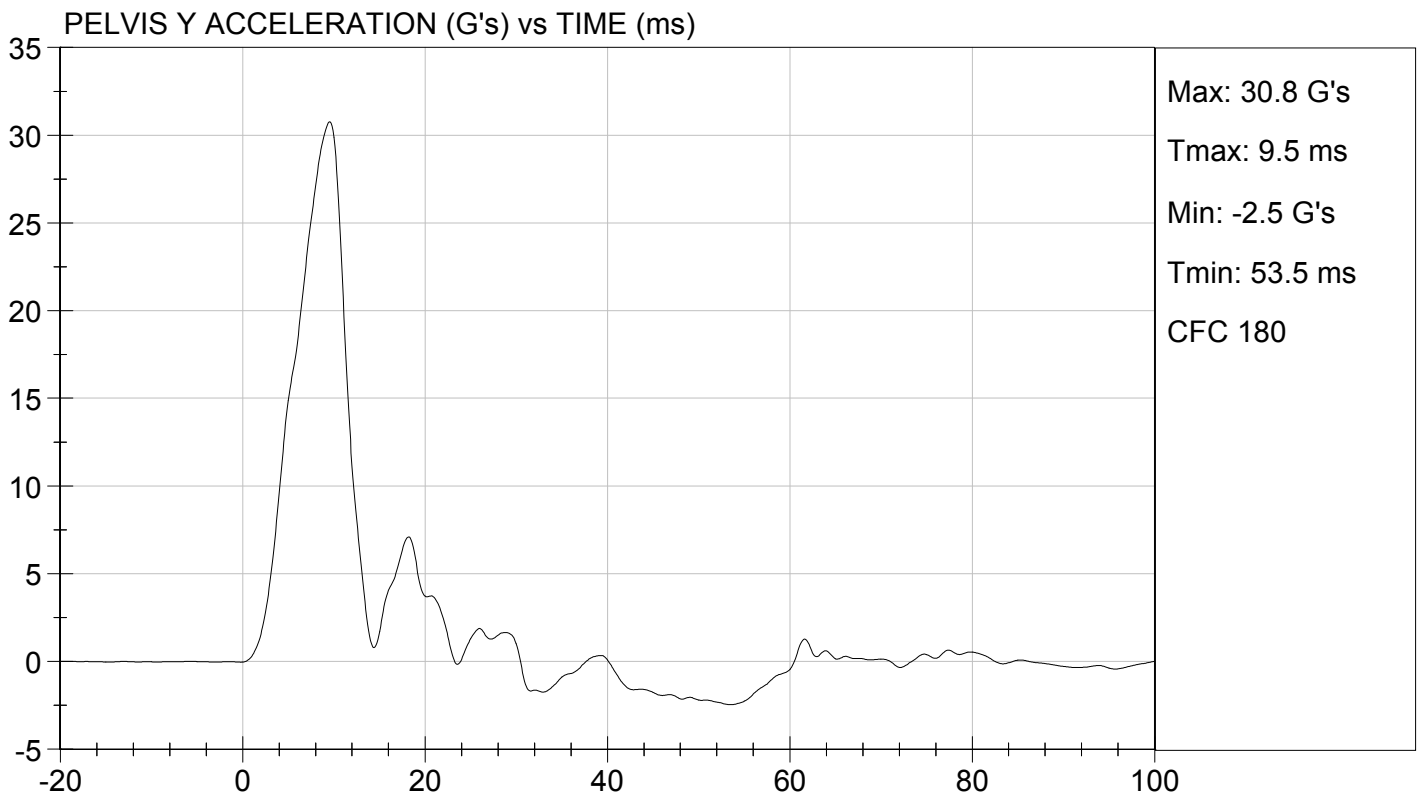
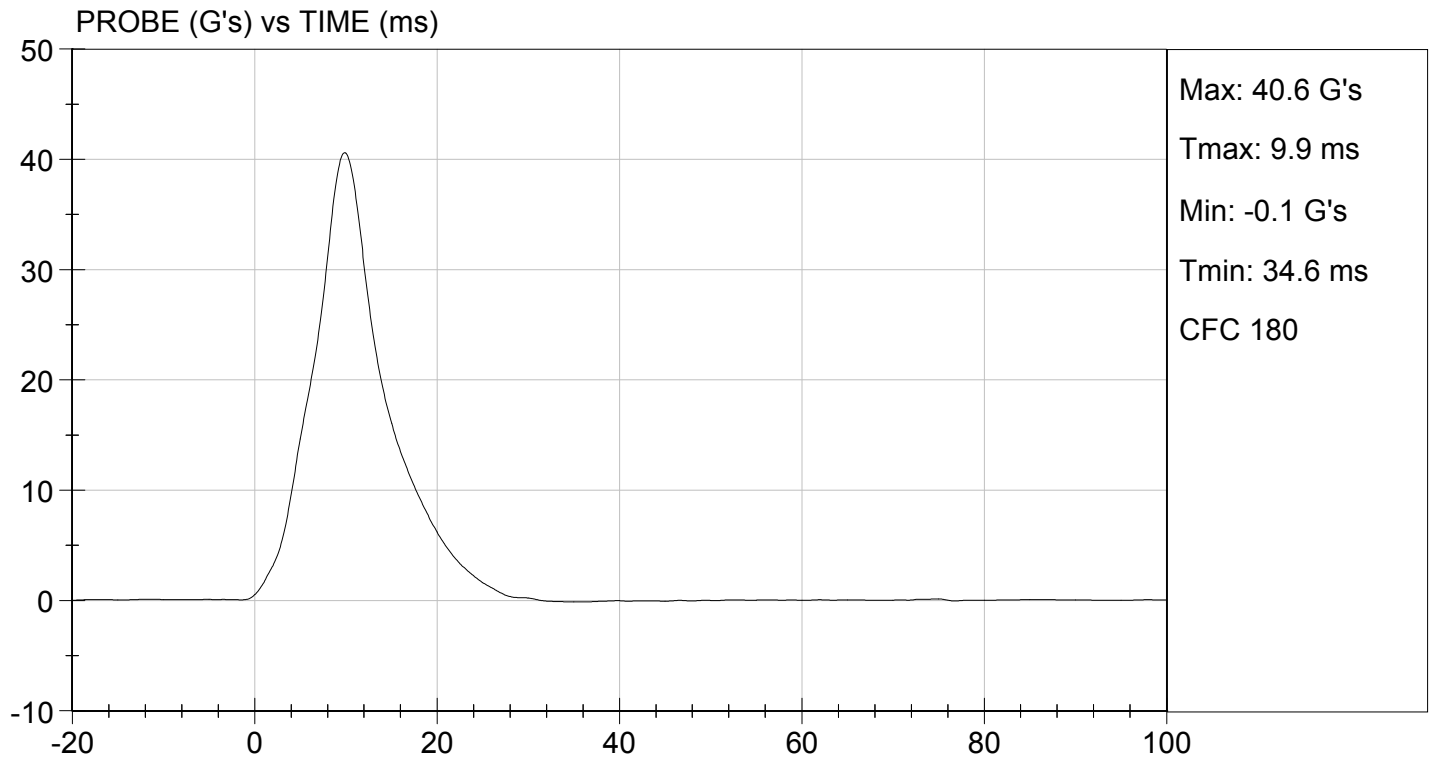
Laboratory Technician

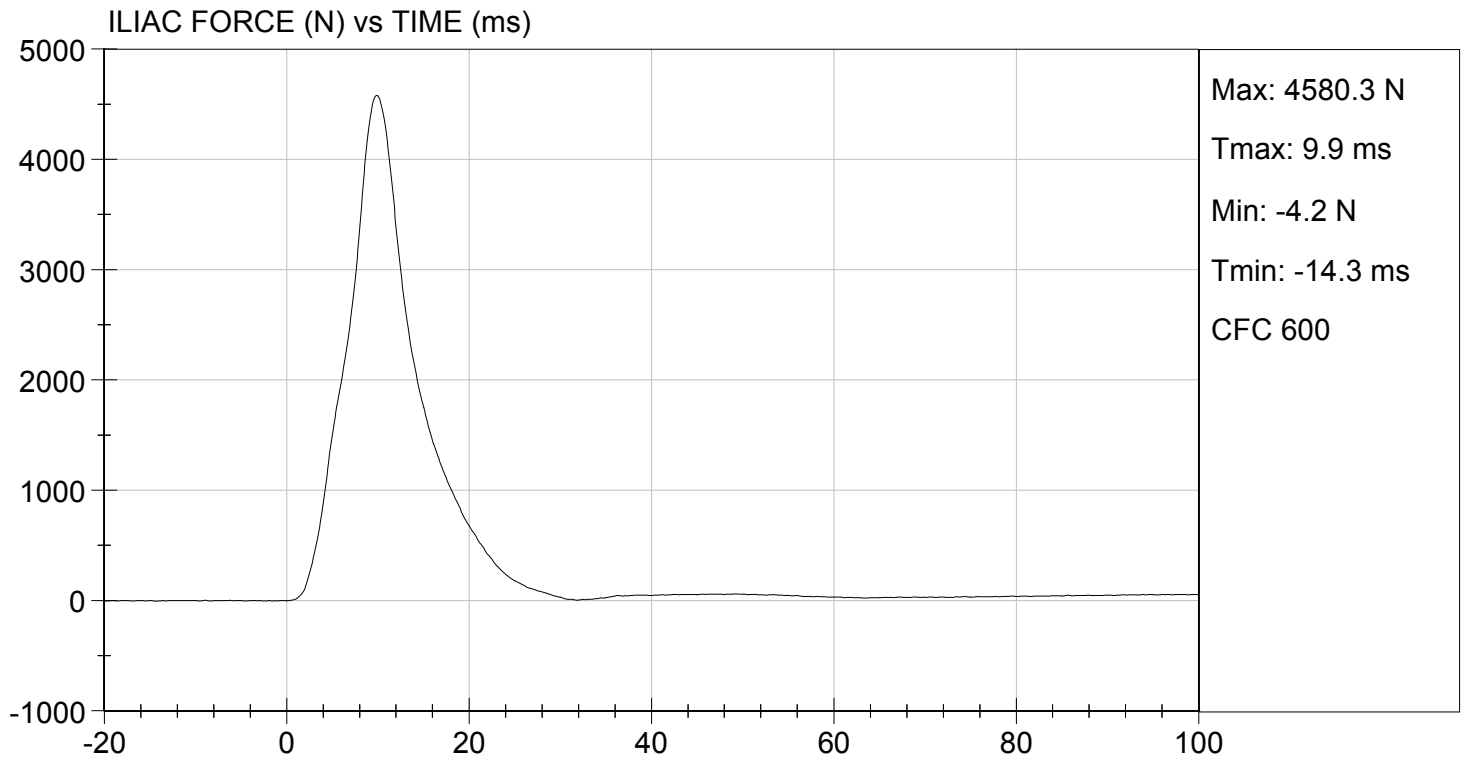
01/07/2016

Test Date

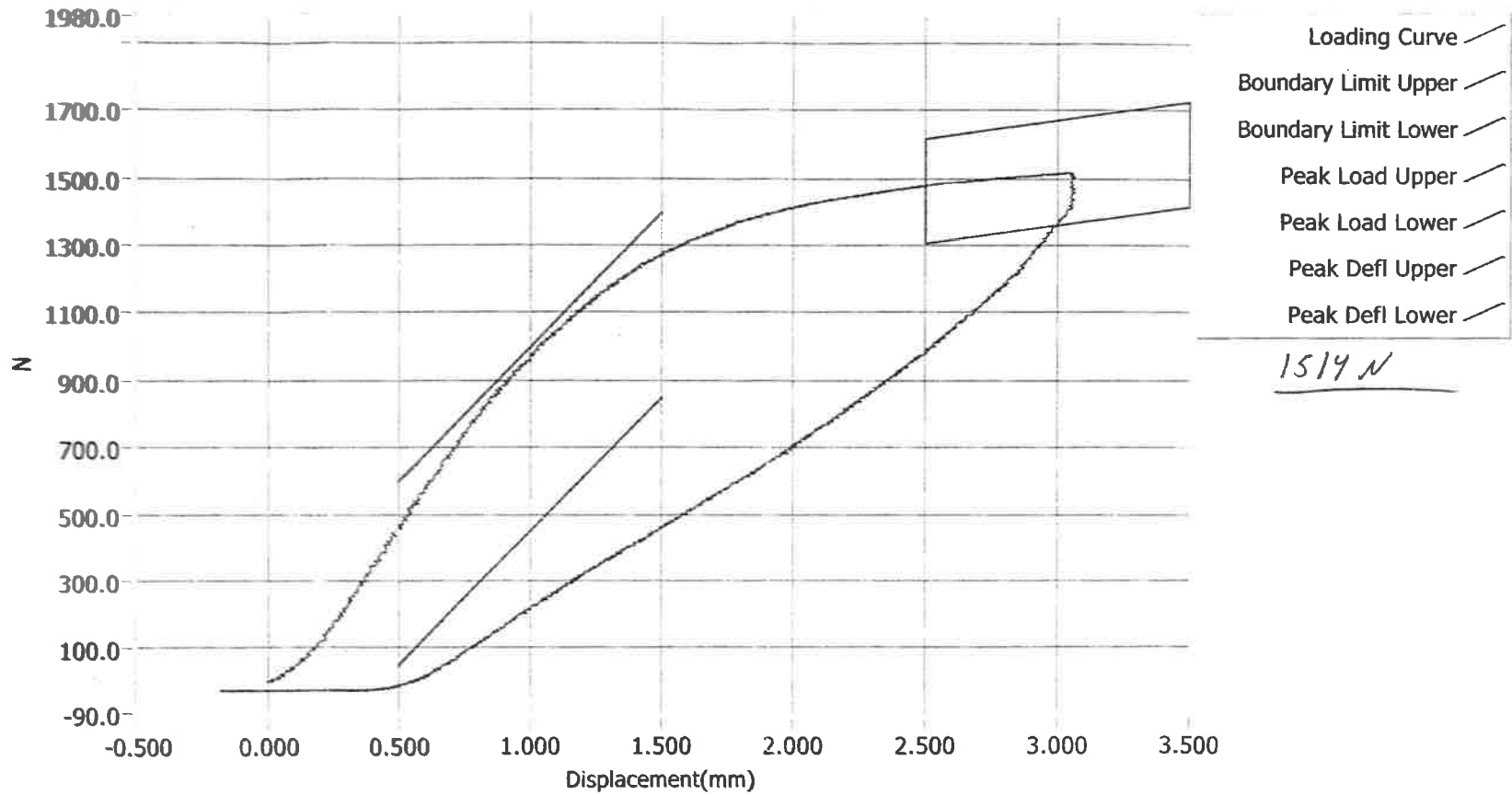
*Jessica Hall*

Approved By





### Resultant Data - SIDIIs Plug Compression



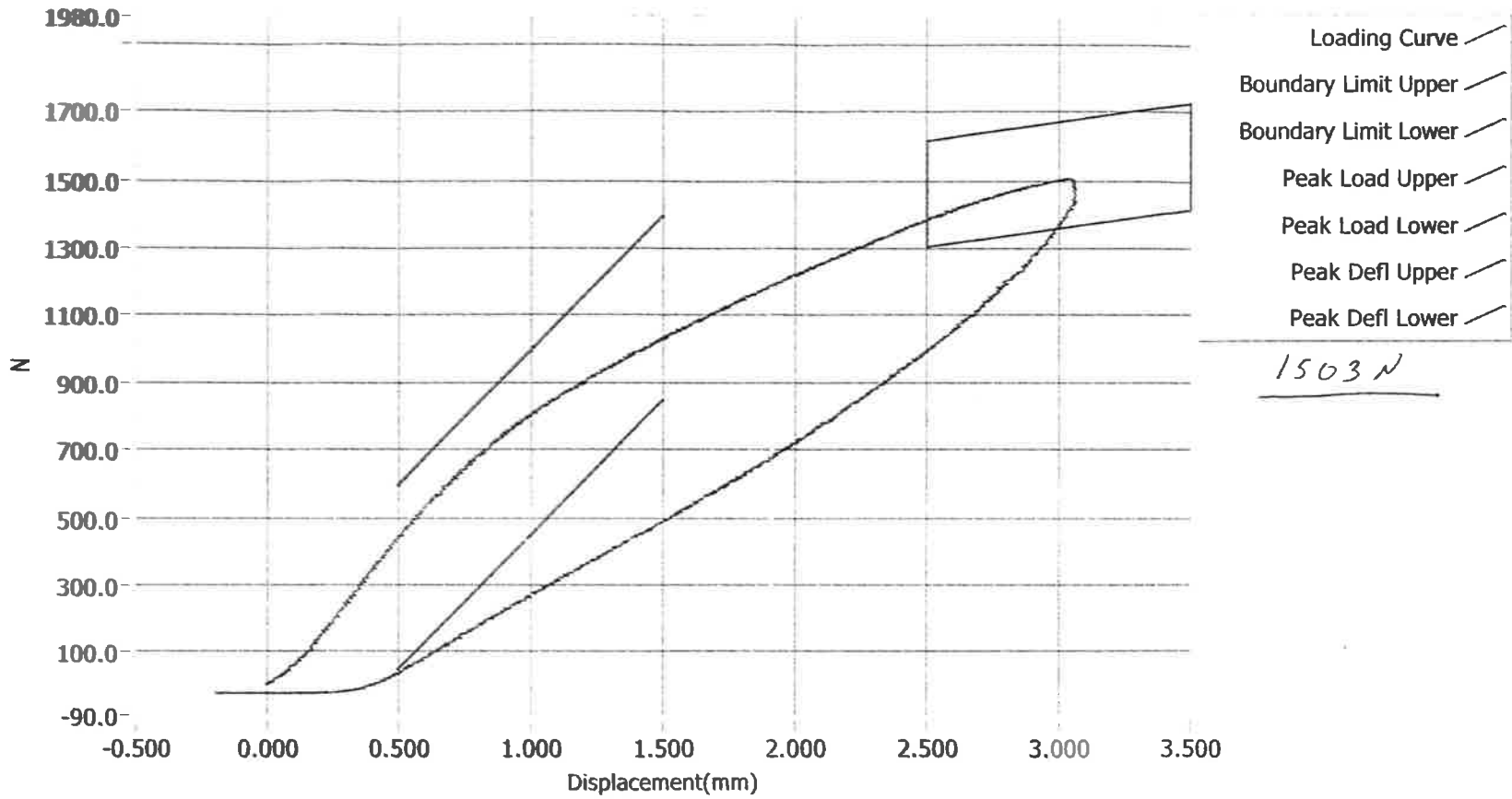
ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	70753	12/13/2013	3:34 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 12/13/2013

Current Time : 15:35:36

### Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	71074	12/18/2013	8:00 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 12/18/2013

Current Time : 20:01:27

**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	P79414	Endevco	10/05/15
			Y	P79409	Endevco	10/05/15
			Z	P79422	Endevco	10/05/15
			Xr	P79640	Endevco	10/05/15
			Yr	P79639	Endevco	10/05/15
			Zr	P79641	Endevco	10/05/15
Head Angular Rate Sensors			X	ARS7416	DTS	07/15/14
			Y	ARS7442	DTS	07/15/14
			Z	ARS7475	DTS	07/08/14
Displacement Potentiometers	Thoracic Rib	Upper	Y	G033	FTSS	10/06/15
		Middle	Y	G1261	FTSS	10/06/15
		Lower	Y	G1270	FTSS	10/06/15
	Abdominal Rib	Upper	Y	G032	FTSS	10/06/15
		Lower	Y	G1304	FTSS	10/06/15
Lower Spine Accelerometers (T12)			X	P82310	Endevco	09/23/15
			Y	P82113	Endevco	09/23/15
			Z	P82114	Endevco	09/23/15
Acetabulum Load Cell			Y	ACG111	FTSS	04/08/15
Iliac Wing Load Cell			Y	IWG226	FTSS	04/08/15
Pelvis Plug (struck side)				70753	FTSS	12/13/13
Pelvis Plug (non-struck side)				71074	FTSS	12/18/13

**Table 2 – Vehicle Instrumentation**

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P88136	Endevco	11/11/15
Vehicle Center of Gravity	Y	P88134	Endevco	11/11/15
Vehicle Center of Gravity	Z	P88135	Endevco	11/11/15
Left Floor Sill	Y	P72792	Endevco	12/04/15
A-Pillar Sill	Y	P73738	Endevco	11/11/15
A-Pillar Low	Y	P77635	Endevco	08/11/15
A-Pillar Mid	Y	P77634	Endevco	08/11/15
B-Pillar Sill	Y	P84469	Endevco	08/20/15
B-Pillar Low	Y	P90672	Endevco	10/06/15
B-Pillar Mid	Y	P90673	Endevco	10/06/15
Driver Seat	Y	P77639	Endevco	10/22/15
Engine Top	X	P77656	Endevco	08/19/15
Engine Top	Y	P77655	Endevco	08/19/15
Firewall	Y	P77647	Endevco	08/13/15
Right Roof	Y	P73870	Endevco	08/05/15
Right Floor Sill	Y	P90691	Endevco	10/06/15
Rear Floorpan	X	P90594	Endevco	09/22/15
Rear Floorpan	Y	P90593	Endevco	09/22/15

**Table 3 – Pole Instrumentation**

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DG6277	FTSS	07/22/15
Load Cell 2	DG6278	FTSS	07/22/15
Load Cell 3	DG6279	FTSS	07/22/15
Load Cell 4	DG6280	FTSS	07/22/15
Load Cell 5	DG6281	FTSS	07/22/15
Load Cell 6	DG6283	FTSS	07/22/15
Load Cell 7	DG6284	FTSS	07/22/15
Load Cell 8	DG6582	FTSS	07/22/15